Revised on 04/29/2022 (updated NOE AND PFE information)

FIRE DEPARTMENT ● CITY OF NEW YORK

Building Operation, Maintenance and Recordkeeping Training Course

**Note:
FDNY is posting this study material for public to prepare the **Z-51** exam. The Z-51 exam will include questions based on this study material starting from **10/1/2015**.
This booklet is also used as a booklet in the continue education Building Operation, Maintenance, and Recordkeeping (BOMR) course for current Q-01/Q-99 holders. Starting from **01/01/2016**, all Q-01/Q-99 applications for **renewal** must submit evidence of having completed BOMR course taught by a FDNY approved school (refer to Notice of Exam for detail) or a valid FSD (F58/F25) Certificate of Fitness.

First Printing: June 2015

Building Operation, Maintenance and Recordkeeping Training Course

Throughout this booklet, the following terms have the meanings indicated:

Fire Code refers to the 2014 New York City Fire Code.

Building Code refers to the 2014 New York City Building Code.

Mechanical Code refers to the 2014 New York City Mechanical Code.

Construction Codes refers to the 2014 New York City Building, Mechanical, Fuel Gas and Plumbing Codes.

NFPA refers to the National Fire Protection Association, Quincy, MA.

Rule or **Rules** refers to the Rules of the New York City Fire Department, as set forth in Title 3 of the Rules of the City of New York.

This training course reference material was written by the staff of the FDNY Licensing Unit with the following Code Development unit staff who always go the extra mile to help promote the Fire Department's mission of fire safety:

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Introduction

Scope

This booklet was developed to be used in the Building Operation, Maintenance and Recordkeeping Training Course. This booklet provides the participant an overview of the 2014/2022 New York City Fire Code requirements for building operation and maintenance, including various provisions of the Referenced Standards adopted in the Fire Code.

The booklet addresses the following subject matter areas:

(A) Module 1: Primary Fire Protection Systems

- Fire alarm systems
- Sprinkler systems
- Standpipe systems
- Painting of sprinkler and standpipe system piping and valve handles in both new and existing buildings
- Out-of-service sprinkler, standpipe and fire alarm systems, including impairment coordinator, fire guard and notification requirements

(B) Module 2: Other Fire Safety-Related Building Systems

- Refrigerating systems
- Emergency power systems
- Battery system
- Smoke control systems
- Elevator in readiness
- Non-water fire extinguishing systems
- Means of egress
- Commercial cooking systems

(C) Module 3: Other Fire Safety Operational and Maintenance Requirements

- Hot work operations
- Flame-resistant decorations
- Fumigation and insecticidal fogging operations
- Emergency planning and preparedness
- Portable fire extinguishers
- Permits, certificates of fitness/qualification and company certification

The graduation test covers the main body (the three modules) of the booklet only. The three appendixes are provided for reference only. **This booklet will not be provided during the graduate test**, but reference tables cited from this booklet will be provided.

This booklet provides a summary of the fire safety requirements relating to the operation and maintenance of buildings. For a comprehensive understanding of such requirements the Fire Code, Fire Department Rules, Building Code, and other applicable laws, rules and regulations must be reviewed in their entirety.

Building Operation Maintenance and Recordkeeping Course

All refrigerating system operating engineers (RSOE) must complete a continuing education course in building operation, maintenance and recordkeeping from a Fire Department-approved continuing education program. This training course shall, at a minimum, provide not less than seven (7) hours of live instruction. This will ensure that operating engineers, who typically have other important responsibilities relating to building operation and maintenance, are familiar with applicable Fire Code requirements, which have undergone a comprehensive revision in 2008 and were revised again in March of 2014. This course is required of all Certificate of Qualification holders, including those that may currently not have a work location registered with the Fire Department. All Certificate of Qualification applications for renewal on or after January 1, 2016 must submit evidence of having completed such course.

Refrigeration system operating engineers (RSOE) that are knowledgeable in Fire Code building operation and maintenance requirements will help foster compliance with the Fire Code in the buildings where they are employed, thereby making the building a safer place for occupants and emergency responders.

What is the NYC Fire Code?

The New York City Fire Code is a city law that establishes fire safety requirements for a wide range of activities in New York City. These requirements govern such matters as the manufacture, storage, handling, use, sale and transportation of hazardous materials and combustible materials, except for the installation of storage tanks and auxiliary storage tanks for oil-burning equipment; the design, installation, operation and maintenance of devices, equipment and systems designed to prevent, mitigate, control and extinguish fire, explosions or other life safety hazards; emergency preparedness and planning, including the orderly evacuation of occupants of buildings, structures or premises in the event of fire, explosion, biological, chemical or hazardous material incident or release, natural disaster or other emergency, or the threat thereof; the prevention, mitigation and control of hazards to firefighters and emergency responders during emergency operations; and the operation and maintenance of any manual, automatic or other fire alarm or fire extinguishing device, equipment or system.

To whom does the Fire Code apply?

The Fire Code applies to all persons and places in New York City. Everyone must comply with its prohibitions and fire safety requirements. Persons and businesses that conduct or supervise the activities regulated by the Fire Code may also be required to obtain permits and certificates that authorize them to engage in those activities.

The 2008 New York City Fire Code that took effect on July 1, 2008, was amended effective March 30, 2014. Some of the design and installation provisions of the 2008 Fire Code and the Fire Prevention Code in effect prior to that may continue to be applicable to certain “pre-existing” installations that will be allowed to remain after the Fire Code took effect on March 31, 2014 even though they are not in compliance with the 2014 Fire Code’s requirements. In such cases, the former Fire Code provisions have been, or will be, consolidated in Chapter 48 of the Rules for convenient reference.

For example,

A sprinkler system legally installed in a building before July 1, 2014 will not be required to comply with the new design requirements of the 2014 Fire Codes. Pre-existing systems are generally required to comply with the industry standards and manufacturer requirements in effect at the time they were installed. However, the operational and maintenance requirements of the 2014 NYC Fire Code must be followed by the building owner for both pre-existing and new installations. Examples of such:

- Operational requirements are, recordkeeping, posting of signage and the prohibition on smoking.

- Maintenance requirements are those that relate to keeping equipment and premises in good working order and a safe condition.

2022 FIRE CODE ENACTED

The amended New York City Fire Code, to be known as the 2022 Fire Code, takes effect on April 15, 2022. **It may not have been updated in this study material and the exam will be mainly based on this booklet, not the 2022 Fire Code. However, as the Certificate of Fitness holder, it is your responsibility to become familiar with the applicable sections of the new 2022 Fire Code.**

Design and installation provisions.
The design and installation provisions of the 2022 Fire Code shall apply to:

- Facilities established and conditions arising on or after 04/15/2022.
- Facilities and conditions not lawfully existing prior to 04/15/2022.

The facilities and conditions lawfully existing prior to the 04/15/2022 can be continued in compliance with the requirements of the former Fire Code/Fire Rule except as otherwise provided in the New Fire Code 102.5.

Operational and maintenance provisions.
The operational and maintenance provisions of the 2022 Fire Code, including permit and certification requirements, shall apply to all facilities, operations, conditions, uses and occupancies, regardless of when they were established or arose.

Whenever this code is amended or a rule is promulgated to require a permit or certificate for a facility, operation, condition, use or occupancy, and no permit or certificate was previously required therefor pursuant to this code or the rules, such facility, operation, condition, use or occupancy may be continued without such permit or certificate until 04/15/2023, except as may otherwise be provided by such amendment or rule.

The 2022 Fire Code can be obtained via the following website:
http://www1.nyc.gov/site/fdny/codes/fire-code/fire-code.page

The 2014/2022 New York City Fire Code Cross-Reference Table can be referred to the following website:
http://www1.nyc.gov/assets/fdny/downloads/pdf/codes/fire-code-cross-reference.pdf

How does the Fire Code relate to the Rules and referenced standards?

The Fire Department has promulgated numerous Rules to supplement the Fire Code. Rules are necessary in some cases to clarify the intent of the code, but more often they are adopted to implement the authority granted to the Fire Department by the Fire Code. For example, Chapter 9 of the Fire Code sets forth the Fire Department's authority to require periodic testing of sprinkler and standpipe systems that contain Fire Department connections. Fire Department Rule (R912-01) sets forth the procedures for testing such systems. The Rules also modify the requirements of the Referenced Standards incorporated by reference into the Fire Code. Fire Department Rule R4702-01 modifies the National Fire Protection Association Referenced Standards set forth in 2022 FC Chapter 80 to conform them to New York City standards or procedures.

Why are periodic fire safety inspections important?

Buildings are designed to protect life and property from fire and smoke conditions by incorporating a variety of fire and life safety systems. These systems are only effective if they operate as designed when needed. Periodic inspections are one way to ensure that fire protection systems, life safety systems and other fire safety systems are operated and maintained in accordance with the Fire Code and Rules, and that such systems are otherwise kept in good working order.

What is a fire protection system?

A fire protection system is any system designed to detect, control, extinguish and alert building occupants to fire or fire-related smoke. The primary fire protection systems are sprinkler systems, standpipe systems and fire alarm systems.

Chapter 9 of the NYC Building Code specifies where sprinkler systems, standpipe systems and fire alarm systems are required to be installed, and the standard for their installation. Whether a building is required to install a fire protection system generally depends upon the occupancy type, height and area of the building (factors that most affect firefighting capabilities) and the relative fire hazard of a specific space or area. The NYC Fire Code requires sprinkler and fire alarm systems in connection with the manufacture, storage, handling and use of hazardous materials and other materials, operations and facilities that present hazards to life and property.

In order to help ensure the reliability of fire protection systems, the Fire Code prescribes minimum periodic inspection, testing and other maintenance requirements for such systems, and in many cases requires persons performing such responsibilities to obtain a Certificate of Fitness. The table below identifies several of the more common building related certificates.

Relevant Certificate of Fitness/Certificate of Qualification List

Type	Description	Personal/ General	Premises Related or Citywide
B-29	Supervision of Battery Systems	General	Premises related
F-01	Citywide Fire Guard for Impairment	Personal	Citywide
F-25/F-58	Fire Safety Director	Personal	Premises related
F-59	Fire Safety/Emergency Action Plan Director	Personal	Premises related
F-60	Fire guard for torch operation and fire guard for construction site.	Personal	Citywide
G-60	Torch operation	Personal	Citywide
P-64/F-64 /W-64	Commercial Kitchen Exhaust System Cleaning Technician	Personal	P-64/W-64: Citywide F-64: Premises related
Q-01/Q-99	Refrigeration system operating engineers	Personal	Premises related
S-12	Citywide Sprinkler System	Personal	Citywide
S-13	Standpipe System (except multi-zone system)	Personal	Citywide
S-14	Standpipe System, multi-zone	Personal	Premises related
S-78/F-78	Inspection, Cleaning & Testing Of Smoke Detectors	Personal	S-78: Citywide F-78: Premises related
S-95	Supervision Of Fire Alarm Systems	Personal	Premises related
S-97/S-98	Inspection, Testing and Servicing of Fire Alarm Systems	Personal	Citywide
W-97	Fumigation and insecticidal fogging operation	Personal	Citywide
W-96	Portable Fire Extinguisher Servicing	Personal	Citywide

Definitions

Certificate of Fitness (C of F)— A written statement issued by the commissioner certifying that the person to whom it is issued has passed an examination as to his or her qualifications or is otherwise deemed qualified to perform one or more of the following duties, for which such certificate is required by this code or the rules: supervise a facility; conduct or supervise an operation; supervise the storage, handling and/or use of a material; or conduct or supervise emergency planning and preparedness activities.

Certificate of Qualification (C of Q) — A written statement issued by the commissioner certifying that the person to whom it is issued has passed an examination as to his or her qualifications to direct, control and supervise the operation of a refrigerating system, for which such certificate is required by this code or the rules.

Commercial cooking system—A system consisting of commercial cooking equipment, exhaust hoods, filters, exhaust duct systems, fire extinguishing system and other related appurtenances designed to capture grease-laden cooking vapors.

Emergency action plan—A written plan which sets forth the circumstances and procedures for the sheltering in place, in-building relocation, partial evacuation or evacuation of building occupants in response to an incident involving an explosion, a biological, chemical or nuclear incident or release, natural disaster or other emergency, or the threat thereof, or a declaration of emergency by a lawful authority.

Exit—That portion of a means of egress system which is separated from other interior spaces of a building or structure by fire-resistance-rated construction and opening protectives as required to provide a protected path of egress travel between the exit access and the exit discharge. Exits include vertical exits, exterior exit doors at ground level, exit enclosures, exit passageways, exterior exit stairs, exterior exit ramps and horizontal exits, but do not include access stairs, aisles, and/or exit access doors opening to corridors or corridors. This term shall include the locations on a premises at which egress may be had from an enclosed outdoor space.

Exit access—That portion of a means of egress system that leads from any occupied portion of a building, structure or premises to an exit. It should be noted that the definition of "Exit access," unlike the Building Code definition, includes outdoor spaces.

Exit discharge—That portion of a means of egress system between the termination of an exit and a public way.

Flame-resistant material—Material that meets the criteria for flame-resistance as set forth in NFPA Standard 701, either because it is inherently flame-resistant or because it has been subjected to a flame-retardant treatment.

Fire alarm system—any system, including any interconnected fire alarm sub-system, of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices.

Fire drill — A training exercise by which building occupants are familiarized with and/or practice the procedures for the safe, orderly and expeditious in-building relocation, partial evacuation or evacuation, as applicable to the occupancy or building type, in accordance with the fire safety and evacuation plan, and to evaluate the efficiency and effectiveness of the implementation of such plan.

Fire guard—A person holding a certificate of fitness for such purpose, who is trained in and responsible for maintaining a fire watch and performing such fire safety duties as may be prescribed by the commissioner.

Fire safety and evacuation plan —A written plan which sets forth the circumstances and procedures for the in-building relocation, partial evacuation or evacuation of building occupants, required or as appropriate for such occupancy or building type, in response to a fire.

Fire watch—A temporary measure intended to ensure continuous and systematic surveillance of a building or portion thereof by one or more qualified individuals for the purposes of identifying and controlling fire hazards,

including detecting early signs of fire, raising an alarm of fire, notifying the department, and performing such other fire safety duties as may be prescribed by the commissioner.

Hot work—Cutting, welding, thermit welding, brazing, soldering, grinding, thermal spraying, thawing pipe, cadwelding, installation of torch-applied roof systems or any other similar operation or activity.

Hot work program—A program, implemented by a responsible person designated by the owner of a building or structure in or on which hot work is being performed, to oversee and issue authorizations for such hot work for the purpose of preventing fire and fire spread.

Hot work program authorizations—Authorizations issued by the responsible person under a hot work program allowing welding or other hot work to be performed at the premises.

Means of egress—A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building, structure or premises to a public way. A means of egress consists of three separate and distinct parts: the exit access, the exit and the exit discharge.

Mechanical smoke control system—An engineered system that uses mechanical fans to produce pressure differences across smoke barriers or that establishes airflows to limit and direct smoke movement.

Natural decorative green—A bough of a natural tree or part thereof.

Natural tree—Any live tree, plant or shrub, including conifer, that is rooted in soil.

Non-fire emergency - A biological, chemical or nuclear incident or release; declaration of emergency by a lawful authority; explosion; medical emergency; natural disaster; or other emergency affecting the premises or the safety of the building occupants.

Portable fueled equipment. Any portable device, equipment or system, whether or not flue-connected, that utilizes a flammable or combustible liquid or flammable gas as a fuel, except an open-flame device.

Regular business hours (effective when the new Rule has been written) - Times of day and days of the week during which a building or occupancy is normally occupied and business is conducted, and any time when a building or occupancy required to have a comprehensive fire and emergency action plan is occupied by more than five hundred persons, or more than one hundred persons above or below the street level. The number of persons employed in a building or occupancy during regular business hours shall be computed based on the work shift or other regular work schedule during which the largest number of employees or other persons working at the premises are present at the premises.

Regular business hours (current in effect) - Times of day and days of the week during which a building or occupancy is normally occupied and business is conducted, and any time when an office building is occupied by more than 500 persons on one or more floors, including street level, or by more than 100 persons on one or more floors other than street level.

Personal supervision—Supervision by the holder of the department certificate who is required to be personally present on the premises, or other proximate location acceptable to the Fire Department, while performing the duties for which the certificate is required.

Post-fire smoke purge system—A mechanical or natural ventilation system intended to move smoke from the smoke zone to the exterior of the building.

Refrigerating system—A combination of interconnected refrigerant-containing parts constituting one closed refrigerant circuit in which a refrigerant is circulated for the purpose of extracting heat.

Responsible person—A person trained in the fire safety hazards associated with hot work and in the necessary and appropriate measures to minimize those hazards, who is designated by the owner of a premises to authorize the performance of hot work at the premises.

Standpipe system—Piping installed in a building or structure that serves to transfer water from a water supply to hose connections at one or more locations in a building or structure used for firefighting purposes.

Standpipe, multi-zone. A standpipe system that is vertically subdivided as required by the construction codes, including the Building Code, into zones to limit the maximum operating pressure in the system. Each zone will have its own individual automatic water supply.

Sprinkler system—A fire extinguishing system, other than a mist fire extinguishing system, that utilizes water as the extinguishing agent.

1 Module 1: Primary Fire Protection Systems

Objectives

At the end of this module you will be better able to:

- Identify and explain the importance of, and requirements for, the periodic inspection, testing and other maintenance of sprinkler, standpipe and fire alarm systems.

Topics covered in this module:

- Sprinkler system maintenance
- Standpipe system maintenance
- Fire alarm system maintenance
- Out-of-service fire protection systems

1.1 Sprinkler Systems

1.1.1 Introduction

A sprinkler system is a fire extinguishing system that utilizes water as the extinguishing agent. Whether a building is required to be provided with sprinkler protection or not is generally set forth in the Building Code, but the Fire Code does require the installation of sprinkler systems for certain special occupancies and circumstances, including for high-piled combustible storage and for buildings constructed on streets of substandard width.

1.1.2 Individuals authorized to perform tasks

It is the building owner's responsibility to ensure that the building's standpipe and sprinkler systems are inspected, tested and maintained as required by NFPA Standard 25 (2011 edition) by a competent person holding an S-12 Certificate of Fitness or other qualifications as detailed below to see that all parts of the system are in good working order.

It is the building owner's responsibility to ensure that the building's sprinkler system is maintained in good working order and in accordance with the Fire Code and Rule requirements, including that the periodic, inspection, testing and other maintenance of the system is personally supervised by an S-12 Certificate of Fitness holder. The S-12 Certificate of Fitness holder or other qualified person who conducts the inspections and tests must maintain records that must be available for FDNY inspection.

There are certain periodic inspections, maintenance, and tests required by the Fire Code that the S-12 Certificate of Fitness holder may perform, and some that they cannot without additional qualifications (refer to Appendix B). The table below provides details of the qualifications required for individuals perform various tasks:

	Holding S-12 only	Q-01 holding S-12	Master Plumber holding S-12	Master Fire Suppression Piping Contractor holding S-12
Visual inspections	Yes	Yes	Yes	Yes
Perform limited maintenance and test of sprinkler system components (refer to the S-12 booklet for the detail)	No	Yes	Yes	Yes
Test, maintain and repair/replace all sprinkler systems components, but limited to residential occupancies 30 sprinkler heads or less without a booster pump.	No	No	Yes	Yes
Test, maintain and repair/replace all sprinkler systems components	No	No	No	Yes

A Refrigerating System Operating Engineer is **NOT** authorized to make inspections of sprinkler system without a S-12 Certificate of Fitness; however, all certified Refrigerating System Operating Engineer who have S-12 C of F are permitted to perform visual inspections, test notification appliances, perform limited daily and weekly routine maintenance and record the inspection, testing and maintenance results for examination by FDNY.

1.1.3 Periodic inspection and testing requirements

Sprinkler systems are required to be maintained in good working order. To ensure that sprinkler systems are maintained in such condition, the Fire Code and Rules provide minimum requirements for the periodic inspection, testing and other maintenance of such systems. Refer to the FDNY S-12 Certificate of Fitness booklet for the detail.

1.1.4 Recordkeeping requirements

Records of all sprinkler system inspections, tests, servicing and other maintenance required by this code, the rules or the referenced standards shall be maintained on the premises for a minimum of 3 years and made available for inspection by any department representative.

1.1.5 Painting of sprinkler piping (BC903.6)

Dedicated sprinkler piping and valve handles must be painted and such painting certified in accordance with BC903.6. In addition to painting, sprinkler piping may also be identified by lettered legend in accordance with ANSI A13.1. Where the piping is required to be listed and labeled such painting shall not obscure such labeling.

Exceptions to what must be painted include:

- Attachments, gauges, valves and operable parts of sprinkler systems other than valve handles.
- Horizontal branch lines.
- Where different color coding is required by Section 3406 of the New York City Fire Code for facilities storing, handling, and using flammable and combustible liquids in connection with special operations.

In new buildings: Cross connections and risers must be painted red and the handles of valves serving dedicated sprinklers must be painted green prior to the hydrostatic pressure test regardless of whether they will be enclosed at a later point in time.

> **Exception** is where a standpipe system is used as a combination standpipe and sprinkler system, the sprinkler risers and cross connections that are also used for the standpipe system must be painted red and the handles of valves serving such combination system must be painted yellow.

Altered buildings: Cross connections and risers for independent (stand-alone) existing sprinkler systems that are exposed during alterations must be painted red and the handles of valves serving such existing sprinkler systems must be painted green. Where the alteration requires a hydrostatic pressure test such painting shall be completed prior to such test.

> **Exception is:** Where a standpipe system is used as a combination standpipe and sprinkler system, the sprinkler risers and cross connections that are also used for the standpipe system must be painted red and the handles of valves serving such combination system must be painted yellow.

All exposed risers and cross connections of completed buildings in existence on March 2, 2010 were required to be painted red by June 2, 2010, and all handles of valves serving such sprinkler system shall be painted green.

> **Exception is:** Where a standpipe system is used as a combination standpipe and sprinkler system, the sprinkler risers and cross connections that are also used for the standpipe system must be painted red and the handles of valves serving such combination system must be painted yellow.

1.2 Standpipe Systems

1.2.1 Introduction

A standpipe system is piping installed in a building that serves to transfer water to hose connections located within the building for firefighting purposes. Whether a building is required or not required to be provided with a standpipe system, and the standard for such system installation, are set forth in the Building Code.

1.2.2 Individuals authorized to perform tasks

It is the buildings owner's responsibility to ensure that the buildings standpipe system is maintained in good working order and aware of the Fire Code and Rule requirements, including that the operations, inspection, tests and other maintenance of the system is personally supervised by an S-13/S-14 certificate of fitness holder. Similar to sprinkler system the building owner is required to designate an impairment coordinator who must take specific actions when a system goes out of service. **A multi-zone standpipe system must be continuously under the supervision of an S-14 certificate of fitness holder. In other words, if your building has multi-zone standpipe system, there must be at least one S-14 C of F holder that could be continuously supervising this system.**

The Refrigerating System Operating Engineers are not authorized to conduct required inspections of a standpipe system without a S-13/S-14 C of F; however, all Refrigerating System Operating Engineers (Q-01) who have S-13/S-14 C of F is authorized to perform visual inspections, test notification appliances, perform limited daily and weekly routine maintenance and record all inspection, testing and maintenance results (refer to Appendix C).

The S-13/S-14 C of F holders with different qualifications are permitted to carry different level of responsibilities in inspecting, testing and maintaining the standpipe systems:

Standpipe system (without multi-zone)	Holding S-13 only	Q-01 holding S-13	Master Plumber holding S-13	Master Fire Suppression Piping Contractor holding S-13
Visual inspections	Yes	Yes	Yes	Yes
Perform limited maintenance and test of standpipe system components (refer to the S-13/S-14 booklet for detail)	No	Yes	Yes	Yes
Test, maintain and repair/replace all standpipe systems that are NOT combined with sprinkler systems	No	No	Yes	Yes
Test, maintain and repair/replace all standpipe systems components that are combined with sprinkler systems	No	No	No	Yes

Multi-zone standpipe system	Holding S-14 only	Q-01 holding S-14
Visual inspections	Yes	Yes
Perform limited maintenance and test of standpipe system components (refer to the S-13/S-14 booklet for detail)	No	Yes
Test, maintain and repair/replace all standpipe systems that are NOT combined with sprinkler systems	No	No
Test, maintain and repair/replace all standpipe systems components that are combined with sprinkler systems	No	No

1.2.3 Operation of multi-zone standpipe system

Standpipe systems are used for firefighting operations inside of a building. It is generally required in buildings that are more than 75 feet in height. Multi-zone systems are required in taller buildings as set forth in the Building Code. These taller buildings are designed with vertically sub-divided zones that limit the maximum operating pressure in the zone. In the multi-zone systems, each zone has its own individual automatic water supply. The design of the multi-zone systems varies from building to building. The S-14 C of F holder must be familiar with the system design and must be immediately available to assist the department in the operation of the system in the event of a fire.

1.2.4 Periodic inspection and testing requirements

Standpipe systems are required to be maintained in good working order. To ensure that standpipe systems are maintained in such condition, the Fire Code and Rules provide minimum requirements for the periodic inspection, testing and other maintenance of such systems. Refer to the FDNY S-13/S-14 Certificate of Fitness booklet for the detail.

1.2.5 Recordkeeping

Standpipe system inspection, testing and maintenance recordkeeping requirements are found in 2022 FC901.6.2 and Section 4.3 of NFPA Standard 25. Records of all standpipe system periodic inspections, tests, servicing and other maintenance required by the Fire Code, Rules and Referenced Standards are required to be maintained on the premises for a minimum of 3 years.

1.2.6 Painting of standpipes piping (BC905.11)

Dedicated standpipe piping valve, handles serving standpipes must be painted and such painting certified in accordance with BC905.11. In addition to painting, standpipe piping may also be identified by lettered legend in accordance with ANSI A13.1. Where the piping is required to be listed and labeled such painting shall not obscure such labeling. Exceptions to when it must be painted include:

- Attachments, gauges, valves and operable parts of standpipes other than valve handles.
- Where different color coding may be required by 2022 FC5706 for facilities storing, handling, and using flammable and combustible liquids in connection with special operations.

In new buildings, all portions of a standpipe system and the handles of valves serving the standpipe system in new buildings must be painted red prior to the hydrostatic pressure test whether or not they are intended to be enclosed at the end of construction. Altered buildings handles of valves serving existing standpipe systems and existing unpainted standpipe risers that are exposed during alterations, must be painted red. All portions of exposed standpipe systems and handles of valves serving the standpipe system of existing buildings on March 2, 2010 were required to be painted red by June 2, 2010.

Where a standpipe system that is used as a combination standpipe and sprinkler system is required to be painted pursuant to BC 905.11 the sprinkler risers and cross connections that are also used for the standpipe system must be painted red, and the handles of valves serving such combination standpipe and sprinkler system must be painted yellow. Certification of compliance with the painting requirements must be maintained on the premises and made available for inspection by the Buildings Department and Fire Department representatives.

1.3 Fire Alarm Systems

1.3.1 Introduction

A fire alarm system is any system arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices. Whether a building is required to be provided with a fire alarm system or not, the type of fire alarm system required and the standard for such installations, are set forth in the Building Code.

1.3.2 Periodic inspection and testing requirements

Fire alarm systems are required to be maintained in good working order. To ensure that fire alarm systems are maintained in such condition, the Fire Code and Rules provide minimum requirements for the periodic inspection, testing and other maintenance of such systems.

NFPA Standard 72 sets forth detailed requirements for the periodic inspection, testing and other maintenance of fire alarm systems.

1.3.3 Companies and individual certifications

It is the buildings owner's responsibility to ensure that the buildings fire alarm system is maintained in good working order and aware of the Fire Code and Rule requirements, including that the operations, inspection, tests and other maintenance of the system. Different Certificate of Fitness is permitted to carry different level of responsibilities in inspecting, testing and maintaining the fire alarm systems:

Fire Alarm System

	Duties and responsibilities	May be performed by	
		S-95/F-58/F-25	S-97/S-98
1.	Daily visual inspections of fire alarm system	**Yes**	**Yes**
2.	Maintain the fire alarm log book	**Yes**	**Yes**
3.	Program, service, clean, test, repair and/or replace any fire alarm system components	**No**	**Yes**

It is highly recommended that fire alarm devices be visually inspected for any evidence of abnormal conditions by an S-95/F-58/F-25 Certificate of Fitness holder at the beginning of each day. The purpose of the visual inspection is to detect defective components or abnormalities.

Any programing, servicing, testing, repairing and/or replacing of the fire alarm system components shall be conducted only by an S-97/S-98 Certificate of Fitness holder. The S-97/S-98 C of F holders could work citywide but must be employed by a FDNY Certified Central Station Company or a FDNY Certified Smoke Detector Company.

- The approved smoke detector maintenance company list:
http://www1.nyc.gov/assets/fdny/downloads/pdf/business/approved-companies-smoke-detectors.pdf
- The approved central station monitoring company list:
http://www1.nyc.gov/assets/fdny/downloads/pdf/business/approved-companies-central-station.pdf

Smoke detector cleaning and testing

	Duties and responsibilities	May be performed by		
		S-95/F-58/F-25	S-78/ F-78	S-97/S-98
1.	Smoke detector visual inspection	**Yes**	**Yes**	**Yes**
2.	Smoke detector inspection, testing and cleaning	**No**	**Yes**	**Yes**
3.	Smoke detector maintenance	**No**	**Yes**	**Yes**
3.	Program, service, clean, test, repair and/or replace	**No**	**No**	**Yes**

	fire alarm components			

The S-78 C of F holders could work citywide but must be employed by a FDNY Certified Company, The F-78 C of F holders could be employed by the premises where possess the tools, instruments or other equipment necessary to clean and test the smoke detectors. The list of FDNY Certified Company could be found in the following website, the list is updated on a monthly basis.

- The approved smoke detector maintenance company list:
  http://www1.nyc.gov/assets/fdny/downloads/pdf/business/approved-companies-smoke-detectors.pdf

Companies that monitor fire alarm systems

A central station company shall be responsible for monitoring and retransmitting the fire alarm system signals. The central station company must be certified by the FDNY. The list of FDNY Certified Company could be found in the following website, the list is updated on a monthly basis.

- The approved central station monitoring company list:
  http://www1.nyc.gov/assets/fdny/downloads/pdf/business/approved-companies-central-station.pdf

1.3.4 Unnecessary and unwarranted alarms

The owner of any premises whose fire alarm system automatically transmits signals to the Fire Department or to a central station is responsible for preventing unnecessary and unwarranted alarms. It is unlawful to transmit 2 or more unnecessary or unwarranted alarms in any three-month period it will be subject to issuance of a ***Notice of Violation*** by the department.

1.3.5 Recordkeeping

Fire alarm log book

The fire safety director, or in buildings not requiring a fire safety director, a person designated by the owner (such as an S-95/F-58/F-25 C of F holder) shall be responsible to make all log book entries required by the Rule. Although an S-97/S-98 C of F holder may be allowed to make the entry when he/she services the fire alarm system; however, the Fire Safety Director or the S-95 C of F holder is responsible to supervise the entries and the maintenance of the alarm log book. Any programing, servicing, testing, repairing and/or replacing the fire alarm system components shall be conducted only by an S-97/S-98 Certificate of Fitness holder.

An alarm log book shall be maintained on the premises, at the building's main **fire alarm control panel** and made available for inspection by any FDNY representatives.

A separate log book shall be kept for each calendar year. Alarm log books shall be retained for a period of three years from the date of the last entry.

Smoke detector maintenance recordkeeping

A smoke detector maintenance log book shall be maintained on the premises in the office of the fire safety director, or, in buildings not requiring a fire safety director, in the building superintendent's office. Such log book shall state the total number of smoke detectors on the premises and list each smoke detector by location. The fire safety director, or in buildings not requiring a fire safety director, a person designated by the owner(such as an S-78/F-78 holder), shall be responsible to make all smoke detector maintenance log book entries required by the Fire Code.

A separate log book shall be kept for each calendar year. Log books shall be retained for a period of three (3) years from the date of the last entry. A computer record that is designed to prevent or detect alteration of information and

that is otherwise maintained in a manner acceptable to the Fire Department, may be maintained in lieu of a bound log book provided that such computerized record is available on the premises for inspection by any Fire Department representative during business hours.

1.4 Out-of-service Fire Protection Systems

The building owner shall designate an impairment coordinator to take the actions required by the Fire Code when a standpipe system, sprinkler system or fire alarm system is out of service. In the absence of a specific designee, the owner shall be considered the impairment coordinator.

1.4.1 Fire watch

The building shall be evacuated or a fire watch maintained when a standpipe system, sprinkler system or fire alarm system is out of service. Such fire watch shall be conducted in compliance with the requirements as listed below:

- continuously patrol the area affected by the out-of-service fire protection system to which such person has been assigned, keeping constant watch for fires;
- be provided with at least one approved means for notification of the department and any Fire Safety Director, Coordinator of Fire Safety and Alarm Systems or Fire Safety Plan staff on the premises;
- immediately report any fire to the department and notify emergency preparedness staff on the premises;
- be trained in the use of portable fire extinguishers and equipped with a portable fire extinguisher, or made aware of the location of readily accessible portable fire extinguishers in the area to which such person has been assigned to maintain a fire watch;
- be responsible for extinguishing fires when they are limited in size and spread such that they can readily be extinguished using a portable fire extinguisher;
- maintain a record of such fire watch on the premises during the fire watch and for a minimum of 48 hours after the fire watch has concluded; and
- have no other duties.

1.4.2 Fire guard

The fire watch required for an out-of-service standpipe system, sprinkler system or fire alarm system shall be maintained by one or more fire guards (qualified fire guards include F-01 C of F holder: Fire Guard for Impairment).

For the initial 4 hours of an unplanned and planned out of service condition when the effected area does not exceed 50,000 square feet, the impairment coordinator or a trained and knowledgeable person who is capable of performing fire watch duties and is designated by the building owner may perform the duties of the fire watch.

In other words, the impairment coordinator or a trained and knowledgeable person designated by the building owner should immediately begin conducting a fire watch in the area where the fire protection systems are out of service. After 4 hours of an out of service condition, such patrols shall only be conducted by fire guards holding the F-01 Certificate of Fitness.

The number of fire guards generally depends on the location and the size of the area affected by the out of service fire protection system. A fire guard should be available to patrol all areas in which the fire protection system is out of service at least once every hour. No individual fire guard should patrol more than 50,000 square feet of building floor area. To meet this standard, it may be necessary that more than one fire guard be designated.

The required coverage for performing fire watch in affected area(s) is summarized below.

Area	Planned or Unplanned	
	The initial 4 hours	> 4 hours
≤ 50,000 ft^2	A F-01C of F holder or an impairment coordinator or a trained and knowledgeable person	One F-01 C of F holder
> 50,000 ft^2	One F-01 C of F holder for each 50,000 square feet	

The fire guard must be maintained continuously, 24 hours a day, until such systems are restored to good working order. In some cases, Fire Department personnel may be on scene and provide additional direction on the number of required fire guards or other fire protection measures that may be required until such time as the fire protection system is restored to good working order.

The fire guard for impairment is recommended to be familiar with the types of fire safety evacuation plans for the buildings where they provide fire watch and the associated staffs available to implement the plan. The fire guard must be familiar of his obligations for notifying the Fire Department in the event of fire.

1.4.3 Planned removal from service

The impairment coordinator shall be made aware in advance of any planned removal from service of a standpipe system, sprinkler system or fire alarm system, or system component, for repair, servicing, alteration, testing and other maintenance of the system or component, or to allow construction to be performed in the area protected by the system without unnecessarily activating it. The impairment coordinator shall authorize and personally supervise the placing of the fire protection system out of service. Before authorizing the placing of the fire protection out of service the impairment coordinator shall:

- notify the certificate of fitness holder responsible for supervising the maintenance of the standpipe system, sprinkler system or fire alarm system.
- determine the extent and expected duration of the out-of-service condition.
- inspect the areas or buildings involved and assess the increased risks.
- make appropriate recommendations to the owner.
- notify the department, if required.
- notify the responsible person designated by the owner to issue hot work authorizations.
- notify the central station and insurance carrier.
- notify the occupants in the affected areas if the duration of time the sprinkler system or fire alarm system will be out of service is estimated to be more than 30 minutes.
- place a tag at each fire department connection, standpipe and sprinkler system control valve and fire command center, indicating which fire protection system, or part thereof, is out of service.
- maintain the fire protection system in service until work is ready to begin.

1.4.4 Unplanned out-of-service condition.

Any person, upon becoming aware of any condition, except a planned removal from service, rendering a standpipe system, sprinkler system or fire alarm system, or part thereof, inoperable in whole or in part, shall notify the owner and the impairment coordinator of such condition. The impairment coordinator shall take the actions set forth in 2022 FC901.7.3 and 901.7.5, and such other actions as are necessary or appropriate to protect the occupants of the building and promptly restore the system to service.

1.4.5 Notification to department.

The department shall be notified that a standpipe system, sprinkler system or fire alarm system is out of service, whether by reason of a planned removal from service or an unplanned out-of-service condition.

- Standpipe systems. Notification shall be made to the department whenever a standpipe system is or will be out of service for any period of time.
- Sprinkler systems and fire alarm systems. Notification that a sprinkler system or fire alarm system, or any part thereof, is or will be out of service shall be made to the department under the following circumstances:
  - The sprinkler system or fire alarm system is or will be out of service on more than one floor of a building; or
  - With respect to a sprinkler system, the work or repairs cannot be completed, and the system restored to service, within 8 hours of the time the system was placed or went out of service; or
  - With respect to a fire alarm system, the work or repairs will require the fire alarm system to be out of service for more than 8 hours in any 24-hour period; or
  - One or more other fire protection systems in the area in which a fire protection system is out of service are or will also be out of service at the same time.
- Reporting requirements. Notification of an out-of-service condition pursuant to this section shall be made by the impairment coordinator to the borough dispatcher of Fire Department at the applicable telephone number as below:

Manhattan	(212) 570-4300
Brooklyn	(718) 965-8300
Queens	(718) 476-6200
Bronx	(718) 430-0200
Staten Island	(718) 494-4296

Such notification shall include the following information:

- The owner or impairment coordinator's name and contact information;
- The building address;
- The type of fire protection system that is out of service;
- Whether the fire protection system is out of service by reason of a planned removal from service (and if so, the reason for placing it out of service) or an unplanned out-of-service condition;
- If a planned removal from service, the date and time the fire protection system will be placed out of service, and the estimated duration the system will be out of service;
- If an unplanned out-of-service condition, the estimated duration the system will be out of service;
- The floors or areas in which the fire protection system is out of service;
- Whether the other fire protection systems are in good working order; and
- The name and certificate number of the certificate of fitness holder responsible for supervision of the fire protection system that is out of service.

1.4.6 Restoring systems to service

When an out-of-service device, equipment or system is restored to service, the impairment coordinator shall:

- conduct necessary inspections and tests to verify that the affected systems are operational.
- notify the department.
- notify the owner, central station, insurance carrier, emergency preparedness staff, and, if previously notified, the occupants in the affected areas.
- remove the out-of-service tags.

Module 1 Summary

Maintaining sprinkler, standpipe and fire alarm systems in good working order is essential to protect life and property. To ensure that these systems are maintained in such condition, the Fire Code and Rules provide minimum requirements for the periodic inspection, testing and maintenance of such systems and for the supervision of those individuals responsible for such maintenance.

Sprinkler and standpipe systems must be maintained in accordance with NFPA Standard 25. Fire alarm systems must be maintained in accordance with NFPA Standard 72. These standards should be reviewed in their entirety to fully understand the requirements. Whenever there are differences or inconsistencies between the provisions of the Fire Code and these two referenced standards, the more restrictive provision shall govern.

2 Module 2: Other Fire Safety-Related Building Systems

Objectives

At the end of this module, you will be better able to identify and explain the importance of, and requirements for, the periodic inspection, testing and other maintenance of the topics covered in this module.

Topics covered in this module:

- Refrigerating systems
- Emergency power systems
- Battery system
- Smoke control systems
- Elevator in readiness
- Non-water fire extinguishing systems
- Means of egress
- Commercial cooking systems

2.1 Refrigerating Systems

2.1.1 Introduction

A refrigerating system is a combination of interconnected refrigerant-containing parts constituting one closed refrigerant circuit in which a refrigerant is circulated for the purpose of extracting heat. Refrigerating systems are most commonly used in buildings for purposes of human comfort. As such, the operation of refrigerating systems is integral with building ventilation systems which have a direct impact on the movement of smoke throughout a building under fire conditions.

2.1.2 Permits

Fire Code requires a permit to maintain or operate a refrigerating system that uses a Group A1, A2, A3, B1, B2 or B3 refrigerant or that is mounted on or suspended from a roof or ceiling. No permit is required for a refrigerating system of less than five horsepower that uses a Group A1 refrigerant and that is not mounted on or suspended from a roof or ceiling. No permit is required for a refrigerating system installed in the residence portion of any building or employing water or air as a refrigerant.

2.1.3 Supervision

The Fire Code requires that certain refrigerating systems be under the personal supervision of a person holding a Certificate of Qualification as a Refrigerating System Operating Engineer (RSOE). You should refer to 2022 FC Table 606.1.1 for detailed requirements.

Persons responsible to provide personal supervision of a refrigerating system must understand what this means. 2022 FC606.1.1 states "…personal supervision shall mean that such person is present in the building at all times while the system is in operation and that the operation of such systems is under his or her personal direction and control…"

The Fire Department recognizes that an RSOE often has other important building operation responsibilities. In carrying out these other building operation responsibilities, it is important that the RSOE not neglect his or her duty to provide personal supervision of the refrigerating system.

The best way to understand how this code provision is interpreted is to understand the following:

1. An RSOE must be **PRESENT IN THE BUILDING** where the system is installed when the system is in operation. "Present in the building" is a critical requirement. On the flip side, if the refrigerating system is shut down, no RSOE is required to be in the building.

2. An RSOE cannot provide personal supervision, at the same time, for refrigerating systems that are in operation in more than one building. On the flip side, an RSOE can provide personal supervision for the operation of more than one system at the same time provided the systems are all installed **IN THE SAME BUILDING**.

2.1.4 Periodic inspection, testing and maintenance requirements

Operator inspection after repairs

After any repairs are made to a refrigerating system, the operation of which requires supervision by a certificate of qualification holder, the certificate of qualification holder must check the repairs, together with the functioning of all control devices and the positioning of all valves.

Monthly testing

2022 FC606.6 requires refrigerating equipment and systems having a refrigerant circuit containing more than 200 pounds of Group A1 or 30 pounds of any other group refrigerant to be subject to monthly testing as follows:

- Fans and associated equipment intended to operate emergency ventilation systems.
- Detection and alarm systems.

2.1.5 Recordkeeping

Operator logbook

Fire Code requires a logbook for refrigerating systems whose operation requires supervision by a Q-01certificate of qualification holder. Entries are required to be made in the logbook by the Q-01 certificate of qualification holder. The logbook must include entries of any operating problems or deficiencies, and required periodic tests conducted.

Written records

Fire Code requires a written record to be kept of refrigerant quantities brought into and removed from the premises. Records of all refrigerating system periodic inspection, testing and other maintenance required by the Fire Code are required to be maintained on the premises for a minimum of 3 years.

2.2 Emergency Power Systems

2.2.1 Introduction

Emergency power systems are intended to provide electrical power for life safety systems, where the loss of normal power would endanger occupants. Emergency power is required for such life safety systems as egress illumination, emergency communications, fire pumps, high-rise building elevators and processes involving the handling and use of hazardous materials.

2.2.2 Individuals authorized to perform tasks

Fire Code requires that the inspection, testing and other maintenance of emergency power systems be conducted under the supervision of a person having one of the following qualifications:

- A person holding a Q-01 Certificate of Qualification.
- A person holding a certificate of fitness as a Fire Safety Director.
- An electrician licensed by the Department of Buildings.
- An electrician holding a special license issued by the Department of Buildings.
- A person holding a stationary engineer license, or high-pressure boiler operating engineer's license, issued by the Department of Buildings.
- A registered design professional.

2.2.3 Periodic inspection and testing requirements

Fire Code requires that emergency power systems be maintained in accordance with NFPA Standard 110, as modified by 2022 FC Appendix B (Emergency and Standby Power Systems) and NFPA Standard 111 (Stored Electrical Energy Emergency and Standby Power Systems). Chapter 8 of NFPA Standard 110 includes requirements for the periodic inspection, testing and other maintenance of emergency power systems supplied by emergency generators. Chapter 6 of NFPA Standard 111 includes requirements of the periodic inspection, testing and other maintenance of stored emergency power systems. These NFPA standards should be reviewed in their entirety to fully understand the requirements.

Fire Code requires that the inspection, testing and other maintenance of emergency power systems be conducted in accordance with an established schedule.

NFPA Standard 110

Chapter 8 of NFPA Standard 110 includes requirements for the periodic inspection, testing and other maintenance of emergency power systems supplied by emergency generators. Emergency power systems subject to compliance with the requirements of NFPA Standard 110, as modified by 2022 FC Appendix B must be maintained as follows:

- Storage batteries, including electrolyte levels or battery voltage, must be inspected weekly and maintained in full compliance with the manufacturer's specifications. Lead- acid batteries must include the monthly testing and recording of electrolyte specific gravity.
- Emergency power systems, including all related components, must be inspected weekly and exercised under load monthly.
- Emergency generator sets must be tested monthly for a minimum of 30 minutes under operating temperature conditions and at not less than 30 percent of the emergency power system nameplate kilowatt

rating, or under loading that maintains the minimum exhaust gas temperatures as recommended by the manufacturer. Instructions must be provided for safe manual transfer in the event automatic transfer switches malfunction.

- Diesel-powered emergency power system installations that do not meet the requirements of generator set monthly exercise as noted above must be tested monthly with the available emergency power system load and exercised annually with supplemental loads at 25 percent of nameplate rating for 30 minutes, followed by 50 percent of nameplate rating for 30 minutes, followed by 75 percent of nameplate rating for 60 minutes, for a total of 2 continuous hours.
- Transfer switches must be tested semiannually. The semiannually test of a transfer switch must consist of electrically operating the transfer switch from the standard position to the alternate position and then returning back to the standard position.
- Level 1 emergency power systems must be tested every 3 years for at least 4 hours under its running load. A full facility power outage is not intended for this test, but is recommended where a facility power outage has not occurred within the last 36 months.
- Emergency power systems must be maintained to ensure to a reasonable degree that the system is capable of supplying service within the time specified for both the type and the class. The maintenance procedure and frequency should conform to the manufacturer's recommendations. In the absence of such recommendations, Figure A.8.3.1(a) of NFPA Standard 110 suggests periodic (weekly, monthly, quarterly, semiannually and annually) visual inspection, checking, changing components, cleaning and testing of the following:
    - Fuel.
    - Lubrication system.
    - Cooling system.
    - Exhaust system.
    - Battery system.
    - Electrical system.
    - Prime mover.
    - Generator.
    - General conditions of emergency power systems (any unusual condition of vibration, leakage, noise, temperature or deterioration), and service room or housing housekeeping.
    - Restore systems to automatic operation condition.

NFPA Standard 111

Stored electrical energy emergency power systems subject to compliance with the requirements of NFPA Standard 111 must be maintained as follows:

- Equipment must be inspected monthly and tested quarterly under connected load for a minimum of 5 minutes. The monthly inspection must include the following:
    - Battery and associated charger/control equipment must be checked to verify that they are in a clean and satisfactory condition.
    - Battery electrolyte levels, individual cell voltages and specific gravity must be checked.
    - Conditions of the plates and sediment of free-electrolyte, lead-acid batteries in transparent containers must be checked.

  - A load test must be performed and the output voltage, the battery voltage, and the duration of the test must be recorded at the beginning and end of the test for each battery set.
  - All indicator lamps, meters, and controls must be checked to verify that they are operating correctly.

- Stored emergency power systems must be checked annually at full load for time duration as specified in NFPA Standard 111.
- Transfer switches must be tested semiannually.
- A regular maintenance and testing program must be established. The maintenance procedure and frequency should conform to the manufacturer's recommendations. In the absence of such recommendations, Table A.8.3.2 of NFPA Standard 111 suggests periodic (weekly, monthly, quarterly, semiannually and annually) visual inspection, checking, changing components, cleaning and testing of the following:
  - Battery.
  - Energy conversion equipment.
  - Battery charger.
  - Load current (check quarterly).
  - Transfer switch (tested semiannually).

2.2.4 Recordkeeping

A written record of inspection, testing and other maintenance of emergency power systems, including additional description of any conditions requiring correction, and what corrective action was taken, is required to be maintained on the premises. Records are required to be maintained for at least 3 years.

2.3 Battery Systems

2.3.1 Introduction

Battery systems can provide an uninterruptible power supply (UPS) that is capable of providing electrical power to key operating systems in a building. The primary purpose of a UPS system is to provide current to a load for a short period of time to certain building systems in the event of normal power failure. When a building with a "UPS" system suddenly loses power from the utility company the UPS system becomes the sole power provider for all designated connections. The difference is that a UPS battery system switches on instantaneously so that there is no down-time or absence of power. A building with a UPS system, but no emergency generator, will lack power if the UPS system has fully discharged.

2.3.2 Individuals authorized to perform tasks

Certain battery systems in place today, regardless of installation date, must be under the general supervision of a person holding a B-29 Certificate of Fitness from the FDNY. This applies to all stationary storage battery systems (i.e. facility standby power, emergency power or uninterrupted power supplies) having an electrolyte capacity of at least:

- 50 gallons for
  - flooded lead acid
  - nickel cadmium (Ni-Cd)
  - valve-regulated lead acid (VRLA),
- 1,000 pounds for
  - lithium-ion
  - lithium metal polymer

In order to ensure that a battery system is properly working, a B-29 Certificate of Fitness holder is primarily responsible for visual inspection. The B-29 Certificate of Fitness does NOT authorize the C of F holder to perform any repairs on the battery system.

Multi-tenant buildings

Many buildings in NYC are not occupied by a single tenant, and therefore may have more than a single UPS system within the building. Each tenant is responsible for his/her own system, or systems. Typically one tenant will have a different C of F holder than the next tenant, so that tenants and entities can remain independent of one another. This does **not** mean that they cannot share a C of F holder. The building manager is responsible to know the location of all UPS battery systems in their building, and know who is responsible for each UPS battery system.

For example, assume one building has 10 tenants occupying at least 10 floors. All of the situations below would be acceptable:

- All 10 tenants in the building use the same C of F holder to inspect their systems. *(Very unlikely)*
- Eight of the 10 tenants use the same C of F holder for inspections, and the other two each have their own C of F holders.
- All 10 tenants in the building have separate C of F holders – meaning 10 different C of F holders are in the building on a daily basis. *(Preferred)*

Single tenant buildings

If there is only one tenant in a building then typically there will only be one C of F holder for all of the UPS systems occupying the building, whether it is one or 20. Again, this is not required. If the tenant desires 20 different inspectors for the 20 systems then that is acceptable. The building FSD (if required) and the building owner should have access to a list of all the battery system C of F holders, their respective contact information, and the exact location of the battery systems that they provided with general supervision.

2.3.3 Periodic inspection and testing requirements

All such visual inspections should be conducted by a B-29 Certificate of Fitness holder to provide general supervision. The B-29 Certificate of Fitness holder should walk through and do a "quick" visual inspection at least once per day.

2.4 Smoke Control Systems

2.4.1 Introduction

The requirements and installation standard for smoke control systems and post-fire smoke purge systems are set forth in the Building Code and Mechanical Code.

Smoke control systems are intended to provide a tenable environment for the evacuation or relocation of building occupants under fire conditions.

2.4.2 Periodic inspection and testing requirements

Fire Code requires that smoke control systems be maintained in good working order. It requires a written maintenance program, including periodic inspection and testing, to be established and implemented immediately upon installation of the smoke control system.

Dedicated smoke control systems must be tested semiannually. Nondedicated smoke control systems must be tested annually.

All systems must be tested under both normal power and emergency power.

Post-fire smoke purge system

Fire Code requires post-fire smoke purge systems to be maintained in good working order. Periodic inspection, testing and other maintenance must be performed in accordance with manufacturer's recommendations.

2.4.3 Recordkeeping

Fire Code requires that records of smoke control system periodic inspection and testing be maintained on the premises. Fire Code also requires that records of post-fire smoke purge system periodic inspection and testing be maintained on the premises. All records are required to be maintained for a period of 3 years.

2.5 Elevators-in-Readiness

2.5.1 Introduction

Building Code and Fire Code contain requirements for elevator emergency operations; including Phase I emergency recall operation and Phase II emergency in-car operation.

Phase I emergency recall operation generally requires that elevator landings and elevator machine rooms be provided with smoke detectors that, when activated, will recall the elevator to a safe location as required by the Building Code. Such recall is also required for sprinkler waterflow alarms.

Phase II emergency in-car operation generally requires that the operating panel in certain elevators be provided with a three-position switch that allows for "normal," "hold" and "fireman service" operations. The fireman service position allows for use of the elevator by firefighters to assist in firefighting operation. When the switch is in the "fireman service" position, the elevator is only operable by the person in the car and all corridor call buttons are inoperative.

Building occupant safety and firefighting operations depend on these systems to function properly during emergency conditions. It is critical that they be maintained in good working order at all times. Fire Code requires all elevators equipped with Phase I emergency recall and Phase II emergency in-car operation to be maintained in proper working order such that the emergency elevator operations are operable at all times.

2.5.2 Periodic testing requirements

All elevators with Phase I emergency recall must be subjected, at least monthly, to a Phase I recall test. All elevators with Phase II emergency in-car operation must be subjected, at least monthly, to a minimum of a one-floor operation Phase II test.

2.5.3 Operational requirements

Fire Code and Building Code require elevators in every building75 feet or more in height to be kept ready for immediate use by the Fire Department (elevators in readiness) during all hours of the night and day including holidays and weekends. A competent building attendant must be available to operate such elevators, except that no attendant is required for buildings between 75 and 150 feet in height having elevators with Phase I emergency recall operation and Phase II emergency in-service operation).comp

Elevator keys

2022 FC506 requires keys for the elevator car doors and firefighter service keys to be kept in an approved location for immediate use by the Fire Department. Firefighter service key switches must be operable by citywide-standard key.

2.5.4 Recordkeeping

For an elevator equipped with Phase I emergency recall operation and Phase II emergency in-car operation, Fire Code requires a written record of the operational status of the elevator to be made and kept on the premises and made available for inspection by any representatives of the Fire Department.

Records of the monthly Phase I emergency recall operation and Phase II emergency in-car operation are required to be maintained on the premises for a minimum of 3 years.

2.6 Non-Water Fire Extinguishing Systems

2.6.1 Introduction

Non-water fire extinguishing systems are generally provided in lieu of a required sprinkler system where the nature of the fire hazard is such that water is not effective as an extinguishing agent. The use of a non-water fire extinguishing system must be acceptable to the Fire Department and the Department of Buildings. Non-water fire extinguishing systems include wet chemical, dry chemical, foam, carbon dioxide, Halon, clean agent and water mist.

2.6.2 Individuals authorized to perform tasks

Non-water fire extinguishing systems must be inspected monthly by a trained and knowledgeable person to assess whether the system is in good working order.

A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the specific non-water fire extinguishing system is required to inspect, test, service and otherwise maintain such system semiannually (annually for foam fire extinguishing systems and water mist fire extinguishing systems).

2.6.3 Periodic inspection and testing requirements

Non-water fire extinguishing systems shall be maintained in good working order at all times. Any fire protection system that is not in good working order shall be repaired or replaced as necessary to restore such system to good working order, or, where authorized by the Building Code, removed from the premises.

Fire protection systems shall be inspected, tested, serviced and otherwise maintained in accordance with this section, the rules and the referenced standards in the table below. Where required by this section, such inspection, testing and maintenance shall additionally comply with the rules. Where applicable, the requirements of the reference standards listed in the following table shall be in addition to those requirements specified in the rules or in the manufacturer's maintenance procedure.

FIRE PROTECTION SYSTEM MAINTENANCE STANDARDS SYSTEM	STANDARD
Dry and wet chemical fire extinguishing systems	NFPA 17 and NFPA 17A
Foam systems	NFPA 11 and NFPA 16
Carbon dioxide fire extinguishing system	NFPA 12
Halon 1301 fire extinguishing systems	NFPA 12A
Clean agent fire extinguishing systems	NFPA 2001 (as modified by FC Appendix B)
Water mist fire extinguishing systems	NFPA 750

Wet and dry chemical fire extinguishing systems

- Wet chemical fire extinguishing systems are commonly used with commercial cooking system.
- Dry chemical fire extinguishing systems are commonly installed in flammable liquid storage rooms and at motor fuel dispensing areas.
- Wet and dry chemical fire extinguishing systems are required to be recharged after use or where an inspection or maintenance check indicates the need.
- At least once a month, an inspection shall be conducted by a trained and knowledgeable person to assess that the system is in good working order. The monthly inspection, or "quick check" requirement, must verify the following:
    - The system is in its proper location.

- The manual activation devices are unobstructed.
- The tamper seals are intact.
- The semiannual maintenance tag is in place.
- The system shows no physical damage or condition that may prevent operation.
- The pressure gauge(s) are in operable range.
- The nozzle blowoff caps are in place and undamaged.
- The protected equipment and the hazard have not been replaced, modified, or relocated.

- A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the wet and dry chemical fire extinguishing system shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on a semiannual basis. Tests shall include a check of the detection system, alarms and releasing devices, including manual stations and other associated equipment. Extinguishing agent containers shall be checked to verify that the system has not been discharged. Stored pressure-type units shall be checked for the required pressure. The cartridge of cartridge-operated units shall be weighed and replaced at intervals specified by the manufacturer.

Foam fire extinguishing systems

- At least once a month, an inspection shall be conducted by a certificate of fitness holder to assess whether the system is in good working order. A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the specific fire extinguishing system, shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on an annual basis.

Carbon dioxide fire extinguishing systems

- Carbon dioxide fire extinguishing systems are commonly installed in large flammable liquid storage areas

- At least once a month, an inspection shall be conducted by a trained and knowledgeable person to assess whether the system is in good working order. A monthly update, or "quick check" (as required by 2022 FC904.8 and Section A.4.8.1 of NFPA Standard 12) must verify that:
  - High-pressure cylinders are in place and properly secured.
  - Low-pressure storage unit pressure gauges show normal pressure, that the tank shutoff valve is open, and that the pilot pressure supply valve is open. The liquid level gauge should be observed. If at any time a container shows a loss of more than 10 %, it should be refilled, unless the minimum gas requirements are still provided.
  - Carbon dioxide storage is connected to discharge piping and actuators.
  - All manual activation devices are in place and tamper seals are in place.
  - Nozzles are connected, properly aligned, and free from obstructions and foreign matters.
  - Detectors are in place and free from foreign matter and obstructions.
  - System control panel is connected and showing "normal-ready" condition.

- A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the carbon dioxide fire extinguishing system shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on a semiannual basis.

- Warning signs are required in every protected space, entrance to protected space, nearby protected space and outside each entrance to rooms containing a carbon dioxide fire extinguishing system. Typical warning signs are as follows:
  - In protected space,

    WARNING
    CARBON DIOXIDE GAS
    WHEN ALARM ACTIVATES VACATE IMMEDIATELY
  - At entrances to protected space,

    WARNING
    CARBON DIOXIDE GAS
    WHEN ALARM ACTIVATES DO NOT ENTER UNTIL VENTILATED
  - In areas nearby protected space,

    CAUTION
    CARBON DIOXIDE DISCHARGE INTO A NEARBY SPACE CAN COLLECT HERE. WHEN ALARM ACTIVATES VACATE IMMEDIATELY
  - Outside each entrance to rooms containing a carbon dioxide fire extinguishing system,

    CAUTION
    CARBON DIOXIDE GAS
    VENTILATE THE AREA BEFORE ENTERING. A HIGH CARBON DIOXIDE GAS CONCENTRATION CAN OCCUR IN THIS AREA CAUSING SUFFOCATION
  - Each Manual Actuation Station

    CAUTION
    CARBON DIOXIDE GAS
    ACTUATION OF THIS DEVICE CAUSES CARBON DIOXIDE TO DISCHARGE. BEFORE ACTUATING, BE SURE PERSONNEL ARE CLEAR FROM THE AREA.
- Liquid-level gauges of low-pressure carbon dioxide containers are required to be inspected weekly. Containers showing a content loss of more than 10 percent must be refilled.
- Carbon dioxide fire extinguishing system hoses must be examined at 12-month intervals for damage. At 5-year intervals, such hoses are required to be tested by a trained and knowledgeable person.
- Auxiliary and supplementary components of carbon dioxide fire extinguishing systems, such as switches, door and window releases, interconnected valves, damper releases and supplementary alarms, are required to be manually operated annually to ensure proper operating condition.
- Total flooding carbon dioxide fire extinguishing systems must not be installed to protect hazards within normally occupied areas. Previously installed total flooding carbon dioxide fire extinguishing systems installed to protect normally occupied areas were required to be removed by July 1, 2013, and a replacement fire extinguishing system installed.

Clean agent fire extinguishing systems

- Clean agents are electrically non-conductive and non-corrosive, and there should be no damage to electronics and delicate mechanical devices upon system discharge in such areas. Clean agent fire extinguishing systems may be ideal for IT systems, data storage rooms and manufacturing equipment, or irreplaceable items like customer/client records, intellectual property, art, antiques and artifacts.

- At least once a month, an inspection shall be conducted by a trained and knowledgeable person to assess whether the system is in good working order. A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation, and maintenance of the clean agent fire extinguishing system shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on a semiannual basis.
- The extinguishing agent quantity and pressure of clean agent containers are required to be checked at 6-month intervals. Where a container shows a loss in original weight of more than 5 percent or a loss in original pressure, adjusted for temperature, of more than 10 percent, the container must be refilled or replaced. The weight and pressure of the container must be recorded on a tag attached to the container.
- Clean agent fire extinguishing system hoses are required to be examined at 12-month intervals for damage. Damaged hoses must be replaced or tested. Clean agent fire extinguishing system hoses are required to be tested at 5-year intervals.
- Enclosures protected by the clean agent fire extinguishing system are required to be thoroughly inspected at least every 12 months to determine if penetrations or other changes have occurred that could adversely affect agent leakage or change volume of hazard or both. Where the inspection indicates conditions that could result in not being able to maintain the clean agent concentration, they must be corrected. If uncertainty still exists, the enclosures are required to be retested for integrity.

Halon Fire Extinguishing Systems

- Halon (short for halogenated hydrocarbon) is nonconducting and described as a "clean agent," as it leaves no residue after being discharged. Halon fire extinguishing agents, include Halon 1211, Halon 1301, and a combination of the two. Halon 1211 is a "streaming agent," and more commonly used in hand-held extinguishers because it discharges mostly as a liquid stream. Halon 1301 is a "flooding agent," and discharges mostly as a gas, allowing it to penetrate tight spaces and behind obstacles and baffles. This property makes it ideal for use in engine nacelles and other tightly enclosed spaces commonly found in aircraft. Halons have been found to be an ozone-depleting substance, harmful to the Earth's stratospheric ozone layer. As of January 1, 1994, under the Clean Air Act, the United States has banned the production and import of Halons 1211 and 1301.
- At least once a month, an inspection shall be conducted by a trained and knowledgeable person to assess whether the system is in good working order. A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the Halon fire extinguishing system shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on a semiannual basis.
- The extinguishing agent quantity and pressure of Halon containers are required to be checked at least semiannually. Where a container shows a loss in original weight of more than 5 percent or a loss in original pressure of more than 10 percent, the container must be refilled or replaced. The weight and pressure of the container must be recorded on a tag attached to the container.
- Halon fire extinguishing system hoses are required to be examined at 12-month intervals for damage. At 5-year intervals, Halon fire extinguishing system hoses are required to be tested by a trained and knowledgeable person.
- Auxiliary and supplementary components of Halon fire extinguishing systems, such as switches, door and window releases, interconnected valves, damper releases and supplementary alarms, are required to be manually operated at 12-month intervals to ensure such components are in proper operating condition.

Water Mist Fire Extinguishing Systems

- Water mist fire extinguishing systems are commonly found in computer rooms or other energized electrical equipment areas.

- At least once a month, an inspection shall be conducted by a trained and knowledgeable person to assess whether the system is in good working order. A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the water mist fire extinguishing system shall inspect, test, service and otherwise maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals at least on an annual basis.
- Water mist fire extinguishing systems are required to be flushed annually. Water tanks are required to be drained and refilled annually. After system operation, strainers and filters are required to be cleaned or replaced as required.

Non-water fire extinguishing systems summary table

<table>
<tr><th rowspan="2">Systems</th><th rowspan="2">Commonly found in/with</th><th rowspan="2">Monthly visual inspection</th><th colspan="2">Test, service and maintenance</th></tr>
<tr><th>Qualified personnel</th><th>Minimum frequency requirement</th></tr>
<tr><td>Dry chemical fire extinguishing systems</td><td>flammable liquid storage rooms and at motor fuel dispensing areas.</td><td>required</td><td rowspan="7">A licensed master fire suppression piping contractor properly trained and having knowledge of the installation, operation and maintenance of the specific system.</td><td>semiannual</td></tr>
<tr><td>Wet chemical fire extinguishing systems</td><td>commercial cooking system</td><td>required</td><td>semiannual</td></tr>
<tr><td>Foam systems</td><td>commercial cooking system</td><td>Required (need to be conducted by a C of F holder)</td><td>annual</td></tr>
<tr><td>Carbon dioxide fire extinguishing system</td><td>flammable liquid storage rooms and at motor fuel dispensing areas.</td><td>required</td><td>semiannual</td></tr>
<tr><td>Clean agent fire extinguishing systems</td><td rowspan="2">IT systems, data storage rooms and manufacturing equipment, or irreplaceable items</td><td>required</td><td>semiannual</td></tr>
<tr><td>Halon fire extinguishing systems</td><td>required</td><td>semiannual</td></tr>
<tr><td>Water mist fire extinguishing systems</td><td>computer rooms or other energized electrical equipment areas</td><td>required</td><td>annual</td></tr>
</table>

2.6.4 Recordkeeping

Records of the monthly inspection of all non-water fire extinguishing systems must be maintained on the premises for a period of at least 3 years. Records must include the date the inspection was performed and the initials of the person performing the inspection.

Records of the semiannual inspection of non-water fire extinguishing systems (annual for foam and water mist fire extinguishing systems) by a licensed master fire suppression piping contractor must be maintained on the premises for a period of at least 3 years. Each system must have a tag or label indicating the month and year the maintenance was performed and identifying the individual and contractor performing the service. Only the current tag or label must remain in place.

2.7 Means of Egress

2.7.1 Introduction

The provision and maintenance of means of egress — a path of travel for occupants to exit a building — is integral to the safeguarding of life in the presence of a fire and is a key life safety system in the Building Code and the Fire Code. Means of egress are designed and intended:

- to give occupants alternative paths of travel to a place of safety to avoid fire.
- to shelter occupants from fire and the products of combustion.
- to accommodate all occupants of a structure.
- to provide a path of travel that is clear, unobstructed, well marked and illuminated and in which all components are under control of the user without requiring any tools, keys or special knowledge or effort.

Multiple fire fatalities, both contemporary and historical, can be traced to a compromise of one or more of the above principles.

2.7.2 Maintenance requirements

- The Fire Code prohibits storage of combustible material and combustible waste in corridors.
- Door hardware and other devices and physical components of the means of egress must be maintained in good working order at all times.
- All required means of egress and access to such, including each exit, exit access and exit discharge, must be maintained free from obstructions and impediments to immediate use in the event of fire or other emergency.
- All required means of egress must be maintained free of snow and ice.
- The Fire Code prohibits causing, allowing or maintaining an overcrowded condition, and any condition that will obstruct or impede access to the means of egress.
- Furnishings, decorations or other objects must not be placed so as to obstruct exits, access thereto, egress therefrom, or visibility thereof.
- Mirrors must not be placed on exit doors, or in or adjacent to any exit in such a manner as to confuse the direction of exit.

2.7.3 Operational requirements

Signage

Building Code Section 1026 sets forth signage requirements for means of egress and elevators. Such requirements include:

- Occupant load capacity sign in assembly occupancies.
- Identification signs for each door that provides access to an area of rescue assistance.
- Signs indicating the location of accessible means of egress.
- Access-control door signs.
- Signs for doors that are equipped with delayed egress.
- Exit signs.
- Stairway floor number and identification signs.
- Signs for spaces that are occupied for multiple purposes involving different occupant loads.

- Emergency sign adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevators in case of fire.
- Elevator identification signs.

2.8 Commercial Cooking Systems

2.8.1 Introduction

A commercial cooking system is a system that consists of commercial cooking equipment, exhaust hoods, filters, exhaust duct systems, fire extinguishing system and other related components designed to capture grease-laden vapors and exhaust them safely to the outdoors. The requirements as to the type of commercial cooking exhaust hoods required to be installed in connection with the commercial cooking equipment are set forth in the Mechanical Code.

2.8.2 Companies and individual certifications

Supervision

Inspection and cleaning of commercial cooking exhaust systems must be personally supervised by a P-64/F-64/W-64 Certificate of Fitness holder.

Persons that engage in the business of inspecting and cleaning commercial cooking exhaust systems are required to obtain a commercial cooking exhaust system servicing company certificate.

The list of FDNY Certified Company can be found on the following website:

Approved Companies with Electrostatic Precipitators in the exhaust duct
http://www1.nyc.gov/assets/fdny/downloads/pdf/business/approved-companies-commercial-cooking-precipitator.pdf

Approved Companies without Electrostatic Precipitators in the exhaust duct
http://www1.nyc.gov/assets/fdny/downloads/pdf/business/approved-companies-commercial-cooking.pdf

Staff training

The owner or operator of commercial cooking equipment must train all staff in the proper procedure for the use of all components of the grease removal system, cleaning of filters, and the manual operation of the fire extinguishing system. Refresher training in the manual operation of the fire extinguishing system must be provided at least once every 6 months. Records of such training must be maintained on the premises.

2.8.3 Periodic inspection and testing requirements

- Commercial cooking equipment utilizing solid fuel must be inspected monthly by a trained and knowledgeable person.
- Commercial cooking exhaust systems must be inspected and cleaned at least once every 3 months by a Certificate of Fitness holder, except that vertical portions of interior and exterior vertical ducts in excess of three stories in height may be cleaned every six months by a person holding a Certificate of Fitness.
- Commercial cooking system fire extinguishing systems must be inspected, tested, serviced and otherwise maintained by qualified person on a semiannual basis.

Other Maintenance Requirements

- Grease filters must be regularly cleaned or replaced by a trained and knowledgeable person, as necessary, but at least once per month.
- Deep-fat fryer high limit controls must be replaced every 3 years with a new or rebuilt unit certified to operate at not more than 475°F.
- Fusible links and foam water sprinkler heads must be replaced at least annually, and other protection devices must be serviced or replaced in accordance with the manufacturer's instructions.

2.8.4 Permit

A permit is required to maintain or operate commercial cooking systems.

2.8.5 Operating instructions

A sign clearly and concisely summarizing the operation, maintenance and cleaning requirements for commercial cooking systems regulated by the code, together with a schematic drawing depicting the origin, run, and terminus of the exhaust system must be posted.

The sign must be:

- At least 8 ½ " by 11"
- At or near the main entrance to the cooking area
- Laminated or framed under a clear glass or plexiglas cover. (2022 FC609.7)

Instructions for manual operation of the fire extinguishing system must be posted that includes:

- A statement that the fire extinguishing system must be manually activated prior to using a portable fire extinguisher
- Under glass or laminated, near the system's manual activation device. Information
- Be clearly and concisely written
  Must be at least 8½" by 11".

2.8.6 Recordkeeping

Recordkeeping of all commercial cooking system inspections, tests, servicing and other maintenance required by the Fire Code, including exhaust system inspection and cleaning, filter cleaning or replacement, semiannual fire extinguishing system inspection, and replacement of deep fat fryer high-limit controls must be maintained on the premises for a minimum of 3 years.

Module 2 summary

Maintaining refrigerating systems, emergency power systems, battery systems, smoke control systems, in-building auxiliary radio communication systems, elevators, non-water fire extinguishing systems, commercial cooking systems in good working order is essential to protect life and property. Maintaining means of egress free of obstructions is essential to safeguard life. To ensure that these systems and means of egress are maintained in such condition, the Fire Code and Rules and the corresponding NFPA standards provide minimum requirements for the periodic inspection, testing and maintenance of such systems and for the supervision of those individuals responsible for such maintenance.

Whenever there are differences or inconsistencies between the provisions of the Fire Code and these Referenced Standards, the more restrictive provision shall govern.

3 Module 3: Other Fire Safety Operational and Maintenance Requirements

Objectives:

At the end of this module you will be better able to identify and explain the importance of, and requirements for, the preparation and monitoring of the topics covered in this module.

Topics covered in this module:

- Hot work operations
- Flame-resistant decorations
- Portable fueled equipment
- Fumigation and insecticidal fogging operations
- Emergency planning and preparedness
- Portable fire extinguishers
- Permits, certificates of fitness/qualification and company certification

3.1 Hot Work Operations

3.1.1 Introduction

Hot work operations and the equipment and materials associated with such operations represent a significant fire hazard. Hot work creates sparks, slag and heat. Materials such as acetylene, LPG and oxygen are used in gas welding and torch operations. Electric current is used in arc welding. Hot work is often conducted in buildings that were not designed for these materials and hazards, including buildings undergoing renovation or repairs. An important factor in avoiding ignition hazards is preparing for and monitoring hot-work operations.

3.1.2 Permit and supervision

Certificate of Fitness

- Certificate of Fitness (G-60) is needed for conducting any of the following torch operations :
    - An oxygen-fuel torch using any amount of oxygen and flammable gas
    - Any torch operation for torch-applied roof system
- Certificate of Fitness (F-60) holder must be present to perform fire watch during hot work operations at the following locations:
    - Construction sites;
    - Rooftop operations and in conjunction with torch-applied roof system operation;
    - In any building or structure, when the torch operation is conducted by a person holding a FDNY permit for torch operation.

Permit

An FDNY permit is required to conduct hot work using oxygen and a flammable gas.

Hot work program responsible person

Whenever hot work is performed in any building or structure, on a building roof or on a building setback, the owner shall ensure that such work is performed in accordance with the Fire Code and shall designate a responsible person to ensure compliance.

The responsible person shall ensure that a permit has been obtained from the Fire Department when one is required, and ensure that the hot work is performed in compliance with the terms and conditions of the permit. The responsible person shall inspect the hot work site prior to issuing a hot work program authorization and periodically monitor the work as it is being performed to ensure there are no fire safety hazards.

Hot work operations shall be conducted under the general supervision of the responsible person. The responsible shall maintain “pre-work check” reports.

3.1.3 Operational requirements

Authorized work areas

Hot work must be performed:

- in areas designated for hot work operations, or
- areas authorized by the responsible person.

Hot work must not be performed:

- in areas where the sprinkler protection is impaired.
- in areas where ignitable vapors are present.
- in areas where readily ignitable material is present.

Hot work operations involving cutting or welding shall be conducted at least 35 feet from combustible materials and combustible waste or shall be provided with appropriate shielding to prevent sparks, slag or heat from igniting exposed combustibles. All other hot work operations shall be conducted at least 25 feet from combustible materials and combustible waste or shall be provided with appropriate shielding to prevent sparks, slag or heat from igniting exposed combustibles.

Hot work program authorization

- A hot work program authorization bearing the signature of the responsible person shall be obtained for any project conducted on a premises involving hot work operations by the person in charge of such hot work operations. Hot work authorizations, issued by the responsible person, shall be available for inspection by any representative of the department during the performance of the work and for 48 hours after the work is complete.
- The hot work authorization must be posted at the work site prior to commencing such work.

Pre-hot work check

Before hot work is authorized and at least once per day while the authorization is in effect, the hot work area shall be inspected by the responsible person to ensure that it is a fire safe area.

A pre-hot work check shall be conducted by the responsible person prior to work to ensure that all equipment is safe and hazards are recognized and protected. A report of the check shall be kept at the work site during the work and for a minimum of 48 hours after work is completed, and made available for inspection by any representative of the department. The pre-hot work check shall be conducted at least once per day and shall verify the following:

- The hot work equipment is in good working order.
- The hot work area is clear of combustibles and flammable solids or that such materials present in the area are protected in accordance with Fire code.
- Exposed construction is of noncombustible materials or, if combustible, is protected.
- Openings are protected.
- Hot work area floors are clear of combustible waste accumulation.
- Fire watch personnel, where required, are assigned.
- Approved actions have been taken to prevent accidental activation of fire extinguishing systems and detection equipment. **Sprinkler system protection shall not be shut off or impaired while hot work is performed unless approved by the commissioner.** Where hot work is performed close to sprinklers, noncombustible barriers or damp cloth guards shall shield the individual sprinkler heads and shall be removed when the work is completed. If the work extends over several days, **the shields shall be removed at the end of each workday**.
- Approved precautionary measures must be taken to avoid accidental operation of automatic fire detection systems during hot work operations. For example, the fire alarm system (e.g. smoke detectors) may need to be taken out of service during the hot work operation to avoid unwarranted alarms. The date and time the alarm system was taken off-line, the reason for such action, the name and operator number of the person notified at the central station (or other evidence of notification satisfactory to the Department), and the date and time the system was restored to service, must be entered in the alarm log book in each such circumstance.
- Portable fire extinguishers and fire hoses (where provided) are operable and available.
- All persons performing hot work possess certificates of fitness, where such certificates are required.
- All persons performing hot work requiring a permit possess a site-specific permit or citywide permit, authorizing such work.

EXAMPLE OF HOT WORK PROGRAM AUTHORIZATION

Hot Work Program Authorization

Hot work may not be authorized, and must be discontinued, if the work will not be, or is not being, performed in compliance with applicable safety requirements.

☐ Hot work equipment is in good working order. ☐ Required separation distances are being maintained from combustible materials and flammable solids or area is protected if items present. ☐ Exposed construction is of noncombustible material or protected combustible construction. ☐ Openings are protected. ☐ Hot work area floors are free of combustible waste accumulation. ☐ When required, fire watch personnel are assigned. ☐ Approved actions have been taken to prevent accidental activation of detection and extinguishing systems. ☐ Portable fire extinguishers, and fire hoses (where provided), are operable and available. ☐ When required, certificate of fitness holders are supervising and/or performing such hot work. ☐ When required, a site-specific permit or citywide permit for such hot work operations has been issued by the NYC Fire Department. ☐ Hazardous materials located so as not to become exposed to or ignited by ignition sources.	BUILDING ADDRESS:_____ _____ FLOOR/AREA:_____ NATURE OF WORK:_____ _____ _____ HOT WORK PERFORMED BY ☐ BUILDING EMPLOYEE ☐ CONTRACTOR NAME_____ _____ HOT WORK OPERATOR(S) NAME_____ CERTIFICATE OF FITNESS# (IF APPLICABLE) AND EXPIRATION DATE OF CERTIFICATE OF FITNESS COF#_____EXP DATE_____ I certify that I have inspected the above location, and confirmed that the pre-hot work precautions as required by 2022 FC3504.3.1 have been checked, as indicated, and I have authorized the work to be performed. RESP ONSIBLE PERSON NAME_____TEL#_____ AUTHORIZATION START DATE_____TIME_____ END DATE_____TIME_____ SIGNATURE OF RESPONSIBLE PERSON: _____

PERIODIC REVIEW REQUIRED

Prior to authorizing hot work and at least once per day while the authorization is in effect, a review of the hot work area must be conducted by the responsible person. A record of this review must be maintained on the premises during the authorization and for 48 hours after the work is completed.

THIS HOT WORK AUTHORIZATION IS FOR THE NAMED HOT WORK OPERATOR ONLY AND IS NON-TRANSFERABLE.

Fire watch

A fire watch shall be maintained and fire guards provided in accordance with Fire Code. A fire watch shall be maintained during ALL hot work operations. The fire watch shall continue for a minimum of 30 minutes after the conclusion of the work. The commissioner, or the responsible person implementing a hot work program, may extend the duration of the fire watch based on the hazards or work being performed.

The fire watch shall observe the entire hot work area. Hot work conducted in areas with vertical or horizontal fire exposures that are not observable by a single individual shall have additional personnel assigned to ensure that exposed areas are monitored.

Persons conducting a fire watch shall keeping constant watch for fires with respect to the areas being monitored in connection with hot work operations. The persons conducting a fire watch shall not have other duties.

Where hose lines are required, they shall be connected, charged and ready for operation. A minimum of one portable fire extinguisher complying with the requirements of Fire Code and with a minimum 2-A:20-B:C rating shall be provided and readily accessible within a 30 feet travel distance of the location where hot work is performed and where the fire guards are positioned.

The fire watch for torch operations conducted at the following locations shall be conducted by an F-60 fire guards:

- **Construction sites.**

A F-60 fire guard shall be provided for each torch in operation at construction sites, except that a single fire guard may be designated to conduct a fire watch for more than one torch operation on the same floor or level if each torch operation is not more than 50 feet from the fire guard, as measured by the actual path of travel, and the field of view of such fire guard encompasses all of the horizontal fire exposures of such torch operations.

- **In any building or structure, when the torch operation is conducted by a person holding a citywide permit for torch operations.**
- **On any rooftop, or in connection with any torch-applied roofing system operation.**

If the torch operation is being conducted at or near the edge of an unenclosed floor of a building, or near a floor opening, or other location where sparks and slag may travel to one or more lower floors or levels, a fire guard must conduct a fire watch on each lower floor or level containing combustible surfaces or materials within 35 feet of the area of such floor or level that potentially would be exposed to such sparks or slag. Prior to commencement of the torch operation, the fire safety manager or responsible person shall inspect the lower floors or levels and take all necessary and appropriate precautions to protect any combustible surfaces and materials that potentially would be exposed to sparks and slag from the torch operation. A certification to that effect must be made on the hot work authorization.

Exception:

1. A fire watch is not required on the floors or levels below a torch operation on a construction site when:
   1.1. the torch operation is not being conducted at or near the edge of an unenclosed floor of a building;
   1.2. the floor upon which the torch operation is being conducted is of noncombustible construction;
   1.3. there are no floor or exterior building openings within 35 feet of the torch operation; and
   1.4. prior to commencement of the torch operation, the fire safety manager or responsible person conducts an inspection and takes the precautions required pursuant to Fire Code.
2. Notwithstanding the foregoing exception, if sparks or slag generated by the torch operation are observed to extend beyond 35 feet, thereby potentially exposing lower floors or levels, the torch operation shall be

immediately discontinued, and the floors or levels below shall be inspected for any fire condition. If there is any potential exposure surfaces or materials on the floors below from such sparks and slag, noncombustible barriers shall be provided and any other necessary or appropriate precautions shall be taken. If such barriers and precautions fail to block the passage of sparks and slag, a fire watch shall be established on the floors or levels below.

It is important to understand the code-required distinction between a fire watch and a fire guard. Not all individuals responsible to maintain a fire watch must possess an F-60 certificate of fitness.

3.1.4 Recordkeeping

The responsible person for the hot work area must maintain "pre-hot work check" reports in accordance with Fire Code. These reports must be maintained on the premises for a minimum of 48 hours after work is complete.

Hot work authorizations must be available for inspection during the performance of the work and for 48 hours after the work is complete.

3.2 Flame-Resistant Decorations

3.2.1 Introduction

The requirements for flame-resistant decorations is intended to limit flame spread that can transform a small fire into a major conflagration. Rapid flame spread was responsible for fires in places of assembly and other public gathering places that resulted in large loss of life, such as the Cocoanut Grove nightclub fire that killed 492 people in 1942. This fire was thought to have started when a lightbulb in the basement cocktail lounge came in contact with the cotton cloth that had been applied to the ceiling for decorative purposes. Post-fire testing of the cotton cloth indicated that it had a flame spread rating of 2,500, more than 33 times the maximum flame spread in today's standards. This factor, in addition to impediments to egress, led to one of the worst fire disasters in history. The need for these regulations was demonstrated again with the February 2003 Station Nightclub fire in West Warwick, Rhode Island, in which 100 people died. The soundproofing material in the nightclub was not approved for such use and was a major factor in fire spread.

In addition to flame spread ratings of surface materials, certain furnishing types and vegetation, such as Christmas trees, pose a large fire hazard because of the potential fire size and intensity. The materials used in furnishings have changed dramatically from those used in the past and many more plastics are now used for decoration and furnishings. Plastics not only burn more vigorously than materials such as cotton and wood, but also produce more toxic fire effluents.

The overall purpose of fire-resistant materials is to ensure that decorations, furnishings and vegetation do not significantly create or add to fire hazards within buildings. The provisions focus on occupancies with specific risk characteristics, such as vulnerability of occupants, density of occupants and lack of familiarity with the building.

3.2.2 Operational requirements

Supervision

Flame-retardant treatment of a material or item must be conducted under the personal supervision of a certificate of fitness holder. (FC801.7 and R805-01).

Occupancies requiring flame-resistant decorations

In Group A, E, I and M occupancies, common areas in Group R-1, R-2 and B occupancies, and any building or structure used as a place for public gathering, curtains, draperies, hangings and decorations are required to be made of a flame resistant material. This does not apply to decorations being displayed solely for sale in any building or as a work of art in any museum or art gallery; to guest rooms in hotels and motels, private offices in commercial buildings; or to houses of worship. (2022 FC805.1 and R805-01)

Documentation of flame-resistant materials

R805-01 sets forth the standards, requirements and procedures for the testing and certification of flame-resistant decorations. Decorations required to be of a flame-resistant material that are installed or maintained in any premises must not be installed or maintained until the owner first files an affidavit of flame resistance for such decorations with the Fire Department. The affidavit must be executed by a certificate of fitness holder, and must indicate that the material is inherently flame-resistant, or that he or she personally supervised the flame-retardant treatment of the material.

Display of natural trees

Cut natural trees may be displayed in a building, except in Group A, B, E, I-1, I-2, I-3, I-4, M, R-1 and R-2 occupancies and any building or structure used for a public gathering. Notwithstanding the foregoing occupancy

restrictions, cut natural trees may be displayed in houses of worship and dwelling units in Group R-2 apartment house occupancies. (2022 FC804.1.1)

Natural trees, except conifers, may be stored and displayed in a building, provided they are maintained in a healthy condition and are not allowed to become dry. It shall be unlawful to store or display natural trees that are conifers in any building. (2022 FC804.1.3)

Display of natural decorative greens

Natural decorative greens may be displayed in buildings on a temporary basis. The display of natural decorative greens in Group A, E, I, and M occupancies, in common areas of Group R-1, R-2 and B occupancies, and any building or structure used for a public gathering, except display of works of art in museums and houses of worship, shall comply with the restrictions set forth in 2022 FC804.5.3.

3.3 Portable fueled equipment

Portable fueled equipment, including snow blowers, portable generators, power washers, weed trimmers and lawn mowers, must not be used indoors. Portable fueled equipment must be stored outdoors unless stored in an FDNY approved indoor storage area.

If stored indoors, portable fueled equipment and fuel used in such equipment should not be stored below grade. Such fuel must be stored in an FDNY approved area, in a flammable liquid storage cabinet (if more than two and one half gallons of gasoline are stored), and in quantities that do not exceed amounts that are incidental to and reasonably necessary for the use of such equipment.

3.4 Fumigation and Insecticidal Fogging Operations

3.4.1 Introduction

Fumigation and insecticidal fogging operation are methods of pest control to suffocate or poison the pests within. They could be used to control pests in buildings. They are hazardous operations because the chemicals used are toxic to most forms of life, including humans. Improper operation may cause injuries, fire or explosions. Fumigation and insecticidal fogging operations within buildings and structures shall be conducted in accordance with the Fire Code. A proper notification shall give the location of the enclosed space to be fumigated or fogged.

3.4.2 Companies and individual certifications

Fumigation and insecticidal fogging operations shall be conducted by or under the personal supervision of a person holding a W-97 certificate of fitness. This person must be an employee of a FDNY Certified fumigation and insecticidal fogging operation company. The list of FDNY certified company could be found in the following website, the list is updated on a monthly basis:
http://www1.nyc.gov/assets/fdny/downloads/pdf/business/approved-companies-fumigators.pdf

3.4.3 Operational requirements

Fire suppression systems

Fumigation and insecticidal fogging operations may require that fire alarm systems be taken out of service during such operation to avoid unwarranted alarms. The date and time the alarm system was taken off-line, the reason for such action, the name and operator number of the person notified at the central station (or other evidence of notification satisfactory to the Department), and the date and time the system was restored to service, shall be entered in the alarm log book in each such circumstance.

The FDNY's Field Public Communication Unit must be notified in writing at least 48 hours before fogging or fumigation commences. Approved warning signs indicating the danger, type of chemical involved and necessary precautions shall be posted on all doors and entrances to the premises. Advance notice shall be given to all occupants of the building or structure where fumigation and thermal insecticidal fogging operations are to be conducted to warn of the hazards of such operation.

3.5 Emergency Planning and Preparedness

3.5.1 Introduction

The Fire Code's emergency planning and preparedness requirements seek to prevent or minimize loss of life by ensuring that certain occupancies have planned for fires and other emergencies by training building staff and building occupants as to what actions to take in the event of an emergency. The participation and cooperation of building staff and building occupants also improves firefighter operations at the scene of an emergency.

The 2014 NYC Fire Code which took effect on March 30, 2014 comprehensively revised and reorganized Chapter 4, the emergency preparedness and planning chapter. However, FC401.3.6.1 of the 2014 Fire Code states that the emergency preparedness plan requirements of the 2008 Fire Code remain in effect until such time as rules are adopted to implement the emergency preparedness plan requirements of the 2014 Fire Code. At this time, the 2008 Fire Code provisions have lapsed only with respect to occupancies that are not required by the 2014 Fire Code to prepare an emergency preparedness plan. **Check the FDNY official website periodically for updates on emergency preparedness requirements.**

The NYC 2008 Fire Code requires three types of emergency plans:

- Fire Safety and Evacuation Plans (FSP)
- Emergency Action plans (EAP) (for office buildings)
- Residential Fire Safety Guides and Notices (for multiple dwellings)

3.5.2 Fire Safety and Evacuation Plans (FSP)

The types of occupancies and buildings required to prepare a FSP include:

- Group A occupancies, other than Group A occupancies used exclusively for purposes of religious worship that have an occupant load less than 2,000.
- Group B occupancy office buildings or parts thereof and other office buildings or parts thereof, occupied or designed to occupied by more than 500 persons on one or more floors, including street level, or by more than 100 persons on one or more floors other than street level.
- Group B occupancy educational facilities.
- Group E occupancy schools, educational facilities and day care facilities.
- Group H occupancies.
- Group I occupancies.
- Group M occupancies occupied or designed to be occupied by more than 500 persons on one or more floors, including street level, or by more than 100 persons on one or more floors other than street level, or in which more than 25 persons are employed.
- Group R-1 occupancies, occupied by more than 30 lodgers, or more than 15 lodgers above street level, for a period of 90 days or less; and/or operated to accommodate such numbers of lodgers for such period of occupancy; and/or designed to contain a total of more than 30 sleeping rooms, or more than 15 sleeping rooms above the street level, for such period of occupancy; and/or occupied by one or more lodgers on a floor more than 75 feet above the street level, for such period of occupancy, or operated or designed for such lodging.
- Group R-2 occupancies occupied by more than 30 lodgers, or more than 15 lodgers above street level, for a period of 90 days or less; and/or operated to accommodate such number of lodgers for such period of occupancy; and/or designed to contain a total of 90 more than 30 sleeping rooms, or more than 15 sleeping rooms above the street level, for such period of occupancy; and/or occupied by one or more lodgers on a floor more than 75 feet above the street level, for such period of occupancy, or operated or designed for such lodging.

- Buildings or parts thereof equipped with a fire alarm system with voice communication of the type required in Class B, R-1 or M occupancies, regardless of whether such system is required in such building or part thereof.
- Buildings with an atrium and containing a Group A, E or M occupancy.
- Covered malls exceeding 50,000 square feet (4645 m2) in aggregate floor area.
- Buildings that are greater than 6 stories or 75 feet (22 860 mm) in height, except Group R-2 occupancies.
- Underground buildings occupied or designed to be occupied by more than 100 persons below street level.
- Buildings occupied or designed to be occupied to provide emergency shelter for more than 15 homeless persons for more than 30 days in a year.

A fire safety and evacuation plan shall include the following information:

- The procedures for notifying building occupants of a fire and reporting a fire to the department, including the preferred and any alternative means of notifying and reporting.
- Whether the response to a fire emergency will require the occupants of the building to be completely evacuated, partial evacuation or relocated within the building, and the procedures for each such response.
- Site plans indicating surrounding buildings and streets and the location of building occupant assembly areas, if applicable.
- Floor plans with specific requirements of what must be on the floor plan. Permitted hazardous material and combustible material storage, handling or use at the premises.
- Identification of fire safety director or other building employees responsible for implementing the fire safety and evacuation plan, training FSP staff, or other duties related to the fire safety and evacuation plan.
- Identification and assignment of personnel responsible for operation of building fire protection, fire extinguishing and life safety systems, or other critical equipment.
- Procedures for employees who must operate critical equipment.
- Procedures for accounting for building employees and building occupants after such employees or occupants have been relocated or evacuated to a safe area.
- Identification and assignment of personnel responsible for implementing the plan.
- Identification of personnel available, if any, to provide emergency medical care.
- A description of the emergency voice/alarm communication system alert tone and preprogrammed voice messages, when approved.
- Procedures for identifying in advance building occupants who require assistance to participate in the plan because of an infirmity or disability or other special need, and approved procedures for providing for such assistance.

3.5.3 Emergency Action Plans (EAP)

Office buildings required to prepare an EAP include those that are:

- Greater than 6 stories in height; or
- Greater than 75 feet (22 860 mm) in height; or
- Occupied or designed to be occupied by more than 500 persons on one or more floors, including street level, or by more than 100 persons on one or more floors other than street level; or
- Equipped with a fire alarm system with voice communication of the type required in Class B or M occupancies, regardless of whether such system is required in such building or space; or
- Ordered by the Fire Department.

An EAP must contain the following information:

- The actions to be taken in response to each type of emergency.
- The designation and qualifications of EAP staff, and their emergency action plan duties and responsibilities.
- Reporting of emergencies to the department.

- Communication with building occupants.
- Use of elevators and the operation of other building systems.
- The conduct of EAP drills.
- Recordkeeping requirements.
- Obligations of building occupants and employers of building occupants.
- Procedures for identifying in advance building occupants who require assistance to participate in the plan because of an infirmity or disability or other special need, and approved procedures for providing for such assistance.

3.5.4 Individuals authorized to perform tasks

- **Group A occupancies.** The FSP staff in Group A occupancies whose lawful use, occupancy or operation requires issuance of a license by the New York City Department of Consumer Affairs shall be organized and trained by a person holding a F-07/W-07 Certificate of Fitness for fire safety training.

- **Group B occupancy office buildings.** Group B occupancy office buildings or parts thereof occupied or designed to be occupied by more than 500 persons on one or more floors, including street level, or by more than 100 persons on one or more floors other than street level, require a Fire Safety Director (F-25/F-58 Certificate of Fitness holder). Office buildings that have lawfully installed an interior fire alarm system do not require a Fire Safety Director, provided that the fire drills conducted by a person holding an F-07/W-07 certificate of fitness as fire drill conductor.

- Buildings equipped with a fire alarm system with voice communication of the type required in Class B, or M occupancies, regardless of whether such system is required in such building, require a Fire Safety Director (F-25/F-58 Certificate of Fitness holder).

- Group I-2 occupancies require that FSP staff training drills be conducted by an F-07/W-07 certificate of fitness as fire drill conductor for fire safety training.
- Group R-1(Hotel/Motels) occupancy buildings require a Fire Safety Director (F-25/F-58 Certificate of Fitness holder), except:
  - Group R-1 college or school student dormitories occupied or designed to be occupied by 500 persons or less, and that are 6 stories or 75 feet in height from grade or less. An S-95 Certificate of Fitness holder to supervise the fire alarm system is required.
  - Homeless shelters, in which a Fire Safety Coordinator (F-80 Certificate of Fitness holder) is required.
  - All other Group R-1 occupancies occupied by 30 or fewer lodgers, with not more than 15 lodgers above street level; operated to accommodate no more than these numbers of lodgers; designed to contain 30 or fewer sleeping rooms, with not more than 15 sleeping rooms above street level; and in each instance not occupied or operated to be occupied by lodgers, or designed to contain sleeping rooms, on any floor more than 75 feet above street level. An S-95 Certificate of Fitness holder to supervise the fire alarm system is required.
- Buildings equipped with a fire alarm system with voice communication of the type required in Group R-1occupancies, regardless of whether such system is required in such building or part thereof, requires Fire Safety Director (F-25/F-58 Certificate of Fitness holder).
- Group B occupancy office building required to prepare an EAP are required to have a Fire Safety/ EAP Director (F-59 Certificate of Fitness holder) to implement such plan.

- The owner of any building required to prepare a FSP must designate a competent persons to act as FSP staff, train the FSP staff and conduct the fire drills.
- The owner of any building required to prepare an EAP must designate a competent persons to act as EAP staff, train the EAP staff and conduct the EAP drills.

3.5.5 Fire drills, EAP drills, FSP staff and EAP staff training

The frequency of required combined fire and non-fire emergency drills for each type of occupancy shall be in accordance with 2008 Fire Code 405.2.

The FSP staff and EAP staff shall be trained in the performance of their duties in accordance with the fire safety and evacuation plan and emergency action plan, respectively. The frequency shall be in accordance with 2008 FC 406.2.

3.5.6 Recordkeeping

FSP logbook

An FSP logbook shall be maintained at an approved location on the premises (where the building is provided with one, at the fire command center) for purposes of documenting compliance with the requirements of the Fire Code and this section relating to the fire safety and evacuation plan, including any fires or other incidents, identification of FSP staff on duty at the premises, and the conduct of fire drills and FSP staff training. The FSP logbook may be consolidated with the EAP logbook. The FSP logbook shall be kept at the premises for a period of at least three (3) years, and shall be made available for inspection by any Fire Department representative.

EAP logbook

An EAP logbook shall be maintained at the building's fire command center for purposes of recording all EAP-related events, staffing and educational and training matters. The EAP logbook may be consolidated with the FSP logbook. The EAP logbook shall be kept at the premises for a period of five (5) years, and made available for inspection by Fire Department representatives upon request.

Fire drills and EAP drills

A written record of fire drills and EAP drills shall be maintained in a bound log book with consecutive numbered pages, or other form of approved electronic recordkeeping, and maintained on the premises for a period of 3 years for fire drills, and 5 years for EAP drills, and made available upon request of any department representative. An entry shall be made in such log book for each fire drill and EAP drill that is conducted in the building that includes the information listed in the 2008 FC405.5.

3.6 Portable Fire Extinguishers

3.6.1 Introduction

Portable fire extinguishers are required by the Fire Code and Rules, in certain occupancies and for certain activities, to give the occupants the means to suppress a fire in its incipient stage. The capability for manual suppression can contribute to the protection of the occupants. To be effective, personnel must be properly trained in the use of portable fire extinguishers.

3.6.2 Occupancies or operations requiring portable fire extinguishers

Portable fire extinguishers are required in all commercial buildings. Refer to 2022 FC906.1 for detailed requirements and information.

3.6.3 Portable fire extinguisher types

The classification of portable fire extinguisher type corresponds with the classification of fires. NFPA Standard 10 classifies fires as follows:

- Class A fires are fires in ordinary combustible materials, such as wood, cloth, paper, rubber, and many plastics.
- Class B fires are fires in flammable liquids, combustible liquids, petroleum greases, tars, oils, oil-based paints, solvents, lacquers, alcohols, and flammable gases.
- Class C fires are fires that involve energized electrical equipment.
- Class D fires are fires in combustible metals, such as magnesium, titanium, zirconium, sodium, lithium, and potassium.
- Class K fires are fires in cooking appliances that involve combustible cooking media (vegetable or animal oils and fats).

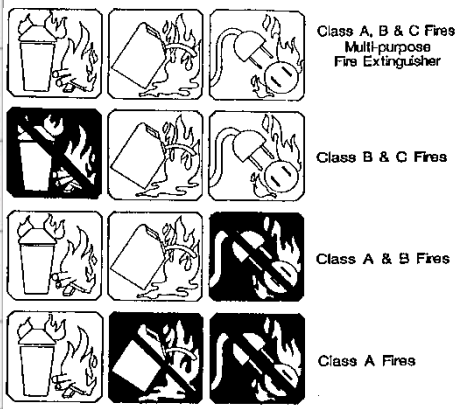
Portable fire extinguishers for the protection of specific class(es) of hazards must be selected from types that are specifically listed and labeled for use on such specific class(es) of fires. Fires commonly encountered are of the nature of Class A or Class B fires.

Portable fire extinguishers rated for Class A fires must be provided for general building protection. Buildings having an occupancy hazard subject to Class B or Class C fires, or both, must have a standard complement of Class A portable fire extinguishers for building protection, plus additional Class B or Class C portable fire extinguishers. Portable fire extinguishers having more than one letter classification (such as A:B:C) may be allowed to satisfy the requirements of each letter class.

Symbols may also be painted on the extinguisher. The symbols indicate what kind of fires the extinguisher may be used on. Examples of these symbols are shown below.

The symbol with the shaded background and the slash indicates when the extinguisher must not be used. The Certificate of Fitness holder must understand these symbols. All fire extinguishers should be kept in good working order at all times.

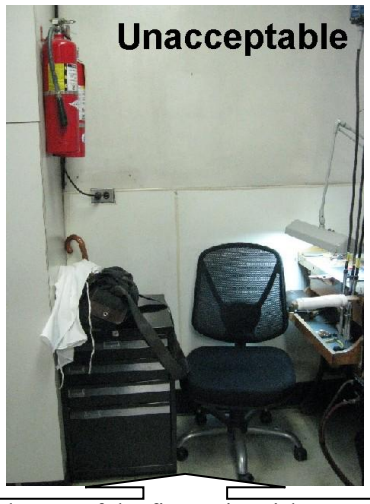
CLASSES OF FIRES	TYPES OF FIRES	PICTURE SYMBOL
A	Wood, paper, cloth, trash & other ordinary materials.	
B	Gasoline, oil, paint and other flammable liquids.	
C	May be used on fires involving live electrical equipment without danger to the operator.	
D	Combustible metals and combustible metal alloys.	D
K	Cooking media (Vegetable or Animal Oils and Fats)	



Fire Extinguisher Identification Symbols

3.6.4 Extinguisher installation

Portable fire extinguishers having a gross weight not exceeding 40 pounds shall be installed so that the top of the extinguisher is not more than 5 feet above the floor. The clearance between the floor and the bottom of installed hand-held portable fire extinguishers shall not be less than 4 inches. In other words, **no fire extinguisher is allowed to be on the floor.**



(1) The top of the fire extinguishers must not be more than 5 ft above the floor.
(2) The fire extinguishers must be accessible and unobstructed.

The bottom of the extinguisher must be at least 4 in above the floor.

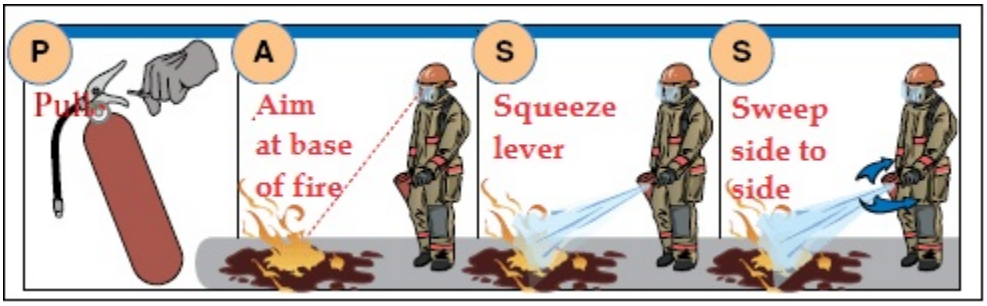
3.6.5 Use of fire extinguisher

In case of any fire, 911 must be called. In the event of a fire extinguisher has been discharged, a fully charged replacement is required before work can resume.

Portable fire extinguishers are important in preventing a small fire from growing into a catastrophic fire, however, they are not intended to fight large or spreading fires. Fire extinguishers may be appropriate to extinguish fires only **when fires are limited in size and spread.** By the time the fire has spread, fire extinguishers, even if used properly, will not be adequate to extinguish the fire. Such fires should be extinguished by the building fire extinguishing systems or trained firefighters only.

Fire is limited in size and spread	The fire has spread
	
Fire exinguisher is appropriate	Fire exinguisher is NOT appropriate.

Fire extinguishers must be used in accordance with the instructions painted on the side of the extinguisher. They clearly describe how to use the extinguisher in case of an emergency. When it comes to using a fire-extinguisher just remember the acronym P.A.S.S. to help make sure you use it properly. P.A.S.S. stands for Pull, Aim, Squeeze, Sweep.



3.6.6 Fire extinguisher maintenance

PORTABLE FIRE EXTINGUISHER INSPECTIONS

MONTHLY

The portable fire extinguishers are required to be checked monthly. The owner of the business is responsible to select a person to do a monthly inspection. This monthly inspection is called a "quick check".

The QUICK CHECK should check if:
(1) the fire extinguisher is fully charged;
(2) it is in its designated place;
(3) it has not been actuated or tampered with;
(4) there is no obvious or physical damage or condition to prevent its operation.

The information of the monthly inspection record must include the date of the inspection, the name/initials of the person who did the inspection.

ANNUALLY

At least annually all Portable Fire Extinguishers must be checked by a W-96 Certificate of Fitness holder from FDNY approved company. After each annual inspection W-96 COF holder will replace the PFE tag. The information of the annual inspection record must be indicated on the new PFE tag.

The list of FDNY certified company could be found in the following website, the list is updated on a monthly basis.

http://www1.nyc.gov/assets/fdny/downloads/pdf/business/approved-companies-full-service-portable-fire-extinguisher.pdf

3.6.7 Recordkeeping

Monthly inspection record

The person conducting such inspections shall keep records of all portable fire extinguishers inspected, including the date the inspection was performed, the person performing the inspection, and those portable fire extinguishers found to require corrective action. Such recordkeeping shall be either kept on a tag or label securely attached to the portable fire extinguisher, on an inspection checklist maintained on file or by an approved electronic method that provides a permanent record.

Annual servicing record

Recordkeeping for the annual servicing and recharging of portable fire extinguishers be maintained on a tag or label attached to the extinguisher. The required tag or label for servicing shall also include the following information:

1. The name and certificate of fitness number of the person who serviced the portable fire extinguisher.
2. The month and year the portable fire extinguisher was serviced.
3. The name, street address and telephone number of the portable fire extinguisher servicing company, if any, servicing the portable fire extinguisher.

3.6.8 Portable Fire Extinguisher Tags

Installed portable fire extinguishers must have an FDNY standard PFE tag affixed. This tag will have important information about the extinguisher. By November 15, 2019, all portable fire extinguishers must have the new PFE tags. The FDNY will only recognize new PFE tags and will be issuing violations to business that have PFE installed without a proper tag.

The color of the fire extinguishers may be changed by the FDNY every few years. The FDNY recommends two ways to verify the tag's legitimacy:

1. Hologram:

A real hologram strip shown on the tag is 3 inches long by ¼ inch wide. Counterfeit tags will NOT have a high quality silver hologram. The hologram on a counterfeit tag will NOT change color as it is moved against the light.

2. QR code

IF you scan the QR code, it should direct you to the updated FDNY approved fire extinguisher company list. You can use the company list to verify if the company printed on the list is currently approved by the FDNY.

If your PFE tags cannot be verified via these two methods, contact your supervisor. If you suspect your PFE is a counterfeit, contact FDNY immediately by e-mail: Tags.Decal@fdny.nyc.gov

PFE tag (This tag is released for 2021-2023)

3.7 Certificate of Fitness, FDNY Permit, Company Certification and Certificate of Qualification Requirements

3.7.1 Certificate of Fitness (C of F)

A Certificate of Fitness (C of F) is a certification issued by the New York City Fire Department. These certificates are legally required for individuals conducting certain activities. The goal of the C of F program is to be sure that workers responsible for certain operations or activities are qualified in the performance of their duties. The C of F program is instrumental in preventing fires by helping to ensure that workers understand the safety hazards associated with the duties they perform.

Most certificates are valid for 3 years. Renewals can be completed online, by mail or in person. The majority of renewals cost $15. Depending on the type of certificate, an exam may be required as a condition of the renewal. Lost certificates cost $5 to replace. If you need to change any information on the certificate,, including mailing address, name (legal papers needed) or work location (you will need a letter from your employer and may need to take a new exam) the fee is $5..

3.7.2 Certificate of Fitness (C of F) exam information

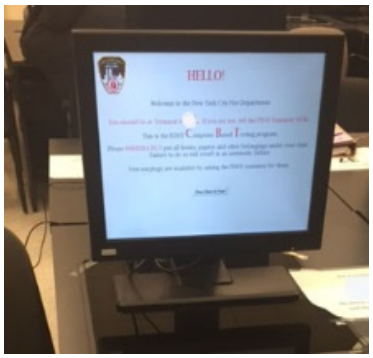
Study materials

The FDNY provides examination study material free of charge to help applicants prepare for most exams. Exam questions are taken directly from the study material. Study material is available online at http://on.nyc.gov/191M68H. You can also pick up exam study materials at FDNY Headquarters or by calling 718-999-1988.

The FDNY does not offer classes or training to prepare candidates for the Certificate of Fitness/Certificate of Qualification exams. There are a few exams (fire safety director for example) where applicants are required to attend an FDNY approved training school. Most exams do not require this. Check the notice of examination for each certificate for detailed information of any required training or experience for the certificate.

Exam

- **What is the exam like?**
  Exams are administered on a "touch screen" computer-based and are of the multiple choice type. Exams are administered in English. Applicants are permitted to bring a dictionary (paper copy only) to assist them in the exam. **No other outside papers, books, or electronic devices may be used during the test.**



- **How many questions are on the exam?**
  The number of questions per exam varies depending on the type of certificate. You should refer to the FDNY Study Guide for the exam for information on the number of questions on the exam.
- **How much does an exam cost?**
  Most exams cost $25, but you should check the Study Guide for actual cost.
- **Where are exams given?**
  Exams are administered at FDNY Headquarters, 9 Metrotech Center Brooklyn, NY 11201. The public entrance to the building is located on Flatbush Avenue between Myrtle Avenue and Tech Place.

- **What do I need to enter the testing location?**
  Government issued photo ID is required to enter the building (examples: non-driver's license, driver's license, passport, or an IDNYC Municipal ID Card.

- **When can I take a test? Should I schedule an exam?**
  Walk-in exams are given Monday thru Friday 8 a.m. – 2:30 p.m. No tests will begin after 2:30 P.M. unless an appointment is scheduled. Certain tests require an appointment. Please visit: http://on.nyc.gov/19zErjh for more information on scheduling. You can also call **718-999-1993** to schedule an appointment.

- **What do I need to take an exam?**
  In general, to take most tests you will require the following:
  1. A letter of recommendation (a referral which must be **dated and signed**) from your employer (in order to receive a COF card, without a letter, you will receive a FDNY temporary letter with a picture so you can look for a job)
  2. Completed Certificate of Fitness (COF) application (A-20 form)
  3. $25: Cash, credit card (2.49% convenience fee will be added), debit, check, or money order (made payable to the New York City Fire Department).

  Review the exams study guide for more information.

- **What happens when I arrive at the testing location?**
  Upon entering FDNY Headquarters, all visitors and their belongings are screened. Weapons, tools and metal utensils are **not allowed** in the FDNY Headquarters:

- **How long will I be there?**
  It depends on the exam and how many exams you are taking that day (max of 2 allowed). You should plan on at least 2 hours.

- **When will I get my results?**
  You will obtain your results immediately upon completion of the exam. If you pass the exam, the certificate or letter of having passed the exam will be issued to you before you leave.

- **What if I fail?**

You will be given a failure report and a receipt before you leave.

- **Can I retake the test? If so, when?**
  Yes. Generally, you can retake an exam the next business day.
- **Is there a fee to retake an exam?**
  Yes. You will be required to pay the original application fee of $25 to retake an exam.

3.7.3 Fire Code requirements for specific materials, operations and facilities

Certain materials, operations and facilities are require a company certificate to conduct, an FDNY operating permit and/or are required to be under the supervision of a certificate of fitness holder or certificate of qualification holder.

Permits

2022 FC105.6 lists all permits required for materials, operations and facilities regulated by the Fire Code. The following permits are commonly issued to building owners:

- Commercial cooking systems
- Compressed gases
- Flammable and combustible liquids
- Hot work operations
- Liquefied petroleum gases (LPG)
- Fuel oil storage
- Open flames (Places of assembly)
- Places of assembly
- Refrigerating systems

The following table outlines the certificate of fitness, certificate of qualification, FDNY permit and Company Certification requirements for specific regulated materials, operations and facilities:

Topics	Required C of F or C of Q	Required Company Certification	FDNY Permit Required
Module 1: Primary Fire Protection Systems			
Sprinkler system	S-12	No	No
Standpipe system	S-13/S-14	No	No
Fire Alarm system	S-95/FSD: Visual inspection	No	No
	S-78/F-78: inspection & cleaning of smoke detectors	Smoke detector company	
	S-97/S-98: install, repair, servicing fire alarm system	Smoke detector company or Central station company	
Fire guard for out-of-service fire protection system	F-01	No	No
Module 2: Other Fire Safety-Related Building Systems			
Refrigerating system	Q-01	No	Yes
Emergency power system	Q-01or FSD or other licensed professionals (See Section 2.2 of the course material)	No	Yes*
Battery system	B-29	No	No
Elevators-in-readiness	No	No	No
Non-water fire extinguishing systems	No	No	No
Means of egress	No	No	No
Commercial cooking system	P-64/F-64/W-64	Commercial Cooking Exhaust System	Yes
Module 3: Other Fire Safety Operational and Maintenance Requirements			
Hot work operations	G-60: Torch operation F-60: Fire guard for torch operation	No	Yes
Fumigation and insecticidal fogging operation	W-97	Fumigation and Thermal Insecticidal Fogging Operation	No
Storage, use & display of decorations	No	No	No
Emergency planning & preparedness	FSD (F-25/F-58) EAP (F-59)	No	No
Portable fire extinguishers	W-96	Portable Fire Extinguisher Servicing	No

*emergency power system operating on fuel oil requires a FDNY permit for oil storage.

3.7.4 Fraudulently activity regarding certificates

All Certificates of Fitness and Certificates of Qualification are issued by the Fire Department. It is a credit-card size card that includes a photo ID. Certificates of Fitness and Certificates of Qualification are only issued by the Certificate of Fitness Unit of Fire Department at 9 Metrotech Center, Brooklyn. It is illegal for anyone to offer you a certificate without you having to go to the Fire Department to take a test. Both the person accepting the certificate and the person offering the certificate are breaking the law. It is also illegal to allow another person to take the examination for you. If you suspect a fraudulent certificate or other fraudulent activity regarding Fire Department certificates, you should contact the Bureau of Fire Prevention Certificate of Fitness Unit by telephoning (718) 999-1988.

Module 3 summary

Preparation and monitoring of hot work operations, fumigation and insecticidal fogging operation, safe storage, use and display of decorations, natural trees and natural decorative greens, emergency planning and preparedness, and maintaining portable fire extinguishers in good working order are essential to protect life and property. To ensure that these are being done, the Fire Code and Rules provide minimum requirements for the preparation and monitoring of hot work operations, storage, use and display of decorations, natural trees and natural decorative greens, emergency planning and preparedness, and the periodic inspection, testing and maintenance of portable fire extinguishers and for the supervision of those individuals responsible for those requirements.

Portable fire extinguishers must be maintained in accordance with NFPA Standard 10. This standard should be reviewed in its entirety to fully understand the requirements. Whenever there are differences or inconsistencies between the provisions of the Fire Code and this referenced standard, the more restrictive provision shall govern.

Appendix A: Applicable Fire Code and Rule Sections and Referenced Standards

Sprinkler system maintenance

- Chapter 9 of the Fire Code.
- Chapter 9 of the Rules, including:
  - R901-02 Maintenance of Sprinkler System Pressure Tanks
  - R903-01 Flow Testing of Residential Sprinkler Systems
  - R912-01 Periodic Testing of Standpipe System and Sprinkler Systems with Fire Department Connections
- NFPA Standard 25 (Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems): The Fire Code requires that sprinkler systems be maintained in accordance with the requirements of NFPA Standard 25.

Standpipe system maintenance

- Chapter 9 of the Fire Code
- Chapter 9 of the Rules, including:
  - R905-01 Standpipe System Pressure Reducing Devices
  - R912-01 Periodic Testing of Standpipe System and Sprinkler Systems with Fire Department Connections
- NFPA Standard 25 (Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems)

Fire alarm system maintenance

- Chapter 9 of the Fire Code
- Chapter 9 of the Rules, including:
  - R901-01 Central Station Monitoring of Fire Alarm Systems
  - R907-01 Fire Alarm Recordkeeping, Smoke Detector Maintenance, Testing and Recordkeeping, and the Prevention of Unnecessary and Unwarranted Fire Alarms
- NFPA Standard 72, *National Fire Alarm Code*

Out-of-service systems

- Section 901.7 of the Fire Code

Refrigerating systems

- Section 606 of the Fire Code
- Chapter 11 of the Mechanical Code
- ASHRAE 15, Safety Standard for Refrigeration Systems

Emergency power systems

- Fire Code Section 604

- Fire Code Appendix B
- NFPA Standard 110, Standard for Emergency and Standby Power Systems
- NFPA Standard 111, Standard on Stored Electrical Energy Emergency and Standby Power Systems

Battery system

- Chapter 6 of the Fire Code

Smoke control systems

- Section 909 of the Fire Code

Elevator in readiness

- Section 506 and 607 of the Fire Code
- Building Code Section 3003

Non-water fire extinguishing systems

- Chapter 9 of the Fire Code (Fire Protection Systems)
- NFPA Standard 11 and NFPA 25 (Low-, Medium- and High-Expansion Foam)
- NFPA Standard 12 (Carbon Dioxide Extinguishing Systems)
- NFPA Standard 12A (Halon 1301 Fire Extinguishing Systems)
- NFPA Standard 16 and NFPA 25 (Installation of Foam-Water Sprinkler and Foam-Water Spray Systems)
- NFPA Standard 17 (Dry Chemical Extinguishing Systems)
- NFPA Standard 17A (Wet Chemical Extinguishing Systems)
- NFPA Standard 750 (Water Mist Fire Protection Systems)
- NFPA Standard 2001 (Clean Agent Fire Extinguishing Systems)
- NFPA Standard 2010 (Aerosol Fire Extinguishing Systems)

Means of egress

- Section 1027 of the Fire Code
- Section 1026 of Building Code

Commercial cooking systems

- Section 609.5 and 904.11 of the Fire Code

Hot work operation

- Chapter 26 of the Fire Code
- Chapter 26 of the Rules, including:

- R2604-01 Hot Work in Repair Garages
- R2605-01 Use of Oxygen and a Flammable Gas in Citywide Hot Work Operations
- R2609-01 Piped Natural Gas and Oxygen Consuming Devices and Installation

- **Flame-resistant decorations**
  - Chapter 8 of the Fire Code and the Rules

- **Fumigation and insecticidal fogging operations**
  - Chapter 17 of the Fire Code

- **Emergency planning and preparedness**
  - Section 404 of the 2008 Fire Code
  - Chapter 4 of the Rules, including:
    - R404-01 Fire Safety and Evacuation Plans
    - R404-02 Office Building Emergency Action Plans
    - R408-02 Residential Fire Safety Guides and Notices

- **Portable fire extinguishers**
  - Chapter 9 of the Fire Code

- **Permit and Certificate of Fitness/Qualification, and Company Certification**
  - Section 105 of the Fire Code
  - Chapter 1 of the Rules, including:
    - R113-01 Certificates of Fitness and Certificates of Qualification
    - R115-01 Company Certificates

Appendix B: Sprinkler System Inspection, Testing, and Maintenance

Summary of Sprinkler System Inspection, Testing, and Maintenance

(Note: FDNY C of F unit is currently revising this S-12 summary table to update the changes in 2014 Fire Code. Please always check for the latest revised booklet at FDNY website)

C of F	**Certificate of Fitness for (S-12) City Wide Sprinkler System.**
Engineer	**Refrigeration Operating Engineer (Q-01 or Q-99), NYC High Pressure Operating Engineer, NYS High Pressure Operating Engineer with S-12 C of F *(For employees of a single or multiple properties under common Ownership employed by the same building owner/management company)**
MFSPC	**Master Fire Suppression Piping Contractor License (A or B) with S-12 C of F.**
MP	**Master Plumber License (MP) with S-12 C of F.**
[1] Limited to residential occupancies 30 sprinkler heads or less without booster pump. **[2] S-95 Supervision for Fire alarm Systems & other related systems.** **[3] Follow testing requirement.** **[4] Record must be maintained to be checked annually.** **[5] Must be performed once annually by licensed contractor.**	

Components			May be performed by			
			C of F	Engineer	MFSPC	MP
I. INSPECTION						
A. Sprinkler Systems		**Frequency**				
WEEKLY (52)						
Gauge (dry, pre-action, deluge sys) Non supervised			Yes	Yes	Yes	Yes
MONTHLY (12)						
Gauge (dry, preaction, deluge sys) supervised			Yes	Yes	Yes	Yes
Gauge – Wet pipe system			Yes	Yes	Yes	Yes
QUARTERLY (4)						
Alarm devices			Yes	Yes	Yes	Yes
Hydraulic name plate			Yes	Yes	Yes	Yes
ANNUALLY (1)						
Buildings – (prior to freezing weather) exterior of building should be examined to prevent freeze-ups fire suppression piping.			Yes	Yes	Yes	Yes
Hanger/seismic bracing			Yes	Yes	Yes	Yes
Pipe and fittings			Yes	Yes	Yes	Yes
Spare sprinkler heads/wrenches			Yes	Yes	Yes	Yes
Sprinkler heads			Yes	Yes	Yes	Yes
B. Fire, Booster and Special Service Pumps						
WEEKLY (52)						
Pump, house, heating ventilating louvers			Yes	Yes	Yes	Yes
Fire pump system			Yes	Yes	Yes	Yes
Diesel Engine System	Fuel	Tank level	Yes	Yes	Yes	Yes
		Tank float switch				
		Solenoids valve operation				
		Water in the fuel sys				
		Flexible hoses and connectors				
		Piping				
		Tank vents & overflow piping unobstructed				
	Lubrication	Oil level				

Components			May be performed by			
			C of F	Engineer	MFSPC	MP
I. INSPECTION						
	system	Lube oil heater				
		Crankcase breather				
	Cooling system	Level				
		Adequate cooling water to heat exchanger				
		Water pumps				
		Cond. Of flexible hoses & connection				
		Jacket water heater				
	Exhaust system	Leakage				
		Drain condensate trap				
		Hangers & supports				
		Flexible exhaust section				
	Battery system	Electrolyte level				
		Terminals clean and tight				
		Equalize charge				
	Electrical system	General inspection				
		Operation of safeties & alarms				
		Circuit breakers or fuses				
MONTHLY (12)						
Diesel Engine System		Circuit breakers or fuses	**Yes**	**Yes**	**Yes**	**Yes**
		Charger & charge rate	**Yes**	**Yes**	**Yes**	**Yes**
QUARTERLY (4)						
Diesel Engine System	Exhaust system	Insulation & fire hazards	**Yes**	**Yes**	**Yes**	**Yes**
	Electrical system	Wire chafing where subject to movement				
SEMIANNUALLY (2)						
Diesel Engine System	Electrical system	Operation of safeties and alarms	**Yes**	**Yes**	**Yes**	**Yes**
ANNUALLY (1)						
Fire pump system	Check accuracy of pressure gauges and sensors		**Yes**	**Yes**	**Yes**	**Yes**
	Check pump shaft endplay, coupling alignment					
	Wet pit suction screens					
Diesel Engine System	Cooling sys	Inspect duct work, clean louvers (combustion air)	**Yes**	**Yes**	**Yes**	**Yes**
Electrical system[2]	Inspect emergency manual starting means (without power)		**Yes**	**Yes**	**Yes**	**Yes**
	Tighten electrical connections as necessary					
	Lubricate mechanical moving parts (excluding starters & relays					
	Calibrate pressure switch settings					
C. Water Storage Tank						
DAILY (365)						
Water temperature – without low temperature alarms (cold weather)			**Yes**	**Yes**	**Yes**	**Yes**
Heating System – without low temperature alarms (cold weather)			**Yes**	**Yes**	**Yes**	**Yes**
WEEKLY (52)						
Water temperature - with low temperature alarms (cold weather)			**Yes**	**Yes**	**Yes**	**Yes**
Heating system – with low temperature alarms (cold weather)			**Yes**	**Yes**	**Yes**	**Yes**
MONTHLY (12)						

Components	May be performed by			
	C of F	Engineer	MFSPC	MP
I. INSPECTION				
Condition of water in tank – without water level alarms (cold weather)	Yes	Yes	Yes	Yes
Water - level (without water level alarms)	Yes	Yes	Yes	Yes
Air pressure - (without supervised air pressure source)	Yes	Yes	Yes	Yes
QUARTERLY (4)				
Condition of water in tank - with water level temperature alarms (cold weather below 40ºF)	Yes	Yes	Yes	Yes
Water – level (with water level alarms)	Yes	Yes	Yes	Yes
Air pressure – (with supervised air pressure source)	Yes	Yes	Yes	Yes
Tank – exterior	Yes	Yes	Yes	Yes
Support structure	Yes	Yes	Yes	Yes
Catwalks and ladders	Yes	Yes	Yes	Yes
Surrounding area	Yes	Yes	Yes	Yes
ANNUALLY (1)				
Embankment-supported coated fabric (ESCF) suction tanks	Yes	Yes	Yes	Yes
Hoops and grillage of wooden tanks (AKA Dunnage)	Yes	Yes	Yes	Yes
Expansion Joints	Yes	Yes	Yes	Yes
3 YEARS				
Interior – (steel tanks without corrosion protection)	Yes	Yes	Yes	Yes
5 YEARS				
Interior - all other types of tanks	Yes	Yes	Yes	Yes
D. Valve and Valve component				
DAILY (365)				
Preaction valve and deluge valves - valve enclosure (during cold weather)	Yes	Yes	Yes	Yes
Dry pipe valves and quick opening devices – valve enclosure (during cold weather)	Yes	Yes	Yes	Yes
WEEKLY (52)				
Control Valves – Sealed	Yes	Yes	Yes	Yes
Preaction valve and deluge valves - valve enclosure equipped with low temperature alarms (during cold weather)	Yes	Yes	Yes	Yes
Dry pipe valves and quick opening devices – valve enclosure equipped with low temperature alarms (during cold weather)	Yes	Yes	Yes	Yes
Pressure reducing & Relief valves – Fire Pumps – Casing relief valves; Pressure relief valves	Yes	Yes	Yes	Yes
Backflow Prevention assemblies – reduced pressure; reduced pressure detectors	Yes	Yes	Yes	Yes
MONTHLY (12)				
Control Valves – Locked; Tamper switches	Yes	Yes	Yes	Yes
Alarm valves – Exterior	Yes	Yes	Yes	Yes
Preaction and deluge valves – **Exterior**	Yes	Yes	Yes	Yes
Dry pipe valves and quick opening devices - **Exterior**	Yes	Yes	Yes	Yes
Pressure reducing & Relief valves – Fire Pumps – Casing relief valves; Pressure relief valves	Yes	Yes	Yes	Yes
Backflow Prevention assemblies (secured with locks or electrically supervised) – reduced pressure; reduced pressure detectors	Yes	Yes	Yes	Yes
QUARTERLY (4)				

Components		May be performed by			
		C of F	Engineer	MFSPC	MP
I. INSPECTION					
Pressure reducing & Relief valves	Sprinkler systems Hose connections Hose racks	Yes	Yes	Yes	Yes
Fire department connections		Yes	Yes	Yes	Yes
ANNUALLY (1)					
Preaction and deluge valves – interior (when trip test is conducted)		No[3]	Yes	Yes	Yes
Dry pipe valves and quick opening devices - interior (when trip test is conducted)		No[3]	Yes	Yes	Yes
Check valves(Preaction/deluge valves, dry pipe valves/quick-opening devices)		No[3]	Yes	Yes	Yes
5 YEARS					
Alarm valves	Interior Strainers, filters, orifices	No[3]	No[3]	Yes Yes	Yes Yes
Check Valves - Interior		No[3]	No[3]	Yes	Yes
Preaction and deluge valves	Strainers, filters, orifices	No[3]	No[3]	Yes	Yes
Dry pipe valves and quick opening devices	Strainers, filters, orifices	No[3]	No[3]	Yes	Yes

C of F	**Certificate of Fitness for (S-12) City Wide Sprinkler System.**
Engineer	**Refrigeration Operating Engineer (Q-01 or Q-99), NYC High Pressure Operating Engineer, NYS High Pressure Operating Engineer with S-12 C of F *(For employees of a single or multiple properties under common Ownership employed by the same building owner/management company)**
MFSPC	**Master Fire Suppression Piping Contractor License (A or B) with S-12 C of F.**
MP	**Master Plumber License (MP) with S-12 C of F.**

[1] Limited to residential occupancies 30 sprinkler heads or less without booster pump.
[2] S-95 Supervision for Fire alarm Systems & other related systems.
[3] Follow testing requirement.
[4] Record must be maintained to be checked annually.
[5] Must be performed once annually by licensed contractor.

Components		May be performed by			
		C of F	Engineer	MFSPC	MP[1]
II. TEST					
A. Sprinkler Systems					
QUARTERLY (4)					
Alarm Devices	water motor gong	Yes	Yes	Yes	Yes[1]
	pressure switch type	Yes	Yes	Yes	Yes[1]
SEMIANNUALLY (2)					
Alarm Devices (Vane type water flow devices)		Yes	Yes	Yes	Yes[1]
ANNUALLY (1)					
Antifreeze solution		No	No	Yes	Yes[1]
5 YEARS					
Gauges - Remove & send for calibration test or replace as required		No	Yes[4]	Yes	Yes[1]
Sprinklers - Remove send for extra high temperature test and replace as required		No	No	Yes	Yes[1]
10 years & every 10 yrs thereafter					
Sprinklers - Dry type		No	No	Yes	Yes[1]
20 years & every 10 yrs thereafter					

Components			May be performed by			
			C of F	Engineer	MFSPC	MP[1]
II. TEST						
Sprinklers – fast response and residential			**No**	**No**	**Yes**	**Yes[1]**
50 years & every 10 years after						
Sprinklers (Standard Response)			**No**	**No**	**Yes**	**Yes[1]**
B. Fire, Booster and Special Service Pumps						
WEEKLY (52)						
Pump operation - No-flow condition			**No**	**Yes**	**Yes**	**Yes[1]**
Fire pump – Electric pump (minimum of 10 minutes)			**No**	**Yes**	**Yes**	**Yes[1]**
Diesel Engine system	tank float switch		**No**	**Yes**	**Yes**	**Yes[1]**
	Solenoids valve operation					
MONTHLY (1)						
Electrical system[2]	Isolating switch & circuit breaker		**No**	**Yes[4]**	**Yes**	**Yes[1]**
Battery system	Specific gravity or state of charge					
SEMIANNUALLY (2)						
Electrical system[2]	Operating manual starting means (electrical)		**No**	**Yes[4]**	**Yes**	**Yes[1]**
Diesel Engine System	Cooling system	Antifreeze protection level	**No**	**Yes[4]**	**Yes**	**Yes[1]**
	fuel	Tank float switch				
		Solenoids valve operation				
	Electrical system	Operation of safeties and alarms				
ANNUALLY (1)						
Pump operation - Flow condition			**No**	**No**	**Yes**	**No**
Electrical system[2]	Trip circuit breaker(if mechanism provided)		**No**	**No**	**Yes**	**No**
	Operate emergency manual starting means(without power)					
Exhaust system	Excessive back pressure		**No**	**No**	**Yes**	**No**
Diesel Engine System	Tank vents and overflow piping unobstructed		**No**	**No**	**Yes**	**No**
C. Water Storage Tank						
MONTHLY (12)						
Temperature alarms (cold weather)			**No**	**Yes[5]**	**Yes**	**Yes[1]**
High temperature limit switches (cold weather)			**No**	**Yes[5]**	**Yes**	**Yes[1]**
SEMIANNUALLY (2)						
Water level alarms			**No**	**Yes[5]**	**Yes**	**Yes[1]**
5 YEARS						
Level indicators			**No**	**Yes[5]**	**Yes**	**Yes[1]**
Pressure gauges			**No**	**Yes[5]**	**Yes**	**Yes[1]**
D. Valve and Valve Component						
QUARTERLY (4)						
Main drain (sole water supply is through a backflow preventer and/or pressure reducing valves)			**No**	**Yes[5]**	**Yes**	**Yes[1]**
Water-Flow Alarms			**No**	**Yes[5]**	**Yes**	**Yes[1]**
Preaction and deluge valves	Priming water		**No**	**Yes[5]**	**Yes**	**Yes[1]**
	Low air pressure alarm					
Dry pipe valves and Quick Opening devices	Priming water		**No**	**Yes[5]**	**Yes**	**Yes[1]**
	Low air pressure alarm					
	Quick-opening devices					

Components			May be performed by			
			C of F	Engineer	MFSPC	MP[1]
II. TEST						
SEMIANNUALLY (2)						
Control Valves	Supervisory		**No**	**Yes[5]**	**Yes**	**Yes[1]**
ANNUALLY (1)						
Main drain			**No**	**No**	**Yes**	**Yes[1]**
Preaction and deluge valves		Full flow	**No**	**No**	**Yes**	**Yes[1]**
Dry pipe valves and Quick Opening devices		Trip test	**No**	**No**	**Yes**	**Yes[1]**
Control Valves		Position	**No**	**No**	**Yes**	**Yes[1]**
		Operation				
Pressure reducing and Relief valves		Circulation relief	**No**	**No**	**Yes**	**Yes[1]**
		Pressure relief valves				
Backflow prevention Assemblies			**No**	**No**	**Yes**	**Yes[1]**
3 YEARS						
Dry pipe valves and Quick Opening devices	Full flow trip test		**No**	**No**	**Yes**	**Yes[1]**
5 YEARS						
Pressure reducing & Relief valves	Sprinkler systems		**No**	**No**	**Yes**	**Yes[1]**
	Hose connections					
	Hose racks					

C of F	**Certificate of Fitness for (S-12) City wide Sprinkler System.**
Engineer	**Refrigeration Operating Engineer (Q-01 or Q-99), NYC High Pressure Operating Engineer, NYS High Pressure Operating Engineer with S-12 C of F** ***(For employees of a single or multiple properties under common Ownership employed by the same building owner/management company)**
MFSPC	**Master Fire Suppression Piping Contractor License with S-12 C of F.**
MP	**Master Plumber License (MP) with S-12 C of F.**

[1] Limited to residential occupancies 30 sprinkler heads or less with out booster pump.
[2] S-95 Supervision for Fire alarm Systems & other related systems.
[3] Follow testing requirement.
[4] Record must be maintained to be checked annually.
[5] Must be performed once annually by licensed contractor.

Components			May be performed by			
			C of F	Engineer	MFSPC	MP[1]
III. MAINTENANCE						
A. Sprinkler Systems						
ANNUALLY (1)						
Valves (all types)	Control valves		**No**	**No**	**Yes**	**Yes[1]**
	Preaction/deluge		**No**	**No**	**Yes**	**Yes[1]**
	Dry pipe valves /quick opening devices				**Yes**	**Yes[1]**
Low point drains - (Dry pipe systems)			**No**	**No**	**Yes**	**Yes[1]**
5 YEARS						
Obstruction Investigation			**No**	**No**	**Yes**	**Yes[1]**
B. Fire, Booster and Special Service Pumps						

Components			May be performed by			
			C of F	Engineer	MFSPC	MP[1]
III. MAINTENANCE						
WEEKLY (52)						
Diesel engine system	Fuel	Clean water in the system	**No**	**Yes[5]**	**Yes**	**Yes[1]**
MONTHLY (12)						
Diesel engine system	Battery sys	Remove corrosion, case exterior	**No**	**Yes[5]**	**Yes**	**Yes[1]**
QUARTERLY (4)						
Diesel engine system	Fuel	Clean Strainer, filter or dirt leg or combination	**No**	**Yes[5]**	**Yes**	**Yes[1]**
	Lubricating sys	Crankcase breather				
	Cooling sys	Water strainer				
	Battery sys	Remove corrosion, case exterior clean & dry				
SEMIANNUALLY (2)						
Diesel engine system	Electrical sys	Boxes, panels and cabinets	**No**	**Yes[5]**	**Yes**	**Yes[1]**
		Circuit breakers or fuses				
ANNUALLY (1)						
Hydraulic			**No**	**No**	**Yes**	**Yes[1]**
Pump system	Lubricate pump bearings		**No**	**No**	**Yes**	**Yes[1]**
	Check accuracy of pressure gauges & sensors					
	Wet pit suction screens (after each pump opera.)					
Mechanical transmission	Lubricate coupling		**No**	**No**	**Yes**	**Yes[1]**
	Lubricate right angle gear drive					
Electrical system	Grease motor bearings		**No**	**No**	**Yes**	**Yes[1]**
Controller, various components			**No**	**No**	**Yes**	**Yes[1]**
Motor			**No**	**No**	**Yes**	**Yes[1]**
Diesel engine system various components	Cooling sys	Inspect duct work clean louvers	**No**	**No**	**Yes**	**Yes[1]**
		Rod out heat exchanger				
		Antifreeze				
	Lubrication sys	Oil change				
		Oil filters				
	Exhaust sys	Excessive back pressure				
C. Water Storage Tank						
Water level as required			**Yes**	**Yes**	**Yes**	**Yes[1]**
SEMIANNUALLY (2)						
Drain silt			**No**	**Yes[5]**	**Yes**	**Yes[1]**
ANNUALLY (1)						
Embankment-supported coated fabric (ESCF) suction tanks			**No**	**No**	**Yes**	**Yes[1]**
D. Valve and Valve Component						
ANNUALLY (1)						
Control valves			**No**	**No**	**Yes**	**Yes[1]**
Preaction and Deluge Valves			**No**	**No**	**Yes**	**Yes[1]**
Dry Pipe Valves and Quick-Opening Devices			**No**	**No**	**Yes**	**Yes[1]**
Electrical release component for Preaction/deluge system (i.e. smoke detectors)[2]			**No**	**No**	**Yes**	**Yes[1]**

Appendix C: Standpipe System Inspection, Testing, and Maintenance

Summary of Standpipe and Hose System Inspection, Testing, and Maintenance

(Note: FDNY C of F unit is currently revising this S-13 summary table to update the changes in 2014 Fire Code. Please always check for the latest revised booklet at FDNY website)

C of F	**Certificate of Fitness S-13 City Wide Standpipe System**
Engineer	**Refrigeration Operating Engineer (Q-01 & Q-99), NYC High Pressure Operating Engineer, NYS High Pressure Operating Engineer with S-13 C of F *(For employees of a single or multiple properties under common Ownership employed by the same building owner/management company)**
MFSPC	**Master Fire Suppression Piping Contractor License (A or B) with S-13 C of F.**
MP	**Master Plumber License (MP) with S-13 C of F.**
[1] Must have an S-12 Certificate of Fitness for City Wide Sprinkler System. **[2] S-95 Supervision for Fire alarm Systems & other related systems.** **[3] Follow testing requirement.** **[4] Record must be maintained to be checked annually.** **[5] Must be performed once annually by licensed contractor.** **[6] Independent standpipe system.**	

Components			May be performed by			
			C of F	Engineer	MFSPC	MP
I. INSPECTION						
A. Standpipe Systems						
WEEKLY (52)						
Gauge (dry) Non supervised			Yes	Yes	Yes	Yes
MONTHLY (12)						
Gauge (dry) supervised			Yes	Yes	Yes	Yes
Gauge – Wet pipe system			Yes	Yes	Yes	Yes
QUARTERLY (4)						
Alarm devices 5.2.6			Yes	Yes	Yes	Yes
Pressure regulating device 12.1	Hose connections		Yes	Yes	Yes	Yes
	Hose racks					
Piping 6.2.1	Piping		Yes	Yes	Yes	Yes
	Hanger/seismic bracing (floor level)					
	Supervisory device					
ANNUALLY (1)						
Buildings – (prior to freezing weather) exterior of building should be examined to prevent freeze-ups fire suppression piping.			Yes	Yes	Yes	Yes
Cabinet			Yes	Yes	Yes	Yes
Hanger/seismic bracing (floor level)			Yes	Yes	Yes	Yes
Hose storage device (Hose racks)			Yes	Yes	Yes	Yes
Hose			Yes	Yes	Yes	Yes
B. Fire, Booster and Special Service Pumps						
WEEKLY (52)						
Pump, house, heating ventilating louvers			Yes	Yes	Yes	Yes
Fire pump system			Yes	Yes	Yes	Yes
	Fuel	Tank level	Yes	Yes	Yes	Yes
		Tank float switch				
		Solenoids valve operation				
		Water in the fuel sys				
		Flexible hoses and connectors				
		Piping				
		Tank vents & overflow piping				

Components			May be performed by			
			C of F	Engineer	MFSPC	MP
I. INSPECTION						
Diesel Engine System		unobstructed	Yes	Yes	Yes	
	Lubrication system	Oil level				
		Lube oil heater				
		Crankcase breather				
	Cooling system	Level				
		Adequate cooling water to heat exchanger				
		Water pumps				
		Cond. Of flexible hoses & connection				
		Jacket water heater				
	Exhaust system	Leakage				
		Drain condensate trap				
		Hangers & supports				
		Flexible exhaust section				
	Electrical system	General inspection				
		Operation of safeties & alarms				
		Circuit breakers or fuses				
MONTHLY (12)						
Diesel Engine System		Circuit breakers or fuses	Yes	Yes	Yes	Yes
		Charger & charge rate	Yes	Yes	Yes	Yes
QUARTERLY (4)						
Diesel Engine System	Exhaust system	Insulation & fire hazards	Yes	Yes	Yes	Yes
	Electrical system	Wire chafing where subject to movement				
SEMIANNUALLY (2)						
Diesel Engine System	Electrical system	Operation of safeties and alarms	Yes	Yes	Yes	Yes
ANNUALLY (1)						
Fire pump system	Check accuracy of pressure gauges and sensors		Yes	Yes	Yes	Yes
	Check pump shaft endplay, coupling alignment					
	Wet pit suction screens					
Diesel Engine System	Cooling sys	Inspect duct work, clean louvers (combustion air)	Yes	Yes	Yes	Yes
Electrical system[2]	Inspect emergency manual starting means (without power)		Yes	Yes	Yes	Yes
	Tighten electrical connections as necessary					
	Lubricate mechanical moving parts (excluding starters & relays					
	Calibrate pressure switch settings					
C. Water Storage Tank						
DAILY (365)						
Water temperature – without low temperature alarms (cold weather)			Yes	Yes	Yes	Yes
Heating System – without low temperature alarms (cold weather)			Yes	Yes	Yes	Yes
WEEKLY (52)						
Water temperature - with low temperature alarms (cold weather)			Yes	Yes	Yes	Yes
Heating system – with low temperature alarms (cold weather)			Yes	Yes	Yes	Yes
MONTHLY (12)						
Condition of water in tank – without water level alarms (cold weather)			Yes	Yes	Yes	Yes
Water tanks - level (without water level alarms)			Yes	Yes	Yes	Yes
Air pressure - (without supervised air pressure source)			Yes	Yes	Yes	Yes
QUARTERLY (4)						

Components			May be performed by			
			C of F	Engineer	MFSPC	MP
I. INSPECTION						
Condition of water in tank - with water level temperature alarms (cold weather below 40ºF)			Yes	Yes	Yes	Yes
Water – level (with water level alarms)			Yes	Yes	Yes	Yes
Air pressure – (with supervised air pressure source)			Yes	Yes	Yes	Yes
Tank – exterior	Support structure		Yes	Yes	Yes	Yes
	Catwalks and ladders					
	Surrounding area					
ANNUALLY (1)						
Embankment-supported coated fabric (ESCF) suction tanks			Yes	Yes	Yes	Yes
Hoops and grillage of wooden tanks (AKA Dunnage)			Yes	Yes	Yes	Yes
Expansion Joints			Yes	Yes	Yes	Yes
3 YEARS						
Interior – (steel tanks without corrosion protection)			Yes	Yes	Yes	Yes
5 YEARS						
Interior - all other types of tanks			Yes	Yes	Yes	Yes
D. Valve and Valve component						
DAILY (365)						
Dry valve - valve enclosure without temperature alarm(during cold weather)			Yes	Yes	Yes	Yes
Dry pipe valves and quick opening devices – valve enclosure without temperature alarm (during cold weather)			Yes	Yes	Yes	Yes
WEEKLY (52)						
Control Valves	Sealed		Yes	Yes	Yes	Yes
dry valves - valve enclosure equipped with low temperature alarms (during cold weather)			Yes	Yes	Yes	Yes
Dry pipe valves and quick opening devices – valve enclosure equipped with low temperature alarms (during cold weather) N20			Yes	Yes	Yes	Yes
Pressure reducing & Relief valves	Fire Pumps	Casing relief valves	Yes	Yes	Yes	Yes
		Pressure relief valves				
Backflow Prevention assemblies		reduced pressure	Yes	Yes	Yes	Yes
		reduced pressure detectors				
MONTHLY (12)						
Control Valves	Locked		Yes	Yes	Yes	Yes
	Tamper switches					
Alarm valves	Exterior		Yes	Yes	Yes	Yes
Deluge valves – Exterior			Yes	Yes	Yes	Yes
Dry pipe valves and quick opening devices - **Exterior**			Yes	Yes	Yes	Yes
Pressure regulating & Relief valves	Fire Pumps	Casing relief valves	Yes	Yes	Yes	Yes
		Pressure relief valves				
Backflow Prevention assemblies (secured with locks or electrically supervised)		reduced pressure	Yes	Yes	Yes	Yes
		reduced pressure detectors				
QUARTERLY (4)						
Pressure regulating & Relief valves	Hose connections		Yes	Yes	Yes	Yes
	Hose racks					
	Floor markings					
	calibration					
	Setting notches					
Fire department connections	Caps combination with standpipe/sprinkler (should be painted yellow		Yes	Yes	Yes	Yes
	Swivel turn freely					
	Ball drip					
	Signage					
Hose Valve			Yes	Yes	Yes	Yes
ANNUALLY (1)						

Components		May be performed by			
		C of F	Engineer	MFSPC	MP
I. INSPECTION					
Dry and deluge valves – interior (when trip test is conducted)		No	Yes	Yes	Yes
Dry pipe valves and quick opening devices - interior (when trip test is conducted)		No	Yes	Yes	Yes
Check valves (deluge valves, dry pipe valves/quick-opening devices) exterior		No	Yes	Yes	Yes
Standpipe system *		No	Yes	Yes	Yes
5 YEARS					
Alarm valves	Interior Strainers, filters, orifices	No	No	Yes	Yes
Check Valves - Interior		No	No	Yes	Yes
Deluge valves	Strainers, filters, orifices	No	No	Yes	Yes
Dry pipe valves and quick opening devices	Strainers, filters, orifices	No	No	Yes	Yes

C of F	**Certificate of Fitness S-13 City Wide Standpipe System**
Engineer	**Refrigeration Operating Engineer (Q-01 & Q-99), NYC High Pressure Operating Engineer, NYS High Pressure Operating Engineer with S-13 C of F (For employees of a single or multiple properties under common Ownership employed by the same building owner/management company)**
MFSPC	**Master Fire Suppression Piping Contractor License (A or B) with S-13 C of F.**
MP	**Master Plumber License (MP) with S-13 C of F.**

[1] Must have an S-12 Certificate of Fitness for City Wide Sprinkler System.
[2] S-95 Supervision for Fire alarm Systems & other related systems.
[3] Follow testing requirement.
[4] Record must be maintained to be checked annually.
[5] Must be performed once annually by licensed contractor.

Components		May be performed by			
		C of F	Engineer	MFSPC	MP
II. TEST					
A. Standpipe Systems					
QUARTERLY (4)					
Alarm Devices	water flow alarms	Yes	Yes	Yes	Yes
	Supervisory devices	Yes	Yes	Yes	Yes
SEMIANNUALLY (2)					
Alarm Devices (Vane type water flow devices)		Yes	Yes	Yes	Yes
5 YEARS					
Gauges - Remove & send for calibration test or replace as Required		No	Yes[4]	Yes	Yes
B. Fire, Booster and Special Service Pumps					
WEEKLY (52)					
Pump operation - No-flow condition		No	Yes	Yes	Yes
Fire pump – Electric pump (minimum of 10 minutes)		No	Yes	Yes	Yes
Diesel Engine system	Solenoids valve operation	No	Yes	Yes	Yes
MONTHLY (1)					
Electrical system[2]	Isolating switch & circuit breaker	No	Yes	Yes	Yes
Battery system	Specific gravity or state of charge				
SEMIANNUALLY (2)					
Electrical system[2]	Operating manual starting means	No	Yes[4]	Yes	Yes

Components			May be performed by			
			C of F	Engineer	MFSPC	MP
II. TEST						
	(electrical)					
Diesel Engine System	Cooling system	Antifreeze protection level	**No**	**Yes**	**Yes**	**Yes**
	fuel	Tank float switch				
		Solenoids valve operation				
	Electrical system	Operation of safeties and alarms				
ANNUALLY (1)						
Pump operation - Flow condition			**No**	**No**	**Yes**	**Yes**
Electrical system [2]	Trip circuit breaker(if mechanism provided)		**No**	**No**	**Yes**	**Yes**
	Operate emergency manual starting means(without power)					
Exhaust system	Excessive back pressure		**No**	**No**	**Yes**	**Yes**
Diesel Engine System	Tank vents and overflow piping unobstructed		**No**	**No**	**Yes**	**Yes**
C. Water Storage Tank						
MONTHLY (12)						
Temperature alarms (cold weather)			**No**	**Yes[5]**	**Yes**	**Yes**
High temperature limit switches (cold weather)			**No**	**Yes[5]**	**Yes**	**Yes**
SEMIANNUALLY (2)						
Water level alarms			**No**	**Yes[5]**	**Yes**	**Yes**
5 YEARS						
Level indicators			**No**	**Yes[5]**	**Yes**	**Yes**
Pressure gauges			**No**	**Yes[5]**	**Yes**	**Yes**
D. Valve and Valve Component						
QUARTERLY (4)						
Main drain (where the sole water supply is through a backflow preventer and/or pressure reducing valves)			**No**	**Yes**	**Yes**	**Yes[1]**
Dry pipe valves and Quick Opening devices	Priming water		**No**	**Yes[5]**	**Yes**	**Yes**
	Low air pressure alarm					
	Quick-opening devices					
SEMIANNUALLY (2)						
Control Valves	Supervisory		**No**	**Yes[5]**	**Yes**	**Yes**
ANNUALLY (1)						
Hose Nozzle 1962			**No**	**No**	**Yes**	**Yes**
Hose Storage device , racks 1962			**No**	**No**	**Yes**	**Yes**
Standpipe – hose valve			**No**	**Yes**	**Yes**	**Yes**
Main drain			**No**	**No**	**Yes**	**Yes[1]**
Dry pipe valves and Quick Opening devices	Trip test		**No**	**No**	**Yes**	**Yes**
Control Valves	Position		**No**	**No**	**Yes**	**Yes**
	Operation					
Pressure reducing and Relief valves	Circulation relief		**No**	**No**	**Yes**	**Yes**
	Pressure relief valves					
Backflow prevention Assemblies			**No**	**No**	**Yes**	**Yes**
3 YEARS						
Hose 1962			**No**	**Yes**	**Yes**	**Yes**
Combined Sprinkler/Standpipe- hose valve			**No**	**No**	**Yes**	**Yes**
Dry pipe valves and Quick Opening devices	Full flow trip test		**No**	**No**	**Yes**	**Yes**
5 YEARS						

Components		May be performed by			
		C of F	Engineer	MFSPC	MP
II. TEST					
Hose 1962		No	Yes	Yes	Yes
Hydrostatic Test 6.3.2		No	No	Yes	Yes
Flow test 6.3.1		No	No	Yes	Yes
Gauges - Remove & send for calibration test or replace as required		No	Yes[4]	Yes	Yes
Pressure reducing & Relief valves	Standpipe systems	No	No	Yes	Yes
	Hose connections				
	Hose Storage device, racks				

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Components			May be performed by			
			C of F	Engineer	MFSPC	MP
III. MAINTENANCE						
A. Standpipe Systems						
ANNUALLY (1)						
Valves (all types)	Control valves		No	No	Yes	Yes
	Dry pipe valves /quick opening devices		No	No	Yes	Yes
Low point drains - (Dry pipe systems)			No	No	Yes	Yes
Hose Connections 6.2.2	Lubricate		No	Yes	Yes	Yes
	Repair		No	Yes	Yes	Yes
	Replace		No	Yes	Yes	Yes
5 YEARS						
Obstruction Investigation			No	No	Yes	Yes
B. Fire, Booster and Special Service Pumps						
WEEKLY (52)						
Diesel engine system	Fuel	Clean water in the system	No	Yes[5]	Yes	Yes
MONTHLY (12)						
Diesel engine system	Battery sys	Remove corrosion, case exterior	No	Yes[5]	Yes	Yes
QUARTERLY (4)						
Diesel engine system	Fuel	Clean Strainer, filter or dirt leg or combination	No	Yes[5]	Yes	Yes
	Lubricating sys	Crankcase breather				
	Cooling sys	Water strainer				
	Battery sys	Remove corrosion, case exterior clean & dry				

Components			May be performed by			
			C of F	Engineer	MFSPC	MP
III. MAINTENANCE						
SEMI-ANNUALLY (2)						
Diesel engine system	Electrical sys	Boxes, panels and cabinets	No	Yes[5]	Yes	Yes
		Circuit breakers or fuses				
ANNUALLY (1)						
Hydraulic			No	No	Yes	Yes
Pump system	Lubricate pump bearings		No	No	Yes	Yes
	Check accuracy of pressure gauges & sensors					
	Wet pit suction screens (after each pump opera.)					
Mechanical transmission	Lubricate coupling		No	No	Yes	Yes
	Lubricate right angle gear drive					
Electrical system	Grease motor bearings		No	No	Yes	Yes
Controller, various components			No	No	Yes	Yes
Motor			No	No	Yes	Yes
Diesel engine system various components	Cooling sys	Inspect duct work clean louvers	No	No	Yes	Yes
		Rod out heat exchanger				
	Lubrication sys	Oil change				
		Oil filters				
	Exhaust sys	Excessive back pressure				
C. Water Storage Tank						
Water level as required			Yes	Yes	Yes	Yes
SEMIANNUALLY (2)						
Drain silt			No	Yes[5]	Yes	Yes
ANNUALLY (1)						
Embankment-supported coated fabric (ESCF) suction tanks			No	No	Yes	Yes
D. Valve and Valve Component						
ANNUALLY (1)						
Control valves			No	No	Yes	Yes
Dry Pipe Valves and Quick-Opening Devices			No	No	Yes	Yes