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**FIRE DEPARTMENT • CITY OF NEW YORK**



**STUDY MATERIAL FOR THE EXAMINATION FOR  
THE CERTIFICATE OF FITNESS FOR  
CONSTRUCTION SITE FIRE SAFETY MANAGER**

**S-56**

FDNY is posting this study material for public to use as "**a reference guide**". All applicants are required to attend the class and bring a certificate of completion from FDNY approved school to take FDNY S-56 certificate of Fitness written exam"

ALSO INCLUDED IN THIS BOOKLET YOU WILL FIND THE FOLLOWING:  
NOTICE OF EXAMINATION (NOE)

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## **NOTICE OF EXAMINATION**

**Title:** **Examination for Certificate of Fitness for Construction Site Fire Safety Manager (CSFSM) (S-56)**

**Date of Test:** Written tests for CSFSM are conducted by appointment only.

## **QUALIFICATION REQUIREMENTS**

1. Applicants must have a reasonable understanding of the English language
2. Applicant must provide two forms of government issued photo identification, such as a State-issued Driver's License or Non-Driver's License or a passport.
3. Applicants shall possess and demonstrate to the satisfaction of the Department the physical ability to perform the duties of the position.
4. **Training Course** - Applicants shall successfully complete a Construction Site Fire Safety Manager course at a school certified by the FDNY. A Graduation Certificate must be submitted to the FDNY.
  - a. Applicants will be given **two (2)** opportunities to take and pass the school graduation test on the basis of having successfully completed the CSFSM course. After the second failure, applicants must repeat the CSFSM course and must successfully pass the graduation test.
  - b. The Graduation Certificate is valid for one year. The FDNY C of F test must be taken within one year.**
5. Applicants will be given **two (2)** opportunities to take and pass the FDNY test. After the second failure, applicants must repeat the CSFSM course and begin as a new applicant.
6. In addition to Graduation Certificate, he/she must satisfy one of the experience requirements listed below (#7) with proof.
7. Applicants shall hold or possess the required certification or experience listed below and submit satisfactory documentation.
  - a. A Site Safety Manager or Site Safety Coordinator Certificate issued by the *Department of Buildings* pursuant to BC3310.5 and *Department of Buildings* rule 1 RCNY 104-08; or
  - b. At least three (3) years of full-time experience within the last six (6) years prior to the date of the application:
    - (1) working for a governmental agency or a construction, design or consulting firm;
    - (2) at *construction sites* upon which "major buildings" (as that term is defined in BC3310.2) are being constructed; and
    - (3) with responsibility for *construction site* safety and/or supervision of construction; or

- c. At least eight (8) years of full-time experience within the past 12 years prior to the date of the application working for a governmental agency with responsibility for conducting and/or supervising fire code or fire safety inspections or enforcement; or
    - d. At least ten (10) years of full-time experience within the past 15 years prior to the date of the *application* working as a firefighter or fire officer in a paid fire department.
- 8. Fire Department will accept applications with satisfactory proof of documentation for **pre-approval** before attending schools if he/she is not sure of their qualification. You may submit your application and the accompanying submissions by mail or in person to: New York City Fire Department, Attention: C of F Unit, Bureau of Fire Prevention, 9 Metro Tech Center 1<sup>st</sup> Floor, Brooklyn, New York, 11201-3857, Attn: Vernetta Shuler. If you have any questions, please contact (718) 999-2473 or 0648 or email [shulerv@fdny.nyc.gov](mailto:shulerv@fdny.nyc.gov). You may not take the examination until after the satisfactory review of your submissions. You will be notified by email whether you qualify or not. If you qualify to take the FDNY C of F test, you will receive an email notification pertaining to your test date and time appointment. **Lateness of 15 minutes or more will result in a forfeiture of your application fee, and require a rescheduling of the test.**

## **APPLICATION INFORMATION**

### **Application Fees**

\$25.00 for originals and \$15.00 for renewals. The fee may be paid by credit card (no debit), in cash, money order, or personal check payable to New York City Fire Department. The \$25.00 fee must be payable by all applicants prior to taking the Certificate of Fitness test. Application forms are available at the Public Certification Unit, 1<sup>st</sup> floor, 9 Metro Tech Center, Brooklyn, NY 11201.

### **Renewal Requirements**

1. Send the renewal coupon or a letter stating C of F number.
2. The fee \$15.00 money order or personal check, payable to the New York City Fire Department
3. To FDNY (cashier unit), 9 Metro Tech Center, Brooklyn, NY 11201

## **TEST INFORMATION**

**Test:** The test will consist of **60** multiple-choice questions, administered on a “touch screen” computer monitor. A passing score of at least 70% is required in order to secure a Certificate of Fitness for CSFSM.

**Website:** [WWW.NYC.GOV/FDNY](http://WWW.NYC.GOV/FDNY)

## **STUDY MATERIAL AND TEST DESCRIPTON**

These study materials will help you prepare for the written examination for the Certificate of Fitness (C of F) for Construction Site Fire Safety Manager (S-56). It is your responsibility to become familiar with all applicable laws, rules and regulations of the federal, state and city agencies having jurisdiction, even though such requirements are not included in this study material. You need to be familiar with New Fire Code Chapters 9, 26, 27, 30, 34, 35, 38, Local Standpipe Laws, Local Law 58, 59, 63, and 64 which regulate CSFSM in order to adequately prepare for the exam. ***It is critical that you read AND understand this booklet to help increase your chance of passing this exam.***

### **ABOUT THE TEST**

You must pass a multiple-choice test to qualify for the C of F. A score of 70% correct is required in order to pass the test. All questions have four answer options. Only one answer is correct for each question. If you do not answer a question, or if you mark more than one answer to a single question, your answer to that question will be scored as incorrect. Read each question carefully before marking your answer. There is no penalty for guessing.

### **Sample Questions**

1. Who was the first president of the United States?

- (A) George Washington.
- (B) Madonna.
- (C) Abraham Lincoln.
- (D) Elvis Presley.

The correct answer is "A". You would mark "A" on your touch-screen terminal.

2. What sports team plays at Madison Square Garden?

- (A) Yankees.
- (B) Nets
- (C) Cardinals.
- (D) Knicks.

The correct answer is "D". You would mark "D" on your touch-screen terminal.

## INTRODUCTION

The FDNY FC Section 1408 requires a Construction Site Fire Safety Manager (**CSFSM**) on all New York City construction sites to ensure compliance with the Fire and Building code requirements. This study material will help you prepare for the written examination for the C of F for CSFSM. This study material includes information taken from the New York City Fire Code (FC), Fire Department Rules, Building Code, and the industries' recommendations. The booklet also contains recommendations that are called "**Best Practices**" in *italics*. Statements written in regular font are mandatory and/or informational. **Best Practices** are based on other regulatory requirements such as OSHA and industry practice. If adopted, the best practices should improve fire protection and are highly recommended by the FDNY and construction industry representatives. They are, however, not required at this time.

### Fire History Summary

Date	Fire Summary	Lessons Learned	Changes Since Incident
November 2010	<p><u>Chinese city of Shanghai construction fire</u></p> <p>Sparks from welding equipment set alight nylon construction netting and bamboo scaffolding that nearly covered the building.</p> <p>58 people died and 56 still missing, and more than 120 are injured.</p>	<p>There should be a safe distance between the combustible materials (in this case the bamboo scaffolding) the hot work operations area, or there should be a fire guard watching for sparks.</p>	<p>The government officials began a drive to increase fire and safety inspections at building and constructions sites.</p>
February 2010	<p><u>Santa Barbara Cottage Hospital construction fire</u></p> <p>A fire started in an area where waterproofing application and a welding operation were under way at the same time. There were no injuries and fire fighters were able to extinguish the flames with fire extinguishers and hoses.</p>	<p>A fire guard is needed to manage hazardous situations and prevent incidents like this. Even a small spark can start a large fire, especially on a construction site.</p>	<p>Fire Officials have since strongly urged construction workers working with equipment that could spark a fire to keep a fire extinguisher nearby at all times.</p>
July 2009	<p><u>Throggs Neck construction fire</u></p> <p>At 5 a.m. a fire started near scaffolding and flammable construction materials on the Queens-side bridge approach by a construction worker's blow torch.</p>	<p>This three-alarm fire caused major traffic jams on the Throggs Neck Bridge. Although still under investigation, the cause reflects a lack of fire safety at the construction site.</p>	<p>Fire Officials have now raised awareness about the fire hazards of using torches on bridges. Additionally they have emphasized the importance of fire guards.</p>

February 2009	<u>510 Madison Ave construction fire</u> A fire broke out overnight causing some cosmetic damage to the 30-story building. Curtain walls were blown out, and mullions were melted away. There were no injuries.	The fire seemed to be electrical in nature. Firefighters had some trouble reaching the second floor of the building under construction.	It was found that there was improper storage of construction materials with violations to the Fire Code.
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August 2007	<p><u>Deutsche Bank Building deconstruction</u></p> <p>A seven-alarm fire broke out on the 17<sup>th</sup> floor, affecting 10 floors. The area was filled with a maze of protective polyurethane for asbestos, which made firefighting extremely difficult. Two firefighters died and 115 were injured.</p>	<p>The building had not been inspected since March. It was determined that the cause of the fire was smoking by the workers. There was also a non-operational standpipe that went previously undetected.</p>	<p>Brought about a comprehensive review of FDNY inspections. Contributed to the 2008 release of the NYC Fire Code, and enhanced partnership with the Department of Buildings. Led to creation of CSFSM position.</p>
April 2003	<p><u>AOL Time Warner construction fire</u></p> <p>A fire originated on the sixth floor and spread the fourth, fifth, and seventh floors. There was one injury and 13 firefighters suffered smoke inhalation.</p>	<p>This four-alarm fire took 2 hours to bring under control. The source of the fire appeared to be either a space heater or a salamander. It also originated in an area which housed construction shanties.</p>	<p>A C of F is now needed for use of salamander heaters.</p>
December 2000	<p><u>Dongdu Commercial Building construction, Luoyang, China</u></p> <p>Construction workers in the basement dropped molten metal on flannel rags and wooden furniture. The welders fled without warning, and workers on 2<sup>nd</sup> and 3<sup>rd</sup> floor, as well as 200 guests at an illegal party, were trapped. 309 people died.</p>	<p>Only 60 escaped the fire, as construction material and merchandise blocked exits. Firefighters used cranes to attempt rescues, and the fire took 3 hours to extinguish. The welders who started the fire were performing unlicensed renovation work.</p>	<p>The building had a 3 year history of safety violations, had no fire alarms or sprinkler system. 23 people were placed on trial; some were sentenced to 7-13 years in prison.</p>
June 1982	<p><u>K-Mart Distribution Center, Pennsylvania Fire</u></p> <p>Fire started by falling carton of carburetor cleaner aerosol cans. Caused \$100 million in damage as explosions blew flaming aerosol cans through firewalls and sprinkler systems were overwhelmed. There were no deaths.</p>	<p>The building was engulfed within 1 hour. The deluge systems which protected firewall openings were not adequate to deal with the large flammable load stored in facility. 225 employees were able to escape.</p>	<p>Firewalls were not designed to be free-standing after burnout in 1 quadrant. There are now requirements for the type of sprinkler systems needed in certain facilities with highly flammable products.</p>

January 1982	<p><u>Trump Tower construction</u></p> <p>On the 28<sup>th</sup> floor, it was reported that a fire began and spread quickly through plywood forms used to cast concrete. A worker trapped in a crane atop the building was rescued by fire fighters.</p>	<p>It was reported that a spark from a heater used to keep newly poured concrete from freezing started the fire. Better fire safety management was needed.</p>	<p>LPG is since not allowed to be used on concrete heating. Its use is now very limited on construction sites.</p>
March 1911	<p><u>Triangle Shirt Waist Factory, NYC</u></p> <p>A fire started because of a dropped cigarette. Confined factory conditions and abundance of flammable material led to fire burning through in less than 20 minutes. There were 146 deaths.</p>	<p>There were many inadequacies in this building. Some exits were locked from the outside, there were only 2 staircases and 2 elevators failed. Fire department ladders could not reach top floors, the standpipe hose line was rotted, and the sole fire escape collapsed.</p>	<p>Code changes required: fire-proofing, sprinkler systems, improved exiting from high-rises. This led to creation of NYC Bureau of Fire Protection, enforcement of fire codes and fire drills. Led to NFPA 101, The Life Safety Code, and Labor Law reforms.</p>

### Sources

Arnold, Jim. "Large Building Fires and Subsequent Code Changes". April 7, 2005.

FDNY: Worker's blow torch started Throgs Neck fire. (2009, July 13). *Newsday*.

Fire Damages Trump Tower Construction. (1987, January 30). *The New York Times*.

Fire is Latest Setback at AOL Time Warner Tower at Columbus Circle. (2003, April 9). *The New York Times*.

Small Fire causes damage at hospital construction site. (2010, February 16). *Daily Sound*.

## **PART 1: ROLE AND RESPONSIBILITIES**

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### **1.1 Construction Site Fire Safety Manager Task Overview**

**1408.1 Fire Safety Manager** - Where a Site Safety Manager or Site Safety Coordinator is required by the Building Code, the owner shall designate a person to be the Fire Safety Manager for the construction site. The Fire Safety Manager may be the Site Safety Manager or Site Safety Coordinator required by the Building Code. The Fire Safety Manager shall be responsible for ensuring compliance with the requirements of the Fire Code, and the FDNY Rules. The Fire Safety Manager shall conduct an inspection of the construction site and all fire safety measures on at least a daily basis, and maintain a record of same in a bound log book or other approved system of recordkeeping. The log book or other approved recordkeeping shall be made available for inspection by any representative of the department. Where fire watch service is provided, the Fire Safety Manager shall be responsible for the general supervision of the fire guards.

**3 RCNY Section 1408** - A Construction Site Fire Safety Manager shall be present at the construction site at all times when construction, demolition and alteration work is being conducted.

**1408.2 Pre-fire plans** - The Fire Safety Manager shall develop and maintain at the construction site an approved pre-fire plan, and make it available for examination by any representative of the Fire Department. The Fire Department shall be notified of any changes in site conditions materially affecting the procedures set forth in such plan.

**1408.3 Training** - The Fire Safety Manager shall ensure that construction site personnel are acquainted with the operation of portable fire extinguishers and other fire protection equipment on the construction site.

**1408.4 Fire protection devices** - The Fire Safety Manager shall ensure that all fire protection equipment and systems are readily available and periodically inspected, tested, and maintained in accordance with this code, the rules, and the Building Code.

**1408.5 Hot work operations** - The Fire Safety Manager shall be responsible for supervising the issuance of authorizations for hot work operations in accordance with Chapter 26.

**1408.6 Impairment of fire protection systems** - The Fire Safety Manager or Impairment Coordinator shall comply with the requirements of Section 901 in the event of impairment of any fire protection system.

**1408.7 Temporary covering of fire protection devices** - Coverings placed on or over fire protection devices to protect them from damage during construction processes shall comply with the requirements of Chapter 9 and shall be immediately removed upon the completion of the construction processes in the room or area in which the devices are installed.

**CERTIFICATE OF FITNESS (C of F):** A written statement issued by the NYC Fire Department 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 conduct or supervise an operation, or supervise a facility for which such certificate is required by this code or the rules. It is valid for 3 years.

**GENERAL SUPERVISION.** Except as otherwise provided in this code, supervision by the holder of any department certificate who is responsible for performing the duties set forth in Section 113.2 but need not be personally present on the premises at all times.

**PERSONAL SUPERVISION.** Except as otherwise provided in the Fire Code, supervision by the holder of any department certificate who is required to be personally present on the premises, or other proximate location acceptable to the department, while performing the duties for which the certificate is required.

A **variance** from the FDNY is required when the job site conditions don't meet the FDNY Code Requirements.

*Best practice: A Fire Safety Manager shall remain on the construction site until such time the general contractor no longer has a presence or personnel on site. In addition, a CSFSM shall be designated on all construction projects whether or not a Site Safety Manager or Site Safety Coordinator is present.*

## 1.2 Responsibilities Overview

Category	Item	Frequency
Fire Safety Manager <b>FC 1408.1</b>	The CSFSM shall be responsible for ensuring compliance with the requirements of this code, including this chapter, and the rules.	Daily
Pre-Fire Plans <b>FC 1408.2</b>	Develop and maintain at the construction site the pre-fire plan. <b>(See Part 4: # 4.1)</b>	As needed
<b>g FC 1408.3 &amp; Orienta</b>	The CSFSM shall ensure that construction site personnel are familiar with the operation of portable fire extinguishers and other fire protection equipment. <i>Include in initial fire safety orientation, (Best practice)</i>	As needed

<b>Fire Protection Devices</b> <b>FC 1408.4</b>	<b>Standpipe</b> <b>FC 1412</b>	All personnel receive fire safety orientation, and sign orientation acknowledgement.	Maintained As Needed
		<i>No Smoking acknowledgement form signed (Best practice)</i>	<i>Maintained As Needed</i>
		<i>Mandatory reorientations given every 6 months? Attendance at reorientations documented (Best practice).</i>	<i>Every 6 months</i>
		<i>Hot works training provided to tradespersons involved in welding, burning, grinding, braising, or other fire guard operations. Acknowledgements of this orientation signed by each trainee (Best practice).</i>	<i>Before performing any hot work</i>
		<i>Hot Works training refreshed and worker acknowledgement of training.</i>	<i>Every 6 months</i>
<b>Extinguishers</b> <b>FC 1415</b>	<b>Sprinkler</b> <b>FC 1414</b>	Standpipe maintained under pressure and equipped with low pressure alarm.	Maintained As Needed
		Standpipe, including piping leading to Fire Department Connection, inspected visually on daily basis by CSFSM.	Daily
		Construction drawings used to confirm routing of unexposed standpipe sections.	Daily
		<b>FDNY/CSFSM Daily Reports</b> must be kept by CSFSM documenting standpipe inspections, fire extinguisher inspections, and upkeep of permit logs.	Daily
		<i>FDNY First Responders' Box maintenance and execution of Evacuation Drills (Best practice).</i>	<i>Daily, quarterly</i>
		<i>Standpipe, pressurizing system, and alarm tested weekly (Best practice).</i>	<i>Weekly</i>
		Licensed plumber/fire suppression contractor perform air/water test of standpipe.	During alarm install
		Standpipe alarm installation documented by CSFSM.	During alarm install
		Standpipe alarm soundings logged and documentation includes description of response to alarm.	Per incident
		Standpipe repaired and retested until retesting is successful after failed bi-weekly test by licensed plumber/fire suppression subcontractor. Repairs documented.	After failed biweekly inspection
<b>Extinguishers</b> <b>FC 1415</b>	<b>Extinguishers</b> <b>FC 1415</b>	Sprinkler systems for use at construction sites shall be provided, maintained, and made available for Fire Department use.	Maintained as Needed
		<i>ABC horizontal mount sprinkler head fire extinguisher in each shanty. Proper signage posted on shanty entry door (Best practice).</i>	<i>Maintained As Needed</i>
		Fire extinguishers shall be provided as per FC Section 1415.	Maintained As Needed
		Fire extinguisher monthly inspection completed by employee.	Monthly

<b>Hot Work Operations</b> <b>FC 1408.5</b> <small>(Fire Guard vs. Watch Person)</small>	<p>The CSFSM shall be responsible for verifying FDNY hot work permit and supervising the issuance of authorizations for hot work operations.</p> <p>A fire guard (F-60/F-93/F-30) is required at each hot work operation while in progress and shall continue on site for a minimum of 30 minutes after each hot work operation is complete. A log book shall be maintained on site.</p> <p>A fire guard (F-60/F-93/F-30) shall be assigned one floor below hot work operations for fire exposures that are not observable by the fire guard on the floor above.</p> <p>A fire guard (F-60/F-93/F-29) shall perform patrols from 1600 to 2400.</p> <p>All fire guards shall have Certificates of Fitness (F-60/F-93/F-30/F-29).</p> <p>Watch person shall be onsite from 2400 to 0800 with the ability to notify the Fire Department in case of fire.</p> <p>A Hot Works permit log shall be onsite.</p>	Daily
<b>Impairment of Fire Protection</b> <b>FC 1408.6</b>	<p>The CSFSM or Impairment Coordinator shall comply with the requirements of Section 901.7 (<b>See Part 6: FC Chapter 9</b>) in the event of impairment of any fire protection system.</p>	Daily
<b>First Responders Communications (Best practice)</b>	<p><i>In the event of fire or any emergency, the CSFSM will meet the first responders at the front gate.</i></p>	As needed
<b>Negative Air</b> <b>NYC DEP Rules 1.9.1</b>	<p><b>(Note: Asbestos and containment projects only).</b> If the project area is greater than 15,000 square feet on any given floor, the installation of a negative air cut off switch or switches shall be required at a single location outside the work place, such as inside a stair well, or at a secured location in the ground floor lobby when conditions warrant.</p>	As needed

	Local FDNY unit must be informed that negative air is being used, areas of project where it is in use, and the location of the emergency responder cutoff switch. <b>(Note: Asbestos and containment projects only).</b>	Monthly
<b>Smoking Prevention Policy</b>	<i>No Smoking policy included in all contracts with subcontractors.</i>	<i>During bid-award</i>
	<i>No Smoking signs posted prominently on all floors.</i>	<i>Maintained As Needed</i>
	<i>Acknowledgement of zero-tolerance "No Smoking Policy" signed by all workers.</i>	<i>During orientations</i>
	<i>Site patrolled by one undercover smoking policy enforcement security guard per 200 tradespersons.</i>	<i>Daily</i>
	<i>Employees found smoking on site terminated/removed immediately.</i>	<i>Per incident</i>
	<i>Subcontractor employee removed from site if found smoking and incidents reported on FDNY/CSFSM Daily Report.</i>	<i>Per incident</i>
	<i>Site has a list of company-wide smoking offenders, name, and copy of No Smoking acknowledgement.</i>	<i>Maintained As Needed</i>
	<i>Shanty inspections performed weekly.</i>	<i>Weekly</i>
	Review location of controlled smoking area to include fire extinguisher.	Maintained As Needed
<b>Hazardous Materials</b>	Powder actuated ammunition must be properly stored and unfired rounds properly disposed.	Maintained As Needed
	Flammable gas, compressed gas, and flammable/combustible liquids must be stored in approved manner daily.	Daily
	Proper signage for flammable gas, LPG, flammable/combustible liquid, and powder actuated ammo storage locations. Fire extinguisher must be at each storage location.	Maintained As Needed
<b>House keeping FC 1404.2</b>	Combustible waste, including rubbish and construction and demolition material, shall not be accumulated within buildings and shall be removed from buildings at the end of each work shift, but at least once a day. Combustible waste, including rubbish and construction and demolition material, shall be removed from the premises or stored in noncombustible containers.	

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## PART 2: DAILY OPERATIONS

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### 2.1 Fire Safety Manager

#### **FDNY Fire Code Section 1408.1, Fire Safety Manager**

Where a Site Safety Manager or Site Safety Coordinator is required by the Building Code, the owner shall designate a person to be the Fire Safety Manager for the construction site. The Fire Safety Manager may be the Site Safety Manager or Site Safety Coordinator required by the Building Code. The Fire Safety Manager shall be responsible for ensuring compliance with the requirements of this code, including this chapter, and the rules. The Fire Safety Manager shall conduct an inspection of the construction site and all fire safety measures on at least a daily basis, and maintain a record of same in a bound log book or other approved system of recordkeeping. The log book, or other approved recordkeeping shall be made available for inspection by any representative of the Fire Department. Where fire watch service is provided, the Fire Safety Manager shall be responsible for the general supervision of the fire guards.

#### **FDNY Rules 1408.1**

##### Supervision of Construction Site Fire Safety

Fire safety manager duties and responsibilities. Pursuant to FC1408.1, the fire safety manager is responsible for ensuring that the construction, alteration and demolition work at a *construction site* is conducted in compliance with the requirements of the Fire Code and the *rules*. Such supervision shall include, but is not limited to:

- (A) authorizing, supervising and/or monitoring materials, operations and *facilities* regulated by the Fire Code;
- (B) in accordance with FC1408.1, regularly inspecting the *construction site* for fire safety purposes, including compliance with the code and *rule* provisions set forth in R1401-01(c), 1403-01 and 1405-01;
- (C) performing the duties of the *impairment coordinator* required by FC901.7, the *responsible person* required by FC2603.2.2, and the Fire Department liaison required by FC2703.9.1.1, or ensuring that such persons are designated and monitoring the performance of their duties;
- (D) providing or arranging *Department* access to the *construction site*, inspection of the logbook and other records, and communication with the *owner* or his or her *design professionals*, managers or contractors, in accordance with R1401-01(b)(2); and
- (E) taking all other actions that a prudent person trained and knowledgeable in *construction site* fire safety would take to ensure that fire safety is maintained at the *construction site*, given site conditions.

CSFSM shall be responsible for ensuring the supervision of the holders of the following Certificates of Fitness:

- F-01 [Certificate of Fitness for Impairment.](#)
- F-60 Certificate of Fitness for Fire Guard for Torch Operation & Construction Site.
- G-60 Certificate of Fitness for Torch Operation.
- P-54 Certificate of Fitness for Crane Serial Fueling Operations at Construction Site.
- S-92 Certificate of Fitness for Supervision of Portable Fueled Space Heaters at Construction Site.
- S-93 [Certificate of Fitness for Supervising Temporary Storage and Dispensing Flammable or Combustible Liquids at Construction Sites.](#)
- E-21 Certificate of Fitness for Using Powder Activated (Ammunition) Tools.
- A-49 Certificate of Fitness for Supervision of Aerosol.
- G-40 Use of LPG/CNG for Tar Kettles, Asphalt Melter and Marking Street Line
- G-44 Storage and Handling of LPG/CNG.

**Old C of Fs (no longer issued, only valid until expired)**

- G-95 Certificate of Fitness for Torch Operation.
- F-93 Certificate of Fitness for Fire Guard for Construction Site and Torch Operation.
- F-29 Certificate of Fitness for Fire Guard for Construction Site.
- F-30 Certificate of Fitness for Fire Guard for Torch Operation.
- W-14 Certificate of Fitness for Flammable/Combustible Liquids Portable Containers.
- C-98 [Certificate of Fitness for Flammable or Combustible Liquids.](#)

A Fire Safety Manager shall remain on a project as long as a Site Safety Manager is required by the New York City Department of Buildings until which time the NYC DOB releases the Site Safety Manager. The Fire Department may require a CSFSM to be onsite to monitor hot work operations and fire protection systems.

## **2.2 Pre-Fire Plan**

**Fire Code Section 1408.2** - The CSFSM shall develop and maintain an approved pre-fire plan. FDNY shall be notified of any changes in the construction or demolition process affecting the utilization of information contained in such pre-fire plans.

- Pre-fire plans are developed by the CSFSM to assist the site personnel reacting to a fire. Changes in the building's construction or fire protection equipment that could affect the fire department's fire

fighting operations must be reported to FDNY dispatcher and be indicated on the pre-fire plan. For example, any changes to the access to the exterior hoist or Fire Department connections.

Establish and implement the following for your site specifically:

- Site specific evacuation procedure
- Site specific emergency contact procedure

#### Site Specific Evacuation Procedure

- **Communication:** All staff and visitors must be given instruction on emergency warning systems and evacuation procedures, including the area to assemble for the roll call. (Fulfilled via Site Safety Orientation)
- A sufficient number of trained personnel must be appointed and trained in evacuation procedures in order to ensure an effective evacuation.
- **Signage/Notification:** Evacuation routes and Assembly Points must be well labeled.
- **Fire Drills:** *Fire drills should be held quarterly for all projects, and their results recorded and used in performance reviews.*
- **See attached a sample of a site specific evacuation floor plan and role clarification for an emergency evacuation procedure**

### **2.3 Training**

**1408.3 Training** - The Fire Safety Manager shall ensure that construction site personnel are acquainted with the operation of portable fire extinguishers and other fire protection equipment on the construction site.

- *All workers on site must receive Project Safety - Fire Prevention Orientation (retrained every six months).*
- *All workers involved in hot work operations will receive hot work orientation (retrained every six months).*
- CSFSM must file copies of all Certificates of Fitness and worker accreditations on site.

#### **Training**

*To provide proper education as part of continuing construction site personnel training; to assure the prompt reporting of fire and immediate initiation of fire safety procedures to safeguard life and contain fire until the arrival of the Fire Department.*

#### **How to Conduct Training Session**

*Construction Fire Safety training sessions shall be conducted for the benefit of construction workers and construction site safety personnel. Listed are some teaching techniques to help all construction site personnel become familiar with fire safety requirements, practices, and procedures.*

- *Prepare the length of the training session*
- *Prepare a training session teaching plan to include the following:*
  - *Teaching objective*
  - *Topics of discussion*
  - *Review of material*
- *Announce the training session ahead of time to all construction personnel*
- *Prepare hand-outs with applicable fire safety information and procedures*
- *Encourage open dialogue with students in training session such as break-out sessions, Q & A sessions, scenarios, real-life problems, etc.*
- *Request feedback on training session in order to improve subsequent sessions.*
- *All trainees must sign acknowledgement at the conclusion of training session.*

### **Topics for Training**

- *Pre-fire plans*
  - *Site Safety Plan*
  - *Fire Protection Plans*
  - *Tenant Protection Plan*
  - *Daily Log*
  - *FDNY First Responder's Box*
- *At project orientations, make copies of: OSHA 10, 4 hour scaffold training, FDNY Certificates of Fitness.*
- *In case of an emergency, call 911.*
- *Ensure that required notices are posted on the floors and that proper record keeping is maintained.*
- *Designate exits and evacuation routes.*
- *Implement methods of communication with the personnel in the construction site.*
- *Fire Safety Training Orientation topics:*
  - *Communication*
    - *Emergency*
    - *Non-emergency*
  - *Zero tolerance No Smoking Policy*
  - *Extinguishing fires*
  - *Familiarity with fire protection plan*
- *Best practice is to conduct training a minimum every 6 months.*
- *Hot Works Operations Orientation:*
  - *Hot Works Log Book/Hot Works Permit*
  - *Gas storage*
  - *Aerosol Storage*
  - *Combustible/Debris Staging for Removal*
  - *Best practice is to conduct orientation a minimum every 6 months.*
- *Fire Protection Devices:*
  - *Fire extinguishers*
  - *Standpipe: red light, signage, dump valve*

- Audible alarm for pressurized standpipe system
- Air compressor review
- Shanty Fire protection overview

## 2.4 **Fire Protection Devices**

**1408.4 Fire protection devices** - The Fire Safety Manager shall ensure that all fire protection equipment and systems are readily available and periodically inspected and tested, and maintained in accordance with this code, the rules and the Building Code.

### 2.4.1 **Standpipes**

#### **Building Code Section BC3303.8: Air Pressurized Alarm System for Standpipes (previously required by Local Law No. 64/2009)**

##### **Standpipe Requirements –**

###### **1. Demolitions (BC3303.8)**

In vacant buildings and structures undergoing a full demolition, all existing standpipes shall be maintained in a state of readiness as a dry standpipe system and shall be provided with an air pressurized alarm system.

###### **2. New buildings and structures (BC3303.8)**

All required permanent or temporary standpipes shall be in a state of readiness once the work reaches a height greater than 75 feet and shall contain an air pressurized alarm system.

###### **New construction, alteration, and partial demolition.**

Where a dry standpipe system is utilized during new construction, alteration, or partial demolition operations, such standpipe system shall be provided with an air pressurized alarm system.



###### **3. Maintenance and Inspections**

*The CSFSM shall ensure that air pressurized alarm system is working properly by conducting a visual inspection of the gauges on the system and performing*

*spot checks on portions of the standpipe system. Tracing of the standpipe riser(s) may be necessary if the alarm is activated.*

- A License Master Plumber/Master Fire Suppression contractor shall conduct an air pressure or hydrostatic pressure test on all standpipes at such time as the pressure alarm is installed and all required necessary inspections, maintenance and testing.
- If any portion of the standpipe is not fully exposed, the CSFSM will need to obtain a schematic drawing of the standpipe system and use them to perform his/her visual inspection.

Fire Safety Initiatives, all Standpipes (dry or wet) must:

- Be maintained in service as required. (Note: In new buildings under construction, a temporary dry standpipe with an air pressurized alarm system is required to be installed. In existing buildings undergoing a major alteration, the existing wet standpipe may be required to be converted to a temporary dry standpipe with an air pressurized alarm system.)
- The activation of any alarm must be recorded in the log book.
- (BC Section 903) All exposed standpipe piping, cross connections, and risers shall be painted red or identified by lettered legend as per ANSI A13.1.
- Fire Department connection(s) shall be identified by signage and red light and shall be visible from the street.
- All OS&Y valve(s) or control valves shall be locked by chain in the open position. Valves handles of combination standpipe systems shall be painted yellow.

### **Alarms**

- The CSFSM will visually inspect the standpipe as required.
- The CSFSM shall document the installation of the alarm, any incidents in which it sounds, and any steps taken in response to any alarm.
- *The CSFSM will test the standpipe alarm weekly by opening a valve and releasing air from the pressurized system and verifying that the alarm sounds. The CSFSM must notify the FDNY dispatcher prior to perform this test.*
- Standpipes shall be maintained under pressure and equipped with a local alarm that will sound if any portion of the standpipe system is defective.

## **4. Removal From Service Conditions**

### **Planned Removal from Service of Standpipe System**

Before taking a standpipe out of service for maintenance or repair, call the Fire Department Borough dispatch 24 hours ahead of time. While the standpipe is off-line, a fire guard for impairment (e.g. F-01 C of F holder) must be posted. No hot work may take place in the building. The Department will determine other measures to take and the circumstances under which normal work may continue or resume. See BC3303.8 for additional details.

### **Unplanned Out of Service Condition**

If the alarm sounds, the system may be compromised. In the event of an emergency, there is a possibility the standpipe system could fail. It is absolutely crucial that action be taken to get the standpipe back to working order as soon as possible. Follow the procedure below, and for additional clarification review BC 3303.8 as provided in the (**See Part 6 Reference Materials**) below:

1. Cease all work. No work may continue on the site until the standpipe is repaired, unless authorized by Fire Department.

Exception:

[BC 3303.8.1 4.2.1] The activation of the alarm shall not require the cessation of work necessary for the completion of concrete pouring operations in progress at the time of alarm activation, where such cessation would cause a cold joint that would impair the structural integrity of the finished construction. The continuation of such operations shall be permitted only until an orderly termination of such operations can be effectuated. The site safety manager or coordinator shall record the names and locations of any employees necessary for the completion of the concrete pouring operations and provide them to the Fire Department personnel who arrive on the scene.

2. Contact FDNY Borough Dispatcher and explain nature of call.
3. Put the pre-fire plan into action.
4. *Contact the Senior Superintendent.*
5. Confirm all head counts ASAP.
6. Contact the Licensed plumber or master fire suppression contractor to perform an inspection of the standpipe system and make any necessary repairs.
7. Be sure to notify FDNY when the corrective work is complete.

If the standpipe system is not returned to a state of readiness and the alarm reactivated within 2 hours, all construction or demolition shall cease unless authorized by the Fire Department. No hot work will be allowed if the standpipe is inoperable.

8. Once corrective work is complete, the Master Fire Suppression Contractor shall verify the standpipe system is in service.
9. Note all events in the *Daily Standpipe Inspection Log* and the FDNY/CSFSM Daily Report.

### Standpipe Alarms



#### **5. Weekly Standpipe Pressure Test (Dry)**

Air pressurized standpipe alarm system shall be tested each week to verify that the alarm and compressor are functioning properly. The system should not exceed a 25 psig. If it reads ~ 15 psi the compressor should start up, ~ 10 psi the alarm should sound. The procedure for the weekly test is listed in order below:

1. Notify the FDNY dispatcher and communicate throughout site that a standpipe test will be performed;
2. Go to a standpipe hose outlet and remove the outlet cap;
3. Open the hose valve and release air pressure from the pressurized standpipe;
4. Verify that the gauge on the compressor/standpipe falls below alarm level. (~ 10 psi);
5. Confirm the alarm is at the pre-set level;
6. When the alarm sounds close the standpipe hose outlet valve;
7. Verify the pressure builds back up to the sustained level (~ 25 psi);
8. Enter the following in the standpipe log:
  - Level alarm sounds;
  - Level compressor starts up;
  - Level Pressure sustains;
  - Confirmation that alarm was heard by guard at main gate.

#### **2.4.2 Sprinkler**

**Sprinkler systems (1414.1)** – Sprinkler systems for use at construction sites shall be provided, maintained, and made available for department use, in accordance with this code, and the construction codes, including the Building Code.

**Completion before occupancy (1414.2)** - In buildings or structures where a sprinkler system is required by this code or the construction codes, including the

Building Code, it shall be unlawful to occupy any portion of a building or structure until the sprinkler system installation has been tested and approved.

**Operation of valves (FC 1414.3)** - Sprinkler control valves shall be operated only by authorized personnel. Such operation shall be under the general supervision of the fire safety manager where one is required pursuant to Section 1408. When the sprinkler system valves are being regularly closed and opened to facilitate connection of newly completed or disconnected segments, the sprinkler control valves shall be inspected at the end of each work day to ascertain that the system is in good working order.

### **2.4.3 Fire Extinguishers**

**FC 1415.1** Where required. Buildings or structures under construction, alteration or demolition shall be provided with not less than one approved portable fire extinguisher in accordance with Section 906 and sized for not less than ordinary hazard as follows:

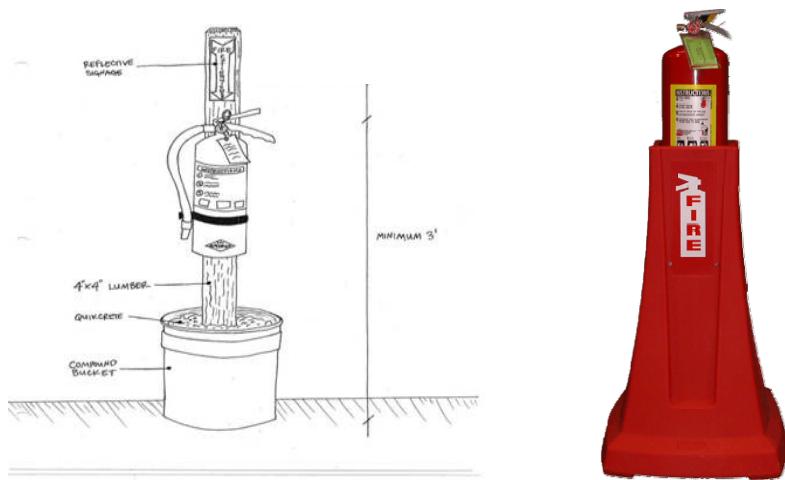
- a. At each stairway on all floor levels where combustible materials are being stored or combustible waste is being generated.
- b. At the entrance of each storage and construction shed.
- c. Additional portable fire extinguishers shall be provided where flammable and combustible liquids are stored, handled and used.

Furthermore,

- All extinguishers should be a minimum of 2A 20: BC rated with maximum travel distance to any fire extinguisher not to exceed 75 ft.
- Provide one extinguisher for every 1,500 sq/ft. (FC table 906.3(1))
- In multi-floor structures, one of the required extinguishers shall be placed near each stair.
- Extinguishers will be hung on the wall *or stand* at a height of approximately 3 ft.
- All extinguishers must be visually checked on a monthly basis and recorded in the logbook by the CSFSM.
- All extinguishers must be maintained by a FDNY certified Portable Fire Extinguisher Company on an **annual** basis.

**Best Practice for Fire Extinguisher Requirements:** CSFSM is ultimately responsible for ensuring that portable fire extinguishers meet the following requirement:

- *Provide one extinguisher on each floor where wood scaffold has been erected to a height greater than 40 feet. This extinguisher shall be readily accessible to the scaffold.*



**Example of Extinguisher stand**

- Fire extinguisher will be hung on the wall or put on a stand at a height of approximately 3 feet. Extinguisher stands can be of the following variety:
- This 4"x4" and bucket model can be constructed on site as needed.
- Utilize the wall mount hook provided with each fire extinguisher and mount to wall/column at least 4 inches from the floor.
- Portable fire extinguishers having a gross weight not exceeding 40 pounds shall be installed so that their tops are not more than 5 feet above the floor. Hand-held portable fire extinguishers having a gross weight exceeding 40 pounds shall be installed so that their tops are not more than 3.5 feet above the floor.
- Fire extinguisher locations will be conspicuously marked and kept clear of any obstructions (e.g. equipment, supplies, and trash).
- Fire extinguisher locations will be outlined in the Site Specific Safety Plan.
- All fire extinguishers on the project site must be visually checked a minimum of once a **month**. Records must be kept and available for review.
- This inspection is a "quick check" that a fire extinguisher is available and will operate. 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.
- Fire extinguishers shall be certified by an FDNY certified Portable Fire Extinguisher Company on an **annual** basis.
- Fire extinguishers that do not pass inspection must be removed from service and replaced immediately.
- Projects utilizing hose reels, blankets, etc. must ensure such items are clearly marked/labeled and remain accessible at all times and are regularly inspected.



- at least 1 every 1,500 square feet on each floor (FC table 906.3(1))
- at least 1 at each stairway (1 per stair for scissor stairs)\*
- at least 1 at each guard booth
- at least 1 at each hot work operation
- at least 1 at each area where wood scaffolding is erected at a height of 40 feet or greater\*
- at least 1 at each flammable/combustible liquid storage cage
- at least 1 wheeled type extinguisher with at least a 40-B:C rating at each flammable/combustible gas storage cage. Such portable fire extinguisher shall be kept outside of the storage facility or placed at another readily accessible location not more than 30 feet from the cage.
- at least 1 having at least 2-A rating at each small arms ammunition storage area
- at least 1 at each construction hoist landing\*
- at least 1 per 1,000 square feet on floors with operational coke salamander temporary heat (maximum travel distance to farthest coke salamander on the floor is 75 feet)
- at least 1 within 30 feet of LPG heaters during temporary heat

\*can be included into 1 per 1,500 square foot calculations.

## Fire Extinguisher Tags

- 5 7/8" X 3 1/8" "Fire Extinguisher Recharge & Inspection Record" Tag



## 2.5 Hot Work Operations

**1408.5 Hot Work Operations** - The Construction Site Fire Safety Manager shall be responsible for supervising the issuance of authorizations for hot work operations in accordance with Chapter 26. The Construction Site Fire Safety Manager shall also ensure that any contractor that will be performing hot work have the appropriate FDNY permit (FDNY site specific permit or FDNY citywide permit). The Construction Site Fire Safety Manager must ensure that all personnel have the appropriate C of F prior to authorizing hot work operations.

- Certificate of Fitness (G-60/G-95) is needed for conducting any of the following torch operations :
  - (1) An oxygen-fuel torch using any amount of oxygen and flammable gas

- Certificate of Fitness (F-60/F-93/F-30) holder must be present to perform fire watch during hot work operations at the following locations:
  - (1) Construction sites;
  - (2) Rooftop operations and in conjunction with torch-applied roof system operation;
  - (3) In any building or structure, when the torch operation is conducted by a person holding a FDNY permit for torch operation.
- FDNY Permits are required to conduct hot work (Fire Code 105.6) :
  - (1) using oxygen and a flammable gas; or
  - (2) storing, using or handling any flammable gas (e.g. LPG or CNG or acetylene) in excess of 400 SCF

## **Types of FDNY Permits related to hot work operations:**

(1) Site-specific permit

A site-specific permit may be a permanent permit or a temporary permit.

Permanent permits are valid for 12 months only. Every permit or renewal shall require an inspection and shall expire after twelve months. Temporary permit may be valid from one day to 12 months depends on the construction /operation need. For example, a one-week temporary permit may be issued for construction work which only takes one week. Normally, hot work operation (e.g. construction site or hot work repair) is issued a temporary permit.

## (2) Citywide permit

A city-wide permit is normally issued when hot work operations are anticipated to be completed in 30 days or less.

## **Example of a permanent FDNY permit**

FIRE DEPARTMENT, CITY OF NEW YORK					BUREAU OF FIRE PREVENTION		
ACCOUNT NUMBER 77777777	TYPE 10	A.P. P	D.O. 12	ADM. CO. E284	ISSUANCE DATE 01/28/10	PERMIT EXPIRES 01/11	
PREMISES ADDRESS 1111 YORK ST STATEN ISLAND NY 11111				ACCOUNT NAME CARI & RENO			
ITEM CODE 345	SUB CODE 00	QTY 1	DESCRIPTION COMPRESSED GASES ONLY STR/USE			FLOOR NO. 1	Fee PAID
PERMIT TYPE 1							ANNUAL FEE PAID
1=REGULAR 2=SUPPLEMENTAL 3=DUPLICATE		CARI & RENO 1111 YORK ST STATEN ISLAND NY 11111					
 <b>20 11012938</b>							
BY ORDER OF THE COMMISSIONER							

### Example of a temporary FDNY permit

D.O.	COMPANY	BORO	ACCOUNT NO.	TOTAL FEE	02.24.11
01	MRKIN PIPING INDUST.	MANH	3333333	\$ 525.00	
<b>THE CITY OF NEW YORK</b> <b>FIRE DEPARTMENT</b> Bureau of Fire Prevention 9 Metro Tech Center <b>F 02872</b>					
<b>FIRE DEPARTMENT PERMIT</b> Postal Address of Permit Holder or Agent: <input type="text" value="KIRLIN PIPING INDUST."/> <input type="text" value="347 RIVERWAY"/> <input type="text" value="WADING RIVER, N.Y. 11792"/>  Occupancy for which this Permit is issued and at which it must be displayed: <input type="text" value="13110 WEST 11 STREET"/> <input type="text" value="NEW YORK, N.Y. 10011"/>					
New York MANHATTAN  Pursuant to the provisions of the administration Code and the regulations made thereunder, the above permittee is hereby authorized by the Fire Commissioner to store and use HAZARDOUS MATERIALS in the quantity specified.  This permit is revocable at the pleasure of the Commissioner, and is issued with the express understanding that the articles herein named are to be stored and kept in accordance with the provisions of the law; that the permittee will use all possible care to avoid accidents; that it is only available for the location and permittee named.  24 Fire Commissioner					
CODE NO. 345. OXYGEN STORAGE AT CONSTRUCTION SITE 346. ACETYLENE STORAGE AT CONSTRUCTION SITE 347. USE OXYGEN AND ACETYLENE TORCH AT A CONSTRUCTION SITE NOTE: OXYGEN AND ACETYLENE CYLINDERS SEPARATELY STORED IN APPROVED CAGES AT GROUND LEVEL					
<b>CASHIER'S COPY</b> RF-101 (1/01) 93-111-R26-0470					

#### **Compressed gas storage:**

FDNY permits issued for hot work operations utilizing oxygen and acetylene are specifically for the quantity of cylinders to be used for the work being performed. In addition, any **RESERVE CYLINDERS for future use** must be specifically stated to the FDNY prior to issuance of the permit. Reserve storage is prohibited from the work floor. Storage must only be on the ground or the first floor as approved by the FDNY. Indoor storage of flammable gas shall not be more than 3,500 SCF per control area, and must be protected against damage or injury from falling objects or surrounding activity. There may be more than one storage location of 3,500 SCF, provided that each storage location does not exceed 3,500 SCF and the storage locations are separated by at least 50 feet or an approved (acceptable to the FDNY) masonry barrier having a minimum fire resistance rating of 2 hours.

The intent of allowing a contractor to have a cage for oxygen and acetylene cylinders on the work floor is for what will be used for the day. There must not be any reserve storage on any work floor. At the end of each workday, cylinders must be removed from the work floor and be stored in the cage/cabinet on the ground floor.

Storage areas of compressed gas cylinders, containing oxygen or fuel gases must be in accord to Federal, State or local regulations. Empty cylinders must be returned to the permitted storage location, and removed from the job site in a timely manner. All compressed gas cylinders must be stored upright, capped and secured in a proper storage rack. Cylinders must not be stored outside of a proper storage rack.

#### **Fire guard vs fire watch person**

All fire guards for torch operations must hold a FDNY C of F. All other hot work operations (such as grinding or other spark producing operations) require a fire watch which must be performed by a trained person. Fire watch does not require a FDNY C of F.

#### **Hot Work Authorization Requirements (Fire Code 2603.2; 2603.3)**

- All hot work authorizations are to be issued **daily** and are required at all times for hot works, such as 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. A hot work authorization should be prepared by the responsible person for the subcontractor. 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.
- The Construction Site Fire Safety Manager may serve as the responsible person, or should ensure that such person is designated and monitoring the hot work operations. The CSFSM should have copies of all FDNY hot work permits and hot work authorizations, which shall be kept onsite by the CSFSM.
- Hot works operations are limited to the area and time specified in the hot work authorization.
- *Subcontractors will identify their responsible person for hot work in their Subcontractor Site Specific Safety Plan.*
- A copy of the FDNY hot work permit and hot work authorization are to be kept by the fire guard or the person who performs the fire watch. Copies of completed permits will be maintained in the project files. All hot work authorizations must be returned to the CSFSM or the responsible person upon completion of work for the day to confirm that work in the area has

been concluded. This returned authorization must be filed with the FDNY hot work permit section with the appropriate original.

- FDNY permits will be posted in a central location and recorded in a log book to assist in the coordination of construction related activities. This will provide information when work is being performed with other potential sources of fire (i.e. use of solvents, adhesives, or sealants).
- Hot work authorization must be posted in the area where the work is taking place. It must be available for inspection by any FDNY representatives during the performance of the work and for 48 hours after the work is complete.

### **Pre-hot Work Check (FC 2604.3.1)**

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 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:

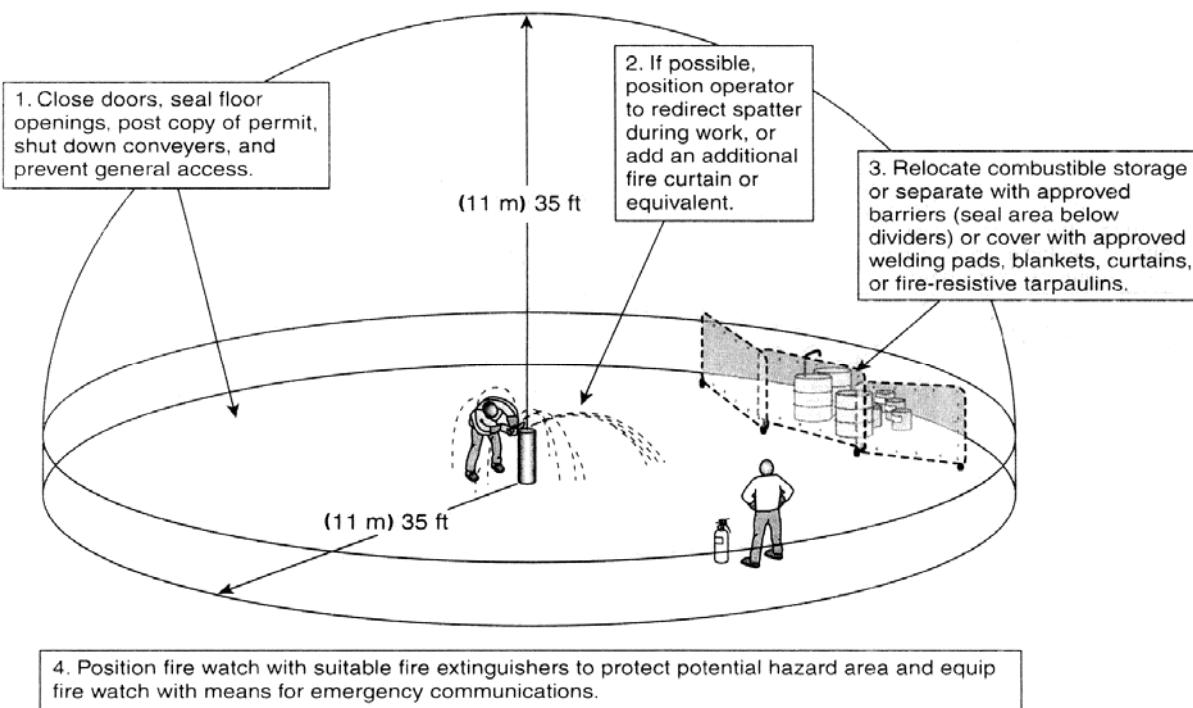
1. The hot work equipment is in good working order.
2. The hot work area is clear of combustibles and flammable solids or the hot work areas shall not be less than 35 feet from combustible materials and combustible waste or shall be provided with appropriate shielding to prevent sparks, slag or heat from igniting exposed combustibles.
3. Exposed construction is of noncombustible materials or, if combustible, is protected.
4. Openings are protected.
5. Hot work area floors are clear of combustible waste accumulation.
6. Fire watch personnel, where required, are assigned.
7. Approved actions have been taken to prevent accidental activation of extinguishing 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.
8. Portable fire extinguishers and fire hoses (where provided) are operable and available.
9. All persons performing hot work possess certificates of fitness, where such certificates are required.
10. All persons performing hot work requiring a permit possess a site-specific permit or citywide permit, authorizing such work.

### **Fire Guard for Hot Work Operations**

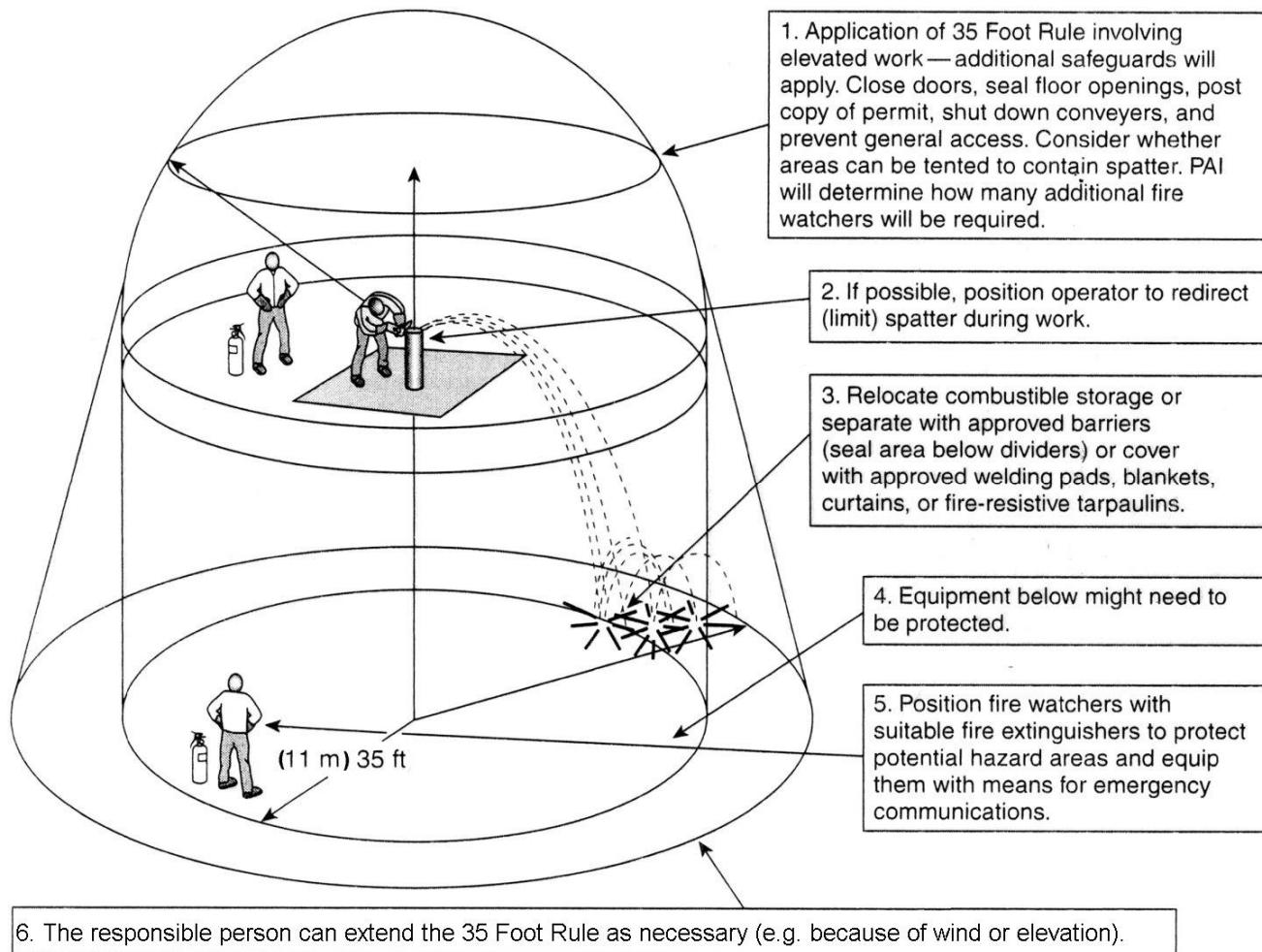
- One fire guard (F-60/F-93/F-30) is required per spark producing tool (torch, chop saw, grinder) and may not perform other work except for the fire guard

duties. An additional fire guard is required when the operation is not observable by a single individual.

- Contractor shall ensure any adjacent structures are adequately protected and monitored (where necessary) by additional fire guard personnel.
- A minimum of one crew member, other than the person doing the hot work, shall be assigned the duties of a fire guard at all times that the hot work operation is in progress, and for 30 minutes after the conclusion of the work.
- The fire guard must remain within 50 feet of the hot work operation and maintain an unobstructed view of the work area; be supplied with a minimum of one (1) twenty-pound ABC dry chemical fire extinguisher for each hot work operation; know whom to call to report a fire; be familiar with the operations of the extinguishing equipment and have a method of communicating to the project office or directly to emergency services.
- The fire guard shall immediately call 911 for any fire.
- The fire guard is responsible for seeing that FDNY is called in an emergency.
- *The fire guard should then immediately notify the CSFSM and Senior Superintendent. If a fire caused by hot work is extinguished immediately, the site office should be immediately notified.*
- Each subcontractor fire guard (F-60/F-93/F-30) is required to maintain bound logbook for hot work operation.
- The 2009 edition of National Fire Protection Association 51B shows the 35-ft. rule in a 3-D perspective to account for a general fire watch and multiple fire watchers. Detail information refers to Chapter 5 of NFPA 51B, 2009.



- Precautions taken to ensure fire safety to areas below or adjacent to the work area can include the relocation of combustible/flammable materials, wetting combustible or flammable materials, or using fire blankets or fire stops to protect combustible/ flammable materials.



## Training Requirements

- Workers performing burning, welding or fire watch activities are to be trained in the hot work process with a signed acknowledgement evidence of such training. Best practice is follow-up training to be provided every six months and documented.
- Hot work process will be included in the site specific safety orientation provided to all site workers.
- Hot work operations are limited to the area and time specified in hot work authorization.

## General Conditions

- Hot work shall not be performed on a container or equipment that contains or has contained flammable liquids, gases or solids until the container or

equipment has been thoroughly cleaned, inerted or purged; except that “hot tapping” shall be allowed at bulk plants and terminals on tanks and piping when such work is conducted by competent personnel. Hot work involving cutting, welding or heating of any flammable solid in any form shall be conducted only with the approval of the FDNY.

- A fire detection/suppression system cannot be made inoperable (impaired) without the authorization from the FDNY. A fire detection/suppression system shall be protected from accidental discharge or activation.
- Any incident involving notification of the emergency services must be reported to the Construction Site Fire Safety Manager or the responsible person.
- The fire guard shall be equipped with a fully charged fire extinguisher at all times during hot work operations.

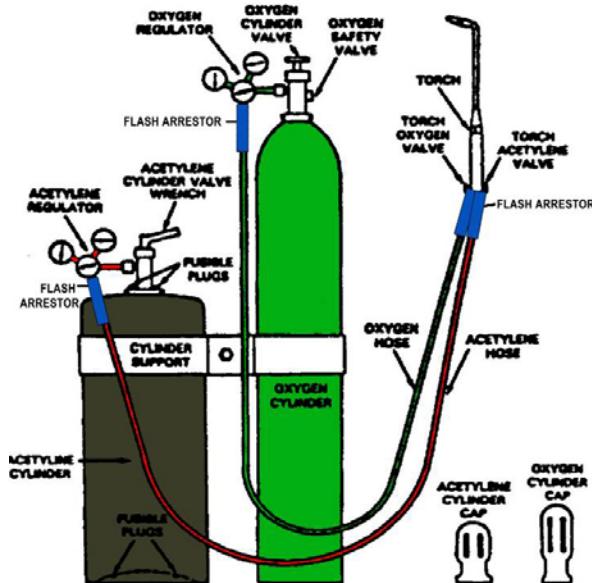
## 2.6 Torch Operation Basics

**Torches are used for the following construction activities:**

- Heating
- Cutting
- Welding
- Brazing

### Setup

A mixture of oxygen and fuel gas (butane, natural gas, propane, acetylene) is used to generate a flame. Acetylene is the most commonly used fuel gas because, compared to the other gases, it creates the greatest amount of heat when burned. The oxygen supports combustion, effectively intensifying the burning of the fuel gas. A typical **oxyacetylene system** is pictured below:



The oxygen and acetylene are stored in separate cylinders. The cylinders are under pressure and have control valves on the top. Control valves allow the discharge of gas and each should have a protective cap in place whenever the cylinder isn't in use. A handle is used to open the oxygen control valve and a special key is required for the acetylene. Before the either of the cylinders can be used, a regulator must be attached to each of the control valves. The regulators are manually adjusted for fine control of the oxyacetylene discharge pressure. When discharged, the two gases are mixed inside the torch, with the operator controlling the shape and intensity of the flame via valves on the torch. Both cylinders are typically stored and transported on a hand truck, where they are less likely to be damaged. Brazing is typically done with a B tank set-up. The tank is normally 23 inches high and contains about 40 SCF of gas. **An FDNY storage permit is required when the amount of B tanks exceeds 400 SCF of flammable gas.**

### **Torch Operating Requirements**

- Operators must hold a valid FDNY G-60/G-95 C of F
- Operator must wear the following **Personal Protection Equipment (PPE)** per OSHA:
  - Flame resistant gloves
  - Flame resistant apron (no pockets that can catch sparks)
  - Full sleeves
  - Skull cap
  - Helmet or goggles
  - Safety shoes
  - Work area should be well ventilated

When not in use (e.g. for 1 hour or more), oxygen and acetylene cylinders must be removed from the work floor, and stored separately in FDNY permitted storage locations. Signs painted in red on a white background should be posted at each storage area. (See part 5 for proper signs)

## **2.7 Fire Guard and Watchperson for Construction Sites**

### **After Hours Fire Guard**

A fire guard is required at sites when construction, alteration or demolition exceeds 10,000 square feet when fronting one street, or 20,000 square feet when fronting two streets or whenever the building exceeds 75 feet in height. When the construction, alteration or demolition site is completely enclosed by a substantial fence, the area limitations shall be increased by 50 percent to therefore require one fire guard per 15,000 square feet when fronting one street or one fire guard per 30,000 square feet when fronting two streets.

- A fire guard is required when work is not in progress from 1600-2400 (4 PM-12 PM)
- A fire guard must hold an valid FDNY F-60/F-93/F-30 certificate of fitness. For **major buildings** based upon 2008 DOB code, the fire guard must also have completed the OSHA 10 hour training.
- Fire guards must maintain a bound log of their inspections/patrols of the building site. Patrols should be conducted hourly and cover all areas of the building.
- Fire guards must enter in the log the condition of all fire suppression/ firefighting equipment at the site, including the standpipe and/or sprinkler and presence of fire extinguishers on each floor.
- The log must be available for FDNY and DOB inspection at all times. The log must contain the results of inspections, any deficiencies discovered, and the name of the fire guard who conducted the inspections.
- If a fire occurs, the fire guard shall call 911 immediately.
- The fire guard must know the location of fire extinguishers and how to use the fire extinguishers and related fire fighting equipment and know the location of emergency exits.
- The fire guard must notify CSFSM or the responsible person immediately on observing any compressed gas cylinders stored outside of the FDNY permitted storage locations.

### **Watchperson**

- A watchperson is required from 2400-0800 (**Midnight – 8 AM**) when a building being constructed or demolished occupies an area of 5,000 sq/ft up to 40,000 sq/ft. If the area is greater than 40,000 sq/ft, an additional watchperson will be on the premises. The watch person must maintain a bound logbook.
- The watchperson is not required to hold a C of F, but does need OSHA 10 hour training.

### **Fire Guard Variation Breakdown**

F-60/F-93 is the certificate for both Fire Guard for Construction sites and Fire Guard for Torch Operations.

<b>▪ <u>Fire Guard Construction Site</u></b>	<b>▪ <u>Fire Guard Torch Operation</u></b>	<b>▪ <u>Watchperson</u></b>
<ul style="list-style-type: none"> <li>▪ Holds a valid C of F (F-60/F-93/F-29)</li> <li>▪ OSHA 10 for major buildings</li> </ul>	<ul style="list-style-type: none"> <li>▪ Holds a valid C of F (F-60/F-93/F-30)</li> <li>▪ OSHA 10 for major buildings</li> </ul>	<ul style="list-style-type: none"> <li>▪ No C of F is required</li> <li>▪ OSHA 10 for major buildings</li> </ul>
<ul style="list-style-type: none"> <li>▪ Required 1600 until 2400 (4 PM- 12 PM) or afterhours.</li> </ul>	<ul style="list-style-type: none"> <li>▪ A fire guard must be provided for each torch operation at a construction site and in connection with torch-applied roofing system operations. (one per torch/tool)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Required 2400 until 0800 (Midnight – 8 AM)</li> </ul>
<ul style="list-style-type: none"> <li>▪ Required to maintain a daily log book noting inspection times and areas reviewed per hour to be signed by Fire guard on duty.</li> </ul>	<ul style="list-style-type: none"> <li>▪ An additional fire guard shall be provided on the floor or level below the torch operation. (2604.2.7.1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ <i>Required to maintain a daily log book noting attendance and notable findings.</i></li> </ul>
<ul style="list-style-type: none"> <li>▪ Required to walk the job site visiting all major areas.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Required to maintain a daily log book documenting the location, inspection times and conditions at least thirty minutes after each hot work operation is completed. (Log book to be signed by Fire guard on duty.)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Not required to walk all areas of jobsite, however must be aware of emergency contact procedure and locations of contact lists in the event of an emergency.</li> </ul>

## **2.8 Impairment of Fire Protection Systems**

The owner/managing agent/tenant of the premises shall be notified when a fire alarm system or part of the system is impaired and shall designate an ***Impairment Coordinator*** for the building/entity.

The CSFSM performs the duties of the *impairment coordinator* required by FC901.7, the *responsible person* required by FC2603.2.2, and the Fire Department liaison required by FC2703.9.1.1, or ensures that such persons are designated

and monitoring the performance of their duties. It is important for the Impairment Coordinator to take immediate steps to notify the FDNY.

Any impairment to a standpipe system poses safety risks to a building and its occupants. The Impairment Coordinator shall be responsible to ensure posting of a fire guard detail, notifications to onsite personnel, and posting out of service signage.

**901.7 Out of service systems.** Where a required fire protection system is out of service, the Fire Department shall be notified immediately and unless otherwise directed by the Fire Commissioner, either the building shall be evacuated or a fire watch shall be maintained by one or more persons holding a certificate of fitness for fire guard. Any other actions as the Fire Commissioner may direct, in addition to or in lieu of such measures, shall also be undertaken, until the fire protection system has been returned to service. Where utilized, fire guards shall be provided with at least one approved means for notification of the Fire Department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires.

**901.7.1 Impairment coordinator.** The building owner shall assign an impairment coordinator to comply with the requirements of this section. In the absence of a specific designee, the owner shall be considered the impairment coordinator.

**Standpipe System off-line entries:** The date and time the system was taken off-line, the reason for such action, the name and number of the FDNY dispatcher notified. The FDNY borough dispatcher shall be notified when the system is restored to service, and an entry shall be recorded in the log book.

#### **Out of service Signage:**

The CSFSM shall place a sign over the out of service Fire Department connection indicating what portion of the system is effected.

#### **Notification Procedures for Construction Sites**

The Fire Code (FC) requires the Fire Department be notified of any fire protection system (including fire alarm) outage. The general information (non-emergency) numbers for the 5 boroughs that should be used for notifications from owners, building managers, impairment coordinators, etc. are as follows:

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

The notification should include:

- 1.** A brief description of condition.
- 2.** Area affected.
- 3.** Type of occupancy.
- 4.** Estimated time until it becomes operational.
- 5.** Name and Telephone number of Impairment Coordinator making the notification.

In an existing or completed building with 5 or fewer contiguous floors, any planned impairment shall be made in advance by a Letter of Notification to

Fire Department of the City of New York  
Construction, Demolition and Abatement Unit  
9 Metrotech Center  
Brooklyn, NY 11201-3857

The letter shall indicate the detailed scope of work, date and time and the duration of the disconnection, and temporary fire protection measures to be provided in the affected area.

### **Fire Guard for Impairment Requirements**

In any occupancy, where a required fire protection system (e.g. sprinkler system, fire alarm system and standpipe system) is out of service, a fire watch shall be maintained by one or more persons holding an F-01 (Fire Guard for Impairment) Certificate of Fitness for fire guard. The fire guard(s) is/are required to be immediately available when the system is out-of-service with the following exception:

For the initial 4 hours of an unplanned and planned out of service condition, 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 when the affected area does not exceed 50,000 square feet.

In other words, when the affected area does not exceed 50,000 sqft, 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 C of F.

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. It may be necessary that more than one fire guard be designated to meet this standard,

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

Area	Planned or Unplanned	
	The initial 4 hours	> 4 hours
≤ 50,000 ft <sup>2</sup>	A F-01 C of F holder or an Impairment coordinator or a trained and knowledgeable person	One F-01 C of F holder
> 50,000 ft <sup>2</sup>	One F-01 C of F holder per 50,000 square feet	

The fire guard should 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 Certificate of Fitness holder must keep the Certificate of Fitness upon his or her person, or otherwise readily available for inspection by any representative of the Fire Department, at all times while conducting or supervising the material, operation or facility for which the certificate is required.**

Fire guards for impairment are 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 fire plan. Fire guards must be familiar of his obligations for notifying the Fire Department in the event of fire (**FC Chapter 4 Section 401.3**).

#### **Emergency procedures**

Fire guards must have a method of communicating to the emergency services. Fire guards can use cell phones to make immediate notifications. Fire guards should ensure that the cell phone is fully charged to cover the shift. **Notifying by phone is the most direct and effective way to notify the Fire Department.**

## **2.9 Smoking and Tobacco Products Regulation**

- Smoking is prohibited on all construction sites (See part 5 for signs).
- *All workers must sign no-smoking acknowledgement during orientation*
- Visitors and delivery drivers must abide by no-smoking regulations.
- Signage with FDNY Code 1404 must be posted on every floor throughout building.
- Tobacco products and smoking paraphernalia are banned on asbestos and abatement sites.

Smoking, including the carrying of a lighted pipe, cigar, cigarette or any other type of smoking paraphernalia or material is prohibited at all construction sites.

**“No Smoking” signs:**

All construction sites are required by New York City Building Code Section BC3307.3.2 to be enclosed with a fence. Smoking is prohibited within the area enclosed by such fence, including in construction trailers and other indoor or outdoor areas.

Durable “No Smoking” signs shall be conspicuously posted at approved locations throughout the construction site in accordance with FC Section 310. The content, lettering, size and color of required “No Smoking” signs shall be in accordance with the rules. “No Smoking” signs should be posted at all sliding and swinging gate openings, and any other openings allowing for access to the site by persons or vehicles. Within the fenced enclosure, signs should be posted at appropriate locations throughout the construction site sufficient to provide notice to persons entering or working on the site of the prohibition against smoking, including at the entrances to buildings, one or more locations on each floor of such buildings, and any indoor or outdoor areas on the construction site at which persons congregate.

In buildings undergoing alteration, where no fenced enclosure is required pursuant to BC3307.3.2, smoking is prohibited in all areas of the building in which alteration work is or will be conducted under the application filed with the Department of Buildings. “No Smoking” signs should be posted at all entrances to areas of the building undergoing alteration, and any place within those areas where persons would congregate.

In addition, smoking is prohibited at all locations, and at all times, where hazardous operations are conducted, or flammable or combustible materials or explosives are stored, handled or used. “No Smoking” signs must be posted in the immediate area of such operations and materials.

## **2.10 Electrical Safety**

- Electrical service distribution panels, spark-producing operations, or open flames will be prohibited in areas used for fuelling, transfer of fuel, or fuel storage areas.

Faulty temporary electrical systems can be a major source of fire at construction and demolitions projects. Designing and installing temporary electrical systems is the job of individuals properly licensed and qualified to do so. As part of the electrical site safety program, the licensed CSFSM should ensure that:

- A pre-task plan is in place and followed for all major electrical work, and an assured grounding program is in effect and/or ground fault circuit interrupters are installed.

The CSFSM can help ensure the temporary electrical system does not present a fire risk by protecting electrical connections from exposure to moisture caused by day-to-day conditions at the site. Moisture can be a ready electrical conductor creating the potential for fires through arcing, short circuits, and overheating of electrical equipment. Common places for such problems to occur include:

- Broken or damaged electrical cords and cable, especially where such appliances are exposed to rain or standing water.
- Electrical boxes that are not sealed and allow for moisture intrusion.
- Use of improperly rated electrical equipment, such as lights or tools, in wet or damp locations.
- Electrical cords running along floors

## **2.11 Housekeeping**

The CSFSM shall ensure the following:

- **Waste disposal** - Combustible waste, including rubbish and construction and demolition material, shall not be accumulated within buildings and shall be removed from buildings at the end of each work shift, but at least once a day. Combustible waste, including rubbish and construction and demolition material, shall be removed from the premises or stored in noncombustible containers. (FC 1404.2).
- All floors of the building are cleared of accumulations of flammable rubbish and debris.
- Lumber and other combustible debris in and around the site are not allowed to accumulate.
- Combustible material in excess of 15 cubic yards is removed daily before the close of day's work.

## **2.12 Flammable & Combustible Gases & Liquids**

- Any hazardous materials brought on site must be accompanied by Material Safety Data Sheet (MSDS). All MSDS's shall be reviewed for flammability ratings. And materials must be provided with proper storage requirements.
- Flammable and combustible compressed gases and liquids require a FDNY Storage Permit and FDNY Usage Permit
- Contact the District Office at (**See Part 4: 4:11**) depending upon the location of the site or building to arrange a permit inspection
- MSDS are required for all chemicals brought onsite

- All flammable/combustible gases and liquids must be clearly identified on the container.
- *All subcontractors must submit an affidavit verifying all tanks have been properly tested.*
- (OSHA) No more than 25 gallons of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet.
- Certificate of Fitness for any storage, use and handling of flammable/combustible liquids and gases at construction sites.

C of F	Description
S-93	Temporary storage and handle of flammable/combustible liquids
G-60	Torch operations using oxygen and a flammable gas, and any torch operation for torch-applied roof systems
G-40	Use of LPG/CNG for Tar Kettles, Asphalt Melter and Marking Street Line

### **Additional Requirements for Flammable Gases and Oxygen**

- LPG/oxygen/ acetylene tanks must not be allowed to be stored in any basement or enclosed space. Cylinders shall be stored in approved storage racks.

#### **FDNY Code 2605.6**

- (2605.6) Container shutoff. The torch valve shall be closed and the gas supply to the torch completely shut off when hot work operations are discontinued for a period of 1 hour or more.
- (2605.6.1) Emergency shut-off. Oxygen and fuel gas container valves shall be accessible to the torch operator or fire guard for immediate shut off of the gas supply in the event of an emergency.

**\*Note: The FDNY considers a tank to be in storage the moment its regulator is removed and it is capped.**

#### **FDNY Code 3504.1**

- (3504.1) Indoor storage. Indoor storage of flammable gases in amounts exceeding the maximum allowable quantity per control area set forth in Table 2703.1.1(1), is not allowed where outdoor storage is available on the premises. Indoor storage shall be in accordance with Sections 2701, 2703 and 2704, and this chapter.
- (3504.1.2) Maximum storage quantity. Storage of flammable gases shall not exceed 15,000 SCF (424.8 m<sup>3</sup>) in any building or structure.
- (3504.1.3) Flammable gas storage of 3,500 SCF (99.12 m<sup>3</sup>) or less. Indoor storage shall be protected against damage or injury from falling objects or

surrounding activity, and be located not less than 20 feet (6096 mm) from all classes of flammable and combustible liquids, oxidizing gases and readily combustible materials, such as paper and combustible fibers.

- 25 feet (7620 mm) from open flames, ordinary electrical equipment or other sources of ignition.
- 50 feet (15 240 mm) from other flammable gas storage.
- (3504.1.4) Flammable gas storage of more than 3,500 SCF. There may be more than one storage location of 3,500 SCF in a room, provided that each storage location does not exceed 3,500 SCF and the storage locations are separated by at least 50 feet or an approved masonry barrier having a minimum fire resistance rating of 2 hours. (Please refer to table 3504.2.1 of the FDNY Code, Chapter 35. It outlines how far away flammable gases must be stored from existing exposures outdoors. )

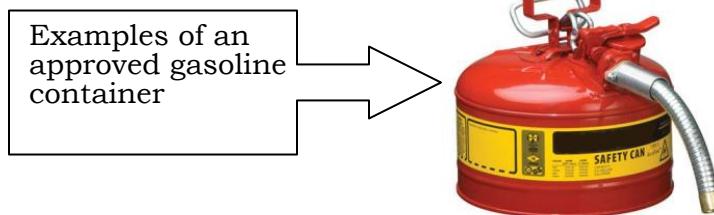
### **Unit Size References**

- SCF = Standard Cubic Feet
- One standard size Oxygen cylinder (9.27 in x 55.5 in) is approximately 307 SCF
- One standard size Acetylene cylinder (12 in x 48.5 in) is approximately 420 SCF
- 3,500 SCF in total storage / 300 SCF per standard cylinder = 11.40 cylinders

### **Additional Requirements for Flammable/Combustible Liquids (this section is added around 06/2012, schools are notified)**

#### **Fire Code**

- (1416.1 & 2204.4.1.1) Fuel for equipments at construction sites shall be stored in an approved outdoor area, and shall be moved in approved **METAL** containers **not to exceed 5 gallons**. Metal containers having a capacity greater than 2.5 gallons and up to of 5 gallons can be only filled at a construction site from temporary tanks.



- (2204.4.1) **Motor fuel liquids in portable containers shall not be dispensed into portable tanks or cargo tanks.** Portable containers shall not be filled while located inside the trunk, passenger compartment or truck bed of a vehicle or upon a watercraft.

- (2703.11.3.5) Container type. Containers shall be approved for the intended use and identified as to their content.
- (2704.2.2.4 and 3403.4) Spill control and secondary containment. Where the maximum allowable quantity per control area is exceeded, and when required by FC 2704.2, rooms, buildings or areas used for storage, handling or use of Class I, II and III-A liquids, including the dispensing or mixing of such liquids, shall be provided with spill control and secondary containment. Secondary containment for outdoor storage areas shall be designed to contain a spill from the largest individual vessel. If the area is open to rainfall, secondary containment shall be designed to include the volume of a 24-hour rainfall as determined by a 25-year storm but in no case less than 110% of the largest individual vessel and provisions shall be made to drain accumulations of ground water and rainwater.
- (3404.3) Container storage. Storage of flammable and combustible liquids in closed containers that do not exceed 60 gallons in individual capacity, and transfers incidental thereto, shall comply with the requirements of this section. **It shall be unlawful to store flammable and combustible liquids in containers with an individual capacity of greater than 60 gallons.**
- (3404.3.2) Where the Fire Department requires that liquid containers be stored in storage cabinet, such cabinets and storage shall be in accordance with the followings:
  - The cabinet must be listed in accordance with UL 1275. All cabinets must be provided with a conspicuous label in red letters on contrasting background which reads: FLAMMABLE-KEEP FIRE AWAY. The door must be well fitted, self-closing and equipped with a three-point latch. The bottom of the cabinet must be liquid-tight to a height of at least 2 inches.
  - The combined total quantity of liquids in a cabinet shall not **exceed 120 gallons** or the manufacture's recommendations whichever is less. **Maximum 3 cabinets is allowed** to be located in a single fire area, additional cabinets are allowed to be located in the same fire area if the additional cabinets (or groups of up to 3 cabinets) are separated from other cabinets or groups of cabinets **by at least 100 feet or separated from other areas by a noncombustible wall having a fire-resistance rating of at least 2 hours.**
- (3404.3.4.4) Quantities of flammable and combustible liquids requiring a permit, used for maintenance purposes and the operation of equipment, shall be **stored in liquid storage cabinet.**



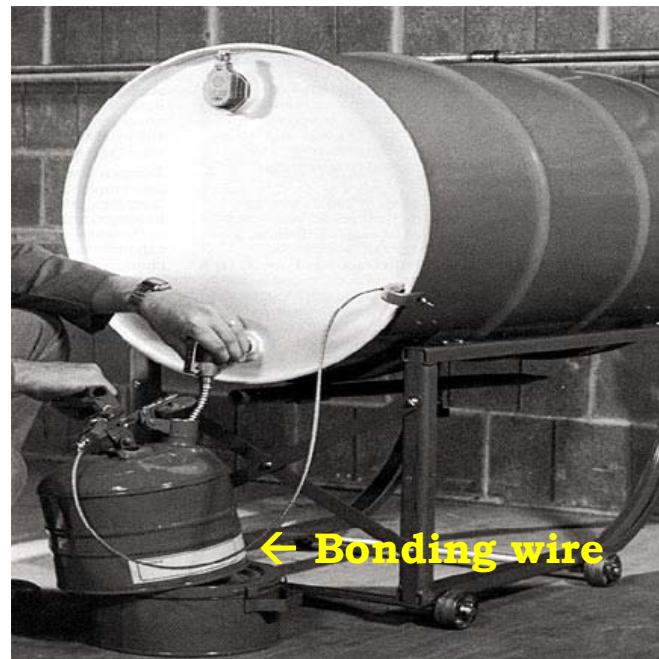
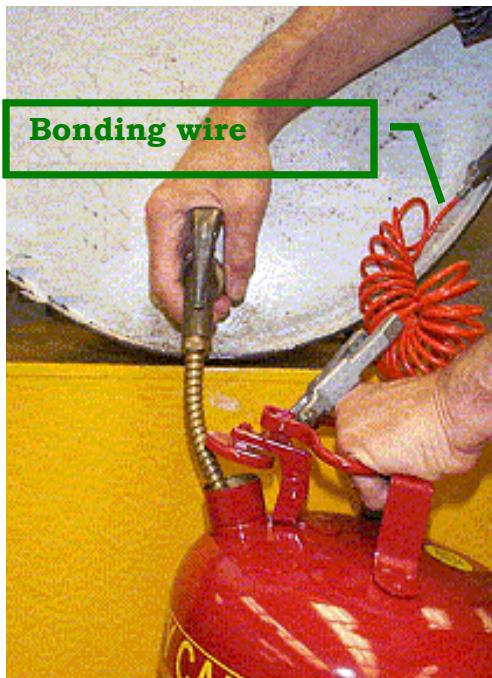
- (3404.4.6) The storage location shall be kept free from vegetation and other combustible waste. Rubbish and other combustible waste shall not be allowed to accumulate within **15 feet** of a flammable or combustible liquid storage location.
- (3404.4.8) Empty containers shall be considered as full containers. The storage of empty containers previously used for the storage of flammable or combustible liquids shall be stored as required for filled containers.
- (3405.2.2) **Gases shall not be used to pressurize containers or tanks to provide for transfer.** Container-filling operations for Class I liquids involving conveyor belts or other automatic-feeding operations shall be designed to prevent static accumulations.
- (3405.2.4) **Class I and II liquids or Class III liquids in containers exceeding 5.3 gallons capacity** that are at a temperature higher than 20°F less than their flash points shall **not be dispensed by gravity**, but shall be transferred by one of the following methods:
  1. From safety cans complying with the requirements of UL 30.
  2. Through an approved closed piping system.
  3. From containers or tanks by an approved pump taking suction through an opening in the top of the container or tank.
  4. Approved engineered liquid transfer systems.

Example: Turpentine having a flash point of 95°F would NOT be allowed to be dispensed by gravity if the material temperature was to exceed 75°F.

- (3405.2.5) The following liquids shall not be transferred into containers unless the nozzle and containers are **electrically interconnected**:
  - (1) **Any Class I liquids;**
  - (2) **The Class II or III liquids at a temperature higher than 20°F less than their flash points**

Acceptable methods of electrical interconnection include:

1. Metallic floor plates on which containers stand while filling, when such floor plates are electrically connected to the fill stem; or
2. Where the fill stem is bonded to the container during filling by means of a bond wire.



- (3406.2.1) Combustibles and open flames near tanks. Storage areas shall be kept free from weeds and other combustible waste. It shall be unlawful to smoke, or light or maintain an open flame in a flammable or combustible liquid storage area.
- (3406.2.2) Marking of tanks and containers. Tanks and containers for aboveground storage of liquids shall be conspicuously marked with the name of the product which they contain and the words: FLAMMABLE—KEEP FIRE AND FLAME AWAY. Tanks shall bear the additional marking: KEEP 50 FEET FROM BUILDINGS.
- (3406.2.4) The capacity of temporary aboveground tanks containing flammable or combustible liquids shall not exceed 660 gallons. Tanks shall be of the single-compartment design, shall be constructed of steel, and shall meet the requirements of the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Parts 613 and 614.

**Fill openings shall be equipped with a locking closure device. Fill openings shall be separate from vent openings.** Tanks containing flammable or combustible liquids shall be kept outdoors and at least **50 feet from buildings, combustible material and combustible waste.** Additional distance shall be provided when necessary to ensure that vehicles, equipment and containers being filled directly from such tanks will not be less than 50 feet from structures or combustible storage.

## **2.13 Means of Egress and Elevators**

**Stairways** - Stairways at construction sites shall be provided, maintained, and made available for department use in accordance with the construction codes, including the Building Code.

**Maintenance** - Required means of egress shall be maintained during construction, alteration and demolition in accordance with this code and the Building Code.

**Elevators** - Elevators at construction sites shall be provided, maintained, and made available for department use in accordance with the construction codes, including the Building Code.

## **2.14 Internal – Combustion – Powered Equipment**

### **Fire Code 1416**

**Conditions of use:** Internal-combustion-powered construction equipment shall be used in accordance with the following requirements:

1. Equipment shall be located so that exhausts do not discharge against combustible material.
2. Exhausts shall be piped to the outdoors.
3. Equipment shall not be refueled while in operation.
4. Fuel for equipment shall be stored in an approved outdoor area, and shall be moved in approved containers not to exceed 5 gallons (19 L).

## **2.15 Safeguarding Roofing Operations**

### **Fire Code 1417**

Roofing operations utilizing heat-producing systems or other ignition sources shall be performed by a responsible person. Roofing operations involving hot work shall comply with the requirements of Chapters 26, 35 and 38, as applicable.

**Tar kettles** - Tar kettles shall be handled and used in accordance with Section 303.

**Portable fire extinguishers for roofing operations** - Portable fire extinguishers shall be provided in accordance with Section 906. There shall be not less than one multi-purpose portable fire extinguisher with a minimum 3-A 40-B:C rating on the roof being covered or repaired.

**Prohibited operations** - It shall be unlawful to install any roofing material using a torch on a roof of combustible construction, or otherwise engage in roofing operations on roofs of combustible construction using hot work equipment.

## **2.16 Powder Actuated Tools**

- E-21 FDNY C of F is required to handle Powder Actuated Tools
- **Storage of small arms ammunition shall be under the general supervision of a E-21 C of F holder**
- Subcontractors must obtain an FDNY permit to handle or store onsite
- Proper signage must be displayed at Small Arms Ammunition Storage area(s)
- Misfired shots are not to be submerged in water, they must be re shot

### **Storage**

FDNY Code 105.6

- A permit is required to store, handle, use or sell 200 or more shells of small arms ammunition.

FDNY Code 3306.2.2

- Quantity restrictions. It shall be unlawful to store small arms ammunition and primers, black powder or smokeless propellants in quantities exceeding the 2,500,000 cartridges for pistols.

FDNY Code 1418.1

- Storage, handling and use. Small arms ammunition shall be stored, handled and used for powder-actuated tools at a construction site, as follows:
  - The main store of small arms ammunition shall be kept in a locked metal box interlined with  $\frac{1}{2}$  inch of non-combustible insulating material.
  - The small arms ammunition storage box shall be kept away from heat and shall not be stored in the same storage area or storage facility containing compressed gases or flammable liquids.
- The storage area or storage facility in which the locked metal small arms ammunition box is stored shall bear a permanent sign bearing the words "DANGER- AMMUNITION" in 2-inch white letters on a red background.
- Powder-actuated tools shall not be used in an explosive atmosphere.
- The C of F holder shall establish a safe zone behind a work area in which powder-actuated tools are to be used by evacuating the area or placing a barrier constructed of  $\frac{1}{2}$  inch steel plate.
- At least one portable fire extinguisher having a minimum 2-A rating shall be provided in the area where small arms ammunition is stored.

### **Disposal of Safety Boosters (Power Loads)**

- Misfired boosters should not be placed in a bucket of water. This will not deactivate/neutralize the boosters.
- Not all Manufacturer Sales Representatives can take back misfired boosters. Only manufacturer's who are licensed to be Hazardous Waste Disposal Contractors can do this.

- The simplest method of disposing boosters is to fire them. If the booster shows a firing pin dent, then the booster should be re-inserted 180° from its original position and tried again. Some tools will allow the booster strip or booster to be re-inserted 180° from its original position. Some booster strips do not allow this. In these strips the booster would have to be rotated in the strip. Once the booster is repositioned it should fire.

## **2.17 First Responder Communication**

- *All jobsites should have FDNY First Responders' Box.*
- *Request FDNY visit and walk jobsite monthly and/or after major changes.*
- Borough Dispatch must be contacted for non-emergencies and/or notified when a standpipe is being taken out of service.

### ***FDNY First Responders' Box***

#### ***Location***

- Box to be located on a solid surface with clean surroundings.
- Easily accessible 24/7.
- Exact location to be determined in coordination with FDNY.

#### ***Contents***

- ***Emergency Contact List – Job Specific***

- *Attached to underside of lid*
- *8 ½" x 11"*
- *Laminated*
- *The list must have the following phone numbers:*
  - a. Police*
  - b. FDNY*
  - c. DOB BEST Squad*
  - d. Ambulance*
  - e. Company Main Office*

- ***Work, home, and mobile numbers of the following:***

- Senior Superintendent
- Site Safety Manager
- Construction Site Fire Safety Manager
- Senior Project Manager
- Company Fire Safety Manager
- Hoist Subcontractor Contact
- Security Subcontractor Contact
- Fire Suppression Contact
- Elevator Subcontractor Contact
- Electrical Subcontractor Contact

- **FDNY Permit Binder**

- 8 1/2" x 11"
- All permits must be stored in a **three** ring binder clearly marked "FDNY Permits"
- The binder must include all permits for the storage and use of:
  - a. Flammable gases
  - b. Liquefied petroleum gases
  - c. Portable fueled space heaters
  - d. Combustible liquids (excluding paints, varnishes and lacquers)
  - e. Compressed gases
  - f. Flammable liquids (excluding paints, varnishes and lacquers)

- **Floor by Floor Egress Plans**

- Clearly marked as "Floor by Floor Egress Plans"
- 11" x 17"
- Laminated, bound together
- Clearly labeling entry and exit points

- **Standpipe Diagram**

- Clearly indicating highest floor served by standpipe (updated as necessary)
- Full Size
- Laminated
- Labeled as "*Current Standpipe Diagram*"

- **Site Safety Plan illustrating the following:**

- Full Size
- Laminated
- The Site Safety plan must clearly identify "*You Are Here*" and illustrate the following:
  - a. Location of standpipe(s)
  - b. Location of gas storage
  - c. Location of fuel storage
  - d. Location of hoist locations
  - e. Crane locations
  - f. Evacuation procedure
  - g. Muster points
  - h. Location of OS & Y valve
- Labeled as "*Site Safety Plan*"

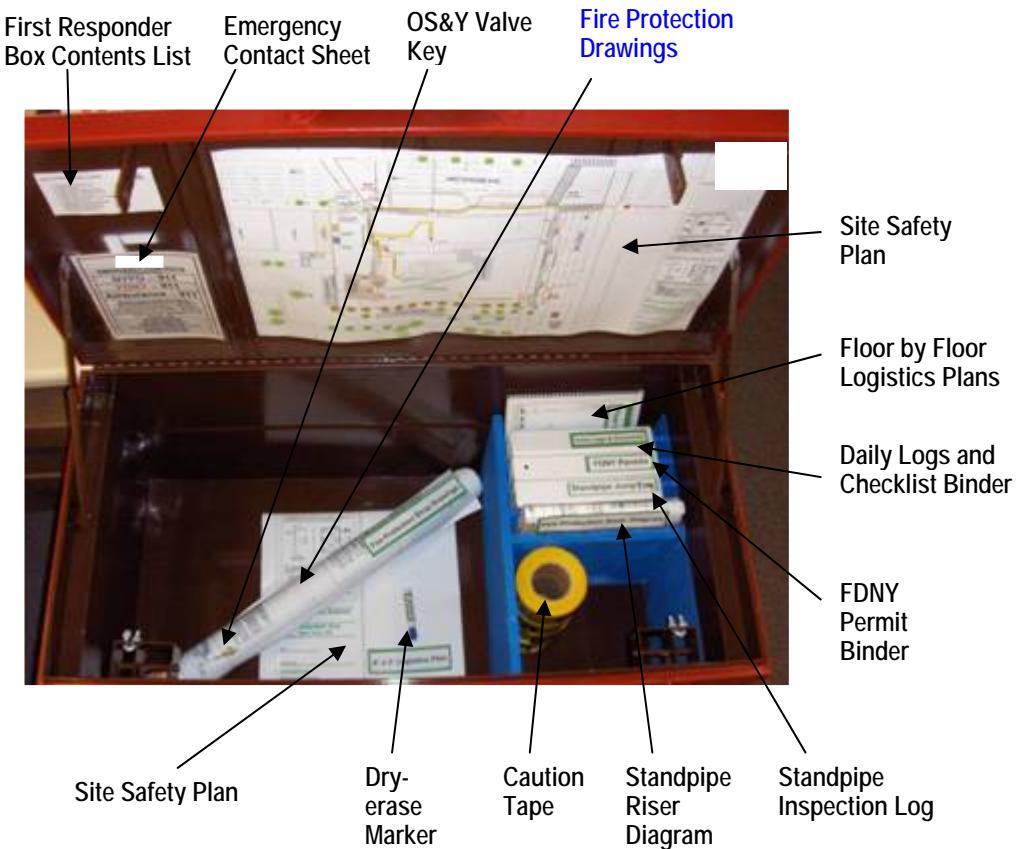
- **Daily Log and Checklist**

- This should be a bound log book, clearly marked "*Daily Log and Checklist*"

- This log book must include:
  - Status of fire protection devices and systems which includes:
    - I. Pressurized standpipe system**
      - a.** Painted red
      - b.** Air compressor
      - c.** Alarm system
      - d.** Relief valve
      - e.** Red light
      - f.** Signage
      - g.** Fire Department connection
      - h.** Visual inspection of electrical components
    - II. Sprinkler system**
      - a.** In service
      - b.** Out of service
    - III. Fire extinguishers**
      - a.** Locations per code
      - b.** Inspection labels/tags
      - c.** Quantity per code
  - Egress and access
  - Hot works operations
- Standpipe Inspection Log
  - This should be its own 1", three ring binder clearly marked "Standpipe Inspection Log"
  - Daily inspection top floor to street level Fire Department connection
  - Testing occurring on that day
  - Incidents/deficiencies that occur on a daily basis
  - Corrective actions taken on that day
  - Official safety inspections
  - In its own 1", three ring, clearly marked binder
- (2) Rolls of Caution Tape
- Dry erase pen/marker

### **Appearance**

- 2' x 4' Gang Box
- Painted red
- "FDNY" neatly & clearly written with reflective tape (top, front & both sides)
- Lock (example combination is 1, 2, 3, 4 for all jobsites)
- Internal compartments to properly organize binders and drawings
- Area around box to be well lit 24/7 for easy identification by FDNY



## Record Keeping

- FDNY/CSFSM Daily Report (required by Fire Rule §1408-01(e))
  1. This log must be filled out daily by the CSFSM.
  2. A copy of the FDNY/CSFSM Daily Report goes into the FDNY First Responders' Box in the Daily Log and Checklist Binder.

## Site Visits and Walkthroughs

- Local Fire House Liaison An FDNY Local Fire House is invited to tour each jobsite once monthly and/or after any major logistics change within or around the jobsite.
- *Any visits are to be documented in the FDNY/CSFSM Daily Report, which is to be signed by the visiting senior member and kept in the FDNY First Responders' Box.*
- Contact Borough Dispatch for non-emergency calls (i.e. an extinguished fire, negative air in use, etc.) and when taking systems out of service (i.e. standpipe, sprinklers, demo, etc.).
- All calls to Borough Dispatch will be recorded.
- See below for the FDNY Borough Dispatcher's phone number that applies to your jobsite.

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

## **2.18 Emergency Response Procedure**

The emergency response procedure should refer to pre-fire plan.

- *Compile emergency contact phone numbers list (post as required)*
- *Create a Personnel Breakdown per person of actions taken in an emergency*
- *Hold fire drills quarterly*
- *Prepare an emergency evacuation route on the site logistics plan*
- *Establish all subcontractor foremen as fire marshals*

### **Notification Contact Numbers**

- For **all** emergencies **call 9-1-1**
- FDNY Borough Dispatcher # for fire protection system impairment

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

- *You must have the work, home and mobile numbers of the following individuals readily available:*
  - Senior Superintendent
  - Site Safety Manager
  - Construction Site Fire Safety Manager
  - Senior Project Manager/Project Executive
  - Hoist Subcontractor Contact
  - Security Subcontractor Contact
  - Master Fire Suppression Contractor and Master Plumber Contact
  - Elevator Subcontractor Contact
  - Electrical Subcontractor Contact
- CSFSM is required to post this list in the following locations (if they exist on your site):
  - Guard Shack
  - Superintendents' Office
  - Project Management Office
  - Underside Lid of FDNY First Responders' Box

- As the first page in the Daily Log and Checklist binder within the FDNY First Responder's Box
- Additional contact number guidelines:
  - Be sure your guards understand the numbers are for emergency use only.
  - Do not display contact numbers in a location visible to the public or general job site population.
  - This emergency contact procedure is a vibrant illustration; however, yours can be in a simple table format establishing the same efficient communication route to these key individuals/ organizations.

## **2.19 Negative Air**

### **Negative Air Ventilation System Disconnect Switch**

For all multi-floor or entire floor asbestos projects, and for all partial floor asbestos projects with the floor containment area greater than 15,000 square foot, a negative air ventilation system disconnect switch that controls the entire operational system shall be installed, maintained and located at the ground floor exterior of the building. The switch location shall be coordinated with an FDNY Borough Command representative who has jurisdiction at the site.

#### **DEP Rules §1-91 (f):**

If the containment area of the asbestos project covers the entire floor of the affected building, or an area greater than 15,000 square feet on any given floor, the installation of a negative air cut off switch or switches shall be required at a single location outside the work place, such as inside a stair well, or at a secured location in the ground floor lobby when conditions warrant. The required switch or switches shall be installed by a licensed electrician pursuant to a permit issued by the Department of Buildings. If negative pressure ventilation equipment is used on multiple floors, the cut off switch shall be able to turn off equipment on all floors.

## **2.20 Other Certificates**

### **2.20.1 Aerosols**

The usage and storage of aerosol products on a construction site shall be monitored and supervised as these highly pressurized and combustible products pose a fire hazard.

By passing the CSFSM exam, the holder may supervise the Storage of aerosol products on construction sites **without taking any further exam**. At other

locations, a separate exam (A-49) is required at fixed locations such as hardware and drug stores. This recognition is only applicable on Construction Sites.

A Certificate of Supervision of Aerosols (A-49) holder is required at any site with usage or storage which exceeds **100 pounds** of level 2 or 3 aerosol products. Below is a chart which shows the different quantities of products which constitute more than 100 pounds:

Permit and C of F Calculations	
Can Net Weight	Number of Cans
6 oz	267
7 oz	229
8 oz	200
10 oz	160
12 oz	134
14 oz	115
16 oz	100
20 oz	80
24 oz	67
Example of combination:	
10 oz and 16 oz	80 and 50, respectively



**AEROSOLS**

Examples of **Level 2 (Chemical heat of combustion of 8,600 to 13,000 Btu/lb)** products are alcohol formulated based, such as hair sprays and insect repellents:

	
<b>Spray Paints</b>	<b>Insect Repellents</b>

Examples of **Level 3 (Chemical heat of combustion greater than 13,000 Btu/lb)** products are hydrocarbon formulated based, such as carburetor cleaner and petroleum lubricating sprays:

	
<b>Carburetor Cleaner</b>	<b>Petroleum-based Aerosols</b>

Note: **Level 1** aerosols DO NOT have restrictions as to the amount or place of storage of products.

	
<b>Whipped Cream</b>	<b>Some Air Fresheners</b>

Proper storage of aerosol products on a construction site shall abide by the New York City Fire Code. In the event of a fire, proper aerosol storage will prevent the products from combusting and exploding resulting from excessive heat and flames.

**Note: Aerosol storage is NOT permitted in ANY amounts at a basement/below ground level.**

#### Separated Storage:



#### Fences

chain-link fences shall be used to enclose storage areas used for aerosol products. To ensure the proper strength and type of chain-link fence, these requirements shall be followed:

1. Minimum No. 9 gage steel wire fence woven into a maximum **two (2) inch** diamond mesh.
2. Fence shall run from the floor to the ceiling of the enclosed area.
3. Other combustible products shall be stored outside the area, at least **eight (8) feet** from the fence.

**Exception:** Combustible liquids may be stored in 1-quart metal containers or smaller.

4. There must be at least two (2) exits from the fenced area.
5. Access openings must have a self-closing device so that aerosol products cannot rocket through openings at any given moment.

## **2.20.2 Crane Aerial Fueling Operations**

A Certificate of Fitness holder for Crane Aerial Fueling Operations (P-54) must be present at all times at a construction site when the fueling operation is in progress. The CSFSM must ensure that before starting a crane aerial fueling operation, the C of F holder for Crane Aerial Fueling Operations (P-54) inspects the following:

- A. Inspection of fueling equipment**
- B. Weather conditions:** note wind speed and any approaching storms.
- C. Communication:** maintained between crane operator and other personnel.
- D. Method of discharge:** must be done under gravity discharge.
- E. Fire Source:** Check for faulty electrical fixtures, open flames or other spark producing devices. Make sure nobody is smoking around the fueling operation.
- F. Fueling of crane:** Must follow all procedures, including:
  - Stopping the construction operation
  - Shutting off the engine of the crane.
  - The portable tank should be grounded to the crane structure

All procedures listed in the Certificate of fitness (P-54) shall be followed. Proper fire protection systems shall be implemented as stated in the Crane Aerial Fueling C of F (P-54) Study Materials. This includes providing **fire extinguishers and proper signage constructed of a durable metal. (See Section 5: Signage for examples)**

## **2.20.3 Portable Fueled Space Heaters**

A C of F holder for Supervision of Portable Fueled Space Heaters (S-92) must be present at all times at a construction site when portable fueled space heaters are in use.

Examples of these devices are:

### **1. Solid Fuel Salamander:**



Salamander with coke burning



Improperly stored fuel in cardboard bin

## **2. Kerosene Fueled Salamander:**



**Kerosene Forced Air Portable heater**

## **3. Liquid Petroleum Gas (LPG) Fueled Salamander**

**Examples include: propane, propylene, butane and butylenes.**



**Propane radiant heater**



**Safe LPG Cylinder Storage**

## **4. Natural Gas Fueled Salamander**



**Natural Gas Salamander**



**Compressed Natural Gas (CNG) cylinders**

The Construction Site Fire Safety Manager shall conduct an inspection of the construction site and all fire safety measures and maintain a record of these inspections in a bound log book or other approved system of recordkeeping. The

log book or other approved recordkeeping shall be made available for inspection by any representative of the department.

**Where a fire watch service is provided, the Fire Safety Manager shall be responsible for the general supervision of the fire guards.**

#### **Handling Gas Emergencies**

- Gas leaks that have not ignited: mitigated by shutting off gas valve and ventilating area.
- Gas leaks that have ignited: **Call 911 immediately.** Shutting off the gas supply is the safest way to extinguish the fire.
- **Fire Extinguishers** - a minimum 20-B: C rating shall be provided on each floor of the construction site at a location not more than 30 feet from where a heater is in use or connected for use.

## **2.21 ORGANIZATION BASICS**

### ***Fire Safety Documents***

*Follow the step-by-step directions below on how to set up the five recommended binders needed per job site.*



#### ***Fire Safety Orientation Binder***

- Divide binder alphabetically by subcontractor
- File each subcontractor alphabetically by employee
- For each employee include:
  - Fire Safety Orientation
  - Fire Safety Accreditations
  - F-60 or (F-93/F-30/F-29) (Fire Guard)
    - G-60 or G-95 or G-38 (Torch Operator)
    - DOB Welding License
    - Certificates of Fitness
    - Hot works Orientation
  - File 6 month re-orientations by attaching new copy to old copy



#### ***Hot work Permit Binder***

- Divide binder alphabetically by sub
- File each sub's permits by date (newest on top)

F  
D  
N  
Y  
  
G  
a  
n  
g  
  
B  
o  
x

### **FDNY Permit Binder**

*Divide binder alphabetically by subcontractor  
File each subcontractor's FDNY permits by date  
(newest on top)*

F  
D  
N  
Y  
  
G  
a  
n  
g  
  
B  
o  
x

### **Daily Forms & Checklists Binder**

*This should be its own 1", three ring binder clearly  
"Daily Log and Checklist Binder"*

*This binder must be divided into (3) sections:*

- Emergency Contact List  
(Reference # 1 above)
- Most recent FDNY/ CSFSM Daily Log (only most recent is required)
- Fire Notification Guidelines



### **Standpipe Inspection Log**

- *This should be its own 1", three ring binder clearly marked "Standpipe Inspection Log"*
- *Daily inspection top floor to street level Fire Department connection*
- *Testing occurring on that day*
- *Incidents/deficiencies that occur on a daily basis*
- *Corrective actions taken on that day*
- *Official safety inspections*

## **PART 3: INSPECTIONS AND WALKTHROUGHS**

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### **3.1 CDA Walkthroughs**

#### **What is the Construction Demolition and Abatement (CDA) Unit?**

The Construction Demolition and Abatement Unit (CDA) is a unit within the Bureau of Fire Prevention that is responsible for inspecting buildings under construction, demolition, or abatement.

The Construction Demolition and Abatement Unit have broad authority to inspect fire and life safety conditions on construction sites, including provisions of both the Fire Code and Building Code.

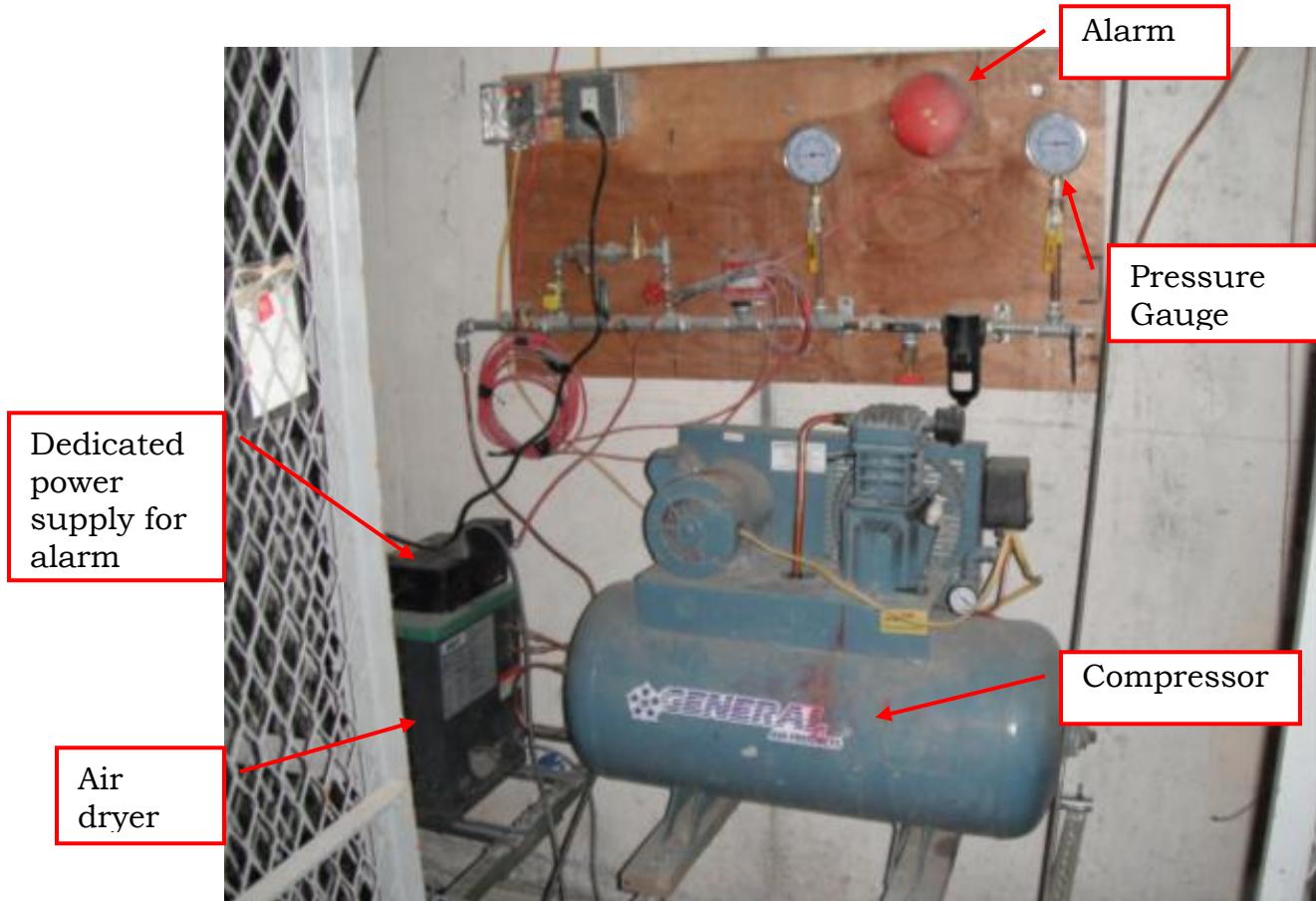
*The CSFSM should meet the Construction Demolition and Abatement Unit (CDA) inspector at site gate.*

**Typical items inspected, but not limited to, during the Construction Demolition and Abatement (CDA) walkthrough are:**

They will want to see:

- Posted Department of Buildings Permit & Variance(s)
- Fire Department Permit & Variance(s)
- Certificates of Fitness
  - CSFSM (S-56)
  - Fire Guard (F-60/F-93/F-30/F-29)
  - Torch Operator (G-60/G-95)
- Site Safety Manager's license
- Hot works Permits
- Hot works Orientations
- FDNY/CSFSM Daily Reports
- Fire guard Log (for subcontractors doing hot work)
- Fire guard Log (for 4pm through 12am Guard Service)
- Emergency Evacuation Procedure
- No Smoking signage posted
- Site contact information (general contractor and owner)
- Standpipe system and Fire Department connections
  - Air-pressurized alarm system
  - Clear access
  - Proper signage
  - Red light

### **Examples of a Standpipe Compressor/Alarm Configuration:**



## **3.2 Weekly Subcontractor Shanty Inspections (Best Practice)**

### **Project Shanty Guidelines (Best Practice)**

- *Night time security guards will be required to patrol all areas where a construction shanty or shed is located during all off work hours.*
- *The Fire Safety Manager is to review shanty town on a weekly basis recording the date of the review on the weekly log.*
- *Contractors using construction shanty or sheds shall maintain them free of accumulated trash/debris.*
- *All contractor shanties are to be free of newspapers on floor, windows, walls, etc.*
- *Shanty construction should be made of sheet metal, tin or sheetrock. Knock down shanties may be used if constructed weekly with fire rated plywood wrapped in metal.*

- *Electric heaters are only permitted if it is mounted at the ceiling and installed by an electrician who follows Electrical Code.*
- *Oil filled heaters are only permitted to be used as a floor placed unit.*
- *Disconnect for shanty town electrical service shall be clearly labeled for emergency purposes.*
- *ABC horizontal mounted extinguishing systems or tank shall be located in each shanty. A sign must be located at the entrance to the shanty that the ABC extinguisher is installed. This signage is for FDNY notification.*

**Examples of construction shanties with sheet metal protection**



## **PART 4: PLANS, FORMS, CHECKLISTS AND LOGS**

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### **4.1 Pre- Fire Plan for Construction Site**

**Purpose:** To establish a method of systematic, safe and orderly evacuation of an area and of its construction site personnel in case of fire or other emergency, in the least possible time to a safe area or by the nearest safe means of egress. Also to ensure the readiness and use of available fire protection equipment.

A Pre-Fire Plan is required by FC 1408.2. The CSFSM shall develop and maintain at the construction site an approved Pre-Fire Plan. The department shall be notified of any changes in site conditions materially affecting the procedures set forth in such plan.

The main goal of the Pre-Fire Plan is to gather general and detailed data of the construction site conditions and provide them in a condensed format for use by the site personnel in the event of an emergency.

The Pre-Fire Plan shall be in a narrative with explanatory drawing. This plan is required to be updated as major construction on the site changes.

#### **Pre- Fire Plan**

This narrative shall accompany the required drawing. The Pre-Fire Plan shall indicate:

**1.** Building Address: \_\_\_\_\_ Zip Code\_\_\_\_\_

Type of Construction: \_\_\_\_\_ Combustible \_\_\_\_\_ Non-Combustible  
Number of floors \_\_\_\_\_ Above ground \_\_\_\_\_ Belowground \_\_\_\_\_

**2.** Building ownership information: \_\_\_\_\_

**2.1** Contact Business/ Cell No: \_\_\_\_\_

**3.** Construction Site Fire Safety Manager (CSFSM)

**3.1** Name \_\_\_\_\_  
Business/ Cell No.\_\_\_\_\_

**3.2** C of F # \_\_\_\_\_ Exp date: \_\_\_\_\_  
Site Safety Manager (SSM) / Site Safety Coordinator (SSC)

**3.3** Name \_\_\_\_\_  
Business/ Cell No.\_\_\_\_\_

**3.4** License / C of F # \_\_\_\_\_ Exp date: \_\_\_\_\_  
Construction Project Manager

**3.5** Name \_\_\_\_\_  
 Business/ Cell No. \_\_\_\_\_

**4. Emergency Procedures**

**4.1** A sketch indicating the evacuation procedures and path for site personnel to follow (Updated as site conditions change)  
 Date of most recent update: \_\_\_\_\_

**4.2** Location of all marked evacuation exits.

**4.2.1** Available stairways for an emergency evacuation

1. \_\_\_\_\_ 3. \_\_\_\_\_

2. \_\_\_\_\_ 4. \_\_\_\_\_

**4.2.2** Location of any limited access and egress points.

1. \_\_\_\_\_ 3. \_\_\_\_\_

2. \_\_\_\_\_ 4. \_\_\_\_\_

**4.2.3** Any other type of access and egress points:

1. Type of Egress \_\_\_\_\_

2. Identification \_\_\_\_\_

3. Location \_\_\_\_\_

4. Leads to \_\_\_\_\_

**4.3** Means of notification to site personnel:

E.g. Air horn with repetitive horn blasts

i.e.: Three second horn blasts with a 10 second pause repeated as necessary All clear is a 10 second continuous horn blast.

i.e.: Audible sound will alert site personnel that an evacuation is required.

**4.4** Specific procedures for the safe evacuation of the construction site:

**4.4.1** Head count of all building trade workers on the site \_\_\_\_\_.

**4.4.2** Personnel for hoist/elevator operation \_\_\_\_\_.

**4.4.3** Site superintendent to search building.

**4.5** The location of "MUSTER POINT" outside construction site where all building trade workers must report to in the event of a total site evacuation. (Note: personnel shall be notified not to wander off or leave unless instructed to by their supervisor).

\_\_\_\_\_

\_\_\_\_\_

**5. Evacuation Drills (recommended quarterly)**

**5.1** Conduct fire drill and evacuation drills.

**5.2** Frequency of drills – indicate start date and frequency \_\_\_\_\_.

**5.3** Head count of all building trade workers participated \_\_\_\_\_.

**6. Not limited but required signage**

**6.1** Exits signs including signs on the floor that leads to exits (Best practice)

**6.2** Extinguishers locations

- 6.3** Location of standpipe system and Fire Department connections.
- 6.4** Location of fire hydrant and other forms of fire protection
- 6.5** FDNY location of "Muster Point"
- 6.6** Storage of flammable solids, liquids and/or gases.
- 6.7** Stair case and means of egress.

**7.** Communications systems like walkie-talkies telephones etc

- 7.1** \_\_\_\_\_
- 7.2** Automatic Dialer

**8.** Fire Protection equipment

- 8.3** Extinguishers
  - How many \_\_\_\_\_
  - Location \_\_\_\_\_

**9.** Prepared/revised by \_\_\_\_\_

- 9.1** Date prepared: \_\_\_\_\_
- 9.2** Date revised: \_\_\_\_\_

## 4.2 CDA Checklist



### Fire Prevention Construction, Demolition and Abatement Unit Building Information Form

CDA-1 (10-09)

Division: \_\_\_\_\_ Date: \_\_\_\_\_ Name of CDA Inspector: \_\_\_\_\_

BIN: \_\_\_\_\_ Building Address: \_\_\_\_\_

Contractor Name: \_\_\_\_\_

Building Height (ft): \_\_\_\_\_ Floors: \_\_\_\_\_ Dimensions (ft): \_\_\_\_\_ x \_\_\_\_\_  CDA 30 Day  CDA VO  
Re-inspection

**Occupancy Classification:**  Assembly:Group A  Business:Group B  Educational:Group E  
 Factory/Industrial:Group F  High Hazard:Group H  Institutional:Group I  
 Mercantile:Group M  Residential:Group R  Storage:Group S  Utility/Miscellaneous:Group U

**Inspection Time:** Hrs \_\_\_\_\_ Mins \_\_\_\_\_

Standpipe System:  Yes  No Siamese connection(s) \_\_\_\_\_ Location(s) \_\_\_\_\_

Stairways Identified: Yes  No  Location of risers: Stairway(s) \_\_\_\_\_ Elevators Identified:  Yes  No

**Does the dry standpipe system have an air pressurized alarm system?  Yes  No**

**Is there a working air gauge on the alarm system?  Yes  No**

**If no, was the entire standpipe system traced from siamese connections to uppermost standpipe cap?  Yes  No**

**Enforcement Action Taken:**

NOV(s) Issued: \_\_\_\_\_ VOs: Issued \_\_\_\_\_ Complied With \_\_\_\_\_ A8 Referrals \_\_\_\_\_ Summons: \_\_\_\_\_  
 qty qty qty qty

**Summon #(s)**

**NOV / VO#(s)** \_\_\_\_\_

**Building Status:**  Active Site  No Access

No Activity / Vacant Lot (construction has not commenced at site)

Excavation / Foundation

Construction Suspended: Stop Work Order / Labor Issue / Financing /other: \_\_\_\_\_

Major Construction Completed / No Further Inspection Required

(All of the following must be present to be deemed Major Construction Completed)

Required elevators complete and operational.  All interior stairway(s) completed.  Required standpipe(s) is completed and operational.  Required sprinkler system is complete and operational.  Exterior elevators and hoists have been removed and exterior skin of building is closed up.  Site Safety Manager no longer required under prevailing law and regulation and sidewalk shed has been removed.  All structural welding completed.

**Remarks:** \_\_\_\_\_

Supervisor: \_\_\_\_\_ Date Reviewed: \_\_\_\_\_ Submitter: \_\_\_\_\_ Date Entered: \_\_\_\_\_

### 4.3 Construction Site Fire Safety Manager Daily Report

Construction Site Fire Safety Manager Daily Report			
<b>GENERAL INFORMATION</b>			
Job Number: _____	Job Name: _____	Date: _____	
Today's man count: _____	Workers oriented and fire safety trained; documentation up to date and on file: today _____ total _____		
Describe any negative air/asbestos/infectious disease controls in use: _____			
<b>STANDPIPE INSPECTION</b>			
<input type="checkbox"/> Standpipes inspected visually in their entirety, from the tops to the Siamese connections on street level; covered sections traced using schematic diagrams.			
<i>Pressurized Air Standpipes with Alarms</i>	<input type="checkbox"/> None	<i>Standpipes Under Water Pressure</i>	<input type="checkbox"/> DOB/FDNY paperwork
<input type="checkbox"/> Pressurizing mechanisms and alarm visually inspected?		Entity that controls the standpipe: _____	
Pressurized from floor _____ to _____	Wet from floor _____ to _____		
Date of last weekly pressure alarm test: _____		<input type="checkbox"/> Contractor's current certification of standpipe readiness on file? If any alarm incidents, indicate cause and response taken: _____	
<i>For any air or hydrostatic pressure test of a standpipe performed today:</i> Location tested: _____			
Contractor performing test: _____		Contractor Witness: _____	Witness: _____
<b>FDNY COMMUNICATIONS AND INSPECTIONS</b>			
FDNY Gang Box	<input type="checkbox"/> Painted red, stenciled with "FDNY" in white, and secured in place at site entrance? <input type="checkbox"/> Contents are up to date? <input type="checkbox"/> Emergency contact numbers (attached to underside of cover; should include all subcontractor contacts)? <input type="checkbox"/> Copies of all FDNY permits? <input type="checkbox"/> Comprehensive floor plans for each floor- no hand-drawn modifications or annotations-with updated and accurate egress marked, "you are here" indication, and all access routes to interior stairs marked? <input type="checkbox"/> Sprinkler shop drawings for standpipe (basement and risers only)? <input type="checkbox"/> Logistics plan indicating locations of OS&Y valve and standpipe, guard booths, gas storage areas, hoists? <input type="checkbox"/> Evacuation plan and muster point location map or list?		
	Date of last FDNY inspection: _____ <i>If today:</i> Inspector's Name: _____ Inspector's Signature: _____ Inspector's Department/FDNY Company: _____ Notes/violations issued: _____		
<input type="checkbox"/> Yellow line painted on grade leading to the staircase containing the standpipe and/or fire pump?			
<b>FIRE SAFETY INSPECTIONS</b>		<b>EVACUATION DRILLS</b>	
Access and egress paths visually inspected and properly maintained.		Date of last quarterly drill: _____ <i>If today:</i> Start time: _____ End time: _____ Number of workers evacuated: _____	
Date of last weekly shanty inspection: _____  <i>Fire Extinguishers- verify placement daily; inspect and initial tag monthly</i>			
<input type="checkbox"/> Tagged and in place at each shanty? <input type="checkbox"/> Tagged and in place on all floors and at areas of high fire risk work? <input type="checkbox"/> Inspected and tags initialed? Date of last inspection: _____			
<b>PERMIT LOG MAINTENANCE</b>			
<input type="checkbox"/> Hot works authorization and log books issued at beginning of day signed off by Fire Safety Manager at end of day?		<input type="checkbox"/> FDNY permits up to date?	
<b>NO SMOKING ENFORCEMENT</b>			
<input type="checkbox"/> FDNY no smoking signage posted on floors and at site gates? <input type="checkbox"/> Designated off-site smoking area clear of debris? Proper disposal receptacles in place outside of fence? Number of undercover security guards on site (need one per 200 workers): _____ Number of cigarette butts found: _____ Name and company of any worker dismissed for violating no smoking policy: _____ Number to date: _____			
<b>COMMENTS</b>			
<hr/> <hr/> <hr/>			
<b>CONSTRUCTION SITE FIRE SAFETY MANAGER</b>			
Name: _____		Signature: _____	Date: _____

#### **4.4 After Hours Fire Guard Checklist (4pm-midnight)**

##### **After-Hours Fire Guard Checklist      date: \_\_\_\_\_**

###### **Instructions**

- As the designated Fire Guard, you are required to make hourly inspections, and to record the result of your inspections on this checklist.
- Enter "OK" for items that are satisfactory, "X" for items that are deficient, and "N/A" for items that are not applicable.
- Provide a description of any deficient items in the comments section, and bring them to the attention of the supervisor on the next shift.
- Print your name and sign this checklist on the provided lines at the end of your shift.

Time								
<b>Standpipe</b> - inspect standpipe for breaks, leaks, damage; ensure that red light is on at Siamese connection; ensure that valves are zip-tied in position; ensure that there are no obstructions at the Siamese connections and fire hydrants.								
<b>Exits</b> - ensure that exits have 3' of clearance, exit doors/gates are free of locks, self-closing doors are not propped open, directional and exit signs are posted and unobstructed, and lighting in exit corridors is adequate and fully operational.								
<b>Trash Accumulation</b> - ensure that access and exit corridors are free of debris and rubbish.								
<b>Fire Extinguishers</b> - ensure that fire extinguishers are in their designated locations, and that signs are posted indicating fire extinguisher locations and operating instructions.								
<b>Potential Ignition Sources</b> - watch for frayed wires, unattended heaters, equipment emitting sparks.								
<b>Sidewalk Sheds</b> - ensure that lighting is fully operational, and that walkways are unobstructed.								
<b>Contraband</b> - inspect site for evidence of cigarette/tobacco product, alcohol, and drug use.								
<b>Shanty Inspections</b> - inspect exteriors of and areas around shanties for trash accumulation, unattended heaters.								
<b>Fire Alarm Pull Stations</b> -inspect for damage.								
<b>Sprinkler System</b> -inspect heads, pipes, and valves for damage and leaks								
<b>Comments</b>								
_____ Name				_____ Signature				
_____ Fire Guard Certificate of Fitness Number				_____ Fire Guard Certificate of Fitness Expiration Date				

## Third Daily Log Book for Hot Work

## Fire Guard's Daily Log for Hot Work

ng hot work must complete this log daily  
em after verifying it for compliance in each active hot  
ot compliant and the competent person designated for  
or the fire guard cannot correct it, then no hot work  
and must be notified.

Date: \_\_\_\_\_

- Notify personnel of any and all incidents that occur. Fires of all sizes must be reported, even if they are immediately extinguished. If a fire cannot be extinguished immediately, contact emergency services (e.g. 911) directly.
- Report any fires related to hot work operations in the comments section of this log.
- Print your name and sign this log at the end of your shift.

Before beginning and while performing hot work					After completing hot work
INCIDENT REPORTING	FIRE EXTINGUISHER	COMBUSTIBLES	FLAMMABLES	FIRE GUARD	POST-WORK CHECK
Radio or phone on hand to notify personnel in case of incident?	At least a 2-A:20-B:C rating fire extinguisher in work area? (a minimum 3-A:40-B:C rating fire extinguisher on torch-applied roofing system operations?)	Wood, cardboard, & other combustibles within 35' to work area? Blankets protecting gas bottles in use?	Gas, Fuel, and other flammables no closer than 35' to work area?	Fire guard has an unobstructed line of sight?	Area checked 30 minutes after completion of work?

State of Fitness Number:

**Expiration Date:**

## 4.6 Standpipe Inspection

Standpipe System Testing and Inspection Report				DATE	
STANDPIPE STATUS		INSPECTION TYPE			
<input type="checkbox"/> Dry <input type="checkbox"/> Wet		<input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Hydrostatic Test			
DAILY INSPECTION		N	N/A	Y	IF Y, INDICATE CORRECTIVE ACTION TAKEN
D1	OS&Y valves not chained and locked in the open position				
D1	Visible signs of damage to horizontal/vertical pipe				
D2	Visible signs of damage at pipe couplings				
D3	Sections of pipe not visible				
D4	Sections of pipe not painted red				
D5	Visible signs of damage at all hose connections				
D6	Caps missing at hose connections in stairways				
D7	Caps missing at Siamese connections				
D8	Valve handles damaged or missing in stairways				
D9	Indications of air or water leakage along system				
D10	Visible signs of damage to alarm wiring or conduit				
D11	Material blocking access to hose connections				
D12	Red lights at Siamese locations on sidewalk bridge				
D13	Obstructions at fire hydrants				
D14	Visible signs of damage to air compressor				
D15	Compressor air pressure reading	_____	PSI	Time of reading: _____	
WEEKLY INSPECTION AND TESTING		N	N/A	Y	IF Y, INDICATE CORRECTIVE ACTION TAKEN
W1	Fire Hose Valve failure to operate ‡				
W2	Failure of Air Drying Unit/Heat Tracing (where appl.)				
W3	Identification Signage/Labeling Missing				
W4	Alarm back-up power device failure				
W5	Compressor Alarm Test	Time at valve opening: _____	Pressure:      when alarm sounds _____ PSI when compressor starts _____ PSI when compressor stops _____ PSI		
WHEN REQUIRED					
H1	Hydrostatic Test	_____	PSI	Time of reading: _____	
INSPECTOR					
Name: _____ Signature: _____					

‡ Test a random sampling amounting to at least 5% of the total installation.

## 4.7 Hot Work Authorization and Field Copy

### HOT WORK AUTHORIZATION

This Hot Work Authorization is required for any project conducted on a premises involving hot work operations.

#### INSTRUCTIONS

- A. Verify pre-hot work check listed at right (or do not proceed with the work).
- B. Complete and retain this authorization.

#### HOT WORK BEING DONE BY

- Employee
- Contractor \_\_\_\_\_

DATE

JOB NO.

#### LOCATION/BUILDING & FLOOR

#### NATURE OF JOB/OBJECT

#### NAME OF HOT WORK OPERATOR

#### CERTIFICATE # OF HOT WORK OPERATOR

#### NAME OF FIRE GUARD

#### CERTIFICATE # OF FIRE GUARD

I verify the above location has been examined, the precautions checked on the Required Pre-Hot Work Checklist have been taken to prevent fire, and permission is authorized for work.

NAME

SIGNED

TIME

DATE

#### Pre-Hot Work Checklist

##### 1. Equipment.

- Available sprinklers, hose streams, and extinguishers are available and operable.
- Approved actions have been taken to prevent accidental operation of automatic fire detection systems.
- Hot work equipment in good repair.

##### 2. Requirements within 35 feet of work area.

- Flammable liquids, dust, lint, and oil deposits removed.
- Floor swept clean.
- Combustible floors wet down, covered with fire-resistant sheet.
- Remove other combustibles where possible, otherwise protect with fire-resistant cover or metal shields.
- All wall and floor openings covered.
- Combustibles on other side of walls moved away.

##### 3. Fire watch/ hot work area monitoring.

- Fire watch will be provided during hot work operations and will continue for a minimum of 30 minutes after work.
- Fire watch is supplied with fire extinguishers.
- Fire watch may be required for adjoining areas and below.

##### 4. Permit and Certificate of Fitness.

- Required site-specific permit or citywide permit is readily accessible.
- All persons performing hot work possess Certificate of Fitness.

**THIS AUTHORIZATION IS VALID FOR  
ONE DAY ONLY !**

**Hot Work Authorization - Field copy****Hot Work Authorization - Field Copy**

HOT WORK PERMIT HAS BEEN COMPLETED AND IS ON FILE IN SUPERINTENDENT'S OFFICE

**WARNING !!!**  
**HOT WORK IN PROGRESS**  
**STAY CLEAR**

**IN CASE OF AN EMERGENCY**

**CALL:**

**AT:**

**FIRE WATCH REMINDER**

- Maintain watch throughout work. Watch must be maintained uninterrupted throughout lunch, breaks, and ensuing shifts.
- A complete inspection of work and adjacent areas must be conducted 30 minutes after work is complete.
- Return this tag to supervisor upon completion of fire watch.

**PERMIT INFORMATION**

Company Name: \_\_\_\_\_ Date: \_\_\_\_\_ Location: \_\_\_\_\_

Name of Hot Work Permittee: \_\_\_\_\_ Fire Guard: \_\_\_\_\_

## **4.8 Fire Extinguisher Inspection Log**

## **4.9 Weekly Subcontractor Shanty Inspection Form**

a. Shanties must be made of sheet metal, tin, sheetrock or fire-rated plywood wrapped in metal.

- a. Charcoal must be made of insect metal, tin, sheetrock or fire rated plywood wrapped in metal.
- b. Heaters must be electric, ceiling mounted, equipped with a protective cage, and wired by an electrician. Floor heaters must be of the oil-filled type. Cords must be replaced and not repaired if damaged.

#### 4.10 Project CSFMS Initiatives-Monthly Self-Assessment Form

Project Name	Date			
Category	Item	Response	Recommended Action	
GENERAL REQUIREMENTS	What type of space heater is being used?	<input type="checkbox"/> Coke <input type="checkbox"/> Kerosene <input type="checkbox"/> LPG <input type="checkbox"/> CNG <input type="checkbox"/> Piped natural gas <input type="checkbox"/> Electric		
	How many heaters are in use?	Quantity:		
	In what locations are heaters in use?	Locations:		
	What subcontractor is supervising temporary heat operations?	Subcontractor Name:		
	Valid S-92 FDNY C of F holder for portable fueled space heaters supervising operation?	Yes	No	If no, discontinue use remove from site, and obtain permit
	Is there a FDNY permit for portable heater storage and use?	Yes	No	If no, discontinue use remove from site, and obtain permit
	Are carbon monoxide readings recorded every hour if utilizing coke heaters?	Yes	No	If no, correct and comply.
	Is there a copy of the manufacturer's operating and maintenance instructions on site for the heaters?	Yes	No	If no, correct and comply.
	If the building is 75 ft in height, is the standpipe system operating according to code requirements?	Yes	No	If no, correct and comply.
	If the building is 75 ft in height, is the elevator in readiness?	Yes	No	If no, correct and comply.
	How many extinguishers are required for each floor?	Amount Required:		
	Are fire extinguishers properly placed and easily accessible? (not more than 30' away from each heater)	Yes	No	If no, correct and comply.
	Is there a log book available for S-92 entries?	Yes	No	If no, correct and comply.
	Has adequate temporary lighting been installed on the heated floor(s)?	Yes	No	If no, correct and comply.
	Heaters are maintained the proper 10 feet away from combustibles?	Yes	No	If no, correct and comply.
	Is proper signage posted? (No Smoking, Flammable Liquid Storage, LPG Storage, etc.)	Yes	No	If no, correct and comply.
	Are tarps being used rated properly?	Yes	No	If no, correct and comply.
	Are tarps properly secured?	Yes	No	If no, correct and comply.
Are heaters at least 10 feet away from all tarps?	Yes	No	If no, correct and comply.	
SOLID FUELED COKE	Has a FDNY variance been acquired if utilizing solid fueled coke salamanders?	Yes	No	If no, discontinue use, remove from site, and obtain variance
	Is there adequate ventilation in place in order to avoid gas build up?	Yes	No	If no, correct and comply.
	How many S-92 FDNY C of F holders are required? (coke only; 1 C of F/50 heaters)	Amount Required:		
	Is there an escape hatch in place as required?	Yes	No	If no, correct and comply.
	Are there fire extinguishers every 1000 square feet on floors where coke heaters are in use?	Yes	No	If no, correct and comply.
	Is the LPG torch used to ignite coke being operated personally by the S-92 Certificate holder?	Yes	No	If no, discontinue use of LPG torch
Electric	All coke salamanders are on noncombustible platforms	Yes	No	If no, correct and comply.
	Are metal bins being used to store solid fuel onsite?	Yes	No	If no, provide metal bins for proper storage.
Kerosene	Are electric heaters with glowing red elements in use?	Yes	No	If yes, remove and replace with acceptable heater
	Are all electric heaters (except oil-filled radiator type) hardwired?	Yes	No	If no, hardwire all heaters to correct
	Is there a FDNY permit for storage of kerosene? (required when quantity onsite exceeds 10 gallons)	Yes	No	If no, discontinue use, remove from site, and obtain permit
Are only approved (metal with spout and self-closing cap) 5 gallon portable cans being used to refuel?	Yes	No	If no, obtain proper portable metal safety cans	
	Are proper kerosene storage control areas maintained? (240 gal per area max if in safety cabinet)	Yes	No	If no, correct and comply.
	Is the building occupied?	Yes	No	If yes, LPG salamanders are not prohibited for use
	Is there a FDNY permit storage of LPG?(required when quantity onsite exceeds 400 SCF/47 lbs)	Yes	No	If no, discontinue use, remove from site, and obtain permit

<b>L P G</b>	Are LPG cylinders are transported using a proper hand truck?	Yes	No	If no, obtain the proper hand truck for correct handing
	Are all LPG cylinders in storage and use above grade level?	Yes	No	If no relocate above grade level
	Is there more than 2,500 pounds of LPG in one storage area?	Yes	No	If yes, separate LPG as necessary to comply
	Is the total capacity of LPG stored and in use onsite more than 5,000 pounds?	Yes	No	If yes, remove LPG from site so total qty is less than 5,000lbs
	LPG storage locations are separated by 50 Ft from combustibles and other LPG storage locations?	Yes	No	If no, correct and comply
<b>Natural Gas</b>	Is there a FDNY permit for storage of CNG if natural gas is not piped? (required if qty exceeds 400 SCF/47 lbs)	Yes	No	If no, discontinue use, remove from site, and obtain permit
	Is there a quarter turn shut-off valve for each natural gas pipe outlet where heaters are connected?	Yes	No	If no, correct and comply.
	Are there more than 4 heaters connected to any one shut off valve?	Yes	No	If yes, reduce the number to 4 or less per shut-off valve
	Are any flexible hoses longer than 20 feet	Yes	No	If yes, reduce the length to 20 ft or less
<b>End of Shift inspection</b>	Will heating operations continue after the end of the normal (0800-1600) workday?	Yes	No	If yes, answer next question
	Is there an S-92 C of F holder on site to provide supervision so heating may continue?	Yes	No	If no, discontinue heating operation
<b>S-92 COF Holder Shift 1</b>	<b>Signature</b>		<b>Date</b>	
	<b>Name</b>			
<b>S-92 COF Holder Shift 2</b>	<b>Signature</b>		<b>Date</b>	
	<b>Name</b>			

#### **4.11 FDNY CDA Unit Contact Information**

## **CDA Unit** Fax #: 718-999-0091

### **\*Divisions 1 & 8**

Supervising CDA Inspector: Darryl Chalmers  
Office #: 718-999-7061  
E-mail: Darryl.Chalmers@fdny.nyc.gov

### **\*Divisions 6, 7, 13, & 14**

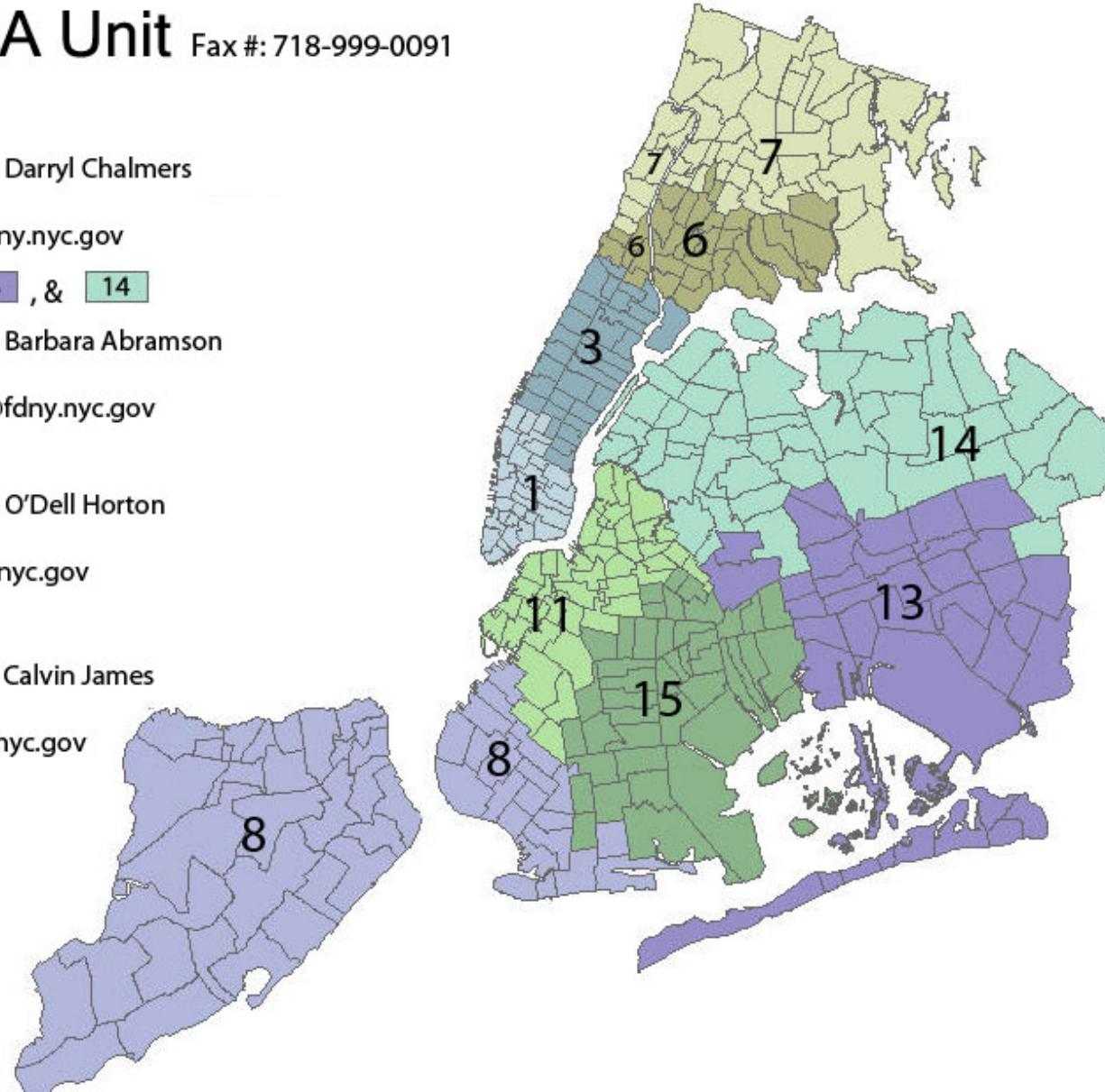
Supervising CDA Inspector: Barbara Abramson  
Office #: 718-999-5105  
E-mail: Barbara.Abramson@fdny.nyc.gov

### **\*Division 3**

Supervising CDA Inspector: O'Dell Horton  
Office #: 718-999-5102  
E-mail: Odell.Horton@fdny.nyc.gov

### **\*Divisions 11 & 15**

Supervising CDA Inspector: Calvin James  
Office #: 718-999-0401  
E-mail: Calvin.James@fdny.nyc.gov

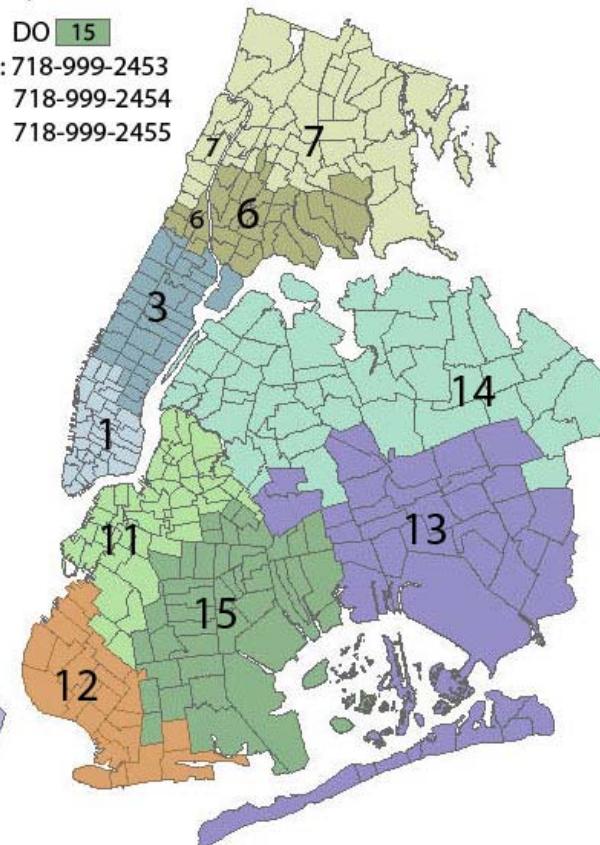


#### 4.12 FDNY District Office Contact Information

## FDNY District Offices

DO **1** , **3** , **11** & **15** (Fax #: 718-999-0096)

DO <b>1</b>	DO <b>3</b>	DO <b>11</b>	DO <b>15</b>
Tel #: 718-999-0634	Tel #: 718-999-1052	Tel #: 718-999-1641	Tel #: 718-999-2453
718-999-2929	718-999-2919	718-999-2451	718-999-2454
718-999-2428	718-999-2842	718-999-2452	718-999-2455
718-999-2073	718-999-1434		
	718-999-2667		



DO <b>8</b>	DO <b>12</b>	DO <b>13</b>
Fax #: 718-987-4186	Fax #: 718-331-4350	Fax #: 718-441-3718
Tel #: 718-987-3910	Tel #: 718-331-9400	Tel #: 718-476-6271
718-494-4560	718-331-9337	718-476-6281
718-494-2492	718-331-9323	718-441-3717

DO **6** & **7** (Fax #: 718-583-4765)

DO <b>6</b>	DO <b>7</b>
Tel #: 718-583-7964	Tel #: 718-583-9114
718-430-0231	718-430-0257
718-430-0254	718-430-0267

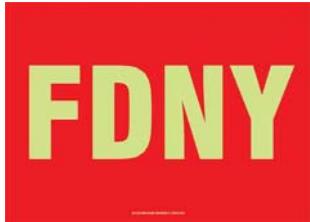
DO **14**

Fax #: 718-352-8840
Tel #: 718-352-8092
718-352-8160
718-352-8279
718-352-8308
718-352-8829

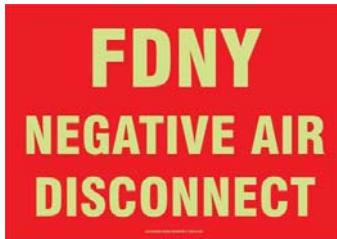
## **PART 5: SIGNAGE REQUIREMENTS**

Warning Signs must be easily read, constructed of a durable metal and visibly posted. Safety regulations must be posted in visible locations on the site. The CSFSM C of F holder must ensure that such signs are visible at all times. Signage shall be color copy and laminated.

### **5.1 FDNY SIGN (Best Practice)**



### **5.2 FDNY NEGATIVE AIR SIGN (Best Practice)**



### **5.3 NO SMOKING SIGNS**

#### **FDNY Rules § 310-02 Design of "No Smoking" Signs**

For no smoking signs the size shall be 10" x 14" (or 11" x 15") and for the symbol "No Smoking" and lettering color should be (3 $\frac{3}{4}$ " x  $\frac{1}{4}$ " cigarette and smoke in black; 5/16" x 5/16" ash in red; 6 $\frac{1}{2}$ " diameter x  $\frac{3}{4}$ " circle with  $\frac{3}{4}$ " cross bar in red).

Legend	Letter Size-Capital	Color
<b>NO SMOKING</b>	<b>2" Min.</b>	<b>Red</b>
<b>IN THESE PREMISES</b>	<b>1" or 3/4" Min.</b>	<b>Black</b>
<b>UNDER PENALTY OF FINE OR IMPRISONMENT, OR BOTH, BY ORDER OF THE COMMISSIONER</b>	<b><math>\frac{1}{4}</math>"</b>	<b>Black</b>

**No Smoking Sign****Unacceptable No Smoking Sign**

## 5.4 EXIT SIGN

Exit signs in accordance with the NYC *Building Code*, including BC1011. The letter of exit signs must be red. The height of letters must be not less than 6 inches. Graphics must have letter widths, strokes and spacing in proportion to their height.

**Proper Signs****Improper Signs**

## **5.5 FIRE EXTINGUISHER LOCATION SIGN**

Typical signs 10" X 7" Red and White Extinguisher Sign "Fire Extinguisher" with down arrow.



## **5.6 FLAMMABLE GAS (e.g. ACETYLENE) STORAGE**

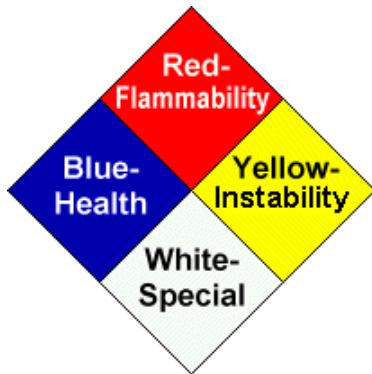
The sign must be at least 10 inches by 14 inches in size and the letters must be at least 2 inches high. The word "Danger" shall be in white on a red oval bordered in white which shall be on a black background at the upper part of the sign. The other required wording shall be in black on a white background in the lower part of the sign.



## **5.7 FLAMMABLE OR COMBUSTIBLE LIQUIDS STORAGE**

For combustible liquid storage areas, they must be provided with a hazard identification sign that complies with the requirements of NFPA Standard 704.

For flammable liquid storage areas, a warning sign made of a durable material stating Danger-Flammable Liquids be posted in any area where flammable liquid is being stored. Tanks and containers for aboveground storage of flammable liquids shall be conspicuously marked with the name of the product which they contain and the words: FLAMMABLE—KEEP FIRE AND FLAME AWAY. Tanks shall bear the additional marking: KEEP 50 FEET FROM BUILDINGS.



(NFPA 704 diamond)



(An example of the warning sign for flammable liquids)

## **5.8 OXYGEN STORAGE SIGN**

Lettering shall not be less than 2 inches in height and shall be either RED ON A WHITE or WHITE ON A RED background.



## **5.9 AMMUNITION STORAGE**



The storage area or storage facility in which the locked metal small arms ammunition box is stored shall bear a permanent sign bearing the words "DANGER-AMMUNITION" in 2-inch white letters on a red background.

## **5.10 STANDPIPE PRESSURIZED**

**FDNY CONNECTION DRY  
STANDPIPE PRESSURIZED**

**MANUAL AIR RELEASE VALVE**

## **5.11 STANDPIPE IMPAIRMENT**

**901.7.2 Tag required.** A tag shall be used to indicate that a system, or portion thereof, is out of service.

**901.7.3 Placement of tag.** The tag shall be posted at each fire department connection, system control valve, fire alarm control unit, fire alarm annunciator and fire command center, indicating which system, or part thereof, is out of service. The commissioner shall specify where the tag is to be placed.

**FDNY CONNECTION DRY  
STANDPIPE IMPAIRED**

## **PART 6: REFERENCES MATERIALS**

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The following Chapters of the **FDNY Code** (FC) can be found in their entirety at the following FDNY web site.

**Fire Code:** <http://www.nyc.gov/html/fdny/html/firecode/index.shtml>

**FDNY Rules:** [http://www.nyc.gov/html/fdny/html/rules/rules\\_overview.shtml](http://www.nyc.gov/html/fdny/html/rules/rules_overview.shtml)

### **FC Chapter 9**

#### **FDNY Code CHAPTER 9**

**901.6 Maintenance.** Fire protection 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.

**901.7 Out of service systems.** Where a required fire protection system is out of service, the department shall be notified immediately and unless otherwise directed by the commissioner, either the building shall be evacuated or a fire watch shall be maintained by one or more persons holding a C of F for fire guard. Any other actions as the commissioner may direct in addition to or in lieu of such measures shall also be undertaken, until the fire protection system has been returned to service. Where utilized, fire guards shall be provided with at least one approved means for notification of the department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires.

**901.7.1 Impairment coordinator.** The building owner shall assign an impairment coordinator to comply with the requirements of this section. In the absence of a specific designee, the owner shall be considered the impairment coordinator.

**901.7.2 Tag required.** A tag shall be used to indicate that a system or portion thereof, is out of service.

**901.7.3 Placement of tag.** The tag shall be posted at each fire department connection, system control valve, fire alarm control unit, fire alarm annunciator and fire command center, indicating which system, or part thereof, is out of service. The commissioner shall specify where the tag is to be placed.

**901.7.4 Planned removal from service.** The C of F holder and the impairment coordinator shall be made aware of and authorize the placing of systems out of service. Before authorizing such action the impairment coordinator shall:

1. Determine the extent and expected duration of the out of service condition.
2. Inspect the areas or buildings involved and assess the increased risks.
3. Make appropriate recommendations to the owner.

4. Notify the department and the responsible person designated by the owner to issue hot work authorizations in accordance with Chapter 26.
5. Notify the central station and insurance carrier.
6. Notify the occupants in the affected areas.
7. Place out of service tags at all required and appropriate locations.
8. Maintain system in service until work is ready to begin.

**901.7.5 Unplanned out of service condition.** The C of F holder, impairment coordinator, and/or other person responsible for inspecting, maintaining or supervising the operation of a fire protection system who observes a serious defect such as an empty tank, break or major leak in system water piping, inoperative or shut water supply valves, defective Fire Department connections, or complete or partial shut down of sprinkler and/or standpipe systems, other than a shutdown for scheduled inspection, testing or maintenance, shall immediately report such condition to the owner of the building, and to the department. When a system fails or otherwise goes out of service, the C of F holder or the impairment coordinator shall take the actions set forth in Section 901.7.4. and such other actions necessary or appropriate to protect the occupants of the building and minimize property damage. When the C of F holder or other such person observes a minor defect or other condition not presenting a serious safety hazard, he or she shall report the defect or condition to the owner, and if the defect or condition is not corrected within 30 days, shall report it in writing to the department.

**901.7.6 Restoring systems to service.** When an out of service device, equipment or system is restored to normal working order, the impairment coordinator shall:

1. Conduct necessary inspections and tests to verify that the affected systems are operational.
2. Reserved.
3. Notify the department.
4. Notify the owner, central station, insurance carrier and occupants in the affected areas.
5. Remove the out of service tags.

**901.7.7 Out of service standpipe systems at construction sites.\*** The owner, Fire Safety Manager and/or impairment coordinator shall take the following actions whenever a standpipe system at a construction site is out of service:

1. Immediately notify the department of any unplanned out of service condition, and otherwise comply with the requirements of Section 901.7.5.
2. Notify the department at least 24 hours prior to any planned removal of the standpipe system from service, and otherwise comply with the requirements of Section 901.7.4.
3. Ensure that a fire watch is continuously maintained in compliance with the requirements of Section 901.7 while the standpipe system is out of service.
4. Repair the standpipe system and return it to service in compliance with the requirements of Sections 901.6 and 901.7.6 and Section 3303.8.1 of the New York City Building Code. The construction site may continue to be

occupied, and construction, demolition or alteration activities may continue, pending such repair and restoration to service, except:

- 4.1. As otherwise provided in Section 3303.8.1 of the New York City Building Code; and/or
- 4.2. As otherwise directed by the commissioner upon a determination that, in the absence of an operable standpipe system, the conduct of certain construction, demolition or alteration activities would be imminently perilous to life or property; and
- 4.3. That in no circumstance shall hot work be conducted on the construction site until such time as the standpipe system is restored to service and the standpipe alarm reactivated.

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\*FC901.7.7 added by Local Law No. 64 of 2009, effective 2/4/10.

## **FC Chapter 14**

### **RULES OF THE FIRE DEPARTMENT**

#### **§ 1408-01 Construction Site Fire Safety Manager**

**(a)** Scope. This section sets forth standards, requirements and procedures for the supervision of fire safety at a construction site by a fire safety manager designated pursuant to FC1408.1.

**(b)** General Provisions

**(1)** Designation of fire safety manager. Pursuant to FC1408.1, a fire safety manager shall be designated by the owner at any construction site for which the Building Code requires a site safety manager or site safety coordinator pursuant to BC3310.5. The fire safety manager shall perform the duties and responsibilities set forth in FC1408.1 and this section. The name and C of F number of the fire safety manager (and any alternate fire safety managers) shall be entered in the logbook required by FC1408.1 to be maintained at the construction site.

**(2)** C of F. The fire safety manager at a construction site shall hold a C of F for such purpose.

**(c)** Supervision of Construction Site Fire Safety

**(1)** Fire safety manager duties and responsibilities. Pursuant to C1408.1, the fire safety manager is responsible for ensuring that the construction, alteration and demolition work at a construction site is conducted in compliance with the requirements of the Fire Code and the rules. Such supervision shall include, but is not limited to:

**(A)** authorizing, supervising and/or monitoring materials, operations and facilities regulated by the Fire Code;

**(B)** in accordance with FC1408.1, regularly inspecting the construction site for fire safety purposes, including compliance with the code and rule provisions set forth in R1401-01(c), 1403-01 and 1405-01;

**(C)** performing the duties of the impairment coordinator required by FC901.7, the responsible person required by FC2603.2.2, and the Fire Department liaison required by FC2703.9.1.1, or ensuring that such persons are designated and monitoring the performance of their duties;

**(D)** providing or arranging Department access to the construction site, inspection of the logbook and other records, and communication with the owner or his or her design professionals, managers or contractors, in accordance with R1401-01(b)(2); and

**(E)** taking all other actions that a prudent person trained and knowledgeable in construction site fire safety would take to ensure that fire safety is maintained at the construction site, given site conditions.

**(2)** Presence at construction site. The fire safety manager shall be present at the construction site at all times when construction, alteration and demolition work is being conducted. The fire safety manager shall sign in the logbook required by FC1408.1 at the beginning and end of each workday.

An alternate fire safety manager shall assume the duties and responsibilities of the fire safety manager whenever the fire safety manager is required to be present at the construction site but is absent.

**(d)** Obligations of Construction Site Personnel. All persons present on a construction site, including contractors, subcontractors and their employees, shall cooperate with, and comply with the directions of, the fire safety manager in authorizing, supervising and/or monitoring materials, operations and facilities regulated by the Fire Code, or otherwise carrying out the duties and responsibilities of a fire safety manager, as set forth in FC1408 and this section.

**(e)** Recordkeeping. A record of the periodic inspection of the construction site required by FC1408.1, and other duties and responsibilities performed each day by the fire safety manager, shall be maintained in accordance with the provisions of that section. Entries shall be made for any conditions not in compliance with the applicable code and rule requirements, when such conditions could not be timely corrected, and the notifications made. The logbook required by FC1408.1 used to maintain such records shall be separate and distinct from the any log required to be maintained by the Building Code, including BC 3310.7 and 3310.8.4.

## **Fire Code CHAPTER 14**

### **FIRE SAFETY DURING CONSTRUCTION, ALTERATION AND DEMOLITION SECTION FC 1401 GENERAL**

**1401.1 Scope.** This chapter shall govern fire safety measures during the construction, alteration, or demolition of buildings, structures, premises and facilities.

**1401.2 General.** Buildings, structures, premises and facilities undergoing construction, alteration or demolition shall comply with the fire safety measures set forth in this chapter, and shall additionally comply with the requirements of NFPA 241 as to measures not specifically addressed herein.

**1401.3 Permits.** Permits shall be required as set forth in Section 105.6.

**1401.4 Prohibitions.** It shall be unlawful at a construction site to store, handle or use portable fueled heating devices or equipment:

1. For purposes of human comfort or any other purpose other than construction-related curing and drying.
2. Utilizing a flammable liquid as a fuel.

## SECTION FC 1402

### DEFINITIONS

**1402.1 Definitions.** The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

**CONSTRUCTION SITE** - Any location at which a building, structure, premises or facility is undergoing construction, alteration or demolition.

## SECTION FC 1403

### PORTABLE FUELED SPACE HEATERS

**1403.1 Design.** Portable fueled space heaters shall be designed, listed and labeled in accordance with the construction codes, including the Mechanical Code and the Fuel Gas Code, and standards promulgated by the commissioner by rule, as applicable. Portable fueled space heaters shall be installed, operated and maintained in accordance with this chapter, the terms of the listing, and manufacturer's specifications.

**1403.2 Portable oil-fueled heaters.** Portable oil-fueled space heaters may be used at construction sites for construction-related curing and drying purposes. Such heaters shall be stored, handled and used in accordance with the rules.

**1403.3 Portable gas-fueled heaters.** Portable gas-fueled space heaters utilizing liquefied petroleum gas (LPG), compressed natural gas (CNG) and piped natural gas may be used at construction sites for construction-related curing and drying purposes. Such heaters shall be stored, handled and used in accordance with the rules.

**1403.4 Refueling.** Refueling operations shall be conducted in accordance with Section 3405. Portable fueled space heaters shall be shut down and cool to the touch before refueling.

**1403.5 Installation.** Clearance to combustibles from portable fueled space heaters shall be maintained in accordance with the manufacturer's specifications. When in operation, portable fueled space heaters shall be fixed in place and protected from overturning, movement or damage in accordance with the manufacturer's specifications.

**1403.5.1 Protection of heating element.** The heating element or combustion chamber shall have a permanent device to prevent accidental contact by persons or material.

**1403.6 Supervision.** The handling and use of portable fueled space heaters shall be under the personal supervision of a person holding a C of F. The storage of

portable fueled space heaters, and the fuel therefore, shall be under the general supervision of a C of F holder.

## **SECTION FC 1404**

### **PRECAUTIONS AGAINST FIRE**

**1404.1 Smoking.** Smoking shall be prohibited at all construction sites. Signs shall be posted in accordance with Section 310.

**1404.2 Waste disposal.** Combustible waste, including rubbish and construction and demolition material, shall not be accumulated within buildings and shall be removed from buildings at the end of each work shift, but at least once a day. Combustible waste, including rubbish and construction and demolition material, shall be removed from the premises or stored in noncombustible containers.

**1404.3 Open fires.** It shall be unlawful to ignite or maintain an open fire at a construction site.

**1404.4 Spontaneous ignition.** Materials susceptible to spontaneous ignition, such as oily rags, shall be stored in a container listed for such use.

**1404.5 Fire watch.** The commissioner may require, for demolition operations that are hazardous in nature, that persons holding a C of F as fire guard be provided to serve as an on-site fire watch. Fire guard personnel shall be provided with at least one approved means for notification of the department and their sole duty shall be to perform constant patrols and watch for the occurrence of fire.

**1404.6 Cutting and welding.** Operations involving the use of cutting and welding shall be performed in accordance with Chapter 26.

**1404.7 Electrical.** Temporary wiring for electrical power and lighting installations at construction sites shall comply with the requirements of the Electrical Code.

## **SECTION FC 1405**

### **FLAMMABLE AND COMBUSTIBLE LIQUIDS**

**1405.1 Storage of flammable and combustible liquids.** Storage of flammable and combustible liquids shall be in accordance with Section 3404.

**405.2 Class I and Class II liquids.** The storage, handling and use of flammable and combustible liquids at construction sites shall be in accordance with Section 3406.2. Adequate ventilation shall be provided for operations involving the application of materials containing flammable solvents.

**1405.3 Housekeeping.** Flammable and combustible liquid storage areas shall be maintained clear of vegetation and combustible waste. Such storage areas shall not be used for the storage of combustible materials.

**1405.4 Precautions against fire.** Sources of ignition and smoking shall be prohibited in flammable and combustible liquid storage areas. Signs shall be posted in accordance with Section 310.

**1405.5 Handling at point of final use.** Class I and II liquids shall be stored in approved safety containers.

**1405.6 Leakage and spills.** Leaking containers shall be immediately repaired or taken out of service. Spills shall be cleaned up immediately and all liquid and waste material disposed of lawfully.

## SECTION FC 1406

### FLAMMABLE GASES AND OXYGEN

**1406.1 Flammable gases.** The storage, handling and use of flammable gases shall comply with the requirements of Chapters 26, 35 and 38, as applicable.

**1406.2 Oxygen.** The storage, handling and use of oxygen shall comply with the requirements of Sections 1406.2.1 through 1406.2.3, and Chapters 26 and 30, as applicable.

**1406.2.1 Portable liquid oxygen containers.** The storage, handling and use of portable liquid oxygen containers shall be in accordance with Sections 1406.2.1.1 through 1406.2.1.9.

**1406.2.1.1 Design and installation documents.** A sketch showing the following information shall be submitted to the department for approval in connection with an application for a permit for oxygen storage.

1. Number and size of containers.
2. Enclosure, manifold and service piping construction.
3. Location of risers and outlets.
4. Location of all equipment and devices including vaporizers, valves and safety relief devices.

**1406.2.1.2 Indoor storage restrictions.** Not more than one liquid oxygen container having a maximum water capacity of 6.2 cubic feet (0.176 m<sup>3</sup>) may be installed indoors. Such container shall be connected for use with a flammable gas. Storage in excess of one liquid oxygen container shall be located outdoors.

**1406.2.1.3 Ventilation.** The room used for the storage, handling and use of a liquid oxygen container shall be equipped with ventilation direct to the outdoors, and shall not contain any combustible material or flammable gas.

**1406.2.1.4 Manifolds and vaporizers.** Manifolds and vaporizers shall be constructed of materials suitable for oxygen service at a pressure of 250 psig (1724 kPa). Such manifolds and vaporizers shall have a minimum bursting pressure of 1,000 psig (6895 kPa) and shall be protected with safety relief devices which will relieve at or below 500 psig (3448 kPa).

**1406.2.1.4.1 Test.** The assembled vaporizer and manifold shall be pressure tested at 500 psig (3448 kPa) with an oil free and non-flammable material as the testing medium.

**1406.2.1.5 Service piping from the oxygen manifold.** Service piping from the oxygen manifold shall be copper tubing, stainless steel, wrought iron or steel, and shall run vertically outside the building to the floor or floors being serviced, where outlets may be provided for hose connections to approved torches. The service piping shall be properly secured, protected from damage from mechanical injury and properly labeled. Any connection between service piping and the manifold shall be made using not more than 5 feet (1524 mm) of hose capable of withstanding pressure up to at least 1,000 psig (6895 kPa).

**1406.2.1.5.1 Service pressure.** Service piping shall be suitable for 250 psig (1724 kPa) service unless an intervening pressure regulator is provided at the manifold, and shall withstand a test of two times the maximum operating pressure, using an oil free and non-flammable material as the testing medium.

**1406.2.1.6 Hose and connectors.** Hose and connectors capable of withstanding pressure up to at least 1,000 psig (6895 kPa) and of a design suitable for oxygen service at a pressure of 250 psig (1724 kPa) shall be used to connect the outlets on the service piping to the blowpipes. Hose shall be rejected for use if it shows excessive wear, loose connections, leaks or burns; hose subjected to a flash back in use shall be tested to twice the service pressure, but not less than 200 psig (1379 kPa), before being returned to service.

**1406.2.1.7 Signs.** Signs shall be posted in the vicinity of liquid oxygen container storage and use, reading: DANGER-LIQUID OXYGEN-NO SMOKING-NO OPEN FLAMES.

**1406.2.1.8 Operating instructions.** Legible operating instructions shall be posted near any liquid oxygen manifold.

**1406.2.1.9 Affidavit.** An affidavit shall be provided by the installer and/or contractor to certify that the vaporizer, valves, piping, hose and safety devices are of an approved type, that they meet the Specifications for bursting test and design pressure, and that they have been satisfactorily tested in accordance with this section.

**1406.2.2 Oxygen trailers.** The storage and use of oxygen trailers shall be in accordance with Sections 1406.2.2.1 through 1406.2.2.5.

**1406.2.2.1 Design, construction, testing and maintenance.** Oxygen trailer containers shall be designed, constructed, tested and maintained in accordance with the United States Department of Transportation specifications and regulations.

**1406.2.2.2 Instructions.** Legible operating instructions shall be posted in the trailer and on or near any oxygen manifold used indoors.

**1406.2.2.3 License plates.** Oxygen trailers shall at all times have affixed to them a motor vehicle license plate as issued in accordance with New York State or other applicable motor vehicle license plate laws, rules or regulations.

**1406.2.2.4 Notification.** The owner or operator of an oxygen trailer shall notify the department, in writing, of the delivery of the trailer to a construction site, at least 48 hours in advance of such delivery. Such notification shall include:

1. Contractor's name, address and telephone number.
2. Location of the construction site.
3. Quantity and frequency of oxygen delivery to the construction site.
4. Expected duration of oxygen storage and use at the construction site.

**1406.2.2.5 Oxygen trailers having a capacity exceeding 20,000 SCF (566 m<sup>3</sup>).** The distance between oxygen trailers having a total aggregate capacity exceeding 20,000 SCF (566 m<sup>3</sup>) and exposures shall be in accordance with NFPA 50.

**1406.2.3 Supervision.** The handling and use of portable liquid oxygen containers and oxygen trailers shall be under the personal supervision of a C of F holder. The storage of liquid oxygen containers and oxygen trailers shall be under the general supervision of a C of F holder.

## **SECTION FC 1407**

### **EXPLOSIVE MATERIALS**

**1407.1 Storage and handling.** Explosive materials shall be stored, handled and used in accordance with Section 1418 and Chapter 33.

**1407.2 Blasting operations.** Blasting operations shall be conducted in accordance with Chapter 33.

**1407.3 Demolition using explosives.** Fire hoses and nozzles for use by demolition personnel, connected to an approved water supply under pressure, shall be provided and maintained at the demolition site whenever explosives are used for demolition. Such fire hoses, nozzles and water supply shall be available prior to explosives arriving at the site. Such fire hoses and nozzles shall be capable of a continuous flow of 180 gallons (681 L) per minute with a minimum reach of 35 feet (10 668 mm) from the nozzle and be capable of being brought to bear anywhere on the construction site. Hose shall be pressure tested to withstand at least 600 pounds per square inch gauge (psig)(2413 kPa).

## **SECTION FC 1408**

### **CONSTRUCTION SITE FIRE SAFETY MANAGER**

**1408.1 Fire safety manager.** Where a Site Safety Manager or Site Safety Coordinator is required by the Building Code, the owner shall designate a person to be the Fire Safety Manager for the construction site. The Fire Safety Manager may be the Site Safety Manager or Site Safety Coordinator required by the Building Code. The Fire Safety Manager shall be responsible for ensuring compliance with the requirements of this code, including this chapter, and the rules. The Fire Safety Manager shall conduct an inspection of the construction site and all fire safety measures on at least a daily basis, and maintain a record of same in a bound log book or other approved system of recordkeeping. The log book or other approved recordkeeping shall be made available for inspection by any representative of the department. Where fire watch service is provided, the Fire Safety Manager shall be responsible for the general supervision of the fire guards.

**1408.2 Pre-fire plans.** The Fire Safety Manager shall develop and maintain at the construction site an approved pre-fire plan, and make it available for examination by any representative of the department. The department shall be notified of any changes in site conditions materially affecting the procedures set forth in such plan.

**1408.3 Training.** The Fire Safety Manager shall ensure that construction site personnel are acquainted with the operation of portable fire extinguishers and other fire protection equipment on the construction site.

**1408.4 Fire protection devices.** The Fire Safety Manager shall ensure that all fire protection equipment and systems are readily available and periodically inspected and tested, and maintained in accordance with this code, the rules and the Building Code.

**1408.5 Hot work operations.** The Fire Safety Manager shall be responsible for supervising the issuance of authorizations for hot work operations in accordance with Chapter 26.

**1408.6 Impairment of fire protection systems.** The Fire Safety Manager or impairment coordinator shall comply with the requirements of Section 901 in the event of impairment of any fire protection system.

**1408.7 Temporary covering of fire protection devices.** Coverings placed on or over fire protection devices to protect them from damage during construction processes shall comply with the requirements of Chapter 9 and shall be immediately removed upon the completion of the construction processes in the room or area in which the devices are installed.

### **SECTION FC 1409**

#### **FIRE ALARM REPORTING**

**1409.1 Emergency telephone.** A telephone not requiring a coin to operate, or other approved clearly identified means to notify the department, shall be provided at an approved location. The street address of the construction site and the emergency telephone number of the fire department shall be posted adjacent to the telephone or other approved device.

### **SECTION FC 1410**

#### **ACCESS FOR FIREFIGHTING**

**1410.1 Required access.** Approved vehicle access for fire apparatus shall be provided to all construction sites. Vehicle access shall be provided to within 100 feet (30 480 mm) of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading under all weather conditions. Vehicle access shall be maintained until permanent fire apparatus access roads are available.

**1410.2 Key boxes.** Key boxes shall be provided as required by Chapter 5 and the Building Code.

### **SECTION FC 1411**

#### **MEANS OF EGRESS AND ELEVATORS**

**1411.1 Stairways.** Stairways at construction sites shall be provided, maintained, and made available for department use in accordance with the construction codes, including the Building Code.

**1411.2 Maintenance.** Required means of egress shall be maintained during construction, alteration and demolition in accordance with this code and the Building Code.

**1411.3 Elevators.** Elevators at construction sites shall be provided, maintained, and made available for department use in accordance with the construction codes, including the Building Code.

### **SECTION FC 1412**

#### **WATER SUPPLY FOR FIRE PROTECTION**

**1412.1 Water supply.** An approved water supply for fire protection, either temporary or permanent, shall be made available prior to hazardous materials or combustible material arriving at the site. Any water source intended for firefighting operations, including standpipe outlets, street hydrants and yard hydrants, shall not be used for construction, alteration or demolition purposes, unless approved.

### **SECTION FC 1413**

#### **STANDPIPES**

**1413.1 Standpipe systems.** Standpipe systems for use at construction sites shall be provided, maintained, and made available for department use in accordance with this code, and the construction codes, including the Building Code.

**1413.2 Demolition operations.** Where a building or structure with an existing standpipe system is being demolished, such system shall be maintained for the use of the department in accordance with the construction codes, including the Building Code.

### SECTION FC 1414 SPRINKLER SYSTEM

**1414.1 Sprinkler systems.** Sprinkler systems for use at construction sites shall be provided, maintained, and made available for department use, in accordance with this code, and the construction codes, including the Building Code.

**1414.2 Completion before occupancy.** In buildings or structures where a sprinkler system is required by this code or the construction codes, including the Building Code, it shall be unlawful to occupy any portion of a building or structure until the sprinkler system installation has been tested and approved.

**1414.3 Operation of valves.** Sprinkler control valves shall be operated only by authorized personnel. Such operation shall be under the general supervision of the Fire Safety Manager where one is required pursuant to Section 1408. When the sprinkler system valves are being regularly closed and opened to facilitate connection of newly completed or disconnected segments, the sprinkler control valves shall be inspected at the end of each work day to ascertain that the system is in good working order.

### SECTION FC 1415 PORTABLE FIRE EXTINGUISHERS

**1415.1 Where required.** Buildings or structures under construction, alteration or demolition shall be provided with not less than one approved portable fire extinguisher in accordance with Section 906 and sized for not less than ordinary hazard as follows:

1. At each stairway on all floor levels where combustible materials are being stored or combustible waste is being generated.
2. At the entrance of each storage and construction shed.
3. Additional portable fire extinguishers shall be provided where flammable and combustible liquids are stored, handled and used.

### SECTION FC 1416 INTERNAL-COMBUSTION-POWERED EQUIPMENT

**1416.1 Conditions of use.** Internal-combustion-powered construction equipment shall be used in accordance with the following requirements:

1. Equipment shall be located so that exhausts do not discharge against combustible material.
2. Exhausts shall be piped to the outdoors.
3. Equipment shall not be refueled while in operation.
4. Fuel for equipment shall be stored in an approved outdoor area, and shall be moved in approved containers not to exceed 5 gallons (19 L).

### SECTION FC 1417

## **SAFEGUARDING ROOFING OPERATIONS**

**1417.1 General.** Roofing operations utilizing heat-producing systems or other ignition sources shall be performed by a responsible person. Roofing operations involving hot work shall comply with the requirements of Chapters 26, 35 and 38, as applicable.

**1417.2 Tar kettles.** Tar kettles shall be handled and used in accordance with Section 303.

**1417.3 Portable fire extinguishers for roofing operations.** Portable fire extinguishers shall be provided in accordance with Section 906. There shall be not less than one multi-purpose portable fire extinguisher with a minimum 3-A 40-B:C rating on the roof being covered or repaired.

**1417.4 Prohibited operations.** It shall be unlawful to install any roofing material using a torch on a roof of combustible construction, or otherwise engage in roofing operations on roofs of combustible construction using hot work equipment.

## **SECTION FC 1418**

### **SMALL ARMS AMMUNITION FOR POWDER-ACTUATED TOOLS**

**1418.1 Storage, handling and use.** Small arms ammunition shall be stored, handled and used for powder-actuated tools at a construction site, as follows:

1. The main store of small arms ammunition shall be kept in a locked metal box interlined with  $\frac{1}{2}$  inch (12.7 mm) of non-combustible insulating material.
2. The small arms ammunition storage box shall be kept away from heat and shall not be stored in the same storage area or storage facility containing compressed gases or flammable liquids.
3. The storage area or storage facility in which the locked metal small arms ammunition box is stored shall bear a permanent sign bearing the words "DANGER-AMMUNITION" in 2-inch (50.8-mm) white letters on a red background.
4. Powder-actuated tools shall not be used in an explosive atmosphere.
5. The C of F holder shall establish a safe zone behind a work area in which powder-actuated tools are to be used by evacuating the area or placing a barrier constructed of  $\frac{1}{2}$  inch (12.7 mm) steel plate.
6. At least one portable fire extinguisher having a minimum 2-A rating shall be provided in the area where small arms ammunition is stored.

**1418.1.1 Supervision.** Powder-actuated tools utilizing small arms ammunition shall be used only by a C of F holder. Small arms ammunition shall be handled only by a C of F holder. Storage of small arms ammunition shall be under the general supervision of a C of F holder.

## **FC Chapter 26**

### **FIRE CODE CHAPTER 26** **WELDING AND OTHER HOT WORK** **SECTION FC 2601** **GENERAL**

**2601.1 Scope.** This chapter shall govern welding, cutting and other torch and hot work operations and equipment.

**2601.2 Permits.** Permits shall be required as set forth in Section 105.6.

**2601.3 Approved locations.** Hot work shall be conducted only in the areas set forth in this section or approved by the commissioner.

**2601.3.1 Authorized areas.** Hot work may be conducted in the following areas:

1. Areas designed for hot work operations.
2. Areas authorized for that purpose by the responsible person at the premises when precautions have been taken in compliance with the requirements of this chapter.

**2601.3.2 Restricted areas.** Hot work shall not be conducted in the following areas unless approval has been obtained from the commissioner:

1. Areas where the sprinkler system is impaired.
2. Areas where there exists the potential of an explosive atmosphere, such as locations where flammable gases, liquids or vapors are present.
3. Areas with readily ignitable materials, such as storage of large quantities of bulk sulfur, baled paper, cotton, lint, dust or loose combustible materials.
4. On board marine vessels or watercraft at dock under construction or repair.

**2601.4 Containers.** Compressed gas containers shall be designed, installed, operated and maintained in accordance with this chapter and Chapter 30.

**2601.5 Design and installation of oxygen-fuel gas systems.** An oxygen-fuel gas system shall be designed and installed in accordance with NFPA 51 and ANSI Z49.1, as applicable.

**2601.5.1 Oxygen at construction sites.** The storage and use of oxygen at a construction site shall additionally comply with the requirements of Chapter 14.

**2601.6 Torches.** Torches and tips that utilize a flammable gas for hot work operations shall be listed.

## **SECTION FC 2602** **DEFINITIONS**

**2602.1 Definitions.** The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

**FIRE GUARD.** A person holding a C of F 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.

**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 AREA.** The area exposed to sparks, hot slag, radiant heat, or convective heat as a result of hot work.

**HOT WORK EQUIPMENT.** Electric or gas welding or cutting equipment used for hot work.

**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.

**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.

**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.

**TORCH-APPLIED ROOF SYSTEM.** Bituminous roofing systems using membranes that are adhered by heating with a torch and melting asphalt back coating instead of mopping hot asphalt for adhesion.

## SECTION FC 2603

### GENERAL REQUIREMENTS

**2603.1 General.** Hot work operations, including temporary and fixed hot work areas, shall be conducted in accordance with this chapter.

**2603.1.1 Torch operations using LPG.** The use of LPG for torch operations shall additionally comply with the requirements of Chapter 38.

**2603.1.2 Torch operations using CNG.** The use of CNG for torch operations shall additionally comply with the requirements of Chapter 35.

**2603.2 Hot work program.** 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 this chapter and shall designate a responsible person to ensure compliance.

**2603.2.1 Hot work program responsible person.** The responsible person shall ensure that a permit has been obtained from the 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.

**2603.2.2 Responsible person supervision.** Hot work operations shall be conducted under the general supervision of the responsible person.

**2603.3 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.

**2603.4 Qualifications of operators.** An authorization for hot work operations shall not be issued unless the individuals in charge of performing such operations are capable of performing such operations safely. Demonstration of a working knowledge of the provisions of this chapter shall constitute acceptable evidence of compliance with this requirement.

**2603.4.1 Torch operations using oxygen and flammable gases.** Torch operations using oxygen and a flammable gas, and any torch operation for torch-applied roof systems, shall be performed by a C of F holder.

**Exception:** Torch operations using oxygen and piped natural gas for manufacturing jewelry may be performed under the personal supervision of a C of F holder, who shall be responsible to regulate the pressure and flow of oxygen and natural gas to each torch.

**2603.5 Records.** The responsible person for the hot work area shall maintain “pre work check” reports in accordance with Section 2604.3.1. These reports shall be maintained on the premises for a minimum of 48 hours after work is complete.

**2603.6 Signage.** Visible hazard identification signs shall be provided where required by Chapter 27. Where the hot work area is accessible to persons other than the operator of the hot work equipment, signs shall be posted in a conspicuous location to warn others before they enter the hot work area. Such signs shall read as follows:

**CAUTION**  
**HOT WORK IN PROGRESS**  
**STAY CLEAR**

**SECTION FC 2604**  
**FIRE SAFETY REQUIREMENTS**

**2604.1 Protection of combustibles.** Combustible material and combustible waste shall be protected in accordance with Sections 2604.1.1 through 2604.1.9.

**2604.1.1 Separation from combustibles.** Hot work areas shall not be less than 35 feet (10 668 mm) from combustible materials and combustible waste or shall be provided with appropriate shielding to prevent sparks, slag or heat from igniting exposed combustibles.

**2604.1.2 Openings.** Openings or cracks in walls, floors, ducts or shafts within 35 feet (10 668 mm) of the hot work area shall be tightly covered to prevent the passage of sparks to adjacent combustible areas, or shielded by metal fire-resistant guards, or provided with curtains to prevent passage of sparks or slag.

**2604.1.3 Housekeeping.** Combustible waste shall not be allowed to accumulate on floors and other surfaces within the hot work area. Hot work areas shall be regularly cleaned and combustible waste removed and disposed of lawfully.

**2604.1.4 Conveyor systems.** Conveyor systems that are capable of carrying sparks to distant combustibles shall be shielded or shut down.

**2604.1.5 Partitions.** Partitions segregating hot work areas from other areas of the building shall be of noncombustible construction. In fixed hot work areas, the partitions shall be securely connected to the floor such that no gap exists between the floor and the partition. Partitions shall prevent the passage of sparks, slag, and heat from the hot work area.

**2604.1.5.1 Motor-fuel dispensing facilities.** The use of a torch within a repair garage located on a property upon which a motor-fuel dispensing facility is situated shall be conducted within a fire-rated enclosure. All doors of such enclosure shall be fireproof and self-closing.

**2604.1.5.2 Repair garages.** In a repair garage with a capacity for more than one vehicle, hot work shall be conducted within a fire-rated enclosure in compliance with Section 2604.1.5.1 or behind a noncombustible screen that

is positioned and of sufficient size to prevent the passage of sparks, slag, and heat from the hot work area.

**2604.1.6 Floors.** Fixed hot work areas shall have floors with noncombustible surfaces.

**2604.1.7 Precautions in hot work.** Hot work shall not be performed on a container or equipment that contains or has contained flammable liquids, gases or solids until the container or equipment has been thoroughly cleaned, inserted or purged; except that "hot tapping" shall be allowed at bulk plants and terminals on tanks and piping when such work is conducted by responsible personnel. Hot work involving cutting, welding or heating of any flammable solid in any form shall be conducted only with the approval of the commissioner.

**2604.1.8 Sprinkler protection.** 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.

**2604.1.9 Fire detection systems.** Approved special precautions shall be taken to avoid accidental operation of automatic fire detection systems.

**2604.2 Fire watch.** A fire watch shall be maintained and fire guards provided in accordance with Sections 2604.2.1 through 2604.2.7.

**2604.2.1 When required.** A fire watch shall be maintained during 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.

**2604.2.2 Location.** 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.

**2604.2.3 Duties.** Individuals assigned to fire watch duty shall have fire extinguishing equipment readily available and shall be trained in the use of such equipment. Individuals assigned to fire watch duty shall be responsible for identifying and extinguishing spot fires and reporting such fires to the department.

**2604.2.4 Fire training.** The individuals responsible for performing the hot work, and for the fire watch, shall be trained in the use of portable fire extinguishers.

**2604.2.5 Fire hoses.** Where hose lines are required, they shall be connected, charged and ready for operation.

**2604.2.6 Portable fire extinguishers.** A minimum of one portable fire extinguisher complying with the requirements of Section 906 and with a minimum **2-A:20-B:C rating shall be readily accessible within 30 feet** (9144

mm) of the location where hot work is performed and where the fire guards are positioned.

**2604.2.7 Fire guards for torch operations.** The fire watch for torch operations conducted at the following locations shall be conducted by fire guards:

1. Construction sites.
2. On any rooftop, or in connection with any torch-applied roof system operation.
3. In any building or structure, when the torch operation is conducted by a person holding a citywide permit for torch operations.

**2604.2.7.1 Construction sites and torch-applied roof systems.** A fire guard shall be provided for each torch operation at a construction site and in connection with torch-applied roofing system operations. A fire guard shall be provided for each torch in operation. An additional fire guard shall be provided on the floor or level below the torch operation.

**2604.3 Area reviews.** 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.

**2604.3.1 Pre-hot work check.** 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 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:

1. The hot work equipment is in good working order.
2. The hot work area is clear of combustibles and flammable solids or that such materials present in the area are protected in accordance with Section 2604.1.1.
3. Exposed construction is of noncombustible materials or, if combustible, is protected.
4. Openings are protected.
5. Hot work area floors are clear of combustible waste accumulation.
6. Reserved.
7. Fire watch personnel, where required, are assigned.
8. Approved actions have been taken to prevent accidental activation of extinguishing and detection equipment in accordance with Sections 2604.1.8 and 2604.1.9.
9. Portable fire extinguishers and fire hoses (where provided) are operable and available.
10. All persons performing hot work possess certificates of fitness, where such certificates are required.
11. All persons performing hot work requiring a permit possess a site-specific permit or citywide permit, authorizing such work.

## **SECTION FC 2605**

### **GAS WELDING AND CUTTING**

**2605.1 General.** Devices or attachments mixing air or oxygen with flammable gases prior to consumption, except at the burner or in a standard torch or blow pipe, shall not be allowed unless approved.

**2605.2 Container storage, handling and use.** Storage, handling and use of compressed gas containers shall be in accordance with this section and Chapter 30.

**2605.3 Precautions.** Containers, valves, regulators, hose and other apparatus and fittings for oxygen shall be kept free of oil or grease. Oxygen containers, apparatus and fittings shall not be handled with oily hands, oily gloves, or greasy tools or equipment.

**2605.4 Acetylene gas.** Acetylene gas shall not be piped except in approved container manifolds and container manifold connections, or piped or utilized at a pressure exceeding 15 pounds per square inch gauge (psig) (103 kPa). Acetylene gas stored in containers shall be dissolved in a suitable solvent. Acetylene gas shall not be brought in contact with unalloyed copper, except in a torch.

**2605.5 Remote locations.** Oxygen and fuel gas containers shall be located at a distance from the hot work area sufficient to protect such containers from heat, sparks, slag, or misdirection of the torch flame.

**2605.6 Container shutoff.** The torch valve shall be closed and the gas supply to the torch completely shut off when hot work operations are discontinued for a period of 1 hour or more.

**2605.6.1 Emergency shut-off.** Oxygen and fuel gas container valves shall be accessible to the torch operator or fire guard for immediate shut off of the gas supply in the event of an emergency.

**2605.7 Prohibited operations.** The following hot work operations shall be prohibited.

1. Welding or cutting operations supported by or resting on compressed gas containers.
2. Torch-applied roof system operations on roofs constructed of combustible materials.
3. Use of acetylene generators.

**2605.8 Tests.** It shall be unlawful to test piping equipment or systems for leaks using a flame. Tests for suspected leaks in piping equipment and systems shall be made using soapy water.

## SECTION FC 2606

### ELECTRIC ARC HOT WORK

**2606.1 General.** The frame or case of electric hot work machines, except internal-combustion-engine-driven machines, shall be grounded. Ground connections shall be mechanically strong and electrically adequate for the required current.

**2606.2 Return circuits.** Welding current return circuits from the work to the machine shall have proper electrical contact at joints. The electrical contact shall be periodically inspected.

**2606.3 Disconnecting.** Electrodes shall be removed from the holders when electric arc welding or cutting is discontinued for any period of 1 hour or more. The holders shall be located to prevent accidental contact and the machines shall be disconnected from the power source.

**2606.4 Emergency disconnect.** A switch or circuit breaker shall be provided so that fixed electric welders and control equipment can be disconnected from the supply circuit. The disconnect shall be installed in accordance with the Electrical Code.

**2606.5 Damaged cable.** Damaged cable shall be removed from service until properly repaired or replaced.

## SECTION FC 2609

### PIPING MANIFOLDS AND HOSE SYSTEMS FOR FUEL GASES AND OXYGEN

**2609.1 General.** The use of piping manifolds, protective equipment and hose systems in oxygen-fuel gas systems, including natural gas supplied from a utility for use in an oxygen-fuel gas system, shall be designed, installed, operated and maintained in accordance with Section FC 2609, Chapter 30 and NFPA 51.

**2609.2 Protection.** Piping shall be protected against physical damage.

**2609.3 Signage.** Signage shall be provided for piping and hose systems as follows:

1. Aboveground piping systems shall be marked in accordance with ANSI A13.1.
2. Station outlets shall be marked to indicate their intended usage.
3. Signs shall be posted, indicating clearly the location and identity of section shutoff valves.

**2609.4 Manifolding of containers.** Oxygen manifolds shall be located at least 20 feet (6096 mm) away from combustible waste and combustible material, including oil and grease, and gas containers containing flammable gases, unless the gas containers are separated from each other by a fire partition.

**2609.5 Identification of manifolds.** Signs shall be posted for oxygen manifolds with service pressures not exceeding 250 psig (1379 kPa). Such signs shall read as follows:

**LOW-PRESSURE MANIFOLD  
DO NOT CONNECT HIGH-PRESSURE CONTAINERS  
MAXIMUM PRESSURE 250 PSIG**

**2609.6 Clamps.** Hose connections shall be clamped or otherwise securely fastened.

**2609.7 Inspection.** Hoses shall be inspected frequently for leaks, burns, wear, loose connections or other defects.

**2609.8 Piped natural gas precautions.** When piped natural gas is used with oxygen in any hot work operation, a listed protective device that serves as a combination flashback arrester and backflow check valve shall be provided at an approved location on both the natural gas and oxygen supply lines so as to ensure the safe operation of all devices, equipment and systems, including the utility gas meter. Where pressure of the piped natural gas supply is insufficient to ensure such safe operation, approved equipment shall be provided between the gas meter and the fuel consuming appliance that

increases such pressure to the level required for such safe operation. Notwithstanding any section of this code to the contrary, such flashback arresters and check valves, and pressure increasing equipment, shall be installed as components of both new and existing installations. Installations involving the use of piped natural gas with oxygen in any hot work operation shall additionally comply with the rules.

## **FC Chapter 27**

### **CHAPTER 27 HAZARDOUS MATERIALS—GENERAL PROVISIONS SECTION FC 2701 GENERAL**

**2701.1 Scope.** This chapter shall govern the storage, handling, use and transportation of hazardous materials. Hazardous material storage, handling and use shall additionally comply with the requirements of the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Parts 595 through 614.

#### **Exceptions:**

1. The storage, handling and use in retail or wholesale sales occupancies of alcoholic beverages, medicines, foodstuffs, cosmetics, and consumer products containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solutions not being flammable, when packaged in individual containers not exceeding 1.3 gallons (5 L) in volume.
2. Storage, handling and use of hazardous materials for agricultural purposes as a pesticide, fertilizer or similar application, when approved for such use by the regulatory agency having jurisdiction and when such storage, handling and use is in accordance with the manufacturer's instructions.
3. Reserved.
4. Reserved.
5. Refrigerating systems when designed, installed, operated and maintained in accordance with the Mechanical Code and Section 606.
6. Stationary lead-acid batteries when in accordance with Section 608.
7. The storage, handling and use, including storage for sale, of fireworks, in accordance with Chapter 33.
8. The storage, handling and use of corrosives in Group M occupancies, including storage for sale, of personal and household products, when in the manufacturer's original consumer packaging.
9. The storage of distilled spirits and wines in wooden barrels and casks.
10. The use of wall-mounted dispensers containing alcohol-based hand rubs classified as Class I or Class II liquids when in accordance with Section 3405.5.

**2701.1.1 Relationship with other chapters.** This chapter shall apply to all hazardous materials, including those materials regulated elsewhere in this code, except that when specific requirements inconsistent with the provisions of this chapter are set forth elsewhere in this code, those specific requirements shall apply to the extent that they are inconsistent. Where a material is in multiple hazard categories, compliance with each hazard category shall be required. Where a material is both a physical hazard and a health hazard, compliance with the requirements for each hazard category shall be required.

**2701.2 Material classification.** Hazardous materials shall be classified by physical hazard, health hazard and/or other hazards associated with the properties of the material, or if the hazardous material is a mixture, with the hazards associated with the mixture as a whole. The commissioner may determine the appropriate hazard classification of a hazardous material, or may accept the classification set forth in nationally recognized standards, material safety data sheets, or other approved standard or method.

**2701.2.1** Reserved.

**2701.2.2** Reserved.

**2701.2.2.1 Physical hazards.** The material categories listed in this section are classified primarily as physical hazards.

1. Explosives and blasting agents.
2. Flammable and combustible liquids.
3. Flammable solids and gases.

## **FC Chapter 30**

### **CHAPTER 30 COMPRESSED GASES SECTION FC 3001 GENERAL**

**3001.1 Scope.** This chapter shall govern the storage, handling and use of compressed gases in compressed gas containers and systems, including those gases regulated elsewhere in this code.

**Exceptions:**

1. Compressed gases used as refrigerants in refrigerating systems in accordance with Chapter 6.
2. Compressed natural gas (CNG) stored, handled or used as a vehicular fuel in accordance with Chapter 22, NFPA 52 and the Fuel Gas Code.
3. Compressed gases connected for use in a fire extinguishing system.

**3001.2. Permits.** Permits shall be required as set forth in Section 105.6.

**3001.3 General.** Compressed gases shall be stored, handled and used in accordance with this chapter.

**3001.3.1 Cutting and welding gases.** Cutting and welding gases shall additionally comply with the requirements of Chapter 27.

**3001.3.2 Cryogenic fluids.** Cryogenic fluids shall additionally comply with the requirements of Chapter 32.

**3001.3.3 Hazardous materials.** Compressed gases classified as hazardous materials shall additionally comply with the requirements of Chapter 27 and any other applicable chapters of this code, including Chapters 35 (Flammable Gases), 37 (Highly Toxic and Toxic Materials), 40 (Oxidizers) and 41 (Pyrophoric), as applicable.

**3001.3.4 Liquefied petroleum gas (LPG).** LPG shall additionally comply with the requirements of Chapter 38 and the Fuel Gas Code.

**3001.4 Supervision.** The storage, handling, use and compression of compressed gases shall be supervised as set forth in Sections 3001.4.1 through 3001.4.3.

**3001.4.1 Handling and use.** The handling and use of compressed gases in quantities requiring a permit, including piped medical gas systems, shall be under the personal supervision of a person holding a C of F.

**3001.4.2 Storage.** The storage of compressed gases in quantities requiring a permit, including medical gases that are not piped, shall be under the general supervision of a person holding a C of F.

**3001.4.3 Compressing.** The compressing of gases requiring a permit shall be performed by or under the personal supervision of a person holding a C of F.

**Exception:** Compressing atmospheric air may be under the general supervision of a person holding a C of F.

**3001.4.4 Filling of containers.** The transfer of nonflammable compressed gases between containers shall be performed by a person holding a C of F.

## SECTION FC 3002

### DEFINITIONS

**3002.1 Definitions.** The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

**COMPRESSED GAS.** A material, or mixture of materials that is a gas at 68oF (20oC) or less at 14.7 psia (101 kPa) of pressure; and has a boiling point of 68oF (20oC) or less at 14.7 psia (101 kPa) that is either liquefied, nonliquefied or in solution at that temperature and pressure, except that gases which have no other health- or physical-hazard properties are not considered to be compressed until the pressure in the packaging exceeds 41 psia (28 kPa) at 68oF (20oC). Compressed gases shall be classified as follows:

**Nonliquefied compressed gases.** Gases, other than those in solution, that are in a packaging under the charged pressure and are entirely gaseous at a temperature of 68oF (20oC).

**Liquefied compressed gases.** Gases that, in a packaging under the charged pressure, are partially liquid at a temperature of 68oF (20oC).

**Compressed gases in solution.** Nonliquefied gases that are dissolved in a solvent.

**Compressed gas mixtures.** A mixture of two or more compressed gases contained in a single packaging, the hazard properties of which are represented by the properties of the mixture as a whole.

**COMPRESSED GAS CONTAINER.** A pressure container designed to hold compressed gases at pressures greater than one atmosphere at 68oF (20oC).

**COMPRESSED GAS SYSTEM.** An assembly of components, such as containers, reactors, pumps, compressors and connecting piping and tubing, designed to contain, distribute or transport compressed gases.

**NESTING.** A method of securing flat-bottomed compressed gas containers upright in a tight mass using a contiguous three-point contact system whereby all containers within a group have a minimum of three points of contact with other containers, walls or bracing.

## SECTION FC 3003

### GENERAL REQUIREMENTS

**3003.1 Containers.** Compressed gas containers shall comply with the requirements of this section. Compressed gas containers shall be designed and fabricated in accordance with the specifications of the ASME Boiler and Pressure Vessel Code or DOTn regulations, or be otherwise approved. Compressed gas containers that are not designed for refillable use shall not be refilled after use of the original contents.

**3003.1.1 Partially full compressed gas containers.** Partially full compressed gas containers containing residual gases shall be considered as full for the purposes of the controls required.

**3003.2 Marking.** Stationary and portable compressed gas containers and systems shall be marked in accordance with Sections 3003.2.1, 3003.2.2 and 3003.2.3.

**3003.2.1 Stationary compressed gas containers.** Stationary compressed gas containers shall be marked with the name of the gas and in accordance with Sections 2703.5 and 2703.6. Markings shall be visible from any direction of approach. All uninsulated stationary outdoor compressed gas containers shall be of light-reflective design or painted with a light-reflecting color.

**3003.2.2 Portable containers.** Portable compressed gas containers shall be marked in accordance with CGA C-7 and DOTn regulations.

**3003.2.3 Piping systems.** Piping systems shall be marked in accordance with ANSI A13.1. Markings used for piping systems shall consist of the name of the contents and include an arrow indicating direction of flow. Markings shall be provided at each valve; at wall, floor or ceiling penetrations; at each change of direction; and at a minimum of every 20 feet (6096 mm) or fraction thereof throughout the piping run.

#### Exceptions:

1. Piping that is designed or intended to carry more than one compressed gas at various times shall have appropriate signs or markings posted at the manifold, along the piping and at each point of use to provide clear identification and warning.
2. Piping within gas-manufacturing plants, gas-processing plants and similar occupancies shall be marked in an approved manner.

**3003.2.4 Out-of-service containers.** Out-of-service compressed gas containers shall be marked to indicate that they are no longer available for service.

**3003.3 Container protection.** Compressed gas containers and systems shall be secured and protected against physical damage and tampering in accordance with Sections 2703.9.2, 3003.3.2 and 3003.3.3.

**3003.3.1** Reserved.

**3003.3.2 Physical protection.** Compressed gas containers and systems that could be exposed to physical damage shall be protected. Posts or other approved means shall be provided to protect compressed gas containers and systems indoors and outdoors from vehicular damage and shall comply with the requirements of Section 312.

**3003.3.3 Securing compressed gas containers.** Compressed gas containers shall be secured to prevent movement from contact, vibration or seismic activity, utilizing one or more of the following methods:

1. Securing containers to a fixed object with one or more noncombustible restraints. Containers shall not be secured to plumbing systems or electrical conduits.
2. Securing containers on a cart or other mobile device designed for the movement of compressed gas containers.
3. Nesting of compressed gas containers at container filling or servicing facilities or in seller's warehouses not accessible to the public. Nesting shall be allowed provided the nested containers, if dislodged, do not obstruct any required means of egress.
4. Securing of compressed gas containers to or within a rack, framework, cabinet or similar assembly designed for such use, except when the containers are in the process of examination, filling, transport or servicing.
5. Securing stationary compressed gas containers to a foundation designed for such use in accordance with the construction codes, including the Building Code.

**3003.4 Valve protection.** Compressed gas container valves shall be protected from physical damage by means of protective caps, collars or similar devices, in accordance with Sections 3003.4.1 and 3003.4.2.

**3003.4.1 Compressed gas container protective caps or collars.** Compressed gas containers designed to be fitted with protective caps, collars or other protective devices shall have such caps or devices in place except when the containers are in use or are being serviced or filled.

**3003.4.2 Caps and plugs.** Valves of compressed gas containers designed to accept protection caps or other protective devices shall have such caps or devices attached. Outlet caps or plugs shall be in place except when the compressed gas containers are in use or are being serviced or filled.

**3003.5 Separation from hazardous conditions.** Compressed gas containers and systems in storage or use shall be separated from materials and conditions that present potential hazards to them, or to which they present potential hazards. Compressed gas containers and systems in storage or use shall be separated in accordance with Sections 3003.5.1 through 3003.5.10.

**3003.5.1 Incompatible materials.** Compressed gas containers shall be separated from each other based on the hazard class of their contents.

Compressed gas containers shall be separated from incompatible materials in accordance with Section 2703.9.8.

**3003.5.2 Combustible waste and vegetation.** Combustible waste and vegetation shall be kept a minimum of 10 feet (3048 mm) from compressed gas containers and systems. A noncombustible partition, without openings or penetrations extending not less than 18 inches (457 mm) above the height of the tallest container or system piping and not less than 18 inches (457 mm) to the sides of the storage area is allowed in lieu of such distance. The wall shall either be an independent structure, or the exterior wall of the building adjacent to the storage area.

**3003.5.3 Ledges, platforms and elevators.** Compressed gas containers shall not be placed near elevators, unprotected platform ledges or other areas where the container could drop a distance exceeding one-half the height of the container.

**3003.5.4 Temperature extremes.** Compressed gas containers, whether full or partially full, shall not be exposed to temperatures exceeding 125oF (52oC) or less than mean low atmospheric temperatures unless designed for use under the exposed conditions.

**3003.5.5 Falling objects.** Compressed gas containers and systems shall not be placed in areas where they are exposed to damage from falling objects.

**3003.5.6 Heating.** Compressed gas containers shall not be heated by devices that could raise the surface temperature of the container to above 125oF (52oC). Heating devices shall comply with the requirements of the Mechanical Code and the Electrical Code. Approved heating methods not capable of producing surface temperatures above 125oF (52oC) are allowed to be used by trained personnel. Devices designed to maintain individual compressed gas containers at constant temperature shall be approved and shall be designed to be fail-safe.

**3003.5.7 Sources of ignition.** Open flames and high-temperature devices shall not be used in a manner that creates a hazardous condition.

**3003.5.8 Exposure to chemicals.** Compressed gas containers and systems shall not be exposed to corrosive chemicals or fumes that could damage containers, valves or valve-protective caps.

**3003.5.9 Exhausted enclosures.** When exhausted enclosures are provided as a means to segregate compressed gas containers from exposure hazards, such enclosures shall comply with the requirements of Section 2703.8.5.

**3003.5.10 Gas cabinets.** When gas cabinets are provided as a means to separate compressed gas containers from exposure hazards, such gas cabinets shall comply with the requirements of Section 2703.8.6.

**3003.6 Wiring and equipment.** Electrical wiring and equipment shall comply with the requirements of the Electrical Code. Compressed gas containers and systems shall not be located where they could become part of an electrical circuit. Compressed gas containers and systems shall not be used for electrical grounding.

**3003.7 Service and repair.** Service, repair, modification or removal of valves, pressure-relief devices or other compressed gas container appurtenances shall be performed by responsible personnel.

**3003.8 Unauthorized use.** Compressed gas containers and systems shall not be used for any purpose other than as a vessel for the materials that they are designed to contain.

**3003.9 Exposure to fire.** Compressed gas containers that have been exposed to fire shall be removed from service. Containers so removed shall be handled by qualified persons under the personal supervision of a C of F holder. Containers exposed to fire shall not be used unless they have been requalified in accordance with the standards set forth in ASME or DOTn regulations, or otherwise approved by the commissioner.

**3003.10 Leaks, damage or corrosion.** Leaking, damaged or corroded compressed gas containers shall be removed from service under the personal supervision of a C of F holder, and properly repaired or disposed.

**3003.11 Protection against corrosion.** Except as otherwise provided in this section, compressed gas containers may be stored or used without being placed under overhead cover. Containers shall be protected from direct contact with soil or unimproved surfaces to prevent bottom corrosion. The surface of the area upon which the containers are placed shall be graded to prevent accumulation of water.

**3003.12 Overhead cover.** Compressed gas containers in quantities requiring a permit are allowed to be stored or used in the sun except in locations where extreme temperatures prevail. When extreme temperatures prevail, overhead covers shall be provided. Overhead covers shall also be provided to prevent accumulations of ice and snow on the valves of containers connected for use.

**3003.13 Lighting.** Areas used for the storage, handling and use of compressed gas containers and systems shall be provided with approved lighting by natural or artificial means.

## SECTION FC 3004

### STORAGE OF COMPRESSED GASES

**3004.1 Upright storage.** Compressed gas containers, except those designed for use in a horizontal position, and all compressed gas containers containing nonliquefied gases, shall be stored in an upright position with the valve end up. The axis of the container stored in the upright position may be inclined as much as 45 degrees (0.80 rad) from the vertical provided that it is properly secured.

**Exception:** Compressed gas containers with an internal volume less than 0.174 ft<sup>3</sup> (0.005 m<sup>3</sup>) may be stored in a horizontal position.

**3004.2 Material-specific regulations.** In addition to the requirements of this section, indoor and outdoor storage of compressed gases shall comply with the material-specific requirements of Chapters 31, 35 and 37 through 44.

## SECTION FC 3005

### HANDLING AND USE OF COMPRESSED GASES

**3005.1 Compressed gas systems.** Compressed gas systems shall be suitable for the use intended and shall be designed and installed by persons competent in such design and installation. Compressed gas devices and systems shall be listed or approved.

**3005.2 Controls.** Compressed gas system controls shall be designed to prevent materials from entering or leaving process or reaction systems at other than the intended time, rate or path. Automatic controls shall be designed to be fail-safe.

**3005.3 Piping systems.** Piping, including tubing, valves, fittings and pressure regulators, shall comply with the requirements of this section and Chapter 27. Piping, tubing, pressure regulators, valves and other apparatus shall be kept gas tight to prevent leakage. Adequate pressure-relief devices shall be provided where refrigerated liquefied gas can become trapped in the piping.

**3005.4 Valves.** Valves utilized on compressed gas systems shall be suitable for the use intended and shall be accessible. Valve handles or operators for required shutoff valves shall not be removed or otherwise altered to prevent access or hinder operation.

**3005.5 Venting.** Venting of gases shall be directed to an approved location. Venting shall comply with the requirements of the Mechanical Code.

**3005.6 Upright use.** Compressed gas containers, except those designed for use in a horizontal position, and all compressed gas containers containing nonliquefied gases, shall be used in an upright position with the valve end up. The axis of a container being used in an upright position may be inclined as much as 45 degrees (0.80 rad) from the vertical provided that it is properly secured. Use of nonflammable liquefied gases in the inverted position when the compressed gas is in the liquid state shall be allowed provided that the container is properly secured and the dispensing apparatus is designed for such liquefied gas use.

**Exception:** Compressed gas containers with an internal volume less than 0.174 ft<sup>3</sup> (0.005 m<sup>3</sup>) may be used in a horizontal position.

**3005.7 Transfer.** Transfer of nonflammable compressed gases between containers shall be performed using equipment and operating procedures specified in CGA P-1 and NFPA 99.

**3005.8 Use of compressed gas for inflation.** Inflatable equipment, devices or balloons shall be pressurized or filled only with nonflammable gases.

**3005.9 Material-specific regulations.** In addition to the requirements of this section, indoor and outdoor use of compressed gases shall comply with the material-specific requirements of Chapters 31, 35 and 37 through 44.

**3005.10 Handling.** The handling of compressed gas containers shall comply with the requirements of Sections 3005.10.1 and 3005.10.2.

**3005.10.1 Carts and trucks.** Containers shall be moved using an approved method. Where containers are moved by hand cart, hand truck or other mobile device, such carts, trucks or devices shall be designed for the secure movement of containers. Carts and trucks utilized for moving compressed gas containers indoors shall comply with the requirements of Section 2703.10. Carts and trucks utilized for moving compressed gas containers outdoors shall be designed so that the containers will be secured against dropping or otherwise striking against each other or other surfaces.

**3005.10.2 Lifting of containers.** Ropes, chains or slings shall not be used to suspend compressed gas containers unless such containers have been designed for such handling. Valves of compressed gas containers shall not be used for lifting.

## **SECTION FC 3006**

### **MEDICAL GAS STORAGE**

**3006.1 General.** The storage of compressed gases intended for inhalation or sedation including, but not limited to, analgesics for dentistry, podiatry, veterinary and similar uses at hospitals and other medical facilities shall comply with the requirements of this section in addition to other requirements of this chapter.

**3006.2 Storage locations within buildings.** Medical gases shall be stored in areas dedicated to the storage of such gases without other storage or uses. Where containers of medical gases in quantities greater than the maximum allowable quantity per control area are located inside buildings or structures, they shall be stored in a 1-hour room or a gas cabinet in accordance with Section 3006.2.1 or 3006.2.3.

**3006.2.1 One-hour rooms.** A 1-hour room shall be a room separated from the remainder of the building or structure by fire barriers with a fire-resistance rating of not less than 1 hour. Openings between the room and interior spaces shall be protected by self-closing smoke and draft-control assemblies having a fire protection rating of not less than 1 hour. Rooms having an exterior wall shall be provided with at least two vents in such wall, each having not less than 36 square inches (0.023 m<sup>2</sup>) free area. One vent shall be within 6 inches (152 mm) of the floor and one shall be within 6 inches (152 mm) of the ceiling. Rooms with no exterior wall shall be exhausted through a duct to the outdoors. Supply and exhaust ducts shall be enclosed in a 1-hour-rated shaft enclosure from the room to the outdoors. Approved mechanical ventilation shall comply with the requirements of the Mechanical Code and be provided at a minimum rate of 1 cubic foot per minute per square foot [0.00508 m<sup>3</sup>/(s·m<sup>2</sup>)] of the area of the room. Rooms shall be protected by a sprinkler system.

**3006.2.2 Reserved.**

**3006.2.3 Gas cabinets.** Gas cabinets shall be constructed in accordance with Section 2703.8.6 and the following:

1. The average velocity of ventilation at the face of access ports or windows shall not be less than 200 feet per minute (61 m/s) with a minimum of 150 feet per minute (46 m/s) at any point of the access port or window.
2. Connected to an exhaust system.
3. Internally protected by a sprinkler system.

**3006.3 Outdoor storage locations.** The storage of oxidizing medical gases located outdoors in quantities greater than the amount requiring a permit shall be located in accordance with Section 4004.2.1.

**3006.4 Medical gas storage.** Medical gas storage, including containers, supply manifolds, connections, pressure regulators, relief devices and valves, shall comply with the requirements of NFPA 99 and this chapter.

## **SECTION FC 3007**

### **COMPRESSED GASES NOT OTHERWISE REGULATED**

**3007.1 General.** Compressed gases in storage or use not regulated by the material-specific provisions of Chapters 6, 31, 35 and 37 through 45, including asphyxiant, irritant and radioactive gases, shall comply with the requirements of this section in addition to other requirements of this chapter.

**3007.2 Ventilation.** Indoor storage and use areas and storage buildings shall be provided with mechanical exhaust ventilation or natural ventilation in accordance with Section 2704.3 or 2705.1.9. Mechanical exhaust ventilation shall be provided where required by Section 2705.2.1.1 or 2705.2.2.2. When mechanical ventilation is provided, the systems shall be operational during such time as the building or space is occupied.

## **SECTION FC 3008**

### **ETHYLENE OXIDE**

**3008.1 Scope.** This section shall govern the storage, handling and use of gases containing ethylene oxide used for sterilization purposes. The storage, handling and use of gases containing ethylene oxide for purposes other than sterilization shall comply with the other applicable requirements of this chapter. The storage, handling and use of flammable gases containing ethylene oxide shall additionally comply with the requirements of Chapter 35.

**3008.2 General.** The storage, handling and use of gases containing ethylene oxide used for sterilization purposes shall comply with the other requirements of this chapter, as applicable, and shall additionally be in accordance with this section.

**3008.3 Prohibitions.** It shall be unlawful to sterilize pressurized oxygen equipment with gases containing ethylene oxide.

**3008.4 Application.** Prior to storing or using gases containing ethylene oxide, or modifying an existing installation or system, the owner shall file with the department an application for the approval of the design and installation of the sterilization system which contains such information and documentation as the commissioner may prescribe.

**3008.5 Design and installation requirements.** The design and installation of sterilization systems shall comply with the requirements of Sections 3008.5.1 through 3008.5.3.

**3008.5.1 Compliance with other codes and standards.** The design and installation of sterilization systems and the storage of gases containing ethylene oxide shall be in accordance with the construction codes, including the Building Code, the Electrical Code, the manufacturer's specifications and the approved testing laboratory that listed the sterilizer.

**3008.5.2 Sterilization system room and local area ventilation.** Sterilization systems shall be installed in rooms that are ventilated as follows:

**3008.5.2.1 Room ventilation.** Sterilizers shall be installed in a well-ventilated room or other area provided with an independent, non-recirculating mechanical ventilation system that discharges outdoors. Ventilation supply and exhaust registers shall be located such that there are no stagnant air spaces in the immediate area of the sterilizer and that the direction of air movement is away from the operator.

**3008.5.2.2 Local area ventilation.** Where a local ventilation system is required by the regulations of the United States Department of Labor, such ventilation system shall be an independent, dedicated and non-recirculating system that discharges directly outdoors or to an emission control system and only metallic ductwork impervious to ethylene oxide shall be used. The

amount of flexible ducting and the number of elbows in the duct shall be kept to a minimum.

**3008.5.3 Vent lines.** Sterilizer vent lines shall be designed and installed in accordance with the following requirements:

1. Each sterilizer shall be equipped with an independent, dedicated and gas-tight vent line for the discharge of gases containing ethylene oxide.
2. Vent lines shall discharge directly outdoors or to an emission control system. Such vent lines shall not discharge into any other ventilation or exhaust system.
3. The piping and the point of discharge for all vent lines discharging outdoors shall be designed and installed to prevent moisture from entering the vent line.
4. Vent lines, including piping, fittings and other components, shall be in accordance with the specifications of the sterilizer manufacturer. Pipe lengths shall not exceed the maximum lengths specified by the manufacturer. Vertical travel distances, elbows, sharp bends and any reduction in vent line size shall be kept to a minimum.

**3008.6 Operation and maintenance.** The operation and maintenance of sterilization systems shall be as follows:

1. Sterilization systems shall be operated and maintained in compliance with the manufacturer's specifications and the approved testing laboratory listing requirements.
2. Air compressors and their air intakes shall be located such that any gas that may leak from the sterilization system or stored containers will not enter the compressor.
3. Sterilizers shall not be operated if the room ventilation system, local area ventilation system or vent pipe is not operational.

**3008.7 Emergency plan.** Where required by the regulations of the United States Department of Labor, a written emergency plan to be implemented in the event of an ethylene oxide spill or leak shall be prepared, shall be maintained on the premises and made available for inspection by any representative of the department.

**3008.8 Recordkeeping.** A copy of the manufacturer's instructions for the installation, operation and maintenance of the sterilizer shall be maintained in the room or other area in which the sterilization system is located.

## **FC Chapter 34**

### **CHAPTER 34** **FLAMMABLE AND COMBUSTIBLE LIQUIDS** **SECTION FC 3401** **GENERAL**

**3401.1 Scope.** This chapter shall govern the storage, handling and use of flammable and combustible liquids, including the dispensing and mixing of such liquids, including flammable and combustible liquids subject to the New York State

Department of Environmental Conservation regulations, as set forth in 6 NYCRR Parts 595 through 614.

**3401.4 Permits.** Permits shall be required as set forth in Section 105.6.

**3401.5 Material classification.** Flammable and combustible liquids shall be classified in accordance with the definitions in Section 3402.1.

**3401.6 Supervision.** Manufacture, storage, handling and use of flammable and combustible liquids, including the dispensing of such liquids, shall be supervised as set forth in Sections 3401.6.1 through 3401.6.3.

**3401.6.1 Manufacture.** The manufacture of flammable and combustible liquids shall be under the personal supervision of a C of F holder.

**3401.6.2 Storage.** The storage of flammable and combustible liquids, excluding combustible liquids with a flash point over 300°F (149°C), in quantities exceeding 275 gallons (1041 L) or in any building or structure classified as Group H occupancy, shall be under the general supervision of a C of F holder.

**3401.6.3 Handling and use.** The handling and use of flammable and combustible liquids, including the dispensing of such liquids, excluding combustible liquids with a flash point over 300°F (149°C), shall be under the personal supervision of a C of F holder when the total quantities stored, handled and used in or upon a premises exceeds 275 gallons (1041L) or in any building or structure classified as Group H occupancy.

**3401.7 Prohibitions.** It shall be unlawful to:

1. Manufacture, refine or distill petroleum or coal tar, or the liquid products thereof.
2. Operate a refinery.
3. Install an aboveground flammable liquid storage tank indoors.
4. Store or transport in the harbor or the city any flammable or combustible liquid, except in a barge or marine vessel constructed, protected and operated in accordance with the regulations of the United States Coast Guard.

**3401.8 Certificate of license.** Persons who install, alter, test or repair any flammable or combustible liquid storage system shall hold a certificate of license or shall be employed by and perform such duties under the general supervision of a person holding such certificate.

## SECTION FC 3402

### DEFINITIONS

**3402.1 Definitions.** The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

**ALCOHOL-BASED HAND RUB.** An alcohol-containing preparation designed for application to the hands for anti micro-bacterial or other medicinal purpose and containing ethanol or isopropanol in an amount not exceeding 70 percent by volume.

**COMBUSTIBLE LIQUID.** For purposes of transportation, a combustible liquid, as defined in the regulations of the United States Department of Transportation, as set forth in 49 CFR Section 173.120. For all other purposes, a liquid, other than a

compressed gas or cryogenic fluid, having a closed cup flash point at or above 100°F (38°C), classified as follows:

**Class II.** Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).

**Class IIIA.** Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).

**Class IIIB.** Liquids having closed cup flash points at or above 200°F (93°C).

**FIRE POINT.** The lowest temperature at which a liquid will ignite and achieve sustained burning when exposed to a test flame in accordance with ASTM D 92.

**FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE SYSTEM.** A flammable or combustible liquid storage tank and all devices, equipment and systems associated with such tank, including the tank, piping, valves, fill connection, vent lines, pumps and any other ancillary equipment, except liquid motor fuel storage and dispensing systems and flammable and combustible liquid storage systems at a bulk plant or terminal used for bulk transfer operations.

**FLAMMABLE LIQUID.** For purposes of transportation, a flammable liquid defined in the regulations of the United States Department of Transportation, as set forth in 49 CFR Section 173.120. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point below 100°F (38°C), classified as follows:

**Class IA.** Liquids having a flash point below 73°F (23°C) and having a boiling point below 100°F (38°C).

**Class IB.** Liquids having a flash point below 73°F (23°C) and having a boiling point at or above 100°F (38°C).

**Class IC.** Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).

**FLASH POINT.** The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified in ASTM D 56, ASTM D 93 or ASTM D 3278.

**LIQUID STORAGE ROOM.** A room classified as a Group H-3 occupancy used for the storage of flammable or combustible liquids.

## SECTION FC 3403

### GENERAL REQUIREMENTS

**3403.1 Electrical.** Electrical wiring and equipment shall be installed and maintained in accordance with the Electrical Code.

**3403.1.1 Classified locations for flammable liquids.** Areas where flammable liquids are stored, handled or used, including the dispensing or mixing of such liquids, shall be in accordance with Table 3403.1.1 and the Electrical Code. A classified area shall not extend beyond any floor, roof or other solid partition having no openings. The extent of the classified area is allowed to be reduced, or eliminated, where sufficient technical justification is provided to the

commissioner that a concentration in the area in excess of 25 percent of the lower flammable limit cannot be generated.

**3403.2 Fire protection.** Fire protection for the storage, handling, and use of flammable and combustible liquids, including the dispensing and mixing of such liquids, and on-site transportation, shall be provided in accordance with this chapter and Chapter 9.

**3403.2.1 Portable fire extinguishers and hose lines.** Portable fire extinguishers shall be provided in accordance with Section 906. Where required, hose lines shall be provided in accordance with Section 905.

**3403.3 Site assessment.** The commissioner may require a owner or operator of a tank system to conduct a site assessment upon a determination that a potential fire or explosion hazard exists as a result of a spill, leak or discharge from such system. Such site assessments shall be conducted to ascertain potential fire hazards and shall be completed and submitted to the department within a time period established by the commissioner, not to exceed 60 days.

**3403.4 Spill control and secondary containment.** Where the maximum allowable quantity per control area is exceeded, and when required by Section 2704.2, rooms, buildings or areas used for storage, handling or use of Class I, II and III-A liquids, including the dispensing or mixing of such liquids, shall be provided with spill control and secondary containment in accordance with Section 2704.2.

**3403.5 Labeling and signage.** The commissioner may require warning signs for the purpose of identifying the hazards of manufacturing, storing, handling or using flammable liquids, including the dispensing or mixing of such liquids. Signage for identification and warning such as for the inherent hazard of flammable liquids or smoking shall be provided in accordance with this chapter and Sections 2703.5 and 2703.6.

**3403.5.1 Style.** Warning signs shall be of a durable material. Signs warning of the hazard of flammable liquids shall have white lettering on a red background and shall read: DANGER—FLAMMABLE LIQUIDS. Letters shall not be less than 3 inches (76 mm) in height and 0.5 inch (12.7 mm) in stroke.

**3403.5.2 Location.** Signs shall be posted in locations as required by the commissioner. Piping containing flammable liquids shall be identified in accordance with ANSI A13.1.

**3403.5.3 Warning labels.** Individual containers, packages and cartons shall be identified, marked, labeled and placarded in accordance with federal regulations and applicable state laws.

**3403.5.4 Identification.** Color coding or other approved identification means consistent with the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Section 613.3(b), shall be provided on each loading and unloading riser for flammable or combustible liquids to identify the contents of the tank served by the riser.

## SECTION FC 3404

### STORAGE

**3404.1 General.** Flammable and combustible liquids in containers and tanks shall be stored in accordance with this section, Chapter 27 and the New York State

Department of Environmental Conservation regulations, as set forth in 6 NYCRR Parts 596, 598, 599, 612, 613 and 614.

**3404.1.1 Aboveground storage prohibited.** Except as specifically authorized in Section 3406, it shall be unlawful to store flammable liquids in an aboveground storage tank.

**3404.1.2.3 Aboveground, outdoor combustible liquid tanks.** The aggregate capacity of aboveground combustible liquid tanks installed outdoors at a premises shall not exceed 30,000 gallons (113 550 L).

**3404.1.2.4 Aboveground, indoor combustible liquid tanks.** The aggregate capacity of aboveground combustible liquid tanks installed indoors shall not exceed 20,000 gallons (75 700 L).

**3404.2 Tank storage.** The provisions of this section shall apply to:

1. The storage of flammable liquids in stationary aboveground tanks located outdoors and underground tanks.
2. The storage of combustible liquids in stationary aboveground tanks indoors and outdoors, and underground tanks.
3. Existing storage tank installations at bulk plants and terminals which have not been used for the storage of flammable or combustible liquids for a period in excess of 2 years from the date of completion of construction of the tank structure, if the tank is to be placed in service.

**3404.2.3 Labeling and signs.** Labeling and signs for storage tanks and storage tank areas shall comply with the requirements of Sections 3404.2.3.1 and 3404.2.3.2.

**3404.2.3.1 Smoking and open flame.** Signs shall be posted in storage areas prohibiting open flames and smoking. Signs shall comply with the requirements of Section 3403.5.

**3404.2.3.2 Label or placard.** Tanks more than 100 gallons (379 L) in capacity, which are used for the storage of Class I, II or IIIA liquids, shall bear a label and placard identifying the material therein. Placards shall be in accordance with NFPA 704.

**3404.2.4 Sources of ignition.** Open flames are prohibited in storage areas in accordance with Section 2703.7.

**3404.2.5 Explosion control.** Explosion control shall be provided in accordance with Section 911.

**3404.2.6 Separation from incompatible materials.** Flammable and combustible liquids shall be stored separated from incompatible materials, in accordance with Section 2703.9.8.

**3404.2.9.5.3 Separation between adjacent tanks containing flammable or combustible liquids and LPG.** The minimum horizontal separation between an LPG container and a Class I, II or IIIA liquid storage tank shall be 20 feet (6096 mm) except in the case of Class I, II or IIIA liquid tanks operating at pressures exceeding 2.5 psig (17.2 kPa) or equipped with emergency venting allowing pressures to exceed 2.5 psig (17.2 kPa), in which case the provisions of Section 3404.2.9.5.2 shall apply. An approved means shall be provided to prevent the accumulation of Class I, II or IIIA liquids under adjacent LPG containers such as

by dikes, diversion curbs or grading. When flammable or combustible liquid storage tanks are within a diked area, the LPG containers shall be outside the diked area and at least 10 feet (3048 mm) away from the centerline of the wall of the diked area.

**Exception:** Horizontal separation is not required between LPG containers and underground flammable and combustible liquid tanks.

**3404.3 Container storage.** Storage of flammable and combustible liquids in closed containers that do not exceed 60 gallons (227 L) in individual capacity, and transfers incidental thereto, shall comply with the requirements of this section. It shall be unlawful to store flammable and combustible liquids in containers with an individual capacity of greater than 60 gallons (227 L).

**3404.3.1 Design, construction and capacity of containers.** The design, construction and capacity of containers for the storage of flammable and combustible liquids shall be in accordance with this section and Section 4.2 of NFPA 30. It shall be unlawful to store flammable and combustible liquids in portable tanks, intermediate bulk containers and fiber drums.

**3404.3.1.1 Approved containers.** Only approved containers shall be used.

**3404.3.2 Liquid storage cabinets.** Where other sections of this code require that liquid containers be stored in storage cabinets, such cabinets and storage shall be in accordance with Sections 3404.3.2.1 through 3404.3.2.3.

**3404.3.2.1 Design of storage cabinets.** Design of liquid storage cabinets shall be in accordance with this section.

**3404.3.2.1.1 Materials.** Cabinets shall be listed in accordance with UL 1275.

**3404.3.2.1.2 Labeling.** Cabinets shall be provided with a conspicuous label in red letters on contrasting background which reads: FLAMMABLE—KEEP FIRE AWAY.

**3404.3.2.1.3 Doors.** Doors shall be well fitted, self-closing and equipped with a three-point latch.

**3404.3.2.1.4 Bottom.** The bottom of the cabinet shall be liquid tight to a height of at least 2 inches (51 mm).

**3404.3.2.2 Capacity.** The combined total quantity of liquids in a cabinet shall not exceed 120 gallons (454 L).

**3404.3.2.3 Number of storage cabinets.** Not more than three storage cabinets shall be located in a single fire area, except that in a Group F occupancy, additional cabinets are allowed to be located in the same fire area if the additional cabinets (or groups of up to three cabinets) are separated from other cabinets or groups of cabinets by at least 100 feet (30 480 mm).

**3404.3.3 Indoor storage.** Storage of flammable and combustible liquids indoors in containers shall be in accordance with this section.

**Exceptions:**

1. Liquids in the fuel tanks of motor vehicles, aircraft, watercraft or portable or stationary engines.
2. The storage of distilled spirits and wines in wooden barrels or

casks.

**3404.3.3.1 Portable fire extinguishers.** Approved portable fire extinguishers shall be provided in accordance with specific sections of this chapter and Section 906.

**3404.3.3.2 Incompatible materials.** Materials that will react with water or other liquids to produce a hazard shall not be stored in the same room with flammable and combustible liquids in accordance with Section 2703.9.8.

**3404.3.3.3 Clear means of egress.** Storage of any liquids, including stock for sale, shall not be stored near or be allowed to obstruct physically the route of egress.

**3404.3.3.4 Empty containers storage.** The storage of empty containers previously used for the storage of flammable or combustible liquids shall be stored as required for filled containers. Containers, when emptied, shall have the covers or plugs immediately replaced in openings, be removed to an outdoor location and, if not cleaned on the premises, the empty containers shall be removed from the premises as soon as practical, but at least daily.

**3404.3.3.5 Shelf storage.** Shelving shall be of approved noncombustible construction, adequately braced and anchored. Seismic requirements shall be in accordance with the construction codes, including the Building Code.

## **FC Chapter 35**

### **CHAPTER 35 FLAMMABLE GASES SECTION FC 3501 GENERAL**

**3501.1 Scope.** This chapter shall govern the storage, handling and use of flammable gases.

#### **Exceptions:**

1. Flammable gases used as refrigerants in refrigerating systems, as set forth in Section .

### **SECTION FC 3502 DEFINITIONS**

**3502.1 Definitions.** The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

**FLAMMABLE GAS.** A material which is a gas at 68°F (20°C) or less at 14.7 pounds per square inch absolute (psia) (101 kPa) of pressure which:

1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air, in accordance with testing procedures set forth in ASTM E 681; or
2. Has a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower limit, in accordance with testing procedures set forth in ASTM E 681.

**FLAMMABLE LIQUEFIED GAS.** A liquefied compressed gas which, under a charged pressure, is partially liquid at a temperature of 68°F (20°C) and which is a flammable gas.

### SECTION FC 3503

#### GENERAL REQUIREMENTS

**3503.1 Quantities not exceeding the maximum allowable quantity per control area.** Flammable gases in amounts not exceeding the maximum allowable quantity per control area set forth in Section 2703.1 shall be stored, handled and used in accordance with Sections 2701, 2703, 3501, 3503, 3506, 3507 and 3508.

**3503.1.1 Special limitations for indoor storage, handling and use.**

Flammable gases shall not be stored, handled or used in Group A, B, E, I or R occupancies.

**Exceptions:**

1. Containers not exceeding a capacity of 250 SCF (7.08 m<sup>3</sup>) used for maintenance purposes or operation of equipment.

**3503.1.4 Ignition source control.** Ignition sources in areas containing flammable gases shall be controlled in accordance with Section 2703.7 and the following requirements:

1. Static-producing equipment located in flammable gas storage areas shall be grounded.
2. "No Smoking" signs shall be posted at entrances to and in areas containing flammable gas containers, piping and equipment in accordance with Section 2703.6.

**3503.1.5 Liquefied flammable gases and flammable gases in solution.**

Containers of liquefied flammable gases and flammable gases in solution shall be positioned in the upright position or positioned so that the pressure relief valve is in direct contact with the vapor space of the container.

**Exceptions:**

1. Containers of flammable gases in solution with a capacity of 1.3 gallons (5 L) or less.
2. Containers of flammable liquefied gases, with a capacity not exceeding 1.3 gallons (5 L), designed to preclude the discharge of liquid from safety relief devices.

### SECTION FC 3504

#### STORAGE

**3504.1 Indoor storage.** Indoor storage of flammable gases in amounts exceeding the maximum allowable quantity per control area set forth in Table 2703.1.1(1), is not allowed where outdoor storage is available on the premises. Indoor storage shall be in accordance with Sections 2701, 2703 and 2704, and this chapter.

**3504.1.1 Explosion control.** Buildings or portions thereof containing flammable gases shall be provided with explosion control in accordance with Section 911.

**3504.1.2 Maximum storage quantity.** Storage of flammable gases shall not exceed 15,000 SCF (424.8 m<sup>3</sup>) in any building or structure.

**3504.1.3 Flammable gas storage of 3,500 SCF (99.12 m<sub>3</sub>) or less.** Indoor storage shall be protected against damage or injury from falling objects or surrounding activity, and be located not less than:

1. 20 feet (6096 mm) from all classes of flammable and combustible liquids, oxidizing gases and readily combustible materials, such as paper and combustible fibers.
2. 25 feet (7620 mm) from open flames, ordinary electrical equipment or other sources of ignition.
3. 50 feet (15 240 mm) from air-conditioning equipment, air compressors and intakes of ventilation.
4. 50 feet (15 240 mm) from other flammable gas storage.

**3504.1.4 Flammable gas storage of more than 3,500 SCF (99.12 m<sub>3</sub>).** There may be more than one storage location of 3,500 SCF (99.12 m<sub>3</sub>) in a room, provided that each storage location does not exceed 3,500 SCF (99.12 m<sub>3</sub>) and the storage locations are separated by at least 50 feet (15 240 mm) or an approved masonry barrier having a minimum fire resistance rating of 2 hours. Each such storage location shall additionally comply with the requirements of Section 3504.1.2 and 3504.1.3.

**3504.2 Outdoor storage.** Outdoor storage of flammable gases in amounts exceeding the maximum allowable quantity per control area set forth in Table 2703.1.1(3) shall be limited to a maximum storage of 3,500 SCF (99.12 m<sub>3</sub>) except where the provisions of this code or the rules authorize storage in larger quantities at construction sites. Outdoor storage of flammable gases shall be in accordance with Sections 2701, 2703 and 2704, and this chapter.

**3504.2.1 Location of outdoor storage areas.** Outdoor storage areas for flammable gases shall be located at or above grade level, and in accordance with Sections 3504.2.1.1 and Table 3504.2.1, as applicable.

**3504.2.1.1 Proximity to hazards.** Storage shall not be located where the stored flammable gases would be exposed to the following hazards in the event of the failure of their structure or containment systems:

1. Electric power lines.
2. Piping containing flammable or combustible liquids.
3. piping containing flammable gases.
4. piping containing oxidizing materials.

**3504.2.2 Proximity to flammable and combustible liquid storage.** Storage within 50 feet (15 240 mm) of aboveground storage of flammable and combustible liquids shall be located on ground higher than such storage, except where dikes, diversion curbs, grading or walls are used to prevent these liquids from accumulating under the flammable gas storage.

**3504.2.3 Electrical equipment.** Electrical equipment within 3 feet (914 mm) in any direction of an outdoor flammable gas storage area shall comply with the Class I, Division 2 wiring requirements of the Electrical Code for hazardous locations, unless such electrical equipment is separated from such area by a wall or other solid partition having no openings.

## **FC Chapter 38**

### **CHAPTER 38 LIQUEFIED PETROLEUM GASES SECTION FC 3801 GENERAL**

**3801.1 Scope.** This chapter shall govern the manufacture, storage, handling and use of LPG and the installation and operation of LPG equipment relating to such systems.

**Exceptions:**

1. Use of LPG or LPG mixtures as a refrigerant in a refrigerating system regulated by the construction codes, including the Mechanical Code, and Section FC 606 of this code.
2. Storage and use of LPG in connection with special effects.
3. Outdoor storage and use for private, non-commercial barbecues within the lot line of a Group R-3 occupancy, as set forth in Section 307.

**3801.2 Permits.** Permits shall be required as set forth in Section 105.6.

**3801.2.1 Deliveries.** Distributors shall not deliver LPG containers to any location in quantities requiring a permit unless a permit for such installation, storage or use has been issued for that location by the commissioner.

**3801.4 General.** LPG shall be stored, handled and used, and devices, equipment and systems utilizing LPG shall be designed, installed, operated and maintained, in accordance with this chapter, the rules and NFPA 58.

**3801.5 Supervision.** The storage, handling and use of LPG shall be supervised in accordance with Sections 3801.5.1 through 3801.5.8.

**3801.5.1 Connecting and disconnecting of LPG containers.** The connecting and disconnecting of LPG containers with a capacity greater than 16.4 ounces (0.465 kg) shall be conducted by a person holding a C of F.

**3801.5.2 Tar kettles.** The storage, handling and use of a tar kettle that requires a permit shall be under the personal supervision of a person holding a C of F.

**3801.5.3 Torch operations.** Torch operations using LPG containers with a capacity greater than 16.4 ounces (0.465 kg) LPG shall be performed by a person holding a C of F.

**3803.2.1.1 Use in basement, pit or other area below grade.** LPG containers shall not be used in a cellar, basement, pit or other area below grade where heavier-than-air gas might collect. LPG containers shall not be used in an above-grade under floor space or basement unless such location is provided with an approved means of ventilation.

**Exceptions:**

1. Use with self-contained torch assemblies in accordance with Section 3803.2.1.6 and the rules.
2. Manhole operations in accordance with the rules.

**3803.2.1.2 Construction site heating.** Portable containers are allowed to be used in buildings or areas of buildings undergoing construction as set forth in Section 3.4.3 of NFPA 58, Sections 313.5 and 1403, and the rules.

**3803.2.1.3 Group F occupancies.** Portable LPG containers shall not be stored, handled or used indoors in Group F occupancies, except as the commissioner may authorize by rule.

**3803.2.1.4 Group E and I occupancies.** Portable LPG containers shall not be permitted inside Group E and I occupancies, except as allowed in this section and the rules. In Group E and I occupancies, portable LPG containers are allowed to be used for research purposes. Such containers shall not be used in classrooms. Such containers shall not exceed 16.4 ounces (0.465 kg) of LPG. Where more than one such container is present in the same room, each container shall be separated from other containers by a distance of not less than 20 feet (6096 mm).

**3803.2.1.5 Demonstration uses.** Portable LPG containers are allowed to be used temporarily for demonstrations and public exhibitions. Except as otherwise authorized by the commissioner in connection with exhibitions and trade shows, such containers shall not exceed 16.4 ounces (0.465 kg) of LPG. Where more than one such container is present in the same room, each container shall be separated from other containers by a distance of not less than 20 feet (6096 mm). Storage and use of portable LPG containers shall be in accordance with the rules.

**3803.2.1.6 Use with self-contained torch assemblies.** Portable LPG containers are allowed to be used to supply approved self-contained torch assemblies. Such containers shall not exceed 16.4 ounces (0.465 kg) of LPG.

**3803.2.1.7 Use for food preparation.** Commercial food service appliances using LPG may be used only when authorized by this code or the rules.

**3803.2.2 Industrial vehicles.** Containers on industrial vehicles shall comply with the requirements of Section FC 309, Sections 8.3 and 8.4 of NFPA 58, and the rules.

**3803.3 Location of equipment and piping.** Equipment and piping shall not be installed in locations where such equipment and piping is prohibited by the construction codes, including the Fuel Gas Code, or the rules.

**SECTION FC 3804  
RESERVED  
SECTION FC 3805**

**PROHIBITED STORAGE, HANDLING AND USE OF LPG**

**3805.1 Unapproved equipment.** LPG shall not be used for the purpose of operating any device, equipment or system unless such device, equipment or system is approved for use with LPG.

**3805.2 Release to the atmosphere.** LPG shall not be released to the atmosphere except as authorized by the commissioner.

**3805.3 General prohibitions.** It shall be unlawful to:

1. Store, handle or use LPG in any container with a capacity greater than 100 pounds (45.4 kg) of LPG.

2. Store, handle or use LPG in a basement, cellar or other below grade area, except as authorized by the commissioner.
3. Store LPG in any outdoor or indoor storage facility, or store, handle or use LPG for a stationary LPG installation that has not been approved.
4. Store, handle or use LPG without a permit when such storage, handling or use exceeds the quantities set forth in Section 105.6.
5. Store, handle or use in, or bring or allow into, any residential occupancy, or on any lot containing a building used for a residential occupancy, any LPG container with a capacity greater than 16.4 ounces (0.465 kg), except as authorized by the commissioner.
6. Store, handle or use in, or bring or allow into, any non-residential building, any LPG container with a capacity greater than 16.4 ounces (0.465 kg) LPG, except as authorized by the commissioner.
7. Store LPG containers on the roof of any building.
8. Handle or use on the roof of any building LPG containers with a capacity greater than 16.4 ounces (0.465 kg), except as authorized by the commissioner.
9. Store, handle or use LPG in or on motor vehicles, except as temporary storage incidental to transportation, or as a fuel for generating motive power for a motor vehicle, or as otherwise authorized by the commissioner.
10. Store, handle or use LPG for a stationary LPG installation in any area where access to piped natural gas from a public utility is available.
11. Store, handle or use LPG in any equipment used or previously used for natural gas, except as may be authorized by the commissioner on an emergency basis.
12. Store, handle or use LPG for space heating or water heating, except as authorized by the commissioner.
13. Store, handle or use LPG in or for any appliance that withdraws or utilizes LPG in a liquid form except as authorized by the commissioner.
14. Use non-metallic pipe, tubing and components for any installation, appliance or equipment using LPG, except as authorized by the commissioner.
15. Store LPG containers with a capacity greater than 16.4 ounces (0.465 kg) LPG indoors in any residential occupancy and in any building where an outside storage location for such LPG container is available.
16. Store or operate a floor maintenance machine utilizing LPG indoors.
17. Manufacture LPG.
18. Dispense LPG and fill LPG containers as set forth in Section FC 3806.

## **SECTION FC 3806**

### **DISPENSING AND FILLING**

**3806.1 Dispensing and filling.** It shall be unlawful to dispense LPG, fill a container with LPG, or transfer LPG in any state from one container to another.

## **SECTION FC 3807**

### **SAFETY PRECAUTIONS AND DEVICES**

**3807.1 Safety devices.** Safety devices on LPG containers, equipment and systems shall not be tampered with or rendered ineffective.

**3807.2 Smoking and other sources of ignition.** "No Smoking" signs complying with the requirements of Section 310 shall be posted when required by the commissioner. Smoking is prohibited in accordance with Chapter 3. Control of other sources of ignition shall comply with the requirements of Chapter 3, and Section 3.7 of NFPA 58.

**3807.3 Clearance to combustibles.** LPG containers shall be kept a minimum of 10 feet (3048 mm) from vegetation, rubbish and other combustible waste and combustible materials.

**3807.4 Protecting containers from vehicles.** Where exposed to vehicular damage due to proximity to alleys, driveways or parking areas or when required by the commissioner, LPG containers, regulators and piping shall be protected in accordance with Section 312.

## SECTION FC 3808 PORTABLE FIRE EXTINGUISHERS

**3808.1** Reserved.

**3808.2 Portable fire extinguishers.** Portable fire extinguishers complying with the requirements of Section 906 shall be provided as specified in NFPA 58 and the rules.

## SECTION FC 3809 STORAGE OF PORTABLE LPG CONTAINERS

**3809.1 General.** Storage of portable LPG containers shall comply with the requirements of Sections 3809.2 through 3809.14, and shall be approved by the commissioner.

**Exceptions:**

1. Containers that have not previously been filled with LPG.
2. Containers stored for use at construction sites.

**3809.2 Exposure hazards.** Containers in storage shall be located in a manner which minimizes exposure to physical damage, tampering or excessive temperature rise.

**3809.3 Position.** Containers in storage having individual capacity greater than 1 pound (0.454 kg) of LPG shall be positioned with the pressure relief valve in direct communication with the vapor space of the container.

**3809.4 Separation from means of egress.** Containers shall not be stored or left unattended near exit access doors, exits, stairways, exit discharge areas, or other areas designed or used as a means of egress.

**3809.5 Quantity.** Empty containers that have been in LPG service shall be considered as full containers for the purpose of determining the maximum quantities of LPG allowed in Sections 3809.9 and 3809.11.

**3809.6 Storage on roofs.** Containers shall not be stored, or connected for use in a stationary LPG installation, on the roof of any building or structure.

**3809.7 Storage in basement, pit or other area below grade.** LPG containers shall not be stored in a cellar, basement, pit or other area below grade.

**3809.8 Protection of valves on containers in storage.** Container valves shall be protected by screw-on-type caps or collars which shall be securely in place on all containers stored regardless of whether they are full, partially full or empty. Container outlet valves shall be closed. LPG containers with a capacity of 20 pounds (9 kg) of LPG shall also be provided with transportation plugs that secure gas tight the container's outlet valve connection.

**3809.9 Storage within buildings accessible to the public.** LPG containers constructed in accordance with the United States Department of Transportation (DOTn) specifications with a maximum capacity of 16.4 ounces (0.465 kg) of LPG used in completely self-contained hand torches and similar devices are allowed to be stored for sale or displayed in a building accessible to the public. Buildings shall be protected by a sprinkler system in storage and display areas when quantities exceed permit amounts. The quantity of LPG shall not exceed 200 pounds (91 kg).

**3809.10 Storage within buildings not accessible to the public.** The quantity of LPG containers allowed in one storage location in buildings not accessible to the public, such as industrial buildings, shall not exceed a maximum capacity of 300 pounds (136 kg) of LPG. Where additional storage locations are required on the same floor within the same building, they shall be separated by a minimum of 300 feet (91 440 mm).

**Exception:** Storage of LPG at construction sites shall be in accordance with the rules.

**3809.11. Reserved.**

**3809.12 Location of outdoor storage.** Outdoor storage, including storage of containers for sale and containers connected for use, shall be located not less than 20 feet (6096 mm) from building openings, 20 feet (6096 mm) from any motor vehicle fuel dispenser and 10 feet (3048 mm) from any combustible material and, as applicable, in accordance with the Table 3809.12. Outdoor storage of LPG shall be limited to not more than 400 pounds (181.6 kg) of LPG and shall be located at or above grade level.

**Exception:** Storage of LPG at construction sites shall be in accordance with the rules.

**3809.12.1 Proximity to hazards.** Storage shall not be located where the stored LPG would be exposed to the following hazards in the event of the failure of their structure or containment systems:

1. Electric power lines.
2. Piping containing flammable or combustible liquids.
3. Piping containing flammable gases.
4. Piping containing oxidizing materials.

**3809.13 Protection of containers.** Containers shall be stored within a suitable enclosure or otherwise protected against tampering. Vehicular protection shall be provided as required by the commissioner.

**3809.15 Electrical equipment.** Except as otherwise provided in NFPA 58, electrical equipment within 3 feet (914 mm) in any direction of an outdoor LPG storage area shall comply with the Class I, Division 2 wiring requirements of the

Electrical Code for hazardous locations, unless electrical equipment is separated from such area by a wall or other solid partition having no openings.

**3809.14 Separation from means of egress for containers located outside of buildings.** Containers located outdoors shall not be located within 20 feet (6096 mm) of any exit access doors, exits, stairways or in areas normally designed or used as a means of egress.

## **LOCAL LAW 58 of 2009**

### **NEW YORK CITY BUILDING CODE**

#### **Fire Suppression Piping Components to be identified as required by Local 58/2009**

**NOTE:** Only existing visible piping shall be identified as required. When ceilings are removed during renovations, any existing visible system piping shall be identified and painted.

**Standpipe and Sprinkler Feed Mains** - The portion of the standpipe or sprinkler system piping that supplies water to one or more standpipe or sprinkler risers.

**Standpipe and Sprinkler Cross Connections** - The portion of the standpipe or sprinkler system that interconnects the feed mains and risers to the fire department connections.

**Standpipe and Sprinkler Risers** - The vertical portion of the system piping that delivers the water supply for hose connections, and sprinklers on stand alone as well as combined systems, vertically from floor to floor.

**Fire Department Connections** - The portion of the standpipe or sprinkler system that is connected to the fire department pumper connection and supplies the standpipe and sprinkler feed mains, cross connections, and risers.

**All handles of Indicating Valves** - These handles control controlling the water supplies to the standpipe and sprinkler systems.

**Street water supply** - The portion of system piping connected to the discharge of the water meter to the main sprinkler control valves.

**All pipe material identification information, if present, shall not be painted.**

#### **Fire Suppression Piping Components not required to be identified as required by Local 58/2009.**

**Fire Department Hose valve bodies and handles, indicating control valve bodies, check valves, jockey pump control valves, trim, test, and drain valve handles.**

**Standpipe Branch Piping** - The portion of the piping system connecting one or more hose valve stations.

**Sprinkler Cross Mains** - The portion of the piping system connecting supplying the branch lines either directly or through risers.

**Sprinkler Feed Mains** - The portion of the piping system downstream of a sectional or floor control valve supplying cross mains.

**Sprinkler Branch Piping** - The portion of the piping system to which the sprinkler heads or nozzles are directly connected to.

For more info go to the attached URL (NYC Building website Local law 58/2009)  
<http://www.nyc.gov/html/dob/downloads/pdf/l158of2009.pdf>

## **Local Law 59**

### **NEW YORK CITY BUILDING CODE**

**Source:** Local Law 59 of 2009, effective September 3, 2009.

**3310.8.1.1** Site safety manager or coordinator standpipe inspection responsibilities. The site safety manager or coordinator shall, at a minimum, in accordance with rules promulgated by the department, conduct daily checks to ensure that a standpipe system is available and in a state of readiness at all times for use by fire fighting personnel, by verifying:

1. That valves are in place at each story below the construction floor;
2. That standpipes are connected to a water source or Fire Department connection connections; and
3. That Fire Department connections hose connections are free from obstruction and are marked by a red light and sign that reads, "Standpipe Fire Department Connections."

The site safety manager or coordinator shall also, in accordance with such rules, conduct weekly checks to verify that no breach exists by visually tracing the standpipe, including risers, cross connections and Fire Department connections. A record of all such inspections shall be maintained by such site safety manager or coordinator in a log book.

## **Local Law 63**

### **NEW YORK CITY BUILDING CODE**

**Source:** Local Law 63 of 2009, effective February 4, 2010.

**1704.21 Sprinkler system special inspection.** New and altered sprinkler systems shall be inspected in accordance with Sections 903 and 1704.21.1. The permit holder responsible for the sprinkler work shall perform all required acceptance tests, complete and sign the appropriate contractor's material and test certifications. The special inspector shall witness all required tests, and shall verify that all installations of all materials, fittings, hangers, assemblies and signage are in accordance with the approved construction documents, that painting of the sprinkler system required by Section 903.6 of this code has been performed and that the contractor has transmitted required maintenance literature and instruction to the owner. The special inspector shall verify that the material and test certification forms have been transmitted to the Fire Department and the Department of Buildings‡.

**Exception:** The special inspector need not witness the hydrostatic pressure test when such test is witnessed by the department.

**1704.21.1 Hydrostatic pressure testing.** All new or altered sprinkler systems in buildings shall undergo successful hydrostatic pressure testing by a licensed master plumber or licensed fire suppression piping contractor in accordance with the requirements of this code, including Section 901.5, and NFPA 13.

**1704.22 Standpipe system special inspection.** New and altered standpipe systems shall be inspected in accordance Sections 905 and 1704.22.1. The permit holder responsible for the standpipe work shall perform all required acceptance tests, and complete and sign the appropriate contractor's material and test certifications. The special inspector shall witness all required tests, verify that installation of all materials, fittings, hangers, assemblies and signage are in accordance with the approved construction documents, that painting of the standpipe system required by Section 905.11 of this code has been performed and that the contractor has transmitted required maintenance literature and instruction to the owner. The special inspector shall verify that the material and test certification forms have been transmitted to the Fire Department and the Department of Buildings‡.

**Exception:** The special inspector need not witness the hydrostatic pressure test when such test is witnessed by the department.

**1704.22.1 Hydrostatic pressure testing.** All new or altered standpipe systems in buildings shall undergo successful hydrostatic pressure testing by a licensed master plumber or licensed fire suppression piping contractor in accordance with the requirements of this code, including Section 901.5, Sections 1704.22.1.1 through 1704.22.1.5 and NFPA 14.

**Exception:** When the standpipe system is exposed to freezing conditions, a hydrostatic pressure test required by this section may be postponed until such conditions no longer exist, notwithstanding any requirement that the standpipe be maintained in a state of readiness, provided that the system undergoes an interim test with dry nitrogen or air using a compressor in accordance with NFPA 14. Any such air pressure tests shall be witnessed by the special inspector unless witnessed by the department.

**1704.22.1.1 New buildings under construction.** For standpipes required to comply with Section 3303.8 of this code, an initial hydrostatic pressure test of the entire system shall be performed when the building reaches a height of 75 feet (22 860 mm) and additional successful hydrostatic pressure tests of the entire system shall be performed at 175 feet (53 340 mm), and at every 100 feet (30 480 mm) in height thereafter. The permit holder shall perform a final acceptance test of the completed system in accordance with the requirements of Section 901.5 of this code.

**1704.22.1.2 Enlargements or additions to existing system.** Where there is an enlargement that triggers a new standpipe system or there is an addition to an existing standpipe system, hydrostatic pressure tests of the entire system shall be performed for every 75 feet (22 860 mm) of additional height added to the system. The permit holder shall perform a final acceptance test of the completed system in accordance with the requirements of Section 901.5 of this code.

**1704.22.1.3 Removal of stories, including full demolitions.** Where stories are removed from a building served by an existing standpipe system, hydrostatic pressure tests of the entire system shall be performed prior to the commencement of work.

**1704.22.1.4 Alterations.** For alterations not covered under Sections 1704.22.1.2 or 1704.22.1.3 above, the permit holder shall perform a final acceptance test of the completed system in accordance with the requirements of Section 901.5 of this code.

**1704.22.1.5 Readiness.** No standpipe system shall be considered in readiness until there has been a successful hydrostatic pressure test.

## **Local Law 64**

### **NEW YORK CITY BUILDING CODE**

**Source:** Local Law 64 of 2009, effective February 4, 2010.

**3303.8.1 Air pressurized alarm system for dry standpipe systems during construction or demolition operations.** Air pressurized alarm systems shall be provided as set forth in Items 1 through 5 below. The provisions of NFPA 14, Chapter 12, as modified in Appendix Q, shall also apply.

1. Demolitions. In vacant buildings and structures undergoing demolition, all existing standpipes shall be maintained in a state of readiness as dry standpipes in accordance with Item 2 of Section 3303.8 and shall be provided with an air pressurized system.
2. New buildings and structures. All required permanent or temporary standpipes shall be in a state of readiness once the work reaches a height greater than 75 feet (22 860 mm) and shall contain an air pressurized alarm system.
3. Submission of application. An application to install an air pressurized alarm system shall be filed by a registered design professional and a permit obtained by a licensed master plumber or licensed master fire suppression piping contractor. A licensed electrician shall obtain all required electrical permits in accordance with Chapter 3 of Title 27 of the *Administrative Code*.
4. Specifications. The following provisions shall apply to the air pressurized alarm system:
  - 4.1. Pressure. Pressure shall be maintained in the standpipe and cross connections at all times and shall not exceed 25 psig (172 kPag) by utilizing nitrogen or an air compressor with an air dryer. The supervisory pressure shall be as determined by a registered design professional.
  - 4.2. Automatic air pressurized alarm activation. The alarm shall be automatically activated when the pressure drops below the supervisory pressure or rises above the maximum pressure of 25 psig (172 kPag). When the alarm is activated, notification shall be made to the Fire Department in accordance with Section 901.7.7 of the *New York City*

*Fire Code*, all work at the site shall cease, except as provided in Item 4.2.1, and an investigation of the entire standpipe system and air compressor shall be immediately performed

to determine the cause of the alarm. Unless authorized by the Fire Department, no construction or demolition work shall resume until the standpipe system is repaired and the appropriate pressure is restored, except that any repairs to the standpipe system needed to restore the required pressure shall be undertaken immediately and the standpipe system restored as soon as possible. There shall be compliance with the requirements of Section 901.7.7 of the *New York City Fire Code* while the standpipe system is out of service. Upon completion of repairs to the standpipe system a full inspection of such system shall be performed, which shall include, among other things, visually tracing the standpipe, including risers, cross connections and Fire Department connections to verify that no breach exists and checking all gauges of the standpipe system to ensure the standpipe system has been restored to a state of readiness.

- 4.2.1. Notwithstanding the provisions of Item 4.2, the activation of the alarm shall not require the cessation of work necessary for the completion of concrete pouring operations in progress at the time of alarm activation, where such cessation would cause a cold joint that would impair the structural integrity of the finished construction. The continuation of such operations shall be permitted only until an orderly termination of such operations can be effectuated. The site safety manager or coordinator shall record the names and locations of any employees necessary for the completion of the concrete pouring operations and provide them to the Fire Department personnel who arrive on the scene.
- 4.3. Air compressor. The air compressor shall be designed to automatically cut in and cut out at the supervisory pressure and shall be tied into the standpipe system between the Fire Department connections and the house check valves. The air compressor shall utilize an air dryer during times when freezing conditions exist to condition the air entering the dry standpipe system.
- 4.4. Alarm. The standpipe alarm system shall utilize pressure switches and control equipment to annunciate a local audible alarm on site that can be heard during working and non-working hours. The audible signal of the horn shall be at least 15 dBA above the ambient noise level but no more than 110 dBA.
- 4.5. Power supply. The standpipe alarm system shall be connected to an active, dedicated power supply at all times.
- 4.6. Check valves. Check valves shall be installed to prevent water from entering the air compressor.

- 4.7. Locks and caps. All control valves shall be chained and locked in the appropriate position and shall be provided with capped outlets. All hose valves shall also be provided with capped outlets.
- 4.8. Fire Department connections. Three inch (76 mm) iron hose plugs with gaskets in Fire Department connection swivels shall be provided.
- 4.9. Drainage. Provisions shall be made to drain water in any trapped sections of the dry standpipe system that are subject to freezing.
- 4.10. Manual air release connection. A minimum 2.5-inch (64 mm) connection located immediately downstream of the Fire Department connections check valve shall be provided and piped to a location immediately adjacent to the Fire Department connections. This line shall be fitted with a 2.5-inch (64 mm) hose valve and shall allow for release of the pressurized air from the dry standpipe system. The number of air release valves provided shall be such that the air pressure shall be released in no more than 3 minutes, which shall be verifiable by an actual air release test performed at the time of the initial installation.
- 4.11. Construction documents. Plans shall identify all standpipe risers, cross connections, Fire Department connections, any intermediate check valves that have to be removed, proposed location of the air release connections, designation of the supervisory pressure, complete information regarding the alarm system, and procedures for the safe pressurization and depressurization of the system.
- 4.12. Signage. Signage shall be provided at all Fire Department connections indicating that the dry standpipe system is pressurized and showing the location of the manual air release.

5. Planned removal from service of standpipe system and standpipe air pressurized alarm. Whenever the standpipe system is to be placed out of service for the addition of a new section to the system, removal of an existing section as demolition operations progress, or other planned event, the standpipe alarm may be temporarily deactivated subject to compliance with the requirements of Section 901.7.7 of the *New York City Fire Code*. Where a site safety manager or coordinator is required by Section 3310.5 of this code, all alarm activations, inspections, and repairs shall be logged into the log book maintained by such site safety manager or coordinator. If the standpipe system is not returned to a state of readiness and the alarm reactivated within 2 hours of such planned removal from service, all construction or demolition work at the site shall cease, unless otherwise approved by the Fire Department.

§ 2. Section 901.7 of the New York City Fire Code, as added by local law number 26 for the year 2008, is amended by adding a new section 901.7.1.1. **(See chapter 9 Fire Code Part 6 Reference materials)**

## New York City Building Code Section 3303.8

**3303.8 Standpipe systems during construction, alteration or demolition.** During construction, alteration or demolition operations, standpipe systems shall comply with the following:

1. When [work], during the course of the construction of a new building, the working deck reaches a height [greater than] of 75 feet (22 860 mm) or greater above the ground in a building for which a standpipe system will be required, a permanent or temporary standpipe system meeting the requirements of Section 905 shall be kept in a state of readiness at all times for use by fire-fighting personnel. The standpipe system shall serve all floors except the floors where the permanent stairs are not required per Section 3303.11. No standpipe shall be considered to be in a state of readiness unless it is painted red in accordance with the provisions of Section 905.11 of this code. [The system shall be a dry system when freezing conditions may be encountered.] When freezing conditions may be encountered, the system in whole, or the part of the system subject to freezing conditions, shall be maintained as a dry system.
2. Existing standpipe systems in structures undergoing a full demolition shall be maintained as dry standpipes. At the commencement of demolition, the standpipe risers shall be capped above the outlet on the floor immediately below the floor being demolished so as to maintain the standpipe system on all lower floors for Fire Department use. Cutting and capping of standpipes during demolition work shall be performed only by a licensed master plumber or licensed master fire suppression piping contractor who has obtained a permit for such work. Standpipe hose, nozzles and spanners are not required to be maintained and may be removed at any time. [Siamese hose connections shall be kept free from obstruction and shall be marked by a metal sign reading, "Standpipe Siamese Connection" and by a red light at night.] The red paint required pursuant to Section 905.11 of this code shall be maintained during any demolition operations. All existing house check valves shall remain in place until completion of the demolition work.
3. The standpipe system may be used for water supply necessary to demolition operations. In freezing weather, such standpipe system shall be completely drained after use to prevent freezing. Existing standpipe systems shall not be utilized to convey compressed air unless the standpipe consists of two or more risers. In such case and upon Fire Department approval, one of the risers may be used to convey compressed air to any floor or portion of the premises.]
3. When, during the course of the construction of a new building which will have a habitable space at a depth of 75 feet (22 860 mm) or greater below

the level of the ground in a building for which a standpipe system will be required, a permanent or temporary standpipe system meeting the requirements of Section 905 shall be installed and shall be kept in a state of readiness at all times for use by fire-fighting personnel. The standpipe system shall serve all stories below grade and shall be installed as soon as a temporary or permanent stair is installed below grade. No standpipe shall be considered to be in a state of readiness unless it is painted red in accordance with the provisions of Section 905.11 of this code. The system shall be a dry system when freezing conditions may be encountered.

4. When, during the course of alteration or partial demolition operations in a building for which a standpipe system is required, the standpipe system shall be maintained in accordance with Section 3303.9. In an unoccupied building, an existing wet standpipe system may be maintained as a dry system subject to the approval of the commissioner and the commissioner of the fire department, and also provided the standpipe system is equipped with an air pressurized alarm system meeting the requirements of Section 3303.8.1. No standpipe shall be considered to be in a state of readiness unless it is painted red in accordance with the provisions of Section 905.11 of this code.

4.1 If the alteration work results in the addition of new stories to the structure at a height of 75 feet (22 860 mm) or greater above the level of the ground, the requirements of Item 1 of this section shall apply to such new stories during the course of the alteration operation.

4.2 If the alteration work results in the addition of new habitable space at a depth of 75 feet (22 860 mm) or greater below the level of the ground, the requirements of Item 3 of this section shall apply to such new habitable space below grade during the course of the alteration operation.

**3303.8.1 Air pressurized alarm system for dry standpipe systems during construction or demolition operations.** [Air pressurized alarm systems] Dry standpipe systems utilized during construction or demolition operations shall be provided with an air pressurized alarm system as set forth in Items 1 through 5 below. The provisions of NFPA 14, Chapter 12, as modified in Appendix Q, shall also apply.

1. [Demolitions] Full demolitions. In [vacant] buildings and structures undergoing a full demolition, all existing standpipes shall be maintained in a state of readiness as a dry [standpipes] system in accordance with Item 2 of Section 3303.8 and shall be provided with an air pressurized alarm system.

2. [New buildings and structures. All required permanent or temporary

standpipes shall be in a state of readiness once the work reaches a height greater than 75 feet (22 860 mm) and shall contain an air pressurized alarm system.] New construction, alteration, and partial demolition. Where a dry standpipe system is utilized during new construction, alteration, or partial demolition operations, such standpipe system shall be provided with an air pressurized alarm system.

3. Submission of application. An application to install an air pressurized alarm system shall be filed by a registered design professional and a permit obtained by a licensed master plumber or licensed master fire suppression piping contractor. A licensed electrician shall obtain all required electrical permits in accordance with Chapter 3 of Title 27 of the Administrative Code.
4. Specifications. The following provisions shall apply to the air pressurized alarm system:
  - 1.1. Pressure. Pressure shall be maintained in the standpipe and cross connections at all times and shall not exceed 25 psig (172 kPag) by utilizing nitrogen or an air compressor with an air dryer. The supervisory pressure shall be as determined by a registered design professional.
  - 1.2. Automatic air pressurized alarm activation. The alarm shall be automatically activated when the pressure drops below the supervisory pressure or rises above the maximum pressure of 25 psig (172 kPag). When the alarm is activated, notification shall be made to the Fire Department in accordance with Section 901.7.7 of the New York City Fire Code, all work at the site shall cease, except as provided in Item 4.2.1, and an investigation of the entire standpipe system and air compressor shall be immediately performed to determine the cause of the alarm. Unless authorized by the Fire Department, no construction or demolition work shall resume until the standpipe system is repaired and the appropriate pressure is restored, except that any repairs to the standpipe system needed to restore the required pressure shall be undertaken immediately and the standpipe system restored as soon as possible. There shall be compliance with the requirements of Section 901.7.7 of the New York City Fire Code while the standpipe system is out of service. Upon completion of repairs to the standpipe system a full inspection of such system shall be performed, which shall include, among other things, visually tracing the standpipe, including risers, cross connections and [siamese] fire department connections to verify that no breach exists and checking all gauges of the standpipe system to ensure the standpipe system has been restored to a state of readiness.

- 1.2.1. Notwithstanding the provisions of Item 4.2, the activation of the alarm shall not require the cessation of work necessary for the completion of concrete pouring operations in progress at the time of alarm activation, where such cessation would cause a cold joint that would impair the structural integrity of the finished construction. The continuation of such operations shall be permitted only until an orderly termination of such operations can be effectuated. The site safety manager or coordinator shall record the names and locations of any employees necessary for the completion of the concrete pouring operations and provide them to the Fire Department personnel who arrive on the scene.
- 1.3. Air compressor. The air compressor shall be designed to automatically cut in and cut out at the supervisory pressure and shall be tied into the standpipe system between the [siamese] fire department connections and the house check valves. The air compressor shall utilize an air dryer during times when freezing conditions exist to condition the air entering the dry standpipe system.
- 1.4. Alarm. The standpipe alarm system shall utilize pressure switches and control equipment to annunciate a local audible alarm on site that can be heard during working and non-working hours. The audible signal of the horn shall be at least 15 dBA above the ambient noise level but no more than 110 dBA.
- 1.5. Power supply. The standpipe alarm system shall be connected to an active, dedicated power supply at all times.
- 1.6. Check valves. Check valves shall be installed to prevent water from entering the air compressor.
- 1.7. Locks and caps. All control valves shall be chained and locked in the appropriate position and shall be provided with capped outlets. All hose valves shall also be provided with capped outlets.
- 1.8. Fire Department connections. Three inch (76 mm) iron hose plugs with gaskets in Fire Department connection swivels shall be provided.
- 1.9. Drainage. Provisions shall be made to drain water in any trapped sections of the dry standpipe system that are subject to freezing.
- 1.10. Manual air release connection. A minimum 2.5-inch (64 mm)

connection located immediately downstream of the Fire Department [siamese] connection check valve shall be provided and piped to a location immediately adjacent to the [siamese] fire department connections. This line shall be fitted with a 2.5-inch (64 mm) hose valve and shall allow for release of the pressurized air from the dry standpipe system. The number of air release valves provided shall be such that the air pressure shall be released in no more than 3 minutes, which shall be verifiable by an actual air release test performed at the time of the initial installation.

- 1.11. Construction documents. Plans shall identify all standpipe risers, cross connections, [siamese] fire department connections, any intermediate check valves that have to be removed, proposed location of the air release connections, designation of the supervisory pressure, complete information regarding the alarm system, and procedures for the safe pressurization and depressurization of the system.
- 1.12. Signage. Signage shall be provided at all [siamese] fire department connections indicating that the dry standpipe system is pressurized and showing the location of the manual air release.
- 4.13. Pressure gauges. A system of pressure gauges shall be installed at the compressor and at the most remote points of the system from the compressor.
5. Planned removal from service of standpipe system and standpipe air pressurized alarm. Whenever the standpipe system is to be placed out of service for the addition of a new section to the system, removal of an existing section as demolition operations progress, or other planned event, the standpipe alarm may be temporarily deactivated subject to compliance with the requirements of [Section 901.7.7 of] the New York City Fire Code. Where a site safety manager or coordinator is required by Section 3310.5 of this code, all alarm activations, inspections, and repairs shall be logged into the log book maintained by such site safety manager or coordinator. If the standpipe system is not returned to a state of readiness and the alarm reactivated within 2 hours of such planned removal from service, all construction or demolition work at the site shall cease, unless otherwise approved by the Fire Department.

**3303.8.2 Free from obstruction.** Fire department hose connections shall be kept free from obstruction and shall be marked by a metal sign reading, "Standpipe Connection" and by a red light at night.

**3303.8.3 Use of standpipes for purposes other than supplying water for firefighting.** Standpipes may be used for a purpose other than to supply water

for firefighting operations, including but not limited to supplying water or compressed air for construction or demolition operations, subject to the approval of the Fire Department and provided at least one standpipe riser is maintained at all times for firefighting operations. Where the standpipe system is used to supply water for construction or demolition operations and freezing conditions may occur, the standpipe system shall be completely drained after use to prevent freezing.

## **Site Specific Evacuation Plan**

