

FIRE DEPARTMENT • CITY OF NEW YORK



**STUDY MATERIAL FOR THE
CONSOLIDATED EXAMINATION F-60 FOR
FIRE GUARD FOR TORCH OPERATIONS**

This book is provided to the public for free by the FDNY.

***Note: The F-60 Certificate of Fitness is NOT qualified to serve as a watchperson at construction site. Applicants who applies to be a watchperson should take S-60 Certificate of Fitness test. See the S-60 COF study material for further information.**

***Note: The F-60 Certificate of Fitness is NOT qualified to serve as a fire guard for impairment at construction sites. Applicants who applies to be a fire guard for impairment should take F-01 Certificate of Fitness test. See the F-01 COF study material for further information.**

TABLE OF CONTENT

EXAM SPECIFIC INFORMATION FOR F-60 CERTIFICATE OF FITNESS 2
STUDY MATERIAL AND TEST DESCRIPTION..... 4
 Certificate of Fitness..... 6
DEFINITIONS..... 12
PART 1. HOT WORK OPERATION AND FIRE WATCH..... 13
 1.1 Responsible Person and Pre-Hot Work Check..... 14
 1.2 Fire Safety Requirements 16
 1.2.1. Gas Torch Operation Precautions..... 16
 1.2.2. Protection of Combustibles..... 16
 1.2.3. Signage..... 18
 1.3 Fire Watch Requirements..... 18
 1.3.1. Fire watch..... 18
 1.3.2. Fire guard..... 19
 1.3.3. Fire guard for construction sites and torch-applied roofing systems 19
 1.3.4. Time and Recordkeeping requirement 21
 Example: Fire Guard Daily Log Book 22
 1.4 Gas Welding and Cutting Precautions 23
PART 2. EMERGENCY NOTIFICATION, FIRE PROTECTION SYSTEMS,
AND FIRE EXTINGUISHERS..... 24
 2.1 Notification..... 24
 2.2 Fire Protection System 24
 2.2.1 Fire hoses 24
 2.2.2 Sprinkler protection 24
 2.2.3 Fire detection system..... 25
 2.3 Fire Extinguishers 25
 2.3.1 Operation Instructions for a Fire Extinguisher..... 26
 2.3.2 Fire Extinguishers Types..... 27
 2.3.3 Typical Fire Extinguishers 28
 2.3.4 Fire Extinguisher Inspections..... 29
 2.3.5 Portable Fire Extinguisher (PFE) Tags..... 30

EXAM SPECIFIC INFORMATION FOR F-60 CERTIFICATE OF FITNESS

Save time and submit application online!

Applicants who submitted and paid online for an exam before arriving at the FDNY will not need to wait in line to enter the FDNY.

It can take about 30 minutes to complete. Completing application and paying online will eliminate waiting outside in the long lines.

Simplified instructions for online application and payment can be found here:

<http://www1.nyc.gov/assets/fdny/downloads/pdf/business/fdny-business-cof-individuals-short.pdf>

Create an Account and Log in to:

<https://fires.fdnyccloud.org/CitizenAccess/SAML/NYCIDLogin.aspx>

REQUIREMENTS FOR CERTIFICATE OF FITNESS APPLICATION

General requirements:

Review the General Notice of Exam:

<http://www1.nyc.gov/assets/fdny/downloads/pdf/business/general-notice-of-exam-cof.pdf>

Special requirements for the: F-60 Certificate of Fitness: None

Application fee (Cash is NO LONGER ACCEPTED):

Pay the **\$25** application fee online or in person by one of the following methods:

- Credit card (*American Express, Discover, MasterCard, or Visa*)
- Debit card (*MasterCard or Visa*)
- In person: Personal or company check or money order (*made payable to the New York City Fire Department*)

A convenience fee of 2% will be applied to all credit card payments.

For fee waivers submit: ***(Only government employees who will use their COF for their work-related responsibilities are eligible for fee waivers.)***

- A letter requesting fee waiver on the Agency's official letterhead stating applicant full name, exam type and address of premises; **AND**
- Copy of identification card issued by the agency

REQUIREMENTS FOR ALTERNATIVE ISSUANCE PROCEDURE (AIP)

No AIP available. This certificate of fitness can only be obtained by passing the computer exam at the FDNY Headquarters.

EXAM INFORMATION

The **F-60** exam will consist of **25** multiple-choice questions, administered on a "touch screen" computer monitor. It is a time-limit exam. Based on the amount of the questions, you will have **38** minutes to complete the test. A passing score of at least 70% is required in order to secure a Certificate of Fitness.

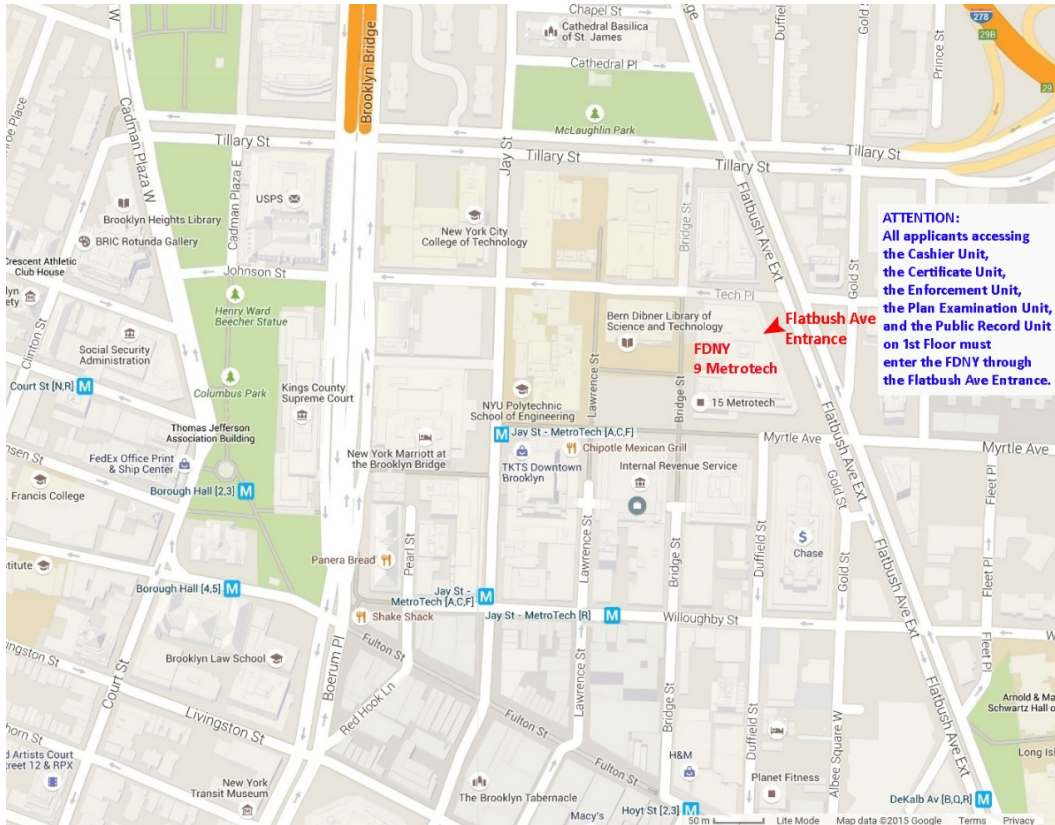
Call (718) 999-1988 for additional information and forms.

This book is provided to the public for free by the FDNY.

Please always check for the latest revised booklet at FDNY website before you take the exam.

<http://www1.nyc.gov/assets/fdny/downloads/pdf/business/cof-f60-noe-study-materials.pdf>

Exam site: **FDNY Headquarters, 9 MetroTech Center, Brooklyn, NY.** Enter through the **Flatbush Avenue entrance (between Myrtle Avenue and Tech Place).**



RENEWAL REQUIREMENTS

General renewal requirements:

Review the General Notice of Exam:

<http://www1.nyc.gov/assets/fdny/downloads/pdf/business/general-notice-of-exam-cof.pdf>

Special renewal requirements for F-60 COF: None

The FDNY strongly recommends the F-60 COF holders to renew the COF on-line.

To learn the simplified on-line renewal:

<http://www1.nyc.gov/assets/fdny/downloads/pdf/business/cof-simplified-renewal-short.pdf>

QUESTIONS?

FDNY Business Support Team: For questions, call 311 and ask for the FDNY Customer Service Center or send an email to FDNY.BusinessSupport@fdny.nyc.gov

STUDY MATERIAL AND TEST DESCRIPTION

About the Study Material

This study material will help you prepare for the examination for the Certificate of Fitness for fire guard for torch operations. The study material includes information taken from the Fire Prevention Code of the Bureau of Fire Prevention. This study material consists of 3 parts. The exam covers the entire booklet and any tables. **It will not be provided to you during the test. It is critical that you read and understand this booklet to help increase your chance of passing this exam.** The study material does not contain all of the information you need to know to work as a fire guard. It is your responsibility to become familiar with all applicable rules and regulations of the City of New York, even if they are not covered in this study material. You need to be familiar with the National Fire Protection Association (NFPA) 51B, and Fire Code Chapter 26, which regulate the duties of fire guards for performing fire watch for torch operations in order to adequately prepare for the exam.

About the Test

25 questions on the F-60 Certificate of Fitness examination are of the multiple choice type with four alternative answers to each question. Only one answer is most correct for each question. If you do not answer a question, or if you mark more than one alternative your answer will be scored as incorrect. A score of 70% is required on the examination in order to qualify for the Certificate of Fitness. Read each question carefully before marking your answer. There is no penalty for guessing.

Sample Questions

The following questions represent the “format” of the exam questions, not the content of the real exam.

1. Which of the following are allowed to be used/displayed while taking a Certificate of Fitness examination at 9 Metro Tech Center?

- I. cellular phone**
- II. study material booklet**
- III. reference material provided by the FDNY**
- IV. mp3 player**

- A. III only
- B. I, II, and III
- C. II and IV
- D. I only

Only reference material provided by the FDNY is allowed to be used during Certificate of Fitness examinations. Therefore, the correct answer would be A. You would touch “A” on the computer terminal screen.

2. If you do not know the answer to a question while taking an examination, who should you ask for help?

- A. the person next to you
- B. the firefighters
- C. the examiner in the testing room
- D. you should not ask about test questions since FDNY staff cannot assist applicants

You should not ask about examination questions or answers since FDNY staff cannot assist applicants with their tests. Therefore, the correct answer would be D. You would touch "D" on the computer terminal screen.

3. If the screen on your computer terminal freezes during your examination, who should you ask for help?

- A. the person next to you
- B. the firefighters
- C. the examiner in the testing room
- D. the computer help desk

If you have a computer related question, you should ask the examiner in the testing room. Therefore, the correct answer would be C. You would touch "C" on the computer terminal screen.

INTRODUCTION

This document outlines New York City Fire Department regulations for fire guard for hot work operations. Fire guards are required to reduce the threat of fires.

Certificate of Fitness

The fire watch for torch operations conducted at the following three locations shall be conducted by at least one F-60 fire guard:

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

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

The F-60 Certificate of Fitness holder is required to comply with the following FDNY code and rule sections:

- Welding and Other Hot Work: **[FC Chapter 26]**
- Fire Prevention During Welding, Cutting and Other Hot Work: **[NFPA 51B, 2003 edition]**
- Liquefied Petroleum Gases: **[Rule 3809-01]**
- Compressed Natural Gas **[Rule 3507-01]**

FDNY Permit

Permits issued by the FDNY are required to conduct the following hot work:

- (1) storing, using or handling 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.
or
- (3) storing, using or handling any oxidizing gas (e.g. oxygen) in excess of 504 SCF

For LPG, 400 SCF is approximately 47 lbs. The following table lists the number of LPG containers for the storage, use, handling or transportation, requiring a permit. This permit will be issued by the Fire Commissioner after the location has been inspected and approved as acceptable for such practices.



LPG Container Capacity	Number of Containers Requiring Permit
14.1 oz	54
16.4 oz	46
20 lbs	3
33.5 lbs	2
40 lbs	2
100 lbs	1

Portable **LPG** containers that are more than **16.4 oz** and **CNG** containers with a capacity greater than **8.7 SCF** must NOT stored, handled, or used indoors/roof in the following occupancies (as defined in the Building code): residential occupancies, factory and industrial occupancies; educational occupancies; institutional occupancies, except as the commissioner may authorize by rule.

Use of LPG/Propane on an occupied roof requires an affidavit from a licensed professional (Architect or Engineer) stating the roof is constructed of non-combustible material(s).

Any single standard portable LPG container must not exceed 100 lbs in weight. Any single CNG container must not exceed 381 SCF.

A LPG/CNG permit will not be issued by the FDNY for a stationary LPG/CNG installation located in an area where access to piped natural gas from a public utility is available.


Example of LPG container with a capacity of 20 lbs	Example of LPG container with a capacity of 100 lbs
	

Types of FDNY Permits


(1) Site-specific permit

Such permit authorizes the permit holder to store, handle, or use flammable gases, or conduct a torch operation at a specific premises or location. A site-specific permit may be a permanent permit or a temporary permit. Permanent permits are valid for 12 months only. Every permits 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 to a construction job which only takes one week. Normally, a hot work operation (e.g. construction site or hot work repair) is issued a temporary permit.

Example of a permanent FDNY permit

FIRE DEPARTMENT, CITY OF NEW YORK				BUREAU OF FIRE PREVENTION			
ACCOUNT NUMBER	TYPE	A.P.	D.O.	ADM. CO.	ISSUANCE DATE	PERMIT EXPIRES	
7777777	10	P	12	E284	01/28/10	01/11	
PREMISES ADDRESS				ACCOUNT NAME			
1111 YORK ST STATEN ISLAND NY 11111				CARI & RENO			
ITEM CODE	SUB CODE	QTY	DESCRIPTION	FLOOR NO.	FEE		
345	00	1	COMPRESSED GASES ONLY STR/USE	1	PAID		
PERMIT TYPE				ANNUAL FEE		PAID	
1							
1=REGULAR 2=SUPPLEMENTAL 3=DUPLICATE				CARI & RENO 1111 YORK ST STATEN ISLAND NY 11111			
 20 11012938				BY ORDER OF THE COMMISSIONER			

Example of a temporary FDNY permit

D.O.	COMPANY	BORO	ACCOUNT NO.	TOTAL FEE	EXPIRES
01		MANH	3333333	\$ 525.00	02/24/11
Expiration Date			11/01/11		
THE CITY OF NEW YORK FIRE DEPARTMENT Bureau of Fire Prevention 9 Metro Tech Center Brooklyn, N.Y. 11201-3857					
F 02872 FIRE DEPARTMENT PERMIT					
Postal Address of Permit Holder or Agent:					
KARLIN PIPING INDUST.					
347 REM WAY					
WADING RIVER, N.Y., 11792					
Occupancy for which this Permit is issued and at which it must be displayed:					
13110 WEST 11 STREET					
NEW YORK, N.Y., 10011					
New York <u>MANHATTAN</u>					
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.					
 Fire Commissioner					
			PERMIT COVERS CODE NO. 345 OXYGEN STORAGE AT A CONSTRUCTION SITE 346 ACETYLENE STORAGE AT A CONSTRUCTION SITE 347 USE OXYGEN AND ACETYLENE TORCH AT A CONSTRUCTION SITE NOTE: OXYGEN AND ACETYLENE CYLINDERS SEPARATELY STORED IN APPROVED CRIGES AT GROUND LEVEL		

This temporary permit is valid for 7 months.

RF-101 (1/01) 93-111-R05-0470

CASHIER'S COPY

(2) Citywide permit

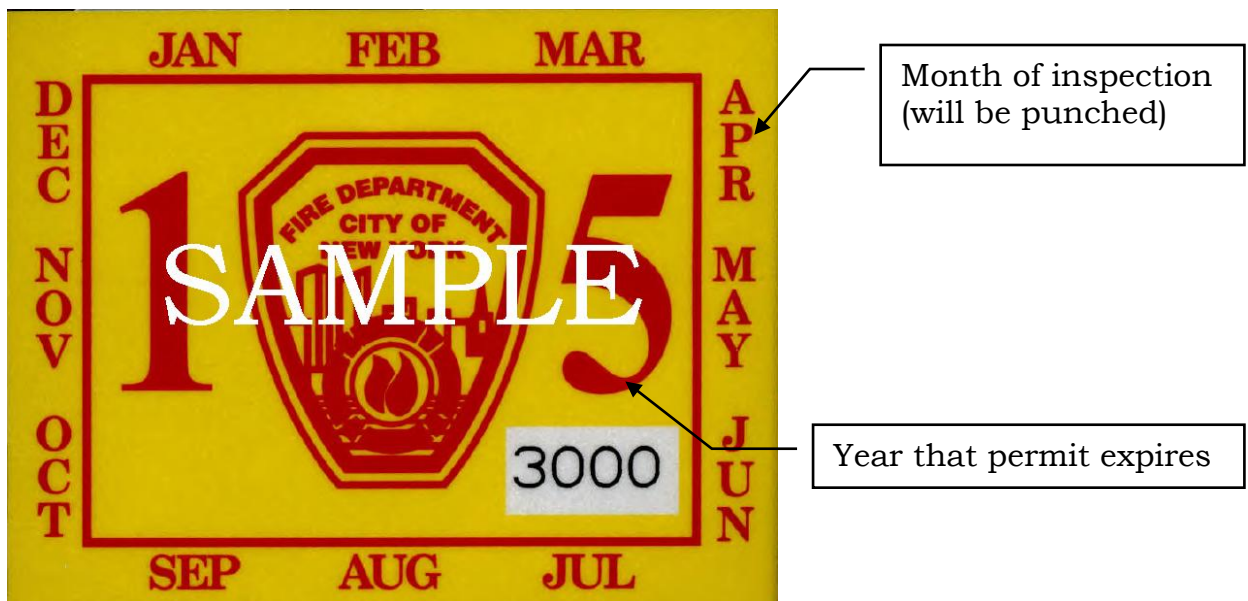
Such permit authorizes the permit holder to store, handle, use or sell hazardous materials, or conduct an operation on a citywide basis. A citywide permit is valid to temporarily store, handle, use or sell hazardous materials or to conduct an operation at one or more locations subject to the following restrictions:

- The duration of such activity at any individual location does not exceed **30 calendar days** and **all hazardous materials associated with such activity are removed from the location at the end of the workday**. Periods of activity in excess of 30 calendar days at any one location shall require a site-specific permit.
- The quantity of hazardous materials being temporarily stored and used does not exceed 5 gallons of gasoline, or 250 gallons of any other flammable liquid, and 300 gallons of any combustible liquid. Storage or use of hazardous materials in quantities exceeding these amounts requires a site-specific permit for each location at which such storage or use occurs.

(3) Transportation permit

Such permit authorizes the permit holder to transport, pick up and deliver hazardous materials. Any person who transports any hazardous material in the quantity of requiring a FDNY permit has to apply for a FDNY transportation permit. The FDNY transportation permit (sticker) must be displayed on the vehicle.

Example of a FDNY transportation permit (a sticker)



All permits are not transferable, and any change in occupancy, operation, tenancy or ownership requires that a new permit be issued. The Certificate of Fitness holder is responsible for making sure that all fire safety regulations and procedures are obeyed on the premises. **Permits shall be readily available on the premise for inspection by Fire Department representatives.**

Hot Work Authorization (Hot Work Program Permit)

A hot work program authorization is required for any project conducted on premises involving hot work operations. Hot work program authorization is NOT issued by the FDNY, it must be signed and issued by the **responsible person**, and it must be available for

inspection by any representative of the Fire Department during the performance of the work, and for **48 hours after the work is complete.**

An authorization for hot work operations shall not be issued unless the individuals conducting such operations are capable of performing such operations safely.

HOT WORK AUTHORIZATION PERMIT

Note: This authorization applies only to this job, and in the area specified during the date and time noted.

GENERAL INFORMATION	
Hot Work Performed By: <input type="checkbox"/> Employee <input type="checkbox"/> Contractor <input type="checkbox"/> Off-hours	Authorization #
Employee /	Contractors Name:
Supervisor / Foreman Name:	Supervisor / Foreman - On-site emergency contact phone number:
Location: Building address, room # and/or area of work .	Start Date: _____ Permit Start Time: _____
	Stop Date: _____ Permit Stop Time: _____
	Comments: _____

HOT WORK ACTIVITY				
<input type="checkbox"/> ARC WELDING	<input type="checkbox"/> SOLDERING	<input type="checkbox"/> GRINDING	<input type="checkbox"/> BRAZING	<input type="checkbox"/> USING OXYGEN AND A FLAMMABLE GAS (FDNY PERMIT)
<input type="checkbox"/> MAPP WELDING	<input type="checkbox"/> WELDING	<input type="checkbox"/> CUTTING	<input type="checkbox"/> NON-FIRE WORK	<input type="checkbox"/> OTHER: _____
<i>Torch operations using oxygen and a flammable gas, and any torch operation for torch-applied roofing systems, shall be performed by a certificate of fitness holder. Certificate holders shall be responsible for keeping such certificate upon his/her person or otherwise readily available for inspection.</i>				
Torch Operator:	Certificate #:	Exp Date:		
Fire Guard:	Certificate #:	Exp Date:		

ACCEPTANCE BY THE RESPONSIBLE PERSON FOR HOT WORK		
I certify that all applicable codes, procedures, regulations, rules, pre-checks and safety precautions will be followed for as long as the hot work authorization is effective.		
Name:	Signature:	Date:
_____	_____	_____
<input type="checkbox"/> Employee <input type="checkbox"/> Contractor		

DESIGNATED TO AUTHORIZE THE PERFORMANCE OF HOT WORK			
Name:	Signature:	Time:	Date:
_____	_____	_____	_____
Fire alarm precautions taken <input type="checkbox"/> YES <input type="checkbox"/> N/A Type: _____	Pre-hot work check completed: <input type="checkbox"/> YES	FDNY permit required to conduct hot work?	
_____	<input type="checkbox"/> YES <input type="checkbox"/> N/A		

This authorization shall be available for inspection by any representative of the fire department during the performance of the work and for 48 hours after the work is complete.

DEFINITIONS

FIRE GUARD: A person holding a Certificate of Fitness for such purposes, who is trained in and responsible for maintaining a fire watch and performing such fire safety duties as may be prescribed by the commissioner.

FIRE WATCH: A temporary measure intended to ensure continuous and systematic surveillance of a building or portion thereof by one or more qualified individuals for the purposes of identifying and controlling fire hazards, detecting early signs of fire, raising an alarm of fire, and notifying the department.

HOT WORK: Cutting, welding, thermit welding, brazing, soldering, grinding, thermal spraying, thawing pipe, cadwelding, installation of torch-applied system, 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. A program, implemented by a responsible person designated by the owner of a building or structure in or on which hot work is being performed, to oversee and issue authorizations for such hot work for the purpose of preventing fire and fire spread.

HOT WORK PROGRAM AUTHORIZATIONS. Authorizations issued by the responsible person under a hot work program allowing welding or other hot work to be performed at the premises.

NFPA: National Fire Protection Association. The world's leading advocate of fire prevention and an authoritative source on public safety. NFPA develops, publishes, and disseminates more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks.




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.

PART 1. HOT WORK OPERATION AND FIRE WATCH

A high temperature flame is needed to perform hot work operations. However, usually it is not the flame that causes a fire. Instead, it is the thousands of sparks and pieces of hot metal that are generated when using the torch. The sparks and pieces of hot metal are all possible sources of ignition. In fact, sparks and pieces of hot metal are the source of ignition in about 60% of all fires in industrial occupancies. This number is greatly reduced when the operators are trained to use the equipment correctly.

Fire History Summary

Date	Fire Summary	Lessons Learned	
Nov. 2010	<p><u>Chinese city of Shanghai construction fire</u> Sparks from welding equipment set a light nylon construction netting and bamboo scaffolding that nearly covered the building. 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>	
July 2009	<p><u>Throgs Neck construction fire, Queens, NY</u> 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>Although still under investigation, the cause reflects a lack of fire safety at the construction site.</p>	
June 2009	<p><u>5-story apartment construction fire, Renton, WA</u> Several spot fires from a roof torch had fallen into the void between the insulation, ceiling, and roof assembly, and a breeze provided enough air for a fire to flare up early hours later. The fire spread rapidly through the wooden construction. \$12 million damage estimate in this fire.</p>	<p>Sheetrock had not yet been installed to protect the wood framing. There should be a fire guard watching for sparks.</p>	

Date	Fire Summary	Lessons Learned	
Mar. 2009	<p><u>Casino Fire, Joliet, IL</u> A fire sparked by a construction worker welded a kitchen hood in an area of the casino. The fire caused heavy damage to sections of the Empress Casino and firefighters had to truck in water to contain the blaze. \$340 million damage estimate in this fire.</p>	There should be a fire guard watching for sparks.	
Dec. 2000	<p><u>Dongdu Commercial Building construction, Luoyang, China</u> Construction workers in the basement dropped molten metal on flannel rags and wooden furniture. The welders fled without warning, and workers on 2nd and 3rd floor, as well as 200 guests at an illegal party, were trapped. 309 people died.</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.	

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*.
 Small Fire causes damage at hospital construction site. (2010, February 16). *Daily Sound*.
 Stephen G. Badger. "US Large-Loss Fires in 2009". (2010, November/ December). *NFPA Journal*.

1.1 Responsible Person and Pre-Hot Work Check

For hot work operation with citywide permit, the owner of the premises of the hot work operation areas must be notified in writing by the citywide permit holder **at least 48 hours before** the hot work is to be started.

For all hot work operations, the owner of the hot work operation areas must designate a responsible person. The responsible person must ensure that the hot work is performed in compliance with the terms and conditions of the permit. The person should inspect the hot work site prior to issuing the hot work authorization (hot work program authorization) to ensure that it is a fire safe area. He/she also need to periodically monitor the work as it is being performed to ensure there are no fire safety hazards. Hot work operations must be conducted under the general supervision of the responsible person.

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.

The pre-hot work check must be conducted by the responsible person before hot work is authorized and at least once per day. The check reports must be kept at the work site during the work, made available for inspection by a representative of the FDNY, and **maintained on the premises for a minimum of 48 hours after work is complete.**

A pre-hot work check must be conducted at least once per day and must 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.

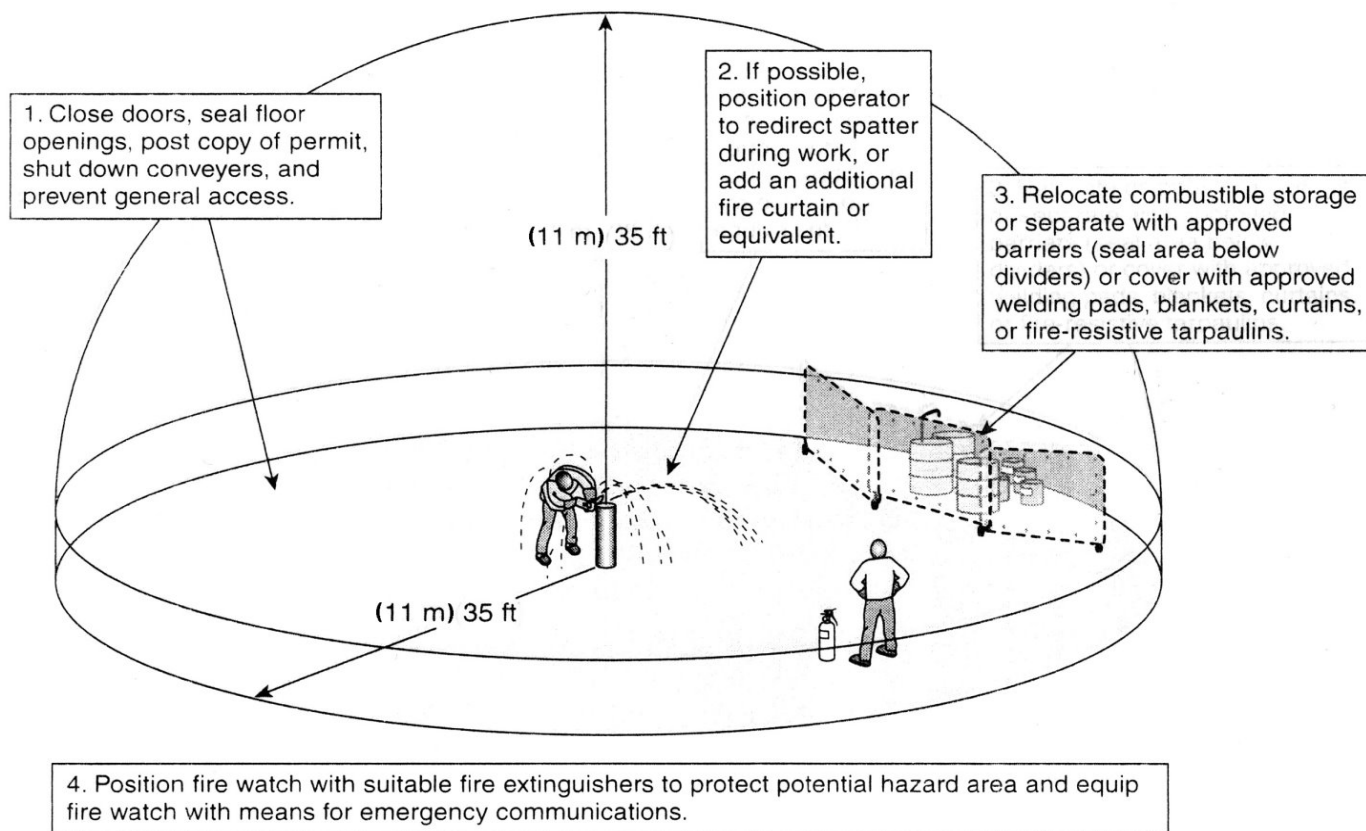
(1) 35 feet rule for cutting or welding operation

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

(2) 25 feet rule for other hot work operation

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

The 2009 edition of National Fire Protection Association 51B shows the 35-ft. rule in a 3-D perspective. Detail information refer to Chapter 5 of NFPA 51B, 2009.



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 fire extinguishing systems and detection equipment.
 - (1) Sprinkler protection.
Sprinkler system protection **must not be shut off or impaired** while hot work is performed. 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.
 - (2) Fire detection systems.
Approved precautionary measures shall be taken to avoid accidental operation of automatic fire detection systems. For example, the fire alarm system (e.g. smoke detectors) may need to be taken out of service during the hot work operation to avoid unwarranted alarms. The date and time the alarm system was taken off-line, the reason for such action, the name and operator number of the person notified at the central station (or other evidence of notification satisfactory to the Department), and the date and time the system was restored to service, must be entered in the alarm log book in each such circumstance. Fire watch for impairment must be provided when the alarm system is off-line.
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.
 - (1) G-60 certificates of fitness is required for torch operations using oxygen and a flammable gas
 - (2) G-60 or G-41 or G-42 certificates of fitness is required for torch applied roof system.
 - (3) F-60 certificates of fitness fire guard is required to perform the fire watch for torch operations at (a) construction sites, (b) on any rooftop, or (c) in any building or structure, when the torch operation is conducted by a person holding a citywide permit for torch operations
11. All persons performing hot work requiring a permit possess a site-specific permit or citywide permit, authorizing such work.

1.2 Fire Safety Requirements

1.2.1. Gas Torch Operation Precautions

Each person must operate only one torch at a time and such torch must not be left unattended while ignited.

The torch equipment should only be used for purposes for which it was intended. It should not be used for any kind of tricks or stunts. This could result in serious or fatal injuries.

1.2.2. Protection of Combustibles

Areas designed for hot work operations shall have floors with noncombustible surfaces. Paper, wood shavings, straw and fabric are examples of combustible materials. Hot work operations involving cutting or welding shall be conducted at least 35 feet from combustible materials and combustible waste or shall be provided with appropriate shielding to prevent sparks, slag or heat from igniting exposed combustibles.

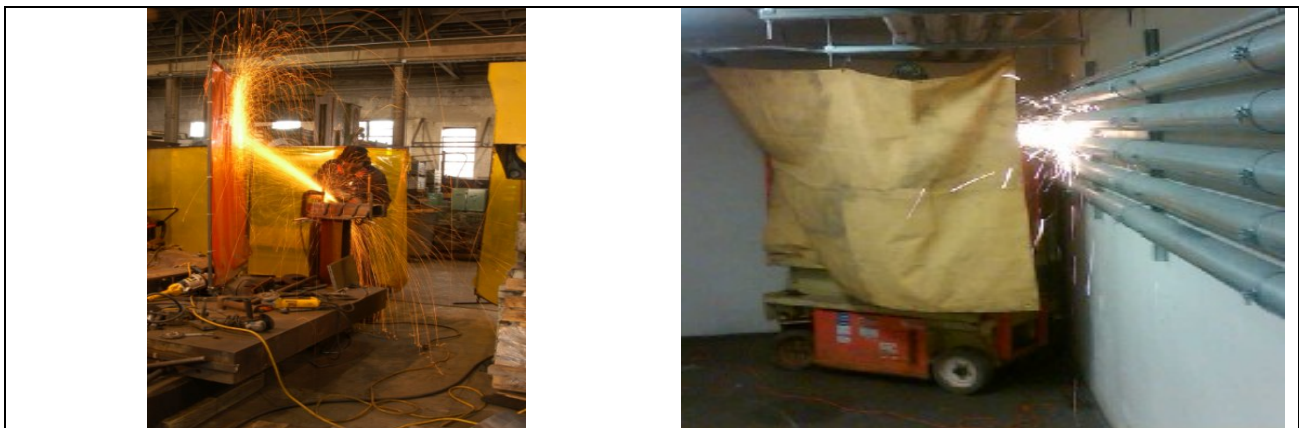
All other hot work operations shall be conducted at least 25 feet from combustible materials and combustible waste or shall be provided with appropriate shielding to prevent sparks, slag or heat from igniting exposed combustibles.

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.

If possible, the combustible materials should be moved to a safe location. If relocation of the combustible materials is impractical, combustibles, openings or cracks in walls, floors, ducts or shafts within 35 feet of the hot work area must be tightly covered to prevent the passage of sparks to adjacent combustible areas, or shielded by metal or fire-retardant guards, or provided with curtains to prevent passage of sparks or slag. They may also be wetted down as an added precaution. Ducts and conveyor systems that are capable of carry sparks to distant combustibles must be shielded, or shut down, or both. If hot work is done near walls, partitions, ceilings, or roofs, ignition of combustibles on the other side must be prevented.

It is prohibited to perform welding or cutting when supported by or resting on any compressed gas containers. Hot work shall not be performed on a container or equipment that contains or has contained a flammable solid, flammable liquid or flammable gas until the container or equipment has been thoroughly cleaned and purged. Hot work involving cutting, welding or heating of any flammable solid in any form shall be conducted only with an approval of the FDNY.

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.



Special requirement for a repair garage:

The use of a torch within a repair garage located on a property upon which a motor-fuel dispensing facility is situated must be conducted within a fire-rated enclosure (approved by the Building Department). All doors of such enclosure shall be fireproof and self-closing.

In a repair garage with a capacity for more than one vehicle, hot work shall be conducted within a fire-rated enclosure 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.

1.2.3. Signage

Where the hot work area is accessible to persons other than the operator of the hot work equipment, visible hazard identification signs must be posted in a conspicuous location to warn others before they enter the hot work area. An example warning sign is shown below.



A copy of the FDNY 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 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.

1.3 Fire Watch Requirements

1.3.1. Fire watch

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

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

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

Exception: **There shall be not less than one multi-purpose portable fire extinguisher with a minimum 3-A 40-B:C rating for roofing operations utilizing heat-producing systems or other ignition sources.**



1.3.2. Fire guard

The fire watch for torch operations conducted at the following three locations shall be conducted by at least one F-60 fire guard:

(1) Construction sites.

(2) In any building or structure, when the torch operation is conducted by a person holding a citywide permit for torch operations.

(3) On any rooftop, or in connection with any torch-applied roofing system operation.

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

1.3.3. Fire guard for construction sites and torch-applied roofing systems

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.

A torch-applied roof system is a bituminous roofing system using membranes that are adhered by heating with a torch and melting asphalt back coating instead of mopping hot asphalt for adhesion. It is widely used in US, torch-applied operations can be hazardous to roofers and the public. Improper torch use or careless fire watch has caused many rooftop fires. Fire guards must be on continuous duty during all torch operations on the roof of a building.

At a construction site and torch-applied roofing system operation, every torch operator must also have a person performing fire watch by a F-60 fire guard.

Exception:

The single fire guard may be designated to conduct a fire watch for more than one torch operation on the same floor or level if each torch operation is not more than 50 feet from the fire guard, as measured by the actual path of travel, and the field of view of such fire guard encompasses all of the horizontal fire exposures of such torch operations.

Fire watch on floors below: Additional F-60 fire guard is required to perform fire watch on floor below if the torch operation is being conducted at or near the edge of an unenclosed floor of a building, or near a floor opening, or other location where sparks and slag may travel to one or more lower floors or levels.



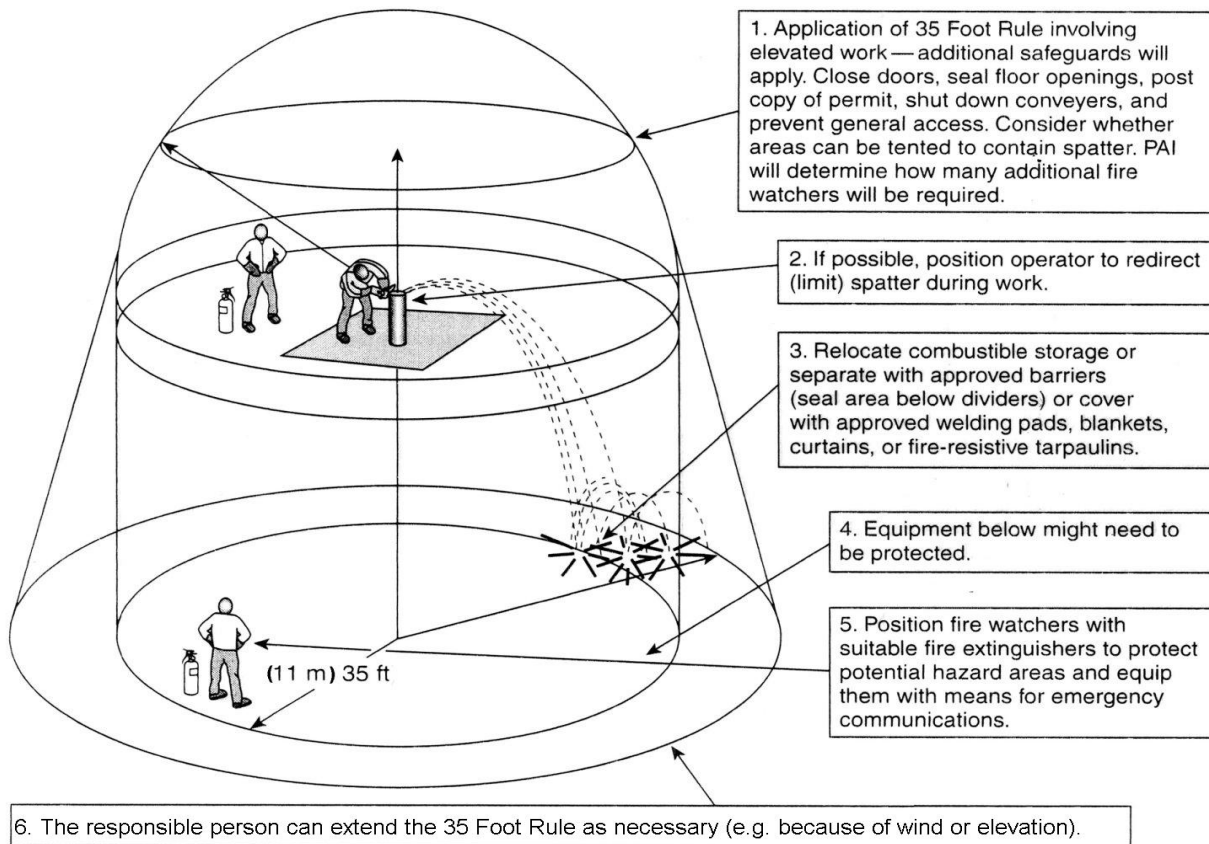
Fire watch is required for adjoining areas and below to make sure that sparks do not cause a fire on the adjoining areas.

This additional fire guard must conduct a fire watch on each lower floor or level containing combustible surfaces or materials within 35 feet of the area of such floor or level that potentially would be exposed to such sparks or slag. Prior to commencement of the torch operation, the fire safety manager or responsible person shall inspect the lower floors or levels and take all necessary and appropriate precautions to protect any combustible surfaces and materials that potentially would be exposed to sparks and slag from the torch operation. A certification to that effect must be made on the hot work authorization.

Exception:

1. A fire watch is not required on the floors/levels below a torch operation on a construction site when ALL the following conditions are met:
 - 1.1.the torch operation is not being conducted at or near the edge of an unenclosed floor of a building;
 - 1.2.the floor upon which the torch operation is being conducted is of noncombustible construction;
 - 1.3.there are no floor or exterior building openings within 35 feet of the torch operation; AND
 - 1.4.prior to commencement of the torch operation, the fire safety manager or responsible person conducts an inspection and takes the precautions to protect any combustible surfaces and materials that potentially would be exposed to sparks and slag from the torch operation.
2. Notwithstanding the foregoing exception, if sparks or slag generated by the torch operation are observed to extend beyond 35 feet, thereby potentially exposing lower floors or levels, the torch operation shall be immediately discontinued, and the floors or levels below shall be inspected for any fire condition. If there is any potential exposure surfaces or materials on the floors below from such sparks and slag, noncombustible barriers shall be provided and any other necessary or appropriate precautions shall be taken. If such barriers and precautions fail to block the passage of sparks and slag, a fire watch shall be established on the floors or levels below.

The 2009 edition of National Fire Protection Association 51B shows the 35-ft. rule in a 3-D perspective to account for multiple fire watchers. Detail information refer to Chapter 5 of NFPA 51B, 2009 .



1.3.4. Time and Recordkeeping requirement

A fire watch must be maintained during any hot work operation. The fire watch must 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.

For any CNG or LPG torch operation, **the first inspection shall be conducted 30 minutes after completion of torch operations; the second inspection 1 hour after completion of torch operations.** This is to make sure that there are no smoldering fires in the building. The fire guards must complete a signed inspection report. The fire guards or fire watch personnel must complete a signed inspection report (or the log book). **This report must be submitted to and retained by the person in charge of the torch operations.** The inspection report must be made available to any representative of the Fire Department and should be maintained on the premises for reasonable length of time (e.g. 48 hours) after work is complete.

Example: Fire Guard Daily Log Book for Hot Work

Fire Guard’s Daily Log for Hot Work

Date: _____

- Each fire guard monitoring hot work must complete this log daily
- Enter a check for each item after verifying it for compliance in each active hot work area. If an item is not compliant and the competent person designated for this hot work operation or the fire guard cannot correct it, then no hot work may proceed in the area and must be notified.
- 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.

<i>Before beginning and while performing hot work</i>							<i>After completing hot work</i>
WORK AREA	PERMIT	INCIDENT REPORTING	FIRE EXTINGUISHER	COMBUSTIBLES	FLAMMABLES	FIRE GUARD	POST-WORK CHECK
List each active hot work area on the lines below.	Posted by fire guard at work area?	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?
COMMENTS							

Name: _____ Signature: _____

Fire Guard Certificate of Fitness Number: _____ Expiration Date: _____

1.4 Gas Welding and Cutting Precautions

Oxygen containers and oxygen container valves, regulators, hose and other apparatus and fittings 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. 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.

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. Oxygen and fuel gas container valves shall be accessible to the torch operator or fire guard for immediate shutoff of the gas supply in the event of an emergency.

It shall be unlawful to conduct the following hot work operations:

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 an acetylene generator for hot work operations.

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.

PART 2. EMERGENCY NOTIFICATION, FIRE PROTECTION SYSTEMS, AND FIRE EXTINGUISHERS

2.1 Notification

The fire guard must be familiar with emergency notification procedures. The fire guard can use a wireless phone to make emergency notifications. If a wireless phone is used, it is important to be sure that the battery has enough power to last the entire shift. Notifying the FDNY by phone is the most direct and effective way to make notification of an emergency.

When notifying 911 of a fire or other emergency, the call-taker will need to obtain certain information about the emergency. Obviously the nature of the emergency and address are the most critical pieces of information. They operator may also ask what the nearest cross-street is, and if anyone is in need of medical attention and if so, what are their symptoms.

Additionally, if you are responsible for a very large construction site, it is likely that there will be more than one means of entry. Providing information about which entrance would provide the most direct access to the emergency area would be helpful in getting the emergency response personnel to the area of the emergency as quickly as possible. If certain construction site entrances are obstructed with construction equipment or construction materials and are not easily accessible by emergency responders this information should be communicated to the 911 operator. The more information you have available to communicate to the 911 operator, the more efficient they can get the right kind of help to you quickly.

When you call 911, in addition to the information mentioned above, you should be prepared to answer other 911 operator questions, which may include:

- The phone number you are calling from
- The nature of the emergency
- Details about the emergency, such as a physical description of a person who may have committed a crime, a description of any fire that may be burning, or a description of injuries or symptoms being experienced by a person having a medical emergency

Be prepared to follow any instructions the operator gives you. Many 911 operators can tell you exactly what to do to help in an emergency until help arrives.

Finally, do not hang up until the operator instructs you to.

After the FDNY arrives, the fire guard should be sure to meet the emergency responders to provide them with information regarding the nature of the emergency, its location on the construction site and to provide the information that the emergency responders request.

2.2 Fire Protection System

2.2.1 Fire hoses

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

2.2.2 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.

2.2.3 Fire detection system

Approved precautionary measures shall be taken to avoid accidental operation of automatic fire detection systems. For example, the fire alarm system (e.g. smoke detectors) may need to be taken out of service during the hot work operation to avoid unwarranted alarms. The date and time the alarm system was taken off-line, the reason for such action, the name and operator number of the person notified at the central station (or other evidence of notification satisfactory to the Department), and the date and time the system was restored to service, must be entered in the alarm log book in each such circumstance. **Fire watch for impairment must be provided when the alarm system is off-line.**

2.3 Fire Extinguishers

All persons conducting hot work operations or performing fire watch shall be trained in the use of portable fire extinguishers, and **shall be capable of extinguishing fires when they are limited in size and spread such that they can readily be extinguished using a portable fire extinguisher.**

A portable fire extinguisher with at least a 2-A:20-B:C rating (a minimum 3-A:40-B:C rating fire extinguisher on torch-applied roofing system operations) must be readily accessible within 30 feet of the location where hot work is performed and where the fire guards are positioned. In case of fire, 911 must be called.



In the event of a fire extinguisher has been discharged, a fully charged replacement is required before work can resume. **The C of F holder is recommended to be trained for the use of portable fire extinguisher.** Portable fire extinguishers are important in preventing a small fire from growing into a catastrophic fire, however, they are not intended to fight large or spreading fires. **The trained Certificate of Fitness holders should only consider extinguishing fires when they are limited in size and spread such that they can readily be extinguished using a portable fire extinguisher.** By the time the fire has spread, fire extinguishers, even if used properly, will not be adequate to extinguish the fire. Such fires should be extinguished by the building fire extinguishing systems or trained firefighters only. In case of any fire, FDNY must be notified. Fire extinguishers must be used in accordance with the instructions painted on the side of the extinguisher. They clearly describe how to use the extinguisher in case of an emergency. The Certificate of Fitness holder should be familiar with the use of portable fire extinguishers. When it comes to using a fire-extinguisher just remember the acronym P.A.S.S. to help make sure you use it

properly. P.A.S.S. stands for Pull, Aim, Squeeze, Sweep.

All fire extinguishers must be installed so that the top of the extinguisher is not more than 5 ft above the floor and the clearance between the bottom of the extinguisher and the floor is not less than 4 in. In other words, **no fire extinguisher is allowed to put on floor.**



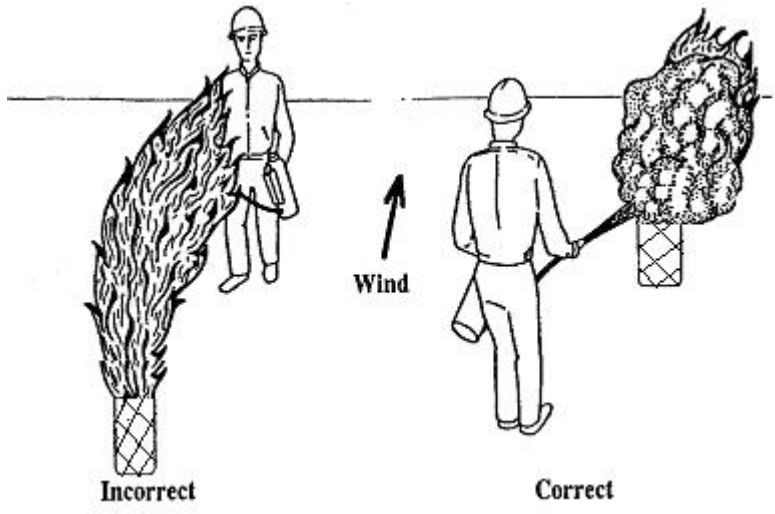
Fire extinguisher in a construction site.



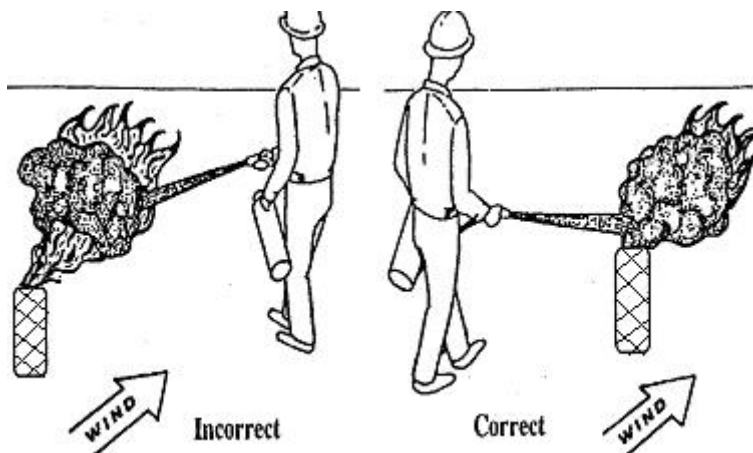
Improper floor placement of Fire Extinguisher.

2.3.1 Operation Instructions for a Fire Extinguisher

Special care must be taken when extinguishing a gas fire caused by a leak. The easiest way to extinguish the fire is to shut off by using the Emergency Shut Off valve until the flame is extinguished. **In case of any fire, Fire Department must be notified.** The flame must be approached from an upwind direction. This will prevent the Certificate of Fitness holder from being burned by the flames. **Never approach a fire from a downwind direction.** The correct ways to approach a fire are shown below.



The dry chemical stream must be directed toward the point where the flame begins. **Do not direct the chemical stream at the center of the flame.** This will not extinguish the fire. The correct way to direct the dry chemical stream is shown below.



For the piped gas, the gas supply must be shut off first and then call 911. This is safer than allowing the flammable gas (e.g. acetylene or LPG) to leak out. A flammable gas leak could result in a serious explosion if it were ignited. **Never attempt to extinguish the flame unless the gas supply shut. When it is not possible to shut off the gas supply (e.g. the fire is near the control valve or the shut-off valve) and the gas supply is limited (e.g. it is from a cylinder), allow the flame to burn itself out and call 911.** In the meantime, you should try to control the scene and prevent the fire spreading to the surrounding materials. **The trained Certificate of Fitness holders should only consider extinguishing fires when they are limited in size and spread such that they can readily be extinguished using a portable fire extinguisher.** By the time the fire has spread, fire extinguishers, even if used properly, will not be adequate to extinguish the fire. Such fires should be extinguished by the building fire extinguishing systems or trained firefighters only.

2.3.2 Fire Extinguishers Types

The Certificate of Fitness holder must be familiar with the different types of fire extinguishers available at the work site. The Certificate of Fitness holder must know how to operate the extinguishers in a safe and efficient manner. The Certificate of Fitness holder must also know the difference between the various types of extinguishers and when they may be used. A description of the classes of fires and the appropriate extinguishers are described below.

Class A fires are caused by ordinary combustible materials (such as wood, paper, and cloth). To extinguish a Class A fire, these extinguishers utilize either the heat-absorbing effects of water or the coating effects of certain dry chemicals.

Class B fires are caused by flammable or combustible liquids and gases such as oil, gasoline, etc. To extinguish a Class B fire, the blanketing-smothering effect of oxygen-excluding media such as CO₂, dry chemical or foam is most effective.

Class C fires involve electrical equipment. These fires must be fought with fire extinguishers that do not conduct electricity. Foam and water type extinguishers must not

be used to extinguish electrical fires. After shutting off the electrical equipment, extinguishers for Class A or B fires may be used.

Class D fires are caused by ignitable metals, such as magnesium, titanium, and metallic sodium, or metals that are combustible under certain conditions, such as calcium, zinc, and aluminum. Generally, water should not be used to extinguish these fires.






A multi-purpose dry chemical fire extinguisher may be used to extinguish more than 2 Classes fires. Examples of some fire extinguishers are shown below.





Examples of fire extinguishers



2.3.3 Typical Fire Extinguishers

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

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

	Class A, B & C Fires Multi-purpose Fire Extinguisher
	Class B & C Fires
	Class A & B Fires
	Class A Fires

Fire Extinguisher Identification Symbols

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

2.3.4 Fire Extinguisher Inspections

MONTHLY

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

The **QUICK CHECK** should check if:

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

The information of the monthly inspection record must include the date of the inspection, the name/initials of the person who did the inspection. This monthly quick check record must be kept on the back of the PFE tag or by an approved electronic method that provides a permanent record.

ANNUALLY

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

2.3.5 Portable Fire Extinguisher (PFE) Tags

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

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

1. Hologram:

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

2. QR code

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

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

Tags.Decal@fdny.nyc.gov



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

Fire Department also issues standard outdoor fire extinguisher tags. If the fire extinguishers may be placed outdoors, the COF holder should ask the fire extinguisher suppliers to provide the outdoor fire extinguisher tags for the fire extinguishers.

The special features of the outdoor tags:

1. The material is durable and tear-resistant

2. Different printings:

- On the back of the tag, the series number will contain a “D” letter; AND/OR
- On the front of the tag, an “O” is printed on the top of the tag (this feature may not be on ALL outdoor tags)



Outdoor PFE tags