STUDY MATERIAL FOR THE
CERTIFICATE OF FITNESS EXAMINATION F-60 FOR:

FIRE GUARD FOR TORCH OPERATIONS
AND CONSTRUCTION SITE (old F-93, F-29, F-30)
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NOTICE OF EXAMINATION

Title: Examination for Certificate of Fitness for Fire Guard for Torch Operations and Construction Site (F-60)

Date of Test: Written tests are conducted Monday through Friday (except legal holidays) 8:00 AM to 2:30 PM

QUALIFICATION REQUIREMENTS

1. Applicants must be at least 18 years of age.
2. Applicants must have a reasonable understanding of the English language.
3. Applicants must present a letter of recommendation from his/her employer. The letter must be on official letterhead and must state the applicant’s full name, character, physical conditions, experience, and address of premises where applicant will be employed.
4. Applicants must present two (2) forms of satisfactory identification i.e., driver’s license, passport, vehicle registration, library card, or equivalent.

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, 1st floor, 9 Metro Tech Center, Brooklyn, NY 11201.

TEST INFORMATION

Test: The test will be of the written, multiple choice type. A passing score of at least 70% is required in order to secure a Certificate of Fitness. Call 718-999-1988, or 2504 for additional information and forms.
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 and construction site. 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 COF covers 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.

About the Test
All questions on the 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

1. Who was the first President of the United States?
   (A) George Jefferson.
   (B) George Washington
   (C) Bill Clinton.
   (D) Barack H. Obama.

   The correct answer is "B". You would press "B" on your computer terminal.

2. The city in the United States referred to as The Big Apple is:
   (A) Los Angeles.
   (B) Buffalo.
   (C) Florida.
   (D) New York.

   The correct answer is "D". You would press "D" on your computer terminal.
INTRODUCTION

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

Certificate of Fitness, where required

Hot work operation:
According to the FDNY regulations, an F-60 Certificate of Fitness 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.

Construction site:
A fire guard (F-60 Certificate of Fitness holder) 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. (RCNY Title2 §3-02)

Exception:
A contracting company does not have to provide an after hours fire guard or watchperson of the if ownership provides its own 24 hour security or concierge (this coverage must be FDNY F-60 certified).

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.

FDNY Storage Permit and FDNY Usage Permit
Permits issued by FDNY are required to conduct 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;

Portable LPG containers that are greater than 16.4 oz must not be stored, handled or used indoors 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.
Types of FDNY Permits
(1) Site-specific permit
Such permit authorizes the permit holder to store, handle, 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 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 to a construction work which only takes one week. Normally, hot work operation (e.g. construction site or hot work repair) is issued a temporary permit.
Example of a temporary FDNY permit

This temporary permit is valid for 7 months.

(2) Citywide permit
A city-wide permit is valid up to 30 days and all gas containers must be removed from the site at the end of each workday. A new application must be submitted if a single job will last more than 30 days.

Permits for Citywide Hot Work Operations
1. Each vehicle used to transport torches and containers of oxygen and flammable gas for use in citywide hot work operations must be inspected by a Department representative at the Bureau of Fire Prevention’s hazardous cargo vehicle inspection facility prior to the issuances of a permit for citywide hot work operations.
2. A city-wide permit is valid up to 30 days. A site-specific citywide permit must be obtained for any hot work operations are conducted for more than 30 days.
3. A separate permit must be applied for storage of oxygen or flammable gas at a work site.
All permits are not transferable and any change in occupancy, operation, tenancy or ownership must require 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 bearing the signature of the responsible person must 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 authorization, issued by the responsible person, must 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**. An example of hot work program permit is shown below.

**Hot Work Authorization (Hot Work Permit) Requirements**
- A hot work permit is required at all times for any welding, brazing/soldering, torch cutting, and spark production.
- Hot works operations are limited to the area and time specified in the hot work permit.
- For construction site,
  - A hot works permit should be prepared by the competent person for the subcontractor. The superintendent or CSFSM will be provided a copy of the completed permit before work begins.
  - Subcontractors will identify their competent person for hot work in their Subcontractor Site Specific Safety Plan.
  - A copy of the hot work permit is to be kept by the Fire guard. Copies of completed permits will be maintained in the project files. The subcontractor’s copy of the permit must be handed back in to the CSFSM to confirm the work in the area has been completed, thus no hot work risk. This returned version must be filed in the hot work permit section with the appropriate original.
  - Open permits will be posted in a central location or recorded in a log book to assist in the coordination of construction related activities which may contribute fuel sources for a fire (i.e. use of solvents, adhesives, or sealants).

**Regulations about Fire Guards**
- 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 systems. 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.
- Hot work permit (Hot work authorization) is required for all welding, brazing/soldering, and any other spark producing operation (i.e. metal cutting/grinding).
- Copies of hot work permits are to be kept and filed onsite.
- One fire guard (F-60) 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.
- One fire guard requires a C of F from the FDNY.
### Fire Guard Variation Breakdown

F-60 is consolidated certificate of both Fire Guard for Field Construction sites and Fire Guard for torch operations.

<table>
<thead>
<tr>
<th>Fire Guard Construction Site</th>
<th>Fire Guard Torch Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>holds C of F</td>
<td>holds C of F</td>
</tr>
<tr>
<td>Required to walk all areas of jobsite each hour from 4pm until midnight following each day where hot work operations were performed.</td>
<td>Required for hot work operations (at least one per torch/tool)</td>
</tr>
<tr>
<td>Required to maintain a daily log book noting inspection times and areas reviewed per hour to be signed by fire guard on duty.</td>
<td>An additional fire guard is required per torch on the floor below the operation.</td>
</tr>
<tr>
<td>Required to walk the job site visiting all major areas.</td>
<td>Required to maintain a daily log book noting location and inspection times both thirty and sixty* minutes after each hot work operation is over, to be signed by fire guard on duty.</td>
</tr>
</tbody>
</table>

Special Note: A watchperson is often required from 2400-0800 (Midnight – 8 AM) for construction site. In addition, all fire guards and watchperson should complete OSHA 10 hour training.

The fire guard for torch operation and construction site is required to comply with the following fire department 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]
# 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

<table>
<thead>
<tr>
<th>Hot Work Performed By:</th>
<th>☐ Employee</th>
<th>☐ Contractor</th>
<th>☑ Off-hours</th>
<th>Authorization #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee / Contractors Name:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor / Foreman Name:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location: Building address, room # and/or area of work:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permit Start Date:</td>
<td></td>
<td>Permit Start Time:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permit Stop Date:</td>
<td></td>
<td>Permit Stop Time:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## HOT WORK ACTIVITY

- ☐ ARC WELDING
- ☐ SOLDERING
- ☐ GRINDING
- ☐ BRAZING
- ☐ USING OXYGEN AND A FLAMMABLE GAS (FDNY PERMIT)
- ☐ MAPP WELDING
- ☐ WELDING
- ☐ CUTTING
- ☐ NON-FIRE WORK
- ☐ OTHER: ________________

All hot work activities must be conducted by FDNY Certificate of Fitness holders. Certificate holders shall be responsible for keeping such certificate upon his/her person or otherwise readily available for inspection.

<table>
<thead>
<tr>
<th>Torch Operator:</th>
<th>Certificate #:</th>
<th>Exp Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Guard:</td>
<td>Certificate #:</td>
<td>Exp Date:</td>
</tr>
</tbody>
</table>

## 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.

<table>
<thead>
<tr>
<th>Name:</th>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Employee</td>
<td>☐ Contractor</td>
<td></td>
</tr>
</tbody>
</table>

## DESIGNATED TO AUTHORIZE THE PERFORMANCE OF HOT WORK

<table>
<thead>
<tr>
<th>Name:</th>
<th>Signature:</th>
<th>Time:</th>
<th>Date:</th>
</tr>
</thead>
</table>

- Fire alarm precautions taken ☐ YES ☐ N/A Type: ______________________
- Pre-hot work check completed: ☐ YES
- FDNY permit required to conduct hot work? ☐ YES ☐ 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.

Steve Doyle 5/2011
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.

**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 I. HOT WORK OPERATION

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.

<table>
<thead>
<tr>
<th>Date</th>
<th>Fire Summary</th>
<th>Lessons Learned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov. 2010</td>
<td>Chinese city of Shanghai construction fire</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Sparks from welding equipment set alight nylon construction netting and bamboo scaffolding that nearly covered the building. 58 people died and 56 still missing, and more than 120 are injured.</td>
<td></td>
</tr>
<tr>
<td>July 2009</td>
<td>Throgs Neck construction fire, Queens, NY</td>
<td>Although still under investigation, the cause reflects a lack of fire safety at the construction site.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>June 2009</td>
<td>5-story apartment construction fire, Renton, WA</td>
<td>Sheetrock had not yet been installed to protect the wood framing. There should be a fire guard watching for sparks.</td>
</tr>
<tr>
<td></td>
<td>Several spot fires from roof torch had 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 hour hours later. The fire spread rapidly through the wooden construction. This fire caused $12,000,000 in damage.</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Fire Summary</td>
<td>Lessons Learned</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Mar. 2009</td>
<td>Casino Fire, Joliet, IL. 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. This fire caused $340,000,000 in damage.</td>
<td>There should be a fire guard watching for sparks.</td>
</tr>
<tr>
<td>Dec. 2000</td>
<td>Dongdu commercial building construction, Luoyang, China. 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.</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Sources**

1.1 Responsible Person and Pre-Hot Work Check

For citywide hot work operations, 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 permit) 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 operation must be conducted under the general supervision of the responsible person.

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 department, 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 followings.

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

2. Requirements within 35 feet of work area
   (1) Flammable liquids, dust, lint, and oil deposits removed.
   (2) Floor swept clean
   (3) Combustible floors wet down, covered with fire-resistant sheet
   (4) Remove other combustibles where possible. Otherwise protect with fire-resistant cover or metal shields.
   (5) All wall and floor openings covered.
   (6) Combustibles on other side of walls moved away.

3. Fire watch/ hot work area monitoring
   (1) Fire watch will be provided during at least 30 minutes after work
   (2) Fire watch is supplied with fire extinguishers
   (3) Fire watch may be required for adjoining areas and below

4. Permit and Certificate of Fitness
   (1) Required site-specific permit or citywide permit is readily accessible
   (2) All persons performing hot work possess Certificate of Fitness (e.g. G-60 COF for torch operator; F-60 COF for fire guard)

1.2 Designated Hot Work Area

A designated area (e.g. a cutting and welding station) must be a specific area designed or approved for hot work. Partitions segregating hot work areas from other areas of the building must be of noncombustible or fire-resistive construction. If fixed hot work areas, the areas must have floors with noncombustible surfaces, the partitions must be securely connected to the floor such that no gap exists between the floor and the partition. Partitions must prevent the passage of sparks, slag and heat from the hot work area. This area must keep 35 feet away from any combustible material and combustible waste. Paper, wood shavings, straw and fabric are examples of combustible materials. Some walls, portable partitions, ceilings and floors are also combustible. 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 might 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. Under no circumstances should hot work be done within 35 feet of flammable or explosive materials. Flammable materials are generally categorized as either liquids or gases that burn. For example gasoline and propane are flammable materials.

Visible hazard identification sign 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 Designated Hot Work Area

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.
1. Close doors, seal floor openings, post copy of permit, shut down conveyors, and prevent general access.

2. If possible, position operator to redirect spatter during work, or add an additional fire curtain or equivalent.

3. Relocate combustible storage or separate with approved barriers (seal area below dividers) or cover with approved welding pads, blankets, curtains, or fire-resistive tarpaulins.

4. Position fire watch with suitable fire extinguishers to protect potential hazard area and equip fire watch with means for emergency communications.

5. Position fire watchers with suitable fire extinguishers to protect potential hazard areas and equip them with means for emergency communications.

6. The responsible person can extend the 35 Foot Rule as necessary (e.g. because of wind or elevation).
**1.3 Fire Guards for Hot Work Operations**

FDNY certified fire guards (F-60 COF holders) must be present to perform fire watch during the hot work operations for the torch operations at the following locations: (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 FDNY permit for torch operation.

A fire guard may be required for adjoining areas and below. For example, an additional fire guard must be provided on the floor or level below the torch operation if torch operations are performed at the construction site or in connection with torch-applied roofing system operations. The responsible person shall ensure any adjacent structures are adequately protected and monitored (where necessary) by additional fire guard personnel.

Fire guard is responsible for fire safety duties during torch operations. This person ensures that sparks and pieces of hot metal do not cause a fire in the area of hot work or the floor below. Like the torch operator, the fire guard is a Certificate of Fitness holder (F-60) and both must have this in their possession at all times during all torch operations.

The fire watch must be continue after the completion of torch operation, the fire guard must inspect all areas exposed to the effects of torch operations for the purpose of detecting fires. The entire work area should be checked after completion of hot work for fires. For all hot work, the inspection must be conducted 30 minutes after completion of torch operations. *In the best practice and for any CNG or LPG torch operation, the 2nd inspection should be 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 log book). The fire guards 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.*

Such fire guards must not be assigned any duties other than to remain alert and guard against fire, and they must be alert to sparks, the transmission of heat, and the potential ignition of combustible material. They are also authorized to stop work if necessary and restore safe conditions within the hot work areas. Such fire guards must be responsible for ensuring that fire extinguishing equipment is readily accessible from the time torch operations are commenced until an hour after such operations are completed. **A minimum 2-A:20-B:C rating fire extinguisher must be readily accessible within 30 feet of the hot work location and the fire guard.** Fire guards may use garden hoses connected to a reliable water supply, or buckets of water.
1.3.1 Special Regulations of Fire Watch in the Torch-applied Roof System

Torch-applied roof system is a 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. It is widely use in US, torch-applied operations can be hazardous to roofers and the public. Improper torch use or careless fire watch caused many rooftop fires. Torch-applied roof system must not be operated on roofs constructed of combustible materials. Fire guards must be on continuous duty during all torch operations on the roof of a building. There must be one fire guard on the roof for each torch operator, and an additional fire guard is required one floor level below the work area. The fire guard makes sure that sparks do not cause a fire on the lower floor. A minimum 3-A:40-B:C rating fire extinguisher must be readily accessible within 30 feet of the hot work location and the fire guard. Fire guards may use garden hoses connected to a reliable water supply, or buckets of water.

1.4 Gas Torch Operation Precautions

Any containers that contain combustible materials must not be cut, welded, or applied torch operation. The container may catch fire and result in an explosion. Such explosions have caused serious injuries and several deaths. Even containers that have been empty for a while may be dangerous as they may still contain flammable vapors. All combustible and flammable solids, liquids, dusts, or vapors must be removed from the container before cutting or welding. The containers should be thoroughly cleaned with the correct cleaning solutions.

It is prohibited to perform welding or cutting when supported by or resting on any compressed gas containers. Performing any torch-applied roof operations on any combustible roof (e.g. wood roof) is also prohibited. 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.

**Automatic sprinkler protection shall not be shut off while hot work is performed.** Cutting and welding may cause sprinkler heads to accidentally open if the temperature rises near the sprinkler heads. To prevent this the head should be covered by noncombustible barriers or damp cloth. The covers should be removed immediately after the cutting and welding is finished. If the work extends over several days, the covers shall be removed at the end of each workday.

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**Smoke Eater** being used to remove fumes/smoke and prevent unnecessary fire alarm activations.

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The gases used by gas torches are commonly supplied in compressed gas containers, which can pose additional handling and transport hazards. All compressed gases are potential hazards because of the pressure within the container, their flammability, and/or their toxicity. The chemical is in gaseous form and pressurized, it can quickly contaminate a large area in the event of a leak.

Compressed gas containers must be replaced when they are empty. Empty containers must be handled in the same manner as full ones. They should be marked empty, the container valve or regulator cap must be closed and stored separately from full containers. All empty containers must be promptly removed by vendors.

A compressed gas container must not be rolled on its side or its rim. It must be moved only by using approved lifting equipment. Containers must never be dropped or thrown from any height. Before transporting any compressed gas containers make sure that the valves are tightly closed.

Compressed gas containers should be moved in an upright position and must be moved using an approved method. Where containers are moved by hand cart, hand truck or other mobile device must be designed for the secure movement of containers. Carts and trucks
utilized for moving compressed gas containers outdoors must be designed so that the containers will be secured against dropping or otherwise striking against each other or other surfaces. Ropes, chains or slings must not be used to suspend compressed gas containers unless such containers have been designed for such handling. Valves of compressed gas containers must not be used for lifting.

If the compressed gas containers need to be transported between different floors, use of elevator (e.g. freight elevator, construction elevator, or passenger elevator when approved) and such elevator shall be occupied by the minimum number of persons.

1. Compressed gas container should be used, handled, and stored in upright position, except those designed for use in a horizontal position.
2. Compressed gas containers placed on carts and trucks must be individually restrained.

Compressed gas containers must be moved using an approved method.
PART 2. CONSTRUCTION SITE

FDNY certified fire guards (F-60 holders) must be on duty during all hours when operations are not in progress except between midnight and 8:00 am at construction, alteration or demolition sites which exceed 10,000 square feet when fronting on one street or 20,000 square feet when fronting on more than one street or where 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. When the construction, alteration or demolition site exceeds the area limitations set forth, at least one additional fire guard must be on duty for each additional 10,000 square feet or 20,000 square feet respectively. A contracting company does not have to provide an after hours fire guard or watchperson of the if ownership provides its own 24 hour security or concierge (this coverage must be FDNY F-60 certified).

The fire guards must be familiar with the location and use of nearest street fire alarm boxes and other acceptable means of transmitting an alarm of fire. They also must know the location of fire extinguishers and emergency exits and must be familiar with the use of the fire extinguisher and related fire fighting equipment required to be on the site.

The fire guard should walk all areas of jobsite each hour from 4pm until midnight following each day. He must maintain a daily log book noting inspection times and areas reviewed per hour to be signed by fire guard on duty. All compressed gas containers must be stored upright, capped and secured in a proper storage rack and must not be stored outside of a proper storage rack.

If a fire occurs, the fire guard must call 911 immediately and should then notify the Construction Site Fire Safety Manager. Any incident involving notification of the Emergency services should be reported.
PART 3. FIRE PREVENTION AND FIRE SUPPRESSION

3.1 LOGBOOK/INSPECTION REPORT AND NOTIFICATION

3.1.1 Logbook and Inspection Report

Logbooks or inspection reports are required to be prepared and endorsed by fire guards (fire guards for hot work operation and fire guards for supervising construction site from 1600-2400). Fire guards should enter in the log/report 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/report must be present for FDNY inspection at the site, and contain the results of inspections, any deficiencies discovered, and the name of the fire guard who conducted the inspections.

3.1.2 Notification

Fire guards must know whom to call to report a fire and must have a method of communicating to the project office or directly to emergency services.

(1) Individuals assigned to fire watch duty must be responsible for identifying and extinguishing spot fires and reporting such fires to the department.

(2) Fire guards must know the location of fire extinguishers and emergency exits.
Example: After Hours Fire Guard Checklist (4pm-midnight)

### After-Hours Fire Guard Checklist

**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 |  
|------|---
| Standpipe | inspect standpipe for breaks, leaks, damage; ensure that red light is on at Siamese connection; ensure that valves are zipped in position; ensure that there are no obstructions at the Siamese connections and fire hydrants.  
| Exits | 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.  
| Trash Accumulation | ensure that access and exit corridors are free of debris and rubbish.  
| Fire Extinguishers | ensure that fire extinguishers are in their designated locations, and that signs are posted indicating fire extinguisher locations and operating instructions.  
| Potential Ignition Sources | watch for frayed wires, unattended heaters, equipment emitting sparks.  
| Sidewalk Sheds | ensure that lighting is fully operational, and that walkways are unobstructed.  
| Contraband | inspect site for evidence of cigarette/tobacco product, alcohol, and drug use.  
| Shanty Inspections | inspect exteriors of and areas around shanties for trash accumulation, unattended heaters.  
| Fire Alarm Pull Stations | inspect for damage.  
| Sprinkler System | inspect heads, pipes, and valves for damage and leaks.  

### Comments

| Name |  
|------|---
| Signature |  

| Fire Guard Certificate of Fitness Number |  
| Fire Guard Certificate of Fitness Expiration Date | 4/14 |
Example: Fire Guard Daily Log Book for Hot Work

Fire Guard’s Daily Log for Hot Work

- 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.

<table>
<thead>
<tr>
<th>WORK AREA</th>
<th>PERMIT REPORTING</th>
<th>FIRE EXTINGUISHER</th>
<th>COMBUSTIBLES</th>
<th>FLAMMABLES</th>
<th>FIRE GUARD</th>
<th>POST-WORK CHECK</th>
</tr>
</thead>
<tbody>
<tr>
<td>List each active hot work area on the lines below.</td>
<td>Radio or phone on hand to notify personnel in case of incident?</td>
<td>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?)</td>
<td>Wood, cardboard, &amp; other combustibles within 35’ to work area? Blankets protecting gas bottles in use?</td>
<td>Gas, Fuel, and other flammables no closer than 35’ to work area?</td>
<td>Fire guard has an unobstructed line of sight?</td>
<td>Area checked 30 minutes after completion of work?</td>
</tr>
</tbody>
</table>

COMMENTS

Name: _________________________  Signature: _________________________

Fire Guard Certificate of Fitness Number: _________________________  Expiration Date: _________________________
3.2 Fire Protection and Suppression Systems

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. (FC 2604.2.6; FC 1417.3)

Where fire hose lines are required, they must be connected, charged and ready for hot work operation. The equipment, including hoses, gauges, leads, cords, being used must be in good condition, inspected on a regular basis, and must be immediately removed from service if found to be defective. Barriers, protective screens, or warning signs must be used to alert the other trades or facility employees of the work being done. In case of fire, 911 must be called.

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 the floor. In the event of a fire extinguisher has been discharged, a fully charged replacement is required before work can resume.

A stackable and portable stand is convenient for temporary extinguisher installation. Improper floor placement of fire extinguisher.

Acceptable

Unacceptable
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 Fire Guard Certificate of Fitness holder must be trained in the use of portable fire extinguishers. When it come 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.

Special care must be taken when extinguishing a flammable 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. 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. 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.
The gas supply must be shut off as soon as the flame is extinguished. **Never attempt to extinguish the flame unless the gas supply shut. When it is not possible to shut off the gas supply, allow the flame to burn itself out.** This is safer than allowing the flammable gas to leak out. A flammable gas leak could result in a serious explosion if it were ignited.

### 3.3 Fire Extinguishers

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

<table>
<thead>
<tr>
<th>10-B:C (10BC)</th>
<th>3-A:40-B:C(3A40BC)</th>
<th>3-A:40-B:C(3A40BC), wheeled</th>
</tr>
</thead>
</table>

3.4 **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.

<table>
<thead>
<tr>
<th>CLASSES OF FIRES</th>
<th>TYPES OF FIRES</th>
<th>PICTURE SYMBOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Wood paper, cloth, trash &amp; other ordinary materials.</td>
<td>![Symbol A]</td>
</tr>
<tr>
<td>B</td>
<td>Gasoline, oil, paint and other flammable liquids.</td>
<td>![Symbol B]</td>
</tr>
<tr>
<td>C</td>
<td>May be used on fires involving live electrical equipment without danger to the operator.</td>
<td>![Symbol C]</td>
</tr>
<tr>
<td>D</td>
<td>Combustible metals and combustible metal alloys.</td>
<td>![Symbol D]</td>
</tr>
<tr>
<td>K</td>
<td>Cooking media (Vegetable or Animal Oils and Fats)</td>
<td>![Symbol K]</td>
</tr>
</tbody>
</table>

**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.
### 3.5 Fire Extinguisher Inspections

The extinguishers are required to be inspected monthly. The owner of the premises is responsible to designate a person to perform a monthly inspection. This inspection is a "quick check" that a fire extinguisher is available and will operate. It is intended to give reasonable assurance that the fire extinguisher is fully charged and operable. This is done by verifying that it is in its designated place, that it has not been actuated or tampered with, and that there is no obvious or physical damage or condition to prevent its operation. The information of the monthly inspection record must include the date the inspection was performed, the person performing the inspection, and those portable fire extinguishers found to require corrective action. Such recordkeeping must be either attached to the extinguisher or on an inspection checklist maintained on file. Labels or markings indicating fire extinguisher use or classification or both shall be placed on the front of the fire extinguisher. At least once per year, all fire extinguishers must be maintained by a FDNY approved company and a W-96 Certificate of Fitness holder.