# **NYC FIRE CODE GUIDE**



# CODE DEVELOPMENT UNIT BUREAU OF FIRE PREVENTION

#### NYC FIRE CODE GUIDE

# FREQUENTLY ASKED QUESTIONS AND RESPONSES PROVIDING OFFICIAL INTERPRETATIONS AND GUIDANCE

NEW YORK CITY FIRE CODE (CHAPTER 2 OF TITLE 29 OF THE ADMINISTRATIVE CODE OF THE CITY OF NEW YORK)

NYC FIRE DEPARTMENT RULES
(TITLE 3 OF THE RULES OF THE CITY OF NEW YORK)

#### GENERAL OUESTIONS

#### 1. What is the Fire Code?

The New York City Fire Code is a City law that establishes fire safety requirements for a wide range of activities in New York City. These requirements govern such matters as emergency preparedness; the prevention and reporting of fires; the manufacture, storage, handling, use and transportation of hazardous materials and combustible materials; the conduct of various businesses and activities that pose fire hazards; and the design, installation, operation and maintenance of the buildings and premises that house such materials, businesses and activities.

#### 2. To whom does the Fire Code apply?

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

#### 3. When did the Fire Code take effect?

The 2014 Fire Code took effect on March 30, 2014. It was the first periodic review and revision of the 2008 Fire Code, which took effect on July 1, 2008.

The 2008 Fire Code was enacted by Local Law No. 26 of 2008. It was the first comprehensive revision of the City's fire code in a century. It was based on a model code, the International Fire Code, published by the International Code Council, Inc.

New York City Administrative Code §29-104, enacted as part of Local Law 26 of 2008, required that no later than the third year after the effective date and every third year thereafter, the Fire Commissioner shall review the latest edition of the International Fire Code and submit to the City Council such proposed amendments as he or she may determine should be made to the Fire Code based upon such model code.

In accordance with Administrative Code §29-104, the Fire Department undertook a three-year code review process in consultation with representatives of the City Council, New York City Department of Buildings and industry, professional, trade and union organizations. This process culminated in proposed amendments that were approved by the City Council and signed into law by the Mayor as

Local Law 148 of 2013 in December 2013. This amended Fire Code, which is referred to as the "2014 Fire Code" for convenient reference, took effect on March 30, 2014.

#### 4. What happened to the Fire Code in effect prior to July 1, 2008?

The Fire Code in effect prior to July 1, 2008, known as the New York City Fire Prevention Code, was repealed on July 1, 2008.

However, some of the design and installation provisions of the Fire Prevention Code continue to be applicable to certain "pre-existing" installations that have been allowed to remain in use since July 1, 2008, the effective date of the 2008 Fire Code, even though they are not in compliance with the 2008 Fire Code's requirements. The Fire Department has consolidated such Fire Prevention Code provisions into Chapter 48 of the Fire Department rules (Title 3 of the Rules of the City of New York) for convenient reference and enforcement purposes.

# 5. Is there a "grace period" under which it is optional to file with the Fire Department under the 2014 Fire Code?

No, there is no grace period. However, provision is made for "projects in progress" at the time the 2008 and 2014 Fire Codes took effect. See Chapter 1, Frequently Asked Question #13.

#### 6. How can I tell where in the 2014 Fire Code a 2008 Fire Code section can be found?

Most section numbers in the 2014 Fire Code are unchanged from the 2008 Fire Code. 2008 Fire Code sections that have been moved or renumbered are listed in the following cross-reference table, with the section number of the corresponding 2014 Fire Code section. See the Fire Code Cross-Reference Table at the end of this Guide.

# 7. I have questions about the Fire Code. Who should I contact at the Fire Department to obtain assistance?

The best way to obtain assistance regarding the meaning of the Fire Code is to monitor this Frequently Asked Questions page and to use the Fire Code inquiry form on this web site.

<u>To submit a Fire Code question</u>, go the Code and Rules Public Feedback Page on the Fire Department's website (<a href="www.nyc.gov/fdny">www.nyc.gov/fdny</a>) and use the Public Inquiry Form.

You may also submit your inquiry in writing to: Code Development Unit, Bureau of Fire Prevention, New York City Fire Department, 9 MetroTech Center, Brooklyn, NY 11201-3857.

The Fire Department cannot provide an official interpretation of the Fire Code, or other official guidance upon which you can rely, in response to a telephone inquiry.

8.	Will the existing Fire Department rules (as set forth in Title 3 of the Rules of the City of
	New York) remain in effect after the 2014 Fire Code becomes effective?

Yes. The existing Fire Department rules will remain in effect unless and until they are repealed or amended at a later date.

# 9. Does the Fire Department anticipate making any changes to its rules, or adopting new rules, in light of the 2014 Fire Code?

Yes. In connection with the recent amendments to the Fire Code, the Fire Department has promulgated rules to implement the provisions of the 2014 Fire Code. Certain rules, the provisions of which were incorporated into the 2014 Fire Code, have been repealed.

All existing and amended Fire Department rules are numbered to parallel the Fire Code chapters and sections to which they correspond.

All proposed and final rules, new and amended, may be viewed on this website on the "FDNY Rules" page.

#### 10. Where can I obtain a copy of the published version of the 2014 Fire Code?

The new Fire Code can be purchased online or in person at *Citystore*, located in the Municipal Building at One Centre Street, North Plaza, in Manhattan.

# 11. How can I register a complaint with the Fire Department regarding a potential violation of the Fire Code or Fire Department rules?

A complaint regarding a potential violation of the Fire Code or Fire Department rules can be reported to the Fire Department's Bureau of Fire Prevention Field Public Operations Support Unit at (718) 999-2541.

#### FC CHAPTER 1 - ADMINISTRATION

1. I understand that all installations on or after March 30, 2014 must comply with the design and installation requirements of the 2014 Fire Code, but is there any "grandfathering" for installations that were approved or were under construction prior to March 30, 2014?

**FC 102.3 and 102.4** address facilities and conditions "lawfully existing" on June 30, 2008 and March 30, 2014 that would not be allowed or approved under the 2008 or 2014 Fire Code, respectively. Clarification of the scope and meaning of **FC 102.3 and 102.4** is set forth in Fire Department rule 3 RCNY 102-01, which was recently amended to address "grandfathering" issues arising from the enactment of the 2014 Fire Code.

2. FC 102.3 and 102.4 state that lawfully existing facilities whose design and installation would not be allowed or approved under the 2014 Fire Code can be continued under prior laws, rules and regulations. FC102.5 contains certain exceptions, one of which requires compliance with the Fire Code when the part of the building in which the installation exists undergoes alteration. Is alteration defined?

Yes. **FC202** defines "alteration" as any addition to, or modification of, an existing installation, other than repairs made in the ordinary course of maintenance. An example of an alteration would be the installation of a new system, or the removal and replacement of an existing system. An example of an ordinary repair would be the servicing or replacement, in kind, of components of an existing installation. Certain Fire Code sections (**FC501.4.3.1** is an example) may set forth specific standards for alterations that trigger Fire Code compliance.

3. I own a single family home in Broad Channel, Queens, that was severely damaged by Superstorm Sandy in October 2012. The damage extended to the propane installation that fuels my kitchen stove and clothes dryer. What Fire Code requirements and Fire Department approvals are required to repair and restore my propane installation?

The Fire Code strictly regulates Liquefied Petroleum Gases (LPG), commonly referred to as propane, and prohibits its use for household purposes where piped natural gas is available from a public utility.

Broad Channel is one of the few areas in New York City that is not supplied with piped natural gas. Many of the single family homes in Broad Channel were constructed in the 1930s and 1940s and since that time have used propane to fuel cooking appliances and clothes dryers.

The Fire Code authorizes continuation of lawful installations pre-dating the requirements of the 2008 and 2014 Fire Code, with certain exceptions. **FC102.3** and Fire Department rule 3 RCNY §4838-01 authorize continuation of existing lawful residential use of propane for cooking and clothes drying purposes where piped natural gas is not available.

The Fire Department has determined to treat the restoration of Sandy-damaged stationary propane installations for these residential purposes as a repair, not an alteration. As such, the owner of a one or two family home in Broad Channel may restore a stationary propane installation lawfully used for residential cooking and/or clothes drying as of the date of Superstorm Sandy (October 29, 2012) and does not have to comply with the design and installation requirements of **FC Chapter 38** 

and Fire Department rule 3 RCNY §3809-01 that are applicable to newly-constructed or altered stationary propane installations.

Broad Channel homeowners do not have to obtain any Fire Department approvals for repairs to their lawfully existing propane residential cooking and/or clothes drying installations provided that they meet the following interim guidelines:

- 1. The homeowner has documentation (such as invoices from a plumber or propane supplier) that establishes that stationary propane installation was in operation at the premises as of October 29, 2012.
- The quantity of propane fueling the cooking and/or clothes drying appliances is unchanged from the amount in use on October 29, 2012, and in no case exceeds two (2) propane tanks.
- 3. All propane tanks are located outdoors and the size (capacity) of each individual propane tank does not exceed one hundred (100) pounds of propane.
- 4. There is no reserve storage of propane (unconnected spare tanks) at the premises.
- 5. The propane installation is used only for cooking and/or clothes drying purposes and for no other purpose.
- 6. With respect to any propane installation originally installed on or after March 1, 2000, no propane tank shall be located within five (5) feet of:
  - (A) any building opening, including any door, openable window or intake or exhaust vent;
  - (B) the nearest lot line, sidewalk or building on an adjoining lot;
  - (C) a parked motor vehicle; and/or
  - (D) any vent or fill line of a fuel oil storage tank.
- 7. All repairs necessary to restore the propane installation, including repairs to the piping and equipment, shall be made by a plumber licensed by the New York City Department of Buildings in accordance with the requirements of the Fire Code and the New York City Construction Codes, including the Fuel Gas Code.

Any homeowner that meets these interim guidelines (and can document that the installation was in operation at the premises as of October 29, 2012, the date of Superstorm Sandy) may restore their propane residential cooking and clothes drying installation without filing design and installation documents with the Fire Department.

Any homeowner with an installation that does not meet these interim guidelines should contact the Technology Management Unit of the Bureau of Fire Prevention at (718) 999-2405 or Suzanne.Ledan@fdny.nyc.gov for instructions about filing an application for Fire Department review of the installation.

4. Is there a convenient way to identify the types of installations that require design and installation documents to be submitted to the Fire Department for approval?

Yes. **FC105.4** lists the types of installations requiring submission of design and installation documents. See the list of installations requiring submission of design and installation documents at the end of this **Guide**.

5. Is there a convenient way to identify the materials, operations and facilities that require a Fire Code permit?

Yes. FC 105.6 lists all of the permits required by the Fire Code.

6. Am I required to obtain a permit for an existing business or activity that did not previously require a permit?

Yes. Existing businesses will be required to secure permits that are required by the 2014 Fire Code, even if they were not required previously. You will have until March 30, 2015 (one year from the effective date of the 2014 Fire Code) to obtain the new permit.

If the permit is for an existing installation, in most cases existing businesses will not be required to comply with 2014 Fire Code design and installation requirements in order to obtain the permit. The exceptions are set forth in **FC102.5** and Fire Department rule 3 RCNY 102-01.

7. Is there a convenient way to identify the Fire Code's certificate requirements, especially those that are new to the 2014 Fire Code?

Yes. A list of all required Certificates of Fitness and Company Certificates is posted on the Fire Department's website, <a href="www.nyc.gov/fdny">www.nyc.gov/fdny</a>.

**FC113** lists the general requirements for Fire Department Certificates of Fitness and Certificates of Qualification; **FC114** for Certificates of License; and **FC115** for Company Certificates. Additional requirements are set forth in the following Fire Department rules: 3 RCNY 113-01, 113-02, 113-03, 113-08, 113-09 and 113-11 for Certificates of Fitness and Certificates of Qualification; 3 RCNY 114-01 for Certificates of License; and 3 RCNY 115-01 for Company Certificates.

8. Am I required to obtain certificates for an existing business or activity that under the 2008 Fire Code did not require a Fire Department certificate?

Yes. Individuals and existing businesses will be required to secure certificates that are now required by the 2014 Fire Code, even if they were not required previously. You will have until March 30, 2015 (one year from the effective date of the 2014 Fire Code) to obtain the new certificate.

9. I currently hold a certificate issued by the Fire Department. Is my certificate still valid after the 2014 Fire Code took effect on March 30, 2014?

Yes. Your certificate remains valid until its expiration, unless you are notified otherwise by the Fire Department. Upon renewal, some certificate holders may be required to demonstrate knowledge of the 2014 Fire Code requirements by attending a continuing education program or passing a certificate examination. Current certificate holders will be notified in advance of the certificate's expiration date of any such requirements.

#### 10. What are the Fire Code's "operational and maintenance" requirements?

Operational requirements are those that relate to the operation and supervision of equipment and premises. Permits, supervision and certificate requirements, emergency preparedness plans, recordkeeping, markings and the posting of signs, and prohibitions against smoking are examples of operational requirements.

Maintenance requirements are those that relate to keeping equipment and premises in good working order and a safe condition. Housekeeping, servicing and periodic testing and inspection of equipment, and prevention and removal of obstructions to means of egress are examples of maintenance requirements.

11. As the owner of an existing building or business, am I required to comply with the 2014 Fire Code's operational and maintenance requirements, or those contained in the 2008 Fire Code?

You are required to comply with the 2014 Fire Code's operational and maintenance requirements. The operational and maintenance requirements set forth in the 2008 Fire Code have been superseded by the 2014 Fire Code.

If you encounter a situation where it is impossible or impracticable to comply with the 2014 Fire Code's operational or maintenance requirements, seek Fire Department guidance as to how to comply with the Fire Code and/or seek a modification of the Fire Code's requirements (see General Frequently Asked Question #7).

12. My facility was granted Fire Department modifications from certain provisions of the repealed Fire Prevention Code and the 2008 Fire Code. Will these modifications still be valid under the 2014 Fire Code?

Yes, unless the Fire Department determines that one of the exceptions to pre-existing facilities and conditions set forth in **FC102.5** applies to your facility.

13. I have filed and obtained various approvals from the New York City Department of Buildings and other regulatory agencies prior to the effective date of the 2014 Fire Code for a number of projects that will not be commenced until after March 30, 2014 (the effective date of the 2014 Fire Code). Certain design elements of these projects do not conform with the 2014 Fire Code requirements? Can I proceed with these projects?

Generally speaking, any new installation on or after March 30, 2014 (the effective date of the 2014 Fire Code) must comply with the 2014 Fire Code design and installation requirements. However, special consideration is given to certain "projects in progress" in recognition of the hardship that would result if the new design and installation requirements were imposed on buildings or other projects that are fully designed and/or in the process of being constructed or installed.

Fire Department rule 3 RCNY 102-01 allowed certain projects in progress at the time the 2008 Fire Code took effect to be constructed under the prior code requirements if completed within a specified timeframe. In order for the work to be considered a project in progress under the criteria specified in Section 102-01(f), the applicant must have obtained a Department of Buildings work permit prior to the effective date of the Fire Code. This ensures that the work that is to be undertaken or

continued after the effective date of the new code requirements legitimately pre-dates the new code requirements.

The Fire Department has amended Rule 102-01 to provide a similar grace period for projects in progress as of the effective date of the 2014 Fire Code.

For solar panel installations on pitched roofs filed and/or approved prior to the effective date of the 2014 Fire Code, see Chapter 5, Frequently Asked Question #36.

#### FC CHAPTER 2 - DEFINITIONS

#### 1. Where can I find the definitions for terms used in the Fire Code?

**FC Chapter 2** contains a complete list of all defined terms used in the Fire Code. **FC Chapter 2** sets forth definitions for all administrative terms used in the Fire Code, as well as referencing, by section number, terms defined in the individual Fire Code chapters.

#### 2. Where can I find the definitions for terms used in the Fire Department rules?

Fire Department rules italicize terms that are defined in the Fire Code. In addition, certain defined terms are used in the rules. These defined terms are also italicized and are listed in Fire Department rule 3 RCNY 202-01.

#### FC CHAPTER 3 - GENERAL PRECAUTIONS AGAINST FIRE

Are tar kettles permitted to be utilized on the roof of buildings?

No. **FC303.2** prohibits the use of tar kettles on the roof of any building. However, the Fire Code does allow LPG-fueled asphalt melters to be used on the roof of buildings that have noncombustible roofs under certain circumstances, as set forth in Fire Department rule 3 RCNY 3809-01.

2. I notice that stores and catalogs advertise and sell for backyard use portable outdoor fire pits. These fire pits burn wood in a metal dish that looks like a big wok, sometimes with screening. I am aware that the Fire Code regulates barbecues. Does it regulate fire pits as well?

Yes. Portable outdoor fire pits that burn wood or other solid fuel (such as manufactured firelogs) are regulated by the Fire Code as an open fire. The Fire Code (FC307.1) prohibits open fires, with a few exceptions, because of the fire hazards they present. The main exception allows barbecues that burn charcoal, propane or piped natural gas (See Frequently Asked Questions #3, 4 and 5). The fuels used in a barbecue generate heat or a controlled flame, as opposed to the uncontrolled fire that is created by the open burning of wood in fire pits.

3. I am the managing agent for a high-rise apartment building. The tenants would like to barbecue on the balconies, rooftop and rear yards. Does the Fire Code have any restrictions or prohibitions?

Yes. **FC307.5** regulates the operation and maintenance of charcoal, piped natural gas, LPG and electric barbecues on all properties, including apartment building properties. You should refer to **FC307.5** for complete requirements.

All barbecues, regardless of the type of fuel used, are required to be operated outdoors (such as on a balcony or rooftop or in a rear yard) and at least 10 feet from combustible materials, including combustible building surfaces, combustible roofs and combustible decks. This restriction will effectively preclude the use of a barbecue on many balconies and rooftops, including on the roof of any apartment building with a combustible roof. Additionally, rooftops are not generally designed or safe for occupancy. You should consult with an engineer, architect or the New York City Department of Buildings regarding the safe and lawful use of any rooftop.

Use of propane (LPG)-fueled barbecues on apartment building properties is restricted to barbecues fueled by one 16.4 ounce container of LPG (the size of LPG container commonly used for hand-held propane torches). A maximum of four 16.4 ounce propane containers may be stored in any individual apartment. No LPG may be stored in any basement or cellar.

All barbecues must be constantly attended and there must be ready access to fire extinguishing equipment, as set forth in FC307.5.

See Frequently Asked Question #4 for barbecue requirements for private dwellings and Frequently Asked Question #5 for commercial properties.

4. I live in a private dwelling (1 or 2 family home). Can we have a barbecue on the balcony or roof deck and/or in the rear yard? If it is allowed, are there any restrictions on barbecue use on the property?

Yes. **FC307.5** regulates the operation and maintenance of charcoal, piped natural gas, LPG and electric barbecues on all properties, including private dwelling properties. You should refer to **FC307.5** for complete requirements.

All barbecues, regardless of the type of fuel used, are required to be operated outdoors and at least 10 feet from combustible materials, including combustible building surfaces, combustible roofs and combustible decks. This restriction will effectively preclude the use of a barbecue on many balconies and rooftops, including on the roof of any private dwelling with a combustible roof. Additionally, rooftops are not generally designed or safe for occupancy. You should consult with an engineer, architect or the New York City Department of Buildings regarding the safe and lawful use of any rooftop.

Additionally, propane (LPG)-fueled barbecues located and used on a balcony or roof deck are limited to those having a container not exceeding 16.4 ounces of LPG, with not more than 4 such containers in any dwelling unit. LPG fueled barbecues located and used in rear yards are limited to those having a container not exceeding 20 pounds of LPG, with not more than 2 such containers stored outdoors on the property (one in use and one reserve container). LPG containers with a capacity exceeding 16.4 ounces are not allowed to be stored indoors. No LPG may be stored in any basement or cellar.

All barbecues must be constantly attended and there must be ready access to fire extinguishing equipment, as set forth in FC307.5.

See Frequently Asked Question #3 for barbecue requirements for apartment buildings and Frequently Asked Question #5 for commercial properties.

5. My business occupies an office building. I would like to have a summer barbecue for my staff on the rooftop or in the rear yard. Does the Fire Code restrict or prohibit barbecues in these areas?

Yes. **FC307.5** regulates the operation and maintenance of charcoal, piped natural gas and electric barbecues on all properties, including commercial properties. Unlike residential properties, propane (LPG)-fueled barbecues are not allowed on commercial properties. You should refer to **FC307.5** for complete requirements.

All barbecues, regardless of the type of fuel used, are required to be operated outdoors and at least 10 feet from combustible materials, including combustible building surfaces, combustible roofs and combustible decks. This restriction will effectively preclude the use of a barbecue on many rooftops, including on the roof of a commercial establishment with a combustible roof. Additionally, rooftops are not generally designed or safe for occupancy. You should consult with an engineer, architect or the New York City Department of Buildings regarding the safe and lawful use of any rooftop.

All barbecues must be constantly attended and there must be ready access to fire extinguishing equipment, as set forth in FC307.5.

See Frequently Asked Question #3 for barbecue requirements for apartment buildings and Frequently Asked Question #4 for private dwellings.

6. I own an electric cooking grill which has its heating elements embedded within a solid cooking surface. Is this type of grill considered an "electric barbecue" regulated by FC307.5.1?

No. An electric grill which has its heating elements embedded within a solid cooking surface is not an electric barbecue. For purposes of **FC307.5.1**, as set forth in **FC302.1**, an electric barbecue is defined as "any device designed for heating or cooking food on an open grate cooking surface above exposed heating elements". An electric grill that has its heating elements embedded within a solid cooking surface is not an electric barbecue. Electric barbecues present the fire safety hazard of grease from the heating or cooking process dripping on the heating elements and being ignited.

It is important to note that barbecue-size electric grills require a substantial amount of electric current. Be sure that the electrical outlet into which you plug the grill has sufficient current to safely operate the grill (see Chapter 6, Frequently Asked Question #3) and that if you use an extension cord you comply with the fire safety requirements of **FC605.5**.

7. Are coke-fueled salamanders at a construction site allowed to be used for concrete drying and curing?

Yes. Coke-fueled salamanders were allowed by the New York City Fire Prevention Code but were not included as an allowed type of open fire in the 2008 Fire Code. In response to construction industry requests, the Fire Department has, since 2008, allowed the use of coke-fueled salamanders at construction sites through granting of modifications.

The 2014 Fire Code, in **FC 307.1** and **307.6**, allows the use of coke-fueled salamanders for construction-related drying and curing, subject to permit requirements, supervision requirements and other safety requirements to be established by rule.

8. My school conducts candle-lighting ceremonies as a memorial on certain holidays or to create a spiritual or festive atmosphere on other occasions. We understand that candles are a common cause of fires and we want to be sure that we can conduct these ceremonies lawfully and safely. Does the Fire Code allow candle use in an educational occupancy and, if so, does the Fire Department offer any guidance as to how candle-lighting ceremonies should be conducted?

The Fire Code regulates the use of candles and other open flames, which are the cause of many fires. **FC308.2** prohibits candles in college and university dormitories; in any place in which hazardous material is stored, handled or used; or where the open flame could ignite combustible materials or vapors.

The Fire Code (in **FC308.3**) strictly regulates the use of candles in any place of assembly. This includes school auditoriums, cafeterias and classrooms that are designed to be occupied by more than 75 persons. Any use of candles in these spaces requires a Fire Department permit and must comply with the detailed requirements of **FC308.3**.

The Fire Code does not specifically prohibit or regulate candle use in classrooms or other areas of an educational occupancy (kindergarten through 12th grade) that are *not* places of assembly.

The Fire Department does not encourage use of lit candles in any occupancy, given the fire safety hazards associated with open flames. However, the Fire Department recognizes that candle-lighting is a traditional observance. Also, educational occupancies typically have noncombustible finishes

and fewer combustible materials than, for example, a residential occupancy. Accordingly, the Fire Department offers the following guidance with respect to candle use in rooms or areas of educational occupancies that are *not* places of assembly.

Whenever a candle is being lit, handled and/or left lit, the following fire safety precautions shall be taken:

- 1. Candles may be lit, carried and left lit only in rooms or areas that do not contain hazardous materials or vapors. (Science laboratories and art rooms may contain such materials.)
- 2. Candles must be lit, carried and left lit a safe distance away from combustible material (including drapes, decorations, upholstered furniture and papers).
- 3. Candles should be lit only by an adult, or under the individualized and immediate supervision of an adult who, if necessary, can intervene to ensure safe lighting.
- 4. Candles should be carried only by an adult, or under the individualized and immediate supervision of an adult who, if necessary, can intervene to ensure safe handling.
- 5. All persons involved in candle-lighting or handling lit candles should avoid loose clothing or costumes, and long hair should be tied back.
- 6. Candles that are left lit should be placed in candle holders that securely hold the candles and are not easily susceptible to tipping over. Ideally, candles that are left lit should be placed on noncombustible surfaces or trays.
- 7. Candles that are left lit should be continuously monitored by an adult, and not left unattended.
- 8. One or more portable fire extinguishers should be readily available, and the adults responsible for supervising the candle-lighting and handling and the monitoring of lit candles should be trained in their use.

9. I operate a bar and restaurant that has a lawful occupancy of less than 75 persons. As it is not a place of assembly, am I required to comply with the regulations in the Fire Code and the Fire Department's rules for use of open flames and propane (LPG)?

Yes. Bars, restaurants and other eating and drinking establishments with a lawful occupancy of less than 75 persons are regulated by the Fire Code (**FC403.1**) as a "public gathering place."

The use of open flames and LPG present the same fire safety concerns in eating and drinking establishments that are public gathering places as they do in eating and drinking establishments that are places of assembly. Accordingly, the regulations governing the use of open flames and LPG apply to eating and drinking establishments whether they are large enough to be classified as a place of assembly or are regulated as a public gathering place.

With respect to open flames, **FC105.6** requires an open flame permit for any public gathering place. The fire safety regulations governing the use of open flames in public gathering places are set forth in **FC308** and Fire Department rule 3 RCNY 308-01. Among other things, these provisions regulate the preparation of flaming foods and beverages, and the use of candles and combustible liquids in tabletop lamps and other open-flame decorative devices; solid alcohol for food warming (Sternos); and charcoal for cooking in hibachis.

With respect to LPG, **3 RCNY 308-01** regulates the use of LPG in public gathering places, including restricting its use to food warming and culinary browning; limiting the size of LPG containers to not more than 16.4 ounces; and limiting the number of containers that can be stored on the premises to no more than 12 containers.

Permits for open flames are issued by the Fire Department's Bureau of Fire Prevention upon completion of a satisfactory inspection of the premises. Permits are normally issued for a period of one year and must be renewed upon expiration. For additional information regarding open flame permits in eating and drinking establishments call the Bureau of Fire Prevention at (718) 999-0380.

10. FC310.3 requires that "no smoking" signs be posted at locations where smoking is prohibited by the Fire Code. What content, lettering, size and color is required of such signs?

The Fire Department has published an approved "No Smoking" sign. It is set forth in Fire Department rule 3 RCNY 310-02. However, the Fire Department does not mandate that this design be used. Other legible, durable signs, clearly communicating the "no smoking" requirement, may be used, but are subject to Fire Department enforcement action if found to be inadequate.

#### FC CHAPTER 4 - EMERGENCY PLANNING AND PREPAREDNESS

1. The 2014 Fire Code comprehensively revised and reorganized the emergency preparedness requirements of Chapter 4. When will these new requirements of Chapter 4 take effect?

The 2014 Fire Code took effect on March 30, 2014. However, **FC401.3.6.1** of the 2014 Fire Code provides that the emergency preparedness plan requirements of the 2008 Fire Code remain in effect until such time as rules are adopted to implement the emergency preparedness plan requirements of the 2014 Fire Code. This includes preparation of the emergency preparedness plan as well as staffing and drill requirements. At this time, the 2008 Fire Code provisions have lapsed only with respect to buildings or occupancies that are not required by the 2014 Fire Code to prepare an emergency preparedness plan.

#### FC CHAPTER 5 - FIRE OPERATION FEATURES

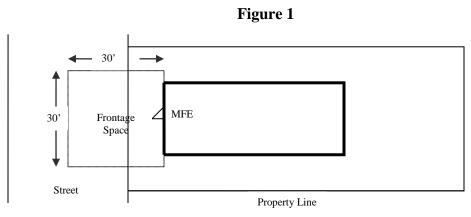
1. I understand that FC503.1.1 requires a fire apparatus access road from a public street to the frontage space of a building. The definition of "frontage space" in FC502.1 refers to a street or open space outside of a building that is within 30 feet of the main front entrance to the building and not less than 30 feet in any dimension. I understand that the Building Code has a different definition of "frontage space." How should the term "frontage space" be interpreted, and at what distance from a public street does a fire apparatus access road need to be provided?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC502.1** and **FC503.2.4** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

The Fire Code uses the term "frontage space" to refer to a 30-foot by 30-foot unobstructed space in front of the "main front entrance" to a building. If the main front entrance of a building is more than 40 feet from a public street, a fire apparatus access road is required from the public street or private road to the frontage space.

The New York City Building Code's definition of frontage space (set forth in BC502.1) and the Building Code provision specifying when a frontage space is required (in BC501.3.1) are different from the Fire Code's definition (in **FC502.1**) and requirements. A development must comply with both Building Code and Fire Code requirements.

The New York City Building Code (BC501.3.1) generally requires a 30-foot by 30-foot unobstructed space adjoining every building. (For buildings without a large front yard, the sidewalk and the street can be included in meeting the frontage space requirement.) The intent of this frontage space is to allow direct access to the building by fire apparatus and other vehicles. (See Figure 1.)



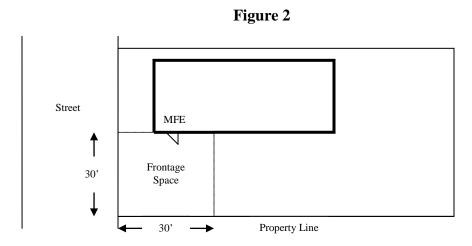
MFE = main front entrance Location of frontage space shown is illustrative only.

However, the Building Code does not require that this space be located on the "front" of the building, where the main front entrance and windows typically provide the best access to the

building for firefighting operations. The Fire Department generally organizes its firefighting operations from the front of the building.

Accordingly, the Fire Code was drafted to require that the required 30' by 30' frontage space directly adjoin the main front entrance. However, the wording of **FC502.1** definition of frontage space has created some confusion. The Fire Department interprets **FC502.1** to require that the minimum 30' by 30' frontage space be situated directly in front of the building, including the area directly in front of the main front entrance. (Building lots that are less than 30 feet in width can comply with this requirement by providing an unobstructed frontage space for the full width of the lot.)

The main entrance to a building may not always be on the face of the building that is generally recognizable as the "front" of the building. The term "front" in "main front entrance" refers to that face of the building that is most accessible for firefighting operations (see Figure 2). Fire Department plan review may be required in cases where the main entrance is not on the front of the building.



MFE = main front entrance Location of frontage space shown is illustrative only.

Where a building has more than one occupancy and the occupancies have separate entrances, the Fire Code requires a separate frontage space for the "main front entrance" to each occupancy. In the case of a single two-family dwelling with one or both of the entrances more than forty feet (40') from the street, the Fire Department will accept (by modification) unobstructed five foot access to the rear yard of the building in lieu of a second frontage space. (See Frequently Asked Question #2.)

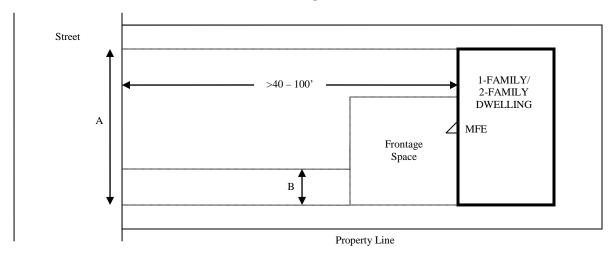
The definition of frontage space has a bearing on the Fire Code's fire apparatus access road requirements because **FC503.1.1** requires that a fire apparatus access road be provided from a public street to the frontage space of a building.

When the main front entrance of a building is more than forty feet (40') from the curb line on the street that provides access to the building, it can no longer be said to front directly on a street, and a fire apparatus access road must be provided from the street to the frontage space of the building. See **FC503.2.4**.

When a building is located within a private residential or commercial development, the fire apparatus road required by FC503.1.1 is the private road that proceeds from the public street into the development to the particular property upon which the building is situated. If the main front entrance of the building is set back more than forty feet (40') from curb line of the "street" (i.e., the

private road to the property), the fire apparatus access road must be "extended" by a fire apparatus access road to the frontage space of the building (see Figure 3).

Figure 3



MFE = main front entrance

Location of frontage space shown is illustrative only.

A: Fire apparatus access road required by FC503.2.1 (30' – 34' wide)

B: Driveway/FAAR alternative authorized by interim guidelines (width subject to DOB approval).

The requirement that a fire apparatus access road connect a building to the street when the building's main front entrance is set back more than 40 feet from the street is similar to the Building Code requirement for a "driveway" to the frontage space, but it is not a "driveway" in the commonly-used sense of the term, as a paved surface leading to a parking space or garage.

Concerns were expressed about the need for a fire apparatus access road that is 34 feet wide (or even one that is 30 feet wide, as authorized by FC503.2.3 for some developments) when the road is being designed and will be used exclusively to provide for access to a one-family or two-family home or certain small commercial developments. This issue is addressed in Frequently Asked Questions #4 and 5 and FC503.2.4.1.

I understand that FC503.1.1 requires that a fire apparatus access road be provided to the frontage space of any building, including one-family and two-family homes, where the main front entrance is more than 30 feet from the street. However, a fire apparatus access road of the size required by the Fire Code (30 or more feet wide) would be as large as, or larger than, the front yard of a typical one-family or two-family home. Is there any alternative to providing such a large fire apparatus access road?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC503.2.4** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

The Fire Department recognizes that the typical one-family or two-family dwelling, even if it is set back more than 40 feet from a public street, does not require a fire apparatus access road of the size and construction required for access to other types of developments.

**FC503.1.1** requires a fire apparatus access road to the frontage space of each building to ensure that an emergency response is not impeded by narrow, obstructed streets. Ordinarily, the fire apparatus access road is the street leading to the property, culminating in the street in front of the building. However, when the main front entrance of a building is more than 40 feet from the street, the building can no longer be said to front directly on the street, and a fire apparatus access road is required to "extend" the street to the frontage space of the building.

Accordingly, the Fire Department revised this requirement in the 2014 Fire Code as it relates to any one-family or two-family dwelling with a main front entrance more than 40 feet from the street that is accessed by means of a driveway designed and used solely for that building and that meets the requirements of the New York City Building Code or is otherwise approved by the New York City Department of Buildings. **See FC503.2.4**.

I am an architect that is designing a commercial strip mall that is set back more than thirty feet from the street. The mall will have three stores, each with a main front entrance, and a parking lot complying with off-street parking zoning requirements and the parking lot lane width required by the Building Code. I understand that FC503.1.1 requires that a fire apparatus access road be provided to the frontage space of a building if the building is set back more than 30 feet from the street, and that FC503.2.1 generally requires that the fire apparatus access road be 38 feet wide. Does the fire apparatus access road to the three store entrances have to be 34 feet wide? That would be far wider than the required width of the parking lot lanes between parked cars. At what location in the development does the fire apparatus access road terminate?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC503.5** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

The Fire Department recognizes that in small commercial strip malls and other small commercial developments situated in a parking lot setting, with main front entrances more than 40 feet from a public street, it may be impracticable, and unnecessary for firefighting operations, to provide a fire apparatus access road of the size and construction required for access to other types of developments. As set forth below, the Fire Department will consider, on a case-by-case basis, granting modifications (variances) pursuant to its authority under **FC104.1** when the application incorporates the design guidelines set forth below.

**FC503.1.1** requires a fire apparatus access road to the frontage space of each building to ensure that an emergency response is not impeded by narrow, obstructed streets. Ordinarily, the fire apparatus access road is the street leading to the property that culminates in the street in front of the building. However, when the main front entrance of a building is more than forty feet (40') from the street that provides access to the building, it can no longer be said to front directly on a street, and a fire apparatus access road must be provided from the street to the frontage space of the building. (See Frequently Asked Question #2.)

Although maintenance of access to the main front entrances of commercial buildings is critical for firefighting operations, when such buildings are situated in a parking lot setting, the immediate availability of parking generally minimizes impediments to fire apparatus access, except at the main front entrances to the stores, where vehicles constantly stop to discharge and load passengers and their purchases. The area in front of the building may be used for parking in certain developments because the frontage requirements of the New York City Building Code do not necessarily require that the 30 foot by 30 feet unobstructed frontage space be situated in front of the stores' main front entrances.

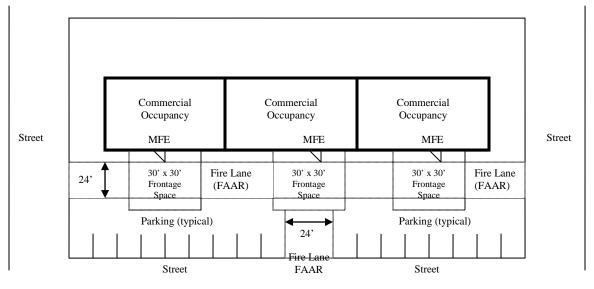
With these concerns and considerations in mind, the Fire Department has concluded that a 34-foot-wide fire apparatus access road may not be necessary in all small commercial developments, provided that the design of the development eliminates parking and other obstructions at the front of the building in a way that facilitates firefighting operations. The Fire Department is prepared to grant modification of the fire apparatus access requirement to encourage parking lot design that better serves firefighting operations.

The Fire Department will grant modifications of this requirement on a case-by-case basis. In accordance with the standard set forth in **FC104.8**, modification may only be granted if provision is made to ensure an equivalent level of fire safety. Applications meeting the design criteria set forth below (which would serve to mitigate and offset the consequences of a delayed Fire Department response resulting from impediments to fire apparatus access) are more likely to receive favorable consideration.

Applications for modification of the fire apparatus access road requirement in commercial developments that incorporate the following design criteria are more likely to receive favorable consideration:

- The property owner demonstrates that compliance with the Fire Code's fire apparatus access requirement is impracticable, given the size, location and/or configuration of the property (the size of the project and the height of the buildings will be a factor in determining whether to grant a modification); and
- 2. The building is protected throughout by a sprinkler system designed and installed in compliance with the requirements of the New York City Building Code; and
- 3. There is a 30 foot by 30 foot unobstructed frontage space in front of each of the main front entrances of the building, which is accessible from at least one fire apparatus access road. Such frontage spaces may only be used for passenger discharge and loading, and shall be demarcated by yellow road markings as a "fire access lane." (See Figure 1.) "No Parking" signs conforming to the requirements of FC503.7 shall be conspicuously posted; and
- 4. The fire apparatus access road is at least twenty-four foot (24') in width and is designed and constructed in compliance with the requirements of FC503.1.1; and
- 5. The location and configuration of the off-street parking for the development serve to obviate obstructions to fire apparatus access.

Figure 1
Typical Small Commercial Development



 $FAAR = fire\ apparatus\ access\ road$ 

MFE = main front entrance

Locations of frontage space shown are illustrative only.

These design criteria only apply to newly-constructed developments. These design criteria do not authorize the construction, use or occupancy of a building contrary to the Building Code, Zoning Resolution or other applicable provisions of law.

Modification of the fire apparatus access road requirement may be obtained from the Fire Department prior to submitting a building application to the New York City Department of Buildings. The Department of Buildings will issue an objection requiring the applicant to obtain Fire Department approval if the development does not provide a fire apparatus access road in compliance with FC503.2. Submission of a modification application (available on the Fire Department's website) and a site plan that is clearly marked to indicate compliance with each interim guideline (such as notes documenting each required dimension or design feature) will facilitate timely Fire Department review.

4. The Fire Code requires that fire apparatus access roads have an "unobstructed" width of 34 feet, and that new buildings on public streets with an "unobstructed" width of less than 34 feet be protected throughout by a sprinkler system. What would constitute an obstruction for these purposes?

For purposes of **FC503.2.3**, **FC503.2.10** and FC503.3.2, a private road or public street has an "unobstructed" width of 34 feet if its roadbed extends 34 feet from curb to curb, and is open to vehicular traffic for that full distance. An "obstruction" for these purposes would be any installation that prevents or impedes vehicular access, such as planters, bollards and fences. Approved speed bumps and legally parked motor vehicles would not be considered an obstruction.

Partial widening of existing streets, such as widening public streets in front of one or more individual buildings, does not constitute compliance with this requirement. Such a partially widening street does not afford "unobstructed" vehicular access to the property. The intent of these provisions was to address the impediment to fire apparatus access and emergency response resulting from narrow streets, and such partially widened streets do nothing to further this objective, and indeed may exacerbate the problem.

The Department is currently reviewing how to treat streets divided by pedestrian islands. The Fire Code did not intend to prohibit or eliminate such amenities.

# 5. Does the sprinklering requirement of FC503.8.2 apply to accessory buildings, such as a detached garage or a detached shed?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC503.2.10** and **FC503.3.2** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

The answer depends on the use, floor area and height of the accessory building.

FC503.2.10 and FC503.3.2 requires that buildings on streets with an unobstructed width of less than 34 feet be protected throughout by a sprinkler system. The Fire Department has interpreted this provision to require sprinklering of newly-constructed buildings and certain buildings undergoing substantial alterations on public streets with a roadway of less than 34 feet, curb to curb. See FC501.4.3.

The primary purpose of FC503.2.10 and FC503.3.2 was to ensure that newly-constructed buildings on public streets whose width may impede fire apparatus access, be sprinklered. It was not intended that compliance with this sprinkler requirement be triggered by any alteration, no matter how small, to an existing building.

The term "building" is defined by **FC202** as "an enclosed structure designed or occupied to house any use or occupancy." As with the issue of alterations, the Fire Department has concluded that it was not intended that compliance with the sprinkler requirement of **FC503.8.2** be triggered by any enclosed structure, no matter how small, and no matter how limited the benefit of sprinklering such a structure.

**FC503.2.10** and **FC503.3.2** require sprinklering of buildings on public streets of substandard width even when New York City Building Code may not require that the occupancies housed in such buildings be sprinklered. Nonetheless, the Building Code (BC) provides some guidance as to need or efficacy of sprinklering certain buildings.

The Building Code (BC312.1) includes in its "utility and miscellaneous" (Group U) occupancy classification what it terms "private garages," "carports," "sheds" and "greenhouses." BC406.1.2 defines private garages and carports as structures that are not more than 650 square feet in size and one story in height, and that are accessory to a one-family or two-family dwelling (Group R-3 occupancy), or an apartment building or other Group R-2 occupancy. BC312.1 defines sheds and greenhouses as structures that are not more than 120 square feet in size, accessory to a one-family or two-family dwelling (Group R-3 occupancy), and used for household goods or gardening items. The Building Code does not require that these four accessory occupancies be sprinklered.

The Fire Department has concluded that the Fire Code did not intend to require sprinklering of the typical detached, unheated, garden shed, or one- or two-car garage for parking of personal automobiles, accessory to a private residence. Although such accessory storage spaces fall within the definition of "building," a reasonable interpretation of the intent of the Fire Code would not

encompass such buildings, provided that they do not exceed the parameters set forth in BC406.1.2 and BC312.1. The 2014 Fire Code excludes Group U occupancies from the sprinklering requirement, as set forth in FC503.2.10 and FC503.3.2.

Garages, carports, sheds and greenhouses that exceed the use, floor area and/or height parameters of a "utility or miscellaneous" occupancy, or other buildings used for storage of automobiles or other items, would ordinarily be classified by the Building Code (BC311) as storage (Group S) occupancies. The Building Code requires some storage occupancies to be protected throughout with a sprinkler system. Even if the Building Code does not require that a storage occupancy be sprinklered, FC503.2.10 and FC503.3.2 may require that it be sprinklered if the storage occupancy is constructed in a building on a street of substandard width. This would be true regardless of whether it is the main building occupying the lot or accessory to another building. The Fire Department will consider such developments on a case-by-case basis.

The Fire Department has further concluded that if an accessory detached building is designed to be occupied, whether for residential, commercial or office purposes, the building must be fully sprinklered, regardless of Building Code requirements. Examples of such accessory detached buildings are a caretaker's residence, cottage or a dwelling above a garage, or a private garage converted to a commercial office or workshop. Sprinklering such small buildings generally may be accomplished as of right or by modification using storage tanks or alternative fire extinguishing systems.

6. I own a building that is subject to the requirements of FC504.4 for rooftop access and obstructions. Do I have to bring my building into compliance?

Generally, no, unless you alter your rooftop. Lawfully existing installations are not required to comply with the provisions of FC504.4, except with respect to color-coding of conduits and piping and the other operational requirements set forth in FC504.4.7 and 504.4.8. However, an alteration to a lawfully existing rooftop installation would require that the design and installation of such rooftop obstructions be brought into compliance with FC504.4, unless a modification was granted.

7. What type of alterations to rooftop installations would require that the rooftop comply with the rooftop access and obstruction requirements of FC504.4?

**FC202.1** defines "alteration" as any addition to, or modification of, an existing installation, other than a repair made in the ordinary course of business. An example of an alteration to a rooftop would be the installation of a new refrigerating system or telecommunications installation. An example of an ordinary repair would be the servicing or replacement, in kind, of components of an existing installation.

8. I am planning to perform construction on the roof of my building and install new equipment. I understand that, as explained in Frequently Asked Questions #6 and 7, such work constitutes an alteration to the rooftop that triggers the obligation to comply with the rooftop access and obstruction requirements of FC504.4. However, there are existing structures and installations on the roof that make full compliance problematic if not impossible. Is there an alternative to complying with FC504.4 as written?

Yes. **FC104.8** authorizes modifications of the Fire Code when compliance with one or more Fire Code requirements is impracticable.

The Fire Department recognizes that full compliance with the rooftop access and obstruction requirements of **FC504.4** may be impracticable when an alteration is made to an existing rooftop. The Fire Department has granted modifications of these requirements when a rooftop access plan is presented that affords reasonable access onto and across the rooftop consistent with the purposes of **FC504.4**.

The Fire Department's Bureau of Fire Prevention has issued an informative bulletin that provides detailed guidance to applicants seeking modification of the Fire Code's rooftop access and obstruction requirements. To request a copy go the Code and Rules Public Feedback Page on the Fire Department's website (<a href="www.nyc.gov/fdny">www.nyc.gov/fdny</a>) and use the Public Inquiry Form.

9. Are satellite dishes, television antennas and vent pipes considered to be rooftop obstructions?

Yes. Other examples of other obstructions are set forth in **FC504.4**.

10. With respect to rooftop access and obstructions, is it the intent of FC504.4.4 that the roofs of bulkheads and penthouses be provided with perimeter access and clear paths just as the main roof?

Generally, no. A roof of a bulkhead or penthouse that is not accessible from the frontage space of the building or any other exposure accessible to fire apparatus access (i.e., where the roof is set well back from the perimeter of the building) generally need not comply with the requirements of FC504.4. However, there may be instances where the location and/or size of the bulkhead or penthouse are such that its roof will be treated as a separate rooftop. For example, where the bulkhead or penthouse roof is located at the perimeter of an accessible building exposure and/or occupies a substantial portion of the building rooftop, compliance will be required. The Fire Department often vents stairways and buildings from bulkhead and penthouse roofs, using portable ladders to gain access, and building owners are encouraged to maintain reasonable access for such firefighting operations even if not required by FC504.4.

11. With respect to rooftop access and obstructions, if the accessible building perimeter is not a whole number multiple of 12, should the number of clearance openings be rounded to the upper or lower multiple of 12?

The rooftop access clearance openings required by **FC404.4.1** should be calculated based on the whole number multiple of 12 (linear feet of fire apparatus-accessible building perimeter), not fractions. Accordingly, a 30 foot wide building requires two such openings.

12. For purposes of the rooftop access clearance required by FC504.4.1(1), is the accessible building perimeter measured from the inside or outside dimensions of the parapet?

It should be calculated using the inside dimensions of the parapet walls, reflecting the rooftop that is actually accessible.

13. If rooftop installations are located on the corners of the building, should the perimeter dimensions for purposes of the rooftop access clearance openings required by

FC504.4.1(1) be calculated separately for each fire-apparatus accessible exposure, or as one continuous exposure?

**FC504.4.1(1)** allows the two exposures to be treated together or separately, to afford maximum flexibility while ensuring rooftop access.

14. With respect to rooftop access and obstructions, if a building has indented light courts along the building façade accessible to fire apparatus, are the light courts counted in the perimeter distance?

Yes. Exclusion of such areas from the calculation of the building perimeter could result in elimination of the Fire Code requirement for rooftop access.

15. If a rooftop spans multiple buildings, can it be treated as a single rooftop for purposes of the Fire Code's rooftop access and obstruction requirements?

Yes, with the written consent of all building owners, provided that a clear path complying with the requirements of **FC504.4** can be established across the multiple rooftops. Such a combined rooftop would be considered a single rooftop for all purposes relating to **FC504.4**.

16. Is a telecommunications company that has installations on the roof of a building responsible for the signage required by FC504.3 for stairway access to the roof, or only the signage on the roof required by FC504.4.8?

The signage requirements of **FC504.3** serve to identify stairway access to the roof for egress and other purposes, and are not related to the rooftop access and obstruction provisions of **FC504.4.8**.

17. Are antennas mounted on the walls of a building that do not extend above the building parapet considered rooftop obstructions?

Yes, if the antenna is above the level of the roof, even if it not above the top of the parapet. Such flush-mounted antennas may not be installed in a manner that interferes with rooftop access.

18. With respect to rooftop access and obstructions, can the clear path required by FC504.4.4 twist and turn if need be?

It would be preferable if the clear path be a straight route from one side of the building to another. However, the Fire Department recognizes that this may cause practical difficulties for some buildings. In such cases, the Fire Department will accept a clear path that "jogs" around a bulkhead or other rooftop obstruction, provided that the path is still "clear" and not confusing or dangerous. Multiple turns in the path should be avoided, and, if excessive, may result in the Department determining that the route does not meet the requirement for a clear path.

19.	With respect to rooftop access and obstructions, in an irregularly-shaped building, such as an "H" shaped building, is a 6 foot clear path as set forth in FC504.4.4 required at 3 locations (front to back, and from side to side in each wing of the building)?
	Yes. In order to accomplish the purposes for the clear path, an "H" shaped building would be required to provide 3 clear paths, as you describe, unless the size of the building, or the air shafts or other openings separating the two wings of the building, is sufficiently small to obviate the need for a second clear path. This issue will likely need to be addressed in a future rulemaking.
20.	With respect to the clear path required by FC504.4.4, are steps and ramps only necessary to the extent they are required under the Building Code?
	No. The applicable requirements for steps and ramps are set forth in <b>FC504.4.7</b> . However, the design of steps, ramps and railings shall be in accordance with Building Code requirements.
21.	With respect to rooftop access and obstructions, where conduit or piping crosses the clear path, is it permissible to have a step over the piping or conduit that is less than the six feet width of the clear path (for example, a step or ramp that is only 3 feet wide)?
	No. The step or ramp over the conduit must be the full width of the 6-foot clear path (less approximately 6 inches on each side for handrail clearance). Otherwise, the required clear path would be constricted to the width of the step.
22.	With respect to the clear path required by FC504.4.4, are handrails required on both sides of the steps and ramps or just one side?
	Handrails are required on both sides of steps and ramps.
23.	FC504.4.7(1) requires high voltage wiring to be color-coded red. What constitutes high voltage?
	The Department interprets this provision to refer to the definition of "high voltage wiring" in the New York City Electrical Code, which defines the term to include 120, 208, 277 and 480-volt circuits. Examples of wiring that would not be high voltage include coaxial and telephone cable, unless otherwise provided in the Electrical Code.
24.	With respect to the marking requirements for rooftop conduits and piping of FC504.4.7, is metallic/reflective tape acceptable?
	<b>FC504.4.7</b> requires continuous, durable and weatherproof reflective or luminescent markings. Any tape satisfying these requirements may be utilized.

25. Do piping and conduits enclosed within walls or other enclosures require markings in accordance with FC504.4.7?

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26.	Do the markings for rooftop conduit and piping required by FC504.4.7 need to be continuous for the entire length of the conduit and piping or can it be spaced out a intervals?
	The marking are required to be continuous. Continuous markings may be interrupted where it impractical to mark the piping or conduit. Typically, such interruptions would be limited unles conduit or piping is enclosed.
27.	Do the markings required of FC504.4.7 apply to conduit and piping affixed to the exterior of a building?
	No. This requirement is meant to apply only to rooftop conduits and piping.
28.	Are landmark buildings exempt from the marking requirements for rooftop conduits an piping of FC504.4.7?
	No. However, if the marking of pipe or conduit could give rise to a violation of Landmark Commission or other legal requirements relating to landmarks, an application for modification of the requirements should be made to the Fire Department.
29.	Where more than one transmitting antenna is mounted on the same mounting or support structure, can the lettering required by FC504.4.8 only appear once on the mount of support structure?
	This section provides that the sign be posted "on or near" any installation. If the location of the sign and/or markings on a sign (such as arrows) clearly identifies more than one transmitter, complies with the code requirements.
30.	Does the lettering required by FC504.4.8 only need to be visible from the rooftop of the building on which it is installed?
	<b>FC504.4.8</b> requires that the lettering be 3 inches in height. The signage should be visible from the parapet area or from the clear path that traverses the building.
31.	Is there a process to request a variance/reconsideration of these requirements for rooftop access and obstructions? If so, what is the process to apply?

No. Only piping and conduits that are not enclosed need be marked.

### 32. What is the purpose of the multiple grouped clearance openings for rooftop access set forth in FC504.4.1(3)?

This was intended to provide maximum flexibility on large roofs. In place of multiple clearance openings, this section allows fewer but larger openings, provided that they are not separated by less than 12 feet linear distance.

# 33. With respect to rooftop access and obstructions, what is the definition of building rooftop height?

The Fire Department interprets this provision to refer to the definition of "height, building" set forth in Building Code Section 502.1, which refers to the vertical distance from the grade plane to the average height of the highest roof surfaces.

34. I filed or pre-filed with the New York City Department of Buildings and the New York City Fire Department for solar panel installations on one and two family dwellings with pitched roofs before the effective date of the 2014 Fire Code. Do I have to comply with the 2014 Fire Code requirements for solar panel installations on pitched roofs?

Yes, but consideration will be given to certain projects in progress as set forth in Chapter 1, Frequently Asked Question #13, and below.

Generally speaking, any new installation on or after March 30, 2014 (the effective date of the 2014 Fire Code) is subject to 2014 Fire Code design and installation requirements. However, special consideration is given to certain "projects in progress" in recognition of the hardship that would result if the new design and installation requirements were imposed on buildings or other projects that are fully designed and/or in the process of being constructed or installed.

Any solar panel installation on a pitched roof *that obtained a Department of Buildings work permit* prior to March 30, 2014, may be eligible to be deemed a project in progress. See Chapter 1, Frequently Asked Question #13.

The Rooftop Access Unit of the Fire Department's Bureau of Fire Prevention has previously utilized the date of filing with the Department of Buildings for various purposes. The solar industry may have filed various solar installation projects on pitched roofs prior to March 30, 2014, with the understanding that such filing would serve to ensure that the projects could be designed in compliance with the 2008 Fire Code. Additionally, the solar industry has "pre-filed" various projects with the Department of Buildings (without submitting design and construction documents).

Filing or pre-filing of an application with the Department of Buildings, which does not constitute Department of Buildings approval of the work or issuance of a work permit, is not sufficient to deem a project "in progress" such that it would not be subject to 2014 Fire Code design and installation requirements.

However, in recognition of the prior Fire Department practice, the Fire Department will grant modifications pursuant to **FC104.8** approving completed submissions (including all required design and construction documents) based on the filed or pre-filed applications, even though such submissions do not fully meet 2014 Fire Code design and installation requirements for solar installations on pitched roofs.

In order to be considered for a modification based on a filing or pre-filing with the Department of Buildings, the completed submission must meet the following criteria:

- 1. The application must have been filed or pre-filed with the Department of Buildings between April 1, 2013 and March 30, 2014.
- 2. The application must be for installation of solar panels on a pitched roof subject to FC512.3, not on a flat roof subject to FC504.4 and FC512.2.
- 3. The completed submission, a modification application and applicable fees must be filed with the Fire Department by August 1, 2014. Any project for which a completed submission is not received by the Fire Department by August 1, 2014, must comply with the requirements of the 2014 Fire Code.
- 4. The completed submission, together with the Fire Department modification, must be filed with the Department of Buildings within thirty (30) days of Fire Department approval of the modification.
- 5. A Department of Buildings work permit must be obtained, the installation completed, and Department of Buildings sign-off obtained, by August 1, 2015.
- 6. The 3-foot wide clear access area required by **FC512.3** must be provided on *one side* of the ridge of the roof, for the full length of the roof. The clear access area must be unobstructed by solar panel supports or other rooftop installations. The applicant may determine the side of the roof to be left clear.
- 7. The building is protected throughout by a sprinkler system, or, if not protected throughout by a sprinkler system, the height of the building does not exceed 35 feet (as defined by the Building Code).
- 35. Can you clarify for solar panel installers and homeowners when the rooftop clear path requirement of FC504.4 applies to pitched roofs and when the 3-foot ridge line clearance of FC512.3 applies? Does the Fire Code require a rooftop clear path on the pitched roofs of the typical one or two-family home?

The rooftop access and clear path requirements of **FC504.4** are meant to apply to "flat" roofs (on buildings 100 feet or less in height). **FC504.4** specifically states that it does not apply to building rooftops with slope exceeding 20 degrees (0.35 rad). Except as otherwise explained below, a building with a roof slope more than 20 degrees is a "pitched" roof that is subject to **FC512.3**. **FC512.3** requires a 3-foot wide clear access along the ridge of each roof slope upon which solar panels are installed.

The reason for this distinction is that, for safety reasons, New York City firefighters typically do not walk on pitched roofs, but conduct firefighting operations from an aerial ladder.

The City's solar coordinator has brought to the Fire Department's attention that many one-and-two family dwellings have roofs that, by all appearances, are pitched, but when measured, have a roof slope of less than 20 degrees. These shallow-pitched roofs have slopes of 2, 3 or 4 units vertical in 12 units horizontal, or, in industry parlance, "2/12," "3/12" or "4/12" pitches.

Such shallow-pitched roofs are typically found on one or two family dwellings. There is confusion as to whether such shallow-pitched roofs should comply with **FC504.4** or **FC512.3**.

As stated above, the rooftop access and clear path requirements of **FC504.4** were intended to apply to "flat" roofs. All roofs have some pitch, for drainage purposes, and the 20 degree standard was derived from the 2008 Building Code. However, the Fire Department did not anticipate that **FC504.4** would be applied to the shallow-pitched roofs found on many one or two-family homes. On such roofs, firefighting operations are generally better served by access to the ridge line (to allow the roof to be cut to ventilate the heat and smoke of a fire), not a path up one side of a pitched roof and down the other.

Accordingly, pending code revision or promulgation of a rule, the Fire Department will interpret FC504.4 and FC512.3 in accordance with the following interim guidelines:

- 1. A one or two-family home with a shallow-pitched roof (a roof slope of not less than 2/12, or 9.5%) shall comply with **FC512.3**, not **FC504.4**.
- 2. A one or two family dwelling that is primarily a flat-roof building shall comply with FC504.4, even if a portion of the roof is shallow-pitched or has a pitch exceeding 20%. For example, a brownstone-type building shall comply with FC504.4, not FC512.3, notwithstanding it having a pitched roof element (such as a mansard) or a penthouse or bulkhead with a pitched roof.

A shallow-pitched or pitched portion of the building rooftop must be kept free of obstructions if it can be traversed to gain access onto, or across, the otherwise flat roof. Owners may request guidance from the Bureau of Fire Prevention as to the appropriate treatment of shallow-pitched or pitched portions of flat-roofed buildings.

- 3. This interim guideline shall <u>not</u> apply to shallow-pitched roofs on buildings other than one or two family dwellings (Occupancy Group R-3).
- 36. FC504.4.2 requires reasonable access to rooftop doors, fire escapes, access ladders and other building features, including a 3-foot clearance around three sides of any skylight or scuttle. Can such access and clearance be provided using the six-foot-wide clear path required by FC504.4?

Yes, if the building feature is located adjacent to the rooftop clear path but does not obstruct the clear path.

The rooftop clear path can serve as the required 3-foot clearance on the one or more sides of a skylight or scuttle or other rooftop feature that adjoins the clear path. Similarly, the clear path can provide reasonable access to any other adjoining building feature, such as rooftop bulkhead doors, fire escapes, and access ladders.

37. FC504.4.7 allows "conduits and piping" to cross the clear path required by FC504.4 on flat rooftops 100 feet or less in height. Does "piping" include plumbing ventilation pipes? I am referring to the vertical pipes on rooftops that are the termination of the "vent lines" for plumbing waste pipes. Rooftop ventilation pipes may be no higher than many rooftop conduits and piping.

No, the reference to "piping" in **FC504.4.7** does not include rooftop ventilation pipes. The exception in that section was intended to address utility piping and telecommunications conduits that must traverse the entire width of a building. Recognizing that these obstructions to the clear path cannot be avoided, **FC504.4.7** requires provision of a step or steps over the conduits or piping.

**FC504.4** requires that the clear path be situated to avoid rooftop obstructions, including such building features as skylights, hatches, loft ventilators and ventilation pipes, even if they are less than one foot in height.

This requirement has been part of the Fire Code since the enactment of **FC504.4** in 2008. The Fire Department's interpretation of this requirement has not changed.

The Fire Department notes that the height of a rooftop ventilation pipe must comply with Plumbing Code requirements (that serve to ensure proper dispersal of plumbing waste line gases) and Department of Buildings-approved plans, and cannot be unilaterally altered. In any event, a short ventilation pipe is precisely the type of tripping hazard that **FC504.4** seeks to avoid.

The Fire Department appreciates that, on some buildings, the location of the various rooftop building features may make it difficult to establish a compliant clear path. The Fire Code, as interpreted and applied by the Fire Department, affords three remedies in these circumstances:

- FC504.4 does not require the clear path to be absolutely straight. It can make a limited number of "jogs" around obstructions. (See Chapter 5, Frequently Asked Question #18.)
- If the existence of multiple obstructions on a rooftop renders it impossible or impracticable to provide a Fire Code-compliant clear path, application may be made to the Fire Department pursuant to **FC104.8** for a modification of one or more clear path requirements.
- 38. I am the owner of a brownstone building. I am considering a photovoltaic solar panel installation on my rooftop. The solar installer informs me that a solar panel installation is not economically viable on my rooftop because the area for solar panels is limited by the presence of a skylight, vent pipe, chimney and other building elements, and because the Fire Code requires an unobstructed 6 foot wide clear path.

I understand the importance of rooftop access for firefighting operations, but given the City policy of promoting solar power, has any consideration been given to accommodating solar panel installations on small buildings with narrow roofs?

Yes. The 2014 Fire Code makes allowance for solar panel installations on buildings with limited roof area, in recognition of the fact that such installations must achieve a certain size to be economically viable. Solar panel installations are increasingly popular and cost-effective on brownstones and other small residential buildings.

**FC512.2** allows permanent building features – attic ventilators, bulkheads, chimneys, hatches, plumbing ventilation pipes, scuttles, skylights, and roof-mounted heating, air conditioning equipment, and other rooftop building service equipment – to encroach upon the clear path required by **FC504.4** to a limited extent and only under the following circumstances:

- The building rooftop must be 25 feet or less in width and/or depth; and
- The design of the solar panel installation necessitates coverage of all or substantially all of the width and/or depth of the rooftop; and
- The encroachment does not obstruct and thereby reduce the width of the clear path beyond the amount approved by the Fire Department.

Pending code revision or rule promulgation, the Fire Department will implement FC512.2 by applying the following interim guidelines to rooftop clear path encroachments by permanent building features:

- 1. The building rooftop has a width or depth of not more than 25 feet; and
- 2. The filed plans indicate (in a note or other approved manner) that encroachment on the clear path is necessary to accommodate the design of the solar installation, which requires coverage across all or substantially all of one or more of the rooftop dimensions; and
- 3. Only the following permanent obstructions ("Qualifying Encroachments") may encroach upon and thereby reduce the clear path width at one or more locations: attic ventilators;

- bulkheads; chimneys; hatches; plumbing ventilation pipes; scuttles; skylights; and roof-mounted heating, air conditioning equipment; and
- 4. The 6-foot rooftop clear path width required by **FC504.4** shall be provided and maintained across the rooftop in accordance with **FC504.4**, except that Qualifying Encroachments may encroach upon and reduce the width of such clear path up to 2 feet (24 inches). The Qualifying Encroachments are not limited in length or height, but shall not reduce the width of the clear path at any point to less than 4 feet (48 inches); and
- 5. The Qualifying Encroachments may not encroach upon the rooftop landing areas required by **FC504.4.3**, which shall be kept free of obstructions for the required six-foot by six-foot dimension; and
- 6. The rooftop solar panel installation is filed with the New York City Department of Buildings for full plan review in accordance with that agency's filing procedures (not under professional certification in lieu of plan review), or is filed with the Fire Department's Bureau of Fire Prevention for plan review in accordance with Fire Department filing procedures; and
- 7. The solar panel installation complies with all other Fire Code requirements, including all other requirements of **FC504.4**.

The Department of Buildings will approve a solar panel installation with Qualifying Encroachments in the clear path (and the Fire Department will approve a rooftop access plan with such encroachments) if the plan meets these guidelines.

An applicant seeking any other or further modification of the rooftop access and clear path requirements of **FC504.4**, or to authorize encroachment upon the clear path by any type of building feature not listed above as a Qualifying Encroachment, must file a modification application with the Fire Department in accordance with **FC104.8**. A modification application may be obtained using this link: http://www1.nyc.gov/assets/fdny/downloads/pdf/business/tm-5-plan-review-rooftop-access.pdf.

#### FC CHAPTER 6 - BUILDING SERVICES AND SYSTEMS

1. Is FC604.2, which requires that emergency power systems comply with the requirements of NFPA 110 and NFPA 111, applicable to both existing and new installations?

Yes. **FC604.2** requires that emergency power systems for both new and existing installations be operated and maintained (not designed and installed) in accordance with NFPA 110 and NFPA 111.

2. Does the Fire Code require signs warning of electrical hazards in electrical control panel rooms (sometimes called electrical utility closets)?

Yes. **FC605.3.1** requires that doors into electrical control panel rooms be marked with a sign stating "ELECTRICAL ROOM."

3. Does the Fire Code allow individuals working in an office building to plug in and use refrigerators, toasters, microwaves, coffee makers and/or electric space heaters in their offices?

The New York City Electrical Code, not the Fire Code, directly addresses this issue. Table 210.21(B)(2) of the Electrical Code establishes maximum electrical loads where electrical appliances are connected to receptacles by cords and plugs. The table allows a maximum load of 12 amperes for a 15-ampere-rated circuit, and a maximum load of 16 amperes for a 20 ampere-rated circuit.

Refrigerators, toasters, microwaves, coffee makers and electric space heaters typically draw a significant amount of current. For example, a 1500-watt electric space heater draws a current of 12.5 amperes, and toasters and toaster ovens often draw 12 amperes or more.

Accordingly, to avoid creating a hazardous condition that could cause a fire, building occupants should consult with the building owner or manager before plugging in and using any portable electrical appliance.

4. I am a building owner/manager. I am responsible for compliance with the Fire Code requirement that building elevators be tested every month to confirm that elevator firefighter service is operable "at all times." Building elevators are programmed to operate in various modes, including out-of-service modes used for servicing and repair. Can you clarify what is meant by firefighter service being operable at all times?

The equipping and programming of an elevator for firefighter emergency operation (commonly referred to as "firefighter service") is a life safety measure intended for the exclusive use of firefighters and emergency medical personnel during emergencies. Firefighter service should override all other modes of automatic elevator operation, with a few limited exceptions, as explained below.

#### Firefighter Service

In accordance with New York City Building Code Sections BC3003.2 and BC3003.3, elevators are equipped and programmed for firefighter service. There are two aspects of firefighter service: emergency recall operation (Phase I) and emergency in-car operation (Phase II).

Phase I firefighter service can be activated automatically by the building's fire alarm system, or manually, using key-operated switches at approved locations that recall all elevators in a bank to a designated level.

Phase II firefighter service requires that each elevator car have a key-operated switch inside the car that allows the emergency responder to operate the car manually.

#### Maintenance Requirements

New York City Fire Code Section **FC607**, entitled "Elevators in Readiness," regulates maintenance of elevators. **FC607.4** requires that elevators equipped with firefighter service be maintained in proper working order "such that the emergency elevator operations are operable at all times."

**FC607.4** further provides that, on at least a monthly basis, "all elevators" equipped with Phase I firefighter service be subjected to a recall test, and all elevators equipped with Phase II firefighter service be subjected to a minimum of a one-floor operational test.

The Building Code's Referenced Standard for elevators (Section 8.6.10 of ASME Standard A17.1 (2000 edition, with 2002 and 2003 addenda), as modified by Building Code Appendix K) contains identical requirements. Both the Building Code Referenced Standard and **FC107.7** require that a record be kept of the inspection and made available to agency representatives upon request.

#### Other Modes of Elevator Operation

Automatic elevators may be programmed to operate in a manner that meets the needs of building occupants. This could include: express service, when floors are bypassed; automatically stopping on all floors, such as during Sabbath observance; hospital emergency service, that overrides normal automatic operation and allows the elevator to be operated manually; occupant evacuation service, specially-designed elevators that bypass floors during emergency evacuation of building occupants; and inspection and hoistway access service, for elevator servicing and repair.

#### Priority of Elevator Programming

**FC607.4**'s requirement that emergency elevator operations be operable "at all times" mandates that Phase I and Phase II firefighter service override <u>all</u> other elevator functions except for elevator inspection and hoistway access and the hospital emergency service, as follows:

- Inspection and Hoistway Access service. Firefighter service does not override these modes
  of operation, as causing the elevator to respond could endanger personnel engaged in
  elevator servicing and repair. The Building Code Referenced Standard requires that an
  alarm sound to alert service personnel that firefighter service is requested when the
  elevator is in these modes. Inspection and hoistway access service cannot be initiated
  when the elevator is already in firefighter service.
- Hospital Emergency service. Elevators in hospitals and other medical facilities are equipped
  to function in a manner similar to firefighter service, allowing medical personnel to override
  regular elevator operation for emergency patient care. Firefighter service does not override
  hospital emergency service as delaying emergency patient care may endanger the patient.
  Hospital emergency service cannot be initiated when the elevator is already in firefighter
  service.

The monthly elevator test should ensure that all of the building's elevators have been programmed to operate in compliance with these requirements. All of the different modes of elevator service currently in use in the building should be overridden by firefighter service, with the exception of elevators operating in the inspection and hoistway access and hospital service modes.

#### Further Guidance

Further guidance about Fire Code requirements may be obtained using the Fire Code and Rules Public Inquiry form, available on the Fire Code page of the Fire Department's website, <a href="https://www.nyc.gov/fdny">www.nyc.gov/fdny</a>.

Guidance about Building Code requirements may be obtained from the Elevator Division of the New York City Department of Buildings.

#### FC CHAPTER 8 -INTERIOR FURNISHINGS, DECORATIONS AND SCENERY

1. It has come to my attention that a number of retail stores are storing and selling Christmas trees indoors. It was my understanding that the Fire Code prohibits the indoor retail storage and sale of conifers, including Christmas trees. Could you clarify whether indoor storage and sale of Christmas trees is allowed?

You are correct. Indoor *storage* of Christmas trees (including storage for sale) is prohibited. Christmas trees must be stored outdoors.

Indoor *display* of Christmas trees is also prohibited in retail stores and most other occupancies. However, indoor display of cut Christmas trees is allowed in one and two family homes; in dwelling units in apartment buildings; and in houses of worship.

**FC804** regulates decorative vegetation, including the storage and display Christmas trees and other conifers, which are a fire hazard because they contain pitch, which burns rapidly.

**FC804.1.1**, **FC804.1.2** and **FC804.1.3** prohibit the *indoor* storage and display of conifers, whether cut or a natural tree (rooted in soil), except as allowed in the dwellings and houses of worship noted above. The Fire Code does not define "indoor." However, the plain meaning of that term would encompass any area inside of a building. (A "building" is defined by **FC202** as an "enclosed structure.")

Whether an area of a building that is only partially enclosed (open on one or more sides and/or not covered by a roof) is an "indoor" area for purposes of conifer storage and display is a determination that the Fire Department would make on a case-by-case basis. Further guidance may be obtained using the public inquiry form on the Fire Code page of the Fire Department's website.

FC804 sets forth certain fire safety requirements for Christmas tree display, including proper support and maintenance. Safe maintenance requires a freshly cut tree trunk at time of purchase or display; keeping the tree trunk in the water at all times; keeping the tree away from any flames or heat source; and prompt disposal of the tree upon significant needle loss or brittleness (as described in FC804.1.5). FC804.1.6 requires that merchants selling cut Christmas trees attach to the tree a printed tag containing such fire safety instructions.

Any complaints regarding the indoor storage or display of Christmas trees can be reported to the Fire Department's Bureau of Fire Prevention Field Public Operations Support Unit at (718) 999-2541.

#### 2. Does the Fire Code regulate furnishings and decorations in hotel guest rooms?

No. The Fire Code and the Fire Department rules do not regulate furnishing and decoration inside guest rooms in hotels and motels (Group R-1 occupancies). However, **FC Chapter 8** does regulate curtains, drapes and other decorations in the public areas of hotels and motels, including places of assembly and places of public gathering.

3. I am a managing agent for office and residential buildings, many of which have assembly and mercantile tenants. Every year building owners and tenants make inquiries about Fire Department regulations relating to the display of Christmas and other holiday decorations. Can you assist me in providing appropriate guidance?

Thank you for requesting our guidance.

The requirements for the display of decorations, including Christmas and other holiday decorations, are set forth in **FC 801, 804** and **805**, and Fire Department rule 3 RCNY 805-01.

This response is intended to highlight and summarize the requirements for display of decorations in assembly, business, educational, institutional, mercantile and residential buildings and occupancies. See **FC202.1** for a definition of each of these types of occupancies.

Be sure to review the Fire Code and rule provisions themselves (which can be viewed on the Fire Department's website) to check for requirements that may be applicable to specific circumstances in the buildings you manage.

There are different requirements for display of decorations in other types of buildings and occupancies. Please check the Fire Code and rule provisions if you are responding to an inquiry relating to a building or occupancy other than an assembly, business, educational, institutional, mercantile or residential building or occupancy.

#### **Cut Christmas Trees**

Cut Christmas trees (real trees that have been cut down) are easily ignitable once they dry out. They must be properly maintained and removed from the building at the first evidence that they have become dry.

Because they are a potentially serious fire hazard, cut Christmas trees are <u>not</u> allowed in any part of the types of buildings this response addresses, including building lobbies, offices, stores, or assembly spaces.

The only exceptions to this rule are in one and two family dwellings, individual residential apartments and houses of worship. Cut Christmas trees may be displayed in these places subject to the fire safety requirements set forth below.

The Christmas trees that you see in office lobbies and other building locations should be artificial (a plastic or other material that is flame-resistant or flameproofed). (The requirements for artificial holiday decorations are discussed below.)

If you are buying a cut Christmas tree for your house or apartment, it should bear a printed tag containing instructions for its safe and lawful display and disposal. Retail merchants are required to attach such instructions, which are readily available from a variety of reputable sources.

If you are displaying a cut Christmas tree in your house or apartment, be sure to comply with the following fire safety measures:

- Use a device that securely supports the tree and that contains at least a two day supply of water.
- > Check the tree daily for dryness. Upon first evidence that the tree is getting dry and dropping needles, remove it from the building.
- > Do not place candles or other open flames on or near the tree.

- Keep the tree away from heat sources, including fireplaces, portable heaters, heat vents, stoves and other heat-producing devices.
- Use only electrical wiring and lighting that bears a "UL" (Underwriters Laboratories) label or the label of another recognized testing laboratory.

Cut Christmas trees for sale or that are being discarded may <u>not</u> be stored inside the building. They must be kept outdoors.

If you are thinking of getting a living tree planted in soil for your home or place of business, the basic rule is as follows: natural (live) trees that have not been cut can be kept indoors in all occupancies, except for Christmas trees (conifers). Conifers have pitch, a sticky substance that will burn, even if the tree is watered. As set forth in **FC801.4.3**, live trees must be regularly watered and kept healthy to avoid becoming a fire hazard. A live tree that becomes dry must be removed from the building.

#### **Artificial Holiday Decorations**

Artificial Christmas trees, holiday wreaths and other artificial decorative vegetation must meet one of the following standards:

- > The tree or other decoration must be "inherently flame resistant," meaning that the materials used to make the item do not catch fire under normal circumstances. There should be a label, tag or other documentation from the manufacturer certifying that it meets this standard.
- If not inherently flame resistant, the tree or other decoration must be certified as having a "limited heat release rate." Again, there should be a label, tag or other documentation to this effect.
- If not inherently flame resistant, the tree or other decoration must have been treated with a flameproofing chemical to render the decoration flame resistant. Typically, this would be a custom decoration, not an item purchased in a store. The chemical used to flameproof the decoration must be approved by the Fire Department and the person certifying that it has been flameproofed must hold a Fire Department Certificate of Fitness for this purpose.

Consult Fire Department rule 3 RCNY 805-01 for full details about flame resistance and flameproofing.

Building owners, commercial tenants and other business owners must maintain documentation on the premises confirming compliance with the above requirements, and provide such documentation to Fire Department representatives upon request.

#### **Natural Decorative Greens**

While "natural" decorative greens (actual tree boughs) are the most authentic and fragrant of decorations, many commonly available decorative greens are <u>not</u> allowed in any building. Balsam, hemlock, pine and Spanish moss and any other decorative green containing "pitch" (a sticky "pine tar" substance) are not fire safe.

The only decorative greens that can displayed are those that do not contain pitch. This would include, among other items, grapevine, boxwood and berries.

Decorative greens cannot readily be watered and quickly become dry. Once dry, they are readily ignitable and can set other decorations and furnishings on fire. Dry decorative greens must be removed from the building.

Decorative greens, except conifers, can be displayed and stored for sale in mercantile establishments, but must be removed when they become dry.

## **Questions and Complaints**

Questions about holiday decorations may be submitted to the Fire Department using the public inquiry form on the Fire Department's website.

Complaints of potential Fire Code violations may be submitted to the Fire Department's Field Public Operations Support Unit at (718) 999-2541.

#### FC CHAPTER 9 - FIRE PROTECTION SYSTEMS

1. I can't find in the Fire Code detailed requirements for the design and installation of sprinkler systems, standpipe systems, fire alarm systems and means of egress. Where are these requirements?

In the New York City Building Code. The requirements for the design and installation of such systems and means of egress are part of the requirements for building construction set forth in the Building Code, which can be viewed on the New York City Department of Buildings' web site, <a href="https://www.nyc.gov/buildings">www.nyc.gov/buildings</a>.

While the Fire Code does not contain the design and installation requirements for sprinkler systems, standpipe systems, fire alarm systems and means of egress, it does set forth operational and maintenance requirements for such systems and means of egress. For additional information about such requirements, see Chapter 1 Frequently Asked Question #9.

2. Is a portable fire extinguisher required to be installed in an area that contains stationary oil-burning equipment?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC603.3.1** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

Yes. Building owners seeking to replace sand pails with a portable fire extinguisher should install a dry chemical extinguisher with a minimum 20 B:C rating, or a carbon dioxide extinguisher with a minimum 2 B:C rating.

Previously, the requirement for a portable fire extinguisher to be provided in an area that contains oil-burning equipment was set forth in the rules of the New York City Board of Standards and Appeals (BSA), 2 RCNY 16-01(n)(7). Such provision required one approved hand held fire extinguisher of not less than a two quart capacity suitable for oil fires, or two rounded bottom pails filled with sand. This BSA provision has long been interpreted to require either a 10 pound carbon dioxide (CO2), or a 5 pound dry chemical portable fire extinguisher, or the two sand pails.

The new Fire Code no longer accepts sand pails as an approved portable fire extinguishing medium, and effective July 1, 2008, sand pails must be replaced with a portable fire extinguisher of an appropriate size and type.

The industry standard applicable to portable fire extinguishers, NFPA 10, which has been adopted by reference in FC906.2, classifies such extinguishers based upon the type and capacity of fires that they are suitable for extinguishing, and the travel distance to the extinguishers. Consistent with the BSA rule and the NFPA standard, the Fire Department has adopted a new rule, 3 RCNY 906-02, requiring a minimum 20 B:C rated dry chemical type portable fire extinguisher, or a minimum 2 B:C rated carbon dioxide portable fire extinguisher, in areas containing stationary oil-burning equipment.

3. I live in a multiple dwelling and the building has no portable fire extinguishers. How can I find out if my building is required to have portable fire extinguishers, and if it does require them, how high off the floor do they have to be mounted?

The types of occupancies in which portable fire extinguishers must be provided are set forth in **FC906**. Portable fire extinguishers are not required to be provided in multiple dwellings. If they are provided, such extinguishers are required to be mounted so that the top of the extinguisher is not more than 5 feet off the floor for extinguishers weighing 40 pounds or less, and not more than  $3\frac{1}{2}$  feet off the floor for extinguishers weighing more than 40 pounds, but in no case less than 4 inches off the floor.

4. FC901.6.3.2 requires companies engaged in the business of selling portable fire extinguishers door to door to owners of buildings or business for use on their premises to obtain a portable fire extinguisher sales company certificate. FC901.6.3.3 requires that companies engaged in the business of inspecting and cleaning commercial cooking exhaust systems to obtain a commercial cooking exhaust system company certificate. How can I obtain these certificates?

**FC115** sets forth basic requirements for such company certificates. Fire Department rule 3 RCNY 115-01 sets forth the standards, requirements and procedures for issuance of company certificates, including fire extinguisher sales and inspecting and cleaning commercial cooking exhaust systems. Application forms for and information about such company certificates are posted on the Fire Department web site.

5. FC901.6.3.3 requires that the person conducting the quarterly inspection and cleaning of commercial cooking exhaust systems must be performed by a Certificate of Fitness holder, while FC904.11.6.3 requires that such inspection and cleaning be conducted under the personal supervision of a certificate of fitness holder. Can you please clarify these requirements?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC609.4.1** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

Consistent with the requirements of **FC102.9** that inconsistent provisions be harmonized, the Fire Department interprets these provisions to require that the quarterly inspection and cleaning of commercial cooking exhaust systems must be performed by a certificate of fitness holder.

6. I recently installed a fire pump as part of a standpipe system installation. Do I need to arrange for a Fire Department inspection of the installation?

Yes. A Fire Department inspection is required upon the installation of any fire pump pursuant to FC913.5.1. That section provides: "Acceptance testing shall be done in accordance with Section 901.5 and NFPA20....before a representative of the Department." The Department will conduct an electrical inspection of the installation of the fire pump. A mechanical inspection is also conducted for installations located on waterfront properties. To obtain information on the required filings and to schedule an inspection, contact the Fire Alarm Inspection Unit of the Bureau of Fire Prevention at

(718) 999-2467 (for electrical inspections) and the Fire Suppression Unit of the Bureau of Fire Prevention at (718) 999-2519 (for mechanical inspections).

#### 7. When is an impairment coordinator required at a construction site, and at what point in the construction process?

Fire Code Section **FC901.7.1** requires that the owner of a building designate an "impairment coordinator" to take the actions required by the Fire Code in the event that a standpipe system, sprinkler system or fire alarm system is out of service. If no impairment coordinator is designated, the building owner is deemed to be the impairment coordinator and must fulfill the duties of the impairment coordinator.

**FC1408.6** provides that, at a construction site, the fire safety manager or the impairment coordinator shall comply with the requirements of **FC901** in the event that a fire protection system is impaired. The fire safety manager can be designated as the impairment coordinator.

**FC901.7** sets forth the actions to be taken in the event a fire protection system is removed from service for repair, maintenance or construction (planned removal from service) or unexpectedly malfunctions (unplanned out of service condition). **FC901.7.7** specifically addresses the actions to be taken by the fire safety manager or impairment coordinator in the event of an out-of-service standpipe system at a construction site.

Accordingly, an impairment coordinator is required at a construction site that has an operational standpipe system, sprinkler system or fire alarm system. As detailed below, the Fire Code obligation to designate an impairment coordinator arises at such time, and continues for so long as, a fire protection system is operational at the site. For purposes of this Frequently Asked Question, "operational" means that the fire protection system has been installed (in whole or in part) and all required approvals have been obtained.

In a building under construction, the impairment coordinator will be primarily responsible for the standpipe system, which is installed early in the construction process and provides fire protection during the construction process. The impairment coordinator must be designated at such time as the Building Code requires that the construction site standpipe system be operational.

An impairment coordinator is required for a sprinkler system and/or a fire alarm system upon the system(s) becoming operational. Generally, such systems are not operational until the building is nearing completion. An impairment coordinator must be designated no later than the date of the certificate of occupancy or temporary certificate of occupancy that authorizes the building, or a portion of the building, to be occupied.

For a table outlining impairment coordinator, fire watch and hot work requirements at construction sites, see the NYC Fire Code Guide, Chapter 9, Frequently Asked Question #12, addressing fire watch requirements at construction sites.

#### 8. Is an impairment coordinator required on other construction sites?

Yes. The Fire Code's definition of "construction site" (in **FC1402.1**) is not limited to new construction but encompasses demolition and alteration projects.

The Building Code (in BC 3303.7 and 3303.8) generally requires that standpipe and sprinkler systems be removed in a building under demolition on a floor-by-floor basis (except for "wrecking ball" and other mechanical demolitions that do not proceed floor-by-floor), so an impairment coordinator must be maintained at a demolition construction site until all fire protection systems are lawfully rendered inoperable.

An impairment coordinator is required on alteration projects if the building has an operational standpipe, sprinkler or fire alarm system.

9. Is an impairment coordinator required when a sprinkler system or fire alarm system is being removed in connection with building alterations?

Yes, in almost all circumstances.

**FC311.2.2** requires that fire protection systems in a temporarily vacant floor or other space of an existing building be maintained in good working order. Removal of building fire protection systems must be authorized by the Department of Buildings (DOB) by issuance of work permit with the concurrence of the Fire Department and/or in accordance with Fire Department requirements. (See Building Code Sections BC 3303.7.4.3 and 3303.9.)

When building renovations require removal of existing fire protection systems, it is DOB policy (set forth in DOB Buildings Bulletin 2012-009) to mandate installation of a temporary loop sprinkler system around the building core. DOB policy also requires that fire alarm systems be maintained during alteration work to the maximum extent feasible. Fire alarm system detectors may be covered or removed to prevent unnecessary alarms resulting from construction work, but DOB policy generally requires that other fire alarm system components, including sprinkler flow alarms and manual pull stations, be maintained in an operational condition.

In such circumstances, an impairment coordinator must be designated for the temporary loop sprinkler system and the fire alarm system components that remain operational, in addition to the building standpipe system, if the building has one. Designation of separate building and construction site impairment coordinators is addressed in NYC Fire Code Guide, Chapter 9, Frequently Asked Question #10.

In the rare circumstance that DOB authorizes removal of the building's fire protection systems without installation of a temporary sprinkler system or maintenance of alarm system components, and the building has no standpipe system, no impairment coordinator is required. An impairment coordinator is required for any premises at which there is an operational standpipe, sprinkler system or fire alarm system. An impairment coordinator is not required at any premises that lawfully has none of these systems or lawfully removes the system(s).

10. When alteration work is being performed in an existing building is the building's impairment coordinator responsible for the construction site or can there be a separate impairment coordinator for the floors on which construction or alteration work is being performed?

Either arrangement is acceptable.

It is the building owner's decision whether to make the building's impairment coordinator responsible for out of service fire protection systems in the areas of the building undergoing alteration or to designate a separate impairment coordinator.

If separate impairment coordinators are designated, the persons designated to perform this function must coordinate their respective responsibilities for the building's fire protection systems.

#### 11. Must the impairment coordinator be present at the construction site at all times?

No. An impairment coordinator does not need to be present at a construction site at all times. However, in the absence of the designated impairment coordinator, the owner is responsible for making the notifications and taking the other actions required by the Fire Code in the event that a fire protection system is out of service. Accordingly, an owner may wish to designate more than one individual to serve as the impairment coordinator so that there is a trained and knowledgeable person on the premises at all times during construction activities.

12. Except for standpipe systems, fire protection systems are typically not in service in buildings under construction, and sprinkler and fire alarm systems are commonly removed from service, in whole or in part, during building alteration or demolition. When does the Fire Code require fire guards at a construction site for "out of service" fire protection systems?

A fire watch must be maintained by fire guards at a construction site whenever a fire protection system is "out of service." Whether and when a fire protection system is deemed to be out of service at a construction site is discussed in this Frequently Asked Question and response.

Fire Code Section **FC901.7.2** generally requires that a building be "evacuated *or* a fire watch maintained in accordance with this section when a standpipe system, sprinkler system or fire alarm system is out of service." **FC901.7.7** specifically requires that a fire watch be maintained at a construction site when the standpipe system is out of service.

**FC901.7.2.2** requires that a fire watch for an out of service fire protection system be maintained by a fire guard, an individual who has obtained a Fire Department certificate of fitness to perform this important fire safety function. **FC901.7.2.1** and **FC901.7.2.2** set forth the duties and responsibilities of a person conducting a fire watch at a premises with an out of service fire protection system.

**FC1404.5** also authorizes the Fire Commissioner to require that a fire watch be maintained by fire quards at a demolition site or other construction site that is unusually hazardous in nature.

The issue of whether a fire protection system is "out of service" at a construction site is complicated by the fact that fire protection systems are not yet operational in new buildings under construction, and may be removed in connection with construction activity in an existing building undergoing demolition or alteration. For purposes of this Frequently Asked Question, "operational" means that the fire protection systems have been installed (in whole or in part) and all required approvals have been obtained.

As explained in the Frequently Asked Questions addressing impairment coordinator requirements at construction sites (NYC Fire Code Guide, Chapter 9, Frequently Asked Questions #7-11), removal of building fire protection systems must be authorized by the Department of Buildings (DOB) by issuance of a work permit (which is only issued with the concurrence of the Fire Department and/or in accordance with Fire Code requirements). On demolition projects, the Building Code requires that fire protection systems be maintained in an operational condition until demolition commences on the floor (except for "wrecking ball" and other mechanical demolitions that do not proceed floor-by-floor). When fire protection systems must be removed in connection with alteration work, DOB typically requires the installation of temporary sprinkler systems and retention of certain fire alarm system components, including sprinkler flow alarms and manual pull stations.

Accordingly, whether a fire watch is required for an "out of service" fire protection system at a construction site depends on whether the fire protection system is operational; whether temporary fire protection systems have been authorized during construction work in lieu of the fire protection systems that are being removed in whole or in part; whether the building is occupied or vacant; and whether the Fire Department has determined that there are unusually hazardous circumstances at the construction site requiring a fire watch.

The following table sets forth fire watch requirements for out of service fire protection systems at three types of construction sites: (1) new buildings under construction, which are occupied only by construction personnel; (2) existing buildings undergoing alteration, and new buildings partially occupied pursuant to a temporary certificate of occupancy; and (3) buildings under demolition. The table also addresses impairment coordinator requirements at construction sites and hot work restrictions when construction site fire protection systems are out of service.

Fire Department recommends that, to ensure timely reporting of any fire, construction sites be monitored at all times, even when vacant and no formal fire watch is required. The "watchperson" required by the New York City Building Code, security personnel and other persons who are present at a construction site when work is not being conducted should be trained to watch for signs of fire and provided with a means to call 911.

# NYC FIRE CODE GUIDE – CHAPTER 9 FREQUENTLY ASKED QUESTION AND RESPONSE (#12)

## IMPAIRMENT COORDINATOR AND FIRE WATCH REQUIREMENTS AND HOT WORK RESTRICTIONS FOR OUT OF SERVICE FIRE PROTECTION SYSTEMS AT CONSTRUCTION SITES

#### NEW BUILDINGS UNDER CONSTRUCTION (OCCUPIED BY CONSTRUCTION PERSONNEL ONLY)

	Fire Protection System	Status of Installation <sup>1</sup>	Impairment Coordinator Required? <sup>2</sup>	Fire Watch Required When Fire Protection System Out of Service? 3.4	Hot Work Allowed When Fire Protection System Out of Service? <sup>5</sup>
1	Standpipe system	Installed and approved	Yes	Yes. Fire watch required at all times (regardless of whether building vacant or occupied by construction personnel). Comply with FC901.7.7.	No hot work allowed.
2A	Sprinkler system	Not yet installed and/or approved	No	No fire watch required, except where special circumstances require. <sup>6</sup>	Hot work allowed.
2B		Installed and approved	Yes	Yes, as required by FC901.7. No fire watch required when entire building vacant/evacuated of construction personnel, except where special circumstances require. <sup>6</sup>	No hot work allowed.
2.4	Electronic control	Nich cost to stelled and so of the	NI-	No Constant and the state of th	Hat words all and a
3A	Fire alarm system	Not yet installed and/or approved	No	No fire watch required, except where special circumstances require. <sup>6</sup>	Hot work allowed.
3B		Installed and approved	Yes	Yes, as required by FC901.7. No fire watch required when entire building vacant/evacuated of construction personnel, except where special circumstances require. <sup>6</sup>	Hot work allowed, except no hot work allowed when fire alarm system sprinkler water flow alarm is out of service.

For purposes of this table:

<sup>&</sup>lt;sup>1</sup> A fire protection system is "installed and approved" when all required approvals for a full or partial installation have been obtained, including all signoffs required by the NYC Building Code.

<sup>&</sup>lt;sup>2</sup> The obligation to provide an impairment coordinator arises as soon as the fire protection system is installed and approved. If no impairment coordinator is designated, the building owner is deemed to be the impairment coordinator in accordance with FC901.7.1. See Footnote 9 for additional information about impairment coordinators.

<sup>&</sup>lt;sup>3</sup> A "fire watch" means the patrolling of the areas affected by an out-of-service fire protection system for fire by a Fire Department-certified fire guard (F-01 Certificate of Fitness) in accordance with FC901.7.2. The presence of a "watchperson" (holding a Fire Department F-60 Certificate of Fitness) at the construction site, as required by Building Code 3303.3, does <u>not</u> constitute compliance with the fire watch requirement of FC901.7.2.

<sup>&</sup>lt;sup>4</sup> "Out of service" means the fire protection system is not in good working order and/or has been temporarily removed from service for repair, maintenance or construction.

<sup>&</sup>lt;sup>5</sup> Hot work restrictions apply in areas affected by the out-of-service fire protection system. In accordance with FC901.7.7(4.3), hot work is not allowed anywhere on the construction site if the standpipe system is out of service. Hot work restrictions do not preclude hot work required to restore a fire protection system to service.

<sup>&</sup>lt;sup>6</sup> "Special circumstances" means a construction site determined by the Fire Department (pursuant to FC1404.5) to be unusually hazardous, which may include the following conditions: (1) no working fire hydrant within 250 feet of entrance to building or 100 feet of fire department connection (BC3303.7); (2) impediments to fire apparatus access to building; (3) no fire apparatus access to within 100 feet of temporary or permanent fire department connection (FC1410); (4) anticipated delays in Fire Department response due to location of construction site; (5) sensitive occupancies in close proximity to construction site, including schools, hospitals and nursing homes; hazardous materials storage; public utility substations; bridges or other major infrastructure; (6) one or more fires, pattern of violations or other history of noncompliance at construction site(s); and (7) other special circumstances as determined by the Chief of Fire Prevention or Chief of Operations.

#### BUILDINGS OR FLOORS UNDERGOING ALTERATION and NEW BUILDINGS PARTIALLY OCCUPIED PURSUANT TO A TEMPORARY CERTIFICATE OF OCCUPANCY

	Fire Protection System	Status of System <sup>1</sup>	Impairment Coordinator Required? <sup>2</sup>	Fire Watch Required When Fire Protection System Out of Service? <sup>3,4,7</sup>	Hot Work Allowed When Fire Protection System Out of Service? <sup>5</sup>
4	Standpipe system	Installed and approved	Yes	Yes. Fire watch required at all times (regardless of whether building vacant or occupied). Comply with FC901.7.7.	No hot work allowed.
5A	Sprinkler system	Installed and approved (not removed)	Yes	Yes, as required by FC901.7. No fire watch required when entire building vacant/evacuated, except where special circumstances require. <sup>6</sup>	No hot work allowed.
5B		Removed pursuant to DOB permit. 8 No core loop system required.	No	No fire watch required, except where special circumstances require. <sup>6</sup>	Hot work allowed.
5C		Removed pursuant to DOB permit. <sup>8</sup> Core loop system installed and approved.	Yes <sup>9</sup>	Fire watch required when core loop system out of service and building occupied. No fire watch required when entire building vacant/evacuated, except where special circumstances require. <sup>6</sup>	Hot work allowed when core loop in service. No hot work allowed when core loop system out of service.
6	Fire alarm system	Installed and approved (not removed) 10	Yes	Yes, as required by FC901.7. No fire watch required when entire building vacant/evacuated, except where special circumstances require. <sup>6</sup>	Hot work allowed, except no hot work allowed when fire alarm system sprinkler water flow alarm is out of service.

<sup>&</sup>lt;sup>7</sup> The removal of building compartmentation that served as passive fire protection in lieu of a sprinkler system (in pre-2008 buildings) constitutes an out of service sprinkler system.

<sup>&</sup>lt;sup>8</sup> Fire Department approval must be obtained in accordance with Building Code Sections 3303.7.4.3 and 3303.9 before DOB will authorize removal of a fire protection system.

<sup>&</sup>lt;sup>9</sup> An impairment coordinator is required for the core loop system and any portions of the building sprinkler system that remain installed and in good working order. In a partially occupied building, the building owner can make the building's impairment coordinator responsible for out-of-service fire protection systems in the areas of the building undergoing alteration or may designate a separate impairment coordinator. If separate impairment coordinators are designated, they must coordinate their respective responsibilities. See NYC Fire Code Guide, Chapter 9, Frequently Asked Question #10.

<sup>&</sup>lt;sup>10</sup> DOB allows removal or covering of smoke detectors during construction work provided that the other fire alarm system components remain operational. See DOB Buildings Bulletin 2012-009. A modified fire alarm system complying with the terms of the DOB permit is considered installed and approved for purposes of this analysis.

## **BUILDINGS UNDER DEMOLITION**

	Fire Protection System	Status of Installation <sup>1</sup>	Impairment Coordinator Required? <sup>2</sup>	Fire Watch Required When Fire Protection System Out of Service? <sup>3,4</sup>	Hot Work Allowed When Fire Protection System Out of Service? <sup>5</sup>
7	Standpipe system	Installed and approved	Yes	Yes. Fire watch required at all times (regardless of whether building vacant/evacuated or occupied by construction personnel). Comply with FC901.7.7.	No hot work allowed.
8A	Sprinkler system	Installed and approved, except removed on floor(s) under active demolition.	Yes	Yes, as required by FC901.7. No fire watch required on floors under active demolition, or when entire building vacant/evacuated, except where special circumstances require. <sup>6</sup>	No hot work allowed, except on floors under active demolition.
8B		Removed pursuant to DOB permit <sup>8</sup>	No	Yes, in lieu of an operational sprinkler system, except in buildings undergoing mechanical demolition. No fire watch required on floors under active demolition, or when entire building vacant/evacuated, except where special circumstances require. <sup>6</sup>	Hot work allowed.
9A	Fire alarm system	Installed and approved, except removed on floor(s) under active demolition <sup>10</sup>	Yes	Yes, as required by FC901.7. No fire watch required on floors under active demolition, or when entire building vacant/evacuated, except where special circumstances require. <sup>6</sup>	Hot work allowed.
9B		Removed pursuant to DOB permit <sup>8</sup>	No	No fire watch required, except where special circumstances require.6	Hot work allowed.

#### FC CHAPTER 10 - MEANS OF EGRESS

1. I just moved into an apartment and would like to install security gates over the window that leads to my fire escape. How do I know which type of gates are approved by the Fire Department?

**FC1025.5** requires that bars placed over windows and other openings onto fire escapes be of a type for which a certificate of approval has been issued by the Fire Department. A list of currently approved gates can be obtained by contacting the Bureau of Fire Prevention's Technology Management Unit at (718) 999-2391.

2. I am advised that the Fire Code prohibits storage of "combustible materials" in "corridors." Does this mean that the draperies, console table, bench and mirror, umbrella stand, framed prints, coat racks and doormats in the hallway of my apartment building are not allowed and must be removed?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC1027.4** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

This Frequently Asked Question is intended to provide interim guidance for this commonly asked question pending an anticipated future rulemaking.

**FC1027.4.1** prohibits storage of combustible materials or combustible waste in corridors except as authorized by the Fire Code or Fire Department rule. This requirement is intended to minimize the potential fire load and eliminate tripping hazards and other impediments to access that might hinder or prevent egress from the building.

However, the Fire Department recognizes that it is common to decorate apartment building hallways with incidental furnishings, such as a console table, bench and/or mirror, umbrella stand, draperies, framed prints and doormats. The Fire Department appreciates the importance of such items in enhancing the appearance and comfort of such building spaces, and is considering how to best accommodate such items consistent with the interest of fire safety.

Accordingly, the Fire Department establishes the following interim guidelines for the storage of combustible materials in apartment building "corridors," which, for purposes of this Frequently Asked Question and response, is limited to hallways outside of dwelling units and does not include building lobbies.

The Fire Department retains discretion to prohibit and direct removal of any combustible hallway furnishing allowed by these interim guidelines that, by virtue of its size, materials or location, presents an undue fire safety hazard.

Interim guidelines for the storage of combustible materials in apartment building hallways:

1. Incidental furnishings. An apartment building hallway may be furnished with a console table, console bench, mirror, and umbrella stand. All such items must be "incidental" to hallway use, i.e., furnishings whose purpose is primarily decorative in nature and provided for the convenience of persons passing through the hallways. Such incidental use would not include furniture designed primarily to hold or store clothing or other items (such as chests of drawers, armoires, wall systems and coat racks), or storage in the hallway of furniture (such as beds, upholstered furniture and dining room tables) whose primary purpose is not decorative or for the temporary accommodation of passersby. No furnishing

may narrow the apartment building hallway beyond the minimum width required by the New York City Multiple Dwelling Law and New York City Building Code.

- 2. Draperies, area rugs and decorative greens. Draperies, area rugs and decorative greens must be installed and maintained in compliance with the requirements of FC Chapter 8. Draperies, area rugs and decorative greens must be noncombustible, or flameproofed by an approved method. Christmas trees and other conifers, and wreathes made of conifers, are prohibited in apartment building hallways.
- 3. **Artwork.** The walls of an apartment building hallway may be decorated with combustible artwork (including artworks made of paper, canvas, wood or fabric), provided that the artwork does not exceed more than twenty percent (20%) of the wall area. Such percentage is to be calculated separately for each wall. Artwork shall be affixed to the walls in a manner that prevents it from moving freely and intruding further into the hallway space.
- 4. **Carpeting.** Carpeting and other interior finishes are not regulated by the Fire Code but by Chapter 8 of the New York City Building Code. Please consult the New York City Department of Buildings' website, <a href="https://www.nyc.gov/buildings">www.nyc.gov/buildings</a>.
- 5. Doormats. The Fire Department discourages the use of doormats in apartment building hallways, and encourages their placement inside dwelling units. Doormats are commonly manufactured of combustible or highly combustible material and typically are not flameproofed. Doormats also present potential tripping hazards in a location meant to serve as a means of egress. However, in the exercise of its enforcement discretion, the Fire Department will issue violations and direct removal of doormats only where their size, materials or location present an undue fire safety or tripping hazard. Oversize doormats may be deemed to be area rugs, which, as set forth above, must be noncombustible, or flameproofed by an approved method.
- 6. Personal property. Personal property (such as bicycles, baby carriages and clothing) may not be stored in apartment building hallways. All such items must be stored in lawful closets or other storage areas, or in dwelling units.
- 7. **Household garbage.** Household garbage, including trash cans and recycling containers, may not be stored in apartment building hallways. All such items must be stored in compactor rooms and other lawful storage areas.

# 3. I live in an apartment building and I would like to place a bookcase in the hallway outside my apartment. Would this be a violation of the Fire Code?

It would be a violation of the code, unless the bookcase is primarily decorative in nature, constructed of noncombustible material and displays only noncombustible items.

**FC1027.3.6** prohibits the storage of combustible materials and combustible waste in building corridors, except as authorized by the Fire Code or rule. This requirement is intended to minimize the potential fire load and eliminate tripping hazards and other impediments to access that might hinder or prevent egress from the building.

The Fire Department has posted interim guidelines for apartment building hallway furnishings (see immediately preceding Frequently Asked Question and response). Such furnishings must be "incidental" to hallway use, i.e., furnishings whose purpose is primarily decorative in nature and provided for the convenience of persons passing through the hallways. Furnishings designed primarily for storage would not be incidental furnishings.

Accordingly, a decorative, metal bookcase, designed for display, and used to display metal, glass, ceramic or other noncombustible items, would not be prohibited if it did not violate Multiple Dwelling Law and Building Code requirements for minimum corridor width.

4. I would like to operate a sidewalk café outside of my restaurant. There is a fire escape on the side of the building. I understand that the Fire Code and Fire Department rules prohibit obstructing any means of egress. Could you clarify what clearances should be maintained?

The interpretation provided in this response was offered in connection with the 2008 Fire Code. The basic requirement that fire escape ladders not be obstructed has since been incorporated into **FC1027.6.4** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements, and additional guidance. Be sure to check the 2014 Fire Code for all applicable requirements.

FC1027.2 prohibits obstructing any means of egress. This includes any building fire escape. Fire Department rule 3 RCNY §404-03(d) specifically provides that awnings, canopies, decorations and umbrellas shall not obstruct or otherwise impede use of a fire escape ladder.

Sidewalk cafes that are located in areas where building fire escapes provide egress to the street level must be designed and maintained in a manner that does not impede the operation of the fire escape ladder or obstruct egress from the ladder.

Most fire escapes are equipped with a drop ladder that is lowered vertically to the sidewalk. Some fire escapes are equipped with a counterbalanced stair ladder, in which a large section of fire escape containing stairs swings to the ground.

The following guidelines are intended to provide general guidance with respect to clearances. These guidelines do not preclude the Fire Department from imposing additional or different requirements depending on specific site conditions.

#### Guidelines for Sidewalk Cafes:

- 1. An awning is prohibited underneath any fire escape ladder, unless the awning has a minimum 3-foot by 3-foot opening that allows for passage down the fire escape ladder through the awning, or is equipped with a hatch that is readily openable by operation of the fire escape ladder.
- Fixed furniture, table umbrellas or other fixtures are prohibited underneath any fire escape drop ladder. Readily movable tables, chairs and other furnishings are acceptable underneath a fire escape drop ladder.
- 3. Cafe heaters are prohibited underneath any fire escape drop ladder. A minimum distance of 4 feet is acceptable. Cafe heaters shall be installed in accordance with the provisions of the Fire Code and New York City Department of Buildings Technical Policy and Procedure Notice 2-2007.
- 4. All sidewalk cafe fences or planters on the sidewalk alongside any part of a fire escape must be readily movable. Any fixed or heavy fences or planters must be approved by the Fire Department. This is to ensure that portable ladders can be used to access the fire escape. Requests for such approval shall be directed to the Bureau of Operations, New York City Fire Department, 9 MetroTech Center, Brooklyn, NY 11201.
- 5. The entire area underneath a counterbalanced stair fire escape ladder must be kept clear of awnings, canopies, furniture, cafe heaters and other furnishings and fixtures. The presence of furniture and fixtures could impede the proper functioning of the fire escape and/or injure any persons sitting or standing underneath the fire escape.

# FIRE CODE CHAPTER 14 - FIRE SAFETY DURING CONSTRUCTION, ALTERATION AND DEMOLITION

1. I understand that the Fire Code prohibits smoking at construction sites, and requires that "no smoking" signs be posted in approved locations. Can you please clarify what areas would be considered part of the "construction site" and what locations are "approved" for posting of such signs?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC1401.1.1** and **FC1404.1.2** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

**FC1404.1** prohibits smoking at construction sites. **FC1402.1** defines a construction site as any location at which a building, structure, premises or facility is undergoing construction, alteration or demolition.

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

"No Smoking" signs should be posted at all sliding and swinging gate openings, and any other openings allowing for access to the site by persons or vehicles. Within the fenced enclosure, signs should be posted at appropriate locations throughout the construction site sufficient to provide notice to persons entering or working on the site of the prohibition against smoking, including at the entrances to buildings, one or more locations on each floor of such buildings, and any indoor or outdoor areas on the construction site at which persons congregate.

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

In addition, as set forth in **FC310.2(3)**, smoking is prohibited at all locations, and at all times, where hazardous operations are conducted, or flammable or combustible materials or explosives are stored, handled or used. "No Smoking" signs must be posted in the immediate area of such operations and materials.

2. Does the Fire Code allow storage of flammable and combustible liquids in aboveground tanks at construction sites, and, if so, what restrictions apply?

Yes. The Fire Code allows aboveground storage of flammable and combustible liquids at construction sites.

**FC 1405** and **3406** regulate the storage, handling and use of flammable and combustible liquids at construction sites, including portable tanks temporarily installed at such sites. There is a 660 gallon limit on the capacity of such tanks. In addition, **FC3406.2.8** authorizes the filling of construction equipment directly from cargo tank trucks under certain conditions.

3. Do the Fire Code requirements for the indoor storage of acetylene set forth in FC Table 2703.1.1(1) apply to buildings undergoing construction?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC2703.1.14** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

No. FC Chapter 14, which regulates construction sites, makes reference (in FC1406.1) to FC Chapter 35, which in turn references FC2703. The accompanying table, FC Table 2703.1.1(1), sets forth Maximum Allowable Quantities per Control Area of Hazardous Materials ("MAQ") for indoor and outdoor spaces, and limits the number of control areas allowed per floor.

The Fire Department interprets the MAQs and control area limitations set forth in **FC Table 2703.1.1(1)** as design requirements for permanent installations. Provided that the building undergoing construction is not occupied, these requirements do not apply to the temporary storage of hazardous materials for use at construction sites, and the temporary storage facilities in which they are kept. In a building that is being newly constructed, the MAQs and control area limitations would apply upon issuance of a certificate of occupancy or temporary certificate of occupancy for the building.

The MAQs and control area limitations set forth in **FC Table 2703.1.1(1)** are applicable to a construction site if the construction work is being conducted in a building that is occupied or partially occupied. In such circumstances, temporary storage of hazardous materials in the portion of the building undergoing construction cannot exceed the MAQs and control area limitations without the prior written authorization of the Fire Department.

Even where the MAQs and control area limitations are not applicable, various Fire Code provisions and Fire Department rules separately restrict the quantity and location of hazardous materials storage (including flammable gas storage) even in buildings that are unoccupied. For example, FC3504 regulates the storage of acetylene in any building, including unoccupied buildings, and, among other things, restricts such storage to a maximum of 15,000 SCF. FC3809 and Fire Department rule 3 RCNY 3809-01 separately regulates the storage of LPG.

4. Does the interpretation applicable to the indoor storage of acetylene at construction sites (as discussed in the preceding question) also apply to the indoor storage of oxygen?

Yes. Oxygen is an oxidizer, not a flammable gas, and therefore is subject to **FC1406.2** and **4003.1**, but the same reasoning applies to the MAQs and control area limitations.

Note, however, that **FC1406.2.1** has separate, and detailed, requirements for the storage and use of *liquid* oxygen at construction sites.

5. Fire Department personnel have advised me that when torch operations are "discontinued" the oxygen and acetylene containers must be moved to an approved storage area or removed from the premises. Can you clarify under what circumstances torch operations are deemed to be "discontinued"?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC1406.3** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

Oxygen and acetylene containers that are no longer in use must be removed from the work area. In general, this means that oxygen and acetylene containers must be removed from the work area when torch operations are discontinued for the workday. The containers need not be removed from the work area for brief interruptions in work – for example, during a lunch break or coffee break – but do need to be removed if it is expected that work will not promptly resume thereafter.

6. Can oxygen and acetylene containers used in torch operations be stored overnight on the floors on which the torch work is being conducted? If so, where can they be stored and what storage requirements apply?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC1406.3** and **FC1406.4** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

Oxygen and acetylene containers used for torch operations may be stored overnight on the floors on which the torch work is being conducted only in an unoccupied building and only in an approved storage area.

No reserve oxygen or acetylene containers can be stored on the floors. (Any containers that are not necessary for the day's torch operations are considered reserve storage). Reserve storage of the containers must be in approved reserve storage areas (see Frequently Asked Question #7).

The requirements for storage of acetylene and oxygen containers on floors under construction are set forth in FC3504.1.3. That section requires that indoor storage areas for acetylene and oxygen comply with distance to exposure requirements (including the requirement that acetylene containers be stored at least 20 feet from oxygen containers) and be limited to a day's supply, but in no event more than 3,500 SCF of acetylene per floor. Additionally, the storage area must comply with the applicable requirements of FC2703, including FC2703.9.2 (requiring that containers be safeguarded against unauthorized entry, such as by placing them in a storage cabinet) and FC2703.5 (requiring hazard identification signs).

7. Inasmuch as reserve storage of oxygen and acetylene containers is not allowed on the floors on which torch work is being conducted, where can such containers be stored and what storage requirements apply?

The reserve storage of oxygen and acetylene containers at construction sites is subject to the detailed requirements of FC Chapters 40 and 35, respectively.

All indoor and outdoor storage of reserve oxygen and acetylene containers must comply with the safeguarding and signage requirements of FC2703.9.2 and FC2703.5 (see Frequently Asked Question #6).

Requirements for indoor reserve storage of oxygen are set forth in FC4003, FC4004 and FC3504.1.3. Requirements for outdoor reserve storage of oxygen are set forth in FC4003, FC4004 and FC Table 4004.2.2.

Requirements for indoor and outdoor reserve storage of acetylene are set forth in **FC3504**. That section requires reserve storage of acetylene outdoors if outdoor storage is available on the premises; otherwise, indoor reserve storage is allowed on the ground level of the building.

**FC3504** also limits the total quantity of acetylene stored at a construction site. **FC3504.2** limits storage in an outdoor storage area to not more than 3500 SCF. **FC3504.1.2** limits indoor acetylene storage for the entire building (including floor storage and ground floor reserve storage) to not more than 15,000 SCF. **FC3504.1.3** limits the quantity of acetylene in an individual indoor storage area (which must be on the ground level) to not more than 3500 SCF.

# 8. Can you clarify when the separate fire safety manager referenced in FC1408.1 is required on a construction site?

**FC1408.1** requires that a fire safety manager responsible for ensuring compliance with Fire Code requirements be provided at a construction site whenever a site safety manager or site safety coordinator is required by the Building Code.

**FC1408.1** specifically provides that the fire safety manager at a construction site can be the same person as the site safety manager or coordinator required by the Building Code. However, experience since the enactment of the Fire Code in 2008 indicated that, on large building construction projects, one person is not sufficient to adequately oversee Building Code and Fire Code compliance.

**FC1408.1** was amended in the 2014 Fire Code to require that a separate fire safety manager be designated for a "building under construction" when the building "reaches" a height of 20 stories or more than 250 feet, or has a lot coverage of 200,000 square feet or greater, "or as otherwise prescribed by rule."

Accordingly, any building under construction (that is, one issued a New Building Permit by the New York City Department of Buildings) must provide a separate fire safety manager once the building "reaches" a height of 20 stories or more than 250 feet.

For any building under construction that has a lot coverage of 200,000 square feet (that is, the area of the building lot encompassed by the construction fence required by the Building Code), a separate fire safety manager must be provided upon construction reaching street level.

The requirement of a separate fire safety manager takes effect on March 30, 2014, the effective date of the 2014 Fire Code. The Fire Department intends to enforce this requirement upon its taking effect but will allow a reasonable time for compliance.

The requirement of a separate fire safety manager is an operational requirement. As such, it applies to all buildings under construction, regardless of whether construction was commenced before or after the effective date of the section. However, as indicated above, the obligation to provide a separate fire safety manager does not arise until the building has reached the required height.

The requirement of a separate fire safety manager does not preclude the construction site staff holding the required fire safety manager certificate of fitness from engaging in other work. The fire safety manager can perform other work provided that such work does not interfere with the performance of his or her fire safety manager duties.

The Fire Department has not yet considered whether construction site safety requires a separate fire safety manager in buildings undergoing alteration or demolition (which are included in the definition of "construction site" pursuant to **FC1402.1**). Until such time as the Fire Department determines that a separate fire safety manager is necessary on such projects and promulgates a rule to that effect, a separate fire safety manager is not required for buildings undergoing alteration or demolition.

9. When is an impairment coordinator required at a construction site, given that fire protection systems are not operational when construction work commences?

**FC1408.6** states that the construction site fire safety manager or impairment coordinator must comply with the out-of-service fire protection system requirements of **FC901**. The impairment coordinator requirements for construction sites (including a new building under construction; an existing building being altered, with or without occupants in the building; and a building being demolished) are addressed in Frequently Asked Questions #7-11 in Chapter 9.

10. Fire protection systems are frequently removed, covered or otherwise temporarily rendered inoperable, in whole or in part, at construction sites during alteration and demolition work. Newly-installed fire protection systems in both new construction and altered buildings may not be fully operational until the completion of work. Do the Fire Code's out of service provisions in FC901.7 apply to fire protection systems at construction sites, and if so, when?

Yes. **FC1408.6** requires that the fire safety manager or impairment coordinator comply with the requirements of **FC901** in the event of the impairment of any fire protection system.

The issue of when a fire protection system is operational and when it is out of service at a construction site is fully addressed in Chapter 9 of the Fire Code Guide. See Frequently Asked Questions #7-12, including the table attached to FAQ #12.

FC Chapter 9, FAQ #12 addresses the fire watch requirements and hot work restrictions for out-of-service fire protection systems at construction sites (including a new building under construction; an existing building being altered, with or without occupants in the building; and a building being demolished).

#### FC CHAPTER 15 - FLAMMABLE FINISHES

1. Are paint spray booths permitted to be installed in basements or other below grade areas?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC1504.2.1** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

No. **FC1504.1.2** requires that paint spray booths be designed and constructed in accordance with National Fire Protection Association (NFPA) Standard 33 of 2000. Section A.2.1(f) of this NFPA Standard does not recommend any spray application operation, including spray booths, in basements.

2. I understand that the Fire Code requires a Certificate of Approval for pre-manufactured paint spray booths. Previously, the Department of Buildings and the Board of Standards and Appeals ("BSA") only required approval of pre-manufactured paint spray booths equipped with mechanical ventilation systems that circulated heated air in the booth. Does the Fire Code require that other types of pre-manufactured paint spray booths obtain a Certificate of Approval?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC1501.5** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

No. As indicated by the text of the applicable Fire Code section, **FC1504.1.2.7** (and as the Fire Department stated in connection with the enactment of Local Law 26 of 2008, which adopted the new Fire Code), the Certificate of Approval requirement for pre-manufactured paint spray booths was intended to continue the prior regulation of that equipment. The Department of Buildings issued Materials and Equipment approvals only for pre-manufactured paint spray booths that circulated heated air in the booth, to ensure that there are safeguards to prevent the lower explosive limit of the flammable vapor present in the booth from being reached by the heating of the air.

Accordingly, the pre-manufactured paint spray booths that **FC1504.1.2.7** requires to be of a type for which a Certificate of Approval has been issued are limited to the type of paint spray booths that are designed to circulate heated air in the booth. Design and installation documents must be submitted for all pre-manufactured paint spray booths, and will be reviewed by the Department for compliance with FC Chapter 15 requirements, including NFPA Standard 33.

#### FC CHAPTER 22 - MOTOR FUEL-DISPENSING FACILITIES AND REPAIR GARAGES

1. The 2008 Fire Code eliminated the requirement that aboveground and underground motor fuel storage tanks and other system components be of a type for which a Certificate of Approval has been issued. Is there a phase-in period for this change or will all tanks and other system components installed after July 1, 2008 no longer require these Certificates of Approval?

Effective July 1, 2008, newly installed motor fuel storage systems are required to be inspected and tested in accordance with the new Fire Code, including **FC2206.9**. The Fire Code no longer requires certificates of approval for motor fuel tanks and system components.

2. I operate several motor fuel-dispensing facilities throughout the city. What Fire Code and Rule requirements will I be expected to comply with?

All motor-fuel dispensing facilities, both new and pre-existing (systems lawfully installed before March 30, 2014), are required to comply with the operational and maintenance requires of the 2014 Fire Code, including requirements relating to signage, supervision, and periodic testing of leak detection and fire extinguishing systems.

Pre-existing installations, which can comply with the design and installation provisions of the Fire Code shall comply with those requirements. Pre-existing installations which cannot comply with the design and installation provisions of the Fire Code shall comply with the 2008 Fire Code or Fire Prevention Code, rules, permit conditions, and other applicable law, rule and regulation, under which the installation was approved.

I am an engineer that designs gas stations and renovates existing stations. FC2206.7.9 requires that motor fuel storage and dispensing systems be provided with vapor-recovery systems in accordance with the requirements of the New York State Department of Environmental Conservation (DEC). On May 25, 2011, DEC issued a Stage II Vapor Collection System Enforcement Discretion Directive, in which they eliminated the requirement of a Stage II vapor recovery system for a gas station's motor fuel storage and dispensing system. Can I design or renovate my client's gas stations without a Stage II vapor recovery system given the provisions of FC2206.7.9?

The interpretation provided in this response was offered in connection with the 2008 Fire Code and has since been incorporated, with certain changes, into **FC2206.7.9** of the 2014 Fire Code. This response is intended to provide an understanding of reasoning underlying the Fire Code requirements. Be sure to check the 2014 Fire Code for all applicable requirements.

Yes. The Fire Department has determined that **FC2206.7.9** was intended to reflect the obligation of gas station owners to incorporate the vapor recovery system required by DEC for environmental reasons, not to establish an independent fire safety requirement. Stage II vapor recovery systems do not serve any critical fire safety function. In light of DEC's directive, no purpose would be served by continuing to require Stage II vapor recovery systems.

Accordingly, newly-constructed liquid motor fuel service stations may be designed without Stage II vapor recovery systems. Reference should be made on the appropriate design and installation documents submitted to the Department pursuant to **FC2201.3** that a Stage II vapor recovery

system is not being provided in accordance with DEC's Stage II Vapor Collection System Enforcement Discretion Directive ("DEC Directive").

However, *removal* of existing Stage II vapor recovery systems in liquid motor fuel service stations does implicate fire safety concerns. Improper removal of the system could jeopardize the integrity of the tank and piping. Accordingly, the Fire Department will monitor the decommissioning process.

To that end, the Fire Department establishes the following procedures and interim guidelines for the decommissioning of Stage II vapor recovery systems from a liquid motor fuel service station:

- Application shall be made to the Bureau of Fire Prevention for a modification pursuant to FC104.8 for each service station from which a Stage II vapor recovery system is to be decommissioned. The application form for a modification is available on the Fire Department's website at:
  - http://www.nyc.gov/html/fdny/pdf/fire\_prevention/modification\_variances.pdf.
- 2. The modification application shall include a legible sketch prepared by a Fire Department Certificate of License holder (see **FC2201.8**) of the proposed decommissioning work and a written narrative describing the work.
- 3. Decommissioning of Stage II vapor recovery systems shall be conducted in accordance with the Stage II Vapor Collection System Decommissioning Procedures as set forth in Appendix A of the DEC Directive.
- 4. All work performed in connection with the decommissioning of Stage II vapor recovery systems shall be conducted by a Fire Department Certificate of License holder.
- 5. Upon completion of the decommissioning work, the motor fuel storage and dispensing system shall be subjected to, and pass, the CARB Vapor Recovery Test Procedure TP-201.3 (Determination of 2-inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities), as set forth in the DEC Directive, to ensure the vapor tightness of the system. Such testing shall be conducted by a Fire Department Certificate of License holder.
- 6. Within thirty (30) days of completion of the decommissioning work, the Fire Department Certificate of License holder that conducted the decommissioning work shall submit an affidavit to the Bulk Fuel Safety Unit of the Bureau of Fire Prevention attesting to the decommissioning of the Stage II vapor recovery system in compliance with the DEC Directive and the modification application, and the successful CARB testing of the motor fuel storage and dispensing system. A copy of the CARB test results filed with DEC shall be submitted with the affidavit.

Questions regarding the decommissioning of existing Stage II vapor recovery systems may be directed to the Bulk Fuel Safety Unit at (718) 999-2516.

Failure to comply with these procedures and guidelines will subject the owner and/or Certificate of License holder to enforcement action.

I operate an existing repair garage and plan to begin repairing hydrogen and compressed natural gas (CNG)-fueled vehicles. Do I have to make any modifications to the design of my facility?

That depends. Repair garages constructed in accordance with the requirements of the 1968 Building Code are designed for the repair of liquid motor fueled vehicles, not vehicles fueled by lighter-than-air fuels. FC2211.7 provides that repair garages used for the repair and/or conversion of vehicles fueled by lighter-than-air fuels must comply with the requirements of the Mechanical Code and Building Code, including ventilation requirements (see MC502.16) and the flammable gas detection system requirements (see BC406.6.6). Unless you have documentation showing that the Department of Buildings had previously authorized your repair garage to be used for the repair

and/or conversion of vehicles fueled by lighter-than-air fuels, you are required to comply with the provisions of FC2211.7 and Fire Department rule 3 RCNY 2211-01.

#### FC CHAPTER 24 - TENTS AND OTHER MEMBRANE STRUCTURES

1. Can "sternos" be used in tents to keep food warm?

FC2404.7 allow	s use o	f sternos	when	an	open	flame	permit	has	been	issued	for	such	use	by	the

Fire Department.

## 2. Can tables or other items be stored or placed against the tent walls?

No. FC2404.11 requires that there be at least 3 feet clearance between the tent walls and any tent contents.

# 3. Can electric table-top burners and electric induction burners be used in tents for food warming?

Yes. The Fire Code does not directly regulate the use of electric food warmers in tents, only devices utilizing an open flame. However, any temporary wiring must comply with the requirements of the Electrical Code, and the use of any extension cord is subject to compliance with the requirements of **FC605.5**.

# 4. FC2401.2 states that permits shall be required as set forth in FC105.6. Is a permit required for a tent?

No. A tent does not require a Fire Department permit. However, a Fire Department permit is required if certain activities or operations are conducted inside the tent, such as use of commercial cooking equipment, open flames, and the conduct of special effects.

#### FC CHAPTER 26 - WELDING AND OTHER HOT WORK

1. I understand that FC2609.8 requires a combination flashback arrestor and backflow check valve be provided when piped natural gas is used with oxygen in any hot work operation, both in existing and new installations. The section also provides that the installation shall additionally comply with the rules. Can you direct me to the rule that applies?

The standards, requirements and procedures implementing the provisions of FC2609.8 are set forth in Fire Department rule 3 RCNY 2609-01.

#### FC CHAPTER 27 - HAZARDOUS MATERIALS-GENERAL PROVISIONS

1. If an entire building with non-production chemical laboratories is a non-smoking facility and no smoking signs are posted at the entrances to the building, do "No Smoking" signs need to be posted on the doors to each laboratory unit?

Yes. "No Smoking" signs must be posted at the entrance to each non-production laboratory, but not necessarily on the door.

**FC2703.7.1** requires the posting of no-smoking signs in rooms or areas where various types of hazardous materials are used. This requirement is consistent with longstanding former Fire Department rule 3 RCNY 10-01, which required posting of No Smoking signs at the exterior entrance to laboratory areas and within laboratory areas.

This requirement is intended for fire safety purposes, and is not rendered unnecessary by New York City Health Code regulations prohibiting smoking in buildings for health reasons.

#### FC CHAPTER 30 - COMPRESSED GASES

1. Does the Fire Code have any regulations for the storage, handling and use of helium containers?

Yes. Helium is regulated as a compressed gas, as that term is defined in FC3002.1. A permit is required for the storage, handling and use of helium gas pursuant to FC Table 105.6(1) and the storage, handling and use of helium in permitted amounts requires supervision by the holder of a certificate of fitness pursuant to FC3001.4. You should refer to the requirements of FC Chapter 30 for other storage, handling and use requirements.

#### FC CHAPTER 33 - EXPLOSIVES, FIREWORKS AND SPECIAL EFFECTS

Our organization conducts ceremonies honoring military veterans and fires off blank rifle and cannon salutes using blank black powder cartridges and bags. We understand that the New York City Fire Code requires a permit for the storage, handling and use of explosives for any "special effect." What requirements would apply to the use of blank cartridges for outdoor rifle or cannon salutes?

The storage, handling and use of explosives, including black powder and small arms ammunition, is strictly regulated by the Fire Code because of the life and fire safety hazards its presents. Detailed requirements for explosives are set forth in **FC Chapter 33**, and **FC105.6** requires that a permit be obtained for the storage, handling and use of explosives. **FC Chapter 33** also regulates "special effects" that utilize explosives, pyrotechnic materials or other hazardous materials.

However, **FC Chapter 33** primarily focuses on blasting operations and fireworks displays, and on special effects conducted indoors, in close proximity to performers or the audience. The Fire Department has concluded that these requirements do not adequately address the use of blank cartridges for outdoor rifle or cannon salutes or similar activities uses, such as the use of starter pistols or cannon at athletic or boating events.

Accordingly, the Fire Department has determined, pursuant to its authority under **FC105.3.8**, to adopt the following interim guidelines, pending amendment of the Fire Code and/or adoption of a Fire Department rule:

#### Firing of Blank Pistol and Rifle Cartridges and Blank Shotgun Shells

The Fire Department will issue a <u>citywide permit</u> authorizing the firing of blank pistol or rifle cartridges or blank shotgun shells ("firing") at any lawful location in New York City.

Application for such citywide permit shall be made by letter or on such other form specified by the Department, demonstrating compliance with the following requirements and subject to the following terms and conditions:

- 1. **Event description.** The application must specify the date(s), time(s), location(s) and event(s) at which the firing will be conducted. If not known at time of application, the Department may require notification of the Fire Department's Explosives Unit two business days prior to each firing.
- 2. Lawful activities only. The firing must be in conjunction with a lawful event or activity.
- 3. **Limit on blanks discharged.** The firing is limited at each event to no more than a combined total of *fifty (50)* blank pistol and rifle cartridges and blank shotgun shells. (A site-specific Fire Department permit shall be obtained for any event in which more than this amount of blank cartridges or shells is to be fired.)
- 4. **Outdoor firing only.** The firing must be conducted outdoors. (A site-specific Fire Department special effects permit shall be obtained for any event involving indoor firing of blank cartridges or shells.)
- 5. Storage of blanks. Except for temporary storage of blanks incidental to a firing (see below), blanks and other explosives must be stored in New York City in accordance with FC Chapter 33, and a separate, site-specific Fire Department permit obtained for storage of amounts requiring a permit.

#### 6. Conduct of firing

- (a) **No live ammunition or other projectiles.** No live ammunition or other projectiles, or other matter, shall be fired from the barrel of the pistol, rifle or shotgun. (A site-specific Fire Department special effects permit shall be obtained for any event involving the firing of projectiles or other matter.)
- (b) **Temporary storage of blanks.** The temporary storage of blanks at the event or activity shall be under the continuous supervision of a trained and knowledgeable person who shall ensure that the blanks are constantly monitored. At all times when not in use, blanks shall be kept in a metal ammunition box.
- (c) **Supervision of firing.** Each firing shall be conducted under the continuous supervision of a trained and knowledgeable person who shall be personally present during the firing.
- (d) **Safety zone**. A safety zone of *not less than 15 feet* (or such other distance as may be specified by the Fire Department) shall be maintained around the temporary storage area and the firing area. There shall be no smoking in the safety zone, and only authorized personnel shall be allowed to enter the safety zone. The safety zone shall be searched at the conclusion of the firing to be sure no blanks have been left behind.
- (e) Fire extinguishers. At least one portable fire extinguisher, which shall be readily available for use, shall be provided within the safety zone when firing blank pistol or rifle cartridges.
- 7. **Fire Department inspections.** The Fire Department reserves the right to inspect the storage and firing areas and monitor the firing. Fire Department representatives shall be granted access to such areas.
- 8. **Permit fee.** Payment of an annual citywide permit fee of \$52.50 must be received at time of application.
- Compliance with other requirements. The citywide permit shall not relieve the applicant of complying with any and all other Fire Code and Fire Department rule requirements applicable to the event or activity.

### Firing of Blank Cannon Black Powder Cartridges and Bags

The Fire Department will issue a <u>site-specific</u> permit authorizing the firing of blank cannon black powder cartridges and bags ("cannon firing") at any lawful location in New York City.

Application for such site-specific permit shall be made by letter or on such other form specified by the Department, demonstrating compliance with the following requirements and subject to the following terms and conditions:

- 1. **Event description.** The application must specify the date, time, location and event at which the cannon firing will be conducted.
- Lawful activities only. The cannon firing must be in conjunction with a lawful event or activity.
- 3. **Size of cannon.** Cannon size is limited to standard salute cannon with a barrel not exceeding *five (5)* inches in diameter. No larger cannon and no other type of firing device shall be used except as may be approved by the Fire Department for good cause shown.
- 4. **Limit on blanks discharged.** The cannon firing is limited at each event to no more than a total of *fifty (50)* blank cannon black powder cartridges and bags except as may be approved by the Fire Department based on the size and duration of the event or other good cause shown.

- 5. **Outdoor firing only.** The cannon firing must be conducted outdoors. (A Fire Department special effects permit shall be obtained for any event involving any indoor cannon firing.)
- 6. Storage of blanks. Except for temporary storage of blanks incidental to a firing (see below), blank black powder cartridges and bags and other explosives must be stored in New York City in accordance with FC Chapter 33, and a separate, site-specific Fire Department permit obtained for storage of amounts requiring a permit.

#### 7. Conduct of cannon firing

- (a) **No live ammunition or other projectiles.** No live ammunition or other projectiles, or other matter, shall be fired from the barrel of the cannon.
- (b) **Temporary storage of blanks.** The temporary storage of blanks at the event or activity shall be under the continuous supervision of a trained and knowledgeable person who shall ensure that the blanks are constantly monitored. At all times when not in use, blanks shall be kept in a metal ammunition box.
- (c) **Supervision of firing.** Each cannon firing shall be conducted under the continuous supervision of a trained and knowledgeable person who shall be personally present during the firing.
- (d) Safety zone. A safety zone of not less than 100 feet (or such other distance as may be specified by the Fire Department) shall be maintained around the temporary storage area and the cannon firing area. There shall be no smoking in the safety zone, and only authorized personnel shall be allowed to enter the safety zone. The safety zone shall be searched at the conclusion of the cannon firing to be sure no blanks have been left behind.
- (e) Fire extinguishers. At least two portable fire extinguishers, which shall be readily available for use, shall be provided within the safety zone when firing blank cannon cartridges or bags.
- 8. **Fire Department inspections.** The Fire Department reserves the right to inspect the storage and cannon firing areas and monitor the cannon firing. Fire Department representatives shall be granted access to such areas.
- 9. **Permit fee.** Payment of an annual site-specific permit fee of \$105 must be received at time of application.
- 10. **Compliance with other requirements.** The site-specific permit shall not relieve the applicant of complying with any and all other Fire Code and Fire Department rule requirements applicable to the event or activity.

#### FC CHAPTER 34 - FLAMMABLE AND COMBUSTIBLE LIQUIDS

1.	FC3401.8 requires persons that install, alter, test or repair flammable or combustible
	liquid storage systems hold a certificate of license. Is this requirement applicable to tanks
	installed at bulk plants or terminals?

No. The definition of flammable and combustible liquid storage systems set forth in FC3402 excludes bulk plant and terminal storage systems.

2. I am planning to replace my fuel oil tanks. What section of the Fire Code regulates the installation of these tanks?

The New York City Mechanical Code, not the Fire Code, regulates the installation of fuel oil tanks. However, when removing a fuel oil tank from service, the owner must comply with the "out-ofservice" requirements for flammable and combustible liquid storage tanks set forth in FC3404.2.13 and Fire Department rule 3 RCNY 3404-01. The removal of the old tank must be performed by a licensed person, as set forth in that rule.

3. I have an existing permit for the storage of gasoline and diesel fuel in 5 gallon metal containers. FC2204.1.7.2 requires that portable containers storing gasoline and diesel fuel not be greater than 21/2 gallons in capacity. Am I correct that because I have existing flammable and combustible liquid storage permits that I can continue to comply with the requirements of the old Fire Prevention Code, which allowed 5 gallon metal containers?

You are not correct. The provisions of FC2204.1.7.2 limiting the capacity of portable gasoline and diesel fuel containers is an operational requirement. Pursuant to FC102.2, the operational requirements of the Fire Code are applicable to both new and existing facilities.

4. I recently learned of a new type of "one-time use emergency gas can": a disposable, collapsible container, constructed of cardboard with a plastic liner, intended for storing and dispensing flammable liquids, including motor fuels. The container nozzle is sealed by a stopper. Is use of such a container allowed under the Fire Code?

No. FC2204.1.7.1 prohibits the dispensing of liquid motor fuels into containers that do not have a tight closure with a screw-type or spring loaded cover. A portable container using a stopper on the end of the nozzle to prevent spillage would not comply with this code requirement.

5. Does the Fire Code regulate the storage and use of alcohol-based hand rubs?

Yes. FC3405.5 sets forth requirements for the storage and use of alcohol-based hand rubs, including a maximum container capacity of 68 ounces. Please refer to the section for complete requirements.

6. FC3406.2.8 authorizes the transfer of fuels from cargo tanks directly into the fuel tanks of construction equipment at a construction site. Does the Fire Code also authorize the

transfer of fuels from cargo tanks directly into the fuel tanks of motor vehicles in other circumstances and other locations?

No. Such direct fueling is only allowed at construction sites under the circumstances set forth in FC3406.2.8.

7. My business provides trailers to supply temporary power to buildings when their normal electrical power is interrupted. An 1100-gallon fuel oil storage tank is mounted on these trailers. Is a permit required for these systems?

Yes. A Fire Department permit is required for the 1100-gallon diesel fuel storage tank, but not the electrical generator itself. The permit requirement for the fuel storage tank is set forth in **FC105.6** under "transportation of hazardous materials." Such trailers are required to comply with the requirements of the Fire Department rule 3 RCNY 3405-01.

#### FC CHAPTER 45 - REFERENCED STANDARDS

# 1. What are the Referenced Standards listed in Chapter 45 of the Fire Code and how do they relate to the Fire Code?

The Fire Code incorporates by reference numerous nationally-recognized fire safety standards, and certain Federal regulations. These standards and regulations are listed in **FC Chapter 45**. The Referenced Standards supplement the requirements of the Fire Code. The provisions of the Fire Code chapters and Fire Department rules govern where there is a conflict between those provisions of law and the provisions of the Referenced Standards.

**FC Chapter 45** identifies the edition of the Referenced Standard that has been adopted. It is important that you use the correct edition of the Referenced Standard to ensure that you are complying with the applicable legal requirements.

#### 2. How can I obtain copies of the Referenced Standards?

**FC Chapter 45** identifies the name and contact information of the organization that promulgates each Referenced Standard. You should contact these organizations for information as to how to obtain copies of their standards.

The Fire Department suggests that you check the web sites of these organizations, as they may make their standards and regulations available at no cost on the web site.

## 3. Has the Fire Department adopted any modifications to the Referenced Standards?

Yes. **Appendix B** of the Fire Code and Chapter 47 of the Fire Department's rules include the amendments made to the Referenced Standards adopted in Fire Code Chapter 45.

## FC APPENDIX A - FEES

1. Where can I find the fees for Fire Department permits, certificates, and other approvals and services?

All fees can now be found in Appendix A to the Fire Code, and Chapter 46 of the Fire Department's rules.

Fire Code Guide (6/15/16)

## 2008 FIRE CODE AND CORRESPONDING 2014 FIRE CODE SECTIONS

2008 Fire Code	2014 Fire Code
102.3	102.3, 102.4 and 102.5
102.4	105.3.9
313.5.2.3	313.3(1) Exception 4
316	317
316.1	317.1
316.2	317.2
316.3	317.3
316.4	317.4
316.4.1	317.4.1
316.4.2	317.4.2
316.4.3	317.4.3
316.4.3.1	317.4.3.1
316.4.3.2	317.4.3.2
316.4.3.3	317.4.3.3
316.5	317.5
316.5.1	317.5.1
316.5.2	317.5.2
316.5.3	317.5.3
316.5.3.1	317.5.3.1
316.5.3.2	317.5.3.2
316.5.4	317.5.4
316.6	317.6
401.1	401.1
401.2	401.4.4, 401.5.4
401.3	401.2.1
401.3.3	401.7.5
401.6	401.4.5, 401.5.5
401.6.1	401.4.5.1(3), 401.5.5.1
401.6.2	404.2.1(1), 401.4.5
401.6.2 Exception	404.2.1 Exception
401.6.2.1	401.4.5
401.6.2.2	401.4.5.1
401.6.2.2(1)	401.4.5.1(1)
401.6.2.2(2)	401.4.5.1(2)
401.6.2.2(3)	401.4.5.1(3)
401.6.2.2(4)	401.4.5.1(3)
401.6.3	401.3.7
401.6.4	401.5.5.1(1)
401.6.5 Exception 1	410.4.1(5) & (6),
1	410.4.2
401.6.5 Exception 2	405.4.3, 405.4.4
401.6.5 Exception 3	405.3.1, 405.3.2
401.6.5.1	405.2.2
401.6.5.2	401.4.5.1
401.6.5.2(1)	401.4.5.1(1)
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2008 Fire Code	2014 Fire Code
401.6.5.2(2)	401.4.5.1(2)
401.6.5.2(3)	401.4.5.1(3)
401.6.5.2(4)	401.4.5.1(3)
401.6.6	401.3.7
401.6.7	405.2.2, 405.3.2
401.6.8.1	405.2.2, 405.4.4
401.6.8.2	405.2.2, 405.4.4.1
401.6.8.2(1)	405.2.2, 405.4.4.1(1)
401.6.8.2(2)	405.2.2, 405.4.4.1(2)
401.6.8.2(3)	405.2.2, 405.4.4.1(3)
401.6.8.3	405.4.5
401.7	401.4.5
401.7.1	404.2.2
401.7.2	401.4.5.1
401.7.2(1)	401.4.5.1(1)
401.7.2(2)	401.4.5.1(2)
401.7.2(3)	401.4.5.1(3)
401.7.2(4)	401.4.5.1(3)
401.8	401.10
401.9	401.11
402.1	402.1
403.1	403.1
403.2	403.2
403.3	403.3, 407.5
403.3.1	407.5.1
403.3.2	407.5.2
403.3.3	407.5.3
403.3.3(1)	407.5.3(1)
403.3.3(2)	407.5.3(2)
403.3.3(3)	407.5.3(3)
403.3.4	407.5.4
403.4	407.6
403.5	407.7
403.5(1)	
` '	407.7(1)
403.5(2)	407.7(2)
404.1	401.3.1
404.1.1	401.3.6
404.2.1(1)	407.2.1, 407.3.1(1)
404.2.1(2)	404.2.1(1) & (2)
404.2.1(3)	410.3.1(2), 410.4.1(3)
404.2.1(4)	410.4.1(2) & (4)
404.2.1(5)	412.1
101 0 1 (5) (5 1)	412.1(1)
404.2.1(5)(5.1)	
404.2.1(5)(5.1) 404.2.1(5)(5.2)	412.1(2)

404.2.1(6)       408.2, 413.2         404.2.1(7)       414.2.1(1) & (2), 414.3.1(1) & (2)         404.2.1(8)       405.3.1         404.2.1(10)       401.3.7         404.2.1(11)       407, 410, 414         404.2.1(12)       414.2.1(3), 414.3.1(3)         404.2.1(13)       405.2.1(1), 410.3.1(1), 410.4.1(1), (2) & (5), 414.2.1(1) & (3), 404.2.1(1) & (3), 404.2.1(1) & (3), 404.2.1(1) & (3), 404.3.1, 408.2, 411.2, 412.2, 415.1.1(1)         404.2.1(15)       405.4.1, 405.4.3         404.2.2(1)       404.2.1(1)         404.2.2(2)       404.2.1(1)         404.2.2(3)       404.2.1(1)         404.2.2(4)       401.3.7         404.2.2(5)       404.2.1(4)         404.3.1(1)       401.4.3(2), (3) & (5)         404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)         404.3.1(3)       401.4.3(9)         404.3.1(4)       401.4.3(10)         404.3.1(4)       401.4.3(10)         404.3.1(4)       401.4.3(10)         404.3.1(4)       401.4.3(10)         404.3.1(4)       401.4.3(10)         404.3.1(4)       401.4.3(10)         404.3.1(4)       401.4.3(10)         404.3.1(4)       401.4.3(10)         404.3.1(4)       401
414.3.1(1) & (2)  404.2.1(8) 405.3.1  404.2.1(10) 401.3.7  404.2.1(11) 407, 410, 414  404.2.1(12) 414.2.1(3), 414.3.1(3)  404.2.1(13) 405.2.1(1), 410.3.1(1), 410.4.1(1), (2) & (5), 414.2.1(1), 415.1.1(1)  404.2.1(14) 404.2.1(15) 404.2.1(15) 404.2.1(1) 404.2.2(1) 404.2.2(1) 404.2.2(2) 404.2.1(1) 404.2.2(3) 404.2.1(1) 404.2.2(4) 404.3.1(1) 404.3.1(1) 404.3.1(2) 404.3.1(2) 404.3.1(2) 404.3.1(3) 404.3.1(3) 401.4.3(9) 404.3.1(3) 404.3.1(3) 401.4.3(9) 404.3.1(4) 4
414.3.1(1) & (2) 404.2.1(8) 405.3.1 404.2.1(10) 401.3.7 404.2.1(11) 404.2.1(12) 414.2.1(3), 414.3.1(3) 404.2.1(13) 404.2.1(13) 405.2.1(1), 410.3.1(1), 410.4.1(1), (2) & (5), 414.2.1(1), 415.1.1(1) 404.2.1(14) 404.2.1(15) 404.2.1(15) 404.2.1(1) 404.2.1(1) 404.2.2(1) 404.2.2(1) 404.2.2(2) 404.2.1(1) 404.2.2(3) 404.2.1(1) 404.2.2(3) 404.2.1(1) 404.2.2(4) 401.3.7 404.2.2(5) 404.2.1(1) 404.3.1(1) 404.3.1(2) 404.3.1(2) 404.3.1(3) 401.4.3(6) 404.3.1(3) 401.4.3(9) 404.3.1(3) 401.4.3(9) 404.3.1(4) 404.3.1(4) 401.4.3(10) 404.3.1(4) 404.3.1(4) 401.4.3(10) 404.3.1(4)(4.1) 404.3.1(4)(4.1) 404.3.1(4)(4.1) 404.3.1(4)(4.5) 404.3.1(4)(4.5) 404.3.1(4)(4.6) 404.3.1(4)(4.7) 404.3.1(4)(10.7) 404.3.1(4)(4.8) 404.3.1(4)(10.7) 404.3.1(4)(4.9) 404.3.1(4)(10.7) 404.3.1(4)(4.9) 404.3.1(4)(10.7) 404.3.1(4)(4.9) 404.3.1(4)(10.7) 404.3.1(4)(10.7) 404.3.1(4)(4.9) 404.3.1(4)(10.7) 404.3.1(4)(10.7) 404.3.1(4)(10.7) 404.3.1(4)(4.9) 401.4.3(10)(10.5) 404.3.1(4)(4.9) 401.4.3(10)(10.5) 404.3.1(4)(4.9) 401.4.3(10)(10.6) 404.3.1(4)(4.9) 401.4.3(10)(10.6) 404.3.1(4)(4.9) 401.4.3(10)(10.7) 404.3.1(4)(4.9) 401.4.3(10)(10.7) 404.3.1(4)(4.9) 401.4.3(10)(10.7) 404.3.1(4)(4.9) 401.4.3(10)(10.7) 404.3.1(4)(4.9) 401.4.3(10)(10.7) 404.3.1(4)(4.9)
404.2.1(8)       405.3.1         404.2.1(10)       401.3.7         404.2.1(11)       407, 410, 414         404.2.1(12)       414.2.1(3), 414.3.1(3)         404.2.1(13)       405.2.1(1), 410.3.1(1), 410.4.1(1), (2) & (5), 414.2.1(1), 415.1.1(1)         404.2.1(14)       404.2.1(1) & (3), 404.3.1, 408.2, 411.2, 412.2, 415.1.1(1)         404.2.1(15)       405.4.1, 405.4.3         404.2.2(1)       404.2.1(1)         404.2.2(2)       404.2.1(1)         404.2.2(3)       404.2.1(1) & (2)         404.2.2(4)       401.3.7         404.2.2(5)       404.2.1(4)         404.3.1(1)       401.4.3(2), (3) & (5)         404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(4)       401.4.3(10)(10.1)         404.3.1(4)(4.1)       401.4.3(10)(10.12)         404.3.1(4)(4.2)       401.4.3(10)(10.13)         404.3.1(4)(4.4)       401.4.3(10)(10.13)         404.3.1(4)(4.4)       401.4.3(10)(10.13)         404.3.1(4)(4.4)       401.4.3(10)(10.5)         404.3.1(4)(4.4)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.5)         404.3.1(4)(4.9)       401.4.3(10)(10.8)
404.2.1(9)       405.3.1         404.2.1(10)       401.3.7         404.2.1(12)       414.2.1(3), 414.3.1(3)         404.2.1(13)       405.2.1(1), 410.3.1(1), 410.4.1(1), (2) & (5), 414.2.1(1), 415.1.1(1)         404.2.1(14)       404.2.1(1) & (3), 404.3.1, 408.2, 411.2, 412.2, 415.1.1(1)         404.2.1(15)       405.4.1, 405.4.3         404.2.2(1)       404.2.1(1)         404.2.2(2)       404.2.1(1)         404.2.2(3)       404.2.1(1) & (2)         404.2.2(4)       401.3.7         404.2.2(5)       404.2.1(4)         404.3.1(1)       401.4.3(2), (3) & (5)         404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(4)       401.4.3(10)(10.1)         404.3.1(4)(4.1)       401.4.3(10)(10.1)         404.3.1(4)(4.2)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3(10)(10.13)         404.3.1(4)(4.4)       401.4.3(10)(10.13)         404.3.1(4)(4.5)       401.4.3(10)(10.5)         404.3.1(4)(4.6)       401.4.3(10)(10.5)         404.3.1(4)(4.9)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.8)
404.2.1(10)       401.3.7         404.2.1(11)       407, 410, 414         404.2.1(12)       414.2.1(3), 414.3.1(3)         404.2.1(13)       405.2.1(1), 410.3.1(1), 410.4.1(1), (2) & (5), 414.2.1(1), 415.1.1(1)         404.2.1(14)       404.2.1(1) & (3), 404.3.1, 408.2, 411.2, 412.2, 415.1.1(1)         404.2.1(15)       405.4.1, 405.4.3         404.2.2(1)       404.2.1(1)         404.2.2(2)       404.2.1(1)         404.2.2(3)       404.2.1(1) & (2)         404.2.2(4)       401.3.7         404.2.2(5)       404.2.1(4)         404.3.1(1)       401.4.3(2), (3) & (5)         404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(4)(4.1)       401.4.3(10)(10.1)         404.3.1(4)(4.1)       401.4.3(10)(10.1)         404.3.1(4)(4.2)       401.4.3(10)(10.12)         404.3.1(4)(4.4)       401.4.3(10)(10.13)         404.3.1(4)(4.5)       401.4.3(10)(10.13)         404.3.1(4)(4.6)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.5)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.9)       401.4.3(10)(10.8)
404.2.1(11)       407, 410, 414         404.2.1(12)       414.2.1(3), 414.3.1(3)         404.2.1(13)       405.2.1(1), 410.3.1(1), 410.4.1(1), (2) & (5), 414.2.1(1), 415.1.1(1)         404.2.1(14)       404.2.1(1) & (3), 404.3.1, 408.2, 411.2, 412.2, 415.1.1(1)         404.2.1(15)       405.4.1, 405.4.3         404.2.2(1)       404.2.1(1)         404.2.2(2)       404.2.1(1)         404.2.2(3)       404.2.1(1) & (2)         404.2.2(4)       401.3.7         404.2.2(5)       404.2.1(4)         404.3.1(1)       401.4.3(2), (3) & (5)         404.3.1(3)       401.4.3(9)         404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(4)       401.4.3(10)(10.1)         404.3.1(4)(4.1)       401.4.3(10)(10.1)         404.3.1(4)(4.2)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3(10)(10.3)         404.3.1(4)(4.5)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.9)       401.4.3(10)(10.8)
404.2.1(12)       414.2.1(3), 414.3.1(3)         404.2.1(13)       405.2.1(1), 410.3.1(1), 410.4.1(1), (2) & (5), 414.2.1(1), 415.1.1(1)         404.2.1(14)       404.2.1(1) & (3), 404.3.1, 408.2, 411.2, 412.2, 415.1.1(1)         404.2.1(15)       405.4.1, 405.4.3         404.2.2(1)       404.2.1(1)         404.2.2(2)       404.2.1(1)         404.2.2(3)       404.2.1(1) & (2)         404.2.2(4)       401.3.7         404.2.2(5)       404.2.1(4)         404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(3)(3.2)       401.4.3(10)(10.1)         404.3.1(4)(4.1)       401.4.3(10)(10.1)         404.3.1(4)(4.2)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3(10)(10.13)         404.3.1(4)(4.5)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.2.1(13)       405.2.1(1), 410.3.1(1), 410.4.1(1), (2) & (5), 414.2.1(1), 415.1.1(1)         404.2.1(14)       404.2.1(1) & (3), 404.3.1, 408.2, 411.2, 412.2, 415.1.1(1)         404.2.1(15)       405.4.1, 405.4.3         404.2.2(1)       404.2.1(1)         404.2.2(2)       404.2.1(1)         404.2.2(3)       404.2.1(1) & (2)         404.2.2(4)       401.3.7         404.2.2(5)       404.2.1(4)         404.3.1(1)       401.4.3(2), (3) & (5)         404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(4)(4.1)       401.4.3(10)(10.1)         404.3.1(4)(4.1)       401.4.3(10)(10.12)         404.3.1(4)(4.2)       401.4.3(10)(10.13)         404.3.1(4)(4.4)       401.4.3(10)(10.3)         404.3.1(4)(4.5)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
414.2.1(1), 415.1.1(1)  404.2.1(14)  404.2.1(1) & (3), 404.3.1, 408.2, 411.2, 412.2, 415.1.1(1)  404.2.2(1)  404.2.2(1)  404.2.1(1)  404.2.2(2)  404.2.1(1)  404.2.2(3)  404.2.1(1) & (2)  404.2.2(4)  404.3.1(1)  404.3.1(2)  404.3.1(2)  404.3.1(3)  401.4.3(9)  404.3.1(3)(3.1)  401.4.3(9)(9.1)  404.3.1(3)(3.2)  404.3.1(4)  401.4.3(10)  404.3.1(4)(4.1)  401.4.3(10)(10.12)  404.3.1(4)(4.2)  401.4.3(10)(10.13)  404.3.1(4)(4.4)  401.4.3(10)(10.13)  404.3.1(4)(4.5)  401.4.3(10)(10.3)  404.3.1(4)(4.6)  401.4.3(10)(10.5)  404.3.1(4)(4.7)  401.4.3(10)(10.5)  404.3.1(4)(4.8)  401.4.3(10)(10.5)  404.3.1(4)(4.9)  401.4.3(10)(10.5)  404.3.1(4)(4.9)  401.4.3(10)(10.5)  404.3.1(4)(4.9)  401.4.3(10)(10.5)  404.3.1(4)(4.9)  401.4.3(10)(10.5)
404.2.1(14)       404.2.1(1) & (3), 404.3.1, 408.2, 411.2, 412.2, 415.1.1(1)         404.2.1(15)       405.4.1, 405.4.3         404.2.2(1)       404.2.1(1)         404.2.2(2)       404.2.1(1) & (2)         404.2.2(3)       404.2.1(1) & (2)         404.2.2(4)       401.3.7         404.2.2(5)       404.2.1(4)         404.3.1(1)       401.4.3(2), (3) & (5)         404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)(9.1)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(4)       401.4.3(10)(10.1)         404.3.1(4)       401.4.3(10)(10.1)         404.3.1(4)(4.2)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3(10)(10.13)         404.3.1(4)(4.4)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1, 408.2, 411.2, 412.2, 415.1.1(1) 404.2.1(15) 404.2.2(1) 404.2.2(2) 404.2.1(1) 404.2.2(3) 404.2.1(1) & (2) 404.2.2(4) 404.3.1(1) 404.3.1(2) 404.3.1(2) 404.3.1(3) 401.4.3(9) 404.3.1(3) 401.4.3(9) 404.3.1(3) 401.4.3(10) 404.3.1(4) 404.3.1(4) 404.3.1(4) 404.3.1(4) 401.4.3(10) 404.3.1(4) 401.4.3(10)(10.1) 404.3.1(4)(4.2) 401.4.3(10)(10.12) 404.3.1(4)(4.3) 401.4.3(10)(10.13) 404.3.1(4)(4.4) 401.4.3(10)(10.13) 404.3.1(4)(4.5) 404.3.1(4)(4.6) 401.4.3(10)(10.13) 404.3.1(4)(4.6) 404.3.1(4)(4.7) 401.4.3(10)(10.5) 404.3.1(4)(4.8) 401.4.3(10)(10.5) 404.3.1(4)(4.8) 401.4.3(10)(10.5) 404.3.1(4)(4.8) 401.4.3(10)(10.5) 404.3.1(4)(4.8) 401.4.3(10)(10.5) 404.3.1(4)(4.8) 401.4.3(10)(10.5) 404.3.1(4)(4.9) 404.3.1(4)(4.9) 401.4.3(10)(10.6) 404.3.1(4)(4.9) 401.4.3(10)(10.6)
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404.2.1(15)       405.4.1, 405.4.3         404.2.2(1)       404.2.1(1)         404.2.2(2)       404.2.1(1) & (2)         404.2.2(3)       404.2.1(1) & (2)         404.2.2(4)       401.3.7         404.2.1(4)       404.3.1(1)         404.3.1(1)       401.4.3(2), (3) & (5)         404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(3)(3.2)       401.4.3(10)         404.3.1(4)       401.4.3(10)(10.1)         404.3.1(4)(4.1)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3(10)(10.13)         404.3.1(4)(4.4)       401.4.3(10)(10.3)         404.3.1(4)(4.5)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
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404.2.2(3)       404.2.1(1) & (2)         404.2.2(4)       401.3.7         404.2.2(5)       404.2.1(4)         404.3.1(1)       401.4.3(2), (3) & (5)         404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(3)(3.2)       401.4.3(9)(9.2)         404.3.1(4)       401.4.3(10)(10.1)         404.3.1(4)(4.1)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3(10)(10.13)         404.3.1(4)(4.4)       401.4.3(10)(10.3)         404.3.1(4)(4.5)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.2.2(4)       401.3.7         404.2.2(5)       404.2.1(4)         404.3.1(1)       401.4.3(2), (3) & (5)         404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(3)(3.2)       401.4.3(10)         404.3.1(4)       401.4.3(10)(10.1)         404.3.1(4)(4.1)       401.4.3(10)(10.12)         404.3.1(4)(4.2)       401.4.3(10)(10.13)         404.3.1(4)(4.4)       401.4.3(10)(10.3)         404.3.1(4)(4.5)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.2.2(5)       404.2.1(4)         404.3.1(1)       401.4.3(2), (3) & (5)         404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(3)(3.2)       401.4.3(9)(9.2)         404.3.1(4)       401.4.3(10)(10.1)         404.3.1(4)(4.1)       401.4.3(10)(10.12)         404.3.1(4)(4.2)       401.4.3(10)(10.13)         404.3.1(4)(4.4)       401.4.3(10)(10.3)         404.3.1(4)(4.5)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(1)       401.4.3(2), (3) & (5)         404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(3)(3.2)       401.4.3(10)         404.3.1(4)       401.4.3(10)(10.1)         404.3.1(4)(4.1)       401.4.3(10)(10.12)         404.3.1(4)(4.2)       401.4.3 and 401.5.3         404.3.1(4)(4.3)       401.4.3(10)(10.13)         404.3.1(4)(4.5)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(2)       401.4.3(6)         404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(3)(3.2)       401.4.3(10)         404.3.1(4)       401.4.3(10)(10.1)         404.3.1(4)(4.1)       401.4.3(10)(10.12)         404.3.1(4)(4.2)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3(10)(10.13)         404.3.1(4)(4.4)       401.4.3(10)(10.3)         404.3.1(4)(4.5)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(3)       401.4.3(9)         404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(3)(3.2)       401.4.3(9)(9.2)         404.3.1(4)       401.4.3(10)         404.3.1(4)(4.1)       401.4.3(10)(10.1)         404.3.1(4)(4.2)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3(10)(10.13)         404.3.1(4)(4.4)       401.4.3(10)(10.3)         404.3.1(4)(4.5)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(3)(3.1)       401.4.3(9)(9.1)         404.3.1(3)(3.2)       401.4.3(9)(9.2)         404.3.1(4)       401.4.3(10)         404.3.1(4)(4.1)       401.4.3(10)(10.1)         404.3.1(4)(4.2)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3 and 401.5.3         404.3.1(4)(4.4)       401.4.3(10)(10.13)         404.3.1(4)(4.5)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(3)(3.2)       401.4.3(9)(9.2)         404.3.1(4)       401.4.3(10)         404.3.1(4)(4.1)       401.4.3(10)(10.1)         404.3.1(4)(4.2)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3 and 401.5.3         404.3.1(4)(4.4)       401.4.3(10)(10.13)         404.3.1(4)(4.5)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.8)
404.3.1(4)       401.4.3(10)         404.3.1(4)(4.1)       401.4.3(10)(10.1)         404.3.1(4)(4.2)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3 and 401.5.3         404.3.1(4)(4.4)       401.4.3(10)(10.13)         404.3.1(4)(4.5)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.8)
404.3.1(4)(4.1)       401.4.3(10)(10.1)         404.3.1(4)(4.2)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3 and 401.5.3         404.3.1(4)(4.4)       401.4.3(10)(10.13)         404.3.1(4)(4.5)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(4)(4.2)       401.4.3(10)(10.12)         404.3.1(4)(4.3)       401.4.3 and 401.5.3         404.3.1(4)(4.4)       401.4.3(10)(10.13)         404.3.1(4)(4.5)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(4)(4.3)       401.4.3 and 401.5.3         404.3.1(4)(4.4)       401.4.3(10)(10.13)         404.3.1(4)(4.5)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(4)(4.4)       401.4.3(10)(10.13)         404.3.1(4)(4.5)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(4)(4.5)       401.4.3(10)(10.3)         404.3.1(4)(4.6)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(4)(4.6)       401.4.3(10)(10.4)         404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(4)(4.7)       401.4.3(10)(10.5)         404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(4)(4.8)       401.4.3(10)(10.6)         404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
404.3.1(4)(4.9)       401.4.3(10)(10.7)         404.3.1(4)(4.10)       401.4.3(10)(10.8)
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404.3.1(10)	401.4.3(1)
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404.3.1(13)	401.4.3(13)
404.3.2	401.4.1
404.3.2(1)	401.4.2
404.3.2(2)	401.4.3(6)
404.3.2(3)	401.4.3(1)
404.3.2(4)	401.4.3(2)
404.3.2(5)	401.4.3(5)
404.3.2(6)	401.4.3(1)
404.3.2(7)	401.7
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408.9.3.1	406.3
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408.10	410.4.1
408.11.1	401.3.4
408.11.2	505.5
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5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	503.2.3.2
503.2.2	503.2.3.4
503.2.3	503.2.2, 503.2.2.1 and
33.2.0	503.2.2.2
503.2.4	503.2.2.4
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Table 503.2.5	Table 503.2.9
Figure 503.2.5	Figure 503.2.9
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503.2.7	503.2.2.3
503.3	503.2.7.2
503.4	503.2.5
503.5	503.2.8.2
503.5.1	503.2.8.2
503.6	503.2.8.1
503.7	503.2.7.2.1
Figure 503.7	Figure 503.2.7.2.1
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503.8.2	503.3.2
504.1	504.1.3 and 504.2
504.1.1	504.1.4
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504.4.2(2)	504.4.7
504.4.3	504.4.8
504.4.4	504.4.7 and 504.4.8
504.5	503.5
506.1	506.2.2
506.1.1	506.2.3
506.2	506.2.2
507.1	316.1
507.2	316.2
507.2.1	316.2.1
507.2.2	316.2.2
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509.1	907.3, 907.3.1, 907.3.2
	and 907.3.3
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608.1	608.1
608.2	608.2.1
608.3	608.4
608.4	608.5 and 608.5.1
608.5	608.6.1
608.6	608.7.1
608.7	608.8
608.8	608.9
609.1	608.1
609.2	608.2.2
609.3	608.3
609.4	608.4, 608.4.1 and
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609.7	608.6.2
609.8	608.4.2, 608.7.1 and
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609.9	608.8
609.10	608.9
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803.2.2	805.1.4
803.3	1027.5
803.3.1	1027.5
803.3.2	805.1 Exception 4
803.4	1027.5
803.4.1	1027.5
803.4.2	805.1 Exception 4
803.5	803.1
803.5.1	803.1.1
803.5.2	803.1.2
803.5.3	803.2.2
803.5.4	803.2.3
803.6	803.1
803.6.1	803.2.1
803.6.2	803.2.2
803.7	803.1
803.7.1	803.1.1
803.7.2	803.1.2
803.7.3	803.2.1
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901.7.2	901.7.3(9)
901.7.3	901.7.3(9)
901.7.4	901.7.3 and 901.7.5.3
901.7.5	901.7.4 and 901.7.5.3
904.11.4(1)	Mechanical Code
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904.11.5	609.3 and 609.3.2
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904.11.5.2	609.6 and 609.6.1
904.11.5.3	609.2.3.1
904.11.5.3.1	609.2.3.2, 609.4.4 and

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904.11.5.5	609.3.6 and 904.11.5
904.11.6	609.3 and 609.4
904.11.6.1	609.3.4.1 and 609.3.4.3
904.11.6.2	609.3.4.2
904.11.6.3	609.4.1 and 609.4.2
904.11.6.3 Exception	609.4.1 Exception 2
904.11.6.3.1	609.3.1(4) and 609.4.3
904.11.6.3.2	609.4.1 Exception 1
904.11.6.3.3	609.4.2
904.11.6.4	904.11.6
904.11.6.5	904.11.6.1
904.11.6.6	609.7 and 904.11.6.2
904.11.6.6(1) & (2)	609.7(1)
904.11.6.6(3)	904.11.6.2
904.11.6.6(4)	906.2.1
904.11.6.6(5)	609.7(2)
904.11.6.7	609.3.5 and 904.11.6.3
904.11.7	609.5.1
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904.11.7.2	609.2.4.1
904.11.7.3	609.5.3
904.11.7.4	609.5.4
905.12.2	905.12
906.3.1	906.3.1.1
Table 906.3(1)	Table 906.3.1
Table 906.3(2)	Table 906.3.2
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1027.4	1027.3.5
1027.4.1	1027.3.6
1027.5	1025.4 and 1027.6
1027.6	1025.4 and 1027.6.2
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1503.2.1.2	1503.2.1
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1503.2.1.3.1	1503.2.1.2.1
1503.2.1.4	1503.2.1.3
1503.2.1.5	1503.2.1.4
1503.2.1.6	1503.2.1
1504.1	1504.2
1504.1.1	1504.3.1
1504.1.1.1	1504.4.4
1504.1.1.2	1501.5
1504.1.2	1504.3.2
1504.1.2.1	1504.3.2.1

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1504.1.2.3	1504.4.4
1504.1.2.4	1504.3.2.5
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1504.1.2.6	1504.3.2.3
1504.1.2.7	1501.5
1504.1.3	1504.3
1504.1.3.1	1504.4.4
1504.1.4	1504.5
1504.1.4.1	1504.5.1
1504.1.4.2	1504.5.2
1504.1.4.3	1504.5.3
1504.1.4.4	1504.5.4
1504.2	1504.3.7
1504.2.1	1504.3.5(5) and
	1504.4.7
1504.2.4	1504.4.8
1504.3	1504.3.7.3
1504.3.1	1504.3.7.3.1
1504.3.2	1504.3.7.3.2
1504.3.3	1504.3.7.3.3
1504.3.4	1504.3.5(6)
1504.3.5	1504.4.2
1504.3.6	1504.4.1
1504.3.7	1504.3.2.4
1504.4	1504.4.1
1504.5	1504.3.6
1504.5.1	1504.3.6.1
1504.5.2	1504.3.6.2
1504.5.3	1504.3.6.3
1504.5.4	1504.4.5
1504.6	1504.3.3, 1504.3.3.1 and
	1504.3.3.2
1504.6.1	1504.4.3
1504.6.2	1504.3.3.3 and
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1504.6.2.1	1504.3.3.3
1504.6.3	1504.3.7.2
1504.6.4	1504.4.10
1504.7	1504.3.4
1504.7.1	1504.3.4.1
1504.7.2	1504.3.4.2
1504.7.2.1	1504.3.5
1504.7.2.2	1504.4.6
1504.7.2.3	1503.2
1505.1	1505.2
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1505.3	1505.3.1
1505.3.1	1505.3.1.1
1505.3.2	1505.3.1.2
1505.3.3	1505.3.2
1505.4	1505.3.5
1505.5	1505.5.3
1505.6	1505.3.4.1
1505.6.1	1505.3.4.2
1505.7	1505.3.3
1505.7.1	1505.3.3.1
1505.7.2	1505.3.3.2
1505.7.3	1505.3.3
1505.8	1505.4
1505.8.1	1505.4.2
1505.8.2	1505.4.3
1505.8.3	1505.4.5
1505.8.4	1505.4.4
1505.8.5	1505.5.2
1505.9	1505.6
1505.9.1	1505.6
1505.10	1505.7
1506	1507
1506.1	1507.1
1506.2	1507.4.3
1506.3	1507.3.1
1506.4	1507.2
1506.5	1507.3.3.1
1506.6	1507.3.3.2
1506.7	1507.3.2.2
1506.8	1507.3.1.1
1506.9	1507.4.2
1506.10	1507.3.4
1506.11	1507.4.1
1506.12	1507.3.2.1
1507	1506
1507.1	1506.1
1507.2	1506.2, 1506.3.1 and
	1506.3.2
1507.3	1506.4.5
1507.4	1506.3.5
1507.5	1506.3.4
1507.6	1506.4.1
1507.6.1	1506.4.2
1507.6.2	1506.4.3
1507.7	1506.1

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1507.8	1506.3.3.1
1507.9	1506.3.3.2
1507.10	1506.4.6
1508.1	1504.2 Exception 1
1509	1508
1509.1	1508.3.1
1509.2	1508.2.3
1509.3	1508.2.4
1509.4	1508.3.3
1509.5	1508.3.2
1509.6	1508.2, 1508.2.1 and
	1508.2.2
1509.7	1508.3.7
1509.8	1508.3.4
1509.9	1508.3.5
1509.10	1508.3.8
1510.1	1510.1
1510.1.1	1510.1.1
1510.1.2	1510.1.2
1510.2	1510.2
1510.3	1510.5
1510.5	1510.3
1510.6	1510.6
1511	1509
1511.1	1509.1
1511.2	1509.1
1511.3	1509.2.1
1511.4	1509.2.3
1511.5	1509.2.2
1511.5.1	1509.2.2.1
1511.6	1509.3.3
1511.7	1509.3.1
1511.8	1509.3.2
1511.8.1	1509.3.2
1703.4	1701.6(1)
1703.5	1703.4
1703.6	1703.5
1703.7	1701.6(2)
1803.1	1803.1, 1803.1.1,
1003.1	1803.1.2 and 1803.1.3
1803.8	1804.4 and 1805.2.4
1803.9	1805.2.5
1804.2	1804.2 and 1804.2.1
1804.2.1	1804.2.2
Table 1804.2.1	Table 1804.2.2.1
1804.2.2	1804.2.2.1
1004.2.2	1004.2.2.1

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1804.3	1804.3.1 and 1804.3.2
1804.3.1	1804.3.3
1805.2	1805.2 and 1805.2.1
1805.2.1	1805.2.2
Table 1805.2.1	Table 1805.2.2
1805.2.2	1805.2.3 and 1805.2.3.1
1805.2.2.1	1805.2.3.2
1805.2.2.2	1805.2.3.3
1805.2.2.3	1803.7
2201.8	2201.9
2201.9	2201.10
2203.2	2204.1.2
2204.1	2201.7
2204.2.1	2204.2.2
2204.2.2	2204.1.2
2204.2.3	2204.1.4.1
2204.2.4	2204.2.3
2204.2.5	2204.2.4
2204.3.1	2204.1
2204.3.1.1	2201.7
2204.3.3	2204.1.2
2204.3.4	2204.1.4.1
2204.3.5	2204.1.4.4
2204.3.6	2204.1.5
2204.3.7	2204.3.3
2204.4	2204.1.7
2204.4.1	2204.1.7.1
2204.4.1.1	2204.1.7.2
2204.4.2	2204.1.7.3
2204.4.3	2204.1.7.4
2204.4.4	2204.1.7.5
2204.5	2204.1.8
2204.6	2204.1
2204.6.1	2201.7
2204.6.2	2204.1.2
2204.6.3	2204.1.4.1
2204.6.4	2204.1.4.4
2204.6.5	2204.1.5
2204.7	2204.1.1
2204.8	2204.1.6
2205.7	2204.1.9 and 2204.1.10
2206.12	2204.1.4.2
2208.1.4	2208.1.5.1
2208.1.5	2208.1.6
2208.1.6	2208.1.7
2208.1.7	2208.1.8

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2208.1.8	2208.1.5.2
2208.1.9	2208.1.11
2208.1.9.1	2208.1.11.2
2208.1.9.2	2208.1.11.3
2208.1.9.3	2208.1.11.4
2208.1.9.4	2208.1.5.3 and
	2208.1.11.5
2208.1.9.5	2208.1.4
2208.1.10	2208.1.12
2208.1.10.1	2208.1.12
2208.1.10.2	2208.1.5.3
2208.1.10.3	2208.1.12.3
2208.1.11	2208.1.13
2208.1.11.1	2208.1.5.3
2208.7.4.1	2208.7.4.2
2208.7.5	2208.1.9
2208.7.6	2208.1.10
2402.2.1	2404.2.1
2604.2.4	2603.4.2 and
	901.7.2.1(4)
2701.2.2.1(6)	2701.2.2.1(7)
2701.2.2.1(7)	2701.2.2.1(8)
2701.2.2.1(8)	2701.2.2.1(9)
2701.2.2.1(9)	2701.2.2.1(10)
2701.5.1(2)	2701.5(7)
2701.5.1(3)	2701.5(6)
2701.5.1(4)	2701.5.1(2)
2701.5.1(5)	2701.5(6)
2701.5.1(7)	2701.5(6), (7), (8) & (9)
2701.5.1(8)	2701.5.1(2)
2701.5.1(9)	2701.5.1(10)
2703.7.1(3)	310.3.1
2703.7.1(4)	2703.7.1(3)
2703.8.3.2	2703.8.3.3
2703.8.3.3	2703.8.3.4
2703.8.3.4	2703.8.3.5
2703.10.4	2705.4.4
2704.3.1(7)	2704.3.1(1)
2704.7(1)	2704.7(2)
2704.7(2)	2704.7(3)
2704.7(3)	2704.7(4)
2704.7(4)	2704.7(5)
2806.2	2806.2.1
2806.3	2806.4
Table 2806.3	Table 2806.4
2806.4	2806.2.2

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2806.8	2806.2.2
3003.1.1	3003.1
3201.5	3201.3
3203.6	3204.3.1
3203.6.1	3204.3.1.1
Table 3203.6.1	Table 3204.3.1.1
3203.6.1.1	3204.3.1.1.1
3203.6.1.2	3204.3.1.1.2
3203.6.1.3	3204.3.1.1.3.1
3203.6.2	3204.3.1.2.1
Table 3203.6.2	Table 3204.3.1.2.1
3203.6.2.1	3204.3.1.2.2
3203.6.2.2	3204.3.1.2.5
3203.7	3203.6
3203.7.1	3203.6.1
3203.7.2	3203.6.2
3203.8	3203.7
3203.8.1	3203.7.1
3203.8.2	3203.7.2
3203.9	3203.8
3203.10	3203.9
3203.11	3203.10
3204.3.1	3204.3
3204.3.1.1	3204.3.1
3204.3.1.2	3204.3.1.1.4
3204.3.1.3	3204.3.1.1.5
3204.3.2	3204.3.1.2
3204.3.2.1	3204.3.1.2
3204.3.2.2	3204.3.1.2.3
3204.3.2.3	3204.3.1.2.4
3301.1(6)	No equivalent exception
3301.1(7)	3301.1(6)
3304.5.3.1.1	3304.5.2.2
3304.5.3.1.2	3304.5.2.2
3404.2.13.1.3(3)	3404.2.13.1.3(4)
3404.2.13.1.3(4)	3404.2.13.1.3(3)
3404.2.13.2.3(3)	3404.2.13.2.3(4)
3404.2.13.2.3(4)	3404.2.13.2.3(6)
3404.2.13.2.3(5)	3404.2.13.2.3(7)
3404.2.14	3404.2.13
3404.2.14.1	3404.2.13
3404.2.14.2	3404.2.13
3404.3.4.5	105.1.2

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3405.3.5.2.1	105.1.2
3405.5(3)	3405.5(4)
3405.5(4)	3405.5(5)
3405.5(5)	3405.5(6)
3405.5(6)	3405.5(7)
3405.5(7)	3405.5(8)
3405.5(8)	3405.5(9)
3405.5.1(1)	3405.5.1(2)
3405.5.1(2)	3405.5.1(3)
3405.5.1(3)	3405.5.1(4)
3405.5.1(4)	3405.5.1(5)
3406.5.1	3406.5
3406.5.1.1	3406.5.1
3406.5.1.2	3406.5.2
3406.5.1.3	3406.5.3
3406.5.1.4	3406.5.4
3406.5.1.5	3406.5.5
3406.5.1.6	3406.5.6
3406.5.1.7	3406.5.7
3406.5.1.7.1	3406.5.7.1
3406.5.1.8	3406.5.8
3406.5.1.9	3406.5.9
3406.5.1.10	3406.5.10
3406.5.1.10.1	3406.5.10.1
3406.5.1.10.2	3406.5.10.2
3406.5.1.10.3	3406.5.10.3
3406.5.1.10.4	3406.5.10.4
3406.5.1.11	3406.5.11
3406.5.1.12	3406.5.12
3406.5.1.13	3406.5.13
3406.5.1.14	3406.5.14
3406.5.1.15	3406.5.15.1
3406.5.1.15.1	3406.5.15.2
3406.5.1.16	3406.5.16
3406.5.1.16.1	3406.5.16
3406.5.1.16.2	3406.5.16
3406.5.1.16.3	3406.5.16
3406.5.2	3406.5
3406.5.2.1	3406.5.17
3406.5.3	3406.5
3406.5.3.1	3406.5.18
3406.5.3.1.1	3406.5.18.1
3406.5.3.1.2	3406.5.18.2
3406.5.3.1.3	3406.5.18.3
3406.5.3.2	3406.2.4.2
3406.5.3.3	3406.5.17

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3406.5.4	3406.2.8
3406.5.4.3	1106.11.1
3406.5.4.4	3406.2.8
3501.1(5)	3501.1(6)
3501.3.1	3501.3
3503.1.4(1)	3503.1.4.1
3503.1.4(2)	3503.1.4.2
3503.1.5	3503.1.6
3503.3	3501.5
3507	3508
3507.1	3508.1
3507.2	3508.2
3507.3	3508.3
3508	3509
3508.1	3509.1
3809.14	3809.4 and 3809.12
3809.15	3809.14
4006	4007
4006.1	4007.1
4006.1.1	4007.1.1
4006.1.2	4007.1.2
4106	4105.3
4107	4106
4107.1	4106.1
4107.1.1	4106.1.1
4107.1.2	4106.1.2
4304.2.2	4304.2.4
4304.2.3	4304.2.5

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