Purpose
The building code, as with any other I-Code®, is intended to be adopted as a legally enforceable document to provide a reasonable level of safety, and protection of public health, general welfare and property. A building code cannot be effective without adequate provisions for its administration and enforcement. The official charged with the administration and enforcement of building regulations has a great responsibility, and with this responsibility goes authority. No matter how detailed the building code may be, the building official must, to some extent, exercise his or her own judgment in determining code compliance. The building official has the responsibility to establish that the homes in which the citizens of the community reside and the buildings in which they work are designed and constructed to be structurally stable with adequate means of egress, accessibility, light and ventilation, and to provide a minimum acceptable level of protection to life and property from fire.

Chapter 1 contains two parts. Part 1, Scope and Application, contains all issues related to the scope and intent of the code, as well as the applicability of this code relative to other standards and laws that might also be applicable on a given building project, such as federal or state. Part 2, Administration and Enforcement, contains all issues related to the duties and powers of the building official, the issuance of permits and certificates of occupancy, and other related operational items.

PART 1—SCOPE AND APPLICATION

SECTION 101
GENERAL

[A] 101.1 Title. These regulations shall be known as the Building Code of [NAME OF JURISDICTION] the City of Topeka, Kansas, hereinafter referred to as “this code.”

The purpose of this section is to identify the adopted regulations by inserting the name of the adopting jurisdiction into the code.

[A] 101.2 Scope. The provisions of this code shall apply to the construction, alteration, relocation, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

Exception: Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories above grade plane in height with a separate means of egress, and their accessory structures not more than three stories above grade plane in height, shall comply with the International Residential Code.

This section establishes when the regulations contained in the code must be followed, whether all or in part. Something must happen (construction of a new building, modification to an existing one or allowing an existing building or structure to become unsafe) for the code to be applicable. While such activity may not be as significant as a new building, a fence is considered a structure and, therefore, its erection is within the scope of the code. The building code is not a maintenance document requiring periodic inspections that will, in turn, result in an enforcement action, although periodic inspections are addressed by the International Fire Code® (IFC®).

The exception indicates that detached one- and two-family dwellings and townhouses that are not more than three stories above grade and have separate means of egress are to comply with the International Residential Code® (IRC®). The definition of townhouse adds that an IRC townhouse must meet four criteria: 1. It is not more than three stories in height; 2. It has a separate means of egress; 3. Each unit extends from foundation to roof; and 4. There is open space on at least two sides.

This applies to all such structures, whether or not there are lot lines separating them, and also to accessory structures such as garages and pools. Accessory structures are also limited to not more than 3 stories in height. Such structures four stories or more in height are beyond the scope of the IRC and must comply with the provisions of the IBC and its referenced codes.

There are two exceptions in the IRC that allow for buildings otherwise required to be constructed in accordance with the IBC to be constructed in accordance with the IRC. These include live/work units (see Section 419) and small bed-and-breakfast style hotels where there are five or fewer guestrooms and the owner also lives in the hotel (see Section 310.5.2).

[A] 101.2.1 Appendices. Provisions in the appendices shall not apply unless specifically adopted.

The provisions contained in Appendices A through M are not considered part of the code and are, therefore, not enforceable unless they are specifically included in the ordinance or other adopting law or regulation of the jurisdiction. See Section 1 of the sample legislation on page xix of the code for where the appendices to be adopted are to be specified in the adoption ordinance.

[A] 101.3 Intent. The purpose of this code is to establish the minimum requirements to provide a reasonable level of safety, public health and general welfare through structural
SCOPE AND ADMINISTRATION

strength, means of egress facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire and other hazards attributed to the built environment and to provide a reasonable level of safety to fire fighters and emergency responders during emergency operations.

The intent of the code is to establish regulations providing for the safety, health and general welfare of building occupants, as well as for fire fighters and emergency responders during building emergencies. The intent becomes important in the application of such sections as Sections 102, 104.11 and 114, as well as any enforcement-oriented interpretive action or judgment. Like any code, the written text is subject to interpretation. Interpretations should not be affected by economics or the potential impact on any party. The only considerations should be safety of the occupants, protection of occupant’s health and welfare and emergency responder safety.

[A] 101.4.4 Property maintenance. The provisions of the International Fuel Gas Code shall apply to the installation, alteration, repair and replacement of gas piping from the point of delivery, gas appliances and related accessories, including water supply and distribution piping; sanitary and storm drainage systems; the fixtures and appliances connected thereto; and medical gas and oxygen systems, and is adopted by reference from this section, as well as other sections in this code, as the enforceable document for regulating these systems. The provisions of the International Private Sewage Disposal Code shall apply to private sewage disposal systems. All references to the International Plumbing Code contained herein shall instead refer to the plumbing code adopted by the city.

[A] 101.4.5 Fire prevention. The provisions of the International Fuel Gas Code shall apply to the installation, alteration, repair and replacement of gas piping from the point of delivery to the inlet connections of each gas appliance. The "point of delivery" is defined in the IFGC as the outlet of the service meter, regulator or shutoff valve.

[A] 101.4.2 Mechanical. The provisions of the International Mechanical Code adopted by the city shall apply to the installation, alteration, repair and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and/or appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems. All references to the International Mechanical Code contained herein shall instead refer to the mechanical code adopted by the city.

The International Mechanical Code® (IMC®) regulates all aspects of a building’s mechanical system, including ventilating, heating, air-conditioning and refrigeration systems, incinerators and other energy-related systems, and is adopted by reference from this section, as well as other sections in this code, as the enforceable document for regulating these systems.

The International Plumbing Code® (IPC®) regulates the components of a building’s plumbing system, including water supply and distribution piping; sanitary and storm drainage systems; the fixtures and appliances connected thereto; and medical gas and oxygen systems, and is adopted by reference from this section, as well as other sections in this code, as the enforceable document for regulating these systems. The International Private Sewage Disposal Code® (IPSDC®) is also adopted as the enforceable document for regulating on-site sewage disposal systems.

[A] 101.4.1 Gas. The provisions of the International Fuel Gas Code shall apply to the installation of gas piping from the point of delivery, gas appliances and related accessories as covered in this code. These requirements apply to gas piping systems extending from the point of delivery to the inlet connections of appliances and the installation and operation of residential and commercial gas appliances and related accessories. The provisions of the electrical code adopted by the city shall apply to the installation of electrical systems, including alterations, repairs, replacement, equipment, appliances, fixtures, fittings and appurtenances thereto.

The International Fuel Gas Code® (IFGC®) regulates gas piping and appliances and is adopted by reference from this section, as well as other sections in the code, as the enforceable document for regulating gas systems. This section also establishes the scope of the IFGC as extending from the point of delivery to the inlet connections of each gas appliance. The "point of delivery" is defined in the IFGC as the outlet of the service meter, regulator or shutoff valve.

The provisions of the International Property Maintenance Code® (IPMC®), International Existing Building Code® (IEBC®) and the IFC are also referenced and enable the building official to address unsafe conditions in existing structures. Various other sections of the code also specifically refer to these codes. Note that these codes are listed in Chapter 35 and further identified by the specific year of issue. Only that edition of the code is legally adopted and any future editions are not enforceable. New editions of the International Codes® are issued concurrently and new editions of the referenced codes are adopted with each new edition of the code. Adoption is done in this manner so that there are not conflicting provisions in these codes.

[A] 101.4.3 Plumbing. The provisions of the International Plumbing Code adopted by the city shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, and where connected to a water or sewage system and all aspects of a medical gas system. The provisions of the International Private Sewage Disposal Code shall apply to private sewage disposal systems. All references to the International Plumbing Code contained herein shall instead refer to the plumbing code adopted by the city.

The provisions of the International Property Maintenance Code shall apply to existing structures and premises; equipment and facilities; light, ventilation, space heating, sanitation, life and fire safety hazards; responsibilities of owners, operators and occupants; and occupancy of existing premises and structures.

The applicability of the code to existing structures is set forth in the IEBC and is generally limited to new work or changes in use that occur in these buildings. The IPMC, however, is specifically intended to apply to existing structures and their premises, providing a jurisdiction with an enforceable document protecting occupant safety, public health and general welfare, including in buildings that were constructed prior to the adoption of the current building code.

[A] 101.4.5 Fire prevention. The provisions of the International Fire Code shall apply to matters affecting or relating to
structures, processes and premises from the hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices; from conditions hazardous to life, property or public welfare in the occupancy of structures or premises; and from the construction, extension, repair, alteration or removal of fire suppression, automatic sprinkler systems and alarm systems or fire hazards in the structure or on the premises from occupancy or operation.

- The IFC contains provisions which provide a reason-able level of safety for occupants from the hazards of fire and explosion that result from: materials, sub-stances and operations that may be present in a structure; circumstances that endanger life, property or public welfare; and the modification or removal of fire suppression and alarm systems. Many of the pro-visions contained in the IBC, especially in Chapters 9 and 10, also appear in the IFC. So that all Interna-tional Codes contain consistent provisions, only one development committee is responsible for consider-ing proposed changes to such provisions. That com-mittee is identified by a letter designation in brackets that appears at the beginning of affected sections. This is described more fully in the preface to the codes. The IFC also contains provisions that are spe-cifically applicable to existing structures and uses and, like the IPMC, provides a jurisdiction with an enforceable document protecting occupant safety, public health and general welfare in all buildings.


- The International Energy Conservation Code® (IECC®) contains provisions for the efficient use of energy in buildings by regulating the design of building envelopes for thermal resistance and low air leak-age, and the design and selection of mechanical systems for effective use of energy. The IECC® is adopted by reference in this section, as well as other sections in this code, as the enforceable document for regulating these systems.

[A] 101.4.7 Existing buildings. The provisions of the International Existing Building Code®Uniform Code for Building Conservation as adopted by the city shall apply to matters govern-ing the repair, alteration, change of occupancy, addition to and relocation of existing buildings may be considered and applied by the building official to the extent necessary in the building official’s sole discretion to implement and enforce this code for the alteration, repair, addition, and change of occupancy of existing structures.

- The International Existing Building Code® (IEBC®) is typically utilized when a building is undergoing some type of alteration, change of occupancy or addition. Maintenance of existing buildings is addressed in the IPMC and IFC. Three different options for compliance are provided within the IEBC. In the 2012 IBC, Chapter 34 addressed existing buildings. This criterion was repeated in the IEBC as Chapter 4, Prescriptive Compliance Methods, and Chapter 14, Performance Compliance Methods. Now this information is only available in the IEBC.

SECTION 102
APPLICABILITY

[A] 102.1 General. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

- In cases where the code establishes a specific requirement for a certain condition, that requirement is applicable even if it is less restrictive than a general requirement elsewhere in the code. As an example, the requirements contained in Section 402.8 for means of egress in a covered mall building would govern over any differing requirements located in Chapter 10, regardless of whether the requirements in Section 402.8 are more or less restrictive.

The most restrictive requirement is to apply where there may be different requirements in the code for a specific issue.

[A] 102.2 Other laws. The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

- In some cases, other laws enacted by the jurisdiction or the state or federal government may be applicable to a condition that is also governed by a requirement in the code. In such circumstances, the requirements of the code are in addition to the other law that is still in effect, although the building official may not be responsible for its enforcement.

[A] 102.3 Application of references. References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

- In a situation where the code may make reference to a chapter or section number or to another code provision without specifically identifying its location in the code, assume that the referenced section, chapter or provision is in the code and not in a referenced code or standard.

[A] 102.4 Referenced codes and standards. The codes and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.4.1 and 102.4.2.

- A referenced code, standard or portion thereof is an enforceable extension of the code as if the content of the standard were included in the body of the code. For example, Section 905.2 references NFPA 14 in its entirety for the installation of standpipe systems. In those cases when the code references only portions of a standard, the use and application of the referenced standard is limited to those portions that are specifically identified. For example, Section 412.4.6 requires that aircraft hangars must be provided with fire suppression systems as required in NFPA 409.
Section 412.4.6 cannot be construed to require compliance with NFPA 409 in its entirety. It is the intent of the code to be in harmony with the referenced standards. If conflicts occur because of scope or purpose, the code text governs.

[A] 102.4.1 Conflicts. Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

- The use of referenced codes and standards to cover certain aspects of various occupancies and operations rather than write parallel or competing requirements into the code is a long-standing code development principle. Often, however, questions and potential conflicts in the use of referenced codes and standards can arise, which can lead to inconsistent enforcement of the code. In the code, several sections illustrate this concern, such as Section [F] 415.9.3.

Section [F] 415.9.3 Dry cleaning plants. The construction and installation of dry cleaning plants shall be in accordance with the requirements of this code, the International Mechanical Code, the International Plumbing Code and NFPA 32. Dry cleaning solvents and systems shall be classified in accordance with the International Fire Code.

Based on this text, NFPA 32, Standard for Dry-cleaning Plants, 2011 edition, in Section 4.4.1.1 states, “General building and structure design and construction shall be in accordance with NFPA 5000, Building Construction and Safety Code®, except as modified herein.” Since the extent of the reference to NFPA 32 in Section 415.9.3 includes “...construction...”, it has happened that designers construed this to mean that the requirements for building construction of dry cleaning plants will be required to follow NFPA 5000 instead of the IBC.

Another example is in the IMC, which references ASHRAE 15 in Sections 1101.6 and 1108.1. ASHRAE 15 then references NFPA 54 (ANSI Z223.1), National Fuel Gas Code. This could lead code users to interpret the mechanical code to mean that the National Fuel Gas Code is applicable to specific situations rather than the IFGC.

In both cases, the reference is only applicable to the first referenced standard.

[A] 102.4.2 Provisions in referenced codes and standards. Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code or the International Codes listed in Section 101.4, the provisions of this code or the International Codes listed in Section 101.4, as applicable, shall take precedence over the provisions in the referenced code or standard.

- Section 102.4.2 expands upon the provisions of Section 102.4.1 by making it clear that, even if a referenced standard contains requirements that parallel the code (or the other referenced International Codes) in the standard’s own duly referenced section(s), the provisions of the IBC (or the other referenced International Codes) will always take precedence. This proposed section does not intend to take the place of carefully scoped and referenced text for written standards for the International Codes but, rather, provides the policy underpinnings upon which sound code change proposals can be based.

[A] 102.5 Partial invalidity. In the event that any part or provision of this code is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.

- Only invalid sections of the code (as established by the court of jurisdiction) can be set aside. This is essential to safeguard the application of the code text in situations where a provision is declared illegal or unconstitutional. This section preserves the legislative action that put the legal provisions in place.

[A] 102.6 Existing structures. The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as otherwise specifically provided in this code, the International Existing Building Code®, Uniform Code for Building Conservation, the International Property Maintenance Code, or the International Fire Life Safety Code.

- An existing structure is generally “grandfathered” to be considered approved with code adoption, provided that the building meets a minimum level of safety. Frequently, the criteria for this level are the regulations (or code) under which the existing building was originally constructed. If there are no previous code criteria to apply, the building official must apply those provisions that are reasonably applicable to existing buildings. A specific level of safety in existing buildings is dictated by maintenance and hazard abatement provisions, as contained in this code, the IPMC and the IFC. These codes (see Sections 101.4.4 and 101.4.5) are applicable to existing buildings. Special attention should be paid to IFC Chapter 11, Construction Requirements for Existing Buildings. Additionally, IEB (see Section 101.4.7) comprehensively identifies the pertinent requirements for existing buildings on which construction operations are intended or that undergo a change of occupancy.

[A] 102.6.1 Buildings not previously occupied. A building or portion of a building that has not been previously occupied or used for its intended purpose in accordance with the laws in existence at the time of its completion shall comply with the provisions of the International Building Code or International Residential Code, as applicable, for new construction or with any current permit for such occupancy.

- This section applies to any building that may have been completed but not occupied or used for its original intended purpose. The building remains a new structure in terms of code compliance until such time as it is occupied in whole or in part. Tenant buildouts are permitted to comply with the code adopted at the time of initial construction, unless that permit has expired. If the permit has expired, the tenant buildout
must comply with new construction requirements, similar to alterations to existing buildings. See Section 105.5 regarding the expiration and extensions available for permits.

[A] 102.6.2 Buildings previously occupied. The legal occupancy of any building existing on the date of adoption of this code shall be permitted to continue without change, except as otherwise specifically provided in this code, the International Fire Code or International Property Maintenance Code, or as is deemed necessary by the building official for the general safety and welfare of the occupants and the public.

- This section allows for buildings that were legally occupied in whole or in part at the time the code was adopted to continue as is. There is a maintenance concern that is addressed by the requirement that the building comply with either the IFC or the IPMC. These codes ensure that life safety systems, such as means of egress pathways and fire protection systems, are kept in place and continue to be able to protect the life and safety of the inhabitants of these existing structures.

PART 2—ADMINISTRATION AND ENFORCEMENT

SECTION 103
DEPARTMENT OF BUILDING SAFETY

[A] 103.1 Creation of enforcement agency. The Department of Building Safety is hereby created and the official in charge thereof shall be known as the building official.

- This section creates the building department and describes its composition (see Section 110 for a discussion of the inspection duties of the department). Appendix A contains qualifications for the employees of the building department involved in the enforcement of the code. A jurisdiction can establish the qualifications outlined in Appendix A for its employees by specifically referencing Appendix A in the adopting ordinance.

The executive official in charge of the building department is named the “building official” by this section. In actuality, the person who is in charge of the department may hold a different title, such as building commissioner, building inspector or construction official. For the purpose of the code, that person is referred to as the “building official.”

[A] 103.2 Appointment. The building official shall be appointed by the chief appointing authority of the jurisdiction.

- This section establishes the building official as an appointed position of the jurisdiction.

[A] 103.3 Deputies. In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the building official shall have the authority to appoint a deputy building official, the related technical officers, inspectors, plan examiners and other employees. Such employees shall have powers as delegated by the building official. For the maintenance of existing properties, see the International Property Maintenance Code.

This section provides the building official with the authority to appoint other individuals to assist with the administration and enforcement of the code. These individuals would have the authority and responsibility as designated by the building official. Such appointments, however, may be exercised only with the authorization of the chief appointing authority.

SECTION 104
DUTIES AND POWERS OF BUILDING OFFICIAL

[A] 104.1 General. The building official is hereby authorized and directed to enforce the provisions of this code. The building official shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be in compliance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.

- The duty of the building official is to enforce the code, and he or she is the “authority having jurisdiction” for all matters relating to the code and its enforcement. It is the duty of the building official to interpret the code and to determine compliance. Code compliance will not always be easy to determine and will require judgment and expertise, particularly when enforcing the provisions of Sections 104.10 and 104.11. In exercising this authority, however, the building official cannot set aside or ignore any provision of the code.

[A] 104.2 Applications and permits. The building official shall receive applications, review construction documents and issue permits for the erection, and alteration, demolition and moving of buildings and structures, inspect the premises for which such permits have been issued and enforce compliance with the provisions of this code.

- The code enforcement process is normally initiated with an application for a permit. The building official is responsible for processing applications and issuing permits for the construction or modification of buildings in accordance with the code.

[A] 104.2.1 Determination of substantially improved or substantially damaged existing buildings and structures in flood hazard areas. For applications for reconstruction, rehabilitation, repair, alteration, addition or other improvement of existing buildings or structures located in flood hazard areas, the building official shall determine if the proposed work constitutes substantial improvement or repair of substantial damage. Where the building official determines that the proposed work constitutes substantial improvement or repair of substantial damage, and where required by this code, the building official shall require the building to meet the requirements of Section 1612.

“Substantial damage” and “Substantial improvement” are defined in Section 202 and in federal regulations (see 44 CFR 59.1, Definitions). Long-term reduction
that the alternative material or construction method is equivalent to that required by the code, he or she may approve it. Any such approval cannot have the effect of waiving any requirements of the code. The burden of proof of equivalence lies with the applicant who proposes the use of alternative materials or methods.

The building official must require the submission of appropriate information and data to assist in the determination of equivalency. This information must be submitted before a permit can be issued. The type of information required includes test data in accordance with referenced standards, evidence of compliance with the referenced standard specifications and design calculations. A research report issued by an authoritative agency is particularly useful in providing the building official with the technical basis for evaluation and approval of new and innovative materials and methods of construction. The use of authoritative research reports can greatly assist the building official by reducing the time-consuming engineering analysis necessary to review these materials and methods. Failure to substantiate adequately a request for the use of an alternative is a valid reason for the building official to deny a request. Any tests submitted in support of an application must have been performed by an agency approved by the building official based on evidence that the agency has the technical expertise, test equipment and quality assurance to properly conduct and report the necessary testing. The test reports submitted to the building official must be retained in accordance with the requirements of Section 104.7.

SECTION 105

PERMITS

[A] 105.1 Required. Any owner or owner’s authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be performed, shall first make application to the building official and obtain the required permit.

This section contains the administrative rules governing the issuance, suspension, revocation or modification of building permits. It also establishes how and by whom the application for a building permit is to be made, how it is to be processed, fees and what information it must contain or have attached to it.

In general, a permit is required for all activities that are regulated by the code or its referenced codes (see Section 101.4), and these activities cannot begin until the permit is issued, unless the activity is specifically exempted by Section 105.2. Only the owner or a person authorized by the owner can apply for the permit. Note that this section indicates a need for a permit for a change in occupancy, even if no work is contemplated. Although the occupancy of a building or portion thereof may change and the new activity is still classified in the same group, different code provisions may be applicable. The means of egress, structural loads and light and ventilation provisions are examples of requirements that are occupancy sensitive. The purpose of the permit is to cause the work to be reviewed, approved and inspected to determine compliance with the code.

[A] 105.1.1 Annual permit. Instead of an individual permit for each alteration to an already approved electrical, gas, mechanical or plumbing installation, the building official is authorized to issue an annual permit upon application therefore to any person, firm or corporation regularly employing one or more qualified tradepersons in the building, structure or on the premises owned or operated by the applicant for the permit.

In some instances, such as large buildings or industrial facilities, the repair, replacement or alteration of electrical, gas, mechanical or plumbing systems occurs on a frequent basis, and this section allows the building official to issue an annual permit for this work. This relieves both the building department and the owners of such facilities from the burden of filing and processing individual applications for this activity; however, there are restrictions on who is entitled to these permits. They can be issued only for work on a previously approved installation and only to an individual or corporation that employs persons specifically qualified in the trade for which the permit is issued. If tradepersons who perform the work involved are required to be licensed in the jurisdiction, then only those persons would be permitted to perform the work. If trade licensing is not required, then the building official needs to review and approve the qualifications of the persons who will be performing the work. The annual permit can apply only to the individual property that is owned or operated by the applicant.

[A] 105.1.2 Annual permit records. The person to whom an annual permit is issued shall keep a detailed record of alterations made under such annual permit. The building official shall have access to such records at all times or such records shall be filed with the building official as designated.

The work performed in accordance with an annual permit must be inspected by the building official, so it is necessary to know the location of such work and when it was performed. This can be accomplished by having records of the work available to the building official either at the premises or in the official’s office, as determined by the official.

[A] 105.2 Work exempt from permit. Exemptions from permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in viola-
tion of the provisions of this code or any other laws or ordinances of this jurisdiction. *Permits* shall not be required for the following:

**Building:**

1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area is not greater than 120 square feet (11 m²).

2. Fences not over 7 feet (2134 mm) high.

3. Oil derricks.

4. Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge or impounding Class I, II or IIIA liquids.

5. Water tanks supported directly on grade if the capacity is not greater than 5,000 gallons (18 925L) and the ratio of height to diameter or width is not greater than 2:1.

6. Sidewalks and driveways not more than 30 inches (762 mm) above adjacent grade, and not over any basement or *story* below and are not part of an accessible route.

7. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.

8. Temporary motion picture, television and theater stage sets and scenery.

9. Prefabricated swimming pools accessory to a Group R-3 occupancy that are less than 24 inches (610 mm) deep, are not greater than 5,000 gallons (18 925 L) and are installed entirely above ground.

10. Shade cloth structures constructed for nursery or agricultural purposes, not including service systems.

11. Swings and other playground equipment accessory to detached one- and two-family dwellings.

12. Window awnings in Group R-3 and U occupancies, supported by an exterior wall that do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.

13. Nonfixed and movable fixtures, cases, racks, counters and partitions not over 5 feet 9 inches (1753 mm) in height.

**Electrical:**

**Repairs and maintenance:** Minor repair work, including the replacement of lamps or the connection of *approved* portable electrical equipment to *approved* permanently installed receptacles.

**Radio and television transmitting stations:** The provisions of this code shall not apply to electrical equipment used for radio and television transmissions, but do apply to equipment and wiring for a power supply and the installations of towers and antennas.

**Temporary testing systems:** A *permit* shall not be required for the installation of any temporary system required for the testing or servicing of electrical equipment or apparatus.

**Gas:**

1. Portable heating appliance.

2. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.

**Mechanical:**

1. Portable heating appliance.

2. Portable ventilation equipment.

3. Portable cooling unit.

4. Steam, hot or chilled water piping within any heating or cooling equipment regulated by this code.

5. Replacement of any part that does not alter its approval or make it unsafe.

6. Portable evaporative cooler.

7. Self-contained refrigeration system containing 10 pounds (4.54 kg) or less of refrigerant and actuated by motors of 1 horsepower (0.75 kW) or less.

**Plumbing:**

1. The stopping of leaks in drains, water, soil, waste or vent pipe, provided, however, that if any concealed trap, drain pipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with new material, such work shall be considered as new work and a *permit* shall be obtained and inspection made as provided in this code.

2. The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures and the removal and installation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.

> Section 105.1 essentially requires a permit for any activity involving work on a building, its systems and other structures. This section lists those activities that are permitted to take place without first obtaining a permit from the building department. Note that in some cases, such as Items 9, 10, 11 and 12, the work is exempt only for certain occupancies. It is further the intent of the code that even though work may be exempted for permit purposes, it must still comply with the code and the owner is responsible for proper and safe construction for all work being done. Work exempted by the codes adopted by reference in Section 101.4 is also included here. However, even if a permit is not required, construction must not violate any code provisions. For example: If you replace a sink faucet, you don’t need a permit, but the faucet would still have to meet material standard and water flow requirements in Chapter 6 of the IPC.

In flood hazard areas, work exempt from a permit must still be undertaken in ways that minimize flood
damage. Accessory structures below the design flood elevation must be anchored to prevent flotation, have
flood openings, be made of flood damage-resistant materials. Equipment and electrical service must also be elevated above the design flood elevation. Water tanks on grade must be anchored to prevent flotation, collapse or lateral movement. Additional descriptions of how the listed activities should be performed in order to meet the intent are found in the commentary for Appendix G.

[A] **105.2.1 Emergency repairs.** Where equipment replacements and repairs must be performed in an emergency situation, the permit application shall be submitted within the next working business day to the building official.

- This section recognizes that in some cases, emergency replacement and repair work must be done as quickly as possible, so it is not practical to take the necessary time to apply for and obtain approval. A permit for the work must be obtained the next day that the building department is open for business. Any work performed before the permit is issued must be done in accordance with the code and corrected if not approved by the building official. For example, if a concealed trap failed on a Sunday, the plumber could replace the trap at that time, but he would have to apply for a permit on Monday and have the repair pass an inspection.

[A] **105.2.2 Repairs.** Application or notice to the building official is not required for ordinary repairs to structures, replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles. Such repairs shall not include the cutting away of any wall, partition or portion thereof, the removal or cutting of any structural beam or load-bearing support, or the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the egress requirements; nor shall ordinary repairs include addition to, alteration of, replacement or relocation of any standpipe, water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring or mechanical or other work affecting public health or general safety.

- This section distinguishes between what might be termed by some as repairs but are in fact alterations, wherein the code is to be applicable, and ordinary repairs, which are maintenance activities that do not require a permit.

[A] **105.2.3 Public service agencies.** A permit shall not be required for the installation, alteration or repair of generation, transmission, distribution or metering or other related equipment that is under the ownership and control of public service agencies by established right.

- Utilities that supply electricity, gas, water, telephone, television cable, etc., do not require permits for work involving the transmission lines and metering equipment that they own and control; that is, to their point of delivery. Utilities are typically regulated by other laws that give them specific rights and authority in this area. Any equipment or appliances installed or serviced by such agencies that are not owned by them and under their full control are not exempt from a permit.

[A] **105.3 Application for permit.** To obtain a permit, the applicant shall first file an application therefor in writing on a form furnished by the department of building safety for that purpose. Such application shall:

1. Identify and describe the work to be covered by the permit for which application is made.
2. Describe the land on which the proposed work is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building or work.
3. Indicate the use and occupancy for which the proposed work is intended.
4. Be accompanied by construction documents and other information as required in Section 107.
5. State the valuation of the proposed work.
6. Be signed by the applicant, or the applicant’s authorized agent.
7. Give such other data and information as required by the building official.

- This section requires that a written application for a permit be filed on forms provided by the building department and details the information required on the application. Permit forms will typically have sufficient space to write a very brief description of the work to be accomplished, which is sufficient for only small jobs. For larger projects, the description will be augmented by construction documents as indicated in Item 4. As required by Section 105.1, the applicant shall be the owner of the property or an authorized agent of the owner, such as an engineer, architect, contractor, tenant or other. The applicant must sign the application, and permit forms typically include a statement that if the applicant is not the owner, he or she has permission from the owner to make the application.

[A] **105.3.1 Action on application.** The building official shall examine or cause to be examined applications for permits and amendments thereto within a reasonable time after filing. If the application or the construction documents do not conform to the requirements of pertinent laws, the building official shall reject such application in writing, stating the reasons therefor. If the building official is satisfied that the proposed work conforms to the requirements of this code and laws and ordinances applicable thereto, the building official shall issue a permit therefor as soon as practicable.

- This section requires the building official to act with reasonable speed on a permit application. In some instances, this time period is set by state or local law. The building official must refuse to issue a permit when the application and accompanying documents do not conform to the code. In order to ensure effective communication and due process of law, the reasons for denial of an application for a permit are...
required to be in writing. Once the building official determines that the work described conforms to the code and other applicable laws, the permit must be issued upon payment of the fees required by Section 109.

[A] 105.3.2 Time limitation of application. An application for a permit for any proposed work shall be deemed to have been abandoned 180 days after the date of filing, unless such application has been pursued in good faith or a permit has been issued; except that the building official is authorized to grant one or more extensions of time for additional periods not exceeding 90 days each. The extension shall be requested in writing and justifiable cause demonstrated.

- Typically, an application for a permit is submitted and goes through a review process that ends with the issuance of a permit. If a permit has not been issued within 180 days after the date of filing, the application is considered abandoned, unless the applicant was diligent in efforts to obtain the permit. The building official has the authority to extend this time limitation (in increments of 90 days), provided there is reasonable cause. This would cover delays beyond the applicant's control, such as prerequisite permits or approvals from other authorities within the jurisdiction or state. The intent of this section is to limit the time between the review process and the issuance of a permit.

[A] 105.4 Validity of permit. The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of the jurisdiction. Permits presuming to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the building official from requiring the correction of errors in the construction documents and other data. The building official is authorized to prevent occupancy or use of a structure where in violation of this code or of any other ordinances of this jurisdiction.

- This section states the fundamental premise that the permit is only a license to proceed with the work. It is not a license to violate, cancel or set aside any provisions of the code. This is significant because it means that despite any errors or oversights in the approval process, the permit applicant, not the building official, is responsible for code compliance. Also, the permit can be suspended or revoked in accordance with Section 105.6.

[A] 105.5 Expiration. Every permit issued shall become invalid unless the work on the site authorized by such permit is commenced within 180 days after its issuance, or if the work authorized on the site by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. The building official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

- The permit becomes invalid under two distinct situations—both based on a 180-day period. The first situation is when no work was initiated 180 days from issuance of a permit. The second situation is when the authorized work has stopped for 180 days. The person who was issued the permit should be notified, in writing, that the permit is invalid and what steps must be taken to reinstate it and restart the work. The building official has the authority to extend this time limitation (in increments of 180 days), provided the extension is requested in writing and there is reasonable cause, which typically includes events beyond the permit holder's control.

[A] 105.6 Suspension or revocation. The building official is authorized to suspend or revoke a permit issued under the provisions of this code wherever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or regulation or any of the provisions of this code.

- A permit is a license to proceed with the work. The building official, however, can suspend or revoke permits shown to be based, all or in part, on any false statement or misrepresentation of fact. A permit can also be suspended or revoked if it was issued in error, such as an omitted prerequisite approval or code violation indicated on the construction documents. An applicant may subsequently apply for a reinstatement of the permit with the appropriate corrections or modifications made to the application and construction documents.

[A] 105.7 Placement of permit. The building permit or copy shall be kept on the site of the work until the completion of the project.

- The permit, or copy thereof, is to be kept on the job site until the work is complete, and made available to the building official or representative to conveniently make required entries thereon.

SECTION 106
FLOOR AND ROOF DESIGN LOADS

[A] 106.1 Live loads posted. In commercial or industrial buildings, for each floor or portion thereof designed for live loads exceeding 50 psf (2.40 kN/m\(^2\)), such design live loads shall be conspicuously posted by the owner or the owner's authorized agent in that part of each story in which they apply, using durable signs. It shall be unlawful to remove or deface such notices.

- This section requires that live loads be posted for most occupancies, since many of the live loads specified in Table 1607.1 exceed 50 pounds per square foot (psf) (2.40 kN/m\(^2\)). Where part of the floor is
107.1 General. Submittal documents consisting of construction documents, statement of special inspections, geotechnical report and other data shall be submitted in two or more sets with each permit application. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the building official is authorized to require additional construction documents to be prepared by a registered design professional.

Exception: The building official is authorized to waive the submission of construction documents and other data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that review of construction documents is not necessary to obtain compliance with this code.

107.1.1 Code footprint. A code footprint shall be included with each set of construction documents submitted for commercial building permit review and approval. A code footprint shall mean a building and life safety code compliance document that contains both graphic and narrative information and that meets the requirements of this code section and department policy regarding format and regulation.

Each code footprint shall be prepared by an architect registered with the State of Kansas. A code footprint shall be prepared for all new buildings, new building additions, changes in occupancy, or building renovation, with the exception of buildings used solely as dwelling houses containing no more than two families.

This section establishes the requirement to provide the building official with construction drawings, specifications and other documents that describe the structure or system for which a permit is sought (see Section 202 for a complete definition). It describes the information that must be included in the documents, who must prepare them and procedures for approving them.

A detailed description of the work for which an application is made must be submitted. When the work can be briefly described on the application form and the services of a registered design professional are not required, the building official may utilize judgment in determining the need for detailed documents. An example of work that may not involve the submission of detailed construction documents is the replacement of an existing 60-amp electrical service with a 200-amp service. Other sections of the code also contain specific requirements for construction documents, such as Sections 1603, 1901.5, 2111.2, 2207.2 and 3103.2. These provisions are intended to reflect the minimum scope of information needed to determine code compliance. Although this section specifies that “one or more” sets of construction documents be submitted, note that Section 106.3.1 requires one set of approved documents be retained by the building official and one set be returned to the applicant, essentially requiring at least two sets of construction documents. The building official should establish a consistent policy of the number of sets required by the jurisdiction and make this information readily available to applicants.

This section also requires the building official to determine that any state professional registration laws be complied with as they apply to the preparation of construction documents.

107.2 Construction documents. Construction documents shall be in accordance with Sections 107.2.1 through 107.2.6.

This section provides instructions regarding the information and form of construction documents.

107.2.1 Information on construction documents. Construction documents shall be dimensioned and drawn upon suitable material. Electronic media documents are permitted to be submitted where approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the building official.

The construction documents are required to be of a quality and detail such that the building official can determine whether the work conforms to the code and other applicable laws and regulations. General statements on the documents, such as “all work must comply with the International Building Code®,” are not an acceptable substitute for showing the required information. The following subsections and sections in other chapters indicated in the commentary to Sections 107.2.2 through 107.2.6 specify the detailed information that must be shown on the submitted documents. Where specifically allowed by the building official, documents can be submitted in electronic form.

107.2.2 Fire protection system shop drawings. Shop drawings for the fire protection system(s) shall be submitted...
to indicate conformance to this code and the construction documents and shall be approved prior to the start of system installation. Shop drawings shall contain all information as required by the referenced installation standards in Chapter 9.

- Since the fire protection contractor(s) may not be selected at the time a permit is issued for construction of a building, detailed shop drawings for fire protection systems are not available. Because they provide the information necessary to determine code compliance, as specified in the appropriate referenced standard in Chapter 9, they must be submitted and approved by the building official before the contractor can begin installing the system. For example, the professional responsible for the design of an automatic sprinkler system should determine that the water supply is adequate, but will not be able to prepare a final set of hydraulic calculations if the specific materials and pipe sizes, lengths and arrangements have not been identified. Once the installing contractor is selected, specific hydraulic calculations can be prepared. Factors, such as classification of the hazard, amount of water supply available and the density or concentration to be achieved by the system, are to be included with the submission of the shop drawings. Specific data sheets identifying sprinklers, pipe dimensions, power requirements for smoke detectors, etc., should also be included with the submission.

[A] 107.2.3 Means of egress. The construction documents shall show in sufficient detail the location, construction, size and character of all portions of the means of egress including the path of the exit discharge to the public way in compliance with the provisions of this code. In other than occupancies in Groups R-2, R-3, and I-1, the construction documents shall designate the number of occupants to be accommodated on every floor, and in all rooms and spaces.

- The complete means of egress system is required to be indicated on the plans to allow the building official to initiate a review and identify pertinent code requirements for each component. Additionally, requiring such information to be reflected in the construction documents requires the designer not only to become familiar with the code, but also to be aware of egress principles, concepts and purposes. The need to ensure that the means of egress leads to a public way is also a consideration during the plan review. Such an evaluation cannot be made without the inclusion of a site plan, as required by Section 107.2.5.

Information essential for determining the required capacity (see Section 1005) and number (see Sections 1006) of egress components from a space must be provided. The designer must be aware of the occupancy of a space and properly identify that information, along with its resultant occupant load, on the construction documents. In occupancies in Groups I-1, R-2 and R-3, the occupant load can be readily determined with little difference in the number so that the designation of the occupant load on the construction documents is not required.

The exit discharge path to the public way must also be shown on the construction documents. The exit discharge path to the public way is an important component of the means of egress system for all buildings or structures. The exit discharge path needs to be delineated on the submitted and approved plans to ensure the path is reviewed for compliance with the provisions of the code. This will also provide an historical reference once the building is occupied to ensure the exit discharge path is maintained as intended for the life of the building or structure unless modifications are approved.

[A] 107.2.4 Exterior wall envelope. Construction documents for all buildings shall describe the exterior wall envelope in sufficient detail to determine compliance with this code. The construction documents shall provide details of the exterior wall envelope as required, including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves or parapets, means of drainage, water-resistive membrane and details around openings.

The construction documents shall include manufacturer’s installation instructions that provide supporting documentation that the proposed penetration and opening details described in the construction documents maintain the weather resistance of the exterior wall envelope. The supporting documentation shall fully describe the exterior wall system that was tested, where applicable, as well as the test procedure used.

- This section specifically identifies details of exterior wall construction that are critical to the weather resistance of the wall and requires those details to be provided on the construction documents. Where the weather resistance of the exterior wall assembly is based on tests, the submitted documentation is to describe the details of the wall envelope and the test procedure that was used. This provides the building official with the information necessary to determine code compliance.

[A] 107.2.5 Site plan. The construction documents submitted with the application for permit shall be accompanied by a site plan showing to scale the size and location of new construction and existing structures on the site, distances from lot lines, the established street grades and the proposed finished grades and, as applicable, flood hazard areas, floodways, and design flood elevations; and it shall be drawn in accordance with an accurate boundary line survey. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The building official is authorized to waive or modify the requirement for a site plan where the application for permit is for alteration or repair or where otherwise warranted.

- Certain code requirements are dependent on the structure’s location on the lot (see Sections 506.3, 507, 705, 1027 and 1206), the topography of the site (see Sections 1104, 1107.4, 1107.7.4 and 1804.4), and whether the site has flood hazard areas (see Sections 1612 and 1804.4). As a result, a scaled site...
SECTION 109 FEES

[A] 109.1 Payment of fees General. A permit shall not be valid until the fees prescribed by law have been paid, nor shall an amendment to a permit be released until the additional fee, if any, has been paid. Whenever any person shall erect, construct, enlarge, alter, repair, move, improve, convert or demolish any building or structure, or cause the same to be done, an application shall be made to the development services office. All fees owed by the applicant shall be paid in full prior to the issuance of any type of building permit. A permit shall not be valid until the fees prescribed by law have been paid, nor shall an amendment to a permit be released until the additional fee has been paid.

Exception: Repair or replacement of less than 50 percent (50%) of roof area will not require a roofing permit. Provided, however, repair or replacement of more than 5,000 square feet of any sized roof shall require a roofing permit.

The code anticipates that jurisdictions will establish their own fee schedules. It is the intent that the fees collected by the department for building permit issuance, plan review and inspection be adequate to cover the costs to the department in these areas. If the department has additional duties, then its budget will need to be supplemented from the general fund. This section requires that all fees be paid prior to permit issuance or release of an amendment to a permit. Since department operations are intended to be supported by fees paid by the user of department activities, it is important that these fees are received before incurring any expense. This philosophy has resulted in some departments having fees paid prior to the performance of two areas of work: plan review and inspection.

[A] 109.2 Schedule of permit fees. On buildings, structures, electrical, gas, mechanical, and plumbing systems or alterations requiring a permit, a fee for each permit shall be paid as required, in accordance with the schedule as established by the applicable governing authority.

109.2.1 The fee for each permit issued for work to be commenced within the City of Topeka boundaries shall be as set forth in the Table in 109.7, except as provided in 109.6.

109.2.2 The determination of value or valuation under any of the provisions of this code shall be made by the building official. The value to be used in computing the building permit and building plan review fees shall be the total value of all construction work for which the permit is issued, as well as all finish work, painting, roofing, electrical, plumbing, heating, air conditioning, elevators, fire-extinguishing systems and any other permanent equipment.

The jurisdiction inserts its desired fee schedule at this location. The fees are established by law, such as in an ordinance adopting the code (see page xv of the code for a sample), a separate ordinance or locally promulgated regulation, as required by state or local law. Fee schedules are often based on a valuation of the work to be performed. This concept is based on the proposition that the valuation of a project is related to the amount of work to be expended in plan review, inspections and administering the permit, plus an excess to cover department overhead.

To assist jurisdictions in establishing uniformity in fees, building evaluation data are published twice each year in ICC’s Building Safety Journal.

[A] 109.3 Building permit valuations Plan review fees. The applicant for a permit shall provide an estimated permit value at time of application. Permit valuations shall include total value of work, including materials and labor, for which the permit is being issued, such as electrical, gas, mechanical, plumbing equipment and permanent systems. If, in the opinion of the building official, the valuation is underestimated on the application, the permit shall be denied, unless the applicant can show detailed estimates to meet the approval of the building official.

Final building permit valuation shall be set by the building official. When submittal documents are required by Section 107, a plan review fee shall be paid to the City. Said plan review fee shall be 40 percent (40%) of the building permit fee as shown in Table 109.7. The plan review fees specified in this section are separate fees from the permit fees specified in Section 109.2 and are in addition to the permit fees. When submittal documents are incomplete or changed so as to require additional plan review or when the project involves deferred submittal items as defined in Section 107.3.4.1, an additional plan review fee shall be charged at the rate shown in the Table.

As indicated in Section 109.2, jurisdictions usually base their fees on the total value of the work being performed. This section requires the applicant to provide this figure, including materials and labor, for which the permit is sought. If the building official believes that the value provided by the applicant is underestimated, the permit is to be denied unless the applicant can substantiate the value by providing detailed estimates of the work to the satisfaction of the building official. For the construction of new buildings, the building valuation data referred to in Section 109.2 can be used by the building official as a yardstick against which to compare the applicant’s estimate.

[A] 109.4 Work commencing before permit issuance Expedited plan review. Any person who commences any work on a building, structure, electrical, gas, mechanical or plumbing system before obtaining the necessary permits shall be subject to a fee established by the building official that shall be in addition to the required permit fees. An applicant requesting a plan review by the division of development services may request an expedited plan review. Expedited plan review will be undertaken by qualified development services employees outside of normal working hours and will not interfere with normal plan review procedures or projects which have been submitted for plan review. An applicant seeking expedited plan review will compensate the City at the rate of two times the plan review fee for the expedited plan review.

The building official will incur certain costs (e.g., inspection time and administrative) when investigating and citing a person who has commenced work without having obtained a permit. The building official is, therefore, entitled to recover these costs by establishing a fee, in addition to that collected when the required permit is issued, to be imposed on the responsible party. Note that this is not a penalty, as described in Section 114.4, for which the person can also be liable.

[A] 109.5 Related Administrative and other inspection fees. The payment of the fee for the construction, alteration, removal or demolition for work done in connection to or concurrently with the work authorized by a building permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.

109.5.1 Administrative fees. In addition to the permitting and other fees permitted in this section, the following fees and charges for services shall also apply:
The fees for a building permit may be in addition to other fees required by the jurisdiction or others for related items, such as sewer connections, water service taps, driveways and signs. It cannot be construed that the building permit fee includes these other items.

[A] 109.6 Refunds Waiver of fees. The building official is authorized to establish a refund policy. Building permit fees and plan review fees as required by this section for building projects with a total valuation of five million dollars ($5,000,000.00) or more may be modified by the city manager to a lesser amount, such modification not to exceed twenty-five percent (25%) of the scheduled fees provided the city manager determines the building project encourages economic development and creation of jobs. Modifications of building permit fees and plan review fees which exceed twenty-five percent (25%) of the scheduled fees shall be approved by the governing body. However, no modification of building permit fees and plan review fees shall be made if: 1) the applicant utilizes other available tax incentives and/or 2) the subject property is exempt from real estate taxation.

109.6.1 Building permit and plan review fees for projects identified by the governing body shall be waived provided and to the extent the Joint Economic Development Organization reimburses the City for such fees.

109.9 Related fees. The payment of the fee for the construction, alteration, removal or demolition for work done in connection to or concurrently with the work authorized by a building permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.

109.10 Refunds. The building official is authorized to establish a refund policy.

This section allows for a refund of fees, which may be full or partial, typically resulting from the revocation, abandonment or discontinuance of a building project for which a permit has been issued and fees have been collected. The refund of fees should be related to the cost of enforcement services not provided because of the termination of the project. The building official, when authorizing a fee refund, is authorizing the disbursement of public funds; therefore, the request for a refund must be in writing and for good cause.

SECTION 110 INSPECTIONS

[A] 110.1 General. Construction or work for which a permit is required shall be subject to inspection by the building official and such construction or work shall remain accessible and exposed for inspection purposes until approved. Approval as a result of an inspection shall not be construed to...
rafters and girders and other items, such as vents and chimneys, that will be concealed by wall construction. Rough electrical work, plumbing, heating wires, pipes and ducts must have already been approved in accordance with the applicable codes prior to this inspection.

[A] 110.3.5 Lath, gypsum board and gypsum panel product inspection. Lath, gypsum board and gypsum panel product inspections shall be made after lathing, gypsum board and gypsum panel products, interior and exterior, are in place, but before any plastering is applied or gypsum board and gypsum panel product joints and fasteners are taped and finished.

Exception: Gypsum board and gypsum panel products that are not part of a fire-resistance-rated assembly or a shear assembly.

- In order to verify that lath, gypsum board or gypsum wallboard products are properly attached to framing members, it is necessary for the building official to be able to conduct an inspection before the plaster or joint finish material is applied. This is required only for gypsum board or gypsum panel products that are part of either a fire-resistant assembly or a shear wall. See the definitions for gypsum board and gypsum panel products.

[A] 110.3.6 Fire- and smoke-resistant penetrations. Protection of joints and penetrations in fire-resistance-rated assemblies, smoke barriers and smoke partitions shall not be concealed from view until inspected and approved.

- The building official must have an opportunity to inspect joint protection required by Section 715 and penetration protection required by Section 714 for fire-resistance-rated assemblies, smoke barriers and smoke partitions before they become concealed from view.

[A] 110.3.7 Energy efficiency inspections. Inspections shall be made to determine compliance with Chapter 13 and shall include, but not be limited to, inspections for: envelope insulation R- and U-values, fenestration U-value, duct system R-value, and HVAC and water heating equipment efficiency.

- Items installed in a building that are required by the IECC to comply with certain criteria, such as insulation material, windows, HVAC and water heating equipment, must be inspected and approved.

[A] 110.3.8 Other inspections. In addition to the inspections specified in Sections 110.3.1 through 110.3.7, the building official is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced by the department of building safety.

- Any item regulated by the code is subject to inspection by the building official to determine compliance with the applicable code provision, and no list can include all items in a given building. This section, therefore, gives the building official the authority to inspect any regulated items.

[A] 110.3.9 Special inspections. For special inspections, see Chapter 17.

- Special inspections are to be provided by the owner for the types of work required in Section 1704. The building official is to approve special inspectors and verify that the required special inspections have been conducted. See the commentary to Section 1704 for a complete discussion of this topic.

[A] 110.3.10 Final inspection. The final inspection shall be made after all work required by the building permit is completed.

- Special inspections are to be provided by the owner for the types of work required in Section 1704. The building official is to approve special inspectors and verify that the required special inspections have been conducted. See the commentary to Section 1704 for a complete discussion of this topic.

[A] 110.3.10.1 Flood hazard documentation. If located in a flood hazard area, documentation of the elevation of the lowest floor as required in Section 1612.5 shall be submitted to the building official prior to the final inspection.

- The lowest floor inspection called for in Section 110.3.3 of the code requires submission of documentation of elevations upon placement of the lowest floor and prior to further vertical construction. The purpose for submission at that time is to confirm compliance at a point during construction when insufficient elevation can be corrected most readily. The purpose of submission of elevation information when construction is completed is to confirm compliance. Work that is performed subsequent to the placement of the lowest floor may alter the reference level that is deemed the lowest floor. Building owners must provide this “as-built” documentation when they obtain federal flood insurance policies from the NFIP. Documentation of the “as-built” lowest floor elevations is required to be obtained and maintained by communities that participate in the NFIP. A building for which the community does not have this documentation is, by federal regulation, considered to be in violation of the minimum NFIP requirements (see definition of “violation” in 44 C.F.R. §59.2).

[A] 110.4 Inspection agencies. The building official is authorized to accept reports of approved inspection agencies, provided such agencies satisfy the requirements as to qualifications and reliability.

- As an alternative to the building official conducting the inspection, he or she is permitted to accept inspections of and reports by approved inspection agencies. Appropriate criteria on which to base approval of inspection agencies can be found in Section 1703.

[A] 110.5 Inspection requests. It shall be the duty of the holder of the building permit or their duly authorized agent to notify the building official when work is ready for inspection.
It shall be the duty of the permit holder to provide access to and means for inspections of such work that are required by this code.

- It is the responsibility of the permit holder or other authorized person, such as the contractor performing the work, to arrange for the required inspections when completed work is ready and to allow for sufficient time for the building official to schedule a visit to the site to prevent work from being concealed prior to being inspected. Access to the work to be inspected must be provided, including any special means such as a ladder.

[A] 110.6 Approval required. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official. The building official, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or notify the permit holder or his or her agent wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the building official.

- This section establishes that work cannot progress beyond the point of a required inspection without the building official’s approval. Upon making the inspection, the building official must either approve the completed work or notify the permit holder or other responsible party of that which does not comply with the code. Approvals and notices of noncompliance must be in writing, as required by Section 104.4, to avoid any misunderstanding as to what is required. Any item not approved cannot be concealed until it has been corrected and approved by the building official.

SECTION 111
CERTIFICATE OF OCCUPANCY

[A] 111.1 Use and occupancy. A building or structure shall not be used or occupied, and a change in the existing use or occupancy classification of a building or structure or portion thereof shall not be made, until the building official has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. When issuance of a building permit is required and building official inspection approval is obtained, building or structure shall not be used or occupied, and a change in the existing use or occupancy classification of a building or structure or portion thereof shall not be made, until the building official has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction.

Exception: Certificates of occupancy are not required for work exempt from permits in accordance with Section 105.2.

111.1.1 Except as provided in section 111.1.2, no certificate of occupancy shall be issued unless the driveway approaches have been installed and sidewalks constructed along all adjoining rights-of-way of the subject lot or all lots or portions thereof joined to it or are the subject of a contract as part of a benefit district created pursuant to K.S.A. 12-6a01 et seq. or Appendix A, Article XII of the Topeka Municipal Code.

111.1.2 The director of planning or designee may waive the requirement of section 111.1.1 if either of the following conditions applies:

1. The sidewalk is the subject of a waiver granted in conjunction with approval of the subdivision plat.
2. Unique circumstances exist where the director of public works or designee determine that the subject sidewalk link would not be part of a viable sidewalk system in that community or conditions exist whereby construction of the sidewalk is impractical.
3. Weather conditions prevented installation of the driveway approaches or construction of the sidewalks. However, in such event, the property owner shall install driveway approaches and construct sidewalks within 90 days from the date of the final inspection.

111.1.3 Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances.

- This section establishes that a new building or structure cannot be occupied until a certificate of occupancy is issued by the building official, which reflects the conclusion of the work allowed by the building permit. Also, no change in occupancy or the use of an existing building is permitted without first obtaining a certificate of occupancy for the new use. The tool that the building official uses to control the uses and occupancies of various buildings and structures within the jurisdiction is the certificate of occupancy. It is unlawful to use or occupy a building or structure unless a certificate of occupancy has been issued. Issuance of a certificate of occupancy does not relieve the building owner from the responsibility for correcting any code violation that may exist.

The exception simply states that when work is not under the monitor of the building department, there is no need to deal with a certificate of occupancy.

[A] 111.2 Certificate issued. After the building official inspects the building or structure and does not find violations of the provisions of this code or other laws that are enforced by the department of building safety, the building official shall issue a certificate of occupancy that contains the following:

1. The building permit number.
2. The address of the structure.
3. The name and address of the owner or the owner’s authorized agent.
4. A description of that portion of the structure for which the certificate is issued.
5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code for the occupancy and division of occupancy and the use for which the proposed occupancy is classified.
6. The name of the building official.
7. The edition of the code under which the permit was issued.
8. The use and occupancy, in accordance with the provisions of Chapter 3.
9. The type of construction as defined in Chapter 6.
10. The design occupant load.
11. If an automatic sprinkler system is provided, whether the sprinkler system is required.
12. Any special stipulations and conditions of the building permit.
safely. The building official shall set a time period during which the temporary certificate of occupancy is valid.

- The building official is permitted to issue a temporary certificate of occupancy for all or a portion of a building prior to the completion of all work. Such certification is to be issued only where the building or portion in question can be safely occupied prior to full completion. The certification is intended to acknowledge that some building features may not be completed even though the building is safe for occupancy, or that a portion of the building can be safely occupied while work continues in another area. This provision precludes the occupancy of a building or structure that does not contain all of the required fire protection systems and means of egress. Temporary certificates should be issued only when incidental construction remains, such as site work and interior work that is not regulated by the code and exterior decoration not necessary to the integrity of the building envelope. The building official should view the issuance of a temporary certificate of occupancy as substantial an act as the issuance of the final certificate. Indeed, the issuance of a temporary certificate of occupancy offers a greater potential for conflict because once the building or structure is occupied, it is very difficult to remove the occupants through legal means. The certificate must specify the time period for which it is valid.

[A] 111.4 Revocation. The building official is authorized to, in writing, suspend or revoke a certificate of occupancy or completion issued under the provisions of this code wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.

- This section is needed to give the building official the authority to revoke a certificate of occupancy for the reasons indicated in the code text. The building official may also suspend the certificate of occupancy until all of the code violations are corrected.

SECTION 112
SERVICE UTILITIES

[A] 112.1 Connection of service utilities. A person shall not make connections from a utility, source of energy, fuel or power to any building or system that is regulated by this code for which a permit is required, until released by the building official.

- This section establishes the authority of the building official to approve utility connections to a building for items such as water, sewer, electricity, gas and steam, and to require their disconnection when hazardous conditions or emergencies exist.

The approval of the building official is required before a connection can be made from a utility to a building system that is regulated by the code, including those referenced in Section 101.4. This includes utilities supplying water, sewer, electricity, gas and steam services. For the protection of building occupants, including workers, such systems must have had final inspection approvals, except as allowed by Section 112.2 for temporary connections.

[A] 112.2 Temporary connection. The building official shall have the authority to authorize the temporary connection of the building or system to the utility, source of energy, fuel or power.

- The building official is permitted to issue temporary authorization to make connections to the public utility system prior to the completion of all work. This acknowledges that, because of seasonal limitations, time constraints or the need for testing or partial operation of equipment, some building systems may be safely connected even though the building is not suitable for final occupancy. The temporary connection and utilization of connected equipment should be approved when the requesting permit holder has demonstrated to the building official's satisfaction that public health, safety and welfare will not be endangered.

[A] 112.3 Authority to disconnect service utilities. The building official shall have the authority to disconnect utility service to the building, structure or system regulated by this code and the referenced codes and standards set forth in Section 101.4 in case of emergency where necessary to eliminate an immediate hazard to life or property or where such utility connection has been made without the approval required by Section 112.1 or 112.2. The building official shall notify the serving utility, and wherever possible the owner and occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnecting, the owner or occupant of the building, structure or service system shall be notified in writing, as soon as practical thereafter.

- Disconnection of one or more of a building’s utility services is the most radical method of hazard abatement available to the building official and should be reserved for cases in which all other lesser remedies have proven ineffective. Such an action must be preceded by written notice to the utility and the owner and occupants of the building. Disconnection must be accomplished within the time frame established by the building official in the notice. When the hazard to the public health, safety or welfare is so imminent as to mandate immediate disconnection, the building official has the authority and even the obligation to cause disconnection without notice. In such cases, the owner or occupants must be given written notice as soon as possible.

SECTION 113
BOARD OF APPEALS

[A] 113.1 General.—Appeals of orders, decisions or determinations made by the building official relative to the application and interpretation of this code shall be in accordance with TMC 2.40.010. In order to hear and decide appeals of orders, decisions or determinations made by the building official relative to the application and interpretation of this code,
There shall be and is hereby created a board of appeals. The board of appeals shall be appointed by the applicable governing authority and shall hold office at its pleasure. The board shall adopt rules of procedure for conducting its business.

This section provides an aggrieved party with a material or definitive interest in the decision of the building official a process to appeal such a decision before a board of appeals. This provides a forum, other than the court of jurisdiction, in which to review the building official’s actions.

This section literally allows any person to appeal a decision of the building official. In practice, this section has been interpreted to permit appeals only by those aggrieved parties with a material or definitive interest in the decision of the building official. An aggrieved party may not appeal a code requirement per se. The intent of the appeal process is not to waive or set aside a code requirement, rather, it is intended to provide a means of reviewing a building official’s decision on an interpretation or application of the code or to review the equivalency of protection to the code requirements. The members of the appeals board are appointed by the “governing body” of the jurisdiction, typically a council or administrator, such as a mayor or city manager, and remain members until removed from office. The board must establish procedures for electing a chairperson, scheduling and conducting meetings and administration. Note that Appendix B contains complete, detailed requirements for creating an appeals board, including number of members, qualifications and administrative procedures. Jurisdictions desiring to utilize these requirements must include Appendix B in their adopting ordinance.

[A] 113.2 Limitations on authority. An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply or an equally good or better form of construction is proposed. The board shall not have authority to waive requirements of this code.

This section establishes the grounds for an appeal, which claims that the building official has misinterpreted or misapplied a code provision. The board is not allowed to set aside any of the technical requirements of the code. It is, however, allowed to consider alternative methods of compliance with the technical requirements (see Section 104.11).

[A] 113.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training to pass on matters pertaining to building construction and are not employees of the jurisdiction.

It is important that the decisions of the appeals board are based purely on the technical merits involved in an appeal. It is not the place for policy or political deliberations. The members of the appeals board are, therefore, expected to have experience in building construction matters. Appendix B provides more detailed qualifications for appeals board members and can be adopted by jurisdictions desiring that level of expertise.

SECTION 114
VIOLATIONS

[A] 114.1 Unlawful acts. It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, repair, move, remove, demolish or occupy any building, structure or equipment regulated by this code, or cause same to be done, in conflict with or in violation of any of the provisions of this code.

Violations of the code are prohibited and form the basis for all citations and correction notices.

[A] 114.2 Notice of violation. The building official is authorized to serve a notice of violation or order on the person responsible for the erection, construction, alteration, extension, repair, moving, removal, demolition or occupancy of a building or structure in violation of the provisions of this code, or in violation of a permit or certificate issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.

The building official is required to notify the person responsible for the erection or use of a building found to be in violation of the code. The section that is allegedly being violated must be cited so that the responsible party can respond to the notice.

[A] 114.3 Prosecution of violation. If the notice of violation is not complied with promptly, the building official is authorized to request the legal counsel of the jurisdiction to institute the appropriate proceeding at law or in equity to restrain, correct or abate such violation, or to require the removal or termination of the unlawful occupancy of the building or structure in violation of the provisions of this code or of the order or direction made pursuant thereto.

The building official must pursue, through the use of legal counsel of the jurisdiction, legal means to correct the violation. This is not optional.

Any extensions of time, so that the violations may be corrected voluntarily, must be for a reasonable and valid cause, otherwise the building official may be subject to criticism for “arbitrary and capricious” actions. In general, it is better to have a standard time limitation for correction of violations. Departures from this standard must be for a clear and reasonable purpose, usually stated in writing by the violator.

[A] 114.4 Violation penalties. Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure in violation of the approved construction documents or directive of the building official, or of a permit or certificate issued under the provisions of this code, shall be subject to penalties as prescribed by law.

Penalties for violating provisions of the code are typically contained in state law, particularly if the code is...
SECTION 509
INCIDENTAL USES

509.1 General Incidental uses located within single occupancy or mixed occupancy buildings shall comply with the provisions of this section. Incidental uses are ancillary functions associated with a given occupancy that generally pose a greater level of risk to that occupancy and are limited to those uses listed in Table 509.

Exception: Incidental uses within and serving a dwelling unit are not required to comply with this section.

- Incidental uses are rooms or areas that constitute special hazards or risks to life safety. Such spaces often pose risks that are not typically addressed by the provisions for the general occupancy groups under consideration. However, such rooms or areas may functionally be an extension of the primary use. Only those rooms or areas found in Table 509 are to be regulated as incidental uses. Incidental uses can be located within both single-occupancy and mixed-occupancy buildings. The concern is that those areas designated as incidental uses pose a risk to the remainder of the building, and as such, some degree of protection is required. The protection requirements, however, are not applicable to incidental uses that are located within and serve a dwelling unit. Incidental uses are not required to also comply with the accessory use provisions of Section 508.2.

Table 509. See page 5-46.

- Table 509 identifies incidental uses and the required separation or other protection to be provided. Where a fire-resistance-rated separation is required, the incidental use must be separated from other portions of the building with fire barriers that comply with Section 707 and/or horizontal assemblies complying with Section 711. Where Table 509 permits protection by an automatic sprinkler system without fire barriers, the walls enclosing the incidental use must comply with Section 509.4.2.

509.2 Occupancy classification. Incidental uses shall not be individually classified in accordance with Section 302.1. Incidental uses shall be included in the building occupancies within which they are located.

- This provision expressly states that incidental uses are not considered as separate and distinct occupancy classifications, but rather are classified the same as the building occupancies in which they are located. As an example, a 200-square-foot (18.5 m²) laundry room in an apartment building would simply be classified as a part of the Group R-2 occupancy. Similarly, a waste and linen collection room in a nursing home would be classified as a portion of the Group I-2 occupancy.

509.3 Area limitations. Incidental uses shall not occupy more than 10 percent of the building area of the story in which they are located.

- The floor area limitation of 10 percent for incidental uses emphasizes the ancillary nature of such rooms and areas. Each incidental use is limited to a maximum of 10 percent of the floor area of the story in which it is located. Where there are two or more tenants located on the same story, the 10 percent limitation is presumably based upon the floor area of each individual tenant space rather than that of the entire story. The application of the limit on a tenant-by-tenant basis is consistent with the concept of incidental uses typically being ancillary only to a portion of the building, the specific tenant occupancy.

509.4 Separation and protection. The incidental uses listed in Table 509 shall be separated from the remainder of the building or equipped with an automatic sprinkler system, or both, in accordance with the provisions of that table.

- In addition to identifying those rooms or areas that warrant regulation as incidental uses, Table 509 also indicates the required degree of protection or separation. The requirements identified in Table 509 vary depending on the incidental use. In some cases, a specific type of separation and/or protection is required, while in others there is an option. As indicated by Section 509.4.2.1, the requirement for an automatic sprinkler system for the majority of those listed applies only to the incidental use room or area, not the entire building. If a building is required to be provided with a sprinkler system for other reasons, then any sprinkler requirement for an incidental use is also met.

509.4.1 Separation. Where Table 509 specifies a fire-resistance-rated separation, the incidental uses shall be separated from the remainder of the building by a fire barrier constructed in accordance with Section 707 or a horizontal assembly constructed in accordance with Section 711, or both. Construction supporting 1-hour fire barriers or horizontal assemblies used for incidental use separations in buildings of Type IIB, IIIB and VB construction is not required to be fire-resistance rated unless required by other sections of this code.

- Where a fire-resistance rated separation is required, the incidental use must be separated from other portions of the building with fire barriers that comply with Section 707, horizontal assemblies complying with Section 711, or both. Where Table 509 permits protection by an automatic sprinkler system without fire barriers, the construction enclosing the incidental use must resist the passage of smoke in accordance with Section 509.4.2. Where the construction surrounding an incidental use is only required to be 1 hour, and the building is of nonrated construction (Type IIB, IIIB or VB), the rated construction does not need to be supported by 1-hour fire-resistance-rated construction. In all other instances, the construction supporting incidental occupancy separations must be supported by construction with at least the same rating as the separations.

509.4.2 Protection. Where Table 509 permits an automatic sprinkler system without a fire barrier, the incidental uses shall be separated from the remainder of the building by construction capable of resisting the passage of smoke. The walls...
shall extend from the top of the foundation or floor assembly below to the underside of the ceiling that is a component of a fire-resistance-rated floor assembly or roof assembly above or to the underside of the floor or roof sheathing, deck or slab above. Doors shall be self- or automatic-closing upon detection of smoke in accordance with Section 716.5.9.3. Doors shall not have air transfer openings and shall not be undercut in excess of the clearance permitted in accordance with NFPA 80. Walls surrounding the incidental use shall not have openings, air transfer openings, or duct openings unless provided with smoke dampers in accordance with Section 710.8.

Where Table 509 permits protection by an automatic sprinkler system without fire barriers, the construction enclosing the incidental use must resist the passage of smoke. While this section can be viewed as a performance standard, construction details for resisting the passage of smoke are provided in this section. Although the section specifically states that air transfer openings must be provided with smoke dampers, it is silent with respect to ducts. If ducts are penetrating this separation, the arrangement of the duct system should be analyzed to determine if it will allow smoke to pass through the wall and not restrict it to the incidental use.

The wall construction described here is not required to be a smoke barrier conforming to Section 709 or a smoke partition conforming to Section 710.

**509.4.2.1 Protection limitation.** Where an automatic sprinkler system is provided in accordance with Table 509, only the space occupied by the incidental use need be equipped with such a system.

The point of this section is that the sprinkler system stipulated in Table 509 is required for the incidental use only. In general, the nature of these incidental uses is such that they are small areas, not often frequented by building occupants, in which a fire could get underway and go unnoticed for a longer time than in a part of the building that is constantly occupied.

**SECTION 510 SPECIAL PROVISIONS**

**510.1 General.** The provisions in Sections 510.2 through 510.9 shall permit the use of special conditions that are exempt from, or modify, the specific requirements of this

<table>
<thead>
<tr>
<th>TABLE 509 INCIDENTAL USES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ROOM OR AREA</strong></td>
</tr>
<tr>
<td>Furnace room where any piece of equipment is over 400,000 Btu per hour input</td>
</tr>
<tr>
<td>Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower</td>
</tr>
<tr>
<td>Refrigerant machinery room</td>
</tr>
<tr>
<td>Hydrogen fuel gas rooms, not classified as Group H</td>
</tr>
<tr>
<td>Incinerator rooms</td>
</tr>
<tr>
<td>Paint shops, not classified as Group H, located in occupancies other than Group F</td>
</tr>
<tr>
<td>In Group E occupancies, laboratories and vocational shops not classified as Group H</td>
</tr>
<tr>
<td>In Group I-2 occupancies, laboratories not classified as Group H</td>
</tr>
<tr>
<td>In ambulatory care facilities, laboratories not classified as Group H</td>
</tr>
<tr>
<td>Laundry rooms over 100 square feet</td>
</tr>
<tr>
<td>In Group I-2, laundry rooms over 100 square feet</td>
</tr>
<tr>
<td>Group I-3 cells and Group I-2 patient rooms equipped with padded surfaces</td>
</tr>
<tr>
<td>In Group I-2, physical plant maintenance shops</td>
</tr>
<tr>
<td>In ambulatory care facilities or Group I-2 occupancies, waste and linen collection rooms with containers that have an aggregate volume of 10 cubic feet or greater</td>
</tr>
<tr>
<td>In other than ambulatory care facilities and Group I-2 occupancies, waste and linen collection rooms over 100 square feet</td>
</tr>
<tr>
<td>In ambulatory care facilities or Group I-2 occupancies, storage rooms greater than 100 square feet</td>
</tr>
<tr>
<td>Stationary storage battery systems having a liquid electrolyte capacity of more than 50 gallons for flooded lead-acid, nickel cadmium or VRLA, or more than 1,000 pounds for lithium-ion and lithium metal polymer used for facility standby power, emergency power or uninterruptable power supplies</td>
</tr>
</tbody>
</table>
walls and fire barriers. It follows that it would be good for shaft walls and stair enclosures as well. It could also be used as a fire partition, smoke partition or smoke barrier.

Fire-resistance-rated glazing is also mentioned in Table 716.5 for doors and windows.

703.7 Marking and identification. Where there is an accessible concealed floor, floor-ceiling or attic space, fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling in the concealed space. Such identification shall:

1. Be located within 1520 feet (4572 mm) of the end of each wall and at intervals not exceeding 3075 feet (9144 mm) measured horizontally along the wall or partition.

2. Include lettering not less than 3 inches (76 mm) in height with a minimum 1/16-inch (9.5 mm) stroke in a contrasting color incorporating the suggested wording, "FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS," or other wording.

This code requirement addresses the need for installed fire-resistance-rated assemblies to maintain their fire resistance over the life of the building. This identification will allow tradespeople, craftsmen, installers, maintenance workers or inspectors to know that the wall is a fire-resistance-rated wall and openings or penetrations of it must be protected. This identification is only required where there is an accessible concealed space associated with the wall construction.

SECTION 704
FIRE-RESISTANCE RATING OF STRUCTURAL MEMBERS

704.1 Requirements. The fire-resistance ratings of structural members and assemblies shall comply with this section and the requirements for the type of construction as specified in Table 601. The fire-resistance ratings shall be not less than the ratings required for the fire-resistance-rated assemblies supported by the structural members.

Exception: Fire barriers, fire partitions, smoke barriers and horizontal assemblies as provided in Sections 707.5, 708.4, 709.4 and 711.2, respectively.

This section contains provisions that apply to structural members that are required to have a fire-resistance rating. The required rating of structural members is usually based on the type of construction and Table 601. Other sections of the code, such as the continuity provisions of Sections 707.5, 709.4, 710.4 and 711.2.2, may require structural members to have a fire-resistance rating because they support fire-resistance-rated construction. The minimum required fire-resistance rating for the structural member is, therefore, the more restrictive of the above two criteria.

There are instances in which the code does not require the supporting structural members to have a fire-resistance rating. An example includes the supporting construction for tenant and sleeping unit separations, exit access corridors and smoke partitions in Type IIB, IIIB, and VB construction (see Sections 708.4 and 709.4).

Protection of structural members differs for various members. Required column fire-resistance protection must be afforded in accordance with Section 704.2. Certain primary structural frames (see definition in Section 202) must be protected by individual encasement in accordance with Section 704.3. Secondary structural members (see definition in Section 202) may utilize membrane protection in accordance with Section 704.4. Special requirements apply to fire-resistance protection of trusses (see Section 704.5).

Section 704 addresses issues such as protection of attachments to structural members (see Section 704.6), embedment of service facilities (see Section 704.8), impact protection (see Section 704.9), exterior structural members (see Section 704.10), bottom flange protection (see Section 704.11), seismic isolation systems (see Section 704.12) and sprayed fire-resistant materials (SFRM) (see Section 704.13).

704.2 Column protection. Where columns are required to have protection to achieve a fire-resistance rating, the entire column shall be provided individual encasement protection by protecting it on all sides for the full column height, including connections to other structural members, with materials having the required fire-resistance rating. Where the column extends through a ceiling, the encasement protection shall be continuous from the top of the foundation or floor/ceiling assembly below through the ceiling space to the top of the column.

Columns required to be fire-resistance rated must be encased on all sides. This is true even if the column is located on the exterior of the structure. The ceiling membrane or ceiling protection of a floor/ceiling or roof/ceiling fire-resistance-rated assembly is prohibited from being considered as the protection for columns required to have a fire-resistance rating. Therefore, the materials that encase or provide individual protection must continue through the concealed space above a ceiling, even if the ceiling membrane is part of a fire-resistance-rated assembly (see Commentary Figure 704.2). Connections of structural members to columns must also be individually protected (see Section 704.6). Columns that provide inherent fire resistance, without encasement, such as heavy timber, are considered as not requiring protection and do not need to comply with this section.

704.3 Protection of the primary structural frame other than columns. Members of the primary structural frame other than columns that are required to have protection to achieve a fire-resistance rating and support more than two floors or one floor and roof, or support a load-bearing wall or a nonload-bearing wall more than two stories high, shall be provided individual encasement protection by protecting...
### Summary of Occupancy-Related Automatic Sprinkler Thresholds

<table>
<thead>
<tr>
<th>Occupancy</th>
<th>Threshold</th>
<th>Exception</th>
</tr>
</thead>
<tbody>
<tr>
<td>All occupancies</td>
<td>Buildings with floor level ≥ 55 feet above fire department vehicle access and occupant load ≥ 30.</td>
<td>Open parking structures. F-2</td>
</tr>
<tr>
<td>Assembly (A-1, A-3, A-4)</td>
<td>Fire area &gt; 12,000 sq. ft. or fire area occupant load &gt; 300 or fire area above/below level of exit discharge. Multitheater complex (A-1 only)</td>
<td>None</td>
</tr>
<tr>
<td>Assembly (A-2)</td>
<td>Fire area &gt; 5,000 sq. ft. or fire area occupant load &gt; 400 or fire area above/below level of exit discharge.</td>
<td>None</td>
</tr>
<tr>
<td>Assembly (A-5)</td>
<td>Accessory areas &gt; 1,000 sq. ft.</td>
<td>None</td>
</tr>
<tr>
<td>Ambulatory care facility (B)</td>
<td>≥ 4 care recipients incapable of self-preservation or any care recipients incapable of self-preservation above or below level of exit discharge.</td>
<td>None</td>
</tr>
<tr>
<td>Educational (E)</td>
<td>Fire area &gt; 12,000 sq. ft. or below level of exit discharge.</td>
<td>Each classroom has exterior door at grade.</td>
</tr>
<tr>
<td>Factory (F-1)</td>
<td>Fire area &gt; 12,000 sq. ft. or building &gt; three stories or combined fire area &gt; 24,000 sq. ft. Woodworking &gt; 2,500 sq. ft. (F-1 only). Manufacture &gt; 2,500 sq. ft. (F-1), display and sale &gt; 5,000 sq. ft. (M), storage &gt; 2,500 sq. ft. (S-1) of upholstered furniture or mattresses. Bulk storage of tires &gt; 20,000 cu. ft. (S-1 only).</td>
<td>None Refer to Chapter 9 for thresholds and fire area criteria</td>
</tr>
<tr>
<td>High hazard (H-1, H-2, H-3, H-4, H-5)</td>
<td>Sprinklers required.</td>
<td>None Refer to local amendment</td>
</tr>
<tr>
<td>Institutional (I-1, I-2, I-3, I-4)</td>
<td>Sprinklers required.</td>
<td>Day Care at level of exit discharge and each classroom has exterior exit door.</td>
</tr>
<tr>
<td>Residential (R)</td>
<td>Sprinklers required.</td>
<td>None Refer to 903.2.8</td>
</tr>
<tr>
<td>Repair garage (S-1)</td>
<td>Fire area &gt; 12,000 sq. ft. or ≥ two stories (including basement) with fire area &gt; 10,000 sq. ft. or repair garage servicing vehicles in basement or servicing commercial motor vehicles in fire area &gt; 5,000 sq. ft.</td>
<td>None</td>
</tr>
<tr>
<td>Parking garage (S-1)</td>
<td>Commercial motor vehicles parking area &gt; 5,000 sq. ft.</td>
<td>None</td>
</tr>
<tr>
<td>Parking garage (S-2)</td>
<td>Fire area &gt; 12,000 sq. ft. or fire area &gt; 5,000 sq. ft. for storage of commercial motor vehicles; or beneath other groups. (enclosed parking)</td>
<td>Not if beneath Group R-3</td>
</tr>
<tr>
<td>Covered and open malls (402.5)</td>
<td>Sprinklers required.</td>
<td>Attached open parking structures.</td>
</tr>
<tr>
<td>High-rises (403.3)</td>
<td>Sprinklers required.</td>
<td>Open garages; certain telecommunications buildings</td>
</tr>
</tbody>
</table>

Note: Thresholds located in Section 903.2 unless noted. See also Table 903.2.11.6 for additional required suppression systems. For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m².

Figure 903.2

SUMMARY OF OCCUPANCY-RELATED AUTOMATIC SPRINKLER THRESHOLDS
[F] 903.2.1.1 Group A-1. An automatic sprinkler system shall be provided for fire areas containing Group A-1 occupancies and intervening floors of the building where one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m²).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. The fire area contains a multiplex theater complex.

Group A-1 occupancies are identified as assembly occupancies with fixed seating, such as theaters. In addition to the high occupant load associated with these types of facilities, egress is further complicated by the possibility of low lighting levels customary during performances. The fuel load in these buildings is usually of a type and quantity that would support fairly rapid fire development and sustained duration.

Theaters with stages pose a greater hazard. Sections 410.7 and 410.8 require stages to be equipped with an automatic sprinkler system and standpipe system, respectively. The proscenium opening must also be protected. These features compensate for the additional hazards associated with stages in Group A-1 occupancies.

This section lists four conditions that require installing a suppression system in a Group A-1 occupancy including the entire story where the A-1 occupancy is located and all intervening floors. Condition 1 requires that, if any one fire area of Group A-1 exceeds 12,000 square feet (1115 m²), the automatic sprinkler system is to be installed throughout the entire story where a Group A-1 occupancy is located, regardless of whether the building is divided into more than one fire area. However, if all fire areas are less than 12,000 square feet (1115 m²) (and less than the other thresholds), then sprinklers would not be required. Compartmentalization into multiple fire areas in compliance with Chapter 7 is deemed an adequate alternative to sprinkler protection.

Condition 2 establishes the minimum number of occupants for which an automatic sprinkler system is considered necessary. The determination of the actual occupant load must be based on Section 1004. Condition 3 accounts for occupant egress delay when traversing a stairway requiring a sprinkler system, regardless of the size of occupant load. In such cases alternative emergency escape elements such as windows may not be available, making the suppression needs all the greater. It is not necessary for the occupant load to exceed 300 on a level other than the level of exit discharge serving such occupancy. Any number of Group A-1 occupants on the alternative level would be cause to apply the requirement for sprinklers. The text does not make reference to “story” but uses the term “floor,” which could include mezzanines and basements.

Condition 4 states that a sprinkler system is required for multiplex theater complexes to account for the delay associated with the notification of adjacent compartmentalized spaces where the occupants may not be immediately aware of an emergency.

[F] 903.2.1.2 Group A-2. An automatic sprinkler system shall be provided for fire areas containing Group A-2 occupancies and intervening floors of the building where one of the following conditions exists:

1. The fire area exceeds 5,000 square feet (464 m²).
2. The fire area has an occupant load of 1000 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.

Group A-2 assembly occupancies are intended for food or drink consumption, such as banquet halls, nightclubs and restaurants. Occupancies in Group A-2 involve life safety factors such as a high occupant density, flexible fuel loading, movable furnishings and limited lighting; therefore, they must be protected with an automatic sprinkler system under any of the listed conditions.

In the case of an assembly use, the purpose of the automatic sprinkler system is to provide life safety from fire as well as preserving property. By requiring fire suppression in areas through which the occupants may egress, including the level of exit discharge serving such occupancies, the possibility of unobserved fire development affecting occupant egress is minimized.

The 5,000-square-foot (464 m²) threshold for the automatic sprinkler system reflects the higher degree of life safety hazard associated with Group A-2 occupancies. As alluded to earlier, Group A-2 occupancies could have low lighting levels, loud music, late hours of operation, dense seating with ill-defined aisles and alcoholic beverage service. These factors in combination could delay fire recognition, confuse occupant response and increase egress time.

Although the calculated occupant load for a 5,000 square-foot (465 m²) space at 15 square feet (1.4 m²) per occupant would be over 100, the occupant load threshold in Condition 2 is meant to reflect the concern for safety in these higher density occupancies. Although the major reason for establishing the occupant threshold at 100 was because of several recent nightclub incidents, the requirement is not limited to nightclubs or banquet facilities but to all Group A-2 occupancies. Any restaurant with an occupant load greater than 100 would require sprinkler protection as well. This includes fast food facilities with no low lighting or alcohol sales. The similar intent of Condition 3 is addressed in the commentary to Section 903.2.1.1.

Note that as with Group A-1 occupancies, when sprinklers are required they are required on the story where the Group A-2 occupancy is located and on all intervening floors leading to the levels of exit discharge.

[F] 903.2.1.3 Group A-3. An automatic sprinkler system shall be provided for fire areas containing Group A-3 occu-
pancies and intervening floors of the building where one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m²).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.

Group A-3 occupancies are assembly occupancies intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A, such as churches, museums and libraries. While Group A-3 occupancies could potentially have a high occupant load, they normally do not have the same potential combination of life safety hazards associated with Group A-2 occupancies. As with most assembly occupancies, however, most of the occupants are typically not completely familiar with their surroundings. When any of the three listed conditions are applicable, an automatic sprinkler system is required throughout the fire area containing the Group A-3 occupancy, including the entire story where the Group A-3 occupancy is located and throughout all floors between the Group A occupancy and exit discharge that serves that occupancy (see commentary, Sections 903.2.1 and 903.2.1.1).

[F] 903.2.1.4 Group A-4. An automatic sprinkler system shall be provided for fire areas containing Group A-4 occupancies and intervening floors of the building where one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m²).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.

Group A-4 occupancies are assembly uses intended for viewing of indoor sporting events and activities such as arenas, skating rinks and swimming pools. The occupant load density may be high depending on the extent and style of seating, such as bleachers or fixed seats, and the potential for standing-room viewing.

When any of the three listed conditions are applicable, an automatic sprinkler system is required throughout the fire area containing the Group A-4 occupancy, including the entire story where the Group A-4 occupancy is located, and in all floors between the Group A occupancy and exit discharge (see commentary, Sections 903.2.1 and 903.2.1.1).

[F] 903.2.1.5 Group A-5. An automatic sprinkler system shall be provided for Group A-5 occupancies in the following areas: concession stands, retail areas, press boxes and other accessory use areas in excess of 1,000 square feet (93 m²).

Group A-5 occupancies are assembly uses intended for viewing of outdoor activities. This occupancy classification could include amusement park structures, grandstands and open stadiums. A sprinkler system is not required in the open area of Group A-5 occupancies because the buildings would not accumulate smoke and hot gases. A fire in open areas would also be obvious to all spectators.

Enclosed areas such as retail areas, press boxes and concession stands require sprinklers if they are in excess of 1,000 square feet (93 m²). The 1,000-square-foot (93 m²) accessory use area is not intended to be an aggregate condition but rather per space. Thus, a press box that is 2,500 square feet (232 m²) in area would need to be subdivided into areas less than 1,000 square feet (93 m²) each in order to be below the threshold for sprinklers. There is no specific requirement for the separation of these spaces. It is assumed, however, that the separation would be a solid barrier of some type but without a required fire-resistance rating.

The provision is meant to mirror that in Section 1029.6.2.3, which exempts press boxes and storage facilities less than 1,000 square feet (93 m²) in area from sprinkler requirements in smoke-protected assembly seating areas.

[F] 903.2.1.6 Assembly occupancies on roofs. Where an occupied roof is above a building four stories or more and has an assembly occupancy with an occupant load exceeding 100 for Group A-2 and 300 for other Group A occupancies, all floors between the occupied roof and the level of exit discharge shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

Exception: Open parking garages of Type I or Type II construction.

Frequently, roof tops are being used and occupied as assembly occupancies. Building owners will provide an open air roof-top bar or lounge, or other use similar to a Group A-2 occupancy on the roof of a building. A roof does not meet the definition of a fire area. As such, protection of the occupants can be less than what would otherwise be required were the occupancy located on a floor rather than on the roof. In addition, even if a fire occurs within the building itself, it puts these occupants at risk. The provisions requiring sprinklers are based on the type of assembly occupancy located on the roof. The roof itself is not required to be sprinklered. The reference to Section 903.3.1.2 is added, since this use can occur on the roof of multi-family housing facilities.

The exception for open parking garages is consistent with the existing code requirement exception for open parking garages under Section 303.2.11.3 for “Buildings 55 feet or more in height.” It is becoming more common in the urban renewal areas throughout the U.S. that jurisdictions are asking developers to provide additional recreational and green spaces for their citizens to enjoy within their own communities. Because of the limited space available, it is not uncommon for such recreational and green spaces to be provided on the roofs of open parking garages. Based on the existing wording of this section, these recreational and green spaces greater than 700 square feet (based on 7 square feet net per occupant) or 1,500 square feet (based on 15 square feet
This section addresses the issue of multiple small assembly occupancies placed in a single-story building and not triggering a sprinkler system requirement because of the installation of a rated corridor and separation walls. The code now requires that sprinkler systems be added when the convergence of more than 300 persons share an exit. This is consistent with the intent of automatic sprinkler systems being required for life safety and to maintain tenable exiting in a fire event. A fire event that is near an exit is the same whether there are 300 occupants in one room or three rooms with 100 occupants each sharing an exit. This is also consistent with the requirement in the “multi-theater complex” for Group A-1, which is a requirement for anytime two or more theaters are in the same tenancy and does not consider occupant load as a trigger.

This will still allow those single-story buildings with multiple tenancies that have separate exits and utilize the fire area separation concept, such as buildings with multiple restaurants with separate entrances and strip-style mall buildings.

903.2.2 Ambulatory care facilities. An automatic sprinkler system shall be installed throughout the entire floor containing an ambulatory care facility where either of the following conditions exist at any time:

1. Four or more care recipients are incapable of self-preservation, whether rendered incapable by staff or staff has accepted responsibility for care recipients already incapable.

2. One or more care recipients that are incapable of self-preservation are located at other than the level of exit discharge serving such a facility.

In buildings where ambulatory care is provided on levels other than the level of exit discharge, an automatic sprinkler system shall be installed throughout the entire floor where such care is provided as well as all floors below, and all floors between the level of ambulatory care and the nearest level of exit discharge, including the level of exit discharge.

Ambulatory care facilities are Group B occupancies, which have an enhanced set of requirements that account for the fact that patients may be incapable of self-preservation and require rescue by other occupants or fire personnel. There are several aspects to the enhanced features, including smoke compartments, sprinklers and fire alarms. More specifically, the requirements for sprinklers are based on the presence of four or more care recipients at any given time that are incapable of self-preservation or any number of care recipients that are incapable of self-preservation located on a floor other than the level of exit discharge that serves the ambulatory care facility. The sprinkler requirement is limited to the floor area that contains the Group B ambulatory care facility and any floors between the ambulatory care facility and level of exit discharge (see commentary, Section 422).
[F] 903.2.3 Group E. An automatic sprinkler system shall be provided for Group E occupancies as follows:

1. Throughout all Group E fire areas greater than 12,000 square feet (1115 m²) in area.
2. Throughout every portion of educational buildings below the lowest level of exit discharge serving that portion of the building.

Exception: An automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area where every classroom throughout the building has not fewer than one exterior exit door at ground level.

ű Group E occupancies are limited to educational purposes through the 12th grade and day care centers serving children older than 2 1/2 years of age. The 12,000-square-foot (1115 m²) fire area threshold was established to allow smaller schools and day care centers to be nonsprinklered to minimize the economic impact on these facilities. The 12,000-square-foot (1115 m²) threshold is similar to that used for several other occupancies, such as Group M occupancies.

Sprinklers would also be required in portions of the building located below the level of exit discharge serving that occupancy. However, there is an exception that would allow the omission of the automatic sprinkler system for the Group E fire area if there is a direct exit to the exterior from each classroom at ground level. The occupants must be able to go from the classroom directly to the outside without passing through intervening corridors, passageways or interior exit stairways.

[F] 903.2.4 Group F-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 occupancy where one of the following conditions exists:

1. A Group F-1 fire area exceeds 12,000 square feet (1115 m²).
2. A Group F-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group F-1 occupancy used for the manufacture of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²).
5. A Group S-1 occupancy used for the storage of upholstered furniture or mattresses exceeds 5,000 square feet (232 m²).

Group F-1 occupancies must meet several different conditions as to when the fire area or occupancy must be sprinklered. The first three conditions are related to the difficulty of manually suppressing a fire involving a large area. Therefore, occupancies of Group F-1 must be protected throughout with an automatic sprinkler system if the fire area is in excess of 12,000 square feet (1115 m²); if the total of all fire areas is in excess of 24,000 square feet (2230 m²); or if the fire area is located more than three stories above grade plane. This is one of the few locations in the code where the total floor area of the building is aggregated for application of a code requirement. The stipulated conditions for when an automatic sprinkler system is required also apply to Group M (see Section 903.2.7) and S-1 (see Section 903.2.9) occupancies. Condition 4 for sprinklering a Group F-1 occupancy relates to the requirement for Group F-1 occupancies in excess of 2,500 square feet (232 m²) that are used for the manufacture of upholstered furniture or mattresses. Note that this requirement is based simply on the square footage of the Group F-1 occupancy and is not related to fire areas. Upholstered furniture has the potential for rapid-growing and high-heat-release fires. This hazard is increased substantially when there are numerous upholstered furniture or mattresses being manufactured. Such fires put the occupants and emergency responders at risk. This requirement exists regardless of whether the upholstered furniture has passed any fire-retardant tests. See the commentary for Section 903.2.7 for more discussion on the subject of upholstered furniture. See the commentary to Section 903.2.9 for discussion of the formal interpretation and applicability to the code and the IFC.

The following examples illustrate how the criteria of this section are intended to be applied:

• If a building contains a single fire area of Group F-1 and the fire area is 13,000 square feet (1208 m²), an automatic sprinkler system is required throughout the entire building; however, if this fire area is separated into two fire areas and neither is in excess of 12,000 square feet (1115 m²), an automatic fire sprinkler system is not required. To be considered separate fire areas, the areas must be separated by fire barriers or horizontal assemblies having a fire-resistance rating as required in Table 707.3.10.

• If a 30,000-square-foot (2787 m²) Group F-1 building was equally divided into separate fire areas of 10,000 square feet (929 m²) each, an automatic sprinkler system would still be required throughout the entire building. Because the aggregate area of all fire areas exceeds 24,000 square feet (2230 m²), additional compartmentation will not eliminate the need for an automatic sprinkler system. However, the use of a fire wall to separate the structure into two buildings would reduce the aggregate area of each building to less than 24,000 square feet (2230 m²) and each fire area to less than 12,000 square feet (1115 m²), which would offset the need for an automatic sprinkler system.

[F] 903.2.4.1 Woodworking operations. An automatic sprinkler system shall be provided throughout all Group F-1 occupancy fire areas that contain woodworking operations in excess of 2,500 square feet (232 m²) in area that generate finely divided combustible waste or use finely divided combustible materials.

ű Because of the potential amount of combustible dust that could be generated during woodworking opera
An automatic sprinkler system shall be installed throughout buildings containing woodworking operations that exceed 2,500 square feet (232 m²) in area. Facilities where woodworking operations take place, such as cabinet making, are considered Group F-1 occupancies. The extent of the phrase "finely divided combustible waste" is to describe particle concentrations that are in the explosive range (see Chapter 22 of the IFC for discussion of dust-producing operations).

The extent of sprinkler coverage is only intended to be for the Group F-1 occupancy involved in the woodworking activity. If the fire area is larger than 2,500 square feet (232 m²) but the woodworking area is 2,500 square feet (232 m²) or less, sprinklers are not required. It is not the intent to require the installation of sprinklers throughout the building but rather in the fire area where the hazard may be present.

[F] 903.2.5 Group H. Automatic sprinkler systems shall be provided in high-hazard occupancies as required in Sections 903.2.5.1 through 903.2.5.3.

- Group H occupancies are those intended for the manufacturing, processing or storage of hazardous materials that constitute a physical or health hazard. To be considered a Group H occupancy, the amount of hazardous materials is assumed to be in excess of the maximum allowable quantities permitted by Tables 307.1(1) and 307.1(2).

[F] 903.2.5.1 General. An automatic sprinkler system shall be installed in Group H occupancies.

- This section requires an automatic sprinkler system in all Group H occupancies. Even though in some instances the hazard associated with the occupancy may be one that is not a fire hazard, an automatic sprinkler system is still required to minimize the potential for fire spreading to the high-hazard use; that is, the sprinklers protect the high-hazard area from fire outside the area. This section does not prohibit the use of an alternative automatic fire-extinguishing system in accordance with Section 904. When a water-based system is not compatible with the hazardous materials involved and thus creates a dangerous condition, an alternative fire-extinguishing system should be used. For example, combustible metals, such as magnesium and titanium, have a serious record of involvement with fire and are typically not compatible with water (see commentary, Chapter 59 of the IFC).

Where control areas are used to regulate the quantity of hazardous material within a building, the building is not considered a Group H occupancy. Unless a building would be required by some other code provision to be protected with sprinklers, control areas can be used to control the allowable quantities of hazardous materials in a building so as to not warrant a Group H classification and its mandatory sprinkler requirements.

[F] 903.2.5.2 Group H-5 occupancies. An automatic sprinkler system shall be installed throughout buildings containing Group H-5 occupancies. The design of the sprinkler system shall be not less than that required by this code for the occupancy hazard classifications in accordance with Table 903.2.5.2.

Where the design area of the sprinkler system consists of a corridor protected by one row of sprinklers, the maximum number of sprinklers required to be calculated is 13.

- Group H-5 occupancies are structures that are typically used as semiconductor fabrication facilities and comparable research laboratory facilities that use hazardous production materials (HPM). Many of the materials used in semiconductor fabrication present unique hazards. Many of the materials are toxic, while some are corrosive, water reactive or pyrophoric. Fire protection for these facilities is aimed at preventing incidents from escalating and producing secondary threats beyond a fire, such as the release of corrosive or toxic materials. Because of the nature of Group H-5 facilities, the overall amount of hazardous materials can far exceed the maximum allowable quantities given in Tables 307.1(1) and 307.1(2). Although the amount of HPM material is restricted in fabrication areas, the quantities of HPM in storage rooms normally will be in excess of those allowed by the tables. Additional requirements for Group H-5 facilities are located in Chapter 27 of the IFC and Section 415.11 of the code.

This section also specifies the sprinkler design criteria, based on NFPA 13, for various areas in a Group H-5 occupancy (see commentary, Table 903.2.5.2). When the corridor design area sprinkler option is used, a maximum of 13 sprinklers must be calculated. This exceeds the requirements of NFPA 13 for typical egress corridors, which require a maximum of either five or seven calculated sprinklers, depending on the extent of protected openings in the corridor. The increased number of calculated corridor sprinklers is based on the additional hazard associated with the movement of hazardous materials in corridors of Group H-5 facilities.

[F] TABLE 903.2.5.2
group h-5 sprinkler design criteria

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>OCCUPANCY HAZARD CLASSIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabrication areas</td>
<td>Ordinary Hazard Group 2</td>
</tr>
<tr>
<td>Service corridors</td>
<td>Ordinary Hazard Group 2</td>
</tr>
<tr>
<td>Storage rooms without dispensing</td>
<td>Ordinary Hazard Group 2</td>
</tr>
<tr>
<td>Storage rooms with dispensing</td>
<td>Extra Hazard Group 2</td>
</tr>
<tr>
<td>Corridors</td>
<td>Ordinary Hazard Group 2</td>
</tr>
</tbody>
</table>

Table 903.2.5.2 designates the appropriate occupancy hazard classification for the various areas within a Group H-5 facility. The listed occupancy hazard classifications correspond to specific sprinkler system design criteria in NFPA 13. Ordinary Hazard Group 2 occupancies, for example, require a minimum design density of 0.20 gpm/ft² (8.1 L/min/m²) with a minimum design area of 1,500 square feet.
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(139 m²). An Extra Hazard Group 2 occupancy, in turn, requires a minimum design density of 0.40 gpm/ft² (16.3 L/min/m²) with a minimum operating area of 2,500 square feet (232 m²). The increased overall sprinkler demand for Extra Hazard Group 2 occupancies is based on the potential use and handling of substantial amounts of hazardous materials, such as flammable or combustible liquids.

[F] 903.2.5.3 Pyroxylin plastics. An automatic sprinkler system shall be provided in buildings, or portions thereof, where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds (45 kg).

 Cellulose nitrate (pyroxylin) plastics pose unusual and substantial fire risks. Pyroxylin plastics are the most dangerous and unstable of all plastic compounds. The chemically bound oxygen in their structure permits them to burn vigorously in the absence of atmospheric oxygen. Although these compounds produce approximately the same amount of energy as paper when they burn, pyroxylin plastics burn at a rate as much as 15 times greater than comparable common combustibles. When burning, these materials release highly flammable and toxic combustion byproducts. Consequently, cellulose nitrate fires are very difficult to control. Although this section specifies a sprinkler threshold quantity of 100 pounds, the need for additional fire protection should be considered for pyroxylin plastics in any amount.

Although the code includes cellulose nitrate “film” in its requirements, cellulose nitrate motion picture film has not been used in the United States since the 1950s. All motion picture film produced since that time is what is typically called “safety film.” Consequently, the only application for this section relative to motion picture film is where it may be used in laboratories or storage vaults that are dedicated to film restoration and archives. The protection of these facilities is addressed in Sections 306.2 and 6504.2, both in the IFC.

[F] 903.2.6 Group I. An automatic sprinkler system shall be provided throughout buildings with a Group I fire area.

Exceptions:

1. An automatic sprinkler system installed in accordance with Section 903.3.1.2 shall be permitted in Group I-1 Condition 1 facilities.

2. An automatic sprinkler system is not required where Group I-4 day care facilities are at the level of exit discharge and where every room where care is provided has not fewer than one exterior exit door.

3. In buildings where Group I-4 day care is provided on levels other than the level of exit discharge, an automatic sprinkler system in accordance with Section 903.3.1.1 shall be installed on the entire floor where care is provided, all floors between the level of care and the level of exit discharge, and all floors below the level of exit discharge other than areas classified as an open parking garage.

 The Group I occupancy is divided into four individual occupancy classifications based on the degree of detention, supervision and physical mobility of the occupants. The evacuation difficulties associated with the building occupants creates the need to incorporate a defend-in-place philosophy of fire protection in occupancies of Group I. For this reason, all such occupancies are to be protected with an automatic sprinkler system. Note that this section is applicable to the entire building that contains a Group I occupancy.

Of particular note, this section encompasses all Group I-3 occupancies where more than five persons are detained (see Section 308.5). There has been considerable controversy concerning the use of automatic sprinklers in detention and correctional occupancies. Special design considerations can be taken into account to alleviate the perceived problems with sprinklers in sleeping units. Sprinklers that reduce the likelihood of vandalism as well as the potential to hang oneself are commercially available. Knowledgeable designers can incorporate certain design features to increase reliability and decrease the likelihood of damage to the system.

Group I-4 occupancies would include either adult-only care facilities or occupancies that provide personal care for more than five children 2 1/2 years of age or less on a less-than-24-hour basis. Because the degree of assistance and the time needed for egress cannot be gauged, an automatic sprinkler system is required.

There are three exceptions to this section. Exception 1 permits Group I-1 Condition 1 occupancies to be protected throughout with an NFPA 13R system instead of an NFPA 13 system. This is the lower risk condition for Group I-1 occupancies. Group I-1 Condition 2 occupancies would be required to use an NFPA 13 system.

Exception 2 exempts sprinkler systems completely if the day care center is at the level of exit discharge and every room has at least one exterior exit door. Note that day cares to which this section applies are considered by Section 308.6.1 to be Group E occupancies. An automatic sprinkler system would not be required unless dictated by the requirements in Section 903.2.2 (see the commentary for Section 308.6.1).

Exception 3 is also related to day cares that are still classified as Group I-4 by nature of the location in the building. In that case, an NFPA 13 system would be required on the floor where the center is located and all floors between and including the level of exit discharge. This is less stringent than the main requirement in Section 903.2.6 that requires the entire building to be sprinklered. As defined in Section 202,
a Group I-4 child care facility located at the level of exit discharge and accommodating no more than 100 children, with each child care room having an exit directly to the exterior, would be classified as a Group E occupancy.

[F] 903.2.7 Group M. An automatic sprinkler system shall be provided throughout buildings containing a Group M occupancy where one of the following conditions exists:

1. A Group M fire area exceeds 12,000 square feet (1115 m²).
2. A Group M fire area is located more than three stories above grade plane.
3. The combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group M occupancy where the primary use is used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464 m²).

The sprinkler threshold requirements for Group M occupancies are identical to those of Group F-1 and S-1 occupancies (see commentary, Section 903.2.4). The one exception is that Group M occupancies are provided with an increased area for display of upholstered furniture and mattresses exceeds 5,000 square feet (464 m²).

Regardless of the size of the Group M fire area, an automatic sprinkler system may be required in a high-piled storage area. High-piled storage includes piled, palletized, bin box, shelf or rack storage of Class I through IV commodities to a height greater than 12 feet (3658 mm) and certain high-hazard commodities greater than 6 feet (1829 mm). Chapter 23 of the IFC provides a package of requirements that may include sprinkler protection depending on the size of the high-piled storage area. The design standard for the sprinkler protection of high-piled storage is NFPA 13, which addresses the many different types and configurations of high-piled storage.

[F] 903.2.8 Group R. An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area.

Exceptions:

1. An automatic sprinkler system is not required for a building containing not more than two (2) one- or two-family dwelling units, either individually or in combination with other nonresidential occupancies; provided, however, that a fire alarm and detection system shall be installed in the residential units as well as the nonresidential occupancy areas.
2. An automatic sprinkler system is not required for buildings consisting solely of four (4) units or less.

This section requires sprinklers in any building that contains a Group R fire area. This includes uses such as hotels, apartment buildings, group homes and dormitories. There are no minimum criteria and no exceptions. It should be noted that buildings constructed under the International Residential Code® (IRC®) are not included in Group R and would not, therefore, be subject to these particular requirements. The 2009 IRC required sprinklers in all new townhouses and, beginning January 1, 2011, in all new one- and two-family dwellings. The IRC is a stand-alone code for the construction of detached one- and two-family dwellings and multiple single-family dwellings (townhouses) no more than three stories in height with a separate means of egress and addresses the requirements for sprinklers in a different way. That is, all of the provi-
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 vicious for new construction that affect those buildings are to be covered exclusively by the IRC and are not to be covered by another International Code. Buildings that do not fall within the scope of the IRC would be classified in Group R and be subject to these provisions. This is stated clearly in IFC Committee Interpretation No. 29-03.

With respect to life safety, the need for a sprinkler system is dependent on the occupants' proximity to the fire and the ability to respond to a fire emergency. Group R occupancies could contain occupants who may require assistance to evacuate, such as infants, those with a disability or who may simply be asleep. While the presence of a sprinkler system cannot always protect occupants in residential buildings who are aware of the ignition and either do not respond or respond inappropriately, it can prevent fatalities outside of the area of fire origin regardless of the occupants' response. Section 903.3.2 requires quick-response or residential sprinklers in all Group R occupancies. Full-scale fire tests have demonstrated the ability of quick-response and residential sprinklers to maintain tenability from flaming fires in the room of fire origin.

Where a different occupancy is located in a building with a residential occupancy, the provisions of this section still apply and the entire building is required to be provided with an automatic sprinkler system regardless of the type of mixed-use condition considered. This is consistent with the mixed-use provisions in Chapter 5. The type of sprinkler system permitted in the different types of Group R occupancies is further clarified in Sections 903.2.8.1 through 903.2.8.4.

[F] 903.2.8.1 Group R-3. An automatic sprinkler system installed in accordance with Section 903.3.1.3 shall be permitted in Group R-3 occupancies.

- Group R-3 occupancies are essentially one- and two-family dwellings that fall outside the scope of the IRC; thus an NFPA 13D system is appropriate. It should be noted there is no restriction on the use of NFPA 13 or NFPA 13R systems.

[F] 903.2.8.2 Group R-4 Condition 1. An automatic sprinkler system installed in accordance with Section 903.3.1.3 shall be permitted in Group R-4 Condition 1 occupancies.

- Group R-4 Condition 1 is the lesser of the risk categories for Group R-4 occupancies. The occupants are more capable of evacuating without assistance. Therefore, they are treated no differently than a Group R-3 occupancy.

[F] 903.2.8.3 Group R-4 Condition 2. An automatic sprinkler system installed in accordance with Section 903.3.1.2 shall be permitted in Group R-4 Condition 2 occupancies. Attics shall be protected in accordance with Section 903.2.8.3.1 or 903.2.8.3.2.

- In Group R-4 Condition 2 occupancies, the occupants need more assistance evacuating a building; therefore, a more robust sprinkler system is required. An NFPA 13R system is required. It should be noted that there are some concerns with NFPA 13R systems not adequately addressing attic spaces as typically NFPA 13R systems focus primarily on the main habitable portion of the building. Specific compliance conditions are provided in Sections 903.2.8.3.1 and 903.2.8.3.2.

[F] 903.2.8.3.1 Attics used for living purposes, storage or fuel-fired equipment. Attics used for living purposes, storage or fuel-fired equipment shall be protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2.

- This section clarifies that if the attic is used for living purposes or if fuel-fired equipment or storage is in these areas, full coverage in accordance with NFPA 13R is required.

[F] 903.2.8.3.2 Attics not used for living purposes, storage or fuel-fired equipment. Attics not used for living purposes, storage or fuel-fired equipment shall be protected in accordance with one of the following:

1. Attics protected throughout by a heat detector system arranged to activate the building fire alarm system in accordance with Section 907.2.10.
2. Attics constructed of noncombustible materials.
3. Attics constructed of fire-retardant-treated wood framing complying with Section 2303.2.
4. The automatic sprinkler system shall be extended to provide protection throughout the attic space.

- In attics where people are not expected and where storage or fuel-fired equipment is not located, some protection is required on top of what NFPA 13R would require. Four different options of protection are provided. The first is simply to provide more warning time to the occupants if a fire should occur in the attic via a heat detector that activates the fire alarm system. The second is simply to reduce the risk of fire by requiring noncombustible construction materials. The third, similar to the second, is reducing the fire hazard using fire-retardant-treated wood. This will slow the growth of a fire should one occur or prevent the start of a fire. The final option is simply to provide sprinkler protection to the attic. However if a sprinkler system is provided in the attic, issues such as freezing temperatures need to be addressed.

[F] 903.2.8.4 Care facilities. An automatic sprinkler system installed in accordance with Section 903.3.1.3 shall be permitted in care facilities with five or fewer individuals in a single-family dwelling.

- This section is similar to Sections 903.2.8.1 and 903.2.8.2 and allows the use of an NFPA 13D system in place of an NFPA 13 or 13R system. In this case, it is specific to smaller care facilities with five or fewer residents. Again, while not technically a single-family dwelling, they are very similar in nature based on the type and actual use of the building.
[F] 903.2.9 Group S-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 occupancy where one of the following conditions exists:

1. A Group S-1 fire area exceeds 12,000 square feet (1115 m²).
2. A Group S-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group S-1 fire area used for the storage of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m²).
5. A Group S-1 occupancy used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²).

An automatic sprinkler system must be provided throughout all buildings containing a Group S-1 occupancy where the fire area exceeds 12,000 square feet (1115 m²); is more than three stories above grade plane; combined, on all floors including mezzanines, exceeds 24,000 square feet (2230 m²); or is used for the storage of commercial motor vehicles and exceeds 5,000 square feet (464 m²). See the commentary to the definition of “Commercial motor vehicle” in Chapter 2.

The first three sprinkler threshold requirements for Group S-1 occupancies are identical to those of Groups F-1 and M (see commentary, Sections 903.2.4 and 903.2.7). Group S-1 occupancies, such as warehouses and self-storage buildings, are assumed to be used for the storage of combustible materials. While high-piled storage does not change the Group S-1 occupancy classification, sprinkler protection, if required, may have to comply with the additional requirements of Chapter 32 of the IFC. High-piled stock or rack storage in any occupancy must comply with the code and the IFC. The fifth sprinkler threshold is the same as for Group F-1 except that, in this case, upholstered furniture and mattresses are being stored and not manufactured. Group M has a similar threshold, but is required for larger occupancies containing such items with an area of 5,000 square feet (464 m²) versus what is required for Groups S-1 and F-1 occupancies of 2,500 square feet (232 m²). See the commentary for Group M and Group F-1 definitions for more discussion on this issue. Again, it is important to note that the threshold is based upon the square footage of the occupancy and not upon the size of the fire area. A formal interpretation (IFC Interpretation 20-14) has been issued on this section. The formal interpretation addresses self storage warehouses specifically and whether such a facility between 2500 and 12000 square feet would require an automatic sprinkler system. This is based upon the fact that upholstered furniture may be stored in such units. The response provided noted that a sprinkler system would be required based on the fact the requirements are focused on the square footage of the occupancy and are not based on fire area or the amount of upholstered furniture or mattresses present.

[F] 903.2.9.1 Repair garages. An automatic sprinkler system shall be provided throughout all buildings used as repair garages in accordance with Section 406, as shown:

1. Buildings having two or more stories above grade plane, including basements, with a fire area containing a repair garage exceeding 10,000 square feet (929 m²).
2. Buildings not more than one story above grade plane, with a fire area containing a repair garage exceeding 12,000 square feet (1115 m²).
4. A Group S-1 fire area used for the repair of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m²).

Automatic sprinklers may be required in repair garages, depending upon the quantity of combustibles present, their location and floor area. In addition, any Group S-1 fire area intended for the repair of commercial motor vehicles that exceeds 5,000 square feet (464 m²) would require sprinklers. This is the same criteria as Group S-1 occupancies and Group S-2 enclosed parking garages storing commercial motor vehicles. Repair garages may contain significant quantities of flammable liquids and other combustible materials. These occupancies are typically considered Ordinary Hazard Group 2 occupancies as defined in NFPA 13. Portions of repair garages used for parts cleaning using flammable or combustible liquids may require automatic sprinkler protection. If quantities of hazardous materials exceed the limitations in Section 307 for maximum allowable quantities per control area, the repair garage would be reclassified as a Group H occupancy. Note that the term “commercial motor vehicles” is specially defined in Chapter 2.

[F] 903.2.9.2 Bulk storage of tires. Buildings and structures where the area for the storage of tires exceeds 20,000 cubic feet (566 m³) shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

This section specifies when an automatic sprinkler system is required for the bulk storage of tires based on the volume of the storage area as opposed to a specific number of tires. Even in fully sprinklered buildings, tire fires pose significant problems to fire departments. Tire fires produce thick smoke and are difficult to extinguish by sprinklers alone. NFPA 13 contains specific fire protection requirements for the storage of rubber tires.

Whether the volume of tires is divided into different fire areas or not is irrelevant to the application of this section. If the total for all areas where tires are stored is great enough that the resultant storage volume exceeds 20,000 cubic feet (566 m³), the building must...
[F] 904.3.1 Electrical wiring. Electrical wiring shall be in accordance with NFPA 70.

- NFPA 70 regulates the design and installation of electrical systems and equipment. All electrical work must also be in compliance with any specific electrical classifications and conditions contained in the referenced standards for each type of system.

Chapter 27 of the code and Section 605 of the IFC contain provisions that also reference NFPA 70. Those sections also contain additional information that must be applied when addressing electrical issues.

[F] 904.3.2 Actuation. Automatic fire-extinguishing systems shall be automatically actuated and provided with a manual means of actuation in accordance with Section 904.12.1. Where more than one hazard could be simultaneously involved in fire due to their proximity, all hazards shall be protected by a single system designed to protect all hazards that could become involved.

Exception: Multiple systems shall be permitted to be installed if they are designed to operate simultaneously.

- Section 904.3.2 requires alternative fire-extinguishing systems to be designed for automatic activation. Activation commonly occurs when a heat, fire or smoke detection system operates. In Type I commercial kitchen hoods, Section 904.12 requires a manual and automatic means of activating the fire-extinguishing system. Designing a fire-extinguishing system to only operate upon manual actuation is prohibited by the code and many of the NFPA fire protection system standards.

The requirements for fire-extinguishing system actuation correlate with the requirements of NFPA 17 and NFPA 17A. The requirement prescribes that when a hazard is protected by two or more fire-extinguishing systems, all of the systems must be designed to operate simultaneously. The reason for the revision is that a typical alternative automatic fire-extinguishing system has a limited amount of fire-extinguishing agent. The amount of agent that is available is based on the area or volume of the hazard and the fire behavior of the fuel. Because the amount of agent is limited, the simultaneous operation of all the fire-extinguishing systems ensures that enough agent is applied to extinguish the fire and prevent its spread from the area of origin.

It is fairly common for a single hazard to be protected by two or more alternative automatic fire-extinguishing systems. For example, protection of a spray booth used for the application of flammable finishes using dry chemical commonly requires two or three alternative automatic fire-extinguishing systems. The reason is that many dry-chemical and all wet-chemical systems are preengineered systems. Utilizing listed nozzles, preengineered systems are designed and constructed based on the manufacturer’s installation requirements. Because these systems are assembled using listed nozzles and extinguishing agents, one system may not be able to protect the spraying space and exhaust plenum. As a result, two or more systems may be required as a provision of an extinguishing system’s listing to protect certain hazards.

Another example is commercial kitchen cooking operations. Consider a flat grill broiler and a deep fat fryer located beneath the same Type I hood. It is quite common for each of these commercial cooking appliances to be protected by separate automatic fire-extinguishing systems. Based on the revision to Section 904.3.2, both extinguishing systems must simultaneously operate in the event a fire involves either of the example appliances (see commentary, Section 904.12.1).

[F] 904.3.3 System interlocking. Automatic equipment interlocks with fuel shutoffs, ventilation controls, door closers, window shutters, conveyor openings, smoke and heat vents and other features necessary for proper operation of the fire-extinguishing system shall be provided as required by the design and installation standard utilized for the hazard.

- Shutting off fuel supplies will eliminate potential ignition sources in the protected area. Automatic door and window closers and dampers for forced-air ventilation systems are intended to maintain the desired concentration level of the extinguishing agent in the protected area. See the commentary for Section 904.12.2 for information on system interconnections in commercial cooking fire-extinguishing systems.

[F] 904.3.4 Alarms and warning signs. Where alarms are required to indicate the operation of automatic fire-extinguishing systems, distinctive audible and visible alarms and warning signs shall be provided to warn of pending agent discharge. Where exposure to automatic-extinguishing agents poses a hazard to persons and a delay is required to ensure the evacuation of occupants before agent discharge, a separate warning signal shall be provided to alert occupants once agent discharge has begun. Audible signals shall be in accordance with Section 907.5.2.

- Safeguards are necessary to prevent injury or death to personnel in areas where the atmosphere will be made hazardous by oxygen depletion due to agent discharge in a confined space. The “where alarms are required” phrase is referring to requirements that will be found in the referenced installation standards indicated in Sections 904.5 through 904.12, as applicable. Predischarge alarms that will operate on fire detection system activation must be installed within and at entrances to the affected areas.

Where required by the appropriate installation standard, an extinguishing agent discharge delay feature shall also be provided to allow evacuation of personnel prior to agent discharge. Warning and instructional signs are also to be posted, preferably at the entrances to and within the protected area. See Section 4.5.6.1 of NFPA 12 for additional information on carbon dioxide system alarms, Section 4.3.5 of NFPA 12A for additional information on Halon system alarms and Section 4.3.5 of NFPA 2001 for additional information on clean agent system alarms.
• Section 1029.15 includes handrail provisions for ramped and stepped aisles.
• Section 1029.16 states where guards are required.

1029.1.1 Bleachers. Bleachers, grandstands and folding and telescopic seating, that are not building elements, shall comply with ICC 300.

On February 24, 1999, the Bleacher Safety Act of 1999 was introduced in the House of Representatives. The bill, which cites the ICC and the code, authorizes the U.S. Consumer Product Safety Commission (CPSC) to issue a standard for bleacher safety. This was in response to concerns relative to accidents on bleacher-type structures. As a result, the CPSC developed and revised the Guidelines for Retrofitting Bleachers. The ICC Board of Directors decided that a comprehensive standard dealing with all aspects of both new and existing bleachers was warranted and authorized the formation of the ICC Consensus Committee on Bleacher Safety. The committee is composed of 12 members, including the requisite balance of general, user interest and producer interest. ICC 300 was completed in December 2001, and submitted to ANSI on January 1, 2002. ICC 300 was reissued with some revisions in 2007 and 2012. While the term “bleachers” is generic, the standard addresses all aspects of tiered seating associated with bleachers, grandstands, and folding and telescopic seating. These types of seating are supported on dedicated structural systems, which in turn may sit on the ground or on a building floor system. Single seats or bench seats bolted down to a stepped floor are not considered a bleacher or grandstand and should comply with Section 1029. See the definitions in Chapter 2 for “Building element,” “Bleachers,” “Grandstands” and “Folding and telescopic seating.” While ICC 300 is consistent and also relies on Chapter 10 of the code for some provisions, the standard addresses items specific to these types of seating arrangements. For example, the minimum number of exits from a bleacher is addressed in ICC 300, Section 404.1; however, to determine the minimum number of exits from the room the bleacher is located in, Section 1006 is applicable. The bleacher standard references Chapter 11 of the code and ICC A117.1 for accessibility requirements.

The ICC 300 has minimum requirements for new, alterations, repair, operation and maintenance of bleacher systems. A bleacher or grandstand is defined as “Tiered seating supported on a dedicated structural system and two or more rows high and is not a building element.” The intent of the terms “dedicated structural system” and “not a building element” in the definition is to recognize that bleacher systems sit on the floor or ground and have a support system separate from the building system. However, the bleacher could rely on the building system for lateral or gravity support. The intent of “two or more rows” is so that a tiered floor system with a bench or row of seats on each tier would not be considered a bleacher.

The criteria in ICC 300 include provisions for construction; means of egress within the bleacher system; inspection and maintenance for existing bleachers; and for when seating systems are relocated.

1029.1.1.1 Spaces under grandstands and bleachers. Where spaces under grandstands or bleachers are used for purposes other than ticket booths less than 100 square feet (9.29 m²) and toilet rooms, such spaces shall be separated by fire barriers complying with Section 707 and horizontal assemblies complying with Section 711 with not less than 1-hour fire-resistance rated construction as follows:

1. Areas of 1,000 square feet are required to be separated by 1-hour fire-resistance rated construction and horizontal assemblies with not less than 1-hour fire-resistance rated construction.

2. Areas over 1,000 and less than 5,000 square feet are required to be protected with a fire sprinkler system or separated by fire barriers and horizontal assemblies with not less than 2-hour fire-resistance rated construction.

3. Areas over 5,000 square feet are required to be protected with a fire sprinkler system.

Sometimes spaces under grandstands are used for other purposes such as bathrooms, concession stands, storage, etc. If that space caught on fire, it could jeopardize the safe evacuation options for persons on the bleachers. For safety, the spaces below must be separated from the bleachers by fire-resistance-rated construction. This is typically the roof and back walls of the concession stand or storage room. If the space below is either a small ticket booth or bathrooms of any size, the potential fire load is low enough that these spaces are not required to be separated.

Note that Section 903.2.1.5 requires enclosed spaces with an area of over 1,000 square feet (93 m²) and under an outdoor bleacher system to be sprinklered.

While the path for means of egress passing under the bleachers (i.e., vomitory) is not specifically addressed in this section, when a bleacher system is outside, the capacity factors for determining minimum egress width [Table 404.5(3) of ICC 300] are based on the assumption that the egress route is essentially open to the outside and, therefore, has a limited chance for the accumulation of smoke along that route. Two of the three legacy codes specifically exempted open means of egress routes under bleachers from separation requirements.

1029.2 Assembly main exit. A building, room or space used for assembly purposes that has an occupant load of greater than 300 and is provided with a main exit, that main exit shall be of sufficient capacity to accommodate not less than one-half of the occupant load, but such capacity shall be not less than the total required capacity of all means of egress leading to the exit. Where the building is classified as a Group A occupancy, the main exit shall front on not less than one street or an unoccupied space of not less than 10 feet (3048 mm) in width that adjoins a street or public way. In a building, room or space used for assembly purposes where there is not a well-defined main exit or where multiple main exits are pro-
vided, exits shall be permitted to be distributed around the perimeter of the building provided that the total capacity of egress is not less than 100 percent of the required capacity.

- Assembly buildings, as well as other buildings including spaces that function as assembly spaces (e.g., the band classroom in a school, the training room...
Chapter 11: Accessibility

Accessibility under this code, including all references within this code, shall be governed by the applicable city ordinances, state and federal statutes and implementing regulations.

General Comments

Chapter 11 contains provisions that set forth requirements for accessibility of buildings and their associated sites and facilities for people with physical disabilities. Existing building criteria are addressed in the International Existing Building Code® (IEBC®). Appendix E is included in the code to address accessibility for items in the 2010 ADA Standard that were not typically enforceable through the standard traditional building code enforcement approach system (e.g., beds, room signage).

In July 2004, the United States Architectural and Transportation Barriers Compliance Board (Access Board) published new design guidelines under the name Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines, otherwise known as the “ADA/ABA Guidelines.” On September 15, 2010, the U.S. Department of Justice (DOJ) published/adopted the 2004 ADA/ABA Guidelines, officially renaming them the 2010 ADA Standards for Accessible Design. For purposes of the following discussion, the 2010 document will be referred to as the “2010 ADA Standard,” while the original guidelines of 1991 are referred to as “ADAAG.” For additional technical assistance and information on the 2010 ADA Standard, visit the Access Board website at www.access-board.gov.

The International Residential Code® (IRC®) references Chapter 11 for accessibility provisions. Therefore, this chapter may be applicable to housing covered under the IRC (see commentary, Sections 1107.6 and 1107.6.3). Structures referenced to Chapter 11 from the IRC would be considered Group R-3.

Section 1101 contains the broad scope statement of the chapter and identifies the baseline criteria for accessibility as being in compliance with this chapter and 2009 ICC A117.1. ICC A117.1, Accessible and Useable Buildings and Facilities, is the consensus national standard that sets forth the technical details, dimensions and construction specifications for accessibility.

Section 1102 contains a list of terms that are associated with accessibility. For the complete definitions and their commentary, see Chapter 2 of this code.

Section 1103 describes the applicability of the provisions of this chapter. Accessibility is broadly required in all buildings, structures, sites and facilities. Those specific circumstances in which accessibility is not required (or is limited) are set forth as exceptions.

Section 1104 contains the requirements for interior and exterior accessible routes. An accessible route is a key component of the built environment that provides a person with a disability access to spaces, elements, facilities and buildings. Note that ramps are addressed in Section 1010.

Section 1105 contains requirements for accessible entrances to buildings and structures. Note that requirements for accessible means of egress are addressed in Section 1009.

Section 1106 sets forth the requirements for accessible parking facilities and passenger loading zones.

Section 1107 contains various accessibility requirements that are unique to occupancies that contain dwelling units and sleeping units and are applicable in addition to other general requirements of this chapter. Specific provisions unique to Group I and R occupancies are included. The Type B dwelling- and sleeping-unit requirements in this section are coordinated with the requirements found in the Fair Housing Accessibility Guidelines (FHAG). Requirements for institutional and transient lodging are also consistent with the 2010 ADA Standard. When federal funding is provided for the project, there may be a higher level of accessibility required.

Section 1108 contains various accessibility requirements that are unique to specific occupancies, other than Groups I and R, and are applicable in addition to all other general requirements of Chapter 11. Specific provisions unique to assembly seating, performance areas, dining areas, self-storage and judicial facilities are included.

Section 1109 contains various requirements that are applicable to features and facilities that are not occupancy related, including requirements for toilet and bathing facilities; sinks; kitchens and kitchenettes; drinking fountains; sauna/steam rooms; elevators; platform lifts; storage facilities; detectable warnings; seating at tables, counters and work surfaces; service facilities; controls and operating mechanisms; fuel dispensing systems; and gaming machines and gaming tables.

Section 1110 provides scoping for a variety of different types of recreational facilities. Basically, all recreational facilities are required to have an accessible route to them. Section 1110.4 includes additional requirements specific to certain types of recreational facilities (e.g., pools, miniature golf courses) or exceptions (e.g., raised boxing rings, water slides and diving boards).

Section 1111 sets forth requirements for signage identifying certain required accessible elements or where communication must be offered by alternative means.
Chapter 13: Energy Efficiency

General Comments

Chapter 13 provides for the design and construction of energy-efficient buildings and structures or portions thereof intended primarily for human occupancy by direct reference to the International Energy Conservation Code® (IECC®).

Purpose

The purpose of Chapter 13 is to provide minimum design requirements that will promote efficient utilization of energy in building construction. The requirements are directed toward the design of building envelopes with adequate thermal resistance and low air leakage, and toward the design and selection of mechanical, service water heating, electrical and illumination systems that will promote the effective use of depletable energy resources and encourage the use of nondepletable energy resources.

SECTION 1301
GENERAL

[E] 1301.1 Scope. This chapter governs the design and construction of buildings for energy efficiency.

- The scope of Chapter 13 is applicable to all buildings and structures, as well as their components and systems that are regulated by the IECC. The IECC thereby addresses the design of energy-efficient building envelopes, and the selection and installation of energy-efficient mechanical, service water heating, electrical distribution and illumination systems and equipment for the effective use of energy in both residential and commercial buildings.


- The energy conservation requirements of this chapter rely exclusively on the technical provisions of the IECC. Compliance with the IECC is the sole means of demonstrating compliance with the technical provisions of Chapter 13.

The climate basis for the 2015 IECC is derived from geographical zones that are based on multiple climate variables (so that both heating and cooling considerations are accommodated). Further, within the U.S., the zones are completely defined by political boundaries (county lines) so that code users will never have to choose from disparate climate data sources to determine local requirements. The climate zones were developed in an open process, in consultation with relevant standards committees of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). The zones are designed to be an appropriate foundation for both residential and commercial codes, and may be useful in other contexts as well.

The IECC is designed to increase consumer awareness of a home’s energy features by making baseline requirements uniform within a jurisdiction and by requiring a disclosure of each house’s R-values, U-factors and heating, ventilating and air-conditioning (HVAC) efficiencies.

The IECC is designed, to the extent practicable, to incorporate aspects of the latest building science regarding energy efficiency and its effects on moisture control and durability. For example, the IECC contains provisions related to unvented crawl spaces, modifies vapor retarder requirements, requires sealing of air handlers in garages and limits worst-case glazing U-factors in locations where moisture condensation can be a serious problem.

Bibliography

The following resource material was used in the preparation of the commentary for this chapter of the code.

1608.2 Ground snow loads. The ground snow loads to be used in determining the design snow loads for roofs shall be determined in accordance with ASCE 7 or Figure 1608.2 for the contiguous United States and Table 1608.2 for Alaska. Site-specific case studies shall be made in areas designated “CS” in Figure 1608.2. Ground snow loads for sites at elevations above the limits indicated in Figure 1608.2 and for all sites within the CS areas shall be approved. Ground snow load determination for such sites shall be based on an extreme value statistical analysis of data available in the vicinity of the site using a value with a 2-percent annual probability of being exceeded (50-year mean recurrence interval). Snow loads are zero for Hawaii, except in mountainous regions as approved by the building official.

Exception:
Provided, however, the snow loads on roofs shall be a minimum of 20 pounds per square foot nonreducible. Greater snow loads due to potential accumulation of snow in valleys, at parapets, on supplemental roof structures and offsets in roof of uneven configuration shall be considered. Calculations for drifting shall use a base snow load of 20 pounds per square foot.

✈ The ground snow loads on the maps in Figure 1608.2 of the code are generally based on over 40 years of snow depth records. The snow loads on the maps are those that have a 2-percent annual probability of being exceeded (a 50-year mean recurrence interval). The maps were generated from data through the winter of 1991-92, and from data through the winter

Building owners need elevation certificates to obtain NFIP flood insurance, and insurance agents use the certificates to compute the proper flood insurance premium rates.

The criteria for the minimum number and size of flood openings to allow free inflow and outflow of floodwaters under all types of flood conditions are set in ASCE 24. The statement described in Item 1.2 is required in the construction documents if the engineered openings are used (see Section 2.7.2.2 of ASCE 24); this statement is not required if nonengineered (prescriptive) openings meet the criteria of Section 2.7.2.1 of ASCE 24. For further guidance, refer to FEMA TB #1, Openings in Foundation Walls and Walls of Enclosures Below Elevated Buildings in Special Flood Hazard Areas.

The statement described in Item 1.3 must be included in the construction documents for nonresidential buildings that are designed to be dry floodproofed. It is important to note that dry floodproofing is allowed only for nonresidential buildings (and nonresidential portions of mixed-use buildings) and only if those structures are not located in coastal high-hazard areas and Coastal A Zones. The registered design professional who seals the construction documents is indicating that, based on development or review of the structural design, specifications and plans for construction, the design and methods of construction are in accordance with accepted standards of practice in ASCE 24 to meet the following provisions: 1. The structure, together with attendant utilities and sanitary facilities, is water tight to the floodproofed design elevation indicated with walls that are substantially impermeable to the passage of water; and 2. All structural components are capable of resisting hydrostatic and hydrodynamic flood forces, including the effects of buoyancy and anticipated debris impact forces. The use of FEMA Form 086-0-34, Floodproofing Certificate, is recommended (download from http://www.fema.gov/floodplain-management/floodproofing-certificate). This certificate is used by insurance agents to determine NFIP flood insurance premium rates for dry floodproofed nonresidential buildings. Insurance rates are higher for buildings that use dry floodproofing measures that require human intervention. For further guidance, refer to FEMA TB #3, Nonresidential Floodproofing—Requirements and Certification for Buildings Located in Special Flood Hazard Areas.

The statement described in Item 2.2 is included in the construction documents to indicate that the design meets the flood load provisions of ASCE 24 and other loads required by this chapter. Buildings located in coastal high-hazard areas and Coastal A Zones are expected to experience significant flood and wind loads simultaneously. FEMA and coastal communities report significant damage to buildings that are not built to current code. The documentation described in Item 2.3 is used only for specific situations in which properly elevated buildings in coastal high-hazard areas and Coastal A Zones have enclosures beneath them, and then only if the walls of the enclosures are designed to resist more than 20 psf (0.96 kN/m²) determined using ASD. Because breakaway walls will fail under flood conditions, building materials can become water-borne debris that may damage adjacent buildings. Refer to FEMA TB #5, Free-of-Obstruction Requirements for Buildings Located in Coastal High-Hazard Areas, and FEMA TB #9, Design and Construction Guidance for Breakaway Walls Below Elevated Buildings in Coastal High-Hazard Areas.

SECTION 1613

EARTHQUAKE LOADS

1613.1 Scope. Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7, excluding Chapter 14 and Appendix 11A. The seismic design category for a structure is permitted to be determined in accordance with Section 1613 or ASCE 7.

Exceptions:

1. Existing buildings. When the occupancy of a building changes to a higher classification the building official may accept the original structural design of the existing building if an architect or engineer verifies that it is structurally sound and it is not classified as an Occupancy Category IV in Table 1604.5. All alterations and additions to existing structures shall meet the seismic requirements of the code and ordinances under which the existing building was built.

42. Detached one- and two-family dwellings, assigned to Seismic Design Category A, B or C, or located where the mapped short-period spectral response acceleration, Sₛ, is less than 0.4 g.

23. The seismic force-resisting system of wood-frame buildings that conform to the provisions of Section 2308 are not required to be analyzed as specified in this section.

34. Agricultural storage structures intended only for incidental human occupancy.

45. Structures that require special consideration of their response characteristics and environment that are not addressed by this code or ASCE 7 and for which other regulations provide seismic criteria, such as vehicular bridges, electrical transmission towers, hydraulic structures, buried utility lines and their appurtenances and nuclear reactors.

These code provisions provide the requirements essential to determining a building’s seismic design category. The balance of the earthquake load provisions are contained in the ASCE 7 load standard. The chapters that are noted as excluded from the ASCE 7 referenced standard are those that can create conflicts with Chapters 17 through 23. The balance of ASCE 7 earthquake load provisions are as follows:
SOILS AND FOUNDATIONS

1807.3.3 Backfill. The backfill in the annular space around columns not embedded in poured footings shall be by one of the following methods:

1. Backfill shall be of concrete with a specified compressive strength of not less than 2,000 psi (13.8 MPa). The hole shall not be less than 4 inches (102 mm) larger than the diameter of the column at its bottom or 4 inches (102 mm) larger than the diagonal dimension of a square or rectangular column.

2. Backfill shall be of clean sand. The sand shall be thoroughly compacted by tamping in layers not more than 8 inches (203 mm) in depth.

3. Backfill shall be of controlled low-strength material (CLSM).

- In order for the post or pole to meet the conditions and limitations of research for which the above criteria was established, backfill in the annular space around a column not embedded in a concrete footing must be either 2,000 psi (13.8 MPa) concrete, CLSM (see commentary, Section 1804.6) or clean sand thoroughly compacted by tamping in layers not more than 8 inches (203 mm) in depth.

SECTION 1808 FOUNDATIONS

1808.1 General. Foundations shall be designed and constructed in accordance with Sections 1808.2 through 1808.9. Shallow foundations shall also satisfy the requirements of Section 1809. Deep foundations shall also satisfy the requirements of Section 1810.

1808.1.1 Footing depth. Unless otherwise designed per provisions of a specific type of foundation, the minimum depth of footings shall be 36 inches (915mm) below finished grade and bearing on undisturbed ground and shall conform to the design requirements per this section.

Exception: Only as determined and approved by the building official in accordance with design provisions of a specific type of foundation.

- Section 1808 contains the provisions that apply to all foundation types. Then specific requirements for shallow and deep foundations are given in Sections 1809 and 1810, respectively.

1808.2 Design for capacity and settlement. Foundations shall be so designed that the allowable bearing capacity of the soil is not exceeded, and that differential settlement is minimized. Foundations in areas with expansive soils shall be designed in accordance with the provisions of Section 1808.6.

- Regardless of the type of shallow foundation used, the allowable bearing capacity of soil must not be exceeded. There are two premises by which allow- able soil-bearing pressures are established. The first premise requires that the safety factor against ulti- mate shear failure of the soil be adequate. The second premise requires that settlements under allowable bearing pressures not exceed tolerable val- ues. In most cases, settlement governs the value established for allowable soil-bearing capacity. Bear- ing capacity is usually determined from a soils investi- gation and engineering analysis.

When the soils profile of a construction site is established by a sufficient number of test borings, and it indicates that a nonuniform soil condition exists where the strata of suitable bearing materials occurs at varying thicknesses or different depths, the foundation design must be adjusted to the subsurface condition to provide for the proper and safe performance of the foundation system.

Under such circumstances, it becomes necessary in the design of shallow foundations to determine the different depths at which isolated or continuous stepped footings need to be placed in order to obtain equal bearing pressures and avoid serious structural damage caused by differential (unequal) settlement of the different parts of the foundation system.

- Another design method for obtaining equal bearing pressures and keeping the footings at a common elevation is to size the footings in accordance with the allowable bearing capacity of the soil at each location, thus producing a balanced design of the foundation system and preventing differential settlement.

- Section 1808.6 stipulates required methods and design of foundations on expansive soils.

1808.3 Design loads. Foundations shall be designed for the most unfavorable effects due to the combinations of loads specified in Section 1605.2 or 1605.3. The dead load is permitted to include the weight of foundations and overlying fill. Reduced live loads, as specified in Sections 1607.10 and 1607.12, shall be permitted to be used in the design of foundations.

- Foundations are permitted to be designed using either ASD or strength design. The appropriate load combinations are investigated to determine the most severe structural effects. Live load reductions permitted in Section 1607 apply equally to the foundation design loads. This section also clarifies what portions of the foundation construction are considered dead loads. See the commentary to Section 1606 for a discussion of dead load estimates.

1808.3.1 Seismic overturning. Where foundations are proportioned using the load combinations of Section 1605.2 or 1605.3, and the computation of seismic overturning effects is by equivalent lateral force analysis or modal analysis, the proportioning shall be in accordance with Section 12.13.4 of ASCE 7.

- This provision correlates with ASCE 7 earthquake load requirements that are based on the NEHRP Recommended Provisions for Seismic Regulations for New Buildings (FEMA 450). When using LRFD load combinations to size foundations, the seismic overturning computed by the equivalent lateral force method or the modal analysis method is permitted to be reduced.

- ASCE 7 permits the reduction of seismic overturning for foundation design where either strength design or ASD load combinations are used. This provision refers to Sections 1605.2 and 1605.3.1, which correspond to the ASCE 7 load combinations. Because the load combinations in Section 1605.3.2 include 0.9D, where overturning is assessed (rather than 0.6D as in Section 1605.3.1), reduction of seismic overturning would be conservative where those load combinations are used.
SOILS AND FOUNDATIONS

defined in Section 202 shall be designed as piers, walls or columns, as applicable, in accordance with TMS 402/ACI 530/ASCE 5.

This provision directs the code user to the definition of "Masonry foundation pier," which states that it has a height less than or equal to four times its thickness. Furthermore, the code user is referred to TMS 402/ACI 530/ASCE 5 for the appropriate design requirements where the definition limits are exceeded. A vertical masonry element will be designed as a foundation pier, a pier, a wall or a column, depending on the dimensions.

SECTION 1809
SHALLOW FOUNDATIONS

1809.1 General. Shallow foundations shall be designed and constructed in accordance with Sections 1808.1.1 and 1809.2 through 1809.13.

Sections 1809.2 through 1809.13 address requirements related to proper design and installation of shallow foundations.

1809.2 Supporting soils. Shallow foundations shall be built on undisturbed soil, compacted fill material or controlled low-strength material (CLSM). Compacted fill material shall be placed in accordance with Section 1804.5. CLSM shall be placed in accordance with Section 1804.6.

It is important that shallow foundations be built on undisturbed soil of known bearing value or properly compacted fill, with known bearing capacity. As an alternative to compacted fill, the code permits the use of CLSM (see commentary, Section 1804.6).

1809.3 Stepped footings. The top surface of footings shall be essentially level. The bottom surface of footings shall be permitted to have a slope not exceeding one unit vertical in 10 units horizontal (10-percent slope). Footings shall be stepped where it is necessary to change the elevation of the top surface of the footing or where the surface of the ground slopes more than one unit vertical in 10 units horizontal (10-percent slope).

The tops and bottoms of footings are required to be essentially level, with a slope of 1 unit vertical in 10 units horizontal (10-percent slope) permitted for the bottom of footings. Where the slope of the surface of the ground exceeds one unit vertical in 10 units horizontal (10-percent slope), footings are required to be stepped. Although not specifically mentioned, crack propagation at the joints should be considered when determining the overlapping and vertical dimensions of the steps.

1809.4 Depth and width of footings. The minimum depth of footings below the undisturbed ground surface shall be 12 inches (305 mm). Where applicable, the requirements of Section 1809.5 shall also be satisfied. The minimum width of footings shall be 12 inches (305 mm).

Footings are required to extend below the ground surface a minimum of 12 inches (305 mm). This is considered a minimum depth to protect the footing from movement of the soil caused by freezing and thawing in mild climate areas (see Section 1809.5 for general frost protection provisions).

1809.5 Frost protection. Except where otherwise protected from frost, foundations and other permanent supports of buildings and structures shall be protected from frost by one or more of the following methods:

1. Extending below the frost line of the locality.
2. Constructing in accordance with ASCE 32.
3. Erecting on solid rock.

Exception: Free-standing buildings meeting all of the following conditions shall not be required to be protected:

1. Assigned to Risk Category I.
2. Area of 600 square feet (56 m²) or less for light-frame construction or 400 square feet (37 m²) or less for other than light-frame construction.
3. Eave height of 10 feet (3048 mm) or less.

Shallow foundations shall not be placed on frozen soil unless such frozen condition is of a permanent character.

Shallow foundations must be placed on soil strata with adequate load-bearing capacity and at depths to which freezing cannot penetrate. In winter, frost action can raise the ground level (frost heave), whereas in springtime the same area will soften and settle back to its previous state. If foundations are built in soil strata that can freeze, then the heave or vertical movement of the ground, which is rarely uniform, can cause serious damage to buildings and other structures. Frost heave can become particularly aggravated in clay soils. Well-drained soils, such as sand and gravel, are not as susceptible to extensive movements.

Unless the exception applies, the foundation is to be protected from frost in accordance with this section. A common method of accomplishing this is by placing the footing bottom below the frost line. The “frost line” is defined as the lowest level below the ground surface to which a temperature of 32°F (0°C) extends. The factors determining the depth of the frost line are air temperature and the length of time the temperature is below freezing [32°F (0°C)], as well as the ability of the soil to conduct heat and its level of thermal conductivity. Frost lines vary significantly throughout the country, ranging from 5 inches (127 mm) in the deep south to 100 inches (2540 mm) in the uppermost northern regions. The frost-free depth for shallow foundations is dependent on the frost line set for the particular locality of construction.

Another form of protection is the use of frost-protected shallow foundations (FPSF) in accordance with ASCE 32. This type of frost protection utilizes slab edge insulation to minimize heat loss at the slab edge. By retaining heat from the building in the ground, it has the effect of raising the frost line around the perimeter of the building.

Foundations are not to be placed on frozen soil.
CHAPTER 27
Electrical

General Comments
This chapter references National Fire Protection Association (NFPA) 70 for all requirements pertaining to electrical installations and contains specific provisions for emergency and standby power. NFPA 70 regulates the design, construction, installation, operation, maintenance and use of electrical systems and equipment. Except for the scope section, this chapter is devoted to establishing where emergency and standby power systems are required.

Purpose
Since electrical systems and components are an integral part of almost all structures, it is necessary for the code to address them to protect life, limb, health and property. In addition to general lighting and power needs, structures depend on electricity for operation of many of the life safety systems required by the code, including fire alarm, smoke control, exhaust, fire suppression, communication and fire command systems. Electricity is also depended upon for elements of egress systems, including elevators, exit signage, egress path illumination, power doors, stair pressurization and smokeproof enclosures.

SECTION 2701
GENERAL
2701.1 Scope. This chapter governs the electrical components, equipment and systems used in buildings and structures covered by this code. Electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of NFPA 70.

Chapter 27 regulates the electrical portions of buildings and structures that are included in the scope of the code. Regulation is accomplished by referencing NFPA 70.

SECTION 2702
EMERGENCY AND STANDBY POWER SYSTEMS
2702.1 Installation. Emergency power systems and standby power systems shall comply with Sections 2702.1.1 through 2702.1.7.

This section states that all required emergency and standby power comply with various subsections. These subsections provide more detailed direction on how such systems are required to be installed. These provisions are consistent with the standards referenced by this code and provide the basic information to the code official.

2702.1.1 Stationary generators. Stationary emergency and standby power generators required by this code shall be listed in accordance with UL 2200.

UL 2200 was developed at the request of building officials to provide a standard to evaluate the safety and reliability of stationary engine generators. UL 2200 establishes a basis for this evaluation.

2702.1.2 Electrical. Emergency power systems and
Emergency power systems are intended to provide electrical power for life safety systems, such as egress illumination, emergency communications and processes involving the handling and use of hazardous materials. In other words, emergency power is required where the loss of normal power would endanger occupants. Such systems are covered in Article 700 of NFPA 70 and one of their key features is the required response time of 10 seconds or less. The time between loss of normal power and the provision of emergency power must be kept very short to prevent putting occupants at risk. This is especially important during an emergency event, such as a building fire, but is important at all times to prevent occupant panic, which could happen if a crowded building is suddenly plunged into darkness.

Standby power systems are covered in Article 701 of NFPA 70 and are intended to provide electrical power for loads not as critical (in terms of transfer time) as those requiring emergency power. Standby power loads include smoke control systems; certain elevators; certain hazardous material operations; smokeproof enclosure systems; illumination; heating, ventilating and air-conditioning (HVAC) systems; refrigeration; and sewage pumps. Standby power systems must provide power within 60 seconds of failure of primary power.

Sources of power for emergency power systems (NFPA 70, Section 701-11) include storage batteries, generators, uninterruptible power supplies and separate services. Sources of power for standby systems include those allowed for emergency systems plus a source that is taken from a point of connection ahead.
CHAPTER 28
Mechanical Systems

General Comments
Chapter 28 provides for the approval, installation, construction, inspection, operation and maintenance of all mechanical appliances, equipment and systems by direct reference to the International Mechanical Code® (IMC®) and the International Fuel Gas Code® (IFGC®). All mechanical equipment and appliances, other than gas-fired equipment and appliances, must comply with the provisions of the IMC. Fuel-gas piping, gas-fired appliances and gas-fired appliance venting must comply with the IFGC.

Purpose
The purpose of Chapter 28 is to verify that mechanical equipment, appliances and mechanical systems are regulated with respect to design, construction, installation, inspection and maintenance. This chapter references the IMC and IFGC. This eliminates the need to duplicate the text of those codes and utilizes the performance and specification criteria of those codes as the basis for regulation of the construction, inspection and maintenance of all mechanical and fuel-gas equipment, appliances and systems.

While this chapter only consists of references to other chapters and codes, it is necessary since almost all newly constructed buildings and structures contain mechanical equipment, appliances and systems. Without this chapter, a necessary link between the code and the IMC and IFGC would not exist.

SECTION 2801
GENERAL

[M] 2801.1 Scope. Mechanical appliances, equipment and systems shall be constructed, installed and maintained in accordance with the International Mechanical Code and the International Fuel Gas Code. Masonry chimneys, fireplaces and barbecues shall comply with the International Mechanical Code and Chapter 21 of this code.

The requirements for all mechanical systems are governed by this chapter. This chapter does not contain any requirements for mechanical equipment, appliances and systems; instead it references the IMC and IFGC. Those two codes, along with 12 others including the International Building Code® (IBC®), constitute the 2015 editions of the International Codes® (I-Codes®).

In the process of producing the code, it was considered unnecessary to include mechanical equipment, appliances and system provisions, since such provisions would duplicate and possibly conflict with those of the IMC or IFGC. Since most newly constructed buildings contain mechanical equipment, appliances and systems, this chapter is necessary to reference the IMC and IFGC and tie them together with the code.

The IMC and IFGC work together to regulate all mechanical systems. Therefore, whether designing the mechanical system for a building or enforcing the provisions of the code that deal with mechanical systems, both the IMC and IFGC will be required.
ASME A17.7/CSA B44.7 is verified by a Certificate of Conformance issued by an Accredited Elevator/Escalator Certification Organization (AECO).

- ASME A90.1 applies specifically to belt-type manlifts.
- ASME B20.1 applies to equipment that is permanently installed to transport freight. People are prohibited from riding this equipment.
- ALI ALCTV applies specifically to automotive lifts such as those used in service garages. Currently the standard does not address lifts used for automated parking structures.
- ASCE 24 as applicable for flood hazard areas.

Elevators installed in buildings and structures located in designated flood hazard areas may be subject to additional flood-resistant design and construction requirements. The application of these additional requirements depends on whether the elevator or components of the elevator equipment are to be located below the design flood elevation. Those not familiar with the subtle differences that make a standard applicable to a specific equipment design should review both the standard’s scope and definitions. ASCE 24 applies to the construction of elevators and conveying systems located in flood hazard areas, as established by application of Section 1612.3 of the code. Section 7.5 of ASCE 24-05 and FEMA FIA-TB #4, Elevator Installation for Buildings Located in Special Flood Hazard Areas, provide extensive guidance on the proper method of installing elevators in buildings and structures located in designated flood hazard areas. In addition to raising elevator service equipment above the design flood elevation, a concern would be determining if the fire fighters’ emergency operation requirements of Section 3003 do not require the elevator car to descend automatically to a level below the design flood elevation during conditions of flooding. The safety of occupants may be jeopardized and the elevator car may be damaged if it descends below the design flood elevation during flooding.

Referenced standards have a long history of providing minimum safety requirements for the equipment covered by their scope. As an example, ASME A17.1 was first published in 1921 and 18 subsequent editions have been published.

Interpretations of the referenced standards can be obtained through the committee responsible for developing and maintaining the standard. The ASME A17.1/CSA B44, ASME A90.1 and ASME B20.1 standards committees have also published interpretations and include copies of all recent interpretations for purchasers of these documents. The publisher of ASME A17.1/CSA B44 also has available a handbook that explains and augments the requirements. While every effort has been made to eliminate conflicts between the code and the referenced standards, such conflicts may occasionally occur. Where differences occur, the requirements of the code take precedence (see Section 102.4).

In terms of the maintenance of elevators, it should be noted that ASME A17.1/CSA B44 contains Appendix N, which specifies frequency of maintenance. This appendix must be specifically adopted by a jurisdiction to become effective. Note that Section 606.1 of the International Property Maintenance Code® (IPMC®) references Appendix N.

**3001.3 Accessibility.** Passenger elevators required to be accessible or to serve as part of an accessible means of egress shall comply with Sections 1009 and 1109.7 be governed by the applicable city ordinances, state and federal statutes and implementing regulations.

- Section 1109.7 requires elevators that form part of an accessible route to be accessible. Section 1009 provides that elevators may be required to be part of an accessible means of egress from a building. The ICC A117.1 standard addresses the accessibility requirements for elevators, including elevator location and access; operation and leveling; door operation; door size; door protective and reopening devices; door delay (dwell time) from hall and car calls; car inside dimensions, controls and position indicators and signals; telephone or intercom systems; floor coverings; minimum illumination; hall buttons; hall lanterns; door jamb markings; and clearance between sills. This standard provides acceptable and appropriate service for all users and makes multistory buildings accessible and usable by people with physical disabilities. The standard provides requirements for destination-oriented elevators, limited use/limited application elevators (LU/LA), private residential elevators as well as standard passenger elevators. Each type can be used to provide an accessible route. The choice of which type of elevator may be used depends on the limits of their use established in ASME A17.1/CSA B44.
- For example, private residence elevators may only be used to or in a private dwelling.

**3001.4 Change in use.** A change in use of an elevator from freight to passenger, passenger to freight, or from one freight class to another freight class shall comply with Section 8.7 of ASME A17.1/CSA B44.

- This section intends to require enforcement of Section 8.7 of ASME A17.1/CSA B44 whenever the elevator changes in use or freight class. The application of these requirements results in an elevator that will operate safely and comply with requirements that are unique to and necessary for the new use or freight class.

**SECTION 3002**

**HOISTWAY ENCLOSURES**

**3002.1 Hoistway enclosure protection.** Elevator, dumbwaiter and other hoistway enclosures shall be shaft enclosures complying with Section 713.

- Reference is made to Section 713 of the code for the required fire resistance and construction of the hoist-
an area greater than 120 square feet (11.16 m²), including
3103.1.2 Permit required. Temporary structures that cover
entrance that are used or intended to be used for the gathering
connecting areas or spaces with a common means of egress or
entrance that are used or intended to be used for the gathering
together of 10 or more persons, shall not be erected, operated
or maintained for any purpose without obtaining a permit
from the building official.

Permits are required for temporary structures that are
greater than 120 square feet (11 m²) and are used for the
gathering of 10 or more people. This provides notice to the building department for larger temporary
structures that pose a higher fire and life safety risk related to their size and presence of occupants as well as relief to the smaller temporary structures that pose a low risk.

3103.3 Location. Temporary structures shall be submitted for each installa-
tion of a temporary structure. The construction documents shall include a site plan indicating the location of the temporary structure and information delineating the means of egress and the occupant load.

Before the installation of any temporary structure, a permit application and construction documents are required to be submitted.

Construction documents, as defined in Chapter 2, include written, graphic and pictorial documents. These documents are to clearly provide pertinent information about the project, including the location, seating capacity, construction and all mechanical and electrical equipment, as a minimum. The code references means of egress and occupant load as items of particular interest for temporary structures because such structures are commonly tents used for special gatherings such as weddings or parties, and therefore the occupant load and clear path of egress are of particular concern. However, it should be noted that these provisions are not intended to remove the need for submittals that are necessary for all new construction, including structural details, calculations, soil tests and any other construction documents that are pertinent. These documents would need to be signed and sealed by a registered design professional as required for new construction.

3103.3 Location. Temporary structures shall be located in accordance with the requirements of Table 602 based on the fire-resistance rating of the exterior walls for the proposed type of construction.

With respect to exposure hazards, temporary structures are no different from permanent structures. Therefore, the fire-resistance rating of the temporary structure’s exterior walls will depend on the occupancy and the fire separation distance.

3103.4 Means of egress. Temporary structures shall conform to the means of egress requirements of Chapter 10 and shall have an exit access travel distance of 100 feet (30 480 mm) or less.

The means of egress in temporary structures is to comply with the requirements of Chapter 10, except the maximum exit access travel distance is limited to 100 feet (30 480 mm). The reduced travel distance applies to all temporary uses and is based on concerns associated with the nature of temporary structure construction, which may accelerate fire spread or rapidly decrease the stability of the structure during a fire.

SECTION 3104
PEDESTRIAN WALKWAYS AND TUNNELS

3104.1 General. This section shall apply to connections between buildings such as pedestrian walkways or tunnels, located at, above or below grade level, that are used as a means of travel by persons. The pedestrian walkway shall not contribute to the building area or the number of stories or height of connected buildings. Further, pedestrian walkways and tunnels which encroach into the City’s right-of-way shall also comply with provisions of Chapter 32.

Pedestrian walkways are normally seen as bridges connecting adjacent buildings (see Commentary Figure 3104). This section addresses the practical application of pedestrian walkways and tunnels, including walkways between buildings, grade-level connections between buildings or corridors around the perimeter of one building. The area of the walkway itself is not to be considered a part of any building it serves, nor is it considered to add to the number of stories or

Figure 3104 EXAMPLE—PEDESTRIAN WALKWAY
3106.3 Roof construction. Where the roof or any part thereof is a skylight, the skylight shall comply with the requirements of Chapter 24. Every roof and skylight of a marquee shall be sloped to downspouts that shall conduct any drainage from the marquee in such a manner so as not to spill over the sidewalk.

- The purpose of this section is to require proper drainage to prevent buildup on the roof due to a marquee or skylight and also to reduce the nuisance of such drainage to those using the sidewalk.

3106.4 Location prohibited. Every marquee shall be so located as not to interfere with the operation of any exterior standpipe, and such that the marquee does not obstruct the clear passage of stairways or exit discharge from the building or the installation or maintenance of street lighting.

- Marquees are an acceptable building feature but they must not interfere or obstruct fire protection features and egress. In addition, such marquees also need to be placed such that street lights can be maintained.

3106.5 Construction. A marquee shall be supported entirely from the building and constructed of noncombustible materials. Marquees shall be designed as required in Chapter 16. Structural members shall be protected to prevent deterioration.

- Damage to both life and property can occur from improperly constructed marquees. Proper design of a marquee involves a structural analysis by qualified persons. Wind and seismic loads must be considered in the design process, as outlined in Chapter 16. Additionally, all material must be noncombustible regardless of the construction type of the building supporting the marquee.

SECTION 3107 SIGNS

3107.1 General. Signs shall be designed, constructed and maintained in accordance with this code. Placement, type of sign, height and other requirements shall be governed by the Topeka Municipal Code.

- The design of signs is to be in accordance with the code. If the design is inadequate, no amount of expert construction, repair or maintenance will result in a safe sign. The primary requirements for such signs will be related to structural stability as addressed in Chapter 16. Signs projecting over the public right-of-way will also be subject to the requirements of Chapter 32.

- Signs within a covered mall building are specifically addressed by Section 402.6.4.

- Note that Appendix H, when adopted by a jurisdiction, provides more specific requirements related to signs.
SECTION 3108
TELECOMMUNICATION AND
BROADCAST TOWERS

[BS] 3108.1 General. Towers shall be designed and constructed in accordance with the provisions of TIA-222. Towers shall be designed for seismic loads; exceptions related to seismic design listed in Section 2.7.3 of TIA-222 shall not apply. In Section 2.6.6.2 of TIA 222, the horizontal extent of Topographic Category 2, escarpments, shall be 16 times the height of the escarpment.

Exception: Single free-standing poles used to support antennas not greater than 75 feet (22 860 mm), measured from the top of the pole to grade, shall not be required to be noncombustible.

Telecommunication and broadcast towers, which include media such as radio, television and cell phones, are special structures in that they are not normally occupied and are open structures containing little, if any, fuel load. This section references TIA-222, which provides the necessary structural requirements for such telecommunication and broadcast towers. The seismic design exceptions given in TIA-222, Section 2.7.3, do not apply because these exceptions bring TIA 222-G below the minimum standard of care for design established by the code and ASCE 7.

Chapter 15 gives specific requirements for design of communications towers. No exemptions are provided. TIA-222 is not listed as a referenced standard within the International Codes® for seismic design, so seismic design requirements must be governed by ASCE 7. TIA 222-G, because of exemptions to seismic design requirements, does not meet the minimum standard of care for design established by the code and ASCE 7.

The exception to this section will allow combustible poles used to support antennas not greater than 75 feet (1905 mm). Such poles are often used for the support of lightweight electrical equipment such as cell phone antennas and have had many years of good performance.

[BS] 3108.2 Location and access. Towers shall be located such that guy wires and other accessories shall not cross or encroach upon any street or other public space, or over above-ground electric utility lines, or encroach upon any privately owned property without the written consent of the owner of the encroached-upon property, space or above-ground electric utility lines. Towers shall be equipped with climbing and working facilities in compliance with TIA-222. Access to the tower sites shall be limited as required by applicable OSHA, FCC and EPA regulations.

Access must be provided to the tower so that its condition can be surveyed. The features required to access such towers are located in TIA-222. Occupational Safety & Health Administration (OSHA), the Environmental Protection Agency (EPA) and the Federal Communications Commission (FCC) are the regulatory bodies that limit who may access such towers and how.

Guy wires are to be arranged so as not to represent a hazard to the public, and, therefore, they shall not cross or encroach a street, public space or electric power line. This is because of both the damage that could occur if a guy wire were suddenly released and the need to prohibit the wire from becoming an obstruction. Guy wires are not to encroach on any other property without previous written consent by the owner of the affected property.

SECTION 3109
SWIMMING POOL ENCLOSURES AND
SAFETY DEVICES

3109.1 General. The design and construction of swimming pools, spas and hot tubs shall comply with the International Swimming Pool and Spa Code® (ISPSC®). Swimming pools, spas and hot tubs shall comply with the International Property Maintenance Code adopted at TMC 8.60.010.

This section now simply refers to the code that addresses swimming pools and all related enclosures and safety devices. The reference is more comprehensive than what was previously provided in this section.

SECTION 3110
AUTOMATIC VEHICULAR GATES

3110.1 General. Automatic vehicular gates shall comply with the requirements of Sections 3110.2 through 3110.4 and other applicable sections of this code.

These provisions are aimed at preventing hazards that could result from improper operation of vehicular gates. Protection is needed to prevent entrapment of individuals between an automatic gate and a stationary object or surface. Gates intended for automation require specific design construction and installation including entrapment protection to minimize or eliminate certain excessive gate gaps, openings and protrusions. As defined, the gates regulated by this section are not those used by pedestrians but instead are intended only for vehicles.

3110.2 Definition. The following term is defined in Chapter 2: VEHICULAR GATE.

Definitions of terms can help in the understanding and application of code requirements. This section directs the code user to Chapter 2 for the proper application of the indicated terms used in this chapter. Terms may be defined in Chapter 2, in another International Code® as indicated in Section 201.3 or the dictionary meaning may be all that is needed (see also commentary, Sections 201 through 201.4).

3110.3 Vehicular gates intended for automation. Vehicular gates intended for automation shall be designed, constructed and installed to comply with the requirements of ASTM F2200.

This section cites the design standard to which such gates must be designed and installed. The standard
Chapter 32: Encroachments Into the Public Right-of-way

General Comments
Chapter 32 contains provisions that regulate a variety of structure encroachments and projections into the public right-of-way, such as a sidewalk, parking lot or street.

Section 3202 addresses encroachments on street lot lines below grade, above grade, below 8 feet (2438 mm) in height and 8 feet (2438 mm) or more above grade.

Encroachments and projections have to be taken into consideration in addition to means of egress, fire resistance, fire protection and structural and material considerations.

Purpose
The purpose of Chapter 32 is to regulate projections and encroachments of structures into the public right-of-way.

SECTION 3201 GENERAL

3201.1 Scope. The provisions of this chapter shall govern the encroachment of structures into the public right-of-way.

- These provisions apply only to encroachments on the public right-of-way, not on interior lot lines. The location of the street lot line (public right-of-way) is determined through a variety of methods based on the regulations of local jurisdictions and, often, the state. The location and width of streets are often established when an area is platted and the land is subdivided into a series of blocks, lots and streets. While subdivision and zoning laws may provide for standard street and right-of-way width, many areas of a jurisdiction may predate those standards. Streets and highways are often established by state and local government transportation agencies. Such agencies can create new streets or widen existing streets by either purchasing or condemning land of sufficient width. In other circumstances, public streets are not owned by a city, but they are easements across privately owned lands. Because of the wide variety of ways in which a public right-of-way can be established, it is important for the building official to know how rights-of-way were established within the jurisdiction and to be able to provide this information to permit applicants.

3201.2 Measurement. The projection of any structure or portion thereof shall be the distance measured horizontally from the lot line to the outermost point of the projection.

- This section defines how the extent of encroachment is determined. The extent of encroachment of any structure or appendage is to be measured from the established street lot line to the outermost (furthest) point of the projection.

3201.3 Other laws. The provisions of this chapter shall not be construed to permit the violation of other laws or ordinances regulating the use and occupancy of public property. Regulation of public rights-of-way; encroachments. The City has a right to regulate public rights-of-way for the benefit of the public. Encroachments into the public right-of-way that solely benefit a private person or organization will not be allowed unless the applicant demonstrates that any private benefit is incidental and there is an overall benefit to the public.

- The projections permitted in this chapter are also subject to other limitations identified in applicable laws and ordinances. Other applicable laws, for example, are those established by the governing authority in regulating right-of-way for highways, streets or public areas adjacent to the structure in question.

The street lot line occurs on each side of a structure that faces or fronts on a street. Many property descriptions have the centerline of the public way as the property line. A lot line differs in that it separates a lot from a public place such as a street or a park. In these cases, the lot line is defined not by the center-line of the public way, but by the line that identifies where the public way exists. This chapter only applies to encroachment across lot lines, established between a lot and any adjoining public right-of-way (street, alley, highway) (see commentary, Section 3201.1). Local zoning codes often establish setbacks or yards on a property, which under the zoning code must be kept open or substantially open. Often, the yard or setback requirements are minimal in commercial or industrial zones and are more substantial in residential zones. This chapter does not address encroachments into yards or setbacks established by zoning codes unless that setback is actually establishing the public right-of-way. This chapter does not apply to interior lot lines—those separating one lot from another. Encroachments across interior lot lines are not permitted.
3201.4 Drainage. Drainage water collected from a roof, awning, canopy or marquee, and condensate from mechanical equipment shall not flow over a public walking surface.

- A great number of street projections are canopies or mansard roofs. They have the potential to create a hazardous condition due to improper drainage on the walkways they cover. It is very important that all street projections have proper drainage systems.

SECTION 3202
ENCROACHMENTS

3202.1 Encroachments below grade. Encroachments below grade shall comply with Sections 3202.1.1 through 3202.1.3.

- Allowable projections of below-grade structural components are described in Sections 3202.1.1 through 3202.1.3. The term "grade" as used in this chapter should be considered the finished ground level of the site. "Grade" should not be confused with "grade plane," which is used for determining other code standards such as building height and number of stories.

3202.1.1 Structural support. A part of a building erected below grade that is necessary for structural support of the building or structure shall not project beyond the lot lines, except that the footings of street walls or their supports that are located not less than 8 feet (2438 mm) below grade shall not project more than 12 inches (305 mm) beyond the street lot line.

- One of the permissible street lot line encroachments (footings) is defined in this section. Where a structure is built immediately adjacent to the street lot line, the footing is permitted to project across that line (see Commentary Figure 3202.1.1). Projection of footings across side (interior) lot lines and onto adjacent property is not permitted.

3202.1.2 Vaults and other enclosed spaces. The construction and utilization of vaults and other enclosed spaces below grade shall be subject to the terms and conditions of the applicable governing authority.

- Below-grade vaults and other enclosed spaces that open at the sidewalk level are usually covered with solid structural caps (e.g., concrete slabs) and are permitted to project beyond the building line or street lot line. However, since these structures occur in the public right-of-way, they are subject to local laws governing private use of the public right-of-way as well as the approval of the applicable governing authority.

3202.1.3 Areaways. Areaways shall be protected by grates, guards or other approved means.

- Areaways, which provide natural light or ventilation to below-grade spaces, are required to be protected by grates, guards or other approved means of protection (see Commentary Figure 3202.1.3). Local regulations allowing the private use of the public right-of-way may prescribe how areaways are covered and protected. Some jurisdictions allow material lifts to be located in these areaways and open to the public street.
3202.2 Encroachments above grade and below 8 feet in height. Encroachments into the public right-of-way above grade and below 8 feet (2438 mm) in height shall be prohibited except as provided for in Sections 3202.2.1 through 3202.2.3. Doors and windows shall not open or project into the public right-of-way.

This section prohibits all projections into the public right-of-way that are above grade and below 8 feet (2438 mm), except those specifically allowed by Sections 3202.2.1 through 3202.2.3 and 3202.4 (e.g., steps, architectural features such as columns or pilasters, awnings, temporary vestibules and storm enclosures). The maximum permitted encroachments and minimum clearances, as well as additional protection requirements, for the specified allowed components are detailed in their respective sections. See the commentary to Section 3202.1 regarding the term “grade.”

3202.2.1 Steps. Steps shall not project more than 12 inches (305 mm) and shall be guarded by approved devices not less than 3 feet (914 mm) in height, or shall be located between columns or pilasters.

Steps are permitted to project a maximum of 12 inches (305 mm) into the public right-of-way by this section. However, since steps may pose a tripping hazard, an approved device (guard), ornamental column or pilaster must be provided at a minimum height of 3 feet (914 mm) to minimize this hazard. Commentary Figure 3202.2.1 illustrates compliance with this provision. Where such steps are part of the building’s means of egress system, Sections 1011.11 and 1014 may require the placement of handrails and handrail extensions such that the 12-inch (305 mm) encroachment into a right-of-way may not be achievable.

3202.2.2 Architectural features. Columns or pilasters, including bases and moldings, shall not project more than 12 inches (305 mm). Belt courses, lintels, sills, architraves, pediments and similar architectural features shall not project more than 4 inches (102 mm).

This section addresses the variety of architectural appurtenances that are part of a structure’s exterior wall or roof. Consistent with the projection limitations given for steps in Section 3202.2.1, the maximum encroachment into the public way is 12 inches (305 mm) for columns and pilasters (see Commentary Figure 3202.2.1). Other noted architectural features are limited to maximum encroachments of 4 inches (102 mm).

3202.2.3 Awnings. The vertical clearance from the public right-of-way to the lowest part of any awning, including valances, shall be not less than 7 feet (2134 mm).

Awnings, including retractable awnings, are permitted to project into the public right-of-way. However, the clearance to any part of an awning, including its valance, is required to be a minimum of 7 feet (2134 mm) above grade (see Commentary Figure 3202.2.3).

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

![Figure 3202.2.1 STEPS](image-url)
ENCROACHMENTS INTO THE PUBLIC RIGHT-OF-WAY

3202.3 Encroachments 8 feet or more above grade. Encroachments 8 feet (2438 mm) or more above grade shall comply with Sections 3202.3.1 through 3202.3.4.

- This section prohibits all projections into the public right-of-way that are 8 feet (2438 mm) or more above grade, except those specifically allowed by Sections 3202.3.1 through 3202.3.4. The maximum permitted encroachments and minimum clearances, as well as additional approval requirements, for the specified allowed components are detailed in their respective sections.

3202.3.1 Awnings, canopies, and marquees and signs. Awnings, canopies, and marquees and signs shall be constructed so as to support applicable loads as specified in Chapter 16. Awnings, canopies, and marquees and signs with less than 15 feet (4572 mm) clearance above the sidewalk shall not extend into or occupy more than two-thirds the width of the sidewalk measured from the building. Stanchions or columns that support awnings, canopies, marquees and signs shall be located not less than 2 feet (610 mm) in from the curb line.

- This section contains three distinct requirements. First, awnings, canopies, marquees and signs must be designed in accordance with the provisions of Chapter 16, with regard to the live loads that may be imposed on such structures.
  Second, the allowable projection of awnings, canopies, marquees and signs with less than 15 feet (4572 mm) of clearance above the sidewalk is limited to two-thirds of the width of the sidewalk measured from the building. The standards of these sections apply to retractable awnings (defined in Section 202).
  Finally, the location of vertical structural components used for supporting awnings, canopies, marquees and signs (stanchions or columns) is also regulated. A minimum of 2 feet (610 mm) of clearance is required between the curb line and the vertical structural support for awnings, canopies, marquees and signs (see Commentary Figure 3202.3.1).

3202.3.2 Windows, balconies, architectural features, signs and mechanical equipment. Where the vertical clearance above grade to projecting windows, balconies, architectural features, signs or mechanical equipment is more than 8 feet (2438 mm), 1 inch (25 mm) of encroachment is permitted for each additional inch (25 mm) of clearance above the minimum 8-foot (2438 mm) clearance required. However, the maximum allowable projection is limited to 4 feet (1219 mm) (see Commentary Figure 3202.3.2).

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

Figure 3202.2.3
AWNINGS
Figure 3202.3.1
AWNINGS, CANOPIES, MARQUEES AND SIGNS 8 FEET OR MORE ABOVE GRADE

Figure 3202.3.2
WINDOWS, BALCONIES, ARCHITECTURAL FEATURES AND MECHANICAL EQUIPMENT

For SI: 1 foot = 304.8 mm, 1 degree = 0.01745 rad.
3202.3.3 Encroachments of awnings, canopies, or marquees 15 feet or more above grade. Encroachments 15 feet (4572 mm) or more above grade shall not be limited. Awnings, canopies, and marquees shall be constructed so as to support applicable loads as specified in Chapter 16. Awnings, canopies, marquees and signs with 15 feet (4572 mm) or more clearance above the sidewalk shall not extend into or occupy more than two-thirds the width of the sidewalk measured from the building. Stanchions or columns that support awnings, canopies, or marquees shall not be located or placed in the public right-of-way. Because encroachments into the public right-of-way that are 15 feet (4572 mm) or more above grade do not interfere with or impede pedestrian or vehicular traffic, they are not regulated by the provisions of this chapter.

3202.3.4 Encroachments of windows, balconies, architectural features, signs, and mechanical equipment 15 feet or more above grade. Encroachments of windows, balconies, architectural features, signs, and mechanical equipment of 15 feet (4572 mm) or more above grade shall be limited to 4 feet and the encroachment shall not be supported by columns, stanchions or other vertical supports placed or located in the public right-of-way.

3202.3.45 Pedestrian walkways. The installation of a pedestrian walkway over a public right-of-way shall be subject to the approval of the applicable governing authority. The vertical clearance from the public right-of-way to the lowest part of a pedestrian walkway shall be not less than 15 feet (4572 mm) minimum.

As in Section 3202.3.3, projections of pedestrian walkways that have a minimum clearance of 15 feet (4572 mm) above grade do not interfere or impede pedestrian or vehicular traffic and thus are not prohibited by this section. The installation of pedestrian walkways over a public right-of-way is required to be approved by the local governing authority. Detailed requirements for pedestrian walkways are provided in Section 3104.

3202.4 Temporary encroachments. Where allowed by the applicable governing authority, vestibules and storm enclosures shall not be erected for a period of time exceeding seven months in any one year and shall not encroach more than 3 feet (914 mm) nor more than one-fourth of the width of the sidewalk beyond the street lot line. Temporary entrance awnings shall be erected with a clearance of not less than 7 feet (2134 mm) to the lowest portion of the hood or awning where supported on removable steel or other approved non-combustible support.

This section addresses a special situation in which temporary projections across the street lot line are erected for climatic reasons (e.g., during the winter months some building owners may erect vestibule enclosures or canopies over entrances). The purpose of this section is to allow these energy-saving procedures, yet place limitations on such projections.

Specifically, enclosures temporarily appended to an entranceway are permitted to project not more than 3 feet (914 mm) beyond the street lot line, or up to one-fourth the width of the sidewalk. Whichever dimension results in the lesser projection defines the maximum projection.

Additionally, when temporary awnings are erected, clearance between the sidewalk and the lowest part of the awning must be at least 7 feet (2134 mm), which is consistent with the requirements for permanent awnings in Section 3202.2.3. It is further required that the frame for the hood or awning is to be supported on