

ATTACHMENT A
THE CITY OF HENDERSON FIRE CODE AMENDMENTS
TO THE 2000 UNIFORM FIRE CODE AND THE
2000 SOUTHERN NEVADA FIRE CODE CONSENSUS AMENDMENTS

Deletion indicators (➡) are provided in the margin where a paragraph or item listing has been deleted or relocated to another portion of the code. by the base 2000 edition of the code.

Text in this format (Blue with double-bar) is text inserted from the International Building Code (IBC) and/or as amended by the Southern Nevada Building Code Amendments. This text is either inserted as an addition to the Fire Code, or is replacing a section of the Fire Code where a conflict in terms, definitions, or requirements, existed between the two codes. When present at the end of a code section, an IBC code number in brackets [IBC § 1111.1.1] indicates the IBC code section that was inserted.

Text in this format (Pink with a three bar) is text that has been modified or deleted to the Southern Nevada Fire Code Amendments. Sections of the code that have been deleted with no replacement, will be shown as a section number with the note “deleted”. An IBC code number present at the end of a code section [IBC § 1111.1.1], indicates that a minor change has occurred to match a conflict in terms, definitions, or requirements between the two codes.

Text in this format (Teal with a wide single bar) is text that has been modified or deleted by the City of Henderson to the 2000 Uniform Fire Code. Sections of the code that have been deleted with no replacement, will be shown as a section number with the note “deleted”.

Minor revisions, such as re-sequencing changes, or updating a direct code section reference for correlation purposes have not been marked.

**CITY OF HENDERSON FIRE CODE AMENDMENTS
TO THE 2000 UNIFORM FIRE CODE AND THE
2000 SOUTHERN NEVADA FIRE CODE CONSENSUS AMENDMENTS**

Certain parts, articles, divisions, sections and subsections of Volume 1 of the Uniform Fire Code, 2000 Edition, are amended or deleted as is provided for in this Supplemental Document. If a conflict exists between any provisions of this Supplemental Document and any provisions of the Uniform Fire Code, 2000¹ Edition, or the International Building Code, 2000 Edition, the provisions of this Supplemental Document shall prevail.

1. **Section 101.6 "Conflicting Provisions"**, is amended by numbering the existing text as sub-section 1. and adding a new Sub-section 101.6.2 as follows:

101.6.2 Conflicting Provisions. If conflicts exist between any provision of this Ordinance and any provision of the Uniform Fire Code, 2000 Edition, or any other Code, Ordinance, or law adopted by the City of Henderson, the more stringent requirement providing the greatest safety from fire and for life shall prevail, unless otherwise approved by the chief.

The trade-off provisions granted in the Hillside Ordinance for fire department access roads and water supplies for fire protection are still applicable. The requirement that all buildings shall be provided with an approved fire sprinkler system is a more stringent requirement, thus the Hillside Ordinance would take precedence.

2. **Section 103.1.4 Appeals** is deleted and replaced with a new **Section 103.1.4 Substantial Compliance Standard**, as follows:

Section 103.1.4 Substantial Compliance Standard. In the enforcement of specific provisions of the adopted technical codes and standards, the Fire Chief and the Building & Fire Safety Director are authorized to grant minor variations from the strict application of specific code provisions where, in the opinion of the Fire Chief and the Building & Fire Safety Director, the work is in substantial compliance with the intent of the adopted codes and standards.

3. **Section 103.2.1.1, Authority of the Chief and Fire Department, first paragraph**, is revised as follows:

103.2.1.1 General. The Chief is authorized to administer and enforce this code. Under the Chief's direction, the Fire Department and the Fire Safety Division are authorized to enforce all ordinances of the jurisdiction pertaining to:...(The rest of the Section remains unchanged.)

4. **Section 103.2.1.2, Fire Safety Division Personnel, Fire Department, and Police, first paragraph**, is revised as follows:

103.2.1.2 Fire Safety Division Personnel, Fire Department, and Police. The Chief, members of the Fire Department, and members of the Fire Safety Division shall have the powers of a police officer in performing their duties under this code.

5. **Section 103.2.2 Organization of the Fire Prevention Bureau**, is re-titled and revised as follows:

103.2.2 Organization of the Fire Safety Division.

103.2.2.1 General. A Fire Safety Division is established within the Building and Fire Safety Department under the direction of the Fire Marshal. The function of this Division shall be to assist the Fire Chief in the administration and enforcement of the provisions of the Fire Code. Management oversight of the Fire Safety Division is provided by the Director of the Building and Fire Safety Department. The Fire Chief has the final decision making authority on all technical fire code issues.

103.2.2.2 Fire Marshal. The Fire Chief hereby designates the Fire Marshal and members of the Fire Safety Division to exercise the powers and perform the duties as set forth in the Fire Code.

6. **Section 103.3.1.1 Authority to Inspect,** is revised as follows:

103.3.1.1 Authority to Inspect. The Fire Safety Division and/or the Fire Department shall inspect, as often as necessary, buildings and premises, including such other hazards or appliances designated by the chief for the purpose of ascertaining and causing to be corrected any conditions which would reasonably tend to cause fire or contribute to its spread, or any violation of the purpose or provisions of the Fire Code and of any other law or standard affecting fire safety.

7. **Section 103.4.1.1 Authorization to Issue Corrective Orders and Notices** is amended as follows:

103.4.1.1 General. When the Chief finds in any building or on any premises combustible, hazardous or explosive materials or dangerous accumulations of rubbish; or finds unnecessary accumulations of wastepaper, boxes, shavings or any highly flammable materials which are so situated as to endanger life or property; or finds obstructions to or on fire escapes, stairs, passageways, doors or windows that reasonably tend to interfere with the operations of the Fire Department or the egress of the occupants of such buildings or premises; or finds that the effectiveness of any exit door, attic separation or any fire separation wall is reduced; or finds that this code is being violated, the Chief is authorized to issue orders as necessary for the enforcement of the fire prevention laws and ordinances governing the same and for the safeguarding of life and property.

8. **Section 103.4.1.3 Stopping uses, evacuation,** is amended as follows:

103.4.1.3 Stopping uses, evacuation. The Chief is authorized to order an operation or use stopped or the evacuation of any premises, building or vehicle or portion thereof which has or is a fire hazard, hazard to life, property or the environment.

9. **Section 105.6 Permits for the Same Location,** is amended by numbering the existing text as Sub-section 1 and adding a new Sub-section 2 as follows:

105.6 Permits for the Same Location.

105.6.1 Consolidation. When more than one permit is required for the same location, such permits may be consolidated into a single form containing more than one permit.

105.6.2 Other Required Permits. The requirements for permits from other agencies or departments shall not waive the requirements for permits required by this Code. Where other agencies or departments require a permit, such permit shall be obtained prior to or simultaneous with the issuance of a permit required by this Code.

10. **Section 105.8 Permit Required,** is amended by adding or modifying sixteen (16) sub-sections as follows:

a.6 **Alarm System(s), Equipment, and Monitoring.** A Fire Department permit is required to install, extend, or alter an alarm system(s), equipment, and monitoring.

b.2 **Barbecue, Commercial.** A Fire Department permit is required to operate a commercial barbecue in a fixed outdoor location.

c.10 **Christmas Trees.** A permit is required prior to the placement and use of natural or resin-bearing cut trees in public buildings. See Appendix IV-B.

EXCEPTIONS:

1. Trees inside the dwelling units.
2. Trees less than 24 inches in height.

e.2. **Exhibits and trade shows.** An operational permit is required to operate exhibits and trade shows.

f.3. **Flammable or combustible liquids.** See Article 79.

1. To use or operate, repair or modify a pipeline for the transportation of flammable or combustible liquids.
2. To store, handle or use Class I liquids in excess of 5 gallons (18.9 L) in a building or in excess of 10 gallons (37.9 L) outside of a building, except that a permit is not required for the following:
 - 2.1. The storage or use of Class I liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant or mobile heating plant, unless such storage, in the opinion of the chief, would cause an unsafe condition.
 - 2.2. The storage or use of paints, oils, varnishes or similar flammable mixtures when such liquids are stored for maintenance, painting or similar purposes for a period of not more than 30 days.
3. To store, handle or use Class II or Class III-A liquids in excess of 25 gallons (94.6 L) in a building or in excess of 60 gallons (227.1 L) outside a building, except for fuel oil used in connection with oil-burning equipment.
4. To remove Class I or Class II liquids from an underground storage tank used for fueling motor vehicles by any means other than the approved, stationary on-site pumps normally used for dispensing purposes.
5. To install, construct, alter or operate tank vehicles, equipment, tanks, plants, terminals, wells, fuel-dispensing stations, refineries, distilleries and similar facilities where flammable and combustible liquids are produced, processed, transported, stored, dispensed or used.
6. To install, alter, remove, abandon, place temporarily out of service or otherwise dispose of a flammable or combustible liquid tank.
7. To change the type of contents stored in a flammable or combustible liquid tank to a material other than that for which the tank was designed and constructed.
8. To dispense Class I or II liquids from a tank vehicle to the fuel tank of motor vehicles or special equipment at approved fixed facilities.

f.6. **Filming.** To film or broadcast at a production studio, production location, or sound stage. See Article 40
EXCEPTION: When approved by the chief, a permit is not required for minor filming locations.

f.7 **Fire Extinguishing System(s) and Equipment.** A Fire Department permit is required to install, extend, or alter fire extinguishing system(s) and equipment.

f.8 **Fire Hydrants – Private.** A renewable permit is required for facilities that have private fire hydrants.

f.9. **Fire Pumps.** A renewable permit is required for facilities that have fire pumps.

g.1. **Gates.** A Fire Department permit is required to install or alter a gate(s) or gate operator(s), which obstructs a fire apparatus access road.

h.4. **Heliports, Helistops (rooftop).** An operational permit is required for the operation of a rooftop heliport or helistop.

h.5. **Holiday Activity Permit.** An activity permit is required at locations that operate Christmas tree lots, pumpkin patch lots, and similar type activities.

m.4. **Monitoring.** Any facility that monitors electronic signals initiated by fire protection systems such as central, supervising or self-monitoring facilities.

m.5. **Medical gas systems.** A Fire Department permit is required to install, extend, or alter a medical gas system. See Article 74.

m.6 **Mobile Refueling Sites.** To conduct mobile fleet refueling operations at a commercial facility. (See Section 7904.2.1.1 Mobile Fleet Refueling)

m.7 **Mobile Refueling Vehicle.** To operate a tank vehicle for the purpose of conducting mobile fleet refueling operations at commercial facilities. (See Section 7904.2.1.1 Mobile Fleet Refueling)

p.1 **Parade floats.** This permit requirement is deleted.

s.1 **Smoke Control System(s) and Equipment.** A Fire Department permit is required to install, extend, or alter smoke control system(s) and equipment.

s.2 **Spray Booth.** A Fire Department permit is required to install, extend, or alter a spray booth.

t.2. **Storage of scrap tires and tire byproducts.** An operational permit is required to establish, conduct or maintain storage of scrap tires and tire byproducts that exceeds 2,500 cubic feet (71m³) of total volume of scrap tires and for indoor storage of tires and tire byproducts. use an open area or portion thereof to store tires in excess of 1,000 cubic feet (28.3 m³). See Section 1103.3.6.

t.3 **Tire-rebuilding plants.** An operational permit is required for the operation and maintenance of a tire rebuilding plant.

w.2. **Wood Pallets.** The storage or rehabilitation of pallets in any area exceeding 500 square feet. See Article 30

w.3 **Wood, Fire.** The storage of firewood in excess of 50 cords. See Article 31.

11. A new **Section 106 – CERTIFICATE OF INSURANCE**, is added as follows:

SECTION 106 — CERTIFICATE OF INSURANCE

106.1 General. A valid Certificate of Insurance shall be submitted to, or be on file, with the chief when applying for a permit to conduct specific operations.

EXCEPTION: ~~Governmental entities shall be exempt from this insurance requirement. The requirement for an insurance certificate for governmental entities may be waived by the City of Henderson’s Risk Manager.~~

106.2 Certificate Information Required. The certificate shall be issued by an insurance company authorized to transact business in the State of Nevada, or be named on the list of authorized insurers maintained by the Nevada Department Business and Industry, Division of Insurance. The following information shall be identified:

1. The contractor shall be named as the insured. If the insurance is provided by an individual, company or partnerships other than the contractor, the contractor shall be named as an additional insured.
2. “The City of Henderson Municipal Corporation, its agents, employees and volunteers” shall be named as additional insured and certificate holder.
3. General liability limits, including contractual liability, in the minimum amount specified below of the specific operation being conducted:
 - 3.1. To erect temporary membrane structures, tents, or canopies. See Article 32. \$5,000,000
 - 3.2. Use of explosive materials. See Article 77. \$5,000,000
 - 3.3. Conduct pyrotechnic displays. See Article 78. \$5,000,000

106.3 Additional Insurance. Greater liability insurance amounts may be required in certain cases as deemed necessary by the chief.

12. A new **Section 107 – FEES**, is added as follows:

107.1 Permit and Service Fee Schedule. Fees for permits, inspections and other services shall be as set forth in the Permit and Service Fee Schedule, as adopted and amended from time to time by the City Council.

107.2 Penalty. Non-payment of fees for permits, inspections and other services in the specified time shall be a violation of the code.

107.3 Stop Work Order. A stop work order may be issued if it is determined that insufficient funds are available to cover any financial instrument used to pay permit fees. Such stop work order shall remain in effect until such time as the City has received full payment of all required fees.

13. **Section 201.1 Definitions**, is amended as follows:

Section 201.1 Definitions. For the purposes of the code, certain words and phrases are defined and certain provisions shall be construed as set forth herein, unless it is apparent from the context that a different meaning is intended.

When terms are not defined, they shall have their ordinary accepted meanings within the context with which they are used. *Webster's Third New International Dictionary of the English Language, Unabridged*, copyright 1993, shall be considered as providing ordinarily accepted meanings.

14. **ARTICLE 2 DEFINITIONS.** The following definitions are added, revised or deleted: is amended to include the following definitions:

SECTION 202 – A

Delete the definition for **ASSEMBLY** and substitute the definition from the IBC § 303.1 **ASSEMBLY GROUP A**.

SECTION 203 – B

Delete the definition for **BALCONY, EXTERIOR EXIT** and substitute the following definition Balcony, Exterior from IBC § 1602.1:

~~**BALCONY, EGRESS,** is a landing or porch projecting from the wall of a building and which serves as an component in a means of egress system. The long side shall be at least 50 percent open, and the open area above the guardrail shall be so distributed as to prevent the accumulation of smoke or toxic gases.~~

BALCONY, EXTERIOR. An exterior floor projecting form and supported by a structure without additional independent supports. [IBC §1602.1]

Delete the definition for **BASEMENT** and substitute the definition from the **IBC § 202 for BASEMENT**.

Delete the definition for **BLEACHERS** and substitute the definition from the **IBC § 1002.1 for BLEACHERS**.

Delete the definition for **BOILING POINT** and substitute the definition from the **IBC § 307.2 for BOILING POINT**.

SECTION 204 – C

The definition **CHIEF** is revised as follows:

CHIEF means the **Fire Chief for the City of Henderson**. Also, for the purpose of enforcement for the Fire Code, **Chief** means the **Fire Marshal and Members of the Fire Safety Division**.

Delete the definition for **CHIEF ENGINEER**.

Revise the definition for **CHIEF OF THE FIRE PREVENTION BUREAU** as follows:
CHIEF OF THE FIRE PREVENTION BUREAU means **Fire Marshal for the City of Henderson.**

Add a new definition for **CONDITIONAL USE PERMIT** as follows:
CONDITIONAL USE PERMIT is as described in the **City of Henderson Development Code.**

Delete the definition for **COVERED MALL BUILDING** and substitute the definition from the **IBC § 404.2** for **COVERED MALL BUILDING**.

SECTION 206 – E

Delete definition for **EXPLOSIVE** and substitute the definition from the **IBC § 307.2** for **EXPLOSIVE**.

SECTION 207 – F

Revise the definition for **FALSE ALARM** as follows:
FALSE ALARM is the activation or reporting of an alarm for which no such alarm condition, fire or emergency actually exists.

A new definition **FIRE ALARM SYSTEM** is added as follows:
FIRE ALARM SYSTEM is a system or portion of a combination system that consists of components and circuits arranged to monitor and annunciate the status of the fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals. [NFPA 72 § 1-4]
A new definition **FIRE LANES** is added as follows:

FIRE LANES are Fire Apparatus Access Roads per UFC Article 9, Sections 901 and 902, which are designated by the Fire Department as those areas located on public or private property which are required to be marked per Section 901.4.2.

Revise the definition of **FIRE PREVENTION BUREAU** as follows:
FIRE PREVENTION BUREAU means the **Fire Safety Division** as established within the **Building and Fire Safety Department for the City of Henderson.**

A new definition **FIRE SAFETY OFFICER** is added as follows:
FIRE SAFETY OFFICER is a fire department official, or individual authorized by the chief, who is responsible for the enforcement and compliance of fire protection laws and regulations.

A new definition **FIRE WATCH** is added as follows:
FIRE WATCH is a person or persons, who are authorized by the chief, who are assigned to an area for the express purpose of notifying the fire department and/or building occupants of an emergency, preventing a fire from occurring, extinguishing small fires, or protecting the public from fire or life safety dangers.

A new definition **FIREWOOD SALES & STORAGE OF WOOD** is added as follows:
FIREWOOD SALES & STORAGE OF WOOD is any lot used for the sale and/or storage of wood.

Delete definition for **FLOOR AREA** and substitute the definition from the **IBC § 1002.1** for **FLOOR AREA, GROSS & FLOOR AREA, NET**.

SECTION 208 – G

Delete the definition for **GARAGE.**

Delete definition for **GRANDSTAND** and substitute the definition from the **IBC § 1002.1** for

GRANDSTAND.

SECTION 209 – H

Revise the definition for **HAZARDOUS PRODUCTION MATERIAL (HPM)** as follows:

HAZARDOUS PRODUCTION MATERIAL (HPM) is a solid, liquid or gas associated with semiconductor manufacturing that has a degree-of-hazard rating in health, flammability or reactivity of Class 3 or 4 as ranked by NFPA 704 and which is used directly in research, laboratory or production processes which have as their end product materials which are not hazardous. [IBC §415.2]

Delete definition for **HORIZONTAL EXIT** and substitute the definition from the **IBC § 1002.1 for HORIZONTAL EXIT**.

Delete definition for **HPM ROOM** and substitute the definition from the **IBC § 415.2 for HPM ROOM**.
SECTION 214 – M

Delete definition for **MEANS OF EGRESS** and substitute the definition from the **IBC § 1002.1 for MEANS OF EGRESS**.

A new definition for **MINISTORAGE WAREHOUSE** is added as follows:

MINISTORAGE WAREHOUSE is a Group S, Division 1 Occupancy partitioned into areas which are rented or leased by individuals or companies for the purpose of storing personal or business items.

SECTION 215 – N

A new definition for **NUISANCE ALARM** is added as follows:

NUISANCE ALARM is any alarm caused by mechanical failure, malfunction, improper installation, or lack of proper maintenance, or any alarm activated by a cause that cannot be determined.

SECTION 216 – O

OCCUPANCY CLASSIFICATION. For the purpose of this code, ~~certain occupancies~~ **Occupancy Classifications** are defined **in accordance with the International Building Code [IBC]** as follows:

ASSEMBLY GROUP A

Assembly Group A. Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering together of persons for purposes such as civic, social or religious functions, recreation, food or drink consumption or awaiting transportation. A room or space used for assembly purposes by less than 50 persons and accessory to another occupancy shall be included as a part of that occupancy. Assembly occupancies shall include the following: [IBC § 303.1]

A-1 Assembly uses, usually with fixed seating, intended for the production and viewing of the performing arts or motion pictures including, but not limited to: Motion picture theaters Television and radio studios admitting an audience Theaters

A-2 Assembly uses intended for food and/or drink consumption including, but not limited to:

- Banquet halls
- Night clubs
- Restaurants
- Taverns and bars

A-3 Assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A, including, but not limited to:

- Amusement arcades
- Art galleries
- Auditoriums
- Bowling alleys
- Churches
- Community halls
- Courtrooms
- Dance halls
- Exhibition halls
- Funeral parlors
- Gymnasiums
- Indoor swimming pools
- Indoor tennis courts
- Lecture halls
- Libraries
- Museums
- Passenger stations (waiting area)
- Pool and billiard parlors

A-4 Assembly uses intended for viewing of indoor sporting events and activities with spectator seating, including, but not limited to:

- Arenas
- Skating rinks
- Swimming pools
- Tennis courts

A-5 Assembly uses intended for participation in or viewing outdoor activities including, but not limited to:

- Amusement park structures
- Bleachers
- Grandstands
- Stadiums

BUSINESS GROUP B

Business Group B. Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts. Business occupancies shall include, but not be limited to, the following: [IBC § 304]

- Airport traffic control towers
- Animal hospitals, kennels and pounds
- Banks
- Barber and beauty shops
- Car wash
- Civic administration
- Dry cleaning and laundries; pick-up and delivery stations and self-service
- Educational occupancies above the 12th grade
- Electronic data processing
- Fire and police stations
- Laboratories; testing and research
- Motor vehicle showrooms
- Outpatient clinic and medical offices (where five or less patients in a tenant space are not capable of self-preservation);
- Post offices
- Print shops

Professional services (architects, attorneys, dentists, physicians, engineers, etc.)
Radio and television stations
Telephone exchanges

EDUCATIONAL GROUP E

Educational Group E. Educational Group E occupancy includes, among others, the use of a building or structure, or a portion thereof, by six or more persons at any one time for educational purposes through the 12th grade. [IBC § 305]

Day care. The use of a building or structure, or portion thereof, for educational, supervision or personal care services for more than five children older than 2½ years of age, shall be classified as a Group E occupancy.

FACTORY GROUP F

Factory Industrial Group F. Factory Industrial Group F occupancy includes, among others, the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations that are not classified as a Group H hazardous occupancy. [IBC § 306.1]

Factory Industrial F-1 Moderate-Hazard Occupancy. Factory Industrial uses which are not classified as Factory Industrial F-2 Low Hazard shall be classified as F-1 Moderate Hazard and shall include, but not be limited to, the following: [IBC § 306.2]

Aircraft
Appliances
Athletic equipment
Automobiles and other motor vehicles
Bakeries
Beverages (alcoholic)
Bicycles
Boats; building
Brooms or brushes
Business machines
Cameras and photo equipment
Canvas or similar fabric
Carpets and rugs (includes cleaning)
Clothing
Construction and agricultural machinery
Disinfectants
Dry cleaning and dyeing
Electric light plants and power houses
Electronics
Engines (including rebuilding)
Food processing
Furniture
Hemp products
Jute products
Laundries
Leather products
Machinery
Metals
Millwork (sash & door)
Motion pictures and television filming
Musical instruments
Optical goods
Paper mills or products

Photographic film
Plastic products
Printing or publishing
Recreational vehicles
Refuse incineration
Shoes
Soaps and detergents
Textiles
Tobacco
Trailers
Upholstering
Wood; distillation
Woodworking (cabinet)

Factory Industrial F-2 Low-Hazard Occupancy. Factory industrial uses that involve the fabrication or manufacturing of noncombustible materials which during finishing, packing or processing do not involve a significant fire hazard shall be classified as F-2 occupancies and shall include, but not be limited to, the following: [IBC § 306.3]

Beverages (nonalcoholic)
Brick and masonry
Ceramic products
Foundries
Glass products
Gypsum
Ice
Metal products (fabrication and assembly)

HIGH-HAZARD GROUP H

Hazardous Group H. Hazardous Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in quantities in excess of those found in Tables 8001.15-A and 8001.15-B. [IBC § 307.1]

Group H-1 structures. Buildings and structures that contain materials that pose a detonation hazard, shall be classified as Group H-1. Such materials shall include, but not be limited to: [IBC § 307.3]

Explosives
Organic peroxides, unclassified detonable
Oxidizers, Class 4
Unstable (reactive) materials, Class 3 detonable and Class 4
Detonable pyrophoric materials

Group H-2 structures. Buildings and structures that contain materials that present a deflagration hazard or a hazard from accelerated burning, shall be classified as Group H-2. Such materials shall include, but not be limited to: [IBC § 307.4]

Class I, or II or III-A flammable or combustible liquids that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 pounds per square inch gauge (103 kPa).
Combustible dusts
Cryogenic liquids, flammable
Flammable gases
Organic peroxides, Class I
Oxidizers, Class 3, that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 pounds per square inch gauge (103 kPa).
Pyrophoric liquids, solids and gases, nondetonable

Unstable (reactive) materials, Class 3, nondetonable
Water-reactive materials, Class 3

Group H-3 structures. Buildings and structures that contain materials that readily support combustion or present a physical hazard, shall be classified as Group H-3. Such materials shall include but not be limited to: [IBC § 307.5]

Aerosols, Level 2 and Level 3
Class I, II or III A flammable or combustible liquids that are used or stored in normally closed containers or systems pressurized at less than 15 pounds per square inch gauge (103 kPa).
Combustible fibers
Consumer fireworks, 1.4G (Class C, Common)
Cryogenic liquids, oxidizing
Flammable solids
Organic peroxides, Class II and Class III
Oxidizers, Class 1 and Class 2
Oxidizers, Class 3, that are used or stored in normally closed containers or systems pressurized at less than 15 pounds per square inch (103 kPa) gauge
Oxidizing gases
Unstable (reactive) materials, Class 2
Water-reactive materials, Class 2

Group H-4 structures. Buildings and structures that contain materials that are health hazards, shall be classified as Group H-4. Such materials shall include, but not be limited to: [IBC § 307.6]

Corrosives
Highly toxic materials
Toxic materials

Group H-5 structures. Semiconductor fabrication facilities and comparable research and development areas in which hazardous production materials (HPM) are used and the aggregate quantity of materials is in excess of those listed in Tables 8001.15-A and 8001.15-B.. Such facilities and areas shall be designed and constructed in accordance with the building code. [IBC § 307.7]

Multiple hazards. Buildings and structures containing a material or materials representing hazards that are classified in one or more of Groups H-1, H-2, H-3 and H-4, shall conform to the code requirements for each of the occupancies so classified. [IBC § 307.8]

EXCEPTIONS: The following shall not be classified in Group H, but shall be classified in the occupancy which they most nearly resemble. Hazardous materials in any quantity shall conform to the requirements of this code. [IBC § 307.9]

1. Buildings and structures that contain not more than the maximum allowable quantities per control area of hazardous materials as shown in Tables 8001.15-A and 8001.15-B. provided that such buildings are maintained in accordance with the *International Building Code*.
2. Buildings utilizing control areas in accordance with Section 414.2 that contain not more than the maximum allowable quantities per control area of hazardous materials as shown in Tables 8001.15-A and 8001.15-B.
3. Buildings and structures occupied for the application of flammable finishes, provided that such buildings or areas conform to the requirements of IBC Section 416 and NFPA 33, NFPA 34 and the *Article 45*.
4. Wholesale and retail sales and storage of flammable and combustible liquids in mercantile occupancies conforming to NFPA 30 and the *Article 79*.
5. Closed systems housing flammable or combustible liquids or gases utilized for the operation of machinery or equipment.

6. Cleaning establishments that utilize combustible liquid solvents having a flash point of 140°F (60°C) or higher in closed systems employing equipment listed by an approved testing agency, provided that this occupancy is separated from all other areas of the building by 1-hour fire-resistance-rated fire barrier walls or horizontal assemblies or both. *See Article 36*
7. Cleaning establishments which utilize a liquid solvent having a flash point at or above 200°F (93°C). *See Article 36*
8. Liquor stores and distributors without bulk storage.
9. Refrigeration systems.
10. The storage or utilization of materials for agricultural purposes on the premises.
11. Stationary batteries utilized for facility emergency power, uninterrupted power supply or telecommunication facilities provided that the batteries are provided with safety venting caps and ventilation is provided in accordance with the *Uniform Mechanical Code*.
12. Corrosives, irritants and sensitizers shall not include personal or household products in their original packaging used in retail display or commonly used building materials.
13. Buildings and structures occupied for aerosol manufacturing or storage shall be classified as Group F-1 or S-1, provided that such buildings conform to the requirements of NFPA 30B and the *Article 88*.
14. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the maximum allowable quantity per control area in Group M or S occupancies complying with Section 8001.14.3.
15. The storage of black powder, smokeless propellant and small arms primers in Groups M and R-3 and special industrial explosive devices in Groups B, F, M and S, provided such storage conforms to the quantity limits and requirements prescribed in the *Article 77*.

INSTITUTIONAL GROUP I

Institutional Group I. Institutional Group I occupancy includes among others, the use of a building or structure, or a portion thereof, in which people having physical limitations because of health or age are harbored for medical treatment or other care or treatment, or in which people are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-1, I-2, I-3 or I-4. [IBC § 308.1]

Group I-1. This occupancy shall include a building or part thereof housing more than 16 persons, who because of age, mental disability or other reasons, live in a supervised residential environment that provides personal care services. The occupants are capable of responding to an emergency situation without physical assistance from staff. This group shall include, but not be limited to, the following: residential board and care facilities, assisted living facilities, half-way houses, group homes, congregate care facilities, social rehabilitation facilities, alcohol and drug centers and convalescent facilities. A facility such as the above with five or fewer persons shall be classified as a Group R-3. A facility such as above, housing at least six and not more than 16 persons shall be classified as a Group R-4. [IBC § 308.2 as amended]

Group I-2. This occupancy shall include buildings and structures used for medical, surgical, psychiatric, nursing or custodial care of more than five persons who are not capable of self-preservation. This group shall include, but not be limited to the following: hospitals, nursing homes (both intermediate care facilities and skilled nursing facilities), mental hospitals and detoxification facilities. A facility such as the above with five or fewer persons shall be classified as a Group R-3. A medical treatment or health care facility such as the above with five or fewer persons shall be classified as a Group B. [IBC 308.3 as amended]

Child care facility. A child care facility that provides care on a 24-hour basis to more than five children 2½ years of age or less shall be classified as Group I-2. [IBC 308.3.1]

Group I-3. This occupancy shall include buildings and structures that are inhabited by more than five persons who are under restraint or security. An I-3 facility is occupied by persons who are generally incapable of self-preservation due to security measures not under the occupants' control. This group shall include, but not be limited to, the following: prisons, jails, reformatories, detention centers, correctional centers and prerelease centers. Buildings of Group I-3 shall be classified as one of the occupancy conditions indicated in IBC Sections 308.4.1 through 308.4.5 (see IBC Section 408.1). [IBC § 308.4]

Condition 1. This occupancy condition shall include buildings in which free movement is allowed from sleeping areas, and other spaces where access or occupancy is permitted, to the exterior via means of egress without restraint. A Condition 1 facility is permitted to be constructed as Group R. [IBC § 308.4.1]

Condition 2. This occupancy condition shall include buildings in which free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments. Egress to the exterior is impeded by locked exits. [IBC § 308.4.2]

Condition 3. This occupancy condition shall include buildings in which free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual sleeping rooms and group activity spaces, where egress is impeded by remote-controlled release of means of egress from such a smoke compartment to another smoke compartment. [IBC § 308.4.3]

Condition 4. This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Remote-controlled release is provided to permit movement from sleeping rooms, activity spaces and other occupied areas within the smoke compartment to other smoke compartments. [IBC § 308.4.4]

Condition 5. This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Staff-controlled manual release is provided to permit movement from sleeping rooms, activity spaces and other occupied areas within the smoke compartment to other smoke compartments. [IBC § 308.4.5]

Group I-4, day care facilities. This group shall include buildings and structures occupied by persons of any age who receive custodial care for less than 24 hours by individuals other than parents or guardians, relatives by blood, marriage, or adoption, and in a place other than the home of the person cared for. A facility such as the above with five or fewer persons shall be classified as a Group R-3. Places of worship during religious functions are not included. [IBC § 308.5]

Adult care facility. A facility that provides accommodations for less than 24 hours for more than five unrelated adults and provides supervision and personal care services. [IBC § 308.5.1]

Child care facility. A facility, that provides supervision and personal care on less than a 24-hour basis for more than five children 2½ years of age or less shall be classified as Group I-4. [IBC § 308.5.2]

EXCEPTION: A child day care facility that provides care for more than five but no more than 100 children 2½ years or less of age, when the rooms where such children are cared for are located on the level of exit discharge and each of these child care rooms has an exit door directly to the exterior, shall be classified as Group E.

MERCANTILE GROUP M

Mercantile Group M. Mercantile Group M occupancy includes, among others, buildings and structures or a portion thereof, for the display and sale of merchandise, and involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. Mercantile occupancies shall include, but not be limited to, the following: [IBC § 309.1]

- Department stores
- Drug stores
- Markets Motor vehicle service stations
- Retail or Wholesale stores
- Sales rooms

Quantity of hazardous materials. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored or displayed in a single control area of a Group M occupancy shall not exceed the quantities in [IBC Table 414.2.2 as amended](#) and [IBC Table 414.2.4](#) [IBC § 309.2]

RESIDENTIAL GROUP R

Residential Group R. Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping accommodations when not classed as an Institutional Group I. Residential occupancies shall include the following:

R-1 Residential occupancies where the occupants are primarily transient in nature (less than 30 days) including: [IBC § 310.1]

- Boarding houses (transient)
- Hotels (including motels)

R-2 Residential occupancies containing more than two dwelling units where the occupants are primarily permanent in nature, including:

- Apartment houses
- Boarding houses (not transient)
- Convents
- Dormitories
- Fraternities and Sororities
- Monasteries

R-3 Residential occupancies where the occupants are primarily permanent in nature and not classified as R-1, R-2 or I and where buildings do not contain more than two dwelling units, or adult and child care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours.

R-4 Residential occupancies shall include buildings arranged for occupancy as Residential Care/Assisted Living Facilities including more than five but not more than 16 occupants, excluding staff. Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3 except for the height and area limitations provided in IBC Section 503.

STORAGE GROUP S

Storage Group S. Storage Group S occupancy includes among others, the use of a building or structure, or a portion thereof, for storage that is not classed as a hazardous occupancy. [IBC § 311.1]

Moderate-hazard storage, Group S-1. Buildings occupied for storage uses which are not classified as Group S-2 including, but not limited, to storage of the following: [IBC § 311.2]

- Aerosols, Level 2 and Level 3
- Aircraft hangars
- Bags, cloth, burlap and paper
- Bamboos and rattan
- Baskets
- Belting, canvas and leather
- Books and paper in rolls or packs
- Boots and shoes
- Buttons, including cloth covered, pearl or bone
- Cardboard and cardboard boxes
- Clothing, woolen wearing apparel
- Cordage
- Furniture
- Furs
- Glues, mucilage, pastes and size
- Grains
- Horns and combs, other than celluloid
- Leather

Linoleum
Lumber
Motor vehicle repair garages complying with the maximum allowable quantities of hazardous materials listed in Table 8001-15-A
Petroleum warehouses for storage of lubricating oils with a flash point of 200°F (93°C) or higher
Photo engravings
Resilient flooring
Silks
Soaps
Sugar
Tires, bulk storage of
Tobacco, cigars, cigarettes and snuff
Upholstery and mattresses
Wax candles

Low-hazard storage, Group S-2. Includes, among others, buildings used for the storage of noncombustible materials such as products on wood pallets or in paper cartons with or without single thickness divisions; or in paper wrappings. Such products may have a negligible amount of plastic trim such as knobs, handles or film wrapping. Storage uses include, but are only limited to, storage of the following: [IBC § 311.3]

Asbestos
Beer or wine up to 12-percent alcohol in metal, glass or ceramic containers
Cement in bags
Chalk and crayons
Dairy products in nonwaxed coated paper containers
Dry cell batteries
Electrical coils
Electrical motors
Empty cans
Food products
Foods in noncombustible containers
Fresh fruits and vegetables in nonplastic trays or containers
Frozen foods
Glass
Glass bottles, empty or filled with noncombustible liquids
Gypsum board
Inert pigments
Ivory
Meats
Metal cabinets
Metal desks with plastic tops and trim
Metal parts
Metals
Mirrors
Oil-filled and other types of distribution transformers
Parking garages, open or enclosed
Porcelain and pottery
Stoves
Talc and soap stones
Washers and dryers

UTILITY AND MISCELLANEOUS GROUP U

General. Buildings and structures of an accessory character and miscellaneous structures not classified in any specific occupancy shall be constructed, equipped and maintained to conform to the requirements of this code commensurate with the fire and life hazard incidental to their occupancy. [IBC § 312.1]

Agricultural buildings

Aircraft hangars, accessory to a one- or two-family residence (See IBC Section 412.3)

Barns

Carports

Fences more than 6 feet (1829 mm) high

Grain silos, accessory to a residential occupancy

Greenhouses

Livestock shelters

Private garages

Retaining walls

Sheds

Stables

Tanks

Towers

SECTION 219 – R

A new definition for **RECREATIONAL FIRES** is added as follows:

RECREATIONAL FIRES. An outdoor fire burning materials other than rubbish where the fuel being burned is contained in an outdoor fireplace (chiminea) or pit, and has a total fuel area of 3 feet or less in diameter and 2 feet or less in height for pleasure, religious, ceremonial, warmth or similar purposes, using solid, natural gas or propane fuels.

SECTION 220 – S

A new definition for **SMOKE CONTROL, DEDICATED SYSTEMS** is added as follows:

SMOKE CONTROL, DEDICATED SYSTEMS. Dedicated smoke-control systems are intended for the purpose of smoke control only. They are separate systems of air moving and distribution equipment that do not function under normal building operating conditions. Upon activation, these systems operate specifically to perform the smoke-control function.

A new definition for **SMOKE CONTROL, NON-DEDICATED SYSTEMS** is added as follows:

SMOKE CONTROL, NON-DEDICATED SYSTEMS. Non-dedicated systems are those that share components with some other system(s) such as the building HVAC system. Activation causes the system to change its mode of operation to achieve the smoke-control objectives

Delete definition for **STANDPIPE SYSTEM, CLASS I** and substitute the definition from the **IBC § 902.1 for STANDPIPE SYSTEM, CLASSES OF.**

Delete definition for **STANDPIPE SYSTEM, CLASS II** and substitute the definition from the **IBC § 902.1 for STANDPIPE SYSTEM, CLASSES OF.**

Delete definition for **STANDPIPE SYSTEM, CLASS III** and substitute the definition from the **IBC § 902.1 for STANDPIPE SYSTEM, CLASSES OF.**

STANDPIPE SYSTEM, CLASSES OF. The IBC Standpipe Classes are substituted as follows:

Class I system. A system providing 2.5-inch (64 mm) hose connections to supply water for use by fire departments and those trained in handling heavy fire streams.

Class II system. A system providing 1.5-inch (38 mm) hose stations to supply water for use primarily by the building occupants or by the fire department during initial response.

Class III system. A system providing 1.5-inch (38 mm) hose stations to supply water for use by building occupants and 2.5-inch (64 mm) hose connections to supply a larger volume of water for use by fire departments and those trained in handling heavy fire streams.

Delete definition for **STANDPIPE SYSTEM** and substitute the definition from the IBC § 902.1 for **STANDPIPE SYSTEM, TYPES OF.**

STANDPIPE, TYPES OF. Standpipe Types are substituted as follows:

Automatic dry. A dry standpipe system, normally filled with pressurized air, that is arranged through the use of a device, such as dry pipe valve, to admit water into the system piping automatically upon the opening of a hose valve. The water supply for an automatic dry standpipe system shall be capable of supplying the system demand.

Automatic wet. A wet standpipe system that has a water supply that is capable of supplying the system demand automatically.

Manual dry. A dry standpipe system that does not have a permanent water supply attached to the system. Manual dry standpipe systems require water from a fire department pumper to be pumped into the system through the fire department connection in order to supply the system demand.

Manual wet. A wet standpipe system connected to a water supply for the purpose of maintaining water within the system but does not have a water supply capable of delivering the system demand attached to the system. Manual-wet standpipe systems require water from a fire department pumper (or the like) to be pumped into the system in order to supply the system demand.

Semiautomatic dry. A dry standpipe system that is arranged through the use of a device, such as a deluge valve, to admit water into the system piping upon activation of a remote control device located at a hose connection. A remote control activation device shall be provided at each hose connection. The water supply for a semiautomatic dry standpipe system shall be capable of supplying the system demand.

SECTION 221 – T

A new definition for **TUNNEL** is added as follows:

TUNNEL is any thoroughfare, public way, walkway, or mechanical/electrical service conduit of dimensions to permit human occupancy for the purpose of service or repair, or conveyance of goods and persons, and which is constructed below grade and cannot be classified as the basement or first story of a building.

15. **Section 901.4.2 Fire Apparatus Access Roads**, is amended and a 2nd paragraph added as follows:

901.4.2 Fire apparatus access roads. When required by the chief, approved signs or other approved notices, or both, shall be provided and maintained for fire apparatus access roads to identify such roads and prohibit the obstruction thereof.

Fire apparatus access roads shall be marked by placing approved signs at the start of the designated fire lane, one sign at the end of the fire lane and with signs at intervals of 100 feet along all designated fire lanes. Signs to be placed on both sides of an access roadway if needed to prevent parking on either side. Signs to be installed no higher than 10 feet or less than 6 feet from the surface of the roadway. The curb along the roadway, or if a curb is not present, then the edge of the pavement or the roadway, shall be painted with a red weather resistant paint.

16. **Section 901.4.3 Fire-protection equipment and fire hydrants:** is amended by adding two new sub-sections:

Section 901.4.3.1 Fire sprinkler equipment. A “FIRE SPRINKLER VALVE ROOM” sign shall be provided in minimum 2” letters in color contrasting with the background on the door leading to the fire sprinkler valves.

Section 901.4.3.2 Fire alarm equipment. A “FIRE ALARM CONTROL PANEL” sign shall be provided in minimum 2” letters in color contrasting with the background on the door leading to the fire alarm panels.

17. **A new Section 901.4.6 Directory Required,** is added as follows:

901.4.6 Directory Required. When required by the Chief, an approved permanent directory shall be provided.

18. **A new Section 901.7 Access Gates,** is added as follows:

901.7 Access Gates

901.7.1 Permit. A Fire Department permit is required to install a gate(s) or gate operator(s), which obstructs a fire department access road.

901.7.2 General. Fire apparatus access roads that are secured by gates shall comply with the specifications of the Fire Department.

Electronically controlled gates shall be provided with an approved vehicle detector/receiver system in accordance with rules and regulations specified by the Fire Department. Access gate systems shall be maintained operational at all times. When electronically controlled gates are out of service, they shall be secured in the open position until repairs are complete. Repairs shall be in accordance with original specifications.

EXCEPTION: When approved by the Chief, electronically controlled gates that are manned on a 24-hour basis.

When required by the Chief, the installing contractor or the owner of the property shall provide the Fire Department transmitter(s) or approved alternative, without cost to the Fire Department.

The Chief may provide transmitter(s), at no cost to the Fire Department, to local law enforcement agencies and/or an ambulance service for use in emergencies.

901.7.3 Existing facilities. All existing facilities with electronically controlled gates installed across access roads shall comply with Fire Department guidelines. Noncomplying gates shall be secured in the open position in a manner approved by the Fire Department.

901.7.4 Plans and Specifications. Three sets of plans and specifications for fire apparatus access road gates shall be submitted for review and approval prior to construction. Included in the submittal shall be the following information:

1. Site plan with north arrow, roadway and gate dimensions.
2. Location of underground roadway detector loop.
3. Manufacturers' specification sheets detailing the voltage, current, radio frequency, power cable and coding for the proposed system.
4. Contractors statement of compatibility with existing installations.
5. Detailed vicinity map.

901.7.5 Operational Testing. An operational test shall be requested by the installer and conducted prior to placing the system into operation to establish that the final installation complies with this code, the specified design, and is functioning properly.

901.7.6 Width. The minimum gate width shall be not less than 20 feet at the gate opening. The fire apparatus access road width may be reduced to not less than 20 feet for a maximum of 40 feet on either side of the gate opening.

19. **Section 902.1 General**, is amended by deleting the second paragraph as follows:

902.1 General. Fire department access roads shall be provided and maintained in accordance with Sections 901 and 902.

20. **Section 902.2.1 Required access**, is amended as follows:

902.2.1 Required access. Fire apparatus access roads shall be provided in accordance with Sections 901 and 902.2 for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction when any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet (45 720 mm) from fire apparatus access as measured by an approved route around the exterior of the building or facility. See also Section 902.3 for personnel access to buildings.

EXCEPTIONS:

1. When buildings are completely protected with an approved automatic fire sprinkler system, the provisions of Sections 902.2.1 and 902.2.2 may be modified by the chief.
2. When access roads cannot be installed due to location on property, topography, waterways, nonnegotiable grades or other similar conditions, the chief is authorized to require additional fire protection as specified in Section 1001.9.
3. When Group R, Division 3, Occupancies are completely protected with an approved automatic sprinkler, the requirements of Sections 902.2.1 and 902.2.2 may be modified by the chief.

More than one fire apparatus road shall be provided when it is determined by the chief that access by a single road might be impaired by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

Approved secondary access shall be provided for 20 or more dwelling units, road(s) with dead-ends or with a single point of access in excess of 600 ft, and for commercial, industrial, and multi-family residential developments.

For high-piled combustibile storage, see Section 8102.6.1.

For required access during construction, alteration or demolition of a building, see Section 8704.2.

21. **Section 902.2.2.1 Dimensions**, the 1st paragraph is amended as follows:

902.2.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 24 feet provided no parking is allowed, not less than 32 feet if parallel parking is allowed on one side, and not less than 40 feet if parallel parking is allowed on both sides. Vertical clearance shall be not less than 13 feet 6 inches.

EXCEPTIONS:

1. When approved by the Chief, vertical clearance may be reduced, provided such reduction does not impair access by fire apparatus and approved signs are installed and maintained, indicating the established vertical clearance.
2. Vertical clearances or widths shall be increased when, in the opinion of the Chief, vertical clearances or widths are not adequate to provide fire apparatus access.
3. The minimum width of a gate(s) opening within a fire apparatus access road, including fire lanes shall be at least 20 feet.

Group R, Division 3 Residential Subdivisions. For Group R, Division 3 Residential Subdivisions, the minimum width of a fire apparatus access road is 36 feet, measured face of curb to face of curb (i.e., 20 feet driving lane with 8 feet of parking on each side).

22. **Section 902.2.2.2 Surface**, is amended as follows:

902.2.2.2 Surface. Fire apparatus roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be provided with an approved asphalt, concrete, or similar type of surface so as to provide all-weather driving capabilities.

EXCEPTION: Asphalt, concrete, or similar type of surface is not required during the time a building is being constructed, provided that an approved road base is provided.

23. Section **902.2.2.3 Turning radius**, is amended as follows:

902.2.2.3 Turning radius. The turning radius of a fire apparatus access road shall be no less than 52 feet outside and 28 feet inside turning radius.

24. Section **902.2.2.6 Grade**, is amended as follows:

902.2.2.6 Grade. The gradient for a fire apparatus access road shall not exceed 12 percent. Angles of approach and angles of departure shall not exceed 6 percent for 25 feet prior to or after the grade change.

EXCEPTION: The gradient for a fire apparatus road(s) within the City of Henderson's Hillside Ordinance.

25. A new Section **902.2.4.3 Speed Bumps and Speed Humps**, is added as follows:

902.2.4.3 Speed Bumps and Speed Humps. Speed bumps and/or speed humps shall not be permitted within the required width of fire apparatus access roads.

EXCEPTION: Speed humps are allowed when approved by the Chief. The location(s), the number permitted, and the design of the speed hump(s) shall meet the approval of the Chief and the Public Works Department.

26. Section **902.4 Key Boxes**, is amended as follows:

902.4 Key Boxes. When access to or within a structure or an area is unduly difficult because of secured openings or where immediate access is necessary for life-saving or firefighting purposes, the chief is authorized to require a key box to be installed in an accessible location.

Buildings with **required monitored** fire sprinkler or fire alarm systems, or buildings not equipped with an exterior means of electrical disconnect, shall be provided with an approved key box.

The key box shall be of an approved type and shall contain keys to gain necessary access as required by the chief.

902.4.2 Key Box Specification. All buildings with fire sprinkler or fire alarm systems shall be provided with one key box located as follows:

- Adjacent to the Fire Command Center, if applicable OR
- Adjacent to the exterior entrance door to the Sprinkler Riser Room OR
- Adjacent to the main entry for buildings with fire alarm systems or sprinklered buildings without riser rooms.

Key boxes shall be installed within 5 feet to 6½ feet to the top of the box above finished grade. Every exterior or interior door utilized to access a fire alarm panel; main sprinkler control valve(s) and fire pump(s) having a lock shall have its key placed into the key box.

27. Section **903.2 Required Water Supply for Fire Protection**, is amended by adding a 2nd paragraph as follows:

All hydrants used to calculate the required fire flow shall be within 750 feet of the structure being protected as measured along the approved fire apparatus access road.

28. **Section 1001.3 Plans**, is amended as follows:

1001.3 Plans. Complete plans and specifications for alarm systems; fire-extinguishing systems, including automatic sprinklers and wet/dry standpipes; halon systems, smoke-control systems and other special types of automatic fire extinguishing systems; basement pipe inlets; and other fire protection systems and appurtenances thereto shall be submitted to the fire department for review and be approved prior to system installation.

Approved plans shall be kept readily available on the job site.

All high rise, covered mall and atrium buildings, in addition to other major facilities as determined by the Chief, shall have a Fire and Life Safety Package Report submitted to the Fire Prevention Bureau and be approved prior to construction.

Wet signature of the licensee (contractors Master or Qualified Employee) shall be on plans submitted as per Nevada Administrative Code, Nevada Revised Statute and Nevada Blue Book.

On and after January 1, 2003, a designer of fire sprinkler and alarm systems must hold a Level II certification from the National Institute for Certification in Engineering Technologies (NICET) or an equivalent certification.

The designers printed name and certificate number shall follow the signature. [NAC 477.300.8]

29. **Section 1001.3.2 Plans, Alarm Systems**, is amended as follows:

1001.3.2 Plans, Alarm Systems. Complete plans and specifications for alarm systems shall include, but not be limited to the requirements as specified in Section 1006.1.1 as amended.

30. **Section 1001.4 Installation Acceptance Testing**, is amended as follows:

1001.4 Installation Acceptance Testing. Fire alarm systems; fire hydrant systems; fire-extinguishing systems, standpipes, smoke-control systems and other fire-protection systems and appurtenances thereto shall meet the approval of the fire department as to installation and location and shall be subject to such acceptance tests as required by the chief. All tests shall be conducted at the expense of the owner or the owner's representative. Condition of acceptance of halon and clean agent systems shall be satisfactory passage of a test conducted in accordance with nationally recognized standards prior to final acceptance of the system.

Fire alarm and detection systems shall be tested in accordance with NFPA 72 and nationally recognized standards.

31. **Section 1001.5.2 Inspection and testing**, is amended as follows:

1001.5.2 Inspection and testing. The chief is authorized to require periodic inspection and testing for fire sprinkler systems, fire hydrant systems, standpipe systems, fire alarm systems, portable fire extinguishers, smoke and heat ventilators, smoke-removal systems and other fire-protection or fire-extinguishing systems or appliances.

Automatic fire-extinguishing systems shall be inspected and tested at least annually. See NFPA 25. Fire alarm systems shall be inspected and tested at least at frequencies specified in NFPA 72. Standpipe systems shall be inspected and tested at least every five years.

EXCEPTIONS:

1. Automatic fire-extinguishing equipment associated with commercial cooking operations when in compliance with Section 1005.
2. Systems in high-rise buildings when in compliance with Section 1001.5.4.

Reports of inspections and tests shall be maintained on the premises and made available to the chief when requested.

32. A new **Section 1001.5.2.1 Fire Protection Systems**, is added as follows:

1001.5.2.1 Fire Protection Systems. All Fire Protection Systems shall be maintained in accordance with the provisions of the Nevada State Fire Marshal's Office Regulations. A copy of said inspection shall be mailed within 48 hours, to the Fire Prevention Bureau only when any deficiency of the system or violation of the Fire Code is noted. In the event a service/maintenance contract is canceled or not renewed, the Fire Prevention Bureau shall be notified by the service company within 24 hours.

33. A new **Section 1001.5.2.2 Private Fire Hydrants**, is added as follows:

1001.5.2.2 Private Fire Hydrants. All private fire hydrant systems shall be serviced to the satisfaction of the Fire Department on a yearly basis. Service records shall be kept on-site and shall be readily available to the inspection authority. A copy of said service record shall be mailed within 48 hours, to the Fire Prevention Bureau when any deficiency of the system or violation of the Fire Code is noted.

34. **Section 1001.5.3 Systems out of service**, is amended as follows:

1001.5.3 Systems out of service. The Fire Department's Dispatch Center shall be notified of the location when any required fire-protection system is out of service and on restoration of service.

35. **Section 1001.5.3.1 Problematic systems and systems out of service**, is amended as follows:

1001.5.3.1 Problematic systems and systems out of service. In the event of a failure of a fire protection system or recurring false or nuisance alarm activation's, the Chief is authorized to require the building owner or occupant to provide Fire Watch personnel until the system is repaired. Such individuals shall be provided with at least one approved means for notification of the fire department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires.

36. **Section 1001.5.5 Smoke-control Systems**, is amended as follows:

1001.5.5 Smoke-control systems. Mechanical smoke-control systems, such as those in high-rise buildings, buildings containing atria, covered mall buildings and mechanical ventilation systems utilized in smoke proof enclosures and for smoke-removal systems utilized in high-piled combustible storage occupancies, shall be maintained in an operable condition at all times. A written record shall be maintained and shall be made available to the inspection authority.

Inspection and periodic testing of existing smoke control systems shall be performed in accordance with the Southern Nevada Fire Code Committee's Uniform Guideline for smoke control testing & recertification.

37. **Section 1001.7.2 Clear space around hydrants**, is amended as follows:

1001.7.2 Clear space around hydrants and fire department connections (FDC). A 3-foot (914.4 mm) clear space shall be maintained around the circumference of fire hydrants except as otherwise required or approved. Fire Department connection(s) shall be visible from the approved fire apparatus access road and accessible in a direct and unobstructed approved route.

38. A new **Section 1001.7.5 Fire Department Connection Marking and Obstruction** is added as follow:

Section 1001.7.5 Fire Department Connection Marking and Obstruction. The FDC shall not be closer than 3 feet horizontally to any door or window opening. Red curb shall be provided and stenciled "NO PARKING – FIRE LANE". A suitable coat of industrial grade enamel (safety red) shall be applied to 10 feet of curb; 5 feet on each side of the FDC, or other approved methods, when approved by the Chief.

39. **Section 1001.9 Special Hazards**, is amended as follows:

1001.9 Special Hazards. For occupancies of an especially hazardous nature or where special hazards exist in addition to the normal hazard of the occupancy, or where access for fire apparatus is unduly difficult, the chief is authorized to require additional safeguards consisting of additional fire appliance units, more than one type of appliance, or special systems suitable for the protection of the hazard involved. Such devices or appliances can consist of automatic fire alarm systems, automatic sprinkler or water spray systems, standpipe and hose, fixed or portable fire extinguishers, suitable fire blankets, breathing apparatus, manual or automatic covers, carbon dioxide, foam, halogenated or dry chemical or other special fire-extinguishing systems. Where such systems are provided, they shall be designed and installed in accordance with the nationally recognized standards. See Article 90 and Section 101.3.

40. A new **Section 1001.11 Fire Command Center**, is added as follows:

1001.11 Fire Command Center. A Fire Command Center shall be provided when required by the Chief or Building Official. Location, size, accessibility and design of the Fire Command Center shall be approved by the Fire Department.

1001.11.1 Features. The location and accessibility of the fire command center shall be separated from the remainder of the building by not less than a two (2)-hour fire-resistance-rated fire barrier with a door opening directly to the exterior of the building. The room shall be a minimum of 150 square feet with a minimum dimension of 10 feet. A layout of the fire command center and all features required by the section to be contained therein shall be submitted for approval prior to installation. The fire command center shall comply with NFPA 72 and shall contain the following features:

1. The emergency voice/alarm communication system unit.
2. The fire department communications unit.
3. Fire detection and alarm system annunciator unit.
4. Annunciator visually indicating the location of the elevators and whether they are operational.
5. Status indicators and controls for air-handling systems.
6. The fire-fighter's control panel required by IBC Section 909.16 for smoke control systems installed in the building.
7. Controls for unlocking stairway doors simultaneously.
8. Sprinkler valve and water-flow detector display panels.
9. Emergency and standby power status indicators.
10. A telephone for fire department use with direct access to the public telephone system.
11. Fire pump status indicators.
12. Current building plans, fire protection system(s) plans, the approved Fire & Life Safety Report, fire emergency preplans for said complex, and manufacture's operation manuals for all systems.
13. A new work table of a minimum size of three (3) feet by seven (7) feet capable of holding plans in an open position.
14. Generator supervision devices, and manual start.
15. Public address system, where specifically required by other sections of this code.
16. A new white board of a minimum size of three (3) feet by four (4) feet capable of easy erasure, with a marking device and an erasure attached.
17. Separate shunt trip switches for normal and emergency power.

41. **Section 1002.1 General**, is amended as follows:

1002.1 General. Portable fire extinguishers shall be installed in occupancies and locations as set forth in this code and as required by the chief. Portable fire extinguishers shall be in accordance with NFPA 10.

Section 1002.1.1 Multi-family. Fire extinguishers shall be provided in all multi-family residential occupancies. Fire extinguishers protecting dwelling units in apartments or condominium buildings may be located inside each individual unit or in the common area.

42. **Section 1003.1.1 General**, is amended as follows:

1003.1.1 General. Fire-extinguishing systems shall be installed in accordance with the Building Code and Section 1003.

Fire hose threads used in connection with fire-extinguishing systems shall be national standard hose thread or as approved.

The location of fire department hose connections shall be approved.

In buildings used for high-piled combustible storage, fire protection shall be in accordance with Article 81.

In storage occupancies and areas designated for storage in all other occupancies, the fire-extinguishing system shall be designed and installed with a minimum density required for Class IV Commodity per NFPA 13, to protect to the available storage height.

43. A new **Section 1003.1.1.1 Fire Extinguishing Systems, Riser Room Requirements**, is added as follows:

1003.1.1.1 Fire Extinguishing Systems, Riser Room Requirements. All buildings equipped with an automatic fire sprinkler system shall be provided with a riser room(s). Riser room(s) shall have a one-hour separation from the remainder of the building, an exterior door, and contain the main riser control valves. Exterior door shall be labeled with the wording “Fire Sprinkler Riser Room”.

EXCEPTIONS:

1. When the riser control valves consist of either exterior wall control valve(s) or a post-indicating valve.
2. When approved by the Chief, riser room(s) in Type 1, A or B construction are not required to have an exterior door.

44. **Section 1003.1.2 Standards**, is amended as follows:

1003.1.2 Standards. Fire-extinguishing systems shall comply with the applicable NFPA Standards **as amended**.

EXCEPTIONS:

1. Automatic fire-extinguishing systems not covered by the Building Code shall be approved and installed in accordance with approved standards.
2. Automatic sprinkler systems may be connected to the domestic water-supply main when approved by the Chief, provided the domestic water supply is of adequate pressure, capacity and sizing for the combined domestic and sprinkler requirements. In such case, the sprinkler system connection shall be made between the public water main or meter and the building shutoff valve, and there shall not be intervening valves or connections. The fire department connection may be omitted when approved.

~~45. A new **Section 1003.2.1.1 Alternative protection**, is added as follows: **Section 1003.2.1.1 Alternative protection**, is deleted:~~

~~**1003.2.1.1 Alternative protection.** Alternative automatic fire-extinguishing systems complying with Section 1005 shall be permitted in lieu of automatic sprinkler protection where recognized by the applicable standard and approved by the code official. [IBC § 903.1.1]~~

46. A new **Section 1003.2.1.2 Residential systems**, is added as follows:

1003.2.1.2 Residential systems. Unless specifically allowed by the Building code, residential sprinkler systems installed in accordance with **NFPA 13D or NFPA 13R** shall not be recognized for the purposes of exceptions or reductions permitted by other requirements of the Building code. [IBC § 903.1.2]

47. **Section 1003.2.2 All occupancies except Group R, Division 3 and Group U Occupancies**, is deleted and replaced with the following:

1003.2.2 Additional Local Requirements. The following local requirements are in addition to the requirements listed in Sections 1003.2.1 through 1003.2.15. Sprinkler systems installed because of this section, and not required by other sections of the code, may utilize any sprinkler substitution allowed by the Building Code. [IBC § 903.1.3 as amended]

1. If any fire area in a building or structure is provided with fire sprinklers, whether required or not, all fire areas in the building or structure shall be provided with fire sprinklers.

EXCEPTIONS:

1. If a fire area is separated from other fire areas by a listed four-hour rated firewall with no openings.
2. Special Hazard Areas may be fire sprinklered without requiring additional fire sprinklers, when approved by the Code Official.
2. A sprinkler system shall be provided in any building or structure of 10,000 square feet or greater.
EXCEPTION: Buildings separated into areas of 10,000 square feet or less by firewalls constructed in accordance with IBC Section 705.
3. An addition to any existing non-sprinklered building or structure which expands the total area to 10,000 square feet or greater shall conform to item #1 or #2 above.
4. To correlate with the Nevada Revised Statutes (NRS 477.150); All buildings which are erected in the State after January 19, 1984 and which are more than 55 feet above or below street level or more than two stories, including any additional height incurred by usable floor space within a building, above grade at any point, must be equipped throughout with approve automatic sprinkler systems meeting the design criteria of National Fire Protection Association Standard 13.

48. **Section 1003.2.3 Group A Occupancies, § 1003.2.3.1 through § 1003.2.3.5 deleted and replaced is amended** as follows:

1003.2.3 Group A. An automatic sprinkler system shall be provided throughout buildings and portions thereof used as Group A occupancies as provided in this section. The automatic sprinkler system shall be provided throughout the floor area where the Group A occupancy is located, and in all floors between the Group A occupancy and the level of exit discharge. [IBC § 903.2.1]

1003.2.3.1 Group A-1. An automatic sprinkler system shall be provided throughout a fire area containing a Group A-1 occupancy where one of the following conditions exists:

1. The fire area exceeds ~~12,000~~ **10,000** 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 the level of exit discharge.
4. The fire area contains a multi-theater complex.

1003.2.3.2 Group A-2. An automatic sprinkler system shall be provided throughout a fire area containing a Group A-2 occupancy where one of the following conditions exists:

1. The fire area exceeds 5,000 square feet (465 m²).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than the level of exit discharge.

1003.2.3.3 Group A-3. An automatic sprinkler system shall be provided throughout a fire area containing a Group A-3 occupancy where one of the following conditions exists:

1. The fire area exceeds ~~12,000~~ **10,000** 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 the level of exit discharge.

EXCEPTION: Areas used exclusively as participant sports areas where the main floor area is located at the same level as the level of exit discharge of the main entrance and exit.

1003.2.3.4 Group A-4. An automatic sprinkler system shall be provided throughout a fire area containing a Group A-4 occupancy where one of the following conditions exists:

1. The fire area exceeds ~~12,000~~ **10,000** 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 the level of exit discharge.

EXCEPTION: Areas used exclusively as participant sport areas where the main floor area is located at the same level as the level of exit discharge of the main entrance and exit.

1003.2.3.5 Group A-5. An automatic sprinkler system shall be provided in concession stands, retail areas, press boxes, and other accessory use areas in excess of 1,000 square feet (93 m²).

49. **Section 1003.2.4 Group E Occupancies**, is ~~deleted and replaced~~ **amended** as follows:

1003.2.4 Group E. An automatic sprinkler system shall be provided throughout all fire areas containing Group E Occupancies where one of the following conditions exist: [IBC § 903.2.2 as amended]

1. An occupant load of 50 or more; or
2. Any portion below the level of exit discharge; or
3. Rooms used for kindergarten, first or second-grade pupils or for child day care purposes, located above or below the first story.

EXCEPTION: Where each classroom has at least one exterior exit door at ground level.

50. **Section 1003.2.5 Group F Occupancies**, is ~~deleted and replaced~~ **amended** as follows:

1003.2.5 Group F-1. An automatic sprinkler system shall be provided throughout all buildings where the fire area containing a Group F-1 occupancy exceeds ~~12,000~~ **10,000** square feet (1115 m²), or where more than three stories in height, or where the combined fire area on all floors, including mezzanines, exceeds 24,000 square feet (2230 m²). [IBC § 903.2.3]

1003.2.5.1 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 which generate finely divided combustible waste or which use finely divided combustible materials. [IBC § 903.2.3.1]

51. **Section 1003.2.6 Group H Occupancies**, is ~~deleted and replaced~~ **amended** as follows:

1003.2.6 Group H. Automatic sprinkler systems shall be provided in high-hazard occupancies as required in Sections 1003.2.6.1 through 1003.2.6.3. [IBC § 903.2.4]

1003.2.6.1 General. An automatic sprinkler system shall be installed in Group H occupancies. [IBC § 903.2.4.1]

1003.2.6.2 Group H-5. An automatic sprinkler system shall be installed throughout buildings containing Group H-5 occupancies. The design of the sprinkler system shall not be less than that required by this code for the occupancy hazard classifications in accordance with Table 1003.2.6.2.

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. [IBC § 903.2.4.2]

**TABLE 1003.2.6.2
GROUP H-5 SPRINKLER DESIGN CRITERIA**

LOCATION	OCCUPANCY HAZARD CLASSIFICATION
Fabrication areas	Ordinary Hazard Group 2
Service corridors	Ordinary Hazard Group 2
Storage rooms without dispensing	Ordinary Hazard Group 2
Storage rooms with dispensing	Extra Hazard Group 2
Corridors	Ordinary Hazard Group 2

1003.2.6.3 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). [IBC § 903.2.4.3]

52. Section 1003.2.7 Group I Occupancies, is ~~deleted and replaced~~ **amended** as follows:

1003.2.7 Group I. An automatic sprinkler system shall be provided throughout buildings with a Group I fire area. [IBC § 903.2.5 as amended]

53. Section 1003.2.8 Group M Occupancies, is ~~deleted and replaced~~ **amended** as follows:

1003.2.8 Group M. An automatic sprinkler system shall be provided throughout buildings where the fire area containing a Group M occupancy exceeds ~~12,000~~ **10,000** square feet (1115 m²), or where more than ~~three~~ **two** stories in height, or where the combined fire area on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²). [IBC § 903.2.6]

54. Section 1003.2.9 Group R, Division 1 Occupancies, is ~~deleted and~~ replaced as follows:

1003.2.9 Group R Occupancies

1003.2.9.1 Group R-1. An automatic sprinkler system installed in accordance with Section 1003.1.2 shall be provided throughout buildings with a Group R-1 fire area. [IBC § 903.2.7 as amended]

1003.2.9.2 Group R-2. An automatic sprinkler system installed in accordance with Section 1003.1.2 shall be provided throughout buildings with a Group R-2 fire area where more than two stories in height, including basements, or where having more than 16 dwelling units [IBC § 903.2.8 as amended]

1003.2.9.3 Group R-3. An automatic sprinkler system installed in accordance with Section 1003.1.2 shall be provided throughout buildings with a Group R-3 fire area when fire department access or available fire flow dictate the need for such systems.

1003.2.9.4 Group R-4. An automatic sprinkler system installed in accordance with Section 1003.1.2 shall be provided throughout buildings with a Group R-4 fire area. [IBC § 903.2.9 as amended]

55. A new Section 1003.2.10 Group S-1, is added as follows:

1003.2.10 Group S-1. An automatic sprinkler system shall be provided throughout all buildings where the fire area containing a Group S-1 occupancy exceeds ~~12,000~~ **10,000** square feet (1115 m²), or where more than ~~three~~ **two** stories in height, or where the combined fire area on all floors, including mezzanines, exceeds 24,000 square feet (2230 m²). [IBC § 903.2.10]

1003.2.10.1 Repair garages. An automatic sprinkler system shall be provided throughout all buildings used as repair garages in accordance with IBC Section 406.6 as follows: [IBC § 903.2.10.1 as amended]

1. Buildings two or more stories in height, including basements, with a fire area containing a repair garage exceeding 10,000 square feet (930 m²).
2. One-story buildings with a fire area containing a repair garage exceeding 10,000 square feet (930 m²).
3. Buildings with a repair garage in the basement.
4. Buildings in which repair work such as body and fender work, work where fuel may be released, welding, open flame or other similar activities, with a fire area exceeding 3,000 square feet.

1003.2.10.2 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 fire sprinkler system in accordance with Section 1003.1.2. [IBC § 903.2.10.2]

1003.2.10.3 Mini Storage Facilities. An automatic sprinkler system shall be provided throughout all buildings used as mini storage where the Fire Area exceeds 2,500 square feet (279 m²), which is not separated by firewalls constructed in accordance with IBC Section 705. [IBC § 903.2.10.3 as amended]

56. A new **Section 1003.2.11 Group S-2**, is amended as follows:

1003.2.11 Group S-2. An automatic sprinkler system shall be provided throughout buildings classified as an enclosed parking garages in accordance with IBC Section 406.4 or where located beneath other groups. [IBC § 903.2.11]

EXCEPTION: Enclosed parking garages located beneath Group R-3 occupancies as applicable in Section 101.2.

1003.2.11.1 Commercial parking garages. An automatic sprinkler system shall be provided throughout buildings used for storage of commercial trucks or buses where the fire area exceeds 5,000 square feet (464 m²).

57. A new **Section 1003.2.12 All occupancies except Groups R-3 and U**, is added as follows:

1003.2.12 All occupancies except Groups R-3 and U. An automatic sprinkler system shall be installed in the locations set forth in Sections 1003.2.12.1 through 1003.2.12.1.3. [IBC § 903.2.12]

EXCEPTION: Group R-3 as applicable in IBC Section 101.2 and Group U.

1003.2.12.1 Stories and basements without openings. An automatic sprinkler system shall be installed throughout every story or basement of all buildings where the floor area exceeds 1,500 square feet (139.4 m²) and where there is not provided at least one of the following types of exterior wall openings: [IBC § 903.2.12.1]

1. Openings below grade that lead directly to ground level by an exterior stairway complying with IBC Section 1003.3.3 or an outside ramp complying with IBC Section 1003.3.4. Openings shall be located in each 50 linear feet (15 240 mm), or fraction thereof, of exterior wall in the story on at least one side.
2. Openings entirely above the adjoining ground level totaling at least 20 square feet (1.86 m²) in each 50 linear feet (15 240 mm), or fraction thereof, of exterior wall in the story on at least one side.

1003.2.12.1.1 Opening dimensions and access. Openings shall have a minimum dimension of not less than 30 inches (762 mm). Such openings shall be accessible to the fire department from the exterior and shall not be obstructed in a manner that firefighting or rescue cannot be accomplished from the exterior. [IBC § 903.2.12.1.1]

1003.2.12.1.2 Openings on one side only. Where openings in a story are provided on only one side and the opposite wall of such story is more than 75 feet (22,860 mm) from such openings, the story shall be equipped throughout with an approved automatic sprinkler system, or openings as specified above shall be provided on at least two sides of the story. [IBC § 903.2.12.1.1]

1003.2.12.1.3 Basements. Where any portion of a basement is located more than 75 feet (22,860 mm) from openings required by Section 903.2.12.1, the basement shall be equipped throughout with an approved automatic sprinkler system. [IBC § 903.2.12.1.3]

1003.2.12.2 Rubbish and linen chutes. An automatic sprinkler system shall be installed at the top of rubbish and linen chutes and in their terminal rooms. Chutes extending through three or more floors shall have additional sprinkler heads installed within such chutes at alternate floors. Chute sprinklers shall be accessible for servicing. [IBC § 903.2.12.2]

1003.2.12.3 Buildings over 55 feet in height. An automatic sprinkler system shall be installed throughout buildings with a floor level having an occupant load of 30 or more that is located 55 feet (16,764 mm) or more above the lowest level of fire department vehicle access. [IBC § 903.2.12.3]

EXCEPTIONS:

1. ~~Airport Control Towers~~
2. **Open parking structures** in accordance with IBC Section 406.3.
3. Low-hazard special occupancies in accordance with IBC Section 503.1.2.

1003.2.12.4 High-piled storage. An automatic sprinkler system shall be provided in accordance with the Article 81 in all buildings where storage of materials is in high-piled or rack storage arrays.

58. A new **Section 1003.2.13 During construction**, is added as follows:

1003.2.13 During construction. Automatic sprinkler systems required during construction, alteration and demolition operations shall be provided in accordance with the *Fire Code*. [IBC § 903.2.12.3]

59. A new **Section 1003.2.14 Other hazards**, is added as follows:

1003.2.14 Other hazards. Automatic sprinkler protection shall be provided for the hazards indicated in Sections 1003.2.14.1 and 1003.2.14.2. [IBC § 903.2.14]

1003.2.14.1 Ducts conveying hazardous exhausts. Where required by the *Uniform Mechanical Code*, automatic sprinklers shall be provided in ducts conveying hazardous exhaust, or flammable or combustible materials. [IBC § 903.2.14.1]

EXCEPTION: Ducts in which the largest cross-sectional diameter of the duct is less than 10 inches (254 mm).

1003.2.14.2 Commercial cooking operations. An automatic sprinkler system shall be installed in commercial kitchen exhaust hood and duct system where an automatic sprinkler system is used to comply with Section 1005. [IBC § 903.2.14.2]

60. A new **Section 1003.2.15 Other required suppression systems**, is added as follows:

1003.2.15 Other required suppression systems. In addition to the requirements of Section 1003.2, the provisions indicated in Table 1003.2.15 also require the installation of a suppression system for certain buildings and areas. [IBC § 903.2.15]

**TABLE 1003.2.15
ADDITIONAL REQUIRED SUPPRESSION SYSTEMS**

IBC SECTION	SUBJECT
402.8	Covered malls
403.2,403.3	High-rise buildings
404.3	Atriums
405.3	Underground structures
407.5	Group I-2
410.6	Stages
411.4	Special amusement buildings
412.2.5, 412.2.6	Aircraft hangers
415.7.2.4	Group H-2
416.4	Flammable finishes
417.4	Drying rooms
507	Unlimited area buildings

61. **Section 1003.3.1 Sprinkler system Monitoring and Alarms, Where required**, is amended as follows:

1003.3.1 Where required. All valves controlling the water supply for automatic sprinkler systems and water-flow switches on all sprinkler systems shall be electrically monitored for integrity where the number of sprinklers is:

1. Twenty or more in Group I, Divisions 1 and 2 Occupancies.
2. One hundred or more in all other occupancies.

Valve monitoring, water-flow alarm, and system trouble signals shall be distinctly different and shall be automatically transmitted to an approved supervising station (central, remote, or proprietary) or, when approved by the Chief, shall sound an audible signal at a constantly attended location.

EXCEPTIONS:

1. Underground key or hub valves in roadway boxes provided by the municipality or public utility need not be monitored;
2. Underground key or hub valves in roadway boxes provided with approved lock-out caps; and
3. Backflow prevention devices which are chained and locked in the open position. The lock(s) shall be an approved type.

Occupancies that are not electrically monitored shall provide an approved identification sign below each outside horn and strobe which reads WHEN ALARM SOUNDS - CALL 9-1-1. This sign shall be of durable material with permanent lettering having a 2" minimum height on a contrasting background.

Multistory facilities shall provide zone annunciation on a floor by floor basis.

In occupancies provided with a supervised sprinkler system, the following three distinctly different alarm signals shall be transmitted to an approved supervising station:

1. Water Flow Alarm
2. Valve Tamper Alarm
3. System Trouble

The supervising station shall retransmit to the Fire Department only the following two distinctly different alarms.

1. Water Flow Alarm
2. Valve Tamper Alarm

~~**EXCEPTION:** The separate interior alarm is not required when the sprinkler water flow switch activates the building fire alarm system notification appliances.~~

62. **Section 1003.3.2 Alarms**, is amended as follows:

1003.3.2 Alarms. An approved audible and visual notification device shall be provided on the exterior of the building in an approved location. An approved audible and visual sprinkler flow alarm to alert the occupants shall be provided in the interior of the building in a normally occupied location. Multi-tenant facilities shall provide approved audible and visual notification devices within each space.

EXCEPTION: The separate interior alarm is not required when the sprinkler water flow switch activates the building fire alarm system notification appliances.

63. **Section 1003.4 Permissible Sprinkler Omissions**, is amended as follows:

1003.4 Permissible Sprinkler Omissions, is amended by deleting sub-section # 5.

64. SECTION - STANDPIPES, is amended as follows:

1004.1 Installation Requirements.

1004.1 General. Standpipe systems shall be provided in new buildings and structures in accordance with this section. Fire hose threads used in connection with standpipe systems shall comply with NFPA 1963 or as otherwise approved and shall be compatible with fire department hose threads. The location of fire department hose connections shall be approved. In buildings used for high-piled combustible storage, fire protection shall be in accordance with the Article 81. [IBC § 905.1]

When approved by the Chief, hose is not required to be provided for Class II Standpipes or small hose stations.

1004.1.1 Valves. Standpipe systems shall be provided with automatic valves.

1004.1.2 Pressure. Standpipe systems shall be provided with a minimum pressure at all hose connections of not less than 127psi.

1004.1.3 Signage. In addition to all signage required by NFPA Standard 14, an approved architectural floor plan with room numbers shall be provided adjacent to each standpipe hose valve outlet. The plan shall graphically show the area reachable by 100 feet of hose. The floor plan shall include the following:

1. Standpipes and the distances between them.
2. Room numbers displayed on the appropriate spots on the floor plan.
3. All elevators.
4. All places of refuge (i.e., locations where firefighters need to check during emergencies).
5. All Key Box locations.
6. Smoke detector locations (i.e., smoke detector 1 is located outside room # 111).
7. All fire extinguisher and hose cabinet locations.
8. Reference points (i.e., you are here markers).
9. Total length of floors.

1004.2 Installation standards. Standpipe systems shall be installed in accordance with this section and NFPA 14. [IBC § 905.2]

1004.3 Required installations. Standpipe systems shall be installed where required by IBC Sections 905.3.1 through 905.3.6 and in the locations indicated in IBC Sections 905.4, 905.5 and 905.6. Standpipe systems are permitted to be combined with automatic sprinkler systems. [IBC § 905.3]

EXCEPTION: Standpipe systems are not required in Group R-3 occupancies. ~~as applicable in Section 101.2.~~

1004.3.1 Building height. Approved Class I standpipe systems shall be installed throughout buildings where the floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of the fire department vehicle access, or where the floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of fire department vehicle access. [IBC § 905.3.1 as amended]

~~**EXCEPTION:** Approved Class I standpipes are allowed in freestanding open parking garages where the highest floor is located not more than 30 feet above the lowest level of fire department vehicle access.~~

1004.3.2 Building area. In buildings exceeding 10,000 square feet (929 m²) in area per story, approved Class I standpipes shall be provided where any portion of the building's interior area is more than 200 feet (60,960 mm) of travel, vertically and horizontally, from the nearest point of fire department vehicle access. [IBC § 905.3.2 as amended]

1004.3.3 Covered mall buildings. A covered mall building shall be equipped throughout with a **Class I automatic wet standpipe system** where required by Section 1004.2. Covered mall buildings not required to be equipped with a standpipe system by Section 1004.2 shall be equipped with Class I ~~hose connections connected to a automatic wet standpipe~~ system sized to deliver a **minimum of 250 gallons per minute (946.4 L/min.)** at the most hydraulically remote outlet. **Hose connections shall be provided at each of the following locations:** [IBC § 905.3.4 as amended]

1. Within the mall at the entrance to each passageway or exit.
2. At each floor-level landing within enclosed stairways opening directly on the mall.
3. At exterior public entrances to the mall.

1004.3.4 Stages. Stages greater than 1,000 square feet in area (93 m²) shall be equipped with a Class III wet standpipe system with 1.5-inch and 2.5-inch (38 mm and 64 mm) hose connections on each side of the stage.

EXCEPTION: Where the building or area is equipped throughout with an automatic sprinkler system, the hose connections are allowed to be supplied from the automatic sprinkler system and shall have a flow rate of not less than that required by NFPA 14 for Class III standpipes.

1004.3.4.1 Hose and cabinet. The 1.5-inch (38 mm) hose connections shall be equipped with sufficient lengths of 1.5-inch (38 mm) hose to provide fire protection for the stage area. Hose connections shall be equipped with an approved adjustable fog nozzle and be mounted in a cabinet or on a rack.

1004.3.5 Underground buildings. Underground buildings shall be equipped throughout with a approved Class I standpipe system.

1004.4 Location of Class I standpipe hose connections. Class I standpipe hose connections shall be provided in all of the following locations: [IBC § 905.4]

1. In every required stairway, a hose connection shall be provided for each floor level above or below grade. Hose connections shall be located at an intermediate floor level landing between floors, unless otherwise approved by the building official.
2. On each side of the wall adjacent to the exit opening of a horizontal exit.
3. In every exit passageway at the entrance from the exit passageway to other areas of a building.
4. In covered mall buildings, adjacent to each exterior public entrance to the mall and adjacent to each entrance from an exit passageway or exit corridor to the mall.
5. Where the roof has a slope less than four units vertical in 12 units horizontal (33.3-percent slope), each standpipe shall be provided with a hose connection located either on the roof or at the highest landing of stairways with stair access to the roof. An additional hose connection shall be provided at the top of the most hydraulically remote standpipe for testing purposes.
6. Class I systems shall be provided with 2½ -in. (38.1-mm) hose connections so that all portions of each floor level of the building are within 130 ft (39.7 m) of a hose connection. Distances shall be measured along a path of travel originating at the hose connection utilizing 100 ft of hose, plus 30 ft of stream travel.

1004.4.1 Protection. Risers and laterals of Class I standpipe systems not located within an enclosed stairway or pressurized enclosure shall be protected by a degree of fire resistance equal to that required for vertical enclosures in the building in which they are located. [IBC § 905.4.1]

EXCEPTION: In buildings equipped throughout with an approved automatic sprinkler system, laterals that are not located within an enclosed stairway or pressurized enclosure are not required to be enclosed within fire resistance-rated construction.

1004.4.2 Interconnection. In buildings where more than one standpipe is provided, the standpipes shall be interconnected in accordance with NFPA 14. [IBC § 905.4.2]

1004.5 Location of Class II standpipe hose connections. Class II standpipe hose connections shall be accessible and shall be located so that all portions of the building are within 30 feet (9144 mm) of a nozzle attached to 100 feet (30 480 mm) of hose. [IBC § 905.5]

1004.5.1 Groups A-1 and A-2. In Group A-1 and A-2 occupancies with occupant loads of more than 1,000, hose connections shall be located on each side of any stage, on each side of the rear of the auditorium, on each side of the balcony and on each tier of dressing rooms. [IBC § 905.5.1]

1004.5.2 Protection. Fire-resistance-rated protection of risers and laterals of Class II standpipe systems is not required. [IBC § 905.5.2]

1004.5.3 Class II system 1-inch hose. A minimum 1-inch (25.4 mm) hose shall be permitted to be used for hose stations in light-hazard occupancies where investigated and listed for this service and where approved by the code official. [IBC § 905.5.3]

1004.6 Location of Class III standpipe hose connections. Class III standpipe systems shall have hose connections located as required for Class I standpipes in Section 1004.4 and shall have Class II hose connections as required in Section 1004.5. [IBC § 905.6]

1004.6.1 Protection. Risers and laterals of Class III standpipe systems shall be protected as required for Class I systems in accordance with Section 1004.4.1. [IBC § 906.6.1]

1004.6.2 Interconnection. In buildings where more than one Class III standpipe is provided, the standpipes shall be interconnected at the bottom. [IBC § 905.6.2]

1004.7 Cabinets. Cabinets containing fire-fighting equipment such as standpipes, fire hose, fire extinguishers or fire department valves shall not be blocked from use or obscured from view. [IBC § 905.7]

1004.7.1 Cabinet equipment identification. Cabinets shall be identified in an approved manner by a permanently attached sign with letters not less than 2 inches (51 mm) high in a color that contrasts with the background color, indicating the equipment contained therein. [IBC § 905.7.1]

EXCEPTIONS:

1. Doors not large enough to accommodate a written sign shall be marked with a permanently attached pictogram of the equipment contained therein.
2. Doors that have either an approved visual identification clear glass panel or a complete glass door panel are not required to be marked.

1004.7.2 Locking cabinet doors. Cabinets shall be unlocked. [IBC § 905.7.2]

EXCEPTIONS:

1. Visual identification panels of glass or other approved transparent frangible material that is easily broken and allows access.
2. Approved locking arrangements.
3. Group I-3.

1004.8 Dry standpipe. In buildings requiring standpipes, dry standpipes complying with NFPA 14 are permitted when, in the opinion of the building official, an approved water supply is not available or when the standpipe is subject to freezing. [IBC § 905.8]

1004.9 Valve supervision. Valves controlling water supplies shall be supervised in the open position so that a change in the normal position of the valve will generate a supervisory signal at the supervising station required by Section 1003.3. Where a fire alarm system is provided, a signal shall also be transmitted to the control unit. [IBC § 905.9]

EXCEPTIONS:

1. Valves to underground key or hub valves in roadway boxes provided by the municipality or public utility do not require supervision.
2. Valves locked in the normal position and inspected as provided in this code in buildings not equipped with a fire alarm system.

1004.10 During construction. Standpipe systems required during construction, alteration and demolition operations shall be provided in accordance with Article 87. [IBC § 905.10]

65. **Table 1004.A Standpipe Required Systems**, is amended by adding a new item 7 as follows:

OCCUPANCY	NONSPRINKLERED BUILDING ¹		SPRINKLERED BUILDING ^{2,3}	
	Standpipe Class	Hose Requirement	Standpipe Class	Hose Requirement
7. In buildings exceeding 10,000 square feet (929 m ²) in area per story, where any portion of the building's interior area is more than 200 feet (60 960 mm) of travel, vertically and horizontally, from the nearest point of fire department vehicle access.	I	NO	I	NO

66. **SECTION 1005 PROTECTION OF COMMERCIAL COOKING SYSTEMS** is deleted and replaced as follows:

SECTION 1005 — ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS

1005.1 General. Automatic fire-extinguishing systems, other than automatic sprinkler systems, shall be designed, installed, inspected, tested and maintained in accordance with the provisions of this Section ~~and~~, the applicable referenced standards, and the applicable sections of IBC § 904.

1005.2 Where required. Automatic fire-extinguishing systems installed as an alternative to the required automatic sprinkler systems of Section 1003 shall be approved ~~by the fire chief~~. Automatic fire-extinguishing systems shall not be considered alternatives for the purposes of exceptions or reductions permitted by other requirements of this code. [IBC § 904.2]

1005.2.1 Hood system suppression. Each required commercial kitchen exhaust hood and duct system required by this Code or the *Mechanical Code* to have a Type I hood shall be protected with an approved automatic fire-extinguishing system installed in accordance with this code. [IBC § 904.2.1]

1005.3 Installation. Automatic fire-extinguishing systems shall be installed in accordance with this Section. [IBC § 904.3]

1005.3.1 Electrical wiring. Electrical wiring shall be in accordance with the *National Electrical Code*. [IBC § 904.3.1]

1005.3.2 Actuation. Automatic fire-extinguishing systems shall be automatically actuated and provided with a manual means of actuation in accordance with Section 1005.11.1. [IBC § 904.3.2]

1005.3.3 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. [IBC § 904.3.3]

1005.3.4 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 pose 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 warn occupants once agent discharge has begun. Audible signals shall be in accordance with Section 1006.3.3.8. [IBC § 904.3.4]

1005.3.5 Monitoring. Where a building fire alarm system is installed, automatic fire-extinguishing systems shall be monitored by the building fire alarm system in accordance with NFPA 72. [IBC § 904.3.5]

1005.4 Inspection and testing. Automatic fire-extinguishing systems shall be inspected and tested in accordance with the provisions of this Section prior to acceptance. [IBC § 904.4]

1005.4.1 Inspection. Prior to conducting final acceptance tests, the following items shall be inspected: [IBC § 904.4.1]

1. Hazard specification for consistency with design hazard.
2. Type, location and spacing of automatic- and manual-initiating devices.
3. Size, placement and position of nozzles or discharge orifices.
4. Location and identification of audible and visible alarm devices.
5. Identification of devices with proper designations.
6. Operating instructions.

1005.4.2 Alarm testing. Notification appliances, connections to fire alarm systems and connections to approved supervising stations shall be tested in accordance with this section and Section 1006 to verify proper operation. [IBC § 904.4.2]

1005.4.2.1 Audible and visible signals. The audibility and visibility of notification appliances signaling agent discharge or system operation, where required, shall be verified. [IBC § 904.4.2.1]

1005.4.3 Monitor testing. Connections to protected premises and supervising station fire alarm systems shall be tested to verify proper identification and retransmission of alarms from automatic fire-extinguishing systems. [IBC § 904.4.3]

1005.5 Wet-chemical systems. Wet-chemical extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 17A and their listing. [IBC § 904.5]

1005.6 Dry-chemical systems. Dry-chemical extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 17 and their listing. [IBC § 904.6]

1005.7 Foam systems. Foam-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 11, NFPA 11A and NFPA 16 and their listing. [IBC § 904.7]

1005.8 Carbon dioxide systems. Carbon dioxide extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 12 and their listing. [IBC § 904.8]

1005.9 Halon systems. Halogenated extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 12A and their listing. [IBC § 904.9]

1005.10 Clean-agent systems. Clean-agent fire-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance NFPA 2001 and their listing. [IBC § 904.10]

1005.11 Commercial cooking systems. The automatic fire extinguishing system for commercial cooking systems shall be of a type recognized for protection of commercial cooking equipment and exhaust systems of the type and arrangement protected. Preengineered automatic dry- and wet-chemical extinguishing systems shall be tested in accordance with UL 300 and listed and labeled for the intended application. Other types of automatic fire-extinguishing systems shall be listed and labeled for specific use as protection for commercial cooking operations. The system shall be installed in accordance with this code, its listing and the manufacturer's installation instructions. Automatic fire-extinguishing systems of the following types shall be installed in accordance with NFPA 96 and the referenced standard indicated, as follows: [IBC § 904.11]

1. Carbon dioxide extinguishing systems, NFPA 12.
2. Automatic sprinkler system, NFPA 13.
3. Foam-water sprinkler system or foam-water spray systems, NFPA 16.
4. Dry-chemical extinguishing systems, NFPA 17.
5. Wet-chemical extinguishing systems, NFPA 17A.

1005.11.1 Manual system operation. A manual actuation device shall be located at or near a means of egress from the cooking area, a minimum of 10 feet (3048 mm) and a maximum of 20 feet (6096 mm) from the kitchen exhaust system. The manual actuation device shall be located a minimum of 4.5 feet (1372 mm) and a maximum of 5 feet (1524 mm) above the floor. The manual actuation shall require a maximum force of 40 pounds (178 N) and a maximum movement of 14 inches (356 mm) to actuate the fire suppression system. [IBC § 904.11.1]

EXCEPTION: Automatic sprinkler systems shall not be required to be equipped with manual actuation means.

1005.11.2 System interconnection. The actuation of the fire suppression system shall automatically shut down the fuel and/or electrical power supply to the cooking equipment. The fuel and electrical supply reset shall be manual. [IBC § 904.11.2]

1005.11.3 Carbon dioxide systems. When carbon dioxide systems are used, there shall be a nozzle at the top of the ventilating duct. Additional nozzles that are symmetrically arranged to give uniform distribution shall be installed within vertical ducts exceeding 20 feet (6096 mm) and horizontal ducts exceeding 50 feet (15 240 mm). Dampers shall be installed at either the top or the bottom of the duct and shall be arranged to operate automatically upon activation of the fire-extinguishing system. Where the damper is installed at the top of the duct, the top nozzle shall be immediately below the damper. Automatic carbon dioxide fire-extinguishing systems shall be sufficiently sized to protect against all hazards venting through a common duct simultaneously. [IBC § 904.11.3]

1005.11.3.1 Ventilation system. Commercial-type cooking equipment protected by an automatic carbon dioxide extinguishing system shall be arranged to shut off the ventilation system upon activation. [IBC § 904.11.3.1]

1005.11.4 Special provisions for automatic sprinkler systems. Automatic sprinkler systems protecting commercial-type cooking equipment shall be supplied from a separate, readily accessible, indicating-type control valve that is identified. [IBC § 904.11.4]

1005.11.4.1 Special Provisions for Automatic Sprinkler Systems. The valve which controls the water supply for commercial-type cooking suppression systems shall be provided to automatically shut off the fuel supply to the cooking equipment and all electrical receptacles which are located under the hood, when the valve for the water supply is shut off.

1005.11.4.2 Listed sprinklers. Sprinklers used for the protection of fryers shall be listed for that application and installed in accordance with their listing. [IBC § 904.11.4.1]

1005.11.5 Operations and maintenance. Fire extinguishing systems shall be serviced at least every six months or after activation of the system. Inspections shall be conducted by personnel licensed by the State of Nevada, Fire Marshal's Office, and a Certificate of Inspection shall be kept on-site and shall be readily available to the inspection authority.

1005.11.6 Portable fire extinguishers. A fire extinguisher listed and labeled for Class K fires shall be installed within 30 feet (9144 mm) of commercial food heat-processing equipment, as measured along an unobstructed path of travel, in accordance with NFPA 10.

EXCEPTION: Approved extinguishers utilizing other extinguishing agents that are compatible for use in the control of cooking grease fires.

67. **SECTION 1006 - FIRE ALARM SYSTEMS**, is deleted and replaced as follows:

SECTION 1006 — FIRE ALARM SYSTEMS

1006.1 General. This section covers the application, installation, performance and maintenance of fire alarm systems and their components. [IBC § 907.1]

1006.1.1 Construction documents. Construction documents for fire alarm systems shall be submitted for review and approval prior to system installation. Construction documents shall include, but not be limited to, all of the following: [IBC § 907.1.1]

1. Project name, street address and owners name.
2. Contractor name, address, phone number, license numbers, license classification, and license limit.
3. Wet signature of the licensee (contractors Master or Qualified Employee).
4. On and after January 1, 2003, wet signature of the NICET Level II designer (or designer having an equivalent certification) who prepared the plan or drawing. For plans prepared by NICET designers, the designers printed name and certificate number shall follow the signature. [NAC 477.300.8]
5. Occupancy classification. For all occupancies state the occupant load.
6. Fire alarm circuit classification (power-limited or nonpower-limited).
7. Class/style designation of all initiating device circuit (IDC), signaling line circuits (SLC) and notification appliance circuits (NAC).
8. Conductor type and size.
9. Sequence of operation input/output matrix similar to Figure A.10.6.2.3(9) of NFPA 72.
10. Symbol legend with equipment description (manufacture's name and model number) and mounting description (surface, semi-flush, flush, and exterior). On and after January 1, 2003 symbols used shall follow NFPA 170, 1999 edition.
11. Site plan.
12. Floor plan drawn to an indicated scale (1/8" minimum) on sheets of a uniform size showing:
 - a) Point of compass (north arrow).
 - b) Walls, doors, windows, openings, stairs, elevators, passageways, high piled storage racks, etc., as applicable to depict the facility.
 - c) Room use identification labels.
 - d) Alarm initiating device, notification appliance, auxiliary controlled or monitored equipment and systems, annunciation and control equipment location.
 - e) Conductor/Conduit routing and size.
 - f) Location of end-of-line resistor.
 - g) Zone identification (conventional system).
 - h) Power panel and circuit connection.
 - i) Key plan.
 - j) Ceiling height (ceiling mounted device and/or appliance).
 - k) Beam, joist, soffit, or other projection extending below the ceiling.
13. Mounting height detail for wall mounted device and/or appliance.
14. Riser diagram including the following information:
15. General arrangement of the system, in building cross-section.

16. Wall/shaft/stairwell and/or cable ratings when survivability or class A requirements apply.
17. Type and number of circuits in each riser.
18. Type and number of fire alarm system components/devices on each circuit, on each floor or level.
19. Authority having jurisdiction notes.
20. Battery calculation (all panels).
21. Circuit load calculation (all notification appliance & auxiliary circuits).
22. Voltage drop calculations for all notification appliance circuits, including remote annunciators and auxiliary appliances.
23. Product data submittal including a cover index sheet listing products used by make and model number, manufacturer data sheets and listing information for all equipment, devices, materials, wire and cable.
24. Design number and detail of penetration fire stop system when required.
25. Any additional information determined necessary when required by the AHJ.

1006.1.2 Equipment. Systems and their components shall be listed and approved for the purpose for which they are installed. [IBC § 907.1.2]

1006.2 When required. An approved manual, automatic, or manual and automatic fire alarm system shall be provided in accordance with Sections 1006.2.1 through Section 1006.2.23. Where automatic sprinkler protection, installed in accordance with Section 1003.1.2, is provided and connected to the building fire alarm system, automatic heat detection required by this section shall not be required. An approved automatic fire detection systems shall be installed in accordance with the provisions of this code and NFPA 72. Devices, combinations of devices, appliances and equipment shall comply with 1006.1.2. The automatic fire detectors shall be smoke detectors, except that an approved alternative type of detector shall be installed in spaces such as boiler rooms where, during normal operation, products of combustion are present in sufficient quantity to actuate a smoke detector. For purposes of this section, fire walls shall not define separate buildings. [IBC § 907.2 as amended]

EXCEPTION: When approved by the Chief, a fire alarm system is not required to extend throughout a mixed occupancy or multi-tenant structure(s), when each occupancy or tenant is protected as required by Section 1006.

1006.2.1 Group A Occupancies. A manual fire alarm system shall be installed in accordance with NFPA 72 in Group A occupancies having an occupant load of 300 or more. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm as required for the Group E occupancy. [IBC § 907.2.1]

EXCEPTION: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system and the notification appliances will activate upon sprinkler water flow.

1006.2.1.1 System initiation in Group A occupancies with an occupant load of 1,000 or more. Activation of the fire alarm in Group A occupancies with an occupant load of 1,000 or more shall initiate a signal using an emergency voice/alarm communications system in accordance with NFPA 72.

EXCEPTION: Where approved, the prerecorded announcement is allowed to be manually deactivated for a period of time, not to exceed 3 minutes, for the sole purpose of allowing a live voice announcement from an approved, constantly attended location. [IBC § 907.2.1.1]

1006.2.1.2 Emergency Power. Emergency voice/alarm communications systems shall be provided with an approved emergency power source. [IBC § 907.2.1.2]

1006.2.2 Group B Occupancies. A manual fire alarm system shall be installed in Group B occupancies having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge. [IBC § 907.2.2 as amended]

EXCEPTION: Manual fire alarm boxes are not required throughout the building when all of the following conditions are met:

1. The building is equipped throughout with an automatic sprinkler system,
2. The sprinkler system is interconnected to the fire alarm system to notify all occupants upon sprinkler water-flow,
3. At least one manual fire alarm box is installed at an approved location.

1006.2.3 Group E Occupancies. A manual fire alarm system shall be installed in Group E occupancies. When automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system. [IBC § 907.2.3]

EXCEPTIONS:

1. Group E occupancies with an occupant load of less than 50.
2. Manual fire alarm boxes are not required in Group E occupancies where all the following apply:
 - 2.1. Interior corridors are protected by smoke detectors with alarm verification.
 - 2.2. Auditoriums, cafeterias, gymnasiums and the like are protected by heat detectors or other approved detection devices.
 - 2.3. Shops and laboratories involving dusts or vapors are protected by heat detectors or other approved detection devices.
 - 2.4. Off-premises monitoring is provided.
 - 2.5. The capability to activate the evacuation signal from a central point is provided.
 - 2.6. In buildings where normally occupied spaces are provided with a two-way communication system between such spaces and a constantly attended receiving station from where a general evacuation alarm can be sounded, except in locations specifically designated by the building official.

1006.2.3.1 Locking Manual Fire Alarm Boxes. When buildings are protected throughout by an approved automatic sprinkler system, manual fire alarm boxes are allowed to be locked utilizing listed institutional style devices in areas occupied by students, subject to the following conditions:

1. Approval of the local fire departments providing coverage to this school is obtained in writing prior to any conversion/installation.
2. The key-operated pull station shall be listed “Institutional” type and not field modified manual pull station.
3. All (school) staff members shall be trained in the operation of the key-operated pull stations and receive a key with obvious markings, for operation of the pull station. Staff members shall have their key for operation of the pull stations with them at all times when on school property.
4. The school will collect reports verifying staff training on a quarterly basis shall be created and shall be available for inspection by the local fire department and/or Office of the State Fire Marshal upon request
5. This information shall be forwarded to the Office of the State Fire Marshal at the end of each school year and shall be available for inspection by the local fire department and/or Office of the State Fire Marshal upon request.
6. The local fire department or the Office of the State Fire Marshal to verify readiness may conduct unannounced drills or training.
7. Unacceptable performance as evaluated by the fire officials may result in a requirement to convert back to regular pull stations.

1006.2.4 Group F Occupancies. A manual fire alarm system shall be installed in Group F occupancies that are two or more stories in height and have an occupant load of 500 or more above or below the lowest level of exit discharge. [IBC § 907.2.4]

EXCEPTION: Manual fire alarm boxes are not required if the building is equipped throughout with an automatic sprinkler system and the notification appliances will activate upon sprinkler water flow.

1006.2.5 Group H Occupancies. A manual fire alarm system shall be installed in Group H-5 occupancies and in occupancies used for the manufacture of organic coatings. An automatic smoke detection system shall be installed for highly toxic gases, organic peroxides and oxidizers in accordance with Article 80 of this Code. [IBC § 907.2.5]

1006.2.6 Group I Occupancies. A manual fire alarm system and an automatic fire detection system shall be installed in Group I occupancies. An electrically supervised, automatic smoke detection system shall be provided in waiting areas that are open to corridors. [IBC § 907.2.6]

EXCEPTION: Manual fire alarm boxes in patient sleeping areas of Group I-1 and I-2 occupancies shall not be required at exits if located at all nurse's control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that travel distances required in IBC Section ~~1006.3.1~~ 907.3.1 are not exceeded.

1006.2.6.1 Group I-2. Corridors in nursing homes (both intermediate care and skilled nursing facilities), detoxification facilities and spaces open to the corridors shall be equipped with an automatic fire detection system. [IBC § 907.2.6.1]

EXCEPTIONS:

1. Corridor smoke detection is not required where patient sleeping rooms are provided with smoke detectors that comply with UL 268. Such detectors shall provide a visual display on the corridor side of each patient room and shall provide an audible and visual alarm at the nursing station attending each room.
2. Corridor smoke detection is not required where patient room doors are equipped with automatic door-closing devices with integral smoke detectors on the room sides installed in accordance with their listing, provided that the integral detectors perform the required alerting function.

1006.2.6.2 Group I-3. Group I-3 occupancies shall be equipped with a manual and automatic fire alarm system installed for alerting staff. [IBC § 907.2.6.2]

1006.2.6.2.1 System initiation. Actuation of an automatic fire-extinguishing system, a manual fire alarm box or a fire detector shall initiate an approved fire alarm signal which automatically notifies staff. Presignal systems shall not be used. [IBC § 907.2.6.2.1]

1006.2.6.2.2 Manual fire alarm boxes. Manual fire alarm boxes are not required to be located in accordance with ~~Section 1006.3~~ IBC § 907.3 where the fire alarm boxes are provided at staff-attended locations having direct supervision over areas where manual fire alarm boxes have been omitted. Manual fire alarm boxes shall be permitted to be locked in areas occupied by detainees, provided that staff members are present within the subject area and have keys readily available to operate the manual fire alarm boxes. [IBC § 907.2.6.2.2]

1006.2.6.2.3 Smoke detectors. An approved automatic smoke detection system shall be installed throughout resident housing areas, including sleeping areas and contiguous day rooms, group activity spaces and other common spaces normally accessible to residents. [IBC § 907.2.6.2.3 as amended]

EXCEPTION: Other approved smoke-detection arrangements providing equivalent protection including, but not limited to, placing detectors in exhaust ducts from cells or behind protective guards listed for the purpose are allowed when necessary to prevent damage or tampering.

1006.2.7 Group M Occupancies. A manual fire alarm system shall be installed in Group M occupancies having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge. [IBC § 907.2.7]

EXCEPTION: Manual fire alarm boxes are not required if the building is equipped throughout with an automatic sprinkler system and the alarm notification appliances will activate upon sprinkler water flow.

1006.2.7.1 Occupant notification. During times that the building is occupied, in lieu of the automatic activation of alarm notification appliances, the manual fire alarm system shall be allowed to activate an alarm signal at a constantly attended location from which evacuation instructions shall be initiated over an emergency voice/alarm communication system installed in accordance with Section 1006.2.12.2.

The emergency voice/alarm communication system shall be allowed to be used for other announcements, provided the manual fire alarm use takes precedence over any other use.

1006.2.8 Group R-1 Occupancies. A fire alarm system and an automatic smoke detection system shall be installed in Group R-1 occupancies. [IBC § 907.2..8 as amended]

EXCEPTION: An automatic smoke detection system is not required in buildings that do not have interior corridors serving guestrooms and where guestrooms have a means of egress door opening directly to an exterior exit access that leads directly to the exits. Single and multiple-station smoke alarms shall be installed in accordance with Section 1006.2.10

1006.2.8.1 Fire detection system. System smoke detectors are not required in guestrooms provided that the single-station smoke alarms required by Section 1006.2.10 are connected to the emergency electrical system and are annunciated by guestroom at a constantly attended location from which the fire alarm system is capable of being manually activated.

1006.2.9 Group R-2 Occupancies. A manual fire alarm system and an automatic smoke detection system shall be installed in Group R-2 occupancies where: [IBC § 907.2.9 as amended]

1. Any dwelling unit is located three or more stories above the lowest level of exit discharge;
2. Any dwelling unit is located more than one story below the highest level of exit discharge of exits serving the dwelling unit; or
3. The building contains more than 15 dwelling units.

EXCEPTIONS:

1. An automatic smoke detection system is not required in buildings that do not have interior corridors serving dwelling units which, have a means of egress door opening directly to an exterior exit access that leads directly to the exits. Single and Multiple-station smoke alarms shall be installed in accordance with 1006.2.10
2. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system and the notification appliances will activate upon sprinkler water flow.

1006.2.10 Single- and multiple-station smoke alarms. Listed single- and multiple-station smoke alarms shall be installed in accordance with the provisions of this code and the household fire-warning equipment provisions of NFPA 72. [IBC § 907.2.10]

1006.2.10.1 Where required. Single- or multiple-station smoke alarms shall be installed in the locations described in Sections 1006.2.10.1.1 through 1006.2.10.1.4.

1006.2.10.1.1 Group R-1. Single- or multiple-station smoke alarms shall be installed in all of the following locations in Group R-1: [IBC § 907.2.10.1.1]

1. In sleeping areas.
2. In every room in the path of the means of egress from the sleeping area to the door leading from the guestroom or suite.
3. In each story within the guestroom or suite, including basements. For guestrooms or suites with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

1006.2.10.1.2 Groups R-2, R-3, R-4 and I-1. Single- or multiple-station smoke alarms shall be installed and maintained in Groups R-2, R-3, R-4 and I-1, regardless of occupant load at all of the following locations: [IBC § 907.2.10.1.2]

1. On the ceiling or wall outside of each separate sleeping area in the immediate vicinity of bedrooms.
2. In each room used for sleeping purposes.
3. In each story within a dwelling unit, including basements and cellars but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

1006.2.10.1.3 Group I-1. Single- or multiple-station smoke alarms shall be installed and maintained in sleeping areas in occupancies in Group I-1. Single or multiple-station smoke alarms shall not be required where the building is equipped throughout with an automatic fire detection system in accordance with Section 1006.2.6.

1006.2.10.1.4 Additions, alterations or repairs to Group R. Where an addition, alteration or repair to an individual dwelling unit or guestroom in Group R requires a permit, smoke alarms shall be installed within that individual dwelling unit or guestroom in accordance with this section. Where one or more sleeping rooms are added or created in an existing Group R, smoke alarms shall be installed in accordance with this section. [IBC § 907.2.10.1.4]

EXCEPTION: Repairs to the exterior surfaces of occupancies in Group R are exempt from the requirements of this section.

1006.2.10.2 Power source. In new construction, required smoke alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and shall be equipped with a battery backup. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection. [IBC § 907.2.10.2]

EXCEPTIONS:

1. Smoke alarms are not required to be equipped with battery backup in Group R-1 where they are connected to an emergency electrical system.
2. Smoke alarms are permitted to be solely battery operated in existing buildings, buildings not served from a commercial power source and in existing areas where alterations or repairs regulated by Section 1006.2.10.1.4 do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for building wiring without the removal of interior finishes.

1006.2.10.3 Interconnection. Where more than one smoke alarm is required to be installed within an individual dwelling unit in Group R-2, R-3 or R-4, or within an individual guestroom or suite in Group R-1, the smoke alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed. [IBC § 907.2.10.3]

EXCEPTIONS:

1. Smoke alarms that are permitted to be solely battery operated in accordance with Section 1006.2.10.2 are not required to be interconnected.
2. Smoke alarms in existing areas are not required to be interconnected where alterations or repairs regulated by Section 1006.2.10.1.4 do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for interconnection without the removal of interior finishes.

1006.2.10.4 Acceptance testing. When the installation of the alarm devices is complete, each detector and interconnecting wiring for multiple-station alarm devices shall be tested in accordance with the household fire warning equipment provisions of NFPA 72. [IBC § 907.2.10.4]

1006.2.11 Amusement buildings. An approved automatic smoke detection system shall be provided in special amusement buildings in accordance with this section. [IBC § 907.2.11]

EXCEPTION: In areas where ambient conditions will cause a smoke detection system to alarm, an approved alternative type of automatic detector shall be installed.

1006.2.11.1 Alarm. Activation of any single smoke detector, the automatic sprinkler system or any other automatic fire detection device shall immediately sound an alarm at the building at a constantly attended location from which emergency action can be initiated, including the capability of manual initiation of requirements in Section 1006.2.11.2.

1006.2.11.2 System response. The activation of two or more smoke detectors, a single smoke detector with alarm verification, the automatic sprinkler system or other approved fire detection device shall automatically:

1. Cause illumination of the means of egress with light of not less than 1 foot-candle (11 lux) at the walking surface level;
2. Stop any conflicting or confusing sounds and visual distractions; and
3. Activate an approved directional exit marking that will become apparent in an emergency.

Such system response shall also include activation of a prerecorded message, clearly audible throughout the special amusement building, instructing patrons to proceed to the nearest exit. Alarm signals used in conjunction with the prerecorded message shall produce a sound which is distinctive from other sounds used during normal operation.

The wiring to the auxiliary devices and equipment used to accomplish the above fire safety functions shall be monitored for integrity in accordance with NFPA72. [IBC § 907.2.11.2]

1006.2.11.3 Emergency voice/alarm communication system. An emergency voice/alarm communication system, which is also allowed to serve as a public address system, shall be installed in accordance with NFPA 72, and shall be audible throughout the entire special amusement building. [IBC § 907.2.11.3]

1006.2.12 High-rise buildings. Buildings having floors used for human occupancy located more than 55 feet above the lowest level of fire department vehicle access shall be provided with an automatic fire alarm system and an emergency voice/alarm communications system in accordance with Section 1006.2.12.2. [IBC § 907.2.12 as amended]

EXCEPTIONS:

1. Open parking garages in accordance with IBC Section 406.3.
2. Low-hazard special occupancies in accordance with IBC Section 503.1.2.

1006.2.12.1 Automatic fire detection. Smoke detectors shall be provided in accordance with this section. Smoke detectors shall be connected to an automatic fire alarm system. The activation of any detector required by this section shall operate the emergency voice/alarm communication system. Smoke detectors shall be located as follows: [IBC § 907.2.12.1 as amended]

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar rooms, elevator machine rooms, and in elevator lobbies,
2. In the main return air and exhaust air plenum of each air-conditioning system having a capacity greater than 2,000 cubic feet per minute (cfm) (0.94 m³/s). Such detectors shall be located in a serviceable area downstream of the last duct inlet.
3. At each connection to a vertical duct or riser serving two or more stories from a return air duct or plenum of an air-conditioning system. In Group R-1 and R-2 occupancies a listed smoke detector is allowed to be used in each return-air riser carrying not more than 5,000 cfm (2.4 m³/s) and serving not more than 10 air-inlet openings.

1006.2.12.2 Emergency voice/alarm communication system. The operation of any automatic fire detector, sprinkler water-flow device or manual fire alarm box shall automatically sound an alert tone followed by automatic voice instructions giving appropriate information and directions on a general or selective basis to all fire areas. Elevators and stairwells shall be manually activated only [IBC § 907.2.12.2 as amended]

EXCEPTION: In Group I-2 and I-3 occupancies, the alarm shall sound in a constantly attended area.

1006.2.12.2.1 Manual override. A manual override for emergency voice communication shall be provided for all paging zones. [IBC § 907.2.12.2.1]

1006.2.12.2.2 Live voice messages. The emergency voice/alarm communication system shall also have the capability to broadcast live voice messages through speakers located in elevators, exit stairways, and throughout a selected floor or floors. [IBC § 907.2.12.2.2]

1006.2.12.2.3 Standard. The emergency voice/alarm communication system shall be designed and installed in accordance with NFPA 72. [IBC § 907.2.12.2.3]

1006.2.12.3 Fire department communication system. An approved two-way, fire department communication system designed and installed in accordance with NFPA 72 shall be provided for fire department use. It shall operate between a fire command center complying with IBC Section 911 and **the following locations:** each elevator, elevator lobby, area of refuge and inside enclosed exit stairways or vestibule on every floor, within each stairwell at roof level, emergency and standby power rooms, and within 5' of entry doors into rooms containing, fire pump(s) or emergency generator(s). [IBC § 907.2.12.2.3 as amended]

EXCEPTION: Fire department radio systems where approved by the fire department. Permanent Fire Department phone handsets (warden type phones) shall be provided. Each warden's phone shall be permanently identified at the phone as to its location and shall be individually identifiable at the fire command center. Exterior phones shall be located in weatherproof enclosures painted red and labeled as Wardens Phone.

1006.2.13 Buildings with an atrium. In buildings with an atrium, smoke detectors shall be installed in accordance with this section and one or both of the following methods: [IBC § 907.2.13]

1. Spot-type detectors shall be installed at the atrium ceiling spaced in accordance with their listing, on the underside of projections into the atrium spaced in accordance with their listing, and around the perimeter of the atrium opening on all floors open to the atrium. The detectors shall be spaced not more than 30 feet (9144 mm) on center and shall be located within 15 feet (4572 mm) of the atrium opening.
2. Projected beam-type smoke detection shall be installed and spaced in accordance with its listing.

1006.2.13.1 System response. The activation of two spot type detectors or a single beam-type detector shall activate the atrium smoke removal system. The activation of any one detector shall cause an alarm to be sounded at a constantly attended location. All smoke detectors shall be accessible for maintenance and testing. [IBC § 907.2.13.1]

1006.2.13.2 Atriums connecting more than two stories. A fire alarm system shall be installed in occupancies with an atrium that connect more than two stories. The system shall be activated in accordance with Section 1006.6. Such occupancies in Group A, E or M shall be provided with an emergency voice/alarm communication system complying with the requirements of Section 1006.2.12.2. [IBC § 907.2.13.2]

1006.2.14 High-piled combustible storage areas. An automatic fire detection system shall be installed throughout high-piled combustible storage areas where required by Article 81. [IBC § 907.2.14]

1006.2.15 Special egress-control devices. Where special egress-control devices are installed on means of egress doors in accordance with IBC Chapter 10, an automatic smoke detection system shall be installed as required by IBC Chapter 10. [IBC § 907.2.15 as amended]

1006.2.16 Aerosol storage uses. Aerosol storage rooms and general-purpose warehouses containing aerosols shall be provided with an approved manual fire alarm system where required by Article 88. [IBC § 907.2.16]

1006.2.17 Lumber, plywood and veneer mills. Lumber, plywood and veneer mills shall be provided with a manual fire alarm system. [IBC § 907.2.17]

1006.2.18 Underground buildings with smoke exhaust system. Where a smoke exhaust system is installed in an underground building in accordance with this code, automatic fire detectors shall be provided in accordance with this section. [IBC § 907.2.18]

1006.2.18.1 Smoke detectors. A minimum of one smoke detector listed for the intended purpose shall be installed in the following areas: [IBC § 907.2.18.1]

1. Mechanical equipment, electrical, transformer, telephone equipment, elevator machine or similar rooms.
2. Elevator lobbies.
3. The main return and exhaust air plenum of each air-conditioning system serving more than one story and located in a serviceable area downstream of the last duct inlet.
4. Each connection to a vertical duct or riser serving two or more floors from return air ducts or plenums of heating, ventilating and air-conditioning systems, except that in Group R occupancies, a listed smoke detector is allowed to be used in each return-air riser carrying not more than 5,000 cfm (2.4 m³/s) and serving not more than 10 air inlet openings.

1006.2.18.2 Alarm required. Activation of the smoke exhaust system shall activate an audible alarm at a constantly attended location. [IBC § 907.2.18.2]

1006.2.19 Underground buildings. A fire alarm system and an automatic smoke detection system shall be installed where the lowest level of a structure is more than 30 feet below the lowest level of exit discharge. Where the lowest level of a structure is more than 60 feet (18,288 mm) below the lowest level of exit discharge, the structure shall also be equipped throughout with a manual fire alarm system, including an emergency voice/alarm communication system installed in accordance with Section 1006.2.12.2. [IBC § 907.2.19 as amended]

1006.2.19.1 Public address system. Where a fire alarm system is not required by Section 1006.2, a public address system shall be provided that shall be capable of transmitting voice communications to the highest level of exit discharge serving the underground portions of the structure and all levels below. [IBC § 907.2.19.1]

1006.2.20 Covered mall buildings. Covered mall buildings exceeding 50,000 square feet (4645 m²) in total floor area shall be provided with an emergency voice/alarm communication system. An emergency voice/alarm communication system serving a mall, required or otherwise, shall be accessible to the fire department. The system shall be provided in accordance with Section 1006.2.12.2. [IBC § 907.2.20]

1006.2.21 Residential aircraft hangars. A minimum of one listed smoke alarm shall be installed within a residential aircraft hangar as defined in IBC Section 412 and shall be interconnected into the residential smoke alarm or other sounding device to provide an alarm that will be audible in all sleeping areas of the dwelling. [IBC § 907.2.21]

1006.2.22 Airport traffic control towers. An automatic fire detection system shall be provided in airport traffic control towers. [IBC § 907.2.22]

1006.2.23 Battery rooms. An approved automatic smoke detection system shall be installed in areas containing stationary lead-acid battery systems having a liquid capacity of more than 100 gallons (378.5 L) in sprinklered buildings or 50 gallons (189.3 L) in unsprinklered buildings. The detection system shall be supervised by an approved central, proprietary or remote station service or a local alarm that will sound an audible signal at a constantly attended location. [IBC § 907.2.23]

1006.3 General System Design and Installation Requirements.

1006.3.1 Design standards. Fire alarm systems, automatic fire detectors, emergency voice alarm communication systems and notification devices shall be designed, installed and maintained in accordance with NFPA 72 and other nationally recognized standards.

1006.3.2 Equipment. Systems and components shall be listed and approved for the purpose for which they are installed.

1006.3.3 System layout and operation.

1006.3.3.1 Manual fire alarm boxes. When a manual fire alarm system is required, manual fire alarm boxes shall be distributed throughout so that they are readily accessible, unobstructed, and are located in the normal path of exit travel from the area and as follows:

1. At every exit from every level.
2. Additional fire alarm boxes shall be located so that travel distance to the nearest box does not exceed 200 feet (60 960 mm). When fire alarm systems are not monitored, an approved permanent sign that reads LOCAL ALARM ONLY—CALL FIRE DEPARTMENT shall be installed adjacent to each manual fire alarm box.

EXCEPTION: Separate signs need not be provided when the manufacturer has permanently provided this information on the manual fire alarm box.

1006.3.3.1.1 Protective covers. The fire official is authorized to require the installation of listed manual fire alarm box protective covers to prevent malicious false alarms or provide the manual fire alarm box with protection from physical damage. The protective cover shall be transparent or red in color with a transparent face to permit visibility of the manual fire alarm box. Each cover shall include proper operating instructions. A protective cover that emits a local alarm signal shall not be installed unless approved. [IBC § 907.3.5]

1006.3.3.2 Control units, annunciator panels and access keys. The alarm control unit, remote annunciator panel and access keys to locked fire alarm equipment shall be installed and maintained in an approved location.

1006.3.3.2.1 Limitations. Unless approved, not more than one main or master fire alarm control panel shall be permitted per building, in an approved location. Not more than one monitoring panel shall be permitted per building.

1006.3.3.3 Power supply. The primary and secondary power supplies for the fire alarm system shall be provided in accordance with NFPA 72. [IBC § 907.4]

1006.3.3.4 Wiring. Wiring shall comply with the requirements of the *National Electrical Code* and NFPA 72. Wireless protection systems utilizing radio-frequency transmitting devices shall comply with the special requirements for supervision of low-power wireless systems in NFPA 72. [IBC § 907.5]

1006.3.3.5 Activation. Where an alarm notification system is required by another section of this code, it shall be activated by: [IBC § 907.6]

1. A required automatic fire alarm system.
2. Sprinkler water-flow devices.
3. Required manual fire alarm boxes.

1006.3.3.6 Presignal system. Presignal systems shall not be installed unless approved by the fire chief. Where a presignal system is installed, 24-hour personnel supervision shall be provided at a location approved by the fire department, in order that the alarm signal can be actuated in the event of fire or other emergency. [IBC § 907.7]

1006.3.3.7 Zones. Each floor shall be zoned separately and a zone shall not exceed 22,500 square feet (2090 m²). The length of any zone shall not exceed 300 feet (91 440 mm) in any direction. [IBC § 907.8]

EXCEPTION: Automatic sprinkler system zones shall not exceed the area permitted by NFPA 13.

1006.3.3.7.1 Zoning indicator panel. A zoning indicator panel and the associated controls shall be provided in an approved location. The visual zone indication shall lock in until the system is reset and shall not be canceled by the operation of an audible alarm-silencing switch. [IBC § 907.8.1]

Labeling for all fire alarm control panels and remote annunciators shall be clearly legible, durable and permanent. Framed or laminated clearly readable floor plans showing room identifications shall be mounted (securely fastened) adjacent to the control panels(s) and annunciator(s).

When a zone directory style annunciator is required by the AHJ the annunciator shall be labeled. When required, a zone description list, laminated or framed (8½" x 11" minimum size) mounted, securely fastened on the wall adjacent to the control panels(s) and annunciator(s) shall also be provided. All devices shall be zoned per floor and based on floor area on individual zones in relation to their function, i.e., smoke detectors on separate zones from manual pull stations. When required, other devices shall be zoned completely independently, i.e., water flow and duct smoke detectors.

When LCD display is required by the AHJ, plain English complete words shall be utilized in the LCD descriptions whenever possible. When acronyms are used in the descriptions(s) a framed or laminated, securely fastened, list of acronyms used and their meanings shall be provided adjacent to the control panel(s) and annunciators(s) with a minimum size of (8½" x 11").

1006.3.3.7.2 High-rise buildings. In buildings used for human occupancy that have floors located more than 55 feet above the lowest level of fire department vehicle access, a separate zone by floor shall be provided for all of the following types of alarm-initiating devices where provided: [IBC § 907.8.2]

1. Smoke detectors.
2. Sprinkler water-flow devices.
3. Manual fire alarm boxes.
4. Other approved types of automatic fire detection devices or suppression systems.

1006.3.3.8 Alarm notification appliances. Alarm notification appliances shall be provided and shall be listed for their purpose. [IBC § 907.9]

1006.3.3.8.1 Visible alarms. Visible alarm notification appliances shall be provided in accordance with Sections 1006.3.3.8.1.1 through 1006.3.3.8.1.3. [IBC § 907.9.1 as amended]

EXCEPTION:

1. Visible alarm notification appliances are not required in alterations, except where an existing fire alarm system is upgraded or replaced, or a new fire alarm system is installed.
2. Exception number 2 is deleted.

1006.3.3.8.1.1 Public and common areas. Visible alarm notification appliances shall be provided in public and common areas. [IBC § 907.9.1.1]

EXCEPTIONS:

1. Electrical rooms and mechanical rooms that are not normally occupied or less than 400 square feet.
2. Janitor closets.
3. Storage rooms less than 400 square feet.
4. Exit enclosures (2 hour)
5. Elevator cabs
6. Individual work areas or offices and private toilets serving individual work areas or offices.
7. Individual inmate sleeping accommodations and patient sleeping rooms except as required by section 1006.3.3.8.1.2.
8. Health care exam and treatment areas.

1006.3.3.8.1.2 Groups I-1 and R-1. Group I-1 and Group R-1 sleeping accommodations in accordance with Table 1006.3.3.8.1.2 shall be provided with a visible alarm notification appliance, activated by both the in-room smoke alarm and the building fire alarm system. [IBC § 907.9.1.2]

**TABLE 1006.3.3.8.1.2
VISIBLE AND AUDIBLE ALARMS**

NUMBER OF SLEEPING ACCOMMODATIONS	SLEEPING ACCOMMODATIONS WITH VISIBLE AND AUDIBLE ALARMS
6 to 25	2
26 to 50	4
51 to 75	7
76 to 100	9
101 to 150	12
151 to 200	14
201 to 300	17
301 to 400	20
401 to 500	22
501 to 1,000	5% of total
1,001 and over	50 plus 3 for each 100 over 1,000

1006.3.3.8.1.3 Group R-2. In Group R-2 occupancies required by Section 1006 to have a fire alarm system, all dwelling units shall be provided with the capability to support visible alarm notification appliances in accordance with ICC/ANSI A117.1. [IBC § 907.9.1.3]

1006.3.3.8.2 Group E. In Group E occupancies, an approved, listed, and weatherproof exterior audible and visual notification device shall be provided.

1006.3.3.8.3 Audible alarms. Audible alarm notification appliances shall be provided and shall sound a distinctive sound that is not to be used for any purpose other than that of a fire alarm. The audible alarm notification appliances shall provide a sound pressure level of 15 decibels (dBA) above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, in every occupied space with-in the building. The minimum sound pressure levels shall be 80 decibels. The maximum sound pressure level for audible alarm notification appliances shall be 120 dBA at the minimum hearing distance from the audible appliance. Where the average ambient noise is greater than 105 dBA, visible alarm notification appliances shall be provided in accordance with NFPA 72 and audible alarm notification appliances shall not be required. [IBC § 907.9.2 as amended]

EXCEPTION: Visible alarm notification appliances shall be allowed in lieu of audible alarm notification appliances in critical care areas of Group I-2 occupancies.

1006.3.4 Fire safety functions. Automatic fire detectors utilized for the purpose of performing fire safety functions shall be connected to the building's fire alarm control panel where a fire alarm system is required by Section 1006.2. Detectors shall, upon actuation, perform the intended function and activate the alarm notification appliances or activate a visible and audible supervisory signal at a constantly attended location. In buildings not required to be equipped with a fire alarm system, the automatic fire detector shall be powered by normal electrical service and, upon actuation, perform the intended function. The detectors shall be located in accordance with NFPA 72. [IBC § 907.10]

1006.3.5 Duct smoke detectors. Duct smoke detectors shall be connected to the building's fire alarm control panel when a fire alarm system is provided. Activation of a duct smoke detector shall initiate a visible and audible supervisory signal at a constantly attended location. Duct smoke detectors shall not be used as a substitute for required open-area detection. [IBC § 907.11]

EXCEPTIONS:

1. The supervisory signal at a constantly attended location is not required where duct smoke detectors activate the building's alarm notification appliances.
2. In occupancies not required to be equipped with a fire alarm system, actuation of a smoke detector shall activate a visible and an audible signal in an approved location. Smoke detector trouble conditions shall activate a visible or audible signal in an approved location and shall be identified as air duct detector trouble.

1006.3.6 Access. Access shall be provided to each detector for periodic inspection, maintenance and testing. [IBC § 907.12]

1006.3.7 Fire-extinguishing systems. Automatic fire-extinguishing systems shall be connected to the building fire alarm system where a fire alarm system is required by another section of this code or is otherwise installed. [IBC § 907.13]

1006.3.8 Heat detectors. Heat detectors shall only be installed in areas where the installation of smoke detectors may not be appropriate due to the high probability of nuisance alarms or to environmental conditions. Heat detectors may not be utilized where smoke detectors are required for smoke management systems.

1006.4 Monitoring.

1006.4.1 General. All alarm systems shall be monitored by an approved supervising station (central, proprietary or remote) or a local alarm which gives audible and visual signals at an approved constantly attended location.

EXCEPTION: Manual fire alarm systems are not required to be connected to an approved supervising station when provided with approved signs in the following locations: Directly below the horn and strobe located on the exterior of the building and adjacent to each manual pull station, a sign which reads WHEN ALARM SOUNDS - CALL 911.

The sign below the horn and strobe shall be of durable material with permanent lettering having a 2" minimum height on a contrasting background. The sign adjacent to each pull station shall be of durable material with permanent lettering having a "1/4" minimum height on a contrasting background.

In occupancies provided with a fire alarm system, the following four distinctly different alarm signals shall be transmitted to an approved supervising station:

1. Water Flow Alarm, if provided with a fire sprinkler system
2. Fire Alarm
3. Valve Tamper Alarm, if provided with a fire sprinkler system
4. System Trouble

The supervising station shall retransmit to the Fire Department only the following three distinctly different alarms.

1. Water Flow Alarm, if provided with a fire sprinkler system
2. Fire Alarm
3. Valve Tamper Alarm, if provided with a fire sprinkler system

1006.4.2 General Requirements. Supervising and self-monitoring facilities shall be in accordance with this section.

1006.4.2.1 Permits. A permit is required for all supervising and self-monitoring facilities.

1006.4.2.2 Notification. Supervising stations shall process and notify the Fire Department dispatch center within 270 seconds (4½ minutes) after initiation of a fire alarm device.

EXCEPTIONS:

1. Group R-3 occupancies.
2. Positive alarm sequence.

1006.4.2.3 Account Transfers. Supervising stations shall not transfer accounts without notification to the Fire Department. Notification must be received in writing within 30 days of transfer.

1006.4.2.4 Account Termination. In the event a monitoring contract is canceled or not renewed, the Fire Department shall be notified in writing within 24 hours.

1006.4.2.5 Account Activation. Supervising stations shall not provide monitoring services for a subscriber until final acceptance and approval is granted by the Fire Department

1006.4.2.6 UL Certification. Annually a current UL Central Station Certification shall be provided.

1006.4.2.7 Runner Service. Central Stations shall annually provide documentation of runner service. Runner service shall be in accordance with UL 827.

1006.5 Automatic telephone-dialing devices. Automatic telephone-dialing devices used to transmit an emergency alarm shall not be connected to any fire department telephone number unless approved by the fire chief. [IBC § 907.15]

1006.6 Acceptance tests. Upon completion of the installation of the fire alarm system, alarm notification appliances and circuits, alarm-initiating devices and circuits, supervisory-signal initiating devices and circuits, signaling line circuits, and primary and secondary power supplies shall be tested in accordance with NFPA 72. [IBC § 907.16]

1006.7 Record of completion. A record of completion in accordance with NFPA 72 verifying that the system has been installed in accordance with the approved plans and specifications shall be provided. [IBC § 907.17]

1006.8 Instructions. Operating, testing and maintenance instructions, and record drawings (“as-builts”) and equipment specifications shall be provided at an approved location. [IBC § 907.18]

1006.9 Inspection, testing and maintenance. The maintenance and testing schedules and procedures for fire alarm and fire detection systems shall be in accordance with this code. [IBC § 907.19]

All fire alarm systems shall be tested and inspected in accordance with nationally recognized standards and the State of Nevada Fire Marshals' Regulations. The alarm contractor shall also provide proof of a license to do business within the Authority Having Jurisdiction. A maintenance contract from an approved fire alarm company is required.

Inspection reports shall be kept on-site and shall be readily available to the inspection authority. A copy of said inspection shall be mailed within 48 hours, to the Fire Prevention Bureau only when any deficiency of the system or violation of the Fire Code is noted.

Prior to service or testing of any equipment, the Fire Department's Dispatch Center shall be notified of the location of the test and the approximate time that the equipment will be inoperable. Upon the completion of the test and inspection, the Fire Department Dispatch Center shall be notified that the system is operable.

In the event a service/maintenance contract is canceled or not renewed, the Fire Department shall be notified by the service company within 24 hours.

1006.10 Problematic systems and systems out of service. See Section 1001.5.3.

1006.11 Connections to other systems: A fire alarm system shall not be used for any purpose other than fire warning unless approved.

1006.12 Monitoring Integrity. Conductors and connections which interconnect equipment, devices and appliances shall be monitored for integrity, as set forth in NFPA 72.

68. A new **SECTION 1007 – FIRE PUMPS**, is added as follows:

1007.1 Power Source. On any development when an electric fire pump is installed, and when an emergency generator is installed, the emergency generator shall be sized to meet the fire pump power demands.

1007.2 Hydrant Supply. Fire pumps shall not supply fire hydrants unless approved.

1007.3 Remote Annunciation. Fire pump controllers shall be provided with a listed remote annunciator in an approved location(s).

1007.4 Quantity. A separate fire pump shall be provided for each building when a fire pump is necessitated by other requirements of this Code.

EXCEPTION: Two or more fire pumps may be used to supply an entire facility, when approved. The facility shall be under a single ownership or an association which shall be provided as the responsible entity for the care and maintenance of the fire pumps.

69. **Section 1101.3 Permits and Plans**, is deleted and replaced as follows:

1101.3 Permits and Plans. Permits are required to conduct open burning, store tires outdoors, store combustible material and operate a commercial rubbish-handling operation as set forth in Section 105, Permits b.2, o.1, t.2, c.6, and c.8, respectively.

A plan showing location and dimensions of tire storage areas, tire piles, buildings, aisles and access roads shall be submitted with applications for tire storage permits.

70. **Section 1102.3.2 Open Burning, Notification**, is revised as follows:

1102.3.2 Notification. At least 24 hours prior to commencement of open burning, the fire department shall be notified.

71. **Section 1102.3.4 Open Burning, Time and Atmospheric restrictions**, is revised as follows:

1102.3.4 Other Permits Required, Time and Atmospheric Restrictions. The applicant shall provide a copy of the permit from the Clark County Health Department upon applying for a “Fire Open Burning Permit”. Open burning shall only be performed when time and atmospheric conditions comply with the limits set forth in the open-burning permit.

72. **Section 1102.3.6 Fire-extinguishing equipment**, is revised as follows:

1102.3.6 Fire-extinguishing Equipment. All fire extinguishing equipment shall be reviewed and approved prior to issuance of the permit.

73. **Section 1102.3.7 Attendance**, is revised as follows:

1102.3.7 Attendance. During the open burn, the fire shall be constantly attended by either the fire department and the property owner or other parties as designated in the permit conditions. The applicant shall pay for all costs incurred by the City.

74. **Section 1102.4.2 Recreational Fire, Location** is revised as follows:

1102.4.2 Location. Recreational fires shall not be conducted within 10 feet from a structure or combustible material and 4 feet from a property line. Conditions which could cause a fire to spread to within 10 feet of a structure shall be eliminated prior to ignition.

75. **Section 1102.4.3 Recreational Fire, Fire-extinguishing Equipment** is revised as follows:

1102.4.3 Fire-extinguishing Equipment. A fire extinguisher with a minimum 4-A rating shall be readily available for use at recreational fires.

76. **Section 1102.5 Commercial Barbecues**, is deleted and replaced as follows:

1102.5 Commercial Barbecue.

1102.5.1 Indoor locations. Barbecues used for commercial cooking operations in buildings shall be constructed as commercial food heat-processing equipment in accordance with the Mechanical Code. See also Section 1005.

1102.5.2 Outdoor locations.

1102.5.2.1 Construction. Barbecues in outdoor locations shall be constructed of concrete or approved noncombustible materials.

1102.5.2.2 Location. Barbecues outside of buildings shall not be located within 10 feet (3048 mm) of combustible walls or roofs or other combustible material.

1102.5.2.3 Portable fire extinguishers. Portable fire extinguishers shall be provided for commercial barbecue in accordance with NFPA 10.

77. A new **Section 1102.6 Residential Barbecues**, is added as follows:

1102.6 Residential Barbecues. Outdoor cooking at apartment, condominium and other residential occupancies with portable barbecuing equipment is prohibited within 10 feet of any overhang, balcony or opening. The storage of LPG fueled barbecues and equipment, including spare LPG cylinders, is prohibited above the first story and within 10 feet of any exterior building wall, overhang, or balcony.

EXCEPTIONS:

1. Electric Barbecues.
2. Group R, Division 3 Occupancies, including townhouses.
3. Storage of spare LPG cylinders in buildings or rooms constructed or authorized for such use in accordance with the Building Code and/or the Fire Code.

Adult supervision is required at all times while the barbecue is generating heat.

78. A new **Section 1102.7 Outside Portable Fireplaces and Fixed Campfires at Residential Occupancies**, is added as follows:

1102.7 Outside Portable Fireplaces and Fixed Campfires at Residential Occupancies. Outside portable fireplaces and stationary campfires at residential occupancies shall be prohibited within 10 feet of any exterior building wall, roof, overhang, balcony, building opening or property line. They shall be constructed of concrete or approved noncombustible materials.

79. **Section 1103.2.1.4.2 Nonmetallic containers**, is amended as follows:

1103.2.1.4.2 Nonmetallic containers. Nonmetallic rubbish containers exceeding 51/3 cubic feet [40 gallons (0.15 m3)] capacity shall be manufactured of materials having a peak rate of heat release not exceeding 300 kW/m² at a flux of 50 kW/m² when tested in accordance with nationally recognized standards. See Article 90, Standard a.4.15. Such containers shall be permanently labeled indicating capacity and peak rate of heat release.

80. **Section 1103.3.3.2 Textile and film materials**, is amended as follows:

1103.3.3.2 Textile and film materials. Textile and film materials shall be treated and maintained flame resistant in accordance with nationally recognized standards. See Article 90, Standard n.2.6.

81. **Section 1103.3.3.3 Wood**, is amended as follows:

1103.3.3.3 Wood. Wood materials less than 1/4 inch (6.4 mm) nominal thickness shall be treated with a flame-retardant coating in accordance with nationally recognized standards. See Article 90, Standard n.2.2.

82. **Section 1103.3.3.4 Foam plastics**, is amended as follows:

1103.3.3.4 Foam plastics. Foam plastics and materials containing foam plastics shall be in accordance with the following:

1. Exhibit booth construction shall have a maximum heat-release rate of 100 kilowatts when tested in accordance with nationally recognized standards. See Article 90, Standard u.1.19.
2. Decorative objects, including but not limited to mannequins, murals and signs, shall have a maximum heat release rate of 150 kilowatts when tested in accordance with nationally recognized standards. See Article 90, Standard u.1.19.

EXCEPTIONS:

1. This requirement may be waived by the chief, when the aggregate area of murals, signs or similar decorative objects occupies less than 10 percent of the floor or wall area.
2. Theater, motion picture and television stage settings with or without horizontal projections and simulated caves or caverns shall have a maximum heat-release rate of 100 kilowatts when tested in accordance with nationally recognized standards. See Article 90, Standard u.1.19.

83. **Section 1109.8.3 Religious Ceremonies** is revised as follows:

Section 1109.8.3 Religious and Other Ceremonies. When in the opinion of the chief, adequate safeguards have been taken, participants in religious ceremonies are allowed to carry handheld candles or opened flamed devices. Handheld candles or opened flamed devices shall not be passed from one person to another while lighted. Candelabras with flame-lighted candles and/or other opened flamed devices shall be securely held in place to prevent falling out or overturning, located away from the public attending the religious ceremonies and located away from contact with drapes, curtains or other combustibles. Multiple candles used for religious purposes, which are ignited by parishioners, shall be securely held in fixed holders and located away from contact with drapes, curtains or other combustibles. The devices or holders shall be designed so that the candles can not fall out or be easily tipped over.

84. A new **Section 1110.4 System and Equipment Installations, New and Existing**, is added as follows:

1110.4 System and Equipment Installations, New and Existing. All systems and equipment required to be installed, including fire protection equipment in vacant buildings, shall be maintained operational.

85. **SECTION 1112 – MAINTENANCE OF INTERIOR WALL AND CEILING FINISHES**, is amended as follows:

SECTION 1112 – MAINTENANCE OF INTERIOR WALL AND CEILING FINISHES
Interior wall, floor and ceiling finishes shall be in accordance with the Building Code.

86. A new **SECTION 1114 – MAINTENANCE OF TENANT SPACES**, is added as follows:

SECTION 1114 – MAINTENANCE OF TENANT SPACES

Maintenance. Unoccupied tenant spaces shall be **maintained as follows**:

1. Unless approved, kept free from the storage of any materials.
2. Separated from the remainder of the building by partitions of at least 0.5-inch-thick (12.7 mm) gypsum board or an approved equivalent to the underside of the ceiling of the adjoining tenant spaces.
EXCEPTION: Buildings which are required to be constructed to a greater type of construction shall comply with the greater type of construction requirements.
3. Without doors or other access openings other than one door that shall be kept key locked in the closed position except during that time when opened for inspection.
4. Kept free from combustible waste and be broom swept clean.

87. A new **SECTION 1115 — HAZARDS TO EMERGENCY RESPONDERS**, is added as follows:

SECTION 1115 — HAZARDS TO EMERGENCY RESPONDERS

The intentional design or alteration of buildings to disable, injure, maim, or kill intruders is prohibited. No person shall install and use firearms, sharp or pointed objects, razor wire, explosives, flammable or combustible liquid containers, or dispensers containing highly toxic, toxic, irritant or other hazardous materials in a manner which may passively or actively disable, injure, maim, or kill a fire fighter who forcibly enters a building for the purpose of controlling or extinguishing a fire, rescuing trapped occupants, or rendering other emergency assistance.

88. **Section 1204.2.2 Aisle Width in occupancies without fixed seats**, is **deleted and replaced by IBC § 1004.3.1 Aisles**, amended as follows:

~~**1204.2.2 Width in occupancies without fixed seats.** The width of aisles in occupancies without fixed seats shall be provided in accordance with the building code.~~

89. **SECTION 1206 — EMERGENCY ESCAPES**, is **deleted and replaced by IBC § 1009 EMERGENCY ESCAPES AND RESCUE**, amended as follows:

~~**SECTION 1206 — EMERGENCY ESCAPES AND RESCUE**
Section 1206 is replaced by section 1009 of the Building Code.~~

90. **Section 1207.3 Locking Devices**, is **deleted and replaced by IBC § 1003.3.1.8 Locks and Latches**. amended as follows:

~~**1207.3 Locking Devices.** Locking devices on exit doors, when installed, shall comply with the requirements of the Building Code.~~

91. **Section 1207.4 Panic Hardware**, is **deleted and replaced by IBC § 1003.3.1.9 Panic and Fire Exit Hardware**. amended as follows:

~~**1207.4 Panic Hardware.** Panic hardware, when installed, shall comply with the requirements of the Building Code.~~

92. **Section 1212.2 Where Required**, is deleted and replaced by **IBC § 1003.2.10.1 Where Required**, amended as follows:

~~**1212.2 Where Required.** The path of exit travel to and within exits in a building shall be identified by exit signs conforming to the requirements of the Building Code.~~

93. **Section 1212.6 Floor-level Exit Signs**, is amended as follows:

1212.6 Floor-level Exit Signs. Where exit signs are required by **IBC Section 1003.2.10.1**, additional approved low-level exit signs that are internally or externally illuminated, photo luminescent or self-luminous, shall be provided in all corridors serving guest rooms in Group R, Division 1 Occupancies.

The bottom of such sign shall not be less than 6 inches (152 mm) nor more than 8 inches (203 mm) above the floor level and shall indicate the path of exit travel. For exit and exit-access doors, the sign shall be on the door or adjacent to the door with the closest edge of the sign within 4 inches (102 mm) of the door frame.

94. A new **Section 1302.4 Nuisance Alarms**, is added as follows:

1302.4 Nuisance Alarms. Nuisance alarms shall not be given, signaled or transmitted or caused or permitted to be given, signaled or transmitted in any manner.

95. A new **Section 1302.5 Phones in Tunnels**, is added as follows:

1302.5 Phones in Tunnels. Tunnels in excess of 300 feet shall be provided with approved 2-way communication devices located at intervals of 300 feet.

96. **Section 1303.1 General**, is amended as follows:

1303.1 General. Emergency plans, staff training and fire drills shall be provided in accordance with Section 1303. See also Appendix I-B.

1303.1.1 Public assemblages and events. Where the chief determines that an indoor or outdoor gathering of persons has an adverse impact on public safety through diminished access to buildings, structures, fire hydrants and fire apparatus access roads or where such gatherings adversely affect public safety services of any kind, the chief shall have the authority to order the development of, or prescribe a plan for, the provision of an approved level of public safety.

1303.1.2 Contents. The public safety plan, where required by Section 1303.1.1, shall address such items as emergency vehicle ingress and egress, fire protection, emergency medical services, public assembly areas and the directing of both attendees and vehicles (including the parking of vehicles), vendor and food concession distribution, and the need for the presence of law enforcement, and fire and emergency medical services personnel at the event.

97. **Section 2401.2 Definitions**, the definition helistop is amended as follows:

HELISTOP is the same as heliport, except that no fueling, defueling, maintenance, repairs or storage (for longer than 24 hours) of helicopters is permitted.

98. **Section 2401.3 Permits**, is amended as follows:

2401.3 Permits. For permits to operate aircraft refueling vehicles, application of flammable or combustible finishes, and welding or cutting, roof top heliports or helistops, see Section 105, Permits a.2, h.3, h.4, or s.1.

99. **SECTION 2403 — PORTABLE FIRE EXTINGUISHERS**, is deleted and replaced as follows:

SECTION 2403 — PORTABLE FIRE EXTINGUISHERS

2403.1 General. Portable fire extinguishers suitable for flammable or combustible liquid and electrical-type fires shall be provided as specified in Section 2403 and NFPA 10. All extinguishers required by this section shall be inspected and maintained in accordance with NFPA 10.

2403.2 On Towing Vehicles. Vehicles used for towing aircraft shall be equipped with at least one listed fire extinguisher having a minimum rating of 20-B:C in accordance with NFPA 10.

2403.3 On Welding Apparatus. Welding apparatus shall be equipped with at least one listed fire extinguisher having a minimum rating of 2-A:10-B:C in accordance with NFPA 10.

2403.4 On Aircraft Fuel-servicing Tank Vehicles. Aircraft fuel servicing tank vehicles shall be equipped with at least two listed fire extinguishers, each having a minimum rating of 20-B:C in accordance with NFPA 10. A fire extinguisher shall be readily accessible from either side of the vehicle.

2403.5 On Hydrant Fuel-servicing Vehicles. Hydrant fuel servicing vehicles shall be equipped with at least one listed fire extinguisher having a minimum rating of 20-B:C in accordance with NFPA 10.

2403.6 At Fuel-dispensing Stations. Portable fire extinguishers at fuel-dispensing stations shall be located such that pumps or dispensers are not more than 75 feet (22,860 mm) from one such extinguisher. Fire extinguishers shall be provided as follows:

1. When the open-hose discharge capacity of the fueling system is not more than 200 gallons per minute (757 L/m), at least two listed extinguishers having a minimum rating of 20-B:C, in accordance with NFPA 10, shall be provided.
2. When the open-hose discharge capacity of the fueling system is more than 200 gallons per minute (757 L/m) but not over 350 gallons per minute (1325 L/m), at least one listed wheeled extinguisher having a minimum rating of 80-B:C, in accordance with NFPA 10, and having a minimum capacity of 125 pounds (57 kg) of agent, shall be provided.
3. When the open-hose discharge capacity of the fueling system is more than 350 gallons per minute (1325 L/m), at least two listed wheeled extinguishers having a minimum rating of 80-B:C each, in accordance with NFPA 10, and having a minimum capacity of 125 pounds (57 kg) of agent each, shall be provided.

2403.7 Fire Extinguisher Access.

2403.7.1 General. Fire extinguishers required by provisions of this article shall be accessible at all times. Where necessary, provisions shall be made to clear accumulations of snow, ice and other forms of weather-induced obstructions.

2403.7.2 Cabinets. Cabinets and enclosed compartments used to house fire extinguishers shall be clearly marked with the words "Fire Extinguisher" in letters at least 2 inches (51 mm) high. These cabinets shall be readily accessible at all times.

2403.8 Reporting Use. Use of any fire extinguisher under any circumstances shall be reported to the manager of the airport and the chief immediately after use.

100. **Section 2404.2 Airport Fuel Systems**, is amended as follows:

2404.2 Airport Fuel Systems. Airport fuel systems shall be designed and constructed in accordance with NFPA 407.

101. **Section 2404.3.1 General**, is amended as follows:

2404.3.1 General. Aircraft fueling vehicles shall be in compliance with Section 2404 and shall be designed and constructed in accordance with NFPA 407 and NFPA 385.

102. **Section 2405.7 Fire Extinguishers**, is amended as follows:

2405.7 Fire Extinguishers. At least one fire extinguisher having a minimum 80-B:C rating shall be provided for each permanent take-off and landing area and for the aircraft parking areas. Installation, inspection and maintenance of these extinguishers shall be in compliance with NFPA 10.

103. A new **Section 2405.9 Heliports and Helistops, Fire Alarms**, is added as follows:

2405.9 Heliports and Helistops, Fire Alarms. Communication facilities shall be provided from the roof area to notify the Fire Department. Alternatively, a fire alarm pull station may be installed and connected to the fire alarm system installed within the building as a separate zone.

104. **Section 2501.3 Permits and Plans**, is amended as follows:

2501.3 Permits and Plans. ~~For permits~~ **A permit is required** to operate a place of assembly of 50 or **more** occupants, operate a carnival or fair, use liquid- or gas-fueled vehicles or equipment for competition or display inside an assembly occupancy, or use candles or other open-flame devices in assembly areas, see Section 105, Permits c.1, c.2, l.2 and p.2. Plans of carnival and fair grounds shall be submitted when required by the chief.

105. **Section 2501.8.2 Panic hardware**, is amended as follows:

2501.8.2 Panic hardware. Exit doors from Group A Occupancies shall be in accordance with the building code.

106. **Section 2501.9 Aisles**, is deleted and replaced as follows:

2501.9 Aisles.

2501.9.1 General. Aisles leading to required exits shall be provided from all portions of buildings. Aisles located within an accessible route of travel shall also comply with the Building Code for accessibility.

Aisles serving as a portion of the exit access in the means of egress system shall comply with the requirements of this Section. Aisles shall be provided from all occupied portions of the exit access which contain seats, tables, furnishings, displays, and similar fixtures or equipment. Aisles serving assembly areas, other than seating at tables, shall comply with Section 2501.9.3. Aisles serving reviewing stands, grandstands and bleachers shall also comply with Section 2502. [IBC § 1004.3.1]

The required width of aisles shall be unobstructed.

EXCEPTION: Doors, when fully opened, and handrails shall not reduce the required width by more than 7 inches (178 mm). Doors in any position shall not reduce the required width by more than one-half. Other nonstructural projections such as trim and similar decorative features are permitted to project into the required width 1.5 inches (38 mm) from each side.

2501.9.1.1 Public areas Group B and M. In public areas of Group B and M occupancies, the minimum clear aisle width shall be 36 inches (914 mm) where seats, tables, furnishings, displays and similar fixtures or equipment are placed on only one side of the aisle and 44 inches (1118 mm) where such fixtures or equipment are placed on both sides of the aisle. [IBC § 1004.3.1.1]

2501.9.1.2 Nonpublic areas. In nonpublic areas, aisle widths shall be a minimum of 36 inches (914 mm). [IBC § 1004.3.1.2]

EXCEPTION: Nonpublic aisles serving less than 50 people, and not required to be accessible by IBC Chapter 11 need not exceed 28 inches (711 mm) in width.

2501.9.2 Seating at tables. Where seating is located at a table or counter and is adjacent to an aisle or aisle accessway, the measurement of required clear width of the aisle or aisle accessway, shall be made to a line 19 inches (483 mm) away from and parallel to the edge of the table or counter. The 19-inch (483 mm) distance shall be measured perpendicular to the side of the table or counter. In the case of other side boundaries for aisle or aisle accessways, the clear width shall be measured to walls, edges of seating and tread edges, except that handrail projections are permitted. [IBC § 1004.3.1.3]

EXCEPTION: Where tables or counters are served by fixed seats, the width of the aisle accessway shall be measured from the back of the seat.

2501.9.2.1 Aisle accessway for tables and seating. Aisle accessways serving arrangements of seating at tables or counters shall have sufficient clear width to conform to the capacity requirements of IBC section 1003.2.3 but shall not have less than the appropriate minimum clear width specified in Section 2501.9.1. [IBC § 1004.3.1.3.1]

2501.9.2.2 Table and seating accessway width. Aisle accessways shall provide a minimum of 12 inches (305 mm) of width plus 0.5 inch (12.7 mm) of width for each additional 1 foot (305 mm), or fraction thereof, beyond 12 feet (3658 mm) of aisle accessway length measured from the center of the seat farthest from an aisle. [IBC § 1004.3.1.3.2]

EXCEPTION: Portions of an aisle accessway having a length not exceeding 6 feet (1829 mm) and used by a total of not more than four persons.

2501.9.2.3 Table and seating aisle accessway length. The length of travel along the aisle accessway shall not exceed 30 feet (9144 mm) from any seat to the point where a person has a choice of two or more paths of egress travel to separate exits. [IBC § 1004.3.1.3.3]

2501.9.3 Width of means of egress for assembly. The clear width of aisles and other means of egress shall comply with Section 2501.9.3.1 where smoke-protected seating is not provided and with Section 2501.9.3.2 or 2501.9.3.3 where smoke protected seating is provided. The clear width shall be measured to walls, edges of seating and tread edges except for permitted projections. [IBC § 1008.5.]

2501.9.3.1 Without smoke protection. The clear width of the means of egress shall provide sufficient capacity in accordance with all of the following, as applicable: [IBC § 1008.5.1]

1. At least 0.3 inch (7.6 mm) of width for each occupant served shall be provided on stairs having riser heights 7 inches (178 mm) or less and tread depths 11 inches (279 mm) or greater, measured horizontally between tread nosing.
2. At least 0.005 inch (0.127 mm) of additional stair width for each occupant shall be provided for each 0.10 inch (2.5 mm) of riser height above 7 inches (178 mm).
3. Where egress requires stair descent, at least 0.075 inch (1.9 mm) of additional width for each occupant shall be provided on those portions of stair width having no handrail within a horizontal distance of 30 inches (762 mm).
4. Ramped means of egress, where slopes are steeper than one unit vertical in 12 units horizontal (8-percent slope), shall have at least 0.22 inch (5.6 mm) of clear width for each occupant served. Level or ramped means of egress, where slopes are not steeper than one unit vertical in 12 units horizontal (8-percent slope), shall have at least 0.20 inch (5.1 mm) of clear width for each occupant served.

2501.9.3.2 Smoke-protected seating. The clear width of the means of egress for smoke-protected assembly seating shall be not less than the occupant load served by the egress element multiplied by the appropriate factor in Table 2501.9.3.2. The total number of seats specified shall be those within a single assembly space and exposed to the same smoke-protected environment. Interpolation is permitted between the specific values shown. A Life Safety Evaluation, complying with NFPA 101, shall be done for a facility utilizing the reduced width requirements of Table 2501.9.3.2 for smoke-protected assembly seating. [IBC § 1008.5.2]

2501.9.3.2.1 Smoke control. Means of egress serving a smoke-protected assembly seating area shall be provided with a smoke control system complying with IBC Section 909 or natural ventilation designed to maintain the smoke level at least 10 feet (1829 mm) above the floor of the means of egress. [IBC § 1008.5.2.1 as amended]

2501.9.3.2.2 Roof height. A smoke-protected assembly seating area with a roof shall have the lowest portion of the roof deck not less than 15 feet (4572 mm) above the highest aisle or aisle accessway. [IBC § 1008.5.2.2]
EXCEPTION: A roof canopy in an outdoor stadium shall be permitted to be less than 15 feet (4572 mm) above the highest aisle or aisle accessway provided that there are no objects less than 80 inches (2032 mm) above the highest aisle or aisle accessway.

**TABLE 2501.9.3.2 [IBC Table 1008.5.2]
 WIDTH OF AISLES FOR SMOKE-PROTECTED ASSEMBLY**

TOTAL NUMBER OF SEATS IN THE SMOKE- PROTECTED ASSEMBLY OCCUPANCY	INCHES OF CLEAR WIDTH PER SEAT SERVED			
	Stairs and aisle steps with handrails within 30 inches	Stairs and aisle steps without handrails within 30 inches	Passageways, doorways and ramps not steeper than 1 in 10 slope	Ramps steeper than 1 in 10 slope
Equal to or less than 2,000	0.300	0.375	0.200	0.220
5,000	0.200	0.250	0.150	0.165
10,000	0.130	0.163	0.100	0.110
15,000	0.096	0.120	0.070	0.077
20,000	0.076	0.095	0.056	0.062
Equal to or greater than 25,000	0.060	0.075	0.044	0.048

For SI: 1 inch = 25.4 mm.

2501.9.3.2.3 Automatic sprinklers. Enclosed areas with walls and ceilings in buildings or structures containing smoke-protected assembly seating shall be protected with an approved automatic sprinkler system in accordance with Section 1003. [IBC § 1008.5.2.3 as amended]

EXCEPTION: Outdoor seating facilities where seating and the means of egress in the seating area are essentially open to the outside.

2501.9.3.3 Width of means of egress for outdoor smoke-protected assembly. The clear width in inches (mm) of aisles and other means of egress shall be not less than the total occupant load served by the egress element multiplied by 0.08 (2.0 mm) where the egress is by aisles and stairs and multiplied by 0.06 (1.52 mm) where egress is by ramps, corridors, tunnels or vomitories. [IBC § 1008.5.3]

EXCEPTION: The clear width in inches (mm) of aisles and other means of egress shall be permitted to comply with Section 2501.9.3.2 for the number of seats in the outdoor smoke-protected assembly where Section 2501.9.3.2 permits less width.

2501.9.4 Assembly aisle termination. Each end of an aisle shall terminate at cross aisle, foyer, doorway, vomitory or concourse having access to an exit. [IBC § 1008.7.5]

EXCEPTIONS:

1. Dead-end aisles shall not be greater than 20 feet (6096 mm) in length.
2. Dead-end aisles longer than 20 feet (6096 mm) are permitted where seats beyond the 20-foot (6096 mm) dead-end aisle are no more than 24 seats from another aisle, measured along a row of seats having a minimum clear width of 12 inches (305 mm) plus 0.6 inch (15.2 mm) for each additional seat above seven in the row.
3. For smoke-protected assembly seating, the dead-end aisle length of vertical aisles shall not exceed a distance of 21 rows.
4. For smoke-protected assembly seating, a longer dead-end aisle is permitted where seats beyond the 21-row dead-end aisle are not more than 40 seats from another aisle, measured along a row of seats having an aisle accessway with a minimum clear width of 12 inches (305 mm) plus 0.3 inch (7.6 mm) for each additional seat above seven in the row.

2501.9.5 Ramp slope. The slope of ramped aisles shall not be more than 1 unit vertical in 8 units horizontal (12.5% slope). Ramped aisles shall have a slip-resistant surface.

2501.9.6 Aisle steps.

2501.9.6.1 When prohibited. Steps shall not be used in aisles having a slope of 1 unit vertical in 8 units horizontal (12.5% slope) or less.

2501.9.6.2 When required. Aisles with a slope steeper than 1 unit vertical in 8 units horizontal (12.5% slope) shall consist of a series of risers and treads extending across the entire width of the aisle. The height of risers shall not be more than 8 inches (178 mm) or less than 4 inches (102 mm) and the tread run shall not be less than 11 inches (279 mm). The riser height shall be uniform within each flight and the tread run shall be uniform throughout the aisle. Variations in run or height between adjacent treads or risers shall not exceed 3/16 inch (4.8 mm). A contrasting marking stripe or other approved marking shall be provided on each tread at the nosing or leading edge such that the location of each tread is readily apparent when viewed in descent. Such stripe shall be a minimum of 1 inch (25.4 mm) wide and a maximum of 2 inches (51 mm) wide.

EXCEPTION: When the slope of aisle steps and the adjoining seating area is the same, the riser heights may be increased to a maximum of 9 inches (229 mm) and may be nonuniform but only to the extent necessitated by changes in the slope of the adjoining seating area to maintain adequate sightlines.

Variations may exceed 3/16 inch (4.8 mm) between adjacent risers provided the exact location of such variations is identified with a marking stripe on each tread at the nosing or leading edge adjacent to the nonuniform riser. The marking stripe shall be distinctively different from the contrasting marking stripe.

2501.9.7 Handrails. Handrails shall comply with the height, size and shape dimensions set forth in the Building Code and shall have rounded terminations or bends. Ramped aisles having a slope steeper than 1 unit vertical in 15 units horizontal (6.7% slope) and aisle stairs (two or more adjacent steps) shall have handrails located either at the side or within the aisle width. Handrails may project into the required aisle width a distance of 3½ inches (89 mm).

EXCEPTIONS:

1. Handrails may be omitted on ramped aisles having a slope not greater than 1 unit vertical in 8 units horizontal (12.5% slope) when fixed seating is on both sides of the aisle.
2. Handrails may be omitted when a guardrail is at the side of an aisle which conforms to the size and shape requirements for handrails.

Handrails located within the aisle width shall be discontinuous with gaps or breaks at intervals not to exceed five rows. These gaps or breaks shall have a clear width of not less than 22 inches (559 mm) and not more than 36 inches (914 mm) measured horizontally. Such handrails shall have an additional intermediate handrail located 12 inches (305 mm) below the main handrail.

107. **Section 2501.10.2 Bonding of chairs**, is deleted and replaced with **Section 1008.10 Seat Stability** of the International Building Code.

108. **Section 2501.18 Standby Personnel** is deleted and replaced as follows:

2501.18 Fire Safety Officer. When, in the opinion of the chief, it is essential for public safety in a place of assembly or any other place where people congregate, due to the number of persons, or the nature of the performance, exhibition, display, contest or activity, the owner, agent or lessee shall employ one or more Fire Safety Officer(s), as required and approved, to be on duty at such place. Such individuals shall be subject to the chief's orders at all times when so employed and shall be in uniform and remain on duty during the times such places are open to the public, or when such activity is being conducted. Before each performance or the start of such activity, such individuals shall inspect the required fire appliances provided to see that they are in proper place and in good working order, and shall keep diligent watch for fires during the time such place is open to the public or such activity is being conducted and take prompt measures for extinguishment of fires that may occur. Such individuals shall not be required or permitted, while on duty, to perform any other duties than those herein specified.

109. **Section 2504.3.3 Fire extinguishers**, is amended as follows:

2504.3.3 Fire extinguishers. Fire extinguisher shall be provided where cooking appliances are used in accordance with section 1005.11.6.

110. **SECTION 2806 - STORAGE OF AGRICULTURAL PRODUCTS**, is amended as follows:

SECTION 2806 - STORAGE OF AGRICULTURAL PRODUCTS

Hay, straw and other similar agricultural products shall not be stored adjacent to buildings or combustible material unless a cleared horizontal distance equal to the height of pile is maintained between such storage and combustible material and buildings. Storage shall be limited to stacks of 100 tons (90 718.5 kg) each. Either an approved one-hour fire barrier constructed as specified in the International Building Code or a clear space of 20 feet (6096 mm) shall be maintained between such stacks.

111. **Section 2901.6.1 Motor-vehicle fuel**, is amended as follows:

2901.6.1 Motor-vehicle fuel. Motor-vehicle fuels are only permitted to be drained in buildings meeting the requirements of IBC section 406.6.

112. **Section 2901.7.2 Welding**, is amended as follows:

2901.7.2 Welding. Welding operations shall be conducted only in buildings meeting the requirements of IBC Section 406.6, and shall be in accordance with Article 49.

113. **SECTION 3003 — PERMITS**, is amended as follows:

SECTION 3003 — PERMITS

For permits for wood product storage, pallet storage, and pallet rehab, see Section 105, Permit w.1, w.2

114. **Section 3004.2 Dust Control**, is amended as follows:

3004.2 Dust Control. When required by Section 3011.2, equipment or machinery located inside buildings, which generates or emits combustible dust shall be provided with an approved dust-collection and exhaust system installed in conformance with Article 76 and the Mechanical Code. Equipment or systems that are used to collect, process or convey combustible dusts shall be provided with an approved explosion-control system.

115. A new **SECTION 3010 — WOOD AND PLASTIC PALLET STORAGE AND REHABILITATION**

YARDS, is added as follows:

SECTION 3010 — WOOD AND PLASTIC PALLET STORAGE AND REHABILITATION YARDS

3010.1 Permits. A permit is required for the storage or rehabilitation of pallets in any area exceeding 500 sq. ft.

3010.2 Fire Flow Requirements. The minimum required fire flow shall not be less than 2000 gpm. Hydrant location shall be in accordance with Appendix III-B, Table A-III-B-1 for pallet yards of 6,200 square feet or less. For pallet storage yards greater than 6,200 square feet the required fire flow will follow the requirements of Appendix III-A, Table A-III-A-1 for type V-N construction. Pallet yards will not exceed the available fire hydrant flow and spacing.

3010.3 Pile Size and Spacing. Pallets stacks shall not exceed fifteen (15) feet in height nor shall cover an area of greater than four hundred (400) square feet or have an aggregate size greater than six thousand (6,000) cubic feet. (Note: Pile height may be limited under other local ordinances.) Pallet stacks shall be arranged to form stable piles. A distance of not less than eight (8) feet shall separate stacks. Piles shall be no closer than eight (8) feet to any property line or structure.

3010.4 Fire Apparatus Access Roads. Fire apparatus access roadways shall be provided for buildings and facilities in accordance with Section 902.2.

116.A new **SECTION 3011 — WOOD PROCESSING AND WOODWORKING FACILITIES**, is added as follows:

SECTION 3011 — WOOD PROCESSING AND WOODWORKING FACILITIES

3011.1 General. The minimum requirements for the construction, operation, and protection of facilities that handle, store, or process wood or wood products that produce or utilize finely divided wood particles or wood fibers shall be in accordance with Section 3011. Such facilities include, but are not limited to, wood flour plants, woodworking plants, lumber mills, and composite board plants.

3011.2 Dust Control. Dust control shall be in accordance with Section 3004.2 for combustible dust-producing operations that occupy areas of more than 2500 square feet (232 m²) or to areas where dust-producing equipment requires an aggregate dust collection flow rate of more than 1000 ft³/min (28.32 m³/hr).

EXCEPTION: The Chief is authorized to require dust control for any operation, if based in his opinion, a significant hazard exists.

3011.2.1 Surfaces and Ledges in Dusty Areas. Interior surfaces and ledges shall be designed to minimize dust accumulation. Surfaces not readily accessible for cleaning shall be inclined at an angle of not less than 45 degrees from the horizontal to minimize dust accumulation.

3011.2.2 Removal of Static Dust. Provisions shall be made for systematic, thorough cleaning of the entire plant at sufficient intervals to prevent the accumulations of finely divided wood dust that might be dislodged and lead to an explosion.

The use of compressed air or other similar means to remove dust accumulations from areas that are not readily accessible for cleaning by other methods shall be permitted only if done frequently enough to prevent hazardous concentrations of dust in suspension. Any open flame or spark-producing equipment shall not be used during blowdown.

117. A new **ARTICLE 31 — FIRE SALES & STORAGE YARDS**, is added as follows:

ARTICLE 31 — FIRE WOOD SALES & STORAGE YARDS

SECTION 3101 — SCOPE

Firewood Sales & Storage Yards shall be in accordance with Article 31, as amended.

SECTION 3102 — PERMITS

For a permit to store firewood in excess of 50 cords see Section 105.8, Permit w.3.

SECTION 3103 — ACCESS ROADS

Fire apparatus access roadways shall be provided to within 150 feet of all portions of the yard in accordance with Section 902 of the UFC.

SECTION 3104 — STORAGE

3104.1 General. Firewood shall be piled with due regard to stability of the piles and in no case higher than 10 feet. Where firewood is piled next to a property line on which a building has been erected, the distance from the pile to the property line shall be not less than one half the height of the pile and in no case less than 5 feet.

3104.2 Width. Driveways between and around lumber piles shall be at least 20 feet wide and maintained free from accumulation of rubbish, equipment or other articles or materials.

Driveways shall be so spaced that a maximum grid system unit of 50 feet by 150 feet is provided.

3104.3 Fencing Permanent firewood storage, operating under a permit, shall be surrounded with an approved fence at least 6 feet high

SECTION 3105 — SMOKING AND OPEN FLAME

3105.1 Burning. Burning of any type is prohibited.

3105.2 Smoking. Smoking shall be prohibited except in areas or structures designated by the Fire Department. "NO SMOKING" signs shall be posted on exterior of all structures and erected at driveways edges.

SECTION 3106 — HOUSEKEEPING

3106.1 Weeds and Vegetation. Weeds and vegetation shall be kept down throughout entire year and shall be sprayed as often as needed with a satisfactory weed killer, or cut, or grubbed out. Dead weeds and vegetation shall be removed.

3106.2 Debris. Debris such as sawdust, chips and bark shall be removed regularly. Proper housekeeping shall be maintained at all times

SECTION 3107 — FIRE EXTINGUISHING APPLIANCES

3107.1 Water Supply and Hydrants. Approved water supply and fire hydrants capable of supplying the required fire flow shall be provided to within 150 feet of all portions of the yard in accordance with Section 903.

3107.2 Fire Extinguishers. Portable fire extinguisher(s) shall be provided at approved locations.

118. SECTION 3203 — PERMITS, is amended as follows:

SECTION 3203 — PERMITS

3203.1 Permits. For permits to erect temporary membrane structures, tents or canopies, see Section 105, Permit t.1.

3203.2 Certificate of Insurance. Before a permit is issued to erect temporary membrane structures, tents and canopies, the applicant shall file with the jurisdiction a Certificate of Insurance. See Section 106.

EXCEPTION: ~~Government entities shall be exempt from this Certificate of Insurance requirement. The requirement for an insurance certificate for governmental entities may be waived by the City of Henderson's Risk Manager.~~

119. SECTION 3204 — USE PERIOD, is deleted and replaced as follows:

SECTION 3204 — USE PERIOD

3204.1 Use Period The duration of intended use must be declared at the time of application for permit.

3204.2 Use Period of 180 Days or Less. Temporary membrane structures, tents and canopies shall be used for a period of not more than 180 days within a 12-month period on a single premise.

3204.3 Use Period of Greater Than 180 Days. A permit may be issued for more than a 180-day period when all of the following are provided:

1. Applicant shall state in advance the exact amount of time needed, but not to exceed an additional 180-day period.
2. The structure shall be equipped with a sprinkler system designed to meet light hazard requirement as defined by NFPA 13, 2002 Edition.
3. A public address system shall be provided and include a master microphone for Fire Department use at an approved location.
4. Grandstands, bleachers, chairs and other type seating must be constructed of fire-resistive material. The entire space under the seating area must be fully enclosed with fire-resistive material and shall not be used for storage or any other purpose.
5. Standby personnel shall be provided for the exterior and interior of the structure as outlined in UFC Section 2501.18. In addition, radio communications shall be maintained between standby personnel and an approved central control point.
6. For assembly uses see Article 25.

120. A new **Section 3206.3 Structures exceeding the 180 day use period**, is added as follows:

Section 3206.3 Structures exceeding the 180 day use period. Structural stability shall be designed to withstand 100-mph wind load. Structural plans calculations and quality assurance agency contracts must be submitted to the Building Department for approval. The Building Department shall review all quality assurance agency inspection records and provide comments to the Fire Department. All electrical, mechanical and plumbing installations are required to be permitted and inspected by the Building Department.

121. SECTION 3407 — FIRE PROTECTION, is amended as follows:

SECTION 3407 — FIRE PROTECTION

Offices, storage buildings and vehicles used for site operations shall each be provided with at least one portable fire extinguisher with a rating of not less than 4-A:40-B:C. When required by the chief, additional portable fire extinguishers shall be provided in specific use areas in accordance with NFPA 10.

122. Section 3505.2 **Flame Spread**, is amended as follows:

3505.2 Flame Spread. Temporary structures shall be noncombustible or be treated and maintained in a flame-retardant condition conforming to Class B flame-spread ratings. (See IBC section 803.1.)

123. **Section 3601.6 Fire Protection,** is amended as follows:

3601.6 Fire Protection. Approved portable fire extinguishers of a type suitable for fighting fires involving flammable or combustible liquids shall be provided in dry-cleaning plants in accordance with NFPA 10. At least one extinguisher shall be provided at each entrance to rooms where flammable or combustible liquids are stored or used.

124. **Section 3603.4 Occupancy Requirements,** is deleted and replaced as follows:

3603.4 Occupancy Requirements.

3603.4.1 General. Class II and Class III-A dry-cleaning plants shall be within Group H, Division 2 Occupancies.

Class III-B dry-cleaning plants shall be within Group F, Division 1 Occupancies.

3603.4.2 Fire protection. Buildings containing dry-cleaning plants shall be protected throughout by an automatic fire-sprinkler system in accordance with the Building Code.

3603.4.3 Location within buildings. Dry-cleaning rooms and solvent storage rooms shall be located only on the first story.

3603.4.4 Plant separations. Buildings containing Class II or III-A dry-cleaning plants and their associated operations shall be separated from other businesses by not less than four-hour fire barrier.

EXCEPTIONS:

1. Class II dry-cleaning plants and associated operations are allowed to be separated from other businesses by two-hour fire barrier when the total quantity of Class II liquids within the building does not exceed 550 gallons (2082 L) and the capacity of individual containers or tanks within the building does not exceed 275 gallons (1041 L).
2. Class III-A plants and associated operations are allowed to be separated from other occupancies by two-hour fire barrier when the total quantity of Class III-A liquids within the building does not exceed 1,320 gallons (4997 L) and the capacity of individual containers or tanks within the building does not exceed 330 gallons (1249 L).

3603.4.5 Occupancy separations within plants.

3603.4.5.1 Dry-cleaning rooms. Dry-cleaning rooms containing Class II or Class III-A liquid solvents shall be separated from other uses, including solvent storage, offices and laundering, scouring, scrubbing, pressing and ironing operations, by not less than a two-hour fire barrier.

EXCEPTION: Solvent storage tanks need not be separated from the dry-cleaning room when the capacity of each such tank does not exceed 1,500 gallons (5678 L), provided there are not more than two storage tanks and the aggregate capacity of all solvent tanks and containers within the room does not exceed 7,500 gallons (28,391 L).

Dry-cleaning rooms containing Class III-B solvents need not be separated from other uses in the dry-cleaning plant; however, the maximum capacity of any container or tank within the room shall not exceed 2,500 gallons (9464 L) and the capacity of all containers or tanks within the room shall not exceed 7,500 gallons (28,391 L).

3603.4.5.2 Solvent storage. Except for solvent storage allowed within a dry-cleaning room in Section 3603.4.5.1, solvents stored within a plant shall be within liquid storage rooms in accordance with Section 7902.5.11.

EXCEPTION: Solvent storage for scouring, brushing and spotting operations in quantities not exceeding exempt amounts for control areas set forth in Section 7902.5.7.1 and stored in accordance with Section 7902.5 as required for such quantities.

3603.4.5.3 Drying rooms. Rooms or areas in which articles are hung up to dry shall be separated from other uses by not less than a two-hour fire barrier.

EXCEPTION: Approved drying or deodorizing cabinets located within dry-cleaning rooms.

3603.4.5.4 Rooms containing open flames. Fuel-burning equipment which generates an open flame shall be separated from rooms in which solvents are used or stored by not less than a four-hour fire barrier. Openings to such rooms shall be at least 10 feet (3048 mm) from openings into rooms containing solvents.

3603.4.5.5 Floors. Floors in rooms containing solvents shall be in accordance with the Building Code as required for floors in liquid storage rooms.

125. A new **ARTICLE 40 — MOTION PICTURE PRODUCTION STUDIO, SOUND STAGES, AND PRODUCTION FACILITIES**, is added as follows:

ARTICLE 40 — MOTION PICTURE PRODUCTION STUDIO, SOUND STAGES, AND PRODUCTION FACILITIES

SECTION 4001 — GENERAL

4001.1 Scope. Production studios, sound stages, and production facilities, used by the entertainment industry for the purpose of motion picture, television and commercial production shall be in accordance with the provision of this article and NFPA 140.

4001.2 Purpose. The purpose of this article is to establish minimum requirements that will provide a reasonable degree of safety from fire, panic, and explosion. Buildings and structures defined herein shall be in accordance with this article.

4001.3 Definitions.

PRODUCTION FACILITY is an existing building, or portion of a building, or a group of buildings, altered for use by the entertainment industry for the purpose of motion picture, televisions and commercial productions.

PLATFORM is part of a set which is a floor or horizontal surface raised above stage floor level.

PRODUCTION LOCATION is any area or facility outside a production studio, production facility, or sound stage, used by the entertainment industry for the purpose of motion picture, televisions and commercial productions.

PRODUCTION STUDIO is a building, a portion of a building, or a group of buildings designed and constructed for use by the entertainment industry for the purpose of motion picture, television, or commercial productions, or broadcasting television programs utilizing a soundstage.

SET is a structure built or assembled for the purpose of motion picture, television, or commercial productions.

SOUND STAGE is a building or a portion of a building, usually insulated from outside noise and natural light, used by the entertainment industry for the purpose of motion picture, television, or commercial productions.

SECTION 4002 — REQUIRED PERMITS

4002.1 General. A permit from the authority having jurisdiction shall be obtained anytime filming or live broadcasts are done from:

1. Production Facilities, Production Studios, Sound Stages, or
2. Production Locations when required by the chief.

EXCEPTION: The filming or live broadcasts of news or sporting events.

4002.2 Additional Permits. A separate permit(s) shall be required for the use of pyrotechnic special effects, open flame use, use of flammable or combustible liquids and gases, welding, and the parking of motor vehicles within a soundstage or production facility.

4002.3 Live Audiences. An assembly permit shall be required for seating arrangements of all live audience stages. Such arrangements shall be in accordance with Article 25.

SECTION 4003 — OCCUPANCY CLASSIFICATION

4003.1 Live Audience Stages. Production facilities, sound stages, and production studios with live audience stages, shall be classified as Group A Occupancies in accordance with the building code.

4003.2 All Other Stages. Production facilities, sound stages, and production facilities without live audience stages shall be classified as Group F, Division 1 Occupancies in accordance with the building code.

SECTION 4004 — GENERAL REQUIREMENTS

4004.1 Housekeeping. Studio sound stages shall maintain proper housekeeping in accordance with Article 11, Section 1103

4004.2 Aisle. Perimeter aisles within the sound stage shall be provided. Aisles required by this section shall be a minimum width of 4 feet (1219mm). See Article 12 for maintenance requirements. Aisles required by this section shall have a minimum clear unobstructed height of 7 feet (2134mm).

4004.3 Travel Distance. The maximum travel distance to any exit within the soundstage shall be 150 ft.

4004.4 Exit Doors. Exit doors shall be equipped with panic hardware and swing in the direction of exit travel.

4004.5 Exit Sign. Illuminated exit signs shall be installed in accordance with the Building Code.

4004.6 Exit Illumination. Exit illumination shall be provided in accordance with the Building Code. In the event of a power failure, exit path illumination shall be automatically provided by an approved emergency back-up system.

4004.7 Exit Obstructions. All means of egress shall be maintained in accordance with the provisions of Article 12 Section 1203.

4004.8 Foam Plastic. All foam plastics shall meet the requirements of Article 11, Section 1103.3.3.4.

SECTION 4005 — FIRE-EXTINGUISHING SYSTEMS

4005.1 Existing Production Studios and Sound Stages. Existing soundstages and existing production facilities equipped with automatic sprinkler systems shall maintain those systems in accordance with NFPA 25.

4005.2 New Production Studios and Sound Stages. New soundstages and new production facilities shall be equipped with an approved, supervised automatic sprinkler system. The system shall be installed in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems, and maintained in accordance with NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.

EXCEPTIONS:

1. The requirements of NFPA 13 prohibiting obstructions to sprinkler discharge shall not be applicable if approved mitigation techniques are employed.
2. The requirements of NFPA 13 prohibiting obstructions to sprinkler discharge shall not be applicable if the building sprinkler system meets the design criteria for Extra Hazard, Group 2.

4005.3 Solid-Ceiling Sets and Platforms. All interior solid-ceiling sets over 600 square feet (55.7m²) in area shall be protected by an automatic fire sprinkler system.. Platforms over 600 square feet (55.7m²) in area and which exceed 3 feet (914mm) in height shall be protected by an automated fire sprinkler system.

EXCEPTIONS:

1. Approved and listed heat detectors shall be installed beneath solid-ceiling sets over 600 square feet (55.7m²) in area and under platforms over 600 square feet (55.7m²) in area and which exceed 3 feet (914mm) in height.
2. Heat detectors shall be spaced 30 feet on center or as required the manufacturer's installation instructions,. Detectors shall be connected to an approved and listed control, proprietary or remote station service, or a local alarm which will give an audible signal at a constantly attended location.
3. Sets with solid ceiling over 600 square feet (55.7m²) in area shall be ~~positions~~ positioned to allow ~~of~~ for the automatic fire sprinkler system after filming has been completed for the day.

SECTION 4006 — FIRE-DETECTION EQUIPMENT

4006.1 Fire Alarm Panels. Fire Alarm panels shall be utilized in accordance with their listing. Panels may be temporarily supported by sets, platforms, or pedestals, for temporary sets which will be erected for less than 180 days.

4006.2 Heat Detectors. Heat detectors require by this article shall be defined as a portable system as it is intended to be reinstalled when platforms or sets are changed, and after filming has been completed for the day. Heat Detectors shall be secured to standard outlet boxes which may ~~by~~ be temporarily supported by sets, platforms, or pedestals.

4006.3 Wiring. Wiring for temporary (less than 180 days) or portable fire alarm systems do not have to meet the requirements of NEC 300-1 as amended locally.

SECTION 4007 — FIRE SAFETY OFFICERS

4007.1 Pyrotechnics. Standby fire safety officers shall be required for all productions where pyrotechnic special effects are used.

4007.2 Other Hazards. Where permits are required by the Fire Code, standby fire safety officers shall be determined by the Chief on a case-by-case basis.

SECTION 4008 — ELECTRICAL REQUIREMENTS

4008.1 General. All electrical equipment, including lighting, cabling, and temporary power, such as portable generators, shall be maintained in good working order and shall comply with the provision of the Electrical Code.

4008.2 Lighting and Power Requirements. A studio, sound stage, and production facility shall be provided with a minimum of 35 watts per square foot of permanently installed power dedicated for the distribution of production lighting and power. Mobile generators may be utilized for auxiliary power.

4008.3 Distribution. Distribution equipment shall be designed for sound stage use. The wiring to such equipment shall be permanent and shall comply with applicable provisions of the Electrical Code. Temporary feeders shall not be tapped with paperboards and switchboards where dead front covers have to be removed.

4008.4 Installations. Permanent or temporary electrical installations shall be installed in accordance with the Electrical Code and this code. Such equipment shall not obstruct exits, means of egress or fire department access.

4008.5 Generators. Portable mobile or stationary power-generating equipment may be used to supplement building electrical power for temporary wiring. Equipment shall be located at a predestinated location as approved by the Chief.

Temporary auxiliary power cables supplied from mobile generators or adjacent building may pass through exterior walls and interior fire-resistive assemblies provided an approved through-penetration fire-stop system is utilized for protection of openings.

SECTION 4009 — MECHANICAL EQUIPMENT

4009.1 Existing Equipment. All mechanical equipment used as part of the building ventilation system shall be maintained in good working order and shall comply with the provisions of the Mechanical Code.

4009.2 Auxiliary Equipment. All auxiliary heating, ventilation, and air-conditioning equipment shall be approved and listed for their intended use. Flexible duct, if utilized, shall be noncombustible. Such auxiliary equipment shall not obstruct exits, means of egress or fire department access.

SECTION 4010 — DESIGN REQUIREMENTS

4010.1 General. Production facilities and soundstages shall be designed, constructed, and altered to sustain all dead loads and other loads specified in the local building code. Where the anticipated loads exceed those specified in the local building code for the purpose of suspending sets, and ceilings, backings, and other heavy production set pieces, the building shall be designed and constructed for the additional loads.

126. A new **Section 4501.3.1 Permits for Spray Booths**, is added as follows:

4501.3.1 Permit for Spray Booths. A permit is required for the construction and/or installation of a spray booth designed for utilizing flammable or combustible liquids, or the application of combustible powders regulated by Article 45, see Section 105, Permit s.2.

127. A new **Section 4502.2.11 Location Prohibited**, is added as follows:

4502.2.11 Location Prohibited. Spray booth(s) designed for utilizing flammable or combustible liquids, or the application of combustible powders regulated by Article 45 shall not be located outside of buildings.

128. **Section 4502.6.2 Occupancy**, is amended as follows:

4502.6.2 Occupancy. Limited spraying areas shall only be located in buildings and structures that conform to the requirements of IBC Section 416, NFPA 33, NFPA 34 and the Article 45.

129. **Section 4502.8.2 Fire extinguishers**, is amended as follows:

4502.8.2 Fire extinguishers. Portable fire extinguishers shall be provided for spraying areas in accordance with the requirements for an extra (high) hazard occupancy as set forth in NFPA 10.

130. **Section 5005.2 Tanks in Buildings**, is amended as follows:

5005.2 Tanks in Buildings. Tank storage for flammable and combustible liquids inside of buildings shall be in storage areas at or above grade, which are separated from the processing area by a two-hour fire barrier constructed in accordance with the Building Code.

EXCEPTION: Quantities in processing equipment essential to the continuity of operations.

131. **Section 5005.4 Storage of Finished Products**, is amended as follows:

5005.4 Storage of Finished Products. Finished products that are flammable or combustible liquids shall be stored outside of buildings, in a separate building, or in a room separated from the processing area by a two-hour fire barrier constructed in accordance with the Building Code. The storage of finished products shall be in tanks or in closed containers in accordance with Article 79.

132. **Section 5005.5.1 Location**, is amended as follows:

5005.5.1 Location. The nitrocellulose storage area shall be in a separate building or in a room which is separated from the processing area by a two-hour fire barrier constructed in accordance with the Building Code. Nitrocellulose storage areas shall not be used for other purposes. Electrical wiring and equipment shall be installed in accordance with the Electrical Code.

133. **Section 5007.3.1 Location**, is amended as follows:

5007.3.1 Location. Open-fire kettles shall be located in an outside area, provided with a protective roof or in a separate building of noncombustible construction or separated from other areas by a two-hour fire barrier constructed in accordance with the Building Code.

134. **Section 5014.4 Powered Industrial Trucks**, is amended as follows:

5014.4 Powered Industrial Trucks. Powered industrial trucks shall be of a type approved for the location and shall be in accordance with nationally recognized standards. See Article 90, Standard n.2.4, n.2.5

135. **Section 5101.6 Emergency Control Station**, is amended as follows:

5101.6 Emergency Control Station. An emergency control station shall be provided on the premises at an approved location, outside of the fabrication area and shall be continuously staffed by trained personnel. The emergency control station shall receive signals from emergency equipment and alarm and detection systems. Such emergency equipment and alarm and detection systems shall include, but not necessarily be limited to, the following when such equipment or systems are required to be provided either by this article or elsewhere in this code:

1. Automatic fire sprinkler system alarm and monitoring systems (see Section 5101.10.1).
2. Manual fire alarm systems (see Section 5101.10.2).
3. Emergency alarm systems (see Section 5101.10.3).
4. Continuous gas-detection systems (see Section 5101.10.4).
5. Smoke-detection systems (see Sections 1006.2.5, 8003.3.1.7, 8003.6.1.6, 8003.7.1.7 and 8004.2.3.7.7 and the Building Code).
6. Emergency power system (see Section 5101.13).

136. **Section 5102.3.2 Separation of HPM**, is amended as follows:

5102.3.2 Separation of HPM. Hazardous production material stored in a liquid storage room, HPM room or gas room shall be separated from each other in the room in accordance with Table 5102-C. Noncombustible partition separation shall be in accordance with Section 8001.11.8, Item 2. When separate rooms are required, the walls of such rooms are not required to be fire rated. One-hour fire-resistive fire barrier shall be provided when one-hour separation is required.

137. **Section 5201.9 Fire Protection**, is amended as follows:

5201.9 Fire Protection. Portable fire extinguishers shall be provided as set forth in NFPA 10.

138. A new **TABLE 5202.3.7-A – MINIMUM SEPARATION REQUIREMENTS FOR PROTECTED ABOVEGROUND**

TANKS, is added as follows:

TABLE 5202.3.7-A – MINIMUM SEPARATION REQUIREMENTS FOR PROTECTED ABOVEGROUND TANKS.

INDIVIDUAL TANK CAPACITY, GALLONS (LITERS)	MINIMUM DISTANCE FROM PROPERTY LINE WHICH IS OR CAN BE BUILT UPON, INCLUDING THE OPPOSITE SIDE OF A PUBLIC WAY. FEET (mm)	MINIMUM DISTANCE FROM THE NEAREST SIDE OF ANY PUBLIC WAY OR FROM THE NEAREST IMPORTANT BUILDING ON THE SAME PROPERTY. FEET (mm)	MINIMUM DISTANCE BETWEEN TANKS. FEET (mm)
Less than or equal to 6,000 (22,712)	15 (4,572)	5 (1,524)	3 (914)
Greater than 6,000 (22,712)	25 (15,240)	15 (4,572)	3 (914)

139. **Section 5203.5.1 General**, is amended as follows:

5203.5.1 General. The installation and operation of LP-gas dispensing systems shall be in accordance with Section 5203.5 and NFPA 58. Liquefied petroleum gas dispensers and dispensing stations shall be installed in accordance with manufacturers specifications and their listing.

140. **Section 5204.2 Standards**, is amended as follows:

5204.2 Standards. Compressed natural gas motor vehicle fuel dispensing operations and facilities shall be in accordance with NFPA 52.

141. **Section 5204.5.1 General**, is amended as follows:

5204.5.1 General. Compression, storage and dispensing equipment shall be located aboveground.

EXCEPTIONS:

1. Compression, storage or dispensing equipment is allowed in buildings of noncombustible construction, as set forth in the Building Code, which are unenclosed for three quarters or more of the perimeter.
2. Compression, storage and dispensing equipment is allowed to be located indoors in accordance with NFPA 52.

142. **Section 5204.10.2.3.5 Vent tube**, is amended as follows:

5204.10.2.3.5 Vent tube. A vent tube which will divert the gas flow to atmosphere shall be installed on the cylinder prior to the commencement of venting and purging operation. The vent tube shall be constructed of pipe or tubing materials in accordance with Article 90, Standard a.2.5. Piping materials specified in NFPA 52 § 2.8.4 shall not be used. The vent tube shall be capable of dispersing the gas a minimum of 10 feet (3048 mm) above grade level. The vent tube shall not be provided with a rain cap or other feature which would limit or obstruct the gas flow. At the connection fitting of the vent tube and the CNG cylinder, a listed bi-directional detonation flame arrester shall be provided.

143. **Section 6106.3 Location**, is amended as follows:

6106.3 Location. The use of listed portable unvented oil-burning heating appliances shall be limited to supplemental heating in Group U Occupancies.

EXCEPTION: When approved, portable unvented oil-burning heating appliances may be used in any occupancy during construction when such use is necessary for the construction and the use does not represent a hazard to life or property.

144. **SECTION 6201 — SCOPE**, is amended as follows:

SECTION 6201 — SCOPE

Location, construction and operation of industrial baking and drying ovens which are heated with oil or gas fuel or which during operation contain flammable vapors from the products being baked or dried shall be in accordance with Article 62. This article provides requirements for the operation of these ovens within certain limitations of control depending on oven design, paint formulation and ventilation requirements. In addition to the requirements of Article 62, industrial baking and drying ovens shall comply with NFPA 86.

145. **SECTION 6205 — SAFETY CONTROLS**, is amended as follows:

SECTION 6205 — SAFETY CONTROLS

6205.1 General. Safety controls specified in NFPA 86 shall be provided in sufficient number and substantially constructed and arranged to maintain the required conditions of safety and prevent the development of fire and explosion hazards.

146. **SECTION 6302 — CLASSIFICATION**, is amended as follows:

SECTION 6302 — CLASSIFICATION

Refrigerants shall be classified into safety groups in accordance with the Mechanical Code. Refrigerant hazards categories shall be classified as indicated in Appendix VI-J Table A-VI-J-1 if the refrigerant used is included in this table and in accordance with Section 8002 otherwise.

147. **Section 6307.4 Identification**, is amended as follows:

6307.4 Identification. Control boxes shall be provided with a permanent label on the outside cover reading “**FIRE DEPARTMENT — EMERGENCY CONTROL BOX**” and including the name of the refrigerant in the system. Hazard identification shall be in accordance with NFPA 704 and Appendix VI-J Table A-VI-J-1. If the refrigerant used is included in this table, the hazard classification shall be posted inside and outside of the control box.

148. **Section 6310.1 When Required**, is amended as follows:

6310.1 When Required. Refrigeration systems shall be provided with a refrigeration machinery room when any of the four following conditions exist:

1. The quantity of refrigerant in a single system exceeds quantities specified in the Mechanical Code.
2. Direct-fired absorption equipment.
3. A Group A1 system, as determined by the Mechanical Code, having an aggregate compressor energy of 100 horsepower (351.6 kW) or more.
4. The system contains other than a Group A1 refrigerant, as determined by the Mechanical Code.

EXCEPTIONS:

1. Lithium bromide absorption systems using water as the refrigerant.
2. Ammonia-water absorption unit systems installed outdoors, provided that the quantity of refrigerant in a single system does not exceed UMC Table 11-A amounts and the discharge is shielded and dispersed.
3. Systems containing less than 300 pounds (136 kg) of refrigerant R-123 and located in an approved exterior location.
4. Systems containing less than 35 pounds (16 kg) of refrigerant R-717 and located in an approved exterior location.

149. **Section 6313.3 Power and Supervision**, is amended as follows:

6313.3 Power and Supervision. Detection and alarm systems shall be powered and supervised as required for fire alarm systems in accordance with NFPA 72.

150. **Section 6313.5 Installation and Maintenance**, is amended as follows:

6313.5 Installation and Maintenance. Detection and alarm systems shall be installed and maintained as required for fire alarm systems in accordance with Article 10 and NFPA 72. Also see Section 6320.1.

151. **SECTION 6319 — EMERGENCY SIGNS AND LABELS**, is amended as follows:

SECTION 6319 — EMERGENCY SIGNS AND LABELS

Refrigeration units or systems shall be provided with approved emergency signs, charts and labels in accordance with the Mechanical Code and NFPA 704. See also Appendix VI-J. Hazard signals shall be in accordance with Appendix VI-J Table A-VI-J-1 if the refrigerant used is included in this table.

152. **Section 6320.1 Acceptance Testing**, is amended as follows:

6320.1 Acceptance Testing. The following emergency devices or systems shall be tested to demonstrate their safety and effectiveness upon completion or alteration:

1. Treatment and flaring systems,
2. Ammonia diffusion systems,
3. Valves and appurtenances necessary to the operation of emergency refrigeration control boxes,
4. Fans and associated equipment intended to operate emergency purge ventilation systems, and
5. Detection and alarm systems.

Fire alarm systems shall be tested in accordance with NFPA 72.

153. **Section 6404.3 Occupancy Separation**, is amended as follows:

6404.3 Occupancy Separation. In other than Groups A, E, I and R Occupancies, battery systems shall be located in a room separated from other portions of the building by a minimum one-hour fire barrier. In Groups A, E, I and R Occupancies, battery systems shall be located in a room separated from other portions of the building by a two-hour fire barrier.

154. **Section 7401.1 Scope**, is amended as follows:

7401.1 Scope. Storage, use and handling of compressed gases in compressed gas containers, cylinders, tanks and systems shall be in accordance with Article 74, including those gases regulated elsewhere in this code. Partially full compressed gas containers, cylinders or tanks containing residual gases shall be considered as full for the purposes of the controls required.

EXCEPTION: Gases within approved refrigeration systems complying with the Mechanical Code are not regulated by Article 74. See Article 63.

For requirements pertaining to bulk oxygen systems at industrial and institutional consumer sites, see NFPA 50.

For requirements pertaining to cutting and welding, see Article 49.

For requirements pertaining to CNG, see Article 52.

For requirements pertaining to cryogenic fluids, see Article 75.

For requirements pertaining to compressed gases classified as hazardous materials, see Article 80.

For requirements pertaining to LP-gas, see Article 82.

155. **Section 7401.3 Permits**, is amended as follows:

7401.3 Permits. Permits are required to store, transport on site, dispense, use or handle compressed gases in excess of quantities specified in Section 105, Permit c.7, or medical gas systems as specified in Section 105, Permit m.5.

156. A new **Section 7404.1.1 Plans and specifications submittal**, is added as follows:

7404.1.1 Plans and specifications submittal. At the time of permit application, a minimum of two (2) sets of plans and specifications including the information specified in Section 7404.1.1 shall be submitted for review and approval. Following approval of the plans, a copy of the approved plans shall be maintained on the premises in an approved location. The plans shall include the following:

1. Project name, street address and owners name.
2. Contractor name, address, phone number, license numbers (City, State Contractor and State Fire Marshal), license classification, and license limit.
3. Wet signature of the licensee (contractors Master or Qualified Employee) or seal and signature of a Professional Engineer licensed in the state of Nevada.
4. Code edition of standards used in the design.
5. System classification (Level).
6. When used - gas type, container size and quantity.
7. Symbol legend with equipment description (manufacturer's name and model number) and mounting description (surface, semi-flush, flush, and exterior).
8. Site plan.
9. Floor plan drawn to an indicated scale (1/8" minimum) on sheets of a uniform size showing:
 - a. Point of compass (north arrow).
 - b. Walls, doors, windows, openings, stairs, elevators, passageways, high piled storage racks, etc., as applicable to depict the facility.
 - c. Room use identification labels.
 - d. Gas, air and vacuum piping distribution systems, manifolds, sizes and material types. Piping hangers and slopes.
 - e. Valves and valve boxes, outlets, gages and other components.
 - f. Electrical warning systems (local and master alarm panels), conductor/conduit routing and size, power panel and circuit connection.
 - g. Key plan.
 - h. Compressor inlet location and vacuum exhaust outlet location.
 - i. For interior gas supply rooms provide construction fire ratings, ventilation and fire sprinkler information.
10. Product data submittal including a cover index sheet listing products used by make and model number, manufacturer data sheets (highlighted or marked) and listing information for all equipment, devices, and materials.
11. Design number and detail of penetration fire stop system when required.
12. Verification & inspection requirements.
13. Name of independent medical gas testing agency to certify the system.
14. Any additional information determined necessary when required by the AHJ.

157. **Section 7404.2.2 Exterior supply locations**, is amended as follows:

7404.2.2 Exterior supply locations. Oxidizer medical gas systems located on the exterior of a building with quantities greater than the permit amount shall be located in accordance with Section 8004.

7404.2.3 Medical gas systems. Medical gas systems including, but not limited to, distribution piping, supply manifolds, connections, pressure regulators, and relief devices and valves, shall be in accordance with NFPA 99 and the general provisions of Article 74.

158. A new **Section 7404.2.4 Medical Gas Systems, Testing**, is added as follows:

7404.2.4 Medical Gas Systems, Testing. Level I & II medical gas systems shall be certified by an independent medical gas testing agency prior to use of the system. Copies of the system certification shall be forwarded to the Fire Prevention Division.

159. A new **Section 7404.2.5 Medical Gas Systems, Piping Hangers**, is added as follows:

7404.2.5 Medical Gas Systems, Piping Hangers. Piping shall be protected from hangers made of dissimilar metals in an approved manner.

160. **Section 7501.1 Scope**, is amended as follows:

7501.1 Scope. Storage, use and handling of cryogenic fluids shall be in accordance with Article 75. Partially full containers having residual cryogenic fluids shall be considered as full for the purposes of the controls required.

EXCEPTION: Fluids within an approved closed-cycle refrigeration system complying with the Mechanical Code are not regulated by Article 75. See Article 63.

For requirements pertaining to oxidizing cryogenic fluids, see NFPA 80. Common oxidizing cryogenic fluids include oxygen.

For requirements pertaining to flammable cryogenic fluids, see NFPA 50B. Common flammable cryogenic fluids include hydrogen, methane and carbon monoxide.

Liquefied natural gas (LNG) is not regulated by this article. For requirements pertaining to liquefied natural gas, see NFPA 59A.

For requirements pertaining to inert cryogenic fluids, see Compressed Gas Association Standard for Bulk Inert Gas Systems at Consumer Sites, CGA P-18.

For requirements pertaining to cryogenic fluids classified as hazardous materials, see Article 80.

For a table of weight and volume equivalents to convert gallons of liquid to cubic feet of gas and similar units of measure, see Appendix VI-K.

161. **Section 7501.9.3.1 Surfaces beneath containers**, is amended as follows:

7501.9.3.1 Surfaces beneath containers. Containers shall be placed on surfaces which are compatible with the fluid in the container. See Section 7501.1 for applicable standards.

162. **Section 7701.1 exception number 6** is deleted in its entirety.

163. **Section 7701.4 Bond**, is amended as follows:

7701.4 Certificate of Insurance. Before a permit is issued to use explosive materials, the applicant shall file with the jurisdiction a Certificate of Insurance. See Section 106.

EXCEPTION: ~~Governmental entities shall be exempt from this insurance requirement. The requirement for an insurance certificate for governmental entities may be waived by the City of Henderson's Risk Manager.~~

164. **Section 7701.7.1 Manufacturing**, is amended as follows:

7701.7.1 Manufacturing. Explosive materials shall not be manufactured without authorization by the chief.

Explosive materials shall not be manufactured within the City of Henderson for wholesale or retail sale.

165. **Section 7701.7.2 Limits established by law**, is amended as follows:

7701.7.2 Storage of Explosives. Explosive materials shall not be stored within the City of Henderson.

EXCEPTIONS:

1. Facilities with a conditional use permit.
2. See Section 7701.1, Exceptions 1 through 5 and 7 & 8.

166. A new **Section 7703.1.14 Development-related blasting activities**, is added as follows:

7703.1.14 Development-related blasting activities. Development-related blasting activities shall be in accordance with Section 7705.

167. A new **SECTION 7705 – DEVELOPMENT-RELATED BLASTING ACTIVITIES**, is added as follows:

SECTION 7705 – DEVELOPMENT-RELATED BLASTING ACTIVITIES

7705.1 General. Development-related blasting activities shall be in accordance with Section 7705.

7705.2 Permit Requirements. A permit is required for any proposed excavation or development activity that will involve the use of explosives. The permit must be obtained by the blasting contractor before any drilling or blasting activity occurs. The application shall be made to the fire department in such a form and detail as prescribed by the fire department. Applications for permits shall be accompanied by such plans as required by the fire department.

7705.3 Blasting Activity Requirements. The blasting contractor shall comply with the following requirements in connection with any blasting activity governed by the fire department:

1. The blasting contractor shall conduct or provide for inspections of neighboring properties upon which are located structures in close proximity to the blasting area, or when otherwise required by condition of the fire department prior to blasting operations.
2. The blasting contractor shall provide a minimum of 24 hours' prior written notice to all residences, businesses and public uses within 1000 feet of the blasting area. The blasting contractor shall also provide a minimum of 24 hours' prior written notice to any utility company that has facilities or equipment within 300 feet of the blasting area. The form and content of any such notice must be as prescribed by the fire department. The blasting contractor shall provide a minimum of 24 hours' prior written notice to the fire department as prescribed by the fire department.
3. Except as otherwise authorized in advance by the fire department for good cause shown, all blasting activities shall be limited to the hours of 8 a.m. to 4 p.m., Monday through Friday. The fire department may restrict the time of actual blasting.
4. The blasting contractor shall provide for the seismic monitoring of any blasting that occurs within 1000 feet of any structure or within 300 feet of any utility installation. Such monitoring must be done by a seismologist and shall measure blast-induced vibration by means of an instrument that senses and records particle velocity in the mutually perpendicular axes. Monitoring results shall be reported to the fire department in a manner as prescribed by the fire department.
5. Blast-induced, ground-borne vibrations shall not exceed a single component peak particle velocity (vector sum) of 0.5 inches per second (ips) at the nearest occupied structure.
6. The blasting contractor shall provide for the sound level monitoring of any blasting that occurs within 1000 feet of any structure or within 300 feet of any utility installation. Such monitoring must be done by a seismologist and shall measure blast-induced sound levels by means of an instrument that senses and records. The sound level shall not exceed 120 decibels. Monitoring results shall be reported to the fire department in a manner as prescribed by the fire department.
7. The blasting contractor shall be responsible for removing and cleaning up any blast-related debris and from adjacent properties.

168. **Section 7801.3.1 Fireworks**, is amended as follows:

7801.3.1 Fireworks. A permit is required for the sale and storage of all fireworks. See Section 105, Permit f.2.

169. **Section 7801.3.1.4 Displays**, is amended by adding a new subsection as follows:

Section 7801.3.1.4.1 Additional Requirements for Outside Fireworks Displays. The following conditions apply to fireworks displays:

1. Fireworks displays shall not exceed eight times per calendar year at any one location.
2. Fireworks displays shall only occur on Friday and Saturday nights, with the sole exception of New Years Eve and July 4th. On New Years Eve and July 4th, fireworks must conclude by 12:30 a.m. (including all misfires). On any other occasion, fireworks must conclude by 10:30 p.m. (including all misfires).
3. Notification of the fireworks display must be provided not more than 30 days and not less than 10 days prior to the fireworks display, to all occupancies and residences, as specified in the permit. A copy of the notification plan shall be included with the permit application.
4. Fireworks displays will be cancelled or postponed when the wind velocity is in excess of 15 mph for aerial displays and when the wind velocity is in excess of 20 mph for ground displays. All advertising for the fireworks display shall contain a disclaimer advising that “The fireworks displays will be cancelled or postponed when the wind velocity is in excess of 15 mph”.
5. Other fireworks displays for special events may be considered on an individual basis.

170. **7802.3 Prohibition**, is amended as follows:

7802.3 Prohibition. The manufacturing, possession, storage, sale, use and handling of fireworks is prohibited.

EXCEPTIONS:

1. Manufacturing of fireworks in accordance with Section 7704 when allowed by the chief under special permits when not otherwise prohibited by applicable local or state laws, ordinances and regulations.
2. Storage of fireworks in accordance with the requirements for low explosives in Section 7702.
3. Storage of fireworks, 1.4G in accordance with the Building Code.
4. The sale, storage and use of Fireworks 1.4G (Class C) when in accordance with the Southern Nevada Fire Chief’s Association Approved Guidelines for Fireworks.
5. Use and handling of fireworks for display in accordance with Section 7802.4.

171. **Section 7802.4.3 Bond**, is amended as follows:

7802.4.3 Certificate of Insurance. Before a permit is issued for a pyrotechnic display, the applicant shall file with the jurisdiction a Certificate of Insurance. See Section 106.

EXCEPTION: ~~Governmental entities shall be exempt from this insurance requirement. The requirement for an insurance certificate for governmental entities may be waived by the City of Henderson’s Risk Manager.~~

172. **Section 7901.3.2 Plans**, is amended as follows:

7901.3.2 Plans. Plans shall be submitted with each application for a permit to store flammable or combustible of liquids. The plans shall indicate the method of storage, quantities to be stored, distances from buildings and property lines, accessways, fire-protection facilities, and provisions for spill control and secondary containment. Complete floor plans shall be submitted for indoor storage.

173. **Section 7901.5.3 Portable fire extinguishers**, is amended as follows:

7901.5.3 Portable fire extinguishers. Portable fire extinguishers shall be provided in accordance with NFPA 10 and as otherwise required by Article 79.

174. **Section 7901.7.1 Unauthorized Discharges, General**, is ~~not~~ amended ~~by deleting exception 2.~~

175. **Section 7902.1.7.2.3 Underground tanks out of service for one year**, is amended as follows:

7902.1.7.2.3 Underground tanks out of service for one year. Underground tanks that have been out of service for a period of one year shall be removed from the ground in accordance with Section 7902.1.7.4 and the Environmental Health Division of Clark County Health District and the site shall be restored in an acceptable manner.

176. **Section 7902.1.8.1.1 General**, is amended as follows:

7902.1.8.1.1 General. Portable tanks, containers and equipment used or intended to be used for the storage of flammable or combustible liquids shall be of an approved type. Containers and portable tanks shall be designed and constructed in accordance with nationally recognized standards. See Article 90, Standards u.1.2 , u.1.14 and NFPA 386. The capacity of individual containers and portable tanks for liquids shall be in accordance with Table 7902.1-A.

EXCEPTION: Medicines, beverages, foodstuffs and cosmetics when packaged according to commonly accepted practices for retail sales.

177. **Section 7902.1.8.2.1 General**, is amended as follows:

7902.1.8.2.1 General. The design, fabrication and construction of tanks shall be in accordance with recognized good engineering practice and nationally recognized standards. Each tank shall bear a permanent nameplate or marking indicating the standard used as the basis of design, fabrication and construction. See Article 90, Standards a.3.1, a.3.2, a.3.3, a.3.4, a.3.5, a.4.8, u.1.3, u.1.5, u.1.7, u.1.13 and u.1.17. Protected aboveground tanks shall be listed and shall meet the requirements specified in nationally recognized standards.

EXCEPTION: Medicines, beverages, foodstuffs and cosmetics when packaged according to commonly accepted practices for retail sales.

178. **Section 7902.1.8.2.7 Use of combustible materials in tank construction**, is amended as follows:

7902.1.8.2.7 Use of combustible materials in tank construction. Tanks constructed of combustible materials shall be subject to the approval of the chief and limited to:

1. Installation underground,
2. Case where required by the properties of the liquid stored,
3. Storage of Class III-B liquids aboveground in areas not potentially exposed to a spill or leak of Class I or II liquids,
4. Storage of Class III-B liquids inside a building protected by an approved automatic fire-extinguishing system, or
5. Protected aboveground tanks that are listed and labeled under nationally recognized standards.

179. **Section 7902.1.9.5 Projectile protection**, is amended as follows:

7902.1.9.5 Projectile protection. Projectile protection is required. The protected aboveground tank shall comply with the requirements for bullet resistance as specified in Section 7702.3.4.3.

180. **7902.1.9.7 Vehicle impact protection**, is amended as follows:

7902.1.9.7 Vehicle impact protection. Where subject to vehicular impact, protected aboveground tanks shall be provided with impact protection in accordance with this section. Protected aboveground tanks with piping connected to remote dispensers shall be protected by guard posts or other approved barriers. Protected aboveground tanks without piping connected to remote dispensers shall comply with the impact protection requirements as prescribed in nationally recognized standards. or shall be protected by guard posts or other approved barriers. Where guard posts or other approved barriers are provided, they shall be independent of each protected aboveground tank.

Where subject to vehicular impact, piping and electrical conduit connected to protected aboveground tanks shall be provided with impact protection.

Impact protection provided by guard posts shall be in accordance with Section 8001.11.3.

181. **Section 7902.1.10.11 Signs**, is amended as follows:

7902.1.10.11 Signs. Signs shall be in accordance with Section 7901.9. In addition, each vault installation storing Class I, II or III-A liquids shall have a label or placard above grade identifying the material stored in each vault in accordance with NFPA 704 at each accessway into a vault, signs shall be posted indicating the need for procedures for safe entry into confined spaces.

182. **Section 7902.1.11 Inspection, repair, alteration or reconstruction of tanks and piping**, is amended as follows:

7902.1.11 Inspection, repair, alteration or reconstruction of tanks and piping. The inspection, repair, alteration or reconstruction, including welding, cutting and hot tapping, of aboveground storage tanks and piping that have been placed in service shall be in accordance with nationally recognized standards. See Article 90, Standards a.3.7, a.3.14 and a.3.19.

183. **Section 7902.1.13.3 Vent line flame arresters and venting devices**, is amended as follows:

7902.1.13.3 Vent line flame arresters and venting devices. Vent line flame arresters and venting devices shall be installed in accordance with their listings. Use of flame arresters in piping systems shall be in accordance with nationally recognized standards. See Article 90, Standard a.3.18.

184. **Section 7902.1.13.7 Vent sizing**, is amended as follows:

7902.1.13.7 Vent sizing. Tank venting systems shall be provided with sufficient capacity to prevent blowback of vapor or liquid at the fill opening while the tank is being filled. Vent pipes shall not be less than 1¼-inch (31.8 mm) nominal inside diameter. The capacity of the vent shall be based on the filling or withdrawal rate, whichever is greater, and the vent line length. Unrestricted vent piping sized in accordance with Table 7902.1-B is acceptable to prevent back-pressure development in tanks from exceeding 2.5 psig (17.2 kPa). Where tank-venting devices are installed in vent lines, their flow capacities shall be determined in accordance with nationally recognized standards. See Article 90, Standard a.3.12.

185. **Section 7902.1.13.8.1 General**, is amended as follows:

7902.1.13.8.1 General. Atmospheric storage tanks shall be adequately vented to prevent the development of vacuum or pressure sufficient to distort the roof of a cone roof tank or exceed the design pressure in the case of other atmospheric tanks as a result of filling or emptying and atmospheric temperature changes. Normal vents shall be sized in accordance with nationally recognized engineering standards or shall be at least as large as the filling or withdrawal connection, whichever is larger, but not less than 1¼-inch (31.8 mm) nominal inside diameter. See Article 90, Standard a.3.12.
If a tank or pressure vessel has more than one fill or withdrawal connection and simultaneous filling or withdrawal can be made, the vent size shall be based on the maximum anticipated simultaneous flow.

186. **Section 7902.1.16.4 Fire protection of supports**, is amended as follows:

7902.1.16.4 Fire protection of supports. Supports or pilings for aboveground tanks storing Class I, II or III-A liquids elevated more than 12 inches (304.8 mm) above grade shall be designed to resist a hydrocarbon pool fire exposure for not less than two hours as determined by testing conducted in accordance with, or by an engineering analysis based on the fire exposure and test procedures specified in nationally recognized standards. See Section 9003, Standard a.4.16.

EXCEPTIONS:

1. Structural supports tested as part of a protected aboveground tank in accordance with nationally recognized standards.
2. Stationary tanks located outside of buildings when protected by an approved water-spray system designed in accordance with NFPA 15.
3. Stationary tanks located inside of buildings protected by an approved automatic sprinkler system designed in accordance with NFPA 13.

187. **Section 7902.2.2.1 Locations where aboveground tanks are prohibited**, is amended as follows:

7902.2.2.1 Locations where aboveground tanks are prohibited. Storage of Class I and II liquids in aboveground tanks outside of buildings is prohibited within the [City of Henderson](#)

EXCEPTIONS:

- ~~1. Areas zoned industrial and subject to approval of the Chief.~~
- ~~2. "Protected Tanks" in accordance with the provisions of Section 7902.1.9 and subject to approval of the Chief.~~
- ~~3. "Aboveground Generator Tanks" when installed in accordance with the provisions of Section 7902.7.~~
 1. "Protected Aboveground Tanks" which have a 2-hour fire resistive rating and projectile protection and are installed and maintained in accordance with the provisions of Fire Code. (Also see Section 7902.1.9 as revised).
 2. Aboveground generator fuel storage tanks which are an integral component, when installed and maintained in accordance with the City of Henderson Fire Safety Division's Approved Guidelines.
 3. Tanks located in below-grade vaults in accordance with the provisions of the Fire Code.
 4. Tanks located in areas with appropriate zoning.

[A Conditional Use Permit](#) is required for facilities which have storage of 250 or more gallons of Class I and II flammable & combustible liquids in aboveground tank(s) which are allowed by Exceptions 1 through 4 listed above.

188. **Section 7902.2.2.2 Location of tanks with pressures 2.5 psig (17.2 kPa) or less**, is amended as follows:

7902.2.2.2 Location of tanks with pressures 2.5 psig (17.2 kPa) or less. Aboveground tanks operating at pressures not exceeding 2.5 psig (17.2 kPa) for storage of Class I, II or III-A liquids, which are designed with a weak roof-to-shell seam or equipped with emergency venting devices limiting pressures to 2.5 psig (17.2 kPa), shall be located in accordance with Table 7902.2-A.

EXCEPTIONS:

1. Vertical tanks having a weak roof-to-shell seam and storing Class III-A liquids are allowed to be located at one half the distances specified in Table 7902.2-A, provided that the tanks are not within a diked area or drainage path for a tank storing Class I or II liquids.
2. Liquids with boilover characteristics and unstable liquids. See Sections 7902.2.2.4 and 7902.2.2.5.

189. **Section 7902.2.4.2 Installation**, is amended as follows:

7902.2.4.2 Installation. Where foam fire protection is required, installation shall be in accordance with NFPA 11.

190. **Section 7902.2.6.3.4 Reductions in required venting for stable liquids**, is amended as follows:

7902.2.6.3.4 Reductions in required venting for stable liquids. For tanks, other than protected aboveground tanks, containing stable liquids, a reduction in the required airflow rate in Sections 7902.2.6.3.1 and 7902.2.6.3.3 is allowed. Such reduction shall be calculated by multiplying the required airflow rate in Section 7902.2.6.3.1 or 7902.2.6.3.3 by the appropriate factor listed in the following schedule when protection is provided as indicated. Only one factor can be used for any one tank.

1. **0.5** For drainage in accordance with requirements for remote impounding in Section 7902.2.8.3 for tanks over 200 square feet (18.6 m²) of wetted area.
2. **0.3** For water spray in accordance with NFPA 15 and drainage in accordance with requirements for remote impounding in Section 7902.2.8.3.
3. **0.3** For insulation in accordance with the following:
 - 3.1 Remain in place under fire-exposure conditions,
 - 3.2 Withstand dislodgement when subjected to hose stream impingement during fire exposure, and
EXCEPTION: The requirement may be waived by the chief where use of solid hose streams is not contemplated or would not be practical.
 - 3.3 Maintain a maximum conductance value of 4 BTU's per hour per square foot per degree Fahrenheit [81.8kJ/(hr^om² °C)] when the outer insulation jacket or cover is at a temperature of 1,660°F (904°C) and when the mean temperature of the insulation is 1,000°F (538°C).
4. **0.15** For water spray with insulation in accordance with NFPA 15 and drainage in accordance with requirements for remote impounding in Section 7902.2.8.3.

191. **Section 7902.2.8.3 Drainage system**, is amended as follows:

7902.2.8.3 Drainage system. Where protection of adjacent tanks, adjoining property or waterways is by means of a natural or constructed drainage system, such system shall comply with the following:

1. Drainage shall be provided at a slope of not less than 1 percent away from the tank toward an impounding basin or an approved means of disposal. This termination area and the route of the drainage system shall be so located that a fire occurring in the drainage system will not endanger pumps, manifolds, control valves, electrical equipment, public utilities, fire-protection equipment, tanks, adjoining property or fire apparatus access roads, and
2. Impounding basins and approved means of disposal shall be designed to retain a spill from the largest capacity tank draining into a basin plus the design discharge from fire-protection systems including monitor nozzles, as specified in NFPA 11, which flow into a basin. Impounding basins and the route of a drainage system shall be located such that a fire occurring in a drainage system will not endanger pumps, manifolds, control valves, electrical equipment, public utilities, fire-protection equipment, tanks, adjoining properties or fire apparatus access roads.

192. **Section 7902.4.1 General**, is amended as follows:

7902.4.1 General. Storage of flammable and combustible liquids in stationary aboveground tanks inside of buildings shall be in accordance with Sections 7902.1 and 7902.4.
Fuel tanks for generators and diesel powered fire pumps shall also meet the requirements of Section 7902.7

193. **Section 7902.5.1.2.1 Portable fire extinguishers**, is amended as follows:

7902.5.1.2.1 Portable fire extinguishers. Approved portable fire extinguishers shall be provided in accordance with NFPA 10, except as specified in Section 7902.5.11.5.2.

194. **Section 7902.5.7.1 Exempt amounts for control areas**, is amended as follows:

7902.5.7.1 Exempt amounts for control areas. For occupancies other than Group M Occupancy wholesale and retail sales uses, indoor storage of flammable and combustible liquids shall not exceed the exempt amounts set forth in Table 7902.5-A and shall not exceed the additional limitations set forth in Section 7902.5.7.2.
For Group M Occupancy wholesale and retail sales uses, indoor storage of flammable and combustible liquids shall not exceed the exempt amounts set forth in Table 7902.5-B.
See Article 51 for storage of hazardous production material flammable and combustible liquids in Group H, Division 5 Occupancies.

195. **Section 7902.5.10.2.4 Fire protection and storage arrangement**, is amended as follows:

7902.5.10.2.4 Fire protection and storage arrangement. Fire protection and container storage arrangement shall be in accordance with the following:

1. Combustible commodities shall not be stored above flammable or combustible liquids;
2. Storage on shelves shall not exceed 6 feet (1828.8 mm) in height, and shelving shall be metal;
3. Storage on pallets or in piles greater than 4 feet 6 inches (1371.6 mm) in height, or where the ceiling exceeds 18 feet (5486.4 mm) in height, shall be protected in accordance with NFPA 30, and the storage heights and arrangements shall be limited to those specified in Table 7902.5-D;
4. Storage on racks greater than 4 feet 6 inches (1371.6 mm) in height, or where the ceiling exceeds 18 feet (5486.4 mm) in height, shall be protected in accordance with NFPA 30 as appropriate, and the storage heights and arrangements shall be limited to those specified in Table 7902.5-E; and
5. Storage methods not in accordance with Item 3 or 4 shall be limited in height in accordance with Table 7902.5-C.

196. **Section, 7902.5.11.2.4 Stabilizing and supports** is amended as follows:

7902.5.11.2.4 Stabilizing and supports. Containers and piles shall be separated by pallets or dunnage to provide stability and to prevent excessive stress to container walls. Portable tanks stored over one tier high shall be designed to nest securely without dunnage.
See NFPA 30 for requirements for portable tank design. Shelving, racks, dunnage, scuffboards, floor overlay and similar installations shall be of noncombustible construction or of wood not less than 1-inch (25.4 mm) nominal thickness. Adequate material-handling equipment shall be available to handle tanks safely at upper tier levels.

197. **Section 7902.5.11.5.1 Fire-extinguishing systems**, is amended as follows:

7902.5.11.5.1 Fire-extinguishing systems. Liquid storage rooms shall be protected by automatic sprinkler systems installed in accordance with Fire Code and NFPA 30. In-rack sprinklers shall also comply with NFPA 13.

Automatic foam-water systems and automatic aqueous film forming foam (AFFF)-water sprinkler systems may be used only when approved.

Protection criteria developed from fire modeling or full-scale fire testing conducted at a nationally recognized fire testing laboratory is allowed in lieu of the protection as required by NFPA 30 when approved.

For guidelines in the evaluation of alternate materials and fire protection designs based on fire testing, see Appendix VI-B.

198. **Section 7902.5.12.5.1 Fire-extinguishing systems**, is amended as follows:

7902.5.12.5.1 Fire-extinguishing systems. Liquid storage warehouses shall be protected by automatic sprinkler systems installed in accordance with the Fire Code and NFPA 30. In-rack sprinklers shall also comply with NFPA 13.

Automatic foam-water systems and automatic aqueous film forming foam-water sprinkler systems may only be used when approved.

Protection criteria developed from fire modeling or full-scale fire testing conducted at a nationally recognized fire testing laboratory is allowed in lieu of the protection as required by NFPA 30 when approved.

For guidelines in the evaluation of alternate materials and fire protection designs based on fire testing, see Appendix VI-B.

199. **Section 7902.5.12.5.2 Warehouse hose lines**, is deleted and replaced by Section 8102.9 as follows:

7902.5.12.5.2 Warehouse hose lines. See Section 8102.9.

200. **Section 7902.6.1 General**, is amended as follows:

7902.6.1 General. Underground storage of flammable and combustible liquids in tanks shall be in accordance with Sections 7902.1 and 7902.6.

201. **Section 7902.6.10 Tank lining**, is amended as follows:

7902.6.10 Tank lining. Steel tanks are allowed to be lined only for the purpose of protecting the interior from corrosion or providing compatibility with a material to be stored. Only those liquids tested for compatibility with the lining material are allowed to be stored in lined tanks.

Tank opening, cleaning, preparation, inspection, lining, closing and testing shall be in accordance with nationally recognized standards.

For permits to alter a tank, see Section 105, Permit f.3.6.

Interior-lined underground tanks shall be protected from corrosion in accordance with Section 7902.6.15.

202. **Section 7902.6.11 Secondary containment**, is amended as follows:

7902.6.11 Secondary containment. An approved method of secondary containment shall be provided for underground tank systems, including tanks, piping and related components.

203. **Section 7902.6.15.1 General**, is amended as follows:

7902.6.15.1 General. Underground tanks and piping shall be properly designed, installed and maintained, and protected from corrosion in accordance with Section 7902.6.15.2 or 7902.6.15.3.

EXCEPTION: If conditions, based on adequate proof, warrant the deletion of the corrosion-protection requirements, the chief may waive the corrosion-protection requirements.
See Article 90, Standards a.3.10, n.1.2, s.1.1, u.1.16 and u.2.1.

204. A new **Section 7902.7 Generator and Diesel Fire Pump Fuel Tanks**, is added as follows:

7902.7 Generator and Diesel Fire Pump Fuel Tanks.

7902.7.1 Exterior Installations.

7902.7.1.1 Tanks containing 240 gallons of fuel or less. Tanks containing 240 gallons of fuel or less which are integral with a generator assembly shall comply with Article 79 and shall meet the requirements of UL 142 for secondary containment.

7902.7.1.2 Tanks containing more than 240 gallons. Tanks containing more than 240 gallons shall comply with Article 79 Section 7902.1.9 and this section.

EXCEPTION: Tanks containing more than 240 gallons up to 500 gallons of fuel may be installed within an approved protective enclosure providing they comply with Article 79 and meet UL 142 for secondary containment. See section 7902.1.9.

7902.7.1.2.3 Separation distances. A protected aboveground tank shall be separated from property lines, important buildings, public ways, and other tanks in accordance with Table 5202.3.7-A.

7902.7.2 Interior Installations.

7902.7.2.1 General. Interior installations of aboveground generator fuel tanks shall comply with Article 79. Tanks containing more than 120 gallons in a non-sprinklered building, or more than 240 gallons in a sprinklered building shall be in a room meeting the requirements of an H-3 Occupancy.

205. **Section 7903.2.1.6.1 Exempt amounts for control areas**, is amended as follows:

7903.2.1.6.1 Exempt amounts for control areas. Indoor use, dispensing and mixing of flammable and combustible liquids shall not exceed the exempt amounts set forth in Table 7903.2-B and shall not exceed the additional limitations set forth in Section 7903.2.1.6.2.

EXCEPTION: Cleaning with Class I, II or III-A liquids shall be in accordance with Section 7903.2.2. See Article 51 for use of hazardous production material flammable and combustible liquids in Group H, Division 5 Occupancies.

206. **Section 7903.4.1 General**, is amended as follows:

7903.4.1 General. Solvent distillation units used to recycle Class I, II or III-A liquids having a distillation chamber capacity of 60 gallons (227.1 L) or less shall be listed, labeled and installed in accordance with Section 7903.4 and nationally recognized standards. See Article 90, Standard u.1.20.

EXCEPTIONS:

1. Solvent distillation units installed in dry-cleaning plants in accordance with Section 3603.
2. Solvent distillation units used in continuous throughput industrial processes where the source of heat is remotely supplied using steam, hot water, oil or other heat-transfer fluids, the temperature of which is below the auto-ignition point of the solvent(s).
3. Solvent distillation units listed for and used in laboratories.
4. Approved research, testing and experimental processes.

Solvent-distillation units used to recycle Class I, II or III-A liquids, having a distillation chamber capacity exceeding 60 gallons (227.1 L) shall be used in locations that comply with the use and mixing requirements of Section 7903 and other applicable provisions in Article 79.

Classes I, II and III-A liquids also classified as unstable (reactive) shall not be processed in solvent-distillation units.

EXCEPTION: Appliances listed for the distillation of unstable (reactive) solvents.

207. **Section 7903.4.7.1 Type**, is amended as follows:

7903.4.7.1 Type. Approved portable fire extinguishers shall be provided in accordance with NFPA 10, except as specified in Section 7903.4.7.2.

208. **Section 7904.1 General**, is amended as follows:

7904.1 General. The following special operations shall be in accordance with Sections 7901, 7902 and 7903 except as provided in Section 7904.

1. Storage and dispensing of flammable and combustible liquids on farms and construction sites, and at special operational sites.
2. Well drilling and operating.
3. Bulk plants or terminals.
4. Loading and unloading of tank vehicles and tank cars.
5. Tank vehicles and tank vehicle operation.
6. Refineries.

209. The section heading “**7904.2 Storage and Dispensing of Flammable and Combustible Liquids on Farms and Construction Sites**”, is amended as follows:

7904.2 Storage and Dispensing of Flammable and Combustible Liquids on Farms and Construction Sites, and at Special Operational Sites.

210. A new **Section 7904.2.1.1 Mobile Fleet Fueling**, is added as follows:

7904.2.1.1 Mobile Fleet Fueling. When approved by the Chief, dispensing of flammable and combustible liquid fuels from tank vehicles in to fuel tanks of motor vehicles located at construction sites and special operational sites such as commercial, industrial and governmental sites, is permitted. See Appendix II-M.

211. **Section 7904.2.5.1 General**, is amended as follows:

7904.2.5.1 General. The capacity of permanent aboveground tanks containing Class I or II liquids shall not exceed 1,100 gallons (4163.9 L). The capacity of temporary aboveground tanks containing Class I or II liquids shall not exceed 10,000 gallons (37,854 L). Tanks shall be of single-compartment design, constructed in accordance with Section 7902.1.8.2.

EXCEPTION: Permanent above-ground tanks of greater capacity which meet the requirements of Section 7902.

212. **Section 7904.2.5.4.2** is amended as follows:

Section 7904.2.5.4.2. Locations Where Aboveground Tanks Are Prohibited. Storage of Class I and II liquids in aboveground tanks outside of buildings is prohibited within the City of Henderson.

EXCEPTIONS:

1. "Protected Aboveground Tanks" which have a 2-hour fire resistive rating and projectile protection and are installed and maintained in accordance with the provisions of Fire Code. (Also see Section 7902.1.9 as revised).
2. Aboveground generator fuel storage tanks which are an integral component, when installed and maintained in accordance with the City of Henderson Fire Safety Division's Approved Guidelines.
3. Tanks located at construction sites for temporary use.

A Conditional Use Permit is required for facilities which have storage of 250 or more gallons of Class I and II flammable & combustible liquids in aboveground tank(s) which are allowed by Exceptions 1 through 3 listed above.

213. **Section 7904.2.8.1 General**, is amended as follows:

7904.2.8.1 General. When approved, liquids used as fuels may be transferred from tank vehicles into the tanks of motor vehicles or special equipment, provided the requirements of Appendix II-M and the following conditions are met.

1. The tank vehicle's specific function is that of supplying fuel to motor vehicle fuel tanks,
2. The dispensing line does not exceed 100 feet (15,240 mm) in length,
3. The dispensing nozzle is an approved type,
4. The dispensing hose is properly placed on the approved reel or in a compartment provided before the tank vehicle is moved,
5. Signs prohibiting smoking or open flame within 25 feet (7620 mm) of a tank vehicle or the point of refueling are prominently posted on the tank vehicle,
6. Electrical devices and wiring in areas where fuel dispensing is conducted are in accordance with the Electrical Code,
7. Vapor-recovery systems are provided in accordance with Section 5202.13,
8. Tank vehicle dispensing equipment is operated only by designated personnel who are trained to handle and dispense motor fuels, and
9. Provisions are made for controlling and mitigating unauthorized discharges.

214. **Section 7904.4.5 Overfill protection of Class I liquids**, is amended as follows:

7904.4.5 Overfill protection of Class I liquids. Manual and automatic systems shall be provided to prevent overfill during the transfer of Class I liquids from mainline pipelines and marine vessels in accordance with nationally recognized standards. See Article 90, Standard a.3.20.

215. **Section 7904.5.1 General**, is amended as follows:

7904.5.1 General. Bulk transfer and process transfer operations and the dispensing of fuel into the fuel tanks of motor vehicles and special equipment shall be approved and shall be in accordance with Section 7904.5. For motor vehicle fuel-dispensing stations, see Article 52.

For dispensing of flammable and combustible liquid fuels from tank vehicles into the fuel tanks of motor vehicles at commercial, industrial, construction, and governmental sites, see Appendix II-M.

216. **Section 7904.5.4 Dispensing fuel from tank vehicles and tank cars**, is amended as follows:

7904.5.4 Dispensing fuel from tank vehicles and tank cars. Class I and II liquids shall not be dispensed from tank vehicles or tank cars into the fuel tanks of motor vehicles and special equipment except as provided in, and conducted in accordance with, Section 7904.5.4 and Appendix II-M.

217. **Section 7904.5.4.6 Fueling of vehicles at farms, construction sites and similar areas**, is amended as follows:

7904.5.4.6 Fueling of vehicles at farms, construction sites and similar areas. Dispensing fuel from tank vehicles into the fuel tanks of motor vehicles for private use on farms and rural areas and at construction sites, earth-moving projects, gravel pits and borrow pits is allowed in accordance with Section 7904.2.8 and Appendix II-M.

218. **Section 7904.6.1 General**, is amended as follows:

7904.6.1 General. Tank vehicles shall be designed, constructed, equipped, certified, and maintained in accordance with DOTn 49 CFR, Parts 100 – 178.

219. **Section 7904.6.3.4 Bonding**, is amended as follows:

7904.6.3.4 Bonding. Bonding shall be in accordance with Section 7904.5.1.7.

220. **Section 7904.7.3 Cleaning of tanks**, is amended as follows:

7904.7.3 Cleaning of tanks. The safe entry and cleaning of petroleum storage tanks shall be conducted in accordance with nationally recognized standards and practices. See Article 90, Standard a.3.16.

221. A new **Section 8001.3.1.1** is added as follows:

8001.3.1.1 Conditional Use Permits for Hazardous Materials. In addition to other required permits, a conditional use permit is required for the storage, handling or use of hazardous materials when the quantities are greater than the exempt amounts or maximum allowable quantities per control area as specified in the Fire Code.

222. A new **Section 8001.3.4** is added as follows:

8001.3.4 Hazardous Materials Information Storage. Buildings or facilities containing hazardous materials in quantities exceeding the exempt amount, a KNOX Cabinet Series 1300, 7 inch depth, with dual locks, rain hood part number 1201 and Document Storage Container part number 1201 shall be installed in an approved location.

223. **Section 8001.4.3.3 Additional regulations for supply piping for health hazard materials**, is amended as follows:

8001.4.3.3 Additional regulations for supply piping for health hazard materials. Supply piping and tubing for gases and liquids having a health hazard ranking of 3 or 4 in accordance with NFPA 704 shall also be in accordance with the following:

1. Piping and tubing utilized for the transmission of highly toxic or toxic material shall have welded or brazed connections throughout unless an exhausted enclosure is provided if the material is a gas, or the piping is provided with a receptor for containment if the material is a liquid,

EXCEPTIONS:

1. Nonmetallic piping with approved connections.
 2. Metallic piping with nonmetallic lining with approved connections.
 3. Threaded pipe and connections in accordance with nationally recognized standards. See Section 9003, Standard a.2.5.
2. Piping and tubing shall not be located within corridors, within any portion of a means of egress required to be enclosed in fire resistive construction or in concealed spaces in areas not classified as Group H Occupancies,
EXCEPTION: Piping and tubing within the space defined by the walls of corridors and floor or roof above or in concealed space above other occupancies when installed in accordance with the Building Code as required for semi-conductor fabrication facilities classified as Group H Occupancies.
 3. Where gases or liquids are carried in pressurized piping above 15 psig (103.4 kPa), excess flow control shall be provided. Where the piping originates from within a hazardous material storage room or area, the excess flow control shall be located within the storage room or area. Where the piping originates from a bulk source, the excess flow control shall be located as close to the bulk source as practical, and
 4. Readily accessible manual or automatic remotely activated fail-safe emergency shutoff valves shall be installed on supply piping and tubing at the following locations:
 - 4.1 The point of use, and
 - 4.2 The tank, cylinder or bulk source.

224. **Section 8001.7 Identification Signs**, is amended as follows:

8001.7 Identification Signs. Visible hazard identification signs as specified in NFPA 704 shall be placed on stationary aboveground tanks and at entrances to locations where hazardous materials are stored, dispensed, used or handled in quantities requiring a permit. Signs shall be provided at specific entrances and locations designated by the chief.

EXCEPTION: The chief may waive this requirement in special cases when consistent with safety if the owner or operator has submitted a hazardous materials management plan and hazardous materials inventory statement. See Appendix II-E and Sections 8001.3.2 and 8001.3.3.

Individual containers, cartons or packages shall be conspicuously marked or labeled in accordance with nationally recognized standards.

Rooms or cabinets containing compressed gases shall be conspicuously labeled COMPRESSED GAS.

Signs shall not be obscured or removed.

Signs shall be in English as a primary language or in symbols allowed by this code.

Signs shall be durable.

The size, color and lettering shall be in accordance with nationally recognized standards.

225. **Section 8001.8 Signs**, is amended as follows:

8001.8 Signs. In addition to the hazard identification signs required by Section 8001.7, additional hazard identification and warning signs shall be provided as follows:

1. Stationary containers and tanks shall be placarded with hazard identification signs as specified in NFPA 704 for the specific material contained.
2. Signs prohibiting smoking shall be provided in the following situations:
 - 2.1 In rooms or areas where hazardous materials are stored or dispensed or used in open systems in amounts requiring a permit in accordance with Section 8001.3.1.
 - 2.2 Within 25 feet (7620 mm) of outdoor storage, dispensing or open-use areas.

Signs shall not be obscured or removed. Signs shall be in English as a primary language or in symbols allowed by this code. Signs shall be durable. The size, color and lettering shall be in accordance with nationally recognized standards.

226. **Section 8001.10.2 Control areas**, is amended as follows:

8001.10.2 Control areas.

8001.10.2.1 Construction requirements. Control areas shall be separated from each other by not less than a one-hour fire barrier.

8001.10.2.2 Number. The number of control areas in buildings or portions of buildings having Group M Occupancies and buildings or portions having Group S Occupancies with storage conditions in accordance with Section 8001.14 shall not exceed two. The number of control areas in buildings with other uses or with other Group S Occupancy storage conditions shall not exceed the limits indicated in Table 8001.10.2.2.

227. A new **TABLE 8001.10.2.2—DESIGN AND NUMBER OF CONTROL AREAS**, is added as follows:

TABLE 8001.10.2.2—DESIGN AND NUMBER OF CONTROL AREAS

Floor Level		PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	NUMBER OF CONTROL AREAS PER FLOOR ¹	FIRE RESISTANCE RATING FOR FIRE BARRIERS IN HOURS ²
Above Grade	Higher than 4	5	1	2
	4	12.5	2	2
	3	25	2	1
	2	50	3	1
	1	100	4	1
Below Grade	1	50	3	1
	2	25	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

¹There shall be a maximum of two control areas per building in Group M occupancies and in buildings or portions of buildings having Group S occupancies with storage conditions and quantities in accordance with IBC Section 414.2.4.

²Fire barriers shall include walls and floors as necessary to provide separation from other portions of the building.

228. **Section 8001.10.3.2 Construction**, is amended as follows:

8001.10.3.2 Construction. Gas rooms shall be separated from the remainder of the building by not less than a one-hour fire barrier. For highly toxic and toxic compressed gases used in conjunction with or serving a semiconductor fabrication facility classified as a Group H Occupancy, also see the Building Code.

229. **Section 8001.12.2 Required use of carts and trucks**, is amended as follows:

8001.12.2 Required use of carts and trucks. Liquids in containers exceeding 5 gallons (18.9 L) in a corridor or exit enclosure shall be transported on a cart or truck. Containers of hazardous materials having a hazard ranking of 3 or 4 in accordance with NFPA 704 transported within corridors or exit enclosures shall be on a cart or truck. When carts and trucks are required for transporting hazardous materials, they shall be in accordance with Section 8001.12.3.

EXCEPTIONS:

1. Two hazardous materials liquid containers, which are hand carried in acceptable safety carriers.
2. Single drums not exceeding 55 gallons (208.2 L), which are transported by suitable drum trucks.
3. Containers and cylinders of compressed gases, which are transported by approved hand trucks, and containers and cylinders not exceeding 25 pounds (11.3 kg), which are hand carried.
4. Solid hazardous materials not exceeding 100 pounds (45.4 kg), which are transported by approved hand trucks, and a single container not exceeding 50 pounds (22.7 kg), which is hand carried.

230. **Section 8002.3 Descriptions and Examples**, is amended as follows:

8002.3 Descriptions and Examples. For descriptions and examples of materials included in hazard categories, see Appendix VI-A, except that refrigerants regulated under Article 63 shall be classified in accordance with Table A-VI-F-1 if the refrigerant used is included in Table A-VI-J-1.

231. TABLE 8001.15-A—EXEMPT AMOUNTS OF HAZARDOUS MATERIALS PRESENTING A PHYSICAL HAZARD, MAXIMUM QUANTITIES MAXIMUM QUANTITIES PER CONTROL AREA, is amended as follows:

TABLE 8001.15-A—EXEMPT AMOUNTS OF HAZARDOUS MATERIALS PRESENTING A PHYSICAL HAZARD
When two units are given, values within parentheses are in cubic feet (cu. ft.) or pounds (lbs.)
(Apply table as specified in Section 8001.15)

CONDITION	CLASS	OCCUPANCY GROUP 14 WHEN THE ALLOWABLE QUANTITY IS EXCEEDED	STORAGE ²			USE ² – CLOSED SYSTEMS			USE ² – OPEN SYSTEMS	
			Solid Lbs ³ (cubic feet) x 0.4536 for kg x 0.0283 for m ³	Liquid Gal ³ (pounds) x 3.785 for L x 0.4536 for kg	Gas Cubic Feet x 0.0283 for m ³	Solid Lbs (cubic feet) x 0.4536 for kg x 0.0283 for m ³	Liquid Gal (pounds) x 3.785 for L x 0.4536 for kg	Gas Cubic Feet x 0.0283 for m ³	Solid Lbs (cubic feet) x 0.4536 for kg x 0.0283 for m ³	Liquid Gal (pounds) x 3.785 for L x 0.4536 for kg
1.1 Combustible Liquid 4, 5, 6, 8, 9, 15	II	H-2 or H-3	N.A.	120 ¹⁰	N.A.	N.A.	120	N.A.	N.A.	30
	III-A	H-2 or H-3	N.A.	330 ¹⁰	N.A.	N.A.	330	N.A.	N.A.	80
	III-B	H-2 or H-3	N.A.	13,200 ¹¹	N.A.	N.A.	13,200 ¹¹	N.A.	N.A.	3,300 ¹¹
1.2 Combustible fiber 17 (loose) (baled)	—	H-3	(100) (1,000)	N.A. N.A.	N.A. N.A.	(100) (1,000)	N.A. N.A.	N.A. N.A.	(20) (200)	N.A. N.A.
1.3 Cryogenic, flammable or oxidizing ¹⁷	—	H-2	N.A.	45	N.A.	N.A.	45	N.A.	N.A.	45
2.1 Explosives 12, 17, 18	—	H--1	1 ^{10,13}	(1) ^{10,13}	N.A.	¼	(¼)	N.A.	¼	(¼)
2.2 Fireworks, (Class C, Consumer)	1.4 G	H-3	125 ^{6,10,18}	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
3.1 Flammable solid 17	—	H-3	125 ^{6,10}	N.A.	N.A.	125	N.A.	N.A.	25	N.A.
3.2 Flammable gas 17 (gaseous) (liquefied)	—	H-2	N.A. N.A.	N.A. 15 ^{6,10}	750 ^{6,10} N.A.	N.A. N.A.	N.A. 15 ^{6,10}	750 ^{6,10} N.A.	N.A. N.A.	N.A. N.A.
3.3 Flammable liquid 4, 5, 6, 8, 9, 15	I-A	H-2 or H-3	N.A.	30	N.A.	N.A.	30	N.A.	N.A.	10
	I-B	H-2 or H-3	N.A.	60	N.A.	N.A.	60	N.A.	N.A.	15
	I-C	H-2 or H-3	N.A.	90	N.A.	N.A.	90	N.A.	N.A.	20
	Combination	H-2 or H-3	N.A.	120	N.A.	N.A.	120	N.A.	N.A.	30
4.1 Organic peroxides, detonatable, unclassified	U	H-1	1 ^{10,12}	(1) ^{10,12}	N.A.	¼ ¹²	(¼) ¹²	N.A.	¼ ¹²	(¼) ¹²
4.2 Organic peroxide	I	H-2	5 ^{6,10}	(5) ^{6,10}	N.A.	1 ⁶	(1) ⁶	N.A.	1 ⁶	(1) ⁶
	II	H-3	50 ^{6,10}	(50) ^{6,10}	N.A.	50 ⁶	(50) ⁶	N.A.	10 ⁶	(10) ⁶
	III	H-3	125 ^{6,10}	(125) ^{6,10}	N.A.	125 ⁶	(125) ⁶	N.A.	25 ⁶	(25) ⁶
	IV	H-3	500 ^{6,10}	(500) ^{6,10}	N.A.	500 ⁶	(500) ⁶	N.A.	100 ⁶	(100) ⁶
	V		N.L.	N.L.	N.A.	N.L.	N.L.	N.A.	N.L.	N.L.
4.3 Oxidizer	4	H-1	1 ^{10,12}	(1) ^{10,12}	N.A.	¼ ¹²	(¼) ¹²	N.A.	¼ ¹²	(¼) ¹²
	3 ¹⁶	H-2	10 ^{6,10}	(10) ^{6,10}	N.A.	2 ⁶	(2) ⁶	N.A.	2 ⁶	(2) ⁶
	2	H-3	250 ^{6,10}	(250) ^{6,10}	N.A.	250 ⁶	(250) ⁶	N.A.	50 ⁶	(50) ⁶
	1	H-3	4,000 ^{6,10}	(4,000) ^{6,10}	N.A.	4,000 ⁶	(4,000) ⁶	N.A.	1,000 ⁶	(1,000) ⁶
4.4 Oxidizer – gas (gaseous) ^{5, 10, 17} (liquefied) ^{6, 10, 17}	—	H-3	N.A. N.A.	N.A. 15	1,500 N.A.	N.A. N.A.	N.A. 15	1,500 N.A.	N.A. N.A.	N.A. N.A.
	5.1 Pyrophoric ¹⁷	—	H-2	4 ^{10,12}	(4) ^{10,12}	50 ^{10,12}	1 ¹²	(1) ¹²	10 ^{10,12}	0
6.1 Unstable (reactive) ¹⁷	4	H-1	1 ^{10,12}	(1) ^{10,12}	10 ^{10,12}	¼ ¹²	(¼) ¹²	2 ^{10,12}	¼ ¹²	(¼) ¹²
	3	H-1	5 ^{6,10}	(5) ^{6,10}	50 ^{6,10}	1 ⁶	(1) ⁶	10 ^{6,10}	1 ⁶	(1) ⁶
	2	H-2	50 ^{6,10}	(50) ^{6,10}	750 ^{6,10}	50 ⁶	(50) ⁶	750 ^{6,10}	10 ⁶	(10) ⁶
	1	H-3	N.L.	N.L.	N.L. ^{6,10}	N.L.	N.L.	N.L.	N.L.	N.L.
7.1 Water Reactive	3	H-2	5 ^{6,10}	(5) ^{6,10}	N.A.	5 ⁶	(5) ⁶	N.A.	1 ⁶	(1) ⁶
	2	H-3	50 ^{6,10}	(50) ^{6,10}	N.A.	50 ⁶	(50) ⁶	N.A.	10 ⁶	(10) ⁶
	1		N.L.	N.L.	N.A.	N.L.	N.L.	N.A.	N.L.	N.L.

N.A.—Not applicable. N.L.—Not limited.

¹ Control areas shall meet the requirements of IBC Section 414.2 and Fire Code Sections 204 and 8001.10.2.

² The aggregate quantity in use and storage shall not exceed the quantity listed for storage. Quantities shall not exceed limits set forth in Fire Code Section 8001.15.2.

³ The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials within a single control area of Group M Occupancies used for retail sales may exceed the exempt amounts when such areas are in compliance with Fire Code Section 8001.14.

⁴ For flammable and combustible liquids, see Fire Code Article 79. See also Fire Code Section 8001.1.1, Exception 2.

⁵ For aerosols, see Fire Code Article 88.

⁶ Quantities may be increased 100 percent in sprinklered buildings. When Footnote 10 also applies, the increase for both footnotes may be applied.

⁷ (Not Used)

⁸ For wholesale and retail sales use, see Fire Code Section 7902.5.10.2.

⁹ Spray application of any quantity of flammable or combustible liquids shall be conducted as set forth in Fire Code Article 45.

¹⁰ Quantities may be increased 100 percent when stored in approved storage cabinets, gas cabinets or exhausted enclosures as specified in Fire Code Sections 8001.3.2, 8003.3.1.3.2 and 8003.3.1.3.3. When Footnote 6 also applies, the increase for both footnotes may be applied.

¹¹ The quantities permitted in a sprinklered building are not limited.

¹² Permitted in sprinklered buildings only. None is allowed in unsprinklered buildings.

¹³ One pound (.454 kg) of black sporting powder and 20 pounds (9 kg) of smokeless powder are permitted in sprinklered or unsprinklered buildings.

¹⁴ See definitions of Group H, Divisions 2 and 3 Occupancies in Section 307.

¹⁵ See Fire Code Article 79.

¹⁶ A maximum quantity of 200 pounds (90.7 kg) of solid or 20 gallons (75.7 L) of liquid Class 3 oxidizers is allowed when such materials are necessary for maintenance purposes, operation or sanitation of equipment. Storage containers and the manner of storage shall be approved.

¹⁷ For any amount, see Fire Code Articles 28, 30, 45, 46, 48, 50, 74, 75, 76, 77 and 78 as applicable for the hazard category.

¹⁸ Unless the actual weight of the pyrotechnic composition of the fireworks, 1.4G is known, 25 percent of the gross weight of the fireworks, including packaging, maybe used to determine the weight of the fireworks for the purpose of this table.

232. TABLE 8001.15-B—EXEMPT AMOUNTS OF HAZARDOUS MATERIALS PRESENTING A HEALTH HAZARD, MAXIMUM QUANTITIES PER CONTROL AREA, is amended as follows:

**TABLE 8001.15-B — EXEMPT AMOUNTS OF HAZARDOUS MATERIALS PRESENTING A HEALTH HAZARD
MAXIMUM ALLOWABLE QUANTITIES PER CONTROL AREA^{1, 2, 14}**

**When two units are given, values within parentheses are in cubic feet (cu. ft.) or pounds (lbs.)
(Apply table as specified in Section 307.7.)**

MATERIAL	OCCUPANCY GROUP WHEN THE ALLOWABLE QUANTITY IS EXCEEDED	STORAGE ³			USE ³ — CLOSED SYSTEMS			USE ³ — OPEN SYSTEMS	
		SOLID POUNDS ^{4, 5, 6}	LIQUID GALLONS ^{4, 5, 6} (POUNDS)	GAS CUBIC FEET ⁵	SOLID POUNDS ⁵	LIQUID GALLONS ^{4, 5, 6} (POUNDS)	GAS CUBIC FEET ⁵	SOLID POUNDS	LIQUID GALLONS (POUNDS)
		x 0.4536 for kg	X 3.785 for L X 0.4536 for kg	X 0.0283 for m ³	x 0.4536 for kg	X 3.785 for L X 0.4536 for kg	X 0.0283 for m ³	x 0.4536 for kg x 0.0283 for m ³	X 3.785 for L X 0.4536 for kg
1. Corrosives	H-4 or H-5	5,000	500	810 ⁶	5,000	500	810 ⁶	1,000 ³	100 ⁵
2. Highly Toxics ¹¹	H-4 or H-5	10	(10)	20 ¹²	10	(10)	20 ¹²	3 ⁵	(3) ⁵
3. Irritants ^{7, 15}	H-4 or H-5	N.L.	N.L.	810 ^{6, 9}	N.L.	N.L.	810 ⁹	5,000 ⁹	500 ⁹
4. Sensitizers ^{7, 15}	H-4 or H-5	N.L.	N.L.	810 ^{6, 9}	N.L.	N.L.	810 ^{6, 9}	5,000 ⁹	500 ⁹
5. Other Health Hazards ^{7, 15}	H-4 or H-5	N.L.	N.L.	810 ^{6, 9}	N.L.	N.L.	810 ^{6, 9}	5,000 ⁹	500 ⁹
6. Toxics ¹¹	H-4 or H-5	500	(500)	810 ⁶	500	(500)	810 ¹²	125 ⁵	(125) ⁵

N.L. = Not Limited.

¹ Control areas shall meet the requirements of Section 414.2 and Fire Code Sections 204 and 8001.10.2.

² See Fire Code Section 8001.1.1, Exception 2.

³ The aggregate quantity in use and storage shall not exceed the quantity listed for storage. Quantities shall not exceed limits set forth in Fire Code Sections 8001.15.2 and 8001.15.3.

⁴ The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid health hazard materials within a single control area of Group M and Group S Occupancies may exceed the exempt amounts when such areas are in compliance with Fire Code Section 8001.14.

⁵ Quantities may be increased 100 percent in sprinklered buildings. When Footnote 6 also applies, the increase for both footnotes may be applied.

⁶ Quantities may be increased 100 percent when stored in approved storage cabinets, gas cabinets or exhausted enclosures as specified in Fire Code Sections 8001.3.2, 8003.3.1.3.2 and 8003.3.1.3.3. When Footnote 5 also applies, the increase for both footnotes may be applied.

⁷ Irritants, sensitizers and other health hazards do not include commonly used building materials and consumer products that are not otherwise regulated by this code.

⁸ See also applicable federal and state OSHA guidelines.

⁹ The quantities allowed in a sprinklered building are not limited when exhaust ventilation in accordance with Fire Code Sections 8003.1.4, 8004.1.11, 8004.2.2.2 and 8004.2.3.3, as applicable to the material condition, is provided.

¹⁰ The quantities allowed in a sprinklered building are not limited when exhaust ventilation in accordance with Fire Code Sections 8003.1.4, 8004.1.11, 8004.2.2.2 and 8004.2.3.3 and spill control and secondary containment in accordance with Fire Code Sections 8003.1.3, 8004.1.4, 8004.2.2.5 and 8004.2.3.6, as applicable to the material condition, is provided.

¹¹ For special provisions, see Fire Code Sections 8003.3, 8003.12, 8004.2.3.7 and 8004.3.5.

¹² Permitted only when located in approved gas cabinets, exhausted enclosures or gas rooms. See Fire Code Sections 8003.3.1.3.2, 8003.3.1.3.3 and 8003.3.1.3.4.

¹³ Licensed, sealed sources for instruments, calibration devices and equipment are exempt. Licensing requirements and determination of whether a source is sealed or nonsealed shall be as set forth in Nuclear Regulatory Commission regulations.

¹⁴ Individual containers shall not exceed a quantity of 2 mCi (7.4 x 10⁷ becquerels) for alpha emitters, 200 Ci (7.4 x 10¹² becquerels) for beta emitters and 0.1 Ci (3.7 x 10⁹ becquerels) for gamma emitters. Ci = curies, mCi = millicuries

¹⁵ For storage and display quantities in Group M and storage quantities in Group S occupancies complying with Section 414.2.4, see Table 414.2.4.

¹⁶ See Fire Code for definitions.

233. TABLE 8001.15-C—EXEMPT AMOUNTS OF HAZARDOUS MATERIALS PRESENTING A PHYSICAL HAZARD, MAXIMUM QUANTITIES ALLOWED IN AN OUTDOOR CONTROL AREA, is amended as follows:

TABLE 8001.15-C—EXEMPT AMOUNTS OF HAZARDOUS MATERIALS PRESENTING A PHYSICAL HAZARD MAXIMUM QUANTITIES ALLOWED IN AN OUTDOOR CONTROL AREA^{1, 2, 3}

CONDITION		STORAGE			USE – CLOSED SYSTEMS			USE – OPEN SYSTEMS	
MATERIAL	CLASS	Solid Lbs ³ (cubic feet)	Liquid Gal ³ (pounds)	Gas Cubic Feet	Solid Lbs (cubic feet)	Liquid Gal (pounds)	Gas Cubic Feet	Solid Lbs (cubic feet)	Liquid Gal (pounds)
		x 0.4536 for kg x 0.0283 for m ³	x 3.785 for L x 0.4536 for kg	x 0.0283 for m ³	x 0.4536 for kg x 0.0283 for m ³	x 3.785 for L x 0.4536 for kg	x 0.0283 for m ³	x 0.4536 for kg x 0.0283 for m ³	x 3.785 for L x 0.4536 for kg
Flammable solid	—	125	N.A.	N.A.	125	N.A.	N.A.	25	N.A.
Flammable gas (gaseous) (liquefied)	—	N.A.	N.A.	750	N.A.	N.A.	750	N.A.	N.A.
		N.A.	15	N.A.	N.A.	15	N.A.	N.A.	N.A.
Organic peroxides, detonatable, unclassified	U	1	(1)	N.A.	1/4	(1/4)	N.A.	1/4	(1/4)
Organic peroxide	I	5	(5)	N.A.	1	(1)	N.A.	1	(1)
	II	50	(50)	N.A.	50	(50)	N.A.	10	(10)
	III	125	(125)	N.A.	125	(125)	N.A.	25	(25)
	IV	500	(500)	N.A.	500	(500)	N.A.	100	(100)
	V	N.L.	N.L.	N.A.	N.L.	N.L.	N.A.	N.L.	N.L.
Oxidizer	4	1	(1)	N.A.	1/4	(1/4)	N.A.	1/4	(1/4)
	3	10	(10)	N.A.	2	(2)	N.A.	2	(2)
	2	250	(250)	N.A.	250	(250)	N.A.	50	(50)
	1	4,000	(4,000) ⁰	N.A.	4,000	(4,000)	N.A.	1,000	(1,000)
Oxidizer – gas (gaseous) (liquefied)	—	N.A.	N.A.	1,500	N.A.	N.A.	1,500	N.A.	N.A.
		N.A.	15	N.A.	N.A.	15	N.A.	N.A.	N.A.
Pyrophoric	—	4	(4)	50	1	(1)	10	0	0
Unstable (reactive)	4	1	(1)	10	1/4	(1/4)	2	1/4	(1/4)
	3	5	(5) ⁰	50 ⁰	1	(1)	10	1	(1)
	2	50	(50)	750	50	(50)	750	10	(10)
	1	N.L.	N.L.	N.L. ^{6,10}	N.L.	N.L.	N.L.	N.L.	N.L.
	3	5	(5)	N.A.	5	(5)	N.A.	1	(1)
Water Reactive	2	50	(50)	N.A.	50	(50)	N.A.	10	(10)
	1	N.L.	N.L.	N.A.	N.L.	N.L.	N.A.	N.L.	N.L.

N.A.—Not applicable. N.L.—No limit.

¹ For gallons of liquids, divide the amount in pounds by 10.

² The aggregate quantities in storage and use shall not exceed the quantity listed for storage.

³ The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed in outdoor storage per single property under the same ownership or control used for retail or wholesale sales is allowed to exceed the exempt amounts when such storage is in accordance with Section 8001.14.

234. TABLE 8001.15-D—EXEMPT AMOUNTS OF HAZARDOUS MATERIALS PRESENTING A HEALTH HAZARD, MAXIMUM QUANTITIES ALLOWED IN AN OUTDOOR CONTROL AREA, is amended as follows:

TABLE 8001.15-D—EXEMPT AMOUNTS OF HAZARDOUS MATERIALS PRESENTING A HEALTH HAZARD MAXIMUM QUANTITIES ALLOWED IN AN OUTDOOR CONTROL AREA^{1,2,3}

MATERIAL	STORAGE ³			USE ³ — CLOSED SYSTEMS			USE ³ — OPEN SYSTEMS	
	SOLID POUNDS ^{4, 5, 6}	LIQUID GALLONS ^{4, 5, 6} (POUNDS)	GAS CUBIC FEET ⁵	SOLID POUNDS ⁵	LIQUID GALLONS ^{4, 5, 6} (POUNDS)	GAS CUBIC FEET ⁵	SOLID POUNDS	LIQUID GALLONS (POUNDS)
	x 0.4536 for kg	X 3.785 for L X 0.4536 for kg	X 0.0283 for m ³	x 0.4536 for kg	X 3.785 for L X 0.4536 for kg	X 0.0283 for m ³	x 0.4536 for kg x 0.0283 for m ³	X 3.785 for L X 0.4536 for kg
Corrosives	5,000	500	810	5,000	500	810	1,000	100
Highly Toxics	10	(10)	20 ⁴	10	(10)	20 ⁴	3	(3)
Irritants	10,000	1,000	810	10,000	1,000	810	5,000	500
Sensitizers	10,000	1,000	810	10,000	1,000	810	5,000	500
Other Health Hazards	10,000	1,000	810	10,000	1,000	810	5,000	500
Toxics	500	(500)	810	500	50	810	25	(25)

¹ For gallons of liquids, divide the amount in pounds by 10.

² The aggregate quantities in storage and use shall not exceed the quantity listed for storage.

³ The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed in outdoor storage per single property under the same ownership or control used for retail or wholesale sales is allowed to exceed the exempt amounts when such storage is in accordance with Section 8001.14.

⁴ Permitted only when used in approved exhausted gas cabinets, exhausted enclosures or fume hoods.

235. TABLE 8003.1-A—REQUIRED SECONDARY CONTAINMENT, HAZARDOUS MATERIALS SOLIDS AND LIQUIDS STORAGE, is amended as follows:

**TABLE 8003.1-A—REQUIRED SECONDARY CONTAINMENT
HAZARDOUS MATERIALS SOLIDS AND LIQUIDS STORAGE**

MATERIAL		INDOOR STORAGE		OUTDOOR STORAGE	
		Solids	Liquids	Solids	Liquids
1. Physical Hazard Materials					
Combustible dusts		NR	NA	NR	
Combustible liquids	Class II	NA	See Article 79	NA	See Article 79
	Class III-A	NA	See Article 79	NA	See Article 79
	Class III-B	NA	See Article 79	NA	See Article 79
Cryogenic liquids		NA	See Article 79	NA	See Article 79
Explosives		See Article 77		See Article 77	
Fireworks		See Article 78		See Article 78	
Flammable liquids	Class I-A	NA	See Article 79	NA	See Article 79
	Class I-B	NA	See Article 79	NA	See Article 79
	Class I-C	NA	See Article 79	NA	See Article 79
Flammable solids		NR	NA	NR	NA
Organic peroxides	Class I	R	R	NR	NR
	Class II	R	R	NR	NR
	Class III	R	R	NR	NR
	Class IV	R	R	NR	NR
	Class V	NR	NR	NR	NR
Oxidizers	Class 4	R	R	NR	NR
	Class 3	R	R	NR	NR
	Class 2	R	R	NR	NR
	Class 1	R	R	NR	NR
Pyrophorics		NR	R	NR	R
Unstable (reactives)	Class 4	R	R	R	R
	Class 3	R	R	R	R
	Class 2	R	R	R	R
	Class 1	NR	NR	NR	NR
Water reactives	Class 3	R	R	R	R
	Class 2	R	R	R	R
	Class 1	NR	NR	NR	NR
2. Health Hazard Materials					
Carcinogens		NR	NR	NR	R
Corrosives		NR	R	NR	R
Highly toxics		R	R	R	R
Irritants		NR	NR	NR	R
Other health hazards		NR	NR	NR	R
Radioactives		R	R	R	R
Sensitizers		NR	NR	NR	R
Toxics		R	R	R	R

NA = Not Applicable NR = Not Required
R = Required D = Detonatable

236. **TABLE 8003.1-B—REQUIRED DETACHED STORAGE**, is amended as follows:

TABLE 8003.1-B—REQUIRED DETACHED STORAGE
(See Section 8003.1.15)

DETACHED STORAGE IS REQUIRED WHEN THE QUANTITY OF MATERIAL EXCEEDS THAT LISTED			
MATERIAL		Solids and Liquids (tons) ^{1,2}	Gases (cubic feet) ^{1,2}
		x 907.2 for kg	x 0.0283 for m ³
1. Explosives, blasting agents, black powder, fireworks, detonatable organic peroxides		Over exempt amounts	Over exempt amounts
2. Class 4 oxidizers			
3. Class 3 or 4 detonatable unstable (reactives)			
4. Oxidizers, liquids and solids	Class 3	1,200	N.A.
	Class 2	2,000	N.A.
5. Organic peroxides	Class I	Over exempt amounts	N.A.
	Class II	25	N.A.
	Class III	50	N.A.
6. Unstable (reactives)	Class 4	1/1,000	20
	Class 3	1	2,000
	Class 2	25	10,000
7. Water reactives	Class 3	1	N.A.
	Class 2	25	N.A.
8. Pyrophoric gases		N.A.	2,000

N.A.—Not applicable.

¹ For materials which are detonatable, the distance to other buildings or property lines shall be as specified in the nationally recognized standard.

² “Over exempt amounts” means over the quantities set forth in Table 8001.15-A.

237. **Section 8003.1.6 Fire-extinguishing systems**, is amended as follows:

8003.1.6 Fire-extinguishing systems. Indoor storage areas and storage buildings shall be protected by an automatic sprinkler system. The design of the sprinkler system shall not be less than that required by the Building Code for Ordinary Hazard Group 2 with a minimum design area of 3,000 square feet (278.7 m²). Where the materials or storage arrangement requires a higher level of sprinkler system protection in accordance with nationally recognized standards, the higher level of sprinkler system protection shall be provided. See NFPA 13

EXCEPTION: Approved alternate automatic fire-extinguishing systems are allowed.

238. A new **Section 8003.8.3 Silane Gas**, is added as follows:

8003.8.3 Silane Gas

8003.8.3.1 General requirements. The storage and use of silane gas and gas mixtures with a silane concentration of 2 percent or more by volume, in amounts exceeding the maximum allowable quantity per control area indicated in Table 8001.15–A or 8001.15–C, shall be in accordance with this section.

8003.8.3.1.1 Building construction. Indoor storage and use of silane gas shall be within a room or building conforming to the *International Building Code*.

8003.8.3.1.2 Flow control. Compressed gas containers, cylinders and tanks containing silane gas, and gas mixtures with a silane concentration of 2 percent or more by volume, shall be equipped with reduced flow valves equipped with restrictive- flow orifices not exceeding 0.010 inch (0.254 mm) in diameter. The presence of the restrictive flow orifice shall be indicated on the valve and on the container, cylinder or tank by means of a label placed at a prominent location by the manufacturer.

EXCEPTIONS:

1. Manufacturing and filling facilities where silane is produced or mixed and stored prior to sale.
2. Outdoor installations consisting of permanently mounted cylinders connected to a manifold, provided that the outlet connection from the manifold is equipped with a restrictive flow orifice not exceeding 0.125 inch (3.175 mm) in diameter and the setback distance to exposures is not less than 40 feet (12,192 mm). Footnote a of Table 8003.8–A shall not apply.

8003.8.3.1.3 Valves. Container, cylinder and tank valves shall be constructed of stainless steel or other approved materials. Valves shall be equipped with outlet fittings in accordance with CGA V-1.

8003.8.3.2 Indoor storage. Indoor storage of silane gas, and gas mixtures with a silane concentration of 2 percent or more by volume, shall be in accordance with Sections 8003.8.1 and 8003.8.3.2.1 through 8003.8.3.2.3.

8003.8.3.2.1 Fire protection. When automatic fire-extinguishing systems are required, automatic sprinkler systems shall be used.

8003.8.3.2.2 Exhausted enclosures or gas cabinets. When provided, exhausted enclosures and gas cabinets shall be constructed as follows:

1. Exhausted enclosures and gas cabinets shall be in accordance with Sections 8001.10.4 and 8001.10.5.
2. Exhausted enclosures and gas cabinets shall be internally sprinklered.
3. The velocity of ventilation across unwelded fittings and connections on the piping system shall not be less than 200 linear feet per minute (102 m/s).
4. The average velocity at the face of the access ports or windows in the gas cabinet shall not be less than 200 linear feet per minute (102 m/s) with a minimum velocity of 150 linear feet per minute (76 m/s) at any point of the access port or window.

8003.8.3.2.3 Emergency power. The ventilation system shall be provided with an automatic emergency power source in accordance with Section 604 and designed to operate at full capacity.

8003.8.3.3 Outdoor storage. Outdoor storage of silane gas, and gas mixtures with a silane concentration of 2 percent or more by volume, shall be in accordance with Sections 8003.8.1.3.1 and 8003.8.3.3.1 through 8003.8.3.3.3.

8003.8.3.3.1 Volume. The maximum volume for each nest shall not exceed 10,000 cubic feet (283.2 m³) of gas.

8003.8.3.3.2 Aisles. Storage nests shall be separated by aisles a minimum of 6 feet (1829 mm) in width.

8003.8.3.3.3 Separation. Storage shall be located a minimum of 25 feet (7620 mm) from lot lines, streets, alleys, public ways, means of egress or buildings.

8003.8.3.4 Indoor use and dispensing. The indoor use and dispensing of silane gas and gas mixtures with a silane concentration of 2 percent or more by volume, in amounts exceeding the maximum allowable quantity per control area indicated in Table 8001.15–A shall be in accordance with Section 8004.1.16 and this section.

8003.8.3.4.1 Exhausted enclosures or gas cabinets. When provided, exhausted enclosures and gas cabinets shall be installed in accordance with Section 8003.8.3.2.2.

8003.8.3.4.2 Remote manual shutdown. Remote manual shutdown of process gas flow shall be provided outside each gas cabinet.

8003.8.3.4.3 Emergency power. The ventilation system shall be provided with an approved automatic emergency power source in accordance with Section 604 and designed to operate at full capacity.

8003.8.3.4.4 Purge panels. Automated purge panels shall be provided.

8003.8.3.4.4.1 Purge gases. Purging of piping and controls located in gas cabinets or exhausted enclosures shall only be performed using a dedicated inert gas supply that is designed to prevent silane from entering the inert gas supply. The use of nondedicated systems or portions of piping systems is allowed on portions of the venting system that are continuously vented to atmosphere. Devices that could interrupt the continuous flow of purge gas to the atmosphere shall be prohibited.

EXCEPTION: Manufacturing and filling facilities where silane is produced or mixed.

8003.8.3.4.4.2 Venting. Gas vent headers or individual purge panel vent lines shall have a continuous flow of inert gas. The inert gas shall be introduced upstream of the first vent or exhaust connection to the header.

8003.8.3.4.4.3 Purging operations. Purging operations shall be performed by means ensuring complete purging of the piping and control system before the system is opened to the atmosphere.

8003.8.3.5 Outdoor use and dispensing. The outdoor use and dispensing of silane gas, and gas mixtures with a silane concentration of 2 percent or more by volume, exceeding the maximum allowable quantity per control area indicated in Table 8001.15–C shall be in accordance with Sections 8004.3 and 8003.8.3.4.

239. **Section 8003.11 Cryogenic Fluids,** is amended as follows:

8003.11 Cryogenic Fluids. Storage of cryogenic fluids shall be in accordance with Article 75. For requirements pertaining to oxidizing cryogenic fluids, see NFPA 50. For requirements pertaining to flammable cryogenic fluids, see NFPA 50B. For requirements pertaining to inert cryogenic fluids, see Article 90 Standard c.1.3.

240. **Section 8003.12.2.3 Fire-extinguishing systems,** is amended as follows:

8003.12.2.3 Fire-extinguishing systems. Outdoor storage of highly toxic solids and liquids shall be in fire-resistive containers or shall comply with one of the following:

1. The storage area shall be protected by an automatic, open head, deluge fire-sprinkler system of the type and density specified in the Fire Code (see NFPA 13), or
2. Storage shall be located under a canopy of noncombustible construction, with the canopied area protected by an automatic fire-sprinkler system of the type and density specified in the Fire Code. See NFPA 13. Such storage shall not be considered indoor storage. See Section 8003.1.14.

241. **Section 8003.13.2.3 Fire-extinguishing systems,** is amended as follows:

8003.13.2.3 Fire-extinguishing systems. Outdoor storage of radioactive materials shall be in fire-resistive containers or shall comply with one of the following:

1. The storage area shall be protected by an automatic, open head, deluge fire-sprinkler system of the type and density specified in the Fire Code (see NFPA 13.), or
2. Storage shall be located under a canopy of noncombustible construction, with the canopied area protected by an approved automatic fire-extinguishing system. Such storage shall not be considered to be indoor storage. See Section 8003.1.14.

242. **Section 8004.1.1 Applicability**, is amended as follows:

8004.1.1 Applicability. Use, dispensing and handling of hazardous materials where the aggregate quantity is in excess of the exempt amounts set forth in Section 8001.15 shall be in accordance with Sections 8001 and 8004.

EXCEPTIONS:

1. For stationary lead-acid battery systems used for standby power, emergency power or uninterrupted power supply, see Article 64.
2. Application of pesticide products registered with the United States Environmental Protection Agency. Use, dispensing and handling of hazardous materials where the aggregate quantity does not exceed the exempt amounts set forth in Section 8001.15 shall be in accordance with Section 8001. For flammable, oxidizing and pyrophoric gases, see also Section 8001.16. For requirements pertaining to oxidizing cryogenic fluids, see NFPA 50. For requirements pertaining to flammable cryogenic fluids, see NFPA 50B. For requirements pertaining to inert cryogenic fluids, see Article 90, standard c.1.3.

243. **Section 8004.1.10 Fire-extinguishing systems**, is amended as follows:

8004.1.10 Fire-extinguishing systems. Indoor rooms or areas in which hazardous materials are dispensed or used shall be protected by an automatic fire-extinguishing system. Sprinkler system design shall not be less than that required by the Fire Code for Ordinary Hazard, Group 2, with a minimum design area of 3,000 square feet (278.7 m²). See NFPA 13. Where the materials or storage arrangement require a higher level of sprinkler system protection in accordance with nationally recognized standards, the higher level of sprinkler system protection shall be provided.

EXCEPTION: Approved alternate automatic fire-extinguishing systems are allowed.

244. **Section 8004.1.14 Bulk oxygen systems**, is amended as follows:

8004.1.14 Bulk oxygen systems. Bulk oxygen systems at industrial and institutional consumer sites shall be in accordance with NFPA 50.

245. **Section 8004.1.15 Liquid transfer**, is amended as follows:

8004.1.15 Liquid transfer. Liquids having a hazard ranking of 3 or 4 in accordance with NFPA 704 shall be transferred by one of the following methods:

EXCEPTIONS:

1. Liquids having a hazard ranking of 4 when dispensed from approved containers not exceeding 1.1 gallons (4 L).
2. Liquids having a hazard ranking of 3 when dispensed from approved containers not exceeding 5.3 gallons (20 L).
1. From safety cans.
2. Through an approved closed-piping system.
3. From containers or tanks by an approved pump taking suction through an opening in the top of the container or tank.
4. From containers or tanks by gravity through an approved self- or automatic-closing valve when the container or tank and dispensing operations are provided with spill control and secondary containment. See Section 8003.1.3.

EXCEPTION: Highly toxic liquids shall not be dispensed by gravity from tanks.

5. Approved engineered liquid transfer systems.

246. **Section 8004.2.2.2 Ventilation**, is amended as follows:

8004.2.2.2 Ventilation. When gases, liquids or solids having a hazard ranking of 3 or 4 in accordance with NFPA 704 are dispensed or used, mechanical exhaust ventilation shall be provided to capture fumes, mists or vapors at the point of generation.

EXCEPTION: Gases, liquids or solids which can be demonstrated not to create harmful fumes, mists or vapors.

247. **Section 8004.4.3 Emergency alarm**, is amended as follows:

8004.4.3 Emergency alarm. When hazardous materials having a hazard ranking of 3 or 4 in accordance with NFPA 704 are transported through corridors or exit enclosures, there shall be an emergency telephone system, a local manual alarm station or an approved alarm-initiating device at not more than 150-foot (45,720 mm) intervals and at each exit and exit-access doorway throughout the transport route. The signal shall be relayed to an approved central, proprietary or remote station service or constantly attended on-site location and shall also initiate a local audible alarm.

248. A new **Section 8004.5 Hazardous Materials, Parking of Vehicles**, is added as follows:

8004.5 Hazardous Materials, Parking of Vehicles. Parking of vehicles displaying hazardous materials placards shall be in accordance with the provisions of Section 7904.6.5.

EXCEPTION: In cases of accident, breakdown or other emergencies, vehicles are allowed to be parked and left unattended at any location while the operator is obtaining assistance.

249. **Section 8101.1 Scope**, is amended as follows:

8101.1 Scope. Buildings containing high-piled combustibles shall be in accordance with Article 81. In addition to the requirements of Article 81, aerosols shall be in accordance with Article 88, flammable and combustible liquids shall be in accordance with Article 79, and hazardous materials shall be in accordance with Article 80.

Storage of combustible paper records shall be in accordance with Article 81 and NFPA 13.

250. **Section 8101.5.2 Designation based on engineering analysis**, is amended as follows:

8101.5.2 Designation based on engineering analysis. The designation of a high-piled combustible storage area, or portion thereof, is allowed to be based on a lower hazard class than that of the highest class of commodity stored when a limited quantity of the higher hazard commodity has been demonstrated by engineering analysis to be adequately protected by the sprinkler system provided.

The engineering analysis shall consider the ability of the sprinkler system to deliver the higher density required by the higher-hazard commodity. The higher density shall be based on the actual storage height of the pile or rack and the minimum allowable design area for sprinkler operation as set forth in the density/area figures provided in NFPA 13. The contiguous area occupied by higher-hazard commodity shall not exceed 120 square feet (11.15 m²), and additional areas of higher-hazard commodity shall be separated from other such areas by 25 feet (7620 mm) or more.

The sprinkler system shall be capable of delivering the higher density over a minimum area of 900 square feet (83.6 m²) for wet pipe systems and 1,200 square feet (111.5 m²) for dry pipe systems. The shape of the design area shall be in accordance with the Fire Code.

251. **Section 8102.7.1 General**, is amended as follows:

8102.7.1 General. When smoke and heat removal are required by Table 81-A, smoke and heat vents shall be provided in accordance with Section 8102.7.

EXCEPTIONS:

1. When the installation of smoke and heat vents is determined by the chief to be impractical, mechanical smoke-removal systems are allowed to be provided in accordance with 8102.7.5.
2. Frozen food storage classified as a Class I or Class II commodity is not required to be provided with smoke and heat vents or mechanical smoke removal when protected by an automatic sprinkler system.

252. **Section 8102.7.2 Types of vents**, is amended as follows:

8102.7.2 Types of vents. Smoke and heat vents shall be approved and shall be labeled to indicate compliance with nationally recognized standards. See Article 90, Standards f.1.2, i.2.1 and u.1.12. Smoke and heat vents shall be operated automatically by activation of an approved fixed-temperature heat-responsive device rated between 350°F and 400°F (176°C and 204°C).

The heat-responsive device shall be listed and labeled. Smoke and heat vents shall have the capability of being opened by an approved manual operation.

253. A new **Section 8102.7.5 Mechanical Smoke-Removal Systems**, is added as follows:

8102.7.5 Mechanical Smoke-Removal Systems

8102.7.5.1 System Capacity. The volume of mechanical ventilation required shall be 300 cubic feet per minute per square foot (1524 L per second per square meter) of roof vent area required by Table 81-B.

8102.7.5.2 Supply Air. Supply air for exhaust fans shall be provided at or near the floor level and shall be sized to provide a minimum of 50 percent of required exhaust. Openings for supply air shall be uniformly distributed around the periphery of the area served.

8102.7.5.3 Fans. Fans shall be in accordance with the following:

1. The individual capacity of a fan shall not exceed 30,000 cubic feet per minute (14,158.4 L/s);
2. One or more exhaust fans shall be provided in each curtained area, and when more than one exhaust fan is provided in a curtained area, the fans shall be uniformly spaced within the curtained area. The distance between fans within a curtained area shall not exceed 100 feet (30,480 mm). In building without curtain boards, exhaust fan shall be evenly distributed throughout structure.
3. Wiring and smoke-removal fan units shall be thermally protected in a manner that will provide continued operation for not less than 15 minutes while exposed to temperature of 1,000°F (537.8°C); and

EXCEPTION: Wiring and electrical equipment installed on the exterior of the building.

4. Controls for mechanical smoke-removal systems shall be as follows:
 - 4.1 On combination comfort air-handling and smoke-removal systems, and on independent comfort air-handling systems, fans shall be controlled to shut down in accordance with the automatic shutoff requirement of the Mechanical Code or by activation of automatic extinguishing or detection systems;
 - 4.2 Electrical service to the smoke-removal system shall be connected on the line side of the main electrical disconnect; and
 - 4.3 The smoke-removal system shall be provided with a fire department control panel located in an approved location and clearly identified. The control panel room shall be protected by not less than a one-hour fire barrier in accordance with the Building Code. The room shall be accessible from the exterior of the building. Automatic sprinkler protection shall be provided in the control room.

254. **Section 8102.9.1 Small hose stations**, is amended as follows:

8102.9.1 Small hose stations. When hose valves and stations are required by Table 81-A, approved 2½ inch hose valves, 2½ inch piping and 1½ inch adapters with caps shall be provided at approved locations. When required by the Chief, hose, nozzles, hose racks, and cabinets or covers shall be provided.

255. **Section 8102.10.1 General**, is amended as follows:

8102.10.1 General. Aisles providing access to exits and fire department access doors shall be provided in high-piled storage areas exceeding 500 square feet (46.45 m²) in accordance with Section 8102.10. For aisles separating storage piles or racks, see also NFPA 13 and Article 88.

EXCEPTION: Where aisles are precluded by rack storage systems, alternate methods of access and protection are allowed when approved.

256. **Section 8103.2.1 General**, is amended as follows:

8103.2.1 General. When fire sprinklers are required by Table 81-A, an approved automatic fire sprinkler system shall be installed throughout the building or to four-hour-rated fire walls constructed in accordance with the Building Code, with no opening. The design and installation of the automatic fire sprinkler system and other applicable fire protection shall be in accordance with the Fire Code. See NFPA 13.

257. **Section 8103.2.2 Shelf storage**, is amended as follows:

8103.2.2 Shelf storage. Shelf storage greater than 12 feet (3658 mm) but less than 15 feet in height shall be in accordance with the fire-protection requirements set forth in NFPA 13. Shelf storage 15 feet (4572 mm) or more in height shall be protected in an approved manner with special fire protection, such as in-rack sprinklers.

258. **Section 8104.2.1 General**, is amended as follows:

8104.2.1 General. When fire sprinklers are required by Table 81-A, an approved automatic fire sprinkler system shall be installed throughout the building or to four-hour fire-resistive walls constructed in accordance with the Building Code, with no openings. The design and installation of the automatic fire sprinkler system and other applicable fire protection shall be in accordance with the Fire Code. See NFPA 13.

259. **Section 8104.2.3.1 General**, is amended as follows:

8104.2.3.1 General. Racks with solid shelving having an area greater than 32 square feet (2.97 m²), measured between approved flue spaces at all four edges of the shelf, shall be in accordance with Section 8104.2.3.

EXCEPTIONS:

1. Racks with mesh, grated, slatted or similar shelves having uniform openings not more than 6 inches (152.4 mm) apart, comprising at least 50 percent of overall shelf area, and with approved flue spaces, are allowed to be treated as racks without solid shelves.
2. Racks used for the storage of combustible paper records, with solid shelving, shall be in accordance with NFPA 13.

260. **Section 8104.2.3.2 Fire protection**, is amended as follows:

8104.2.3.2 Fire protection. Fire protection for racks with solid shelving shall be in accordance with the requirements for racks with solid shelving set forth in NFPA 13 or other nationally recognized standards. See Article 90, Standard f.1.1. Fire protection for records storage racks with solid shelving shall be in accordance with the requirements set forth in NFPA 13.

261. **Section 8104.4 Column Protection**, is amended as follows:

8104.4 Column Protection. Steel building columns shall be protected in accordance with NFPA 13.

262. **Section 8105.2 Fire Sprinklers**, is amended as follows:

8105.2 Fire Sprinklers. When fire sprinklers are required by Table 81-A, an approved automatic fire sprinkler system shall be installed throughout the building. The design and installation of the automatic fire sprinkler system shall be in accordance with the Fire Code. See NFPA 13 and nationally recognized standards.

263. **Section 8106.1 General**, is amended as follows:

8106.1 General. Records storage facilities used for the rack or shelf storage of combustible paper records greater than 12 feet (3658 mm) in height shall be in accordance with Sections 8102 and 8104 and NFPA 13. Palletized storage of records shall be in accordance with Section 8103.1.

264. **TABLE 81-A—GENERAL FIRE-PROTECTION AND LIFE-SAFETY REQUIREMENTS**, is amended as follows:

TABLE 81-A—GENERAL FIRE-PROTECTION AND LIFE-SAFETY REQUIREMENTS

Commodity Class	Size of High-Piled Storage Area ¹ (Square feet) (Sections 8102.2 and 8102.4)	All Storage Areas (See Sections 8102, 8103, and 8104) ²						Solid-Piled Storage, Shelf Storage, and Palletized Storage (See Section 8103.3)		
		Automatic Fire Extinguishing System (Section 8102.4)	Fire-Detection System (Section 8102.5)	Building Access (Section 8102.6)	Smoke and Heat Removal (Section 8102.7)	Curtain Boards (Section 8102.8)	Small Hose Valves and Stations (Section 8102.9)	Maximum Pile Dimension ³ (feet)	Maximum Permissible Storage Height ⁴ (feet)	Maximum Pile Volume (cubic feet)
	X0.0929 for m ²							X 3.048 for m		X 0.0283 for m ³
I-IV	0 – 500	NR ¹	NR	NR ⁵	NR	NR	NR	NR	NR	NR
	501 – 2,500	NR ¹	Yes	NR ⁵	NR	NR	NR	100	40	100,000
	2,501 – 12,000 Public Accessible	Yes	NR	NR ⁵	NR	NP	NR	100	40	400,00
	2,501 – 12,000 Nonpublic Accessible (Option 1)	Yes	NR	NR ⁵	NR	NP	NR	100	40	400,000
	2,501 – 12,000 Nonpublic Accessible (Option 2)	NR ¹	Yes	Yes	Yes	Yes ⁶	Yes	100	30 ⁷	200,000
	12,001 – 20,000	Yes	NR	Yes	Yes	NP	Yes	100	40	400,000
	20,001 – 500,000	Yes	NR	Yes	Yes	NP	Yes	100	40	400,000
	Greater than 500,000 ⁸	Yes	NR	Yes	Yes	NP	Yes	100	40	400,000
High Hazard	0 – 500	NR ¹	NR	NR ⁵	NR	NR	NR	50	NR	NR
	501 – 2,500 Public Accessible	Yes	NR	NR ⁵	NR	NP	NR	50	30	75,000
	501 – 2,500 Nonpublic Accessible (Option 1)	Yes	NR	NR ⁵	NR	NP	NR	50	30	75,000
	501 – 2,500 Nonpublic Accessible (Option 2)	NR ¹	Yes	Yes	Yes	Yes ⁶	Yes	50	20	50,000
	2,501 – 300,000	Yes	NR	Yes	Yes	NP	Yes	50	30	75,000
	300,001 – 500,000 ^{8,9}	Yes	NR	Yes	Yes	NP	Yes	50	30	75,000

NR = Not required. NP = Not Permitted

¹ When fire sprinklers are required for reasons other than Article 81, the portion of the sprinkler system protecting the high-piled storage area shall be designed and installed in accordance with Sections 8103 and 8104.

² For aisles, see Section 8102.10.

³ Piles shall be separated by aisles complying with Section 8102.10.

⁴ For storage in excess of the height indicated, special fire protection shall be provided in accordance with Footnote 8 when required by the chief. See also Articles

79 and 88 for special limitations for flammable and combustible liquids and aerosols.

⁵ Section 902.2 shall apply for fire apparatus access.

⁶ When fire sprinklers are required for reasons other than Article 81, curtain boards shall not be installed.

⁷ For storage exceeding 30 feet (914 mm) in height, Option 1 shall be used.

⁸ Special fire-protection provisions such as, but not limited to, fire protection of exposed steel columns; increased sprinkler density; additional in-rack sprinklers, without associated reductions in ceiling sprinkler density; or additional fire department hose connections shall be provided when required by the chief.

⁹ High-piled storage areas shall not exceed 500,000 square feet (46,451.5 m²). A two-hour area separation wall shall be used to divide high-piled storage exceeding 500,000 square feet (46,451.5 m²) in area.

265. **TABLE 81-B—REQUIREMENTS FOR CURTAIN BOARDS AND SMOKE VENTING**, is amended as follows:

TABLE 81-B—REQUIREMENTS FOR CURTAIN BOARDS AND SMOKE VENTING^a
(See Sections 8102.7.4 and 8102.8.3)

Occupancy Group and Commodity Classification	Designated Storage Height (feet)	NON-SPRINKLERED					SPRINKLERED			
		Minimum Curtain Board Depth (feet)	Maximum Area Formed by Curtain Boards (feet)	Vent Area to Floor Area Ratio	Maximum Spacing of Vent Centers (feet)	Maximum Distance to Vents from Wall ^b (feet)	Curtain Boards	Vent Area to Floor Area Ratio	Maximum Spacing of Vent Centers (feet)	Maximum Distance to Vents from Wall ^b (feet)
Group F-1	—	0.2 xH but ≥ 4	50,000	1:100	120	60	Not Permitted	1:100	100	50
Group S-1 I-IV (Option 1)	≤ 20	6	10,000	1:100	100	60				
	> 20 ≤ 40	6	8,000	1:75	100	55				
Group S-1 I-IV (Option 2)	≤ 20	4	3,000	1:75	100	55				
	> 20 ≤ 40	4	3,000	1:50	100	50				
Group S-1 High Hazard (Option 1)	≤ 20	6	6,000	1:50	100	50				
	> 20 ≤ 30	6	6,000	1:40	90	45				
Group S-1 High Hazard (Option 1)	≤ 20	4	4,000	1:50	100	50				
	> 20 ≤ 30	4	2,000	1:30	75	40				

^a For rack storage heights in excess of those indicated, see Section 8104.5. For solid-piled storage heights in excess of those indicated, an approved engineered design shall be used.

^b The distance specified is the maximum distance from any vent in a particular curtained area to walls or curtain boards which form the perimeter of the curtained area.

266. **SECTION 8201 — SCOPE**, is amended as follows:

SECTION 8201 — SCOPE

Storage, handling and transportation of LP-gas and the installation of equipment pertinent to systems for such uses shall be in accordance with Article 82. For determining properties of LP-gases, see NFPA 58.

267. **Section 8202.1 Permits and Plans**, is amended as follows:

8202.1 Permits and Plans. For a permit to store, use, handle or dispense LP-gas, or to install or maintain an LP-gas container see Section 105, Permit 1.1.

EXCEPTION: A permit is not required to install or maintain portable containers of less than 125-gallon (473.2 L) aggregate water capacity.

Distributors shall not fill an LP-gas container for which a permit is required until the installation has been approved by the chief. Where a single container is over 125-gallon (7571 L) water capacity the installer shall submit plans for such installation.

268. **Section 8203.1 General**, is amended as follows:

8203.1 General. Liquefied petroleum gas equipment shall be installed in accordance with NFPA 58, except as otherwise provided in Article 82 and in other laws or regulations.

269. **Section 8203.2.1.1 General,** is amended as follows:

8203.2.1.1 General. Portable LP-gas containers, as defined in NFPA 58, shall not be used in buildings except as specified in NFPA 58 and Section 8203.2.1.

270. **Section 8203.2.1.3 Construction and temporary heating,** is amended as follows:

8203.2.1.3 Construction and temporary heating. Portable containers are allowed to be used in buildings or areas of buildings undergoing construction for temporary heating as set forth in NFPA 58, Sections 3-4.3, 3-4.4, 3-4.5 and 3-4.7.

271. **Section 8203.2.1.8 Use for food preparation,** is amended as follows:

8203.2.1.8 Use for food preparation. When approved, listed LP-gas commercial food service appliances are allowed to be used for food preparation within restaurants and in attended commercial food catering operations. See NFPA 58, Sections 3.4.8.4 and 5.3.1.2.

272. **Section 8203.2.2 Industrial vehicles and floor maintenance machines,** is amended as follows:

8203.2.2 Industrial vehicles and floor maintenance machines. Containers on industrial vehicles and floor maintenance machines shall be in accordance with NFPA 58, Section 8.3 and 8.4.

273. **Section 8204.1 General,** is amended as follows:

8204.1 General. The storage and transportation of LP-gas and the installation and maintenance of pertinent equipment shall be in accordance with NFPA 58 and subject to the approval of the chief, except as provided in Article 82.

274. **Section 8204.4 Multiple Container Installation,** is amended as follows:

8204.4 Multiple Container Installation. Multiple container installations with a total water storage capacity of more than 180,000 gallons (681,374 L) [150,000-gallon (567,811 L) LP-gas capacity] shall be subdivided into groups containing not more than 180,000 gallons (681,374 L) in each group. Such groups shall be separated by a distance of not less than 50 feet (15,240 mm), unless the containers are:

1. Mounded in an approved manner,
2. Protected with approved insulation on areas that are subject to impingement of ignited gas from pipelines or other leakage,
3. Protected by firewalls of approved construction,
4. Protected by an approved system for application of water as specified in NFPA 58, Table 3-2.2.4, or
5. Protected by other approved means.

Where one of these forms of protection is provided, the separation shall not be less than 25 feet (7620 mm) between container groups.

275. **Section 8206.3 Dispensing Locations,** is amended as follows:

8206.3 Dispensing Locations. The point of transfer of LP-gas from one container to another shall be separated from exposures as specified in NFPA 58, Section 4-3.

276. **SECTION 8208 — SMOKING AND OTHER SOURCES OF IGNITION,** is amended as follows:

SECTION 8208 — SMOKING AND OTHER SOURCES OF IGNITION

NO SMOKING signs shall be posted when required by the chief. Smoking within 15 feet (4572 mm) of a point of transfer, while filling operations are in progress at containers or vehicles, shall be prohibited. For control of other sources of ignition, refer to NFPA 58, Section 3.7.

277. **Section 8211.1 General**, is amended as follows:

8211.1 General. Fire protection shall be provided for installations having storage containers of more than a 4,000-gallon (15,141 L) water capacity, as required by NFPA 58, Section 3.10.

278. **Section 8211.2 Fire Extinguishers**, is amended as follows:

8211.2 Fire Extinguishers. Fire extinguishers shall be provided as specified in NFPA 58, and in accordance with NFPA 10.

279. **Section 8212.9 Storage within Buildings Accessible to the Public**, is amended as follows:

8212.9 Storage within Buildings Accessible to the Public. Department of Transportation (DOT) specification cylinders with maximum water capacity of 2½ pounds (1.13 kg) used in completely self-contained hand torches and similar applications are allowed to be stored or displayed in a building accessible to the public. The quantity of LP-gas shall not exceed 200 pounds (90.7 kg) except as provided in Section 8212.11.

When 2½ pound cylinders are in use as fuel for self-contained torches the storage of spare LP-gas cylinders is limited to 2 cylinders.

280. **Section 8212.11.3 Construction**, is amended as follows:

8212.11.3 Construction. The construction of such buildings and rooms shall comply with requirements for Group H Occupancies in the Building Code; NFPA 58, Chapter 7; and the following:

1. Adequate vents shall be provided to the outside at both top and bottom, located at least 5 feet (1524 mm) from building openings, and
2. The entire area shall be classified for the purposes of ignition source control in accordance with NFPA 58, Section 3.7.

281. **Section 8214.3 Garaging**, is amended as follows:

8214.3 Garaging. Garaging of tank vehicles used for the transportation of LP-gases shall be as specified in NFPA 58. Vehicles with LP-gas fuel systems are allowed to be stored or serviced in garages as specified in NFPA 58, Section 8.6.

282. **Section 8506.2.3 Power supply**, is amended as follows:

8506.2.3 Power supply. Extension cords shall be plugged directly into an approved receptacle or power tap and shall serve only one (1) portable appliance.

283. **SECTION 8507 — MULTIPLUG ADAPTERS**, is amended as follows:

SECTION 8507 — MULTIPLUG ADAPTERS

Multiplug adapters, such as multiplug extension cords, and cube adapters, shall not be used.

EXCEPTION: Group R, Division 3 Occupancies.

284. A new **SECTION 8510 — ACCESS TO MAIN ELECTRICAL DISCONNECT**, is added as follows:

SECTION 8510 — ACCESS TO MAIN ELECTRICAL DISCONNECT

Access shall be maintained as required by NFPA 70, Section 230.70 as amended by the Southern Nevada Amendments to the 2002 National Electrical Code. (See section 902.4)

285. **Section 8801.1 Scope**, is amended as follows:

8801.1 Scope. Storage and retail display of aerosol products shall be in accordance with Article 88. Aerosols shall be classified as Level 1, 2 or 3 in accordance with NFPA30B.

EXCEPTION: Level 1 aerosols in cartons which are clearly marked to identify their classification level are not regulated by Article 88.

For additional requirements for high-piled combustible storage, see Article 81, and for hazardous materials, see Article 80.

286. **TABLE 8802.3-B—SEGREGATED LEVELS 2 AND 3 AEROSOL PRODUCT STORAGE GENERAL-PURPOSE WAREHOUSES AND STORAGE ROOMS MAXIMUM STORAGE AREA, SPRINKLER SYSTEM AND STORAGE ARRANGEMENT**, is amended as follows:

TABLE 8802.3-B—SEGREGATED LEVELS 2 AND 3 AEROSOL PRODUCT STORAGE GENERAL-PURPOSE WAREHOUSES AND STORAGE ROOMS MAXIMUM STORAGE AREA, SPRINKLER SYSTEM AND STORAGE ARRANGEMENT

STORAGE CONDITION	MAXIMUM AGGREGATE STORAGE AREA	SPRINKLER SYSTEM AND STORAGE ARRANGEMENT
Chain link fence enclosure	10 percent of building area and not more than basic allowable building area	Footnotes 1, 2 and 3
1-hour-rated fire barrier separation	10 percent of building area and not more than basic allowable building area	Footnote 1
2-hour-rated fire barrier separation	20 percent of building area and not more than double basic allowable building area	Footnote 1

1. Automatic fire sprinkler system protection shall be provided in aerosol product storage areas in accordance with Tables 8803.1-A through 8803.1-F. Automatic fire sprinkler system protection shall be provided in building areas not used for aerosol product storage in accordance with the Building Code and Article 81 as applicable.

2. The portion of the automatic fire sprinkler system at ceiling level shall be designed for aerosol storage 20 feet (6096 mm) beyond the aerosol storage area.

3. Chain link fence enclosures shall be in accordance with the following:

1. The fence shall not be less than 9 gage steel wire woven into a maximum 2-inch (51 mm) diamond mesh,
2. The fence shall be installed from the floor to the underside of the roof or ceiling above,
3. Class IV or V commodity storage shall not be located within 8 feet (2438 mm) from the fence,
4. Access openings in the fence shall be provided with either self-closing or automatic closing devices as set forth in the Building Code, or a labyrinth opening arrangement which will prevent aerosol containers from rocketing through such openings, and Not less than two means of egress shall be provided from the fenced enclosure.

287. **Section 8803.2.2 Storage**, is amended as follows:

8803.2.2 Storage. When an automatic fire-extinguishing system is required for the storage of aerosol products in Section 8802, the system shall be a wet-pipe automatic fire sprinkler system in accordance with the applicable provisions of Tables 8803.1-A through 8803.1-F. Protection shall be based on the highest level of aerosol product present. The system shall be designed and installed in accordance with NFPA 13, and the Building Code, as applicable.

EXCEPTION: When approved, Level 2 aerosol products in containers with less than 1 ounce (28.3 g) net weight of flammable contents are allowed to be protected as required for Group A plastics (see Section 8101.4.2.2) in accordance with NFPA 13.

288. **Section 8803.2.3 In-rack sprinkler systems**, is amended as follows:

8803.2.3 In-rack sprinkler systems. When racks are used, control valves for in-rack sprinkler systems shall be provided in accordance with NFPA 13.

289. **Section 8803.2.4 Small hose connections,** is amended as follows:

8803.2.4 Small hose connections. Small hose connections, when provided, shall be in accordance with NFPA 13 and NFPA 30B as applicable.

290. **Section 8803.4.3 Containers in cartons on pallets, in solid piles and on shelves,** is amended as follows:

8803.4.3 Containers in cartons on pallets, in solid piles and on shelves. Aerosol products in cartons on pallets, in solid piles or on shelves shall be in accordance with NFPA 30B.

291. **Section 8803.4.4 Containers in cartons on racks,** is amended as follows:

8803.4.4 Containers in cartons on racks. Aerosol products in cartons on racks shall be in accordance with NFPA 30B. Solid shelving shall not be installed in racks that are protected by a ceiling sprinkler system utilizing ESFR heads.

292. **Section 9001.1 UFC Standards,** is amended as follows:

9001.1 Standards. The standards referred to in various parts of this code, which are also listed in Section 9002, are hereby declared to be part of this code.

293. **Section 9002 UFC Standards,** is deleted and replaced with **NFPA Standards** as follows:

SECTION 9002 — ADOPTED NFPA STANDARDS

NFPA 10 – Standard for Portable Fire Extinguishers, 2002 Edition.

NFPA 11 – Standard for Low Expansion Foam Systems, 2002 Edition.

NFPA 13 – Standard for Installation of Sprinkler Systems, 2002 Edition, as modified in Section 9004.1

NFPA 13 D – Standard for Installation of Sprinkler Systems in 1 & 2 Family Dwellings, 2002 Edition, as modified in Section 9004.2.

NFPA 13 R – Standard for Installation of Sprinkler Systems in Residential Occupancies up to and including 4 stories in height, 2002 Edition, as modified in Section 9004.3.

NFPA 14 – Standard for the Installation of Standpipe, Private Hydrant, and Hose Systems, 2000 Edition, as modified in Section 9004.4.

NFPA 15 – Standard for Water Spray Fixed Fire Protection, 2001 Edition.

NFPA 17 - Standard for Dry Chemical Extinguishing Systems, 2002 Edition.

NFPA 17A - Standard for Wet Chemical Extinguishing Systems, 2002 Edition.

NFPA 20 - Standard for the Installation of Stationary Pumps for Fire Protection, 1999 Edition, as modified in Section 9004.5.

NFPA 22 - Standard for Water Tanks for Private Fire Protection , 1998 Edition.

NFPA 24 - Standard for the Installation of Private Fire Service Mains and Their Appurtenances, 2002 Edition.

NFPA 25 - Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems , 2002 Edition.

NFPA 30B – Manufacturing and Storage of Aerosol Products, 2002 Edition..

NFPA 50 –Bulk Oxygen Systems on Consumer Sites, 2002 Edition.

NFPA 50B – Standard for Liquefied Hydrogen Systems at Consumer Sites, 2002 Edition.

NFPA 52 – Compressed Natural Gas (CNG) Vehicular Fuel Systems, 2002 Edition.

NFPA 58 – Standard for Storage and Handling of Liquefied Petroleum Gas, 2002 Edition.

NFPA 72 – National Fire Alarm Code, 2002 Edition, as modified in Section 9004.6.

NFPA 86 – Standard for Ovens and Furnaces, 1999 Edition.

NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems, 2002 Edition.

NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems, 2002 Edition.
NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations, 2001 Edition.
NFPA 99 – Standard for Healthcare Facilities (Chapter 3 – Definitions; Chapter 5 – Medical Gas and Vacuum Systems; Chapter 9 – Gas Equipment), 2002 Edition.
NFPA 110 - Standard for Emergency and Standby Power Systems, 2002 Edition.
NFPA 111 - Standard on Stored Electrical Energy Emergency and Standby Power Systems, 2001 Edition.
NFPA 140 - Standard on Motion Picture and Television Production Studio Soundstages and Approved Production Facilities, 1999 Edition.
NFPA 160 - Standard for Flame Effects Before an Audience, 2001 Edition.
NFPA 385 – Standard for Tank Vehicles for Flammable and Combustible Liquids, 2000 Edition.
NFPA 407 – Standard for Aircraft Fuel Servicing, 2001 Edition.
NFPA 409 - Standard on Aircraft Hangars, 2001 Edition.
NFPA 410 - Standard on Aircraft Maintenance, 1999 Edition.
NFPA 704 – Standard System for the Identification of the Hazards of Materials for Emergency Response, 2001 Edition.
NFPA 1123 - Code for Fireworks Display, 2000 Edition.
NFPA 1126 - Standard for the Use of Pyrotechnics before a Proximate Audience, 2001 Edition.
NFPA 2001 - Standard on Clean Agent Fire Extinguishing Systems, 2000 Edition.
CGA P-18 – Standard for Bulk Inert Gas Systems at Consumer Sites, 2002 Edition.

294. A new **Section 9004.1 NFPA 13, 2002 Edition, Standard for the Installation of Sprinkler Systems**, is added and NFPA 13 is amended as follows:

9004.1 NFPA 13, Standard for the Installation of Sprinkler Systems.

NFPA 13-2002 is available from the National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, Massachusetts 02269-9101

The National Fire Protection Association Standard for the Installation of Sprinkler Systems, NFPA 13-2002, is hereby adopted by reference with the following amendments:

Chapter 5 Classification of Occupancies and Commodities

§ 5.3.2* **Ordinary Hazard (Group 2)**, is amended by adding a new second paragraph as follows:

§ 5.3.2* **Ordinary Hazard (Group 2)**. Ordinary Hazard (Group 2) Occupancies shall be occupancies or portions of other occupancies where the quantity and combustibility of contents is moderate to high, stockpiles do not exceed 12 ft (3.7 m), and fires with moderate to high rates of heat release are expected.

Occupancies containing Casinos, Mini-Storage Facilities, and Shell Buildings (unknown tenants and/or floor layout), shall be designed to meet the requirements of Ordinary Hazard Group 2.

6.1.3 Rated Pressure

§ 6.1.3, is amended by adding a new sentence as follows:

§ 6.1.3 **Rated Pressure**. System components shall be rated for the maximum system working pressure to which they are exposed but shall not be rated at less than 175 psi (12.1 bar) for components installed aboveground and 150 psi (10.4 bar) for components installed underground. When the underground piping can be supplied or pressurized by a Fire Department Connection (FDC), the underground piping shall be designed to withstand a working pressure of not less than 175 psi (Class 200).

6.2.9 Stock of Spare Sprinklers

A new sub-section § 6.2.9.7 **Stock of Spare Sprinklers**, is added as follows:

§ 6.2.9.7 The installing contractor shall provide an approved engraved durable sign secured to the spare sprinkler cabinet. The sign shall convey the following information for each type of sprinkler installed:

The Manufacturer of the Sprinkler

Sprinkler Identification Number (SIN)

The Model of the Sprinkler

The Type of Sprinkler

The quantity of each sprinkler style to be stored in the cabinet.

(Example: Tyco – TY9128, Model EC-25, upright, quantity – 5)

6.3 Aboveground Pipe and Tube.

A new sub-section § 6.3.1.5, is added as follows:

§ 6.3.1.5 Pipe or tube shall have a minimum Corrosion Resistant Ratio (CRR) of one (1) or greater.

6.5 Joining of Pipe and Fittings.

§ 6.5.5 **Other Joining Methods**, a new Sub-sections 6.5.5.1 and 6.5.5.2 is added as follows:

§ 6.5.5.1 Other joining methods investigated for suitability in automatic sprinkler installations and listed for this service shall be permitted where installed in accordance with their listing limitations, including installation instructions.

§ 6.5.5.2 When hole cutting or drilling of pipe is done in the field, debris discs shall be retrieved and attached to the piping at the point at which the hole was made.

6.9 Waterflow Alarms

§ 6.9.1, time limit is revised and a new sentence is added as follows:

§ 6.9.1 Waterflow alarm apparatus shall be listed for the service and so constructed and installed that any flow of water from a sprinkler system equal to or greater than that from a single automatic sprinkler of the smallest orifice size installed on the system will result in an audible alarm on the premises within 60 seconds ~~5 minutes~~ after such flow begins and until such flow stops. Multistory facilities shall be provided with zone annunciation on a floor by floor basis.

§ A.6.9.3.1, second paragraph is revised as follows)

§ A.6.9.3.1 Audible alarms are normally located on the outside of the building. Listed electric gongs, bells, horns, or sirens inside the building, or a combination of such used inside and outside, are sometimes advisable. ~~Outside alarms can be omitted where the sprinkler system is used as part of a central station, auxiliary, remote station, or proprietary signaling fire alarm system utilizing listed audible inside alarm devices.~~

7.1 Wet Pipe Systems

§ 7.1.3 **Auxiliary Systems**, is revised and a new Appendix §A-7.1.3 is added as follows:

§ 7.1.3 A wet pipe system shall be permitted to supply an auxiliary dry pipe or antifreeze system ~~preaction, or deluge system~~, provided the water supply is adequate.

§ A-7.1.3 An auxiliary system should be relatively small when compared to the system to which it is attached. Multiple flow alarms, or a single flow alarm indicating activation of fire sprinklers in different areas of the building should be avoided. The A.H.J. should be consulted prior to creating any auxiliary system(s).

7.2 Dry Pipe Systems

A new sub-section § 7.2.3 **Size of Systems – Volume Limitations**, is added as follows:

§ 7.2.3.6 Regardless of the system size, a dry pipe system shall be designed and installed such that water is delivered to the system test connection in not more than 60 seconds, starting at the normal air pressure on the system and at the time of fully opened inspection test connection.

7.3 Preaction Systems and Deluge Systems

§ 7.3.2.3* **Supervision**, is amended as follows:

§ 7.3.2.3.1 Sprinkler piping and fire detection devices shall be ~~automatically~~ electrically supervised. ~~where there are more than 20 sprinklers on the system.~~

7.5 Antifreeze Systems

§ 7.5.2 **Antifreeze Solutions**, is amended as follows:

§ 7.5.2.4 An antifreeze solution shall be prepared with a freezing point at or below ~~the expected minimum temperature for the locality.~~ 0°F (-17.8°C).

7.9 Commercial-Type Cooking Equipment and Ventilation

§ 7.9.3.4 is amended as follows:

§ 7.9.3.4 Sprinklers or automatic spray nozzles shall not be required, where the entire exhaust duct is connected to a listed exhaust hood incorporating a specific duct collar and sprinkler (or automatic spray nozzle) assembly that has been investigated and been shown to protect an unlimited length, up to 75 feet, of duct in accordance with UL 300, *Standard for Safety Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas*. Horizontal grease ducts in excess of 75 feet shall be protected with automatic sprinklers.

Chapter 8 Installation Requirements

A new sub-section **8.2.4 System Protection Area Limitations**, is added as follows:

§ 8.2.4 In multistory buildings, each story requires a separate system.

§ 8.14.1, **Special Situations, Concealed Spaces** is amended as follows:

§ 8.14.1.2.1 Noncombustible ~~and limited combustible~~ concealed spaces with no combustible loading having no access shall not require sprinkler protection. The space shall be considered a concealed space even with small openings such as those used as return air for a plenum.

§ 8.14.1.2.2 Noncombustible ~~and limited combustible~~ concealed spaces with limited access and not permitting occupancy or storage of combustibles shall not require sprinkler protection. The space shall be considered a concealed space even with small openings such as those used as return air for a plenum.

§ 8.14.1.2.10, is deleted in its entirety.

§ 8.14.1.2.11, is deleted in its entirety.

§ 8.14.1.2.12, is deleted in its entirety.

§ 8.14.5 **Elevator Hoistways and Machine Rooms**, is amended as follows:

§ 8.14.5.2, is deleted in its entirety.

§ 8.14.5.3 Automatic sprinklers when installed in elevator machine rooms or at the top of hoistways, shall be of ordinary- or intermediate-temperature rating.

§ 8.14.5.4 When installed, only upright or pendent spray sprinklers shall be installed at the top of elevator hoistways.

§ 8.14.5.5 Automatic sprinklers are not required in elevator machine rooms or at the tops of hoistways, ~~shall be of ordinary or intermediate temperature rating~~. Protection of elevator machine rooms and top of elevator hoist ways shall be in accordance with ASME A17.1, *Safety Code for Elevators and Escalators*. Elevators machine rooms and hoistways, shall be provided with smoke and heat detection ~~shall be~~ installed in accordance in NFPA 72.

§ 8.14.7 **Exterior Roof or Canopies**, is amended by adding a new sub-section 8.14.7.5 as follows

§ 8.14.7.5 Sprinklers shall be installed under roofs, canopies, or porte-cocheres where automobiles are parked, stopped, or standing.

§ 8.14.8 **Dwelling Units**, is amended as follows:

§ 8.14.8.1.1 Unless sprinklers are required by 8.14.8.1.2 or 8.14.8.1.3, sprinklers shall not be required in bathrooms that are located within dwelling units, that do not exceed 55 ft² (5.1 m²) in area, and that have noncombustible construction fixtures and furnishings. ~~that have walls and ceilings of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating including the wall and ceilings behind fixtures.~~

§ 8.14.8.2 **Closets and Pantries**, is deleted in its entirety.

§ 8.14.10 **Electrical Equipment.**

§ 8.14.10.3 is deleted in its entirety.

§ 8.14.13 **Drop-Out Ceilings**, is amended as follows:

§ 8.14.13.1 Drop out ceilings are not permitted to be installed beneath sprinklers. ~~Drop out ceilings shall be permitted to be installed beneath sprinklers where ceilings are listed for that service and are installed in accordance with their listings.~~

~~Exception: Special sprinklers shall not be installed above drop out ceilings unless specifically listed for this purpose.~~

§ 8.14.13.2 is deleted in its entirety.

§ 8.14.13.3 is deleted in its entirety.

§ 8.14.13.4 is deleted in its entirety.

§ 8.14.13.5 is deleted in its entirety.

§ 8.14.19 **Piping to Sprinkler Below Ceilings.**

§ 8.14.19.3.4 is deleted in its entirety.

§ 8.14.19.4.4 is deleted in its entirety.

8.15 Piping Installation

§ 8.15.1 **Valves**, is amended by adding 4 new sub-sections as follows

§ 8.15.1.1.4 Valve rooms shall be lighted and heated.

§ 8.15.1.1.5 The source of heat shall be of a permanently installed type.

§ 8.15.1.1.6 Heat tape shall not be used in lieu of heated valve enclosures to protect the dry pipe valve and supply pipe against freezing.

§ 8.15.1.1.7 Every tenant space in covered mall buildings shall be provided with an individual control valve.

§ 8.15.3 Protection of Piping - A new Section 8.15.3.1.1.1 Design Temperature and Duration is added as follows:

§ 8.15.3.1.1.1 Design Temperature and Duration. The minimum criteria for an engineered solution in calculating heat loss for the requirement to maintain 40degrees shall be 0 degrees for 8 hours.

8.16 System Attachments

§ 8.16.1 **Sprinkler Alarms/Water Flow Alarms**, is amended as follows:

§ 8.16.1.1 Local waterflow alarms shall be provided on all sprinkler systems having more than 20 sprinklers.

An approved audible and visual notification device shall be provided on the exterior of the building in an approved location. An approved audible and visual alarm to alert the occupants shall be provided in the interior of the building, in a normally occupied location. Multi-tenant facilities shall be provided with an approved audible and visual notification device within each space.

§ 8.16.2 **Fire Department Connections**, is amended as follows:

§ 8.16.2.3 **Size and Number of Inlets**. Pipe size shall be no smaller than the largest system riser. The minimum number of required inlets shall be one 2 1/2" inlet for every 250 gpm of system demand, or fraction thereof. ~~Size. The size of the pipe for the fire department connection shall be in accordance with one of the following:~~

1. ~~Pipe size shall be a minimum of 4 in. (102 mm) for fire engine connections~~
2. ~~Pipe size shall be a minimum of 6 in. (152 mm) for fire boat connections~~
3. ~~For hydraulically calculated systems, the fire department connection shall be permitted to be less than 4 in. (102 mm) and no less than the size of system riser, where serving one system riser~~
4. ~~A single outlet fire department connection shall be acceptable where piped to a 3 in. (76 mm) or smaller riser~~

§ 8.16.4 **System Connections**.

§ 8.16.4.2 **Wet Pipe Systems**, is amended by adding a new sentence at the end of the paragraph.

§ 8.16.4.2 **Wet Pipe Systems** An alarm test connection not less than 1 in. (25.4 mm) in diameter, terminating in a smooth bore corrosion-resistant orifice, giving a flow equivalent to one sprinkler of a type having the smallest orifice installed on the particular system, shall be provided to test each waterflow alarm device for each system. The test connection valve shall be readily accessible.

§ 8.16.4 is amended by adding 2 new Sections 8.16.4.2.4 and 8.16.4.2.5 as follows:

§ 8.16.4.2.4 In one or two story buildings, the test connection valve shall be piped from the most hydraulically demanding area.

§ 8.16.4.2.5 Buildings 3 or more stories in height do not require the inspector test valve to be piped from the most hydraulically demanding area.

§ 8.16.5 **Hose Connections**.

§ 8.16.5.1 **Small (1½ Hose) Connections** is amended as follows:

§ 8.16.5.1.1 When required, hose lines shall be available to reach all portions of the protected area. Approved 2 ½ inch hose valves, 2 ½ inch piping and 1½ inch adapters with caps shall be provided at approved locations. When required by the Chief, hose, nozzles, hose racks, and cabinets or covers shall be provided.

9.1.3 **Fasteners in Concrete**.

§ 9.1.3.9.3 **Powder-Driven Studs and Welding Studs**: is amended as follows:

§ 9.1.3.9.3 ~~Representative samples of concrete into which studs are to be driven shall be tested to determine that the studs will hold a minimum load of 750 lb (341 kg) for 2 in. (51 mm) or smaller pipe, 1000 lb (454 kg) for 2½, 3, or 3½ in. (64, 76, or 89 mm) pipe, and 1200 lb (545 kg) for 4 or 5 in. (102 or 127 mm) pipe.~~ Powder-driven fasteners may only be used for branch lines less than or equal to two (2) inches in diameter. The supporting concrete shall have a minimum 28-day strength of 3,000 psi.

§ 9.1.3.9.4 is deleted and replaced as follows:

§ 9.1.3.9.4 In increaser couplings shall not be used with powder-driven studs.

9.1.4 **Fasteners in Steel**

§ 9.1.4.3 **Powder-Driven Studs and Welding Studs**: is amended as follows:

§ 9.1.4.3 In increaser couplings shall be attached directly to ~~the powder-driven studs or~~ welding studs.

~~§ 9.3.5.8.2 Amend~~ Sections 9.3.5.8.2 and 9.3.5.8.6 are amended as follows:

§ 9.3.5.8.2 For individual braces, the slenderness ratio (l/r) shall not exceed 200 where l is the length of the brace and r is the least radius of gyration.

§ 9.3.5.8.6 For individual braces, the slenderness ratio, l/r , shall not exceed 200 where l is the length of the brace and r is the least radius of gyration.

§ 10.1.5 Working Pressure, is amended as follows:

§ 10.1.5 Working Pressure. Pipe shall be designed to withstand a system working pressure of not less than 150 psi (10.3 bar). When the underground piping can be supplied or pressurized by a Fire Department Connection (FDC), the underground piping shall be designed to withstand a working pressure of not less than 175 psi (Class 200).

A new § 10.1.5.1, is added as follows

§ 10.1.5.1 When the underground piping can be supplied or pressurized by a Fire Department Connection (FDC), the underground piping shall be designed to withstand a working pressure of not less than 175 psi (Class 200).

11.2 Occupancy Hazard Fire Control Approach

§11.2.2 Water Demand Requirements – Hydraulic Calculations Methods.

§11.2.3.1.8 is amended as follows:

§11.2.3.1.8 Regardless of which of the two methods is used, the following restrictions shall apply:

- (1) (no change)
- (2) (no change)
- (3) (no change)
- (4) (no change)
 - (a) (no change)
 - (b)*Light or ordinary hazard occupancies where noncombustible ~~or limited combustible~~ ceilings are directly attached to the bottom of solid wood joists so as to create enclosed joist spaces 160 ft³ (4.5 m³) or less in volume, including space below insulation that is laid directly on top or within the ceiling joists in an otherwise sprinklered attic.
 - (c) Exception No. 3: is deleted.
- (5) (no change)
- (6) (no change)
- (7) (no change)
- (8) (no change)
 - (a) The ~~sprinkler demand water supply~~ shall not be required to be added to standpipe demand as determined from NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*.
 - (b) (no change)
 - (c) (no Change)

A new Section 11.2.3.4.3 is added as follows:)

§ 11.2.3.4.3 **Opening Protection and Rated Assemblies.** Where sprinklers are utilized for opening protection in lieu of rated construction, the sprinklers shall be listed for such use and installed in accordance with their listing. These sprinklers shall be a separate sprinkler system, and shall be controlled, monitored, and supplied independently of the overhead system(s).

§11.2.3.5 Special Design Approaches.

§11.2.3.5.1, is deleted in its entirety.

§11.2.3.5.2, is deleted in its entirety.

A new § 11.2.3.5.6 **Mitigation Matrix for Group R Division 3 Occupancies and Table # 11.2.3.5.6**, is added as follows:

§ 11.2.3.5.6 Mitigation Matrix for Group R Division 3 Occupancies.

When a sprinkler system is being installed to mitigate the minimum Fire Code requirements for fire flow, number of fire hydrants, or fire department access, for a Group R Division 3 Occupancy, the design requirements in Table 11.2.3.5.6 shall be applied.

Table 11.2.3.5.6 Mitigation Matrix for Group R Division 3 Occupancies⁴

Building Area SIZE RANGE ⁶	Mitigation Residential SYSTEM TYPE ^{1,3}	SEPARATE SPRINKLER LEAD-IN REQUIRED ⁵	MINIMUM UNDERGROUND PIPE SIZE ⁵	MINIMUM WATER METER SIZE ⁵	SPRINKLERS REQUIRED IN AREAS SUBJECT TO FREEZING.
< 3,600 sq.ft.	Standard NFPA 13D ²	See NFPA 13D for design requirements.			
≥ 3,600 sq.ft. and < 10,000 sq.ft.	Enhanced NFPA 13D ^{1,2}	See NFPA 13D for design requirements			
≥ 10,000 sq.ft. and < 15,000 sq.ft.	Enhanced NFPA 13R ¹	See NFPA 13R for design requirements			
≥ 15,000 sq.ft.	Modified NFPA 13 ¹ (See 7-9.10.1)	Yes	N/A	N/A	Yes

N/A = Not Applicable

¹ This mitigation constitutes a building "completely protected with an approved fire sprinkler system" per 2000 UFC 902.2.1 Exception 3.

² Domestic demand of 5 gpm is required to be added to the sprinkler demand in the hydraulic calculations.

³ Free-standing detached buildings with one or more sleeping rooms shall be protected by an Enhanced NFPA 13D system.

⁴ Excluding Group R Division 3 occupancies used as Group Care Homes.

⁵ U.G. lead-in shall be the minimum size required hydraulically as proven by the sprinkler contractor and shall be hydrostatically tested and flushed, witnessed by the fire dept.

⁶ Building area is defined as all areas under roof except for porches, patios, balconies, carports and porte cocheres.

A new § 11.2.3.6.1 **Modified 13 Design Criteria**, is added as follows:

§ 11.2.3.6.1 Modified 13 Design Criteria: When Table 11.2.3.5.6 requires a *Modified 13 Design*, the sprinkler system shall be installed to meet the requirements of this code, with the exception of the following items:

- 1. Fire Department Connections (FDC):** A fire department connection is required. Only 2½-inch single snoot connections will be accepted. The FDC shall be located on the garage wall facing the street except for special circumstances where the FDC may be freestanding and located adjacent to the street or private drive. A freestanding FDC in these circumstances may be designed into the mailbox column.
- 2. Riser Room:** Risers shall be located in either the garage or within a dedicated room with an exterior door. Provided the garage/room is fully insulated the requirement for maintaining 40°F will not require a source of heat.
- 3. Inspectors Test Connection:** The inspectors test location may be piped off the system riser.
- 4. Piping in locations less than 40°F:** Dry pipe systems are not permitted for the protection of living spaces, anti-freeze systems shall be used. The protection of non-living spaces such as attics, overhangs/porches, carports, etc., may be protected by dry-pipe systems.
- 5. Anti-Freeze Loops:** The capacity shall not exceed 80 gallons.

6. **Separate Water Supply:** A separate water lead-in for the fire sprinkler system along with an approved (by the local water authority) back-flow prevention device is required. The back-flow prevention device shall be located at the street with in an approved protective enclosure (Hot Box or equivalent). The lead-in shall be sized using the minimum pipe size available that provides the calculated flow.
7. **Control Valves:** All valves used to control the sprinkler system are required to be indicating. A Post Indicator Valve (PIV) is not permitted.
8. **Electrical Supervision:** The main control valves shall be electrically supervised. The back-flow valves are not required to be electrically supervised.
9. **Fire Pumps:** Electric fire pumps normally accepted in NFPA –13D systems for residential use (UL listed jockey pump) are acceptable.
10. **Notification Devices:** Interior – One (1) interior horn/strobe shall be installed in a location specified by the homeowner. Exterior – One (1) exterior horn/strobe shall be located above the FDC or other acceptable location. The sprinkler flow switch shall active both of the required devices.
11. **Areas not required to be sprinklered:** Sprinklers are not required in bathrooms that do not exceed 55 sq. ft. in area, and have walls and ceilings of non-combustible materials with a 15-minute thermal barrier rating including the walls and ceiling behind fixtures.
Sprinklers are not required in clothes closets, linen closets, and pantries within dwelling units where the area of the space does not exceed 24 sq ft., and the least dimension does not exceed 3 feet and the walls and ceilings are surfaced with non-combustible materials.
12. **Annual Inspection:** An inspection contract for an annual inspection by a licensed sprinkler contractor is required. A copy of the annual inspection report shall be forwarded to the Fire Department.
13. **Monitoring:** The sprinkler system shall be monitored by a central station.
14. **Alarm System:** A stand-alone fire alarm panel is not permitted unless the home is not provided with a burglar alarm system.
15. **Residential Sprinkler Heads:** Residential sprinkler heads shall be utilized and the design allowances specified in § 11.2.3.2.3 (reduction to design area) may be applied.
16. **Hangers & Earthquake Bracing.** The hanging of sprinkler pipe shall be in accordance with Chapter 6. Earthquake bracing is not required.

A new § 11.2.3.6.2 **Other Mitigation Designs**, is added as follows:

§ 11.2.3.6.2 **Other Mitigation Designs:** For the other mitigation designs listed in Table 11.2.3.5.6, see the respective amended codes for NFPA 13D and NFPA 13R design requirements.

A new §11.2.3.10 **Sprinkler Protection for Non-Storage Occupancies with High Ceilings**, is added as follows:

§ 11.2.3.10 **Sprinkler Protection for Non-Storage Occupancies with High Ceilings.**

§ 11.2.3.10.1 Non-storage occupancies with ceiling heights between 25 and 50 feet.

§ 11.2.3.10.2 **Light and Ordinary Hazard 1 & 2 Occupancies.** Light and Ordinary Hazard 1 & 2 occupancies shall be designed to provide a minimum density of 0.10 gpm/ft², 0.15 gpm/ft² and 0.20 gpm/ft² respectively. The minimum design area shall be determined utilizing the formula of 100 x the ceiling height. The sprinkler system shall utilize listed quick response sprinklers with a K-factor of 11.2 or greater. Architectural design features, occupancy use considerations, or other conditions may trigger additional design requirements as required by the authority having jurisdiction.

§ 11.2.3.10.3 **Non-storage occupancies with ceiling heights over 50 feet.** All structures, regardless of occupancy or hazard classification, with ceiling heights exceeding 50'-0", require a design analysis from a licensed Fire Protection Engineer. This analysis must be submitted to the Authority Having Jurisdiction for review and approval prior to the start of construction.

§ 11.2.3.10.4 **Extra Hazard Occupancies.** Extra Hazard occupancies require a design analysis from a licensed Fire Protection Engineer. This analysis must be submitted to the Authority Having Jurisdiction for review and approval prior to the start of construction.

13.15 Incinerators, Systems, and Equipment.

§ 13.15.2.3 Commercial-Industrial Compactors, is amended as follows:

All chute-fed compactors shall have an automatic special fine water spray sprinkler with a minimum 1/2-in. (13-mm) orifice installed in the hopper of the compactor. This sprinkler shall be an ordinary temperature-rated sprinkler. The sprinklers ~~shall~~ may be supplied by a minimum 1-in. (25.4-mm) ferrous piping or 3/4-in. (19-mm) copper tubing line from the domestic cold water supply.

The sprinkler shall provide a suitable spray into the hopper. A cycling (on-off), self-actuating, snap-action, heat-actuated sprinkler shall be permitted to be used, or the sprinkler shall be permitted to be controlled by a temperature sensor operating a solenoid valve. Sprinkler water piping shall be protected from freezing in outdoor installations. (82: 5.2, 5.2.1)

14.1 Working Plans

A new Sub-section (45) is added to § 14.1.3, as follows:

(45) Owner's Certificate as required by section 4.3.

14.2 Water Supply Information

§ 14.2.1 Water Supply Capacity Information, Sub-section (8), is amended as follows:

The following information shall be included:

- (1) Location and elevation of static and residual test gauge with relation to the riser reference point
- (2) Flow location
- (3) Static pressure, psi (bar)
- (4) Residual pressure, psi (bar)
- (5) Flow, gpm (L/min)
- (6) Date
- (7) Time
- (8) Test conducted by. ~~or information supplied by.~~ Flow tests shall be witnessed by the Authority Having Jurisdiction.
- (9) Other sources of water supply, with pressure or elevation

A new § 14.4.1.5 **Calculation Procedures**, is added as follows:

§ 14.4.1.5.1 Maximum Velocity. The maximum velocity limit for uses in hydraulic calculations is 32 feet per second (6.1 m/sec).

A new § 14.4.1.6.1 **Minimum Safety Factor**, is amended as follows:

§ 14.4.1.6.1 Minimum Safety Factor. Hydraulically calculated fire sprinkler systems shall be designed to ensure the required system pressure is a minimum of ten (10) psi below the available supply pressure at the time of CO. There must be at least 10 psi additional water pressure above the system demand.

16.2 Acceptance Requirements

§ 16.2.1 Hydrostatic Tests.

§ 16.2.1.6 is amended as follows:

§ 16.2.1.6 Modifications which consist solely in relocating or extending that cannot be isolated, such as relocated drops, regardless of quantity, shall not require testing in excess of system working pressure.

§ 16.2.3.1 System Operational Tests. is amended as follows:

§ 16.2.3.1 Waterflow Devices. Waterflow detecting devices including the associated alarm circuits shall be flow tested through the inspector's test connection and shall result in an audible alarm on the premises within 60 seconds ~~5 minutes~~ after such flow begins and until such flow stops.

295. A new Section 9004.2 NFPA 13D, **Standard for the Installation of Sprinkler Systems in One- and Two-family Dwellings and Manufactured Homes**, is added as follows:

NFPA 13D-2002 is available from the National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, Massachusetts 02269-9101

The National Fire Protection Association Standard for the Installation of Sprinkler Systems in One- and Two-family Dwellings and Manufactured Homes, NFPA 13D-2002, is hereby adopted by reference with the following Amendments:

Chapter 1 Administration

A new second paragraph is added to § 1.1 **Scope**, as follows:

This standard covers the design and installation of automatic sprinkler systems for protection against the fire hazards in one- and two-family dwellings and manufactured homes.

When sprinkler protection is being provided to mitigate the minimum Fire Code requirements for fire flow, number of fire hydrants, or fire department access, the minimum design criteria shall be as outlined in Section 4-7 “Mitigation Matrix for Group R Division 3 Occupancies”.

Chapter 6 Water Supply

§ 6.3* **Multipurpose Piping System**, is amended as follows:

§ 6.3* **Multipurpose System**. A piping system serving both sprinkler and domestic needs shall be considered to be acceptable by this standard where the following conditions are met.

- (1) * ~~In common water supply connections serving more than one dwelling unit, A minimum demand of 5 gpm (19 L/min) are shall be~~ added to the sprinkler system demand to determine the size of common piping and the size of the total water supply requirements.

EXCEPTION: Domestic design demand shall not be required to be added where provision is made to prevent flow into the domestic water system upon operation of a sprinkler.

(2) (No Change)

(3) (No Change)

(4) (No Change)

(5) (No Change)

(6) (No Change)

(7) (No Change)

Chapter 7 Installation

§ 7.3 **Pressure Gauges**, a new Sub-section 7.3.3 is added as follows:

§ 7.3.3 For wet systems, a pressure gauge shall be installed on the supply side of the check valve.

Chapter 8 System Design

A new § 8.7 **Mitigation Matrix for Group R Division 3 Occupancies**, is added as follows:

When a sprinkler system is being installed to mitigate the minimum Fire Code requirements for fire flow, number of fire hydrants, or fire department access, the design requirements in Table 8.7 shall be applied.

§ 8.7.1 **Enhanced 13D Design**. When Table 8.7 requires an Enhanced 13D design, sprinklers shall be installed as required in section 8.6. Additionally, sprinkler protection shall be provided in all bathrooms, closets, pantries, entrance foyers, and garages (NFPA 13R – 2002, Section 6.7.3.3).

§ 8.7.2 Other Mitigation Designs. For other mitigation designs listed in Table 8.7, see the respective amended codes for NFPA 13 and NFPA 13R minimum design requirements.

Table 8.7 Mitigation Matrix for Group R Division 3 Occupancies⁴

Building Area SIZE RANGE ⁶	Mitigation Residential SYSTEM TYPE ^{1,3}	SEPARATE SPRINKLER LEAD-IN REQUIRED ⁵	MINIMUM UNDERGROUND PIPE SIZE ⁵	MINIMUM WATER METER SIZE ⁵	SPRINKLERS REQUIRED IN AREAS SUBJECT TO FREEZING.
< 3,600 sq.ft.	Standard NFPA 13D ²	No	1"	¾"	No
≥ 3,600 sq.ft. and < 10,000 sq.ft.	Enhanced NFPA 13D ^{1,2}	No	1"	¾"	No
≥ 10,000 sq.ft. and < 15,000 sq.ft.	Enhanced NFPA 13R ¹	See NFPA 13R for design requirements			
≥ 15,000 sq.ft.	Modified NFPA 13 ¹	See NFPA 13 for design requirements			

N/A = Not Applicable

¹ This mitigation constitutes a building "completely protected with an approved fire sprinkler system" per 2000 UFC § 902.2.1 Exception 3.

² Domestic demand of 5 gpm is required to be added to the sprinkler demand in the hydraulic calculations.

³ Free-standing detached buildings with one or more sleeping rooms shall be protected by an Enhanced NFPA 13D system.

⁴ Excluding Group R Division 3 occupancies used as Group Care Homes.

⁵ U.G. lead-in shall be the minimum size required hydraulically as proven by the sprinkler contractor and shall be hydrostatically tested and flushed, witnessed by the fire dept.

⁶ Building area is defined as all areas under roof except for porches, patios, balconies, carports and porte cocheres.

296.A new Section **9004.3 NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Two Stories in Height**, is added as follows:

NFPA 13R-2002 is available from the National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, Massachusetts 02269-9101

The National Fire Protection Association Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including ~~Four~~ two Stories in Height, NFPA 13R-2002, is hereby adopted by reference with the following amendments:

Chapter 1 Administration

§ 1.1* Scope, is amended by adding a second paragraph as follows:

This standard covers the design and installation of automatic sprinkler systems for protection against fire hazards in residential occupancies up to and including two ~~four~~ stories in height.

When sprinkler protection is being provided to mitigate the minimum Fire Code requirements for fire flow, number of fire hydrants, or fire department access, the minimum design criteria shall be as outlined in Section 2-8 "Mitigation Matrix for Group R Division 3 Occupancies".

Chapter 6 Working Plans, Design, Installation, Acceptance Tests, and Maintenance.

§ 6.1.7, Sub-section (12), is amended as follows:

(12) Make, SIN, manufacturer, type, heat-response element, temperature rating, and nominal orifice size of the sprinkler.

§ 6.8.2, Sub-section (2) is amended as follows:

- (2) The walls and ceilings, including walls and ceilings behind fixtures, are of noncombustible ~~or limited-combustible~~ materials ~~providing a 15 minutes thermal barrier.~~

§ 6.8.3, Sub-section (3) is amended as follows:

- (3) The walls and ceilings are surfaced with noncombustible ~~or limited-combustible~~ materials as defined by NFPA 220, *Standard on Types of Building Construction*.

A new § 6.10, **Mitigation Matrix for Group R Division 3 Occupancies** is added as follows:

§ 6.10 **Mitigation Matrix for Group R Division 3 Occupancies.** When a sprinkler system is being installed to mitigate the minimum Fire Code requirements for fire flow, number of fire hydrants, or fire department access, the design requirements in Table 6.10 shall be applied.

§ 6.10 .1 Enhanced 13R Design

When Table 6.10 requires an Enhanced 13R design, sprinklers shall be installed as required in section 6.8. Additionally, sprinkler protection shall be provided in all bathrooms, closets, pantries, entrance foyers, garages (In accordance with section 6.7.3.3), attics, mechanical equipment rooms, and crawl spaces.

§ 6.10 .2 Other Mitigation Designs

For other mitigation designs listed in Table 6.10, see the respective amended codes for NFPA 13 and NFPA 13D minimum design requirements.

Table 6.10 Mitigation Matrix for Group R Division 3 Occupancies⁴

Building Area SIZE RANGE ⁶	Mitigation Residential SYSTEM TYPE ^{1,3}	SEPARATE SPRINKLER LEAD-IN REQUIRED ⁵	MINIMUM UNDERGROUND PIPE SIZE ⁵	MINIMUM WATER METER SIZE ⁵	SPRINKLERS REQUIRED IN AREAS SUBJECT TO FREEZING.
< 3,600 sq.ft.	Standard NFPA 13D ²	See NFPA 13D for design requirements			
≥ 3,600 sq.ft. and < 10,000 sq.ft.	Enhanced NFPA 13D ^{1,2}	See NFPA 13D for design requirements			
≥ 10,000 sq.ft. and < 15,000 sq.ft.	Enhanced NFPA 13R ¹ See (2-8.1)	Yes	N/A	N/A	Yes
≥ 15,000 sq.ft.	Modified NFPA 13 ¹	See NFPA 13 for design requirements			

N/A = Not Applicable

¹ This mitigation constitutes a building "completely protected with an approved fire sprinkler system" per 2000 UFC § 902.2.1 *Exception 3*.

² Domestic demand of 5 gpm is required to be added to the sprinkler demand in the hydraulic calculations.

³ Free-standing detached buildings with one or more sleeping rooms shall be protected by an Enhanced NFPA 13D system.

⁴ Excluding Group R Division 3 occupancies used as Group Care Homes.

⁵ U.G. lead-in shall be the minimum size required hydraulically as proven by the sprinkler contractor and shall be hydrostatically tested and flushed, witnessed by the fire dept.

⁶ Building area is defined as all areas under roof except for porches, patios, balconies, carports and porte cocheres.

297. A new Section **9004.4 NFPA 14, Standard for the Installation of Standpipe, Private Hydrant, and Hose Systems**, is added as follows:

NFPA 14, 2000 Edition is available from the National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, Massachusetts 02269-9101

NFPA 14, Standard for the Installation of Standpipe, Private Hydrant, and Hose Systems, 2000 Edition, is hereby adopted by reference with the following amendments:

1 General Information

§ 1-4 **Definitions, Sub-section 10 High-rise Building**, is amended as follows:

§ 1-4.10 **High-Rise Building**. A building more than 55 75 ft (23 m) in height. Building height shall be measured from the lowest level of fire department vehicle access to the floor of the highest occupiable story.

5 Design

§ 5-3 **Location of Hose Connections, Sub-section 5-3.2(f)**, is amended as follows:

§ 5-3.2. Class I Systems.

Class I systems shall be provided with 2½ -in. (63.5-mm) hose connections in the following locations:

- (a) *(No Change)*
- (b) *(No Change)*
- (c) *(No Change)*
- (d) *(No Change)*
- (e) *(No Change)*
- (f) *Class I systems shall be provided with 2½ -in. (38.1-mm) hose connections so that all portions of each floor level of the building are within 130 ft (39.7 m) of a hose connection. Distances shall be measured along a path of travel originating at the hose connection.

§ 5-7* **Minimum Pressure for System Design and Sizing of Pipe**, is amended as follows:

§ 5-7* Minimum Pressure for System Design and Sizing of Pipe.

Standpipe systems shall be designed so that the system demand can be supplied by both the attached water supply, where required, and fire department connections. The authority having jurisdiction shall be consulted regarding the water supply available from a fire department pumper.

Standpipe systems shall be one of the following:

- (1) Hydraulically designed to provide the required waterflow rate at a minimum residual pressure of 100 psi (6.9 bar) at the fire fighting nozzle connected with a fire department hose pack (hotel pack) to outlet of the hydraulically most remote 2½ -in. (63.5-mm) hose connection, and 65 psi (4.5 bar) at the outlet of the hydraulically most remote 1½ -in. (38.1-mm) hose station. The local Authority Having Jurisdiction shall be contacted to establish which calculation number is to be utilized from Table A-5-7.

Exception No. 1: Where the authority having jurisdiction permits pressures lower than 100 psi (6.9 bar) for 2½ -in. (63.5-mm) hose connections, based on suppression tactics, the pressure shall be permitted to be reduced to not less than 65 psi (4.5 bar).

Exception No. 2: In other than high-rise buildings, the authority having jurisdiction shall be allowed to reduce the minimum pressure requirements of this section if the building is protected throughout by an approved automatic sprinkler system.

- (2) Sized in accordance with the pipe schedule in Table 5-7 to provide the required waterflow rate at a minimum residual pressure of 100 psi (6.9 bar) at the topmost 2½ -in. (63.5-mm) hose connection and 65 psi (4.5 bar) at the topmost 1½ -in. (38.1-mm) hose station. Pipe schedule designs shall be limited to wet standpipes for buildings that are not defined as high-rise.

298. A new Section **9004.5 NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection**, is added as follows:

NFPA 20 -1999 is available from the National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, Massachusetts 02269-9101 NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection, 1999 Edition, **is hereby adopted by reference with the following amendments:**

2 General

§2-2.4 is amended as follows:

2-2.4 The net pump shutoff (churn) pressure plus the maximum static suction pressure, adjusted for elevation, shall not exceed the pressure for which the system components are rated. Fire pumps shall be sized to supply the most demanding system without unnecessarily over sizing the fire pump.

2-5 Pressure Gauges, is amended as follows:

2-5.1 A liquid filled pressure gauge having a dial not less than 3½ in. (89 mm) in diameter shall be connected near the discharge casting with a ¼-in. (6.25-mm) gauge valve. The dial shall indicate pressure to at least twice the rated working pressure of the pump but not less than 200 psi (13.8 bar). The face of the dial shall read in pounds per square inch, bar, or both with the manufacturer's standard graduations.

2-5.2* A liquid filled compound pressure and vacuum gauge having a dial not less than 3½ in. (89 mm) in diameter shall be connected to the suction pipe near the pump with a ¼-in. (6.25-mm) gauge valve.

EXCEPTION: This rule shall not apply to vertical shaft turbine-type pumps taking suction from a well or open wet pit. The face of the dial shall read in inches of mercury (millimeters of mercury) or pounds per square inch (bar) for the suction range. The gauge shall have a pressure range two times the rated maximum suction pressure of the pump, but not less than 100 psi (7 bar).

§ 2-7 **Equipment Protection**, Sub-section 2-7.2 is amended as follows:

§ 2-7.2 Suitable means shall be provided for maintaining the temperature of a pump room or pump house, ~~where required~~, above 40°F (5°C). The source of heat shall be of a permanently installed type.

EXCEPTION: (No Change)

Chapter 6 Electric Drive for Pumps, Section 6-2, is amended as follows:

6-2 Power Source(s). Power shall be supplied to the electric motor-driven fire pump by ~~a reliable source or two or more approved independent sources~~, all of which shall make compliance with Section 6-4 possible.

EXCEPTION: At the discretion of the local Authority Having Jurisdiction, only one source of electrical power may be required. ~~Where electric motors are used and the height of the structure is beyond the pumping capacity of the fire department apparatus, a second source in accordance with 6-2.3 shall be provided.~~

299. A new Section **9004.6 NFPA 72, National Fire Alarm Code**, is added as follows:

NFPA 72-2002 is available from the National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, Massachusetts 02269-9101

NFPA 72, National Fire Alarm Code, 2002 Edition, is hereby adopted by reference with the following amendments:

Chapter 4 Fundamentals of Fire Alarm Systems, §4.4 System Fundamentals, § 4.4.4 Performance Limitations

§ 4.4.4.4* **Wiring**, is amended by adding a new sentence at the end of the paragraph as follows:

§4.4.4.4* **Wiring**... All wiring shall be in conduit except two story apartments.

Chapter 5 Initiating Devices, § 5.5 Requirements for Smoke and Heat Detectors, § 5.5.2 Detector Coverage

§ 5.5.2.1 is amended to read as follows:

5.5.2.1 Total (Complete) Coverage. If required and unless otherwise modified by 5-5.2.1.1 through 5-5.2.1.7, total coverage shall include all rooms, halls, storage areas and basements, Attics, lofts, spaces above suspended ceilings, and other subdivisions and accessible spaces; and the inside of all closets, elevator shafts, enclosed stairways, dumbwaiter shafts, and chutes shall also have detectors if required by the AHJ or to satisfy performance design criteria. Inaccessible areas may not be required to be protected by detectors.

A new § 5.5.2.1.7 is added as follows:

5.5.2.1.7 When detectors are installed to comply with the Uniform Mechanical Code section 609.0 Exception 1, total coverage is defined as the area served by the air-moving equipment.

§ 5.5.2.4.1 is amended by **deleting the Exception.**

§ 5.7 Smoke-Sensing Fire Detectors, § 5.7.3 Location and Spacing

§ 5.7.3.2.4(B)(3) is amended by adding a new **Sub-section 3** as follows:

(3) Small rooms less than 900 S.F. that can be shown through calculations that will not delay the response time from a single detector beyond 60 seconds from a fire anywhere in the room.

§ 5.12 Manually Actuated Alarm-Initiating Devices

§ 5.12.4, is amended as follows:

§ 5.12.4 The operable part of each manual fire alarm box shall be not less than 3½-ft (1.1m) and not more than 4-ft (1.22 m) above floor level.

Chapter 6 Protected Premises Fire Alarm Systems, § 6.2 General, § 6.2.2 Software and Firmware Control

A new § 6.2.2.4 is added as follows:

6.2.2.4 A permit is required prior to making any changes.

§ 6.9 Emergency Voice/Alarm Communications, § 6.9.4 Survivability from Attack by Fire

§ 6.9.4.1 is amended as follows:

6.9.4.1 Subsection 6.9.4 shall apply only to systems used for partial evacuation or relocation of occupants or systems providing smoke control or two-way telephone communications. The requirements of 6.9.4 shall apply to audible (tone and voice) and visible notification appliance circuits, smoke control and two-way telephone communication circuits.

A new § 6.9.4.7 is added as follows:

§ 6.9.4.7 Wiring interconnecting the fire alarm system to smoke control circuits and two-way telephone communications circuits shall be installed using one of the following methods:

- (1) A 2-hour rated cable or cable system
- (2) A 2-hour rated enclosure
- (3) Routing the cable through a 2-hour rated enclosure in a building fully sprinklered in accordance with NFPA 13, Standard for the Installation of Automatic Sprinklers and where the circuits are installed in a metal raceway.
- (4) Performance alternatives approved by the AHJ.

§ 6.15 Protected Premises Fire Safety Functions, § 6.15.3 Elevator Recall for Fire Fighters' Service

§ 6.15.3.10, Sub-sections (1) (2) and (3) are amended as follows:

- (1) The smoke detector or other automatic fire detection as permitted by 6.15.3.7 located in the designated elevator recall lobby shall actuate the first elevator control circuit. In addition, if the elevator is equipped with front and rear doors, or if the elevator machine room is located at the designated level, the required smoke detectors shall actuate the first elevator control circuit. The smoke detectors or other automatic fire detection as permitted by 6.15.3.67 in both lobbies at the designated level shall actuate the first elevator control circuit.
- (2) The smoke detectors or other automatic fire detection as permitted by 6.15.3.7 in the remaining elevator lobbies, elevator hoistways, and the elevator machine room shall actuate the second elevator control circuit. Exception 1, if the elevator machine room is located at the designated landing, its smoke detector or other automatic fire detection as permitted by 6.15.3.7 shall also actuate the first elevator control circuit. Exception 2, if a smoke detector or other automatic fire detection as permitted by 6.15.3.7 is installed in a hoistway at or below the lowest landing of recall the initiating device shall cause the car(s) to be sent to the upper recall level.
- (3) The smoke detectors or other automatic fire detection as permitted by 6.15.3.7 in elevator hoistways and the elevator machine room(s) shall actuate a third elevator control circuit.

§ 6.15.4 Elevator Shutdown

§ 6.15.4.4 is deleted in its entirety.

Chapter 7 Notification Appliances for Fire Alarms Systems, § 7.5 Visible Characteristics – Public Mode

§ 7.5.4 Appliance Location, is amended by **adding an Exception** as follows:

Exception: Different mounting heights shall be permitted by the authority having jurisdiction upon receipt of calculations prepared by a Fire Protection Engineer demonstrating the equivalent light dispersion patterns provided at the adjusted height compiling with the requirements of 7-5.3.

Chapter 8 Supervising Station Fire Alarm Systems, § 8.2 Fire Alarm Systems for Central Station Service

§ 8.2.4.1 is amended as follows:

§ 8-2.4.1 The installation shall be certificated when required by the AHJ.

§ 8-2.4.2 is amended as follows:

§ 8-2.4.2 The installation shall be placarded when required by the AHJ.

300. **APPENDIX I-C – STAIRWAY IDENTIFICATION**, is adopted.

301. **APPENDIX II-A – SUPPRESSION AND CONTROL OF HAZARDOUS FIRE AREAS**, is adopted.

302. **APPENDIX II-C – MARINAS**, is adopted **with Sections 6.1 & 6.2** amended as follows:

6.1 General. Portions of floats more than 250 feet (76.2 m) from fire apparatus access and marine motor vehicle fuel-dispensing stations shall be provided with and approved Class II wet standpipe system installed in accordance with section 1004.

6.4 Portable Fire Extinguishers. One fire extinguisher having a minimum rating of 2A, 20-B:C, shall be provided at each required hose station. Additional fire extinguishers, suitable for the hazards involved, shall be provided and maintained in accordance with Article 10 and UFC NFPA 10.

303. **APPENDIX II-E HAZARDOUS MATERIALS MANAGEMENT PLANS AND HAZARDOUS MATERIALS INVENTORY STATEMENTS**, is adopted.

304. **APPENDIX II-H – SITE ASSESMENTS FOR DETERMINING POTENTIAL FIRE AND EXPLOSION RISKS FROM UNDERGROUND FLAMMABLE OR COMBUSTIBLE LIQUID TANK LEAKS**, is adopted.

305. **APPENDIX II-I – OZONE GAS-GENERATING EQUIPMENT**, is adopted.

306. A new **APPENDIX II-M – MOBILE FLEET FUELING AT COMMERCIAL, INDUSTRIAL AND GOVERNMENTAL SITES**, is added and adopted as follows:

APPENDIX II-M

MOBILE FLEET FUELING AT COMMERCIAL, INDUSTRIAL AND GOVERNMENTAL SITES

(See UFC Sections 7904.1, 7904.2 and 7904.5.4.2)

Section 1 — SCOPE

The requirements of Appendix II-M provide for a reasonable degree of safety while dispensing fuel from tank vehicles into the fuel tanks of motor vehicles at commercial, industrial or governmental sites.

Section 2 — DEFINITIONS

Approved Nozzle is a listed automatic-closing-type hose nozzle valve with latch-open device designed so that the hose nozzle valve will close automatically in the event the valve is released from a fill opening or upon impact with the ground surface.

Fuel Limit Device is a mechanism that is manually preset. Located on a tank vehicle, it provides the capability to limit the quantity of product that can be dispensed, either aggregately or intermittently, without being reset.

Mobile Fleet Fueling is the dispensing of motor vehicle fuel from tank vehicles into the fuel tanks of motor vehicles.

Remote Emergency shut-off Device is the combination of an operator carried signaling device and a mechanism on the tank vehicle. Activation of the operator-signaling device sends a remote signal to the tank vehicle mechanism that causes the fuel flow to cease.

Section 3 — PERMITS

3.1 Permits. A permit is required for the following:

1. To engage in mobile fleet fueling, and
2. For each site upon which mobile fleet fueling operations are to be conducted. Applications for permits shall be accompanied by all information required by the chief.

3.2 Plans. When required by the chief, site permit applications shall be accompanied by plans that depict the site. The site plan shall include property lines, location of buildings and openings into the buildings, facilities, hazardous materials, parking areas that denote both paved and unpaved areas, storm drain locations, access and egress lanes, lighting, fencing, and the proposed area(s) of fueling showing distances to each of the items noted in Section 3.2.

3.3 Responsibility for Clean Up

The person, firm or corporation responsible for an unauthorized discharge shall institute and complete all actions necessary to remedy the effects of such unauthorized discharge, whether sudden or gradual, at no cost to the jurisdiction. When deemed necessary by the chief, cleanup may be initiated by the fire department or by an authorized individual or firm. Costs associated with such cleanup shall be borne by the owner, operator or other person responsible for the unauthorized discharge.

Section 4 — SITE REQUIREMENTS

4.1 Mobile Fleet Fueling shall be conducted in areas designed to prevent fuel from running into buildings, obstructing exits, blocking access of emergency apparatus, entering water ways, wetlands or unprotected storm drains or coming into contact with ignition sources.

4.2 The fuel-dispensing nozzle shall be at least 15 feet (4572 mm) from all property lines, streets, alleys, public ways, building openings and storm drains.

EXCEPTIONS:

1. The distance to storm drains can be eliminated if an approved storm drain cover or an approved equivalent is used to prevent any fuel from reaching the drain.
2. The distance to storm drains can be eliminated for drains that direct the intake to approved oil-water separators.

4.3 There shall be a separation of not less than 50 feet (15 240mm) between the tank vehicle and the nearest important building or property lines when dispensing Class I liquid fuels from tank vehicles into the tanks of motor vehicles.

EXCEPTION: When Class I, liquid fuels are dispensed with equipment utilizing an approved remote emergency shut-off device, the separation shall be not less than 25 feet (7620 mm).

4.4 There shall be a separation of not less than 15 feet (4572 mm) between the tank vehicle and the nearest important building or property lines when dispensing Class II and III liquid fuels from tank vehicles into the tanks of motor vehicles.

Section 5 - PERSONNEL REQUIREMENTS

5.1 Driver/operators shall be trained in the operations of mobile tank vehicle fuel dispensing and shall have training for emergencies that may occur during fuel dispensing or vehicle operations. Driver/operators shall be trained in controlling and mitigating unauthorized discharges. When required by the chief, the mobile fleet fueling provider shall submit information regarding the driver/operator training program content and the parameters used to establish competencies and qualifications.

5.2 Records shall be maintained of current driver/operators training.

5.3 Identification shall be carried by driver/operator that will identify their company and themselves. Permits and a site plan shall be carried in the Mobile Fleet Fueling vehicle or maintained at the site that will validate the transfer of fuel at each location.

Section 6 — VEHICLE AND EQUIPMENT REQUIREMENTS

6.1 Vehicle and equipment used for Mobile Fleet Fueling shall be approved in accordance with DOT requirements, NFPA 385 and the following:

Only approved nozzles and hoses shall be used for Mobile Fleet Fueling.

1. Approved communications having the capability to contact a 911 emergency agency shall be readily accessible to the driver/operator in the event of, or during emergency conditions.
2. Provisions shall be maintained on the tank vehicle for controlling and mitigating spills, leaks and unauthorized discharges of at least 5 gallons (18.9 L). Minimum spill kit requirements shall include absorbent pads, wipes, gloves and a 5-gallon (18.9 L) container and equipment needed for proper disposal.
3. Safety interlocks shall prevent the vehicle from being moved while fuel is being dispensed.
4. A minimum of two approved wheel chocks meeting OSHA and DOT Standards shall be carried on each Mobile Fleet Fueling tank vehicle.
5. Tank vehicles shall be maintained in proper repair and free of accumulation of grease, oil or other combustible material.
6. Portable fire protection equipment having a minimum rating of 4A: 40B: C shall be provided during fuel dispensing. This requirement may be satisfied with either two 2A: 20B: C extinguishers or a single 4A: 40B: C.
7. Tank vehicles shall comply with all 49 CFR 178 for DOT 406 tankers, and provide documentation. Dot 306 cargo tankers shall be allowed to engage in mobile fueling when documentation indicates compliance with all DOT required retro fit installation for manhole covers has been done. Cargo tankers shall maintain compliance with DOT requirements.

EXCEPTIONS:

1. Tank vehicles dispensing from tanks or tank compartments not exceeding an individual capacity of 500 gallons (1892.7 L).
2. Tank vehicles utilizing an approved remote emergency shut-off device. The driver/operator shall constantly carry the signaling device while dispensing fuel.

Section 7 — DISPENSING OPERATIONS

7.1 Driver/operators dispensing fuel from tank vehicles shall be responsible for any fuel spill, leak or unauthorized discharge.

7.2 The chief shall be notified immediately when:

1. Any spills leaks or discharges greater than 5 gallons or not controllable by the driver/operator.
2. Any quantity of a spill or discharge creates a distinct hazard to life or property.
3. A spill, leak or discharge is required to be reported by federal, state or local regulations.

7.3 Smoking or ignition sources shall not be allowed within 25 feet (7620 mm) of mobile tank vehicle fueling dispensing operations. The prohibited area shall be measured from the point of transfer, the hose that is in use and the tank vehicle. Signage for this provision shall be posted during fuel transfer.

7.4 Vehicles shall be parked in a safe manner in accordance with Appendix II-M. Wheels shall be chocked and safety interlocks shall be engaged prior to dispensing fuel.

7.5 Fuel dispensing shall be conducted with distances not greater than 100 feet (30,480 mm) between the nozzle and the tank vehicle.

7.6 Driver/operators shall be constantly in attendance at the nozzle during Mobile Fleet Fueling operations.

7.7 Mobile Fleet Fueling shall be conducted in areas where the general public is not permitted.

7.8 Lighting

1. The fueling site shall have yard lighting capable of providing a 1.0 foot candle of light at all fueling locations. At sites lacking the required lighting, fueling operations will be restricted to daylight hours. Exception: Fueling may occur if the fueling company cargo tankers have flood lights which provide **equivalent generalized** yard lighting in the area of the tanker and fueling operations.
2. The operator shall also carry lighting that provides direct illumination at the point of fueling.

7.9 Before dispensing Class I, liquid fuels or dispensing class II or III, liquid fuels when heated above their flashpoint, into the tanks of motor vehicles, the vehicles shall be electrically bonded.

7.10 There shall be a minimum of 10 feet (3048 mm) between the tank vehicle and the vehicle being fueled.

7.11 Other than during fuel dispensing, tank vehicles shall not be parked, garaged or stored on the same property as the dispensing operations.

EXCEPTION: Tank vehicles may be parked in areas meeting the requirements of Section 7904.6.5.2 for unattended parking.

307. **APPENDIX III-A – FIRE-FLOW REQUIREMENTS FOR BUILDINGS**, is adopted and **Section 5.2** is amended as follows:

SECTION 5 — FIRE-FLOW REQUIREMENTS FOR BUILDINGS

5.2 Buildings other than One- and Two-Family Dwellings.

The minimum fire flow and flow duration for buildings other than one- and two-family dwellings shall be as specified in Table A-III-A-1.

EXCEPTIONS:

1. When a building(s) is provided with an approved automatic sprinkler system throughout, a reduction in the required fire flow of 50% is permitted.
2. A reduction in the required fire flow of 25% is permitted in buildings with: floors used for human occupancy more than 3 stories in height or more than 55 feet above the lowest level of fire apparatus access; OR containing high piled combustible storage; OR flammable/combustible liquids in excess of the exempt amount; OR hazardous materials in excess of the exempt amount.
3. The resulting fire flow for all buildings shall not be less than 1,500 gallons per minute.

308. **APPENDIX III-B – FIRE HYDRANTS and DISTRIBUTION**, is deleted and replaced and is adopted as amended as follows:

SECTION 1- SCOPE

Fire hydrants shall be provided in accordance with this Section for the protection of buildings or portions of buildings, or facilities hereafter constructed.

SECTION 2 - PLANS

Water main/hydrant plans drawn to scale are to be submitted to the Fire Prevention Bureau for approval prior to the installation of fire hydrants. Plans must include the information contained in the Fire Prevention Bureau's Guidelines for Fire Hydrant Location and Distribution.

SECTION 3 - FIRE HYDRANT DISTRIBUTION

The number and spacing of fire hydrants shall meet the approval of the Fire Chief. Fire hydrants shall be located adjacent to and accessible from fire apparatus access roads. Fire hydrants shall be spaced along fire apparatus access roads as follows:

1. The spacing of fire hydrants shall normally start by placing fire hydrants at all intersections.
2. In all residential areas, hydrants will be spaced not to exceed 500 feet or 600 feet if protected by an approved automatic fire sprinkler system.
3. In all commercial and industrial areas hydrants will be spaced not to exceed 300 feet or 400 feet if protected by an approved automatic fire sprinkler system.
4. The maximum distance from a Group R, Division 3 Occupancy to a fire hydrant shall not be more than 300 feet, as measured from an approved point on a street or road frontage to a fire hydrant. An approved point is measured from the property line furthest from the hydrant, at a right angle to the street.
5. The maximum distance from a fire hydrant to a fire department sprinkler connection and/or a standpipe connection shall be 100 feet, measured by an approved route.
6. The required fire flow and spacing requirements for fire hydrants are both utilized to determine the number of fire hydrants to be installed, based on a maximum of 1000 gallons per minute per fire hydrant.
7. Fire hydrants on adjacent properties shall not be considered unless fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads & fire hydrants and a written contractual agreement exists.
8. Where streets are provided with median dividers or arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, the Chief may require hydrants to be spaced an average of 1,000 feet on each side of the street and be arranged at 500 feet on an alternating basis. When a street has a high degree of traffic volume, all hydrants being utilized to deliver fire flow to the proposed development must be located on the same side of the street as the proposed development. Streets with high traffic volume are usually defined as Section and half section line streets; streets with 4 or more travel lanes and federal or state highways regardless of the number of travel lanes.
9. Where new water mains are extended along streets or new streets are installed where hydrants are not needed for protection of structures or other fire problems, the Chief may require hydrants at not less than 1,000 feet spacing and at all intersections in order to provide for transportation hazards.
10. For looped water main systems, an approved sectional control valve shall be installed after every two- (2) hydrants on a water system. No more than two (2) hydrants are allowed to be out of service, due to a break in a water main.
11. For any project or facility where there are 4 or more fire hydrants/sprinkler lead-ins, two sources of supply are required.

SECTION 4 - FIRE HYDRANT INSTALLATION SPECIFICATIONS

At any building construction site, accessible fire hydrants shall be installed and shall be approved for use before combustible materials are delivered to the site and construction commences. Fire hydrant installation specifications shall be in accordance with the Fire Prevention Bureau's Guidelines for Fire Hydrant Installation and Specifications.

SECTION 5 - FIRE HYDRANT SPECIFICATIONS

Fire hydrants shall conform to the 1994 Edition of the American Water Works Association's Standard, C502, entitled "Standard for Dry-Barrel Fire Hydrant." All fire hydrants shall comply with the specifications of the Fire Prevention Bureau's Guidelines for Fire Hydrant Installation and Specifications.

All private fire hydrants shall be painted red. To identify the fire hydrant location, a blue reflective marker shall be installed at the centerline of the street adjacent to the fire hydrant.

309. **APPENDIX IV-B – CHRISTMAS TREES**, is adopted.

310. **APPENDIX VI-J – REFRIGERANT GROUPS AND PROPERTIES**, is adopted.