

Amendments to the INTERNATIONAL BUILDING CODE, 2006 Edition

SECTION 105 PERMITS

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

1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 120 square feet.
2. Fences not over ~~6 feet (1829 mm)~~ 30 inches high.
3. Oil derricks.
4. Retaining walls that are not over ~~4 feet (1219 mm)~~ 2 feet in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge or impounding Class I, II or IIIA liquids.
5. ~~Water tanks supported directly on grade if the capacity does not exceed 5,000 gallons (18925 L) and the ratio of the height to diameter or width does not exceed 2:1.~~
6. ~~Sidewalks and driveways not more than 30 inches (762mm) above adjacent grade, and not over any basement or story below and are not part of an accessible route.~~
7. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.
8. Temporary motion picture, television and theater stage sets and scenery.
9. ~~Prefabricated swimming pools accessory to a Group R-3 occupancy that are less than 24 inches (610 mm) deep, do not exceed 5,000 gallons (18925 L) and are installed entirely above ground.~~
10. Shade cloth structures constructed for nursery or agricultural purposes, not including service systems.
11. Swings and other playground equipment accessory to detached one- and two-family dwellings.
12. Window awnings supported by an exterior wall that do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support of Group R-3 and U occupancies
13. Non-fixed and movable fixtures, cases, racks, counters and partitions not over 5 feet 9 inches (1753 mm) in height.

SECTION 3109 SWIMMING POOL ENCLOSURES AND SAFETY DEVICES

3109.1 General. Swimming pools shall comply with the requirements of this section and other applicable sections of this code.

3109.2 Definition. The following word and term shall, for the purposes of this section and as used elsewhere in this code, have the meaning shown herein.

SWIMMING POOLS. Any structure intended for swimming, recreational bathing or wading that contains water ~~over 24 inches (610mm) deep. This includes in-ground, above-ground and on-ground pools; hot tube; spas and fixed in place wading pools.~~ shall include any body of water 18 inches deep or more than 8 feet across.

3109.3 Public swimming pools. Public swimming pools shall be completely enclosed by a fence at least ~~4 feet (1290 mm)~~ 5 feet in height or a screen enclosure. Openings in the fence shall not permit the passage of a 4-inch-diameter (102 mm) sphere. The fence or screen enclosure shall be equipped with self-closing and self-latching gates.

3109.4 Residential swimming pools. Residential swimming pools shall comply with Sections 3109.4.1 through 3109.4.3.

Exception: A swimming pool with a power safety cover or a spa with a safety cover complying with ASTM F 1346.

3109.4.1 Barrier height and clearances. The top of the barrier shall be at least ~~48 inches (1219mm)~~ 60 inches above grade measured on the side of the barrier that faces away from the swimming pool and shall not exceed 72 inches (1836 mm) maximum height, except as permitted by zoning code. The maximum vertical clearance between grade and the bottom of the barrier shall be 2 inches (51 mm) measured on the side of the barrier that faces away from the swimming pool. Where the top of the pool structure is above grade, the barrier is authorized to be at ground level or mounted on top of the pool structure, and the maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (102 mm).

3109.4.1.1 Openings. Openings in the barrier shall not allow passage of a 4-inch-diameter (102 mm) sphere.

3109.4.1.2 Solid barrier surfaces. Solid barriers which do not have openings shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.

3109.4.1.3 Closely spaced horizontal members.

Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than ~~45~~ **54** inches, the horizontal members shall be located on the swimming pool side of the fence. Spacing between vertical members shall not exceed 1.75 inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1.75 inches (44 mm) in width.

3109.4.1.4 Widely spaced horizontal members.

Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is ~~45~~**54** inches or more, spacing between vertical members shall not exceed 4 inches (102 mm). Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1.75 inches (44 mm) in width.

3109.4.1.5 Chain link dimensions.

Maximum mesh size for chain link fences shall be a 2.25 inch square (57 mm square) unless the fence is provided with slats fastened at the top or the bottom which reduce the openings to no more than 1.75 inches (44 mm).

3109.4.1.6 Diagonal members.

Where the barrier is composed of diagonal members, the maximum opening formed by the diagonal members shall be no more than 1.75 inches (44 mm).

3109.4.1.7 Gates. Access gates shall comply with the requirements of Sections 3109.4.1.1 through 3109.4.1.6 and shall be equipped to accommodate a locking device. Pedestrian access gates shall open outward away from the pool and shall be self-closing and have a self-latching device. Gates other than pedestrian access gates shall have a self-latching device. Release mechanisms shall be in accordance with Sections 1008.1.8 and 1109.13. Where the release mechanism of the self-latching device is located less than 54 inches (1372 mm) from the bottom of the gate, the release mechanism shall be located on the pool side of the gate at least 3 inches (76 mm) below the top of the gate, and the gate and barrier shall have no opening greater than 0.5 inch (12.7 mm) within 18 inches (457 mm) of the release mechanism.

3109.4.1.8 Dwelling wall as a barrier. Where a wall of a dwelling serves as part of the barrier, one of the following shall apply: **and when selecting items #1, #2 or #3 of 3109.4.1.8 below, the following provision shall be included. Emergency escape or rescue windows from sleeping rooms with access to the swimming pool or body of water shall be equipped with a latching device not less than 54 inches (1372mm) above the floor. All other openable dwelling unit or guest room windows with similar access shall be equipped with a screwed in place wire mesh screen, or a key lock that prevents opening the window more than 4 inches (102 mm), or a latching device located not less than 54 inches (1372mm) above the floor.**

Exception:

When item number 4 is selected as the barrier between the interior of the dwelling and the pool or body of water, then items #1, #2 or #3 within section 3109.4.1.8 will be considered satisfied.

1. Doors with direct access to the pool through that wall shall be equipped with an alarm that produces an audible warning when the door and/or its screen, if present, are opened. The alarm shall be listed in accordance with UL 2017. The audible alarm shall activate within 7 seconds and sound continuously for a minimum of 30 seconds after the door and/or its screen, if present, are opened and be capable of being heard throughout the house during normal household activities. The alarm shall automatically reset under all conditions. The alarm shall be equipped with a manual means, such as touchpad or switch, to temporarily deactivate the alarm for a single opening. Such deactivation shall last for not more than 15 seconds. In dwellings not required to be Accessible, Type A or Type B units, the deactivation switch shall be located 54 inches (1372 mm) or more above the threshold of the door. In dwellings required to be Accessible, Type A or Type B units, the deactivation switch(es) shall be located at 54 inches (1372 mm) maximum and 48 inches minimum above the threshold of the door.

2. The pool shall be equipped with a power safety cover that complies with ASTM F 1346.

3. Other means of protection, such as self-closing doors with self-latching devices, which are approved by the administrative authority, shall be accepted so long as the degree of protection afforded is not less than the protection afforded by Section 3109.4.1.8, Item 1 or 2.

#4. Installation of a 54 inch high pool fence that completely separates the pool from the inside of the house and complies with gate, latch and spacing requirements found within section 3109.

3109.4.1.9 Pool structure as barrier. Where an above ground pool structure is used as a barrier or where the barrier is mounted on top of the pool structure, and the means of access is a ladder or steps, then the ladder or steps either shall be capable of being secured, locked or removed to prevent access, or the ladder or steps shall be surrounded by a barrier which meets the requirements of Sections 3109.4.1.1 through 3109.4.1.8. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a 4-inch-diameter (102 mm) sphere.

AMENDMENTS TO THE INTERNATIONAL RESIDENTIAL CODE, 2006

SECTION R105 PERMITS

R105.1 Required. Any owner or authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the building official and obtain the required permit.

R105.2 Work exempt from permit. Permits shall not be required for the following: Exemption from permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction.

Building:

1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 120 square feet (11.15 mm).
2. Fences not over ~~6 feet (1829 mm)~~ **30 inches** high.
3. Retaining walls that are not over ~~4 feet (1219 mm)~~ **2 feet** in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.
4. ~~Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallons (18927 L) and the ratio of height to diameter or width does not exceed 2 to 1.~~
5. ~~Sidewalks and driveways.~~
6. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.
7. ~~Prefabricated swimming pools that are less than 24 inches (610 mm) deep.~~
8. Swings and other playground equipment.
9. Window awnings supported by an exterior wall which do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.

APPENDIX G SWIMMING POOLS, SPAS AND HOT TUBS

SECTION AG101

GENERAL

AG101.1 General. The provisions of this appendix shall control the design and construction of swimming pools, spas and hot tubs installed in or on the lot of a one- or two-family dwelling.

SECTION AG102

DEFINITIONS

AG102.1 General. For the purposes of these requirements, the terms used shall be defined as follows and as set forth in Chapter 2.

ABOVE-GROUND/ON-GROUND POOL. See "Swimming pool."

BARRIER. A fence, wall, building wall or combination thereof which completely surrounds the swimming pool and obstructs access to the swimming pool.

HOT TUB. See "Swimming pool."

IN-GROUND POOL. See "Swimming pool."

RESIDENTIAL. That which is situated on the premises of a detached one- or two-family dwelling or a one-family townhouse not more than three stories in height.

SPA, NONPORTABLE. See "Swimming pool."

SPA, PORTABLE. A nonpermanent structure intended for recreational bathing, in which all controls, water-heating and water-circulating equipment are an integral part of the product.

SWIMMING POOL. Any structure intended for swimming or recreational bathing ~~that contains water over 24 inches (610 mm) deep~~ **shall include any body of water 18 inches deep or more than 8 feet across.** This includes in-ground, above-ground and on-ground swimming pools, hot tubs and spas.

SWIMMING POOL, INDOOR. A swimming pool which is totally contained within a structure and surrounded on all four sides by the walls of the enclosing structure.

SWIMMING POOL, OUTDOOR. Any swimming pool which is not an indoor pool.

SECTION AG103

SWIMMING POOLS

AG103.1 In-ground pools. In-ground pools shall be designed and constructed in conformance with ANSI/NSPI-5 as listed in Section AG108.

AG103.2 Above-ground and on-ground pools. Aboveground and on-ground pools shall be designed and constructed in conformance with ANSI/NSPI-4 as listed in Section AG108.

SECTION AG104

SPAS AND HOT TUBS

AG104.1 Permanently installed spas and hot tubs. Permanently installed spas and hot tubs shall be designed and constructed in conformance with ANSI/NSPI-3 as listed in Section AG108.

AG104.2 Portable spas and hot tubs. Portable spas and hot tubs shall be designed and constructed in conformance with ANSI/SPI-6 as listed in Section AG108.

SECTION AG105

BARRIER REQUIREMENTS

AG105.1 Application. The provisions of this chapter shall control the design of barriers for residential swimming pools, spas and hot tubs. These design controls are intended to provide protection against potential drownings and near drownings by restricting access to swimming pools, spas and hot tubs.

AG105.2 Outdoor swimming pool. An outdoor swimming pool, including an in-ground, above-ground or on-ground pool, hot tub or spa shall be surrounded by a barrier which shall comply with the following:

1. ~~The top of the barrier shall be at least 48 inches (1219 mm) above grade measured on the side of the barrier which faces away from the swimming pool.~~ **The top of the barrier shall be at least 60 inches (1530 mm) above grade measured on the side of the barrier that faces away from the swimming pool, and shall not exceed 72 inches (1836mm) maximum height, except as permitted by zoning code.** The maximum vertical clearance between grade and the bottom of the barrier shall be 2 inches (51 mm) measured on the side of the barrier which faces away from the swimming pool. Where the top of the pool structure is above grade, such as an above-ground pool, the barrier may be at ground level, such as the pool structure, or mounted on top of the pool structure. Where the barrier is mounted on top of the pool structure, the maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (102 mm).
2. Openings in the barrier shall not allow passage of a 4-inch diameter (102 mm) sphere.
3. Solid barriers which do not have openings, such as a masonry or stone wall, shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.
4. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than ~~45~~ **54** inches, the horizontal members shall be located on the swimming pool side of the fence. Spacing between vertical members shall not exceed 1-3/4 inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1-3/4 inches (44 mm) in width.
5. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is ~~45~~ **54** inches (1143 mm) or more, spacing between vertical members shall not exceed 4 inches (102 mm). Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1-3/4 inches (44 mm) in width.

6. Maximum mesh size for chain link fences shall be a 2-1/4-inch (57 mm) square unless the fence has slats fastened at the top or the bottom which reduce the openings to not more than 1-3/4 inches (44 mm).

7. Where the barrier is composed of diagonal members, such as a lattice fence, the maximum opening formed by the diagonal members shall not be more than 1-3/4 inches (44 mm).

8. Access gates shall comply with the requirements of Section AG105.2, Items 1 through 7, and shall be equipped to accommodate a locking device. Pedestrian access gates shall open outward away from the pool and shall be self-closing and have a self-latching device. Gates other than pedestrian access gates shall have a self-latching device. Where the release mechanism of the self-latching device is located less than 54 inches (1372 mm) from the bottom of the gate, the release mechanism and openings shall comply with the following:

8.1. The release mechanism shall be located on the pool side of the gate at least 3 inches (76 mm) below the top of the gate; and

8.2. The gate and barrier shall have no opening larger than 1/2 inch (13 mm) within 18 inches (457 mm) of the release mechanism.

9. Where a wall of a dwelling serves as part of the barrier, one of the following conditions shall be met: In addition to selecting items 9.1, 9.2 or 9.3 of AG105.9 below, the following provision shall be included: Emergency escape or rescue windows from sleeping rooms with access to the swimming pool or body of water shall be equipped with a latching device not less than 54 inches (1372 mm) above the floor. All other openable dwelling unit or guest room windows with similar access shall be equipped with a screwed in place wire mesh screen or a key lock that prevents opening the window more than 4 inches (102mm) or a latching device located not less than 54 inches (1372 mm) above the floor. except: when item 9.4 is selected as the barrier between the interior of the dwelling and the pool or body of water, then items 9.1 or 9.2 or 9.3 within section AG105.2.9 will be considered satisfied.

9.1. The pool shall be equipped with a powered safety cover in compliance with ASTM F 1346; or

9.2. Doors with direct access to the pool through that wall shall be equipped with an alarm which produces an audible warning when the door and/or its screen, if present, are opened. The alarm shall be listed in accordance with UL 2017. The audible alarm shall activate within 7 seconds and sound continuously for a minimum of 30 seconds after the door and/or its screen, if present, are opened and be capable of being heard throughout the house during normal household activities. The alarm shall automatically reset under all conditions. The alarm system shall be equipped with a manual means, such as touch pad or switch, to temporarily deactivate the alarm for a single opening. Deactivation shall last for not more than 15 seconds. The deactivation switch(es) shall be located at least 54 inches (1372 mm) above the threshold of the door; or

9.3. Other means of protection, such as self-closing doors with self-latching devices, which are approved by the governing body, shall be acceptable so long as the degree of protection afforded is not less than the protection afforded by Item 9.1 or 9.2 described above.

9.4 Installation of a 54 inch high pool fence that completely separates the pool from the inside of the house and complies with gate, latch and spacing requirements found within section AG105.

10. Where an above-ground pool structure is used as a barrier or where the barrier is mounted on top of the pool structure, and the means of access is a ladder or steps:

10.1. The ladder or steps shall be capable of being secured, locked or removed to prevent access; or

10.2. The ladder or steps shall be surrounded by a barrier which meets the requirements of Section AG105.2, items 1 through 9. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a 4-inch-diameter (102 mm) sphere.

INTERNATIONAL ENERGY CONSERVATION CODE 2006 EDITION

SECTION 504

504.7 Pools. Pools shall be provided with energy conserving measures in accordance with Sections 504.7.1 through 504.7.3.

504.7.1 Pool heaters. All pool heaters shall be equipped with a readily accessible on-off switch to allow shutting off the heater without adjusting the thermostat setting. Pool heaters fired by natural gas shall not have continuously burning pilot lights.

504.7.2 Time switches. Time switches that can automatically turn off and on heaters and pumps according to a preset schedule shall be installed on swimming pool heaters and pumps.

Exceptions:

1. Where public health standards require 24-hour pump operation.
2. Where pumps are required to operate solar-and waste-heat-recovery pool heating systems.

~~504.7.3 Pool Covers. Heated pools shall be equipped with a vapor retardant pool cover on or at the water surface. Pools heated to more than 90 degrees F (32degrees C) shall have a pool cover with a minimum insulation value of R-12. Exception: Pools deriving over 60 percent of the energy for heating from site recovered energy or solar energy source.~~

FOUNTAIN HILLS AMENDMENTS TO THE 2006 INTERNATIONAL FIRE CODE

Section 102 is amended by adding subsection 102.9.1 as follows:

102.9.4 Conflicting references. When a provision of the 2003 International Fire Code is in conflict with a provision of the National Fire Protection Association (NFPA) Standards, and the conflict relates to life and building safety performance requirements, the chief CHIEF shall have the discretion to determine which provision shall apply.

Section 108, subsection 108.1, is amended to read as follows:

108.1 Board of Appeals established. Reference to the "board" or "the board of appeals" in this code shall mean the Board of Adjustment as established and referred to in Chapter 1, Section 1.07 of the Town of Fountain Hills Zoning Ordinance (the "Zoning Ordinance"). The formation, term of office, qualifications of board members, removal, jurisdiction, procedure, quorum and appeals procedure are as set forth in the Zoning Ordinance.

Section 202, Occupancy Classifications Institutional Group I-1 and Residential Groups R-3 and R-4 are amended to read as follows:

Group I-1. This occupancy shall include a building or part thereof housing more than ten persons, on a 24-hour basis, who, because of age, mental disability or other reasons, live in a supervised residential environment which 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 may be classified as Group R-3. A facility such as above, housing at least six and not more than ten persons, shall be classified as Group R-4.

R-3 Residential occupancies where the occupants are primarily permanent in nature and not classified as R-1, R-2, R-4 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. Adult and child care facilities that are within a single-family home are permitted to comply with the applicable edition of the International Residential Code. Group R-3 Residential Care/Assisted Living Facilities occupancies in existing structures with one to five clients shall meet the following requirements:

1. Interconnected smoke detectors shall be installed in all livable areas in accordance with the Town of Fountain Hills Town Code (the "Town Code").
2. Evacuation maps and emergency procedures shall be posted and subject to Fire Department approval.
3. Portable fire extinguishers in accordance with the Town Code.

R-4 Residential occupancies shall include buildings arranged for occupancy as Residential Care/Assisted Living Facilities including more than five but not more than ten occupants, excluding staff. Group R-4 Residential Care/Assisted Living Facilities occupancies shall meet the requirements for construction as defined for Group R-3 except for the height and area limitations provided in Section 503 of the International Building Code. Group R-4 occupancies in existing structures with six to ten clients and all new structures, clients shall meet the following requirements:

1. Interconnected smoke detectors shall be installed in all livable areas in accordance with the Town Code.
2. Evacuation maps and emergency procedures shall be posted and subject to Fire Department approval.
3. Portable fire extinguishers in accordance with the Town Code.
4. An automatic fire sprinkler system in accordance with the Town Code.

Section 308, subsections 308.3.1 and 308.3.1.1 are amended and 308.3.1.2 EXCEPTION is added to read as follows:

308.3.1 Open-flame cooking devices. Charcoal burners, portable barbecues and other open flame devices shall not be operated on combustible balconies or within 10 feet (3048 mm) of combustible construction.

Exception: One- and two-family dwellings.

~~308.3.1.1 Liquefied petroleum gas-fueled~~ **308.3.1.1 OPEN-FLAME cooking devices.** No person shall use OR STORE individual fixed or portable FLAMMABLE LP gas burners or SOLID FUEL barbecues on or under any attached covered patios, balconies, covered walkways, stair or roof overhangs and shall not be located within 10 feet (3048 mm) of combustible construction.

Exception: One- and two-family dwellings.

~~308.3.1.2 Storage of open flame cooking devices and barbecues. Storage of barbecues on or under balconies will be allowed in accordance with the written Fire Department Interpretation and Applications Manual.~~

Exception: ~~If the Fire Department receives complaints or suspects that a cooking device or barbecue is being used on or under a balcony, the Fire Department will require the cooking device or barbecue to be removed from the premises.~~ STORAGE OF THE OPEN-FLAME COOKING DEVICE WILL BE ALLOWED IN BENEATH AN ATTACHED COVERED PATIO, BALCONY, COVERED WALKWAYS, STAIR OR ROOF OVERHANG, PROVIDED IT IS AT GROUND LEVEL, AND THERE IS DIRECT ACCESS TO A LOCATION 10 FEET AWAY FROM ANY COMBUSTIBLE CONSTRUCTION FOR COOKING USE.

Section 503, subsection 503.2.7 is amended and subsections 503.1.4, 503.1.4.1, 503.2.8 and 5016.1 are added as follows:

503.1.4 Town of Fountain Hills Design Standards. For road construction details see the Town of Fountain Hills Subdivision Ordinance.

503.1.4.1 Temporary Fire Department access. Prior to and during construction of every facility, building or portion of a building, a temporary fire department access roadway shall be installed and maintained and shall be ~~16'-0"~~ 16'-0" (4,877 mm) wide, with a minimum ~~0'-4"~~ 0'-4" (101.6 mm) thickness of aggregate base course or decomposed granite compacted to a 90% density where natural soil will not meet compaction requirements.

503.2.7 Grade. The grade of the fire apparatus access road shall be within the limits established by the code official based on the Fire Department's apparatus. Access roads shall comply with the following:

1. The grade of access for non-sprinklered properties shall not exceed 12%.
2. The grade of access for sprinklered properties shall not exceed 15%.
3. All grades of access in excess of 15% require approval by the Fire Department.

503.2.8 Fire apparatus access roads. The chief CHIEF may establish fire lanes on public and private property for access and setup for fire-fighting equipment apparatus and vehicles. It shall be unlawful for any vehicle, equipment or device to park in or block the fire lane. Any vehicle, equipment or device found parked in or blocking a fire lane shall be cited by police or the fire department. All fire lanes shall be marked in the following manner:

1. Fire lane signs per Town of Fountain Hills Standard Detail FH306 and/or
2. Curb, street or driveway painted red to indicate fire lane and labeled FIRE LANE NO PARKING in white block letters 3 inches (76.2 mm) in height, ¾ in. (19.5 mm) stroke, on the vertical face of the curb to indicate fire lane.
3. Lettering shall not be greater than 50'-0" (15.24 m) apart and shall be posted at the beginning and end of the fire lane.

PRIVATE RESIDENTIAL DRIVEWAYS AND ACCESS STANDARD FOR EMERGENCY VEHICLES

The following criteria are the result of testing, review of emergency vehicle performance standards, and nationally accepted practices. The findings have prompted these design requirements for private and shared private drives leading to one or more single family dwellings (Group R-3). This information is not designed to be all encompassing of every situation. If you have any questions for your special needs, please contact Fountain Hills Fire Department/ Fire Prevention.

Definitions:

All weather surface (AW) is a road surface made up of materials compressed to 90% and capable of supporting vehicles in excess of 50,000 pound G.V.W. under any weather condition. (i.e. decomposed granite) also see hard surface.

Common Private Driveway is a private driveway that serves more than one single family residence.

Drive Length is measured from the entrance of the drive to the structure.

Drive Width is measured from the edges of the designated improved drivable surface. 2-12-2 and 2-16-2, is a 2 foot clear AW surface on both sides of the 12 or 16 foot hard surface drive.

Grade is the degree of inclination of a slope, road, or other surface. (See slope)

Ground Cover planting is permitted in random locations of the 2 foot decomposed granite of either side of the driveway.

Hard Surface is a drive surface of concrete, asphalt, or pavers designed to support vehicles in excess of 50,000 pounds under any weather condition.

Hose Lay is the extension of a hand held fire hose as it is extended around the perimeter of the structure. If the hose lay is more than 200 feet from the road to all portions of the exterior, an Operational Platform is required.

Mod-13D is a modified 13D fire sprinkler system per the ordinance and standards adopted.

Attic Protection System is a modified 13D for additional structural protection with the installation of sprinkler inside the attic area located at the “peak” of the attic, maximum spacing of 15’ between heads, installed and calculated per the amendments in the Interpretations and Applications under section 4.2. When any of the requirements that initiates the Attic Protection System specifications, the covered patios shall be included as a protected area.

Operational Platform is an area located on site where the emergency vehicle is staged while performing emergency medical or fire fighting tasks. The platform shall be 20 feet by 30 feet with a maximum crow grade of 5 percent. Operational platforms are required when drive or adjacent street grade is greater than 12% slope or the hose lay from the truck staging area to all portions on the exterior of the structure is greater than 200 feet.

Slope is the ground, road or other surface that forms a natural or artificial incline. The percentage of slope is determined by dividing the rise by the horizontal run multiplied by 100 [% Slope = (Rise/Run) X 100].

Turn-a-round is required for emergency vehicles when the structure is more than 200 feet from the road. This can be accomplished with a circle drive with a 35’ improved turning radius as shown in the Town of Fountain Hills Hillside Local Road Cul-de-sac design requirements (exhibit 1), a T-type hammer head 16’ X 76’, or a variation thereof. See attachment.

Turn-out is required on all extended driveways 300 feet or greater in length to a single residence. This turn-out shall widen the drive to 20 feet minimum width over a minimum length of 45 feet.

ONE SINGLE FAMILY RESIDENCE

ACCESS GRADES FROM 0 TO 12% FOR ONE SINGLE FAMILY RESIDENCE

Drive Length Protection System	Drive Width	Drive Surface	Turn-a-round Required	Hose Lay	Sprinkler Mod-13D	Requirements Attic
Less than 200 feet	12	AW	No	Less than 200 feet	Yes	No
More than 200 feet	2-12-2	AW	Yes	Less than 200 feet	Yes	No
More than 200 feet	2-12-2	AW	Yes	More than 200 feet	Yes	No

ACCESS GRADES FROM 12.1% TO 15% FOR ONE SINGLE FAMILY RESIDENCE

Drive Length Protection System	Drive Width	Drive Surface	Turn-a-round Required	Hose Lay	Sprinkler Mod-13D	Requirements Attic
Less than 200 feet	12	Hard	No	Less than 200 feet	Yes	No
More than 200 feet	2-12-2	Hard	Yes	Less than 200 feet	Yes	No
More than 200 feet	2-12-2	Hard	Yes	More than 200 feet	Yes	Yes

ACCESS GRADES FROM 15.1% TO 18% FOR ONE SINGLE FAMILY RESIDENCE

Drive Length Protection System	Drive Width	Drive Surface	Turn-a-round Required	Hose Lay	Sprinkler Mod-13D	Requirements Attic
Less than 200 feet	12	Hard	No	Less than 200 feet	Yes	Yes

More than 200 feet	2-12-2	Hard	Yes	Less than 200 feet	Yes	Yes
More than 200 feet	2-12-2	Hard	Yes	More than 200 feet	Yes	Yes

TWO TO FOUR SINGLE FAMILY HOMES SERVED BY A COMMON DRIVE

ACCESS GRADES FROM 0% TO 12% FOR TWO TO FOUR SINGLE FAMILY RESIDENCES

Drive Length Protection System	Drive Width	Drive Surface	Turn-a-round Required	Hose Lay	Sprinkler Mod-13D	Requirements Attic
Less than 200 feet	2-16-2	AW	No	Less than 200 feet	Yes	No
More than 200 feet	2-16-2	AW	Yes	Less than 200 feet	Yes	No
More than 200 feet	2-16-2	Hard	Yes	More than 200 feet	Yes	No

ACCESS GRADES FROM 12.1% TO 15% FOR TWO TO FOUR SINGLE FAMILY RESIDENCES

Drive Length Protection System	Drive Width	Drive Surface	Turn-a-round Required	Hose Lay	Sprinkler Mod-13D	Requirements Attic
Less than 200 feet	2-16-2	Hard	No	Less than 200 feet	Yes	No
More than 200 feet	2-16-2	Hard	Yes	Less than 200 feet	Yes	No
More than 200 feet	2-16-2	Hard	Yes	More than 200 feet	Yes	Yes

ACCESS GRADES FROM 15.1% TO 18% FOR TWO TO FOUR SINGLE FAMILY RESIDENCES

Drive Length Protection System	Drive Width	Drive Surface	Turn-a-round Required	Hose Lay	Sprinkler Mod-13D	Requirements Attic
Less than 200 feet	2-16-2	Hard	No	Less than 200 feet	Yes	Yes
More than 200 feet	2-16-2	Hard	Yes	Less than 200 feet	Yes	Yes
More than 200 feet	2-16-2	Hard	Yes	More than 200 feet	Yes	Yes

NOTE: Any structure greater than 500 feet from a fire hydrant with approved flow shall require the addition of a fire hydrant to be installed at the driveway entry. Instead of the hydrant, a dry standpipe from the street to the house may be approved by the Fire Marshal.

503.6.1 Key switch and sensor pre-emption location. A KNOX key switch and a pre-emption sensor shall be required on all electric entry control gates. Key switches shall be installed in a location on the gate control panel that is readily visible and accessible. The pre-emption sensor shall be at or behind the gate.

Section 505, subsection 505.1, is amended to read as follows:

505.1 Address numbers. New and existing buildings shall have approved address numbers, buildings numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property. These numbers shall contrast with their background. Address numbers shall be Arabic numerals or alphabet letters. Numbers shall be a minimum of 4 inches (102 mm) high with a minimum stroke width of 0.5 inch (12.7 mm) or as designated in the Fire Department Interpretation and Applications Manual.

Section 506, subsection 506.1.2, is added as follows:

506.1.2 KNOX Key KEY box location. A KNOX key box shall be required on all commercial structures that contain off-site monitored fire systems or when required by the ~~chief~~ CHIEF. The KNOX key box shall be installed in a location adjacent to the main entrance of the structure, 4'-0 (1.219 m) to 6'-0 (1.829 m) above finished grade, OR IN A LOCATION APPROVED BY THE CHIEF.

Section 508, subsection 508.5.1 Exception, is amended and subsections 508.5.1.1, 508.5.7, 508.7.1, 508.5.8 are added as follows:

Exceptions is amended to read:

1. For non-hillside fire sprinklered R-3 Developments, the maximum distance is 1000 feet (366 m) on center.
2. For hillside fire sprinklered R-3 Developments, the maximum distance is 500 feet (183 m) on center. (Fire Department interprets hillside street grades to range from 9% to a maximum grade of 15%).

3. For fire sprinklered commercial and R-1 and R-2 multifamily developments, the maximum distance is 700 feet (213.36 m) on center.

508.5.1.1 **Dead ends.** On cul-de-sacs in residential and commercial developments, the maximum distance to a hydrant shall not exceed one half of the maximum allowable distance between fire hydrants designated in subsection 508.5.1, Exceptions.

Exception: On cul-de-sacs hillside developments shall have maximum of 500 feet (183 m) from the hydrant to the end of the cul-de-sac.

508.5.7. **Fire hydrant color.** All fire hydrants shall have aboveground barrels painted with a prime coat plus two coats of OSHA yellow paint.

508.5.7.1 **Reclaimed water fire hydrant color.** All fire hydrants using a reclaimed water supply shall have the caps and bonnet painted with a prime coat plus two coats of ~~purple~~ BLACK paint. A DO NOT DRINK WATER placard shall be affixed to the hydrant in both English and Spanish.

508.5.8 **Reflective markers.** All fire protection equipment, fire department connections and hydrants shall be clearly identified by installation of reflective blue markers. See Town of Fountain Hills Standard Detail FH305.

Section 901, subsections 901.2.2, 901.2.3, 901.2.4, and 901.2.5 are added as follows:

901.2.2 **Plan certification for fire alarm systems and occupant notification.** All fire alarm and occupant notification system plans submitted to the Fire Department for review and approval shall bear a review certification of a minimum level III National Institute for the Certification of Engineering Technologies ("NICET") in Fire Alarms in accordance with the Fire Department Interpretation and Applications Manual.

901.2.3 **Plan certification for fire sprinkler systems.** All fire sprinkler plans submitted to the Fire Department for review and approval shall bear a review certification of a minimum level III NICET in Fire Sprinklers in accordance with the Fire Department Interpretation and Applications Manual.

901.2.4 **Plan certification for all other fire protection systems.** Plan certification for all other fire protection systems will be accompanied by a certification of competence when required.

901.2.5 **On-site plans.** Plans and specifications shall be submitted to the Fire Department for review and approval prior to construction. One set of Fire Department approved plans shall be on the job site for each inspection.

Section 903, subsections 903.2, 903.2.1, 903.2.2, 903.2.3, 903.2.4, 903.2.5, 903.2.6, 903.2.7, 903.2.8, 903.2.8.1, 903.2.9, 903.2.9.1, 903.2.10, 903.3, 903.3.5.3, 903.3.6, 903.3.7, 903.4 Exception 2 and 903.4.2 are amended and subsections 903.2.14, 903.3.7.1, 903.3.7.2 and 903.3.7.3 are added as follows:

903.2 **Where required.** An automatic sprinkler system shall be installed throughout all levels of all new Group A, B, E, F, H, I, M, R, S and U occupancies of more than zero square feet in accordance with section 903, the Fire Department Interpretation and Applications Manual, and as set forth below:

1. In every story or basement of all buildings. Fire-resistive substitutions in accordance with provisions in the International Building Code, Chapter 6, footnote d, are allowed for this subsection for Group R occupancies and for other occupancies, provided that the automatic sprinkler is not otherwise required throughout the building by any other provision or section of the applicable building code.

2. 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. Sprinkler heads shall be accessible for servicing.
3. In rooms where nitrate film is stored or handled. See also Section 306.
4. In protected combustible fiber storage vaults.
5. In any building that has a change in occupancy as defined in the applicable building code.

Exceptions: The following accessory structures shall be exempt from fire sprinkler requirements:

1. Gazebos and ramadas for residential and public use.
2. Independent rest room buildings associated with golf courses, parks and similar uses.
3. Guardhouses for residential and commercial developments.
4. Detached, non-combustible carports for residential and commercial developments with covered parking less than 15,000 square feet (1394 m²).
5. Barns and agricultural buildings for private, residential, non-commercial use, not exceeding 1,500 square feet (139.35 m²) with no habitable areas.
6. Detached storage sheds for private, residential, non-commercial use, not exceeding 1,500 square feet (139.35 m²).
7. Detached one, two and three car garages (without habitable spaces) in existing R-3 developed parcels which contain existing non-sprinklered subdivision requirements (i.e. 700 foot (213.36 m) hydrant spacing).
8. For fuel dispensing canopies not exceeding 1,500 square feet (139.35 m²).
9. Open shade horse stalls of non-combustible construction for private, residential, non-commercial use, not exceeding 5,000 square feet (464.52 m²) and not containing combustible products, vehicles or agricultural equipment.
10. Detached one-story accessory building used as a tool and/or storage shed containing non-hazardous materials and not exceeding 200 square feet (11.15 m²).
11. Special use non-combustible structures as approved by the chief CHIEF.

903.2.1 Group A. An automatic sprinkler system shall be installed throughout all Group A occupancies in accordance with NFPA 13 Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

903.2.2 Group E. An automatic sprinkler system shall be installed throughout all Group E occupancies in accordance with NFPA 13 Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

903.2.3 Group F. An automatic sprinkler system shall be installed throughout all Group F occupancies in accordance with NFPA 13 Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

903.2.4 Group H. An automatic sprinkler system shall be installed throughout all Group H occupancies in accordance with NFPA 13 Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

903.2.5 Group I. An automatic sprinkler system shall be installed throughout all Group I occupancies in accordance with NFPA 13 Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

Exception: In jails, prisons and reformatories, the piping system may be dry, provided a manually operated valve is installed at a continuously monitored location. Opening of the valve will cause the piping system to be charged. Sprinkler heads in such systems shall be equipped with fusible elements or the system shall be designed as required for deluge systems in the applicable building code.

903.2.6 Group M. An automatic sprinkler system shall be installed throughout all Group M occupancies in accordance with NFPA 13 Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

903.2.7 Group R. An automatic sprinkler system shall be installed throughout all Group R occupancies in accordance with NFPA 13, 13-R, or 13D Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

903.2.8 Group S-1 occupancies. An automatic sprinkler system shall be installed throughout all Group S-1 occupancies in accordance with NFPA 13 Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

903.2.8.1 Repair garages. An automatic sprinkler system shall be installed throughout all repair garages in accordance with NFPA 13 Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

903.2.9 Group S-2 occupancies. An automatic sprinkler system shall be installed throughout all Group S-2 occupancies in accordance with NFPA 13 Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

903.2.9.1 Commercial parking garages. An automatic sprinkler system shall be installed throughout all commercial parking garages in accordance with NFPA 13 Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

903.2.10 All Group R-3 and U occupancies. An automatic sprinkler system shall be installed throughout all Group R-3 and U occupancies in accordance with NFPA 13 or 13-D Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

903.2.14 Group B occupancies. An automatic sprinkler system shall be installed throughout all Group B occupancies in accordance with NFPA 13 Installation of Sprinkler Systems as modified by the Fire Department Interpretation and Applications Manual.

903.3 Installation requirements. Automatic sprinkler systems shall be designed and installed in accordance with NFPA 13, 13-R, 13-D ~~13 Installation of Sprinkler Systems~~, AND as modified by the Fire Department Interpretation and Applications Manual. SUB-SECTIONS 903.3.5.3, 903.3.7.1, 903.3.7.2 AND 903.3.7.3 ARE ADDED.

903.3.5.3 Use of non-potable water for fire protection.

1. All commercial structures for which a building permit is issued adjacent to golf courses using non-potable or reclaimed water for irrigation with sufficient storage capacity onsite may be sprinklered using this supply.
2. Irrigation systems shall be designed to meet the Fire Department's standards of gallons per minute flow and pressure necessary to supply adequate fire flow.
3. A standby power supply for pumping station supplying fire flow shall be provided.
4. Fire hydrants on domestic supply shall be placed in close proximity to the Fire Department connection for structural sprinkler systems to provide a secondary water supply.
5. Fire hydrants placed on approved non-potable, reclaimed water supply systems, shall have caps and bonnet painted with a prime coat plus two coats of ~~purple~~ BLACK paint. A placard shall be affixed to the hydrant in English and Spanish DO NOT DRINK WATER. Non-potable water supplies shall use approved material for construction of all mains and supply lines and shall have the written approval of the city manager or his designee.
6. All water inlets for non-potable systems shall be required to have a sufficient straining and filtering capacity to eliminate all foreign objects from blocking sprinkler orifice. Chlorination of inlet lines shall be required.

903.3.6 Hose threads. Fire hose threads used in connection with automatic sprinkler systems shall be National Standard Threads.

903.3.7 Fire Department connections. Fire Department connections shall be located within 4 feet (1219.2 mm) to 8 feet (2438.4 mm) of the curb line of an access road or public street, or as otherwise specified or as approved by the chief-CHIEF. The Fire Department connection line shall be a wet line with the check valve at the hose connection above grade. The access to the fire department connection shall be at curb grade. See Fire Department Interpretation and Applications Manual.

903.3.7.1 Wall mounted. Systems may have wall mounted fire department connections only on light and ordinary hazard Group I systems when there are no structural openings or combustible overhangs within 15 feet (4572 mm) horizontally or vertically from inlet connection. See Fire Department Interpretation and Applications Manual.

903.3.7.2 Additions, alterations and repairs. When the gross area of additions, alterations, remodeling, reconstruction and repairs within a twelve month period exceed 50% of the gross area of the existing building or structure, such building or structure shall have an automatic fire sprinkler system installed throughout the entire structure or building in accordance with this section.

903.3.7.3 Partial systems prohibited. In all new additions to existing non-sprinklered buildings and structures, an automatic sprinkler system shall be installed in accordance with this section. There shall be no partially sprinklered compartments. Sprinklered and unsprinklered areas of a structure shall be separated in accordance with all applicable codes and standards.

903.4 Sprinkler system monitoring and alarms. All valves controlling the water supply for automatic sprinkler systems, pumps, tanks, water levels and temperature, critical air pressure and water-flow switches on all sprinkler systems shall be electrically supervised. See Fire Department Interpretation and Applications Manual.

Exceptions:

- Automatic sprinkler systems protecting one- and two-family dwellings.
- 2. Limited area systems serving fewer than 20 sprinklers for E, H, and I occupancies and more than 100 sprinklers in all other occupancies.
- 3. Automatic sprinkler systems installed in accordance with NFPA 13R where a common supply main is used to supply both domestic and automatic sprinkler systems and a separate shutoff valve for the automatic sprinkler system is not provided.
- 4. Jockey pump control valves that are sealed or locked in the open position.
- 5. Paint spray booths or dip tanks that are sealed or locked in the open position.
- 6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
- 7. Trim valves to pressure switches in dry, pre-action and deluge sprinkler systems that are sealed or locked in the open position.

903.4.2 Alarms. Approved audible devices shall be connected to every automatic sprinkler system. Such sprinkler water-flow alarm device shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Alarm devices shall be provided on the exterior of the building in an approved location. An interior alarm to alert the occupants shall be provided in the interior of the building in a normally occupied location when off-site monitoring is required. Where a fire alarm system is installed, activation of the automatic sprinkler system shall actuate the building fire alarm system.

Section 905, subsections 905.2 and 905.3.4 are amended, 905.3.4.1 is deleted in its entirety and 905.3.1.1 is added to read as follows:

905.2 Installation standards. Standpipe systems shall be installed in accordance with this section as modified by Fire Department Interpretation and Applications Manual.

905.3.1.1 Building area. In buildings exceeding 10,000 square feet (929 m²) in area per story, Class I automatic wet standpipes shall be provided and where any portion of the building's interior area is more than 200 feet (60.96 m) of travel, vertically and horizontally, from the nearest point of fire department vehicle access. See Fire Department Interpretation and Applications Manual.

Exceptions:

1. Single story structures are not required to have hose connections, except in those interior portions of the building that exceed 200 feet (60.96 m) of travel from an emergency access road.
2. Required wet standpipes may be an integral part of an approved sprinkler system and may be connected to the sprinkler systems horizontal cross mains. Calculations for required hose demand shall be submitted with sprinkler plans.
3. Unless required by Fire Department Interpretation and Applications, a manual hose connection is not required in Group R-3 occupancies.

905.3.4 Stages. Stages greater than 1,000 square feet in area (93 m²) shall be equipped with a Class I wet standpipe system with 2.5 inch (64 mm) hose connections on each side of the stage supplied from the automatic fire sprinkler system and shall have a flow rate of not less than that required for Class I standpipes.

Section 906, subsection 906.1, is amended to add the following:

906.1 Where required.

1. In single family (R-3) and sprinklered multifamily (R-2) occupancies, fire extinguishers are not required.
2. Fire extinguishers are not required in sprinklered open parking garages.

Section 907, subsections 907.2 and 907.7 are amended and 907.3.1.9, 907.3.1.10 and 907.3.1.11 are added as follows:

907.2 Where required-new buildings and structures. An approved manual, automatic, or manual and automatic fire alarm system shall be provided in new buildings and structures in accordance with Sections 907.2.1 through 907.2.23 and the Fire Department Interpretation and Applications Manual. Where automatic sprinkler protection installed in accordance with Section 903.3.1.1 or 903.3.1.2 and Fire Department Interpretation and Applications Manual 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 system shall be installed in accordance with the provisions of this code and the NFPA 72. Devices, combinations of devices, appliances and equipment shall comply with Section 907.1.2. 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.

Fire alarm systems are not required in multifamily (R-2) structures. This does not exclude occupant notification.

In all occupancies audio-visual devices shall be limited to those necessary for adequate warning.

All manual pull stations are to be eliminated except in Group H and I occupancies and in Group E occupancies at constantly monitored locations.

907.3.1.9 Owner landlord and occupant responsibilities. If a ~~device~~ DEVICE is provided and maintained in a dwelling unit occupied under the terms of a rental agreement or under a month-to-month tenancy:

1. At the time of each occupancy the landlord shall provide smoke detection devices in working condition and, after written notification by the tenant, shall be responsible for replacement; and
2. The tenant shall keep the devices in working condition by keeping charged batteries in battery-operated devices, by testing the devices periodically and by refraining from permanently disabling the devices.

907.3.1.10 Definitions. In this section, 'dwelling unit', 'landlord', 'rental agreement', and 'tenant' have the meanings given in Arizona Revised Statutes.

907.3.1.11 Records and maintenance. The landlord or owner of any rental property shall inspect all smoke detection devices as required by NFPA 72 annually and a record of all inspections and maintenance activities shall be kept by the landlord or owner and be made available for inspection upon request by the ~~chief~~ CHIEF. See Fire Department Interpretation and Applications Manual.

907.7 Activation. Where an alarm notification system is required by another section of this code, it shall be activated by:

1. Required automatic fire alarm system.
2. Sprinkler water-flow devices.
 - a. Multilevel structures. All multilevel structures are required to have a flow switch and tampered control valve per floor. See Fire Department Interpretation and Applications Manual.
Exception: Group R-1 and R-2, occupancies with a domestic water supply serving six units or less and all Group R-3 occupancies. See Fire Department Interpretation and Applications Manual.
3. Required manual fire alarm boxes.
- 4.

Section 2201, subsection 2201.4 is amended and 2201.7 is added as follows:

2201.4 Indoor service stations. Locating motor vehicle fuel-dispensing stations inside buildings is prohibited within the entire Town.

2201.7 Fire protection. Fire sprinkler protection shall be designed in accordance with the applicable building code as required for Ordinary Hazard Group 2.

Section 2204, subsection 2204.3.1, is amended as follows:

2204.3.1 General. Unattended self-serve stations are prohibited within the entire Town.

Exception: Unattended self-serve stations may be allowed by special permit issued by the ~~chief~~ CHIEF for GOVERNMENTAL OR private commercial use only, subject to Sections 2204.3.1 through 2204.3.7 and all other applicable codes and ordinances. Written request and documentation shall be submitted showing compliance with two-way communications and cameras that are monitored off-site at a 24 hour location.

Section 2206, subsections 2206.2.2, 2206.2.3, are amended as follows:

2206.2.2 Above-ground tanks located inside buildings. Above-ground tanks for the storage of Class I, II and IIIA liquid fuels are prohibited within the entire Town.

2206.2.3 Above-ground tanks located outside buildings. Above-ground tanks for the storage of Class I, II and IIIA liquid fuels outside of buildings are prohibited within the entire Town.

Exception: Installation of 2,000 gallon tanks (7,570.8 L) or tanks with less aggregate quantity may be approved by special permit by the chief.

Section 2403, subsection 2403.8.2. Exceptions ARE amended as follows:

Exception:

2. Membrane structures, tents or canopies need not be separated from a fully sprinklered building when all of the following conditions are met:
 - 2.1 The aggregate floor area of the membrane structure, tent or canopy shall not exceed 10,000 square feet (929m²).
 - 2.2 The aggregate floor area of the building and membrane structure, tent or canopy shall not exceed the allowable floor area including increases as indicated in the International Building Code.
 - 2.3 Required means of egress provisions are provided for both the building and the membrane structure, tent or canopy, including travel distance.
 - 2.4 Fire apparatus access roads are provided in accordance with Section 503.

Section 3301, subsection 3301.2.3, is amended to read as follows:

3301.2.3 Permit restrictions. The storage of explosives and blasting agents is prohibited within the entire Town, except for temporary storage for use in connection with approved blasting operations. However, this prohibition shall not apply to wholesale and retail stocks of small arms ammunition, explosive bolts, explosive rivets or cartridges for explosive-actuated power tools in quantities involving less than 500 pounds (226.8 kg) of explosive material.

Section 3404, subsections 3404.2.9.5.1. and 3404.2.13.1.4 are amended to read as follows:

3494.2.9.5.1-1 Locations where above-ground tanks are prohibited. Storage of Class I and II liquids in above-ground tanks outside of buildings is prohibited within the entire Town.

Exception: Installations of 2,000 gallons tanks (7,570.8 L) or tanks with less aggregate quantity may be approved by special permit by the ~~chief~~ CHIEF.

3404.2.13.1.4 Tanks abandoned in place. The abandonment of tanks in place shall be prohibited within the entire Town.

Section 3406, subsection 3406.2.5.2, is amended to read as follows:

3406.2.5.2 Tanks for gravity discharge. Tanks with a connection in the bottom or the end for gravity-dispensing of flammable or combustible liquids shall not be permitted within the entire Town.

Section 3801, subsection 3801.2, Exception, is added as follows:

Exception: A permit is not required to install or maintain portable containers of less than ten gallons (37.9 L) aggregate water capacity. Distributors shall not fill an LP-gas container for which a permit is required unless a permit for installation has been issued for that location by the ~~chief~~ CHIEF.

Section 3804, Table 3804.3, footnote e/5, is added as follows:

- e/5. A container of less than 125 gallons (473.21 L) may be located next to a block fence when the tank is not within 5 feet (1524 mm) of a structure on adjoining property.

Section 3812 is added as follows:

3812 Consumer exchange of pre-filled containers. The storage of portable containers at exchange sites shall be limited to a maximum of ~~381.6 pounds (173.1 kg.)~~ TWENTY 20 LB. CONTAINERS or less, whether filled, partly filled or empty, at consumer exchange sites or distribution points. See Fire Department Interpretation and Applications Manual for installations.

Appendix H Control and Suppression of Hazardous Fire Areas ~~is~~ ARE added as follows:

Control and Suppression of Hazardous Fire Areas

Section H101 General

H101.1 Scope. The unrestricted use of grass-, grain-, brush- or forest-covered land in hazardous fire areas is a potential menace to life and property from fire and resulting erosion. Safeguards to prevent the occurrence of fire and provide adequate fire-protection facilities to control the spread of fire which might be caused by recreational, residential, commercial, industrial or other activities conducted in hazardous fire areas shall be in accordance with Appendix H.

Section 11102 Definitions

H102.1 Definitions. For the purpose of Appendix H, certain terms are defined as follows:

Tracer is any bullet or projectile incorporating a feature which marks or traces the flight of said bullet or projectile by flame, smoke or other means which results in fire or heat.

Tracer charge is any bullet or projectile incorporating a feature designed to create a visible or audible effect by means which results in fire or heat and shall include any incendiary bullets or projectiles.

Section H103 Permits

H103.1 Permits. The ~~chief~~ CHIEF is authorized to stipulate conditions for permits. Permits shall not be issued when public safety would be at risk, as determined by the ~~chief~~ CHIEF.

Section H104 Restricted Entry

H104.1 Restricted entry. The ~~chief~~ CHIEF shall determine and publicly announce when hazardous fire areas shall be closed to entry TO THE GENERAL PUBLIC and when such areas shall again be opened to entry. Entry on and occupation of hazardous fire areas, except public roadways, inhabited areas or established trails and camps sites which have not been closed during such time when the hazardous lire is closed to entry, is prohibited.

Exception:

1. ~~Residents and owners of private property within the hazardous fire area and their invitees and guests.~~
2. Entry, in the course of duty, by peace or police officer or other duly authorized public officers, members of a fire department and members of the United States Forest Service.

Section 11105 Trespassing on Posted Property.

H105.1 General. When the ~~chief~~ CHIEF determines that a specific area within a hazardous fire area presents an exceptional and continuing fire danger because of the density of natural growth, difficulty of terrain, proximity to structures or accessibility to public, such areas shall be closed until changed conditions warrant termination of closure. Such areas shall be posted as hereafter provided.

H105.2 Signs. Approved signs prohibiting entry by unauthorized persons and referring to Appendix H shall be placed on every closed area.

H105.3 Trespassing. Entering and remaining within posted closed areas is prohibited.

Exception: ~~Owners and occupiers of private or public property within posted closed areas, their guest or invitees and local state and federal public officers~~ LOCAL, STATE, AND FEDERAL PUBLIC OFFICERS and their authorized agents acting in the course of duty.

Section H106 Smoking

H106.1 General. Lighting, igniting or otherwise setting fire to or smoking tobacco, cigarettes, pipes or cigars in hazardous fire areas is prohibited.

Exception: Places of habitation or within the boundaries of established smoking areas or campsites as designated by the ~~chief~~ CHIEF.

Section H107 Spark Arresters

H107.1 Spark arresters. Chimneys used in conjunction with fireplaces, barbecues, incinerators or heating appliances in which solid or liquid fuel is used, upon buildings, structures or premises located within 200 feet (60960 mm) of hazardous fire areas shall be provided with a spark arrester constructed with heavy wire mesh or other noncombustible material with openings not to exceed 1/2 inch (12.7 mm).

Section 1108 Tracer Bullets, Tracer Charges, Rockets and Model Aircraft.

H108.1 General. Tracer bullets and tracer charges shall not be possessed, fired or caused to be fired into or across hazardous fire areas. Rockets, model planes, gliders and balloons powered with an engine propellant or other feature liable to start or cause fire shall not be fired or projected into or across hazardous fire areas.

Section H109 Explosives and Blasting

H109.1 Explosives and blasting. Explosives shall not be possessed, kept, stored, sold, offered for sale, given away, used, discharged, transported or disposed of within hazardous fire areas except by permit issued by the ~~chief~~ CHIEF.

Section H110 Fireworks

H110.1 Fireworks. Fireworks shall not be used or possessed in hazardous fire areas. The ~~chief~~ CHIEF OR AN APPOINTED REPRESENTATIVE is authorized to seize, take, remove or cause to be removed fireworks in violation of Section 110.

Section H111 Apiaries

H111.1 Apiaries. Lighted and smoldering material shall not be used in connection with smoking bees in or upon hazardous fire areas except by permit issued by the ~~chief~~ CHIEF.

Section H112 Open-Flame Devices

H112.1 Open-flame devices. Welding torches, tar pots, decorative torches and other devices, machines or processes liable to start or cause fire shall not be operated or used in or upon hazardous fire areas, except by permit issued by the ~~chief~~ CHIEF.

Exception: Use within habited premises or designated campsites which are a minimum of 30 feet (9144 mm) from grass-, grain-, brush- or forest-covered areas. Flame-employing devices, such as lanterns or kerosene road flares, shall not be operated or used as a signal or marker in or upon hazardous fire areas

Exception: The proper use of fuses at the scene of emergencies or as required by standard operating procedures.

Section H113 Outdoor Fires

H113.1 Outdoor fires. Outdoor fires shall not be built, ignited or maintained in or upon hazardous fire areas, except by permit issued by the ~~chief~~ CHIEF.

Exception: Outdoor fires within habited premises or designated campsites where such fires are built in a permanent barbecue, portable barbecue, outdoor fireplace, incinerator or grill and are a minimum of 30 feet (9144 mm) from a grass-, grain-, brush- or forest-covered area.

Permits shall incorporate such terms and conditions which will reasonably safeguard public safety and property. Outdoor fires shall not be built, ignited or maintained in or upon hazardous fire areas under the following conditions:

1. When high winds are blowing,
2. When a person age 17 or over is not present at all times to watch and tend to the fire, or
3. When public announcement is made that open burning is prohibited.
- 4.

Permanent barbecue, portable barbecues, outdoor fireplaces or grills shall not be used for the disposal of rubbish, trash or combustible waste material.

Section H114 Incinerators and Fireplaces

H114.1 General. Incinerators, outdoor fireplaces, permanent barbecues and grills shall not be built, installed or maintained in hazardous fire areas without prior approval Of the ~~chief~~ CHIEF. Incinerators, outdoor fireplaces, permanent barbecues and grills shall be maintained in good repair and in a safe condition at all times. Openings in such appliances shall be provided with an approved spark arrester, screen or door.

Exception: When approved, unprotected openings in barbecues and grills are permitted where necessary for proper functioning.

Section H115 Clearance of Brush and Vegetative Growth From Electrical Transmission Lines

H115.1 General. Clearance of brush and vegetative growth from electrical transmission lines shall be in accordance with Section 115.

Exception: Section 115 does not authorize persons not having legal right of entry to enter upon or damage the property of others without consent of the owner.

H115.2 Support clearance. Persons owning, controlling, operating or maintaining electrical transmission lines upon hazardous fire areas shall, at all times, maintain around and adjacent to poles supporting a switch, fuse, transformer, lightning arrester, line junction, dead end, corner pole, towers, or other poles or towers at which power company employees are likely to work most frequently an effective firebreak consisting of a clearing or not less than 10 feet (3048 mm) in each direction from the outer circumference of such pole of tower.

Exception: Lines used exclusively as telephone, telegraph, messenger call, alarm transmission or other lines classed as communication circuits by a public utility.

H115.3 High tension line clearance. Persons owning, controlling, operating or maintaining electrical transmission lines upon hazardous fire areas shall maintain the clearance specified in Section 115.3 in all directions between vegetation and conductors carrying electrical current: See National Electric Code (N.E.C.).

Such distance shall be sufficiently great to furnish the required clearance from the particular wire or conductor to positions of such wire or conductor at temperatures of 120 F (48.9 C) or less. Forked, dead, old, decadent and rotten trees; trees weakened by ~~cat faces~~, decay or disease; and trees leaning toward the line, which could contact the line from the side or fall on the line, shall be felled, cut or trimmed to remove the hazard.

H115.4 Self-supporting aerial cable. Line clearance is not required for self-supporting aerial cable, except that forked trees, leaning trees and other growth which could fall across the cable and break it shall be removed.

Section H116 Clearance of Brush or Vegetation Growth from Structures

H116.1 General. Persons owning, leasing, controlling, operating or maintaining buildings or structures in, upon or adjoining hazardous fire areas, and person owning, leasing or controlling land adjacent to such buildings or structures, shall at all times:

1. Maintain an effective firebreak by removing and clearing away flammable vegetation and combustible growth from areas with 30 feet (9144 mm) of such buildings or structures;

Exception: Single specimens of trees, ornamental shrubbery or similar plants used as ground covers, provided that they do not form a means of rapidly transmitting fire from the native growth to any structure.

2. Maintain additional fire protection or a firebreak by removing brush, flammable vegetation and combustible growth located from 30 feet to 100 feet (9144 mm to 30,480 mm) from such buildings or structures when required by the ~~chief~~ CHIEF because of extra-hazardous conditions causing a firebreak of only 30 feet (9144 mm) to be insufficient to provide reasonable fire safety;

Exception: Grass and other vegetation located more than 30 feet (9144 mm) from buildings or structures and less than 18 inches (457 mm) in height above the ground need not be removed where necessary to stabilize the soil and prevent erosion.

3. Remove portions of trees which extend within 10 feet (3048 mm) of the outlet of a chimney;
4. Maintain trees adjacent to or overhanging a building free of deadwood; and
5. Maintain the roof of a structure free of leaves, needles or other dead vegetative growth.

Section H117 Clearance of Brush or Vegetation Growth from Roadways

H117.1 Clearance of brush or vegetation. The ~~chief~~ CHIEF is authorized to cause areas within 10 feet (3048 mm) on each side of portions of highways and private streets which are improved, designed or ordinarily used for vehicular traffic to be cleared of flammable vegetation and other combustible growth. The ~~chief~~ CHIEF OR AN APPOINTED REPRESENTATIVE is authorized to enter upon private property to do so.

Exception: Single specimens of trees, ornamental shrubbery or cultivated ground such as green grass, ivy, succulents or similar plants used as ground cover, provided that they do not form a means of readily transmitting fire.

Section H118 Unusual Circumstances

H118.1 Unusual circumstances. If the ~~chief~~ CHIEF determines that difficult terrain, danger of erosion or other unusual circumstances make strict compliance with the clearance of vegetation provisions of Sections 115, 116, or 117 of Appendix H undesirable or impractical, enforcement thereof may be suspended and reasonable alternative measures shall be provided.

Section H119 Dumping

H119.1 Dumping. Garbage, cans, bottles, papers, ashes, refuse, trash, or rubbish or combustible waste material shall not be placed, deposited or dumped in or upon hazardous fire areas or in, upon along trails, roadways or highways in hazardous fire areas.

Exceptions: Approved public and private dumping areas.

Section H120 Disposal of Ashes

H120.1 Disposal of ashes. Ashes and coals shall not be place, deposited or dumped in or upon hazardous fire areas.

Exceptions:

1. In the hearth of an established fire pit, camp stove or fireplace.
2. In a noncombustible container with a tight-fitting lid, which is kept or maintained in a safe location not less than 10 feet (3048 mm) from combustible vegetation or structures.
3. Where such ashes or coals are buried and covered with 1 foot (304.8 mm) of mineral earth not less than 25 feet (7620 mm) from combustible vegetation or structures.

Section H121 Use of Fire Roads and Firebreaks

H121.1 Use of fire roads and firebreaks. Motorcycles, motor scooters and motor vehicles shall not be driven or parked upon, and trespassing is prohibited upon, fire roads or firebreaks beyond the point where travel is resisted ~~by~~ BY a cable, gate or sign, without the permission of the property owners. Vehicles shall not be parked in a manner which obstructs the entrance to a fire road or firebreak.

Exception: Public officers acting within their scope of duty.

Radio and television aerials, guy wires thereto, and other obstructions shall not be installed or maintained on fire roads or firebreaks unless located 16 feet (5877 mm) or more above such fire road or firebreak.

Section H122 Use of Motorcycles, Motor scooters and Motor Vehicles

H122.1 Use of motor vehicles. Motorcycles, motor scooters and motor vehicles shall not be operated within hazardous fire areas, without a permit by the ~~chief~~ CHIEF, except upon clearly established public or private roads. Permission from the property owner shall be presented when requesting a permit.

Section H123 Tampering with Fire Department Locks, Barricades and Signs

H123.1 Tampering with fire department locks, barricades and sign. Locks, barricades, seals, cables, signs and markers installed within hazardous fire areas, by or under the control of the ~~chief~~ Chief, shall not be tampered with, mutilated, destroyed or removed.

Gates, doors, bathers and locks installed by or under the control of the ~~chief~~ CHIEF shall not be unlocked.

Section H124 Liability for Damage

H124.1 Liability for damage. The expenses of fighting fires which result from a violation of Appendix H shall be a charge against the person whose violation of Appendix H caused the fire. Damages caused by such fires shall constitute a debt of such person and are collectable by the ~~chief~~ CHIEF in the same manner as in the case of an obligation under a contract, expressed or implied.

The International Fuel Gas Code ~~2003~~ 2006 Edition And All Supplements, As Published By The International Code Council.

...

SECTION 7. That the Fountain Hills Town Code, Chapter 7, Buildings and Building Regulations, Article 7-9, Fire Prevention and Protection, Section 7-9-5, Penalty, is hereby amended as follows:

FOUNTAIN HILLS FIRE DEPARTMENT
Interpretations and Applications
Of NFPA 13D

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2007 NFPA 13D

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CHAPTER 4-GENERAL REQUIREMENTS

4.1.2.1 LINTELS *ADDED*

Large, beamed ceilings are not intended to be given credit as a compartment enclosure, even if they have an 8" depth. The openings from the compartment are generally based on a 36" wide door opening.

4.8.1 WORKING PLANS *ADDED*

A scaled drawing shall show the following:

- (1) Address
- (2) Size and type of domestic line, including length to city connection
- (3) Water meter size
- (4) Current static water pressure (Current within 6 months of submittal date)
- (5) Interior walls
- (6) Model, manufacturer, temperature, orifice size and spacing requirements of sprinkler
- (7) Type of pipe
- (8) Hanger spacing requirement per the pipe manufacturer
- (9) Riser detail
- (10) Head symbol legend
- (11) Installing contractor information
- (12) Hydraulic calculation data
- (13) Room names
- (14) Ceiling heights, ceiling height changes
- (15) Sloped ceilings exceeding 2 : 12 . Indicate "no sloped ceilings" if applicable
- (16) Beam sizes and soffit depths
- (17) Dimensioning of heads as necessary for determining proper head spacing
- (18) Pipe lengths, center to center
- (19) Clearly identified calculated areas (On plans & calculations)
- (20) Inspectors test
- (21) Riser location
- (22) Electric bell location
- (23) General notes as required
- (24) All sheets shall be sized the same

4.9 SUBMITTAL REQUIREMENTS *ADDED*

New construction and remodel plans submitted to the Town shall comply with the following:

- (1) Submit a minimum of 3 sets of all working drawings
- (2) Submit one set of hydraulic calculations and manufacturer data sheets
- (3) Acceptable paper size shall be limited to 24 x 36 or 30 x 42, minimum scale shall be 1/8"
- (4) All submittals shall bear a dated review certification and signature of a minimum level III NICET certified engineering technician (CET) automatic sprinkler systems or an Arizona Registered Professional Engineer
- (5) An approved set of plans shall be at the structure at the time of scheduled inspections. Deviations from approved plans will require approval of the Fire Marshal.

4.9.1 REMODEL/ADDITIONS SUBMITTAL *ADDED*

Remodel and additions submitted to the Town when calculations are not required:

- (1) When calculations are not required, submittals may be faxed or emailed (PDF or DWF format) on a scaled floor plan (3/16" minimum) 8-1/2 x 11" size paper
- (2) No NICET or P.E. stamp is required
- (3) The scope of work must be clear & demonstrated that no calculations are necessary
- (4) Fax submittals shall be limited to one sheet

4.9.2 REMODEL/ADDITIONS INFORMATION *ADDED*

Information provided on remodel and addition submittals shall include but not limited to:

- (1) Project information
- (2) Meter size
- (3) Underground size and length
- (4) Current static PSI
- (5) Existing and new head type

Note: If the original sprinkler system was installed at less than a .05 density, calculations will be required when using other than an approved replacement head, unless it is obviously close to the riser.

4.10 TESTS AND INSPECTIONS *ADDED*

4.10.1 ROUGH INSPECTION *ADDED*

- (1) All components of the system shall be in place, secured and connected to the water supply at the time of test.
- (2) All new systems shall be tested using a cold water test / minimum of 175 PSI for 24 hours. System must show adequate pressure per approved plans. No visible leakage or pressure reduction is permitted.
- (3) When adding/relocating 4 or more heads to an existing system, it shall be tested using a cold water test / minimum of 140 PSI for 24 hours. 3 heads or less shall be connected to the permanent water supply for 24 hours prior to inspection.
- (4) All fire penetrations should be filled with approved material and nail plates shall be in place at the time of the pressure test. Where metal studs are used piping shall be protected with either a sleeve or grommet.
- (5) Systems tested with sprinkler heads installed at time of test may have up to 10% of the heads removed for orifice obstruction inspection. (Not required if plugs are used) If solvent, glue or other foreign objects are found within the sprinkler head at time of inspection, then the system shall be tested using plugs in lieu of sprinkler heads. The sprinkler contractor will then be required to install all sprinkler systems using plugs in lieu of sprinkler heads for a period of one year from that date for each inspection.
- (6) An approved set of sprinkler plans shall be on the job site at the time of inspection.

4.10.2 FINAL INSPECTION *ADDED*

- (1) At the final inspection all sprinkler system components shall be in place, and the system shall be flowed with the activation of the flow switch and bell.
- (2) All risers shall have a calculation sticker and appropriate spare heads installed in the riser compartment. See Appendix "B" for calculation sticker detail.
- (3) Fire Department Inspection form from rough-in inspection must be on the job site at the time of test if there was a stipulation for rough-in approval.
- (4) Verify manufacturers head tolerance with the escutcheon in place and check for paint, obstructions, plaster, etc.

4.10.3 RE-INSPECTION FEES *ADDED*

A re-inspection fee may be assessed for each inspection or re-inspection, not limited to the following:

- (1) When installation is not complete.
- (2) When corrections from previous inspection are not complete.
- (3) When two or more appointments have been cancelled at the same address.
- (4) Late notice of cancellation (less than 2 hrs prior).

4.11 CPVC CERTIFICATION *ADDED*

When installing CPVC piping, the factory issued certification card must be carried by the pipe fitter during installation and is to be made available to an inspector upon request.

CHAPTER 6 - WATER SUPPLY

6.2.2.1 PUMP SYSTEM CRITERIA FROM TOWN WATER SUPPLY *ADDED*

- (1) A combination pump system supplying both the domestic water and the fire sprinkler system shall be required.

- (2) A bypass line shall be installed.
- (3) Submit manufacturer's specifications for the pump, including the pump curve.
- (4) See Appendix "C" for an example of a pump system from city water supply.

6.2.2.2 PUMP SYSTEM CRITERIA FROM WELL AND/OR STORED WATER SUPPLY

ADDED

- (1) A combination pump system supplying both the domestic and fire sprinkler system shall be required.
- (2) A low water alarm shall be actuated when the water level drops to the minimum quantity specified for the fire sprinkler system. The low water alarm shall be audible and installed in a central location of the normally occupied livable structure. The alarm shall produce a sound pressure of 15 decibels above ambient noise levels.
- (3) An FDC shall be installed below the electric bell, accessible to the Fire Department. (National Standard Hose thread with an 1-1/2" snoot)
- (4) Submit manufacturer's specifications for the pump, including the pump curve.
- (5) See Appendix "D" for an example of a pump system from well water supply.

6.3 MULTIPURPOSE PIPING SYSTEM **AMENDED**

- (1) In common water supply connections, 5 GPM per dwelling unit shall be added to the sprinkler system demand to determine the size of common piping and the size of the total water supply requirements where no provision is made to prevent flow into the domestic water system upon operation of a sprinkler.
- (3) Piping connected to the system that supplies only plumbing fixtures shall comply with local plumbing and health authority requirements and shall be listed.
- (6) Where water treatment and filtration are installed, one of the following conditions shall be met:
 - (a) The flow restriction and pressure loss through the water treatment equipment shall be taken into account in the hydraulic calculations.
 - (b) An automatic listed bypass valve shall be installed around the water treatment equipment that directs all water directly to the system.

CHAPTER 7 – INSTALLATION

7.1.4 FIRE RISER COMPONENTS **ADDED**

The components of a riser assembly include the following:

- (1) Above ground horizontal or vertical pipe between the water supply, the cross mains or feed mains
- (2) A combination control valve installed prior to the fire sprinkler and domestic supply tee (See Appendix "A" for Residential Riser Detail)
- (3) Rubber faced check valve
- (4) Pressure gauge
- (5) Main drain with a pressure relief valve
- (6) Supervisory capable electric flow switch

7.1.4.1 FIRE RISER ASSEMBLY LOCATION AND ACCESS **ADDED**

- (1) The riser shall be constructed within a garage or other secured location as approved by the fire code official or within a wall cabinet or other acceptable enclosure with an access panel or door suitable for access to all riser components.
- (2) All riser assemblies shall be braced and secured.
- (3) Plastic systems shall be protected from damage up to 7 feet from floor level.

7.2.1 DRAIN **AMENDED**

- (1) Each sprinkler system shall have a drain on the system side of the control valve.
- (2) The main drain shall be 1/2 inch or larger, located above the check valve and flow switch.
- (3) There shall be a fixed non-adjustable pressure relief valve branched off of the main drain that will activate at pressures no lower than 150 PSI and no higher than 175 PSI.

7.2.4 INSPECTOR'S TEST CONNECTION **AMENDED**

- (1) Each sprinkler system shall have an inspector's test valve and drain connected at

the ~~highest~~ most remote possible point in the system that will allow for drainage of all levels/floors.

- (2) Piping shall be the same size as the piping to the most remote sprinkler head.
- (3) Underground sprinkler supply pipe servicing detached structures, shall be provided with an inspector's test. This may be used as the only inspector's test if it is a remote location.

7.2.5 INSPECTOR'S TEST ORIFICE SIZE AND LOCATION

AMENDED

- (1) The test valve shall have an orifice the same size as the remote sprinkler head.
- (2) The test valve shall be constructed within a wall cabinet or other acceptable enclosure with an access panel or door.
- (3) The test valve shall be accessible to the fire department in such a place where it will not sustain damage and where water can be flowed without damage to the structure or contents.
- (4) Discharge shall be above grade and unobstructed.
- (5) Discharge from the orifice shall be confined to the property.

7.3.2.1 PRESSURE GAUGE **ADDED**

The gauge shall be installed on the system side of any system.

7.5.5.3 (4), (5) USE OF INTERMEDIATE TEMPERATURE RATINGS **ADDED**

- (1) Intermediate temperature rated residential sprinkler heads (175° F) shall be installed in mechanical rooms, garages and small laundry closets without a/c.
- (2) 200° commercial quick response small (7/16") orifice heads may be used in mechanical and/or storage rooms that are isolated and accessible on the exterior face of the structure.

7.5.8.1 SOLVENT CEMENT **ADDED**

The head adaptor/drop nipple assembly shall be pre-fabricated prior to installation to ensure the sprinkler orifice remains free of obstructions.

7.6 ALARMS **AMENDED**

Local water flow alarms shall be provided on all sprinkler systems as follows:

- (1) A 110 volt AC 6 inch minimum size electric bell shall be supplied by house current
- (2) A dedicated circuit or GFI is not permitted
- (3) The bell shall be mounted on the exterior of the structure, visible from the street and not more than 3 feet from the front
- (4) The bell must be at a height to view easily from the street or drive and no higher than the plane made by the bottom of the eaves
- (5) The alarm shall receive its' signal from a UL listed local water flow switch
- (6) Color: Red

7.7.1 THERMAL PROTECTION **ADDED**

CPVC may be installed the vertical and/or horizontal position to protect mechanical units in open attic spaces, however, it shall be protected with a noncombustible insulation molded to fit the pipe diameter. The insulation shall be compatible with CPVC pipe.

Surface burning characteristics shall be in accordance with the following specifications:

Shall not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E 84, CAN/ULC S102-M88.

Note: Copper pipe may be installed in the same manner as CPVC in open attic spaces.

Insulation products used for either copper or CPVC shall be rated to protect from freezing down to minimum temperatures of 0° F.

7.8 UNSUPERVISED PIPE **ADDED**

Unsupervised sprinkler pipe in residential structures:

- (1) Residential sprinkler systems shall not have unsupervised pipe more than four (4) feet in length within a wall adjacent to livable space and/or no more than ten (10) feet in length in a wall that does not have a livable space on either side.
- (2) The pipe will be measured from the point of entry; both horizontally and vertically, up to the center of the flow switch on the riser.

CHAPTER 8 — SYSTEM DESIGN

8.1.5 SPECIAL DESIGN APPROACHES **ADDED**

8.1.5.1 CEILINGS WITH EXPOSED BEAMS *ADDED*

Ceilings w/ exposed beams – Follow manufacturers listing requirements for "beamed ceiling sprinklers".

(1) Design challenge #1 when drilling beams:

Sloped ceilings (4:12 max.) w/ beams using a listed head for beams – Calculate the next higher GPM listed for the sprinkler head selected or an additional head may be calculated. Following the specific coverage criteria is permitted. The designer will select which option is being utilized and state that option on the plan.

(2) Design challenge #2 when drilling beams:

Sloped ceilings (Over 4:12 – 8:12 max.) w/ beams using a listed head for beams – An additional head shall be calculated. Following the specific coverage criteria is permitted. The designer shall state the requirement on the plan.

(3) Design challenge #3 when installing heads between beams:

Calculate 3 heads with the listed coverage criteria when unable to maintain 8' minimum between sprinklers. The designer shall state the requirement on the plan.

(4) Design challenge #4 when beam length and/or spacing parameters exceed testing approvals:

Calculate the next higher GPM listed for the sprinkler head selected or an additional head may be calculated.

Note: Until further testing has been conducted for residential fire sprinkler systems, design challenges that require sprinkler heads to be installed in non-listed applications, the Fountain Hills Fire Department will be requiring that the 2007 Edition of NFPA 13-D section A.8.1.2 be considered when designing systems.

These guidelines are for some of the most common design challenges. The designer/engineer will address other design challenges on a case-by-case basis.

8.1.5.2 COFFERED CEILINGS/SOFFITS *ADDED*

(1) A.8.1.2 provides guidance for design scenarios when NFPA 13-D Standards and specific head listings do not accommodate a particular design feature. NFPA 13 may be referenced for determining maximum ceiling pocket depth of 36" before requiring a head to be placed at the high point of the ceiling.

(2) When faced with a design challenge of installing heads on other than smooth-flat ceilings, i.e. installing heads in coffered ceilings, Annex A, sec. A.8.1.2 may be applied by choosing the next higher GPM listed for the sprinkler head selected or an additional head may be calculated. The designer will select which option is being utilized and state that option on the plan.

(3) Residential sprinkler heads with a specific listing for beamed ceilings may be installed in lowest architectural soffit feature of a coffer with a maximum depth of 14" from the high point of the ceiling. Following the specific coverage criteria is permitted.

NOTE: NFPA 13-D section 8.6.7 may be used in lieu of the above requirement.

8.1.6 RESIDENTIAL BARNs *ADDED*

(1) 1501-5000 square foot barns may be piped from the domestic service. Calculate a minimum of two commercial QR heads using the area/density method per NFPA 13. Install in accordance with NFPA 13 Standards.

(2) 5001 square foot barns and above shall require a separate fire line service connected to a Town water main. Install in accordance with the Town of Fountain Hills Interpretations and Applications and NFPA 13. Calculate 4 heads.

8.1.7 DETACHED STRUCTURES *ADDED*

Detached garages, guest houses, and similar structures exceeding 1500 square feet, shall require a separate water supply, fire sprinkler riser, inspector's test and electric bell.

8.1.8 EXTENDING EXISTING SYSTEMS TO NEW ADDITIONS *ADDED*

Extending an existing fire sprinkler system to an attached new addition may be done

in the following manner:

- (1) Connect into the existing piping system.
- (2) Connect a new supply line at top of the existing fire sprinkler riser and run the pipe overhead or underground to the point of connection.
- (3) Other proposals will be considered on a case by case basis.

Note: See sections 4.10, 4.10.1 & 4.11 for submittal requirements.

8.4.2.1 FLOW SWITCH LOSS **ADDED**

Pipe sizes 2" or less shall include 3 PSI fixed loss for the flow switch, or per manufacturer specifications.

A.8.4.3.3 NETWORK SYSTEMS **AMENDED**

- (11) In common water supply connections, 5 GPM per dwelling unit shall be added to the sprinkler system demand to determine the size of common piping.
- (12) Piping runs shall be installed per manufacturer's color coding for ease of inspection.
- (13) Where water treatment and filtration are installed, one of the following conditions shall be met:

- (a) The flow restriction and pressure loss through the water treatment equipment shall be taken into account in the hydraulic calculations.
- (b) An automatic listed bypass valve shall be installed around the water treatment equipment that directs all water directly to the system.

8.0.4 (6) PRESSURE LOSS FROM WATER MAIN TO INSIDE CONTROL VALVE **AMENDED**

(6) A minimum of 5 feet shall be calculated from the main to the meter. Pressure losses from the city main to the inside control valve shall be deducted by multiplying the factor from Table 8.4.4 (a) or Table 8.4.4 (b) by the total length(s) of pipe in feet (meters). (The total length includes equivalent length of fittings as determined by applying Table 8.4.4 (c), Table 8.4.4 (d), Table 8.4.4 (e), or Table 8.4.4 (f).)

8.4.4 (12) PRESSURE SAFETY MARGIN **ADDED**

(12) Calculations shall maintain a 10% pressure safety margin from the field water pressure tests. The pressure used for hydraulic calculations shall not exceed 72 psi. The purpose for this practice is to account for water pressure fluctuations. When additional fittings have been installed in a sprinkler system not accounted for in the design, revised drawings may be required with new calculations.

8.4.4 (13) COMMON WATER SUPPLY CONNECTIONS **ADDED**

(13) In common water supply connections, 5 GPM per dwelling unit shall be added to the sprinkler system demand to determine the size of common piping and the size of the total water supply requirements.

8.4.4 (14) DOMESTIC WATER SUPPLY **ADDED**

(14) Domestic water supplies shall be 1" minimum size in new construction.

8.4.4 (15) PRESSURE REDUCING VALVE **ADDED**

(15) Pressure reducing valve installations shall be installed on the domestic side of the tee. In areas of high water pressure, a pressure reducing valve may be permitted on the sprinkler system with the approval of the Fire Marshal.

8.6.1 LOCATION OF SPRINKLERS **AMENDED**

Sprinklers shall be installed in all areas including, but not limited to:

- (1) Garages
- (2) Attached carports
- (3) Bathrooms
- (4) Entrance foyers
- (5) Water heater closets
- (6) Utility and mechanical closets
- (7) Washer-dryer closets
- (8) All accessible areas under stairs and landings
- (9) Closets under stairways
- (10) Area beneath stairway when open to the room

(11) Covered patios when there is livable space above the patio (Entire patio)

(12) In close proximity to mechanical units (any heat producing unit) located in attic spaces. Coverage shall include two sides of each mechanical unit if the head can not be installed above the unit. Use 200° QR 7/16 orifice commercial heads. Install 1 — 12 inches from deck.

(13) Where an attached built-in barbeque with open attic space is constructed, a 200° QR 7/16 orifice commercial head shall be provided in an approved location in close proximity to where the flue passes through the roof structure.

8.6.3 LOCATION OF SPRINKLERS AMENDED

Sprinklers are not required in clothes closets, linen closets, pantries, dumbwaiters, laundry chutes and storage rooms that do not contain electrical or mechanical equipment that meet the following conditions:

(1) The area of the space does not exceed 24 sq. ft.

(2) The least dimension does not exceed 3 ft.

(3) The walls and ceilings are surfaced with noncombustible or limited —combustible materials as defined in NFPA 220, *Standard on Types of Building Construction*.

8.6.5 LOCATION OF SPRINKLERS AMENDED

Sprinklers shall not be required in:

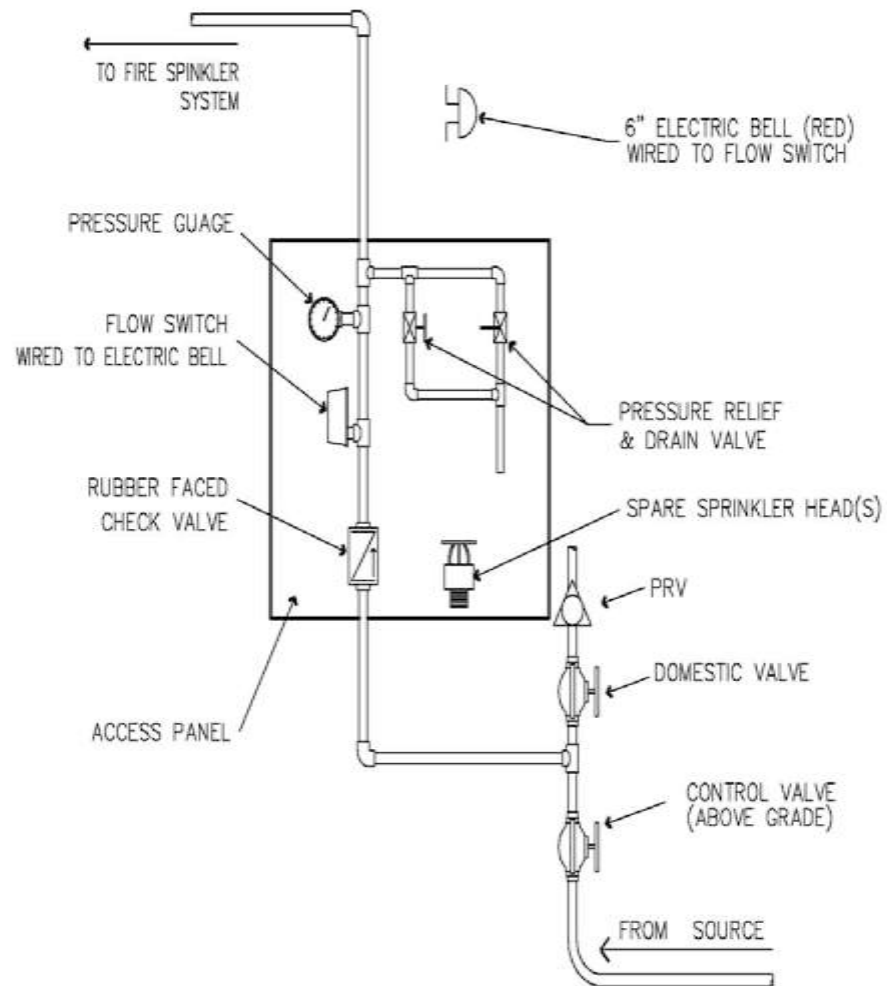
(1) Elevator machine rooms

(2) Floor/ceiling spaces

(3) Elevator shafts

(4) Crawl spaces and other concealed spaces that are not used or intended for living purposes and do not contain fuel-fired equipment.

RISER DIAGRAM



NOT TO SCALE

APPENDIX "A"

CALCULATION DESIGN STICKER FOR 13-D

ABC SPRINKLER CO.
1234 N. SCOTTSDALE RD.
SCOTTSDALE, AZ.

PHONE: 000-000-0000

HYDRAULIC CALCULATION DATA

BASED ON WATER PRESSURE OF
_____ @ RISER

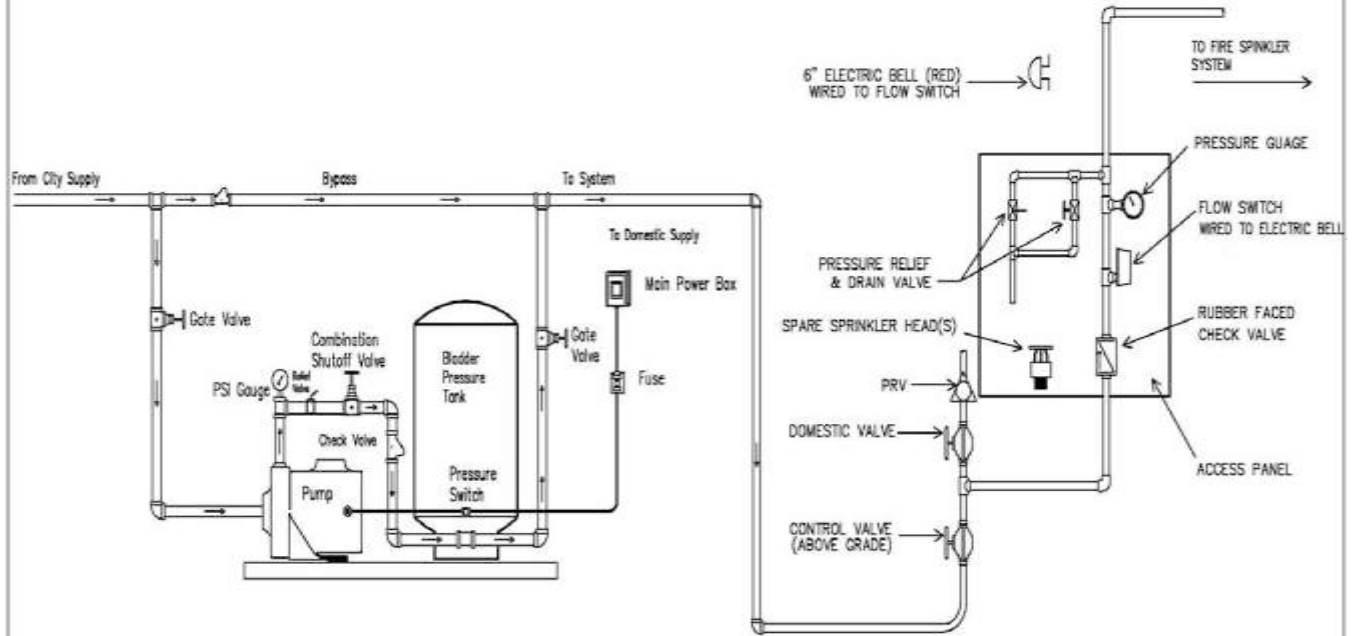
TWO HEAD CALCULATION:
_____ GPM @ _____ PSI

ONE HEAD CALCULATION:
_____ GPM @ _____ PSI

MINIMUM SIZE: 3" X 5"

APPENDIX "B"

EXAMPLE OF A COMBINATION FIRE/DOMESTIC PUMP SYSTEM FOR CITY WATER SUPPLY



APPENDIX "C"

