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# FIRE

This chapter describes how the building code, fire code, infrastructure system, and site design policies are integrated into an effective fire protection design. It lists links to applicable code and trade organizations and to other chapters describing related design topics.

# DRAFT

# FIRE

## GENERAL INFORMATION

This section provides Fire & Life Safety information, guidelines and references specific to site planning and development. For updated information refer to the Fire & Life Safety website, [www.ScottsdaleAZ.gov/departments](http://www.ScottsdaleAZ.gov/departments) or call Fire Plan Review at 480-312-7080.

The following websites provide safety codes, standards and general information:

- American Fire Sprinkler Association [www.sprinklernet.org](http://www.sprinklernet.org)
- Arizona Automatic Fire Alarm Association [www.azafaa.org](http://www.azafaa.org)
- Home Fire Sprinkler Coalition [www.homefiresprinkler.org](http://www.homefiresprinkler.org)
- International Code Council [www.iccsafe.org](http://www.iccsafe.org)
- National Fire Protection Association [www.nfpa.org](http://www.nfpa.org)
- National Fire Sprinkler Association [www.nfsa.org](http://www.nfsa.org)
- Occupational Safety and Health Administration [www.osha.gov](http://www.osha.gov)
- Society of Fire Protection Engineers [www.sfpe.org](http://www.sfpe.org)

## OVERVIEW OF FIRE PROTECTION

- A. Adequate fire protection design must coordinate compliance with building and fire codes, site design policies and public infrastructure needs. The principal considerations for fire protection are addressed online in Codes, Ordinances and Regulatory Documents at [www.ScottsdaleAZ.gov/codes](http://www.ScottsdaleAZ.gov/codes). Examples of principal considerations for building design are:
1. Fuel load
  2. Building structure size
  3. Structure construction methods
  4. Built-in fire protection such as: fire sprinklers, fire alarms, hose valves, etc.
  5. Number of occupants
  6. Hazard level of the use of the structure
- B. Site planning considerations include:
1. Building access by fire trucks
  2. Site access from adjacent streets
  3. Water supply in terms of system pressure and volume capacity
- C. Examples of how these considerations work together:
1. The required number of access points depends on the volume of the fuel load (number of structures, square footage of structures and/or hazard level)
  2. Topography (Hillside, ESLO, washes, etc.)
  3. Available water volume influences on fire protection planning (gallons per minute (GPM), pressure and hydrant systems, built in fire protection and operations)
  4. Remediation of site challenges to provide appropriate access, adequate water supply, or overcoming difficult topography may be accomplished by increasing the protection level of construction methods and materials
  5. Remediation may also be accomplished using built-in fire protection such as increasing the protection level of fire sprinklers, hose valves, fire alarms, etc.

# Section 11-1

## 11-1.000

## 11-1.100

6. Many remediation methods are available in the City Code, may require staff approval, or may require a variance. Consideration of remediation methods and consequences should start during or immediately following Pre-Application and should be concluded as much as possible prior to case approval. This will facilitate a successful and timely review and approval of building plans, improvement plans and deferred shop drawings.

### CASE APPLICATION

Review of applications for site development is a coordinated effort by Fire Plan Review and Planning and Development staff. Applications include: Pre-application, Zoning, Development Review, Preliminary Plat, Abandonment and Conditional Use Permits.

- For development process guidelines, refer to Section 1-1.100.
- For preliminary site review minimum requirements, refer to Section 1-1.200.

Site planning issues to be addressed are typically communicated to the applicant by Planning and Development Services staff or by Fire Plan Review staff. Appropriate fire apparatus access, turning radius, and fire hydrant placement are necessary considerations for site planning. A preliminary site plan review must include:

- A. Turning radius templates
- B. Building construction type
- C. Square footage of each floor level
- D. Identification of hazardous conditions and use/occupancy classifications

A Preliminary Fire Review Worksheet may be required. This will be provided to the applicant at Pre-application, and will be completed as much as possible and returned with the formal application. This Worksheet is simple and should be considered a living document to progress in completion and complexity as the project moves through the planning process. Ultimately the information will be completed and provided in the Project Data/Code Summary in the building plan construction document plan set.

The applicant will receive a first review comments letter from the planning coordinator with a list of Fire Ordinance Requirements which become stipulations to the application. The requirements are based on the plans submitted with the application and are intended as a guide for the applicant's design team. These requirements are to be noted on the construction documents under a general Fire Department note block.

A marked-up site plan will accompany the requirements provided to the applicant which will identify the fire lanes, fire hydrants, Fire Department connection locations, etc. The applicant's design team shall utilize this information to prepare improvement plans. For more information refer to the Master List of Construction Document Requirements, visit [www.ScottsdaleAZ.gov/bldgresources](http://www.ScottsdaleAZ.gov/bldgresources).

### PLAN REVIEW & PERMITTING

11-1.200

11-1.300

## **FIRE**

The Fire Plan Review staff participates in plan review & permitting for the built environment. For information about plan review & permitting refer to Section 1-1.400 and Section 1-2.100.

- A. The Plan Review department is located at One Civic Center, 7447 E. Indian School Road, Suite125, Scottsdale, AZ 85251.
- B. For Permit Services visit the One Stop Shop in Suite 100 of the same building; or refer to [www.ScottsdaleAZ.gov/bldgresources/counterresources](http://www.ScottsdaleAZ.gov/bldgresources/counterresources).
- C. For more information see Fire & Life Safety, see [www.ScottsdaleAZ.gov/departments](http://www.ScottsdaleAZ.gov/departments) or call Fire Plan Review at 480-312-7080.
- D. For specific information about Plan Review & Permit requirements:
  1. Plan Review & Permitting Section 1-1.400
  2. Construction Plan Submittals Section 1-1.403
  3. Improvement Plan Review Requirements Section 1-2.100
  4. Digital Plan Submittals Section 1-2.200
  5. Fire Protection Design Section 6-1.500 through Section 6-1.508
  6. Final Improvement Plans Preparation Section 6-1.600
  7. Fire Code [www.ScottsdaleFD.com](http://www.ScottsdaleFD.com)
  8. Forms, Checklists & Submittal Guides, select F for Fire. [www.ScottsdaleAZ.gov/bldgresources/forms](http://www.ScottsdaleAZ.gov/bldgresources/forms)
  9. Permit Services - One Stop Shop [www.ScottsdaleAZ.gov/bldgresources/counterresources](http://www.ScottsdaleAZ.gov/bldgresources/counterresources)

Fire & Life Safety also conducts Plan Review & Permitting for Special Events.

For more information refer to Fire & Life Safety at [www.ScottsdaleAZ.gov/departments](http://www.ScottsdaleAZ.gov/departments) or call 480-312-1855.

### **FIRE INSPECTION AND CERTIFICATE OF OCCUPANCY**

**11-1.301**

1. For guidelines on these topics refer to Section 1-1.500 and Section 1-1.600.
2. For Permit Services visit the One Stop Shop in Suite 100 of the same building; or refer to [www.ScottsdaleAZ.gov/bldgresources/counterresources](http://www.ScottsdaleAZ.gov/bldgresources/counterresources).
3. For more information refer to Fire & Life Safety, refer to [www.ScottsdaleAZ.gov/departments/](http://www.ScottsdaleAZ.gov/departments/) or call Fire Plan Review at 480-312-7080.

### **FIRE INSPECTION AND CERTIFICATE OF OCCUPANCY**

**11-1.400**

Technical information applicable to emergency access in commercial and residential development is referenced below. Considerations for commercial and residential site planning may include: appropriate access to structures including temporary construction access, fire lane position and widths, or fire apparatus turning radius.

Emergency access is required in accordance with the Fire Code, as amended, [www.ScottsdaleAZ.gov/codes/fireord](http://www.ScottsdaleAZ.gov/codes/fireord).

Fire Ordinance Requirements and a Fire Civil Submittal Checklist is located under Forms, Checklists & Submittal Guides at [www.ScottsdaleAZ.gov/bldgresources/forms](http://www.ScottsdaleAZ.gov/bldgresources/forms).

## FIRE

- A. General
  - 1. Knox Applications, call 480-312-7080 or 480-312-1855.
  - 2. Access During Construction Section 1-1.405
  - 3. Temporary Construction Fire Lane Section 1-1.405
  - 4. Construction Access Sign Section 1-1.405 and Figure 11.1-1
  - 5. Vertical Curbs, Emergency Vehicles Section 5-3.113
  - 6. Median Crossing for Emergency Vehicles Section 5-3.113
  - 7. Traffic Signal Emergency Vehicle Pre-emption Section 5-4.106
- B. Commercial Site Planning
  - 1. International Fire Code (IFC) Ordinance, COS Detail No.2365, [www.ScottsdaleAZ.gov/design/COSMAGSupp](http://www.ScottsdaleAZ.gov/design/COSMAGSupp).
  - 2. Fire Land Dimensions Figure 2.1-1
  - 3. Commercial On-Site Fire Access Turn-Arounds Figure 2.1-2
  - 4. Emergency Access Provisions Section 2-1.503
  - 5. Fire Lanes and Fire Lane Signage Section 2-1.802
- C. Residential Site Planning
  - 1. General Residential On-Site Fire Access Turn-Arounds Figure 2.1-2.
  - 2. Residential Gated Entrances Section 2-1.900 and Figure 2.1-4
  - 3. Residential Driveways greater than 300 feet Section 2-2.308
  - 4. Hillside Residential Development Section 2-2.308
  - 5. Hillside Residential Driveways Figure 2.2-4
  - 6. Operations Platform Section 2-2.308 and Figure 2.2-5
  - 7. Fire Turn-out for Extended Driveways Section 2-2.308 and Figure 2.2-6
  - 8. Dead End Streets, Cul-de-sacs Section 5-3.1100
  - 9. Neighborhood Traffic Management Section 5-9.000

## WATER SUPPLY

References below are specific to water supply requirements for fire operations and fire hydrant layouts in residential and commercial developments.

- 1. Fire Hydrant Flow Test Permit [www.ScottsdaleAZ.gov/bldgresources/forms](http://www.ScottsdaleAZ.gov/bldgresources/forms)
- 2. For Permit Services visit the One Stop Shop in Suite 100 of One Civic Center; or refer to [www.ScottsdaleAZ.gov/bldgresources/counterresources](http://www.ScottsdaleAZ.gov/bldgresources/counterresources).
- 3. Dead-End Lines Section 6-1.403
- 4. Thrust Restraint Section 6-1.411
- 5. Pipe Cover Section 6-1.413
- 6. Backflow Prevention & Cross Connection Control; General Section 6-1.417
- 7. Fire Hydrant locations, including layout, placement and number Section 6-1.502
- 8. Fire Lines Section 6-1.504
  - a. 1-1/2 – 2 inches fire line connection; COS Detail No. 2362-1\*
  - b. 3 inches and larger fire line connection; COS Detail No. 2362-2  
[www.ScottsdaleAZ.gov/design/COSMAGSupp](http://www.ScottsdaleAZ.gov/design/COSMAGSupp)

## FIRE PROTECTION

References below are specific to Fire Protection and Water Supply.

- 1. General, Ordinance Requirements, Design Policy Section 6-1.500

11-1.500

11-1.600

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2. Fire Flow Requirements Section 6-1.501
3. Hydrant Locations Section 6-1.502
4. Pavement Markers Section 6-1.503
5. Fire Sprinklers Section 6-1.505
6. Sprinkler System Design Section 6-1.506
  - a. Fire Sprinkler Riser Detail - Vertical Installation #1; COS Detail No. 2368\*
  - b. Fire Sprinkler Riser Detail - Vertical Installation #2; COS Detail No. 2369\*
7. Remote Fire Department Connection Section 6-1.507  
Remote Siamese Connection Detail, COS Detail No. 2367\*
8. Auxiliary Storage Tanks Section 6-1.508
9. Fire Department Permit Applications, such as tents and other (bonfires, LPG exchange, special events, fireworks displays, etc) [www.ScottsdaleFD.com](http://www.ScottsdaleFD.com)
10. Fire Alarms [www.ScottsdaleAZ.gov/codes/fireord](http://www.ScottsdaleAZ.gov/codes/fireord)
11. Fire Hydrant Flow Test Summary [www.ScottsdaleAZ.gov/bldgresources/forms](http://www.ScottsdaleAZ.gov/bldgresources/forms)

## **SIGNAGE**

References below are specific to the signage requirements for the Fire Department.

See MAG Standard Detail 2300 Series – Water Information

[www.ScottsdaleAZ.gov/design/COSMAGSupp](http://www.ScottsdaleAZ.gov/design/COSMAGSupp).

1. Pavement Markers For Fire Hydrants; COS Detail No. 2363\*
2. Fire and Emergency Access and Delineation; COS Detail No. 2364\*
3. Fire Lane Sign; COS Detail No. 2365\*
4. Construction Access Sign Section 1-1.405 and Figure 11.1-1

**11-1.700**

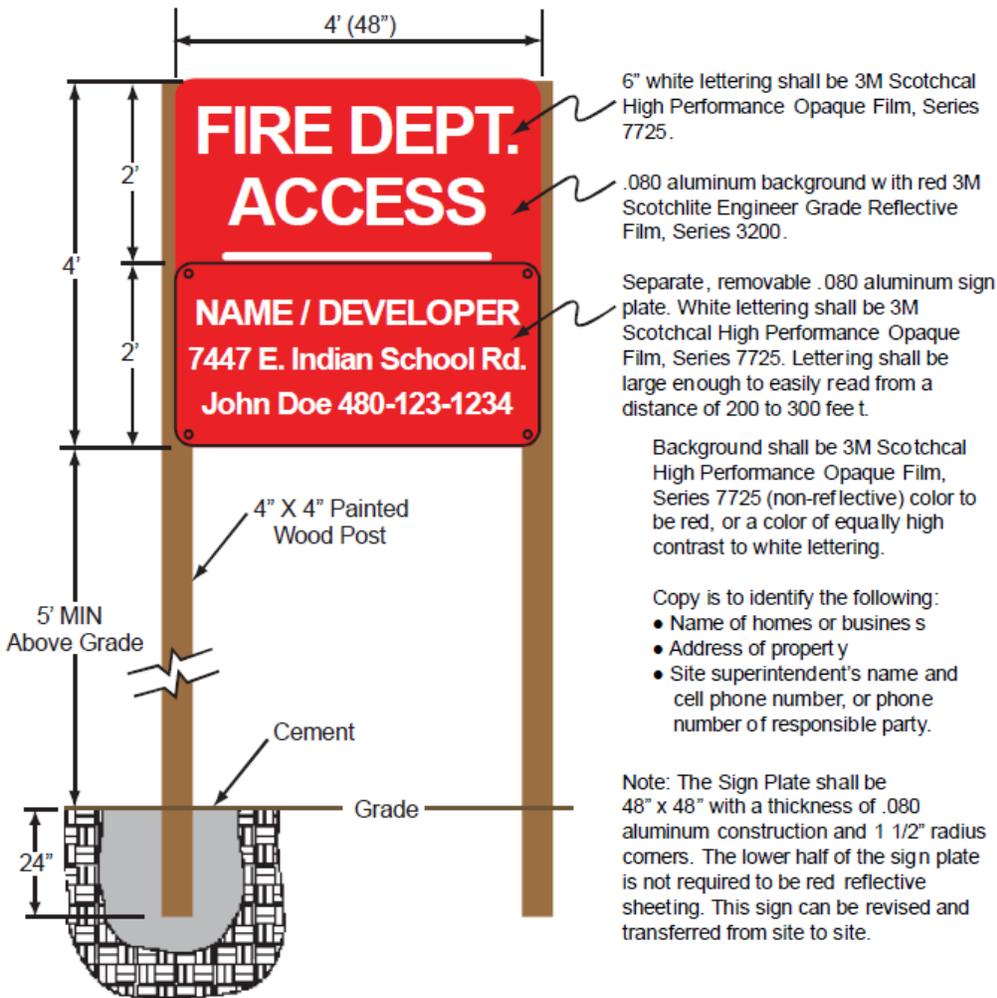


FIGURE 11.1-1 CONSTRUCTION ACCESS SIGN

**WILDLAND BOUNDARY**

For information about Firebreaks refer to Section 2-2.501 paragraph D.2. For Wildland Fire Prevention refer to [www.ScottsdaleAZ.gov/fire](http://www.ScottsdaleAZ.gov/fire).

**11-1.800**

**HIGH RISE CONSIDERATIONS**

For Fire Flow Requirements information refer to Section 6-1.501. For project specific information call Fire Plan Review at 480-312-7080.

**11-1.900**

Radio amplification testing for emergency services is required in basements, buildings exceeding 35' above grade, and other buildings where construction materials may hinder emergency radio signaling. Testing shall be conducted to verify if adequate radio signal strength is, or is not, available. Adequate signal strength shall be determined at or before

the time of completion of rough framing or rough electrical. City emergency services shall be contacted prior to that stage to assist the developer's contractor or specialist in testing the structures for signal strength. If it is determined that the signal strength as listed in Scottsdale amendment to NEC 810 is not adequate, the owner shall provide a system of a radio amplification to meet these radio frequency strength requirements. No certificate of occupancy will be issued until final approval of the testing and/or inspection of the system. Refer to City of Scottsdale, Planning & Development Services Department, Interpretations and Applications of the Building Codes & Regulations #98-5.

### **DOWNTOWN**

Renovation and/or reclassification of existing R-3 and IRC single family residential occupancies to Group B office business occupancies may be equipped with a light hazard commercial sprinkler system utilizing a four head flow calculation. The intent is to result in smaller fire line taps, supply lines, and riser sizing. See Fire Code, Interpretation and Applications.

Residential fire sprinkler retrofits in existing single family R-3 or IRC residences may be evaluated, at owners request, for the opportunity to maintain existing supplies and meter sizes.

For project specific information call Fire Plan Review at 480-312-7080 or refer to [www.ScottsdaleAZ.gov/codes/fireord](http://www.ScottsdaleAZ.gov/codes/fireord).

**11-1.1000**