



## Fire Department Planning Approvals

Under the Cathedral City Municipal Code, the Fire Department reviews nearly all construction projects in partnership with the Building and Planning Departments. All reviews are done in the interest of the occupants, the community, and emergency responders.

For some areas, the review must be completed and approved during the planning phase, as opposed to the permitting phase. The purpose of this information bulletin is to highlight issues critical to the fire department during the planning phase.

The goal of the Fire Department is to have the following issues resolved before planning approval:

- Fire Apparatus Access (CFC Section 503)
- Fire Flow (CFC Section 508 and Appendix B) – generally based on building size and type of construction
- Fire Hydrant Locations (CFC Section 508 Appendix C) – note 400 foot maximum distance

If the project does not meet these requirements, the applicant has the option to apply for a variance and propose alternate means of mitigations for fire code non-compliance. Any of these variances must be approved prior to planning approval.

For fire flow and hydrant locations, the building size & construction type is necessary to determine the requirements. Applications need to provide this information on the cover sheet.

In the initial fire planning review, the Fire Department addresses these 3 major requirements (access, fire flow & hydrants), and will also comment about laddering if the project appears to have major issues. Once these requirements have been addressed and approved, the Planning Department will have our approval for the project to proceed to the building and fire permitting submittal process.

## Fire Apparatus Access Roads

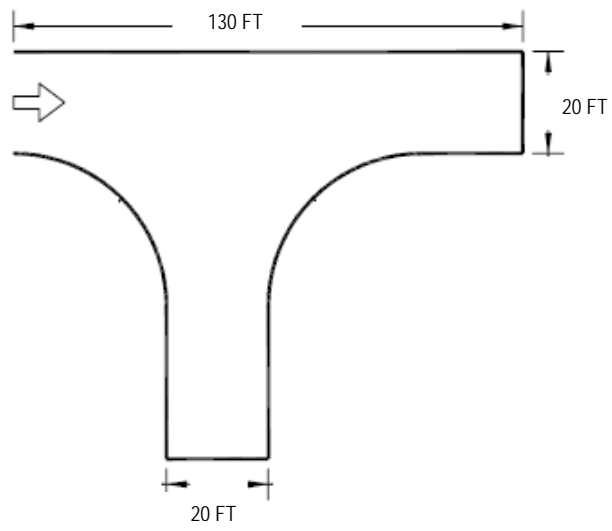
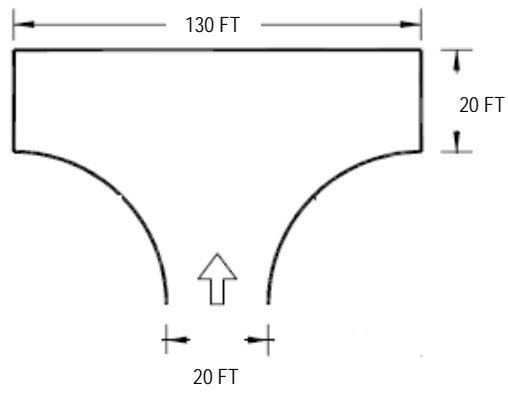
One of the most critical areas of construction design plan review for emergency responders is the fire apparatus access road requirements. Technical requirements are in the CFC Section 503 as amended.

Every portion of all building exterior walls shall be within 150 feet of an access road (2007 CFC Chapter 5 Section 503). The fire apparatus access roads shall:

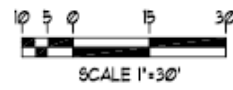
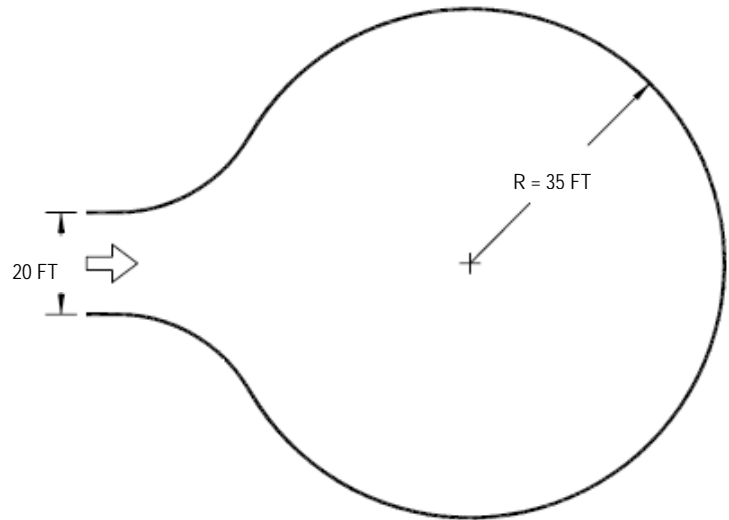
- be at least 20 feet wide (curb face to curb face with no parking);
- have a minimum of 13'- 6" vertical clearance;
- have provisions for turning around fire apparatus on access roads in excess of 150 feet in length that dead-end.
- have one of two approved turn around provisions; one is a cul-de-sac with an outside turning radius of 35 feet from centerline and 15 feet inside radius from centerline; or a hammerhead turnaround extending 65 feet from centerline in each direction; (see attached sketches for approved turn-arounds)
- not exceed a 12% grade;
- not exceed the maximum angle of approach and angle of departure based on fire department's apparatus for grade transitions; (to be determined by the Fire Chief)
- have a second point of access when a fire apparatus access road exceeds 1,000 feet and all developments with 25 or more dwelling units.
- Curbs are required to be painted red and marked as "**Fire Lane – No Parking**" under the following conditions: (show exact locations on plans)
  - **Designated fire lanes**: Private developments shall be not less than 20 feet wide (curb face to curb face) with no parking on either side.
  - **Reduced Roadway Width**: Areas with reduced roadway width (such as entry and exit gates, entry and exit approach roads, traffic calming areas) that are under 36 feet wide require red painted curb to maintain minimum 20 foot clear width.
- Access for firefighting equipment shall be provided to the immediate job site at the start of construction and maintained until all construction is complete. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet and an unobstructed vertical clearance of not less than 13'6". Fire Department access roads shall have an all weather driving surface at 90% compaction and support a minimum weight of 73,000 lbs.
- Plans shall require certification from a Registered Professional Engineer stating the roads are of all weather construction and capable of supporting fire apparatus weighing 73,000 lbs G.V.W.

If the project does not meet these requirements, the applicant has the option to apply for a variance, and propose alternate means of mitigation for non-compliance with the fire code. All variances must be approved prior to planning approval.

Hammerhead



Cul-de-sac



# Fire-Flow Requirements for Buildings

## SECTION B101 GENERAL

### **B101.1 Scope.**

The procedure for determining fire-flow requirements for buildings or portions of buildings hereafter constructed shall be in accordance with this appendix. This appendix does not apply to structures other than buildings.

## SECTION B102 DEFINITIONS

### **B102.1 Definitions.**

For the purpose of this appendix, certain terms are defined as follows:

#### **FIRE-FLOW.**

The flow rate of a water supply, measured at 20 pounds per square inch (psi) (138 kPa) residual pressure, that is available for fire fighting.

#### **FIRE-FLOW CALCULATION AREA.**

The floor area, in square feet (m<sup>2</sup>), used to determine the required fire flow.

## SECTION B103 MODIFICATIONS

### **B103.1 Decreases.**

The fire chief is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

### **B103.2 Increases.**

The fire chief is authorized to increase the fire-flow requirements where conditions indicate an unusual susceptibility to group fires or conflagrations. An increase shall not be more than twice that required for the building under consideration.

### **B103.3 Areas-without water supply systems.**

For information regarding water supplies for fire-fighting purposes in rural and suburban areas in which adequate and reliable water supply systems do not exist, the fire code official is authorized to utilize NFPA 1142 or the *International Wildland-Urban Interface Code*.

## SECTION B104 FIRE-FLOW CALCULATION AREA

### **B104.1 General.**

The fire-flow calculation area shall be the total floor area of all floor levels within the exterior walls, and under the horizontal projections of the roof of a building, except as modified in Section B104.3.

### **B104.2 Area separation.**

Portions of buildings which are separated by fire walls without openings, constructed in accordance with the *California Building Code*, are allowed to be considered as separate fire-flow calculation areas.

**TABLE B105.1  
MINIMUM REQUIRED FIRE-FLOW AND FLOW DURATION FOR BUILDINGS<sup>a</sup>**

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute) <sup>b</sup>	FLOW DURATION (hours)
Type IA and IB <sup>b</sup>	Type IIA and IIIA <sup>b</sup>	Type IV and V-A <sup>b</sup>	Type IIB and IIIB <sup>b</sup>	Type V-B <sup>b</sup>		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m<sup>2</sup>, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. The minimum required fire flow shall be allowed to be reduced by 25 percent for Group R.

b. Types of construction are based on the *California Building Code*.

c. Measured at 20 psi.

# Fire Protection Water Supplies

(California Fire Code Section 508)

## **508.1 Required water supply**

An approved water supply capable of supplying the required fire flow for fire protection shall be provided to premises upon which facilities, buildings or portions of buildings are hereafter constructed or moved into or within the jurisdiction.

## **508.2 Type of water supply**

A water supply shall consist of reservoirs, pressure tanks, elevated tanks, water mains or other fixed systems capable of providing the required fire flow.

### **508.2.1 Private fire service mains**

Private fire service mains and appurtenances shall be installed in accordance with NFPA 24.

### **508.2.2 Water tanks**

Water tanks for private fire protection shall be installed in accordance with NFPA 22.

## **508.3 Fire flow**

Fire flow requirements for buildings or portions of buildings and facilities shall be determined by an approved method *or Appendix B*.

## **508.4 Water supply test**

The fire code official shall be notified prior to the water supply test. Water supply tests shall be witnessed by the fire code official or approved documentation of the test shall be provided to the fire code official prior to final approval of the water supply system.

## **508.5 Fire hydrant systems**

Fire hydrant systems shall comply with Sections 508.5.1 through 508.5.6 *and Appendix C or by an approved method*.

**508.5.1 Where required.** Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 400 feet (122 m) from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided where required by the Chief.

### **Exceptions:**

1. For Group R-3 and Group U occupancies fully sprinkler throughout, the distance requirements may be modified by the Chief.

### **508.5.2 Inspection, testing and maintenance**

Fire hydrant systems shall be subject to periodic tests as required by the fire code official. Fire hydrant systems shall be maintained in an operative condition at all times and shall be repaired where defective. Additions, repairs, alterations and servicing shall comply with approved standards.

### **508.5.3 Private fire service mains and water tanks**

Private fire service mains and water tanks shall be periodically inspected, tested and maintained in accordance with *Title 19 California Code of Regulations Chapter 5*.

#### 508.5.4 Obstruction

Posts, fences, vehicles, growth, trash, storage and other materials or objects shall not be placed or kept near fire hydrants, fire department inlet connections or fire protection system control valves in a manner that would prevent such equipment or fire hydrants from being immediately discernible. The fire department shall not be deterred or hindered from gaining immediate access to fire protection equipment or fire hydrants.

#### 508.5.5 Clear space around hydrants

A 3-foot (914 mm) clear space shall be maintained around the circumference of fire hydrants except as otherwise required or approved.

#### 508.5.6 Physical protection

Where fire hydrants are subject to impact by a motor vehicle, guard posts or other approved means shall comply with Section 312.

**TABLE C105.1  
NUMBER AND DISTRIBUTION OF FIRE HYDRANTS**

FIRE-FLOW REQUIREMENT (gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS <sup>a, b, c</sup> (feet)	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT <sup>d</sup>
1,750 or less	1	500	250
2,000-2,250	2	450	225
2,500	3	450	225
3,000	3	400	225
3,500-4,000	4	350	210
4,500-5,000	5	300	180
5,500	6	300	180
6,000	6	250	150
6,500-7,000	7	250	150
7,500 or more	8 or more <sup>e</sup>	200	120

For SI: 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m.

- Reduce by 100 feet for dead-end streets or roads.
- Where streets are provided with median dividers which can be crossed by fire fighters pulling hose lines, or where arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis up to a fire-flow requirement of 7,000 gallons per minute and 400 feet for higher fire-flow requirements.
- Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet to provide for transportation hazards.
- Reduce by 50 feet for dead-end streets or roads.
- One hydrant for each 1,000 gallons per minute or fraction thereof.