

## General Requirements for Commercial Buildings

The purpose of this document is to provide information about general Fire Code requirements for new commercial buildings constructed within the unincorporated areas of Merced County. It is intended to be general information only and may not address every situation that could arise. Contact the Merced County Fire Prevention Office at 385-7347 if you have questions or need additional information.

### Plan Check & Fire Inspection Fees

This fee is for providing required services directly related to the project. Many projects require plan checks and inspections by the Fire Prevention Office. Fees for these services are based on the costs for providing the service. Fire Marshal plan check fees are \$85.00 per hour. The fee for inspecting new projects is based on the size and occupancy classification of the building. These fees are also collected at the time that the building permit is issued. Please see our breakdown of cost [Fee Schedule](#).

Separate plan submittals are required for private water mains, automatic fire sprinkler systems, fire alarm systems, and other special fire suppression systems. Plan check fees for these systems are \$85.00 per hour. Inspection fees are based on the type and size of the system or project. These systems require separate plan submittals directly to the Merced County Fire Department 735 Martin Luther King Jr. Way, Merced or Buildings and Safety division at 2222 M Street, Merced

### Access Requirements

#### *Access Roadways*

All newly constructed buildings are required to have fire access roadways within 150' of all portions of the building. However, this distance may be increased if the building is equipped with automatic fire sprinklers, or some other approved means of fire protection or no more than two R-3 or U occupancies are served. Access roadways must meet the following criteria:

For more information see California [Fire Code Chapter 5](#) and [appendix D](#)

- Must have an unobstructed of at least 20'.
- Must have an unobstructed height of at least 13' 6".
- Must be capable of supporting vehicles weighing at least 75,000 pounds in all weather.
- May not exceed 10% grade unless approved by the Fire Marshal
- Dead end roadways longer that 750' are not permitted unless approved by the Fire Marshal.
- Dead end roadways longer than 150' must have approved turnarounds. The minimum turning radius for a turnaround is 50' outside and 30' inside measured from the center of the roadway.
- Must include KNOX key boxes or other approved means for entering gated areas. KNOX key box applications must be obtained from the Merced County Fire Prevention Office.

### Building Identification

Address and building numbers shall be visible from the street or road fronting the building and be at least 4" high with a stroke of .5 inch. See California Fire Code [chapter 5](#) for more information.

## Fire Flow or On-Site Water Requirements

*Fire Flow Requirements (areas with municipal water systems)*

Use the following table to calculate minimum required fire flow and flow duration for structures located in areas served by municipal water systems.

***Minimum Required Fire Flow and Flow Duration***

Type IA and IB	Type IIA and IIIA	Type IV and V-A	Type IIB and IIIB	Type V-B	Fire Flow (gpm)	Duration (Hours)
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	2
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	2
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	2
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	2
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	2
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	3
97,101-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	3

Refer to CFC Appendix B for larger structures.

This flow may be reduced up to 75% if building has an approved automatic fire sprinkler system, however the required flow shall not be less than 1500 gpm.

Fire Hydrants shall meet the following requirements:

***Number and Distribution of Fire Hydrants***

Fire Flow Requirement (gpm)	Minimum number of Hydrants	Average Spacing Between Hydrants	Max Distance From Street to Hydrant
1,750 or less	1	500	250
2000-2,250	2	450	225
2,500	3	450	225
3,000	3	400	225
3,500-4,000	4	350	210

Refer to CFC [Appendix C](#) for buildings with larger fire flows.

## **On-Site Water Requirements (areas without municipal water systems)**

An approved on-site water supply for fire suppression is required for many new projects located in rural areas where municipal water systems do not exist. This water supply must be accessible from an approved access roadway that is at least 20' wide with a

vertical clearance of 13'6". On-site water supplies may include tanks, cisterns, swimming pools, and ponds, but must be accessible and available year around. A dry fire hydrant or other approved access must be located not less than 50' or more than 150' or as approved from the building being protected. Structures requiring less than 5,000 gallons, are exempt from providing on-site water storage. Required on-site water supplies for other structures equipped with automatic fire sprinkler systems may be reduced by up to 75%.

Because of the expense that may be associated with providing an approved water supply it is strongly recommended that the proposed water supply be approved by the Merced County Fire Department prior to submitting plans.

National Fire Protection Association (NFPA) Standard #1142 is used to calculate the amount of on-site water supply that is required for structures where no municipal water supply is available. The following formula is used:

$$\text{Gallons of on-site water} = \frac{\text{Volume of structure (in cubic feet)}}{\text{Occupancy Hazard Classification}} \times \text{Construction Classification}$$

Volume of Structure = Total volume of structure in cubic feet

Occupancy Hazard Classification

- 3 for severe hazard uses such as hay storage, wood storage and manufacturing
- 4 for high hazard uses such as feed stores, repair garages, warehouses and stores
- 5 for moderate hazard uses such as farm storage, restaurants, and unoccupied buildings
- 6 for low hazard uses such as churches, offices, service stations, stables
- 7 for light hazard uses such as homes, schools, offices

Construction Classification

- Type I (masonry non combustible) = .50
- Type II (metal or non combustible) = .75
- Type V (wood and wood frame) = 1.5

The required water supply may be increased by up to 50% for structures within 50' of a property line or other buildings.

### **Automatic Fire Sprinklers**

Automatic fire sprinklers are required when:

- Required by the Current California Fire Code