



Clark County Fire Department

FIRE PREVENTION BUREAU

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PERMIT GUIDE

CUSTOM HOME FIRE FLOW AND SPRINKLER REQUIREMENTS

This guide is to assist in the determination of automatic fire sprinkler requirements in new, single-family residences (Group R-3 residential occupancies) being built according to the *International Residential Code (IRC)* and the availability of code-compliant water supply.

APPLICABLE CODES:

The following codes and standard(s) apply:

- International Residential Code (IRC), 2016 edition
- Clark County Fire Code Amendments (CCFC), 2018 edition

Link to CCFC: See the amendments to the IFC in the CCFC using the link below:

<https://cms8.revize.com/revize/clarknv/Building%20&%20Fire%20Prevention/Codes/ClarkCountyFireCodeAmendments2018.pdf?t=1598331770575&t=1598331770575>

Automatic Sprinkler Requirement Based on Living Space

A residential sprinkler system is required when living space of the building exceeds 5,000 square feet. This requirement is from Section 903.2.2. of the CCFC as follows:

903.2 Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided throughout all buildings and structures, regardless of occupancy type and including buildings and structures in accordance with the *International Residential Code*, which meet one of the following requirements, and additionally in locations described in sections 903.2.1 through 903.2.12.

For buildings constructed in accordance with the *International Residential Code*, approved automatic sprinkler systems are required where the living space exceeds 5,000 square feet.

Per the IRC, living space within a dwelling is space used for living, sleeping, eating, cooking, bathing, washing and sanitation purposes.

The sprinkler system is allowed to be installed per the *Standard for the Installation of Sprinkler Systems in One- and Two- Family Dwellings and Manufactured Homes*, NFPA 13D. This allows use of the domestic (plumbing) water supply.

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Fire Flow

The residence is required to have fire flow from a hydrant(s) based on the total area of the occupancy within the exterior walls and under horizontal projections of the roof of a building. This includes the non-conditioned space, i.e. garages, patios, covered porches. The fire flow is determined by using Table B105(2) of the 2018 edition of the *International Fire Code*.

Most single-family homes will be constructed of wood framed construction known as Type V-B. The fire flow is based on the total area and type of construction.

The following are fire flows for typically sized homes:

Type V-B Area (sq. ft.)	FIRE FLOW gallons per minute @ 20 psi
0 - 3,600	1,500
3,601 - 4,800	1,750
4,801 - 6,200	2,000
6,201 - 7,700	2,250
7,701 - 9,400	2,500
9,401 - 11,300	2,750

Each fire hydrant is credited as having 1,500 gpm at 20 psi for the purpose of code compliance; however, the actual fire flow needs to be verified in the case of custom homes. The fire flow availability needs to be verified by the water purveyor.

The Las Vegas Valley Water District (LVVWD) is the purveyor for most of Clark County. The available fire flow can be verified by LVVWD by using the LVVWD Fire Flow Request app that can be found on their website by searching: "Las Vegas Valley Water District Fire Flow" or using this link:

<https://www.lvvwd.com/apps/fireflow-request/index.cfml>

Public water supplies, other than those on the LVVWD system, i.e. Moapa Valley Water District or City of North Las Vegas, are to be verified by contacting them.

Contact Clark County Fire Prevention if your planned construction is larger or of a different type of construction.

Hydrant Locations

At least one hydrant is to be located within 300 feet from the furthest property line. When more than one hydrant is needed to meet the fire flow requirements, they are to be located within 750 feet of the structure. This is required per sections C102.4 and C105.1 of the Clark County Fire Code as follows:

C102.4 Distance from hydrant to R-3 occupancy and single-family dwelling built under the IRC. The maximum distance from a one or two-family dwelling to a fire hydrant shall not exceed 300 feet, as measured from an approved point on a street or road frontage to a fire hydrant. An

approved point is defined as the property line furthest from the hydrant, at a right angle to the street.

C105.1 Minimum number of hydrants. The minimum number of fire hydrants required to meet the fire flow shall be based on a maximum flow of 1,000 gallons per minute per hydrant. All hydrants utilized in providing fire flow shall be within 750 feet of the structure being protected as measured along the street or approved fire apparatus access road.

Exception: In unincorporated Clark County and the City of Las Vegas, the maximum flow per hydrant shall be 1,500 gallons per minute.

Use 1,500 gpm per hydrant in Clark County.

Rural Areas and Well Water Supplies

If a public water supply is available, it must be used for fire protection service. Fire flow is not available in some cases of a rural areas and those served by a well. A rural area is defined in the CCFC as follows:

RURAL AREA...For detached single-family dwellings, an area that is more than 1,000 feet from public water systems capable of providing fire flow.

If a home in a rural area is less than 2,000 square feet in total area and greater than 10 feet from a real or assumed property line, the fire chief is authorized to reduce the fire flow requirement. See Section B103.1.1.

If a home in a rural area is greater than 2,000 square feet in total area and fire sprinklers are not otherwise required, the installation of fire sprinklers in accordance with the CCFC are allowed to provide protection in lieu of fire flow when the building is greater than 10 feet from a real or assumed property line. See Section B103.1.2.

Fire Department Access

A fire apparatus access road complying with the CCFC, extending within 150 feet of all portions of the exterior walls of the first floor is required. The distance can be increased to 250 feet when the building is sprinklered. Homes that are not within these distances from the fire department access road are to be reviewed by Clark County Fire Prevention. See Section 503.1.1.