



Fire Flow Requirements with Mixed Construction

Effective Date: January 1, 2020

Fire Flow plan review for mixed construction requires the following information and calculations. SJFD follows the direction given by the State Fire Marshal in the Code Interpretation #11-015. 2019 CFC section 507.5.1 - Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than four hundred 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 Fire Code Official. *Exception: For Group R-3 and Group U occupancies, equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, the distance requirement shall be not more than 600 feet (183 m).*

Info Required:

NAME OF PERSON/FIRM NAME & PHONE #:

NAME OF PROJECT:

PLANNING NO.:

DESCRIPTION:

LOCATION:

ADDRESS:

Largest building:

Construction Type:

Occupancy Group:

Number of stories:

Example with Info Provided:

NAME OF PERSON/FIRM NAME & PHONE #: Melissa Designer / Melissa's Firm (###)###-###

NAME OF PROJECT: Fantastic Views Homes

PLANNING NO.: PD yr-###

DESCRIPTION: One podium building for 438 apartment units.

LOCATION: SW corner of Fantastic Views Parkway and Whata Way

ADDRESS: 1001 Fantastic Views Parkway

SQUARE FOOTAGE BY BUILDING AND IN COMBINATION: See Gen-2 sheet (only one building)

CONSTRUCTION TYPE: type VA at wood frame and type IA at concrete

OCCUPANCY GROUP: R-2 at wood frame and S-2 at garage plus we have various other smaller occupancy groups. See GEN-2 sheet (you should provide a denoted reference drawing)

NUMBER OF STORIES: four stories over podium with partial lofts

Calculations per SFM interpretation “Fire Flow Requirements with Mixed Construction” 11-015 and SJ Muni Code 17.12.1092:

Total building area (from Drawing Gen-2 not attached in this example) 383,815 square feet (Type IA – Garage - OH) + 443,333 square feet (Type VA – Residential and common use – LH) = 827,148 square feet

Percentage of building IA = $383,815/827,148 \times 100 = 46.4$; percent **VA** = $443,333/827,148 \times 100 = 53.6$ percent

Fire flow per construction type is Type **IA** at 827,148 square feet = **6,000** gpm (25% reduction allowed By SJFD for OH) = **4,500** gpm; Type **VA** at 827,148 square feet = **8,000** gpm (50% reduction allowed By SJFD for LH) = **4,000** gpm

Therefore $0.464 (4,500 \text{ gpm}) + 0.536 (4,000 \text{ gpm}) = 2,088 + 2,144 = 4,232$ gpm = Approximately **4,250** gpm (Round up) is the required Fire Flow for this project.

However:

The Fire Flow Duration, Hydrant Locations and Distribution are to be based on the full Fire Flow required per CFC Tables IIIB and IIIC.

Therefore $0.464 (6,000 \text{ gpm}) + 0.536 (8,000 \text{ gpm}) = 7,072$ = Approximately **7,250** gpm (Round up)

Based upon 7,250 gpm Fire Flow, there needs to be a minimum of 8 hydrants with an average spacing of 200 ft (from Appendix C of the Fire Code) for the duration of 4 hours. The frontage distance based on the 7,250 gpm flow requirement is 120 feet. Although only 4,250 gpm is being required, each (any) hydrant shall be capable of delivering at least 1,000 gpm at 20 psi on its own.

See SJFD Fire Flow and Hydrant Chart for reference.