




City of Phoenix

FIRE DEPARTMENT
FIRE PREVENTION DIVISION

Explanatory Policy – FIRE FLOW

SUBJECT: Fire Flow & Flow Test Requirements	EFFECTIVE DATE: April 30, 2021
REFERENCES: 2018 IFC with Phoenix Amendments (PFC) Section(s) 507, 903, 3206 & Appendix B	REVIEW DATE: July 2024
APPROVED:	
 John Mertens, Fire Marshal	

Scope:

The scope of this explanatory policy is to specify when fire flow verification is required, when a flow test should be provided, and clarify how to apply fire flow and flow tests. *Meeting minimum flow requirements noted in IFC Appendix B apply to new commercial buildings, new construction of subdivisions and existing buildings either adding 10,000 sq ft or more, residential buildings in accordance with the Tarver Ordinance and buildings undergoing a change of occupancy to a higher hazard in accordance with IFC Table 903.1.5. Minimum Flow requirements are not intended to apply retroactively to existing single family homes on hillside lots or undergoing renovation.*

Code:

- **PFC Section 507 Fire Protection Water Supplies.**
Fire Flow required by this code shall be provided in accordance with Section 507.3, where exterior storage includes combustibles or hazardous materials, the required fire flow shall be determined through an engineering analysis; if the analysis determines the exterior storage fire flow demand is greater than the fire flow required for onsite structures/buildings, the greater fire flow demand shall be use.
- **PFC 507.3.2** The minimum requirements for water supply within the City of Phoenix shall be maintained in accordance with Appendix B, where the flow rate, pressure or duration of the available water supply does not meet the minimum requirements the owner shall be responsible for installing all the infrastructure required to meet the fire flow, pressure and duration requirements.



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Water supply tests conducted within City of Phoenix fall into two categories:

- **Private** - water supply tests are conducted on private property from privately owned hydrants, tests are conducted by a third-party contractor and witnessed by a City of Phoenix Fire Protection Engineer, reports are verified by the Fire Protection Engineer prior to issuing the permit back to the customer. *The private contractor is responsible for supplying all required equipment and gauges.*
- **Public** - water supply tests are conducted on public or private property from publicly owned hydrants, tests are conducted by the City Water Department and permits & reports are produced as a deliverable to the customer by the City Water Department.

Water Supply Testing Fire Flow:

Fire flow from Chapter 2 & Appendix B of the PFC is the flow rate of a water supply, measured at 20 pounds per square inch (psi) residual pressure, that is available for firefighting. While both a fire flow test and flow test evaluate available water supply, application with respect to the plan review process is different. *In new construction and sprinkler design calculations adjustment to the static pressure when the static is over 80 psi shall be made in accordance with IFC 903.3.5.5.*

Water Supply Testing Flow Test:

It is important to note that the flow test is different from the fire flow test. A flow test is used to design automatic sprinkler systems and standpipe systems based on a system demand found in NFPA 13 or 14. Fire flow is used to determine the amount of water required by Appendix B of PFC for manual firefighting in conjunction with fire hydrants.

Where Required:

- Fire Flow is required for all new buildings and for existing buildings that have been at minimum demolished back to the concrete pad. Section 511 of the PFC for Hillside Development also includes the requirement for verifying a reliable water supply is available for new buildings that meet the criteria of a Hillside Development.
- A flow test shall be provided within 1 year of fire plans submittal to ensure the recorded accuracy of the available water supply is maintained.
- For high pile storage and from CH 32 of PFC a City of Phoenix Water Supply Flow & Pressure Test Report shall be provided and conducted within 90 days of the plan submittal.



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- Modeling of flow to private on site hydrants may use 1,000 gpm per hydrant and off site public hydrants to show adequate fire flow in accordance with IFC Appendix C.

Permits:

Permit requirements for fire hydrant are as follows:

- The installation of a fire hydrant, as new or maintenance, will require a construction permit.
- The ownership of a hydrant requires an operational permit.

Testing:

The testing requirement for fire hydrants are as follows.

1. Private fire hydrants of all types: Inspection annually and after each operation; flow test and maintenance annually.
2. Fire service main piping: Inspection of exposed, annually; flow test every 5 years.
3. Fire service main piping strainers: Inspection and maintenance after each use.