Backflow Preventer Requirements For Fire Protection Systems

Technical Guideline

Issue Date:	August 2008; Revised August 2013
References:	2012 Uniform Plumbing Code (UPC), Section 602 and 603, 2012 International Plumbing Code (IPC), Section 608 City Code Section 37-144 (b) (37), AZ Administrative Code R18-4-215, University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC-FCCCHR) Manual of Cross Connection Control Tenth Edition
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Approved:	Technical Review Team

BACKFLOW PREVENTION ASSEMBLIES FOR FIRE LINES AND FIRE SPRINKLER SYSTEMS

Backflow prevention assemblies are required on potable water lines serving fire sprinkler systems, fire service standpipes, and fire hydrants.

2012 Uniform Plumbing Code Section 603.5.15 requires that:

603.5.15 Protection from Fire Systems *.Except as provided under Section 603.5.15.1 and 603.5.15.2, potable water supplies to fire protection systems that are normally under pressure, including but not limited to standpipes and automatic sprinkler systems, except in one- or two- family or townhouse residential sprinkler systems, piped in materials approved for potable water distribution systems shall be protected from backpressure and backsiphonage by one of the following testable devices:*

1. *Double check valve backflow prevention assembly (DC)*
2. *Double check detector fire protection backflow prevention assembly*
3. *Reduced pressure principle backflow prevention assembly (RP)*
4. *Reduced pressure detector fire protection backflow prevention assembly*

Potable water supplies to fire protection systems that are not normally under pressure shall be protected from backflow and shall be in accordance with the requirements of the appropriate standards referenced in Table 1401.1.

603.5.15.1 Fire Department Connection. *Where fire protection systems supplied from a potable water system include a fire department (siamese) connection that is located less than 1700 feet from a nonpotable water source that is capable of being used by the fire department as a secondary water supply, the potable water supply shall be protected by one of the following:*

1. *Reduced pressure principle backflow prevention assembly (RP)*
2. *Reduced pressure detector fire protection backflow prevention assembly*

Nonpotable water sources include fire department vehicles carrying water of questionable quality or water that is treated with antifreeze, corrosion inhibitors, or extinguishing agents.

NOTE: The above code section is not applicable per attached letter from Phoenix Fire Department.

603.5.15.2 Chemicals. *Where antifreeze, corrosion inhibitors, or other chemicals are added to a fire protection system supplied from a potable water supply, the potable water system shall be protected by one of the following:*

1. *Reduced pressure principle backflow prevention assembly (RP)*
2. *Reduced pressure detector fire protection backflow prevention assembly*

For more information or for a copy of this publication in an alternate format, contact Planning & Development at (602) 262-7811 voice / (602) 534-5500 TTY.

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2012 International Plumbing Code Section 608.16.4 requires that:

608.16.4 Connections to automatic fire sprinkler systems and standpipe systems. The potable water supply to automatic fire sprinkler and standpipe systems shall be protected against backflow by a double check backflow prevention assembly, a double check fire protection backflow prevention assembly or a reduced pressure principle fire protection backflow prevention assembly.

FIRE HYDRANT LINES
A backflow prevention assembly is not required on a public fire hydrant line provided the water line is installed in compliance with city water main American Water Works Association (AWWA) standards. Potable water lines serving on-site private fire hydrants require installation of a Double Check (DC) or Reduced Pressure (RP) assembly under 2012 UPC Section 603.5.15 and 2012 IPC Section 608.16.4.

LOOPED FIRE LINES
A (DC) or (RP) backflow prevention assembly is required on both ends of a private water main that is connected to the public water service at two or more locations (see City Code Chapter 37, Section 37-144 (b) 27 Multiple Services, Water Services Department Standard Detail W-317, 2012 Uniform Plumbing Code Section 603.4.10 and 2012 International Plumbing Code Section 608.7.2). This requirement will apply even if the private water main is installed only to serve a fire sprinkler, standpipe or hydrant system.

LOCATION OF BACKFLOW PREVENTION ASSEMBLIES FOR FIRE PROTECTION SYSTEMS
Backflow prevention assemblies shall be located "as close as practicable" to the point of water service delivery (typically the water meter).

Section 37-1 "Point of service delivery" means the terminal end of a service connection from the public water system.

If a meter is installed at the end of the service connection, then the point of service delivery shall mean the downstream end (i.e., customer's side) of the meter. If an unmetered connection exists, then the point of service delivery shall mean at the point of demarcation between the public right-of-way or easements and private property.

The term service connection shall mean the terminal end of a service connection from the public potable water system, (i.e., where the water purveyor may lose jurisdiction and sanitary control of the water at its point of delivery to the consumer's water system). If a water meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the water meter. (USC-FCCCHR Manual of Cross-Connection Control Tenth Edition, Section 1.62 and Chapter 4)

Section 37-144 (f) "Close as practicable" is the point nearest the service delivery where the assembly can be installed. Where the assembly installation location may interfere with obstacles such as driveways and sidewalks, then close as practicable is the nearest point after the obstacle, but in no event beyond the first tap.

Assemblies must NOT be located in traffic visibility triangles or where utility devices are prohibited by the Zoning Ordinance.

Locating an assembly behind the front yard zoning setback line, just around a building corner, or otherwise in coordination with a building design element is typically acceptable without special justification provided the reason for the chosen location is readily apparent on the plan.

EXISTING FIRE PROTECTION SYSTEM RETROFIT AND REMODEL
Retrofitted or remodeled fire protection systems shall have an approved backflow prevention assembly installed as close as practicable to the point of water service delivery when the hydraulic calculations of the sprinkler system demand that a new and/or larger service connection to the public water supply system is required.

FIRE LINE BACKFLOW PREVENTER CERTIFICATE OF APPROVAL REQUIRED
A certificate of approval from the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC-FCCCHR) shall be provided for all backflow preventers on fire lines prior to fire line permit issuance. (Arizona Administrative Code R18-4-215)

To: Document Control Coordinator

Pdf document has a 3rd page, which is a memo from the Fire Department. If this document is updated, request info from Building Official on applicability or need to revise memo from Fire Department.

Filename is TRT Approved document folder is: Backflow Preventer Requirements, Fire Protection Memo