

December 19, 2007

TO: All Concerned

**FROM: Jay Mundy, CIPE, CPD
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SUBJECT: Fire System Backflow Protection

We have addressed this same issue ad nauseam. Torturing the words in an effort to make them say something other than what they do say is pointless and a waste of everyone's time. The following points need to be accepted as fact:

- **The Uniform Plumbing Code language is most restrictive of the various Codes cited and is not the least ambiguous in its intent. Class 1 and 2 systems are not exempted from the required backflow protection.**
- **Section 602.0 and its sub-sections require protection against both pollution and contamination. Pollution and contamination are clearly defined in the definitions Sections.**
- **The concern I've heard expressed time and again in opposition to use of backflow prevention regards loss of water pressure when a backflow preventer is installed in the fire-service piping. The maximum pressure loss through these devices is minimal, especially when compared with the broad range of variations in City water pressure from one zone another, and from one period of time to another. Steve Schebler with the Water Services Department advised me that WSD can assure no more than 35# psi of water pressure at any given location within the water main network. That being the case, fire protection systems should *all* be installed with boost pumps and regulators to guarantee the 60-80 pounds of pressure used by designers of a majority of these systems. No one uses 35# psi. for their system design pressure.**
- **There are backflow preventers listed specifically for fire-service installations. Standards for these special use devices were developed by Underwriter's Laboratories [U.L.] and Factory Mutual [F.M.] and will accommodate double the standard flow velocity through such devices (30 fps), and double the standard back pressure against the backflow gates (300 psi) to compensate for the potential pressure boost whenever a fire-pumper connects to the onsite fire system.**

- **The mission of the backflow division is to protect the public water system from potential *pollution* and *contamination* that would result from unprotected interconnection of the public water system with water that no longer meets established standards. Double check valve assemblies and reduced pressure principle backflow preventers are the mechanical devices deemed appropriate for this purpose. The industry recognized a need for devices dedicated specifically to the unique characteristics of fire protection systems, and devised special standards and special devices in an attempt to accommodate those needs.**

In summary, perpetual dialog is not going to change the written word that appears in the Plumbing Code. Nor will it alter the need to isolate fire systems from their potable water source. Furthermore, protection of the potable water system takes precedence over a perceived problem created by installing a backflow protection device. Fire system boost pumps were designed to address the uncertainties of potable water system pressures. The pressure loss issue due to backflow prevention is moot because there is no such thing as constant or predictable water pressure in the public water system over the lifespan of any commercial building. Therefore, fire protection systems are being sized based upon available pressure assumptions that are not supportable. Continued debate on this subject is pointless because the realities of water pressure fluctuation in the public system (fire protection water source) are a far greater area of concern than a relatively minor (but predictable) loss of pressure through a backflow device.

Perhaps the focus should shift to the genuine need for boost pumps and pressure regulators on every fire system if minor pressure variations are as critical as we've been led to believe. There is no other way to assure continuous availability of the 60-80# psi selected by the fire system designer.