

## Flow Through Systems for Residential Sprinklers

The purpose of this brochure is to assist builders and contractors with City requirements for installation of residential sprinkler systems.

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*"This information is provided for convenience only and is not in substitution of applicable City Bylaws or Provincial or Federal Codes or laws. You must satisfy yourself that any existing or proposed construction or other works complies with such Bylaws, Codes or other laws."*

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### Flow through systems

The City of Burnaby now allows and recommends a flow through system instead of the conventional standard system that requires a double check valve assembly in single and two family dwellings.

Flow through is achieved by taking a connection from the most remote sprinkler head in the system and extending the piping to serve a flush tank water closet. Potable water is allowed to flow through the main sprinkler distribution piping each time this fixture is used. With fresh water flowing through the system, the degree of back flow hazard is reduced, thereby allowing the use of a simpler, less expensive backflow device in place of the double check valve assembly.

There are no Dead-leg branches allowed on these sprinkler heads.

The flow-through system eliminates the following:

- annual testing of double check valve assembly;
- the need for extra sprinkler shut off valves other than the main shut off valve for the dwelling and, thus, reduces the possibility of unintentional shut off of the sprinkler system; and
- incremental pressure build up created by water hammer or occasional City water supply surges.

The flow through system is provided with a vane type water flow indicator alarm which will activate when the water flow rate is more than 4 gpm, indicating that a sprinkler head is activated.

# Installation of flow through systems

The following are requirements for flow through system installation:

1. No shut off valve shall be installed for the sprinkler system or double check valve assembly. The sprinkler system is only to be isolated by the main shut off at the point of entry to the building. The potable water system shall be controlled by a separate shut off located immediately downstream of its take off from the building service (see diagram #1).
2. No plumbing fixture other than a flush tank water closet shall be used for the flow through system. The service to this fixture must be taken from the most remote head in the system.
3. Where the line pressure in the sprinkler system is greater than 85 psi, a pressure reducing valve is required on the supply connection to the water closet. This valve must be installed immediately downstream of the water closet shut off and left exposed, for ease of maintenance.
4. Sprinkler system hydraulic design must allow for an additional 5 gpm for domestic flow to the water closet.
5. Sprinkler system piping must be suitable for potable water (eg. no black iron or type M copper), and conform to the requirements of the latest addition of the B.C. Plumbing Code and also be certified by an accredited testing agency (such as Warnock Hersey).
6. A vane type water flow alarm indicator, with adjustable time delay mechanism (such as Notifier WFD, Potter VSR-F) must be installed downstream of the dual check valve. The water flow alarm must be regulated to avoid an alarm when the water closet is flushed, but must activate when any sprinkler head is discharged.
7. To ensure that the flow switch is functioning correctly, a flow test is necessary in addition to the verification flow test. Contact Burnaby's Fire Prevention Office at 604-294-7195 for test procedures.
8. When making application for the sprinkler permit, 3 sets of drawings with hydraulic calculations are required.

## Further information

For further information on flow through systems for residential sprinklers, contact Cross Connection Control Inspector, Building Department, at 604-294-7130.

### Low-Hazard Fire System

This category consists of all fire systems not included under "High Hazard Fire Systems". The recommended backflow prevention assembly is a double check valve assembly or double check detector assembly. The risk assessment is partly based on the experience that chemicals (particularly antifreeze) have been found added without a chemical feed connection to sprinkler systems, even "dry" system, during maintenance.

## Single Family Residential - Flow Through Fire Protection Systems

This category consists of flow through systems using approved potable water pipe and materials.

No backflow prevention assembly is required.

All other categories of single family residential system shall be treated the same as noted above.

### RESIDENTIAL FIRE SPRINKLER SYSTEM FLOW THROUGH DESIGN

