THE TOWN OF ANTIGONISH

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Thermal Expansion Awareness

Thermal Expansion should be referenced when installing backflow prevention devices to ensure your water system will operate efficiently.

The term Thermal expansion can be translated to when water is heated, density decreases and volume increases. This means that the increase in water volume must go somewhere. Water will begin to backflow into the public drinking water system if the extra volume created by expansion overcomes the incoming supply pressure.

One solution to this issue is to create a “closed system” during periods of no-flow in the system through BFP devices, pressure reducing valves and other one-way valves. This solves the problem of backflow, but creates other issues.

Thermal expansion in a closed plumbing system can cause maintenance problems and serious health issues with examples of this being:

1. The build-up of unusually high pressure in a system causing pressure surges and/or the chronic or continuous dripping of a temperature and pressure (T&P) relief valve.

2. Dripping faucets and leaking toilet tank ball cock fill valves.

3. Internal parts, such as internal flues, fittings or water connections, may fail when dangerous pressures are built up in a water heater. If a flue way collapses, it can lead to the potential release of toxic gases, such as carbon monoxide into living spaces. The hot water heating tank may also rupture or become distorted through thermal expansion and this may void the manufacturer’s warranty.

The National Plumbing Code 1995 (Section 6.1.11) states, “When a Backflow Prevention Device, Pressure Reducing Valve, or a Check Valve is required, protection against thermal expansion may be required.”

In order to accommodate for the increase in pressure which is caused by the thermal expansion within a closed water distribution system, it is important that one of these be installed:

1. A suitable sized diaphragm expansion tank which was designed for use within a potable water system.

2. An auxiliary thermal expansion relief valve (T.E.R. valve) conforming to CAN/CSA- B125, “Plumbing Fittings,” it must be set at a pressure of 550 kPa or less and it should be designed for repeated use.

3. The authority, having jurisdiction, may recommend other means.

It is important to note that you are responsible to have a licensed plumber inspect your plumbing system to determine if there is a closed plumbing system, as it will prevent any damage to the private property through thermal expansion from a closed water distribution system.

If so, you should have the plumber install an appropriate device from above to eliminate the problems that can occur due to thermal expansion.

Damages to your water heater and/or plumbing system may result in the failure to address this potential problem within your premises.