



JAY R. SMITH MFG. CO.®

# case study

## Automatic Backwater Valve Protects 2,700 Miles of Sanitary Sewer Line



View looking into pit of Flood-Gate® & cleanout.



Fig. No. 7140

**Problem:** During heavy rain the main sewer line is backing up into the nursery through the floor drains of this church. The City determined that there was insufficient “fall” in the three lines running from the Church into the main line to protect it from back flow. A contributing problem was that the old flapper valve which had been protecting the Church had rusted allowing water to get into the basement nursery.

**Solution:** The Flood-Gate® with its stainless steel knife gate was installed in a 20-foot deep concrete pit. According to the City, the Flood-Gate has been closing automatically providing positive shut off during reported back flow conditions protecting the Church’s nursery and overall environment.

When one municipality needed to protect commercial and residential property from back flow in the sanitary sewer line they used the Flood-Gate® Automatic Backwater Valve, figure number 7140, from Jay R. Smith Mfg. Co. This backwater valve has been successful in protecting homes and business from flood damage along 2,700 miles of sewer main for more than 100,000 customers. When back flow conditions occur the Flood-Gate closes automatically providing positive shut off and property protection.

A sewerage back flow into the building/house will happen if a stoppage or similar problem in the municipal/street sewer, or septic system occurs causing the water level to rise above the top of

the building/house drain. It is under these conditions that the Flood-Gate® works. As the sewerage back flow occurs the trapped air in the sewerage line is forced into the expansion chamber through a port in the valve. As the expansion chamber fills with air and expands, the knife gate rises until the 4" or 6" drainage opening is completely sealed off. This usually occurs with a 9" head of water for a 4" Flood-Gate valve, and 14" for a 6" valve. Once a complete closure is obtained in the valve, all back flow is prevented from entering the building or structure.

Once the back flow subsides and the water level returns to normal, the counterweight atop the expansion chamber forces the trapped air out of the chamber and into the drainage line, allowing the knife gate to lower to a full open position. Now the Flood-Gate® is ready to guard against future back flow situations.

The Flood-Gate® is designed to work in residential basements, commercial and institutional buildings, in industrial applications, and restaurants. Depending on individual circumstances, the Flood-Gate can be installed in a ventilated pit in the horizontal drain line between the building and the sewer main. Although this provides complete protection from flooding, all of the plumbing fixtures in the building will be out of service once the Flood-Gate® is activated.

An alternative installation is to locate the Flood-Gate® where only the fixtures installed below grade (as in a basement) are connected on the upstream side of the valve. All fixtures installed above grade are connected on the downstream (sewer) side of the valve. This allows continued use of the above grade fixtures, while protecting below grade areas from flooding.

Each Flood-Gate® has been thoroughly inspected and tested to a 45 foot head, or 19.3 P.S.I. without any visible signs of leakage or weepage. The Flood-Gate Backwater Valve conforms to requirements per ASME A112.14.1-1975 for backwater valves; has a certificate of compliance from CSA, reference T.I.L. No. MSE 30; and is IAMPO listed, File No. 3758 (4" only).

The Flood-Gate® should be purchased on the principal of low maintenance for the owner and that it is easy to install for the plumbing contractor. It has been three years since the first Flood-Gate was installed and there have been no reported problems. Users state that the Flood-Gate is superior to other valves used. Debris does not get caught since the Flood-Gate is a full port valve and it does not have a flap-per that can be obstructed. Furthermore, no one needs to activate the valve during back flow conditions. It will close automatically.

The Flood-Gate® Automatic In-line Backwater Valve is furnished with 4" or 6" no-hub connections. The unit is designed to be a full port valve and provided for in-line installation. It is constructed with a duco coated cast iron housing, 14 gauge, type 304 stainless steel knife gate with neoprene o-ring seals, flexible PVC expansion chamber with a polyethylene cover and cast iron counterweight. Options: Flood-Gate Alarm, Pit and steel pit cover.