

Big Flats Water Department

Cross Connection Control Containment Device (Backflow) Installation

The Town of Big Flats Water Department (BFWD) Cross Connection Control Program exists to safeguard the quality of the drinking water we supply to our customers. This program is mandated by New York State and Federal laws and enforced by the New York State Department of Health (NYSDOH), who has turned over responsibility of compliance to the water purveyors. Compliance is mandatory by law.

To reduce the cost of compliance to these affected water customers, we have adopted the attached Design Criteria Approval Form. This approach was originally developed by the Town of Elma in Erie County, New York. It is a checklist for design professionals (and water customers) and becomes an important part of their backflow submittal process. By use of this form and adherence to the requirements, references and resources cited within the goal is a more efficient and cost effective design and approval process. If ignored the process is much more time consuming and may create higher costs for the Water Department, designer and water customer, to obtain compliance.

It has been the experience of both the Big Flats Water Department and the local Health Department that many of the submittals are initially quite defective. Problems of inattention to directions and detail, incompleteness, inaccuracy, inconsistency, copy and paste errors and otherwise unacceptable entries and designs cause the submittal to be rejected and returned for corrections. This causes delays to the approval process and creates additional costs and fees for the water customer. Do your part and be sure you use a NYS Licensed Professional Engineer (P.E.), or Architect (R.A), that is experienced and understands the design mission and your goal and timeline. The Big Flats Water Department will assist you, the water customer, and your designer, but compliance is your sole responsibility. The design and submittal is the responsibility of the licensed professional you hire. We are the initial review and approval agency. Your submittal will not be forwarded to the NYSDOH without our review, endorsement and acceptance of the device installation. Proper function of the facility with regard to any affected systems, maintenance and testing of the device, record keeping and installation, etc remains the sole responsibility of the water customer.

Please contact Shawn Crater, Big Flats Water Systems Supervisor for clarification or assistance by phone, 607-562-8443, ext 228 (office) or by email, scrater@bigflatsny.gov.

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DESIGN APPROVAL CRITERIA

Requirements of New York State Department of Health (NYSDOH) and the Big Flats Water Department (BFWD):

Provide four (4) copies of each item, 1-6. **NOTE:** If the lettered sub-item is not applicable (N/A), a negative response is required. This completed checklist document becomes a required part of the professional Engineer's Report to evidence consideration or inclusion of the indicated design concerns. Per the BFWD Rate/Fee Schedule a Plan Review Fee, per device, of \$100.00 for devices smaller than 1 ½" and \$200.00 for devices 1 ½" and larger, payable to the Big Flats Water Department shall accompany your submittal. **NOTE:** BFWD requires Reduced Pressure Zone (RPZ) devices on all commercial use services and recommends above grade installations, with exterior devices in heated, protective enclosures or hot boxes.

- 1. Letter of Transmittal
 - a. Listing all information (4 copies each) submitted for the containment device submittal.
- 2. Application (DOH-347 Form)
 - a. All items 1-12 completed with all information that is applicable to the project.
 - b. Item #5 answered specifically. Information for two parallel devices may be listed.
 - c. Items 13-14: #13 is Hazardous, based generally on commercial type usage, #14 is for BFWD
- 3. Site Plan – (to scale or with dimensions) of the facility containing, but not limited to the following:
 - a. Property line(s), a North direction arrow, benchmark Elevation and Datum used.
 - b. Buildings and other notable structures.
 - c. Size and location of public water mains and any available Auxiliary Water Supply
 - d. All fire, domestic and combination water services to include items to be installed by BFWD.
 - 1. Size of Corporation Stop, Tapping Sleeve or Saddle w/valve
 - 2. Size of Service line within Right of Way (R.O.W.).
 - 3. Size of Curb Stop or Line Valve at R.O.W.
 - e. Meter Vault and Hatch Cover, both with manufacturer and model number shown or noted.
 - f. Fire Sprinkler System (Note: Containment Devices on Fire Services require a meter).
 - 1. Show riser details (maybe submitted on a separate sheet and must include: Name & address of facility, design engineer's or architects original stamp & signature)
 - 2. State AWWA M-14 old classification with new recommended Containment Protection
 - g. On site yard piping/hydrants, fire hydrants and any frost proof hydrants (per ASSE 1057)
 - h. Fire Department connection(s) with point of connection to the fire service shown; also note all potential drafting intake sites (ponds, etc) or available water sources within 1700'.
 - i. Interconnection(s) and any other water source available.
 - j. All irrigation systems, protection if any, types of system, any pumps used or chemigation.
 - k. Proposed location of backflow device(s) and protective enclosures (with descriptions).

- l. State if the site is in 100-year flood plain. Show curvilinear contours and/or elevations of the device centerline, hatch cover and vault floor, finish floor and top of protective enclosure slab.
 - m. Designers stamp and signature (always originals), the design must be done by a NYS Licensed Professional Engineer (P.E.) or a NYS Registered Architect (R.A.)
4. Plumbing Floor Plan – (to scale or with dimensions) A Plan View or a partial plan view showing the location area floor plan and indicating:
- a. Water services and all piping, with all pipe and fitting materials and types shown or noted.
 - b. Name and address of facility.
 - c. Water meter layout (with piping detail showing two (2) full port isolating valves, etc. (Note: Soldered (sweat) joints are not permitted prior to the containment device or PRV)
 - d. Proposed backflow preventer(s), with any strainers and/or pressure regulating valves.
 - e. Booster pump system(s).
 - f. Floor drain(s), size, manufacturer's name and model with % of clear opening of grate. If the drain line discharges to daylight, a rodent screen (with 5 of clear opening) is required.
 - g. All nearby objects (electrical items, boilers, chillers, water cooled jacketed equipment, storage tanks, fire pumps, fire sprinkler risers, protective guard rails, pipe bollards, etc)
 - h. All required clearance dimensions must be shown. Indicate direction of flow.
 - i. Device manufacturer, model number & size, shown or noted, in the plan view or cross section. Use of an "Or Equal" may require a formal design change and amended submittal.
 - j. All piping, fittings, valves, strainers, water meter, pressure regulating valve, appurtenances, retaining rods, pipe supports, thrust blocking, etc. in plan view and/or vertical cross section.
 - k. Designers stamp (seal) and signature. All originals, no copies.
5. Vertical Cross Section(s) Plan – Elevation view (to scale or w/dimensions) of the proposed installation with elevations from and of the floor, ceiling, an outside grade (to include finish grade pitch). To include:
- a. All required clearance, centerline and air gap dimensions for the device(s) shown or noted.
 - b. All size(s), pipe type(s), routing of floor drains, discharge connection, and all drainage piping with % of slope or pitch per foot of drain piping shown or noted. Also indicate the elevation of the differential pressure relief valve discharge outlet, the elevation of the top of hatch and floor vault (pit), if used, the top of the floor drain grate and the invert of the open end of the discharge drainage piping, if run to daylight. Describe drain termination.
 - c. Plan for heat & light. Show all electrical info/circuits (GFI & in –use outlet covers required)
 - d. Indicate direction of flow, with all piping and appurtenances, etc (See Section 4 above)
 - e. Designers stamp (seal) and signature. All originals, no copies.
6. Engineer's Report – The report shall include:
- a. The general uses of water in the facility.

- b. Size and description of all fire, domestic and combination water services to the facility.
- c. Number of floors within the facility; indicate floor level and location of containment device.
- d. Actual or estimated maximum flow demand (volume in GPM and pressure in PSI)
- e. System pressure: existing and estimated after the containment device installation.
- f. Description of the fire system – state the AWWA Manual M-14 recommended protection. (State if containment protection exists, with device manufacturer and model).
- g. Description of the proposed installation of the containment device(s). Describe the drainage planned. Note: state the maximum discharge rate of the RPZ differential pressure relief valve(s) (DPRV) and drain adequacy. Address: the lighting, heating, protective enclosure information, access to the unit (to include any required stabilized vehicle access), sq. footage of the floor level where the device is to be located, and basement or vault (pit) volume (CF).
- h. Will adequate delivery pressure and volume be available? Answer the following questions:
 - 1. After the installation of the proposed containment device(s), will the net positive suction head (NPSH) required for the proper operation of the booster pump system be adequate?
 - 2. After the installation of the containment device(s) in the suction line to the booster pump system, or on the water service, will the water system and/or the booster pump system, operate to deliver an adequate supply at peak demand to the highest elevation, the most remote fixture and/or any other operation requiring a certain pressure? Section 604 of the NYS Plumbing Code requires the **minimum** pressure at all times to be: Fixture: non-flush valve @ 8PSI, Fixture: flush valve @ 15PSI.
 - 3. Does the booster pump system have a pressure cutoff switch in the suction line? What is the pressure setting of the switch? An existing or proposed cutoff switch must be set at: For a cutoff switch where device is located upstream of the booster pump(s): 10PSI. For a cutoff switch where device is located downstream of the booster pump(s): 20PSI.
- i. Does this facility need dual or multiple containment devices in parallel or in a manifold?
 - 1. Does this facility need a continuous, uninterrupted water supply?
- j. The elevation and location of the 100 year flood plain in relation to the facility. A Reduced Pressure Zone (RPZ) backflow preventer must generally be installed 1' above the 100 year flood plain elevation at the RPZ location (measured from the elevation of the differential pressure relief valve discharge outlet), or higher depending on the invert elevation of the discharge end of the drain piping. The invert of which must also be at least 1' above the high water level (HWL) of the 100 year flood elevation at the point of daylight discharge. Cold air infiltration should be prevented by installing a flap type valve, i.e., "Tideflex" or equal.
- k. An inventory of any existing containment devices to include: the make, model, size and serial number of each device. Current annual test reports must also be submitted. The degree of hazard for these services must be determined to insure that the device provides the correct containment protection. State the (NYSDOH & BFWD) approval status of all existing devices.
- l. Enclose a copy (four(4) in total) of this completed document as part of the Engineer's Report. Any items left blank, to include a lack of N/A for Not Applicable, or items not shown or noted on the plans, or addressed in the Engineer's Report could delay the approval process.

- m. A statement that it is the owner's responsibility to keep snow or other obstructions clear of any drain ports or exterior drains for the RPZ device, and to maintain the installation and drainage system in continued compliance, to include vault or pit installation and hatches.
- n. A statement that all protective enclosures shall be designed with security measures such as locking doors and panels, flow alarms or flow indicator lights, power indicator lights, etc.
- o. A Design Provision for thermal expansion, water hammer and supply pressure fluctuation.
- p. Designers stamp or seal and signature. All original on each sheet, no copies.

This completed document is part of the Submittal Application for the installation of containment protection for:

Owner/Water Customer: _____

Phone: _____ Email: _____

Project Name/Description/Type and Size of Device(s): _____

Address: _____

Designer: _____

Company/Firm: _____

Phone : _____ Email: _____

Address: _____

Signature, Date and Stamp (Seal) of the Designer (NYS Licensed P.E or R.A.)

_____ Date: _____

Seal:



The foregoing points of this document are provided as a checklist to give the designer some criteria information that must be thoroughly considered and included in the design development of the backflow installation. The responses and ultimate design remain the sole responsibility of the designer and should indicate to the reviewer that those points have been considered.

The following (most current) resources should all be used in developing a design, effecting the installation and continued compliance:

- NYSDOH Manual on Cross Connection Control
- NYS Plumbing Code
- NYS Sanitary Code
- National Electric Code (NEC)
- NYSDOH, OSHA & EPA Regulations
- AWWA M-14
- Big Flats Water Department Rules & Regulations
- Town of Big Flats Municipal Code
- Chemung County Health Department
- www.health.state.us.ny.us
- www.bigflatsny.gov

NYSDOH requires that the Application for Approval of Backflow Devices, Form DOH-347, accompany all applications and submittals. Remember 4 sets of plans, all originals, no copies.

NYSDOH requires an initial (and subsequent annual) test of the device by a NYSDOH certified tester and a certification by the Designer that the installation was installed exactly as approved. NYSDOH Form 1013, Parts A & B cover this testing and certification. These must be submitted to the Big Flats Water Department as soon as possible after installation.