

# City of Mount Airy



## Backflow Assemblies Specifications February 2004

## **I. General**

All backflow prevention assemblies must be installed and maintained on the customer's premises as part of the customer's private water system at or near the service connection and before the service line is connected to any other pipes except as authorized by the City of Mount Airy Cross Connection Control Technician.

If it has been determined that a backflow prevention assembly cannot be installed at the meter service, due to Zoning or DOT Right-of-Way, an approved backflow prevention assembly must be installed on any branch of plumbing installed between the service meter and the service backflow prevention assembly.

Any branch of plumbing installed on the private water system that may be of a greater hazard than the supply line, (example: Irrigation systems or fire pump systems, etc.) shall be protected with the appropriate backflow prevention device, as determined by the City of Mount Airy Cross Connection Control Technician.

Approved Backflow Prevention Assemblies:

Meets American Society of Sanitary Engineers (ASSE) standard and carries ASSE seal or is on the University of Southern California approval list. Also see the current revision of the City of Mount Airy Backflow Assemblies Specifications sheets.

Any customer installing a reduced pressure zone (RPZ) or reduced pressure detector assembly (RPDA) or double check valve assembly (DCVA) or a double check detector assembly (DCDA); customer must provide the following information to the Cross Connection Control Technician within ten (10) days after installation:

- a. Owner
- b. Service address where assembly is installed
- c. Description of assembly's location
- d. Date of Installation
- e. Type of assembly
- f. Manufacturer
- g. Model Number
- h. Serial Number

Each backflow prevention assembly that is required must function properly at time of installation. Each customer will be required to maintain, and repair each assembly required as part of their private water system. Testing shall be done immediately following installation of any backflow prevention assembly. Testing shall be done by the City of Mount Airy on an appropriate schedule. The owner at their expense may have a certified backflow prevention technician conduct tests and forward the results to the City.

If a repair is necessary on an assembly it must be re-tested following any repairs. Testing shall be done by the City of Mount Airy on an appropriate schedule. The owner at their expense may have a certified backflow prevention technician conduct tests and forward the results to the City. A complete duplicate copy of any testing and/or repair shall be sent to the Backflow Administrator within ten (10) days of completion of test or repair. Each customer must maintain a complete copy of test or repair for no less than five (5) years. All test and repair records must be maintained on forms approved by the Backflow Administrator of the City of Mount Airy. All rubber components must be replaced every five (5) years or as often as needed, according to manufacturer's directions and components condition.

## **II. Installation location requirements**

Backflow prevention assemblies must be located in a place where it is readily accessible for regular testing, maintenance, repair, and inspection. Bypass lines parallel to a backflow prevention assembly shall have an approved backflow prevention assembly that is equal to that on the main line.

### *RPZ (Reduced Pressure Zone Assembly)*

1. Above ground or indoor installation is preferred and encouraged.
2. Below ground installation is strongly discouraged, and shall only be allowed in special cases as approved by the Cross Connection Control Technician. The vault shall have positive drainage with adequate gravity drainage to atmosphere and must be in a location where no portion of assembly can become submerged at any time or under any circumstances or conditions.
3. Twelve (12) inches minimum and thirty (30) inches maximum clearance from vault floor and walls.
4. Horizontal installation unless manufacturer states otherwise.
5. Installation in accordance with manufacturer's recommendations.
6. Located where it is readily accessible for regular testing, maintenance, and inspection.

### *DCVA (Double Check Valve Assembly)*

1. Above ground or indoor installation is preferred and encouraged.
2. Below ground installation is strongly discouraged, and shall only be allowed in special cases as approved by the Cross Connection Control Technician. The vault shall have positive drainage with adequate gravity drainage to atmosphere and must be in a location where no portion of assembly can become submerged at any time or under any circumstances or conditions.
3. Twelve (12) inches minimum and thirty (30) inches maximum clearance from vault floor and walls.
4. Vertical or horizontal installation acceptable.
5. Installation in accordance with manufacturer's recommendations.
6. Located where it is readily accessible for regular testing, maintenance, and inspection.

### *AIR GAP (AG)*

1. Above ground installation only.
2. Must be in a location where no portion of assembly can become submerged at any time under any circumstances or conditions.
3. Minimum distance between the inlet or fill pipe and overflow rim shall be two (2) times the diameter of the fill pipe and no less than one (1) inch. If fill pipe is mounted to wall minimum distance is three (3) times the diameter of fill pipe.

## **III. Backflow Assemblies Specifications**

### *3/4" – 2" BACKFLOW PREVENTERS:*

All backflow preventers must be:

Factory assembled and installed as an assembly, including inlet and outlet shut off valves, unions and four test cocks. All backflow prevention assemblies must be on the approved list compiled by ASSE, AWWA, or the University of Southern California. All double check assemblies must conform to ANSI/AWWA C510. All reduced pressure assemblies must conform to ANSI/AWWA C511. 3/4" – 2" assemblies will have bronze bodies with resilient union connections and bronze ball valves. Shut-off valves will be full port, line size, lever type or tee handle, 1/4 turn, bronze ball valves. Inlet shut-off valves shall be situated where the No. 1 test cock is on the inlet side of the inlet valve.

*4"-10" BACKFLOW PREVENTERS:*

All backflow preventers must be:

Factory assembled and installed as an assembly, including inlet and outlet shut off valves and four test cocks. All backflow prevention assemblies must be on the approved list compiled by ASSE, AWWA, or University of Southern California. All double check assemblies must conform to ANSI/AWWA C510. All reduced pressure assemblies must conform to ANSI/AWWA C511. 4" – 10" assemblies will have fusion bonded epoxy coated gray or ductile iron bodies. Valves will be flanged, hand wheel operated, resilient-seated gate valves. Double check assemblies and reduced pressure assemblies will have non-rising stem gate valves. Inlet shut-off valves shall be situated where the No. 1 test cock is on the inlet side of the inlet valve. Detector assemblies for sprinkler systems will have outside stem and yoke-rising stem gate valves on the main line and ball valves (as described above) on the bypass side.

*Manufactures List of Approved 3/4" – 2" and 4"-10" Backflow Assemblies*

Conbraco Industries Inc.  
PO Box 247  
Matthews NC, 28106  
(704)841-6000

Febco  
Spc Marketing  
PO Box 675  
Monroe NC, 28110  
(704)283-8554

Watts Regulator  
815 Chestnut St  
North Andover MA 01845  
(978)688-1881

Wilkins Regulator  
1747 Commerce Way  
Paso Robles, CA 93446  
(805)237-3828

**DRAIN PIPING:** Pipe shall be schedule 40 PVC-DWV, cast iron soil pipe, or ductile iron. Drain outlet shall have a removable wire mesh screen to prevent rodent entry. Necessary steps must be taken to prevent outlet from damage or being covered over. Drain shall provide positive drainage above normal flood levels for vault or box.

**FITTINGS:** All fittings shall be ductile iron with a minimum pressure rating of 250 p.s.i. All flanges and glands shall be ductile iron. Interiors shall be cement lined with asphaltic seal coat. Exterior shall be coated with a bituminous coating.

**FLANGE PACKS:** Bolts shall be zinc plated, grade “B”, low carbon steel in accordance with ASTM A-307.

| PIPE DIAMETER | BOLT SIZE     | BOLTS PER FLANGE |
|---------------|---------------|------------------|
| 4”            | 5/8” X 3”     | 8                |
| 6”            | 3/4” X 3-1/2” | 8                |
| 8”            | 3/4” X 3-1/2” | 8                |
| 10”           | 7/8” X 4”     | 12               |

**GASKETS:** Gasket Material shall be 1/8” red rubber, ring or full face gaskets will be accepted.

**METERS:** All meters will be installed by the City of Mount Airy

**PIPING:** All piping shall be ductile iron. Piping inside vaults shall be flanged. Piping outside vaults shall be mechanical joint or restrained joint.

**STEPS:** All steps shall conform to current OSHA standards and ASTM C478. Steps shall be straight and in line, installed 12” on center with the first step 12” or less from the top rim of access door and the last step 12” or less from floor.

**SUPPORTS:** Supports shall be PVC cut to length and filled flush with concrete and centered under flanges.

**VALVES:** Meter inlet and outlet shut-off valves, and by-pass valves shall be flanged, hand-wheel operated, non-rising stem, epoxy coated, resilient-seated gate valve.

*Manufactures List of Approved Valves*

American Flow Control  
PO Box 2727  
Birmingham Alabama 35202-2727  
(203)325-7856

M & H Valve Co.  
P.O. Box 2088  
Anniston Alabama 36202  
800-228-2331 ext. 289

Mueller Company  
500 West Eldorado Street  
Decatur Illinois 62525  
(800)423-1325

**ABOVE GROUND ENCLOSURES:** Above ground enclosures shall have an ASSE 1060 approval to protect from vandalism and freezing. The protective structure must provide easy access to the assembly for testing or removal. The structure must have adequate drainage provided by hinged door or drain ports. Structure shall be secured to a concrete pad a minimum of two (2) inches larger than enclosure. The same minimum and maximum clearances apply.

**VAULTS:** Vaults shall be 4000 PSI reinforced concrete designed to support an H-20 wheel load. Vaults shall be pre-cast by an approved manufacturer. Detailed drawings and specifications must be submitted to, and approved by the City of Mount Airy. A maximum of two (2) joints per vault will be allowed and the joints shall be sealed with butyl rubber sealant. All pipe connections shall be made with flexible sleeves which conform to ASTM C923. Butyl rubber shall be used between the vault and vault access door. Approved pre-cast manufacturers are as follows:

*Manufactures List of Approved Vaults:*

Old Castle  
PO Box 19365  
Greensboro NC 27419  
800-951-2108

Carolina Pre-cast Concrete  
P.O. Box 1061  
Dunn, NC 28335  
(910)892-6411

**VAULT ACCESS DOORS:** All vault access doors shall be double leaf aluminum. Door leafs shall be minimum 1/4" aluminum diamond plate designed to withstand a live load of 300 pounds per square foot. Doors shall have a 1/4" aluminum channel frame with a continuous anchor flange. Doors shall have a recessed aluminum drop handle which does not protrude above the cover, and an automatic hold open arm. All 4' X 6" doors shall be hinged on the long side. Door hinges shall be stainless steel with tamperproof stainless steel nuts and bolts. The door hinges shall be removable to allow removal of a damaged door leaf. Each door shall have a stainless steel spring-loaded slam lock, operable from the outside by a square key wrench and from the inside by a fixed turn handle. The slam lock shall include a removable sealing plug. All doors shall have a mill finish with a bituminous coating applied on all surfaces that come in contact with concrete. In cases required by the engineer, doors designed to withstand H-20 wheel loading will be required. Concrete must be used under the support shelf in order to carry the H-20 load. Access doors must be manufactured by one of the following:

*Manufactures List of Approved Vault Doors:*

US Foundry and Manufacturing Company  
8351 Northwest 93rd Street  
Miami Florida 33166  
(305)885-0301

The Bilco Company  
PO Box 1203  
New Haven, CT 06505  
(203)934-6363

**For any additional information contact the  
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