

## **SECTION 12 - WATER LINE PIPE, FITTINGS AND ACCESSORIES**

### **12-01. General Requirements.**

Unless otherwise approved in writing by the Authority, or as specifically indicated on plans approved by the Authority, all pipe for construction of water lines shall be as outlined in this section, and must conform to the most current available standards issued by the American Water Works Association.

### **12-02. Pipe Supports**

Carrier pipe within casing must be adequately supported. The supports shall be designed such that the carrier pipe is centered in the casing, and shall be installed in accordance with the manufacturer's instructions. Acceptable spacers are manufactured by SPIDER Manufacturing Inc., Power Lone Star, Inc. or others as approved by the PSA.

### **12-03. Pipe Materials.**

All pipe shall be one (1) of the following:

Ductile Iron Pipe. Tapping Sleeves and Valves. Ductile Iron Pipe shall be manufactured in accordance with specifications (ANSI/AWWA, A21.51 minimum) wall thickness shall be Class 52 according to Table 51.6, Dimensions and Weights For Special Classes 3 Inches and Above. All wet taps over 2-inch in size shall be made with Mueller Co. H-304-SS stainless steel sleeve and T-2369 Tapping Valve or an approved equal. All of which will be provided and tapped at the Developer's expense.

K-Copper in 2-inch size. Hard stick copper in 20' lengths with silver solder joints or Mueller 110 or Ford Quick Joint<sup>®</sup> compression style couplings and fittings.

Thermoplastic Tubing. Thermoplastic tubing may be used for service lines from the meter to residences or small businesses in 3/4-inch and 1-inch sizes, provided soil conditions and or proper bedding are approved by the Authority. Thermoplastic tubing shall be a minimum of Class 160 NSF rating (200 psi NSF rating is suggested) with a strength of 500 psi, under standard AWWA test procedures. Tubing shall be clearly marked to show class, size, and manufacturer's name.

### **12-04. Valves and Valve Boxes**

#### A. Valves.

Gate valves shall be of the resilient seat type with non-rising stems in accordance with American Water Works Association Standard C509 or C515 for 250 psi working pressure. Stems shall have a 2-inch square nut similar to those on valves of the existing system. Gate valves shall be of one (1) make, and shall open by a counterclockwise rotation of the valve stem. Gate valves shall be Mueller Model A 2360-20 or approved equal. Check valve shall be the Mueller Model A-2600-6 swing-check type, designed for a water working pressure of 175 pounds per square inch, with a suitable opening for cleaning without disconnecting from the pipe; the valve shall be all bronze, or ductile iron body with cast iron body with brass or bronze trim, with pin, seat ring, and disc face of brass or bronze or approved equal. All Pump Control valves, Flow Control valves, Pressure Relief Valves, Pressure Reducing Valves, Electronic Control valves, Air Relief Valves, Backflow Preventers, shall be Cla-Val<sup>™</sup> Co. or approved equal.

## B. Valve Boxes.

Valve Boxes shall be Tyler #6860 three-piece series box and lid with #6 size standard base for 6" and 8" valves and #160 base for 10" and above. Each valve on underground piping shall be provided with an adjustable cast iron valve box with a flared base and of a size suitable for the valve on which it is used. The head shall be round and shall have the word "Water" cast upon it. The least diameter of the shafts of the boxes shall be 5.25 inches. Boxes shall be given a heavy coat of bituminous paint. Valve boxes shall be centered in 2'x2'x4" concrete pad level with finish grade.

## **12-05. Hydrants.**

Hydrants shall be a standard type conforming to the latest specifications for valves and hydrants of the American Water Works Association and shall be a type approved by the National Board of Fire Underwriters (Figure 21). They shall be 6 inches in diameter with 5-1/4 inch clear opening through the valve and shall be provided with a 4.5 inch pumper connection and two 2.5 inch hose connections. Hydrants shall be of the frost proof and non-flooding type that will not flood in case the barrel or valve stem is damaged, with waste orifices for draining the hydrant when the valve is closed. A safety flange shall be provided so that the barrel will not break if struck by a vehicle or other object, and the hydrant shall be repairable without digging. The hydrants shall be designed for 150 pounds working pressure or 300 pounds hydrostatic pressure and shall open counterclockwise. All working parts shall be bronze. Hose and pumper connection threads and operating nut shall be National Standard or as directed by the Authority. Each hydrant shall be. All hydrant installations shall use restrained joints as by Megalug<sup>®</sup>, Field Lok<sup>®</sup> Gasket or approved equal. Restrained joint shall include the valve to tee connection as well as the valve to the hydrant connection. All hydrants shall be the Mueller Centurion<sup>®</sup> 250 unless otherwise approved by the Authority.

## **12-06. Air Release Valve Assemblies.**

Air release valve assemblies shall be Cla-Val<sup>™</sup>, installed as shown in the detail. Each assembly shall consist of riser pipe, ball valve, fittings and meter box (4' minimum inside) reinforced concrete manhole with USF-576-BH-V-W/2-1" diameter holes frame and cover, marked "WATER" and adjusted to grade. All pipe and fittings shall be K copper or brass. Fittings shall be copper or brass. Cut-off valve shall be a Mueller 300 series ball valve. The open end of the riser pipe should extend to a point at least 1 foot above ground and be covered with a screen (Figure 22).

## **12-07. Permanent Blow-Off Assemblies.**

Assemblies shall be installed as shown and in accordance with the following specifications and attached drawing (Figure 23):

### A. Permanent Blow-off branch hydrants

These shall be manufactured by Eclipse/Kupferle Foundry Model #2 Eclipse Post Hydrant freeze-proof with one 2 1/2" NST Nozzle, and must have an IP or MJ inlet. The two-inch inlet shall be all brass piping and include a Mueller 300 B-20283 ball curb valve and Tyler Series 6500 valve box. Three-inch MJ piping shall be ductile iron, AWWA Standard, Class 52 as indicated on the attached typical sections and sketches with Mueller A-2360 gate valve and Tyler 6860 series valve box or approved equals.

## B. Temporary Blow-off Assemblies

Temporary blow-off assemblies shall be sized properly to flush lines under new construction and shall be pre-approved by the Virginia Department of Environmental Quality engineer and Authority.

**Subsections 12-09 through 12-12 below are specific to 5/8" meter settings only (Figure 24). One-inch settings and greater: see specification schematics in Part IV.**

### **12-08. Residential Water Meters.**

Each water meter installation shall include the saddle, tap, corporation stop, meter box, curb stop, and yoke, and meter and ASSE-approved dual check valve, OR a pre-approved meter setter with lockable angle valve and ASSE-approved dual check valve (Figure 25). From the meter box, 1-inch copper pipe shall be extended to each building lot and provided with a 1-inch threaded iron pipe fitting, which will be capped until needed. The copper pipe shall extend six feet from meter box, be brought out of the ground a minimum of one foot, and shall be strapped to a metal or plastic stake and be marked "Water". Meters shall be 5/8 by x 3/4 inch Invensus Touch-Read® (SR-II-TR) service meters with straight reading dial or approved equal. One meter and fiberglass meter box with a cast iron lid shall be installed on each service connection at the locations indicated and in accordance with all applicable plans and specifications. In cases such as apartments, duplexes, subdivisions, town houses and condominiums, two residential-type meter assemblies may be placed in one meter box, upon prior approval by engineer and Authority. All meters shall be provided to the Authority for placement and shall record flows in gallons.

### **12-9. Residential Meter Boxes and Meter Box Lids.**

Hancor™ or Mid-States Plastic, Inc. standard boxes of appropriate size, (18" x 24"), complete with covers as manufactured by Ford (A-32-T w/plug) or Bingham & Taylor (BTA-32T with plug), for single settings; or Ford (A-32TT w/plugs) or Bingham & Taylor (BTA-32TT with plugs) for dual setting, or approved equal, shall be furnished installed around all curbs stops and meters as indicated on the attached details in Part IV or on approved plans. Boxes and lids shall be of the type approved by the Authority.

### **12-10. Residential Corporation Stops and Saddles.**

At the location indicated on the plans and where directed, saddles shall be Ford Style 202B-xxx-CC4\* Brass Double Strap or Mueller #BR2BxxxCC-100\* Brass Double Strap. Corporation stops of sufficient size compression couplings 1-inch FB1000-Q as manufactured by Ford Company, or Mueller B-25008, or approved equal, shall be furnished and installed in accordance with applicable standards and specifications. No dry taps shall be made unless pre-approved by the Authority.

\*Note: "xxx" indicates that the model or item number changes based on the size.

### **12-11. Residential Yokes, Yoke Valves, Check Valves, Meter Setters and Fittings.**

Within all meter boxes and on all service connections the following shall be provided:

**Single** 5/8 x 3/4 inch meter settings: As manufactured by Ford or Mueller companies or approved equal: Inlet Valve (B94-324W-Q), Yoke (Y-502), Outlet Check (HHCH-91-323) with C84-34-Q Fitting.

**Meter Setters:** Ford 5/8 x 3/4 inch setter # VBHC-72-12W-MM-33 with two (2) C14-34-Q fittings OR Mueller 5/8 x 3/4 inch setter #B2434-R6A X 12" with two (2) H15451 fittings. All

double meter setters, hardware, piping and fittings shall be pre-approved by engineer and Authority prior to construction

### **12-12. Residential Service Pipe.**

Type "K" copper pipe and adapters shall be furnished and installed from the corporation stops to water meters, and from water meters to lots at locations indicated on the plans and where directed. All couplings and fittings shall be Ford Quick Joint<sup>®</sup> or Mueller 110 compression type fittings. Where conditions warrant and as directed, the service connections shall be jacked or bored by an approved method. Service connections larger than 1 inch shall be of material approved and directed by the Authority. All service fittings and lines shall be 1-inch diameter to the meter valve and lot lines.

### **12-13. One-inch Meters and Larger.**

See schematics and details in Part IV, Figures [25](#), [26](#), [27](#), [28](#), [29](#), [30](#) & [31](#).

### **12-14. Subdivision Line Extension By-Pass Meter**

The developer shall furnish and install a 1-inch bypass with 1-inch meter at the connection of waterline extensions for new developments to the Authority's existing main. This requires two (2) each: 4" – 20' x 1" Mueller BR2B series Bronze Service Saddles, two (2) each Mueller one-inch Corporation Stop B-25008, one-inch B-234-R6A-15-1" Meter Setter with dual cut off valves, two (2) Mueller 1" x 1" H-15451 fitting, Invensus one-inch SR11 water meter. All compression fittings shall be Mueller 110 style or Ford quick joint type. Meter setter shall be Ford or Mueller. Tubing may be copper or CST plastic 200 psi.

Taps will be made around existing valve approximately three feet on each side of valve. Meter will be set in a Harcor of Mid-States Plastic, Inc. standard boxes of approximate size, (18 x 24) complete with cover as manufactured by Ford (A-32-T) set 2' side valve.

Substitutions for parts listed above shall be submitted to the Authority for approval.