

# **MATERIALS SPECIFICATIONS**

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# **Materials Specification – 1 for DUCTILE IRON PIPE**

## **Push-On Single Gasket Joint 3 Inch, 4 Inch, 6 Inch, 8 Inch, 12 Inch, 16 Inch, 20 Inch, 24 Inch.**

### **1. GENERAL:**

All ductile iron pipes shall be manufactured in accordance with AWWA C151, with the following additional requirements or exceptions.

### **2. SIZE OF PIPE:**

This Specification shall cover ductile iron pipe in 3 inch, 4 inch, 6 inch, 8 inch, 12 inch, 16 inch, and 20 inch, 24 inch, nominal diameters.

### **3. JOINT TYPE:**

Push-on Single Gasket type conforming to applicable requirements of AWWA C111. Joint types other than Push-on Single Gasket are acceptable if specifically approved by Parker Water & Sanitation District

### **4. PIPE WALL THICKNESS:**

Pipe furnished under this Specification shall have the following minimum ductile iron wall thickness:

<b>Nominal Pipe Diameter (Inches)</b>	<b>Minimum Ductile Iron Wall Thickness (Inches)</b>
3	0.25
4	0.26
6	0.25
8	0.27
12	0.31
16	0.34
20	0.36
24	0.41

### **5. PIPE LENGTH:**

Pipe furnished under this Specification shall have normal laying lengths of either 18 feet or 20 feet. Random lengths are not acceptable.

### **6. MATERIAL STRENGTH:**

The grade of iron shall be 60/42/10.

### **7. CEMENT-MORTAR LINING:**

Pipe furnished under this Specification shall have standard thickness cement-mortar linings in accordance with AWWA C104.

**8. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made, and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance with NSF/ANSI 61 shall be sent to Parker Water & Sanitation District

**9. ACCEPTABLE MANUFACTURERS:**

American Cast Iron Pipe  
Griffin Pipe  
Pacific States  
U.S. Pipe

**10. Bell Restraints:**

Ebaa 1700 4"-16"  
Uniflange 1390 4"-12"  
Star 1100 series 3"-48"

Above 16" use of Manufacturers Restrain Joint Pipe required. (Fast-Grip & Field Lok restraint allowed by Parker Water & Sanitation District per job approval)

# **Materials Specification – 2 for POLYVINYL CHLORIDE (PVC) PRESSURE PIPE**

## **Elastomeric Gasket Joint 6 Inch, 8 Inch, And 12 Inch Diameter**

### **1. GENERAL:**

All PVC pipe shall be manufactured in accordance with AWWA C900, with the following additional requirements or exceptions.

### **2. SIZE OF PIPE:**

This Specification shall cover polyvinyl chloride (PVC) pipe in 6 inch, 8 inch, and 12 inch nominal diameters with cast iron pipe equivalent outside diameters.

### **3. JOINT TYPE:**

Pipe joints shall be made using an integral bell with an elastomeric gasket push-on type joint.

**Solvent cement joints are strictly prohibited.**

### **4. CLASS AND TYPE:**

Sizes 6 inch, 8 inch and 12 inch shall be Class 200 Dimension Ratio 14 (DR 14).

### **5. PIPE LENGTH:**

Each length of pipe will be a standard laying length of 20 feet. Random lengths are not acceptable.

### **6. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made, and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance with NSF/ANSI 61 shall be sent to Parker Water & Sanitation District

### **7. ACCEPTABLE MANUFACTURERS:**

Certain-Teed Corporation  
J-M Manufacturing Company  
Ipex, Inc.  
Diamond Plastic Corporation  
Vinyltech

### **8. Restraints:**

Ebaa 1600 6", 8", & 12"

Uniflange 1390 6", 8", & 12"

Star 1100 series 6", 8" & 12"

# **Materials Specification – 3 for DUCTILE IRON AND CAST IRON WATER FITTINGS**

## **1. GENERAL:**

All cast iron and ductile iron fittings shall be manufactured in accordance with the following: AWWA C104, C110, C111, and C153 with the following additional requirements or exceptions.

## **2. LININGS:**

All sizes of cast iron sleeves shall be furnished without a cement-mortar lining. All other fittings shall be furnished with a cement-mortar lining of standard thickness and given a seal coat of asphaltic material or other material specified as defined in referenced standards. Unpainted fittings shall be subject to approval by Parker Water & Sanitation District.

## **3. TYPE OF JOINT:**

All fittings installed in the Parker Water & Sanitation District shall be furnished with mechanical joint ends conforming to referenced standards, and in addition the tee-head bolts and hexagon nuts shall be fabricated from a high-strength, low alloy steel known in the industry as Cor-Ten or Us alloy or ductile iron Durabolt or equal.

Accessories for the mechanical joint consisting of the gasket, gland and fasteners shall be furnished and packaged separately from the fittings. Each package shall be labeled in such a manner as to provide for proper identification and the number of units per package or bundle.

## **4. THICKNESS CLASS:**

Ductile Iron fittings shall have a minimum of 250 psi pressure rating, ductile iron compact fittings shall be 350 psi pressure rating, and shall conform to the dimensions, weights and pressure rating shown in the tables of referenced standards. (C110 & C153)

## **5. MATERIAL:**

All fittings made from ductile iron, cast iron shall meet AWWA Specifications.

## **6. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance with NSF/ANSI 61 shall be sent to Parker Water & Sanitation District

## **7. ACCEPTABLE MANUFACTURERS:**

Tyler Pipe Industries  
U.S. Pipe  
Griffin Pipe Products  
Union Foundry Company  
Star Pipe Products

# **Materials Specification –4 for RESILIENT WEDGE GATE VALVES**

## **250 Pound Class – 3 Inch through 12 Inch Nominal Diameter**

### **1. GENERAL:**

All valves supplied under this Specification shall be designed and manufactured in accordance with AWWA C509, with the following additional requirements or exceptions.

Reduced-wall gate valves may be supplied in accordance with AWWA C515.

### **2. VALVE DESCRIPTION:**

Valves shall be iron body, resilient seated gate valves with non-rising stems. If the resilient seats are bonded to the gates, the gates shall be totally encapsulated with the material, with the exception of any guide tabs or slots. Valve bodies shall be designed to allow lifting of the valves by the bonnet flange, gland flanges or other appurtenances.

### **3. INSTALLATION:**

Valves will be installed with the stem vertical in buried horizontal water lines without gearing, bypasses, rollers or tracks.

### **4. SERVICE:**

All valves shall be suitable for frequent operation as well as service involving long periods of inactivity. Valves shall be capable of operating satisfactorily with flows in either direction, and shall provide zero leakage past the seat. The operating pressure for all sizes shall be 250 psig.

### **5. VALVE STEMS:**

Valves shall be supplied with stems having minimum yield strength of 40,000 psi and a minimum elongation in 2 inches of 12% and shall be made of bronze per ASTM B 763, Copper Alloy No. C99500 or stainless steel per ASTM A 276, Type 304 or 316; or AISI 420. Valves shall be supplied with wrench nuts in accordance with AWWA C509. Stem seal shall consist of two (2) O-rings in accordance with AWWA C509 & C515. The valves shall open by turning to the right.

### **6. BOLTING MATERIAL:**

Bonnet and gland bolts and nuts shall be either fabricated from a low alloy-steel for corrosion resistance or electro-plated with zinc or cadmium or Stainless Steel. The hot-dip process in accordance with ASTM A 153 is not acceptable.

### **7. END CONNECTIONS:**

#### **A. Flanges:**

Flanges shall be sized and drilled in accordance with ANSI B16.1 Class 125. Flanges shall be machined to a flat surface with a serrated finish in accordance with AWWA C207.

**B. Mechanical Joint:**

All components of this type of joint shall conform to AWWA C111. The tee-head bolts and hexagon nuts shall be fabricated from a high-strength, low alloy steel known in the industry as Cor-Ten, Usalloy, or shall be ductile iron Durabolt.

Accessories for the mechanical joint, consisting of the gasket, gland and fasteners shall be furnished and packaged separately from the valves. Each package shall be labeled in such a manner as to provide for proper identification and the number of units per package or bundle.

**8. TESTING:**

Each valve, after shop assembly, shall be given the operation and hydrostatic tests in accordance with AWWA C509 or AWWA C515.

**9. COATING:**

All valves shall be Epoxy coated in accordance with AWWA C509 or AWWA C515. Machined flange faces shall not be painted or coated with the same coating as the body but shall be shop coated with a rust preventive compound.

**10. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all the specified tests have been made and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance with NSF/ANSI 61 shall be sent to Parker Water & Sanitation District.

**11. ACCEPTABLE MANUFACTURERS:**

The following brands are the only ones to be considered as resilient seat gate valves under this Specification:

American Flow Control (C509 and C515)  
Mueller (C509 only)  
Clow (C509 only)  
Kennedy (C509 only)  
U.S. Pipe (C509 only)  
American AVK (C509 only)  
East Jordan Iron Works (C509 and C515)

# **Materials Specification –5 for FLANGED RUBBER SEATED BUTTERFLY VALVES**

## **1. GENERAL:**

Except as modified or supplemented herein, all butterfly valves supplied under this Specification shall be designed and manufactured in strict compliance with AWWA C504. Unless specified otherwise, for valve sizes beyond the scope of AWWA C504, valve design shall be based upon the maximum service conditions with minimum safety factors of 3:1 on yield strength and 5:1 on ultimate strength. All Class 250 valves shall have ductile iron bodies with flange dimensions and drilling per ANSI B16.1, Class 125.

## **2. SERVICE:**

All valves shall be suitable for throttling service and/or frequent operation as well as service involving long periods of inactivity. Valves shall be capable of operating satisfactorily with flows in either direction. Valves shall be suitable for use in potable and non-potable service.

## **3. INSTALLATION:**

All valves specified as "buried" shall be for buried service in horizontal waterlines with the valve shaft horizontal and operating nut shaft vertical. Body of valves will be buried and the actuators will be installed in manholes.

## **4. SHUT OFF PRESSURE:**

The maximum static differential pressure across the valve will be the same as the class of the valve. At rated pressure, the valve shall be bubble tight for flows in either direction.

## **5. CLASS OF VALVE:**

The class of valves shall be as specified.

## **6. VALVE BODIES:**

Valve bodies shall be of short body pattern. All Class 250 valve bodies shall be ductile iron. **Disc stops on the body will not be allowed.**

## **7. VALVE DISCS:**

Valve disc shall seat at 90 degrees to the pipe axis. Discs having hollow chambers that can entrap water will not be allowed. All Class 250 valve discs shall be ductile iron.

## **8. VALVE SEAT:**

Rubber seats may be applied to either the body or the disc. The mating seat surface, in either case, shall be stainless steel or sprayed in accordance with AWWA C504. Plated mating-seat surfaces will not be acceptable.

Rubber seats shall be of new natural or synthetic rubber and may be reinforced by the manufacturer.

Rubber seats mounted on the disc shall be a continuous full circle 360-degree seal, clamped thereon with corrosion resistant retaining rings, and threaded fasteners.

Rubber seats mounted in the groove of the valve body on valves 24 inch diameter a smaller may be bonded to the body. Bonded seats must withstand a 75-pound pull in accordance to the 90 degree stripping test procedure "Method B" of ASTM D 429.

Rubber seats mounted in the valve body on valves larger than 24 inch shall be full circle 360 degree and shall be retained in the valve body by mechanical means in such a manner that the seat can be adjusted to provide a tight shutoff. All hardware used in retaining the seat in the body shall conform to all the requirements of AWWA C504. Valve shaft shall not penetrate the rubber seat.

#### **9. VALVE SHAFT:**

The valve shaft shall be stainless steel and may be either through or stub type and shall conform to all applicable requirements of AWWA C504. Shafts for Class 250B valves shall be ASTM A 564, UNS Designation S17400, condition H1150.

#### **10. SHAFT SEAL:**

Where the valve shaft projects through the valve body for the actuator connection, a shaft seal designed for positive pressure within the valve shall be provided for the following sizes of valves:

##### **A. For valves 24 inch diameter and smaller:**

The seal shall be one of the following types:

- 1) Self-compensating V-type packing.
- 2) 6 O-ring type contained in a corrosion resistant cartridge.

Retention of the above seals shall be designed to utilize the actuator case as a positioner of the seal. Replacement of seals shall be done without removal of the valve shaft.

On "**buried**" valves, the shaft seal area and exposed valve shaft shall be totally enclosed to prevent infiltration of material around the shaft seal and valve shaft during backfilling. Adjustable packing glands shall be accessible either through the bonnet as specified in Paragraph 14 or by removing the enclosure around the packing gland.

#### **11. VALVE BEARINGS:**

Valve bearings shall conform to all applicable requirements of AWWA C504. In addition, valves furnished with an externally adjustable thrust bearing shall have the external adjusting mechanism enclosed in a substantial watertight housing.

#### **12. TYPE OF VALVE ENDS:**

All valves shall be furnished with flanged ends. Dimensions and drilling shall conform to ANSI B16.1, Class 125. Flanges shall be machined to a flat surface with a serrated finish in accordance with AWWA C207. The flanges shall have full-sized bolt holes through the flanges, except that drilled and tapped holes will be acceptable only in the areas where the shaft passes through the body. **Flanges with all holes tapped will not be allowed.**

### **13. VALVE ACTUATORS:**

Unless otherwise specified, valves shall be furnished with manual worm gear actuators designed and sized to develop output torques for the specified operating service and shall be sufficient to seat, unseat and rigidly hold the disc in any intermediate position for the above conditions. The maximum velocity for actuator design shall be 16 feet per second.

**A.** Maximum input torque required to fully open or close the valve for the specified service conditions shall not exceed 150 foot-pounds when applied to the operating nut, or an 80-pound pull when applied to the hand wheel.

The diameter of the output shaft or spline of the actuator shall be sized equal to or greater than the turned-down section of the valve shaft.

All actuators shall have a valve position indicator.

### **14. VALVE BONNET:**

"Buried" valves shall be furnished with a separate one piece cast iron or fabricated steel extension bonnet with (if applicable) access openings fitted with removable covers, located to permit access to the stuffing box for tightening the packing. The extension bonnet shall be 21 inches in length and shall be of a single diameter over its entire length. Minimum thickness of removable cover shall be 14 gauge (.0747") and shall be attached to extension sleeve with a minimum of four 1/4 inch diameter cap screws. Gasketing of the opening is not required.

### **15. TORQUE TUBES:**

Valves shall be supplied with torque tube type shaft extensions and actuator support stands. Each torque tube and actuator support stand shall be sized to operate under the maximum service conditions for the valve. The torque tube shall transmit the required torque to the valve without twisting or bending. The torque tube shall be connected to the valve shaft with a taper pin and nut or with a "keyed" fit.

### **16. NAMEPLATES:**

Corrosion-resistant nameplates shall be provided. There shall be one valve nameplate attached to the valve body, or for "buried" or "submerged" valves, attached to the valve actuator. The valve nameplates shall include the normal valve data and the serial number. There shall be one actuator nameplate attached to the valve actuator.

### **17. MANUFACTURE:**

All valves furnished shall be the latest standard products of a manufacturer regularly engaged in the production of equipment of this nature for a period of at least 5 years.

### **18. TESTING:**

The valve manufacturer shall test all valves according to AWWA C504.

## **19. COATINGS:**

### **A. Internal Surfaces:**

All internal ferrous surfaces except machined or bearing surfaces shall be prepared for coating per SSPC-SP-10. These surfaces shall then be coated with a two-part thermosetting polyamide epoxy in two or more uniform coats, or with fusion bonded epoxy, to a minimum dry film thickness of 12 mils. Epoxy coating shall conform to AWWA C550 and shall be Ameron 400, Tnemec Series 140F Pota-Pox Plus, Corvel ECA-1626 or approved equal.

### **B. External Surfaces:**

All external surfaces except machined or bearing surfaces shall be carefully prepared by removing all dirt, grease, and rust and shall be cleaned to the extent that the coating will bond to all surfaces.

For "buried" valves, the exterior of each valve except flange faces shall be shop coated with two coats of asphalt varnish, or shall be prepared and coated the same as the internal surfaces.

Flange faces shall be shop coated with a rust preventive compound, Houghton "Rust-Veto 344", or Rust-Oleum "R-9".

After above painting is completed, a lubricant compatible with the rubber seal shall be applied to surface of this seal and the mating metal surface to prevent bonding of the two surfaces during shipment and storage. Following application of the seal lubricant, the valve disk shall be placed in a slightly open position for shipment.

## **20. VALVE ASSEMBLY:**

All "buried" and "in-plant" valves shall be shipped fully assembled. "Submerged" valves shall be assembled in the manufacturer's shop such that the torque tube is assembled to the valve shaft and the actuator adapter is mounted to the torque tube to ensure proper fit. The assembled valves shall be performance tested in accordance with AWWA C504. If the "submerged" valves are to be disassembled for shipment, the manufacturer shall match-mark all parts for assembly in the field by the OWNER. The torque tube connection to the valve shaft and the actuator shall also be "scribed" or otherwise marked to indicate relative orientation between the parts for field assembly.

## **21. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all the specified tests have been made and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance with NSF/ANSI 61 shall be sent to Parker Water & Sanitation District

## **22. ACCEPTABLE MANUFACTURERS:**

Mueller  
Pratt  
Rodney Hunt  
SPX/K-Flo  
Val-Matic  
M&H Valve Company

# **Materials Specification – 6 for TAPPING VALVES - MECHANICAL JOINT TYPE**

## **1. GENERAL:**

All valves supplied under this Specification shall be designed and manufactured in accordance with AWWA C500 or AWWA C509 or AWWA C515, with the following additional requirements or exceptions.

## **2. VALVE DESCRIPTION:**

Valves shall be ductile iron body, resilient wedge gate valve, fully bronze-mounted, with parallel seats; or resilient seated gate valves. If the resilient seats are bonded to the gates, the gates shall be totally encapsulated with the material, with the exception of any guide tabs or slots. All valves shall have non-rising stems.

## **3. INSTALLATION:**

Valves will be installed with the stem vertical in buried horizontal water lines without gearing, by-passes, rollers or tracks.

## **4. SERVICE:**

All valves shall be suitable for frequent operation as well as service involving long periods of inactivity. Valves shall be capable of operating satisfactorily with flows in either direction. The operating pressure for all sizes shall be 200 psig.

## **5. VALVE STEM:**

Resilient seated gated valves shall be supplied with stems having minimum yield strength of 40,000 psi and a minimum elongation in 2 inches of 12% and shall be made of bronze per ASTM B 763, Copper Alloy No. C99500 or stainless steel per ASTM A 276, Type 304 or 316; or AISI 420.

Valves shall be furnished with 2 inch square wrench nuts. The wrench nut shall comply with AWWA C500 or AWWA C509. Stem seal shall consist of two (2) O-rings in accordance with AWWA C500 or AWWA C509. Valves shall open by turning to the left

## **6. BOLTING MATERIAL:**

Bonnet and gland bolts and nuts shall be either fabricated from a low alloy-steel for corrosion resistance, or electro-plated with zinc or cadmium. The hot-dip process in accordance with ASTM A 153 is not acceptable.

## **7. END CONNECTIONS:**

### **A. Inlet End of Valve:**

Inlet end of the valve shall be flanged. All dimensions and drilling of this flange shall conform to ANSI B16.1, Class 125. Flange faces shall be machined to a flat surface with a serrated finish in accordance with AWWA C207.

**B. Outlet End of Valve:**

Outlet end of the valve shall have a standard mechanical joint end conforming to AWWA C111. The face of the mechanical joint shall have a sufficiently smooth and even surface to allow a tight O-ring seal with the tapping equipment. Accessories for the mechanical joint consisting of the gasket, gland and fasteners shall be furnished. The tee-head bolts and hexagon nuts shall be fabricated from high-strength low alloy steel known in the industry as

Cor-Ten, Usalloy, or shall be ductile iron Durabolt. Both ends of the valve shall be covered for shipment, and the mechanical joint accessories shall be packed inside the body of the valve.

**8. SEAT RING SIZE:**

Body of the valve and seat opening shall be sized large enough to accommodate the following sizes of shell cutters:

<b>Tapping Valve Nominal Diameter</b>	<b>Shell Cutter Diameter</b>
4"	3 7/8" ±1/32"
6"	5 13/16" ±1/32"
8"	7 7/8" ±1/32"
10"	9 3/4" ±1/32"
12"	11 7/8" ±1/32"

**9. TESTING:**

Each valve, after shop assembly, shall be given the operation and hydrostatic tests in accordance with AWWA C500 or AWWA C509 or AWWA C515.

**10. COATING:**

All valves shall be painted or coated in accordance with AWWA C500, AWWA C509, or AWWA C515. Machined flange faces shall not be painted or coated with the same coating as the body, but shall be evenly coated with a rust preventative compound.

**11. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance with NSF/ANSI 61 shall be sent to Parker Water & Sanitation District.

**12. ACCEPTABLE MANUFACTURERS:**

**Resilient Seated**

- American AVK
- Mueller
- Clow
- Kennedy
- U.S. Pipe & Foundry
- American Flow Control

# **Materials Specification – 7 for FABRICATED STEEL TAPPING SLEEVES**

## **For Use on 4 Inch through 20 Inch Nominal Diameter Pipe**

### **1. GENERAL REQUIREMENTS:**

The manufacturer of the tapping sleeves shall be experienced in their design and construction, shall be regularly engaged in their manufacture, and shall have produced tapping sleeves of the sizes specified herein which have given successful service for a period of at least 5 years.

### **2. SERVICE:**

The tapping sleeves will be installed on the following types of pipe: (1) Cast Iron, (2) Ductile Iron, (3) Asbestos-Cement and (4) Polyvinyl Chloride (PVC).

**The operating pressure for all 4 types of water pipe is 200 psig.**

### **3. MATERIAL:**

All steel plate used in fabrication of the tapping sleeves shall conform to ASTM A 36 or A 285, Grade C.

### **4. FLANGES:**

Flanges shall be fabricated from steel plate, and all dimensions shall conform to AWWA C207, Class D. Flanges shall be machined to a flat surface with a serrated finish in accordance with AWWA C207. In addition, the machined face shall also be recessed for tapping valves in accordance with MSS SP-60.

### **5. GASKETS:**

Gaskets shall be co compounded from new materials, and the shape of cross-section of gasket shall provide adequate seal for the design pressure. Gaskets shall be shop glued to the groove provided in the body section.

### **6. FASTENERS:**

Bolts and hex nuts shall be stainless steel, Usalloy, Dresserloy, Cor-Ten, ductile iron Durabolt or approved equal.

### **7. TESTING OUTLET:**

A 3/4 inch NPT by welded coupling shall be attached to the outlet nozzle of each tapping sleeve assembly complete with a 3/4 inch square head pipe plug.

### **8. PAINTING:**

All surfaces of the sleeve shall be clean, dry and free from grease and dirt before painting. All surfaces of tapping sleeve except face of flange, bolts and nuts, shall be given a shop coat of manufacturer's standard coating. Face of flanges shall be shop coated with a rust preventive compound. Bolts and nuts shall be shipped bare, without paint or protective coating.

**9. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance with NSF/ANSI 61 shall be sent to Parker Water & Sanitation District.

**10. ACCEPTABLE MANUFACTURERS:**

**Fabricated Steel**

Ford Model FTSS  
International Style 228  
Romac FTS 420  
Smith-Blair Model 622  
J.C.M. Model 412

**Stainless Steel**

J.C.M. - Model JCM 432  
Power Seal - Model 3490  
Cascade Style CST

# **Materials Specification – 8 for PRESSURE REGULATING VALVES**

## **1. SERVICE:**

The function of this valve is to reduce an existing high pressure to a pre-adjusted lower downstream pressure for varying rates of flow without causing shock or water hammer on the system.

## **2. VALVE DESCRIPTION:**

The pressure regulating valve shall be a hydraulically operated, pilot controlled, diaphragm or piston activated globe or angle valve. The valve shall be fully stainless steel or bronze-trimmed. An indicator rod shall be furnished as an integral part of the valve to show the valve position. The valve shall be designed to provide an access opening in the valve body for removing the internal parts without removing the main valve body from the line.

## **3. MATERIAL:**

Valve body, flanges and covers shall be cast iron conforming to ASTM A 126, Class B or ASTM A 48, Class 35; ductile iron conforming to ASTM A 536, grade 65-45-12; or 300 series stainless steel. Bronze castings or parts for internal trim shall conform to ASTM B 62.

## **4. VALVE ENDS:**

All valves shall be furnished with flanged ends sized and drilled in accordance with ANSI B16.1, Class 125. Flanges shall be machined to a flat surface with a serrated finish in accordance with AWWA C207.

## **5. PILOT VALVE:**

The pilot valve for controlling operation of the main valve shall be a single seated, diaphragm operated and spring loaded type. The pilot valve shall be attached to the main valve with piping and isolation valves so arranged for easy access in making adjustments and also for its removal from the main valve while the main valve is under pressure.

## **6. NEEDLE VALVE:**

The needle valve shall be all bronze or stainless steel and included with the main valve to control the speed of piston travel.

## **7. OPERATING PRESSURE:**

The operating pressure shall be 200psig.

## **8. TESTING:**

The body of the pressure regulating valve shall be given a hydrostatic test to 150% of the operating pressure specified herein. A seat leakage test shall be made at the operating pressure.

## **9. COATINGS:**

### **A. Internal Surfaces:**

All internal ferrous surfaces except machined or bearing surfaces shall be prepared for coating per SSPC-SP-10. These surfaces shall then be coated with a two-part thermosetting polyamide epoxy in two or more uniform coats, or with fusion bonded epoxy, to a minimum dry film thickness of 12 mils. Epoxy coating shall conform to AWWA C550.

### **B. External Surfaces:**

All external surfaces except machined or bearing surfaces shall be carefully prepared by removing all dirt, grease, and rust and shall be cleaned to the extent that the coating will bond to all surfaces.

The exterior of each valve except flange faces shall be shop coated with one coat of polyamide anti-corrosive epoxy primer to a dry film thickness of not less than 3 mils, or shall be prepared and coated the same as the internal surfaces.

Flange faces shall be shop coated with a rust preventive compound.

## **10. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance with NSF/ANSI 61 shall be sent to Parker Water & Sanitation District.

## **11. ACCEPTABLE MANUFACTURERS:**

Cla-Val  
Ames  
OCV

# Materials Specification – 9 for TWO INCH THROUGH FOUR INCH COMBINATION AIR- RELEASE AND -VACUUM VALVES

## 1. VALVE DESCRIPTION:

Combination Air Release and Vacuum Valves shall be of the single body, double orifice type. The large orifice shall allow air to escape during pipeline filling and to enter during drainage of the pipeline. The small orifice shall release small pockets of air after the pipeline is filled and under pressure. Except as modified or supplemented herein, all air valves supplied under this Specification shall be designed and manufactured in strict compliance with AWWA C512. The valves shall be installed in a vertical position in an underground vault.

## 2. VALVE CONSTRUCTION:

### A. Standard Iron Body:

The valve body and cover shall be cast iron per ASTM A 48, Class 35 or ASTM A 126, Grade B; or ductile iron per ASTM A 536, Grade 65-45-12. Each valve shall be supplied with stainless steel trim, which includes the float, float arm, guide bushings, plug, and all connecting hardware.

### B. Cylindrical Body:

The valve body shall be Type 304 stainless steel, and the ends shall be epoxy coated steel or Type 304 stainless steel, secured with Type 304 stainless steel rods. The floats shall be solid cylindrical high density polyethylene. The baffle plate, nozzle seat retaining plate, small orifice nozzle and all connecting hardware shall be stainless steel.

Valve seats shall be natural or synthetic rubber equal to Buna-N or EPDM.

All 3 inch and 4 inch valves shall be furnished with flanged inlets conforming in dimension and drilling to ANSI B16.1, Class 200. Each flange face shall be machined to a flat surface with a serrated finish in accordance with AWWA C207. All two inch valves shall be furnished with NPT inlets. All valves shall be provided with 1/2 inch NPT pipe plugs in the top cover and in the bottom of the body.

The operating pressure shall be 200 psi.

## 3. SIZE OF ORIFICES:

All valves shall be furnished with orifice sizes as tabulated:

Valve Size	Inlet	Outlet	Small Orifice	
			Standard Body	Cylindrical Body
2"	2"	2"	3/32"	.047"
3"	3"	3"	3/32"	.059"
4"	4"	4"	3/32"	.059"

#### **4. TESTING:**

Each assembled valve shall be tested in accordance with AWWA C512. The manufacturer shall furnish one certified copy of the test reports to the Parker Water & Sanitation District.

#### **5. COATINGS:**

All interior and exterior ferrous surfaces of the valve except machined or bearings surfaces, and corrosion resistant components shall be prepared for coating per SSPC-SP-10. These surfaces shall then be coated with a two-part thermosetting polyamide epoxy in two or more uniform coats, or with fusion bonded epoxy, to a minimum dry film thickness of 10 mils. Epoxy coating shall conform to AWWA C550 and shall be Ameron 400, Tnemec Series 140F Pota-Pox Plus, Corvel ECA-1626, or approved equal. Flange faces shall be shop coated with a rust preventative compound.

#### **6. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance with NSF/ANSI 61 shall be sent to Parker Water & Sanitation District.

#### **7. ACCEPTABLE MANUFACTURERS:**

##### **Standard Body**

APCO, Models 143C, 145C, 147C and 149C

Val-Matic, Series #200

GA Industries, Figure 945

##### **Cylindrical Body**

Vent-O-Mat, Series RBX

# **Materials Specification – 10 for 6 INCH VALVE BOXES**

## **1. GENERAL:**

The manufacturer of valve box components shall be experienced in their design and construction, shall be regularly engaged in their manufacture and shall have produced valve boxes which have given successful service for a period of at least 5 years.

## **2. MATERIALS:**

Valve box parts shall be made of gray cast iron, ASTM A 48, Class 35.

Use of an aluminum alloy as a casting material is not acceptable. The use of light weight boxes will not be allowed.

## **3. BOX DESCRIPTION:**

Valve boxes shall be the three-piece adjustable screw type. With a 160 base

## **4. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification shall be sent to Parker Water & Sanitation District.

## **5. ACCEPTABLE MANUFACTURERS:**

Tyler screw-type 6 inch cast iron valve box assembly Series 6860 with No. 160 oval base.

Star Pipe Model No. VBD160DMWW  
Castings Inc. Cl. 160B Oval Base  
East Jordan Iron Works Series 8560

# **Materials Specification – 11**

## **for**

### **DRY-BARREL FIRE HYDRANTS**

#### **1. GENERAL:**

Except as modified or supplemented herein, all fire hydrants shall be designed and manufactured in strict compliance with AWWA C502 with the following additional requirements or exceptions. All references made in this Specification are to the above standard unless otherwise noted.

#### **2. SERVICE:**

All fire hydrants supplied under these Specifications shall be designed for a working pressure of 200 psi and each factory assembled unit shall be hydrostatically tested in accordance with AWWA C502. Shop tests for the body and main valve will be conducted at a pressure of 300 psi.

#### **3. SIZE OF HYDRANT:**

All hydrants shall have a main valve opening size of at least five and one quarter (5-1/4) inches.

#### **4. TYPE OF HYDRANT:**

Hydrants shall be the three-way type with one pumper nozzle and 2 hose nozzles all located on the same horizontal plane, at least 18 inches above ground line.

#### **5. INLET CONNECTION:**

Hydrant base shall be provided with a mechanical joint inlet to accommodate 6 inch diameter ductile iron pipe complete with plain rubber gasket, gland, bolts and nuts all in accordance with AWWA C111.

The bolts and nuts shall be a high strength low alloy corrosion resistant steel Cor-Ten or equal with a minimum yield of 50,000 psi conforming to ASTM A 242. Incorporated into the base shall be two lugs for rodding of pipe.

All mechanical joint accessories shall be attached to hydrant for shipment.

#### **6. MAIN VALVE ASSEMBLY:**

Main valve of the hydrant shall be the compression type which closes with the water pressure. Seat ring shall be bronze with a machined face and external threads for threading into a bronze drain ring, or a bronze bushed shoe to provide bronze to bronze seating for the main valve. The assembly shall be sealed with O-rings.

Main valve shall be replaceable type fabricated of a resilient material with a threaded bottom plate or nut with a seal to prevent leakage of the hydrant shaft. The upper valve plate material shall be either bronze or epoxy coated ductile iron.

The valve assembly shall include one or more drain valves which will work automatically with the main valve and drain the barrel when the main valve is in the closed position. All drain tubes shall be bronze lined and sized large enough for the barrel to drain within 12 minutes when the barrel is sized for a 5 foot trench depth.

All parts of the main valve assembly shall be so designed that removal of the assembly from the barrel is accomplished without excavation in accordance with AWWA C502.

## **7. OPERATING SHAFT AND NUT:**

The operating nut shall be bronze or ductile iron and shall be pentagon shaped with a finished height of 1-1/8 inch. The dimensions from point-to-flat shall be between 1-1/4 inch and 1-3/8 inch from the top and to the bottom of the nut. Bushings in the bonnet shall be so constructed that it will prevent the operating nut from traveling during opening or closing operation. Also the bushing shall house a gasket or seal to prevent moisture or foreign material from entering the lubricant reservoir.

All hydrants shall be grease lubricated or shall be the dry-top design where an oil reservoir provides permanent lubrication of the operating nut threads.

A stop nut located in the hydrant bonnet on the operating shaft shall prevent over travel of the main valve when being opened.

The hydrant shall open by turning the operating nut to the **right** (in a clockwise direction) and shall have an arrow on top of the bonnet to designate the direction of opening.

## **8. PUMPER NOZZLE AND CAP:**

The pumper nozzle shall be 4-1/2 inches nominal diameter with 5-3/8 inch outer diameter threads having 6 threads per inch. Threads shall be right-hand. It shall be the supplier's responsibility to match the thread requirements for Parker Water & Sanitation District hydrants.

Nozzle cap shall be furnished with a synthetic rubber gasket installed in a retaining groove and the dimensions and shape of the nozzle cap nut shall be the same as the operating shaft nut as described above.

Nozzle caps shall be furnished with security chains with one end of each securely attached to the upper barrel section of the hydrant.

## **9. HOSE NOZZLES AND CAPS:**

The two hose nozzles shall be 2-1/2 inch nominal diameter with 7-1/2 threads per inch (2.5 - 7.5 N.H.). Threads shall be right-hand and National Standard in accordance with NFPA No. 194. Each hose nozzle shall include a nozzle cap with nut and security chain the same as described above.

## **10. NOZZLE ATTACHMENT:**

Outlet nozzles shall be fastened into the barrel by mechanical means and secured by a stainless steel pin or screw, bronze wedge or a ductile iron retainer. Nozzles shall be sealed by the use of O-rings.

## **11. COATINGS:**

The upper exposed section of the hydrant above ground shall be thoroughly cleaned and then painted with a prime coat of a rust inhibitive primer followed by a 10 mil thick shop coat of heavy duty alkyd enamel paint. The paint color shall be yellow similar to Federal Color No. 13538.

All exposed exterior surfaces below the ground line shall be coated with asphalt varnish or equal in accordance with AWWA C502.

The interior of the hydrants shall be coated with an epoxy coating in accordance with AWWA C502. The epoxy paint shall be NSF/ANSI 61 approved.

**12. CERTIFICATION:**

Manufacturer shall furnish a sworn statement stating that all hydrants furnished comply with all applicable provisions of AWWA C502 as modified or supplemented herein. A copy of the Certification including interior epoxy paint compliance with NSF/ANSI 61 shall be sent to Parker Water & Sanitation District.

**13. TRAFFIC FEATURES:**

All hydrants shall be equipped with traffic features that include a break away flange or lug system with a shaft coupling.

**14. ACCEPTABLE MANUFACTURERS:**

<b>Manufacturer</b>	<b>Model No.</b>
Mueller Company	Centurion Model A-473
American Flow Control/Waterous	Pacer WB-67-250
AVK American AVK Company	2700 Modern 2780 Nostalgic

- **ALL FIRE HYDRANTS INSTALLED MUST BE MANUFACTURED IN CURRENT OR PREVIOUS YEAR.**

# **Materials Specification – 12 for POLYETHYLENE ENCASUREMENT MATERIAL**

## **1. GENERAL:**

All polyethylene encasement material shall be manufactured in accordance with AWWA C105, with the following additional requirements or exceptions.

## **2. MATERIALS:**

The raw material used to manufacture polyethylene film shall be Type I, Class A, Grade E-1, in accordance with ASTM D 1248.

## **3. PHYSICALS:**

The polyethylene film shall meet the following test requirements:

Tensile Strength	1200 psi minimum
Elongation	300% minimum
Dielectric Strength	800 V/mil thickness minimum
Thickness	8 mils minimum nominal with minus tolerance not exceeding 10% of nominal
Flow Rate	0.4 maximum

## **4. CERTIFICATIONS:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made, and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification shall be sent to Parker Water & Sanitation District.

# Materials Specification –13 for BRASS AND BRONZE GOODS

## 1. GENERAL:

All of the following brass goods shall be manufactured in accordance with AWWA C800, and all of the following bronze goods shall be manufactured using copper alloy UNS No. C83600 commercially known as 85-5-5 in accordance with ASTM B 62, with the following additional requirements or exceptions.

Each manufacturer shall submit samples to Parker Water & Sanitation District. If the manufacturer is approved, the sample shall be kept by Parker Water & Sanitation District and used as the standard by which future purchases shall be compared.

## 2. CORPORATION STOPS:

Corporation stops shall be ball style, AWWA Standard taper to copper and shall be of the type listed below or equal, approved by Parker Water & Sanitation District:

Mueller	#H-15000	(Sizes 3/4" - 2")
Ford	#F-600	(Sizes 3/4" - 2")
Hays	#5200	(Sizes 3/4" - 2")
A.Y. McDonald	#4701B	(Sizes 3/4" - 2")
Ford	#FB-600	(Sizes 1" - 2")
Cambridge Brass	#102	(Sizes 3/4" - 2")

## 3. CURB STOPS:

Curb stops shall be copper to copper and shall be of the type listed below or equal, approved by Parker Water & Sanitation District

Ford Ball Type	#B-22	(Sizes 3/4" - 2")
Mueller	#H-15204	(Sizes 3/4" - 2")
A.Y. McDonald	#6100	(Sizes 3/4" - 2")
Hays	#4340	(Sizes 3/4" - 2")
Cambridge Brass	#202	(Sizes 3/4" - 2")

## 4. METER YOKES (LINE SETTERS):

Meter yokes shall be copper to copper and shall be of the type listed below or equal, approved by Parker Water & Sanitation District

Ford	#V-80 Series	(Sizes 5/8" - 1")
Ford	#CH88-333-9375	(Size 3/4")
Mueller	#H-14064	(Sizes 3/4" - 1")
Mueller	#H-1412	(Sizes 3/4" - 1")
Mueller	#H-1414	(Size 3/4")
A.Y. McDonald	#37D Series	(Sizes 3/4" - 1")

**5. STOP AND WASTE VALVE:**

Stop and waste valves shall be the type listed below or equal, and approved by Parker Water & Sanitation District

Mueller	#H-15214	(3/4" through 2")
Ford	#Z22-333 SW	(3/4")
Ford	#Z22-444SW	(1")
Cambridge Brass	#203	(Sizes 3/4" – 2")

**6. GATE VALVES:**

All gate valves under 3 inches for use with copper pipe shall be all bronze, with non-rising stems and solid wedge disc. The valve should be rated at 125 psi WSP and 200 psi WOG. Gate valves shall be of the type listed below and approved by Parker Water & Sanitation District:

AVK	25/46x	(3") OS&Y Hand wheel
American Flow		

**7. BALL VALVES:**

All ball valves less than 3 inches for use with copper pipe shall be all bronze, full port ball valve, 200 psi WOG. Ball valves shall be of the type listed below or equal, and approved by Parker Water & Sanitation District

Ford	#B22, #B44	(3/4" - 2") Flare Both Ends
Mueller Ball Curb Valve	#B25154 Ends	(3/4" – 2") Flare Both
AY McDonald Curb Stop	#6104	(3/4" – 2") Flare Both Ends
Ford Curb Stop	#BH-22-233	(3/4" – 2") Flare Both Ends

**8. SERVICE SADDLES:**

Service Saddles shall be 85-5-5-5 Brass Alloy as per ASTM B62 and AWWA Standard C800 All Saddles for PCV Pipe shall be "full support, wide bearing" type. All Saddles for ductile iron pipe shall consist of 85-5-5-5 Brass Alloy as per ASTM B62 and AWWA Standard C800 Saddles shall be of the type listed below or approved equal, and approved by Parker Water & Sanitation District.

Mueller	#BR2S	(Sizes 3/4" - 2")
Ford	#101BS	(Sizes 3/4" - 2")
	#202BS	(Sizes 3/4" - 2")
A.Y. McDonald	#3845	(Sizes 3/4" - 2")
Romac	#202BS	(Sizes 1" - 2")

# Materials Specification –14 for MECHANICAL JOINT RESTRAINT

## 1. GENERAL:

All mechanical joint restraints shall be incorporated in the design of a follower gland. The gland shall be manufactured of ductile iron conforming to ASTM A 536. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to AWWA C111/A21.11-95 and C153. & ANSI/AWWA C151/A21.51 ANSI/AWWA C150/A21.50 Standards.

## 2. DESCRIPTION:

The restraint mechanism shall consist of numerous individually activated gripping surfaces to maximize restraint capability. The gripping surfaces shall be wedges designed to spread the bearing surfaces on the pipe. Twist-off nuts, sized same as tee-head bolts, and shall be used to insure proper actuating of restraining devices. When the nut is sheared off, a standard hex nut shall remain.

## 3. PRESSURE:

The mechanical joint restraint device for ductile iron pipe shall have a working pressure of at least 250 psi with a minimum safety factor of 2.

The mechanical joint restraint device for PVC shall have a working pressure of at least 150 psi with a minimum safety factor of 2:1.

## 4. ACCEPTABLE MANUFACTURERS:

For Ductile Iron Pipe:

Romac Roma Grip	RG (for DIP only)	(4" – 36")
EBAA Iron, Inc.	Mega lug 1100 series	(4" - 36")
Uni-Flange	Series 1400	(4" – 36")
Star Grip	Series 3000	(4" – 36")

For PVC Pipe: DR-14

EBAA Iron, Inc.	Mega lug 2000 PV series	(4" - 12")
Star	Series 4000	(4" – 12")
Uni-Flange	Series 1500c	(4" – 12")

For Bell – Spigot Device: Ductile Iron Pipe

EBAA	Series 1700	(4" – 12")
Ford Uniflange	Series 1390	(4" – 12")

U.S. Pipe Field Lok Gasket

PVC Pipe:DR14

Star	Series 1100	(6" – 12")
Ford Uniflange	Series 1390	(6" – 12")
EBAA	Series 1500	(6" – 12")

# **Materials Specification – 15**

## **for**

### **BOLTED SLEEVE TYPE COUPLINGS**

#### **1. GENERAL:**

Pipe couplings shall be in accordance with AWWA C219 and shall be of a gasketed, sleeve type, with diameter to properly fit the pipe. Each coupling shall consist of one center sleeve, two end rings, two rubber-compounded wedge section gaskets and sufficient bolts to compress the gaskets.

The manufacturer of the coupling shall be experienced in their design and construction shall be regularly engaged in their manufacture and shall have produced couplings of the sizes specified herein which have given successful service for a period of at least 5 years.

#### **2. SERVICE:**

Couplings will be installed on the following types of pipe: 1) Cast Iron, 2) Ductile Iron, 3) Asbestos-Cement, 4) Polyvinyl Chloride. The manufacturer shall state in writing that the coupling must be sufficient for the types of pipe being joined.

#### **3. MATERIAL:**

The couplings shall be manufactured from either cast iron or ductile iron and shall conform to applicable ASTM Designations. For cast iron ASTM A 48 or ASTM A 126, Class B. For ductile iron ASTM A 536, any malleable iron shall conform to ASTM A 47.

#### **4. GASKETS:**

The gaskets of the coupling shall be composed of a crude or synthetic rubber base compounded with other products to produce a material which will not deteriorate from age or heat or exposure to air under normal storage conditions. It shall also possess the quality of resilience and ability to resist cold flow of the material so that the joint will remain sealed and tight indefinitely when subjected to shock, vibration, pulsation and temperature or adjustments of the pipeline.

#### **5. BOLTS:**

Bolts and heavy hex nuts shall be stainless steel, US alloy, Dresserloy, Cor Ten or an approved equal.

The manufacturer shall supply information as to the recommended torque to which the bolts shall be tightened.

#### **6. ACCEPTABLE MANUFACTURERS:**

Smith-Blair	Model 411
Dresser	Model 138-38
Romac	Model 501
Ford	Style FC1
Baker	Series 228
Power Seal	Model 3506

# Material Specification –16 for CONCRETE VAULTS

## 1. GENERAL:

The materials used to construct the vault shall conform to MS-19 and MS-20. Manholes, reducing sections, ladder rungs and traffic lids shall be precast and shall conform to ASTM C 478. the vaults shall be cast with a removable lid section for future access. The vault as a whole, and the individual components, i.e., the lid, walls and base slab shall be adequately designed to handle all applicable loads. The concrete vault design calculations shall be furnished to Parker Water & Sanitation District

## 2. TRAFFIC LIDS AND ROOFS:

All traffic lids and roofs shall be designed for H-20 loading in accordance with AASHTO Standards. The roof slab shall be a minimum of 8 inches thick.

The opening through the roof shall be 24 inches in diameter. Additional reinforcement shall be added around the opening at 45 degree angles to the edges. This shall extend a minimum of 2 feet beyond the opening or the ends of the reinforcing bars shall be standard 180 degree hooks.

If a removable lid is required, the lid shall be cast in sections. The sections shall be cast such that their individual weight does not exceed 7,500 pounds, assuming reinforced concrete weighs 150 pounds per cubic foot. Three inch diameter holes shall be provided in the sections for lifting. The holes shall be perpendicular to the face of the lid surface. The holes shall not displace any of the required reinforcement nor should it protrude from either face of the roof. The holes shall be placed in such a manner that when lifting cables are being used there is an equal weight distribution on all cables.

Only concrete collars will be allowed to bring to finish grade.

## 3. WALLS:

All four walls on cast in place vaults shall be cast in one continuous placement. All corners shall have added reinforcement. The walls shall be doweled into the floor. Precast vault walls shall be connected together by a plate and bolt type arrangement. Precast walls shall be appropriately secured to the floor slab.

The minimum wall thickness is 5 inches with the reinforcement being at least one inch from the inner face of the vault.

## 4. BASE SLAB:

The base slab shall be cast in place or precast.

The manufacturer may cast vaults in which the base slab is integral with the wall sections.

## 5. ACCEPTABLE MANUFACTURERS:

Rinker Materials

Colorado Precast

Amcro Concrete Products

(including 7800 Tunnel Vault)

# **Materials Specification –17 for METER PIT DOMES AND COVERS**

## **1. GENERAL:**

Meter pit domes and covers shall be of double lid frost proof construction and shall fit a 20 inch ID concrete meter pit ring.

## **2. MATERIALS AND CONSTRUCTION:**

The meter pit dome may be constructed of aluminum in accordance with ASTM A 132, or cast iron in accordance with ASTM A 48.

The cap type top lid shall be cast iron or polymer concrete. The cast iron lid shall have a recess approximately 7 inches diameter by 3/4 inches deep to hold an Orion Pit ERT. There shall be a center hole, 2 inches in diameter to accept the ERT, and three drainage holes within the recessed area. The polymer concrete lid shall have integral supports to hold an Itron Pit ERT below the surface of the lid, in accordance with installation instructions. All top lids shall be furnished with a worm-gear locking bolt with a large 5-sided brass nut.

The inner frost lid shall be molded of high-density polyethylene at least 1/8 inch thick. The frost lid shall be dish-shaped with a recess 2-1/2 to 3 inches deep with three to five 1/4 inch diameter drainage holes located around the edge of the recessed area. There shall be a 1/4 inch wide notch the full width of the top lip, and a lifting tab projecting 2 inches hole.

## **3. ACCEPTABLE MANUFACTURERS:**

Castings, Inc.

#M-70-AL

Castings, Inc.

#M-7021CI

Armorcast Products Co.

Polymer Concrete Pit Lid

# **Materials Specification –18 for WATER METERS**

## **1. GENERAL:**

All positive drive displacement type water meters, 5/8 inch through one inch, furnished under this standard, shall be manufactured in strict accordance with the latest edition of AWWA C700, C707, and C702 with the following additional requirements. The meter may be of a nutating disc or impeller.

## **2. ALL WATER METERS WILL BE PROVIDED BY THE PARKER WATER & SANITATION DISTRICT.**

## **3. SERVICE:**

All water meters will be installed by the Parker Water & Sanitation District or under the supervision of the Parker Water & Sanitation District personnel

## **4. 1 ½” AND 2” METERS:**

All water meters will be installed by the Parker Water & Sanitation District or under the supervision of the Parker Water & Sanitation District personnel

## **5. Compound Water Meters**

All compound water meters 3 inch and larger will be installed by the contractor under the supervision of the Parker Water & Sanitation District personnel

# **Materials Specification –19 for CURB STOP BOXES**

## **1. GENERAL:**

The manufacturer of curb box components shall be experienced in their design and construction, shall be regularly engaged in their manufacture and shall have produced valve boxes which have given successful service for a period of at least 5 years.

## **2. MATERIALS:**

Curb Box parts shall be made of gray cast iron, ASTM A 48, Class 35.

Use of an aluminum alloy as a casting material is not acceptable. The use of light weight boxes will not be allowed.

## **3. Box Description:**

Tyler screw-type 2 1/2" inch cast iron Curb box assembly Series 6500

Curb boxes shall be the two-piece adjustable screw type. The top section shall be 30 inches bottom section is 39 inches.

## **4. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification shall be sent to Parker Water & Sanitation District.

## **5. ACCEPTABLE MANUFACTURERS:**

Star Pipe  
Castings Inc. CI.

Tyler

# **Materials Specification –20 for SANITARY SEWER PIPE**

## **1. GENERAL:**

All PVC pipe shall be manufactured in accordance with ASTM D-3034 with the following additional requirements or exceptions.

## **2. SIZE OF PIPE: PVC SEWER MATERIALS**

**THE FOLLOWING DESCRIBED MATERIALS ARE APPROVED FOR USE IN PVC PIPE SEWER CONSTRUCTION.**

### **PIPE:**

Sanitary sewer pipe shall be PVC and conform to: ASTM D3034 SDR 35 for sizes 8 inches to 15 inches in diameter;

ASTM F789 FOR SIZES 8 INCHES TO 18 INCHES (SOLID WALL)

ASTM F679 FOR SIZES 18 INCHES TO 36 INCHES (SOLID WALL)

ASTM F949 FOR SIZES 8 INCHES TO 36 INCHES (PROFILE WALL)

ASTM F749 FOR SIZES 8 INCHES TO 48 INCHES (PROFILE WALL)

ASTM F1803 FOR SIZES 18 INCHES TO 60 INCHES (PROFILE WALL)

## **3. Joint Type: Gaskets**

Gaskets shall comply with ASTM F477. It shall consist of a properly vulcanized high grade elastomeric compound. The basic polymer shall be natural rubber, synthetic elastomer, or a blend of both. The gasket shall be the only element depended upon to make the joint flexible and water-tight.

**Solvent cement joints are strictly prohibited.**

## **4. PIPE LENGTH:**

Each length of pipe will be a standard laying length of 20 feet. Random lengths are not acceptable.

## **6. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made, and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance shall be sent to Parker Water & Sanitation District

## **7. ACCEPTABLE MANUFACTURERS:**

Certain-Teed Corporation  
J-M Manufacturing Company  
Iplex, Inc. or Diamond Plastic Corporation  
Vinyltech

# **Materials Specification –21 for SANITARY SEWER MANHOLES**

**1. GENERAL:**

All Precast Man Hole sections, Flat Tops, Barrels, and Reducers. All Manhole Material must be Designed and Manufactured according to ASTM C-478 Specifications.

**2. SIZE OF BARRELS:**

All Barrel sections will be 4' 5' or 6' inside diameter.

**3. JOINT TYPE:**

Each barrel section will be sealed at the joint with a flexible plastic gasket-type sealant which meets the chemical and physical composition requirements of Federal Specifications SS-S-210A

**4. STEPS:**

Manhole steps shall not be installed over the flow channel. They shall be placed 12" minimum or 16" maximum in a straight vertical alignment with the bottom step 8" above the bench

**5. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made, and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance shall be sent to Parker Water & Sanitation District

**6. ACCEPTABLE MANUFACTURERS:**

Amcor Precast

Colorado Precast Concrete

Firebaugh

# **Materials Specification –22 for MANHOLE RING AND COVER**

## **1. GENERAL:**

The manufacturer of Manhole lids and ring components shall be experienced in their design and construction, shall be regularly engaged in their manufacture and shall have produced lids and rings which have given successful service for a period of at least 5 years.

## **2. MATERIALS:**

Cast Iron must conform to ASTM A-48-93 Class 35B

## **3. RING and COVER:**

Manhole ring and cover shall be class 35B the word SEWER will be cast directly onto lid. The ring will be traffic rated per the CDOT standard M-604-20 (MANHOLES) The lid shall be the standard 24 inch ring and cover.

## **4. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification shall be sent to Parker Water & Sanitation District.

## **5. ACCEPTABLE MANUFACTURERS:**

D&L FOUNDRY & SUPPLY

COMCO FOUNDRY INC

HUTCHINSON FOUNDRY & STEEL INC

CASTINGS INC MH- 400-24 CLASS 35

EAST JORDAN IRON WORKS

# **Materials Specification –23 for SANITARY FITTINGS**

## **1. GENERAL:**

### **Sanitary Sewer Connections**

On all new PVC sewer construction, connections shall be made with Wye's or Tee's conforming to ASTM D3034 or F679 whichever is applicable. Only gasketed fittings will be used. Saddle Wye's and Tee's with gaskets for the saddle and joints are approved for sanitary sewer service connection to existing PVC sanitary sewers only. Stainless steel straps shall be used to secure the saddle fittings to the main pipe.

## **2. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance shall be sent to Parker Water & Sanitation District

# **Materials Specification –24 for PRESSURIZED SANITARY PIPE**

## **POLYVINYL CHLORIDE (PVC) PRESSURE PIPE**

### **Elastomeric Gasket Joint: 6 Inch, 8 Inch, And 12 Inch (Color Green)**

#### **1. GENERAL:**

All PVC pipe shall be manufactured in accordance with AWWA C900, or AWWA C909, with the following additional requirements or exceptions.

#### **2. SIZE OF PIPE:**

This Specification shall cover polyvinyl chloride (PVC) pipe in 6 inch, 8 inch, and 12 inch nominal diameters with cast iron pipe equivalent outside diameters.

#### **3. JOINT TYPE:**

Pipe joints shall be made using an integral bell with an elastomeric gasket push-on type joint.

**Solvent cement joints are strictly prohibited.**

#### **4. CLASS AND TYPE:**

Sizes 6 inch, 8 inch and 12 inch shall be Class 200 Dimension Ratio 14 (DR 14).

#### **5. PIPE LENGTH:**

Each length of pipe will be a standard laying length of 20 feet. Random lengths are not acceptable.

#### **6. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made, and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance with NSF/ANSI 61 shall be sent to Parker Water & Sanitation District

#### **7. ACCEPTABLE MANUFACTURERS:**

Certain-Teed Corporation  
J-M Manufacturing Company  
Iplex, Inc.  
Diamond Plastic Corporation  
Vinyltech

#### **8. Restraints:**

Ebaa 1600 6", 8", &12"

Uniflange 1390 6", 8", &12"

Star 1100 series 6", 8" & 12"

# **Materials Specification –25 for PRESSURIZED SANITARY FITTINGS**

## **1. GENERAL:**

All cast iron and ductile iron fittings shall be manufactured in accordance with the following: AWWA C104, C110, C111, and C153 with the following additional requirements or exceptions.

## **2. VALVES:**

All valves shall be plug valves as specified. **Valve operation shall be open Left.**

### **PLUG VALVES**

Plug valves shall be non-lubricated, with a plug facing as specified by the manufacturer For the application and shall have stainless steel permanently lubricated upper and lower plug stem bearings. Valves shall be designed with adjustable seals which are replaceable without removing the bonnet. Bearing and seal areas shall be protected with grit seals. Port opening for all valves shall be no less than 81% of full pipe area. Twelve inch and smaller valves shall be pressure rated to 175 psi. Fourteen inch and larger valves shall be pressure rated to 150 psi. Shut offs shall be bi-directional.

All valves shall be eccentric plug valves as follows:

Buried plug valves shall have two inch operating nuts within 10 to 15 inches below finish grade.

All accessories shall be supplied as specified by manufacturer.

Buried plug valves shall be provided with adjustable valve boxes. Valve boxes shall be cast iron conforming to ASTM A-48, CL30. Valve boxes shall be Tyler 462A or approved equal.

All fittings installed in the Parker Water & Sanitation District shall be furnished with mechanical joint ends conforming to referenced standards, and in addition the tee-head bolts and hexagon nuts shall be fabricated from a high-strength, low alloy steel known in the industry as Cor-Ten or Us alloy or ductile iron Durabolt or equal.

Accessories for the mechanical joint consisting of the gasket, gland and fasteners shall be furnished and packaged separately from the fittings. Each package shall be labeled in such a manner as to provide for proper identification and the number of units per package or bundle.

## **4. THICKNESS CLASS:**

Ductile Iron fittings shall have a minimum of 250 psi pressure rating, ductile iron compact fittings shall be 350 psi pressure rating, and shall conform to the dimensions, weights and pressure rating shown in the tables of referenced standards. (C110 & C153)

**5. MATERIAL:**

All fittings shall be made from ductile iron.

**6. CERTIFICATION:**

The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of the applicable Standard(s) herein specified. A copy of the Certification including compliance with NSF/ANSI 61 shall be sent to Parker Water & Sanitation District

**7. ACCEPTABLE MANUFACTURERS: VALVES**

Dezurik Corporation,  
Milliken Valve Company,  
M&H Valves.

**8. Acceptable Manufacturers Fittings**

Tyler Pipe Industries  
U.S. Pipe  
Griffin Pipe Products  
Union Foundry Company  
Star Pipe Products