



## WATER SERVICE LINE SPECIFICATIONS

### 420.00 GENERAL PROVISIONS

#### 421.00 General

Construction of all water mains within Broomfield and all water service lines that connect to water mains within Broomfield shall be in accordance with these STANDARDS AND SPECIFICATIONS and the approved plans. These STANDARDS AND SPECIFICATIONS shall apply to new water system construction as well as to repairs to existing facilities.

### 440.00 WATER SERVICE LINE CONSTRUCTION

#### 441.00 General

All water service line locations shall be marked on the face of the curb by saw cutting a "V" symbol where services cross under the curb. Water service lines shall be in a separate trench, except as approved by the City Engineer, and shall be a minimum of ten (10) horizontal feet from sewer service lines. Water service lines shall be a minimum of eighteen (18) vertical inches above any sanitary sewer crossing. All water service lines shall be stubbed into the lot either ten (10) feet beyond the back of the sidewalk or curb or five (5) feet beyond any utility easement, whichever is greater, and shall be marked at the end of the water service with a wood 2x4 painted blue.

The water service line at the curb stop shall be no deeper than five (5) feet - six (6) inches. Water service lines shall be a minimum of two (2) feet inside the property line and shall not be located under a driveway unless approved by the City Engineer.

#### 441.01 Excavation

All excavation shall comply with Section 342.00 Excavation of these STANDARDS AND SPECIFICATIONS.

### 442.00 Equipment and Materials

#### 442.01 Water Service Lines

Water service lines shall be sized to adequately supply the requirements of the property being served. The minimum size line shall be three-fourths ( $\frac{3}{4}$ ) inch. The acceptable material for a three-quarter ( $\frac{3}{4}$ ) inch to two (2) inch service line is seamless copper tube. Three (3) inch and greater diameter service lines may be ductile iron pipe or PVC pressure pipe. High density polyethylene pipe may be an acceptable material for water service lines installed between water meters and private structures, at the discretion of the City Engineer. All service pipes shall conform to one of the following specifications:

- A. Seamless copper tube designated as "Type K" (soft) shall be used for service lines three-fourths ( $\frac{3}{4}$ ) inch through three (3) inches.
- B. Ductile Iron Pipe or PVC pressure pipe complying with Denver Water Board Specifications may be used for three (3) inch service lines, and shall be used for all service lines larger than three (3) inches.
- C. High Density Polyethylene Pipe shall be PE 3408 (DR-11) with a minimum pressure rating of one hundred sixty (160) psi. PE 3408 may be used for service lines that are three-fourths ( $\frac{3}{4}$ ) inch through three (3) inches in diameter and between a water meter and a private structure, as approved by the City Engineer. All pipe, fittings and joints shall comply with sections 605 and 605.20 of the International Plumbing Code.

Water service lines shall be of the same type material from beginning to end, unless the appropriate insulator is installed at the junctions of dissimilar metals and unless approved by the City Engineer.

#### **442.02 Water Service Saddles**

Water service saddles shall be required for all AWWA C909 PVC waterlines for water service taps and may be required on other PVC piping as determined by the City Engineer. Service saddles shall be brass or bronze and shall comply with AWWA C800.

#### **442.03 Meters**

All meters shall be purchased from Broomfield and shall be installed, owned and maintained by the Broomfield Utilities Maintenance division. All single family residential meters shall be size  $\frac{5}{8}$ " x  $\frac{3}{4}$ ", unless otherwise approved by the City Engineer. No meter shall be installed until the City Engineer has approved the proposed installation. Permanent water meters shall be installed prior to issue of the Certificate of Occupancy.

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#### **442.05 (Left Blank Intentionally)**

#### **442.06 Outside Meter Settings**

All outside meters shall be installed in a horizontal position and housed in a manhole or vault in accordance with the Detail Drawings. The installation of the water meter shall comply with the following unless otherwise approved by the City Engineer:

- A. All meters not installed within the right-of-way shall require an easement dedication ten (10) feet wide and extending three (3) feet behind the meter.
- B. The meter shall be installed in a pit, manhole or vault which shall allow free and easy access and adequate room for installation, inspection and maintenance, and shall provide protection from freezing.
- C. All fittings shall be brass or copper.
- D. A pressure regulator (Watts 25 AUB or equivalent) shall be installed on all water services before the meter is installed.
- E. A ball or gate valve shall be installed where the water service line enters the building and the meter is installed.

#### **442.07 Inside Meter Setting and Remote Readers**

##### **INSIDE METERS SHALL ONLY BE USED WITH SPECIAL APPROVAL BY THE CITY**

**ENGINEER.** All inside meter settings shall be installed in a manner which shall allow free and easy access and adequate room for installation, inspection and maintenance, and shall provide protection from freezing. Meters installed inside buildings shall not be more than eighteen (18) inches from the wall through which the water service line enters the building, unless otherwise approved in writing by the City Engineer.

Inside meter settings shall not be allowed in crawlspaces, closets or other places where free and easy access is not provided. Meter sizes one and one-half (1½) inch and two (2) inch installed inside buildings shall be provided with a floor drain. Refer to the Detail Drawings. Installation shall conform to the following:

- A. The meter setting shall be installed in the basement, a utility closet, or similar area, which shall allow free and easy access and adequate room for installation, inspection, and maintenance.
- B. The meter yoke shall be a minimum of twelve (12) inches and a maximum of four (4) feet above floor level in a horizontal position and have a minimum of twelve (12) inches clearance from all surrounding obstructions.
- C. A ball or gate valve shall be installed on both the upstream and downstream side of the water meter.

- D. A pressure regulator, adjustable from twenty-five (25) to seventy-five (75) psi shall be installed between the meter yoke and downstream valve. The regulator shall be a Watts Model 25AUB or equivalent unless otherwise approved in writing by the City Engineer.
- E. All fittings shall be brass or copper.

#### **442.08 Meter Bypass Line**

A bypass line shall be required for all one and one-half (1 ½) inch and larger meters, unless otherwise approved by the City Engineer, whether installed in an outside or inside setting. Bypass lines shall contain an independent control valve and shall not contain tees, plugs or other outlets, and shall be in accordance with the Detail Drawings. A bypass line may be required on services smaller than one and one-half (1½) inch if deemed necessary by the City Engineer.

#### **442.09 Meter Check Valves**

Check valves shall be required on meters where any condition exists that could cause water to flow from the property to the main.

#### **442.10 Valves for Use with Meters**

Gate valves three (3) inches and smaller for copper water service lines shall be brass, with non-rising stems and solid wedge disc, manufactured in accordance with ASTM B62, 125 WSP, 200 PSI WOG. Gate valves shall comply with AWWA C800 and shall be in accordance with the Detail Drawings.

Valves larger than three (3) inches for use with ductile iron water service lines shall be gate valves with cast iron bodies. All gate valves larger than three (3) inches shall be supported by adjustable steel valve supports.

#### **442.11 Meter Couplings**

All meters one and one-half (1½) inch and larger shall be installed with a coupling to allow for the removal of the meter without disturbing the pipe. Couplings shall comply with Denver Water Board Specifications Section MS-22.

#### **442.12 Meter Yokes (Copper Setters)**

Meter Yokes (Copper Setters) shall be Ford Series 80, McDonald Series 31, Cambridge Series 6040 or Mueller Series P-2474 with an angle ball valve and a padlock wing on the inlet side of meter. Water service connections shall be compression fittings, with a "110", "Cam Pack", or "Mac Pack" type fitting and shall be vertical.

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#### **442.15 Meter Pits and Covers**

Meter pits for five-eighths (<sup>5</sup>/<sub>8</sub>) inch meters shall be twenty (20) inches in diameter and forty-eight (48) inches deep and shall comply with ASTM D1505 and D746 and Denver Water Board Specifications. Meter pit covers shall be tight fitting with double lids for frost protection. Meter pit covers and domes shall have non-metallic, cap-type top lids, and the inner lids shall be plastic, aluminum or rubber. Aluminum shall have a polymer coating such as an epoxy. Meter pits and covers shall comply with Denver Water Board Specifications Section MS-23 and shall be in accordance with the Detail Drawings. Placement of meter pits shall be a maximum of five (5) feet from the front property line. Meters not located in the right-of-way shall require an easement dedication ten (10) feet wide and extending three (3) feet behind the meter.

#### **442.16 Corporation Stops**

Corporation stops provide the connection for the water service line to the waterline. Services shall be a minimum of eighteen (18) inches from all pipe joints, fittings and valves. Corporation stops are also required in air and vacuum valve and large butterfly valve installations. Corporation stops are available in standard sizes ¾", 1", 1½" and 2". Refer to the Detail Drawings and Denver Water Board Specifications Section MS-21. Tapered threads other than the inlet thread of corporation valves shall comply with ANSI/ASME B1.20.1. Two spiral wraps of three (3) mil PTFE (Teflon) tape shall be wrapped clockwise around the inlet threads on the closed corporation stops. Liquid sealants or other lubricants shall not be used.

#### **442.17 Curb Stops**

Curb stops are required for meters one and one-half (1 ½) inch and larger. Curb stops are set on the service line on the inlet side of the meter pit and provide a means to shut off the service line. Placement of the curb stop and stop box can vary from a maximum of five (5) feet outside the front property line to a maximum of five (5) feet inside the front property line. Curb stops shall be buried a minimum of four (4) feet – six (6) inches and a maximum of five (5) feet – six (6) inches. Placement of the curb stop and stop box outside the front property line is preferred. Refer to the Detail Drawings and Denver Water Board Specifications Sections MS-21 and MS-23. Curb stops shall not be installed under concrete or asphalt unless approved by the City Engineer and shall have a traffic approved curb box.

#### **442.18 Curb Stop Service Boxes**

Curb stop service boxes shall be cast iron, Buffalo type. The bottom part shaped like an inverted "U" straddling the service line, shall have a flanged bottom so as to support itself. Curb stop service boxes shall comply with Denver Water Board Specifications Section MS-22. Curb stop boxes shall be to grade and be accessible at the time of meter installation.

#### **442.19 Brass Fitting Couplings**

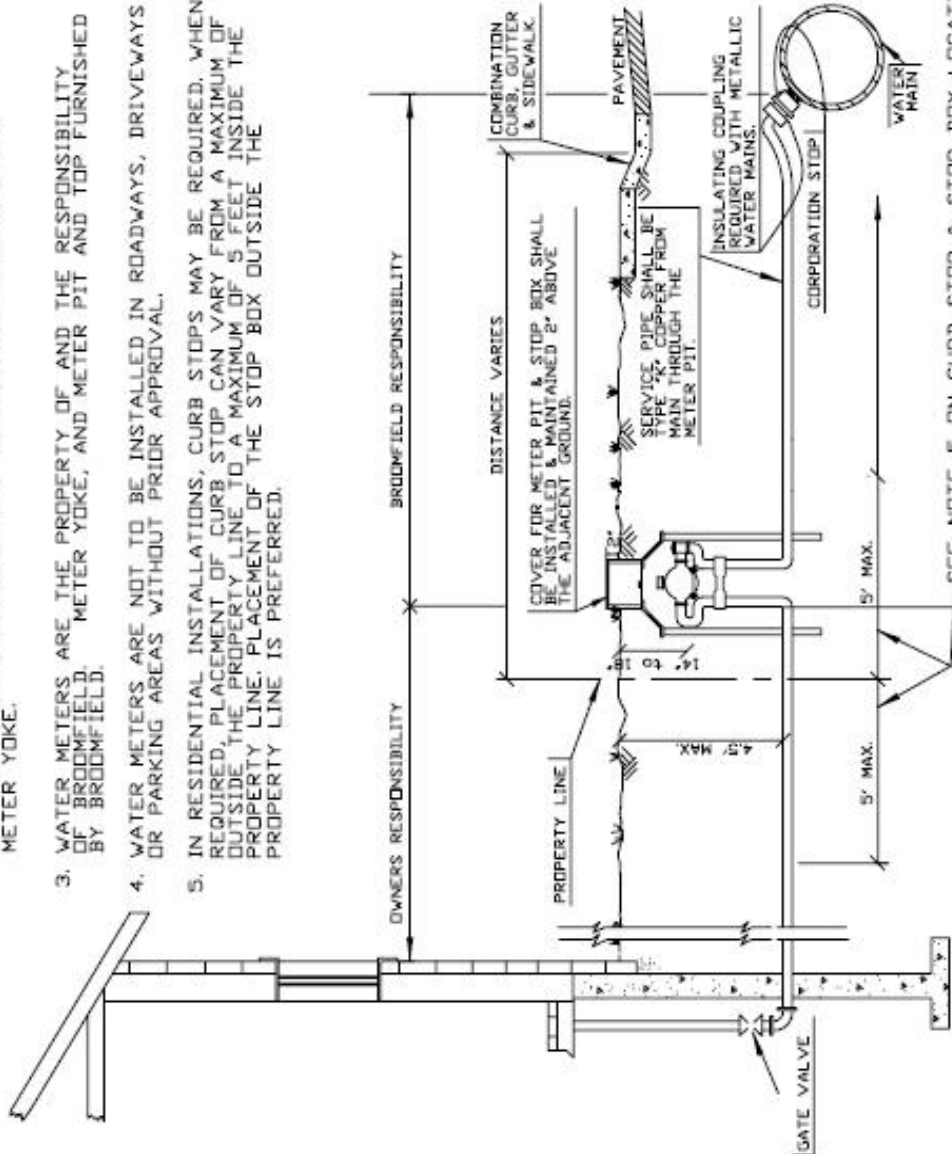
Couplings for brass fittings may be flared or compression.

#### **442.20 Backflow Preventers**

Backflow preventers shall be installed on all commercial water service lines and on all residential water service lines that serve more than two units. Refer to Broomfield Municipal Code Chapter 13-07-100 Backflow Prevention Devices for additional requirements.

**NOTES:**

1. OWNERS RESPONSIBILITY FOR LEAK REPAIR SHALL BE UP TO AND INCLUDING THE TUBE NUT WHICH THREADS ONTO THE METER YOKE.
2. BROOMFIELD'S RESPONSIBILITY SHALL BE THE WATER MAIN, THE CORPORATION STOP, AND WHERE NEEDED, THE TAPPING SADDLE. THE WATER DEPARTMENT WILL FIX LEAKS ONLY OCCURRING BETWEEN THE CORPORATION STOP AND THE METER YOKE.
3. WATER METERS ARE THE PROPERTY OF AND THE RESPONSIBILITY OF BROOMFIELD. METER YOKE, AND METER PIT AND TOP FURNISHED BY BROOMFIELD.
4. WATER METERS ARE NOT TO BE INSTALLED IN ROADWAYS, DRIVEWAYS OR PARKING AREAS WITHOUT PRIOR APPROVAL.
5. IN RESIDENTIAL INSTALLATIONS, CURB STOPS MAY BE REQUIRED. WHEN REQUIRED, PLACEMENT OF CURB STOP CAN VARY FROM A MAXIMUM OF 5 FEET OUTSIDE THE PROPERTY LINE TO A MAXIMUM OF 5 FEET INSIDE THE PROPERTY LINE. PLACEMENT OF THE STOP BOX OUTSIDE THE PROPERTY LINE IS PREFERRED.



SEE NOTE 5 ON CURB STOP & STOP BOX LOCATION.

BROOMFIELD FURNISHES CORPORATION STOP, METER PIT, METER YOKE, AND METER PIT DOME WITH LID



**City and County of Broomfield**  
**ENGINEERING DEPARTMENT**

**TITLE: DOMESTIC SERVICE LINE - OUTSIDE METER- 1/2" & 1"**  
**DETAIL DRAWING NUMBER: 400-13**  
**APPROVED BY: /s/ Burt Knight**      **DATE: 1/9/2007**