December 3, 2018

Re: Chesterfield County’s Water and Sewer Specifications and Procedures;
11/14/18 Revision:
Direct Tapping of Water Service Connections and Water Service Saddle Material Requirements

Dear Members of Chesterfield’s Development Community:

Please be advised that revisions to Chesterfield County’s Water and Sewer Specifications and Procedures dated November 14, 2018 have been published on the County website at:

https://www.chesterfield.gov/410/Water-Wastewater-Specifications

These revisions are consistent with Utilities’ presentation at Chesterfield County’s August 14, 2018 Quarterly Developer’s Meeting and include additional information related to the required use of corrosion resistant bronze body service saddles, use of tapping tees, and when direct tapping of waterlines is required. Additionally, all other iron bodied service saddles are being removed from the approved materials list due to the high cost and inconvenience associated with the continued failures of iron bodied saddles throughout Chesterfield County.

These changes will be enforced effective February 4, 2019 and are being accepted on current construction projects. Please submit any questions or comments to my attention at (804)706-7616 or remboldm@chesterfield.gov or to Rachael Lumpkin at (804)751-4778 or lumpkinr@chesterfield.gov.

Sincerely,

Matthew J. Rembold, P.E.
Engineering Supervisor
# Chesterfield County Water and Sewer Specifications

## Third Edition

### List of Changes  
December 3, 2018

#### Part I

<table>
<thead>
<tr>
<th><strong>Page #</strong></th>
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<tbody>
<tr>
<td>DS-20 and DS-21</td>
<td>Revised to provide additional information related to use of service saddles and when to direct tap the waterline.</td>
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<tr>
<td>DS-22</td>
<td>Repaginated.</td>
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#### Part II

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<thead>
<tr>
<th><strong>Page #</strong></th>
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<tr>
<td>MET-1</td>
<td>Revised to indicate when a service saddle shall be used.</td>
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#### Part III

<table>
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<tr>
<th><strong>Page #</strong></th>
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<tr>
<td></td>
<td>NO CHANGES AT THIS TIME.</td>
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#### Part IV

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<thead>
<tr>
<th><strong>Page #</strong></th>
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<tr>
<td>3-11 thru 3-13</td>
<td>Revised to provide additional information related to use of service saddles and when to direct tap the waterline.</td>
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<td><strong>PAGE #</strong></td>
<td>*** CHANGE ***</td>
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<tr>
<td>V-1-12</td>
<td>In paragraph Q, changed the model numbers to reflect bronze bodied service saddles. Also removed Cascade as an approved manufacturer – no bronze bodied model service saddles. <strong>This becomes effective February 4, 2019.</strong></td>
</tr>
<tr>
<td>V-3-10 and V-3-11</td>
<td>Under SERVICE SADDLES, removed Cascade as an approved manufacturer. <strong>This becomes effective February 4, 2019.</strong></td>
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<tr>
<td>V-4-21</td>
<td>In paragraph 9.g.1, revised to state saddle castings must be bronze and provided correct ASTM and AWWA reference. <strong>This becomes effective February 4, 2019.</strong></td>
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</tbody>
</table>
Services and meters shall be sized and located in accordance with the Standard Details. Minimum service size shall be 3/4" pipe with 5/8" meter. Services shall be designed and reflected on the plans for both residential and commercial developments. A 1" County service line will be installed in residential applications when: the residential water service from the main to the meter is 60' or greater; the peak hour pressure at the meter is 40 psi or less; or the water service will be serving a “multi-purpose” residential fire sprinkler system as identified on plans, in which case it will also be fitted with a 1” water meter.

When the peak hour pressure at the probable meter location is less than 40 psi and other variables occur, such as house location, number of fixtures, number of finished floors, etc., a note must be added to the plans: “The builder may consider installing a larger plumbing line from the meter to the house and/or installing a booster pump to obtain a desired pressure.”

When it is intended for a residential structure to be fitted with a multi-purpose fire sprinkler system, a note must be added to the plans: “If the combined domestic and fire flow demand for a residential, structure, as approved by the Fire Life Safety Division Department review staff, exceeds the rated capacity of a 1” meter, then the water service shall be installed in accordance with detail FIR-1B.”

Pressure reducing valves shall be installed on the customer side of the meter by builder or property owner, to be operated and maintained by the customer, when the service connection system pressure will be greater than 80 psi. Subdivision construction plans must include “PRV” written on each lot where this condition occurs.

The use of approved saddles for 3/4” and 1” residential service lines shall be required for PVC and asbestos cement pipe. Ductile iron pipe shall be direct tapped for 3/4” and 1” residential water services.

Non-residential services shall be in accordance with the following table:

<table>
<thead>
<tr>
<th>Meter Size</th>
<th>Main Line - PVC</th>
<th>Main Line - Ductile Iron</th>
<th>Service Size &amp; Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8”</td>
<td>Corporation stop (saddle)</td>
<td>Corporation stop (direct tap)</td>
<td>3/4” or 1” soft copper</td>
</tr>
<tr>
<td>1”</td>
<td>Corporation stop (saddle)</td>
<td>Corporation stop (direct tap)</td>
<td>1” soft copper</td>
</tr>
<tr>
<td>1 1/2”</td>
<td>New water mains: 2” tapped tee</td>
<td>New water mains: 2” tapped tee or direct tap</td>
<td>1 1/2” hard copper; 2” hard copper to curb stop when crossing Thoroughfare Plan roads</td>
</tr>
<tr>
<td></td>
<td>Existing mains: 2” corporation stop (saddle)</td>
<td>Existing mains: 2” corporation stop (direct tap on ≥ 12” main; saddle &lt;12” main)</td>
<td></td>
</tr>
</tbody>
</table>

Published: 05/02 Revised: 12/03/18 DS-20 Chesterfield County WSSP
New water mains: 2" tapped tee or direct tap
Existing mains: 2" corporation stop (direct tap on ≥ 12" main; saddle <12" main)

2" hard copper

New water mains: Tee
Existing mains: Tapping sleeve and valve when circumstances do not warrant a tee and main valves

Ductile Iron to match meter size

Water service lines shall be perpendicular to the water main whenever possible. This may not be achievable in cul-de-sacs, otherwise water service pipes are to be straight unless otherwise approved by the Utilities Department.

Water meters shall be sized in accordance with Utilities Procedure PRO-DEV-001. Upsizing of water meters one nominal size for multi-family buildings will be considered on a case-by-case basis.

Blowoffs shall be provided at low points on mains 16-inches and larger. For 12-inch mains, blowoffs shall be provided at creek crossings.

Engineer should use the following guidelines, in regard to location of flush points, air release valves, blowoffs, etc. during the design of public water systems:

1. Access to flush points by contractors and especially to the County Operations and Maintenance Section is very important. Flush points serve no purpose if access to the flush points can not be obtained.

2. Engineer needs to make sure that appropriate notes i.e., flow (gpm) expected to be dispersed at points of flushing; etc. are put on the plans.

3. Emphasize (through appropriate notes) to contractor to maintain good erosion control and flushing procedures. Erosion control and environmental impact consideration must be taken into account whenever a flush point is chosen, therefore, certain controls may be needed at the time water line is installed.

4. Engineer needs to advise contractor to coordinate his work through the inspectors and the inspector coordinate with the County Operations and Maintenance Section regarding when to flush (time of day and season, etc.).
5. On most 16" or larger water lines, attempt to locate the flush points as near to the roadways or at a stream (keeping in mind adverse effects to downstream ponds, etc.).

6. Contractor is to perform flushing prior to acceptance of the new water line.

7. Minimize the number of blowoffs, and strategically place them so that proper flushing can be performed.

8. Minimizing number of air release valves, taking into consideration the depth that the water line is to be placed.

9. Standardize the design of a blowoff needed taking into account the size of blowoff, height of blowoff, positioning of blowoff, etc.

10. Look at easement considerations that would be needed during flushing process. Property owners and the County's Right of Way Section shall be solicited for advice during easement acquisition.

Wherever possible, two supply points shall be provided for subdivisions containing more than 25 lots.

All exposed water mains shall be adequately insulated as determined by the engineer.
CHESTERFIELD COUNTY
DEPARTMENT OF UTILITIES

WATER METER FURNISHED & INSTALLED BY THE COUNTY.

PROPERTY LINE

1'-0"
(SEE NOTE #3)

SEE APPROPRIATE DETAIL FOR TYPE BOX REQUIRED.

ANGLE VALVE SHALL BE VERTICAL AND ACCESSIBLE.

12"-16"

22"+

METER BOX

18" MIN.

CUSTOMERS SERVICE LINE
CRIMP END

HAND TAMPED UP TO SERVICE TUBING

MANUFACTURED PIPE (45°)

SADDLE MUST BE USED IF TAP IS MADE IN PVC OR A/C PIPE.
ALL DI TO BE DIRECT TAPPED WHERE APPLICABLE.

NOTES:

1. METERSETTER SHALL BE CENTERED IN METER BOX AND COPPER TUBING ON OUTLET SIDE OF SETTER SHALL EXTEND 18" OUTSIDE OF BOX ON CUSTOMER'S SIDE. THIS COPPER TUBING SHALL BE CRIMPED ON THE END TO KEEP DIRT FROM ENTERING LINE.

2. COPPER TUBING TO THE CORPORATION STOP MUST BE FLARED OR COMPRESSION.

3. METER BOX SHALL BE LOCATED 1' INSIDE OF PROPERTY LINE. METER BOX MAY BE MOVED A REASONABLE DISTANCE INSIDE PROPERTY LINE IN ORDER TO INSTALL ON REASONABLY LEVEL GROUND.

4. SERVICES SHALL BE INSTALLED PRIOR TO TESTING.

5. BYPASS SHALL NOT BE ALLOWED FOR 5/8" OR 1" RESIDENTIAL AND IRRIGATION METERS.

DATE: JAN. 1996
REVISIONS: NOV. 2018

TYPICAL WATER METER CONNECTION
FOR 3/4" & 1" SERVICES
(5/8" AND 1" METERS)

DRWG. NO. MET-1
f. Tighten bolts, alternating from one side to the other to equalize the gap between halves. Continue to tighten bolts until sleeve halves conform to the contour of the pipe and all bolts are to a uniform tightness. The required torque for dry threads will be 70-100 ft. lbs. (Lubricated threads 35-50 ft. lbs.) On thin wall or badly corroded pipe care should be taken to prevent crushing or collapsing of the pipe.

g. A pressure test is required prior to tapping to test the sleeve and valve in place.

Prior to pressure testing, the inspector shall obtain a reading of line pressure in the system, either from a hydrant or a service. The pressure test should be at $2\frac{1}{2}$ times line pressure or 200 psi, whichever is greater. The duration of this pressure test shall be a minimum of ten minutes. If the sleeve fails the pressure test it shall be completely removed and returned and a new sleeve used. The tapping sleeve, valve and tapping machine assembly is to be adequately supported during the tapping operation to prevent movement or rotation of the tapping sleeve.

h. Proceed with tapping operation.

Contractor shall complete tapping procedure and perform the necessary checking as required. Contractor shall furnish the inspector with the coupon.

i. Check the bolts for tightness and retorque if required.

E. Installation of Services

1. 3/4" and 1"

   a. All taps for services on ductile iron pipe shall be direct tapped. Taps made to PVC or asbestos cement pipe shall use service saddles (from approved list)

   b. Taps shall be made on a 45° angle

   c. Corporation stops shall have "cc" thread inlet and copper flare outlet

   d. Tap shall be made with a tapping machine equipped with a bit designed for the type of pipe being tapped

   e. Distance between taps or from a joint or bell shall be a minimum of 18"
f. Service pipe shall be type "K" soft copper

g. Services shall be installed with 3'6" minimum cover up to meter yoke where yoke shall be installed so that meter will set 12"-16" from finished grade

h. Meter yokes shall be from approved materials list and be installed with a tail piece of type "K" copper 10"-18" long

i. Meter yoke and box shall be set 1' inside property line or a reasonable distance inside property line in order to install on reasonable level ground

j. Backfill shall be hand tamped up to service pipe at tap to prevent corporation stop from being broken off during backfilling

k. Traffic box to be of cast iron in driveways

2. 1½" and 2" Services

a. All 1½" services on existing ductile iron pipe shall be direct tapped. 2" services on existing ductile iron pipe shall be direct tapped on pipe 12" or larger and shall use a saddle for pipe smaller than 12". All taps for 1½" and 2" services on existing PVC or asbestos cement pipe shall be made with service saddles (from approved materials list)

b. Connections to newly constructed ductile iron waterlines shall be either direct tapped or use a tapped tee. Connections to newly constructed PVC waterlines shall use a tapped tee.

c. Taps shall be made at the spring line of the pipe

d. Corporation stops shall have "cc" thread inlet and copper flare outlet

e. Tap shall be made with a tapping machine equipped with a bit designed for the type of pipe being tapped

f. Distance between taps or from a joint or bell shall be a minimum of 18"

g. Service pipe shall be type "K" hard copper

h. Services shall be installed with 3'6" minimum cover up to meter yoke where yoke shall be installed so that meter will set 12"-16" from finished grade
i. Meter yokes shall be from approved materials list and be installed with a tail piece of type "K" copper 10"-18" long

j. Meter yoke and box shall be set 1' inside property line or a reasonable distance inside property line in order to install on reasonably level ground

k. On 1½" and 2" services a curb stop shall be installed on inlet side of yoke, 1' from yoke

l. Backfill shall be hand tamped up to service pipe at tap to prevent corporation stop from being broken off during backfilling

F. Installation of Water Mains and Water Meter Boxes as it relates to Sidewalks:

1. Sidewalks must be constructed to accommodate at least a 4 foot horizontal separation between the County’s public water mains.

2. If sidewalks are constructed within the public road right-of-way, the street side of all water meter boxes must be installed 3 feet behind the house side of the sidewalk or to the right-of-way line, whichever is greater.

3. If sidewalks are constructed outside of the public right-of-way and are less than 5 feet from the right-of-way line, the street side of all water meters boxes must be installed 3 feet behind the house side of the sidewalk.

4. If the sidewalks are constructed outside of the public right-of-way and are more than 5 feet from the right-of-way line, the water services must be installed within 1 foot outside of the right-of-way line.

3.02 TESTING OF WATER DISTRIBUTION SYSTEM

A. Testing Techniques for Water Distribution System:

1. Each properly isolated section of the piping system including all water services shall be subjected to a pressure test of 150 psi, or 1-1/2 times the working pressure whichever is greater, measured at the high point of the system. Maintain this pressure for a minimum of two hours with an allowable leakage as reflected in the Standard Details Section - Part II. Prior to applying pressure to the lines all reaction blocking, and/or mechanical restraints shall have been
O. Valve Boxes (Slip Type Only)

1. SIGMA
2. Bingham and Taylor
3. Capitol Foundry
4. Star Pipe

P. Copper Tubing - (as manufactured for domestic use)

1. Type “K” (soft) - for ¾” and 1” service lines
2. Type “K” (hard copper only) - for 1½” and 2” service lines

Q. Service Saddles - Effective February 4, 2019 all service saddles will be required to have a bronze body with double stainless-steel straps. (bronze with double stainless-steel straps)

1. ROMAC - Style 202BS
2. Smith-Blair (Rockwell) SB 325
3. Ford Style 202BS or 202BSD
4. PowerSeal Model No. 3409
5. Mueller - Model BRS2

R. Pipe Restraints (must be UL Listed and FM Approved)

1. For PVC Pipe (Sizes up to 8”)
   a. EBBA Iron - Megalug Series 2000 PV (PVC Pipe - MJ Fittings)
      EBBA Iron - Megalug Series 1500 (PVC Bell and Spigot Joints)
   b. Romac Style 611 (PVC Bell and Spigot Joints)
   c. Uni-Flange Series 1390-C (PVC Bell and Spigot Joints)
      Uni-Flange Series 1500 (PVC Pipe - MJ Fittings)
   d. Star Pipe - STARGRIP Series 4000 (PVC Pipe - MJ Fittings)
2. Beasley Concrete, Inc. (804) 633-9626
   16090 Aspen Road FAX (804) 529-7507
   Milford, VA 22514

3. Bartow Precast (770) 382-4462
   P.O. Box 20067 FAX (770) 382-4480
   Cartersville, GA 30120 Web Site: www.bartowprecast.com

4. Hanover Precast, Inc. (804) 798-2336
   P.O. Box 38 FAX (804) 798-2339
   Ashland, VA 23005

METER BOXES (for 5/8" and 1" water meters)

MANUFACTURERS:

POLYETHYLENE

1. Old Castle Precast, Inc. (404) 558-5970
   3000 New McEver Road (800) 735-5566
   Acworth, GA 30101 FAX (800) 827-7111

CAST IRON

1. Capitol Foundry of Virginia, Inc. (804) 427-9431
   2856 Crusader Circle Mailing Address: P.O. Box 2212
   Virginia Beach, VA 23456 Va. Beach, VA 23452

SERVICE SADDLES - Effective February 4, 2019 all service saddles will be required to have a bronze body with double stainless-steel straps.

MANUFACTURERS:

1. ROMAC Industries, Inc. (800) 426-9341
   21919 20th Ave SE FAX (425) 951-6201
   Bothell, WA 98021

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2. Smith-Blair, Inc. (800) 643-9705
   A BTR Company
   P.O. Box 5337
   Texarkana, TX 75505

3. Ford Meter Box Company (219) 563-3171
   775 Manchester Avenue
   P.O. Box 443
   Wabash, IN 46992

4. Power Seal Pipeline Products Corp. (817) 767-5566
   P.O. Box 2014 (800) 800-0932
   Wichita Falls, TX 76307 FAX (817) 732-8378

5. Mueller Company (217) 320-6278
   500 West Eldorado Street
   Decatur, IL 62525

AIR RELEASE VALVES

MANUFACTURERS:

1. APCO Valve & Primer Corporation (708) 529-9000
   1420 S. Wright Blvd. FAX (708) 529-9007
   Schaumburg, IL 60193-4599

2. G.A. Industries (412) 625-3541
   9025 Marshall Road
   Mars, PA 16046

3. Cla-Valve Company (703) 721-1923
   6911 Richmond Highway, Suite 444 (800) 451-3030
   Alexandria, VA 22306 FAX (703) 721-1927

4. Clow Special Products Division (817) 767-5566
   P.O. Box 2014
   Wichita Falls, TX 76307

5. Val-Matic Valve & Manufacturing Corp. (708) 941-7600
   905 Riverside Drive Telex 28-1001
   Elmhurst, IL 60126 FAX (708) 941-8042
g. Service Saddles: Effective February 4, 2019 all service saddles will be required to have a bronze body with double stainless-steel straps.

1) All saddle castings must be bronze and meet the requirements of ASTM B584 and AWWA C800.

2) All saddles must have a minimum of two (2) 1 1/2" wide (including bolts) stainless steel straps type 304 (18-8) where welds are passivated for resistance to corrosion.

3) Gaskets must be made of Virgin NBR compound.

4) Service saddles are required on all taps made onto PVC and asbestos cement pipe.

10. Water Service Setter for 1", 1 1/2" and 2" Water Meters:
All Materials for the installation of water services shall be as follows or approved equal:

a. The water meter box and cover (for use with all 1", 1½" and 2" water meters) shall be as manufactured by Carson. The boxes shall conform to the specifications as outlined under the "Water Meter Assembly for 5/8" Water Meters" and the dimensions as specified in the standard detail shown in Part II of this documents for 1", 1½" and 2" water meters.

b. General: All 1", 1½" and 2" meter setters for domestic use at residential homes, condominiums, apartments, townhomes, etc. shall NOT be equipped with a bypass valve. Setters for irrigation uses shall NOT be equipped with a bypass valve. All other 1", 1½" and 2" meter setters SHALL be equipped with a bypass.

Meter setters for 1" meters shall be 1" x 12" riser meter yokes with copper tube flare nut or compression on the inlet and outlet sides.

All 1 1/2" and 2" meter setters shall be constructed of seamless threaded red brass pipe, standard Type K hard copper tube (per ASTM B-88-62,) high quality brass (per AWWA C-800,) and leadless solder, and provide horizontal female pipe threads on both front and rear connections.

c. Bypass: Meter setters that are equipped with a bypass line and valve shall be appropriately sized with an