SECTION 22 11 16.11

WATER SERVICE TAPS AND SERVICE LINE INSTALLATION

PART1: GENERAL

1.01 SECTION INCLUDES

A. Tapping existing and/or new water mains and furnishing and installing new service lines for water.

PART 2: PRODUCTS

2.01 MATERIALS

A. Copper Tubing: Provide Type K "soft" copper service lines. Where existing service piping is determined to be 'Copper' new service piping shall be 'Copper Tubing' to match existing.

B. Polyethylene Pipe and Tubing: In accordance with AWWA C901 when specified on the Drawings or approved by the AW Project Manager.

Refer to the below chart for acceptable service line materials.

Acceptable Service Line Materials and Application					
Material	**3/4"**	**1"**	**1.5"**	**2"**	**Greater than 2"**
Type K Copper	✓	✓	✓	✓	-
HDPE	✓	✓	✓	✓	✓
PVC SDR 21	-	-	✓	✓	-
PVC C 900/905	-	-	-	-	✓
Ductile Iron	-	-	-	-	✓

D. All service lines must have both a corporation stop and curb stop.

E. Corporation Main Stops: AWWA C800 as modified in this Section:

1. Inlet End: AWWA standard thread.

2. Valve Body: Tapered plug type, O-ring seat ball type, or rubber seat ball type.

3. Outlet End: Flared-copper connection for use with Type K, soft copper or compression-type fitting.

F. Provide taps for water line types and sizes in accordance with pipe tapping schedule located in Table 1 at end of this Section.

G. Dual Strap Saddles: Fusion epoxy coated saddles are acceptable as noted.

H. Taps for PVC Watermains: Use dual-strap or single, wide-band strap saddles or Wet Tapping Sleeves which provide full support around circumference of pipe and bearing area of sufficient width along axis of pipe, 2-inches minimum, ensuring that pipe will not be distorted when saddle is tightened. Provide approved stainless-steel tapping saddle with AWWA standard thread.

I. Taps for Steel Pipe: Not allowed, unless specifically approved by AW Project Manager. Use saddle only when tap is approved on steel pipe.

J. Curb Stops and Brass Fittings: AWWA C800 as modified in this Section.

1. Inlet End: Flared copper connection or compression-type fitting

2. Valve Body: Straight-through or angled, meter-stop design equipped with following:

   a. O-ring seal straight plug type.

   b. Rubber seat ball type.

3. Outlet End: Female, iron-pipe thread or swivel-nut, meter-spud thread on $^{3}/_{4}$-inch and finch stops and 2-hole flange on 1½ and 2-inch sizes.

4. Fittings: Provide approved fittings. Use same size open end wrenches and tapping machines as used with respective Mueller fittings.

5. Factory Testing of Brass Fittings:

   a. Submerge in water for 10 seconds at 85 psi with stop in both closed and open positions.

   b. Reject fitting that shows air leakage. AW Project Manager may confirm tests locally. Entire lot from which samples were taken will be rejected when random sampling discloses unsatisfactory fittings.

K. Angle Stops: In accordance with AWWA C800; ground-key, stop type with bronze locking head stop cap; inlet and outlet threads conform to application tables of AWWA C800; and inlets flared connection or compression.

1. Outlet for $^{3}/_{4}$-inch and 1-inch size: Meter swivel nut with saddle support.

2. Outlet for 1½ -inch through 2-inch size: O-ring sealed meter flange, iron pipe thread.

L. Fittings: In accordance with AWWA C800 and AWWA C901 and following:

1. Castings: Smooth, free from burrs, scales, blisters, sand holes, and defects which would make them unfit for intended use.

2. Nuts: Smooth cast and has symmetrical hexagonal wrench flats.

3. Flare-Joint Fittings: Smooth cast. Machine seating surfaces for metal-to-metal seal to proper taper or curve, free from pits or protrusions.

4. Thread fittings, of all types, shall have NPT or AWWA threads, and protect male threaded ends in shipment by plastic coating, or approved equal.

5. Compression tube fittings shall have Buna-N beveled gasket.

6. Stamp of manufacturer's name or trademark and of fitting size on body.

2.02 REDUCTION OF LEAD IN DRINKING WATER ACT COMPLIANCE

A. The Contractor shall comply with the requirements and standards of the Reduction of Lead in Drinking Water Act.

B. Any pipe, fitting or fixture (e.g. corp stops, curb valves, gate valves less than 2 inches in diameter, backflow prevention devices, water meters, hose bibs, etc.), solder and flux installed or requiring replacement as of January 4, 2014 must be “lead free”. The Contractor shall be responsible to comply with the State, local laws, ordinances, codes, rules, and regulations governing the Reduction of Lead in Drinking Water Act that may have additional limitations or requirements."

C. The definition of 'lead free' is as follows:

1. Not containing more than 0.2 percent lead when used with respect to solder and flux; and

2. Not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures.

PART 3: EXECUTION

3.01 GENERAL

A. For service lines and lateral connections larger than those allowed in Pipe Tapping Schedule, 4-inch minimum size Wet Cut shall be installed with an approved Tapping Valve and appurtenances included.

B. Tapped collars of appropriate sizes: Approved in new construction only provided they are set at right angles to proposed meter location.

C. Use tapping machine manufactured for pressure tapping purposes for 2-inch and smaller service taps on pressurized water lines.

D. For new meter or when existing meter is in conflict with proposed pavement improvements, locate water meters one foot inside street right-of-way, or when this is not feasible, one foot on curb side of sidewalk. Contact AW Project Manager when major landscaping or trees conflict with service line and meter box location. No additional payment will be made for work on customer side of meter.

E. New location and installation of existing small meter shall conform to requirements of Section - Water Meters.

3.02 SERVICE INSTALLATION

A. Set service taps at right angles to proposed meter location and locate taps in upper pipe segment within 45° of pipe springline.

B. Install service lines in open-cut trench in accordance with Section - Excavation and Backfill for Utilities. Install service lines under paved roadways, other paved areas and areas indicated on Drawings via boring..

C. Lay service lines with a minimum cover as required by local minimum standards.

D. Service lines across existing street (push-unders): Pull service line through prepared hole under paving. Use only full lengths of tubing. Take care not to damage the pipe when pulling it through hole.

E. Maintain service lines free of dirt and foreign matter.

F. Install service lines so that top of meter will be 4 to 6-inches below finished grade.

3.03 CURB STOP INSTALLATION

A. Set curb stops or angle stops at outer end of service line inside of meter box. Secure opening in curb stop to prevent unwanted material from entering. In close

quarters, make S-curve in field. Do not flatten tube. In $^{3}/_{4}$-inch and 1-inch services, install meter coupling, swivel-nut, or curb stop ahead of meter. Install straight meter coupling on outlet end of meter.

3.04 SEQUENCE OF OPERATIONS

A. Open trench for proposed service line in accordance with Section - Excavation and Backfill for Utilities.

B. Install curb stop.

C. With curb stop open and prior to connecting service line to meter in slack position, open corporation stop and flush service line thoroughly. Close curb stop, leaving corporation stop in full-open position.

D. Check service line for apparent leaks. Repair leaks before proceeding.

E. Schedule inspection with AW Project Manager prior to backfilling. After inspection, backfill in accordance with Section - Excavation and Backfill for Utilities.

F. In application where a meter box is present, install meter box centered over meter with top of lid flush with finished grade.

Table 1

PIPE TAPPING SCHEDULE				
WATERMAIN TYPE AND DIAMETER	SERVICE SIZE			
	3/4"	1"	1-1/2"	2"
4" Cast Iron or Ductile Iron	DIRECT	DSS, WBSS	DSS, WBSS	DSS, WBSS
4" Asbestos Cement	WBSS	TS	TS	TS
4" PVC (AWWA C900)	DSS, WBSS	DSS, WBSS	DSS, WBSS	TS
6" and 8" Cast Iron or Ductile Iron	DIRECT	DSS, WBSS	DSS, WBSS	DSS, WBSS
6" and 8" Asbestos Cement	WBSS	TS	TS	TS
6" and 8" Cast Iron or Ductile Iron	DIRECT	DSS, WBSS	DSS, WBSS	DSS, WBSS
6" and 8" PVC (AWWA C900)	DSS, WBSS	DSS, WBSS	DSS, WBSS	TS
12" Cast Iron or Ductile Iron	DIRECT	DSS, WBSS	DSS, WBSS	DSS, WBSS
12" Asbestos Cement	WBSS	TS	TS	TS
12" PVC (AWWA C900)	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
16" and Up Cast Iron or Ductile Iron	DIRECT	DWBSS	DWBSS	DWBSS
16" and Up Asbestos Cement	DWBSS	TS	TS	TS
16" and Up PVC (AWWA C900)	DWBSS	DWBSS	DWBSS	DWBSS

DSS - DUAL STRAP SADDLES
WBSS - WIDE BAND STRAP SADDLES
DWBSS - DUAL WIDE BAND STRAP SADDLES
TS - TAPPING SLEEVE
DIRECT - DIRECT TAP INTO PIPE WALL

END OF SECTION 22 11 16.11