

1.0 GENERAL

1.1 Scope

1.1.1 The work covered by this section involves the installation of water and sewer service connections and all other associated work.

1.2 Related Sections

1.2.1 Section 02315 – Trench Excavation and Backfill

1.2.2 Section 02511 – Watermains

1.2.3 Section 02517 – Watermain Hydrostatic Tests

1.2.4 Section 02519 - Disinfection and Flushing of Watermains

1.3 Authorization

1.3.1 Do not install service connections until written authorization, giving location and size of services required, has been obtained from the owner of the private property being serviced. Be responsible for confirming that this authorization has been given and, for ensuring that the services are installed as indicated.

1.4 Regulations

1.4.1 Install all services in compliance with regulations governing plumbing and drainage issued by Saskatchewan Health as well as City of Regina Building Bylaws and Standard Construction Specifications.

2.0 PRODUCT

- Use only those products in the Approved Products List, Product ID:
 - WP – 12: Service saddle
 - WP – 13: Repair clamps
 - WP – 14: Unions
 - WP – 15: Curb stops
 - WP – 16: Curb boxes and covers
 - WP – 17: Corporation stops
 - WP – 18: Protective tape and primer for coating
 - WP – 19: Tapping sleeve and valves

- Refer to section 2.3.6: Protective Tape Coating for requirements for protecting buried metal objects.

2.1 Sewer Service Pipe

2.1.1 Sanitary and storm service connection pipe and fittings to conform to the following specifications:

- .1 Sanitary service to be minimum 150 mm nominal diameter.
- .2 Storm service to be minimum 200 mm nominal diameter.
- .3 Polyvinyl Chloride Pipe to ASTM D3034 - SDR35 and in full compliance with CSA B182.2

2.2 Water Service Pipe

2.2.1 Piping for building water services shall be in accordance with the following table and be CSA certified:

SERVICE SIZE (mm)	MATERIAL	STANDARD	MINIMUM RATING
All sizes 50 and smaller	Copper-Type K soft Drawn	AWWA C800, ANSI/NSF 61	1100 kPa (160 psi)
40, 50	HDPE	AWWA C901, PE3408, ANSI/NSF 61	1100 kPa (160 psi)
100 and larger	Refer to Section 02511-Watermains		

2.2.2 When the property being serviced is to be used or has been used for the storage of liquid petroleum products or other hazardous materials, approved water service pipe materials are Type K soft drawn copper or polyethylene wrapped ductile iron pipe conforming to latest revision of AWWA C151, and/or ASTM B88.

2.3 Water Service Appurtenances

2.3.1 Service Saddles

- .1 Full circle type, constructed of fully passivated T304 stainless steel with BUNA-N or EPDM gaskets and T304 stainless steel bolts with rolled threads and nuts. Not to be used for AC or CI pipe without full circle gaskets.

2.3.2 Repair Clamps

- .1 Constructed of fully passivated T304 stainless steel with BUNA-N or EPDM gaskets and 304 stainless steel bolts with rolled threads and nuts, min width 300mm.

2.3.3 Unions

- .1 Standard brass compression type, adaptable to the size and type of pipe used.

2.3.4 Curb Stops and Boxes

- .1 50mm and smaller
 - .1 Low lead bronze or brass body, stop and waste design, globe or ball valve style, with compression type end connections designed for the specific pipe type(s) being joined.
 - .2 Curb boxes and top extensions - Sch. 40 Type 304 stainless steel pipe complete with polymer or epoxy coated cast iron boot.
 - .3 Curb box rods - Type 304L stainless steel, 13 mm diameter with standard pigtail to fit standard 25 mm I.D. curb box.
 - .4 Cold forge u-shape complete with hole for brass cotter pin to fit 20 mm to 50 mm curb stops.
 - .5 Curb box cover, ribbed cover with standard pentagon brass plug.
- .2 100mm and larger
 - .1 Resilient seated gate valve complete with valve box as specified in Section 02511.

2.3.5 Corporation Stops

- .1 Corporation stops shall be: Low lead brass or bronze construction with tapping thread and compression type joint compatible with type of pipe used.
- .2 Corporation stops on service sizes 100 mm and larger shall be resilient seated gate valves as specified in Section 02511 and shall be the same size as the service line.

2.3.6 Protective Tape Coating

- .1 Petrolatum primer and cold applied petrolatum tape conforming to AWWA C217 latest edition - (Cold-Applied Petrolatum Tape and Petroleum Wax Tape Coatings for the Exterior of Special Sections, Connections and Fittings for Steel Water Pipeline)

2.3.7 Gaskets as specified in Section 02511 - Watermains

2.3.8 Tapping Sleeves and Valves.

- .1 Tapping sleeves - split body, full circle type with body, stub pipe and flange constructed of fully passivated T304 stainless steel with BUNA-N ring seal and BUNA-S liner. Inside diameter of outlet connection to be at least equivalent to that of standard weight steel pipe of the same nominal size. Sleeve bolts and nuts to be stainless steel to ASTM A193/A194-B8 or B8M. Threads to be Teflon coated. Outlet flange 150lb ANSI, flat-faced.

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- .2 Tapping valves - resilient seated gate valve as specified in Section 02511, having a clear passage at least equivalent to the inside diameter of the connecting stub on the tapping sleeve being used and, certified by the manufacturer as suitable for use as a tapping valve.
- 2.4 Tapping Machine
- 2.4.1 Tap watermains using direct tapping machine meeting industry standards (Refer to *Tapping Guide How to Tap Blue Brute Pipe* by IPEX) and approved by the Engineer.

3.0 EXECUTION

- 3.1 Water Service Connections
- 3.1.1 Water services piping up to and including 50 mm may be installed in a common trench with the sanitary sewer service line. A clear separation of at least 300mm should be maintained between these lines.
 - 3.1.2 Water service piping larger than 50 mm must be installed in a separate trench from the sewer service pipe. Maintain a minimum clear separation of 1.0 metres of undisturbed soil between these lines.
 - 3.1.3 Whenever common trenched service lines must be installed at different elevations, install the higher service on a shelf of undisturbed ground. If shelving the higher service line is not possible, re-establish the foundation of the higher utility with compacted backfill.
 - 3.1.4 Construct services to the end lots on a dead end main by tapping each service to the water main as shown on Standard Drawing W-19.
 - 3.1.5 Leave trenches open until connections up to and including those 25 mm in diameter have been completed and visually inspected while they are under pressure. Ensure corporation stops are in the open position before backfilling.
 - 3.1.6 Install residential service connections on the property line at the locations shown on the drawings. Install a short length of copper pipe on the private side of the curb stop and crimp. Install services to existing buildings along a line that will best suit the interior plumbing. Provide a gooseneck with a minimum radius of 600 mm immediately adjacent to the corporation stop on all service connections 40 mm and smaller. Refer to Standard Drawing W-17 for arrangement details.
 - 3.1.7 Unless otherwise specified, tap corporation stops into the watermain using an approved tapping machine while the main is under normal operating pressure. After completion of each tapping connection, backfill to 75 mm above the top of the gooseneck with material as specified in Section 02315 - Trench Excavation and Backfill.

- 3.1.8 For valves 100 mm and larger installed as corporation stops, refer to Section 02511 – Watermains, Sub-section 2.9 Valve Boxes and Covers.
- 3.1.9 Provide minimum 2.7 m of cover over the full length of service lines.
- 3.2 Tapping Watermains
- 3.2.1 Conditions for Tapping Asbestos Cement Pipe
- .1 Use an approved tapping sleeve.
 - .2 Tapping size shall be one (1) nominal pipe sizes smaller than the watermain being connected to.
- 3.2.2 Conditions for Tapping Ductile Iron, Cast Iron or Steel Pipe
- .1 Where tapping of ductile iron, cast iron, or steel pipe is required, it will either be definitively specified in the Special Provisions or as directed by the Engineer.
- 3.2.3 Conditions for Tapping PVC Pipe
- .1 Use an approved tapping sleeve.
 - .2 Tapping size used on PVC pipe shall be at least one (1) nominal pipe size smaller than the watermain being connected to.
 - .3 Size on size tap as approved by the City of Regina. Submit shop drawings for tapping sleeve. Size on size taps will not be permitted on any asbestos cement or cast iron pipes.

PVC					
DR18 PVC Pipe (mm)	150	200	250	300	400
Tap Size (mm)	TAPPING METHOD				
20	1	1	1	1	1
25	1	1	1	1	1
40	2	2	2	2	2
50	2	2	2	2	2
100	3	3	3	3	3

Where: 1 = Direct tap

2 = Tap through an approved service saddle

3 = Tap through an approved tapping sleeve

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- 3.3 Protective Tape Coating
- 3.3.1 Surface shall be clean, dry and at least 5 °C before any coating materials are applied.
- 3.3.2 Store, handle and apply coating materials according to the manufacturer instructions and climatic and substrate condition requirements.
- 3.4 Service Pipe Positioning
- 3.4.1 Position the service pipe in the trench as follows when facing the building.

<u>Left</u>	<u>Centre</u>	<u>Right</u>
<i>Storm</i>	<i>Domestic</i>	<i>Water</i>

- 3.5 Sewer Service Installation
- 3.5.1 Minimum acceptable continuous grade for 150 mm and 200 mm sewer service pipe is 10 mm/metre (1.0%).
- 3.5.2 Whenever sewer service pipe is installed but not connected to the sewer service from the building, plug the pipe with an approved watertight plug.
- 3.5.3 Connect to the sewer main with tees or wye branches installed during construction of the sewer main.
- 3.6 Sewer Service Connections to Existing Mains
- 3.6.1 Make new connections by tapping into the upper half of the sewer main and installing a tee or wye saddle. Ensure the existing sewer main is not fractured by the tapping operation. Remove all broken pipe, mortar and debris from inside the sewer main.
- 3.6.2 Make holes for tee or wye saddles approximately 10 mm larger than the outside diameter of the service pipe to ensure a snug fit in the hole.
- 3.6.3 Connect fitting saddles to the main with stainless steel straps and clamps.
- 3.7 Water Service
- 3.7.1 Direct Tapping of Watermain with Corporation Stops—50 mm and smaller
- .1 Refer to Standard Drawing W-17. Install the corporation stop in the top quadrant of the watermain at an angle of between 30° to 60° above the horizontal unless noted otherwise.
 - .2 Do not tap corporation stops into watermains within 600 mm of a pipe joint, fitting or valve. Space multiple taps a minimum of 450 mm on centre.
 - .3 Tighten corporation stops into asbestos-cement and ductile iron watermains with 70 to 80 Newton-meters of torque with 1 to 3 threads showing. Tighten corporation stops into PVC watermains (cast iron O.D. only) with 35 to 40 Newton-Meters of torque.

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- .4 Wrap the thread of the corporation stops used on PVC and ductile iron watermains with three to four wrappings of teflon pipe thread tape before installation of the corporation stop.
- 3.8 Curb Stops
- 3.8.1 On services 50mm and smaller install a curb stop and waste at the property line. On services 100 mm and larger, install a resilient seated gate valve at the property line.
- 3.8.2 Install curb stop and waste valves with the drain port on the private property side, extend a short length of copper pipe from it and crimp the end. Refer to Standard Drawing W-17.
- 3.8.3 Install services to existing buildings along a line that will best suit the interior plumbing.
- 3.8.4 Support each curb stop and waste on a 75 mm x 200 mm x 250 mm concrete block as shown on Standard Drawing W-17. Install gate valves as shown on Standard Drawings W-01 and W-15.
- 3.8.5 In fine-grained or clay soils construct a 0.2 m³ volume drainage sump below and around each curb stop and waste.
- 3.8.6 When curb stops or valves are installed and the boxes are to be installed later, mark the curb stop or valve above ground as shown on Standard Drawing W-17.
- 3.8.7 Adequately secure the curb extension rod to each curb stop and waste. Set the service box plumb with the upper sections of the service box adjusted to grade elevation. Install the lower section of the service box and the extension rod a minimum 300 mm below ground elevation to prevent heavy loads being transmitted to the curb stop. Leave the curb stops closed.
- 3.9 Water Service - Multi-Unit Buildings
- 3.9.1 Install water services to multiple unit buildings as shown on Standard Drawing W-19.
- 3.9.2 Install a curb stop and waste complete with box on each individual service connection at 2.5 metres inside the property line and with a minimum of 500 mm between each service. Multiple service lines and curb stops may be deleted if water meters and shut off valves are located in a common room, not accessible to the public, in accordance with the *Water Bylaw 8942*.
- 3.10 Utility Services – Hazardous Material / Petroleum Product Storage Sites
- 3.10.1 Install a trench plug of impermeable plug of bentonite clay or other approved material as shown on Standard Drawing S-28. Plug to be not less than the width of the utility trench at the property line on all utility service trenches on all properties that are used, or have been used, for the storage of liquid hazardous materials and/or petroleum products.