

CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
SECTION 2 - CONSTRUCTION DESIGN CRITERIA
SUB-SECTION 2.6 - SEWER AND WATER SERVICE CONNECTIONS

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2.6.1 SERVICE CONNECTION MINIMUM REQUIREMENTS

The minimum diameter of service connections to a single-family dwelling shall be as follows:

- Sanitary Service 100 mm
- Water Service 20 mm

Commercial services to be as required to a minimum diameter of:

- Sanitary Service 150 mm
- Water Service 38 mm with 20 mm recirculation

The minimum grade on a sewer service shall be 2.0%. A service connection riser shall be required where the main is in excess of 4.5m deep and shall be installed within 3.6m of finished grade.

All water services and recirc lines under 150 mm in size are to be factory insulated and services 50 mm and smaller shall have one gooseneck bend in the vertical plane near the main stop.

Insulation for frost protection of services is to be as follows:

Density	35 -48 kg/m ³ minimum ASTM D1622
Closed cell content	90% minimum ASTM D2856
Water absorption	4.0% by volume ASTM D2842
Thermal conductivity	0.020-0.023 W/m @ 22 degrees Celsius ASTM C518
System Compressive Strength	Modified ASTM D 1621 with 50 mil Jacket, approximately 411 to 549 KPa, varies with pipe diameter
Thickness	Minimum 50 mm

Insulated services shall have a jacket using high-density polyethylene carbon black, factory applied by continuous extrusion or approved tape-wrap method, specified as follows:

Sealant	Butyl rubber and resin
Tensile strength	21 MPa minimum (ASTM G-14-17) 8.93 kg/cm width
Thickness	1/14 1.14 mm minimum for extruded polyethylene or 2 cross wraps, for a total minimum thickness of 1.27 mm for the tape-wrapped.

To aid in leak detection joints on services shall not be taped. The Contractor is to coat the exposed insulation at the end of the pipe with tar. When compression couplings are used for connections, one end of the half-shell is to be taped to the pipe. The other end of the half shell shall be coated with tar and left untaped.

Teflon tape shall not be used on service line couplings that have heat trace as the tape may affect the continuity of the current.

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2.6.2 SANITARY SEWER SERVICE MATERIALS

Service pipe shall be polyethylene pipe or, asphaltic-coated ductile iron conforming to Section 2.4.2, or polyvinyl chloride DR 25, ASTM D1784, minimum stiffness 690 KPa, CSA B137.3.

Service fittings shall conform to the pipe material being used and shall be in accordance with the corresponding specifications

Sanitary services shall be connected to the sanitary main utilizing a saddle, wye, or a tee approved by the pipe manufacturer. In addition, a long radius bend shall be used to connect the service pipe to the service saddle as per detail A6.1.

Polyethylene service saddles shall be those supplied by the pipe manufacturer and must consist of an upper saddle with branch and a lower saddle. The saddle must be a stainless steel Robar #3626.

2.6.3 WATER SERVICE MATERIALS

Water service pipe shall be copper pipe Type K soft copper or Kitec pipe and shall be provided with a factory-applied 50 mm thick insulation and waterproof jacket as described in 2.6.1. Service pipe shall be supplied in minimum 10.0 m lengths. No joint is allowed in the 10.0 m length. Kitec pipe shall have approved frost protection.

HDPE pipe may be used for recirculating.

Corporation main stops shall be Cambridge Brass, Mueller, or approved equal, installed with an internal insulator, copper outlet, and flange for electrical connection. Where ductile iron watermain is specified, an acceptable insulator shall be provided between the main stop and service line to isolate the impedance heat-trace arrangement on the water service.

Curb stops (CC's) shall be Cambridge Brass Model 203 or Mueller H15219, stop & drain valves or approved equal. All fittings shall be of the compressive type.

Curb stops shall be installed directly adjacent to main stops without a goose neck. Squirt tests shall be performed before service pipe is connected to curb stop and witnessed by the City or the Consultant.

Curb boxes shall be Mueller A-726 for 20 or 25 mm services, or Mueller A-728 for 30 to 50 mm services, cast iron extension type with A-800 lids, or approved equal, with 600 mm telescoping upper box. Stationary rods shall be provided.

Couplings for joining copper shall be compression fitting, EMCO Successor, or approved equal. Size of couplings is to match diameter of service pipe. Continuity of heat trace shall be carried across coupling. Only one coupling will be allowed per service to minimize pipe splicing on services less than 19m. Any compression connection on Polyethylene pipe must use approved stiffener. Compression fittings for Kitec pipe have an integral stiffener built into the fitting.

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Water pipe saddles to be installed shall be Robar 2706 double strap saddles, or approved equal, manufactured to the type of main being tapped.

Prior to factory application of the insulation, impedance heat-tracing wire consisting of #10 wire (RWU 90° cross-link) shall be wrapped snugly around the copper piping, with spiral wire at a 100 mm pitch

The wire shall be secured at 1.5m intervals with high-temperature tape to prevent uncoiling. The wire is to be coated and sealed to prevent foam ingress. To allow for future connection, where necessary, a 300 mm pigtail shall extend past the proposed CC.

The heat-trace wire shall be spliced with an approved waterproof splice kit containing a crimp connector and a Raychem WCSM 9/3 - S heat-shrink sleeve. Heat trace wire splice shall be two way copper splice, long barrel, UL 140B Listed. Heat Shrinkable tubing shall be heavy duty, UL 486D Listed.

Transformers shall be multiple voltage transformer 115V primary; extra low voltage; multiple secondary 1.6V, 2.1V, 2.5V; 40 amps service.

Switches shall be single-phase manual switch c/w operating pilot light -Allen Bradley #600-TAX109, O/L 150% of rated input or approved equal.

Service connections shall be greased with non-toxic grease, Chevron Grade O, Poly F-M. Grease shall be applied from the CC 300 mm towards the main.

Pressure reducing control valves shall be Watts Series 25 AUB, all bronze body complete with pressure gauge, or approved equal.

2.6.4 SERVICE CONNECTION INSTALLATION REQUIREMENTS

Where possible, water service lines shall be laid in the same trench as the sewer service lines, 300 mm to the right of the sanitary service when viewed towards the lot. The water service lines shall be installed in accordance with the standard drawings, Appendix 2B. Where the water service is 100 mm or larger, using gasketed pipe, it shall be laid in a separate trench and a minimum separation of 3.0m from any sanitary service, and 1.8m from any storm, gas, or electrical service.

Services shall be installed at the mid-point of the lot in relation to one another as shown on Standard Dwg, Appendix 2B, perpendicular to the front lot line. There may be exceptions where double services in a common trench shall be installed to the property corners of adjacent lots.

The minimum depth of cover over the water and sanitary services shall be 2.4 metres at any point along its length.

Where the sewer services are required to connect to mains in excess of 4.5m deep, risers shall be installed to within 3.6m of finished surface in accordance with the standard drawings in Section 4.

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Corporation main stops and curb stops shall be installed in accordance with the standard drawings in Section 4.

Sewer service shall be extended to the property line and shall be properly capped.

All services shall be laid on 100 mm deep granular bedding. The bedding material shall be placed up to a level of 300 mm above the crown of the highest service in the trench.

When required, red painted pressure treated wood stakes for sewer and blue for water of size 50 mm x 100 mm shall be extended from the end of the service connections to a minimum of 500 mm above the ground level.

2.6.5 AUGURING OF SERVICES

All services shall be open trenched. Where open trenching is not feasible due to adverse soil conditions, auguring shall be permitted.

All auger pit excavations shall be backfilled up to the pipe invert with granular bedding material and mechanically compacted in lifts not to exceed 200 mm in depth, to a minimum of 98% Standard Proctor Density.

All services through auger pit excavations shall be bedded in accordance with Section 2.6.4.

Backfill of auger pit excavations shall be compacted in lifts not to exceed 150 mm in depth, to a minimum of 98% Standard Proctor Density.