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SECTION 2.6 – SEWER AND WATER SERVICE CONNECTIONS

2.6.1 SERVICE CONNECTION MINIMUM REQUIREMENTS

2.6.1.1 GENERAL REQUIREMENTS

Each titled lot within the City of Whitehorse requiring servicing is to be provided 1 sanitary service and 1 water service.

Design and construction must include considerations for cross connections and backflow prevention in accordance with the National Plumbing Code of Canada.

When new services are required to an existing serviced lot, the existing services are to be capped and abandoned at the main.

2.6.1.2 SERVICE PIPE SIZE

The minimum diameter service connections are to be:

Single dwelling on one titled lot :

Sanitary Service 100 mm
Water Service 25 mm with 20 mm recirculation

More than one dwelling on one titled lot:

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

Commercial or Institutional Developments:

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

The above information outlines minimum requirements only. Services for multiple housing, sprinklered developments, commercial developments and institutional developments are to be sized according to the expected demand and the distance from the main. It is incumbent on the Developer to analyze the equivalent fixture units according to the National Plumbing Code.

2.6.1.3 SERVICE INSTALLATION

The minimum grade on a sewer service is to be 2.0%.

A service connection is required where the main is in excess of 4.5 m deep and is to be installed within 3.6 m of finished grade.

Sanitary services are to be provided with cleanouts at a maximum spacing of 30 m.

2.6.1.4 INSULATION

All services are to be insulated using a factory-applied rigid polyurethane foam, specified as follows:

TABLE 2.6.1.4A - SERVICE INSULATION

Density	35.2 kg/m3 minimum, ASTM D1622, apparent core density
Closed cell content	90% minimum, ASTM D6226
Water absorption	Minimum 4.0% by Volume, ASTM D2842
Thermal conductivity	0.023 W/m K @ 50 mm thickness 22° C, ASTM C518
System Compressive Strength	Modified ASTM D 1621 with 50 mil Jacket (1.27 mm) jacket: Approximately 414 to 552 KPa. *Note: Varies with pipe diameter.
Thickness	Minimum 50 mm

All service connections to have a UV stable high-density polyethylene jacket that is factory applied by continuous extrusion and specially formulated for superior cold weather performance (to -45°C) and below grade applications. Jacket thickness varies depending on pipe diameter.

TABLE 2.6.1.4B - INSULATION JACKET

Tape Jacket Material	Polyethylene UV inhibited, formulated for superior cold weather properties (to –45°C)
Sealant	Butyl Rubber and resin
Tensile strength	21 MPa Minimum (ASTM D 1000) 8.93 kg/cm width
Thickness	1.14 mm minimum for extruded polyethylene or 2 cross raps for a total minimum thickness of 1.27 mm for the tape wrapped polyethylene application.

A pipe is to be located at the center of the insulation material. An allowable tolerance on this specification is as follows:

- Total diameter of insulation pipe structure is to in no instance be less than the pipe diameter plus 100 mm; and
- The minimum thickness of insulation on any side of the pipe at any location is to be 50 mm.

All joints in service are to be fused. Compression joints are not acceptable.

Installation of insulation at pipe joints and fittings is to be in strict conformance with system approved by the manufacturer of the insulated pipe being installed.

2.6.2 SANITARY SERVICE MATERIALS

Sanitary service pipe is to be polyethylene pipe or, asphaltic-coated ductile iron conforming to Section 2.4.3, or polyvinyl chloride DR28, ASTM D3034, minimum stiffness 625 KPa, CSA B137.3.

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

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

Polyethylene service saddles are to 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 is to be HDPE DR11 and is to be provided with a factory-applied 50 mm thick insulation and waterproof jacket as described in 2.6.2.3.

Cross linked polyethylene can be used for services 20mm – 50mm nominal internal diameter.

All joints in service are to be fused. Compression joints are not acceptable.

Corporation main stops are to be Cambridge Brass, Mueller, Ford Meter Box FB1000-Q-NL or approved equal, installed with HDPE inserts.

Curb stops (CC's) are to be Cambridge Brass Model 203, Mueller H15219, or Ford Meter Box B44-NL or approved equal installed with HDPE inserts.

Squirt tests are to be performed before service pipe is connected to curb stop and witnessed by the City or the Consultant.

Curb boxes are to 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 and stainless steel CC key. Stationary rods are to be provided.

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

2.6.4 MANHOLE BLEEDER INSTALLATIONS

Insulated HDPE DR11 is to be used for all manhole bleeder installations.

Service connections are to be greased with NSF-61 compliant grease that is compatible with potable water applications and meets all applicable requirements for incidental contact with food.

Grease are to be applied from the CC 300 mm towards the main.

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

2.6.5 SERVICE CONNECTION INSTALLATION AND LOCATION

Water and sanitary services are to be installed in accordance with Sections 3.8, 3.9 and 4 of this Manual.

Where possible, water service lines (2 pipes) are to be laid in the same trench as the sanitary service (1 pipe). Water service pipes are to be installed 300 mm to the right of the sanitary service when viewed towards the lot.

Where the water service is 100 mm or larger, using gasketted pipe, it are to be laid in a separate trench with a minimum separation of 3.0m from all sanitary services and 3.0m from all storm, gas or electrical services.

Services are to be installed at the mid-point of the lot in relation to one another, perpendicular to the front lot line. There may be exceptions where double services in a common trench may be installed to the property corners of adjacent lots.

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

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

Corporation main stops and curb stops are to be installed in accordance with Standard Details included in Section 4 of this manual.

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

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

If possible, water and sanitary services locations are to not cross catch basin leads.

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

2.6.5.1 CLEARANCE REQUIREMENTS

TABLE 2.6.5.1
CLEARANCE REQUIREMENTS

FEATURE	MIN. CLEARANCE
WATER SERVICE OR SANITARY SERVICE AND POWER OR TRANSFORMER	3.0m
SEPARATE SERVICE TRENCHES	3.0m
WATER SERVICE AND MANHOLE SHAFTS, PEDESTALS, TRANSFORMER GROUNDING RODS, LIGHT POLES, POWER POLES, CABLE, CATCH BASINS AND TREES	2.0m

2.6.6 AUGERING OF SERVICES

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

All auger pit excavations are to 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 are to be bedded in accordance with Section 2.6.5.

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