

## 1 GENERAL

1.1 The work of this section includes the provision of all design, labour, materials, equipment and services required to fabricate and install sanitary waste systems as required for a complete project. The work includes, but is not necessarily limited to, the items referenced herein:

- 1.1.1 Cast Iron Soil Pipe Components
- 1.1.2 Epoxy Coated Cast Iron Soil Pipe Components
- 1.1.3 Copper Pipe Components
- 1.1.4 ABS Pipe Components for Buried Pipes
- 1.1.5 PVC Pipe Components for Buried Pipes
- 1.1.6 DWV Pipe Components
- 1.1.7 Clean-Outs and Clean-Out Access Covers
- 1.1.8 Floor Drains
- 1.1.9 Area Drains
- 1.1.10 Submersible Bilge and Sewage Pumps
- 1.1.11 Insulation
- 1.1.12 Sumps

1.2 Abide by all applicable regulations of the Ontario Building Code.

1.3 Provide water and drainage connections to equipment furnished by Owner.

## 2 DESIGN

2.1 Provide sanitary waste piping from each sanitary facility generally.

2.2 Grade horizontal sanitary waste piping at 2% in the direction of flow as per the Ontario Building Code.

2.3 Route pipes in an orderly manner, and maintain proper grades.

2.4 Install piping to conserve headroom and space.

2.5 Route above grade piping parallel to walls.

2.6 Install concealed piping close to building structure to keep furring to a minimum.

2.7 Run connections to street main a minimum of 1500 mm below finished grade.

## 3 MATERIALS

3.1 Cast Iron Soil Pipe Components:

- 3.1.1 Pipe: cast iron soil pipe to *[CAN/CSA-B70-M91]*.
- 3.1.2 Mechanical Joint Components: hubless fittings, elastomeric gaskets and stainless steel mechanical joint couplings to *[CAN/CSA-B70-M91]*.
- 3.2 Epoxy Coated Cast Iron Soil Pipe Components:
  - 3.2.1 Pipe: epoxy coated cast iron soil pipe to *[CAN/CSA-B70-M91]*.
  - 3.2.2 Mechanical Joint Components: hubless fittings, elastomeric gaskets and stainless steel mechanical joint couplings to *[CAN/CSA-B70-M91]*.
  - 3.2.3 Epoxy Coating: interior surfaces of cast iron pipe and fittings coated with 250 mm fusion bonded epoxy, meeting the following requirements:
    - 3.2.3.1 Adhesion: to *[ASTM D 1002-94]*.
    - 3.2.3.2 Penetration Resistance: to *[ASTM G 17-88(1992)]*.
- 3.3 Copper Pipe Components:
  - 3.3.1 Pipe: D" Copper Tube: to *[ASTM B 306-92]*.
  - 3.3.2 Joint and Fitting Components:
    - 3.3.2.1 Wrought Copper Fittings: to *[ANSI B 16.22.1980]*.
    - 3.3.2.2 Cast Copper, Brass & Bronze Fittings: to *[ANSI B 16.18-1984]*.
    - 3.3.2.3 Solder Joints: to *[ASTM B 32-95]*.
    - 3.3.2.4 Brazed Joints: to *[ASTM B 664-90]*.
- 3.4 PVC Pipe Components:
  - 3.4.1 Pipe: PVC plastic pipe to *[CAN/CSA-B 181.2-M90]*.
  - 3.4.2 Joint and Fitting, Components:
    - 3.4.2.1 Fittings: PVC fittings to *[CAN/CSA-B 181.2-M90]*.
    - 3.4.2.2 PVC Solvent Cement: to *[ASTM D 2564-93]*.
    - 3.4.2.3 ABS-PVC Solvent Cement: to *[ASTM D 3138-93]*.
- 3.5 Clean-Outs and Clean-Out Access Covers:
  - 3.5.1 Provide caulked or threaded type extended to finished floor or wall surface. Provide bolted cover plate clean-outs on vertical rainwater leaders only. Ensure ample clearance at clean-out for rodding of drainage system.
  - 3.5.2 Floor clean out access covers in unfinished areas shall be round with nickel bronze scoriated frames and plates. Provide access covers in

finished areas with depressed centre section to accommodate floor finish.  
Wall clean-outs to have chrome-plated caps.

3.6 Floor Drains:

3.6.1 Lacquered cast iron body with double drainage flange, weep holes, combined two-piece body, reversible clamping device and adjustable nickel/bronze strainer. Shower and washroom floor drains: complete with a removable perforated sediment bucket.

3.6.2 Equipment rooms: complete with a polished bronze funnel type strainer, and extension for floating floor.

3.7 Area Drains:

3.7.1 Lacquered cast iron body, adjustable collar and galvanized ductile iron locking grate.

3.8 Submersible Bilge and Sewage Pumps:

3.8.1 Type: completely submersible, vertical, centrifugal

3.8.2 Casing: cast iron volute and oil filled -motor chamber.

3.8.3 Impeller: bronze, non-clog with corrosion resistant alloy steel shaft.

3.8.4 Bearings: anti-friction ball or roller.

3.8.5 Accessories: oil resistant power cord with three-prong connector on single phase, fractional horsepower units only.

3.8.6 Duplex Controls: packaged prewired alternator with mercury type liquid level controls and control panel to cut in second pump on rising level or pump failure, and separate liquid level control for high level alarm. Connect alarms to BAS.

3.9 Insulation:

3.9.1 Material: 25 mm formed mineral fibre rigid insulation sleeving, to [CAN/CGSB-51.9-92].

3.9.2 "K" Value: maximum 0.035 W/m.°C at 24°C mean temperature.

3.9.3 Service Temperature: - 14°C to 100°C.

3.9.4 Jacket: factory applied vapour barrier jacket to [CGSB 51-GP-52Ma], Type 1, with longitudinal lap seal.

3.10 Sump: Reinforced concrete sumps, complete with necessary drainage fittings, 10mm checked steel plate covers with gasket seal frames anchor bolts.

## 4 INSTALLATION

4.1 General:

- 4.1.1 Install cast iron connections from weeping tile to sump pit or sanitary drainage system including backwater valve, deep seal P-trap and clean-out. Provide access for servicing of backwater valve.
- 4.1.2 Lubricate clean-out plugs with mixture of graphite and linseed oil. Prior to building turnover remove clean-out plugs, re-lubricate and reinstall using only enough force to ensure permanent leak-proof joint.
- 4.1.3 Where floor drains are located over occupied areas, provide waterproof installation.
- 4.1.4 Install trap primer to each fixture including floor drains with prime line.
- 4.1.5 Install pressure reducing valves to limit maximum static pressure at plumbing fixtures to 550 kPa.
- 4.1.6 Provide drains required for all equipment and pipe to sanitary main in street.

4.2 Routes and Grades:

- 4.2.1 Route piping in an orderly manner and maintain proper grades.
- 4.2.2 Install piping to conserve headroom and space.
- 4.2.3 Route above grade piping parallel to walls.
- 4.2.4 Where practicable, group piping at common elevations.
- 4.2.5 Install concealed pipes close to building structure to keep furring to a minimum.
- 4.2.6 Grade horizontal sanitary and storm drainage vent piping at 2% minimum.
- 4.2.7 Connect building sanitary line to street main. Run minimum 1500 mm below finished grade.

4.3 Pipe Schedule:

SERVICE	PIPE	FITTING	JOINT
DWV above grade	Cast iron, hubless DWV copper DWV copper	Mechanical Joint Cast Bronze Wrought Copper	Clamped Soldered 50-50, tin lead Soldered 50-50, tin- lead
DWV buried	Cast iron, hubless ABS	Mechanical Joint ABS	Clamped Solvent Weld
Special Waste	Epoxy coated Cast iron, hubless	Mechanical Joint	Clamped

4.4 Insulation: insulate last 1500 mm of plumbing vents and above ground horizontal drain lines. Insulate all exposed waste line.

***End of Section***