

## 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 rain water drainage 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 Copper Pipe Components.
  - 1.1.3 PVC Pipe Components for Buried Pipes.
  - 1.1.4 Aluminum D" Pipe Components.
  - 1.1.5 Clean-Outs and Clean-Out Access Covers.
  - 1.1.6 Roof Drains.
  - 1.1.7 Storm Drain Piping Insulation.
  - 1.1.8 Submersible Bilge and Sewage Pumps, Sumps.

## 2 DESIGN

- 2.1 Provide complete rain water drainage system coordinated with roofing and structural design.
- 2.2 Grade horizontal storm drainage piping at a 2% slope min. in the direction of flow.
- 2.3 Insulate closest 2000 mm length of piping from roof drains including the roof drain sump. Insulate all horizontal runs of storm lines.

## 3 MATERIALS

- 3.1 Cast Iron Soil Pipe Components:
  - 3.1.1 Pipe: cast iron soil pipe to *[CAN/CSA-B70]*.
  - 3.1.2 Mechanical Joint Components: hubless fittings, elastomeric gaskets and stainless steel mechanical joint couplings: to *[CAN/CSA-B70]*.
- 3.2 Copper Pipe Components:
  - 3.2.1 Pipe: DWV Copper Tube: to *[ASTM B 306]*.
  - 3.2.2 Joint and Fitting Components:
    - 3.2.2.1 Wrought Copper Fittings: to *[ANSI B 16.22]*.
    - 3.2.2.2 Cast Copper, Brass & Bronze Fittings: to *[ANSI B 16.18]*.
    - 3.2.2.3 Solder Joints: to *[ASTM B 32]*.
    - 3.2.2.4 Brazed Joints: to *[ASTM B 664]*.

3.3 PVC Pipe Components:

3.3.1 Pipe: PVC plastic pipe to *[CAN/CSA-B181.2]*.

3.3.2 Joint and Fitting Components:

3.3.2.1 Fittings: PVC fittings to *[CAN/CSA-B181.2]*.

3.3.2.2 PVC Solvent Cement: to *[ASTM D 2564]*.

3.3.2.3 ABS-PVC Solvent Cement: to *[ASTM D 3138]*.

3.4 Aluminum DWV Pipe Components:

3.4.1 Aluminum DWV Pipe: to *[CAN/CSA-B281]*.

3.4.2 Mechanical Joint and Fittings consisting of:

3.4.2.1 Hubless Cast Iron Fittings: to *[CAN/CSA-B70]*.

3.4.2.2 Adaptor Ring: elastomeric pipe end protection component to *[CAN/CSA-B281]*.

3.4.2.3 Gasket: double ribbed elastomeric gasket to *[CAN/CSA-B70-M91]*.

3.4.2.4 Joint Coupling: stainless steel mechanical joint coupling to *[CAN/CSA-B70]*.

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 round access covers in finished areas with depressed centre section to accommodate floor finish. Wall clean outs to have chrome plated caps

3.6 Roof Drains:

3.6.1 Material: all major components including body, flashing clamping flange, under deck clamping ring and dome strainer: cast iron or cast aluminum, lacquered. Bolts: galvanized or prime painted steel.

3.6.2 Body:

3.6.2.1 Sump: minimum 180 mm internal diameter, minimum 75 mm deep.

3.6.2.2 Discharge: nominal 100 non-threaded MJ.

3.6.2.3 Bosses: solid, integrally cast, for under deck clamping ring and flashing flange bolts.

- 3.6.2.4 Deck flange: nominal 300 mm outside diameter, minimum 50 mm width.
- 3.6.3 Flashing Clamping Flange: outside diameter same as outside diameter of deck flange. V notched positive draining gravel stop lip, 15 mm high.
- 3.6.4 Dome Strainer: Minimum 150 mm high, 8 - 15 mm slotted openings, sides and top.
- 3.7 Storm Drain Piping Insulation:
  - 3.7.1 Material: 25 mm formed mineral fibre rigid insulation sleeving to [CAN/CGSB-51.9]. "K" Value: maximum 0.035 W/m.°C at 24°C mean temperature. Service Temperature: 14°C to 100°C.
  - 3.7.2 Jacket: factory applied vapour barrier jacket to [CGSB 51-GP-52Ma], Type 1, with longitudinal lap seal.
- 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 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 Sump: Reinforced concrete sump, complete with necessary drainage fittings, 10 mm checked steel plate cover, gasket frame 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.
- 4.2 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 Size storm line minimum for 10 minutes, 50 years intensity with roof scupper drain for heavier storm.
- 4.2.8 Connect building storm system to street storm main.

4.3 Pipe Schedule:

<u>SERVICE</u>	<u>PIPE</u>	<u>FITTING</u>	<u>JOINT</u>
DWV above grade	Cast iron, Hubless	Mechanical Joint	Clamped
	DWV copper	Cast Bronze	Soldered 50-50, tin-lead
	DWV copper	Wrought Copper	Soldered 50-50, tin-lead
	PVC	PVC	Solvent weld
	DWV, Hubless Aluminum	Mechanical Joint	Clamped
DWV buried	Cast iron, hubless	Mechanical Joint	Clamped
	PVC	PVC	Solvent Weld
Special Waste	Epoxy coated cast iron, hubless	Mechanical Joint	Clamped

- 4.4 Insulation: Insulate closest 1500 mm piping to roof drains including the roof drain sump.

***End of Section***