GLYCOL SPECIALTIES

1. GENERAL

1.1 Scope

.1 Glycol mixing/charging tank, fill pump.

.2 Propylene glycol solution.

.3 Manual and automatic air vents.

.4 Air separators.

.5 Relief valves and fittings.

.6 By-pass filter.

1.2 Quality Assurance

.1 Thoroughly check system and make necessary corrections if system continually loses solution.

.2 Perform tests determining strength of glycol solution before system is turned over to the Owner. Provide test prior to end of guarantee and replenish as required. Provide written test results for review.

1.3 Submittals

.1 Provide shop drawings for all equipment in this section.

2. PRODUCTS

2.1 Manual Air Vents

.1 Provide manual air vents with 25 mm or line diameter pipe which ever is greater to form air collection chamber. Collection chamber to be 150 mm high.

2.2 Air Separators

.1 Provide centrifugal type with 861 kPa WSP steel tank, galvanised steel 5 mm perforated strainer, perforated stainless steel air collector tube and drain connection.

2.3 Relief Valves

.1 Provide ASME rated direct spring loaded type, lever operated non-adjustable factory set discharge pressure as indicated.

2.4 Glycol Solution

.1 Provide propylene glycol/water solution suitable for a temperature range of -40°C to 104°C. Solution to be suitable for heating or cooling complete with appropriate corrosion inhibitors. **Solutions must be factory premixed.** Dowfrost HD.

2.5 Bypass Filter

.1 Unit to consist of cartridge filter, flow indicator, flow control valves and filter cartridges. Cartridge filter; stainless steel shell of single centre bolt construction with cast nick-plated brass head, drain plug and air vent. Flow indicator - cast bronze body with two sight glasses of high temper, thermo shock-resistant glass and nylon rotor on stainless steel pin.

Flow Control Valves: Cast Bronze Globe Valves, 25 mm Female NPT Thread.

Filter cartridges: 10 each of 10 micron retention, and 20 micron retention.

Manufacturer: Guthrie Hydroniclean System or equal.

2.6 Glycol Mixing / Charging Tank, And Fill Pump

.1 System shall include 180 litre polyethylene storage/mixing tank with cover, pump suction hose with inlet strainer, pressure pump with thermal cut-out, integral pressure switch, integral check valve, cord and plug, pre-charged accumulator tank with EPDM diaphragm, manual diverter valve for purging air and agitating contents of storage tank, adjustable pressure regulating valve (35 – 380 kPa) complete with pressure gauge, integral replaceable strainer, check valve, union connection, 12 mm x 900 mm long flexible connection hose with check valve, low level pump cut-out.

2.7 Expansion Tank

.1 Provide glycol expansion tanks as described in Section 15130.

3. EXECUTION

3.1 Air Vents

.1 Provide manual type at system high points and convection type heating units.

.2 Where large air quantities can accumulate, provide enlarged air collection standpipe.

3.2 Air Separator

.1 Provide on suction side of system circulation pump and connect to expansion tank.

3.3 Relief Valve

.1 Provide relief valves on pressure tanks, low pressure side of reducing valves, heating convertors, expansion tanks and where indicated.

.2 Drain relief valve to glycol collection tanks. Do not waste glycol to floor drains.

.3 System relief valve capacity shall equal make-up pressure reducing valve capacity. Equipment relief valve capacity shall exceed input rating of connected equipment.

.4 Where one line vents several relief valves, cross sectional areas shall exceed sum of individual vent areas.

3.4 Bypass Filter

.1 Install between pump's suction and discharge. Provide isolation valves and sight glass as indicated.

3.5 Glycol Mixing / ChargingTank And Fill Pump

.1 Provide one tank and one pump.

3.6 Expansion Tanks

.1 Provide air lines, checks, charging valves and pressure gauges for expansion tanks and glycol fill tanks.

3.7 Installation

.1 Do necessary piping to complete installation as shown on the drawings specified.

.2 Thoroughly clean and flush system before antifreeze solution is added.

.3 Manually feed glycol to system through make-up line with pressure regulator.

.4 Provide one extra 170 L drum of glycol, at turn over of the building to owner.

END OF SECTION

TANKS

1. GENERAL

1.1 Scope

.1 Expansion tanks.

.2 Fuel day oil tank.

.3 Fuel oil storage tank.

.4 Glycol fill tanks.

.5 Accessories and connection to piping system.

.6 Saddles and structural supports.

.7 Provide shop drawings for all scheduled tanks.

1.2 Standards

.1 Construct pressure tanks to current ASME Code for Unfired Pressure Vessels.

.2 Comply with current Federal Government Regulations.

.3 Above ground fuel storage tanks shall comply with latest edition of CAN4-S602.

1.3 Submittals

.1 Submit as part of shop drawings for domestic hot water storage tanks, specifications and installation instructions for tank lining method.

1.4 Inspections

.1 Obtain inspection certificates for pressure vessels from Provincial Authorities. Obtain certificates for underground tanks from authorities prior to backfilling.

2. PRODUCTS

2.1 Expansion Tanks, Diaphragm Type

.1 Welded steel, rated for working pressure, supplied with steel support structure.

.2 Precharged air chamber, heavy duty butyl diaphragm bonded with polypropylene liner to steel sheel separating air chamber from water.

.3 Provide with air side charge connection, and water side inlet connection precharged as scheduled.

2.2 Fuel Oil Day Tank

.1 Atmospheric double walled FRP tank.

.2 Provide steel saddle supports.

.3 Provide maximum 600 mm long gauge glass sections extending from top of tank to bottom, brass compression stops and guards.

.4 Provide vent, overflow, return, inlet, outlet, level control, gauge glass, tappings and drain. Levelometer to be complete with electronic output for DDC system, including low level alarm contact for DDC system connection and pump control (by DIV 17).

2.3 Above Ground Fuel Tank (Outside Building)

.1 Above ground 2275 L self contained double wall.

.2 Construction: tank to CAN/ULC-S601-00; containment to CAN/ULC-S653. Provide label on tank. Sandblasting to SSPC-SP6.

.3 Primary tank to be enclosed in a leak tight reinforced steel containment casing having a capacity of 110% of the primary tank's capacity.

.4 Tank shall be equipped with level indicator mounted directly on the tank in plain view of fill point.

.5 Provide the following openings on the top of the tank:

.1 100 Ø port for electronic low level alarm

.2 100 Ø primary vent with cap

.3 100 Ø fuel fill port with kamlok fitting and locking cap

.4 100 Ø tank mounted float level indicator port

.5 100 Ø secondary vent with cap

.6 100 Ø secondary inspection port

.7 150 Ø emergency vent

.8 2 x 100 Ø spare

.9 600 Ø manway

.6 Tank assembly to be complete with lifting lugs and supports.

.7 Provide 100 mm black block lettering indicating tank contents.

.8 Levelometer to be complete with electronic output for controls system (by DIV 17), including low level alarm contact for controls system connection

.9 Finishes:

.1 1 coat of red oxide primer painted to CAN/CGB-1.140; 1 coat of white enamel, corrosion resistant, polyurethane 3.5 mil, factory applied

2.4 Glycol Charging Tanks

.1 Refer to Section 15116 Glycol Specialties.

.2 Tank capacity: As indicated in Section 15999 Equipment Schedules.

3. EXECUTION

3.1 Installation

.1 Support tanks inside building from building structure as indicated on drawings. Provide 100 mm high housekeeping bases on floor mounted tanks.

.2 Flush and clean fuel tank prior to delivery to site and keep sealed during construction.

.3 Provide compressed air fitting on the expansion tank.

.4 Provide fuel for testing of tanks, and provide full fuel fill prior to turning over to owner, after all testing and commissioning is complete.

.5 Provide container of original coating material for touch-up of fuel storage tank.

3.2 Performance

.1 Provide tanks of dimensions and capacities as indicated on the drawings and/or tank schedule.

END OF SECTION

HEAT EXCHANGERS

1. GENERAL

1.1 Scope

.1 Heat exchanger.

.2 Relief and drain valves.

.3 Instrumentation.

.4 Insulation.

.5 Piping connections.

.6 Steel supports.

1.2 Quality Assurance

.1 Design and construction shall meet requirements of ASME code for unfired pressure vessels and provincial codes.

1.3 Submittals

.1 Shop drawings shall include dimensions, locations and size of tappings, and performance data to match specification.

2. PRODUCTS

2.1 General

.1 Units shall be suitable for *861 kPa* working pressure and *150°C* working temperatures.

.2 Heads shall be bronze, with steel or bronze tube sheets, threaded or flanged for piping connections.

.3 Water chamber and tube bundle shall be removable for inspection and cleaning.

.4 Prime coat exterior of units.

.5 Tubes shall be double walled suitable for domestic water application.

2.2 Shell And Tube Heat Exchanger

.1 Shell shall be steel, with threaded or flanged piping connections and necessary tappings.

.2 Tubes shall be 18 gauge copper.

.3 Provide steel saddle supports and attaching U-bolts.

.4 Units shall be designed for heating fluid in shell and heated fluid in tubes.

.5 Provide for temperature regulator sensor at heated fluid outlet.

.6 Provide ASME rated pressure and temperature relief valve on the heated fluid side.

.7 Provide thermometers and pressure gauge tappings in fluid inlets and outlets.

.8 Provide ASME rated pressure relief valve on steam side.

.9 Provide valved shell drain and vent.

3. EXECUTION

3.1 Installation

.1 Provide welded structural steel stands for floor mounting of heat exchangers. Bolt stand to floor.

.2 Ensure installation permits removal of tubes without disturbing installed equipment or piping.

.3 Refer to drawings for details of installation and piping connections.

3.2 Heat Exchanger Schedule

.1 Refer to equipment schedule.

END OF SECTION

DIESEL FUEL SYSTEM

1. GENERAL

1.1 Scope

.1 Provide diesel fuel systems consisting of storage tank, piping, valves, strainers and controls for boiler plant and stand-by gen-set.

.2 Co-ordinate with Division 16 Electrical for field wiring of ancillary control devices. Division 15900 controls to provide monitoring/status as specified, all other control wiring and interlocks shall be provided by Division 16 Electrical.

1.2 Submittals

.1 Submit shop drawings for tanks, valves, piping, pumps and control switches showing in detail pipe tappings, dimensions, construction materials detailed, and pump curves.

1.3 Quality Assurance

.1 Tanks to be suitable for diesel fuel and to carry ULC labels.

.2 Pumps, valves, piping and fittings to be suitable for diesel fuel.

.3 Pump controls to carry ULC and CSA labels.

.4 Installation shall meet all governing codes including the current edition of CSA Standard B139, NFPA and API Standards, and requirements set out by local fire department.

2. PRODUCTS

2.1 Tanks

.1 Refer to Section 15130.

2.2 Above Ground Piping

.1 Refer to Section 15100.

2.3 Pumps

.1 Refer to Section 15300.

2.4 Above Ground Piping And Fittings

.1 Refer to Section 15100.

.2 Provide all necessary isolation valves, check valves, unions and strainers as required for complete installation.

2.5 Fuel Filters

.1 Basket filter with removable bucket, replaceable filter, and 20 mm NPT threaded inlet and outlet.

.2 Standard of acceptance: General Oil Filter 2A-700A

2.6 Remote Fuel Indicator

.1 Provide remote fuel level indicator for outside storage tank. Locate indicator in the mechanical room housing fuel fired equipment.

.2 The fuel indicator shall be hydraulically powered float type. Use Clemmer Model 6754.

3. EXECUTION

3.1 Installation

.1 Securely cap all pipes and plug all tank openings which are temporarily not connected during construction. Clean all dirt and foreign matter in pipe prior to final hook-up. Flush all piping with kerosene or diesel fuel.

.2 Soap test in the presence of Consultant all lines prior to completion and backfill. Any leaks are to be repaired and system retested. Isolate lines for tank during test.

.3 Provide all necessary isolation valves, check valves, unions, and strainers to properly complete the system. Test complete system in the presence of the Consultant to ensure the system operates satisfactorily. Division 16 – Electrical shall provide 190V power source for controls.

.4 Provide plugged tees at low points of oil system to allow drainage of system of condensate and sludge.

.5 Use flexible hose to allow for relative movement due to expansion or heaving.

3.2 Testing

.1 Testing shall be conducted as per the requirements of the local fire department.

.2 Notify local fire department, prior to any testing or backfilling to witness the tests.

.3 Test pressure shall be not less than 1-1/2 times the maximum working pressure and not less than 340 kPa at the highest point of the system. Test shall be maintained for at least 10 hours. Refer to the current edition of CSA Standard B-139, and the Provincial Fire Code. Air test tanks at maximum 35 kPa for a minimum of 2 hours.

END OF SECTION

PIPING INSULATION

1. GENERAL

1.1 Scope

.1 Piping insulation.

.2 Adhesives, tie wires, tapes.

.3 Recovering.

1.2 Quality Assurance

.1 Insulation shall be installed by skilled workmen regularly engaged in this type of work.

.2 Materials shall meet or exceed fire and smoke hazard ratings as stated in this section and defined in applicable building codes.

1.3 Submittals

.1 Submit shop drawings which indicate complete material data, "K" value temperature rating, density, finish, recovery jacket of materials proposed for this project and indicate thickness of material for individual services.

1.4 Job Conditions

.1 Deliver material to job site in original non-broken factory packaging, labelled with manufacturer's density and thickness.

.2 Perform work at ambient and equipment temperatures as recommended by the adhesive manufacturer. Make good separation of joints or cracking of insulation due to thermal movement or poor workmanship.

1.5 Alternatives

.1 Alternative insulations are subject to approval. Alternatives shall provide the same or better thermal resistance at normal conditions as material specified.

2. PRODUCTS

2.1 General

.1 Insulation Materials, Recovery Jackets, Vapour Barrier Facings, Tapes and Adhesives: Composite fire and smoke hazard ratings shall not exceed 25 for flame spread and 50 for smoke developed.

.2 All insulation materials shall meet current Building Code Standards, and packages or containers of such materials shall be appropriately labelled.

.3 Insulate fittings and valve bodies with preformed removable insulated fittings.

2.2 Materials

.1 Cold Piping: Formed fine fibrous glass or formed mineral fibre pipe insulation, with factory applied vapour barrier jacket, factory moulded to conform with piping, "K" value maximum 0.035 W/m.°C at 24°C. Service temperature up to 100°C.

.2 Hot Piping: Formed fine fibrous glass or mineral fibre pipe insulation, with factory applied general purpose jacket, factory moulded to conform to piping, "K" value maximum 0.035 W/m.°C at 24°C. Service temperature up to 150°C.

.3 Vents: Flexible fibrous glass or mineral fibre insulation, "K" value maximum 0.035 W/m.°C at 24°C with factory applied reinforced aluminum foil vapour barrier. Service temperature -14°C0 to 50°C.

.4 Engine Exhaust: Formed rigid hydrous calcium silicate insulation, moulded to conform to piping, "K" value maximum 0.059W/m.°C at 93°C. Service temperature up to 750°C.

.5 Recovery Jackets:

- ULC labelled thermo-canvas flamespread less than 25 smoke developed less than 50.
- 0.9 mm smooth aluminum sheet for engine exhaust.

3. EXECUTION

3.1 Preparation

.1 Do not install covering before piping and equipment has been tested and approved.

.2 Ensure surface is clean and dry prior to installation. Ensure insulation is dry before and during application. Finish with systems at operating conditions.

3.2 Installation

.1 Insulate new piping, fittings and valves. Do not insulate unions, flanges (except on flanged valves), "victaulic" couplings, strainers, flexible connections and expansion joints. Terminate insulation neatly with plastic material trowelled on a bevel.

.2 Finish insulation neatly on hangers, supports and other protrusions.

.3 Locate insulation or cover seams in least visible locations. Locate seams on piping in ceiling spaces on the underside of the pipe.

.4 Provide recovering jackets on exposed insulation throughout, including equipment rooms. Make smooth uneven insulated surfaces before recovering.

.5 Cover insulation exposed to outdoors on existing sanitary sewer vent as detailed on drawing A-3.

.6 Cold Piping: Seal lap joints with 100% coverage of vapour barrier adhesive. Seal butt joints with 50 mm wide strips of vapour barrier sealed with vapour barrier adhesive. For fittings and valves, apply hydraulic insulating cement; or apply factory fabricated insulation half shells, seal all laps and joints.

.7 Flare out staples may be used to secure jacket laps on hot systems. Staples are to be applied on 100 mm centres.

.8 Hot Piping: For fittings and valves, apply hydraulic insulating cement; or apply factory fabricated insulation half shells.

.9 Vents: Adhere flexible insulation with adhesive applied to all laps. Provide annealed tie wire at 400 mm centres for securing insulation. Butt insulation and seal joints and breaks with 50 mm of foil adhered over joint.

.10 Engine Exhaust: Tightly butt insulation with staggered joints secured with metal bands or wire. Cover fittings with equivalent thickness of insulation.

3.3 Insulation Installation Thickness Schedule

	Piping or Equipment	Pipe Sizes mm	Insulation Thickness (fibreglass) mm	Recovery Jacket
1.	Domestic Cold Water Piping	15 to 25	12	Canvas
2.	Domestic Hot Water Supply Piping	15 to 50 Over 50	25 40	Canvas
3.	Vents within 3 m of Roof Outlet, as measured along pipe	All sizes	25	Canvas
4.	Glycol Heating Piping (do not insulate within radiation cabinets)	All sizes	40	Canvas
5.	Engine Exhaust and Muffler	All sizes	100	Aluminum

END OF SECTION

DUCT AND BREECHING INSULATION

1. GENERAL

1.1 Scope

.1 Duct thermal insulation.

.2 Breeching insulation.

.3 Adhesives, tie wires, tapes.

.4 Recovery.

1.2 Quality Assurance

.1 Insulation shall be installed by skilled workmen regularly engaged in this type of work.

.2 Materials shall meet fire and smoke hazard ratings as stated in this section and defined in applicable current building codes.

1.3 Submittals

.1 Submit shop drawings which indicate complete material data, "K" value temperature rating, density, finish, recovery jacket of materials proposed for this project and indicate thickness of material for individual services.

1.4 Job Conditions

.1 Deliver material to job site in original non-broken factory packaging, labelled with manufacturer's density and thickness.

.2 Perform work at ambient and equipment temperatures as recommended by the adhesive manufacturer. Make good separation of joints or cracking of insulation due to thermal movement, poor workmanship or material defects.

1.5 Alternatives

.1 Alternative insulations are subject to approval. Alternatives shall provide the same or better thermal resistance at normal conditions as material specified.

2. PRODUCTS

2.1 General

.1 Insulation Material, Recovery Jackets, Vapour Barrier Facings, Tapes and Adhesives: Composite fire and smoke hazard ratings shall not exceed 25 from flame spread and 50 for smoke developed.

.2 Insulating materials and accessories shall withstand service temperatures without smouldering, glowing, smoking or flaming.

.3 Recovery Jackets:

- ULC labelled thermo-canvas.

.4 All insulation materials shall meet current Building Code Standards, and packages or containers of such materials shall be appropriately labelled.

2.2 Materials

.1 Exposed Rectangular Ducts: Rigid fibrous glass or mineral fibreboard insulation, "K" value maximum 0.035 W/m.°C at 24°C. Factory applied reinforced aluminum foil vapour barrier for cold ducts.

.2 Round Ducts and Concealed Rectangular Ducts: Flexible fibrous glass or mineral fibre insulation, "K" value maximum 0.035 W/m.°C at 24°C. Factory applied reinforced aluminum foil vapour barrier for cold ducts

.3 Breeching Insulation: Semi-rigid mineral fibre insulation with glass mat "K" value 0.035 W/m.°C maximum at 24°C. Service temperature 65°C to 450°C.

3. EXECUTION

3.1 Preparation

.1 Do not install covering before ductwork and equipment has been tested and approved.

.2 Ensure surface is clean and dry prior to installation. Ensure insulation is dry before and during application. Finish with systems at operating conditions where possible.

3.2 Installation

.1 Ensure insulation is continuous through inside walls. Pack around ducts with fireproof self-supporting insulation materials, properly sealed.

.2 Finish insulation neatly at hangers, supports and other protrusions.

.3 Locate insulation or cover seams in least visible locations. Locate seams on ductwork in ceiling spaces on the underside of the duct.

.4 Provide recovering jackets on exposed insulation throughout, including equipment rooms. Insulation located in crawl spaces, shafts and suspended ceiling spaces is not considered exposed. Make smooth any uneven insulated surface before recovering.

.5 Exposed Rectangular Ducts: Secure rigid insulation with galvanised anchors or welded pins on 400 mm centres. Secure in place with retaining pins. Seal all insulation joints and breaks with joint tape. Seal adhesive; cover joints with 100 mm strips of open mesh cloth imbedded between two coats of lap seal adhesive. Use vapour barrier tape for insulation joints or breaks on cold ducts.

.6 Round Ducts and Concealed Rectangular Ducts: Adhere flexible insulation to ductwork with adhesive applied in 150 mm wide strips on 400 mm centres. Provide annealed tie wire tied at 400 mm centres for securing duct insulation. Butt insulation and seal joints and breaks with lap seal adhesive; cover joints with joint tape. Use vapour barrier tape for cold ducts.

.7 Where duct velocities exceed 15 m/s, cover internal duct insulation with 0.8 mm perforated galvanised steel with 24% free area.

.8 Breeching Insulation: Face breeching with 9.5 mm rib lath turn out to provide 12 mm space between insulation and hot surface and 12.5 mm mesh expanded lath on the outside. Butt blankets firmly together and secure with 1.6 mm galvanised wire. Lace metal mesh together. Coat with 12 mm thick insulating cement. Finish with a final 12 mm coat of insulating cement. Trowel to a smooth hard finish. Recover with aluminum jacket.

3.3 Insulation Installation Thickness Schedule

	Ducts and Equipment	Insulation Thickness mm	Recovery Jacket
.1	Combustion Air	50	Canvas
.2	Exhaust Ducts within 3000 mm of Exterior Walls or Openings	25	Canvas
.3	Outside Air Intake Ducts	50	Canvas
.4	Boiler Breeching	50	Canvas

END OF SECTION

PUMPS

1. GENERAL

1.1 Scope

.1 All pumps except where integral with a manufactured piece of equipment.

.2 Pumps controls where self contained.

1.2 Submittals

.1 Submit with shop drawings certified pump curves showing pump performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable. Show pump weights, motor and pump operating or efficiencies and electrical power characteristics.

1.3 Quality Assurance

.1 Pumps shall be aligned by qualified millwright and alignment certified.

.2 Ensure pumps operate at specified system fluid temperatures without vapour binding and cavitation, are non-overloading in parallel or individual operation, operate within 25% of midpoint of published maximum efficiency curve.

.3 Motors shall be high efficiency and/or inverter only as specified in Section 15010.

2. PRODUCTS

2.1 General

.1 Statically and dynamically balance rotating parts.

.2 Construction shall permit complete servicing without breaking piping or motor connections.

.3 Pumps shall operate at 1750 r/min unless specified otherwise.

.4 Pump connections shall be flanged.

2.2 Vertical In-Line Pump

.1 Type: Centrifugal, single stage, close coupled in-line, back pullout design, suitable for vertical operation.

.2 Casing: Cast iron for heating service or bronze for raw water service, rated for greater of 1200 kPa or 1.5 times actual discharge working pressure. Suction and discharge gauge port, air vent, wear rings, seal flush connection, drain plug, flanged suction and discharge.

.3 Impeller: Bronze for heating service or non-ferrous for raw water service, fully enclosed, keyed to shaft and secured with locknut.

.4 Shaft: Stainless steel or carbon steel with bronze or stainless steel sleeve through seal chamber.

.5 Seals: High performance mechanical seal, 1790 kPa maximum stuffing box pressure.

.6 Seals: Packing gland with minimum four rings Teflon impregnated packing.

.7 Motor: Open drip proof unless noted otherwise in pump schedule

.8 For pumps 3.7 kW and larger, provide split spacer couplings.

2.3 Positive Displacement Pumps

.1 Type: Single stage, rotary gear or sliding vane

.2 Pumps: Cast iron casing hardened shaft with stainless steel sleeves and mechanical seal, self-lubricating bronze bearings, inlet and outlet connections and integral bypass type adjustable relief valve.

.3 Drive: Flexible coupling with coupling guard.

.4 Base: Cast iron common mounting for pump and motor with drip rim and drain tapping.

3. EXECUTION

3.1 Installation

.1 Provide drains for bases and stuffing boxes piped to and discharging into floor drains.

.2 Provide air cock and drain connection on horizontal pump casings.

.3 Decrease from line size, with long radius reducing elbows or reducers. Support piping adjacent to pump such that no weight is carried on pump casings. Provide supports under elbows on pump suction and discharge line sizes 100 mm and over.

.4 Check and align pumps prior to start-up.

3.2 Performance

.1 Refer to the Pump Schedule.

END OF SECTION

PLUMBING GENERAL

1. GENERAL

1.1 Scope

.1 Cleanouts.

.2 Backflow preventers.

.3 Vacuum breakers.

1.2 General Requirements

.1 Provide materials, equipment and labour to install plumbing as required by National and Local Codes and as specified herein.

.2 Provide water and drainage connections to equipment furnished in other sections of this specification and as supplied by the Owner.

1.3 Submittals

.1 Submit shop drawings for review by the Engineer, in accordance with the general conditions. Provide shop drawings for the following items:

- Backflow preventers
- Vacuum Breakers

2. PRODUCTS

2.1 Clean-Outs and Clean-Out Access Covers

.1 Provide caulked or threaded type extended to finished floor or wall surface. Ensure ample clearance at clean-out for rodding of drainage system.

.2 Floor cleanout 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.

2.2 Backflow Preventer Assemblies

.1 Provide backflow preventer assembly complete with shut-off valves before and after check valves and test cocks. Assembly shall meet current AWWA requirements and CSA B64 standards.

2.3 Vacuum Breaker Assemblies

.1 Provide hose connection type vacuum breaker assembly, consisting of a check valve disc assembly to be vandal proof and drainable. Watts No. 8A. For freezing conditions, Watts No. NF8

3. EXECUTION

3.1 Installation

.1 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 leakproof joint.

.2 Install backflow prevention devices on plumbing lines, to code requirements, where contamination of domestic water may occur. Generally necessary on boiler make-up lines, hose bibbs and flush valves.

.3 Drainage lines shall grade 2 mm per 100 mm unless otherwise indicated on drawings.

.4 Locate plumbing vents as far as practical from air intakes.

END OF SECTION