SAFETY CODES

Information Toolkit
Homeowners Plumbing Guide

Updated: 2026

Disclaimer. This information is only a guide and, as a homeowner, you must have a basic knowledge of plumbing systems to take on any installation or renovations. While other methods of installation may be acceptable, all installations must meet the most current requirements of the National Plumbing Code of Canada.

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Plumbing permit requirements

A plumbing permit is required when any of the following work is performed:

- A plumbing system is constructed, extended or altered
- Water or sewer lines in or around the home are replaced
- A hot water tank is installed or replaced

Hot water tank installation or replacement

A gas permit is required for hot water tank work if any of the following changes are made:

- Gas lines upstream of the water heater shutoff valve are modified
- The venting system is altered, including changes in size or design
- The water heater is replaced with a different type (for example, switching from a natural draft to a direct vent unit)

Work that does not require a plumbing permit

A plumbing permit is **not** required for the following activities:

- Repairing leaks in water distribution or drainage systems
- Replacing existing faucets or fixtures
- Clearing blockages in drainage systems

General compliance

Alternative installation methods not outlined in this guide may be acceptable. However, all plumbing work must comply with the latest edition of the National Plumbing Code of Canada.

Concealed plumbing procedure

Post-renovation permitting

If renovations have been completed without the necessary permits, it is still possible to apply for permits retroactively. In such cases, a licensed contractor must submit the permit application. For plumbing work that has been covered by drywall or other finishes, the **concealed plumbing procedure** must be followed.

Note:
The following conditions apply to concealed plumbing work:

- Homeowner permits cannot be issued for work concealed before permits were obtained
- A licensed plumbing contractor must be hired to proceed with inspection
- The contractor is responsible for obtaining the permit and verifying code compliance
- The homeowner remains accountable for previously concealed plumbing work

Homeowner plumbing guide

An active plumbing permit is required before any inspections can be booked. Permits are active for two years. Find more information on our website at cochrane.ca/permit

Groundworks

Homeowner permits may require a minimum of two inspections:

- rough in; and
- mandatory final.

To schedule your groundworks rough in or final inspection please submit request through Cochrane's online portal. Access must be arranged by the homeowner and someone 18 years or older must be present.

Inspections are conducted from Monday to Friday, excluding holidays:

- Morning (between 8:30 a.m. and noon)
- Afternoon (between noon and 4:30 p.m.)

Please provide information for a site contact on inspections request. If you wish to cancel your inspection, please submit request through Cochrane's online portal.

Groundworks inspection

All plumbing piping must be installed as per the National Plumbing Code of Canada.

- Installation must be bedded, supported and protected with a back water valve if below grade (street level).

Rough inspection

- All plumbing drainage and venting must be installed and complete
- Waterlines must be installed and connected to the water distribution system
- All drains, vents and waterlines must be properly supported
- Cleanouts must be accessible
- The bathtub or shower valve must be installed

Final inspection

- All fixtures and equipment must be installed and ready for use
- Temperature of water at the bathtub or shower must not exceed 49°C (120°F)
- All piping designed for future fixtures must be sealed with approved plug or cap
- Toilets must be provided with a shutoff valve

A permit services report (PSR) can be requested once all inspections are completed. The report confirms compliance has been achieved. You can request a report by phoning 403-851-2572 or emailing safety.codes@cochrane.ca.

Possible outcomes

The Plumbing and Gas Safety Codes Officer will advise of the inspection outcome. There are three possible outcomes:

1. **Acceptable:** Installation may continue. No further inspections are required.
2. **Verification of compliance (VOC):** Deficiencies must be corrected and a signed copy returned to safety.codes@cochrane.ca. Installation may continue.
3. **Needs correction:** Deficiencies must be corrected and a reinspection booked before installation continues.

The plumbing system

A home's plumbing system is made up of four essential parts:

- **Water supply and distribution**: The water Pipes that transport potable water from the source, including a water heater, to fixtures and devices.
- **Drainage system**: Consists of the drain and sewer pipes that transport waste fluids from the fixtures to the municipal sewer system.
- **Venting system**: Consists of pipes connected to the drainage system, typically terminated in open air above the roof for air circulation and to protect trap seals removing sewer gases and helps the drainage system to work properly.
- **Fixtures and appliances:** Sinks, water closets, laundry tubs, water heaters, washing machines, etc. All fixtures are required to be equipped with a trap, which provides a water seal in the drain preventing sewer gas emissions. The trap must be vented.

Town of Cochrane requirements

Low water use fixtures

Low water use fixtures are designed to conserve water without compromising performance. Examples include faucets, showerheads and toilets, all of which are available in water-efficient models.

In accordance with the **Town of Cochrane's Water Utility Bylaw** and the **National Plumbing Code of Canada**, all new homes and renovations requiring a plumbing permit must be equipped with low water use fixtures.
Required fixture flow rates:

- Toilets: maximum of 4.8 litres (1.28 US gallons) per flush
- Urinal: maximum of 3.8 litres (1 US gallons) per flush
- Showerheads: maximum of 7.6 litres (2 US gallons) per minute
- Faucets: maximum of 5.7 litres (1.5 US gallons) per minute

Flow rate information is typically found on the product packaging, labeling or directly on the fixture.

Materials and standards

All plumbing system components—including materials, fixtures, and appliances—must meet the standards set by the **Canadian Standards Association (CSA)** or another accredited testing agency. Installation of any item that does not meet these standards is not permitted.

The drainage, venting system

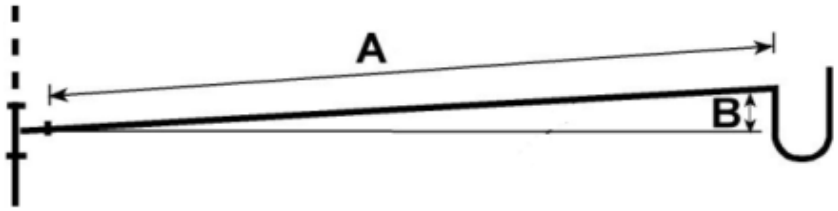
General Piping Requirements (See illustrations pg. 6–11):

- All horizontal drainage piping must grade a minimum of **1/4" (6mm) per foot** up to and including **3" (75mm)** in diameter; **4"** may grade at **1/8" (3mm) per foot.**
- Drains and vents must be **adequately supported** by a firm base or hanger.
- All fixtures located **below grade (street level)** must be protected from **backflow**
- Drain piping must be protected from freezing.
- **Tee fittings or 90-degree elbows** must not be used in the horizontal portion of a drainage system. All changes in direction are to be made using **Y and 45-degree bends.** Except for the piping immediately below a **water closet (toilet)**, a **90-degree elbow** may be used to change direction from horizontal to vertical in the direction of flow.
- **One 90-degree elbow** is allowed in the horizontal position when penetrating the wall serving a sink.
- **Cleanouts** are required at the base of **soil and waste stacks** when penetrating through the concrete floor.
- The maximum change in direction on a trap arm is 135 degrees.
- Except for a water closet, the total fall from the trap to the vent must not exceed the diameter of the trap arm (pipe).
- A 90-degree elbow or tee fitting may be used in the venting system, excluding use on wet vents.
- The **vent** must tie into the **house venting system** and must not have **any dips or sags** where moisture can build up and prevent airflow in the system.
- A **vent pipe** must rise above **the flood level rim** before connecting into another vent pipe.
- A **vent pipe penetrating the roof** must increase one pipe size to at least **3" (75 mm)** immediately before penetration, to protect from **frost closure**.

Minimum size of fixture outlet pipes

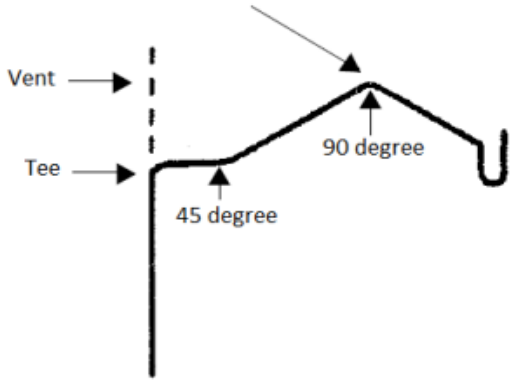
Fixture	Minimum size (inches)
Toilet	3"
Clothes Washer	2"
Lavatory (Basin) Sink	1 ¼"
Bathtub	1 ½"
Shower	1 ½"
Sink - one and two compartments	1 ½"

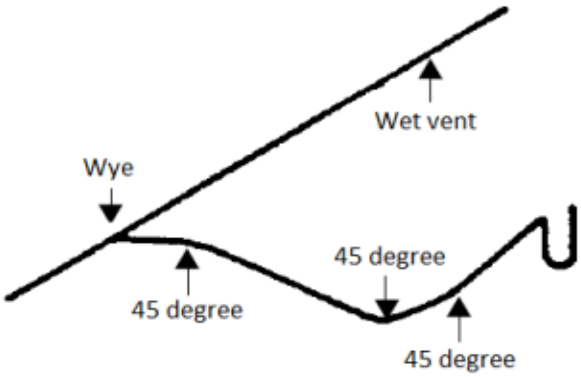
Although 1 ¼" minimum pipe size is required to serve a lavatory (basin), 1 ½" pipe size is typically used due to cost and market availability.

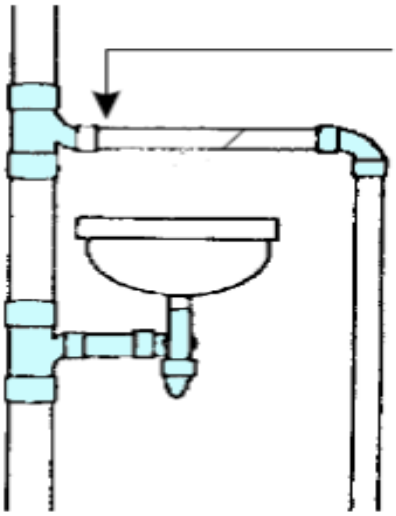


Developed Length of (A) (1-1/2" – Max 6 Feet) (2" – Max 8 Feet) |
Rise (B) – ¼" per foot (Must not be greater than the trap arm pipe size diameter)

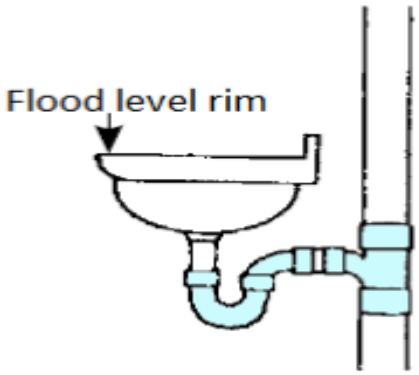
One 90 degree elbow is allowed in the horizontal position when penetrating the wall serving a sink.







A *vent* pipe must rise above *flood level rim* before connecting into another *vent* pipe



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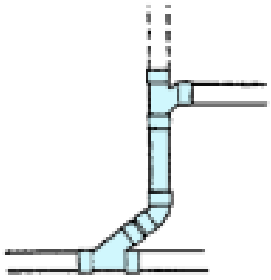

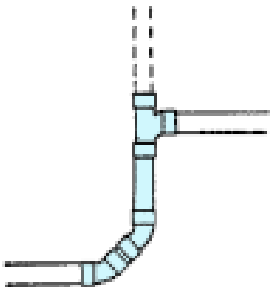

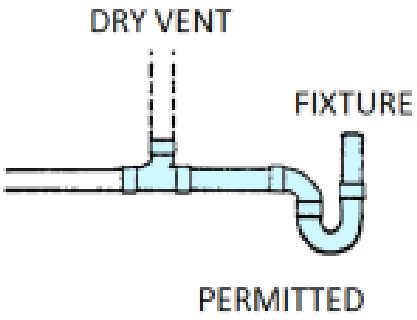

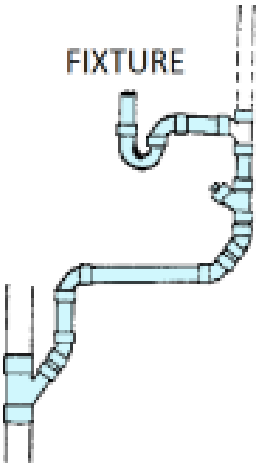

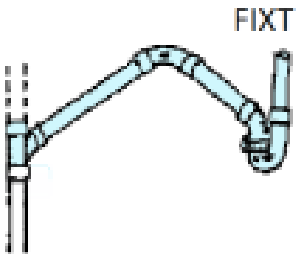

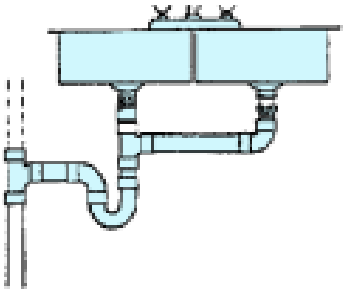

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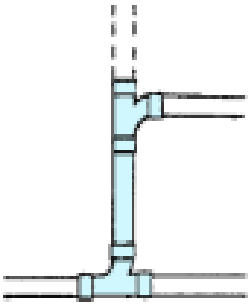
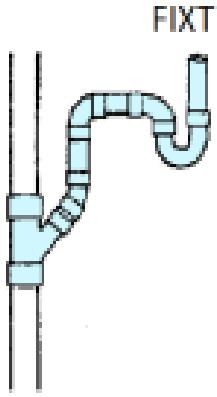
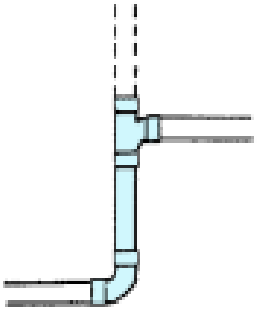






Protection from backflow

All fixtures installed **below street level** must be protected by a **backwater valve** to prevent sewer backup when connected to a municipal sewer system.

- A **normally closed backwater valve** must be installed to protect the branch drain.
- A **normally open backwater valve** may be installed on a building drain or building sewer. (Bi-yearly service recommended)

Normally open backwater valve valve

Normally closed backwater

Typical plumbing installations

Three-piece bathroom toilet:

- The minimum size for a wet vent pipe serving a toilet is **two inches (50 mm).**
- The toilet must be located no more than **10 feet (3 meters)** from a vent or wet vent.
- Standard distance from the finished wall to the center of the toilet flange is **12 inches (305 mm).**

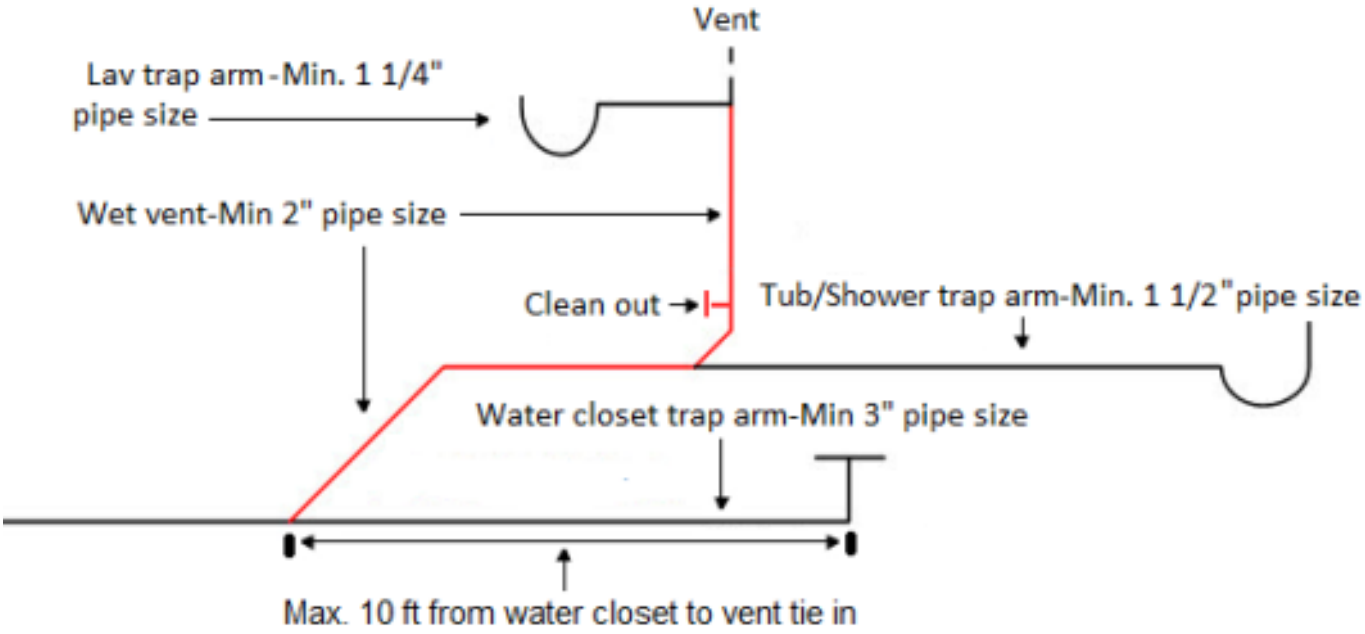
Sink:

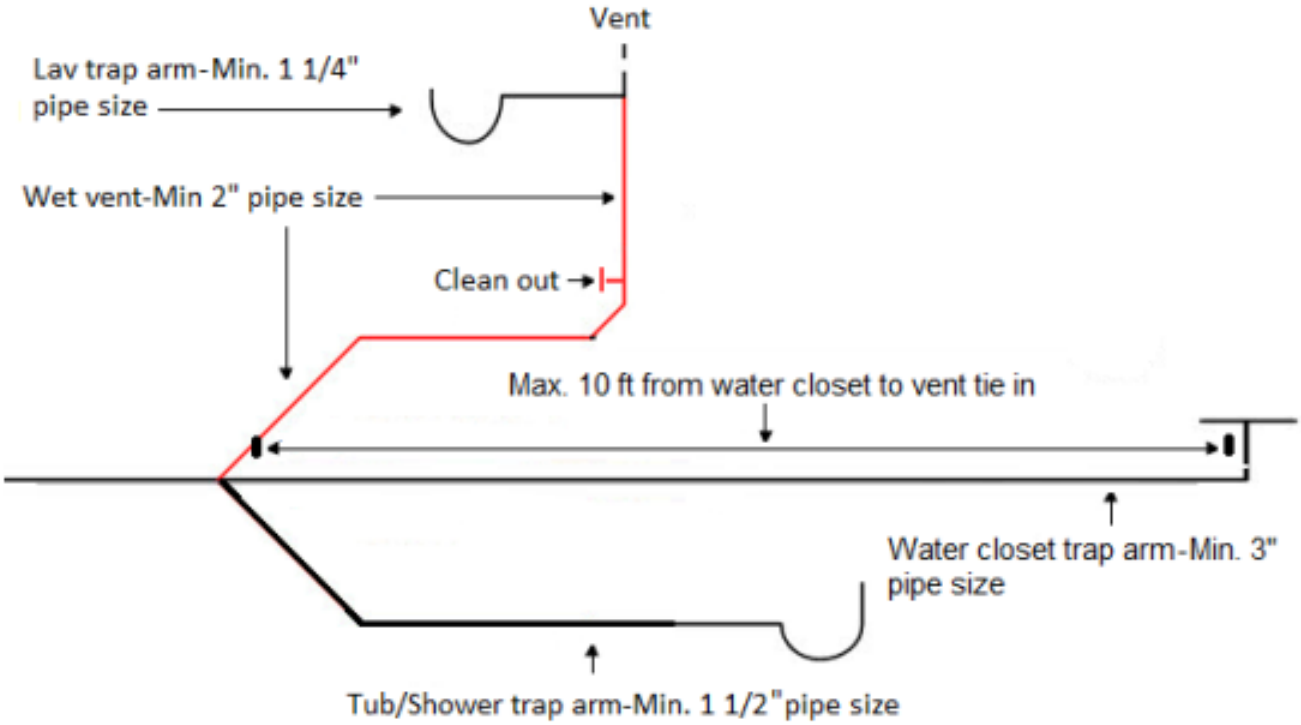
- The standard rough-in height for the sink drains from the floor is **18 inches (457 mm).**
- Water supply lines are typically installed at a height of **21 inches (533 mm)** from the floor.

Shower/bathtub:

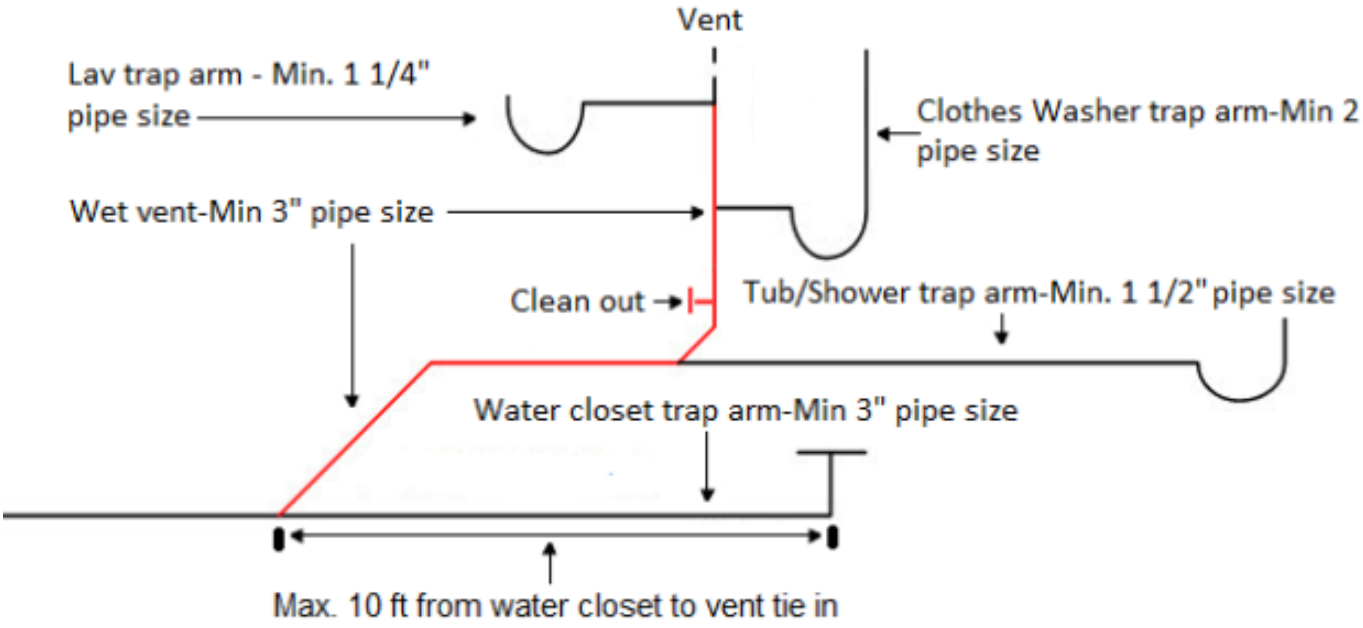
- A **solid weld-type P-trap** must be used when the trap is installed below the floor level.
- If two rough-in valves with two showers heads are installed in one shower, then **two inch (50 mm) drainpipe** is required.

Examples of typical bathroom plumbing installations



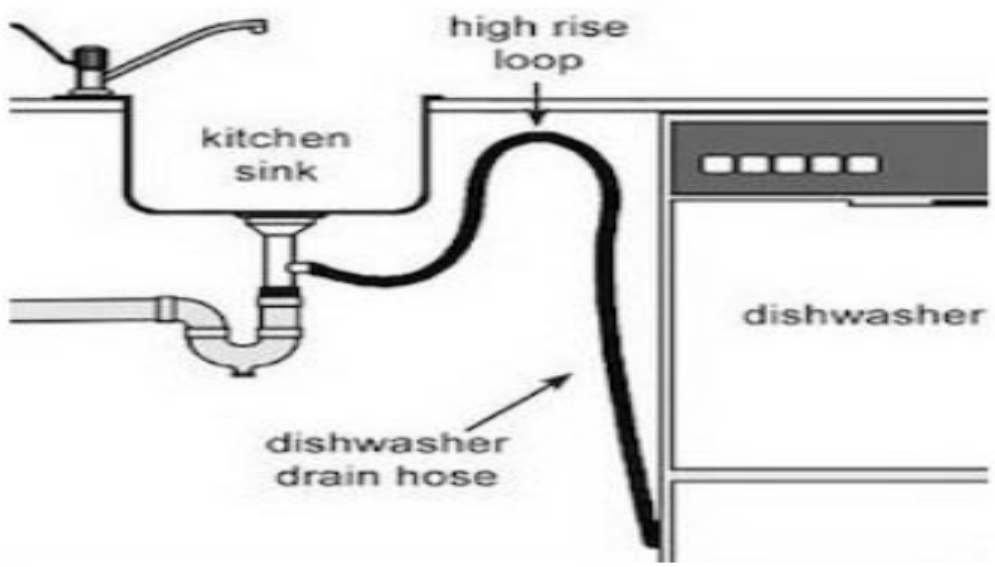


Typical bathroom plumbing installation with additional clothes washer



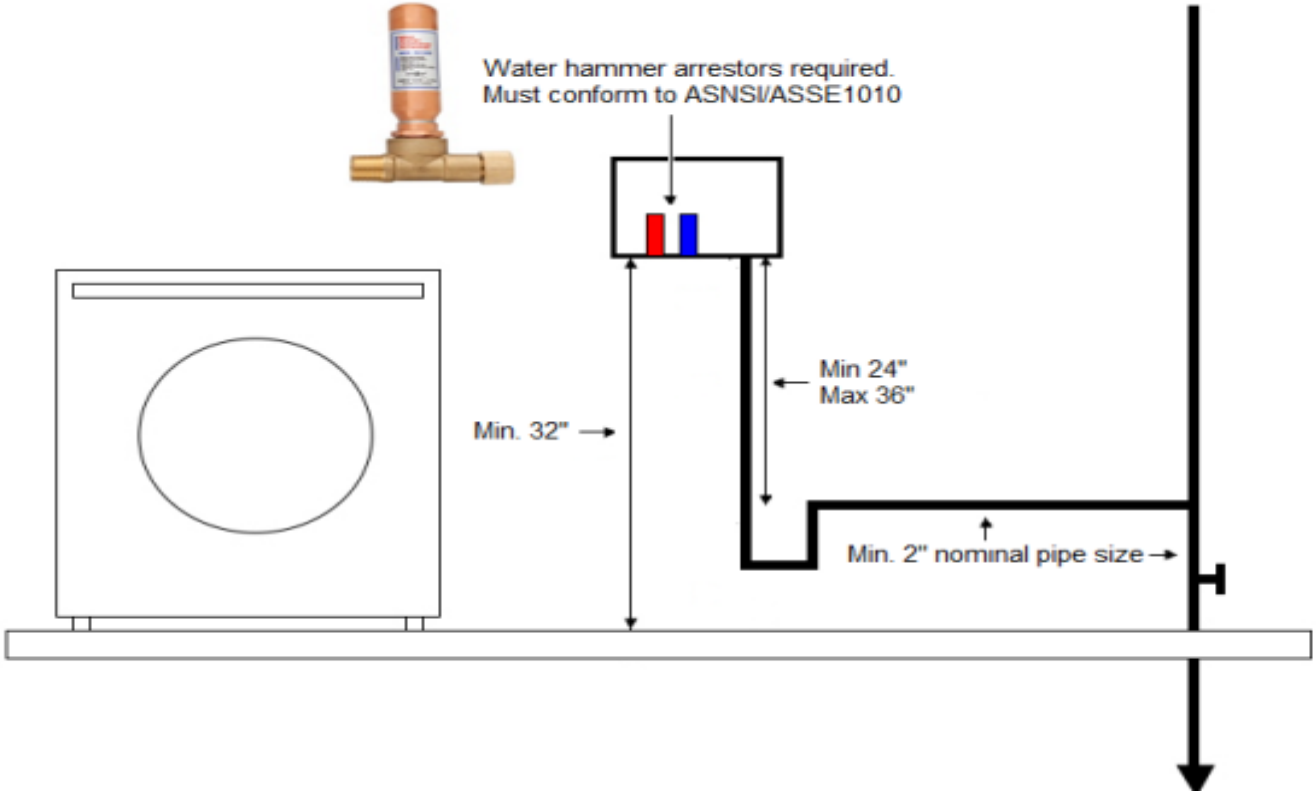
Typical kitchen sink and dishwasher plumbing installation

- The minimum drainpipe size for kitchen sinks is **1 ½" (38mm).**
- Dishwasher drain fittings must be installed **upstream of the trap** and the pump discharge line must rise **as high as possible** to just under the counter, to prevent the influx of sewer gases into the dishwasher.
- If the sink is to be installed on a kitchen island, an **approved air admittance valve** may be installed in an accessible location that allows air to enter.



Clothes washer/laundry box plumbing requirements

- The drainpipe for a clothes washer must be at least **2 inches (50 mm)** in diameter.
- The fixture outlet pipe (drop) connected to the washer must be between **24 inches (600 mm)** and **36 inches (915 mm)** in length.
- The trap arm **(2 inches / 50 mm**) must not exceed **8 feet (203 mm)** in length.
- The drain outlet must be positioned at a minimum height of **32 inches (813 mm)** above the floor.



Maximum Pipe Support Spacing

Vertical Support Spacing – Supported at base and at the floor level of alternate storeys

Pipe Material	Horizontal Support Spacing	Notes
ABS / PVC	1.2 m (4 ft)	At end of branch or change of direction
Copper (Hard)	< 1" → 2.5 m (8 ft) ≥ 1" → 3 m (9.8 ft)	Based on pipe diameter
PEX	0.8 m (3 ft)	—

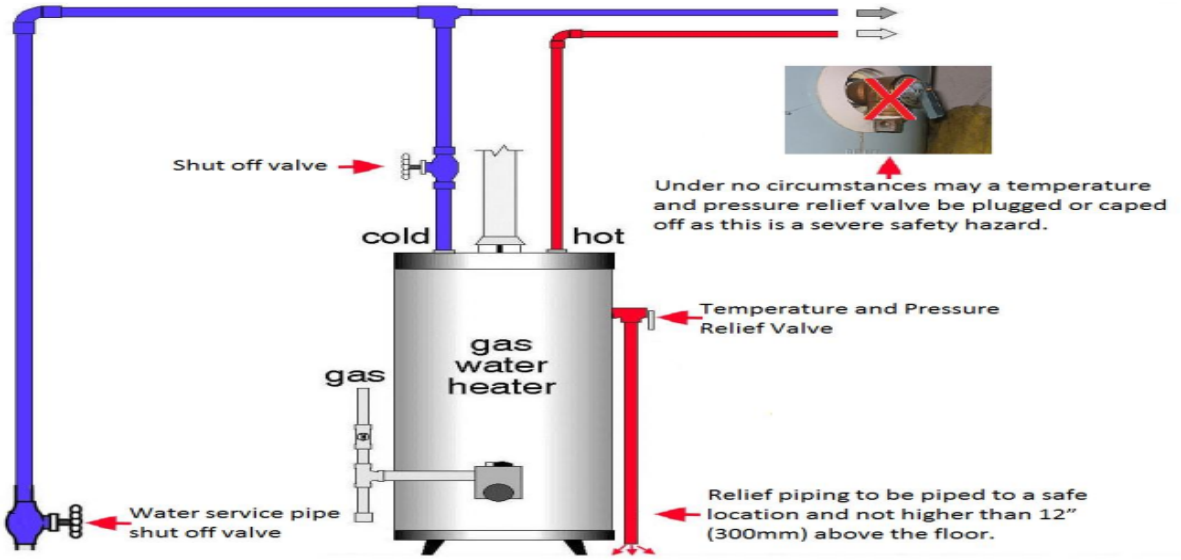
Water supply and distribution system requirements

General piping guidelines

- A **(Stop & Drain)** shut-off valve must be installed where the water service pipe enters the premises.
- The water supply and distribution system must be designed to allow for draining or blown out with air.
- Lead-free solder is required when soldering copper pipes in potable water systems.
- Each toilet **(water closet)** must have a shut-off valve on its supply line.
- Bathtub and shower valves must be either pressure-balanced or thermostatic mixing valves, compliant with CSA B125 standards.
- Clothes washer connections must include water hammer arrestors that meet ANSI/ASSE 1010 specifications.
- Dishwasher supply lines must also have water hammer arrestors conforming to ANSI/ASSE 1010.

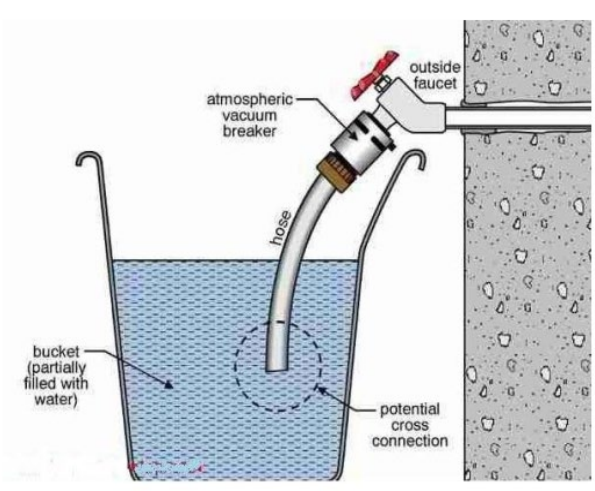
Water heater requirements

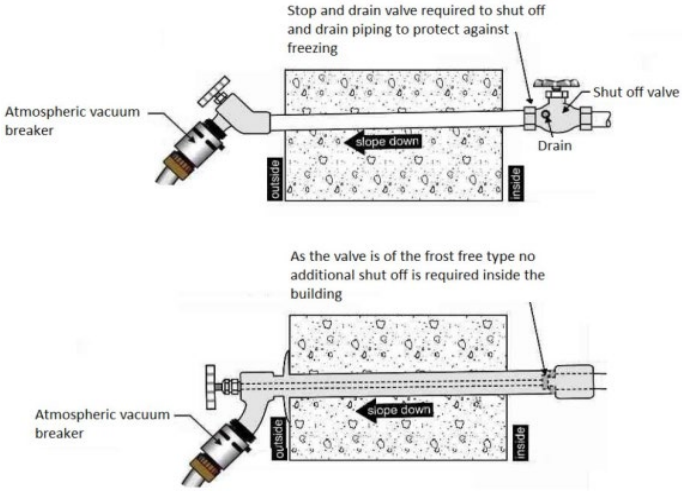
- A **shut-off valve** must be installed on the cold-water supply line serving each water heater.
- Each water heater must be equipped with a temperature and pressure relief valve, located within the **top 6 inches (150 mm)** of the tank.
- The temperature and pressure relief valve discharge pipe must terminate at a safe location, and the outlet must be no more than **12 inches (300 mm)** above the floor.
- The discharge connected to the temperature and pressure relief valve must be the same diameter as the valve outlet.
- Temperature and pressure relief valve must never be plugged or capped, as doing so poses a serious safety hazard.
- Water heaters must be installed on a firm, level, non-combustible surface.



Outdoor faucet / hose bib installation requirements

- Outside faucets /hose bibs must be provided with a frost-free type hose bib, or a stop and drain valve located inside the building must be installed serving the hose bib, to allow the waterline to drain and prevent freezing.
- A vacuum breaker must be installed on all outside faucets, to protect the water supply from possible cross-connection (Most frost-free hose bibs have integral vacuum breakers).





Irrigation system requirements – Town of Cochrane

- All irrigation systems in the Town of Cochrane must include cross-connection protection. This involves installing a testable backflow prevention device, such as a Double Check Valve Assembly (DCVA), on the irrigation water supply line.
- A plumbing permit must be obtained from the Town of Cochrane, and the system must be inspected by a Plumbing and Gas Safety Codes Officer.
- The selection, installation, maintenance and testing of backflow prevention devices must comply with CSA Standard B64.10-07.

Plumbing terminology

Air admittance valve: A one-way valve designed to allow air to enter the drainage system. It must conform to *ASSE1051*.

Backflow: A flowing back or reversal of the normal direction of fluid flow.

Back water valve: A check-valve device installed on a drainage line, to protect fixtures from a public sewage back flow.

Clean out: A fitting that is installed on a plumbing system that has a removable plug, cap or cover to allow the cleaning of plugged piping.

Cross connection: A cross connection is a temporary or permanent link between a potable (drinking) water system and any source containing non-potable water or other substances from which backflow may occur.

Vent: The pipe that extends above any fixture in the system and terminates through the roof to open air.

Fixture: A receptacle, appliance, apparatus or other devices that discharges sewage or clear water waste, and include a floor drain.

Fixture drain: A pipe that connects a trap serving a fixture to another part of a drainage system.

Fixture outlet pipe: A pipe that connects the waste opening of a fixture to the trap serving the fixture.

Flood level rim: The top edge at which water can overflow from a fixture or device.

Kitchen island: An unattached counter in a kitchen that permits access from all sides.

Potable water: Water that is safe for human consumption.

Pressure balanced valve: A valve that compensates for a change in pressure in either the cold or hot water line, maintaining the temperature of the water.

P-trap/trap: A fitting that is designed to hold a water seal that prevents the sewer gasses from entering the house.

Shut off valve: A valve used to regulate the flow of water in a potable

Stop and drain valve: A valve that allows you to drain the lines beyond the shut off point of that valve.

Temperature and pressure relief valve: A valve that protects the water heater from excess pressures and temperatures by discharging water.

Trap arm: Portion of pipe between the trap and the vented pipe.

Vacuum breaker: A device that prevent back-siphonage.

Wet vent: A drainage waste pipe that also serves as a vent pipe and extends from the furthest downstream wet vented fixture connection to the most upstream fixture connection.

Water hammer arrestor: A device that helps to prevent water hammer, which is caused by fast closing valves that may shake the water lines. It must conform to *ANSI/ASSE 1010.*

Water service pipe: A pipe that transports water from a public water main to the inside of a building.

Notes: