

## A Guide to

# Residential Plumbing

## for Homeowners



### The Plumbing System

The plumbing system in a dwelling comprises four basic elements as follows:

#### 1. The water supply and distribution system

This system is composed of the water pipes which transport potable water from the source of supply and conveys it to the fixtures and appliances and in the case of hot water, from the water heater to the fixtures and appliances. The source of supply may be the municipal system, or a private well or cistern, etc.

#### 2. The drainage system

This system consists of the drain and sewer pipes which convey waste fluids from the fixtures to a place of disposal which may be the municipal sewer system, or a septic tank or holding tank, etc.

#### 3. The venting system

This system consists of pipes which terminate in open air above the roof connected to the drainage system and which introduces air into the drainage system.

#### 4. The fixtures and appliances

These consist of sinks, wash basins, water closets (toilets), 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 which prevents the emission of sewer gases. The trap must be vented.

Some of the more common terms used in plumbing and defined in the code are as follows:

**Sanitary Building Drain** – the horizontal pipe at the lowest point in the building (generally the basement floor) which receives the discharge from the other drainage piping and conducts the sewage to a building sewer.

**Clean Out** – a fitting access in a drainage pipe for cleaning and inspection provided with a readily replaceable air tight cover.

**Sanitary Drainage Pipe** – all piping which conveys sanitary sewage to a sanitary building drain, sanitary building sewer, soil stack, waste stack, or waste pipe.

**Plumbing Appliance** – a receptacle that receives water etc. and which discharges to a plumbing system.

**Horizontal** – departing from the true horizontal by not more than 45°

**Potable Water** – water fit for human consumption

**Waste Stack** – a vertical waste pipe that passes through one or more stories that conducts liquid waste from fixtures other than sanitary units.

**Trap** – a fitting or device that provides a liquid seal to prevent the emission of sewer gas without affecting the flow of water.

**Vent** – a pipe that connects a drainage system with open air for circulation of air and the protection of trap seals

The minimum size of piping, in general, which is required to serve a specific fixture or appliance is as follows:

### 1. Water Pipes

The minimum size of water service pipe entering a dwelling from the exterior is required to be 3/4" diameter. The 3/4" diameter should be maintained towards the water heater until the first takeoff branch and thereafter it can be reduced to 1/2" diameter. The hot and cold water distribution system is required to be a minimum diameter of 1/2".

### 2. Drainage Pipes

The minimum size of pipe serving the various fixtures is as follows:

**Building drain – 4" Min**

**Floor drain – 2" Min**

**Bath tub – 1-1/2" Min**

**Laundry tub – 1-1/2" Min**

**Wash basin – 1-1/4" Min**

**Shower Stall – 1-1/2" Min**

**Sink (kitchen) – 1-1/2" Min**

**Water Closet (Toilet) – 3" Min**

**Washing Machine – 2" Min**

### 3. Vent Pipes

The main stack vent (through roof) is 3" min.

All other vent pipes in a dwelling are generally required to be a minimum diameter of 1-1/2".

## Materials

The most commonly used materials in plumbing in a dwelling are copper water pipes, ABS plastic drainage and vent pipes above ground, and below ground. However, a wide variety of other materials as listed in the Ontario Building Code can be used.

It should be noted that all materials, fixtures and appliances in a plumbing system are required to meet prescribed standards, e.g. certified by the Canadian Standards Association or other accredited testing agency, as applicable. The installation of any element of a plumbing system which does not meet the required standard would not be acceptable when the work is inspected.

## Permit Requirements

A permit is required for the following work:

- **The installation of plumbing in a new building**
- **The installation of new plumbing in an existing building**
- **The alteration of existing plumbing**
- **The repair of existing plumbing except for the repair of existing fixtures, leaks or blockages.**
- **The replacement of existing plumbing except for the replacement of existing fixtures.**

A plumbing permit can only be issued to a qualified, licensed plumber except where the owner of a residence is performing the work in a renovation or addition to the owner's principal residence.

## Applying For a Permit

Applications for a building permit are available at the City of St. Catharines, Planning and Building Services (PBS) Department or downloaded at the City of St. Catharines website [www.stcatharines.ca](http://www.stcatharines.ca) or <https://www.stcatharines.ca/en/building-and-renovating/applying-for-a-building-permit.aspx>.

Provide information regarding the number of plumbing fixtures and/or the length of underground pipe to be installed. Pay the plumbing permit fee, as based on the number of plumbing fixtures and/or length of pipe being installed. Your application will be checked to determine if it complies with all applicable regulations and by-laws. Your plumbing permit will be issued when you have all the necessary approvals.

All plumbing for which a permit has been issued is required to be inspected. No plumbing should be covered or concealed until it has been inspected. No plumbing system should be put into use until it has been inspected and the use authorized.

## What to Do When Waiting For the Permit to Be Issued

Once you have submitted your application, we will review your submission as quickly as we can. We are aware of the importance to you in obtaining the permit quickly. Please

make yourself available at the telephone number you provided at the time of application to ensure we can contact you should we require any clarification of your submission.

## What to do When the Permit Has Been Issued

Once you receive your permit, please read the approved permit plans and documents thoroughly before commencing construction. The construction must be in accordance with the approved plans and documents issued with your permit. Any changes made before or during construction must be submitted to the Building Section for approval and additional fees may be applicable.

Inspections by the Building Section are also required during construction to ensure that all work is done in accordance with the approved plan. Some key inspections include:

- **Rough-in Inspection**
- **Water/Sewer Inspection**
- **Interior Drain Inspection**
- **Final Inspection**

**The Plumbing Permit must be posted on the property in a conspicuous location and the approved permit documents must be kept on site and available during inspections.**

**Note:** It is the responsibility of the owner to ensure that either you or the contractor contact the City of St. Catharines, Building Section to request an inspection before proceeding to the next phase of construction. All required inspections are listed on the permit.

Failure to schedule inspections will result in not being allowed to use the plumbing fixtures and may also result in uncovering the work.

**For inspection, call 905-688-5601, ext. 1660.**

Please have your permit number ready when scheduling an inspection.

If you have any further questions or concerns, please do not hesitate to contact the City of St. Catharines, PBS Department between the hours of 8:30 a.m. and 4:30 p.m. at 905-688-5601, ext. 1660.