LV. 1 PLUMBING

Purpose: Giving you the basics to speed your training up.

Plumbing System Summary

1. Water Meter → Main Shutoff Valve
City water comes into the house through the meter, then hits the main shutoff valve (usually in the basement or crawl space).

2. Cold Water Branches Out
From there, cold water lines split off and go to every fixture:

- Sinks
- Toilets
- Hose bibs
- Water heater (feeds hot water side)

3. Water Heater
Cold water goes into the water heater. Hot water comes out and branches to:

- Sinks
- Showers
- Washing machine
- Dishwasher

4. Fixtures
Every fixture has shutoff valves, supply lines, and drain pipes.

5. Drainage
Used water flows into drain pipes (PVC or cast iron), down to a main drain line, which runs out to either:

- A city sewer, or
- A septic tank

Drains use gravity, so everything slopes downward.
Traps under each fixture hold water to block sewer gas.
Vents go up through the roof to let air in so drains flow smoothly.

Applicable Videos

Your Entire Plumbing System & What You Need to Know About It | Plumbing Basics

How Your Home Plumbing Works (From Start to Finish) | GOT2LEARN

Understanding Words We Use

Underlined items = Videos...so click on them ;)

Water Supply

Water Meter: Measures the amount of water used in the household. And also in the meter box there are valves you can use to shut off all water to the home.

Water Main: Primary pipeline delivering water from the municipal supply to buildings.

Main Shut-Off Valve: Stops the flow of water to the entire house.

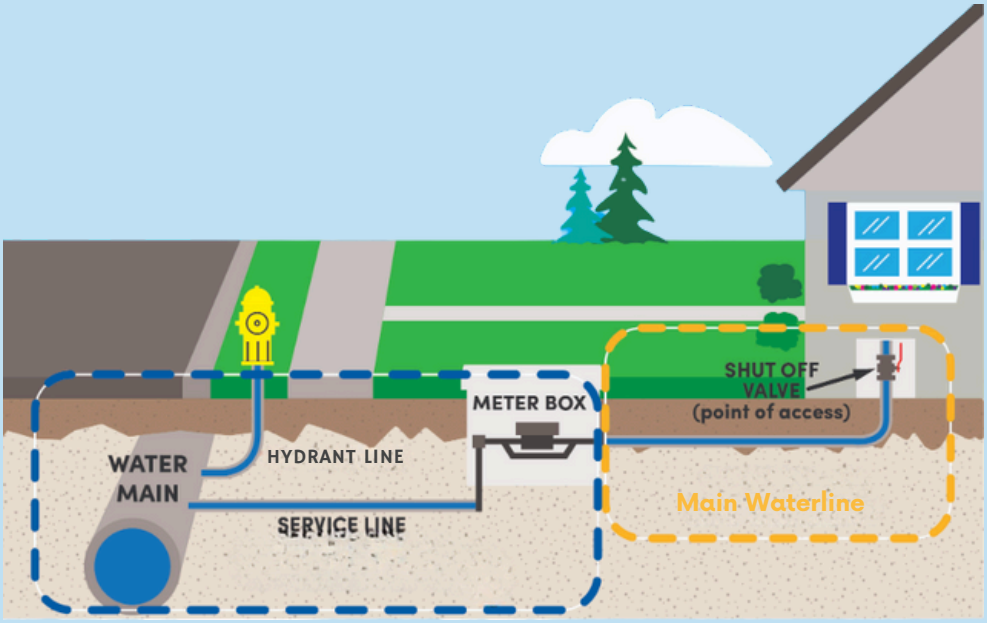
Pressure Regulator Valve (PRV): Controls water pressure entering the home. Paired with Expansion Tank.

Installation Understanding

Expansion Tank: A small 1-2 gallon tank that helps absorb extra water pressure caused by heating water. Installed near the water heater. Paired with PRV.

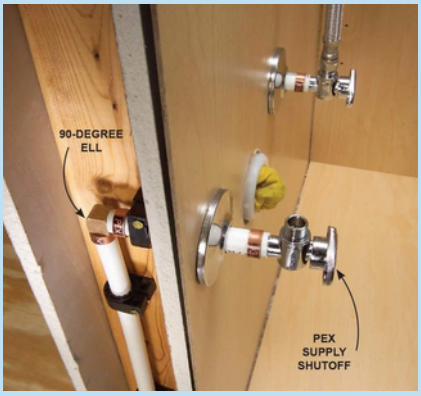
Supply Lines: Pipes that distribute water to different parts of the house.

What's The Point?



Water Supply Usage and Control

Stop Valve: The hot and cold valves at each fixture allowing a way to isolate them.



Risers: These are the lines that connect to the stop valves and go to the fixture. We usually use braided risers.

Cartridge: A cartridge is the inside part of a faucet that controls how much water comes out and how hot or cold it is.

Shower Valve: A shower valve body is the main part hidden behind the wall that connects your hot and cold water lines and sends mixed water to the showerhead or the tub spout.

It holds the cartridge inside it and is what the handle turns.

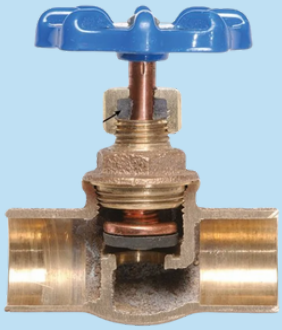
It stays in the wall forever—only the cartridge or trim gets replaced when something breaks.

Single Handle

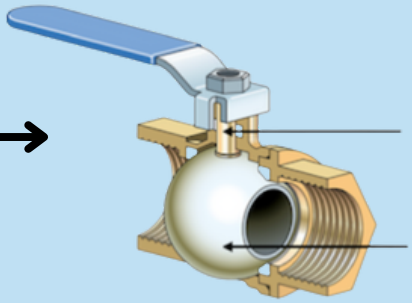
Three Handle

Two Handle

Gate Valve: A gate valve opens and closes by lifting or lowering a gate to let water through. It's for on/off use, not flow control.



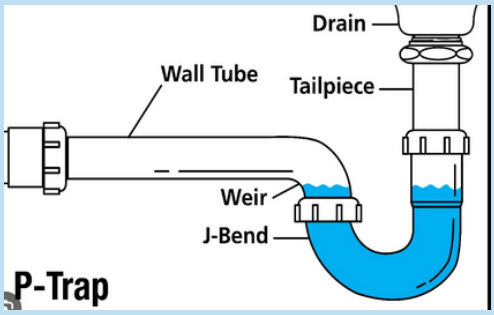
Ball Valve: A ball valve uses a round ball with a hole in it to control flow. Turn the handle ¼ turn for full on or off—fast, strong, and reliable.

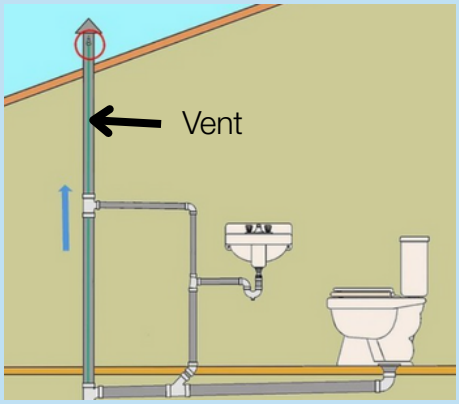


Drainage System

The drainage system removes wastewater and sewage from the home to the municipal sewer system or septic system.

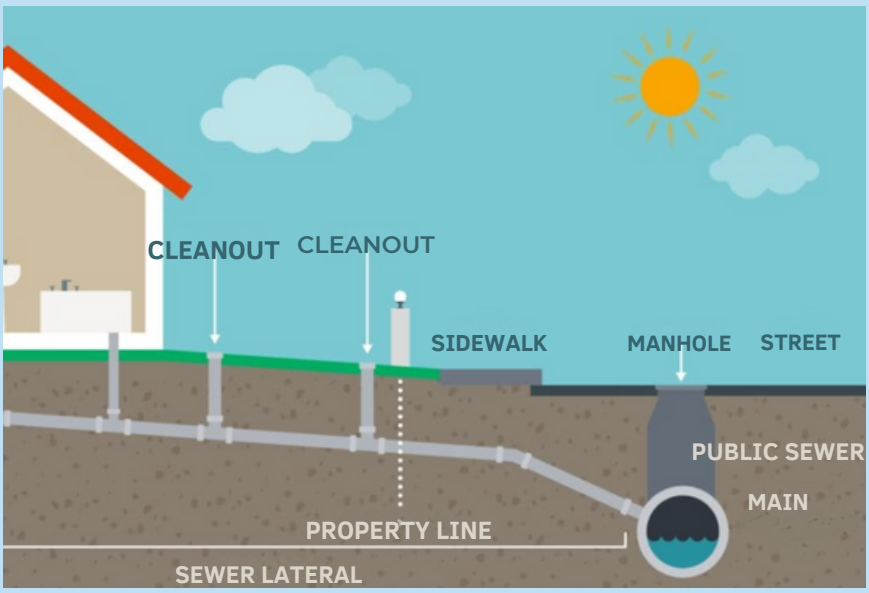
Starting at each fixture the drainage system almost always starts with the trap. Which is...the curved pipe that holds water to prevent sewer gases from entering the home.



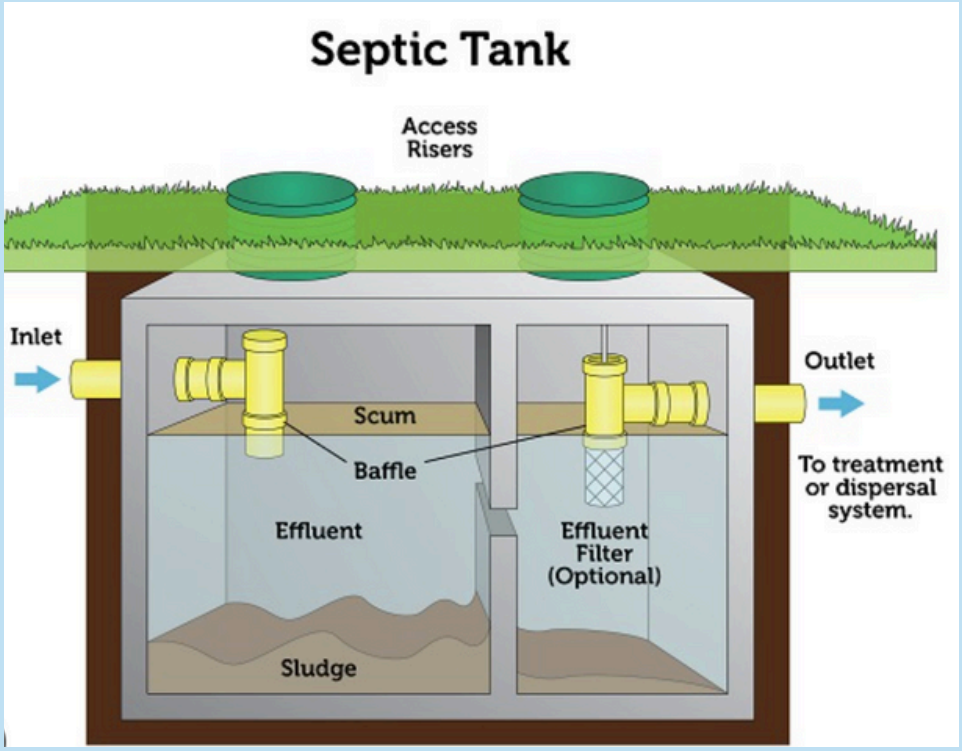


Vent Pipes: Allow air into the drainage system to maintain proper pressure and flow.

Clean-outs: Access points in the drainage system for removing blockages or inspecting the pipe.



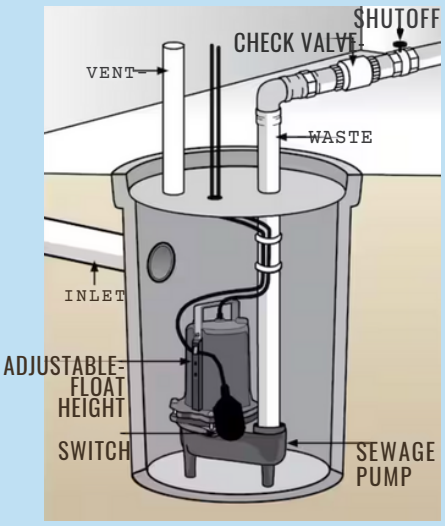
Septic Tank: An underground tank where sewage is collected and decomposed.



Sewage Pump: A sewage pump is a heavy-duty pump that moves solid waste and water from a lower area (like a basement) up to the main sewer line.

It sits in a sealed basin and kicks on when the level rises, grinding the waste if needed and pushing it out through a discharge pipe.

A sewage pump is necessary when waste needs to go uphill to reach the main drain or sewer line.
Gravity usually moves sewage, but in places like basements or lower levels, the drains are below the main sewer line. A sewage pump grinds and lifts the waste up into the plumbing system so it can drain out properly.



Fixtures and Appliances

Bathroom Vanity Faucets

Single Hole

Standard

Widespread

Shower Faucets

Single Handle

Two Handle

Three Handle

Toilets

Water Heaters

Water Heater Comparison | Plumbing 101

All About Water Heaters | Ask This Old House

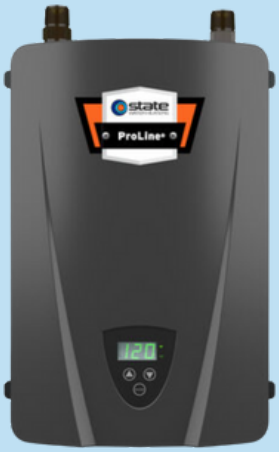
Electric Tank

Most common type and we install mostly 50 and 80 gallon options

Electric LowBoy

Installed in tight spaces in 30, 40, and 50 gallon options

Electric Tankless



We don't gernerally recommend these but they can do when no other options will work

Gas Tankless

Very efficient longterm but higher up front cost. Also not the best option for well water.

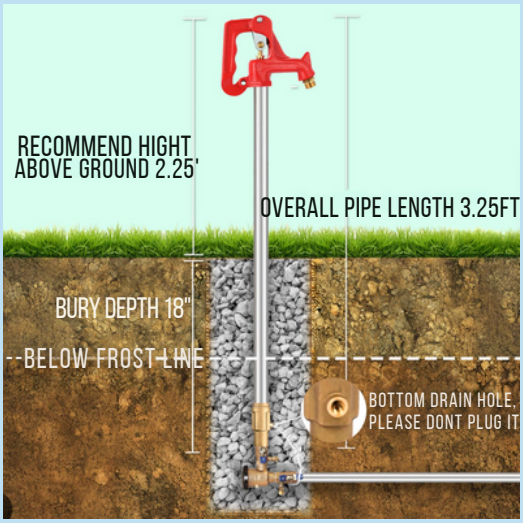
Gas Natural Vent

Also very common and we install mostly 40 and 50 gallon options

Gas Power Vent

These are installed in place of a natural vent option when the exhaust runs through walls and cannot be super hot

Hose Bib: A hose bib is an outdoor faucet where you hook up a garden hose. It's also called a spigot or sillcock.



Yard Hydrant: A yard hydrant is a freeze-proof outdoor water faucet that lets you get water far from the house like in a barn or garden. It drains underground so it doesn't freeze in winter.

PLUMBING MATERIALS

This PDF will give you a good understanding of the the different materials we see on a regular basis.

PLUMBING TOOLS

This PDF will give you a good understanding of the the different tools we use on the van and will allow you to better support your trainer by knowing the names of everything.