

NAME=INAM UL HASSAN

ID=7693

TEACHER=NADEEM ULLAH

SUBJECT=WASTE WATER

ASSIGNMENT=2

Q NO 1

Soil pipes and anti-syphon pipes

Answer :

Soil pipes

A **soil pipe** is designed to carry soiled water from the toilet, urinal or bidet to the sewer. A waste **pipe** carries water from your sinks, shower, washing machine or bath.

What is Soil Pipe?

A soil pipe is just that, a pipe that is designed to carry soiled water away from your home, whether that be from your toilet, urinal or bidet.

Although it seems like any old pipe could hold and transport soiled water, soil pipes should be manufactured to the relevant British standard which is why at Drainage Online we only stock the leading manufacturers of soil pipe such as Brett Martin, Marley and of course, Hargreaves for those looking to keep it traditional with Cast Iron soil pipes. Stocked in 110mm and 160mm diameter, Soil Pipes are much wider than waste pipes. Soil Pipes need to be vented (generally at the top or very near to the top of building) to allow for the safe disposal of gases and to reduce odours and ensure that the pipes are creating a safe area – often gases from soil pipes can be

harmful to health (but not always) which is why it's best to ventilate the pipes as high as possible.

Vent pipes and outlets are an important part of any soil waste system, not only do they ventilate the systems but they also regulate pressure ensuring the positive pressure does not (in extreme cases) push waste water back to your sink, or worse toilet – vent pipes help to regulate this pressure!

anti-syphon pipes

- The water seals of the traps in any multistoried building some times do not work due to siphonic action. When the sewage is suddenly discharged from the sanitary fixture on the upper floor, it moves rapidly through the soil i.e. waste pipe.
- It may suck some air from the lateral pipe which is connected to the soil pipe of the fixtures at the lower floor. This causes siphonic action to break the water seal.
- To prevent this, a separate pipe of small diameter is attached to the trap which connects the trap to the vent pipe. This pipe is known as anti-siphonage pipe.
- Normally this pipe acts as a vent pipe and when the suction takes place, it acts as anti-siphonage pipe

Q NO 2

Sanitary Fixture

a receptacle for industrial and fecal sewage that is installed in homes and public and industrial buildings. Sanitary fixtures are attached to the interior systems of water pipes and sewerage systems and constitute the main elements of a building's sanitary engineering equipment.

Sanitary fixtures are installed in different areas. Bathtubs, washstands, shower sumps, traps, and bidets are installed in bathrooms, washrooms, and shower rooms. Toilet bowls, lavatory pans, and urinals of various types, whether equipped with flush tanks or taps, are installed in lavatories. Washers, sinks and drains are installed in kitchens.

Special sanitary fixtures are used in medical institutions, laboratories, bathhouses, barber shops, and beauty salons and on transportation facilities. These fixtures are made from cast iron, ceramics (faience, semiporcelain), sheet steel, nonferrous metals and alloys, or plastics. Cast-iron and steel fixtures are covered with a white or colored vitreous enamel. Ceramic fixtures are covered with glaze, and nonferrous-metal fixtures are electroplated. Sanitary fixtures are equipped with hydrants or faucets that deliver both hot and cold water. They are also equipped with siphons that have water seals to prevent polluted air from entering a room from sewerage pipes.

Traps

A trap is a device which is used to prevent sewer gases from entering the buildings .

Common gases that are produced in a sewage system .

Methane

Hydrogen sulfide

Nitrogen

Carbon monoxide

In **plumbing**, a **trap** is a device shaped with a bending pipe path to retain fluid to prevent **sewer gases** from entering buildings while allowing waste materials to pass through. In oil refineries, traps are used to prevent hydrocarbons and other dangerous gases and chemical fumes from escaping through drains.

In domestic applications, traps are typically U, S, Q, or J-shaped **pipe** located below or within a **plumbing fixture**. An S-shaped trap is also known as an **S-bend**. It was invented by **Alexander Cumming** in

1775 but became known as the **U-bend** following the introduction of the U-shaped trap by **Thomas Crapper** in 1880. The U-bend could not jam, so, unlike the S-bend, it did not need an overflow. The most common of these traps is referred to as a P-trap. It is the addition of a 90 degree fitting on the outlet side of a U-bend, thereby creating a P-like shape (oriented horizontally). It is also referred to as a sink trap because it is installed under most sinks.

Because of its shape, the trap retains some water after the fixture's use. This water creates an air seal that prevents sewer gas from passing from the drain pipes back into the building. Essentially all plumbing fixtures including **sinks**, **bathtubs**, and **showers** must be equipped with either an internal or external trap. **Toilets** almost always have an internal trap.

Because it is a localized low-point in the plumbing, sink traps also tend to capture small and heavy objects (such as jewelry or coins) accidentally dropped down the sink. Traps also tend to collect hair, sand, food waste and other debris and limit the size of objects that enter the plumbing system, thereby catching oversized objects. For all of these reasons, most traps may be disassembled for cleaning or provide a cleanout feature.

Where a volume of water may be rapidly discharged through the trap, a vertical vented pipe called

a **standpipe** may be attached to the trap to prevent the disruption of the seal in other nearby traps.^[1] The most common use of standpipes in houses is for clothes **washing machines**, which rapidly dispense a large volume of wastewater while draining the wash and rinse cycles.

Q NO # 3

WHAT IS A CROSS CONNECTION?

A cross-connection is a point in a plumbing system where it is possible for a nonpotable substance to come into contact with the potable drinking water supply. Common examples of cross-connections include a garden hose submerged in a pesticide mixture, a piped connection providing potable feed water to an industrial process, such as a cooling tower, or a submerged outlet of an irrigation system. Connections to firefighting equipment are other very common cross-connections. Most crossconnections occur beyond the customer service connection, within residential, commercial, institutional or industrial plumbing systems. Identifying cross-connections can be challenging because many distribution systems are expanding to serve new customers and changing to accommodate customer needs. Further, temporary and permanent cross connections can be created in existing facilities without the knowledge of the water system managers and operators.

What is backsiphonage?

Backsiphonage is caused by negative pressure from a vacuum (or partial vacuum) in the supply piping, just as drinking through a straw draws liquid from a glass. Backsiphonage can be created when there is stoppage in the water supply due to repairs or breaks in the County's water main; an increased demand at one location, such as fire fighting; or even undersized piping. Backsiphonage reverses normal flow in the system, and can pull contaminants into the drinking water.