

# PLUMBING NC II

## TRAINING LESSON 5



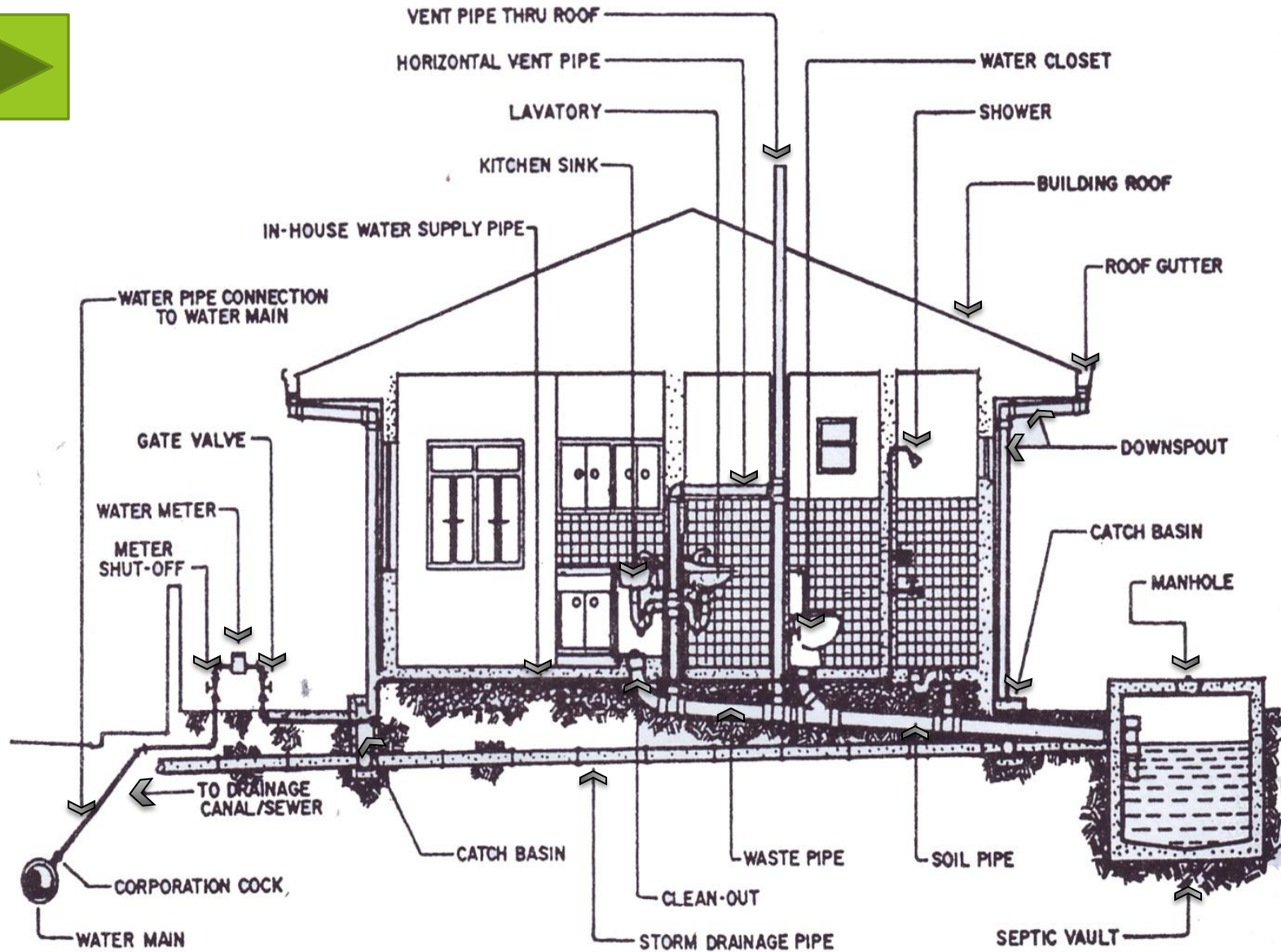
**SUNNY B. OJEDA, RMP**

Technical Drafting / Plumbing Trainer  
San Jose Del Monte National Trade School  
SJDM City, Bulacan

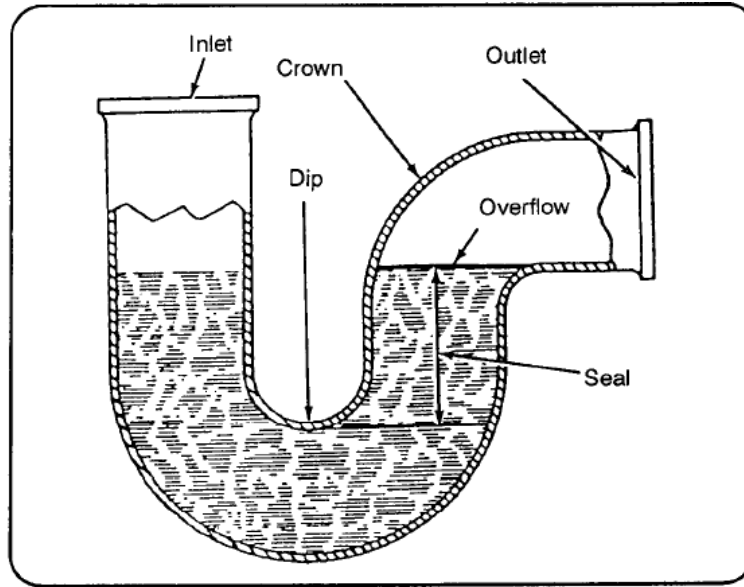
# TARGETS

- ☐ Ventilation Principles
- ☐ Pipe Laying
- ☐ Sanitary Piping Installation

# VENTILATION PRINCIPLES



# TRAP SEAL

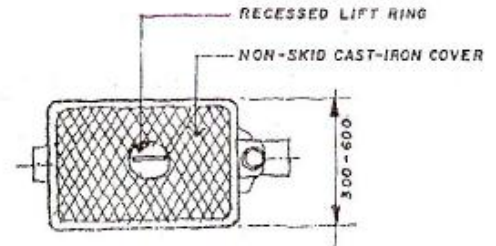
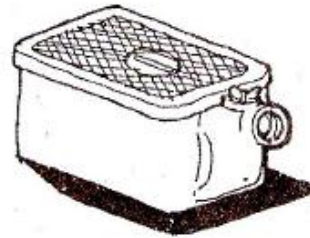
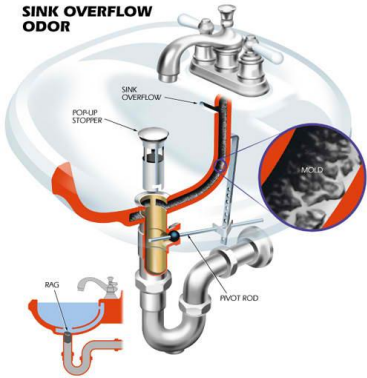


**TRAP** provides a water seal that keeps sewer gases from entering a building through a waste outlet.

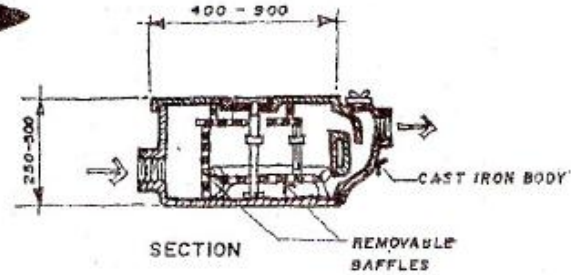
*\*\*Traps are used on some fixtures and floor drains inside buildings. The P-trap is used in a partition to connect a drain to a waste branch. A running trap is used in a building's drain line when the local plumbing code requires that the building drain be trapped.*



# **SINK OVERFLOW ODOR**

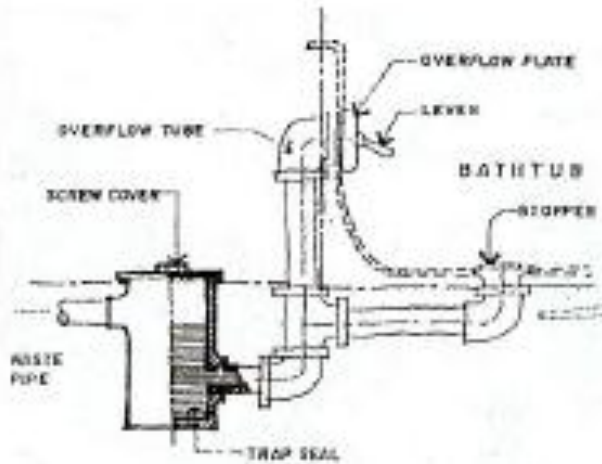


TOP VIEW

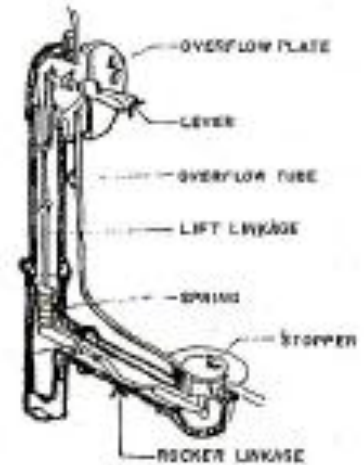


SECTION

## GREASE TRAP / GREASE INTERCEPTOR



DRUM TRAP ON BATHTUB OUTLET



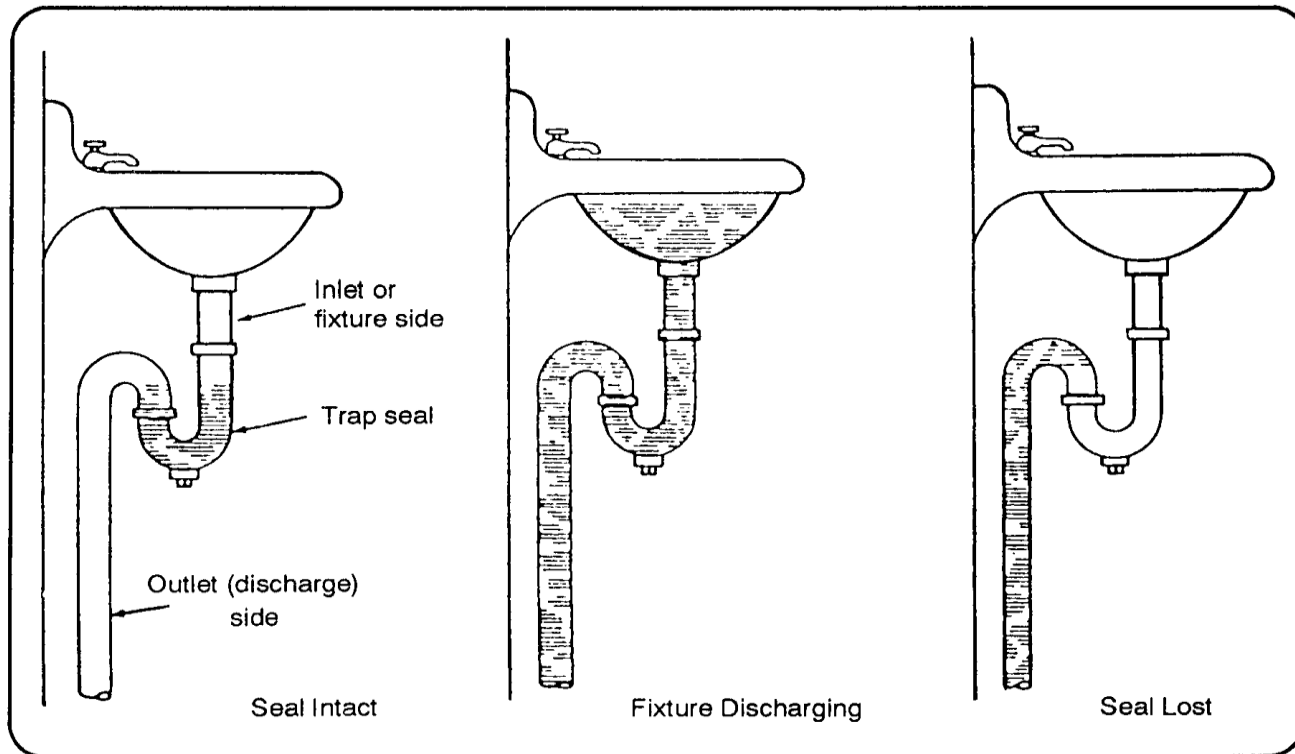
POP-UP DRAIN MECHANISM IN BATHTUB



# ***CAUSES OF TRAP SEAL LOSS***

## **DIRECT SIPHONAGE**

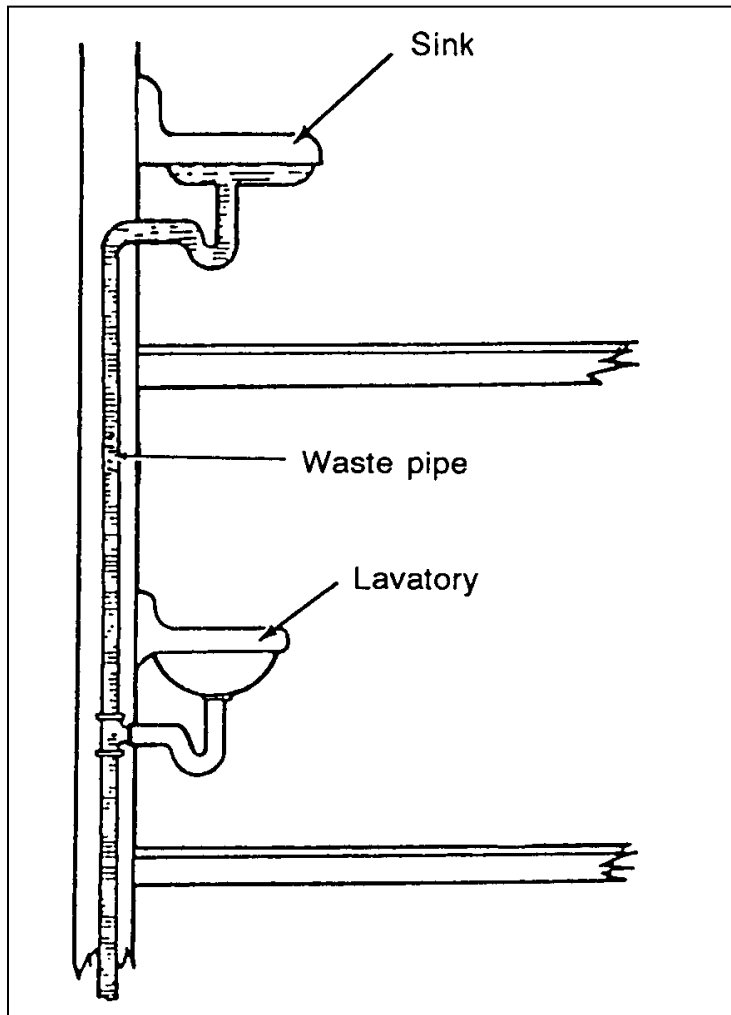
The water displaces the air that normally fills the waste pipe, lowering the atmospheric pressure on the discharge side of the trap. Atmospheric pressure on the fixture side forces the water through the trap, and the seal is lost.



# CAUSES OF TRAP SEAL LOSS

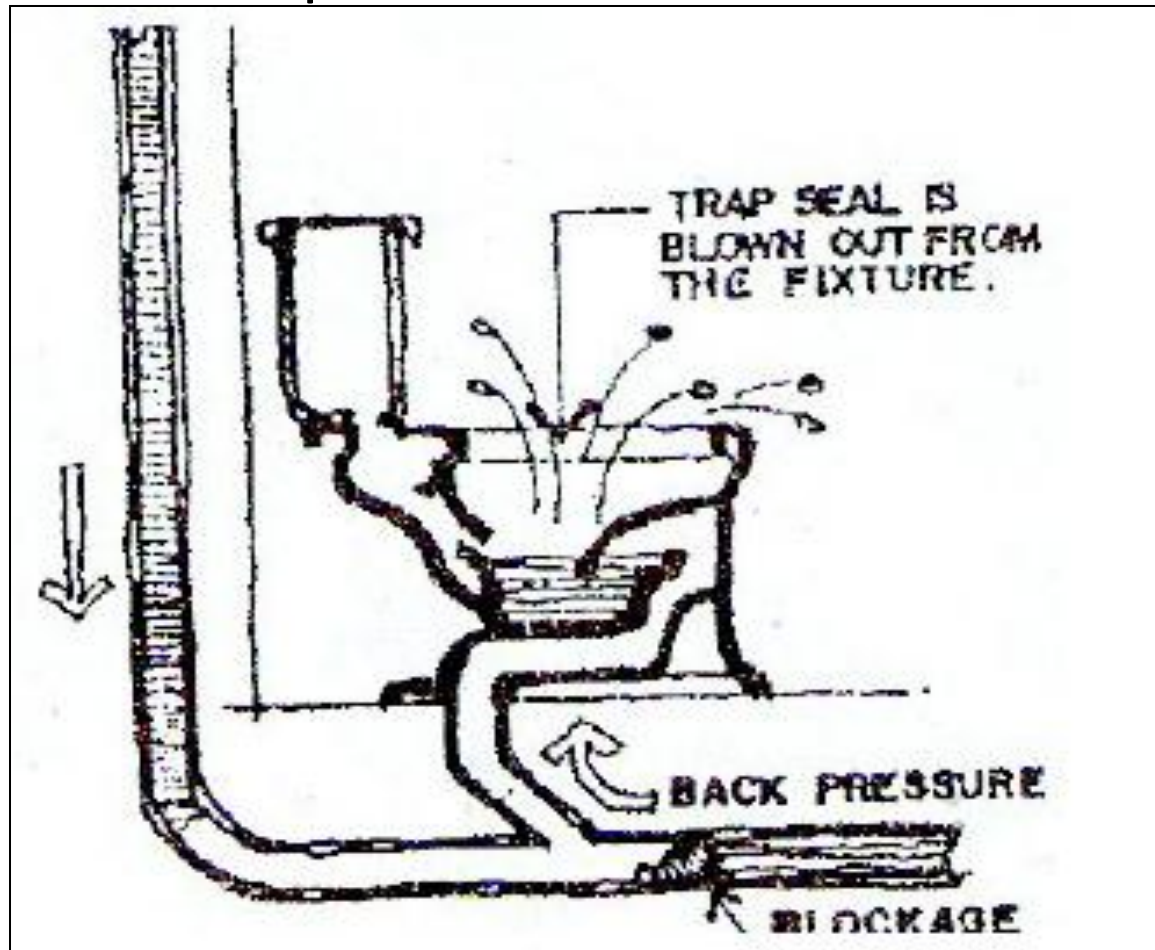
## INDIRECT SIPHONAGE

Indirect siphonage caused by a large discharge of water from a fixture installed one or more floors above the affected fixture. This large discharge tends to form a slug in the stack; and as this slug passes the takeoff of the fixture below it, air is pulled out of the waste line on the lower fixture.



## ***CAUSES OF TRAP SEAL LOSS***

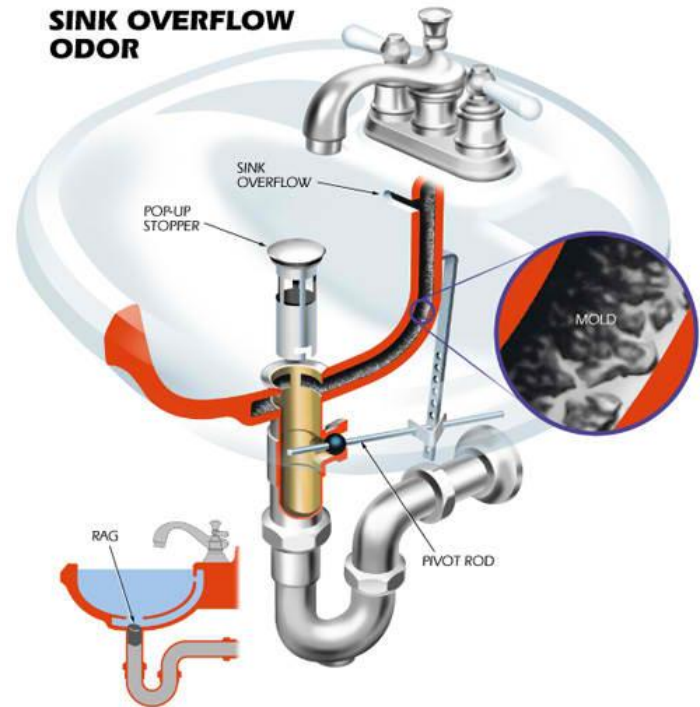
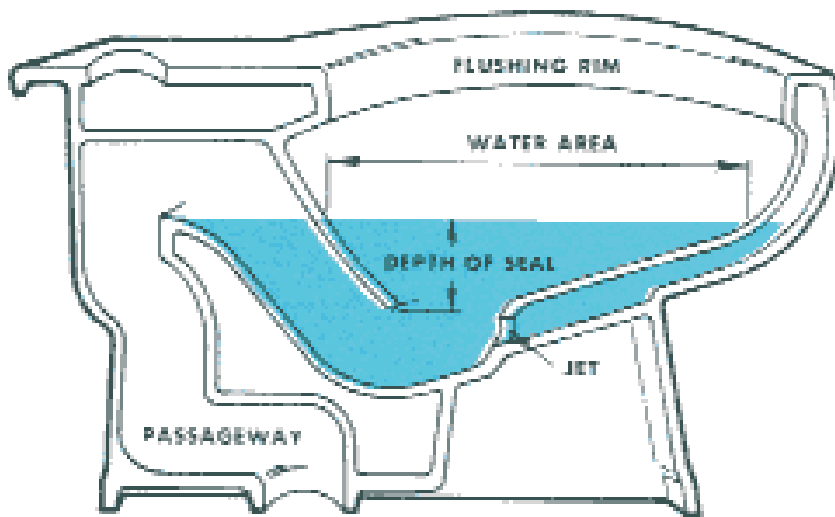
**BACK PRESSURE** within a sanitary drainage system is caused by simultaneous fixture use that overtaxes the plumbing system, causing a positive pressure that affects the water seal of a trap.





# CAUSES OF TRAP SEAL LOSS

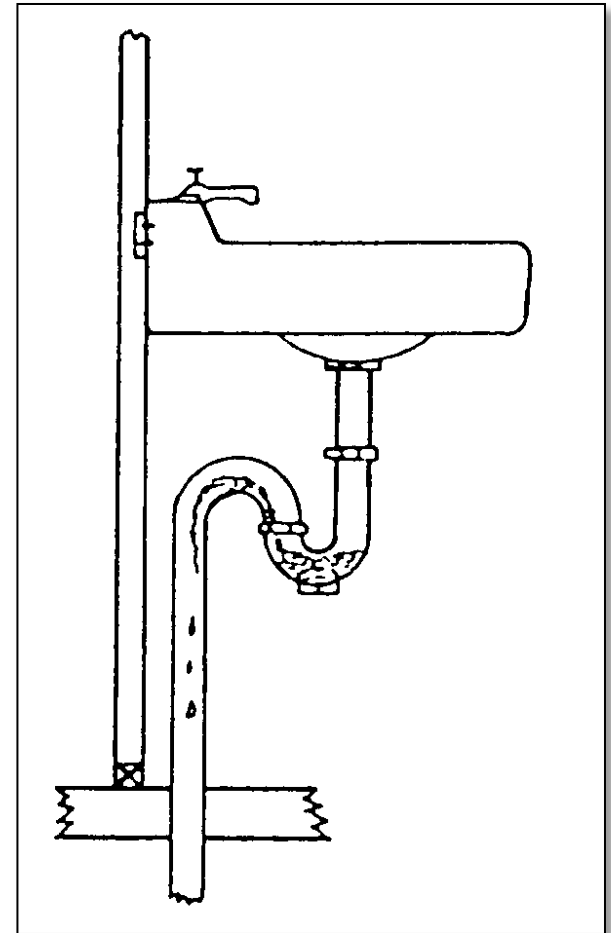
**EVAPORATION** occurs when a fixture is not used for a long time. A Deep seal is the best solution but clogs the pipe due to accumulated solid wastes.



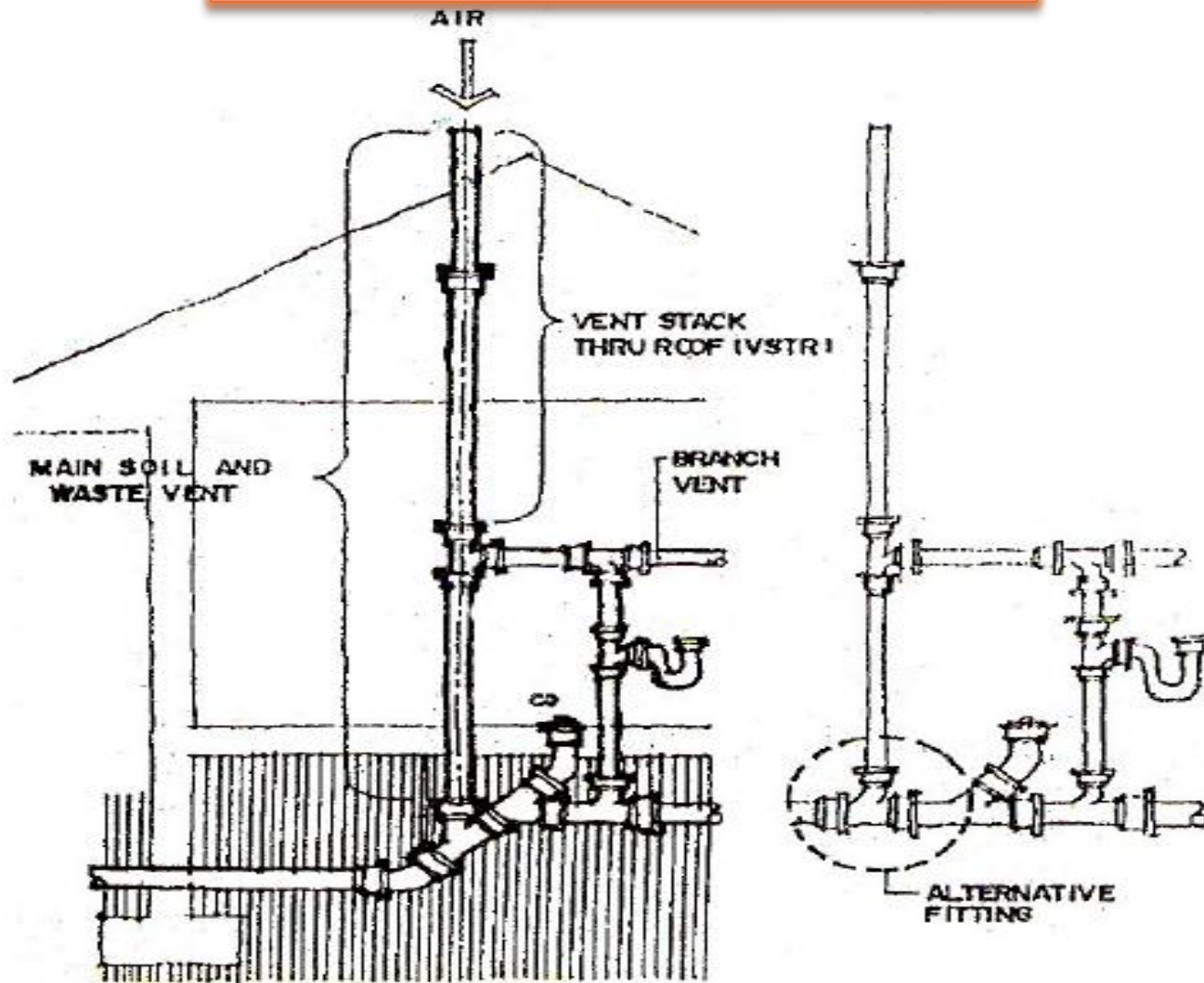
# ***CAUSES OF TRAP SEAL LOSS***

## **CAPILLARY ACTION**

Loss of trap seal by capillary action is caused by a foreign object lodged in the trap. The object acts as a wick and carries the water from the trap over the outlet side into the waste pipe until the seal is ineffective.

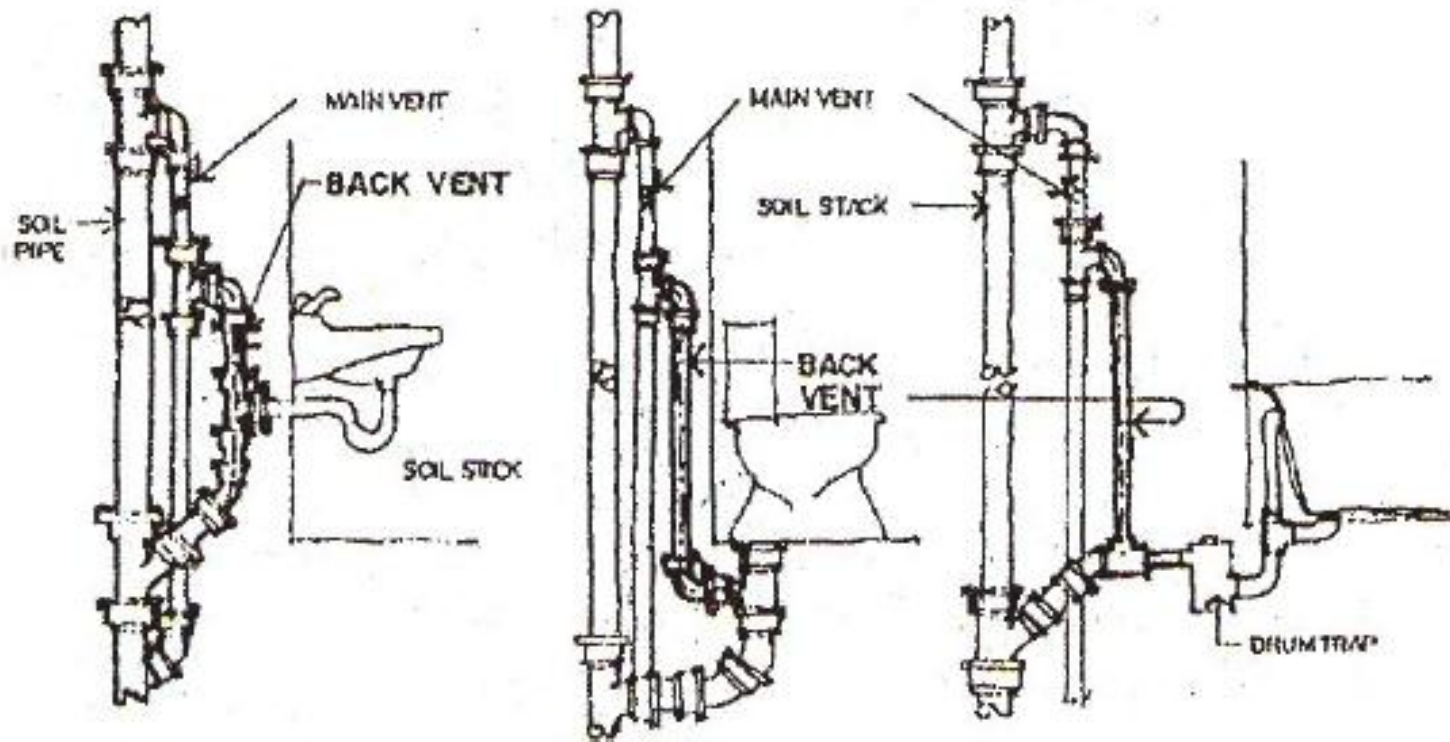


# VENTILATION PRINCIPLES



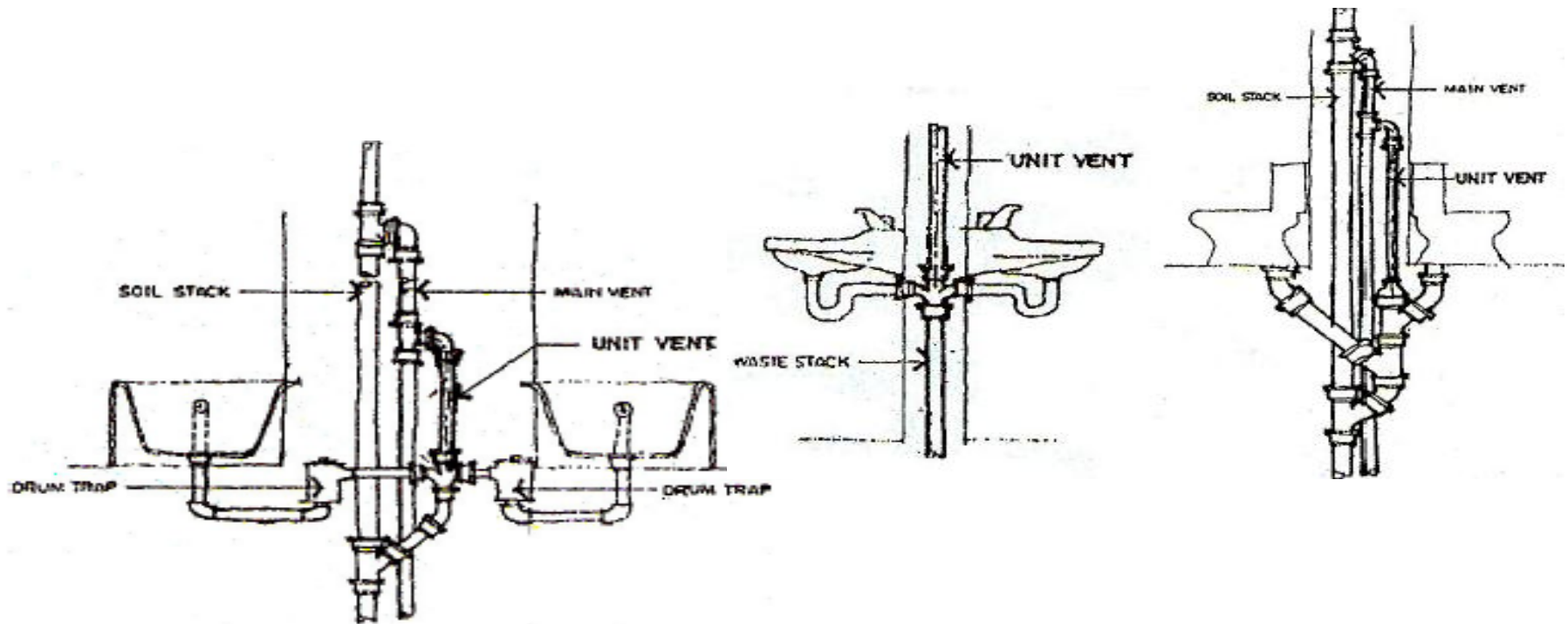
Main soil and waste vent. The portion of soil stack pipe above the highest installed fixture branch extending through the roof.

**VENT** is a pipe or opening that brings outside air into the plumbing system and equalizes the pressure on both sides of a trap to prevent trap seal loss.



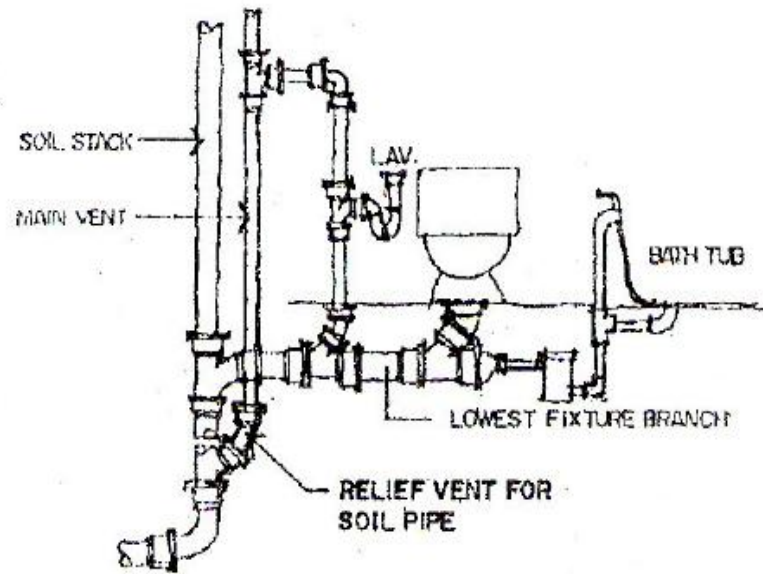
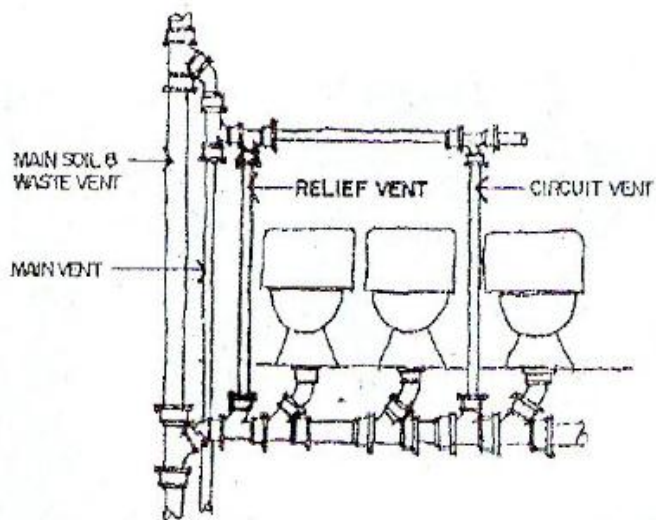
Individual vent or back vent. The portion of the vent pipe system which serves a single fixture.



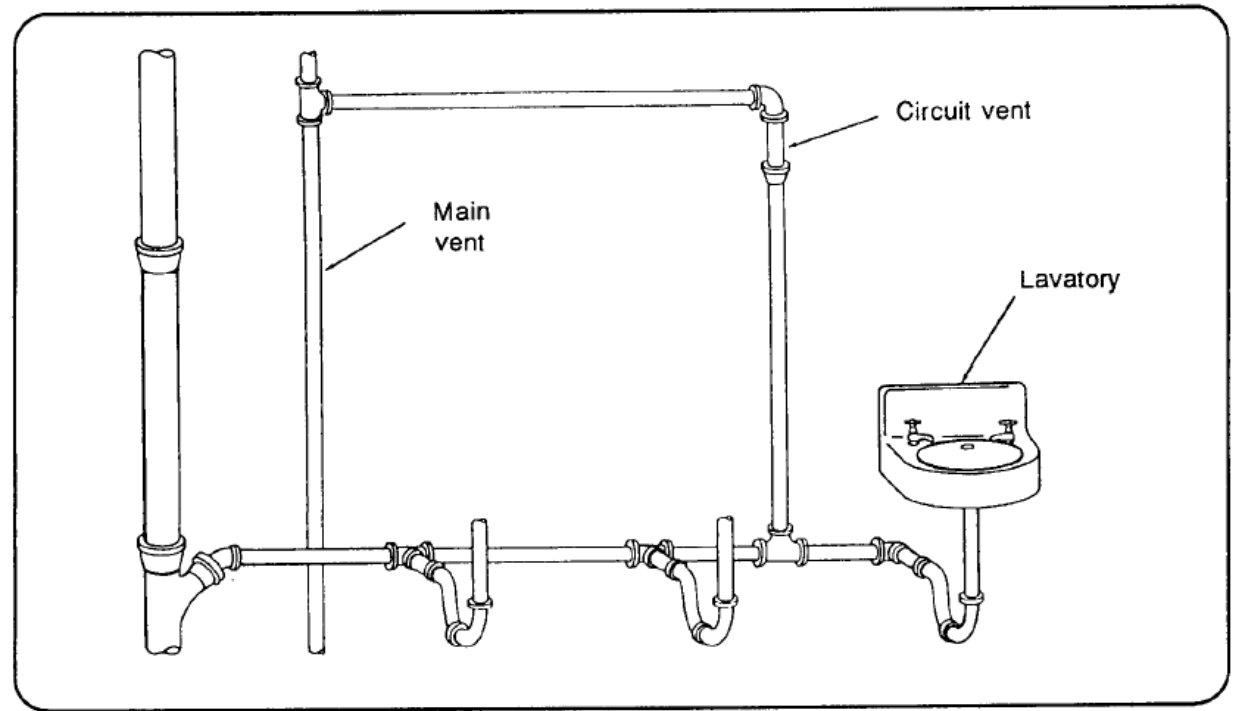
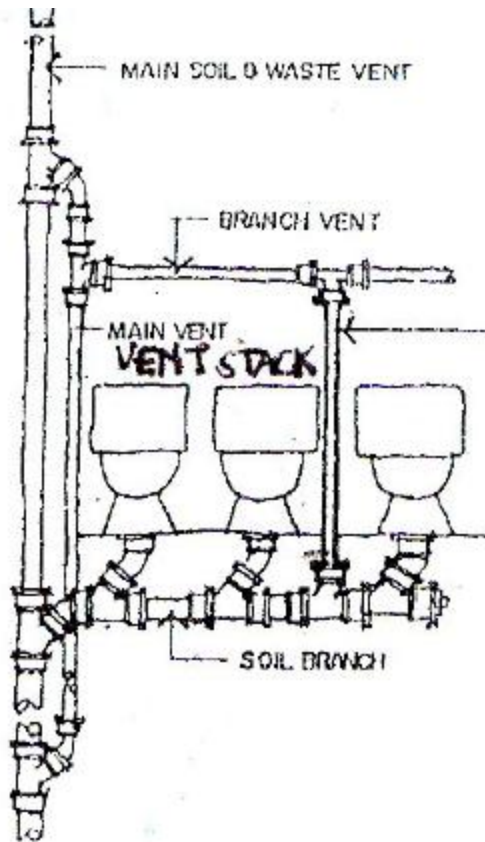


Unit vent. The portion of the vent pipe system which ventilates two fixture of similar design installed on opposite sides of a partition.





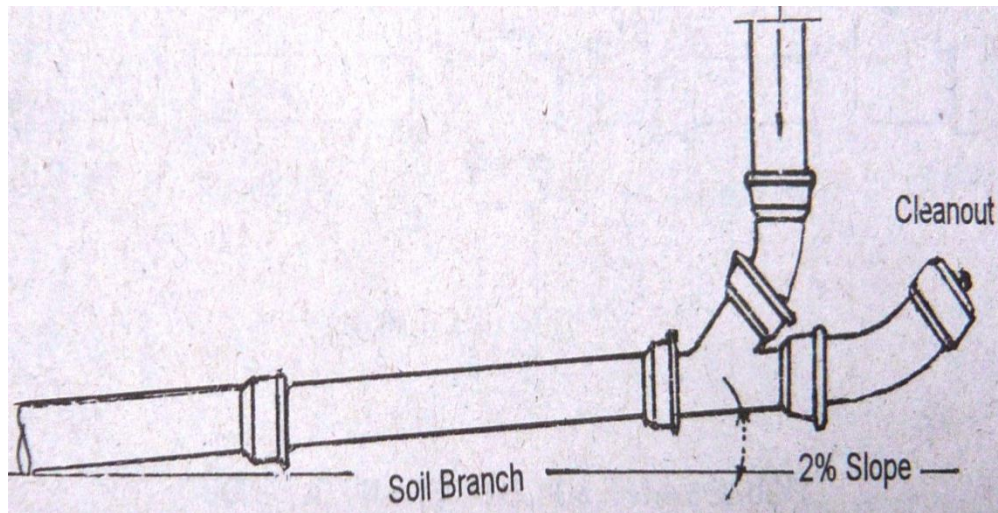
**Relief Vent.** The portion of the vent pipe installation that permits additional circulation of air around the drainage pipes to eliminate back pressure and retardation of waste flow.



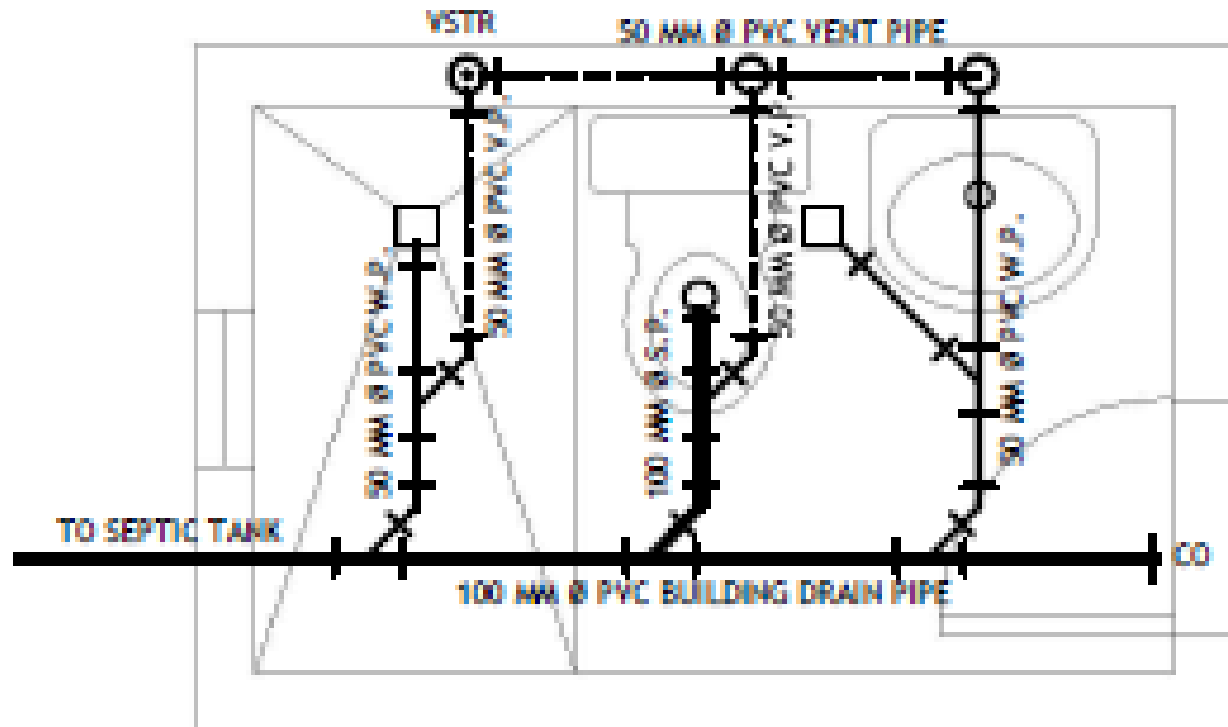
**Circuit vent or loop vent.** The portion of the drainage system which ventilates two or more fixture traps that discharge into a soil or waste branch.

# PIPE LAYING

The efficiency of a horizontal waste installation depends upon the ***self-cleansing action*** for every discharge of waste. Soil branch having a slope more than **2% fall** has the tendency of separating the solid waste from the liquid. Water flows faster on high pitch leaving the suspended materials at the bottom of the pipe. The proper slopes should be **¼" per foot run** or **2 centimeters per meter length**.

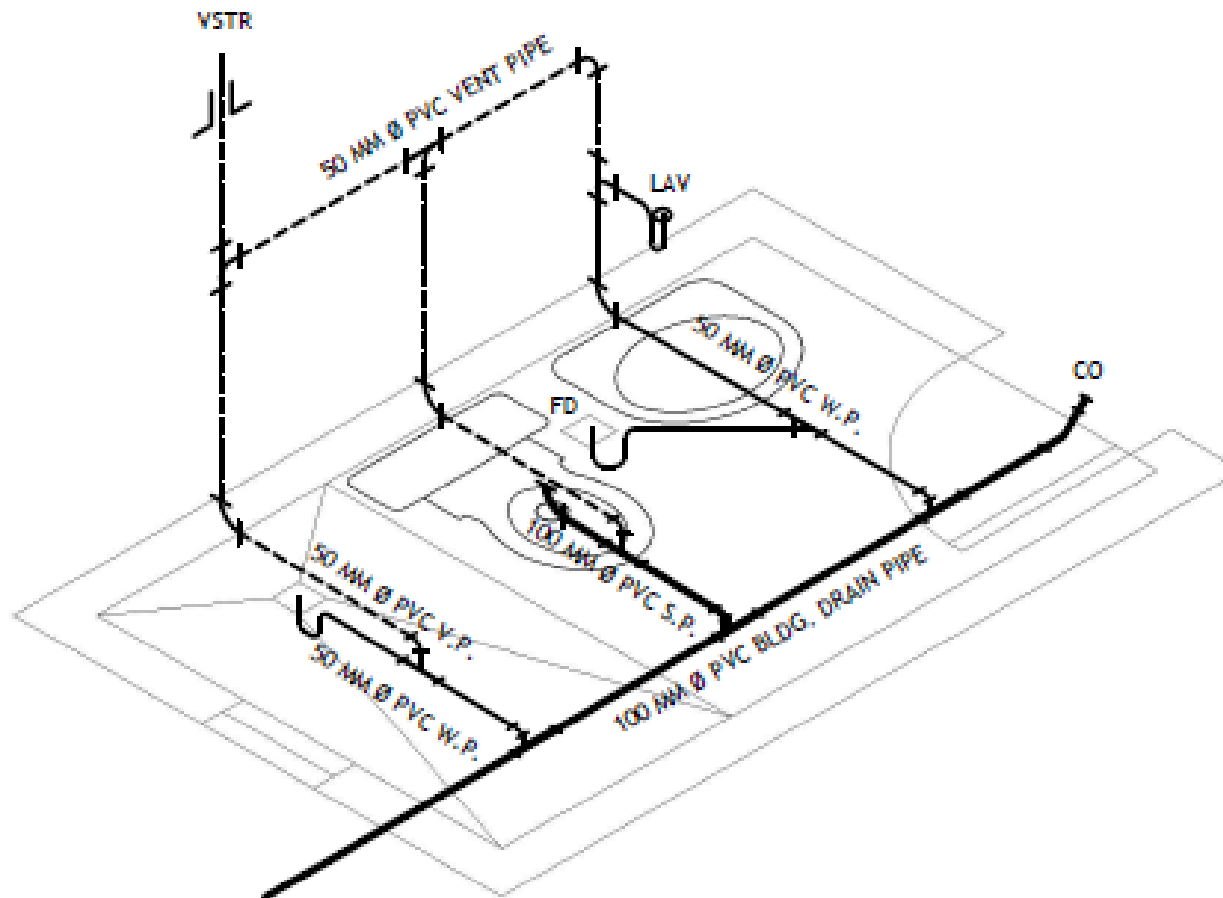


# BLUEPRINT READING



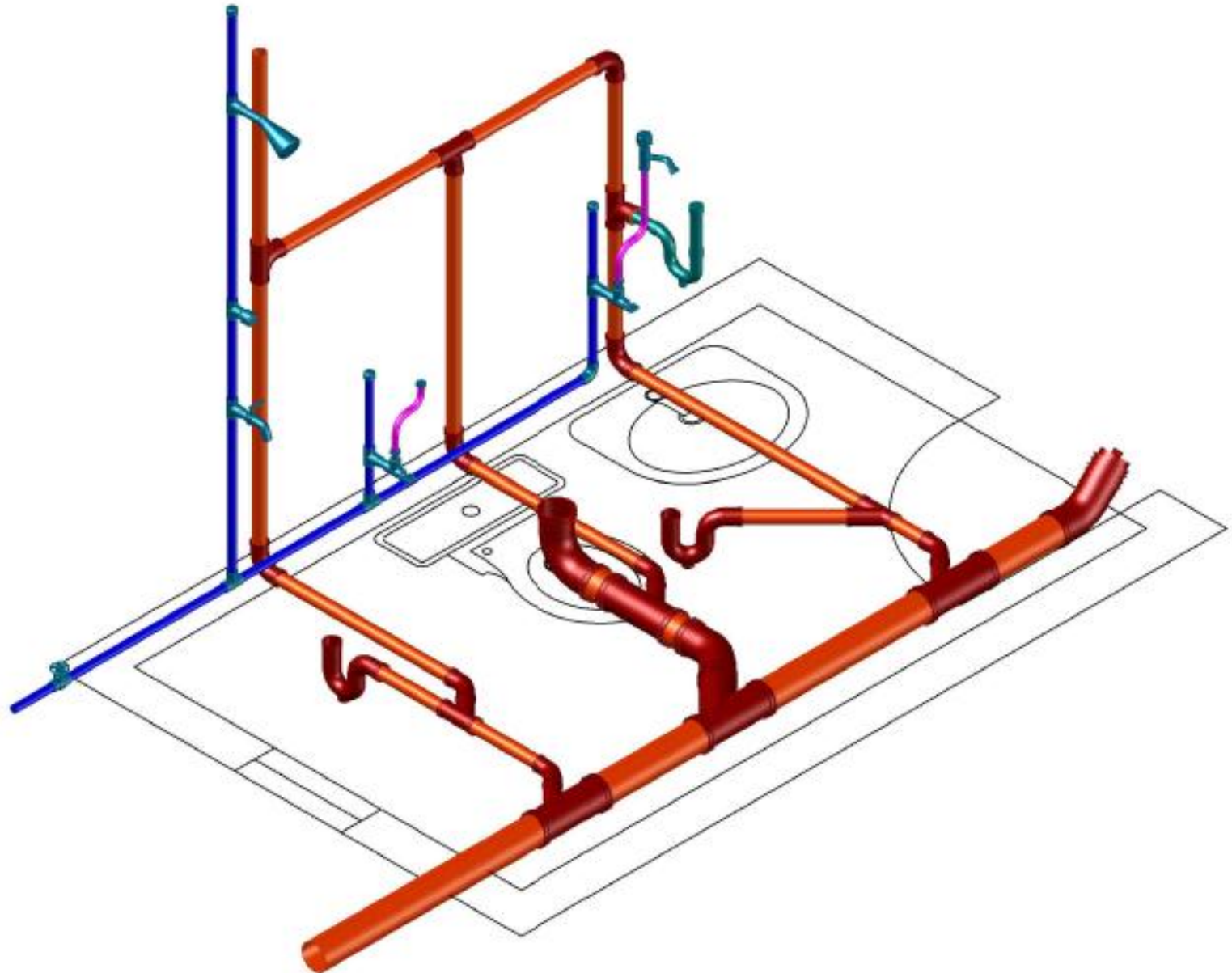
## SANITARY LAYOUT

# BLUEPRINT READING



ISOMETRIC REPRESENTATION

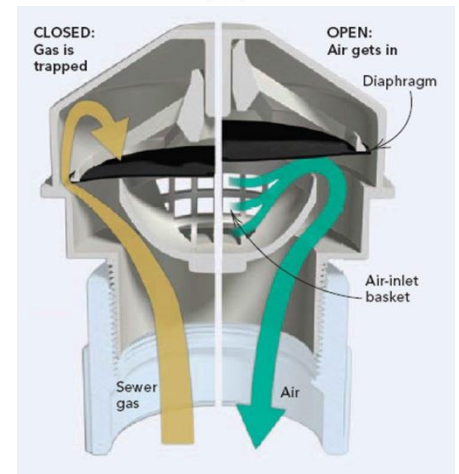




Prepared by: SUNNY B. OJEDA, RMP  
1/6/2018

## INSTALLATION OF TOILET SANITARY PIPING

CATEGORY	4	3	2	1	RAW	SCORE
<u>SPEED (4 pts)</u>	8-9 minutes	10-11 minutes	12-13 minutes	14-15 minutes	1	1
ACCURACY (16 pts)	No error in measurements	With 1 error in measurements	With 2 errors in measurements	With many errors in measurements	4	16
USE OF TOOLS (8pts)	NO error	W/ 1 error	W/ 2 errors	W/ 3 or more	3	6
CLG (8 pts)	5 or more are working	4 of the members	3 of the members	2 of the members	4	8
PPE (4 pts)	Complete of PPE	Lack of 1 PPE	Lack of 2 PPE	No PPE	3	3
						34



Mini-Vent

ø 110 Soil pipe

Pipe sleeve

Fibreglass insulation

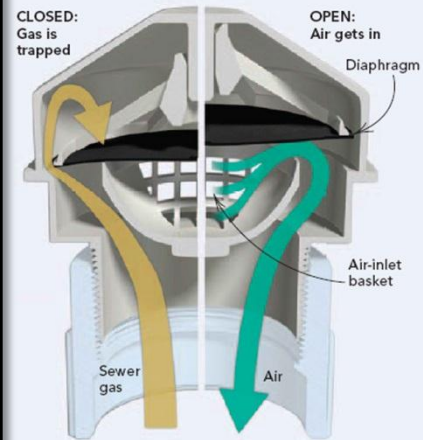
Water closet

ø 110 Soil pipe

RE



CLOSED:  
Gas is trapped



OPEN:  
Air gets in

Diaphragm

Air-inlet basket

Sewer gas

Air