Plumbing Apprenticeship Level II

National Plumbing Code: Vent Pipes Definitions

BCIT

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Introduction

Vent pipes are a critical component of any plumbing system. There are several different types of vent pipes and the requirements for each type are different. The National Plumbing Code includes specific requirements for each type of vent pipe. It is important that you are able to identify each type of vent pipe so that you can figure out the requirements for it.

In this pre-session reading we provide a brief section on why vent pipes are important and short descriptions of each type of vent pipe that you will need to know. For the live session this week make sure you know the name of each type of vent pipe and how it connects to the plumbing system.

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The Role of Vent Pipes

Sewer Gas

Sewer gas is fundamentally methane gas but in reality it is a complex mixture of toxic and non-toxic gases produced and collected in sewage systems by the decomposition of organic household or industrial wastes.

Sewer gases include hydrogen sulphide, ammonia, carbon dioxide, sulphur dioxide and nitrogen oxide. Sewer gases are of a concern due to their odour, health effects and the potential for creating fire or explosion.

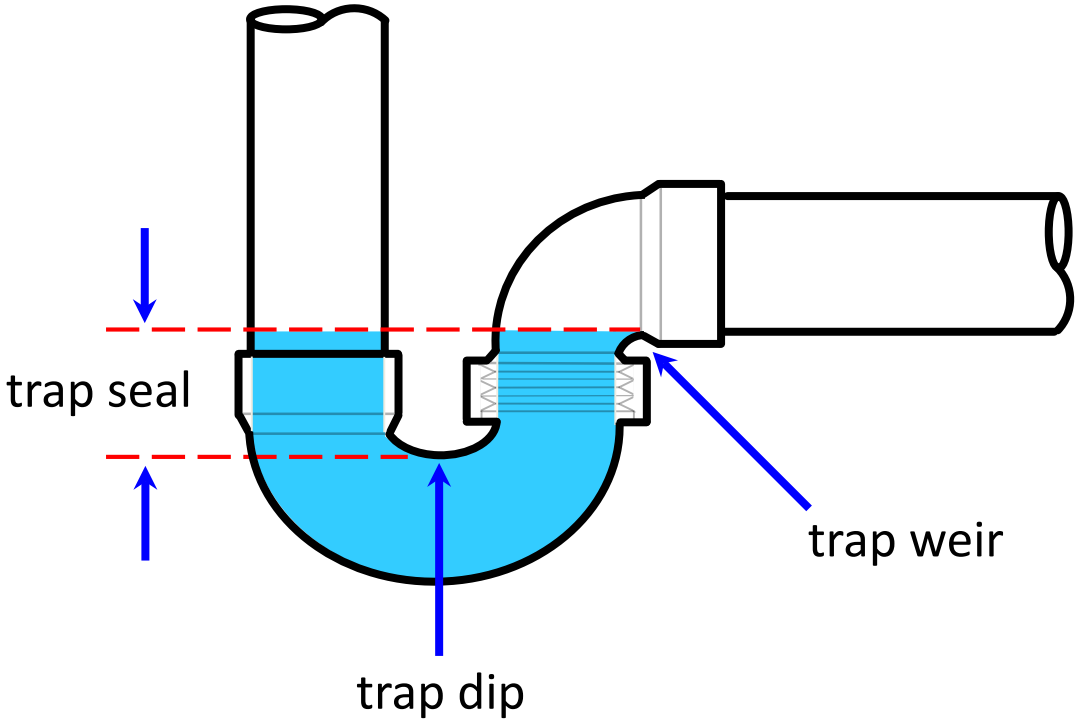
Sewer gas often has a “rotten egg” smell due to the hydrogen sulphide content, which can be detected by the human olfactory senses in concentrations as low as parts per billion. Exposure to low levels of this chemical can irritate the eyes, cause a cough or sore throat, shortness of breath and fluid accumulation in the lungs.

Prolonged low level exposure may cause fatigue, pneumonia, lose of appetite, headache, irritability, poor memory and dizziness.

High concentrations of hydrogen sulphide (greater than 150 PPM) can produce olfactory fatigue, whereby the scent becomes undetectable. At very high concentrations (greater than 300 PPM) hydrogen sulphide can cause a loss of consciousness and death.

P-Trap Seal

Minimum trap seal depth is 38 millimetres or 1 ½ inches.
Maximum trap seal depth is 100 millimetres or 4 inches.

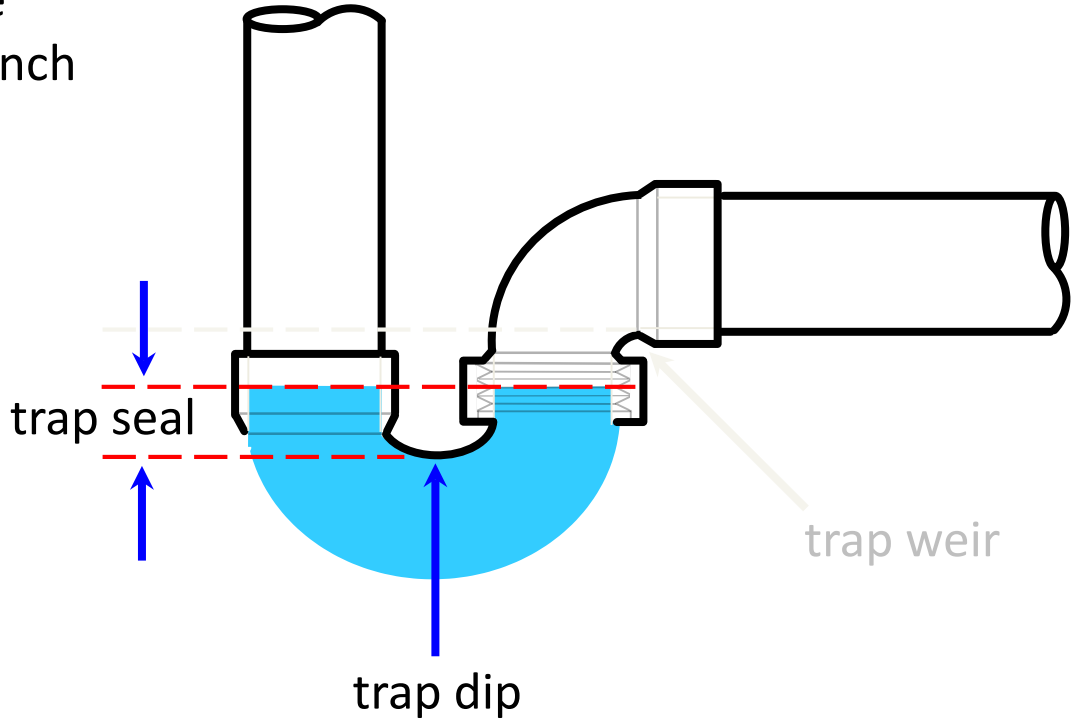


P-Trap Seal

Properly sized vent pipes ensure that pressures do not exceed 1 inch of water column.

If pressures should exceed 1 inch of water column the trap seal will be compromised.

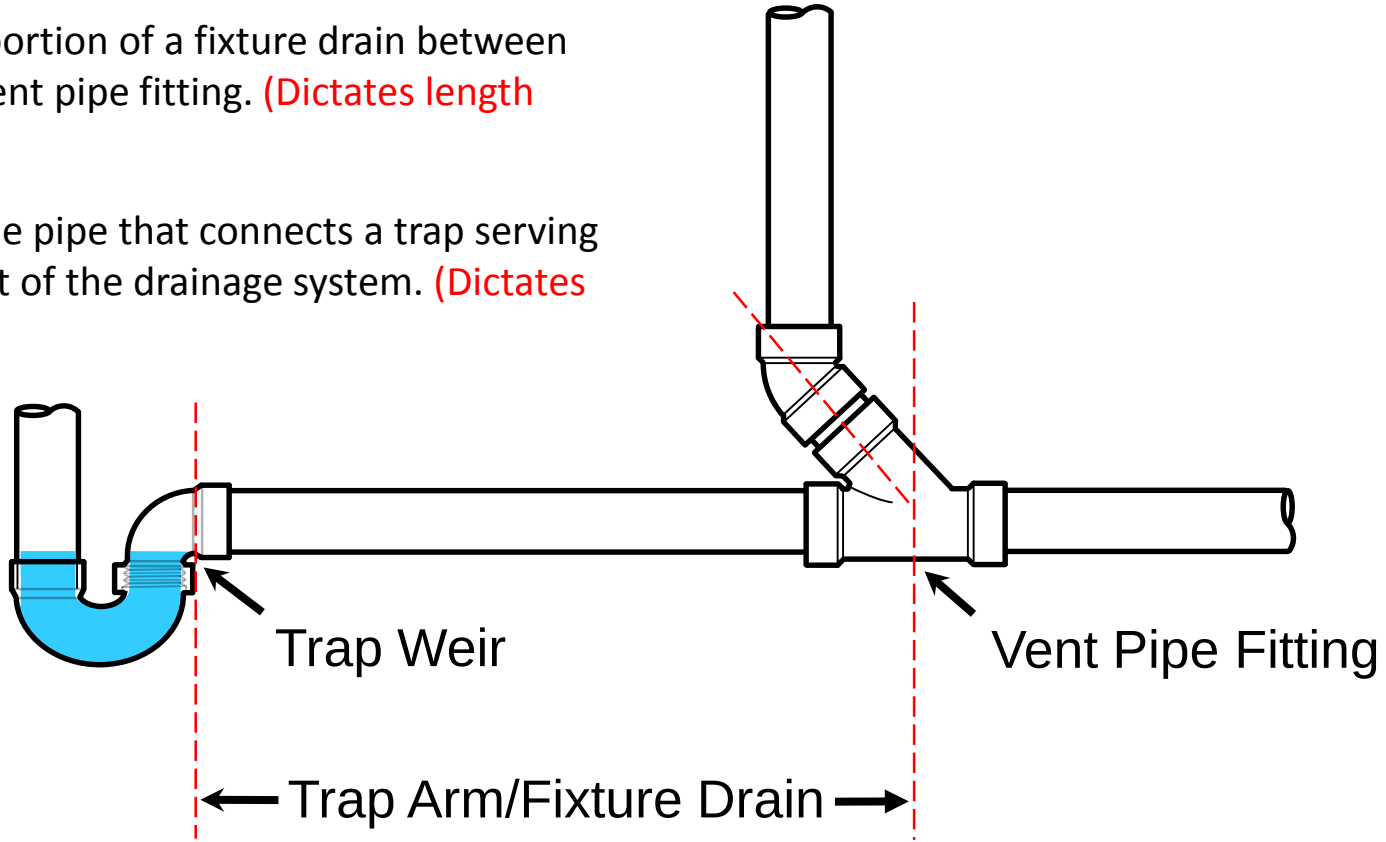
Even if the pressure differential is not sufficient enough to completely siphon the trap the seal is still compromised.



Trap Arm/Fixture Drain

Trap Arm: means that portion of a fixture drain between the trap weir and the vent pipe fitting. (Dictates length restrictions)

Fixture Drain: means the pipe that connects a trap serving a fixture to another part of the drainage system. (Dictates diameter)

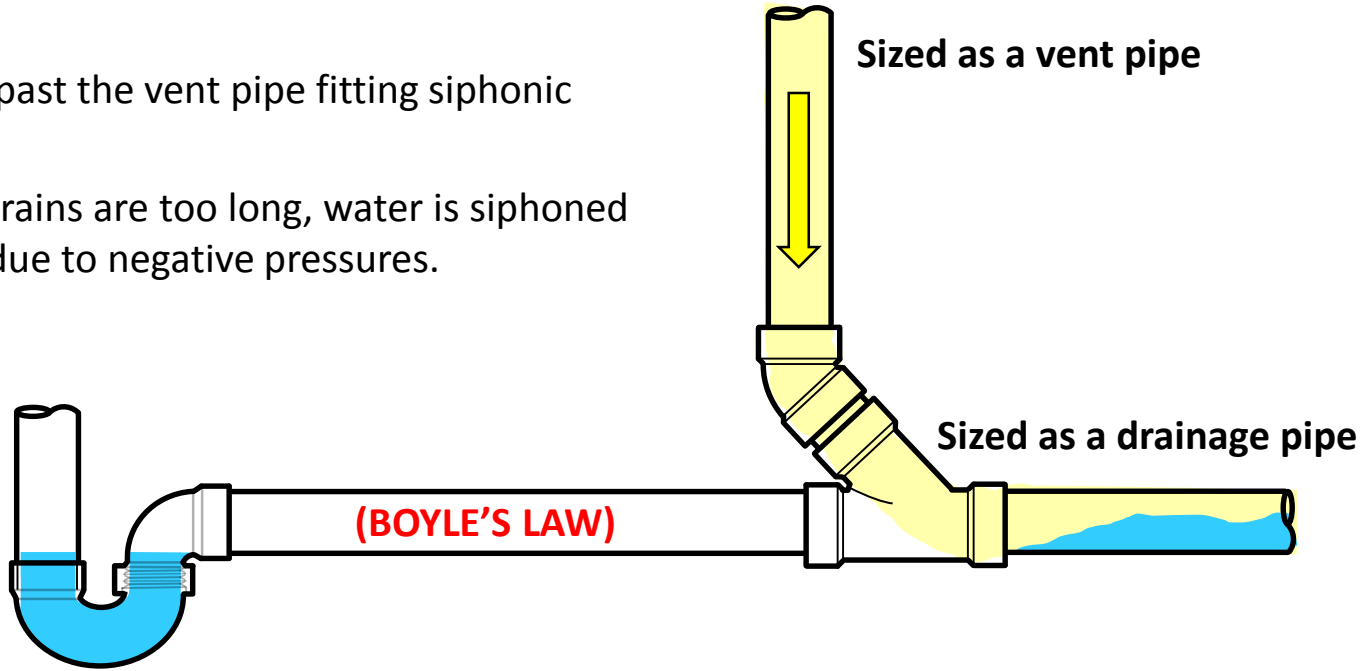


Vents

Vent pipes allow gasses to escape, as water drains from P-traps, keeping pressures balanced within a drainage system.

When water drains past the vent pipe fitting siphonic action is broken.

If trap arm/fixture drains are too long, water is siphoned from the trap seal, due to negative pressures.



Trap Arm/Fixture Drain

A trap arm/fixture drain is the only drainage pipe that has length restrictions

2.5.6.3 Location of Vent Pipes

1) Except as provided in Sentences (2) and (3), a vent pipe that protects a fixture trap shall be located so that
   a) the developed length of the trap arm is not less than twice the size of the fixture drain,
   b) the total fall of the trap arm is not greater than its inside diameter, and
   c) the trap arm does not have a cumulative change in direction of more than 135 degrees.

Table 2.5.6.3.

Length of Trap Arm

Forming Part of Sentence 2.5.6.3.(4)

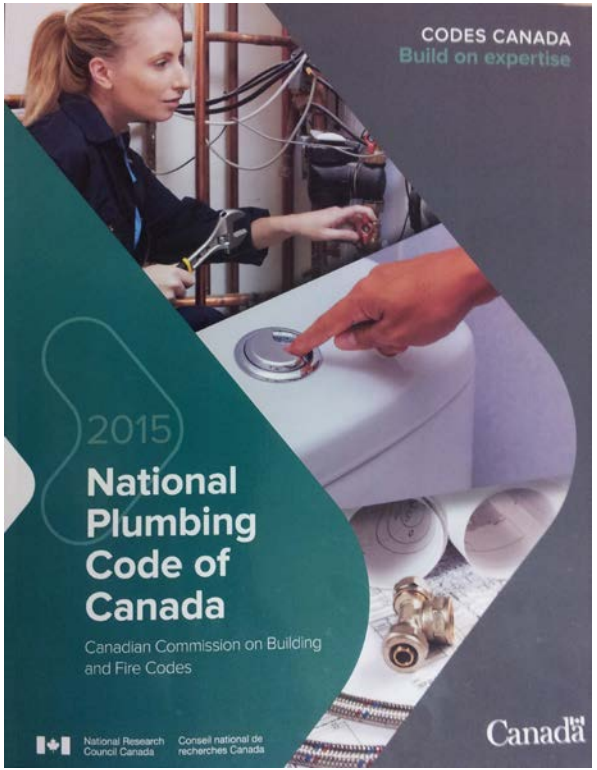
Size of Trap Served, inches	Maximum Length of Trap Arm, Metres	Minimum Slope
1 ¼”	1.5 m or 5 ft.	1/50
1 ½”	1.8 m or 6 ft.	1/50
2	2.4 m or 8 ft.	1/50
3	3.6 m or 12 ft.	1/50
4	4.8 m or 16 ft.	1/50
4	9.8 m or 31 ft.	1/100

Defining Types of Vent Pipes

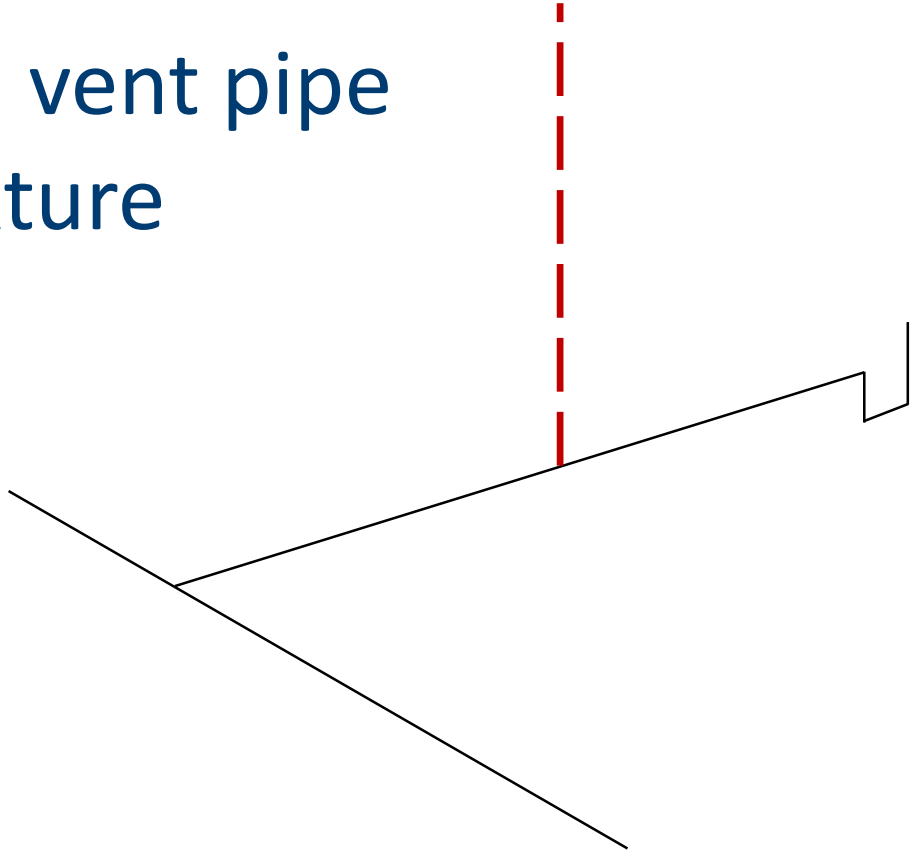
Vent Definitions in NPC

How do you find the requirements for the vent pipe that you need to install?

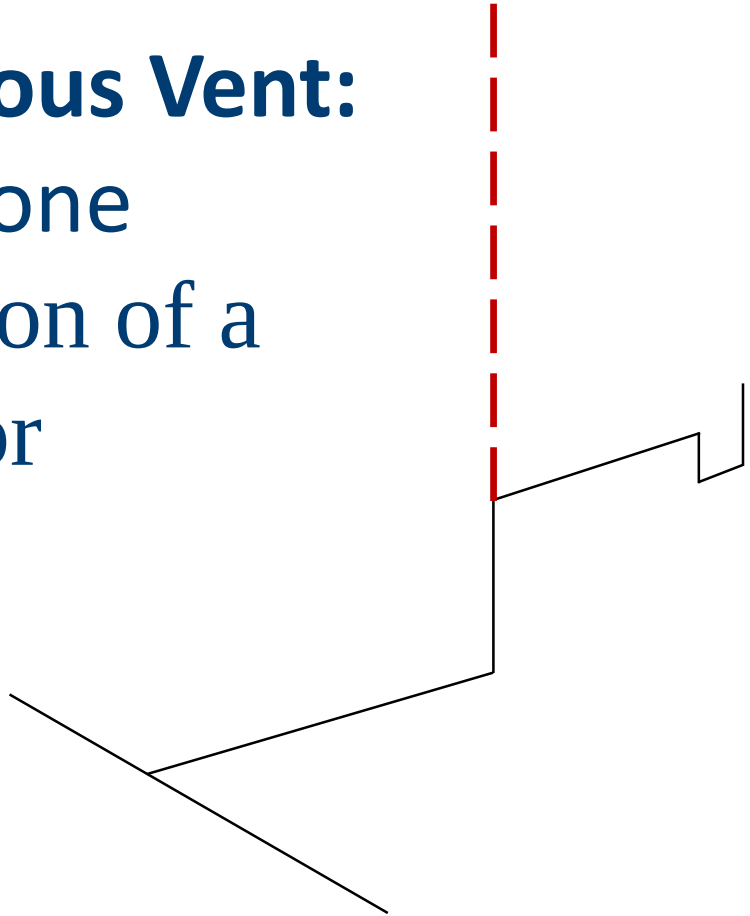
The NPC gives you these requirements by referencing the name of the pipe. Learn the name of each type of vent pipe and how it is used as it is described on the next pages.



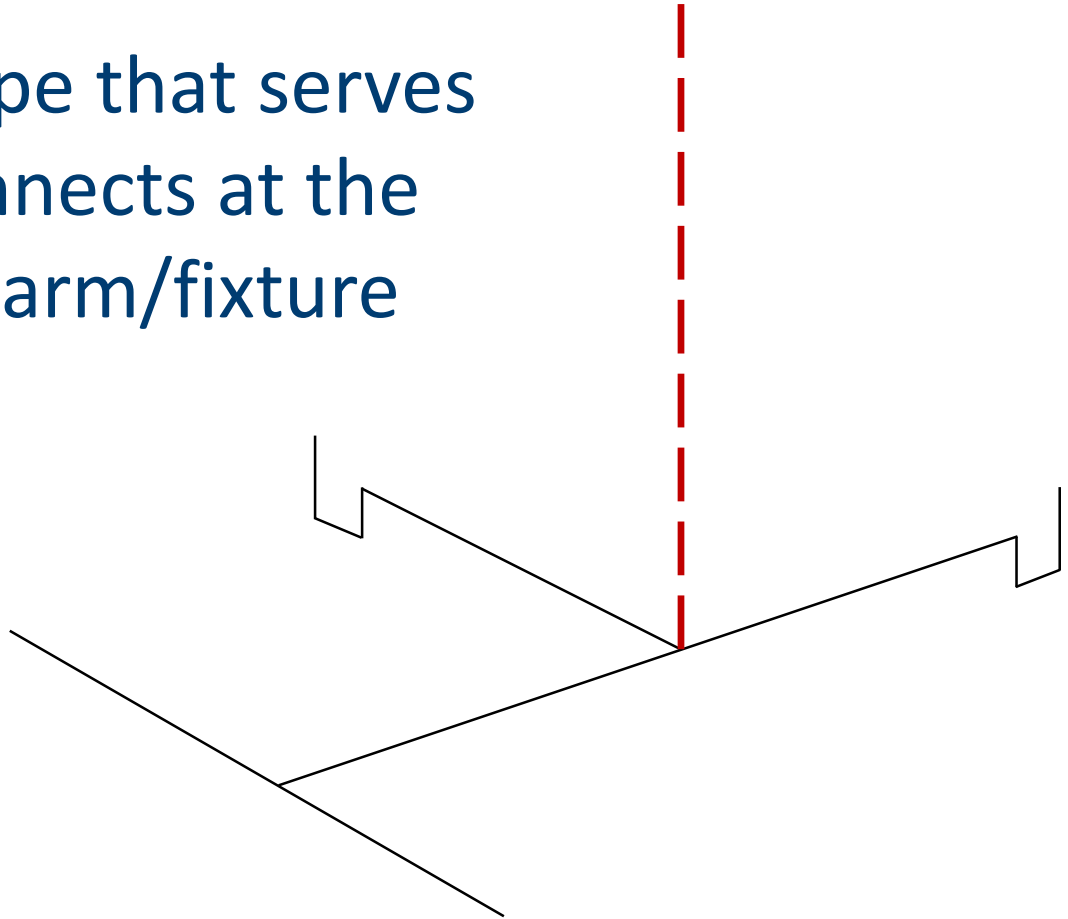
Individual Vent: a vent pipe that serves one fixture



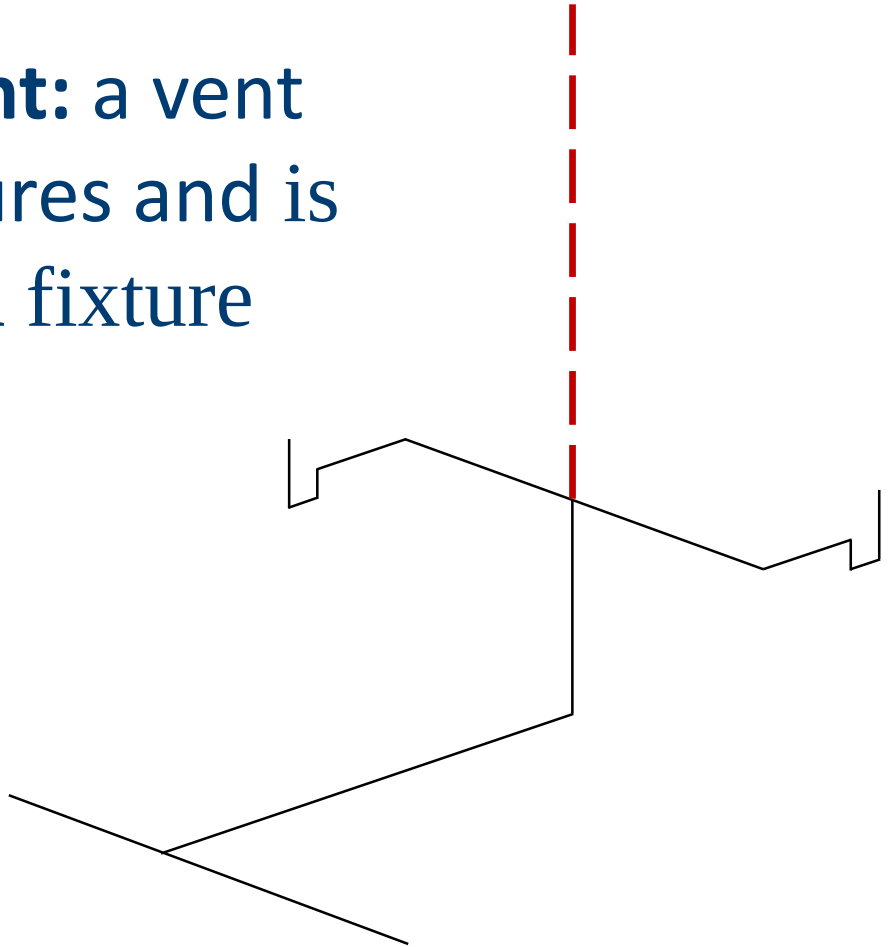
Individual and Continuous Vent: a vent pipe that serves one fixture and is an extension of a **vertical fixture drain** or branch



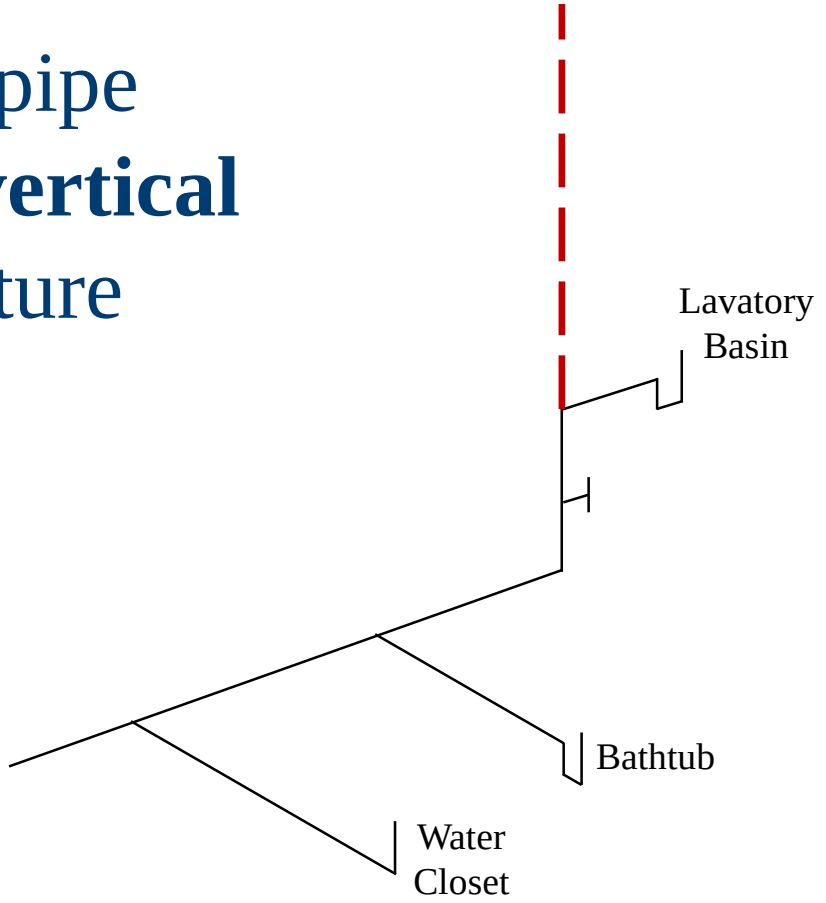
Dual Vent: a vent pipe that serves two fixtures and connects at the **junction** of the trap arm/fixture drains



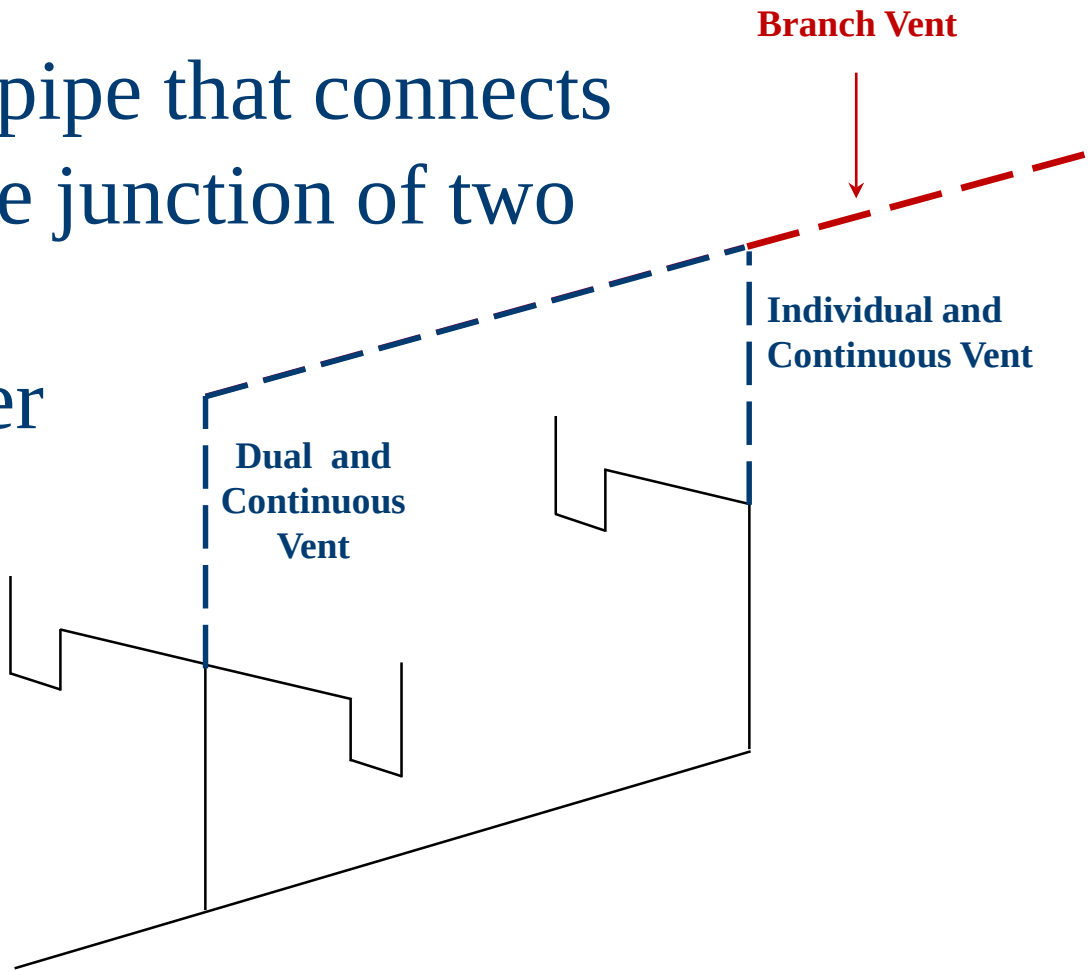
Dual and Continuous Vent: a vent pipe that serves two fixtures and is an extension of a **vertical** fixture drain or **branch**



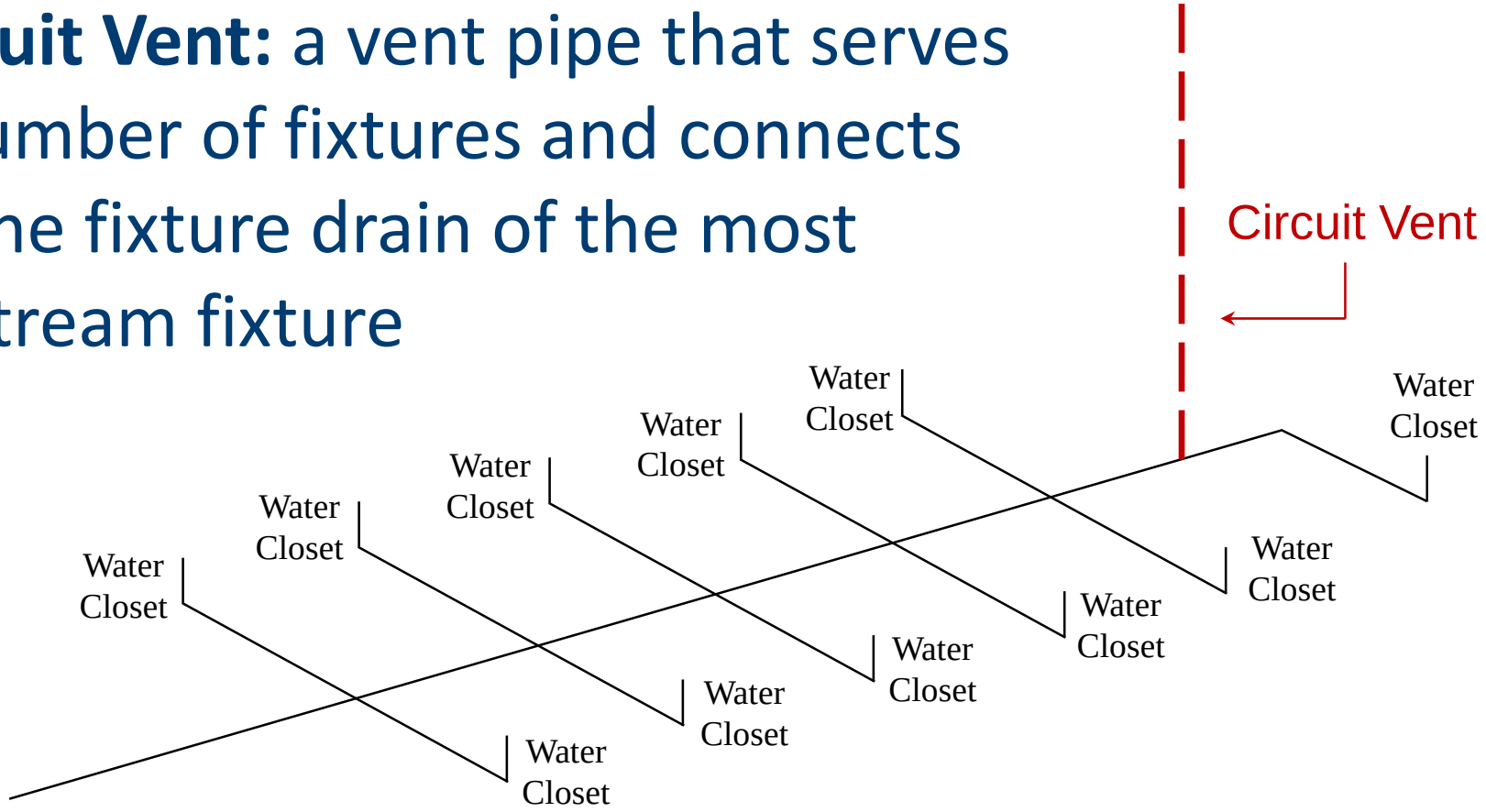
Continuous Vent: a vent pipe that is an extension of a **vertical** section of a branch or fixture drain



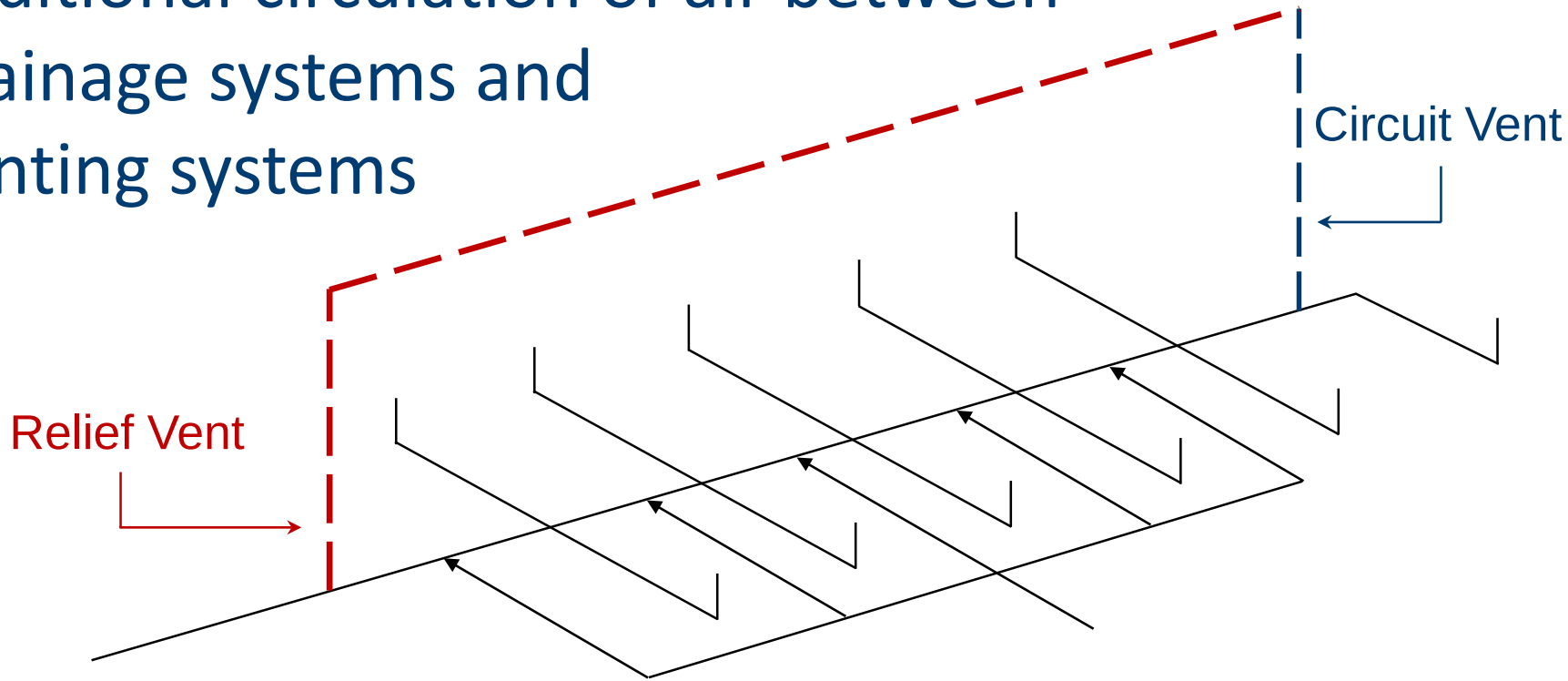
Branch Vent: a vent pipe that connects at its lower end to the junction of two or more vents and is connected at its upper end to a stack vent, vent stack, vent header or outside air



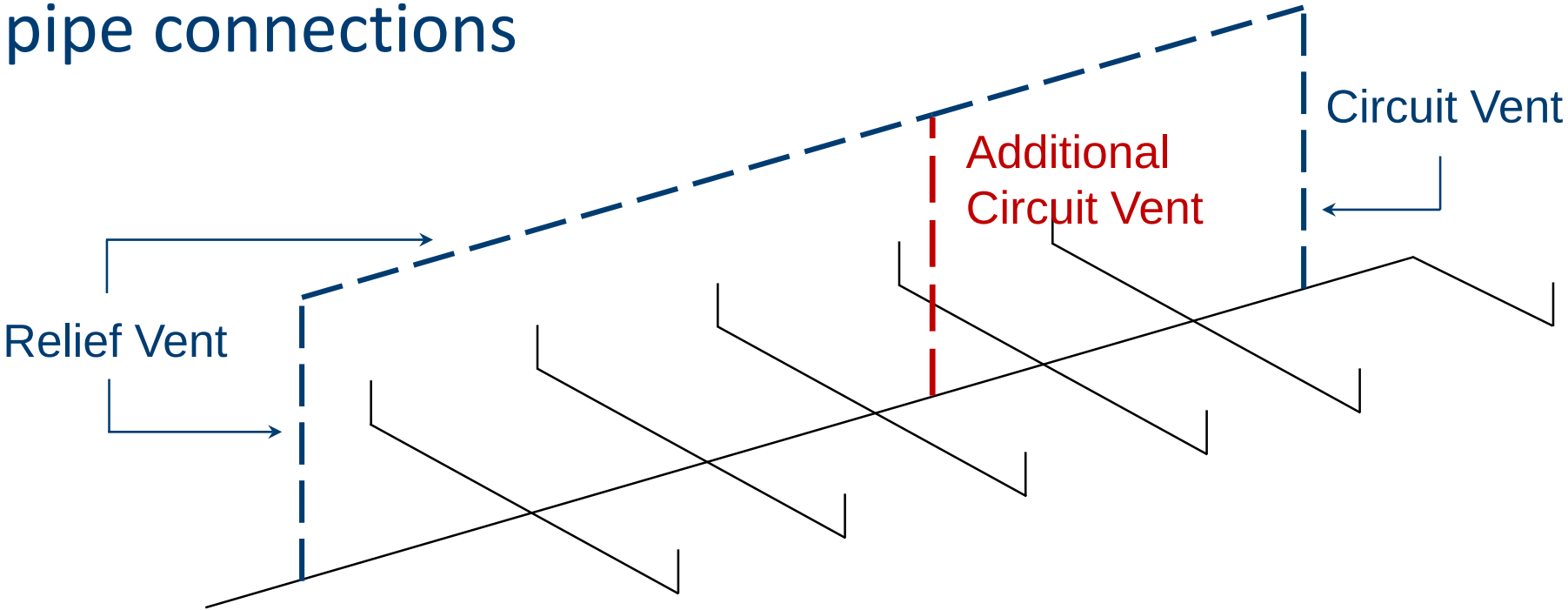
Circuit Vent: a vent pipe that serves a number of fixtures and connects to the fixture drain of the most upstream fixture



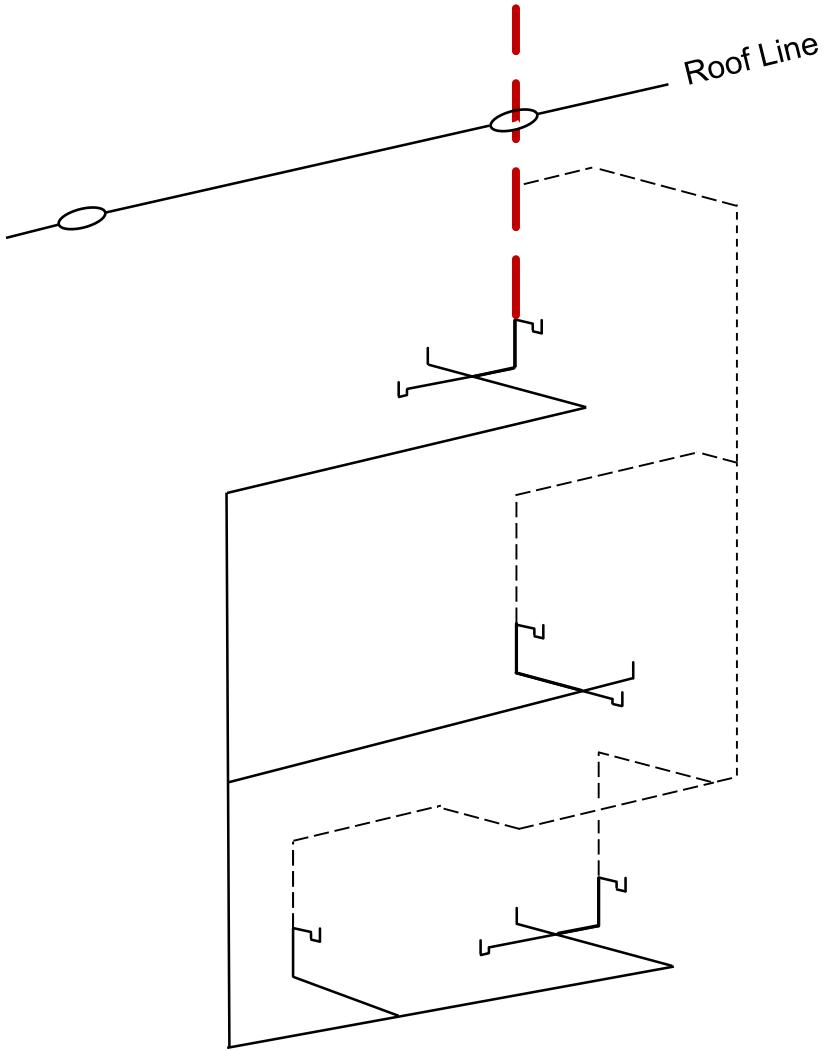
Relief Vent: an auxiliary vent which provides additional circulation of air between drainage systems and venting systems



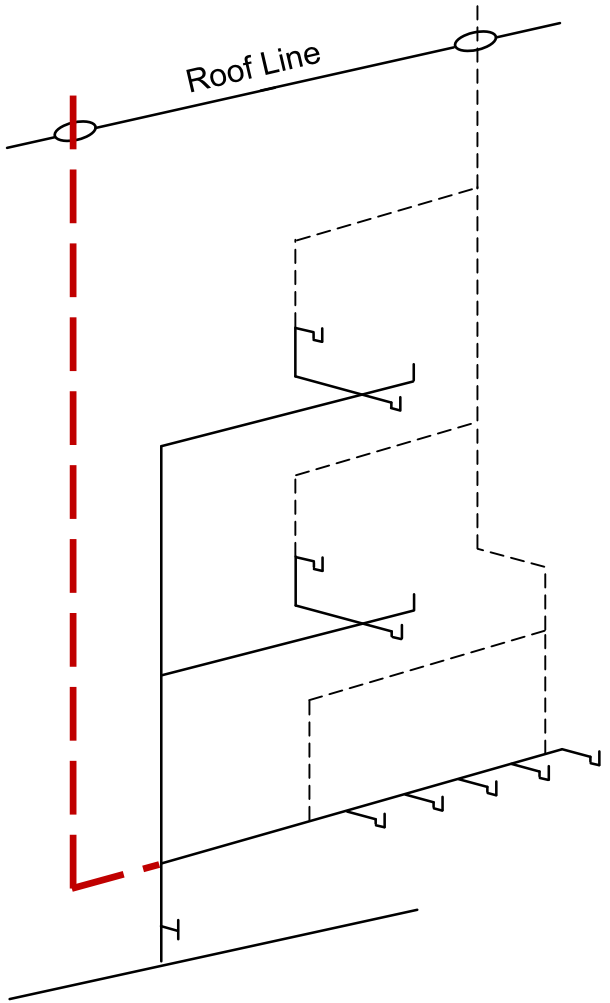
Additional circuit vents are required if there are more than eight fixtures between vent pipe connections



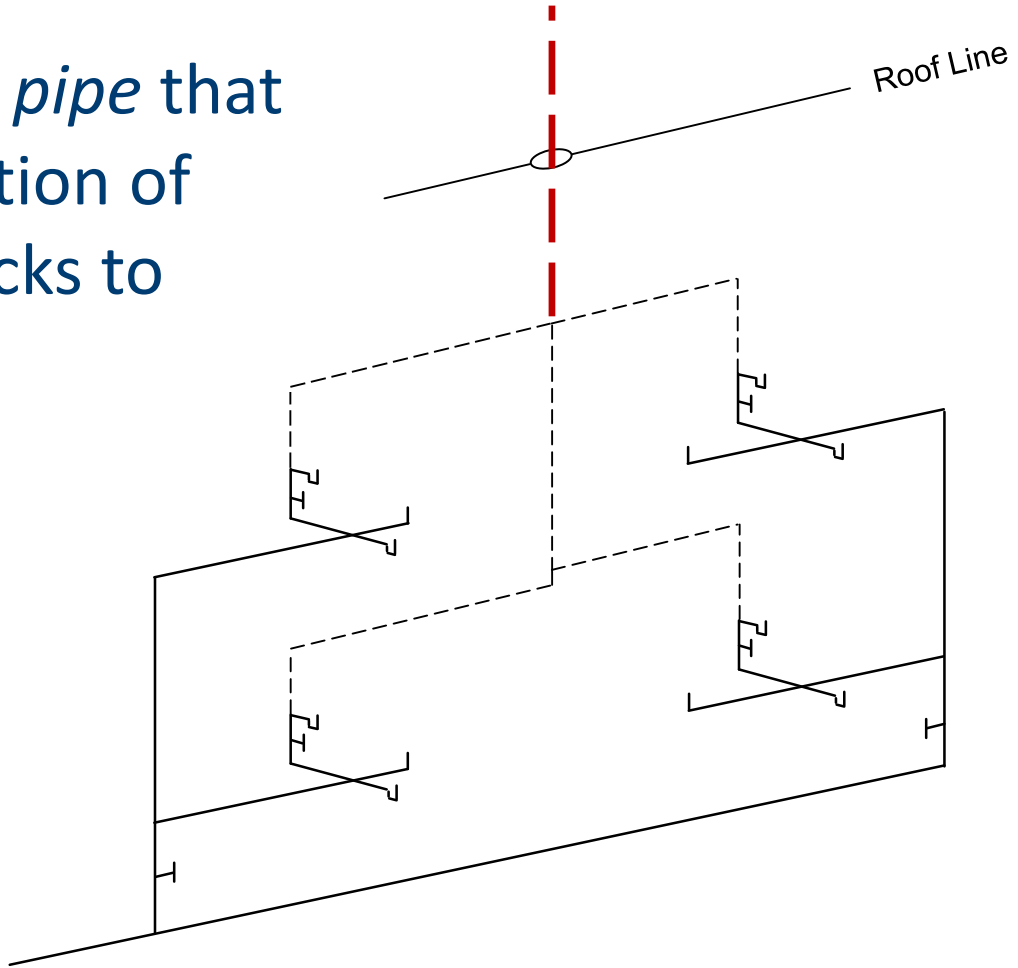
Stack Vent is a vent pipe that connects the top of a soil or waste stack to a vent header or outside air



Vent Stack is a *vent pipe* that is connected at its upper end to a vent header or that terminates in outside air and is connected at its lower end to the soil or waste stack at or below the lowest soil or waste pipe connection



Vent Header is a *vent pipe* that connects any combination of stack vents or vent stacks to outside air



Practice Makes Perfect

To remember better the names of these venting pipes and how they are connected try to draw a different diagram for each of the venting pipe definitions. Use a bright colour for the venting pipe you are presenting.

If you want to learn more about each of these types of vent pipes check the National Plumbing Code requirements for each of them. On the next page you will find the references for each type.

Vent Definitions in NPC

Individual Vent (Table 2.5.7.1.)

Dual Vent (Table 2.5.7.1.)

Individual and Continuous Vent (Table 2.5.7.1.)

Dual and Continuous Vent (Table 2.5.7.1.)

Continuous Vent (Table 2.5.8.3.)

Circuit Vent (2.5.8.3.)

Additional Circuit Vent (Sentence 2.5.8.3)

Relief Vent (Sentence 2.5.8.3.)

Branch Vent (Table 2.5.8.3.)

Stack Vent (Table 2.5.8.4.)

Vent Stack (Table 2.5.8.4.)

Vent Header (Table 2.5.8.3.)