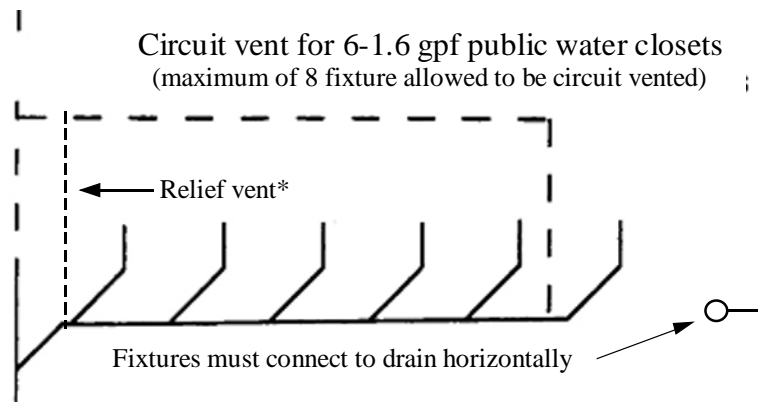


Circuit vents (Section 911)



Determine vent size- 4 dfu x 6 w.c. =24 dfu (Table 709.1)

Table 710.1(2) says 4' drain required

Section 916.2 says, vents other than stack vents or vent stacks must be 1/2 diameter of drain. Therefore, the circuit vent size is 2"

*A relief vent must be installed when four or more w.c. are connected to a drain **and** the soil stack receives discharge from upper branches

Vent pipe sizing (Section 916)

Table 916.1 is used only to size **stack vents, vent stacks and combination vent** systems.

All other vents shall be sized as 1/2 the diameter of the drain served but never smaller than 1-1/4" (If the developed length of the vent is greater than 40 feet, you must increase the size by one pipe size).

Using Table 916.1

The base of a vent stack is connected to a waste stack handling 450 dfu and extends 50 feet upward where it connects to a stack vent. The stack vent continues another 15 feet to the outside air. What is the minimum vent stack size if the waste stack is handling 4 branch intervals?

The first thing we need to know is the size of the building drain stack.

Table 710.1(2) indicates a 5" drain is needed to handle 450 dfu (540 dfu maximum).

Next, we'll turn to Table 916.1 and find a row corresponding to a 5" waste stack and 450 dfu (about half way down the chart is 5" waste stack @ 490 dfu). The total developed length of our stack is 65 feet (50 feet + 15 feet). Therefore slide your finger to the right until you find a column containing at least 65 feet (250 is correct, 63 is too short). At the top of the chart it indicates a 4" vent stack is required.

Sump vents (Using Table 916.5.1)

A 40-gallon per minute sewage pump is feeding a sump. A pipe with a developed length of 55 feet must vent it. What is the minimum allowed size for the vent pipe?

Footnote (a) says to add 50% to the developed length for entrance and friction losses; therefore the maximum developed length would be 55 ft. plus 27.5 ft. (.5 x 55) for a total of 82.5 feet. Table 916.5.1 indicates a 1-1/2" vent is needed.

Section 919 (Single stack discharge and ventilating systems)

This is a plumbing system whereas a single stack is used as both the waste and venting system. Fixtures may discharge directly into the stack without being vented or into a branch, which is vented via a loop or circuit vent. A professional engineer must design the system. To prevent siphoning of fixture traps the piping is larger than conventional plumbing systems and the trap to stack distance is modified as per Table 919.6B. Before the system is put into service it must be tested in accordance with section 312 and pass a **simultaneous discharge test** as prescribed in section 919.11

Vertical stacks are sized **using discharge units**, instead of drainage fixture units. Table 919.5A lists the discharge units for various fixtures and Table 919.5B lists the vertical stack sizes needed to accommodate the total discharge.

Paragraph 919.5.5 explains how to adjust the discharge unit values when *intervals between use* are not the same as listed in Table 919.5A. A sample adjustment would be as follows:

Suppose the interval of use for a water closet is expected to be 1 hour (60 minutes) and a sink 40 minutes. What would the discharge units be?

Adjusted discharge units = $\frac{\text{Table use minutes} \times \text{Table discharge units}}{\text{Expected use minutes}}$

$$\begin{aligned} \text{Adjusted discharge units (w.c.)} &= \frac{20 \times 15}{60} \\ &= \frac{300}{60} \\ &= 5 \end{aligned}$$

$$\begin{aligned} \text{Adjusted discharge units (sink)} &= \frac{25 \times 8}{40} \\ &= \frac{200}{40} \\ &= 5 \end{aligned}$$