

INSTALLATION

It is important to maintain a uniform slope to the drain pipe. It is most common for horizontal drains of all sizes in a structure to be sloped at $\frac{1}{4}$ inch per foot. However, at times it may be necessary to reduce the slope, especially with larger structures where horizontal piping may extend for some distance and where the depth of the piping may be an issue. 3-inch and larger diameter piping may be run at a slope less than $\frac{1}{4}$ inch per foot (Table 5-2). The exception is that horizontal drains discharging to a grease interceptor shall not be installed with less than $\frac{1}{4}$ inch per foot slope.

TABLE 5-2 Slope of horizontal drain pipe

Size (inches)	Minimum Slope (inch per foot)
2 $\frac{1}{2}$ or less	$\frac{1}{4}$
3 to 6	$\frac{1}{8}$
8 or larger	$\frac{1}{16}$

Horizontal branches must connect downstream of the base of a stack a minimum of 10 pipe diameters. Basically, multiplying the diameter of the stack by 10 provides the minimum horizontal distance in inches downstream of the stack where a horizontal drain branch may connect, 30 inches for a 3-inch stack, 40 inches for a 4-inch stack, etc. A drain stack is the vertical line of soil or waste piping that extends through not less than one story with or without offsets. The same required distance applies to horizontal connections in a stack offset (Figure 5-2). [\[Ref. IPC 704.1, 704.3 and IRC P3005.4.2, P3005.5\]](#)

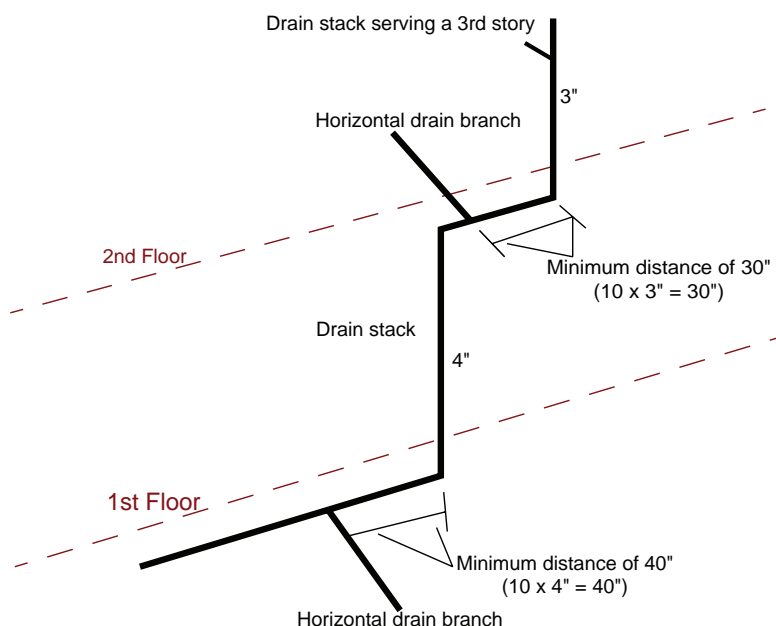


FIGURE 5-2 Connections near stack

You Should Know

Definitions for consideration (see Glossary):

- Horizontal pipe
- Vertical pipe
- Stack ●

Code Essentials

The IPC prohibits the connection of branches and fixture drains within 10 pipe diameters downstream of a drainage stack due to what is termed hydraulic jump, a rise or wave of liquid waste in the horizontal pipe due to the vertical downward gravity flow in the stack as it hits the horizontal pipe. The subsequent rise of liquid waste blocks or restricts the airflow in the horizontal drain, thus pushing air downstream. This action can result in excessive pressures being exerted on fixture traps downstream of the stack. Connections to the horizontal drain must be far enough downstream of the stack where the hydraulic jump has dissipated. ●