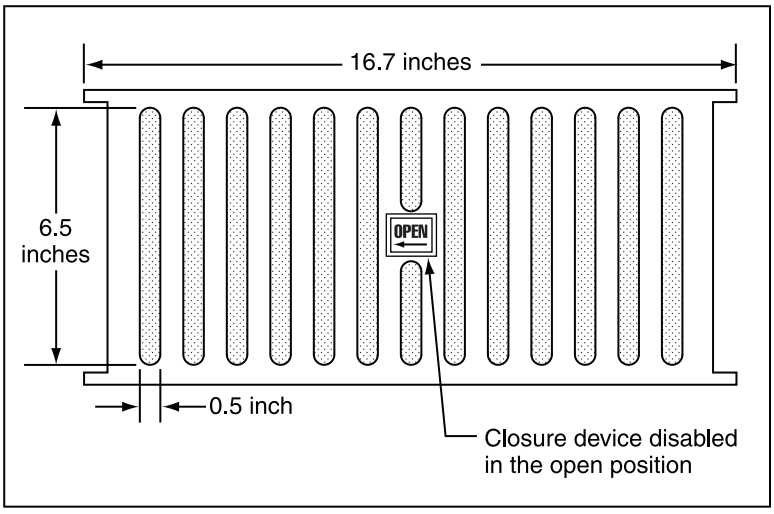
Non-Engineered Openings

Non-engineered openings are openings that are used to satisfy the prescriptive requirement that calls for 1 square inch of net open area for each square foot of enclosed area. A wide variety of options is available to satisfy the prescriptive requirements.

The term "net open area" refers to the permanently open area of a non-engineered opening. The NFIP regulations indicate that flood openings may be equipped with coverings or devices provided that they permit the automatic entry and exit of floodwaters. The measurement of the net open area must take into consideration any coverings that have solid obstructions, such as grilles, fixed louvers, or faceplates. Figure 14 shows a typical standard air vent faceplate and measurements of the net open area.

Figure 14. Typical standard air vent faceplate (this example provides 42 square inches of net open area)



Manufacturers of devices intended for use as standard air vents typically indicate the number of square inches that each device provides for air flow (either stamped into the metal frame or noted on the packaging). The same number should be used for the net open area calculation when these devices are installed as non-engineered openings. However, in order to qualify as flood openings that permit automatic entry and exit of floodwaters, openings must not have solid covers that are installed during cold weather. Similarly, typical air vent devices that are designed to be opened and closed manually must be disabled permanently in the open position.

Insect screens that do not impede the entry and exit of floodwaters are allowed and do not affect the determination of the net open area. Communities that administer the *International Building Code*® (IBC®) or the *International Residential Code*® (IRC®) should note the requirement to cover ventilation openings to keep animals and insects from entering. These codes provide a list of acceptable covering materials. The commentaries that accompany those codes note that some covering materials may reduce the gross open area of the vent by as much as 50 percent. In areas where floodwaters are expected to carry debris such as grass clippings and leaves, it is notable that screens tend to clog (Figure 15). Local officials may determine that additional openings are required to increase the likelihood that openings will perform as expected, even if some become clogged with debris.