How to use the <u>Non-Engineered Opening Guide</u> to meet the NFIP Requirements

The NFIP Requirements

The following criteria must be met for enclosures beneath an elevated building or attached/detached garages:

1. A limitations on use (parking of vehicles, building access, and storage, utilities must be elevated, and flood damage-resistant materials must be used below the BFE or unfinished;

2. *A minimum of two flood openings on different sides of each enclosed area subject to flooding;*

3. *The total net area of all flood openings must be at least one (1) square inch for each square foot of enclosed area subject to flooding;*

4. *If a building has more than one enclosed area, each enclosed area must have flood openings to allow floodwaters to automatically enter and exit;*

5. *The bottom of all required flood openings shall be no higher than one (1) foot above the adjacent grade;*

6. *Flood openings may be equipped with screens, louvers, or other coverings or devices, provided they permit the automatic flow of floodwaters in both directions;*

7. *Enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require flood openings;*

8. *Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires flood openings as outlined above;*

9. *Openings are required in the exterior walls of the garage, and openings may be installed in exit doors and garage doors. Garage doors themselves do not meet the requirements for openings as they do not allow for the automatic entry and exit of floodwaters.*

10. *Gaps that may be present between the garage door and the door jamb or walls do not guarantee automatic entry and exit of floodwaters and do not count towards the net open area requirement.*
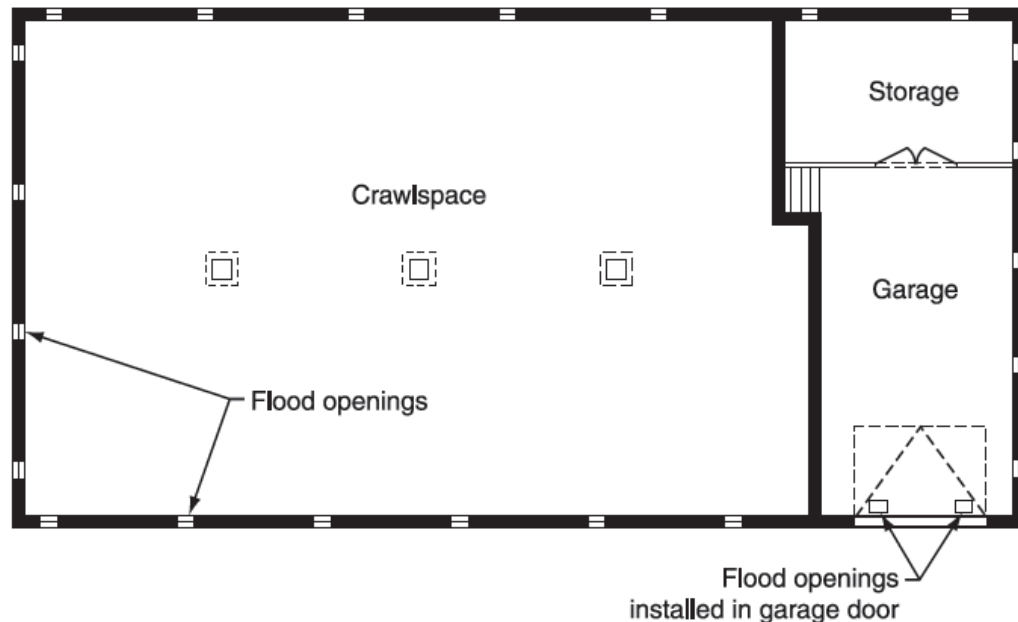
Figure 1 Sketch of foundation plan of home with multiple enclosed areas, each with flood openings

HOW DO I DETERMINE THE NUMBER OF OPENINGS (VENTS) I NEED TO COMPLY WITH 44 CFR 60.3 C (5)?

Step 1: Determine type of non-engineered vent or louver that you have selected. Using pages 8-22 of this guide determine the net open are per vent.

Step 2: Take the square footage from the elevation certificate (A8a or A9a). Convert the equivalent of 1 for 1 ratio (square foot to inches) 1000 square feet =1000 square inches.

Step 3: Take the total square inches from step 2 and divide by the net open area of the vent selected in step 1. This provides you the number of vents you will need to meet the requirements.

HOW TO I CALCULATE USING VENTS FEATURED IN THE NON-ENGINEERED OPENING GUIDE?

Example: We selected Figure 20 on page 30 of this guide, which offers 52 square inches of net open area. The elevation Certificate provides the square footage of 1800 square feet. Therefore, we need 1800 square inches of open area at a minimum.

$$\frac{1800 \; total \; square \; inches \; needed}{52 \; square \; inches \; per \; vent \; (from \; guide)} = 34.65 \; or \; 35 \; vents$$

we must round up to the next whole number

HOW TO I CALCULATE USING ENGINEERED VENTS?

Step 1: Select the engineered flood vent and review the ICC-ES report. Determine the net open area for the engineered flood opening.

Step 2: Take the square footage from the elevation certificate (A8a or A9a). Convert the equivalent of 1 for 1 ratio (square foot to inches) 1000 square feet =1000 square inches.

Step 3: Take the total square inches firm step 2 and divide by the net open area of the vent selected in step 1.

Example, SmartVents are ICC-ES approved to provide 200 square inches of net open area. The Elevation Certificate provides the square footage of 1865 square feet. Therefore, we need 1865 square inches of open area at a minimum.

$$\frac{1865 \; total \; square \; inches}{200 \; square \; inches \; per \; vent} = 9.33 \; or \; 10 \; vents$$

we must round up to the next whole number