

# FLOOD VENT WORKSHEET

## for Enclosures Below BFE on New Construction and Substantial Improvements

LCO Section 1131.15 (b)(4) regulates enclosures below the base flood elevation (BFE) on new construction and substantial improvements where the low floor is not elevated to above the BFE. The following provisions apply:

- The enclosed area below BFE shall be for building access, vehicle parking, and/or incidental or accessory storage of materials of a low damage potential or that are easily moved, *but the enclosure area shall not be inhabitable.*
- Service facilities such as electrical and heating equipment cannot be located in the enclosure unless elevated above the BFE;
- Heating ductwork and other lines must be above the BFE;
- Materials used to construct the enclosure must be flood-resistant materials;
- The enclosure must be built to automatically equalize hydrostatic flood forces on the exterior walls. Designs for meeting this requirement must meet one of the following:
  1. Be certified by a registered professional engineer or architect; or,
  2. Meet or exceed the following criteria:
    - a. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area;
    - b. The bottom of the openings shall be no higher than one foot above grade; and,
    - c. Openings may be equipped with screens, louvers, valves or other coverings or devices provided that they permit the automatic entry of floodwaters.

### PROPOSED USE OF ENCLOSED AREA:

The enclosed area will be used for the following purpose: \_\_\_\_\_

### CALCULATION FOR REQUIRED FLOOD VENT OPENINGS:

Area in square feet of Enclosure below BFE	=	_____ =	Number of openings needed, Rounded to the next higher integer.
Effective opening in square inches of vents to be used			

**NOTE:** The effective opening of the flood vent is the net area of the vent cover or grate. Net areas can be found on the manufacturer's specifications or calculated.

### LOCATION OF FLOOD VENTS ALONG ENCLOSURE WALLS:

If not already included with the permit submittal, provide a plan view drawing of the foundation showing the location of the flood vents and each vents effective opening, include a north arrow, and include an arrow depicting the direction of the flood flows.

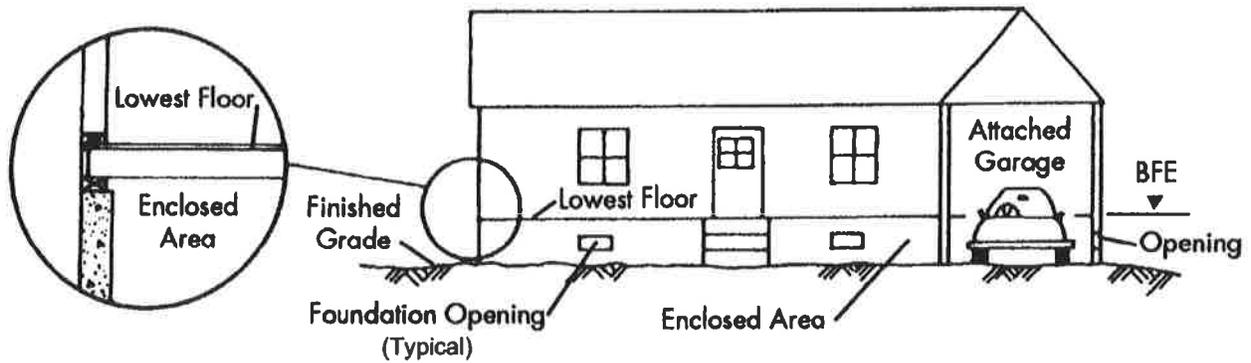
### PROPERTY OWNER'S CERTIFICATION:

I/We hereby certify that the information submitted is true and accurate to the best of my/our knowledge. The walls of the enclosed area shall be equipped and remain equipped with vents as approved in this Permit. Any alterations or changes from these conditions constitute a violation of the Permit and may render the structure uninsurable or increase the cost of the insurance, or may subject the Owner to legal action.

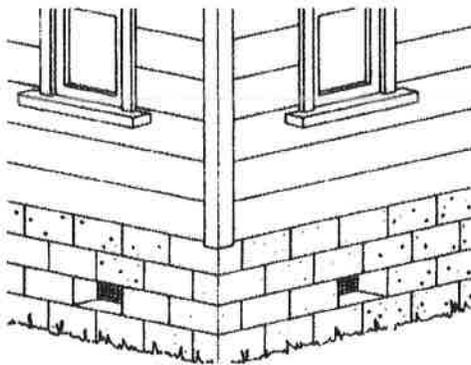
\_\_\_\_\_  
 Signature of Property Owner

\_\_\_\_\_  
 Date

# TYPICAL FLOOD VENT APPLICATIONS FOR FOUNDATION WALLS IN NEW AND SUBSTANTIAL CONSTRUCTION



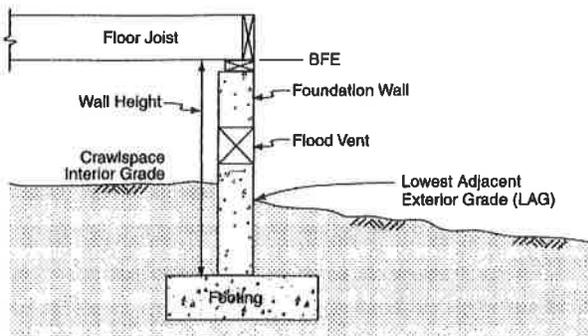
COMPLIANT RESIDENCE BUILT ON SOLID FOUNDATION WALLS



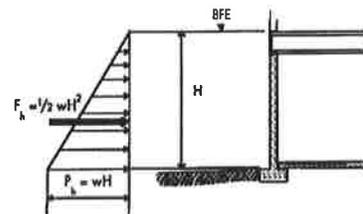
TYPICAL CRAWLSPACE FLOOD VENTS



OPENINGS IN FOUNDATION WALL



PREFERRED CRAWLSPACE  
CONSTRUCTION



$F_r$  = Resultant lateral force  
due to hydrostatic pressure  
 $P_r$  = Hydrostatic pressure at H  
 $w$  = Specific weight of water  
 $H$  = Depth of floodwaters

HYDROSTATIC FORCES ON  
WALL BELOW BFE

## ADDITIONAL RESOURCES:

Openings in Foundation Walls for Buildings Located in Special Flood Hazard Area, Technical Bulletin 1-93, Federal Emergency Management Agency, Federal Insurance Administration (FIA-TB-1) 4-1993

Crawlspace Construction for Buildings Located in Special Flood Hazard Areas, Technical Bulletin 1-93, Federal Emergency Management Agency, Federal Insurance and Mitigation Administration (FIA-TB-11) 11-2001