Bulletin # 15: Flood Openings

Date: April 20, 2017
Effective Date: Immediately
To: All Staff
From: Jonathan Walsh, Chief Building Official

Subject: Explanation, Requirements and Procedure for Flood Openings.

Flood openings requirements are found within the Florida Building Code-Residential, Section R322 – Flood Resistant Construction & Florida Building Code-Building, Section 1612 – Flood Loads. Supplemental guidance regarding flood openings rationale and requirements are found within the Technical Bulletin # 1: Openings in Foundation Walls and Walls of Enclosures produced by FEMA, 2008 (TB 1-08). It is the intent of this bulletin to clarify the requirements of the Building Code, highlighting specific areas of concern.

Definitions (per TB 1-08):

Enclosure or enclosed area: Areas created by a crawlspace or solid walls that fully enclose areas below the BFE.

Net open area: The permanently open area of a non-engineered opening intended to provide automatic entry and exit of floodwaters.

Opening, engineered: An engineered opening is an opening that is designed and certified by a registered design professional as meeting certain performance characteristics related to providing automatic entry and exit of floodwaters; the certification requirement may be satisfied by an individual certification or issuance of an Evaluation Report by the ICC Evaluation Service, Inc.

Opening, non-engineered: Is an opening that is used to meet the National Flood Insurance Program’s prescriptive requirement of 1 square inch of net open area for every square foot of enclosed area.


R322.2.2 Enclosed area below design flood elevation. Enclosed areas, including crawl spaces, that are below the design flood elevation shall:
1. Be used solely for parking of vehicles, building access or storage.
2. Be provided with flood openings that meet the following criteria:
2.1. There shall be a minimum of two openings on different sides of each enclosed area; if a
built has more than one enclosed area below the design flood elevation, each area shall
have openings on exterior walls.
2.2. The total net area of all openings shall be at least 1 square inch (645 mm\(^2\)) for each
square foot (0.093 m\(^2\)) of enclosed area, or openings shall be design professional that the
design of the openings will provide for equalization of hydrostatic flood forces on exterior
walls by allowing for the automatic entry and exit of floodwaters as specified in Section
2.6.2.2 of ASCE- 24.
2.3 The bottom of each opening shall be 1 foot (305 mm) or less above the adjacent ground
level.
2.4 Openings shall be not less than 3 inches (76 mm) in any direction in the plane of the
walls.
2.5 Any louvers, screens or other opening covers shall allow the automatic flow of
floodwaters into and out of enclosed area.
2.6 Openings installed in doors and windows, that meet requirements 2.1 through 2.5, are
acceptable; however, doors and windows without installed openings do not meet the
requirements of this section.

Technical Bulletin 1-08 (FEMA) – Openings in Foundation Walls and Walls of Enclosures

Requirements and Guidance for Installation of Openings - The NFIP regulations specify certain
installation requirements that must be met by all flood openings, whether non-engineered
openings or engineered openings.

- Openings must be located so that the portion of the opening intended to allow
  for inflow and outflow is below the BFE.
- Openings that are entirely above the BFE (or any portion of an opening that is
  above the BFE) will not serve the intended purpose during base flood conditions
  and thus are not counted towards the compliance with the flood opening
  requirements.
- Plans submitted to Building Review and Inspections must indicate the following:
  o Proposed installation location of flood openings.
  o Proposed installation height of top of flood openings in relation to Base
    Flood Elevation (BFE) AND proposed finished floor elevations.
  o Note: Regarding engineered openings, if any portion is installed above
    BFE, only the portion below BFE will be calculated based on the net
    open area.

Non-Engineered Openings and Engineered Openings Documentation

- Plans submitted to Building Review and Inspections must include the following:
o Non-Engineered Openings
  ▪ Manufacturer’s product information
    • Information must be from purchased product (information labeled on plans will not suffice).

o Engineered Openings
  ▪ Certification of engineered openings OR
  ▪ ICC Evaluation Report
  ▪ Note: In addition to information being required for plans submittal, the Finished Construction FEMA Elevation Certificate will be required to include applicable certification/report for engineered openings.