

2021 Virginia Construction Code

CHAPTER 16 STRUCTURAL DESIGN

SECTION 1612 FLOOD LOADS

1612.1 General.

Within *flood hazard areas* as established in [Section 1612.3](#), all new construction of buildings, structures and portions of buildings and structures, including *substantial improvement* and restoration of *substantial damage* to buildings and structures, shall be designed and constructed to resist the effects of flood hazards and *flood loads*. For buildings that are located in more than one *flood hazard area*, the provisions associated with the most restrictive *flood hazard area* shall apply.

1612.1.1 Elevation of manufactured homes.

New or replacement *manufactured homes* to be located in any flood hazard zone shall be placed in accordance with the applicable elevation requirements of this code.

Exception: *Manufactured homes* installed on sites in an existing manufactured home park or subdivision shall be permitted to be placed so that the *manufactured home* chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches (914 mm) above grade in lieu of being elevated at or above the *base flood elevation* provided no *manufactured home* at the same site has sustained flood damage exceeding 50 percent of the market value of the home before the damage occurred.

1612.2 Design and construction.

The design and construction of buildings and structures located in *flood hazard areas*, including *coastal high hazard areas* and *coastal A zones*, shall be in accordance with Chapter 5 of [ASCE 7](#) and [ASCE 24](#).

1612.3 Establishment of flood hazard areas.

To establish *flood hazard areas*, the applicable governing authority shall adopt a flood hazard map and supporting data. The flood hazard map shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management Agency in an engineering report entitled "The *Flood Insurance Study* for [INSERT NAME OF JURISDICTION]," dated [INSERT DATE OF ISSUANCE], as amended or revised with the accompanying *Flood Insurance Rate Map* (FIRM) and Flood Boundary and *Floodway Map* (FBFM) and related supporting data along with any revisions thereto. The adopted flood hazard map and supporting data are hereby adopted by reference and declared to be part of this section.

1612.3.1 Design flood elevations.

Where *design flood elevations* are not included in the *flood hazard areas* established in [Section 1612.3](#), or where *floodways* are not designated, the *building official* is authorized to require the applicant to do one of the following:

1. Obtain and reasonably utilize any *design flood elevation* and *floodway* data available from a federal, state or other source.
2. Determine the *design flood elevation* or *floodway* in accordance with accepted hydrologic and hydraulic engineering practices used to define special *flood hazard areas*. Determinations shall be undertaken by a *registered design professional* who shall document that the technical methods used reflect currently accepted engineering practice.

1612.3.2 Determination of impacts.

In riverine *flood hazard areas* where *design flood elevations* are specified but *floodways* have not been designated, the applicant shall provide a *floodway* analysis that demonstrates that the proposed work will not increase the *design flood elevation* more than 1 foot (305 mm) at any point within the jurisdiction of the applicable governing authority.

1612.4 Flood hazard documentation.

The following documentation shall be prepared and sealed by a *registered design professional* and submitted to the *building official*:

1. For construction in *flood hazard areas* other than *coastal high hazard areas* or *coastal A zones*:
 - 1.1. The elevation of the lowest floor, including the basement, as required by the lowest floor elevation inspection in [Section 113.3.2](#) and for the final inspection in [Section 113.3.3](#).
 - 1.2. For fully enclosed areas below the *design flood elevation* where provisions to allow for the automatic entry and exit of floodwaters do not meet the minimum requirements in [Section 2.7.2.1 of ASCE 24](#), *construction documents* shall include a statement that the design will provide for equalization of hydrostatic flood forces in accordance with [Section 2.7.2.2 of ASCE 24](#).
 - 1.3. For *dry floodproofed* nonresidential buildings, *construction documents* shall include a statement that the *dry floodproofing* is designed in accordance with [ASCE 24](#) and shall include the flood emergency plan specified in

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Chapter 6 of ASCE 24.

2. For construction in *coastal high hazard areas* and *coastal A zones*:
 - 2.1. The elevation of the bottom of the lowest horizontal structural member as required by the lowest floor elevation inspection in Section 113.3.2 and for the final inspection in Section 113.3.3.
 - 2.2. *Construction documents* shall include a statement that the building is designed in accordance with ASCE 24, including that the pile or column foundation and building or structure to be attached thereto is designed to be anchored to resist flotation, collapse and lateral movement due to the effects of wind and *flood loads* acting simultaneously on all building components, and other *load* requirements of Chapter 16.
 - 2.3. For breakaway walls designed to have a resistance of more than 20 psf (0.96 kN/m²) determined using *allowable stress design*, *construction documents* shall include a statement that the breakaway wall is designed in accordance with ASCE 24.
 - 2.4 For breakaway walls where provisions to allow for the automatic entry and exit of floodwaters do not meet the minimum requirements in Section 2.7.2.1 of ASCE 24, *construction documents* shall include a statement that the design will provide for equalization of hydrostatic flood forces in accordance with Section 2.7.2.2 of ASCE 24.