

Technical Topic: Guidance for Pools and Spas in Flood Hazard Areas

This brief provides interim guidance for Florida's Building Officials, Floodplain Managers, and members of the pool design and construction industry concerning language in the Florida Building Code and ASCE 24. This guidance does not address the diversity of questions posed by numerous individuals in these industries who regularly contact the State Floodplain Management Office for more detailed guidance on constructing pools in Special Flood Hazard Areas. For further information, please contact us at 850.815.4556 or floods@em.myflorida.com. Please reference the below-noted regulations and standards when designing, building, or regulating swimming pools and spas in SFHAs.

Regulatory Resources

Florida Building Code/Construction Standards

When regulating the construction of swimming pools and spas, communities should follow the Florida Building Code (FBC) and therein referenced construction standards. Community administration in SFHAs should also take into account accepted construction/maintenance standards/practices and the practical limitations and tolerances of pool and spa equipment.

ASCE 24

Engineering standards for construction in flood zones by the American Society of Civil Engineers (ASCE). ASCE is referenced and modified in the Florida Building Code for use in Florida.

Regulatory Standard

Based on Florida Building Code (FBC) and ASCE 24 standards for swimming pools, spas, and pool/spa equipment, performance expectations for community regulation of such in SFHAs should focus on the following:

1. Ability of Swimming Pool or Spa to resist flood forces, breakaway, OR be elevated per sight -specific engineering;
2. Preventing flotation of pool/spa equipment during a flood event (i.e. anchoring of equipment); and
3. Safety of electrical circuits powering pool/spa equipment during a flood event (i.e. use of GFCI connections).

See explanation of the FBC and Construction Standards below.

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Florida Building Code/ACSE 24 Standards

Florida's communities are required to issue permits for development in special flood hazard areas, including the installation of swimming pools and associated controls, equipment. Local officials must examine these proposals and consider the following:

1. **Pools.** How the pool itself is handled depends on the flood zone and whether the pool is in-ground, above-ground, or a combination (perhaps with associated grading and fill). Following Provisions are found in the 2017 FBC and ASCE 24.

2017 Florida Building Code, Building
454.1.1 Flood hazard areas. Public swimming pools installed in flood hazard areas established in Section 1612.3 shall comply with Section 1612. Note About ASCE 24: Sec. 1612 refers to ASCE 24, Flood Resistant Design and Construction, which includes provisions for pools in Sec. 9.6. Primarily, pools are to withstand flood-related loads and load combinations and if structurally connected to a structure, designed to function as a continuation of the structure. Additional requirements apply in coastal high hazard areas (V zones) and Coastal A Zones.
454.2.4.2.1 Flood hazard areas. Private swimming pools installed in flood hazard areas established in Section 1612.3 shall comply with Section 1612.
2017 Florida Building Code, Residential
R4501.4.2.1.Flood hazard areas. Pools installed in flood hazard areas established in Section R322 shall comply with Section R322.2.4 (A Zones) or R322.3.3.1 in coastal high-hazard areas (V Zones).
A ZONES
R322.2.5 Pools in flood hazard areas. Pools that are located in flood hazard areas established by Table R301.2(1), including above-ground pools, on-ground pools, and in-ground pools that involve placement of fill, shall comply with Section R322.2.5.1 or R322.2.5.2. Exception: Pools located in riverine flood hazard areas which are outside of designated floodways.
R322.2.5.1 Pools located in designated floodways. Where pools are located in designated floodways, documentation shall be submitted to the building official, which demonstrates that the construction of the pool will not increase the design flood elevation at any point within the jurisdiction.

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R322.2.5.2 Pools located where floodways have not been designated.

Where pools are located 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 pool will not increase the design flood elevation more than 1 foot (305 mm) at any point within the jurisdiction.

V ZONES

R322.3.3.1 Pools. Pools in coastal high-hazard areas shall be designed and constructed in conformance with ASCE 24.

ASCE 24

ASCE 24 Section 9.6 requires one of three compliance methods for swimming pools and spas built in floodplains: the pool can be elevated, designed to breakaway, OR resist flood forces.

The determination of the best method of compliance should be based on sight specific engineering.

2. Pools and Enclosures.

- a. Pools in any flood zone shall not be fully enclosed by walls and roofs. Walls on all sides are not allowed because the resulting building would be an accessory structure, and the NFIP limits the use of accessory structures that are below the Base Flood Elevation to parking of vehicles and storage. Pools are not allowed in enclosures, even if the walls are glass, breakaway walls (V zones), or walls with flood openings (A zones) because recreational use is not a permitted use. Pools may be surrounded with lattice, insect screening, or aluminum screening.
- b. The NFIP allows pools to be placed under elevated buildings only if the top of the pool and accompanying deck or walkway are flush with the existing grade, and only if the space around the pool is not enclosed on all sides with walls (see explanation above regarding enclosing pools with walls). Designs for Coastal A Zone and V Zone buildings with pools underneath must be certified by a registered design professional that the building and pool will not be subject to flotation or displacement that will damage building foundations during a flood.

3. Pool equipment/controls. In the interest of preventing floatation of pool/spa equipment/controls, preventing pool/spa equipment from becoming a projectile

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hazard or an electrical hazard during a flood event, pool equipment and controls must:

- a. Be elevated only as high as practical, to be readily accessible for cleaning, operating, maintenance and servicing in accordance with manufacturers' specifications;
- b. Securely anchored to prevent flotation; and
- c. Be connected to a separate GFCI circuit.

2017 Florida Building Code, Residential
R4501.23 Accessibility and clearances. Equipment shall be installed so as to provide ready accessibility for cleaning, operating, maintenance and servicing.
2020 Florida Building Code, Residential (Adopted)
R322.1.6 Protection of mechanical, plumbing and electrical systems. Electrical systems, equipment and components; heating, ventilating, air conditioning; plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall be located at or above the elevation required in Section R322.2 or R322.3. If replaced as part of a substantial improvement, electrical systems, equipment and components; heating, ventilating, air conditioning and plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall meet the requirements of this section. Systems, fixtures, and equipment and components shall not be mounted on or penetrate through walls intended to break away under flood loads. Exception: Locating electrical systems, equipment and components; heating, ventilating, air conditioning; plumbing appliances and plumbing fixtures; duct systems; and other service equipment is permitted below the elevation required in Section R322.2 or R322.3 provided that they are designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation in accordance with ASCE 24. <u>Equipment for pools, spas and water features shall be permitted below the elevation required in Section R322.2 or R322.3 provided it is elevated to the extent practical and anchored to prevent flotation and resist flood forces and is supplied by branch circuits that have ground-fault circuit interrupter protection.</u> Electrical wiring systems are permitted to be located below the required elevation provided that they conform to the provisions of the electrical part of this code for wet locations.

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2020 Florida Building Code (Adopted)

1612.4.2 Modification of ASCE 24 9.6 Pools.

In-ground and aboveground pools shall be designed to withstand all flood-related loads and load combinations. Mechanical equipment for pools such as pumps, heating systems, and filtering systems, and their associated electrical systems shall comply with Chapter 7.

Exception: Equipment for pools, spas and water features shall be permitted below the elevation required in Table 7-1 provided it is elevated to the extent practical, anchored to prevent flotation and resist flood forces and is supplied by branch circuits that have ground-fault circuit interrupter protection.

4. **Pool equipment buildings.** Buildings that house pool equipment are accessory structures. The buildings must either be elevated or, if not elevated, be constructed to comply with the pertinent requirements for accessory buildings (allowed if used only for parking or storage) based on the flood zone.
5. **Tanks.** Tanks must meet the requirement to either be elevated or anchored to resist anticipated flood loads (e.g., see ASCE 24, Section 9.6).
6. **Package Pool Chemicals.** Communities are encouraged to specify that ready to use pool chemicals are stored above the Base Flood Elevation. This does not apply to pool chemical feeders.