## Prohibit Enclosures below Elevated Buildings – local technical code amendments (Part 2 building and Part 2.5 residential)

Submit draft ordinances amending the flood provisions of the building code (in <track changes>) for review well in advance of first reading to DWR\_NFIP@water.ca.gov or FEMA-NFIP-R9@fema.dhs.gov. Please put community name in subject line.

**Before you start:** Review the General Instructions for Amending the California Building Standards Code (CCR Title 24) to Adopt Higher Standards for Buildings and Development Located in Flood Hazard Areas.

**NFIP Community Rating System Credits.** Adoption and enforcement of this higher standard may qualify for CRS points (credits). Communities should review the [*CRS Coordinators Manual*](https://www.fema.gov/media-library/assets/documents/8768)and consult with their CRS Resource Specialists. FEMA/ISO determines which provisions qualify for points.

**Description****[[1]](#footnote-1):** Buildings located in flood hazard areas may be subject to considerable forces exerted on foundations and any portions that extend below the flood level. Enclosures below otherwise properly elevated buildings are allowed under the NFIP and the California Building Standards Code, provided the enclosures meet certain requirements and are used only for parking of vehicles, storage, and building access. The requirements for the walls of enclosures depend on flood zone. The presence of enclosures below elevated buildings results in higher NFIP flood insurance premiums, especially in Zone V/VE.

Some communities choose to prohibit enclosures to minimize obstructing flow, reduce the amount of debris added to floodwater, and minimize damage that can still be sustained by elevated buildings. Additional benefits of prohibiting enclosures below elevated buildings are lower NFIP flood insurance premiums and reduced opportunities for owners to modify enclosures for uses other than those allowed.

**How Part 2 addresses enclosures beneath elevated buildings:** Part 2 (buildings), by reference to ASCE 24, includes the basic NFIP-consistent requirements for enclosed areas and walls below elevated buildings. Requirements for enclosures under buildings in all flood zones that start with the letter “A” are in ASCE 24 Section 2.6 and requirements for Zone V/VE and CAZ are in ASCE 24 Section 4.6.

**How Part 2.5 addresses enclosures beneath elevated dwellings:** Part 2.5 (dwellings) includes the basic NFIP-consistent requirements for enclosed areas and walls below elevated dwellings. Requirements for all flood zones are in R322.1, requirements for all flood zones that start with the letter “A” are in R322.2, and requirements for Zone V/VE and CAZ are in R322.3. Part 2.5 treats CAZ like Zone V/VE, with an exception that allows backfilled stem walls.

**INSTRUCTIONS**

**Step 1.** **Amend Part 2 (all buildings except 1- and 2-family dwellings and townhouses less than three stories).** Some communities prohibit enclosures only below dwellings (see Step 2). To apply this limitation to all buildings, add a section to the ordinance that adopts local amendments to Part 2. To make the changes discernable, maintain strikethrough and underlining.

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| *CCR Title 24, Part 2, Section 1612.2 is hereby amended by adding a new section 1612.2.1 as follows:***1612.2.1 Modification of ASCE 24: Enclosure limitations.** Enclosures below the lowest floor are not permitted. |

**Step 2.** **Amend Part 2.5 (1- and 2-family dwellings and townhouses less than three stories).** Add a section to the ordinance that adopts local amendments to Part 2.5. To make the changes discernable, maintain strikethrough and underlining.

* Contact **Technical Support** if your intent is to prohibit enclosures in all in all flood zones that start with the letter “A”, but to allow perimeter wall foundations (crawlspaces).
* Note this language prohibits enclosures in Zone V/VE by not allowing breakaway walls that form enclosures. An alternative is shown to allow insect screening or open lattice.

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| *CCR Title 24, Part 2, Section R322.2 is hereby amended as follows:***R322.2.2 Enclosed area below design flood elevation.** Enclosed areas, including crawl spaces, that are below the design flood elevation are not permitted. ~~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 building 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 mm²) for each square foot (0.093 m²) of enclosed area, or the openings shall be designed and the construction documents shall include a statement by a registered 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 wall.~~ ~~2.5. Any louvers, screens or other opening covers shall allow the automatic flow of floodwaters into and out of the 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.~~ |
| *CCR Title 24, Part 2, Section R322.3 is hereby amended as follows:***R322.3.4 Walls below design flood elevation.** Walls and partitions are not permitted below the elevated floor. ~~, provided that such walls and partitions are not part of the structural support of the building or structure and:~~1. ~~Electrical, mechanical, and plumbing system components are not to be mounted on or penetrate through walls that are designed to break away under flood loads; and~~
2. ~~Are constructed with insect screening or open lattice; or~~
3. ~~Are designed to break away or collapse without causing collapse, displacement or other structural damage to the elevated portion of the building or supporting foundation system. Such walls, framing and connections shall have a design safe loading resistance of not less than 10 (470 Pa) and no more than 20 pounds per square foot (958 Pa); or~~
4. ~~Where wind loading values of this code exceed 20 pounds per square foot (958 Pa), the construction documents shall include documentation prepared and sealed by a registered design professional that:~~

~~4.1. The walls and partitions below the design flood elevation have been designed to collapse from a water load less than that which would occur during the design flood.~~ ~~4.2. The elevated portion of the building and supporting foundation system have been designed to withstand the effects of wind and flood loads acting simultaneously on all building components (structural and nonstructural). Water loading values used shall be those associated with the design flood. Wind loading values used shall be those required by this code~~. **R322.3.5 Enclosed areas below design flood elevation.** Enclosed areas below the design flood elevation are not permitted ~~shall be used solely for parking of vehicles, building access or storage~~.***Alternative****: to allow areas enclosed with insect screening or lattice:***R322.3.5 Enclosed areas below design flood elevation.** Enclosed areas below the design flood elevation are permitted to be enclosed solely by insect screening or open wood lattice and shall be used solely for parking of vehicles, building access or storage. |

1. Reference: [*Reducing Flood Losses Through the International Codes: Coordinating Building Codes and Floodplain Management Regulations*](http://www.fema.gov/media-library/assets/documents/96634)(5th Edition, 2019), International Code Council and FEMA. [↑](#footnote-ref-1)