



City of Palo Alto

Public Works Engineering

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Is Your House in a Flood Zone?

If a structure proposed to be constructed or substantially improved is in a FEMA-designated Special Flood Hazard Area (SFHA), it is subject to the flood hazard regulations contained in Palo Alto Municipal Code Chapter 16.52. A description of the SFHA and the flood hazard regulations are outlined below. If you are proposing to construct a new or improved structure in the SFHA, it is important for you to contact the Public Works-Engineering Division, prior to commencing major design work on the project in order to determine how the flood zone regulations could impact your proposed development.

Flood Hazards in Palo Alto

The Federal Emergency Management Agency (FEMA) has identified two distinct types of flood hazards in Palo Alto, creek flooding and tidal flooding. Several areas of the City are subject to creek flooding, which is caused by the overtopping of local creeks in the event of the one percent flood. In addition, a large area on the eastern side of the city is subject to tidal flooding in the event of overtopping or failure of the Bayfront levees during the one percent high tide on San Francisco Bay. The areas of the City subject to these flood risks are mapped as Special Flood Hazard Areas (SFHA) on FEMA's Flood Insurance Rate Maps. Palo Alto residents can determine whether or not their property is located in a SFHA in one of the following ways:

- 1) Check the City's website at <https://opengis.cityofpaloalto.org/parcelreports/>
- 2) Email Public Works Engineering at pwcips@cityofpaloalto.org
- 3) Call Public Works Engineering at (650) 329-2295

Flood Hazard Regulations

The flood hazard regulations contained in Palo Alto Municipal Code (PAMC) Chapter 16.52 apply to the construction of new structures and "substantial improvement" of existing structures within a SFHA. Contact the Public Works-Engineering staff at the CPA Development Center for more information on these regulations. FEMA technical bulletins are also available there for design standards.

What is a "substantial improvement"?

The Public Works Engineering staff at the Development Center will determine whether or not a proposed modification to an existing structure constitutes a "substantial improvement". A "substantial improvement" is defined as any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the existing structure. The "market value" of an existing structure is determined by calculating its replacement cost and adjusting that replacement cost by a depreciation factor, based on the age and condition of the structure. The cost must exclude the value of the land, site improvements, detached structures, and any other costs not directly related to the structure being evaluated. Public Works staff determines the market value of existing residential structures using data from standard cost estimating guides and structure-specific information provided by permit applicants. In cases where an applicant believes that Public Works staff's market value determination is inaccurate, the applicant may provide a market value determination calculated by a licensed real estate appraiser. The appraiser must use the methodology described above for determining the market value of an existing structure.

What are the special building requirements contained in PAMC Chapter 16.52?

New construction and "substantial improvements" in the Special Flood Hazard Area (SFHA) must comply with the following requirements. The information provided is a brief summary of the City's flood zone regulations. For specific detailed requirements, please see the ordinance language contained in the referenced section of the Palo Alto Municipal Code.

- The lowest floor of residential structures must be built at a level at or above the Base Flood Elevation plus one foot* established on the Flood Insurance Rate Map. This requirement effectively prohibits the construction of basements as part of new structures in the SFHA. For substantial improvements, the floor elevation requirement extends to the entire structure, which means that existing floors must also be raised if they are below the minimum elevation, and basements have to be filled.
- Structures must be constructed with flood-resistant materials (such as concrete, steel, pressure-treated wood, etc.) below the Base Flood Elevation plus one foot*. Electrical, heating, ventilation, plumbing, and air conditioning equipment must be elevated above the BFE plus one foot* to prevent water from entering or accumulating within the components during flooding.
- The crawl space beneath a structure must be graded so that the elevation of the finished surface within the crawl space area is equal to or higher than the adjacent grade outside the building footprint on at least one side of the structure. If the crawl space grade is lower than the adjacent grade outside the building footprint on all four sides of the structure, then the crawl space is considered a basement, which is prohibited.
- Garage walls and building stem walls must be constructed with a number of openings sufficient for allowing the passage of flood waters and equalize hydrostatic pressure during flood events. At a minimum, there shall be openings (located on at least two sides of the structure) with a total net area of at least one square inch for every square foot of enclosed area subject to flooding. The bottom of the openings must be no higher than one foot above grade.
- Prior to final City approval of the structure, the elevation of the lowest floor shall be certified by a registered professional engineer or surveyor on a FEMA Elevation Certificate submitted to the Public Works Department.

* BFE plus one foot applies to AE and AH zones. For A zones the requirement is the Highest Adjacent Grade** plus three feet.

**Highest Adjacent Grade: The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

This publication is intended to be an informal means of informing the public about a City process. Although it is assumed the information provided is accurate, the sheet is not intended to create any sort of legal obligation on the City's part. The actual process is governed by City ordinances, regulations and procedures, and the reader should make specific inquiry to the City for specific cases.