

## **Chapter 21.07 FLOOD DAMAGE PROTECTION**

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### **21.07.010 Purpose.**

It is the purpose of this chapter to promote the public health, safety and general welfare, reduce the annual cost of flood insurance, and to minimize public and private losses due to flood conditions in specific areas by provisions designed:

- (1) To protect human life and health;
- (2) To minimize expenditure of public money and costly flood control projects;
- (3) To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- (4) To minimize prolonged business interruptions;
- (5) To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in areas of special flood hazard;
- (6) To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;
- (7) To ensure that potential buyers are notified that property is in an area of special flood hazard;  
and
- (8) To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions. (Ord. 2888 § 1, 2007; Ord. 2112 § 2, 1987).

### **21.07.020 Methods of reducing flood losses.**

In order to accomplish its purposes, this chapter includes methods and provisions for:

- (1) Restricting or prohibiting uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;

- (2) Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- (3) Controlling the alterations of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters;
- (4) Controlling filling, grading, dredging and other development which may increase flood damage; and
- (5) Preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters or may increase flood hazards in other areas. (Ord. 2888 § 1, 2007; Ord. 2112 § 2, 1987).

#### **21.07.030 Definitions.**

Unless specifically defined in this section, words or phrases used in this chapter shall be interpreted so as to give them the meaning they have in common usage and to give this chapter its most reasonable application:

- (1) "Appeal" means a request for a review of the interpretation of any provision of this chapter or a request for a variance.
- (2) "Area of shallow flooding" means a designated AO or AH zone on the flood insurance rate map (FIRM). AO zones have base flood depths that range from one to three feet above natural ground; a clearly defined channel does not exist; the path of flooding is unpredictable and indeterminate; and velocity flow may be evident. AO is characterized as sheet flow; AH indicates ponding, and is shown with standard base flood elevations.
- (3) "Area of special flood hazard" means the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year. Designation on maps always includes the letters A or V.
- (4) "Base flood" means the flood having a one percent chance of being equalled or exceeded in any given year (also referred to as the "100-year flood"). Designated on flood insurance rate maps by the letters A or V.
- (5) "Basement" means any area of a building having its floor sub-grade (below ground level) on all sides.
- (6) "Breakaway wall" means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces, without causing damage to the elevated portion of the building or supporting foundation system.

(7) "Compensatory flood storage" means any new, excavated flood storage volume equivalent to any flood storage capacity which has been or would be eliminated by filling or grading within the flood fringe.

(8) "Critical facility" means a facility for which even a slight chance of flooding might be too great. Critical facilities include, but are not limited to, schools, nursing homes, hospitals, police, fire and emergency response installations, and installations which produce, use, or store hazardous materials or hazardous waste.

(9) "Cumulative substantial damage" means flood-related damages sustained by a structure on two separate occasions during a 10-year period for which the cost of repairs at the time of each such flood event, on the average, equals or exceeds 25 percent of the market value of the structure before the damage occurred.

(10) "Development" means any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials located within the area of special flood hazard.

(11) "Elevated building" means (for insurance purposes) a nonbasement building that has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.

(12) "Elevation certificate" means the official form (FEMA Form 81-31) used to track development, provide elevation information necessary to ensure compliance with community floodplain management ordinances, and determine the proper flood insurance premium rate with Section B completed by the city building official.

(13) "Existing manufactured home park or subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the adopted floodplain management regulations.

(14) "Expansion to an existing manufactured home park or subdivision" means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

(15) "Freeboard" means a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. Freeboard tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size

flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization of the watershed.

(16) "Flood" or "flooding" means a general and temporary condition of partial or complete inundation of normally dry land areas from:

(a) The overflow of inland or tidal waters; and/or

(b) The unusual and rapid accumulation of runoff of surface waters from any source.

(17) "Flood insurance rate map (FIRM)" means the official map on which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

(18) "Flood insurance study (FIS)" means the official report provided by the Federal Insurance Administration that includes flood profiles, and flood boundary-floodway map, and the water surface elevation of the base flood.

(19) "Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

(20) "Increased cost of compliance (ICC)" means a flood insurance claim payment up to \$30,000 directly to a property owner to address the cost of complying with floodplain management regulations after a direct physical loss caused by a flood. Eligibility for an ICC claim can be through a single instance of substantial damage or as a result of cumulative substantial damage.

(21) "Lowest floor" means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area, is not considered a building's lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable nonelevation design requirements of this chapter found at PMC [21.07.060](#).

(22) "Manufactured home" means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. The term "manufactured home" does not include a recreational vehicle.

(23) "Manufactured home park or subdivision" means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

(24) "New construction" means structures for which the start of construction commenced on or after the effective date of the ordinance codified in this chapter.

(25) "New manufactured home park or subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of adopted floodplain management regulations.

(26) "Recreational vehicle" means a vehicle:

- (a) Built on a single chassis;
- (b) Four hundred square feet or less when measured at the largest horizontal projection;
- (c) Designed to be self-propelled or permanently towable by a light duty truck; and
- (d) Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

(27) "Start of construction" includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the state of excavation; or the placement of a manufactured home on a foundation. "Permanent construction" does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

(28) "Structure" means a walled and roofed building, including a gas or liquid storage tank that is principally aboveground.

(29) "Substantial damage" means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

(30) "Substantial improvement" means any repair, reconstruction or improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure either:

- (a) Before the improvement or repair is started; or

(b) If the structure has been damaged and is being restored, before the damage occurred. For the purposes of this definition, "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure;

(c) The term can exclude:

(i) Any project for improvement of a structure to correct pre-cited existing violations of state or local health, sanitary, or safety code specifications which have been previously identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions, or

(ii) Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.

(31) "Variance" means a grant of relief from the requirements of this chapter that permits construction in a manner that would otherwise be prohibited by this chapter.

(32) "Water dependent" means a structure for commerce or industry that cannot exist in any other location and is dependent on the water by reason of the intrinsic nature of its operations. (Ord. 2888 § 1, 2007; Ord. 2268 § 80, 1991; Ord. 2184 § 1, 1988; Ord. 2112 § 2, 1987).

#### **21.07.040 General provisions.**

(1) Lands to Which This Chapter Applies. This chapter shall apply to all areas of special flood hazards within the jurisdiction of the city.

(2) Basis for Establishing the Areas of Special Flood Hazard. The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for the City of Puyallup dated August 15, 1980," with accompanying flood insurance maps, and any revisions thereto, adopted by the city, is adopted by reference and declared to be a part of this chapter. The flood insurance study is on file at 330 3rd Street Southwest, Puyallup, Washington. A copy of this material is available for public review in the Development Services Department, 1100 39th Avenue Southeast, Puyallup, Washington.

(3) Penalties for Noncompliance. No structure or land shall hereafter be constructed, located, extended, converted or altered without full compliance with the terms of this chapter and other applicable regulations. Violations of the provisions of this chapter by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions) shall constitute a gross misdemeanor. Any person who violates this chapter or fails to comply with any of its requirements shall upon conviction thereof be fined not more than \$5,000 or imprisoned for not more than 365 days, or both, for each violation, and in addition shall pay all costs and expenses involved in the case. Nothing contained in this chapter shall prevent the city from taking such other lawful action as is necessary to prevent or remedy any violation.

(4) Abrogation and Greater Restrictions. This chapter is not intended to repeal, abrogate or impair any existing easements, covenants or deed restrictions. However, where this chapter and another ordinance, easement, covenant or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

(5) Interpretation. In the interpretation and application of this chapter, all provisions shall be:

- (a) Considered as minimum requirements;
- (b) Liberally construed in favor of the governing body; and
- (c) Deemed neither to limit nor repeal any other powers granted under state statutes.

(6) Warning and Disclaimer of Liability. The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by manmade or natural causes. This chapter does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This chapter shall not create liability on the part of the city, any officer or employee thereof, or the Federal Insurance Administration, for any flood damages that result from reliance on this chapter or any administrative decision lawfully made under this chapter. (Ord. 2888 § 1, 2007; Ord. 2112 § 2, 1987).

**21.07.050 Administration.**

(1) Establishment of Development Permit.

(a) Development Permit Required. A development permit shall be obtained before construction or development begins within any area of special flood hazard established in PMC [21.07.040\(2\)](#). The permit shall be for all structures, including manufactured homes, as set forth in PMC [21.07.030](#), and for all development, including fill and other activities also as set forth in PMC [21.07.030](#).

(b) Application for Development Permit. Application for a development permit shall be made on forms furnished by the city and may include, but not be limited to, plans in duplicate drawn to scale showing the nature, location, dimensions and elevations of the area in question; existing or proposed structure, fill, storage of materials, drainage facilities and the location of the foregoing. Specifically, the following information is required:

- (i) Elevation in relation to mean sea level of the lowest floor (including basement) of all structures recorded on a current elevation certificate (FF 81-31) with Section B completed by the city engineer;

(ii) Elevation in relation to mean sea level to which any structure has been floodproofed;

(iii) Certification by a registered professional engineer or architect that the floodproofing methods for any nonresidential structure meet the floodproofing criteria in PMC [21.07.060\(2\)\(b\)](#);

(iv) Description of the extent to which a watercourse will be altered or relocated as a result of proposed development.

(2) Designation of the City. The city is appointed to administer and implement the ordinance codified in this chapter by granting or denying development permit applications in accordance with its provisions.

(3) Duties and Responsibilities of the City. Duties of the city shall include, but not be limited to:

(a) Permit Review.

(i) Review all development permits within 28 calendar days of submittal to determine if the application is complete and shall follow the procedures set forth in PMC [20.11.006](#).

Upon acceptance of the application as complete, the city shall review the development permit to determine that the permit requirements of this chapter have been satisfied.

(ii) Review all development permits to determine that all necessary permits have been obtained from those federal, state or local governmental agencies from which prior approval is required.

(iii) Review all development permits to determine if the proposed development is located in the floodway. If located in the floodway, assure that the encroachment provisions of PMC [21.07.060\(3\)\(a\)](#) are met.

(b) Use of Other Base Flood Data. When base flood elevation data has not been provided (in A or V zones) in accordance with PMC [21.07.040\(2\)](#), Basis for Establishing the Areas of Special Flood Hazard, the city shall obtain, review and reasonably utilize any base flood elevation and floodway data available from the federal, state or other source, in order to administer PMC [21.07.060\(2\)](#), Specific Standards, and PMC [21.07.060\(3\)](#), Floodways.

(c) Information to be Obtained and Maintained.

(i) Where base flood elevation data is provided through the flood insurance study, flood insurance rate map, or required as in subsection (3)(b) of this section, obtain

and record the actual (as-built) elevation (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures, and whether or not the structure contains a basement.

(ii) For all new or substantially improved floodproofed nonresidential structures:

(A) Verify and record the actual elevation (in relation to mean sea level) to which the structure was floodproofed; and

(B) Maintain the floodproofing certification required in subsection (1)(b)(iii) of this section.

(iii) Maintain for public inspection all records pertaining to the provisions of this chapter.

(d) Alteration of Watercourses.

(i) Notify adjacent communities and the Department of Ecology prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance Administration.

(ii) Require that maintenance is provided within the altered or relocated portion of such watercourse so that the flood carrying capacity is not diminished.

(e) Interpretation of FIRM Boundaries. Make interpretations where needed, as to exact location of the boundaries of the areas of special flood hazards (for example, where there appears to be a conflict between a mapped boundary and actual field conditions). The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in subsection (4) of this section.

(4) Variance Procedure.

(a) Conditions for Variances.

(i) Generally, the only condition under which a variance from the elevation standard may be issued is for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, provided subsections (4)(b)(iv)(A) through (K) of this section have been fully considered. As the lot size increases, the technical justification required for issuing the variance increases.

(ii) Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places, without regard to the procedures set forth in this section.

(iii) Variances shall not be issued within a designated floodway if any increase in flood levels during the base flood discharge would result.

(iv) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

(v) Variances shall only be issued upon:

(A) A showing of good and sufficient cause;

(B) A determination that failure to grant the variance would result in exceptional hardship to the applicant;

(C) A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public as identified in subsection (4)(b)(iv) of this section, or conflict with existing local laws or ordinances.

(vi) Variances as interpreted in the National Flood Insurance Program are based on the general zoning law principle that they pertain to a physical piece of property; they are not personal in nature and do not pertain to the structure, its inhabitants, economic or financial circumstances. They primarily address small lots in densely populated residential neighborhoods. As such, variances from the following elevations should be quite rare.

(vii) Variances may be issued for nonresidential buildings in very limited circumstances to allow a lesser degree of floodproofing than watertight or dry-floodproofing, where it can be determined that such action will have low damage potential, complies with all other variance criteria except subsection (4)(a)(iv) of this section, and otherwise complies with PMC [21.07.060](#)(1)(a) and (2) of the general standards.

(viii) Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with a lower floor elevation below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.

(b) Appeals.

(i) The hearing examiner shall hear and decide appeals and requests for variances from the requirements of this chapter.

(ii) The hearing examiner shall hear and decide appeals when it is alleged that an error in any requirement, decision or determination is made by the engineering department in the enforcement or administration of this chapter.

(iii) A party of record aggrieved by the decision of the hearing examiner may appeal such decision to the superior court, as provided in RCW 35A.63.110.

(iv) In passing upon such applications, the hearing examiner shall consider all technical evaluations, all relevant factors, standards specified in other sections of this chapter, and:

(A) The danger that materials may be swept onto other lands to the injury of others;

(B) The danger to life and property due to flooding or erosion damage;

(C) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;

(D) The importance of the services provided by the proposed facility to the community;

(E) The necessity to the facility of a waterfront location, where applicable;

(F) The availability of alternative locations for the proposed use which are not subject to flooding or erosion damage;

(G) The compatibility of the proposed use with existing and anticipated development;

(H) The relationship of the proposed use to the comprehensive plan and floodplain management program for that area;

(I) The safety of access to the property in times of flood for ordinary and emergency vehicles;

(J) The expected heights, velocity, duration, rate of rise and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site; and

(K) The costs of providing environmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, and streets and bridges.

(v) Upon consideration of the factors of subsection (4)(b)(iv) of this section, and the purposes of this chapter, the hearing examiner may attach such conditions to the granting of variances as he/she deems necessary to further the purposes of this chapter.

(vi) The city shall maintain the records of all appeal actions and report any variances to the Federal Insurance Administration upon request.

(vii) Before the hearing examiner may grant, amend or deny any application for a variance, the hearing examiner shall conduct a duly noticed public hearing pursuant to Chapter [20.12](#) PMC. Within 10 business days of the conclusion of said hearing, the hearing examiner shall render a written decision supported by findings and conclusions granting, amending, or denying said variance application in accordance with the provisions of this chapter.

(viii) Expiration, extension of time, cancellation of a variance, revocation of a variance, and posting of performance bonds shall be processed pursuant to the procedures established in PMC [20.85.025](#), [20.85.030](#), [20.85.035](#), [20.85.040](#), and [20.85.045](#), respectively. (Ord. 2888 § 1, 2007; Ord. 2479 § 1, 1996; Ord. 2268 § 81, 1991; Ord. 2112 § 2, 1987).

**21.07.060 Provisions for flood hazard reduction.**

(1) General Standards. In all areas of special flood hazards, the following standards are required:

(a) Anchoring.

(i) All new construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure.

(ii) All manufactured homes must likewise be anchored to prevent flotation, collapse or lateral movement, and shall be installed using methods and practices that minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors (reference FEMA's "Manufactured Home Installation in Flood Hazard Areas" guidebook for additional techniques).

(b) Construction Materials and Methods.

(i) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

(ii) All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

(iii) Electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

(c) Utilities.

(i) All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system;

(ii) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters;

(iii) On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding; and

(iv) Water wells shall be located on high ground that is not in the floodway.

(d) Subdivision Proposals.

(i) All subdivision proposals shall be consistent with the need to minimize flood damage;

(ii) All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

(iii) All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage; and

(iv) Where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for subdivision proposals and other proposed developments which contain at least 50 lots or five acres (whichever is less).

(e) Review of Building Permits. Where elevation data is not available either through the flood insurance study, flood insurance rate maps, or from another authoritative source, applications for building permits shall be reviewed to assure that proposed construction will be reasonably safe from flooding. The test of reasonableness is a city judgment and includes use of historical data, high water marks, photographs of past flooding, etc., where available. Failure to elevate at least two feet above grade in these zones may result in higher insurance rates.

(2) Specific Standards. In all areas of special flood hazards where base flood elevation data has been provided as set forth in PMC [21.07.040](#)(2), Basis for Establishing the Areas of Special Flood Hazard, or PMC [21.07.050](#)(3)(b), Use of Other Base Flood Data. Additional standards, with varying impacts on flood insurance premium rates, are provided in FEMA Technical Bulletin 11-01. The following provisions are required:

(a) Residential Construction.

(i) New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated to a minimum of one foot or more above base flood elevation. Addition of additional freeboard increases safety and can reduce insurance premiums.

(ii) Fully enclosed areas below the lowest floor that are subject to flooding are prohibited, or shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

(A) A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided;

(B) The bottom of all openings shall be no higher than one foot above grade;

(C) Openings may be equipped with screens, louvers or other coverings or devices; provided, that they permit the automatic entry and exit of floodwaters;

(D) Additional requirements for below-grade crawlspaces:

1. The interior grade of a crawlspace below the base flood elevation (BFE) must not be more than two feet below the lowest adjacent exterior grade (LAG) shown as "D" in Figure 1.

2. The height of the below-grade crawlspace, measured from the interior grade of the crawlspace to the top of the crawlspace foundation wall, must not exceed four feet (shown as "L" in Figure 1) at any point. The height limitation is the maximum allowable unsupported wall height according to the engineering analyses and building code requirements for flood hazard areas. This limitation will also prevent these crawlspaces from being converted into habitable spaces.

3. There must be an adequate drainage system that removes floodwaters from the interior area of the crawlspace. The enclosed area should be drained within

a reasonable time after a flood event. The type of drainage system will vary because of the site gradient and other drainage characteristics, such as soil types. Possible options include natural drainage through porous, well-drained soils and drainage systems such as perforated pipes, drainage tiles, or gravel or crushed stone drainage by gravity or mechanical means.

4. The velocity of floodwaters at the site should not exceed five feet per second for any crawlspace. For velocities in excess of five feet per second, other foundations should be used.

5. Any building utility systems within the crawlspace must be elevated above BFE or designed so that floodwaters cannot enter or accumulate within the system components during flood conditions. Ductwork, in particular, must either be placed above the BFE or sealed from floodwaters.

6. Below-grade crawlspace construction in accordance with the requirements listed above will not be considered basements.

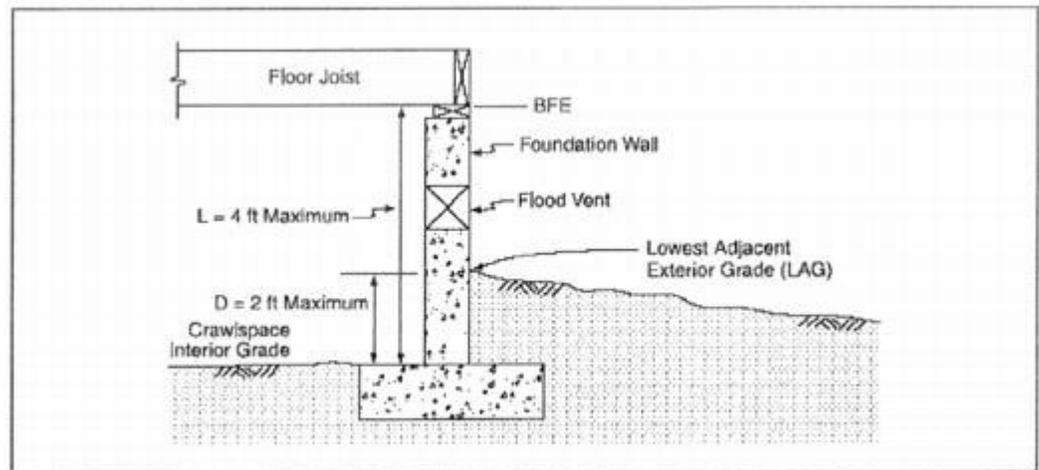


Figure 1 Requirements regarding below-grade crawlspace construction

(b) Nonresidential Construction. New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor, including basement, elevated to a level of a minimum of one foot or more above base flood elevation; or together with attendant utility and sanitary facilities, shall:

- (i) Be floodproofed so that below one foot above the regulatory flood level the structure is watertight with walls substantially impermeable to the passage of water;
- (ii) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;

(iii) Be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this subsection based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the official as set forth in PMC [21.07.050](#)(3)(c)(ii);

(iv) Nonresidential structures that are elevated, not floodproofed, must meet the same standards for space below the lowest floor as described in subsection (2)(a)(ii) of this section;

(v) Applicants floodproofing nonresidential buildings shall be notified that flood insurance premiums will be based on rates that are one foot below the floodproofed level (e.g., a building constructed to the base flood level will be rated as one foot below that level). Floodproofing the building an additional foot will reduce insurance premiums significantly.

(c) Critical Facility. Construction of new facilities shall be, to the extent possible, located outside the limits of the base floodplain (shown as Special Flood Hazard Areas, SFHA, on floodplain maps). Construction of new critical facilities shall be permissible within the base floodplain if no feasible alternative site is available. Critical facilities constructed within the base floodplain shall have the lowest floor elevated to three feet or more above the level of the base flood elevation at the site or to the height of the 500-year flood, whichever is higher. Access to and from the critical facility should also be protected to the height utilized above. Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters. Access routes elevated to or above the level of the base floodplain shall be provided to all critical facilities to the extent possible.

(d) Manufactured Homes. All manufactured homes to be placed or substantially improved in the floodplain within zones A1 – 30, AH, and AE on the community's FIRM shall be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated one foot or more above the base flood elevation and be securely anchored to an adequately anchored foundation system in accordance with the provisions of subsection (1)(a)(ii) of this section.

(i) Applicants floodproofing manufactured homes shall be notified that flood insurance premiums will be based on rates that are one foot below the floodproofed level (e.g., a building constructed to the base flood level will be rated as one foot below that level). Floodproofing the structure an additional foot will reduce insurance premiums significantly.

(e) Recreational Vehicles. Recreational vehicles placed on sites within AO zones are required to either:

- (i) Be on the site for fewer than 180 consecutive days; or
- (ii) Be fully licensed and ready for highway use, on wheels or jacking system, attached to the site only by quick disconnect type utilities and security devices, and have no permanently attached additions; or
- (iii) Meet the requirements of subsection (2)(d) of this section and the elevation and anchoring requirements for manufactured homes (subsection (2)(d) of this section).

(3) Floodways. Located within areas of special flood hazard established in PMC [21.07.040\(2\)](#) are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of floodwaters that can carry debris and increase erosion potential, the following provisions apply:

(a) Prohibit encroachments, including fill, new construction, substantial improvements, and other development unless certification by a registered professional engineer is provided demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment shall not result in any increase in flood levels during the occurrence of the base flood discharge.

(b) If subsection (3)(a) of this section is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of this section.

(c) Construction or reconstruction of residential structures is prohibited within designated floodways, except for:

- (i) Repairs, reconstruction, or improvements to a structure which do not increase the ground floor area; and
- (ii) Repairs, reconstruction or improvements to a structure, the cost of which does not exceed 50 percent of the market value of the structure either:
  - (A) Before the repair, reconstruction, or repair is started, or
  - (B) If the structure has been damaged, and is being restored, before the damage occurred;
- (iii) Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe

living conditions, or to structures identified as historic places, may be excluded in the 50 percent;

(iv) If subsections (3)(a) and (b) of this section are satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of this section.

(d) Wetlands Management. To the maximum extent possible, avoid the short and long-term adverse impacts associated with the destruction or modification of wetlands, especially those activities that limit or disrupt the ability of the wetland to alleviate flooding impacts. The following process should be implemented:

(i) Review proposals for development within base floodplains for their possible impacts on wetlands located within the floodplain.

(ii) Ensure that development activities in or around wetlands do not negatively affect public safety, health, and welfare by disrupting the wetlands' ability to reduce flood and storm drainage.

(iii) Request technical assistance from the Department of Ecology in identifying wetland areas. Existing wetland map information from the National Wetlands Inventory (NWI) can be used in conjunction with the community's FIRM to prepare an overlay zone indicating critical wetland areas deserving special attention.

(4) AE and A1 – 30 Zones with Base Flood Elevations But No Floodways. In areas with base flood elevations (but a regulatory floodway has not been designated), no new construction, substantial improvements, or other development (including fill) shall be permitted within zones A1 – 30 and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

(5) Standards for Shallow Flooding Areas (AO Zones). Shallow flooding areas appear on FIRMs as AO zones with depth designations. The base flood depths in these zones range from one to three feet where a clearly defined channel does not exist, or where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is usually characterized as sheet flow. In these areas, the following provisions apply:

(a) New construction and substantial improvements of residential structures within AO zones shall have the lowest floor (including basement) elevated above the highest adjacent grade of the structure, one foot or more above (as recorded on a current elevation certificate, FF 81-31, with Section E completed) the depth number specified in feet on the

community's FIRM (at least two feet above the highest adjacent grade to the structure if no depth number is specified).

(b) New construction and substantial improvements of nonresidential structures within AO zones shall either:

(i) Have the lowest floor (including basement) elevated above the grade of the building site, one foot or more above the depth number specified on the FIRM (at least two feet if no depth number is specified); or

(ii) Together with attendant utility and sanitary facilities, be completely floodproofed to or above that level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effect of buoyancy. If this method is used, compliance shall be certified by a registered professional engineer or architect as in subsection (2)(b)(iii) of this section.

(c) Require adequate drainage paths around structures on slopes to guide floodwaters around and away from proposed structures.

(d) The building site shall be filled to an elevation at least one foot above the crown of the public street which provides access for at least 15 feet beyond the perimeter of the structure. The engineering department may require a greater depth of fill if it has reason to believe such a fill is necessary. The engineering department shall make a determination whether the crown of the existing street is at finished elevation. If the street is not at finished elevation, the engineering department shall require that the finished elevation of the street be determined by a professional engineer.

(i) Where hazardous velocities were noted on the FIRM, measures mitigating the effects of these velocities through proper construction techniques and methods shall be undertaken. The engineering department may require that a professional engineer prepare the mitigating measures.

(e) Require adequate drainage paths around structures on slopes to guide floodwaters around and away from proposed structures. (Ord. 2888 § 1, 2007; Ord. 2224 § 1, 1990; Ord. 2184 § 2, 1988; Ord. 2112 § 2, 1987).

#### **21.07.070 Compliance with Department of Ecology Standards.**

All building and development in the Puyallup River Flood Control Zone No. 1 within the city corporate limits shall comply with Chapter 86.16 RCW and Chapter 508-60 WAC. (Ord. 2888 § 1, 2007; Ord. 2112 § 2, 1987).