

Sec. 601.075. - Specific standards for riverine (including all non-coastal) flood zones.

These specific standards shall apply to all new construction and substantial improvements in addition to the General Standards contained in SRC 601.070(a).

- (a) *Enclosed areas and flood openings.* All new construction and substantial improvements with fully enclosed areas below the lowest floor (excluding basements) are subject to the following requirements:
 - (1) Enclosed areas below the Base Flood Elevation, including crawl spaces shall:
 - (A) Be designed to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters;
 - (B) Be used solely for parking, storage, or building access; and
 - (C) Be certified by a registered professional engineer or architect or meet or exceed all the following minimum criteria:
 - (i) A minimum of two openings;
 - (ii) The total net area of non-engineered openings shall be not less than one square inch for each square foot of enclosed area, where the enclosed area is measured on the exterior of the enclosure walls;
 - (iii) The bottom of all openings shall be no higher than one foot above grade.
 - (iv) Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they shall allow the automatic flow of floodwater into and out of the enclosed areas and shall be accounted for in the determination of the net open area; and
 - (v) All additional higher standards for flood openings in the State of Oregon Residential Specialty Codes Section R322.2.2 shall be complied with when applicable.
 - (2) Enclosed areas below the Base Flood Elevation shall be limited only to crawl spaces or below-grade crawl spaces.
- (b) *Garages.*
 - (1) Attached garages shall be constructed with the garage floor slab no less than one foot above the Base Flood Elevation (BFE) in riverine flood zones.
 - (2) Detached garages must be constructed in compliance with the standards for appurtenant structures in SRC 601.075(c)(6) or non-residential structures in SRC 601.075(c)(3) depending on the square footage of the garage.
- (c) *Riverine (non-coastal) SFHAs with base flood elevations.* In addition to the general standards listed in SRC 601.070(a) the following specific standards shall apply in SFHAs with Base Flood Elevations (BFE): Zones A1-A30, AH, and AE.
 - (1) *Before regulatory floodway.* In areas where a regulatory floodway has not been designated, no new construction, substantial improvement, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's Flood Insurance Rate Map (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.
 - (2) *Residential construction.*

- (A) New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated no less than one foot above the base flood elevation.
 - (B) Enclosed areas below the lowest floor shall comply with the flood opening requirements in SRC 601.075(a).
- (3) *Non-residential construction.*
- (A) New construction and substantial improvement of any commercial, industrial, or other non-residential structure shall:
 - (i) Have the lowest floor, including basement elevated no less than one foot above the base flood elevation; or, together with attendant utility and sanitary facilities;
 - (ii) ~~Be floodproofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water; Be completely floodproofed to one foot above the base flood elevation, 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 effects of buoyancy. If this method is used, compliance shall be certified by a registered professional engineer or architect as stated in SRC 601.075(c)(3)(A)(iv).~~
 - (iii) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and
 - (iv) 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 section based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the Floodplain Administrator as set forth in SRC 601.040(b).
 - (B) Non-residential structures that are elevated, not floodproofed, shall comply with the standards for enclosed areas below the lowest floor in SRC 601.075(a).
 - (C) Applicants floodproofing non-residential buildings shall be notified that flood insurance premiums will be based on rates that are one (1) foot below the floodproofed level (e.g., a building floodproofed to one (1) foot above the base flood level will be rated at the base flood level).~~as one (1) foot below~~.
- (4) *Manufactured dwellings.*
- (A) New or substantially improved manufactured dwellings supported on solid foundation walls shall be constructed with flood openings that comply with SRC 601.075(a);
 - (B) The bottom of the longitudinal chassis frame beam shall be no less than one foot above the base flood elevation;
 - (C) New or substantially improved manufactured dwellings shall be anchored to prevent flotation, collapse, and lateral movement during the base flood. 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); and
 - (D) Electrical crossover connections shall be a minimum of 12 inches above Base Flood Elevation (BFE).
- (5) *Recreational vehicles.*
- (A) Recreational vehicles placed on sites are required to:
 - (i) Be on the site for fewer than 180 consecutive days;

- (ii) Be fully licensed and ready for highway use, on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions; or
 - (iii) Meet the requirements of SRC 601.075(c)(4), including the anchoring and elevation requirements for manufactured dwellings.
- (6) *Appurtenant structures.* Relief from elevation or floodproofing requirements for residential and non-residential structures in riverine (Non-Coastal) flood zones may be granted for appurtenant structures that meet the following requirements:
 - (A) Appurtenant structures located partially or entirely within the floodway must comply with requirements for development within a floodway found in SRC 601.075(d);
 - (B) Appurtenant structures shall be only used for parking, access, and/or storage of low value and nonhazardous items and shall not be used for human habitation;
 - (C) In compliance with State of Oregon Specialty Codes, appurtenant structures on properties that are zoned residential are limited to one-story structures less than 200 square feet, or 400 square feet if the property is greater than two acres in area and the proposed appurtenant structure will be located a minimum of 20 feet from all property lines. Appurtenant structures on properties that are zoned as non-residential are limited in size to 120 square feet;
 - (D) The portions of the appurtenant structure located below the Base Flood Elevation must be built using flood resistant materials;
 - (E) The appurtenant structure must be adequately anchored to prevent flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the base flood;
 - (F) The appurtenant structure must be designed and constructed to equalize hydrostatic flood forces on exterior walls and comply with the requirements for flood openings in SRC 601.075(a);
 - (G) Appurtenant structures shall be located and constructed to have low damage potential;
 - (H) Appurtenant structures shall not be used to store toxic material, oil, or gasoline, or any priority persistent pollutant identified by the Oregon Department of Environmental Quality unless confined in a tank installed in compliance with SRC 601.070(a)(6);
 - (I) Appurtenant structures shall be constructed with electrical, mechanical, and other service facilities located and installed to prevent water from entering or accumulating within the components during conditions of the base flood.
- (7) *Below-grade crawl spaces.*
 - (A) The building must be designed and adequately anchored to resist flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy. Hydrostatic loads and the effects of buoyancy can usually be addressed through the required flood openings stated in SRC 601.075(a). Because of hydrodynamic loads, crawlspace construction is not allowed in areas with flood velocities greater than five feet per second unless the design is reviewed by a qualified design professional, such as a registered architect or professional engineer. Other types of foundations are recommended for these areas.
 - (B) The crawlspace is an enclosed area below the Base Flood Elevation (BFE) and, as such, must have openings that equalize hydrostatic pressures by allowing the automatic entry and exit of floodwaters. The bottom of each flood vent opening can be no more than one foot above the lowest adjacent exterior grade.

- (C) Portions of the building below the BFE must be constructed with materials resistant to flood damage. This includes not only the foundation walls of the crawlspace used to elevate the building, but also any joists, insulation, or other materials that extend below the BFE. The recommended construction practice is to elevate the bottom of joists and all insulation above BFE.
 - (D) 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.
 - (E) The interior grade of a crawlspace below the BFE must not be more than two feet below the lowest adjacent exterior grade.
 - (F) 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 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.
 - (G) 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.
 - (H) The velocity of floodwaters at the site shall not exceed five feet per second for any crawlspace. For velocities in excess of five feet per second, other foundation types should be used.
- (d) *Floodways.* Located within the SFHAs established in SRC 601.030(a) are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of the floodwaters which carry debris, potential projectiles, and erosion potential, the following provisions apply:
- (1) Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless:
 - (A) Certification by a registered professional civil 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 within the community during the occurrence of the base flood discharge; or,
 - (B) A community may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided that a Conditional Letter of Map Revision (CLOMR) is applied for and approved by the Federal Insurance Administrator, and the requirements for such revision as established under Volume 44 of the Code of Federal Regulations, section 65.12 are fulfilled.
 - (C) If an encroachment proposal within the adopted regulatory floodway would result in an increase in base flood elevations, the Director may permit the encroachment without a CLOMR only if the encroachment proposal meets the following criteria:
 - (i) Is for the purpose of fish enhancement;
 - (ii) Does not involve the placement of any structures (as defined in SRC 601.005) within the floodway;

- (iii) Has a feasibility analysis completed documenting that fish enhancement will be achieved through the proposed project;
 - (iv) Has a maintenance plan in place to ensure that the stream carrying capacity is not impacted by the fish enhancement project;
 - (v) Has approval by the National Marine Fisheries Service, the State of Oregon Department of Fish and Wildlife, or the equivalent federal or state agency; and
 - (vi) Has evidence to support that no existing structures will be negatively impacted by the proposed activity.
- (D) For encroachments permitted without a CLOMR, as allowed under the provisions of SRC 601.075(d)(1)(C), written notice of the Director's permit decision shall be mailed to the applicant, the applicable neighborhood associations, watershed council, and land owners along the immediately affected stream corridor within 1,500 feet of the project site. The permit shall issue 15 days after the date of mailing of decision, unless appealed as provided in this section. Within 15 days of the mailing of the Director's decision, any person may file a written notice of appeal to the Council, with the fee established by resolution of the Council, specifying the manner in which the Director erred. Upon such appeal, the Council shall conduct a de novo hearing and make a final determination. No permit shall be effective pending Council's determination.
- (2) If the requirements of SRC 601.075(d)(1) are satisfied, all new construction, substantial improvements, and other development shall comply with all other applicable flood hazard reduction provisions of SRC 601.070.
- (e) *Standards for shallow flooding areas.* Shallow flooding areas appear on FIRMs as AO zones with depth designations or as AH zones with Base Flood Elevations. For AO zones the base flood depths range from one to three feet above ground 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. For both AO and AH zones, adequate drainage paths are required around structures on slopes to guide floodwaters around and away from proposed structures.
 - (1) Standards for AH zones. Development within AH Zones must comply with the standards in SRC 601.070(a), SRC 601.075, and SRC 601.075(e).
 - (2) Standards for AO zones. In AO zones, the following provisions apply in addition to the requirements in SRC 601.070(a) and SRC 601.075(e)
 - (A) New construction and substantial improvement of residential structures and manufactured dwellings within AO zones shall have the lowest floor, including basement, elevated above the highest grade adjacent to the building, at minimum to one foot above the depth number specified on the Flood Insurance Rate Maps (FIRM) (at least two feet if no depth number is specified). For manufactured dwellings the lowest floor is the bottom of the longitudinal chassis frame beam.
 - (B) New construction and substantial improvements of non-residential structures within AO zones shall either:
 - (i) Have the lowest floor (including basement) elevated above the highest adjacent grade of the building site, at minimum to one foot above the depth number specified on the Flood Insurance Rate Maps (FIRM) or a minimum of at least three feet above the highest adjacent grade if no depth number is specified); or
 - (ii) Together with attendant utility and sanitary facilities, be completely floodproofed to one foot above the depth number specified on the FIRM or a minimum of three feet above the highest adjacent grade if no depth number is specified, 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 effects of buoyancy. If this

method is used, compliance shall be certified by a registered professional engineer or architect as stated in SRC 601.075(c)(3)(A)(iv).

- (C) Recreational vehicles placed on sites within AO zones on the community's Flood Insurance Rate Maps (FIRM) shall either:
 - (i) Be on the site for fewer than 180 consecutive days; and
 - (ii) Be fully licensed and ready for highway use, on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and have no permanently attached additions; or
 - (iii) Meet the elevation requirements of SRC 601.075(e)(2)(A), and the anchoring and other requirements for manufactured dwellings of SRC 601.075(c)(4).
- (D) In AO zones, new and substantially improved appurtenant structures must comply with the standards in SRC 601.075(c)(6).
- (E) In AO zones, enclosed areas beneath elevated structures shall comply with the requirements in SRC 601.075(a).