

## **CHAPTER 4.5 FLOOD CONTROL AND DRAINAGEWAY PROVISIONS**

### **Section 4.5.10 - PURPOSES**

The flood control and drainageway provisions in this chapter are intended to reduce flood damage and loss of life in areas subject to periodic flooding. They are also intended to protect open, natural streams and drainageways as an integral part of the City environment and to maintain both hydrological and biological functions of an open drainageway system in accordance with the Corvallis Drainage Master Plan.

An open drainageway system is necessary to manage stormwater drainage, minimize maintenance costs, protect properties adjacent to drainageways, improve water quality, protect riparian plant and fish and wildlife habitats, and provide opportunities for trail linkages.

### **Section 4.5.20 - APPLICABILITY**

These provisions apply to areas in the 100-year flood plain as identified by the Federal Emergency Management Agency (FEMA) and/or the Corvallis Drainage Master Plan, and to other natural drainageways and properties adjoining natural drainage areas that collect stormwater.

### **Section 4.5.30 - GREATER RESTRICTIONS**

This chapter of the Code is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this chapter and any other ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

### **Section 4.5.40 - 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 human-made 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 of Corvallis, any officer or employee thereof, or the Federal Insurance Administration, for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

### **Section 4.5.50 - PROCEDURES**

Compliance of development applications with the provisions of this chapter shall be determined through the development review processes identified in section 1.2.110 of Chapter 1.2 - Legal Framework or the building permit review process. Applications for

building permits or other permits for structures and other development activities located in the flood plain or adjoining a natural drainage area shall be submitted and reviewed to ensure sites are reasonably safe from flooding before any permits are issued or before improvements, construction, or development begins.

#### **4.5.50.01 - Application Requirements**

Applications for development in the flood plain or in an adjoining natural drainage area shall contain the following information:

- a. A description of the extent to which any watercourse will be altered or affected as a result of proposed development;
- b. The elevation in relation to the National Geodetic Vertical Datum (NGVD) of the lowest floor (including basement) of all new structures; and
- c. The elevation in relation to the NGVD to which any existing structure has been or is proposed to be flood proofed and certification by a registered professional engineer ensuring that the flood proofing methods for any nonresidential structure meet the flood proofing criteria in section 4.5.60.03 below.

Applications shall be reviewed to determine that all necessary permits have been obtained from those Federal, State, or local governmental agencies from which prior approval is required.

#### **4.5.50.02 - City Responsibility**

It shall be the City's responsibility to record and maintain as a public record the elevation and flood proofing information for new construction and substantial improvements, along with related information as required for submittal by this chapter of the Code.

#### **4.5.50.03 - Interpretation of Flood Insurance Rate Map Boundaries**

When a boundary on the Flood Insurance Rate Map appears to conflict with actual field conditions, the City Engineer shall interpret the exact location of the boundaries of the flood plain. Where FEMA base flood elevation information is unavailable for flood hazard areas, the City Engineer shall use other available data to apply standards in the floodway fringe and floodway.

### **Section 4.5.60 - STANDARDS IN THE FLOODWAY FRINGE**

Development within the floodway fringe (zones A, AH, A1-A30, AE, and AO on the Flood Insurance Rate Map), including residential and nonresidential structures and the public and private facilities serving these structures, shall be constructed to minimize flood damage. Electrical, heating, ventilation, plumbing, air-conditioning equipment, and other service

facilities shall be designed and/or otherwise elevated or located to prevent water from entering or accumulating within the components during flood conditions.

The following standards are required in the floodway fringe.

#### **4.5.60.01 - Anchoring**

- a. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.
- b. All manufactured dwellings shall 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 as approved by the Building Official.

#### **4.5.60.02 - Residential Construction**

New construction and substantial improvement (as defined in Chapter 1.6 - Definitions) of any residential structure, including mobile and manufactured homes, shall have the finished grade of any nonhabitable space at or above the base flood elevation. The lowest floor, including basement, of any habitable space shall be elevated to a minimum of 1 ft. above base flood elevation.

Accessory structures and fully enclosed nonhabitable areas below the lowest floor are prohibited unless designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of flood waters. Designs for meeting this requirement shall follow the standards outlined in Chapter 31, Division I of the Structural Specialty Code, and shall meet or exceed the following minimum criteria:

- a. A minimum of two openings having a total net area of not less than 1 sq. in. for every sq. ft. of enclosed area subject to flooding shall be provided;
- b. The bottom of all openings shall be no higher than 1 ft. above grade; and
- c. Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of flood waters.

#### **4.5.60.03 - Nonresidential Construction**

New construction and substantial improvement of any commercial, industrial, or other nonresidential structure shall have either the finished grade of any nonhabitable space at or above the base flood elevation and the lowest floor, including basement, of any habitable space elevated 1 ft. above the level of the base flood elevation, or:

- a. Be flood proofed so that the structure is watertight 1 ft. above the base flood level;
- b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and
- c. Be certified by a registered professional engineer or architect to ensure 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.

Designs for meeting these requirements shall follow the standards outlined in Chapter 31, Division I, of the Structural Specialty Code.

Nonresidential structures that are elevated but not flood proofed must meet the same standards for space below the lowest floor as described in section 4.5.60.02 above.

Applicants proposing to flood proof nonresidential buildings shall be notified that the flood insurance premiums are based on rates for structures with a lowest floor that is 1 ft. below the flood-protected level.

#### **Section 4.5.70 - STANDARDS IN THE FLOODWAYS**

New construction, substantial improvements, and encroachments are prohibited within the 0.2-ft.-rise floodway. The floodway is the portion of the flood plain where high volumes of moving water flow through streams or drainageways as determined by the most recent data. Nonstructural development, such as parking lots, may be permitted within the floodway when certification by a registered professional engineer is provided to the satisfaction of the City Engineer showing that encroachments will not result in any increase in flood levels and/or flood hazards during a base flood event as defined in Chapter 1.6 - Definitions.

#### **Section 4.5.80 - DRAINAGEWAY DEDICATIONS**

Because development either increases the amount of surface water runoff or decreases the time to peak flow destined for the drainageway, any new development, expansion, or redevelopment proposed on land adjoining an open, natural drainageway shall require either dedication or granting of an easement of lands suitable for conveying stormwater and maintaining and operating an effective open drainageway system.

The dedication or easement is intended to satisfy the purposes cited in section 4.5.10 above and shall be reviewed and approved by the City Engineer.

- a. **Dedication** - A drainageway dedication shall be required when:

1. A parcel of land is divided into two or more parcels, whether by land partition or subdivision;
2. A permitted development of any kind (building, parking lot, etc.) is proposed on a vacant parcel of any size;
3. A Detailed Development Plan is proposed in accordance with Chapter 2.5 - Planned Development for a parcel, regardless of whether structures exist;
4. A Special or Administrative Development is proposed for a vacant parcel of any size; or
5. Development is proposed on a partially developed parcel, and the proposed new development constitutes an increase of 50 percent or more in impervious coverage of the parcel. The effects of new development shall be cumulative from the date of adoption of this Code, and when the net effect of one or more changes results in an increase of 50 percent or more in impervious cover of the parcel, a dedication shall be required.

**b. Easement** - A drainageway easement shall be required with further development of any partially or fully developed parcel, when no items listed in "a" above apply. The easement shall contain sufficient restrictions on the use of the area to satisfy the purposes cited in section 4.5.10 above. Restrictions shall apply to structural improvements, regrading, or decrease in vegetative cover.

**c.** When a dedication or an easement is required, the following width shall be provided.

1. The dedication or easement area shall include the drainage channel plus additional width as determined by the following formula:

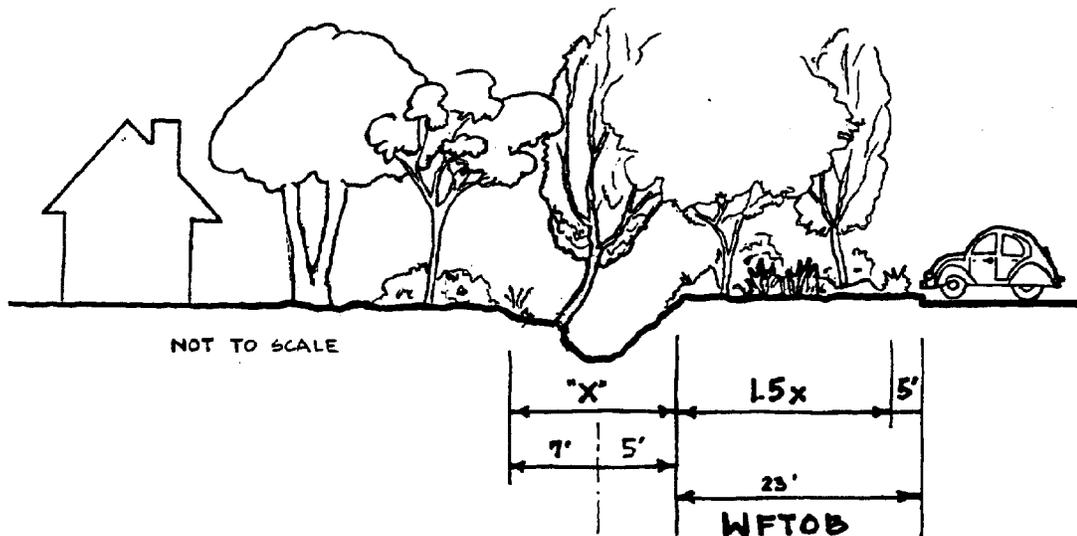
$$\text{WFTOB} = 1.5x + 5 \text{ ft.}$$

*where:*

**WFTOB** = **Width From Top Of Bank** (i.e., the width of the dedicated or easement area needed on each side of a drainageway channel).

**x** = Width of channel from top of bank to top of bank as determined by the City Engineer, or 30 ft., whichever is less.

**Note:** In the formula (1.5x + 5 ft.), the +5 ft. can be waived when the City Engineer finds that there is minimal risk that impervious cover, compaction, or trenching activities will occur in this 5-ft. area.



2. In some situations, the width of the protected drainageway needs to be wider than specified in "1" above, due to the natural sloughing and realigning of the stream that is anticipated when channel side slopes are greater than 2:1 (27 degrees from horizontal). In situations where the channel's side slopes are greater than 2:1, the protected drainage area shall be the channel width plus additional width as determined by the following formula:

$$\text{WFTOB} = 1.5x * 1.6 + 5 \text{ ft.}$$

3. If the 0.2-ft.-rise floodway boundary (as determined by maps on file with the City Engineer) extends beyond the required width as specified above, additional dedication or easement widths shall be provided as needed to encompass the floodway.
4. If the federally designated 100-year flood plain (as determined by maps on file with the City Engineer) extends beyond the required width as specified above, additional dedication or easement widths shall be provided for flood management or to preserve riparian areas. Such dedications or easements shall not exceed 50 ft. as measured from the top of the bank.
5. The City Engineer may reduce the required dedication or easement width under the following circumstances:
  - (a) Where the requirements as specified above conflict with development that is already constructed and is a permitted use in the zone; or
  - (b) Where the requirements as specified above would result in a parcel that cannot be developed under the standards of the applicable zone.