

CHAPTER 4.14 LANDSLIDE HAZARD AND HILLSIDE DEVELOPMENT PROVISIONS

Section 4.14.10 - PURPOSES - LANDSLIDE HAZARD AND HILLSIDE DEVELOPMENT PROVISIONS

Without establishing any priority, the purposes of this Chapter are intended to:

- a.** Protect human life, health, and property;
- b.** Reduce damage and loss of life from the Natural Hazards of steep slopes, landslide risk areas, and landslide-related risk areas;
- c.** Implement the landslide hazard and hillside development requirements of Statewide Planning Goal 7 - which relates to Areas Subject to Natural Disasters and Hazards;
- d.** Implement the landslide hazard and hillside provisions in Article 4 of the Comprehensive Plan; and
- e.** In order to assist in the furtherance of these purposes, where not required, creation of open space tracts is encouraged within areas designated as Natural Resources or Natural Hazards on the Comprehensive Plan and Official Zoning Maps.

Section 4.14.20 - APPLICABILITY

4.14.20.01 - Natural Hazards that are Subject to this Chapter

- a. These provisions apply to:**
 1. Areas with slopes equal to or greater than 10 percent;
 2. High landslide risk areas;
 3. Existing landslide areas; and
 4. Landslide debris run-out areas.
- b. Mapping of Natural Hazards -**
 1. Natural Hazards Map - The Natural Hazard areas in “a,” above, are mapped on the Corvallis Natural Hazards Map.
 2. Exclusion of Corvallis Fault Line and Liquefaction Soils - Hazards associated with the Corvallis Fault Line and liquefaction soils are not

addressed as part of this Code. Hazards associated with the Corvallis Fault Line, and with fault lines in general, are difficult to anticipate. This is in part because the Fault has not been precisely mapped and in part because other faults may exist in the area which are not yet known. The hazards posed by liquefaction soils can be addressed by the application of more stringent building construction requirements. However, the City will have a map(s) available for informational purposes to show the approximate location of the Corvallis Fault Line and the location of liquefaction soils. These hazards may need to be addressed per the requirements of the adopted Building Code and/or per the recommendations of geologic studies, etc.

4.14.20.02 - Coordination with Building Codes and Greater Restrictions

- a. Coordination with Building Codes** - Pursuant to the requirement established in ORS 455 that the City of Corvallis administers and enforces the State Building Codes, the City Council of the City of Corvallis does hereby acknowledge that the State Building Codes contain certain provisions that apply to the design and construction of buildings and structures located in landslide hazard and hillside areas. Therefore, this ordinance is intended to be administered and enforced in conjunction with the State Building Codes.
- b. Greater Restrictions** - This Chapter 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.

4.14.20.03 - Exceptions

Chapter 4.11 - Minimum Assured Development Area (MADA) explains how Minimum Assured Development Area (MADA) is determined. If the application of Natural Hazard regulations outside prohibited areas, or if the cumulative impact of such Natural Hazard regulations and the application of the regulations in this chapter, Chapter 2.11 - Floodplain Development Permit, Chapter 4.5 - Floodplain Provisions, Chapter 4.12 - Significant Vegetation Protection Provisions and Chapter 4.13 - Riparian Corridor and Wetland Provisions would limit the developable portion of a property below the property's MADA, then development will be allowed on the property, to the degree necessary to achieve the MADA, as explained in Chapter 4.11 - Minimum Assured Development Area. However, development is prohibited in certain areas, regardless of MADA, as outlined in Section 4.11.50.05 of Chapter 4.11 - Minimum Assured Development Area.

Section 4.14.30 - DISCLAIMER OF LIABILITY

The degree of Natural Hazard protection required by this Chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger hazard events can and will occur on rare occasions. Landslide risks may be increased by man-made or natural causes. Areas impacted by other Natural Hazards may differ from those shown on the Corvallis Natural Hazards Map. This Chapter does not imply that land outside the landslide hazard areas or Uses permitted within such areas will be free from landslides, nor does it imply that land outside of mapped hazard areas will be free from damage or earth movement in a hazard event. 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 hazard damages that result from reliance on this Ordinance or any administrative decision lawfully made hereunder. Compliance with the minimum standards established by this Chapter is not intended to relieve any private party from liability for the design or construction of development which causes damage or injury by aggravating an existing and known hazard.

Section 4.14.40 - PROCEDURES

Compliance 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. Applications for Excavation and Grading Permits, Building Permits or other permits for structures on sites containing the Natural Hazard areas, as defined in Section 4.14.20, shall be submitted and reviewed to ensure compliance with specifications referenced herein; and to ensure that development is reasonably safe from anticipated hazards. Such applications for Excavation and Grading Permits, Building Permits or other permits for structures also include those needed for Manufactured Dwellings. Other development activities as described in this provision include, but are not limited to, mining, dredging, filling, grading, paving, and excavating.

- a. Development Application** - Development applications for all properties containing or abutting a mapped Natural Hazard area shall accurately indicate the locations of these features and the location of any proposed development. Development applications shall include Floodplain Development Permits, Excavation and Grading Permits, Building Permits, Public Improvements by Private Contract Permits (PIPC), and any land use application identified in Chapter 2.1 - Comprehensive Plan Amendment through Chapter 2.14 - Partitions, Minor Replats, and Lot Line Adjustments. The Building Official, City Engineer, Floodplain Administrator, or Community Development Director may determine that the following information is not necessary in conjunction with permits for work that would not exacerbate hazard conditions in any way.

b. Required Information, General - All such development applications shall include the following information:

1. A site plan showing the proposed development on the site, drawn to a standard scale and including an illustrated scale for use in reductions;
2. Location of all proposed infrastructure necessary to serve the proposed development. Such infrastructure includes streets, driveways, water, sanitary sewer, and storm drainage;
3. Land uses within 300 ft. of the subject property;
4. Title block;
5. North arrow and bar scale;
6. Date(s) of field check(s);
7. A grading plan, if grading is to occur, showing existing and finished contours on the site, at two- ft. contour intervals;
8. Sources of information, such as national, state, or local soil survey maps; and City maps such as Comprehensive Plan and Zoning Maps, the Natural Hazards Map, the Significant Vegetation Map, the Riparian Corridors and Wetlands Map; and date and scale of aerial photos, etc.; and
9. Any other submittal requirements identified for development in areas with specific Natural Hazards, as specified in Sections 4.14.50, 4.14.60, and 4.14.70.

Section 4.14.50 - STANDARDS FOR DEVELOPMENT IN STEEPLY SLOPED AREAS

4.14.50.01 - Purposes - Steeply Sloped Areas Provisions

It is the purpose of these regulations to:

- a. Provide supplementary development regulations to underlying zones to ensure that development occurs in such a manner that protects:**
 1. The natural and topographic character and identity of these areas;
 2. Environmental resources;
 3. The aesthetic qualities and restorative value of lands; and

4. The public health, safety, and general welfare;
- b. Accomplish “a,” above, by ensuring that development does not create soil erosion, sedimentation of lower slopes, slide damage, flooding problems, and severe cutting or scarring; and
- c. Encourage development that is responsive to natural topography and allows for a reasonable use that complements the natural and visual character of the City.

4.14.50.02 - Applicability

Steeply sloped areas are identified on the Corvallis Natural Hazards Map. The Natural Hazards Map provides information regarding the location of steep slopes on property within the Corvallis Urban Growth Boundary.

- a. The following standards regulate development on areas with slopes of 15 percent or greater, which are slopes identified as having a significant hazard potential;
- b. In addition to these regulations, the Hillside Development standards in Section 4.14.70 apply to development in areas with slopes of 10 percent or greater; and
- c. No portion of this Code shall preclude the Building Official’s authority to require geotechnical reports and other analyses, as deemed necessary, and in compliance with the City’s currently adopted Oregon Structural Specialty Code. All construction in these areas shall be subject to currently adopted Oregon Structural Specialty Code requirements.

4.14.50.03 - Topographic Mapping Requirements

Applications for development on properties containing areas of 15 percent slope or greater, as indicated on the Natural Hazards Map, shall include a topographic map of the development site showing two-ft. contour intervals for the entire site. This information can be obtained from the Natural Hazards database, or the applicant may submit a topographic survey prepared and stamped by a licensed surveyor or civil engineer. In either case, the topographic map shall include the following information:

- a. **The topographic map shall differentiate between the following slope increments:**
 1. equal to, or greater than 35 percent;

2. equal to, or greater than 25 percent, but less than 35 percent; and
 3. equal to, or greater than 15 percent, but less than 25 percent.
- b.** The topographic map shall also indicate the location of all existing and proposed improvements on the development site, including existing and proposed structures; driveways, parking areas, and other impervious surface areas; and proposed retaining walls. The topographic map shall also generally indicate the location of existing trees and landscaping on the development site.

4.14.50.04 - Site Assessment

a. Site Assessments are required:

1. In conjunction with development proposals on areas with slopes of 15 percent or more; and
2. For development in Landslide Hazard areas, as stipulated in Section 4.14.60 of this Code;

b. The Site Assessment is an overview of site conditions, as well as a professional evaluation of whether or not additional studies are needed prior to development on a property. The Site Assessment shall be completed and stamped by either a Certified Engineering Geologist or by a Licensed Civil Engineer, licensed in the Specialty of Geotechnical Engineering. At a minimum, the Site Assessment shall include the following elements:

1. A field investigation of the site and vicinity;
2. A discussion of geologic hazards, if any;
3. Suitability of the site for proposed development, from a geologic standpoint;
4. If applicable, discussion of any unusual or extreme geologic processes at work on the site, such as rapid erosion, Landslide Hazard, flood hazard, rockfall, subsidence, debris run-out, or other features;
5. A list of any geologic hazards that may affect the proposed land use, including slope stability, debris flow, flooding, topography, erosion hazard, shallow groundwater, springs, expansive soils, subsidence, fault rupture, or any other geologic hazard discovered by the investigation;

6. If applicable, an identification of any areas of the site recommended to be avoided for human-occupied structures;
7. If necessary, identification of mitigation measures needed to address any anticipated geologic problems;
8. A discussion regarding the need for follow-up studies that should be conducted, such as engineering geotechnical reports, additional subsurface exploration, or more extensive soil reports; and
9. Feasibility of the site for the proposed development.

4.14.50.05 - Geotechnical (Soils Engineering) Report Requirements

a. Geotechnical Reports are required:

1. In conjunction with development proposals in areas with slopes of 25 percent or greater;
2. When called for by a Site Assessment Report, in conjunction with development proposals in Landslide Hazard areas as stipulated in Section 4.14.60 of this Code; or
3. At the discretion of the Building Official.

b. A Geotechnical Report is intended to include:

1. Data regarding the nature, distribution and strength of existing soils;
2. Conclusions and recommendations for grading procedures;
3. Design criteria for corrective measures, including buttress fill, when necessary; and
4. Opinion on the adequacy of the development site for the intended use considering the proposed grading in relation to soils engineering factors, such as slope stability.

c. When a Geotechnical Report is required by this Code, it shall comply with the requirements for such reports, as prescribed in the Development Services Division's document, once developed, to be entitled "Geotechnical Report Requirements."

d. It is the responsibility of the geotechnical engineer to provide a report and appropriate design recommendations for existing site conditions and the

proposed development. The Geotechnical Report shall be completed and stamped by a Licensed Civil Engineer, licensed in the Specialty of Geotechnical Engineering by the Oregon State Board of Engineering Examiners.

4.14.50.06 - Standards for Areas with Slopes Equal to or Greater than 35 Percent

Generally, development in these areas is strongly discouraged due to concerns with safety, ground movement, slope stability, high levels of cut and fill, and hydrological and erosion impacts. However, very limited development, as described and regulated in "a," through "d," below, may occur in areas with slopes equal to or greater than 35 percent. These standards are applicable only to the specific portions of a site which contain the specified slopes, as indicated on a topographic survey. If an applicant demonstrates, by submittal of the topographic map, that development on a property can be accommodated without encroachment into the specified slope areas, then the following standards do not apply.

- a. **Development Limitations** - Streets and utilities may be located on the specified slope areas only if it can be shown that passage through the steeply sloped area is the only viable route available to afford access to the developable portion of a property;
- b. **Site Assessment and Geotechnical Report Required** - Applications for development on the specified slope areas, including land use applications, Public Improvements by Private Contract Permits (PIPC), Excavation and Grading Permits, Floodplain Development Permits, and Building Permit submittals, shall be accompanied by a site assessment, geotechnical report, and any other report deemed necessary by the site assessment report. Reports shall meet the criteria identified in sections 4.14.50.04 and 4.14.50.05. Development shall conform with all recommendations and requirements established by these required reports.
- c. **Compliance with Hillside Development Standards** - Development shall comply with the Hillside Development Standards in Section 4.14.70.
- d. **Tree Cutting Limitations** - No tree cutting is allowed on slopes equal to or greater than 35 percent, with the exception of the following:
 1. Removal of a Hazardous Tree - Hazardous Trees are defined in Chapter 1.6 - Definitions. Hazardous Tree removal requests shall be consistent with Section 4.2.20.1;
 2. Accommodation of development allowed under 4.14.50.06.a above;
or

3. Accommodation of a public or private utility for which permits have been obtained.

4.14.50.07 - Standards for Areas with Slopes Equal to or Greater than 25 Percent, but less than 35 Percent

Development in these areas should be avoided, if feasible, due to concerns with safety, ground movement, slope stability, and erosion impacts. However, the following standards shall apply for development in areas with slopes equal to or greater than 25 percent, but less than 35 percent. These standards are applicable only to the specific portions of a site which contain the specified slopes, as indicated on a topographic survey. If an applicant demonstrates, by submittal of the topographic map, that development on a property can be accommodated without encroachment into the specified slope areas, then the following standards do not apply.

- a. **Site Assessment and Geotechnical Report Required** - Applications for development on the specified slope areas, including land use applications, Public Improvements by Private Contract Permits (PIPC), Excavation and Grading Permits, Floodplain Development Permits, and Building Permit submittals, shall be accompanied by a site assessment, geotechnical report, and any other report deemed necessary by the site assessment report. Reports shall meet the criteria identified in sections 4.14.50.04 and 4.14.50.05. Development shall conform with all recommendations and requirements established by these required reports.
- b. **Compliance with Hillside Development Standards** - Development shall comply with the Hillside Development Standards in Section 4.14.70.

4.14.50.08 - Standards for Areas with Slopes Equal to or Greater than 15 Percent, but less than 25 Percent

Development in these areas should be carefully evaluated, due to concerns with safety, ground movement, slope stability, and erosion impacts. The following standards shall apply for development in areas with slopes equal to or greater than 15 percent, but less than 25 percent. These standards are applicable only to the specific portions of a site which contain the specified slopes, as indicated on a topographic survey. If an applicant demonstrates, by submittal of a topographic survey, that development on a property can be accommodated without encroachment into the specified slope areas, then the following standards do not apply.

- a. **Site Assessment Required** - Applications for development on the specified slope areas, including land use applications, Public Improvements by Private Contract Permits (PIPC), Excavation and

Grading Permits, Floodplain Development Permits, and Building Permit submittals, shall be accompanied with a Site Assessment which meets the criteria identified in Section 4.14.50.04. If the Site Assessment identifies the need for a Geotechnical Report, or other reports, those reports shall be submitted with the application for development and shall be consistent with the requirements of Section 4.14.50.05. Development shall conform with all recommendations and requirements established by any and all required reports.

- b. Compliance with Hillside Development Standards** - Development shall comply with the Hillside Development Standards in Section 4.14.70.

Section 4.14.60 - STANDARDS FOR DEVELOPMENT IN LANDSLIDE HAZARD AREAS

4.14.60.01 - Purposes - Standards for Development in Landslide Hazard Areas

It is the purpose of these regulations to provide supplementary development regulations to underlying zones to ensure that development occurs in such a manner as to mitigate potential impacts from landslides in Corvallis. Landslide Hazard areas include High Landslide Risk areas, Existing Landslide areas, and Landslide Debris Runout areas. These areas are mapped on the Natural Hazards Map. The following regulations shall apply to development and other activities in identified Landslide Hazard areas.

4.14.60.02 - Applicability

Except as provided under Section 4.14.60.03, below, no person shall engage in any of the following regulated activities on properties containing or abutting the Landslide Hazard areas designated on the Corvallis Natural Hazards Map, unless it can be shown that the proposed activity is located at least 500 ft. distant from any portion of the Natural Hazard area as mapped on the Natural Hazards Map:

- a.** Excavation;
- b.** Fill;
- c.** Installation or construction of any accessory structure with a Building Code occupancy classification other than "U;"
- d.** Construction, reconstruction, structural alteration, relocation or enlargement of any building or structure for which permission is required pursuant to this Code, or the adopted Building Code; and

- e. Construction or expansion of utilities, streets, driveways, or other accessways.

4.14.60.03 - Site Assessment and Geotechnical Report Requirement

- a. Applications for development on properties containing or abutting identified Landslide Hazard areas, including land use applications, Excavation and Grading Permits, Floodplain Development Permits, Public Improvements by Private Contract Permits (PIPC), Building Permits, and any other development permits, shall include a Site Assessment and Geotechnical Report which meet the criteria identified in Sections 4.14.50.04 and 4.14.50.05. In addition to the items identified in Section 4.14.50.05, the Geotechnical Report shall specifically address the presence, characteristics, and precise location of the identified hazard(s) on the subject property which is/are depicted on the Natural Hazards Map. If other reports are called for by the Site Assessment, these reports shall also be submitted.
- b. Prior to issuance of permits for any work on the development site, the Building Official and/or City Engineer shall review the submitted Site Assessment, Geotechnical Report, and any other required reports. Permits shall not be issued until the Building Official and/or City Engineer approve the required reports. Upon approval of these reports, permits for construction activities may be issued, if they are in accordance with the findings and recommendations of the reports. Site inspections and submitted permit materials shall demonstrate that all necessary measures recommended by the reports and by City staff are addressed in the construction process. In no case will permits be issued for development that would increase landslide risks on the development site, or upon neighboring properties, as indicated in the approved reports.

4.14.60.04 - Required Indemnification and Release

Prior to issuance of Building Permits for structures within or abutting Landslide Hazard areas, the applicant shall sign an agreement, provided by the City, to indemnify and release the City from potential liability resulting from damage to life or property resulting from landslides. This indemnity and release shall be recorded with the property, and shall run with the land.

Section 4.14.70 - HILLSIDE DEVELOPMENT STANDARDS

4.14.70.01 - Purposes

Hillside Development standards have been developed for the following purposes:

- a. To plan development to fit the topography, soil, geology, and hydrology of hillsides;
- b. To align the built surface infrastructure, such as streets and waterways, with the natural contours of terrain; and to minimize cutting and filling in developments;
- c. To minimize soil disturbances and the removal of native vegetation, and to avoid these activities during winter months, unless impacts can be mitigated;
- d. To encourage the design of developments and the utilization of construction techniques that minimize erosion and surface water runoff;
- e. To balance a view of the hills with the view from the hills;
- f. To provide or maintain landscaping that enhances the identified open space resources; and
- g. To design developments that consider landscaping management that will minimize the threat of fire on improved property and the spreading of fire to wildland habitat.

4.14.70.02 - Applicability

Areas with slopes of 10 percent or greater are identified on the Natural Hazards Map. The following standards regulate development on areas with slopes of 10 percent or greater. In addition to these regulations, the Standards for Development in Steeply Sloped Areas in Section 4.14.50 apply to development in areas with slopes of 15 percent or greater. The Natural Hazards Map provides information regarding the location of slopes of 10 percent or greater on property within the Corvallis Urban Growth Boundary.

4.14.70.03 - Definitions

- a. **Natural Hazards Map** - The Natural Hazards Map is based on recent aerial photography (2002) and provides a level of accuracy equivalent to two-ft. contour intervals. An applicant for development may contest the accuracy of the slope data on the Natural Hazards Map by providing a

slope survey prepared and stamped by a licensed surveyor. The slope survey must show Natural Grade, prior to any site grading.

- b. Individual Lot Grading** - Grading done on an individual lot, in conjunction with the development of a building, or buildings, on the lot.
- c. Mass Grading** - Site grading done in anticipation of future development, prior to grading done to accommodate specific structures. Typically, grading for street and infrastructure improvements is done in conjunction with Mass Grading. For Subdivisions, Mass Grading is done after preliminary plat approval, but prior to application for Building Permits for individual lots.
- d. Eight-ft. Standard** - Restricts grade changes (cuts or fills) in excess of eight ft. on an individual lot or development site. Cut and fill is measured vertically from Natural Grade. In no case shall a combination of cut and fill in the same location exceed 16 ft.
- e. 10- ft. Standard** - Restricts grade changes (cuts or fills) in excess of 10 ft. in an area where an exception to the Eight-ft. Standard is allowed. Cut and fill is measured vertically from Natural Grade. In no case shall a combination of cut and fill in the same location exceed 16 ft.
- f. 12- ft. Standard** - Restricts grade changes (cuts or fills) in excess of 12 ft. in an area where an exception to the Eight-ft. Standard is allowed. Cut and fill is measured vertically from Natural Grade. In no case shall a combination of cut and fill in the same location exceed 16 ft.

4.14.70.04 - Grading Regulations

- a. Types of Grading** - The following regulations address two types of grading, both of which are defined in Section 4.14.70.03, above:
 - 1. Mass Grading; and
 - 2. Grading on Individual Lots.
- b. These regulations prescribe grading area limitations based on zoning and lot size, as set out in Sections 4.14.70.04.c.3 and 4.14.70.04.d.2 -**
 - 1. On development sites where both Mass Grading and Individual Lot Grading are employed, Mass Grading and Individual Lot Grading must be contained within the same grading limitation areas. The amount of gradable area allowed, per lot, is the same under both

standards. This means that when Mass Grading is employed, the area that is Mass Graded on an individual lot will be the area in which Individual Lot Grading is allowed, unless the Mass Graded area is less than the maximum gradable area allowed. In this case, additional area, up to the maximum allowed, can be graded at the time of Individual Lot Grading.

2. The remaining provisions of this Section in 4.14.70.04.c through 4.14.70.04.e, below, are organized as follows:

- a) Mass Grading Standards;
- b) Individual Lot Grading Standards; and
- c) Terracing Requirements and Design Standards.

3. Exceptions to these standards for streets may be allowed through the Planned Development process of Chapter 2.5 - Planned Development, or through the Capital Improvements Program process.

c. Mass Grading Standards - The following standards shall apply to development throughout the City of Corvallis:

1. Maximum Allowed Cut Depth and Fill Height - The following standards govern the maximum cut depth and fill height:

Site Characteristics	Maximum Cut Depth and Fill Height
No Extenuating Conditions	Eight-ft. Standard
One Extenuating Condition	10-ft. Standard only where allowed to work around extenuating condition
Two or more Extenuating Conditions	12-ft. Standard only where allowed to work around extenuating conditions

2. Extenuating Conditions - Exceptions to the Eight-ft. Standard for Mass Grading shall be based on the following specific extenuating conditions:

- a) Street/Pedestrian Alignment - Additional Cut/Fill provides for the alignment of a necessary street or pedestrian

connection. A necessary street or pedestrian connection is one which is needed to create a Block Perimeter of approximately 1,600 ft., or which is identified in an adopted City Master Plan document. A necessary street connection must comply with the slope standards in Section 4.0.60.k of Chapter 4.0 - Improvements Required with Development. Section 4.0.60.k stipulates that Arterial Streets shall not exceed a six percent grade, Collector and Neighborhood Collector Streets shall not exceed 10 percent, and Local and Local Connector Streets shall not exceed 15 percent. The width and overall extent of any street exceeding the Eight-ft. Standard shall be minimized, where feasible, to minimize grading impacts.

- b) Significant Natural Feature - Additional cut/fill is necessary to protect a Significant Natural Feature, which is defined as a feature subject to a Natural Hazards (except slopes) and/or Natural Resource Overlay on the Comprehensive Plan Map, or a Significant Tree, as defined in Chapter 1.6 - Definitions. In the case of a preserved tree, a certified arborist must find that the proposed cut/fill exception would preserve the viability of a Significant Tree that would otherwise have been damaged by the application of the Cut and Fill Standards.
 - c) Detention Facilities - To accommodate stormwater detention facilities where no other viable location exists on the site.
3. Grading Area Limitations - The following requirements apply to Mass Grading in areas with slopes equal to or greater than 10 percent, as mapped on the Natural Hazards Map:
- a) Low and Medium Density Residential Development Zones -

Ultimate Lot Size of Tentatively Approved Subdivision/development within Low and Medium Density Residential Development Zones	Mass Grading Regulations
< or = 6,500 sq. ft.	Grading up to 100 percent of the lot area is allowed. Grading shall comply with the Eight-ft. Standard, unless extenuating conditions are present.

Ultimate Lot Size of Tentatively Approved Subdivision/development within Low and Medium Density Residential Development Zones	Mass Grading Regulations
> 6,500 sq. ft., but < 10,000 sq. ft.	Grading up to 6,500 sq. ft. of each lot is allowed. Grading shall comply with the Eight-ft. Standard, unless extenuating conditions are present.
> or = 10,000 sq. ft.	No Mass Grading is allowed. See standards for Individual Lot Grading

b) Medium-high and High Density Residential Development Zones -

Medium-high and High Density Residential Development Zones	Mass Grading Regulations:
RS-12, RS-12U, RS-20, and MUR Zones	For development sites <u>greater than 6,500 sq. ft. in size</u> - Graded area shall not exceed 75 percent. The Eight-ft. Standard shall apply, unless extenuating conditions are present.
	For development sites <u>less than or equal to 6,500 square ft. in size</u> - Grading of up to 100 percent of the site is allowed. The Eight-ft. Standard shall apply, unless extenuating conditions are present.

c) Nonresidential Development Zones -

Nonresidential Zones	Grading Regulations
All Commercial and Industrial Development Zones, OSU Zone, C-OS, and AG-OS Zone	For development sites greater than 6,500 square ft. in size - Graded area shall not exceed 75 percent. The Eight-ft. Standard shall apply, unless extenuating conditions are present.
	For development sites less than or equal to 6,500 square ft. in size - Grading of up to 100 percent of the site is allowed. The Eight-ft. Standard shall apply, unless extenuating conditions are present.

d. **Individual Lot Grading Standards** - These standards are in addition to Section 4.14.70.04.c, above, and apply to lots which contain slopes equal to or greater than 10 percent, as mapped on the Natural Hazards Map.

1. Maximum Allowed Cut Depth and Fill Height - The following standards govern the maximum cut depth and fill height:

Extenuating Conditions	Maximum Cut and Fill Height
No Extenuating Conditions	Eight-ft. Standard
One Extenuating Condition	10-ft. Standard only where allowed to work around extenuating condition
Two Extenuating Conditions	12-ft. Standard only where allowed to work around extenuating conditions
If lot would otherwise be unbuildable	The least extensive cut and fill necessary, not to exceed the 12-ft. Standard, to reach the Minimum Assured Development Area, as defined by Chapter 4.11 - Minimum Assured Development Area (MADA).

a) Extenuating Conditions - Exceptions to the Eight-ft. Standard for Individual Lot Grading shall be based on the following specific extenuating conditions:

- 1) Street/Pedestrian Alignment - Additional Cut/Fill provides for the alignment of a necessary street or pedestrian connection. A necessary street or pedestrian connection is one which is needed to create a block perimeter of approximately 1,600 ft., or which is identified in an adopted City Master Plan document.
- 2) Significant Natural Feature: Additional cut/fill is necessary to protect a Significant Natural Feature, which is defined as a feature subject to a Natural Hazards (except slopes) and/or Natural Resource Overlay on the Comprehensive Plan Map; or a Significant Tree, as defined in Chapter 1.6 - Definitions. In the case of a preserved tree, a Certified Arborist must find that the proposed cut/fill exception would preserve the viability of a Significant Tree that would otherwise have been damaged by the application of the Cut and Fill Standards.
- 3) Maintain Driveway Slope - Additional Cut/Fill is necessary to allow for the construction of a driveway at a slope of 15 percent or less. It must be demonstrated, to the satisfaction of the Building Official, that other driveway alignments have been considered and are not feasible before additional Cut/Fill is authorized.

b) Locational Standards -

- 1) Within the portion of each lot within 50 ft. of the edge of public right-of-way, the combination of cuts and fills may not exceed 16 ft. from Natural Grade, as measured within a linear distance perpendicular from the edge of right-of-way to the 50-ft. boundary; and
- 2) All retaining walls must be located at least four ft. from any property line or easement line.

2. Gradable Area - In no case shall the cumulative impact of Mass Grading and Individual Lot Grading impact more site area on an individual lot than is allowed under the following standards:

a) Low and Medium Density Residential Development Zones -

Lot size within Low and Medium Density Residential Development Zones	Grading Regulations
< or = 6,500 sq. ft.	Grading up to 100 percent of the lot area is allowed. Grading shall comply with the Eight-ft. Standard, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.
> 6,500 sq. ft., but < 10,000 sq. ft.	Grading up to 6,500 sq. ft. of each lot is allowed. Grading shall comply with the Eight-ft. Standard, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.
> or = 10,000 sq. ft.	Grading area is limited to 6,500 sq. ft. + 25 percent of lot area over 10,000 sq. ft. Grading shall comply with the Eight-ft. Standard, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.

b) Medium-high and High Density Residential Development Zones -

Medium-high and High Density Residential Development Zones	Grading Regulation
RS-12, RS-12U, and RS-20 Zones	For development sites <u>greater than 6,500 square ft. in size</u> - Graded area shall not exceed 75 percent. The Eight-ft. Standard shall apply, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.

Medium-high and High Density Residential Development Zones	Grading Regulation
	For development sites <u>less than or equal to 6,500 square ft. in size</u> - Grading of up to 100 percent of the site is allowed. The Eight-ft. Standard shall apply, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.

c) Nonresidential Development Zones -

Nonresidential Development Zones	Grading Regulations
All Commercial and Industrial Development Zones, OSU Zone, C-OS, and AG-OS Zone	For development sites <u>greater than 6,500 sq. ft. in size</u> - Graded area shall not exceed 75 percent. The Eight-ft. Standard shall apply, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.
	For development sites <u>less than or equal to 6,500 sq. ft. in size</u> - Grading of up to 100 percent of the site is allowed. The Eight-ft. Standard shall apply, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.

- e. Terracing Requirements and Design Standards** - When a cut or fill, or combination thereof, exceeds eight ft. and is greater than a 25 percent slope, terracing shall be provided, as follows:
1. For cuts/fills between 8-10 ft., at least one terrace shall be provided between the two- and eight-ft. level, with a shelf no less than six ft. deep. The slope of the shelf may not exceed 20 percent.
 2. For cuts/fills that are more than 10 ft., risers shall not exceed four ft. in height and shelves shall be a minimum of six ft. deep. The slope of the shelf may not exceed 20 percent.

3. Terraces shall be landscaped with a combination of ground cover plants and shrubs, planted with adequate coverage to stabilize soil in the terraced areas. Trees shall be required, at a minimum 30 ft. on-center spacing, to mitigate trees removed due to grading and to stabilize soil in the shelf area. Irrigation and maintenance for required landscaping shall be addressed as stipulated in Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting.
4. Wall materials and landscaping shall be subject to final review and approval by the City Engineer and Community Development Director. Acceptable exterior wall materials include quarried stone, brick, concrete masonry, and similar quality materials. Additional flexibility shall be allowed for wall materials for retaining walls which are wholly internal to the development site, provided the materials and design meet Oregon Structural Specialty Code requirements. Retaining walls shall comply with all applicable Building Code requirements.
5. Exceptions to the terracing requirement may be allowed by the City Engineer and Community Development Director if the applicant demonstrates, with the submittal of a report from a certified arborist, qualified Stream scientist, or qualified wetlands scientist that potential impact to an existing Significant Tree or a Significant Natural Feature in the area of the cut and fill would be significantly reduced by an exception to the terracing requirement.

A Significant Natural Feature is defined in Chapter 1.6 - Definitions. In the case of a preserved tree, a certified arborist must find that the proposed retaining wall treatment would preserve the viability of a Significant Tree that would otherwise have been damaged by the application of the Cut and Fill Standards, and that the Tree's continued growth will not adversely affect the structural integrity of the wall.

6. Per Chapter 2.12 - Lot Development Option, exceptions to the requirements in "1," through "5," above, may be granted through the Lot Development Option process, if the exceptions qualify as a Minor or Major Lot Development Option. The Lot Development Option may allow an increase in retaining wall height of up to 20 percent of the permitted height, or a reduction of shelf width of up to 20 percent of the required depth, subject to compliance with all Lot Development Option criteria in Section 2.12.30.06 of Chapter 2.12 - Lot Development Option.

4.14.80 - MAP REFINEMENTS

4.14.80.01 - Map Refinements Defined

Map Refinements are adjustments made through professional analyses to refine the actual boundaries of some Natural Resources and Natural Hazards. Map Refinements must be made in accordance with the provisions in Chapter 4.5 - Floodplain Provisions, Chapter 4.13 - Riparian Corridor and Wetland Provisions, and Chapter 4.14 - Landslide Hazard and Hillside Development Provisions. The Map Refinements governed by this chapter are specifically allowed to determine the location and extent of the:

- a. Landslide Hazard areas; and
- b. Slopes.

4.14.80.02 - Map Refinements Provisions

Map Refinement provisions for Landslide Hazard areas and slopes are outlined below. Map Refinement provisions for the 0.2-ft. Floodway, the 1.0-ft. Floodway, and the 100-yr. Floodway Fringe are outlined in Chapter 4.5 - Floodplain Provisions. Map Refinement provisions for Top-of-bank, Riparian Corridor, and Wetland boundaries are outlined in Chapter 4.13 - Riparian Corridor and Wetland Provisions. Map Refinements are also adjustments to resolve registration issues that may occur between different GIS layers or maps.

- a. **Landslide Hazard Area Boundaries** - The precise locations of Landslide Hazard area boundaries are determined by one of the following two methods:
 1. Site Assessments and/or Geotechnical Reports, as required per Section 4.14.60; or
 2. Information provided by the Oregon Department of Geology and Mining Industries (DOGAMI), once it has been developed and finalized by DOGAMI.

If these areas are not precisely mapped by one of these two methods, the 500-ft. setback required by Section 4.14.60.02 shall be maintained.

- b. **Slope Boundaries** - The precise locations of the steep slope boundaries are determined by one of the following two methods, consistent with the provisions of Section 4.14.50.03:

1. Using the information from the Natural Hazards database and creating a topographic map of the development site showing two-ft. contour intervals; or
2. Using a topographic survey, showing two-ft. contour intervals, prepared and stamped by a licensed surveyor or civil engineer.

4.14.80.03 - Map Refinement Procedures

Adjustments to maps consistent with the provisions of Sections 4.14.80.01 and 4.14.80.02, above, are considered to be Map Refinements and may be Ministerially adjusted on the relevant maps, with no land use process required other than a demonstrated adherence to the provisions of sections 4.14.80.01 and 4.14.80.02.

4.14.90 - MAP CORRECTIONS

No Zone Change or Comprehensive Plan Map Amendment shall be required to accomplish Map Corrections approved in accordance with the provisions outlined in this Section.

- a. Decisions regarding Map Correction requests shall be made by the Community Development Director, as specified in sections 4.14.90.01 and 4.14.90.02, below. Upon approval of a Map Correction request, the Director shall ensure that changes are reflected in the City's affected maps and databases. Notice of such Map Correction shall be provided to decision-makers as outlined in Section 4.14.90.b, below.
- b. When requests for five Map Corrections on any Natural Hazard or Natural Resource for which a Map Correction is allowed have been submitted to and decided upon by the Community Development Department Director, or approximately twice a year, whichever is sooner, the Map Correction requests shall be summarized in an informational memo for decision-makers so that they may review them for tracking purposes in accordance with Comprehensive Plan Policy 4.2.6. This memo shall be shared with the Corvallis Planning Commission and City Council for Map Correction requests on lands within the City limits; and with the Corvallis and Benton County Planning Commissions, the Corvallis City Council, and the Benton County Board of Commissioners for Map Correction requests on lands within the Urban Fringe.

4.14.90.01 - Map Corrections Defined

- a. A Map Correction is not the type of adjustment described in the Map Refinement provisions of Section 4.14.80, above. A Map Correction is, however, an actual correction to maps referencing Natural Hazards or

Natural Resources other than Significant Vegetation areas, where it is found that the map depiction does not reflect the Natural Features Inventory. As the Natural Features Inventory (NFI) was the basis for developing the City's maps that reference Natural Hazards and Natural Resources, a correction to the NFI for Natural Hazards or Natural Resources other than Significant Vegetation areas could result in a correction to the related maps. These maps include the Comprehensive Plan Map, Local Wetlands Inventory Map, Official Zoning Map, Natural Hazards Map, or Riparian Corridors and Wetlands Map.

Map Correction provisions for Landslide Hazard areas are outlined below. Adjustments to other hazards governed by this chapter are not Map Corrections, but are Map Refinements and are addressed through the provisions of Section 4.14.80, above. There are no Map Correction provisions for the 100-year Floodplain, since corrections are accomplished through the Map Refinement provisions in Chapter 4.5 - Floodplain Provisions. Map Correction provisions for Riparian Corridor widths and Wetland boundaries are outlined in Chapter 4.13 - Riparian Corridor and Wetland Provisions.

- b. Landslide Hazard Areas** - Landslide Hazard area boundaries may be refined through the Map Refinement procedures outlined in 4.14.80, above. However, if technical data demonstrates that no Landslide Hazard exists within or near an area identified as a potential Landslide Hazard on the City's maps, a Map Correction may be accomplished to delete the Landslide Hazard indication from the maps. Such technical data must be from:

1. A site assessment and geotechnical report; or
2. The Oregon Department of Geology and Mining Industries (DOGAMI).

4.14.90.02 - Map Corrections Procedures for Landslide Hazard Areas

There are two procedures available for a Map Correction involving the removal of a Landslide Hazard area from the Natural Hazards Map.

- a. Removal of a Landslide Hazard Area from Determination by the Oregon Department of Geology and Mining Industries (DOGAMI) -**

If in finalizing its data and maps regarding Landslide Hazard areas the Oregon Department of Geology and Mining Industries (DOGAMI) determines that no Landslide Hazard exists within or near an area identified as a potential Landslide Hazard on the Natural Hazards Map, then a Map Correction to remove indication of the Landslide Hazard area

shall be done by the Community Development Department Director, following written verification of the DOGAMI's determination. When such written documentation of the determination is provided to the Director, the Director shall ensure that the changes reflected by the DOGAMI decision are reflected in the City's affected maps and databases.

b. Removal of a Landslide Hazard Area from Determinations Reached by a Site Assessment and Geotechnical Report -

If a property owner or property owner's legal representative provides the Community Development Department Director with the items listed in "1," below, a request to remove indication of a Landslide Hazard area from the Natural Hazards Map and other affected maps may be considered as outlined in "2," and "3," below.

1. For a Map Correction request to consider removal of a Landslide Hazard from the Natural Hazards Map and other related maps, the following information is required:
 - a) A Site Assessment and Geotechnical Report which meet the criteria identified in sections 4.14.50.04 and 4.14.50.05. In addition to the items identified in Section 4.14.50.05, the Geotechnical Report shall specifically address the lack of presence, characteristics, and/or precise location of the identified hazard(s) on the subject property which is/are depicted on the Natural Hazards Map. If other reports are called for by the Site Assessment, these reports shall also be submitted; and
 - b) An indemnification and release agreement in accordance with the provisions of Section 4.14.60.04;
2. For lands within the City limits, Map Correction requests shall be reviewed by the Building Official and City Engineer, in coordination with the Community Development Department. The Community Development Director shall make the final decision. For lands within the Urban Fringe, Map Correction requests shall be reviewed by the Building Official and City Engineer, in coordination with the Corvallis Community Development Department and the Benton County Development Department. For the Urban Fringe lands, the Corvallis Community Development Department Director shall also make the final decision.

3. To approve a Map Correction request, the Director must find that:
 - a) The information required by “1,” above, has been provided and is complete;
 - b) The required technical reports and recommendations sufficiently demonstrate that there is no Landslide Hazard on or near the area identified on the Natural Hazards Map; and
 - c) The required technical reports and recommendations sufficiently demonstrate that development on the subject area would not increase landslide risks on the development site, or upon neighboring properties.