



Stormwater and Grading Design Standards

# CHAPTER 1

## *General Information*

## CHAPTER 1. GENERAL INFORMATION

The Stormwater and Grading Design Standards describe requirements and methods for minimizing the impacts of development within the City of Oregon City (City). Implementing these standards will help protect water resources which, in turn, will benefit human health, fish and wildlife habitat, recreational resources, and drinking water.

This chapter describes the purpose, applicability, jurisdictional, and administrative requirements of the Stormwater and Grading Design Standards.

### 1.1 Purpose of the Stormwater and Grading Design Standards

The purposes of the Stormwater and Grading Design Standards include but are not limited to the following:

- A. Meet federal and state National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permitting requirements.
- B. Minimize the introduction of pollutants and provide water quality treatment of stormwater runoff to preserve the beneficial uses of drainageways, lakes, ponds, wetlands, and other sensitive areas.
- C. Enhance water quality by protecting sensitive areas and the required vegetative buffers.
- D. Reduce stormwater runoff volumes and maximize groundwater recharge through the process of infiltration of runoff into vegetated stormwater facilities.
- E. Maintain the pre-development stormwater runoff characteristics to minimize effects on the drainageways such as sediment transport, erosion, and degradation generally associated with urbanization, through the use of Low Impact Development (LID) facilities and/or flow controls to address hydromodification.
- F. Protect the safety of persons and property by safely conveying all stormwater runoff from site development and preventing the uncontrolled or irresponsible discharge of stormwater onto adjoining public or private property.
- G. Provide for orderly development by preserving the drainageways and natural conveyance systems created by the existing topography and creating man-made conveyance systems with adequate capacity for future development upstream.
- H. Construct stormwater management facilities which are safe, effective, and economical to maintain and minimize future replacement costs.
- I. Provide guidance to designers and engineers in meeting the requirements of stormwater regulations when developing land and constructing infrastructure within the City of Oregon City.

### 1.2 Applicability of the Stormwater and Grading Design Standards

These standards are intended for use by property owners, developers, and design professionals as general design guidelines for all publicly and privately-owned and maintained stormwater management facilities within the City.

All development, as defined by the City, is subject to the requirements of these standards during the land use decision and permitting processes. These processes generally include all land use proposals, site development, and permit approvals within or proposed to be within City boundaries.

All private storm drains outside the building envelope shall be designed using these standards, along with the Oregon Structural Code (OSC), Oregon Plumbing Code (OPC), and/or other applicable codes as appropriate.

### **1.2.1 General Thresholds**

The site development thresholds and applicability of these standards are as follows:

- A. Development activities that result in **5,000 square feet of new or replaced impervious surface**, cumulative over a 5-year period, are subject to the requirements of these standards.
- B. Development activities that will result in the **creation of more than 500 square feet of new impervious surface within a natural resource overlay district (NROD)** (as defined by Oregon City Municipal Code [OCMC] 17.49), cumulative over a 5-year period, are subject to the requirements of these standards.
- C. Development activities that will **disturb 1,000 square feet of existing impervious surface within an NROD as part of a commercial or industrial redevelopment**, cumulative over a 5-year period, are subject to the requirements of these standards.
- D. All development that results in **1,000 square feet of new or replaced impervious surface shall be subject to the erosion prevention and sediment control requirements outlined in Chapter 7**.
- E. All site **development that results in any new or replaced impervious surfaces and is categorized as high risk for increased pollutant loading** in stormwater runoff is required to comply with **Chapter 6** in addition to all requirements within these standards. High-risk sites, as defined in Chapter 6, include the following site use categories:
  - Fuel Dispensing Facilities and Surrounding Traffic Areas
  - Above-Ground Storage of Liquid Materials
  - Solid Waste Storage Areas, Containers, and Trash Compactors
  - Exterior Storage of Bulk Materials
  - Material Transfer Areas/Loading Docks
  - Equipment and/or Vehicle Washing Facilities
  - Development on Land with Suspected or Known Contamination
  - Covered Vehicle Parking Areas for Commercial or Industrial Uses
  - Industrial and Commercial High-Traffic Areas
  - Land Uses Subject to Oregon Department of Environmental Quality 1200-Z Industrial Stormwater Permit Requirements

### 1.2.2 Exemptions

Projects in the following categories are generally exempt from the requirements of these standards:

- A. **Stream enhancement or restoration projects** approved by the City
- B. **Farming practices** as defined by Oregon Revised Statutes (ORS) 30.930 and **farm use** as defined in ORS 214.200, except that buildings associated with farm practices and farm use are subject to the requirements of these standards
- C. Actions by a public utility or any other governmental agency **to remove or alleviate an emergency condition**
- D. **Road and parking area preservation/maintenance projects** such as pothole and square cut patching, surface sealing, mill/resurface or overlaying of existing asphalt or concrete pavement, provided the preservation/maintenance activity does not expand the existing area of impervious coverage above the thresholds listed in **Section 1.2.1**
- E. **Pavement reconstruction/rehabilitation projects** located within the public right-of-way that alter the subgrade shall be required to meet water quality and flow control standards for the net new impervious surface created
- F. **Pedestrian and bicycle improvements** (sidewalks, trails, pathways, transit stops, multi-modal stops, and bicycle paths/lanes) that are standalone projects where no other impervious surfaces are created or replaced
- G. **Underground utility projects** that replace the ground surface with in-kind material or materials with similar runoff characteristics
- H. **Maintenance or repair** of existing utilities
- I. An exemption to the flow control requirements (see **Section 4.2**) of these standards will be granted when **all** of the following apply:
  - The development site discharges directly to the Willamette River, Clackamas River, or Abernethy Creek; and
  - That development lies within the 100-year floodplain or is up to 10 feet above the design flood elevation (design flood elevation is equal to 50.7 feet NAVD 88) as defined by OCMC 17.42; and
  - The project site must be drained by a conveyance system that is comprised entirely of manmade elements (e.g., pipes, ditches, culverts, outfall protection, etc.) and extends to the ordinary high water line of the exempt receiving water; and
  - The conveyance system between the project site and the exempt receiving water shall have sufficient hydraulic capacity and erosion stabilization measures to convey discharges from the proposed conditions of the project site and the existing conditions from non-project areas from which runoff is collected.

### 1.3 General Stormwater Management Principles

The City restricts the uncontrolled and untreated discharge of pollutants into any stormwater system and/or natural drainageway area. The City's stormwater standards are intended to provide guidance for the reduction of pollutants in stormwater to the Maximum Extent Practicable (MEP).

Stormwater pollutants are generally separated into the following categories: suspended solids (sediment), oxygen-demanding pollutants, bacteria, organic carbon, hydrocarbons, metals (lead, copper, zinc, mercury, and cadmium), nutrients (nitrogen and phosphorous), and pesticides/herbicides.

The most effective method for preserving stormwater quality is preventing pollution of stormwater runoff at the source. Constructed stormwater management facilities are the last line of defense for removing pollutants contained in stormwater runoff.

Stormwater management facilities use a variety of methods to remove pollutants from stormwater, such as infiltration, sedimentation, filtration, plant uptake, ion exchange, adsorption, and bacterial decomposition. Infiltration is the preferred method to address stormwater runoff for water quality and flow control requirements. In some cases, a combination of stormwater management facilities, referred to as a treatment train, may be the most effective strategy for removal of specific pollutants of concern in designated high-risk areas.

In selecting a stormwater management approach, the designer must consider site characteristics, anticipated land uses, runoff characteristics, and treatment objectives. Once the site analysis is complete, the designer may incorporate the most effective stormwater management facilities into the stormwater management plan for the proposed development. See **Chapter 2** for additional details on *Site Assessment and Preliminary Design* and **Chapter 4** for design criteria, design methods, and facility selection and sizing.

### 1.4 Stormwater Management Requirements

The following requirements apply to all projects:

#### 1.4.1 General Design Requirements

Design of stormwater management plans must include provisions to control runoff adequately from impervious and pervious areas within and upstream of the development without exceeding capacities of available facilities and downstream drainageways. General design considerations are as follows:

- A. Surface or subsurface drainage, caused or affected by development, shall not flow over adjacent public or private property in a volume or location significantly different from that which existed prior to development, but shall be collected and conveyed to an acceptable point of discharge as approved by the City.
- B. The City generally does not allow the diversion of stormwater from one drainage basin or watershed to another drainage basin or watershed.
- C. Surface drainage entering a development from offsite areas shall be intercepted at the naturally occurring locations. Offsite surface drainage shall be conveyed through the site in a separate system and will not be mixed with the stormwater collected and treated in onsite stormwater management facilities unless the onsite stormwater management facilities are designed to manage the additional flows from the upstream drainage

basin(s) assuming full development potential.

- D. All public storm drainage systems shall be gravity systems without the use of pumps or other mechanical means to convey or transport stormwater.
- E. The point of discharge for all stormwater may be a piped system, curb and gutter, or open channel as approved by the City. All outfalls to an existing or proposed stormwater facility, conveyance system, or drainageway shall be approved by the City.
- F. When an approved point of discharge is located on an adjacent private property, the applicant shall be responsible to acquire all applicable downstream private and/or public stormwater easements.
- G. In compliance with Oregon Drainage Law, development shall not adversely impact downstream properties. Stormwater runoff from a development shall be safely conveyed to prevent the uncontrolled or irresponsible discharge of stormwater onto adjoining public or private property.
- H. The point of discharge for stormwater shall not be the City's sanitary sewerage system, except as provided in **Chapter 6**.
- I. No project or development shall directly or indirectly discharge to the public storm system any quantity of stormwater, pollutant, substance, or wash water that will violate the discharger's permit (if one is issued), the City's NPDES MS4 permit, OCMC, or other environmental laws or regulations.

#### 1.4.2 Stormwater Management Plan

All projects that meet the thresholds in **Section 1.2.1** shall prepare a Stormwater Management Plan that addresses the following elements. Each requirement is explained in further detail in the following chapters and sections.

- A. Site Assessment and Preliminary Design – **Section 2.2**
- B. Grading, Fill, and Excavation – **Section 3.1**
- C. Stormwater Management Facility Design – **Section 4.2**
- D. Stormwater Conveyance – **Section 5.1**
- E. Source Controls – **Section 6.1**
- F. Erosion Prevention and Sediment Control – **Section 7.1**
- G. Operation and Maintenance of Stormwater Facilities – **Section 8.1**

#### 1.4.3 Stormwater Site Design Incentives

Incentive programs are continuously changing and evolving. While the City does not administer an incentive program for stormwater-related design elements, applicants may find that required stormwater facilities can be beneficial in qualifying for incentives or benefits from other agencies. Examples include the Leadership in Energy and Environmental Design program, the Envision Rating System administered by the Institute of Sustainable Infrastructure, Salmon-Safe, Earth Advantage, and the Sustainable Sites Initiative. Information on these programs should be discussed with representatives from the sponsoring agency.

#### **1.4.4 Additional Requirements**

The requirements presented in these standards do not exclude or replace the requirements of other applicable codes or regulations, such as the Willamette Basin Total Maximum Daily Load Program, the industrial NPDES permitting program, or any other applicable federal or state regulations or permit requirements.

All development within Federal Emergency Management Agency (FEMA)-regulated streams and floodplain overlay zones shall meet the FEMA floodplain permit approval process requirements and the requirements of OCMC 17.42 through the local planning and building authority.

If it is determined by the City that stormwater management or conveyance facilities, in addition to the onsite facilities required by these standards, are necessary to manage and protect natural resources, municipal infrastructure, and/or private property effectively, the City may require additional facilities or modifications.

#### **1.4.5 Alternative Materials and Methods**

Alternative materials and methods for stormwater management will be accepted only if the applicant can demonstrate that the existing standards are not appropriate for a given site and the proposed alternative provides the same or greater level of stormwater management as defined in these standards. Alternate materials or methods not explicitly approved herein will be considered for approval through the modification process outlined in **Section 1.6**. All requests will be evaluated on a case-by-case basis, and approval of alternative materials and methods for one development proposal will not imply an approval under similar circumstances in another proposal.

#### **1.4.6 Stormwater Easements**

Drainage easements shall be provided in a proposed development for all stormwater facilities that are not located in public rights-of-way or tracts. Said drainage easements shall be granted to the parties responsible for providing ongoing maintenance of the stormwater facilities.

City-maintained stormwater management facilities, including access roads to said facilities, shall require a public stormwater easement or dedication as described in **Chapter 5** and **Chapter 8**. The stormwater easement shall include access to all stormwater management facilities to accommodate maintenance of the facilities. The owner shall provide the City with all necessary documentation granting such easements. The City will not approve the final construction plans until all public and private easement documents have been completed to the satisfaction of the City.

#### **1.4.7 Operations and Maintenance (O&M) Requirements and Access**

Stormwater management facilities that serve a single property owner may be privately maintained. Stormwater management facilities that serve multiple properties (e.g. facilities for residential subdivisions) shall be transferred to public ownership following the 2-year maintenance warranty period. Regardless of ownership, all stormwater management facilities are required to comply with O&M requirements described in **Chapter 8**.

## **1.5 Jurisdictional Requirements**

### **1.5.1 Jurisdiction**

The City may promulgate new or amended policies pertaining to these standards in accordance with any other rules and regulations issued by the City and approved by the governing body.

### **1.5.2 Compliance with Laws**

Conformance with these standards shall not be a substitute for, or eliminate the necessity of, conforming with any and all federal, state, and local laws, ordinances, rules, and regulations which are now, or may in the future, be in effect.

### **1.5.3 Conflicts**

Any provisions or limitations of these standards and any regulation and order adopted pursuant hereto are suspended and supplemented by any applicable federal, state, or local requirements existing or adopted subsequent hereto which are more stringent than the provisions and limitations contained herein, provided, always, that any provision of these standards and policies adopted pursuant thereto which are more stringent than any applicable federal, state, or local requirement shall prevail and shall be the standard for compliance by all properties within the city boundary.

## **1.6 Modification Process**

Modification to the adopted stormwater standards may be requested in accordance with OCMC 16.12 and 13.12.100 using the following process.

### **1.6.1 Modification Request Submittal**

Requests to modify the stormwater standards shall be submitted in writing to the City and include the following:

- A. The desired modification(s).
- B. The reason(s) for the request(s).
- C. A comparison between the specification(s) and standard(s) and the modification(s) for performance, function, maintainability, safety, etc.
- D. References to regional and/or national accepted standards, record of successful use by other agencies, or other supportive information.
- E. It is the responsibility of the applicant to obtain all approvals from any federal, state, or local entity that has authority over or is responsible for permitting of the activities before proceeding with an approved modification.

### **1.6.2 Criteria for Modification of Standards**

The City may grant a modification to the adopted standards when the use thereof does not compromise public safety, environmental protection, or the intent of the stormwater standards and any one of the following conditions are met:

- A. The standard is deemed not applicable for the particular application.

- B. Topography or other geographic conditions impose an environmental or safety concern and an equivalent alternative exists, which can accomplish the same design intent as provided in these standards.
- C. A minor change to the standard is required to address a specific design or construction problem which, if not enacted, will result in an undue hardship.
- D. The proposed modification is in the public interest and requirements for safety, function, appearance, and maintainability based on sound engineering and technical judgment are fully met.
- E. The financial viability of meeting the requirements of these design standards is not in itself an adequate justification for granting a modification of the standards.

## 1.7 Design Professional

Much of the information covered in this document is addressed to professional engineers. In order to assist the professional engineer in fulfilling his/her responsibilities related to a development project, the following comments address the City's expectations regarding the responsibilities of the project engineer and other design professionals.

### 1.7.1 Project Engineer's Responsibilities

All engineering plans, reports, or documents must be stamped and signed by a professional civil engineer registered in the State of Oregon. The project engineer is responsible for reviewing any proposed improvements or modifications to the existing storm drain system with City staff prior to commencement of design work to determine any special requirements and whether the proposal is permissible.

When specifically indicated in this document, some submittals do not require the approval or stamp of a professional engineer. These include but are not limited to the *Site Assessment and Preliminary Design Checklist (Appendix B)*, the use of the BMP Sizing Tool to size stormwater facilities, and the design of planting plans.

The project engineer's responsibilities include:

- A. The project engineer shall prepare construction plans for site development meeting City standards. The engineer shall remain responsible for the accuracy, completeness, and scope of all work submitted to the City. The project engineer shall be responsible for correcting all deficiencies, when necessary, should errors, omissions, or inaccurate data due to the engineer's work come to the City's attention in the future. The project engineer shall be responsible for any damages resulting from the incorrect work.
- B. The project engineer shall incorporate recommendations from geotechnical engineering reports and any other engineering recommendations into the construction plans for site development.
- C. The project engineer shall, when required by the City, be responsible for the inspection and approval of the construction within the engineer's area of technical expertise. This responsibility shall include, but need not be limited to, construction observation and approval as to the establishment of line, grade, maintenance, and implementation of Best Management Practices (BMP) and drainage of the development area. In conjunction with the execution of this responsibility, copies of any on-site inspection reports shall be

submitted by the engineer to the City, when so requested. Inspection under this paragraph means the visual observation and documentation of the construction of the stormwater system and BMPs as compared to the approved plans, specifications, and City standards.

- D. The project engineer shall act as the coordinating agent in the event the need arises for liaison between the owner, other professionals, contractors, the City, and other agencies.
- E. The project engineer shall be responsible for the preparation of revised plans and the submittal of as-built plans or record drawings, as applicable upon completion of work.
- F. The project engineer shall be responsible for verification of excavation and embankment quantities, detention pond volumes, slope steepness, and compliance with approved construction plans.
- G. Approval of plans and issuance of permits by the City does not in any way relieve the project engineer of his/her responsibility to meet all requirements of the City or other affected jurisdictions, or the obligation to protect the life, health, and property of the public. The design for any project must be revised or supplemented at any time it is determined or suspected by the City or the engineer of record that the full requirements of the City were not met.

### **1.7.2 Geotechnical Engineer's Responsibilities**

When a geotechnical investigation report is required, the minimum responsibilities of the geotechnical engineer shall be as follows:

- A. The preparation of any required geotechnical investigation report.
- B. All reports, field data, test data, and recommendations shall be submitted to the project engineer and to the City Engineer.
- C. The geotechnical engineer shall provide infiltration testing when required, following the requirements in Appendix D.
- D. The geotechnical engineer shall provide, when required by the project engineer or the City Engineer, professional inspection and approval concerning the preparation of ground to receive fills and testing for required compaction. The geotechnical engineer shall also provide oversight on stability of all finished slopes and the design of embankment fills.
- E. The geotechnical engineer shall prepare, when required by the project engineer or the City Engineer, a final soils report which includes locations and elevations of field density tests. The final soils report shall also include summaries of field and laboratory tests and other substantiating data and comments on any changes made during site development.

### **1.7.3 Landscape Architect's Responsibilities**

When plans for a proposed stormwater management facility are prepared by a licensed landscape architect, the landscape architect shall prepare construction plans for site development meeting the standards and requirements of this document. The landscape architect shall be responsible for correcting all deficiencies, when necessary, should errors, omissions, or inaccurate data due to the landscape architect's work come to the City Engineer's attention in the future. The landscape architect shall be responsible for any damages resulting from the incorrect work.