

## SECTION 500

## GRADING, EROSION AND SEDIMENTATION CONTROL

### 501 Erosion and Sedimentation Control Plan

All engineering plans for projects that propose to construct new, or modify existing drainage facilities, which propose filling and/or grading shall include an approved temporary and/or permanent "Erosion and Sedimentation Control Plan" (ESC) to prevent sediment-laden runoff from leaving the site during construction, protect and preserve critical areas and significant trees, or until other permanent measures are taken. The plan shall be designed in accordance with Section 2.0 herein, the Stormwater Management Manual for Western Washington, 2005 Edition and the following additional design requirements:

#### 501.1 Construction Entrance

Stabilize all construction access points to the project with a quarry rock pad. The pad shall be of 4-to-8 inch quarry spalls, 15-foot minimum width and 100-foot minimum length.

#### 501.2 Clearing Limits

Delineate, dimension, field stake, and flag limits of clearing, wetland buffers, and other sensitive areas.

#### 501.3 Temporary Drainage

A drainage plan shall be designed to limit the tributary drainage to areas to be cleared and graded. For projects larger than one (1) acre the design shall include a temporary detention facility which will provide a storage volume equal to a 100-year/24-hour storm event. A temporary flow control structure shall be designed to limit the discharge flow rate to a 5-year/24-hour storm event. An overflow spillway shall also be provided. For projects larger than one (1) acre or projects which drain to a critical area (e.g. rivers, streams, ponds, wetland, natural drainageways, etc.) which would potentially be impacted by the clearing, filling or grading activities as determined by the Public Works Director, the design shall include the King County Surface Water Design Manual, Chapter 21.14 Clearing, Filling and Grading of the Puyallup Municipal Code, and the following additional design requirements.

#### 501.4 Sedimentation Control

Design measures shall be provided to allow settlement of sediment prior to discharge. Examples are sediment traps or sediment ponds, depending on tributary area, augmented by other measures such as silt fencing, perimeter ditches, and check dams.

#### 501.5 Soil Stabilization and Revegetation

Exposed areas and soil stockpiles must be stabilized according to the following schedule:

1. From April 1 to October 31 all disturbed areas at final grade and all exposed areas that are scheduled to remain unworked for more than 30 days shall be stabilized within 10 days.
2. From November 1 to March 31 all exposed soils at final grade shall be stabilized immediately using permanent or temporary measures. Exposed soils with an area greater than 5,000 square feet that are scheduled to remain unworked for more than

24 hours and exposed areas of less than 5,000 square feet that will remain unworked for more than seven (7) days shall be stabilized immediately.

All disturbed areas which are not planned to be constructed on within 90 days from time of clearing and grading shall be revegetated with the native vegetation.

#### 501.6 Construction Sequence

All ESC plans shall include a “Construction Sequence” schedule which outlines the proper sequence and maintenance requirements for ESC in conjunction with the construction of the project. The following “Construction Sequence” is to be used as a guide, although each individual project is unique and will require its own “Construction Sequence” schedule:

1. Hold a preconstruction meeting with the City and obtain required permits.
2. Establish clearing and grading limits.
3. Construct temporary construction entrance.
4. Construct perimeter ditches, silt fences, and other erosion control devices as shown.
5. Construct protection devices for critical areas and significant trees proposed for retention.
6. Schedule an erosion control inspection with the City.
7. Construct storm drainage retention/detention (control and storage) facilities. Provide emergency overflow as applicable.
8. All ditches and swales as shown shall be provided to direct all surface water to the retention/detention and sedimentation pond as clearing and grading progresses. No uncontrolled surface water shall be allowed to leave the site or be discharged to a critical area at any time during the grading operations.
9. Clearly state at what point grading activities can begin, usually only after all drainage and erosion control measures are in place.
10. Identify erosion control measures which require regular maintenance.

#### **502 Grading Design Requirements**

Clearing and grading design required for project site development should be done in conjunction with proposed site development construction plans. When a separate grading permit is requested, the submittal and design requirements shall be in accordance with Sections 1.0 and 2.0 herein. In both cases the following design requirements shall also apply:

- 502.1 Cross sections of fill/grading shall be shown on the plans through all properties and at least 30 feet beyond the property lines. Cross sections shall be shown at 200-foot minimum intervals across the total width/length of the property. These are minimum requirements and additional cross sections may be warranted depending upon site conditions.

- 502.2 The fill/grading plan shall be designed so as not to affect any public right-of-way or adjacent properties.
- 502.3 All side slopes shall be stabilized with approved erosion control treatment.
- 502.4 No fill or cut side slopes shall be steeper than 2H:1V unless a geotechnical report dictates otherwise.
- 502.5 A minimum setback of 5 feet shall be provided between the top of any fill placement and the top of the bank of any defined drainage channel or critical area or associated buffer boundary.
- 502.6 When filling a site, particular care should be taken to prevent the impediment of existing upstream surface drainage flow.
- 502.7 Any material to be exported shall not be deposited within the city limits unless previously approved by the Engineering Services Staff. The quantity of both the fill and the cut shall be noted on the plans.
- 502.8 No clearing, filling, grading or other alteration shall occur within any critical areas or associated buffer unless specifically authorized pursuant to Chapter 21.06 Environmentally Critical Areas Management of the Puyallup Municipal Code.

### **503 Grading, Erosion and Sedimentation Control Plan Requirements**

The applicable “General Plan Requirements” in Section 2.0 shall be shown on the plans.

The following applicable fill and grading plan requirements shall also be shown on the plans:

- All existing trees 6 inches diameter at breast height or larger, which are proposed to be removed, or retained. The location, size and species of each tree shall be shown.
- The fill and/or excavation quantities in cubic yards.
- The type of fill material and compaction requirements.
- State whether or not the fill material will be placed upon native or stripped vegetation.
- Cross sections at 200-foot minimum intervals showing the fill/grading shall be shown on the plans through all properties and 30 feet beyond the property lines. Scale shown shall be consistent with the requirements of Section 2.0.
- Show tracking control entrance on the plans.
- Show adequate siltation control measures to protect adjacent properties.
- When silt fences are required, show the location with a typical fence detail. Silt fences will usually be required unless site work is lower than the surrounding property.
- Clearly show the limits of fill and/or excavation work.
- Show perimeter ditches to control water flow.
- Show proposed sequence of construction that will provide the maximum drainage and erosion control during construction.
- Storm Retention/Detention plan requirements are as follows:
  - Show on the plans how water quality and quantity will be controlled.
  - Indicate the ponding limits showing the high water elevations.
  - Show all existing and proposed storm pipes including locations, lengths, materials, slopes, depths, sizes, rims, and inverts.
  - Indicate the location, number, and type of manholes and catch basins.
  - Show measures taken to prevent silt laden water from entering the public storm system.
  - Identify storm pipes and control structures that are temporary and not part of the final storm system.

- Indicate the highest groundwater elevation.
- Height and profile of existing or proposed retaining structures.
- The location of all critical areas and associated buffers shall be shown.

#### **504 Construction Dewatering and Bypass Pumping Standard**

Construction dewatering is the process of removing water from excavations, trenches, pipelines, and utility vaults so that work can be performed. Dewatering may involve using pumps, well points, or diversions to remove water. The discharges from the dewatering process are likely to be muddy and/or contaminated with other pollutants. Some common contaminants are silts, clays, sewage, and petroleum products.

The Contractor shall be responsible for controlling the volumes and water quality of all discharges. The Contractor shall be responsible for the safe and legal disposal of all dewatering discharges. Control of dewatering discharges may require one or more of the following measures.

- Discharge to settling ponds or tanks.
- Discharge to sanitary sewer system when approved by the City.
- Discharge to tanker trucks for offsite disposal.
- Discharge to City storm drainage system (clean water only).
- Discharge to ground surface.

Spills or releases of contaminated water shall be reported to the City immediately. In event of a spill, the Contractor shall cease all discharges and begin clean up using industry accepted standard methods. Use of an environmental cleanup company may be required.

Prohibited activities include discharge of contaminated, dirty, or sediment laden water to the City storm drainage system; and surface discharge of contaminated water that may pose a hazard to the general public.

#### **Construction Bypass Operations**

Construction bypass operations are ones where storm drains, sanitary sewers, and creeks or streams are diverted or pumped around a construction site. Sizing of the bypass conveyance system, coffer dams, and/or pump(s) is critical to ensure that the work site is not overwhelmed during high flows.

All bypass operations shall be described in detail on the project plans. The information on the plans shall include diversion and return locations, design flows, pump size and type, pipeline location and material, environmental protection measures, and contingency plan. The following are minimum criteria for sizing bypass systems.

- Sanitary Sewer Bypass Systems: shall be sized according to anticipated sewage flows as determined by City Treatment Plant or Collections Division Staff.
- Storm Drainage Bypass Systems: shall be sized to pass the 25-year, 24-hour rainfall event flow.
- Stream Bypass Systems: shall be sized to pass the 50-year, 24-hour rainfall event flow. A State of Washington JARPA application shall be required for all stream bypass projects.

## 505 Grading, Erosion and Sedimentation Control Plan Notes

The applicable “General Plan Notes” in Section 2.0 shall be shown on the plans. The following notes shall also be shown on the plans.

### **GRADING, EROSION AND SEDIMENTATION CONTROL NOTES:**

1. All work in City right-of-way requires a permit from the City of Puyallup. Prior to any work commencing, the general contractor shall arrange for a preconstruction meeting at the Development Services Center to be attended by all contractors that will perform work shown on the engineering plans, representatives from all applicable Utility Companies, the project owner and appropriate City staff. Contact Engineering Services to schedule the meeting (253) 841-5568. The contractor is responsible to have their own approved set of plans at the meeting.
2. After completion of all items shown on these plans and before acceptance of the project, the contractor shall obtain a “punch list” prepared by the City’s inspector detailing remaining items of work to be completed. All items of work shown on these plans shall be completed to the satisfaction of the City prior to acceptance of the water system and provision of sanitary sewer service.
3. All materials and workmanship shall conform to the Standard Specifications for Road, Bridge, and Municipal Construction (hereinafter referred to as the “Standard Specifications”), Washington State Department of Transportation and American Public Works Association, Washington State Chapter, latest edition, unless superseded or amended by the City of Puyallup City Standards for Public Works Engineering and Construction (herinafter referred to as the “City Standards”).
4. A copy of these approved plans and applicable city developer specifications and details shall be on site during construction.
5. Any revisions made to these plans must be reviewed and approved by the developer’s engineer and the city engineer prior to any implementation in the field. The City shall not be responsible for any errors and/or omissions on these plans.
6. The contractor shall have all utilities verified on the ground prior to any construction. Call (811) at least two working days hours in advance. The owner and his/her engineer shall be contacted immediately if a conflict exists.
7. All limits of clearing and areas of vegetation preservation as prescribed on the plans shall be clearly flagged in the field and observed during construction.
8. All required sedimentation and erosion control facilities must be constructed and in operation prior to any land clearing and/or other construction to ensure that sediment laden water does not enter the natural drainage system. The contractor shall schedule an inspection of the erosion control facilities **PRIOR** to any land clearing and/or other construction. All erosion and sediment facilities shall be maintained in a satisfactory condition as determined by the City, until such time that clearing and/or construction is completed and the potential for on-site erosion has passed. The implementation, maintenance, replacement, and additions to the erosion and sedimentation control systems shall be the responsibility of the permittee.

9. The erosion and sedimentation control system facilities depicted on these plans are intended to be minimum requirements to meet anticipated site conditions. As construction progresses and unexpected or seasonal conditions dictate, facilities will be necessary to ensure complete siltation control on the site. During the course of construction, it shall be the obligation and responsibility of the permittee to address any new conditions that may be created by his activities and to provide additional facilities, over and above the minimum requirements, as may be needed to protect adjacent properties, sensitive areas, natural water courses, and/or storm drainage systems.
10. Approval of these plans is for grading, temporary drainage, erosion and sedimentation control only. It does not constitute an approval of permanent storm drainage design, size or location of pipes, restrictors, channels, or retention facilities.
11. Any disturbed area which has been stripped of vegetation and where no further work is anticipated for a period of 30 days or more, must be immediately stabilized with mulching, grass planting, or other approved erosion control treatment applicable to the time of year in question. Grass seeding alone will be acceptable only during the months of April through September inclusive. Seeding may proceed outside the specified time period whenever it is in the interest of the permittee but must be augmented with mulching, netting, or other treatment approved by the City.
12. In case erosion or sedimentation occurs to adjacent properties, all construction work within the development that will further aggravate the situation must cease, and the owner/contractor will immediately commence restoration methods. Restoration activity will continue until such time as the affected property owner is satisfied.
13. No temporary or permanent stockpiling of materials or equipment shall occur within critical areas or associated buffers, or the critical root zone for vegetation proposed for retention.