

**EROSION AND SEDIMENT CONTROL STANDARDS  
CITY OF OVERLAND PARK  
DRAFT 06.15.2005**

**A. Authority**

As set forth in the Overland Park Municipal Code (OPMC), Chapter 16.200, the Director of Planning and Development Services is authorized to adopt Erosion and Sediment Control Standards for construction within the City of Overland Park. Such authority has been delegated by the Director to the Administrator of Engineering Services and Codes Administrator for construction undertaken by private parties and to the Director of Public Works and City Engineer for construction undertaken by the Public Works Department.

**B. Contents and Principles**

Standards include Design Criteria, Standard Drawings and Specifications. As set forth in the OPMC, standards are based on the following principles:

1. Fit the development to existing site conditions.
2. Minimize the extent of exposure.
3. Minimize duration of exposure.
4. Break work activities into phases when possible.
5. When possible, protect disturbed areas from any unnecessary run-on of stormwater from adjacent sites, at least during the construction period.
6. Stabilize disturbed areas.
7. Keep runoff velocities low.
8. Retain sediment on the site.
9. Inspect and maintain control measures.
10. Use performance measures and outcomes.
11. Timely employment and maintenance of all measures.

**C. Design Criteria**

Division V - Design Criteria, Section 5100 - Erosion and Sediment Control (Section 5100) of the Standard Specifications and Design Criteria, published by the Kansas City Metropolitan Chapter of the American Public Works Association (KC-APWA), is hereby adopted by reference as the Design Criteria for the City, except as amended below. This adoption shall apply to the revision of Section 5100 adopted and approved by KC-APWA on August 13th, 2003. Any future revisions of Section 5100 shall not be in force until adopted by the City in writing.

The following exceptions shall apply:

1. Section 5102, "Education, Training, and Certification" shall not apply.
2. Section 5103 "Plan Requirements", add the following:

The erosion and sediment control (ESC) plan shall be on separate plan sheets from other construction plans. Except when waived by the City for simple or limited construction, separate ESC plan sheets shall be provided for the following stages of construction:

- a. Initial BMP installation and perimeter controls prior to land disturbance.
  - b. BMP installations after completion of all site improvements and site grading but prior to final stabilization. Additionally, this plan must show staging/phasing of construction either on separate plan sheets or with a "staging chart" during the following project stages (when applicable):
    - Sanitary sewer installation
    - Mass grading
    - Storm sewer installation
    - Street construction
    - During construction of buildings on the site
3. Section 5103.3 "Verification of Design Performance" shall not apply.
  4. Section 5104.1 "Single Family Residential Lot"; Template 5104-1; and the "Single Family Residential Standard Design Booklet" shall not apply. The guidance provided in the City of Overland Park publication "Single Family Residential Erosion and Sediment Control Standards", January 2004 or latest version, shall be used instead.
  5. Section 5108.1 "Straw Bale Barrier", add the following paragraph:

Straw bales are discouraged for general use and are prohibited for use as ditch checks.
  6. Section 5108.3 "Sediment Fence", delete Table 5108-1 and add the following:

a. Site Perimeter and Protection of Paved Areas:

Perimeters of all construction sites and all paved areas must be adequately protected from erosion by use of silt fence or other equivalent perimeter controls. Controls at the site perimeter and at edge of pavement shall meet minimum requirements indicated in Table 5108-1A below.

<b>Table 5108-1A Silt Fence Protection for Paved Areas and Site Perimeters</b>			
Maximum flow path length (4)	Average Ground Slope		
	<3%	3% to 5%	>5%
< 20 ft	No Control Required (1)	Single Row (1)	Single Row
20 – 100 ft	Single Row	Single Row	Single Row
100 – 200 ft	Single Row	Single Row	Double Row (2)
200 – 300 ft	Single Row	Double Row (2)	Double Row (2)
300 + ft	Double Row (2)	Double Row (2)	Double Row (2)

Notes:

1. When perimeter of the site is a developed yard or a stream corridor, a silt fence or other barrier shall ALWAYS be provided.
2. A wire reinforced silt fence in accordance with APWA Standard Detail ESC-12 may be substituted for a double row of standard silt fence.
3. The requirements in this table are MINIMUMS. If silt fence indicated in this table do not satisfactorily control erosion, the City may require additional controls.
4. Flow path length is measured from the top of the watershed for each silt fence location. Do not reduce length due to intermediate silt fence placed on the slope.

In addition to site perimeters and paved areas, interior portions of the site must be protected through use of Silt fence or alternative BMPs in accordance with the following:

b. Interior Site Silt Fence Placement:

Silt fence or equivalent controls shall be installed on all disturbed sites at the following maximum intervals:

<u>Average Ground Slope</u>	<u>Spacing</u>
<3%	150 ft
3 – 5%	100 ft
5 – 10%	75 ft
10%-20%	50 ft
> 20%	N/A*

\* For slopes exceeding 20%, provide silt fence at the toe of slope but use alternative controls along the slope.

7. Section 5108.12 “Temporary Sediment Basin”, add the following paragraph;

a. Applicability:

Temporary silt basins are required for all site discharges from sites with disturbed areas exceeding 10 acres in any subbasin or watershed. The City may waive this requirement on a case-by-case basis when installation of such a basin is not feasible due to construction or site constraints. Phased construction shall generally not be considered a constraint that will relieve this requirement. For residential subdivision development, temporary withholding or phased release of one or more residential lots may be necessary to allow adequate area for sediment basin facilities. When existing lakes, other water bodies or sensitive areas are located immediately downstream from a construction site, the City may require silt basins for discharges from subbasins smaller than 10 acres. Additionally, any earthen stormwater detention facilities shall be designed to act as a sediment basin during the construction period unless waived by the City.

b. Design Requirements:

General:

- (1) Maximum drainage area to a single sediment basin shall be 40 acres unless approved by the City. Basins serving greater than 40 acres shall require hydrograph routing computations.

- (2) Design inflow/outflow for sediment basins serving less than 40 acres may be computed without considering hydrograph attenuation due to storage. Rational method flow computations are acceptable for basins serving 40 or less acres.
- (3) The construction drawings shall indicate all of the following design data. It may be included in a table or shown on the plan/profile of the basin:

Hydrology/Hydrologic data:

- Tributary Area to Basin
- 50% (2 year) design flow to basin
- 4% (25 year) design flow to basin
- 50% (2 year) design storm water surface elevation
- 4% (25 year) design storm water surface elevation

Sediment Basin Data:

- Required sediment storage volume
- Sediment basin bottom elevation
- Sediment basin cleanout elevation
- Permanent pool elevation (if not a dry pond)
- Dewatering device connection to riser pipe elevation
- Top of Principal Spillway Riser elevation
- Emergency Spillway elevation
- Top of dam elevation

Basin Shape Data:

- $A$  = Area at normal pool (or at bottom of dewatering device if dry pond)
- $L$  = Flow path length for all discharges into pond
- $We$  = Effective Width =  $A/L$
- Length to width ratio =  $L/We$  (if less than 2, baffles are required)

Principal Spillway Data:

- Riser pipe diameter
- Barrel (outflow) pipe diameter

Dewatering Device:

- Type of Dewatering device
- Size and spacing of perforations (See Table 5108.12A below for additional design guidance)

Emergency Spillway Data:

- 4% design storm depth in spillway
- 4% design storm discharge velocity

<b>Table 5108.12A – Drawdown Mechanism Sizing Chart</b>				
Tributary Drainage Area	Perforated Riser Hole Diameter (1)			Skimmer (inches)
	Single Column Riser (inches)	4-Column Riser (inches)	12-Column Riser (inches)	
3-5 acres	1.0	N/A	N/A	2.0
5.1 to 10 acres	1.3	0.5	N/A	2.6
10.1 to 15 acres	N/A	0.7	N/A	3.3
15.1 to 20 acres	N/A	0.8	0.5	4.0
20.1 to 25 acres	N/A	0.9	0.5	4.4
25.1 to 30 acres	N/A	1.0	0.6	4.8
30.1 to 35 acres	N/A	1.1	0.6	5.1
35.1 to 40 acres	N/A	1.2	0.7	5.5
<p>Notes:</p> <p>(1) Perforated riser hole diameters based on 6-inch on center spacing vertically</p> <p>(2) Minimum diameter – ½ inch, Maximum diameter 1-1/2 inch</p> <p>(3) Source of data - Interpolated from Penn State University Fact Sheet #F253 – “Controlling Dewater of Sediment Basins”.</p> <p>(4) Drawdown based on 134 CY/acre storage volume and 48 hour target drawdown period.</p>				

(4) Storage Design Requirements:

- (a) If the length to width ratio is less than 2, interior silt fence baffles shall be provided to reduce short circuiting of the basin.

- (b) The storage volume shall be 134 cubic yards per tributary acre to the basin. The tributary area shall include all areas that drain to the basin, including any offsite areas or undisturbed areas.
  - (c) All storage shall be considered “dry” storage. A permanent pool may be allowed on a case-by-case basis when the sediment basin will become a permanent water feature for the site, or if adequate safety measures are employed.
- (5) Interior basin slopes shall not exceed 3:1. Outside embankment slopes shall not exceed 2.5:1
- (6) Principal Spillway Requirements:
- (a) The principal spillway shall be designed to pass the 50% (2 year) storm without overtopping the emergency spillway.
  - (b) For drainage basins less than 10 acres, a rock check dam around a horizontal discharge pipe may be used in lieu of a riser pipe.
  - (c) The principal spillway shall include a drawdown device designed to empty the silt basin in not less than 24 hours and not more than 48 hours. Acceptable devices include a floating skimmer (preferred) to draw water from the surface, a perforated riser, and perforated drainage tube attached to the principal spillway riser.
  - (d) The principal spillway shall include a trash rack or other device to prevent clogging.
  - (e) The principal spillway riser pipe, and outflow pipe shall be a minimum diameter of 15 inches.
  - (f) The principal spillway riser pipe shall include a Red Painted line to delineate the storage level when sediment storage has reduced the sediment storage to 75% of the design volume. (Typically 100 cubic yard per acre for a basin designed for 134 cubic yards per acre). The line shall be clearly marked “Cleanout Level”.

- (7) Emergency Spillway Design:
  - (a) Emergency spillways shall be located in a non-fill location when feasible and shall be lined with a non-erodible material such as rip-rap or turf reinforcement mat.
  - (b) The emergency spillway shall be located a minimum of 1 foot above the principal spillway overflow elevation.
  - (c) The emergency spillway shall be designed for the 4% (25 year) storm. A minimum of 1 foot freeboard must be provided from the 4% (25 year) design storm elevation to the top of dam.
  - (d) Emergency spillways can be omitted with approval of the City if the primary spillway is designed for the 4% storm AND the tributary area is less than 20 acres. If the emergency spillway is omitted, a minimum of 2-foot of freeboard must be provided from the 4% design storm elevation to the top of dam.
- (8) Maintenance/Safety Considerations:
  - (a) The permit holder or contractor shall clean out deposited sediment when the sediment storage exceeds the level of the cleanout mark.
  - (b) Sediment basins shall be fenced using construction fencing or other material for safety reasons and include warning signs reading "Danger, Keep Out".
8. Section 5108.7 "Check Dams", add the following:

All swales or concentrated drainages exceeding 2 acres in tributary area must be adequately protected with check dams and/or lining material capable of withstanding concentrated flows. Protection must be installed within 14 days of grading. Silt fence may not be used across concentrated flow for tributary drainage areas exceeding 2 acres.
9. Section 5108.9 "Culvert Inlet Protection", delete paragraph entitled "Sediment Fence Culvert Inlet Protection. Silt fence as inlet or outlet protection for culverts is not permissible.



10. Section 5108.8 “Drop or Curb Inlet Protection“, add the following:  
  
Silt fence for area inlet protection must be reinforced with a supporting frame structure or with wire reinforcement.
11. Where there is a contradiction between specific materials or installation requirements included in Section 5100 and the Standard Drawings and Specifications which follow in this document, the Standard Drawings and Specifications shall govern. Any item discussed in Section 5100 which is prohibited for use by the Standard Drawings and Specifications is not allowed.
12. Additional guidance for design of erosion and sediment control found in the following documents may be considered, subject to City approval:  
  
EPA. Stormwater Management for Construction Activities - Developing Pollution Prevention Plans and Best Management Practices.  
(EPA 832-R-92-005). Sept. 1992.  
  
Missouri Department of Conservation and the St. Charles County Soil and Water Conservation District, with revisions by the Mid America Association of Conservation Districts (MAACD).  
Protecting Water Quality.
13. Section 5100 may contain errors and omissions. Final approval of specific erosion and sediment control designs lies with the City. Professional judgment shall be used in applying these design standards.

**D. Standard Drawings**

1. The following standard drawings, available from the City, are hereby adopted:  
  
Curb Inlet Sediment Filter  
Concrete Block Curb Inlet Sediment Filter  
Area Inlet Protection  
Rock Dam Ditch Check  
Silt Basin (2 sheets)  
Sediment Fence Layout  
Sediment Fence  
Straw Bale Drop Inlet Protection  
Temporary Diversion

2. Standard Drawings for Temporary Water Pollution Control approved by the Kansas Department of Transportation (KDOT) are also acceptable for use in appropriate situations.

3. Standard Drawings for Erosion and Sediment Control approved by the KC-APWA and bound in Division III of the KC-APWA Standard Specifications and Design Criteria, Volume III are also approved, except as follows:

ESC-02, ESC-13, ESC-19, ES 28, and ES-31 are not applicable.

#### **E. Specifications**

1. The basic specification for all erosion and sediment control work performed within the City shall be the KDOT Standard Specifications for State Road and Bridge Construction, current edition, as modified by the following Special Provisions (latest versions):

90P-151-R8 "Temporary Erosion and Pollution Control"

90P-138-R1 "Fertilizers"

90P-152-R2 "Seeds"

90P-153-R3 "Mulching, Slope Protection and Erosion Control"

90P-177-R02 "Silt Fence"

90P-193-R03 "Erosion Control Materials"

2. In addition, all projects or plans must contain the following requirements:
  - a. Concrete Washout: Concrete wash or rinsewater from concrete mixing equipment, tools and/or ready-mix trucks, tools, etc, may not be discharged into or be allowed to run directly into any existing water body or storm inlet. One or more locations for concrete wash out will be designated on site, such that discharges during concrete washout will be contained in a small area where waste concrete can solidify in place and excess water evaporated or infiltrated into the ground.
  - b. Chemical Handling: Chemicals or materials capable of causing pollution may only be stored onsite in their original container. Materials stored outside must be in closed and sealed water-proof containers and located outside of drainageways or areas subject to flooding. Locks and other means to prevent or reduce vandalism shall be used. Spills will be reported as required by law and immediate actions taken to contain them.

3. Specifications for items not covered by these specifications or covered completely by the Standard Drawings shall be developed by the Engineer for each project specifically. Information relevant for such specifications may be taken from manufacturer's information and may be supplemented by guidance given in other publications and standards, subject to approval by the City.

**F. Performance Standard and Innovation**

This ultimate standard of the City is that practices used in the field perform without failure, and work together as part of integrated systems to prevent sediment from leaving the construction zone and to prevent sediment from contaminating downstream waterways. **Practices which fail to perform in the field shall be replaced with more effective substitutes, regardless of prior City reviews.** Innovations which engineers or contractors propose which have a high likelihood of improving performance are encouraged and will be considered by the City. All such innovations require City approval for use.

**G. Adoption**

The Director of Planning and Development Services and the Public Works Director jointly adopt these Erosion and Sediment Control Standards this \_\_\_\_\_ day of \_\_\_\_\_, 2005.

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Roger W. Peterson  
Director of Planning and Development Services

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Doug Brown, P.E.  
Public Works Director