7E-1 Design Information for Erosion and Sediment Control Measures

A. General

The following sections provide design information for a variety of erosion and sediment control measures. Each section describes the measure, how to properly design and implement it, and the benefits that it provides. Each measure's benefits are shown on the first page and a rating (high, medium, or low) is given for each; a summary of the individual measures and their benefits is shown in Table 1. The benefits have been divided into five categories that directly affect erosion or sediment transportation. The following are descriptions of each of the benefits shown in Table 1.

B. Flow control

Flow control refers to the ability of a practice to reduce flow velocity (either sheet or concentrated flow). Reducing flow velocity helps reduce erosion and transportation of sediment. Controlling velocity is important on long or steep slopes. High-velocity flows can quickly cause severe erosion.

C. Erosion control

Erosion control is the measure's ability to stabilize the surface and prevent soil particles from becoming displaced. Erosion control should be utilized on all disturbed surfaces. Preventing erosion from taking place is the simplest and most cost-effective method of keeping sediment from leaving a site.

D. Sediment control

Sediment control is the ability of a practice to remove suspended soil particles from runoff after erosion has taken place. Sediment control measures are the last line of protection against releasing sediment laden runoff into water bodies or waterways.

E. Runoff reduction

Runoff reduction is the ability to reduce the volume of runoff from a site. Reducing the volume from an area also reduces the potential for both erosion and sediment transportation. These methods utilize absorption or increase the potential for infiltration of stormwater into the soil.

F. Flow diversion

Flow diversion consists of routing upland runoff around disturbed areas. By reducing the amount of runoff over a disturbed area, the potential for erosion and sediment transportation are also reduced.

G. Selecting control measures

To simplify the process of selecting erosion and sediment control measures, a web-based database has been developed. This database narrows the list of practical measures based upon site conditions and other selection criteria. This database is available at: http://dhn.iihr.uiowa.edu/runoff/.

The database and the following table may be used to select a system of both erosion control and sediment control measures. No single measure should be relied upon as the sole method of erosion control and sediment control.

Table 1: Summary of erosion and sediment control measures and benefits

Section	Control Measure	Benefits				
		Flow Control (Velocity)	Erosion Control (Stabilization)	Sediment Control (Removal)	Runoff Reduction (Volume)	Flow Diversion
Vegetative & Soil Stabilization Erosion Control Measures						
7E-2	Compost Blanket	M	M	L	M	
7E-3	Dust Control		M			
7E-4	Grass Channel	L	H	L	L	
7E-5	Mulching	L	M	L	L	
7E-6	Permanent Seeding	M	H	M	M	
7E-7	Temporary Rolled Erosion Control Products	L	H			
7E-8	Sodding	M	H	M	M	
7E-9	Surface Roughening	L	L		L	
7E-10	Temporary Seeding	M	H	M	L	
7E-11	Turf Reinforcement Mats	L	H			
7E-12	Vegetative Filter Strip	L	L	M	L	
Structural Erosion Control Measures						
7E-13	Check Dam	H		L		
7E-14	Diversion Structure					H
7E-15	Level Spreader	H				M
7E-16	Rock Chutes and Flumes	M	H			
7E-17	Rock Outlet Protection	H	H			
7E-18	Flow Transition Mat	L	H			
7E-19	Temporary Slope Drain					H
Sediment Control Measures						
7E-20	Filter Berm	L		L		L
7E-21	Filter Sock	L		L		L
7E-22	Wattle	L		L		
7E-23	Flocculents			H		
7E-24	Flotation Silt Curtain			M		
7E-25	Inlet Protection			L		
7E-26	Sediment Basin	H		H	L	
7E-27	Sediment Trap	H		H	L	
7E-28	Silt Fence	L		M		M
7E-29	Stabilized Construction Entrance			L		