

	Bowling Green, Kentucky Stormwater Best Management Practices (BMPs) Sediment Management Practices (SMPs)	SMP-04
	Activity: Sediment Traps (ST)	
PLANNING CONSIDERATIONS: Design Life: 1-1 ½ years Acreage Needed: Minimal Estimated Unit Cost: Low Monthly Maintenance: 30% of Installation		 
	Target Pollutants	
	Significant ♦ Partial ◇ Low or Unknown ◇	
	Sediment ♦ Heavy Metals ◇ Nutrients ◇ Oxygen Demanding Substances ◇ Toxic Materials ◇ Oil & Grease ◇ Bacteria & Viruses ◇ Floatable Materials ♦ Construction Waste ◇	
Description	<p>The sediment trap is a control measure that detains sediment-laden runoff from small disturbed areas in an earthen embankment that will allow ponding long enough to allow the sediment to settle within the depression.</p>	
Suitable Applications	<ul style="list-style-type: none"> ➤ Install detention areas below disturbed vicinities of less than 10 acres. ➤ Along the perimeter of the site at locations where sediment-laden runoff is discharged off-site or areas where runoff can enter stabilized areas or waterways. ➤ Temporary sediment traps shall not be used in live or continuously-flowing streams. Sediment traps may kill nearby vegetation by excessive sediment or by long periods of submergence. ➤ Temporary sediment traps only remove coarse particles which settle quickly. Sediment traps are not effective for fine-grained soils such as silt or clay. Additional upstream erosion control measures are necessary. 	
Approach	<ul style="list-style-type: none"> ➤ Prepare sediment traps prior to beginning of construction. ➤ Traps are to be located in areas by hollowing out areas across swales or low embankments, places where damages are excluded and areas needing maintenance to reduce sediment accumulation. ➤ Create larger traps to include a greater amount of sediment buildup. ➤ After stabilization of the construction area, the sediment trap may be removed and stabilize area as needed with vegetation or other cover. 	

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Design Criteria ➤ Volume

Minimum volume of a sediment trap shall be 67 cubic yards per acre for the total drainage area. The volume shall be measured at an elevation equivalent to the spillway invert.

Optimal design volume of sediment trap depends on type of soil, size and slope of drainage area, amount of land disturbance, desired sediment removal efficiency, and desired cleanout frequency. A recommended volume for temporary sediment trap in heavily disturbed areas is 134 cubic yards per acre, which equates to 1 inch of stormwater runoff. Optimal design of this type of sediment trap includes an upper zone of at least 67 cubic yards per acre (to be dewatered using one of the outlet design alternatives) and a lower wet zone for sediment storage and settling.

➤ Shape

The designer should attempt to plan a basin that has a minimum 3:1 length to width ratio.

➤ Slopes

Basin side slopes should be restricted to 4:1 or flatter. However, the permeable, filter, portion should have a maximum cross section of 2:1.

➤ Emergency Spillway

The emergency overflow outlet of the temporary sediment trap must be stabilized with rock, riprap, geotextile, vegetation or another suitable material which is resistant to erosion. A stable emergency spillway must be installed to safely convey stormwater runoff for the 10-year storm event.

An emergency overflow weir should be provided at an elevation of at least 1.5 feet below the top of embankment, with a minimum freeboard of 1 foot. The minimum bottom width of a trapezoidal section for an emergency overflow weir should be:

4 feet - 1 acre (total drainage area)

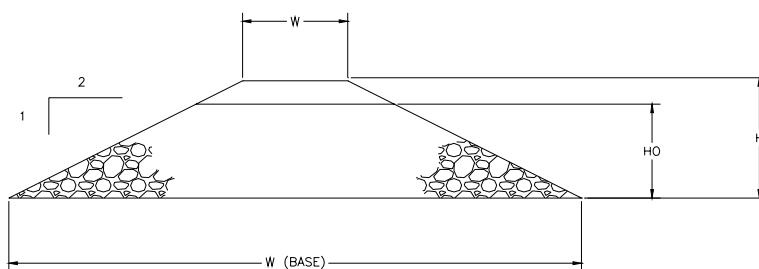
6 feet - 2 acres (total drainage area)

8 feet - 3 acres (total drainage area)

10 feet - 4 acres (total drainage area)

12 feet - 5 acres (total drainage area)

*Drainage areas over 5 acres as designed



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Sediment Trap Dimensions

H	HO	W	W (BASE)
2.0	1.0	5.0	9.0
2.5	1.0	5.5	10.5
3.0	1.5	6.0	12.0
3.5	2.0	6.5	13.5
4.0	2.5	7.0	15.0
4.5	3.0	7.5	16.5
5.0	3.5	8.0	18.0

*Units: Feet***Installation Procedures**

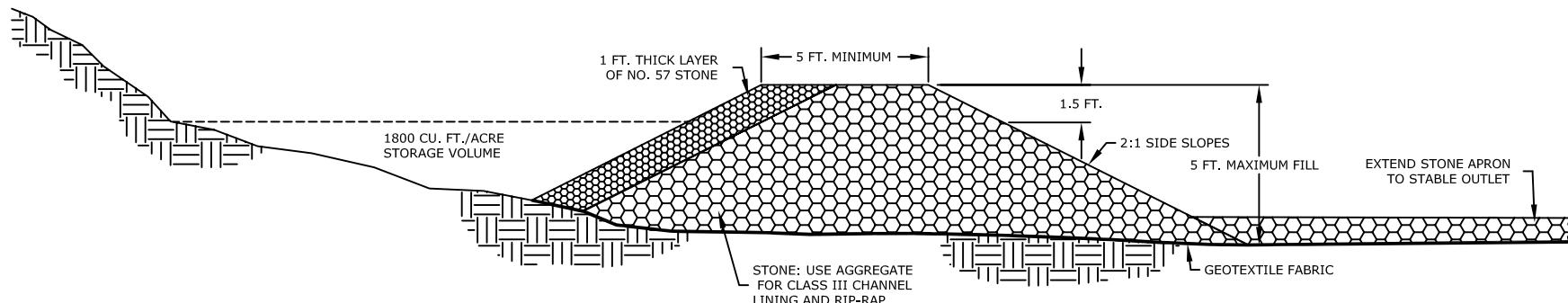
Contractors should construct temporary sediment traps near the beginning of a construction project, after establishing the perimeter erosion control measures and before any clearing or grading operations. This practice will be useful in the early stages of the construction process as it will negate the detrimental characteristics of grading, earthwork, trenching and other land-disturbing activities.

- Use perimeter erosion control measures in the vicinity adjacent to the sediment trap location. Areas under embankments should be cleared and grubbed. Grade and/or excavate to construct the required volume and to provide fill material for any embankments.
- Use clay for fill materials that is free of roots, large rocks, and organic material. Place fill and compact with a sheep's foot roller or other vibratory equipment in 6 inches layers.
- Install outlet structures such as rock outlet berm, or an emergency overflow weir. Prevent outlet failure by installing geotextile fabric and wire fencing. Baffles should be used to maximize storm water residence time within the sediment trap.
- Stabilize slopes using temporary vegetation, erosion control matting, mulch or other measures. Inspect final work for safety and function. Warning signs, barricades, perimeter fence or other measures necessary should be installed to protect construction workers and equipment.

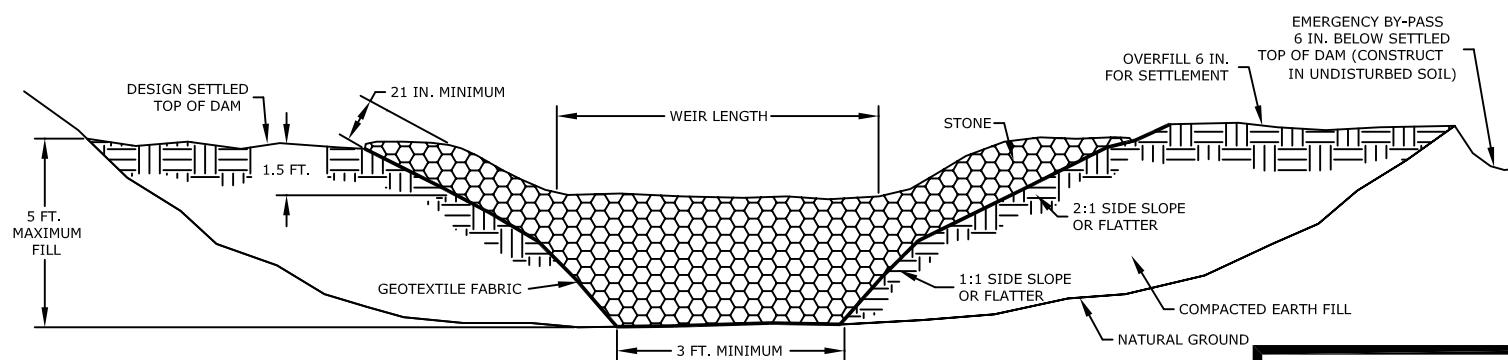
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- Maintenance**
- Inspect traps weekly and before and after heavy rainfall.
 - Maintain traps to guarantee correct utilization.
 - Remove sediment after it reaches $\frac{1}{3}$ the height of the trap.

- Inspection Checklist**
- Constructed traps serve 10 acres or less.
 - Type of outlet structure used matches EPSC plan.
 - Structure is stabilized to prevent erosion.
 - Gage is visible and correctly indicates the depth of the trap.
 - Sediment accumulation does not exceed $\frac{1}{3}$ the height of trap.
 - Trap is constructed in such a way that no damage occurs to life or property.
 - Trap is maintained



STONE SECTION



EMBANKMENT AND SPILLWAY ELEVATION



City of Bowling Green

Public Works Planning and Design
1011 College Street
Bowling Green, Kentucky 42101

TEMPORARY SEDIMENT TRAP

STANDARD DRAWING NO. **SMP-04-01**

APPROVED BY: _____
DIRECTOR OF ENGINEERING _____
DATE _____

SOURCE: NORTH CAROLINA EROSION & SEDIMENT CONTROL PLANNING & DESIGN MANUAL