Sediment Control Practices	SMP 4.3.3 Sediment Traps

Symbol

ST

Description

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.

Application

- 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.

Design

- **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.

Design (cont'd)

- **Location**

Traps cannot be placed in blue-line streams or other regulated water unless space limitations or design limitations provide no other feasible option. A USACE Clean Water Ace (CWA) section 404 permit is required in these cases.

- **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. Trap berm width at base must be sufficient to support 2H:1V berm.

- **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)

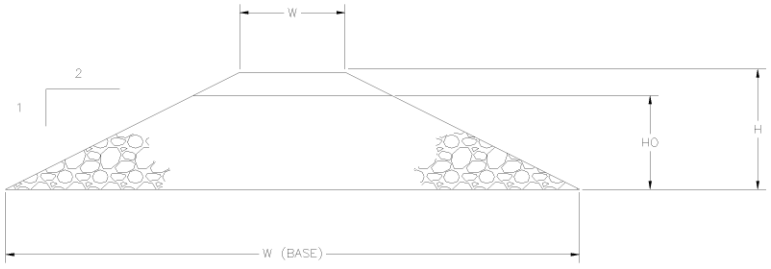
6 feet - 2 acres (total drainage area)

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



Maintenance

- Inspect traps weekly and before and after heavy rainfall.
- Maintain traps to guarantee correct utilization.
- Remove sediment after it reaches 1/3 the height of the trap.

Design (cont'd)

- Construct traps of rock (KYTC No. 2 mixed with smaller stone), rock-filled fiber bags, or use approved commercial sediment trap products installed and spaced according to manufacturer's instructions.
- Site sediment traps in areas where they can be maintained (i.e. sediment removed).
- Set traps back from property lines or water bodies as much as possible.
- Minimum sediment storage capacity is 134 cubic yards (3600 cubic feet) of upland area drained by the trap. Where space restrictions exist, install multiple traps in a series at least 50 feet apart.
- Maximum drainage area is 5 acres.
- Basin flow length should be at least two times the flow width.
- Recommended traps depth for open areas is 2 feet at the inlet and 4 feet at the oulet.
- Trap height must be 1.5 feet minimum in ditches, 3-5 feet in open area drainageways.
- Trap length must be sufficient to tie into upper banks in ditches or high enough to prevent side bypasses in drainageways. Overflows must in the center of the berm.
- Construct the trap, seed and stabilize before clearing and grading work begins.
- Embankment shall have a maximum height of 5 feet.
- The outlet must consist of an overflow spillway wide made of stone (KYTC No. 2 minimum)
- Any material excavated from the trap must be uniformly spread to a depth no exceeding 3 feet and graded to a continuous slope away from the trap.
- Field-approved installations should be noted on weekly or bi-weekly inspection reports an on plan documents within 7 days.

Inspection Checklist

- ☐ Inspect weekly or every 14 days or after a rainfall greater than one-half inch.
- ☐ 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 $^1/_3$ the height of trap. Plans for sediment trap must indicate the methods for disposing of the sediment removed.
- ☐ Trap is constructed in such a way that no damage occurs to life or property.
- ☐ Trap is maintained
- ☐ Remove upon stabilization or cover of the upland drainage area with vegetation, pavement, and so on.