Erosion & Sediment Control for Construction Sites

Technical Note: Slow Release Device

A slow release device is a mechanical structure installed into the outlet of a retention or detention basin to temporarily store storm water. The basin then functions as a temporary sediment trap. The slow release device is designed to allow stored water to drain slowly from the basin, causing sediment to settle out of the water. After construction is completed, the slow release device is removed. Accumulated sediment is then cleaned out to restore the basin back to its intended design capacity.

A retention basin or a permanent pond can be retrofitted with a slow release device to retain sediment during construction.

The temporary storage capacity of the basin then is used to detain storm water.

After construction in the drainage area is completed, and the site is seeded and stabilized, the slow release device can be removed.

A slow release device installed in a storm water detention basin detains water from the drainage area for up to three days.

After construction has been completed and the site stabilized, the slow release device is removed and the sediment cleaned out.

The grass cover is then re-established as needed.

Storm water management storage basins should be the first erosion or sediment control practice installed on a new construction site. Most basins can be used for sediment control with temporary modifications to the outlet of the basin. Usually, this is the last opportunity to contain sediment on site. The main purpose of a slow release device is to impound storm water for up to three days. This is usually adequate time for sediment to settle out as water continues to flow slowly through the outlet.

Soil & Water Conservation Districts of Southwest Ohio

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Hamilton, OH
513/887-3720

Clermont SWCD
Owensville, OH
513/732-8880

Hamilton Co. SWCD
Cincinnati, OH
513/772-7645

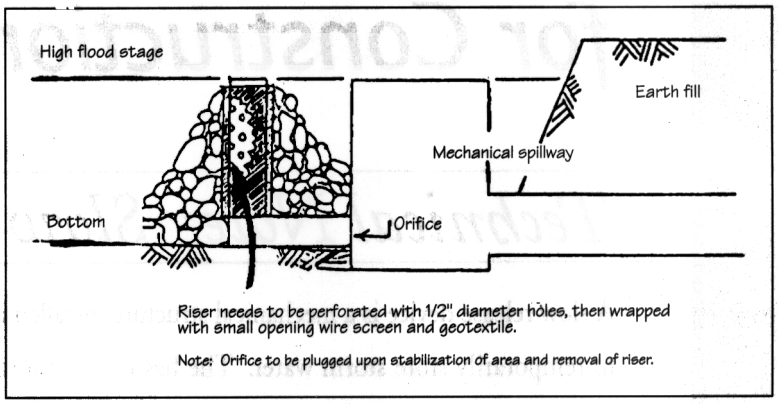
Montgomery SWCD
Brookville, OH
937/854-7645

Warren SWCD
Lebanon, OH
513/695-1336

Design Criteria: Slow Release Device

Planning Considerations

- *The drainage area of the storage basin should be limited to the construction area.*
- *The storage basin needs to be the first practice constructed, before the contributing area is disturbed.*
- *The storage basin must be accessible for sediment removal and maintenance as needed.*
- *The basin should be designed by a qualified professional engineer.*
- *The temporary modifications for sediment control must meet proper design criteria.*



Slow Release Device Installation

The outlet, as illustrated above, is designed to function as a sediment trap by releasing water slowly through the outlet.

- *This device is designed to temporarily store runoff water for up to three days, providing sufficient time for sediment to settle out.*
- *Install at time of outlet construction, or immediately following construction of the storage basin.*
- *Attach firmly to the principal outlet, being certain there are no leaks.*
- *Cover riser pipe with small opening wire screen and wrap with geotextile to filter sediment, or double wrap with geotextile.*
- *Gravel/small rock needs to be piled against the riser and on horizontal pipes, or embed the riser in concrete, to provide support and to prevent the pipe from floating.*

Maintenance

The slow release device needs to be inspected weekly.

- *Clean out accumulated sediment as needed to retain capacity.*
- *Replace the filter fabric if torn or becomes clogged.*
- *Remove the slow release device after all upslope areas, including home sites, in the drainage area have been seeded and sloping areas protected.*
- *Reseed as needed, fertilize and mulch all parts of the basin following removal of temporary outlet.*
- *Steep slopes may need erosion control matting or blankets.*

Pool Design Criteria

- *Design the storage basin and principal spillway in accordance with approved engineering standards and specifications as found in "Rainwater and Land Development". A copy of this is available at your SWCD office.*
- *The minimum sediment storage volume shall be no less than 67 cubic yards for each acre of contributing drainage area, measured below the principal spillway outlet elevation.*
- *Remove accumulated sediment when capacity of the basin is reduced to 40 cubic yards per contributing acre. This can be shown by placing a mark at the appropriate elevation on the riser.*
- *The pool may be oversized to accommodate estimated sediment accumulation, while maintaining final design capacity of the storage basin.*

Estimating Annual Sediment Volume

Average Slope of Disturbed Area	Volume of Sediment Per Acre of Disturbed Area (cubic yards)
<6%	20
10%	45
14%	75
18%	120

Note: It is assumed that erosion control practices will be used.

Rule of Thumb: This is a sediment control practice. The longer it ponds water, the better it works.