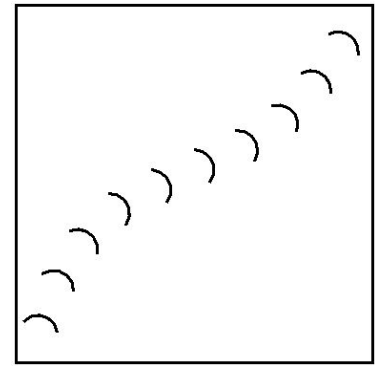


SC-3 GRAVEL BAG BARRIER

Refer to: ITD Standards and Specifications for Highway Construction, Section 212.



Standard Symbol

Definition and Purpose

A gravel bag barrier consists of a single row of gravel bags that are installed end-to-end to form a barrier across a slope to intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide some sediment removal. Gravel bag barriers can also be used where flows are moderately concentrated, such as ditches, swales, and storm drain inlets to divert and/or detain flows.

Appropriate Applications

- Along the perimeter of a site.
- Along streams and channels.
- Below the toe of exposed and erodible slopes.
- Down slope of exposed soil areas.
- Around stockpiles.
- Where flows are moderately concentrated, such as ditches, swales, and storm drain inlets.
- Across channels if constructing check dams or diversions.
- Parallel to a roadway to keep sediment off paved areas.
- At the top of slopes to divert runoff away from disturbed slopes.
- To divert or direct flow or create a temporary sediment basin.
- During construction activities in channels when the contributing drainage area is less than 5 acres.
- When extended construction period limits the use of either silt fences or straw bale barriers.
- When site conditions or construction sequencing require adjustments or relocation of the barrier to meet changing field conditions and needs during construction.

BMP Objectives	
<input checked="" type="checkbox"/>	Perimeter Control
<input checked="" type="checkbox"/>	Slope Protection
<input checked="" type="checkbox"/>	Borrow and Stockpiles
<input checked="" type="checkbox"/>	Drainage Areas
<input checked="" type="checkbox"/>	Sediment Trapping
<input checked="" type="checkbox"/>	Stream Protection
<input checked="" type="checkbox"/>	Temporary Stabilizing
<input type="checkbox"/>	Permanent Stabilizing

- At grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

Limitations

- Degraded gravel bags may rupture when removed, spilling contents.
- Installation can be labor-intensive.
- Burlap bags have limited durability for long-term projects.
- When used to detain concentrated flows, maintenance requirements increase.

Construction

- When using as a linear control for sediment removal:
 - Install along a level contour.
 - Turn ends of gravel bag row upslope to prevent flow around the ends.
 - Generally, use gravel bag barriers in conjunction with temporary soil stabilization controls up slope to provide effective control.
- When using for concentrated flows:
 - Stack gravel bags to required height using a pyramid approach.
 - Upper rows of gravel bags shall overlap joints in lower rows.
- Construct gravel bag barriers with a setback of at least 3 feet from the toe of a slope. Where it is not practical due to specific site conditions, the gravel bag barrier may be constructed at the toe of the slope, but shall be constructed as far from the toe of the slope as practical to allow for maintenance access.

Design Considerations

- **Bag Material:** Bags shall be woven polypropylene, polyethylene, or polyamide fabric, minimum unit weight 4 ounces per square yard; mullen burst strength exceeding 300 psi in conformance with the requirements in ASTM designation D3786; and ultraviolet stability exceeding 70 percent in conformance with the requirements in ASTM designation D4355.
- **Fill Material:** Gravel shall be between 0.4 and 0.8 inch in diameter and shall be clean and free from clay balls, organic matter, and other deleterious materials. The filled bags shall be between 28 and 48 pounds in mass. Fill material is subject to approval by the Engineer.

Maintenance and Inspection

- Conduct inspections as required by the NPDES permit or contract specifications.
- Reshape or replace gravel bags as needed.
- Repair washouts or other damages as needed.
- Removed sediment shall be incorporated in the project at locations designated by the Engineer or disposed of in an approved manner.

- Remove gravel bag berms when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilize the area.