

## Sediment Filter Bag Standard

This standard is intended to guide stormwater professionals on the application of sediment filter bags when used as a temporary sediment control practice during construction to minimize the amount of sediment discharge. Consult with product specifications pertaining to manufactured sediment filter bags.

**Keywords:** dewatering, filter, sediment removal, sediment control

### 1 DEFINITION

- 1.1 A manufactured, non-woven geotextile or permeable fabric bag designed to effectively remove sediment from stormwater runoff generated on construction sites from stormwater conveyances, dewatering, and excavation operations.

### 2 PURPOSE

- 2.1 To filter stormwater and separate sediment, slurry, and solid materials prior to discharge from the site. Filtered water should be able to pass through the non-woven geotextile fabric. Sediment filter bags will capture larger soil particle sizes. Clay and silt size particles may pass through the fabric.

### 3 DESIGN

- 3.1 Size: sediment filter bags come in various sizes and capacities, allowing stormwater professionals to select the appropriate bag based on the specific flow rate, volume of water, and particle size to be treated.
- 3.2 Flow Rate and Capacity: The flow rate and volume should be assessed to determine the appropriate size and capacity of the sediment filter bag. The bag must be capable of handling the maximum expected flow rate without failing.
- 3.3 Sediment Particle Size: Sediment filter bags have varying filtration capabilities. It is essential to consider the size of sediment particles expected in the inflow to select a geotextile material with an appropriate permittivity that can effectively capture the sediment while allowing for the bag to discharge water. Flocculant may be used with sediment filter bags to increase the range of soil particles captured; however more frequent bag replacement may be required due to clogging.
- 3.4 Location and Placement: For runoff capture, the sediment filter bag should be strategically placed to intercept stormwater runoff before it reaches sensitive areas or natural water bodies. For dewatering and excavation applications place sediment filter bags in an area where it can be easily accessed and removed.
- 3.5 Inlet and Discharge: inlet and discharge should be properly designed to ensure that stormwater flows smoothly into the bag and treated water exits without causing erosion or bypassing. The inlet should have adequate protection to prevent clogging and damage to the bag. Properly secure the pipe inlet to prevent dislodging.

### 4 MATERIALS

- 4.1 UV resistant, non-woven geotextile fabric or similar permeable material should be used.
- 4.2 Sediment filter bags shall incorporate durable seams and secure closures to prevent bag failure during use.
- 4.3 Larger sediment filter bags may have attached handling and lifting straps to facilitate handling, installation, securement, and removal.

### 5 INSTALLATION

- 5.1 Refer to manufacturer guidance and specifications for proper installation, use, and disposal of sediment filter bags.
- 5.2 Place sediment filter bags strategically for ease of access and removal.
- 5.3 Place in area that will not initiate erosion and sediment transport.
- 5.4 Clear the installation area of any debris or sharp objects that might interfere with the sediment filter bag placement or could puncture or damage the bag.
- 5.5 Consider the slope and elevation of the installation location to ensure the bag's proper positioning. The ground should be level to ensure the bag sits flat and allows water to flow through the sediment filter bag.
- 5.6 In general sediment filter bags should not be used on a slope. Extend inflow pipes or slope drains to the toe of the slope to ensure sediment filter bags are situated on level ground. If installation on a slope is unavoidable, consider alternative practices.
- 5.7 Anchor the bag securely to the ground using stakes and/or sandbags to prevent displacement during use.
- 5.8 The installation area should be stable to prevent resuspension of materials. Place sediment filter bags on a layer of a porous substrate, straw, or sand, to prevent puncture and allow flow through pass through the bottom of the bag.
- 5.9 Place the sediment filter bag on the prepared installation area, ensuring it is centered and aligned with the flow of water.
- 5.10 Consider placing smaller sediment filter bags on a pallet, truck, roll-off dumpster, or similar device to facilitate offsite removal and disposal.

### 6 INSPECTION AND MAINTENANCE

- 6.1 Ensure that all connections are securely fastened and watertight to prevent leaks.

- 6.2 Regularly inspect the sediment filter bag for any signs of clogging, damage, or displacement.
- 6.3 If flow through the sediment filter bag is substantially reduced, discontinue pumping into the bag.

## 7 REMOVAL AND DISPOSAL

- 7.1 Once the bag reaches its sediment retention capacity, carefully remove the bag from the site, unless plans call to leave in place.
- 7.2 Bags may be left to dry before hauling offsite. Large bags may need to be cut open for drying prior to removal.
- 7.3 Properly dispose of the retained sediment in an environmentally responsible manner in accordance with local guidelines and regulations.

## 8 DISCLAIMER

- 8.1 These design standards are intended to ensure proper performance and effectiveness of sediment filter bag. It is important to consult with a qualified engineer, contractor, or the product manufacturer to ensure that these criteria are met, and that the sediment filter bag is properly designed, installed, inspected, maintained, and disposed of to meet the specific needs of the site. It is important to note that the design standards may vary based on the specific site conditions and regulations in the local area.

## 9 ACKNOWLEDGEMENTS

- 9.1 This standard was developed by members of the IECA Standards and Practices Committee: Wesley Donald, Chris Estes, Michael Frankcombe, Christina Kranz, Earl Norton, Rich McLaughlin, Perry Oakes, Michael Perez, Jaime Schussler, Jim Spotts, J. Blake Whitman, and Wesley Zech. Their time and effort is greatly appreciated.

## 10 REFERENCES

- 10.1 South Carolina Department of Transportation, Supplemental Technical Specifications for Sediment filter bags, SCDOT Designation: SC-M-815-15 (11/11). [https://www.scdot.org/business/technicalPDFs/supTechSpecs/Dewatering\\_Bags\\_08\\_08\\_2011.pdf](https://www.scdot.org/business/technicalPDFs/supTechSpecs/Dewatering_Bags_08_08_2011.pdf).
- 10.2 Lloyd, L. N. (2021). [Evaluation of the filtration effectiveness of sediment filter bags and assessment of potential improvements.](https://www.virginiadot.org/vtrc/main/online_reports/pdf/21-r17.pdf) [https://www.virginiadot.org/vtrc/main/online\\_reports/pdf/21-r17.pdf](https://www.virginiadot.org/vtrc/main/online_reports/pdf/21-r17.pdf).
- 10.3 Minnesota Stormwater Manual. Construction stormwater treatment - dewatering, including chemical treatment and sediment filtration. [https://stormwater.pca.state.mn.us/index.php?title=Construction\\_stormwater\\_treatment\\_-\\_dewatering,\\_including\\_chemical\\_treatment\\_and\\_sediment\\_filtration](https://stormwater.pca.state.mn.us/index.php?title=Construction_stormwater_treatment_-_dewatering,_including_chemical_treatment_and_sediment_filtration)