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4.4.1 Brush Fabric Barrier



Source: ALSWCC (2018)

Definition and Purpose

A brush fabric barrier is a dam-like structure constructed from woody residue and faced with a geotextile fabric to function as a dam. The dam temporarily ponds water, allowing sedimentation. It is intended to function similarly to a sediment trap for a short period of time.

Appropriate Applications

This practice is applicable in small drainage areas (ideally less than two acres) and with a lifespan of less than one year (ALSWCC, 2018). Brush fabric barriers are ideal where brush and other woody debris are available from a clearing and grubbing operation.

Limitations and Maintenance

Brush fabric barriers are subject to several limitations and require regular maintenance to function effectively. They are only suitable on sites where topography allows for proper impoundment of sediment-laden runoff and where an adequate supply of woody material is available from clearing operations. If these conditions are not met, alternative sediment control measures may need to be considered.

Maintenance involves frequent inspections, particularly after significant rainfall, to check for short-circuiting or flow bypassing the ends of the barrier. Accumulated sediment should be



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removed when it reaches half the height of the barrier to prevent overtopping or structural failure. Overtopping during large storm events can lead to gully erosion behind the barrier, which must be promptly repaired. Since brush fabric barriers are temporary, they should be removed once construction activities cease and the contributing area is stabilized through seeding and mulching unless otherwise specified in the site plan (MDEQ, 2011).

Planning and Design Considerations

Brush fabric barriers should be positioned downgradient from areas producing sediment-laden runoff and located in areas that provide adequate storage volumes, detention times, and that would not result in property damage or loss of life under sudden failures. The barrier is best used in areas with a maximum drainage area of two acres, and its design lifespan is approximately one year. When drainage areas exceed two acres, consider treatment trains with other EPSC measures such as additional brush fabric barriers (if multiple flow paths exist), sediment traps (Section 4.4.8), or sediment basins (Section 4.4.7).

Brush fabric barriers are constructed by placing densely compacted woody debris in a continuous row, generally along the contour of the land. Each end of the barrier is to be turned upslope to ensure that high flows overtop the barrier rather than bypassing it, similar to the “J-hook” concept that is applied to silt fence (Section 4.4.10). The brush should be oriented lengthwise along the barrier, with main stems aligned and smaller limbs trimmed to prevent puncturing the facing fabric. The lengthwise orientation allows longer pieces of brush to lock together and hold their shape. Barrier dimensions typically range from three to six feet in height, with a base width of at least five feet perpendicular to flow direction. The upstream face of the brush is typically covered with a non-woven geotextile fabric, such as an eight-ounce material (Figure 4.4.1-A). To maintain structural integrity, fabric rolls should be wide and long enough to minimize vertical splices and eliminate horizontal ones. Where vertical seams are necessary, a three-foot overlap should be securely fastened to prevent flow from short-circuiting. The base of the fabric is to be embedded at least six inches deep in an excavated trench in front of the barrier, staked securely at three-foot intervals using 18-inch wooden stakes, then backfilled and compacted. The top edge of the fabric should be anchored, typically with twine tied to stakes behind the barrier, to prevent sagging below the designed storage elevation. This ensures effective sediment containment and maintains structural stability during storm events. The barrier is to be removed once construction is complete and the drainage area is stabilized. The sediment accumulations should be properly stabilized prior to completion of the construction project.



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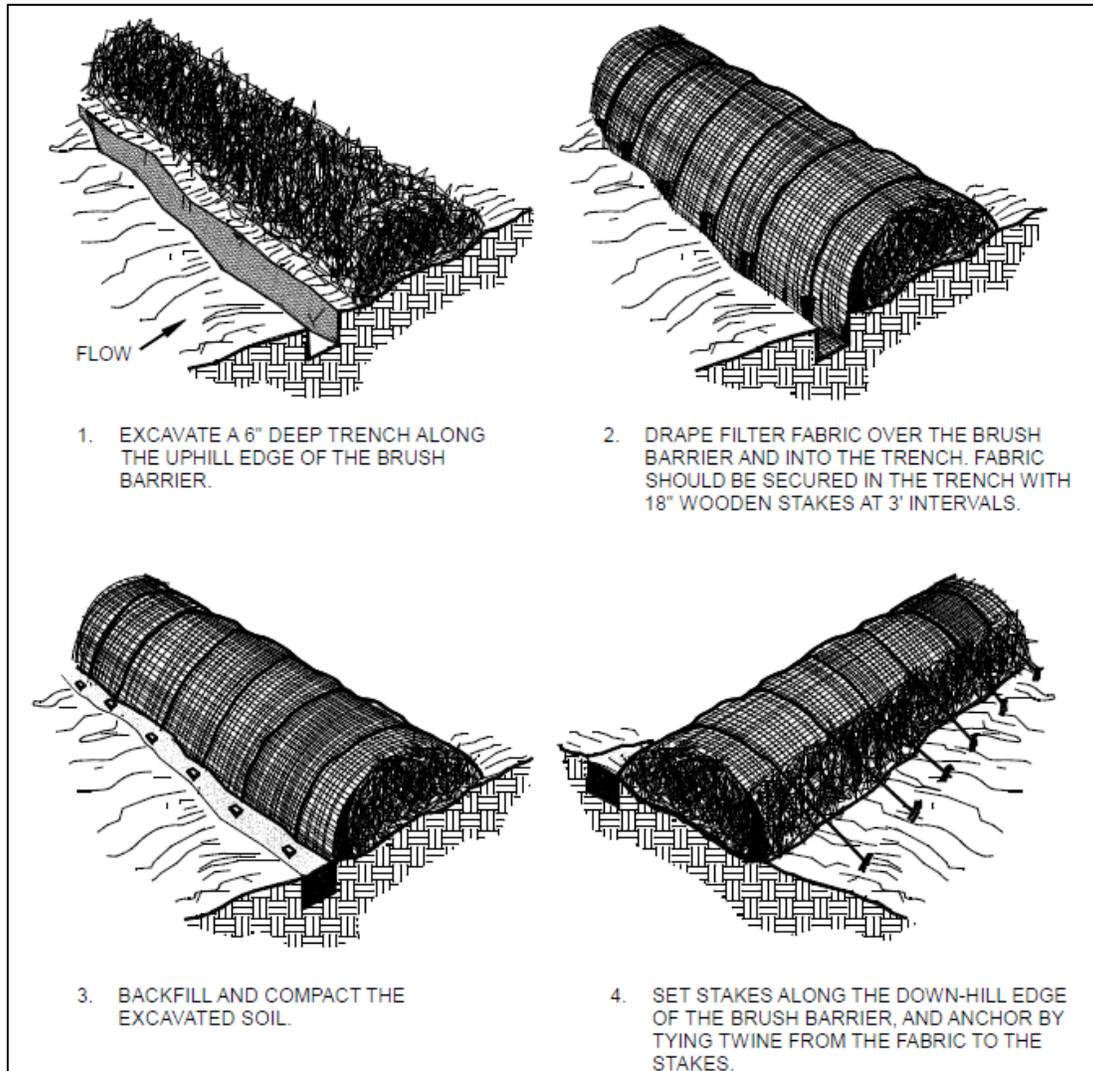


Figure 4.4.1-A: Typical brush fabric barrier construction details. Adapted from VDEQ (2024).

Example Application

No formal design or quantities are required for this measure and therefore are not presented here.

References

- ALSWCC. (2018). *Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas*.
- MDEQ. (2011). *Mississippi Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas*.
- VDEQ. (2024). *Virginia Stormwater Management Handbook*.