

Silt fence



DEFINITION

A temporary barrier of woven geotextile fabric used to intercept run off, reduce its velocity and impound sediment laden run off from small areas of disturbed soil.

PURPOSE

To detain flows from run off so that deposition of transported sediment can occur through settlement.

Silt fences can only be used to intercept sheet flow. Do not use silt fences as velocity checks in channels or place them where they will intercept concentrated flow.

APPLICATION

- On low gradient sites or for confined areas where the contributing catchment is small, such as short steep batter fills and around watercourses.
- To delineate the limit of disturbance on an earthworks site such as riparian areas or bush reserves.
- To store run off behind the silt fence without damaging the fence or the submerged area behind the fence.
- Do not install silt fences across watercourses or in areas of concentrated flows.

DESIGN

- Ensure silt fence height is a minimum of 400mm above ground level.
- Place supporting posts/waratahs for silt fences no more than 2m apart unless additional support is provided by tensioned wire (2.5mm HT) along the top of the silt fence. Where a strong woven fabric is used in conjunction with a wire support, the distance between posts can be extended up to 4m. Double the silt fence fabric over and fasten to the wire and posts with wire ties or cloth fastening clips at 150mm spacing. Ensure supporting posts/waratahs are embedded a minimum of 400mm into the ground.
- Always install silt fences along the contour. Where this is not possible or where there are long sections of silt fence, install short silt fence returns, projecting upslope from the silt fence to minimise concentrations of flows. Silt fence returns are a minimum of 2m in length, can incorporate a tie back and are generally constructed by continuing the silt fence around the return and doubling back to eliminate joins.
- Join lengths of silt fence by doubling over fabric ends around a wooden post or batten or by stapling the fabric ends to a batten and butting the two battens together as shown in figure 1 (overleaf).
- Maximum slope lengths, spacing of returns and angles for silt fences are shown in table 1 (overleaf).
- Install silt fence wings at either end of the silt fence projecting upslope to a sufficient height to prevent outflanking.

- Where impounded flow may overtop the silt fence, crossing natural depressions or low points, make provision for a riprap splash pad or other outlet protection device.
- Do not use silt fences in catchments of more than 0.25ha.
- Where water may pond behind the silt fence, provide extra support with tie backs from the silt fence to a central stable point on the upward side. Extra support can also be provided by stringing wire between support stakes and connecting the filter fabric to this wire.

CONSTRUCTION SPECIFICATIONS

- Use silt fence material appropriate to the site conditions and in accordance with the manufacturer's specifications.
- Excavate a trench a minimum of 100mm wide and 200mm deep along the proposed line of the silt fence. Install the support posts on the downslope edge of the trench and silt fence fabric on the upslope side of the support posts to the full depth of the trench. Backfill the trench with compacted soil.
- Use supporting posts of tanalised timber a minimum of 50mm square, or steel waratahs at least 1.5m in length.
- Reinforce the top of the silt fence fabric with a wire support made of galvanised wire of a minimum diameter of 2.5mm. Tension the wire using permanent wire strainers attached to angled waratahs at the end of the silt fence.
- Where ends of silt fence fabric come together, ensure they are overlapped, folded and stapled to prevent sediment bypass.

MAINTENANCE

- Inspect silt fences at least once a week and after each rainfall. Make any necessary repairs when bulges occur or when sediment accumulation reaches 50 per cent of the fabric height.
- Any areas of collapse, decomposition or ineffectiveness need to be immediately replaced.
- Remove sediment deposits as necessary to continue to allow for adequate sediment storage and reduce pressure on the silt fence. Ensure that the sediment is removed to a secure area.
- Do not remove silt fence materials and sediment deposition until the catchment area has been appropriately stabilised. Stabilise the area of the removed silt fence.

Table 1

Silt fence design criteria			
Slope steepness (%)	Slope length (m) (Maximum)	Spacing of returns (m)	Silt fence length (m) (Maximum)
Flatter than 2%	Unlimited	N/A	Unlimited
2-10%	40	60	300
10-20%	30	50	230
20-33%	20	40	150
33-50%	15	30	75
> 50%	6	20	40

Figure 1

