SOILS AND CONSTRUCTION

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The hip pocket handbook

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SOILS AND CONSTRUCTION

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Contents

Introduction

This handbook contains the standard drawings and construction notes from the 4th edition of Managing Urban Stormwater: Soils and Construction (Landcom, 2004). It is presented as a conceptual specification or field guide for the installation of many structures that can affect soil erosion, sediment pollution, flooding, water diversion and the like. It has particular application to projects in New South Wales where more than 250 square metres of land will be disturbed and soil erosion is likely.

Most urban erosion is a short term problem caused by the removal of site vegetation and the subsequent land reshaping that occurs during the construction of roads and buildings. In fact, removal of the protective vegetative cover for such purposes can increase the erosion hazard by more than one hundred fold. The sediment and other pollutants that result from such erosion can cause substantial environmental damage, such as destroying ecosystems in our streams, lakes and harbours and blocking stormwater drains.

Fine sediment is a particular problem because it can "piggyback" nutrients that degrade the receiving waters by accelerating the growth of algae and weeds. In addition, fine sediment discolours the water in streams and lakes, reducing light penetration and damaging aquatic life. Recreational values can also be affected badly. Ultimately, the whole community must pay to fix these problems – problems that can largely be controlled by the application and maintenance of erosion control practices during the land disturbance phase.

Local Councils now require developers to submit Erosion and Sediment Control Plans or Soil and Water Management Plans with their development or building application. The proper implementation of these plans during the construction phase should minimise soil erosion within the site and curb sediment flowing to the receiving waters.

Principles of Erosion and Sediment Control

Generally, effective soil and water management during a land disturbance phase is achieved largely by the following ten principles:

(i) assess the likely soil and water implications of development at the subdivision or site planning stage based on a proper assessment of site constraints and opportunities;

(ii) plan for erosion and sediment control concurrently with engineering and landscaping design in consideration of the assessment in (i), above;

(iii) install erosion and sediment control measures as a first step in the work's program and maintain these in an effective condition throughout the development phase;

(iv) give priority to implementing those management practices that control soil erosion in the first place, rather than to those that clean up the mess downslope or at the catchment outlet (i.e. concentrate on source controls);

(v) minimise the area of soil disturbed and exposed to erosion:

- phase works so that land disturbance is confined to minimum areas of workable size, but consistent with the scale and economics of the development
- erect barrier fencing to minimise disturbance by preventing vehicular and pedestrian access to restricted areas
- limit access following the requirements of Table 1;

(vi) conserve topsoil for site rehabilitation/revegetation when site works are complete;

(vii) control water flow from the top of, and through the development area. In particular, divert upslope waters around works and limit slope length to 80 metres on disturbed lands if rainfall is expected;

(viii) where appropriate, reduce the effects of wind erosion by controlling on-site traffic movement and watering bare soil areas;

(ix) rehabilitate disturbed lands quickly; and

(x) ensure that all erosion and sediment control measures are kept in a properly functioning condition until all site disturbance works are completed and the site is rehabilitated.

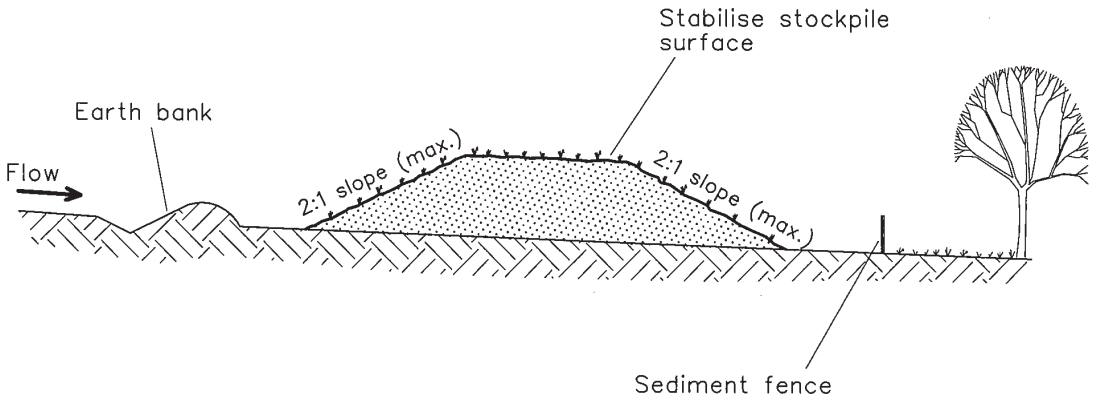
Table 1. Limitations to access

Land use	Limitation	Comments
Construction areas	Disturbance to be no further than five (preferably two) metres from the edge of any essential engineering activity as shown on the plans	All site workers will clearly recognise these zones that, where appropriate, are identified with barrier fencing (upslope) and sediment fencing (downslope), or similar materials
Access areas	Limited to a maximum width of 10 metres	The site manager will determine and mark the location of these zones onsite. They can vary in position to best conserve the existing vegetation and protect downstream areas while being considerate of the needs of efficient works' activities. All site workers will clearly recognise their boundaries that, where appropriate, are marked with barrier mesh, sediment fencing, or similar materials
Remaining lands	Entry prohibited except for essential thinning of plant growth	Thinning of growth might be necessary for fire hazard reduction

Stockpiles

1. Place stockpiles in locations more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

Stockpiles


Stabilise stockpile surface
Earth bank
Flow
2:1 slope (max.)
2:1 slope (max.)
Sediment fence

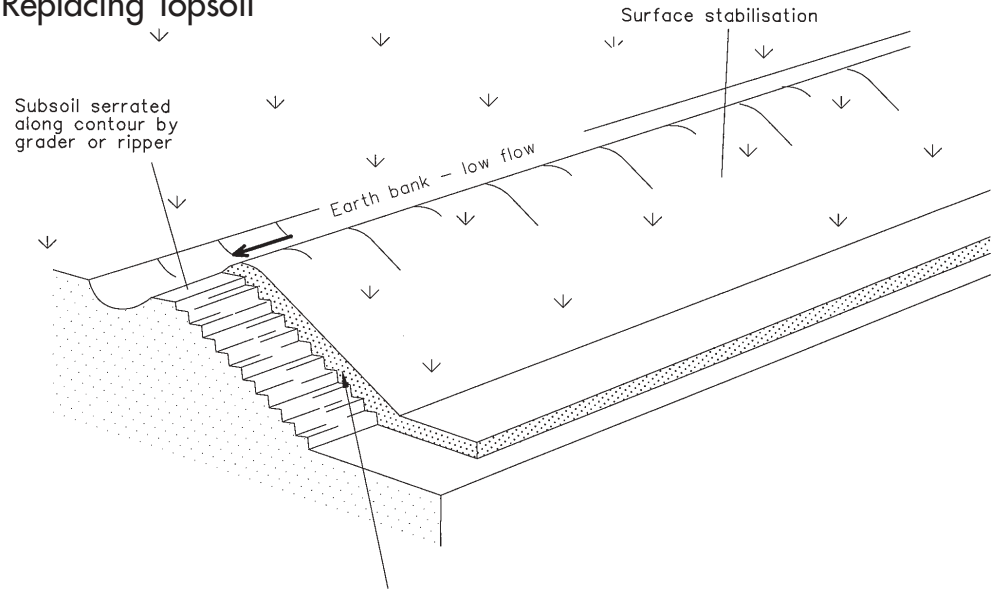
Replacing Topsoil

1. Scarify the ground surface along the line of the contour to a depth of 50 mm to 100 mm to break up any hardsetting surfaces and to provide a good bond between the respread material and subsoil.
2. Add soil ameliorants as required by the ESCP or SWMP.
3. Rip to a depth of 300 mm if compacted layers occur.
4. Where possible, replace topsoil to a depth of 40 to 60 mm on lands where the slope exceeds 4(H):1(V) and to at least 75 mm on lower gradients.

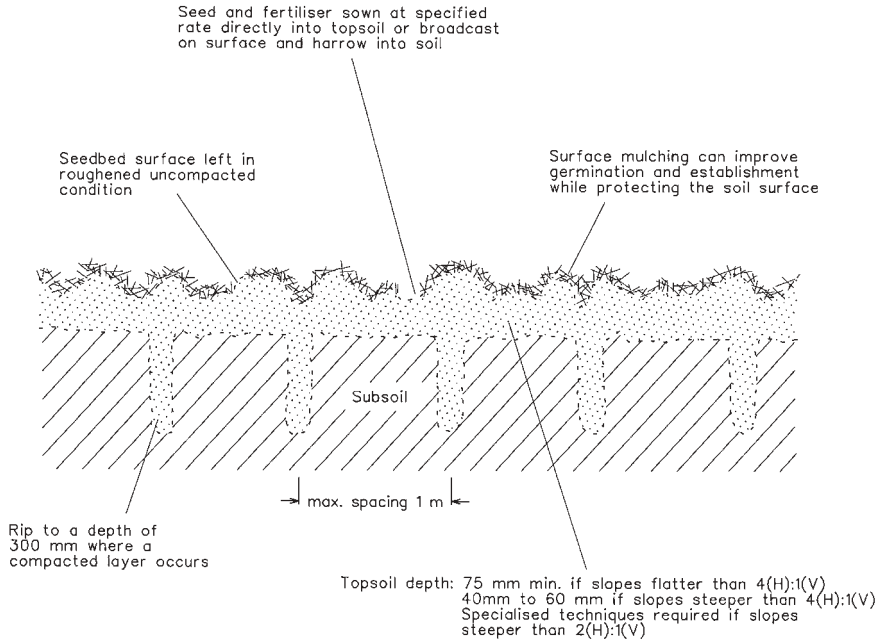
Seedbed Preparation

1. Loosen compacted soil before sowing any seed. If necessary, rip the soil to a depth of 300 mm.
2. Work the ground only as much as necessary to achieve the desired tilth and prepare a good seedbed. Avoid rotary hoe cultivation.
3. Avoid cultivation in very wet or very dry conditions.
4. Cultivate on or close to the contour where possible, not up and down the slope.

Replacing Topsoil



Seedbed Preparation



Revegetation Guidelines

Revegetation Program

1. Where practical, phase works so that minimal lands are exposed to the forces of soil erosion at any one time and site stabilisation measures are progressively installed throughout the development phase.
2. Above the 2-year ARI flood level, schedule works so that the duration from the conclusion of land shaping to completion of final stabilisation is less than 20 working days.
3. Where works are within the 2-year ARI flood level, ensure that the C-factors are higher than 0.1 only when the 3-day forecast suggests that rain is unlikely. In this case, management regimes should be established that facilitate rehabilitation within 24 hours should the forecast prove incorrect.
4. While C-factors are likely to rise to 1.0 during the work's program, do not allow them to exceed those given in Table 2. Also see Points 5 and 6, below.
5. During the revegetation phase in periods of expected low rainfall erosivity, achieve a C-factor of less than 0.15 and keep it there by vegetation, paving, armouring, etc.

6. During the revegetation phase in periods of moderate to high rainfall erosivity, achieve a C-factor of less than 0.1 and set in motion a program that should ensure it will drop permanently by vegetation, paving, armouring, etc. to less than 0.05 within a further 60 days.
7. While most erosion control techniques are satisfactory under sheet flow conditions (e.g. wood chip mulches), use special measures under concentrated flow conditions – see Table A4 of Landcom (2004).

Maintenance of Revegetated Lands

1. Investigate areas not satisfactorily revegetated to determine the reason for failure. Then undertake appropriate remedial action, including replacing any lost topsoil and resowing the site.
2. Maintain any erosion and sediment control measures until all earthworks are completed and the site rehabilitated. Where appropriate, remove soil conservation structures as the last activity in the site stabilisation program.

C-factors for established grass cover

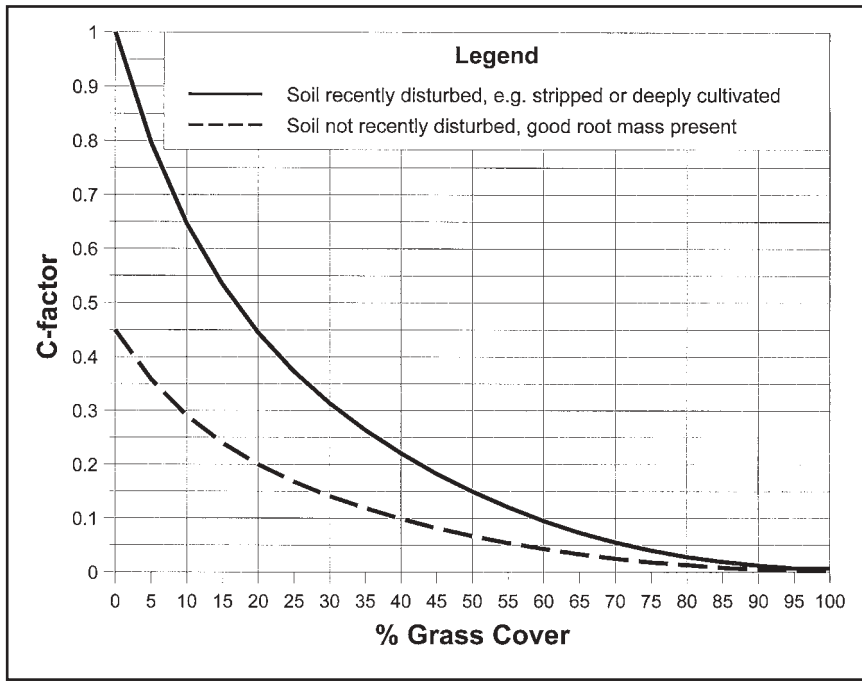


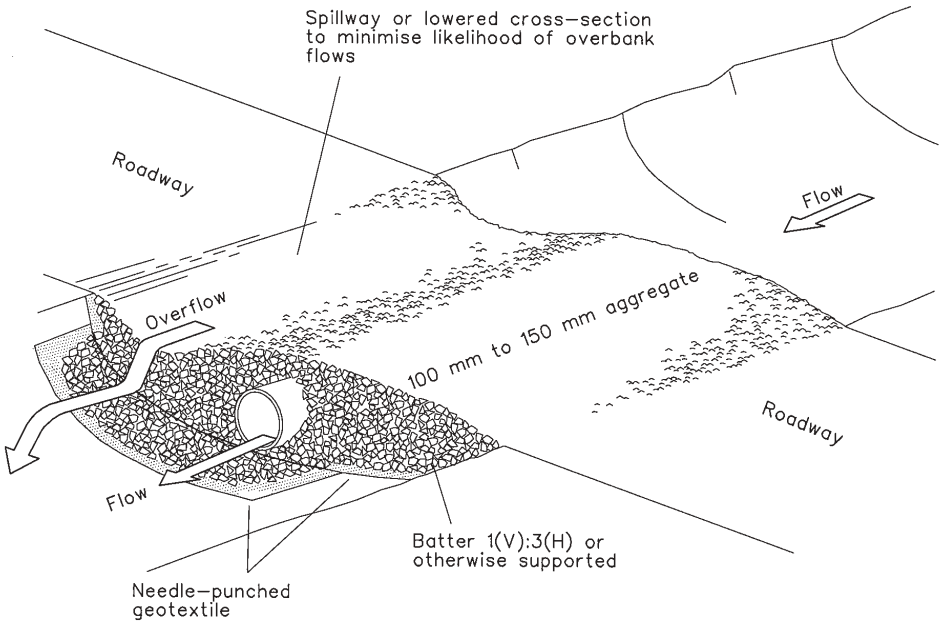
Table 2. Maximum acceptable C-factors at nominated times during works.

Lands	Maximum C-factor	Remarks
Waterways and other areas subjected to concentrated flows, post construction	0.05	Applies after ten working days from completion of formation and before they are allowed to carry any concentrated flows. Flows will be limited to those shown in Table 5.1 of Managing Urban Stormwater - Soils & Construction, Landcom (2004). Foot and vehicular traffic will be prohibited in these areas (70% ground cover)
Stockpiles, post-construction	0.1	Applies after ten working days from completion of formation. Maximum C-factor of 0.10 equals 60% ground cover
All lands, including waterways and stockpiles during construction	0.15	Applies after 20 working days of inactivity, even though works might continue later. Maximum C-factor of 0.15 equals 50% ground cover

Temporary Waterway Crossings

1. Prohibit all traffic until the access way is constructed.
2. Strip any topsoil and place a needle-punched textile over the base of the crossing.
3. Place clean, rigid, non polluting aggregate or gravel in the 100 mm to 150 mm size class over the fabric to a minimum depth of 200 mm.
4. Provide a 3-metre wide carriageway with sufficient length of culvert pipe to allow less than a 3 (H): 1 (V) slope on side batters.
5. Install a lower section to act as an emergency spillway in greater than design storm events.
6. Ensure that culvert outlets extend beyond the toe of fill embankments.

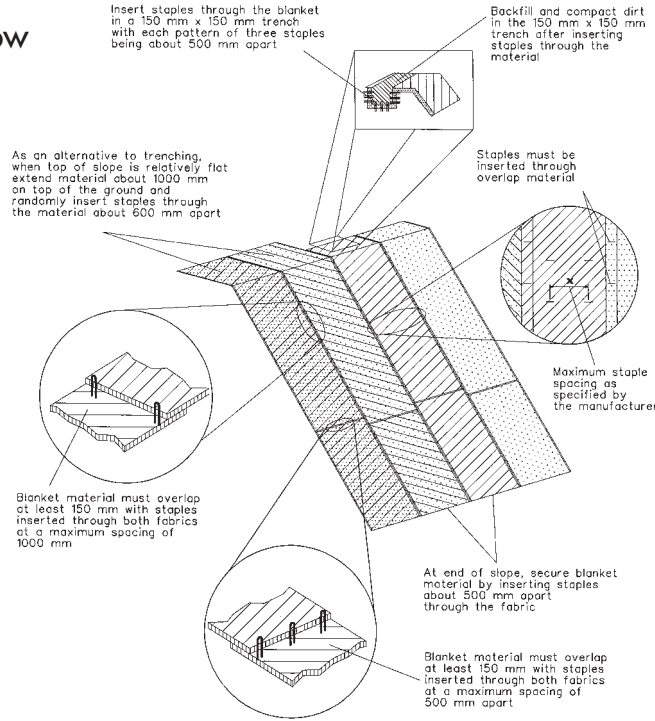
Temporary Waterway Crossings



Reinforced Erosion Control Products (RECPs): Sheet Flow

1. Remove any rocks, clods, sticks or grass from the ground surface before laying the matting.
2. Spread topsoil to at least 75 mm depth.
3. Where appropriate, complete fertilising and seeding on a properly prepared seedbed (Standard Drawing 7-1) before laying the matting.
4. Ensure the fabric can be continuously in contact with the soil by grading the surface carefully first.
5. Lay the matting in "shingle-fashion" with the ends of each upstream roll overlapping the next roll downslope.
6. Ensure sufficient staples are used to maintain a good contact between the soil and the matting.

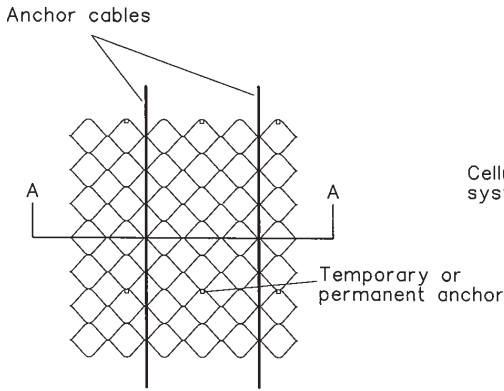
RECP: Sheet Flow

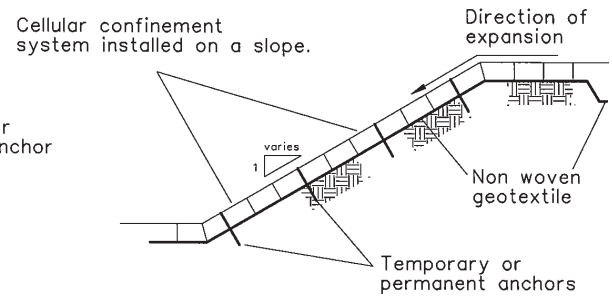


Cellular Confinement Systems

1. Undertake design only with the help of a suitably qualified geotechnical engineer.
2. Anchor systems on steep slopes to prevent sliding or movement under gravitational forces. This might include the use of high tensile, low creep cables made of polyester (not polypropylene), rope or steel wire.
3. Place thick, non woven geotextiles under the cellular confinement system to allow for lateral drainage.
4. Fill the cells with soil, rock or concrete depending on the application.

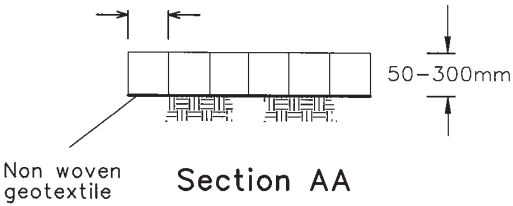
Cellular Confinement Systems



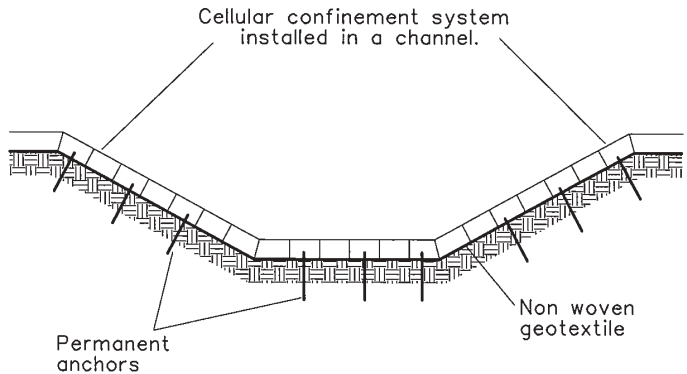


Slope Protection System

Cellular Confinement Systems



Section AA

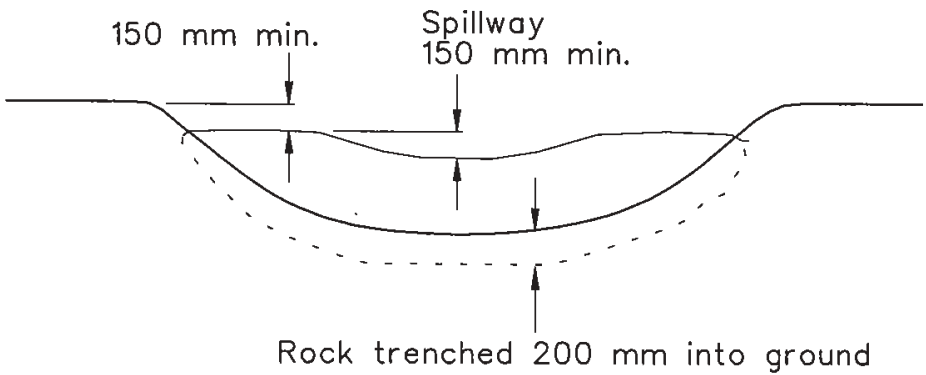


Channel Protection System

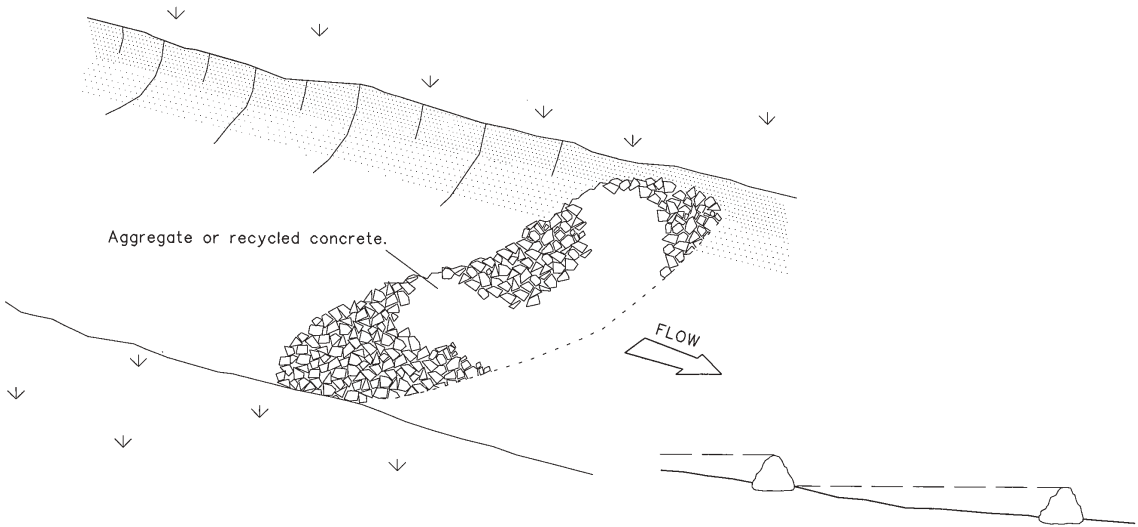
Check Dams

1. Check dams can be built with various materials, including rocks, logs, sandbags and straw bales. The maintenance program should ensure their integrity is retained, especially where constructed with straw bales. In the case of bales, this might require their replacement each two to four months.
2. Trench the check dam 200 mm into the ground across its whole width. Where rock is used, fill the trenches to at least 100 mm above the ground surface to reduce the risk of undercutting.
3. Normally, their maximum height should not exceed 600 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
4. Space the dams so the toe of the upstream dam is level with the spillway of the next downstream dam.

Rock Check Dam



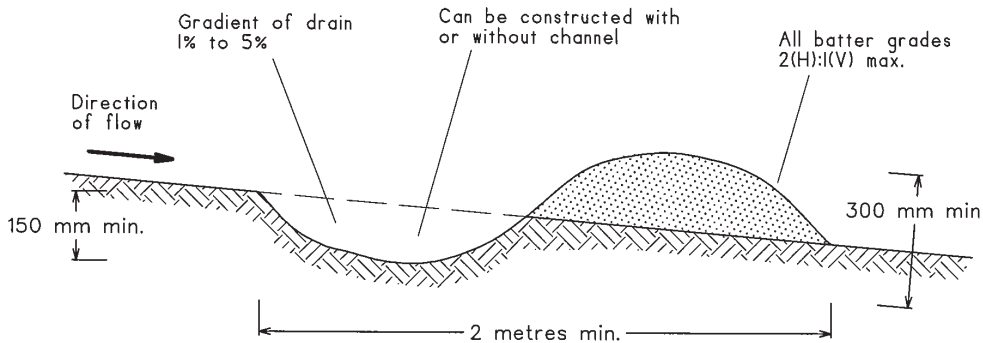
Rock Check Dam



Earth Banks (Low Flow)

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible – work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

Earth Bank (Low Flow)

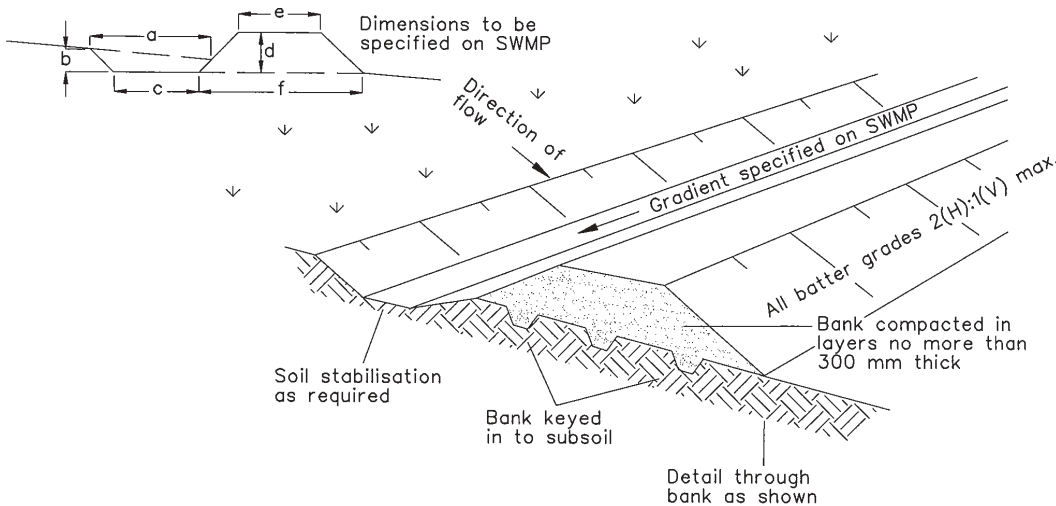


NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

Earth Banks (High Flow)

1. Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent
2. Avoid removing trees and shrubs if possible – work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
7. Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader (Standard Drawing 5-6b).

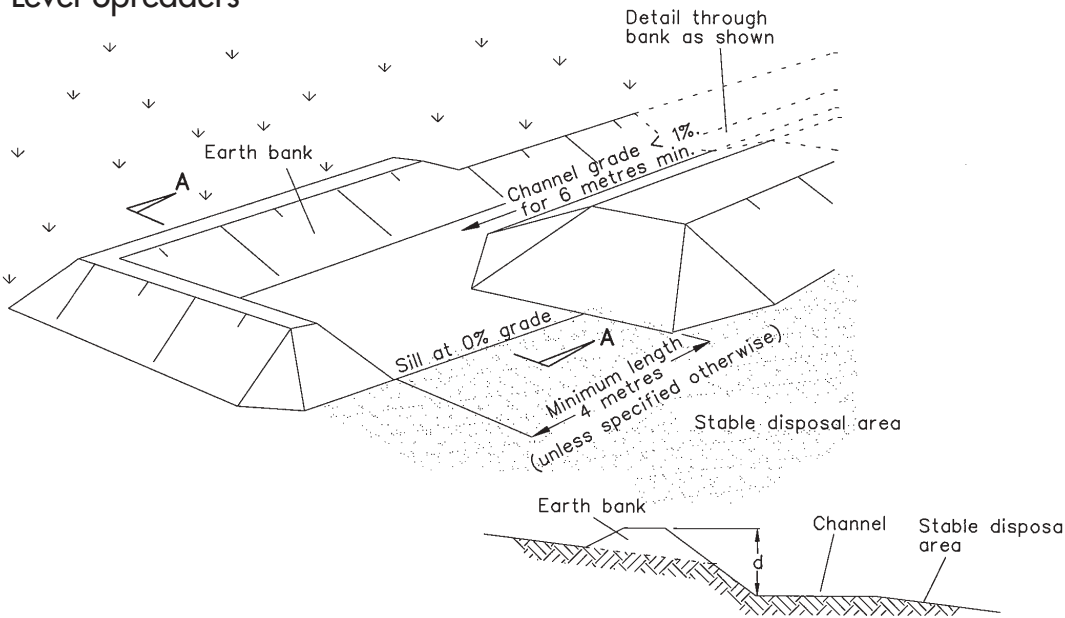
Earth Bank (High Flow)



Level Spreaders

1. Construct at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
2. Avoid removing trees and shrubs if possible – work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Ensure the structures are properly compacted to prevent failure.
5. Complete permanent or temporary stabilisation within 10 days of construction.
6. Where possible, ensure they discharge waters onto either stabilised or undisturbed disposal sites within the same subcatchment area from which the water originated. Approval might be required to discharge into other subcatchments.

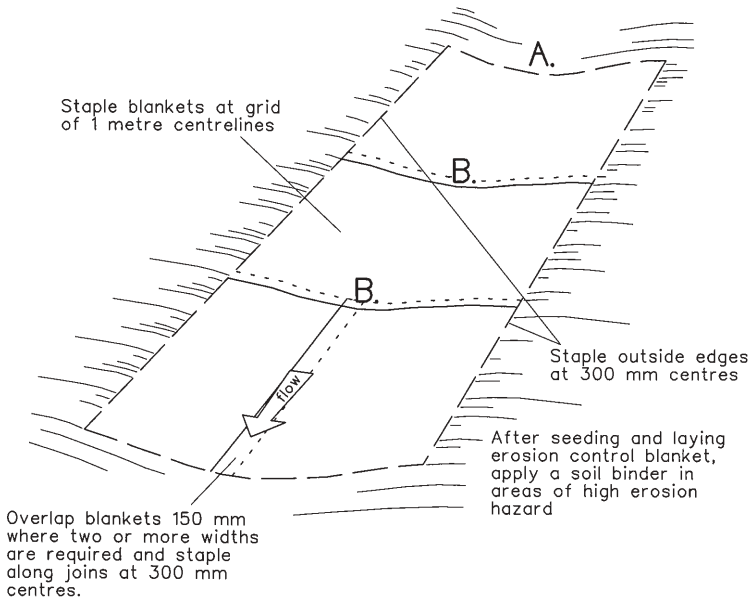
Level Spreaders



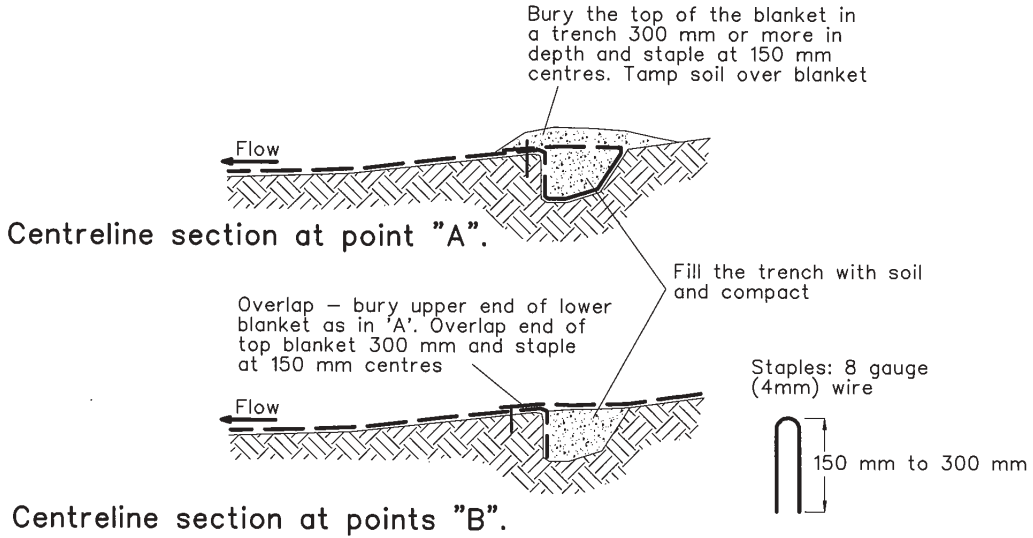
RECPs: Concentrated Flow

1. Remove any rocks, clods, sticks or grass from the surface before laying matting.
2. Ensure that topsoil is at least 75 mm deep.
3. Complete fertilising and seeding before laying the matting.
4. Ensure fabric will be continuously in contact with the soil by grading the surface carefully first.
5. Lay the fabric in "shingle-fashion", with the end of each upstream roll overlapping those downstream. Ensure each roll is anchored properly at its upslope end (Standard Drawing 5-7b).
6. Ensure that the full width of flow in the channel is covered by the matting up to the design storm event, usually in the 10-year ARI time of concentration storm event.
7. Divert water from the structure until vegetation is stabilised properly.

RECP: Concentrated Flow



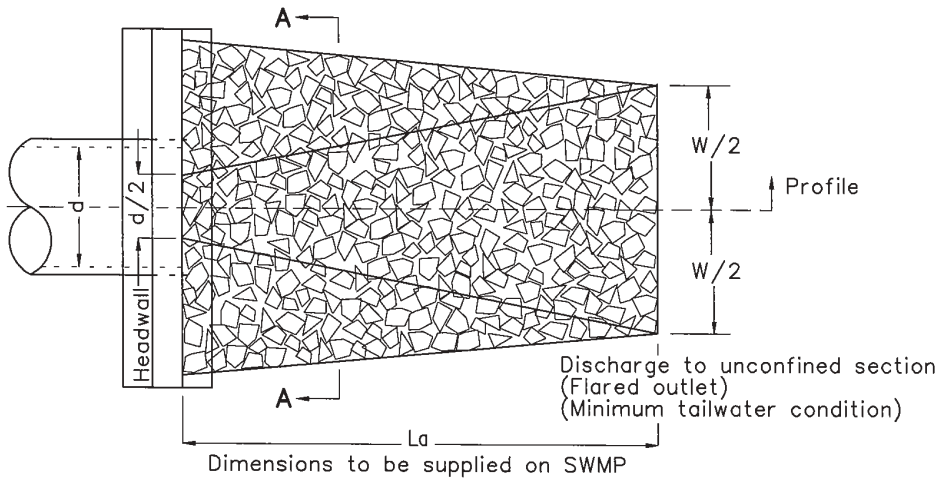
RECP: Concentrated Flow



Energy Dissipaters

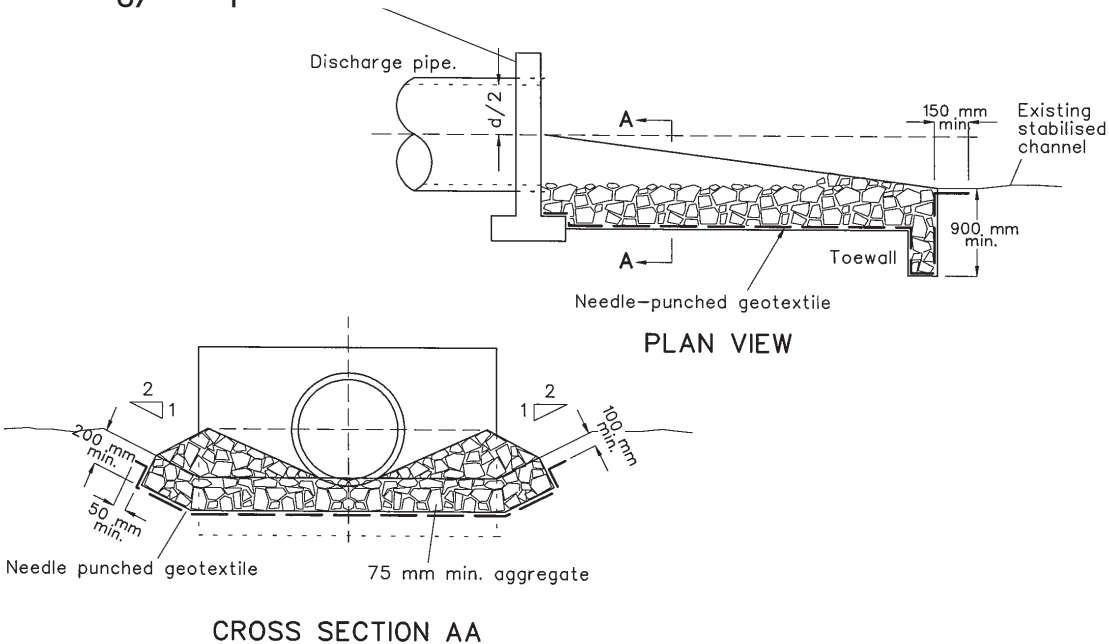
1. Compact the subgrade fill to the density of the surrounding undisturbed material.
2. Prepare a smooth, even foundation for the structure that will ensure that the needle-punched geotextile does not sustain serious damage when covered with rock.
3. Should any minor damage to the geotextile occur, repair it before spreading any aggregate. For repairs, patch one piece of fabric over the damage, making sure that all joints and patches overlap more than 300 mm.
4. Lay rock following the drawing, according to Table 5.2 of Landcom (2004) and with a minimum diameter of 75 mm.
5. Ensure that any concrete or riprap used for the energy dissipater or the outlet protection conforms to the grading limits specified on the SWMP.

Energy Dissipater



PLAN VIEW

Energy Dissipater

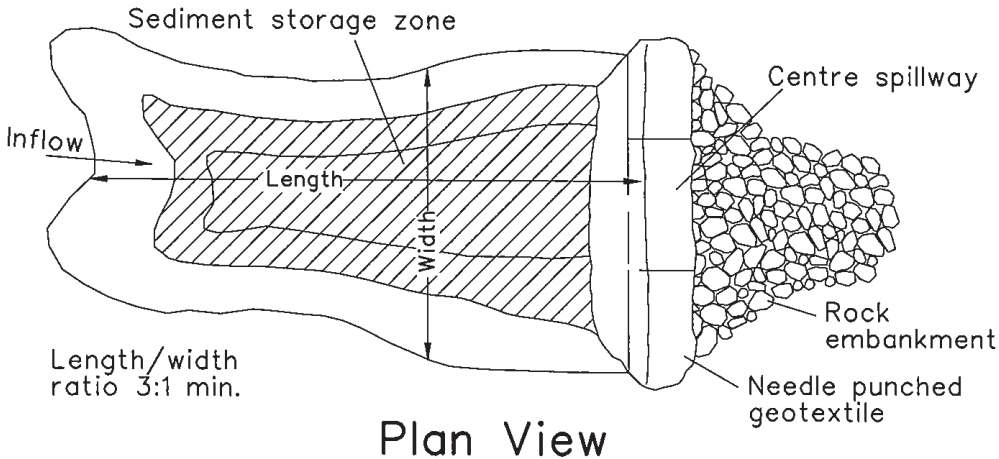


Rock Sediment Basins

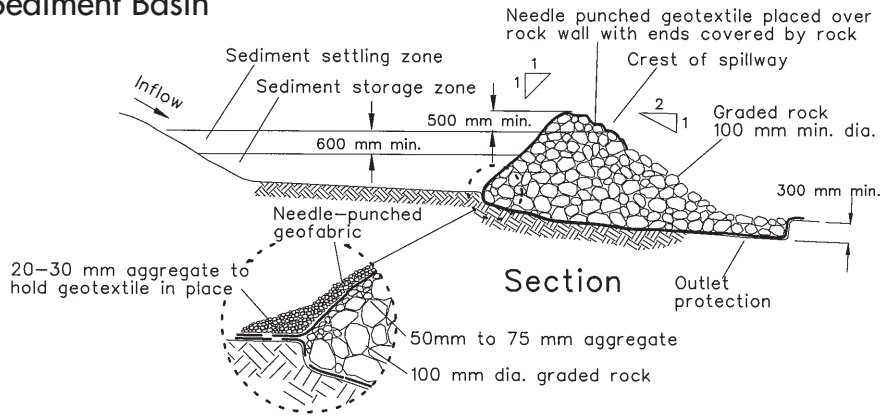
(Applies to Type C soils only)

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Excavate to 300 mm depth for base of the dam wall.
3. Line the excavation with a needle-punched geotextile allowing sufficient to line below the wall, and over the upstream rock and the spillway to 500 mm below the spillway exit on the downstream face.
4. Make up the wall profile and outlet protection with100 mm (min.) diameter graded rock. Spread a layer of 50 mm to 75 mm diameter aggregate over the upstream batter for a more even surface, and add 100 mm to 150 mm of 20 mm to 30 mm gravel over the 50 mm to 75 mm diameter aggregate.
5. Lay geotextile over the upstream batter and through the spillway, fixing in place with 100 mm rock.
6. Place a "Full of Sediment" marker to show when less than design capacity occurs and sediment removal is required.
7. Replace the upstream geotextile layer each time sediment is removed.

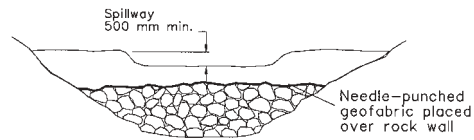
Rock Sediment Basin



Rock Sediment Basin



NOTE:
Spillway width and depth, wall crest width and downstream outlet protection measures to be specified on SWMP.



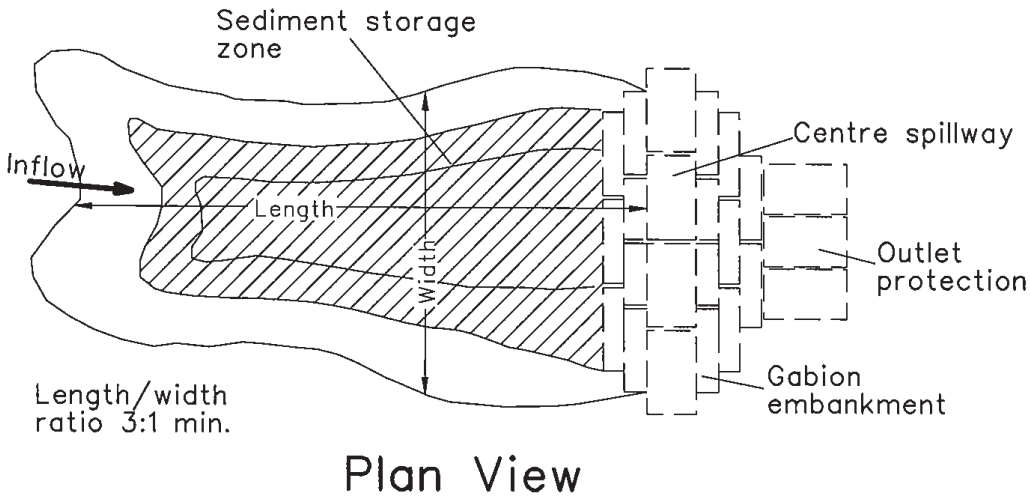
Downstream Elevation

Gabion Sediment Basins

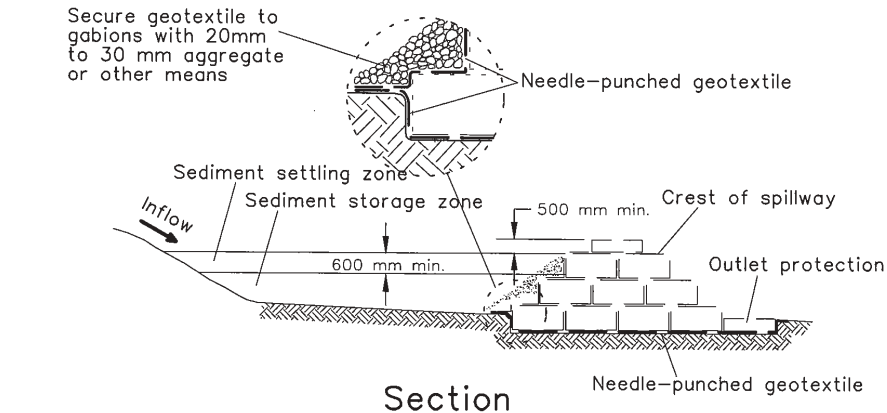
(Applies to Type C soils only)

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Excavate to 300 mm depth for the base of the dam wall and form a level platform for the gabions.
3. Line the excavation with a needle-punched geotextile allowing sufficient to line below the wall, and over the upstream gabions and spillway to 500 mm below the spillway exit on the downstream face.
4. Make up the wall profile and outlet protection with gabion units filled with graded rock as specified on the SWMP.
5. Construct a spillway 500 mm below the crest of the dam and for the width specified on the SWMP.
6. Lap the geotextile over the upstream face and through the spillway and fix it in place with the top row of gabions.
7. Cover the upstream face of the wall with 20 mm to 30 mm gravel and geotextile (Standard Drawing 6-2b)
8. Place a "Full of Sediment' marker to show when less than design capacity occurs and sediment removal is required.
9. Replace the upstream geotextile layer when sediment is removed if a dry basin is required.

Gabion Sediment Basin



Gabion Sediment Basin



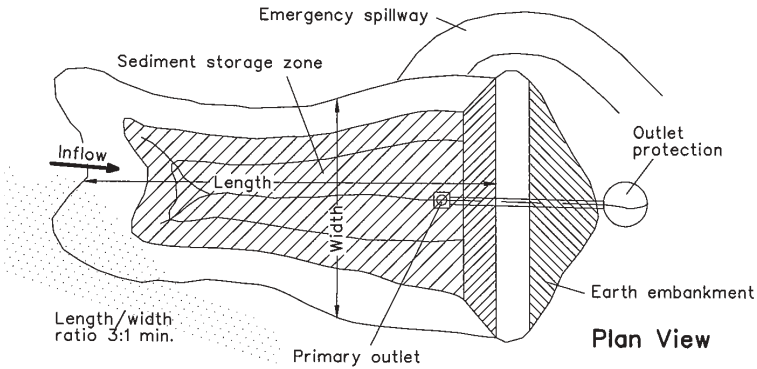
NOTE: Spillway width and depth, wall crest width and downstream outlet protection measures to be specified on SWMP.

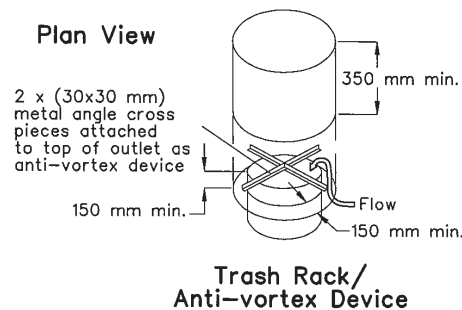
Earth Basins – Dry

(Applies to Type C soils only)

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Form a cut off trench under the centreline of the embankment 600 mm deep and 1,200 mm wide, extending to a point on the watercourse wall above the riser sill level.
3. Maintain the trench free of water and recompact the materials with equipment as specified In the SWMP to 95 per cent Standard Proctor Density.
4. Select fill according to the SWMP that is free from roots, wood, rock, large stone or foreign material.
5. Prepare the site under the embankment by ripping to at least 100 mm to help bond the compacted fill to the existing substrate.
6. Spread the fill in 100 mm to 150 mm layers and compact it at optimum moisture content following the SWMP.
7. Install the pipe outlet with seepage collars as specified in the SWMP and Standard Drawing 6-3b.
8. Form batter grades at 2(H):1(V) upstream and 3(H):1(V) downstream or as specified in the SWMP.

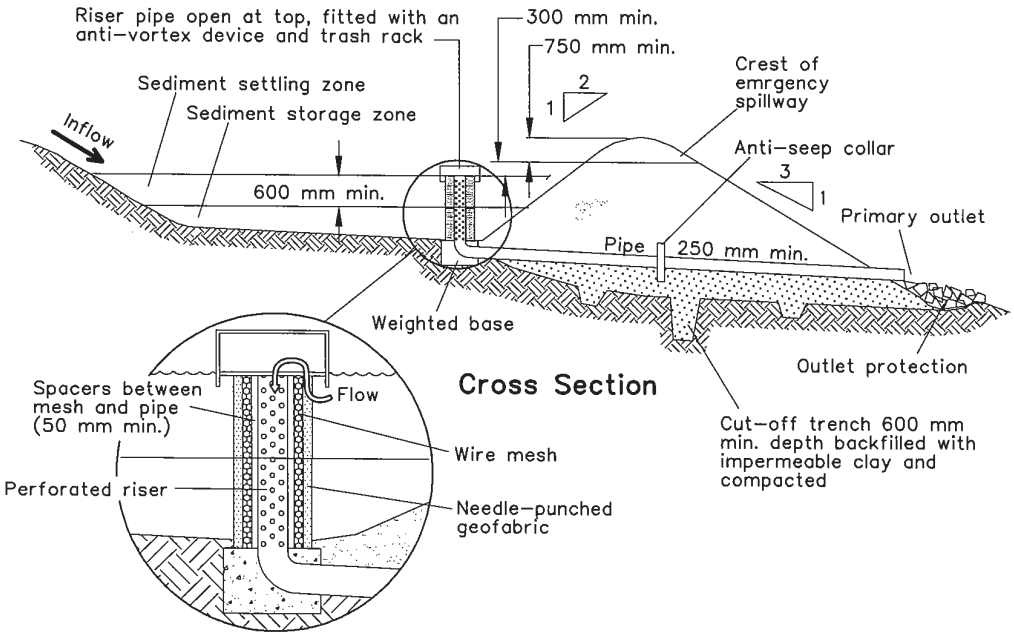
Earth Basin – Dry





Trash Rack/
Anti-vortex Device

Earth Basin – Dry

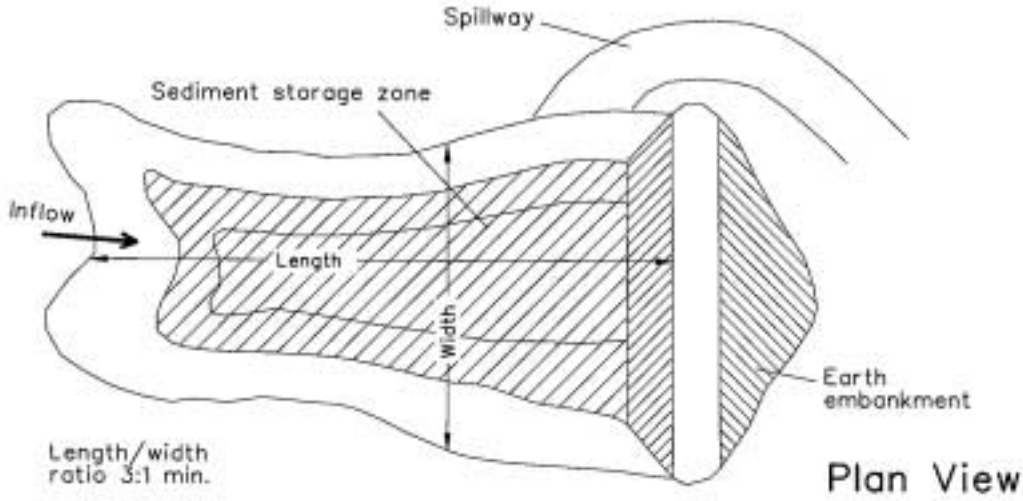


Earth Basins – Wet

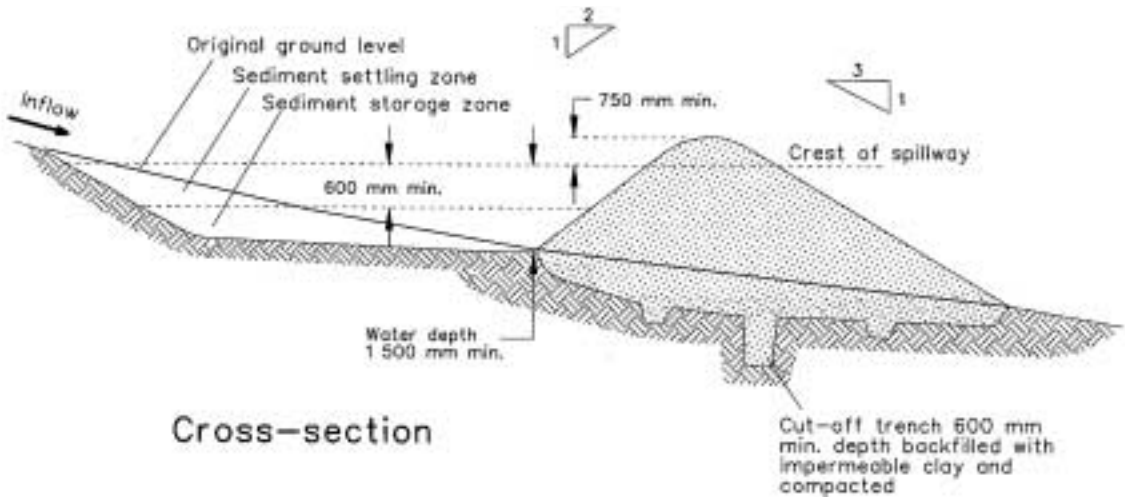
(Applies to Type D and Type F soils only.)

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Construct a cut-off trench 500 mm deep and 1,200 mm wide along the centreline of the embankment extending to a point on the gully wall level with the riser crest.
3. Maintain the trench free of water and recompact the materials with equipment as specified in the SWMP to 95 per cent Standard Proctor Density.
4. Select fill following the SWMP that is free of roots, wood, rock, large stone or foreign material.
5. Prepare the site under the embankment by ripping to at least 100 mm to help bond compacted fill to the existing substrate.
6. Spread the fill in 100 mm to 150 mm layers and compact it at optimum moisture content following the SWMP.
7. Construct the emergency spillway.
8. Rehabilitate the structure following the SWMP.

Earth Basin – Wet



Earth Basin – Wet

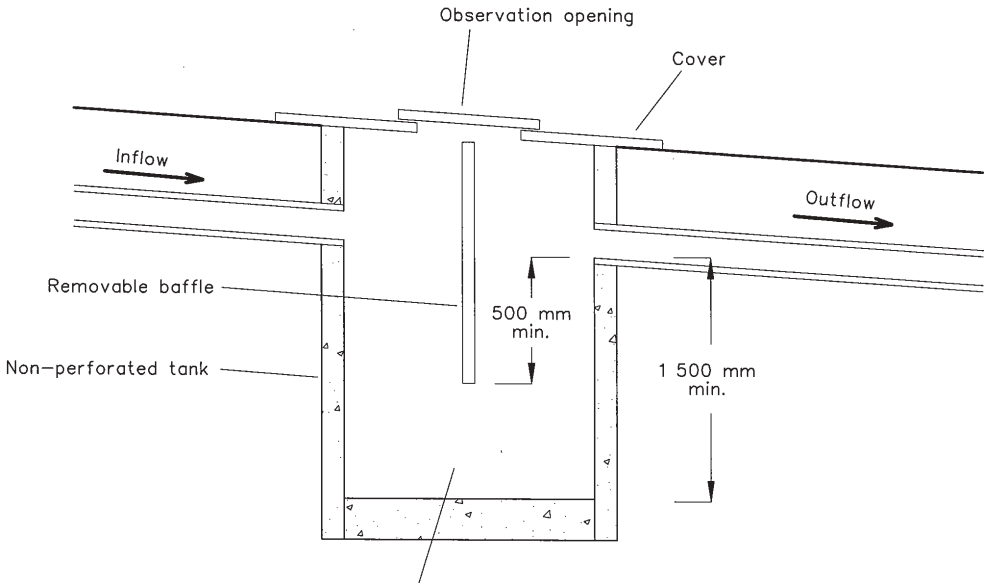


Cross-section

Lined Tanks

1. Join the inlet to the stormwater, taking any suitable steps to remove bulky or coarse material before it can enter the tank.
2. Connect the outlet to a safe disposal area following the SWMP.
3. Install a removable baffle, central to the inflow/outflow and normal to the direction of flow, ensuring that it reaches 500 mm below the invert of the outlet pipe.
4. Install a cover over the pit with an observation port and access cover.

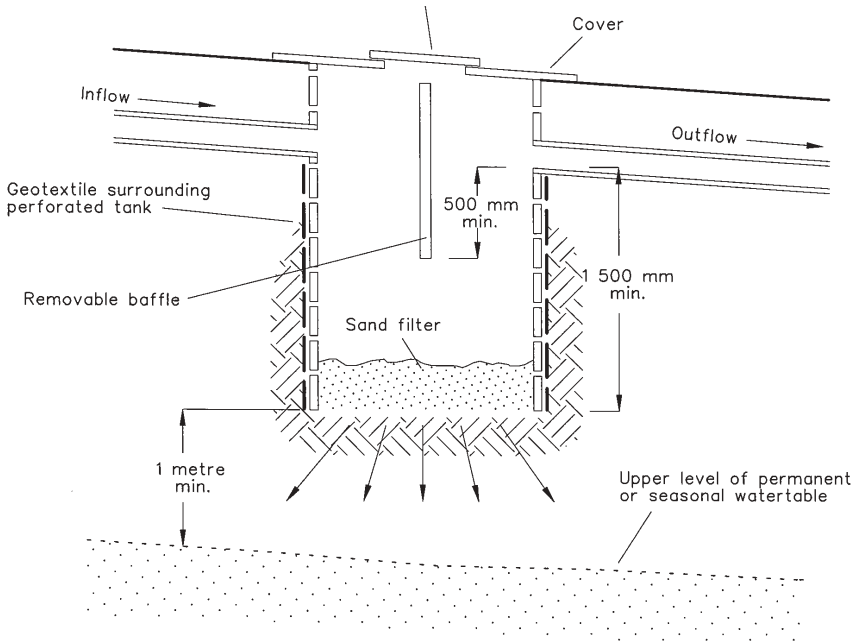
Lined Tank


Observation opening
Cover
Inflow
Outflow
Removable baffle
Non–perforated tank
500 mm
min.
1 500 mm
min.

Infiltration Sumps

1. Join the inlet to the polluted supply taking any suitable step to remove bulky material before it can enter the sump.
2. Connect the outlet to a safe disposal area following the ESCP/SWMP.
3. Place a geotextile liner on the outside of the pit.
4. Install a removable baffle, central to the inflow/outflow and normal to the direction of flow, ensuring that it reaches 500 mm below the invert of the outlet pipe.
5. Install a cover over the pit with an observation port and access cover.

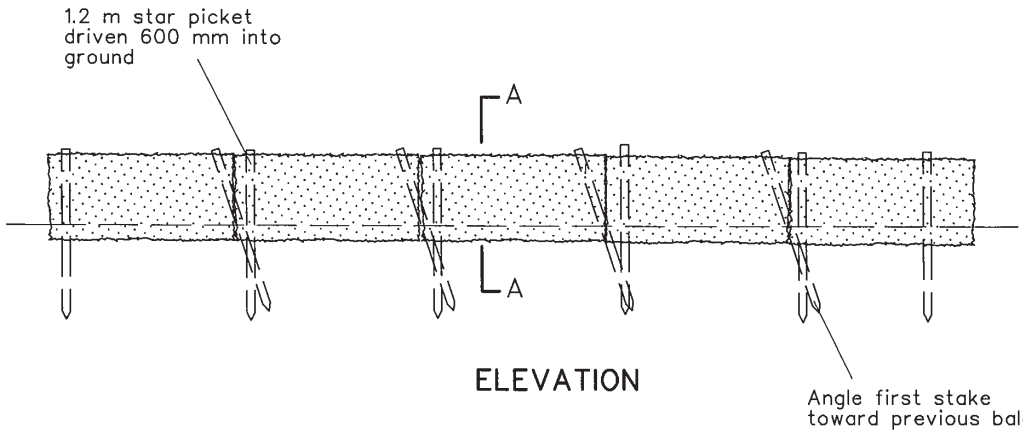
Infiltration Sump



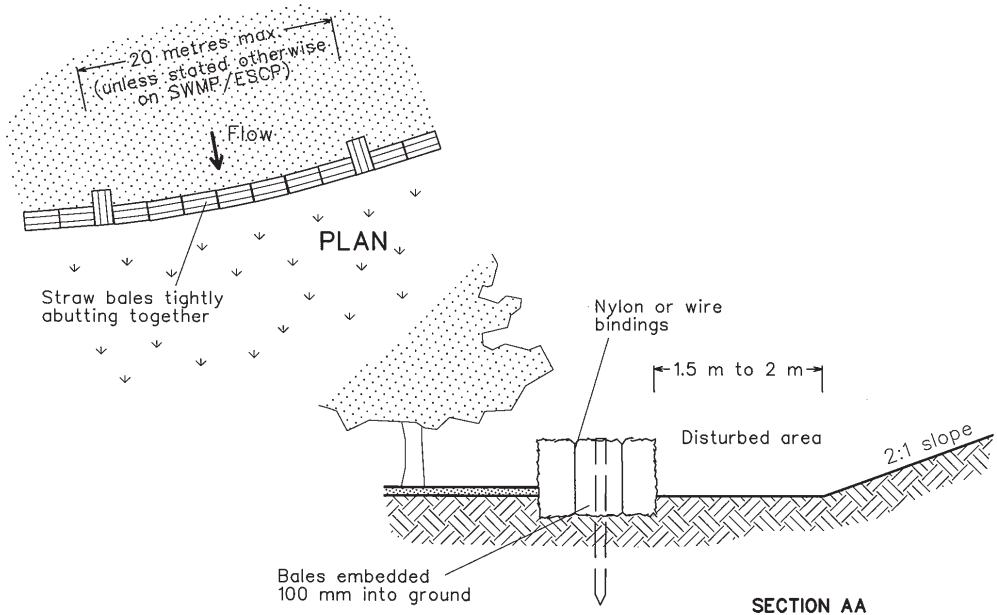
Straw Bale Filters

1. Construct the straw bale filter as close as possible to being parallel to the contours of the site.
2. Place bales lengthwise in a row with ends tightly abutting. Use straw to fill any gaps between bales. The straws in each bale are to be aligned parallel to ground.
3. Ensure that the maximum height of the filter is one bale.
4. Embed each bale in the ground 75 mm to 100 mm and anchor with two 1.2 metre star pickets or stakes. Angle the first star picket or stake in each bale towards the previously laid bale. Drive them 600 mm into the ground and, if possible, flush with the top of the bales. Where star pickets are used and they protrude above the bales, ensure they are fitted with safety caps.
5. Where a straw bale filter is constructed downslope from a disturbed batter, ensure the bales are placed 1 to 2 metres downslope from the toe.
6. Establish a maintenance program that ensures the integrity of the bales is retained – they could require replacement each two to four months.

Straw Bale Filter



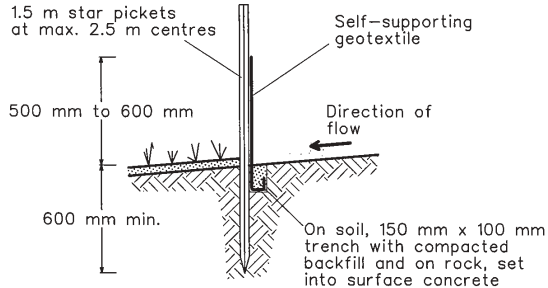
Straw Bale Filter

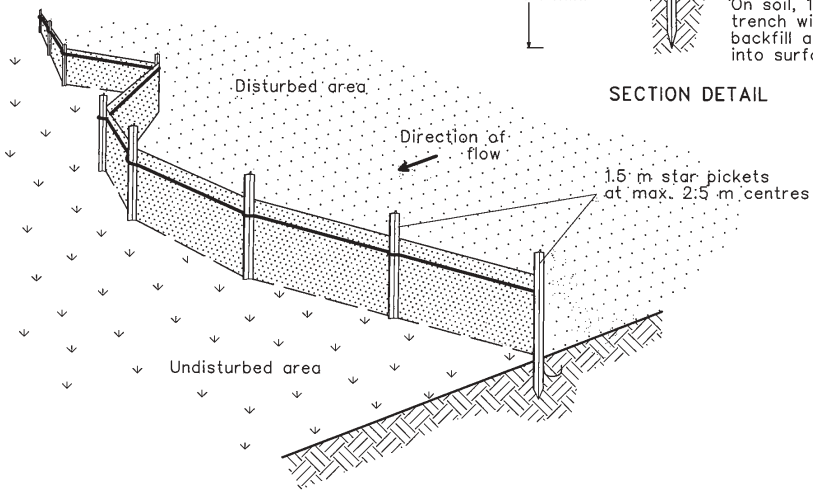


Sediment Fences

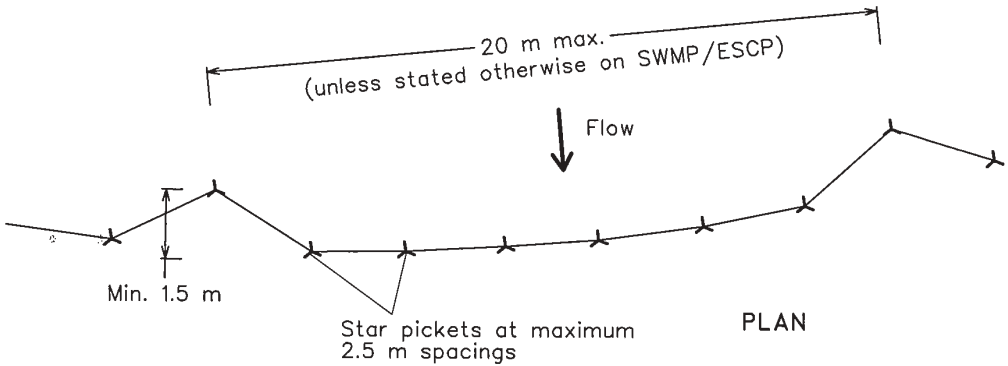
1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

Sediment Fence





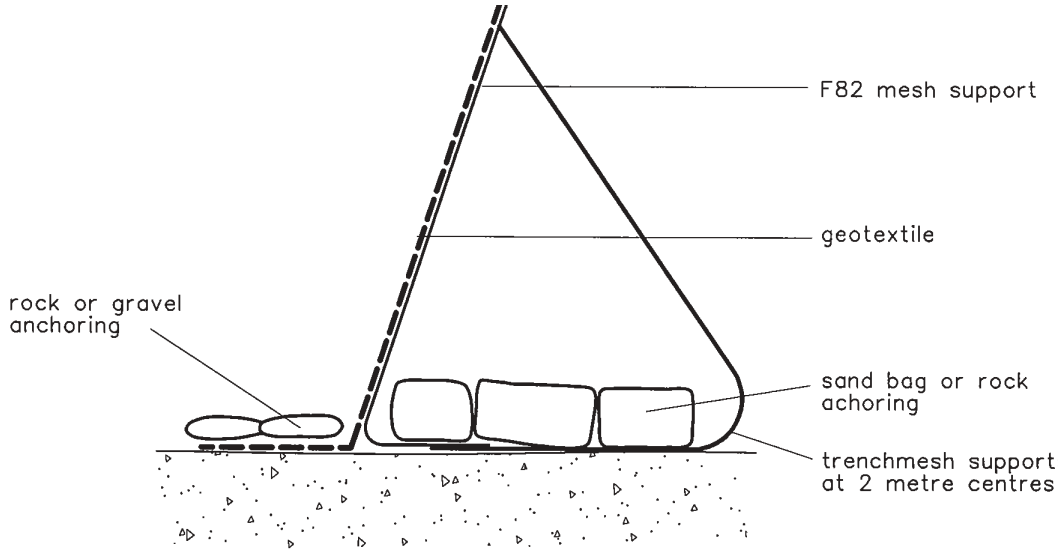
Sediment Fence



Alternative Sediment Fences

1. Install this type of sediment fence when use of support posts is not desirable or not possible. Such conditions might apply, for example, where approval is granted from the appropriate authorities to place these fences in highly sensitive estuarine areas.
2. Use bent trench mesh to support the F82 welded mesh facing as shown on the drawing above. Attach the geotextile to the welded mesh facing using UV-resistant cable ties.
3. Stabilise the whole structure with sandbag or rock anchoring over the trench mesh and the leading edge of the geotextile. The anchoring should be sufficiently large to ensure stability of the structure in the design storm event, usually the 10-year event.

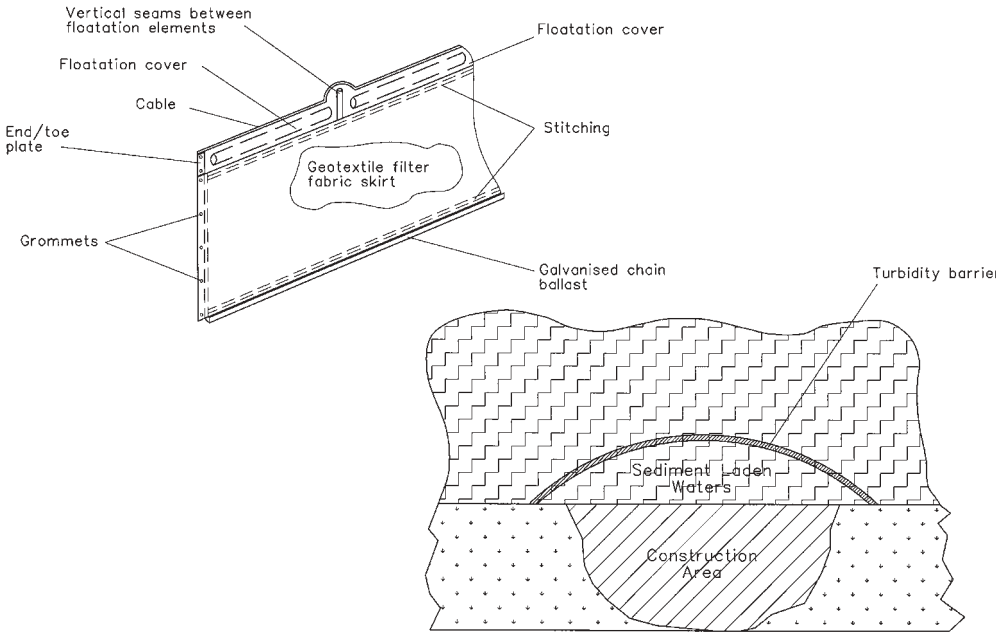
Alternative Sediment Fence



Turbidity Barriers

1. Use turbidity barriers only where high flows are unlikely to remove accumulated sediment and/or move the curtain significantly.
2. Where the barrier is to remain in place for more than one month, ensure the floatation cover is a UV-resistant, durable material.
3. Use only closed cell foam or foam-filled PVC piping as floatation elements. Do not use unfilled pipes.
4. Use only woven or heat-set non woven geotextiles. Needle-punched, non woven geotextiles can become fouled with debris that fray and delaminate them as they move with the waves or currents.
5. Remove captured sediment before the barrier is decommissioned.
6. In tidal areas, ensure the barrier can rise and fall without being moved from its position.

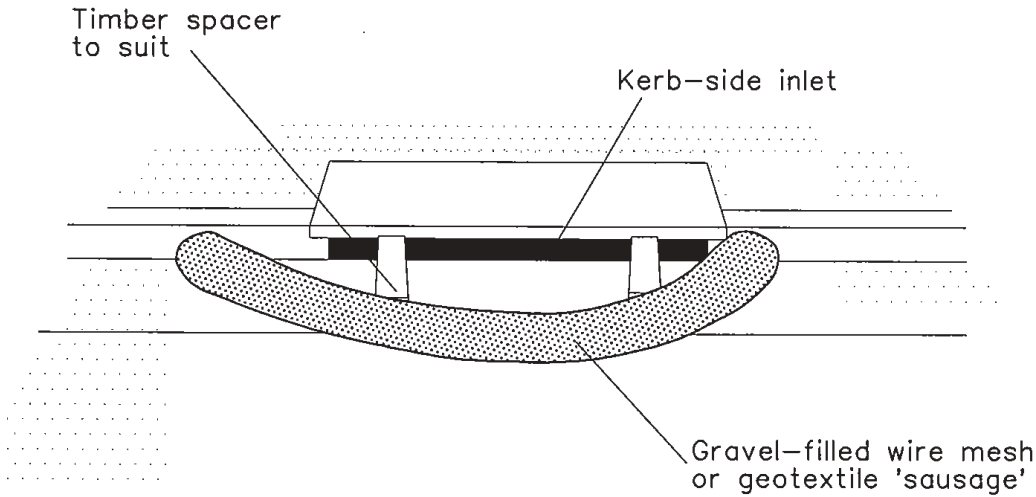
Turbidity Barrier



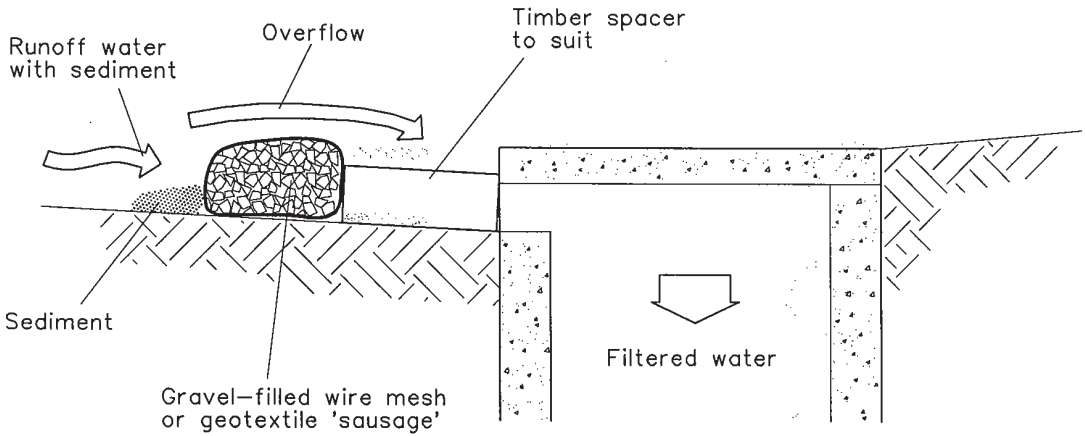
Kerb Inlet Filters

1. Install filters to kerb inlets only at sag points.
2. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit and fill it with 25 mm to 50 mm gravel.
3. Form an elliptical cross-section about 150 mm high x 400 mm wide.
4. Place the filter at the opening leaving at least a 100-mm space between it and the kerb inlet. Maintain the opening with spacer blocks.
5. Form a seal with the kerb to prevent sediment bypassing the filter.
6. Sandbags filled with gravel can substitute for the mesh or geotextile providing they are placed so that they firmly abut each other and sediment-laden waters cannot pass between.

Mesh and Gravel Inlet Filter



Mesh and Gravel Inlet Filter

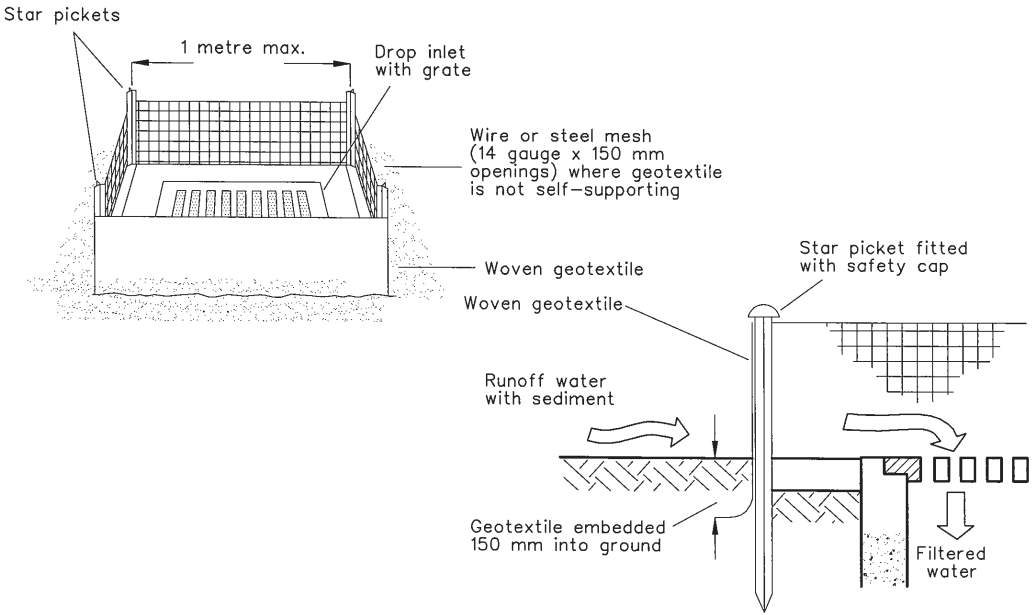


NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

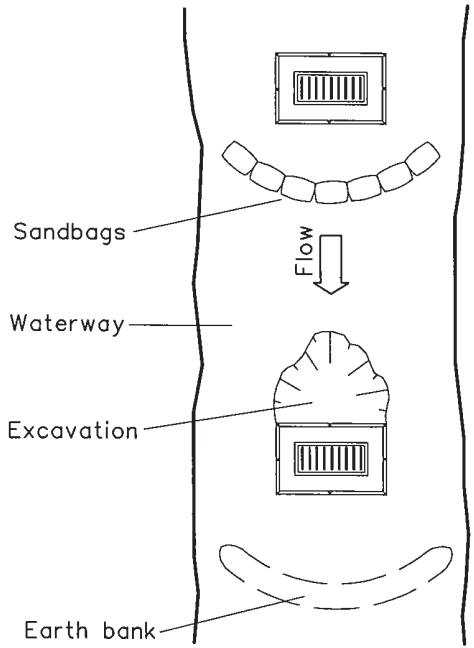
Drop Inlet Filters

1. Fabricate a sediment barrier made from geotextile or straw bales.
2. Follow Standard Drawing 6-7 and Standard Drawing 6-8 for installation procedures for the straw bales or geofabric. Reduce the picket spacing to 1 metre centres.
3. In waterways, artificial sag points can be created with sandbags or earth banks as shown in the drawing.
4. Do not cover the inlet with geotextile unless the design is adequate to allow for all waters to bypass it.

Geotextile Inlet Filter



Geotextile Inlet Filter

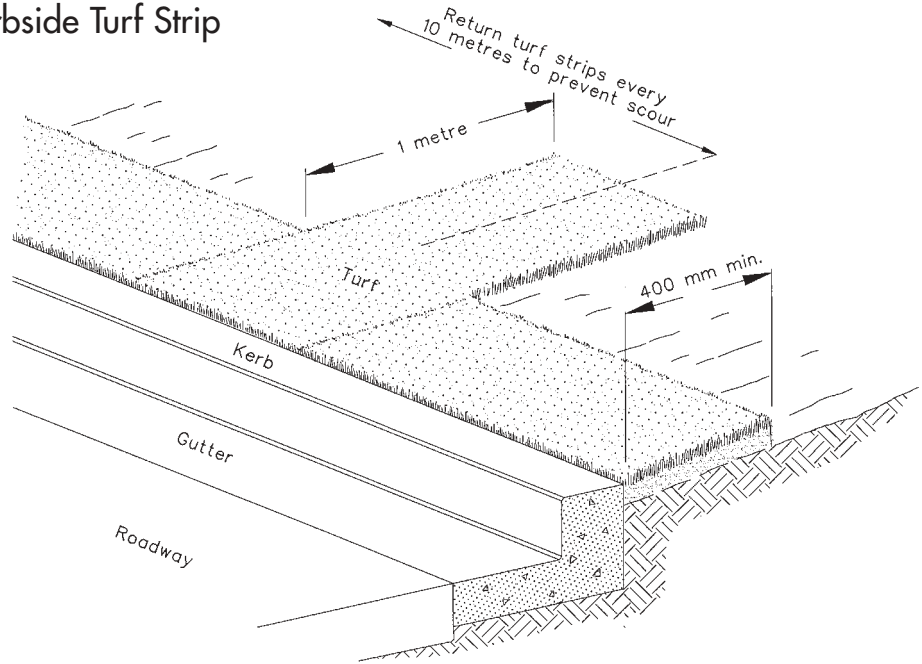


For drop inlets at non–sag points, sandbags, earth bank or excavation used to create artificial sag point

Kerbside Turf Strips

1. Install a 400-mm minimum wide roll of turf on the footpath next to the kerb and at the same level as the top of the kerb.
2. Lay 1.4 metre long turf strips normal to the kerb every 10 metres.
3. Rehabilitate disturbed soil behind the turf strip following the ESCP/SWMP.

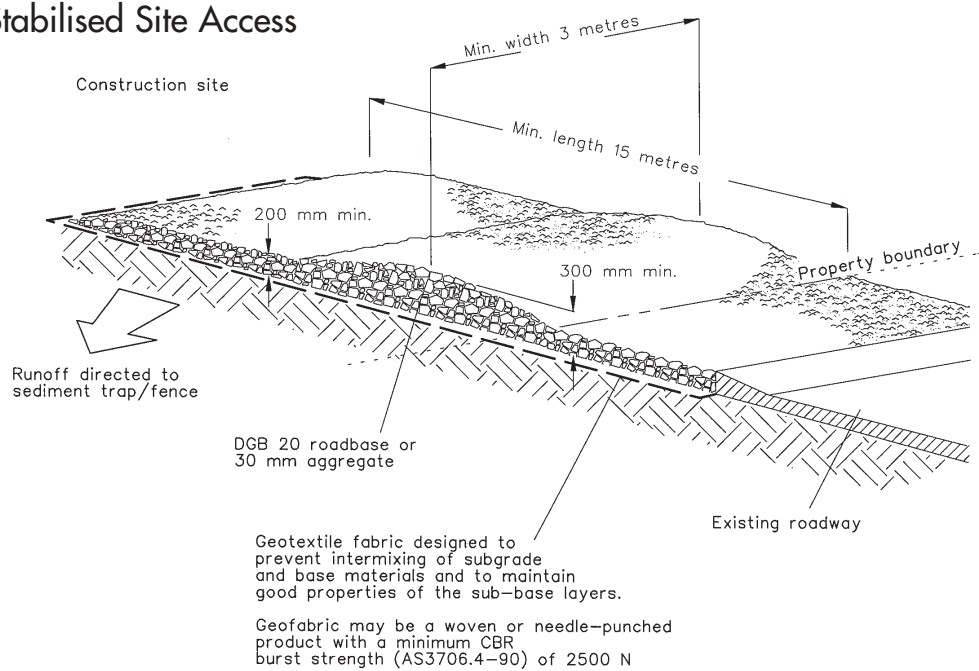
Kerbside Turf Strip



Stabilised Site Accesses

1. Strip the topsoil, level the site and compact the subgrade.
2. Cover the area with needle-punched geotextile.
3. Construct a 200-mm thick pad over the geotextile using road base or 30-mm aggregate.
4. Ensure the structure is at least 15 metres long or to building alignment and at least 3 metres wide.
5. Where a sediment fence joins onto the stabilised access, construct a hump in the stabilised access to divert water to the sediment fence.

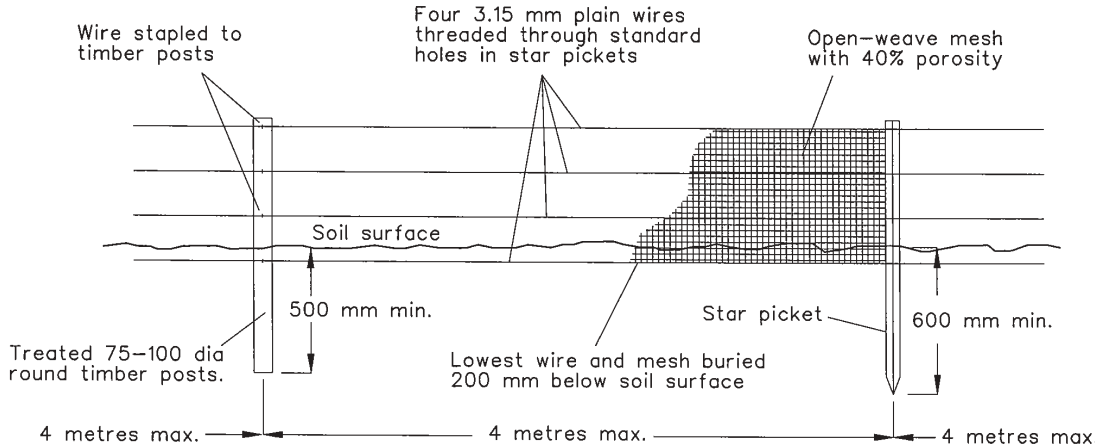
Stabilised Site Access



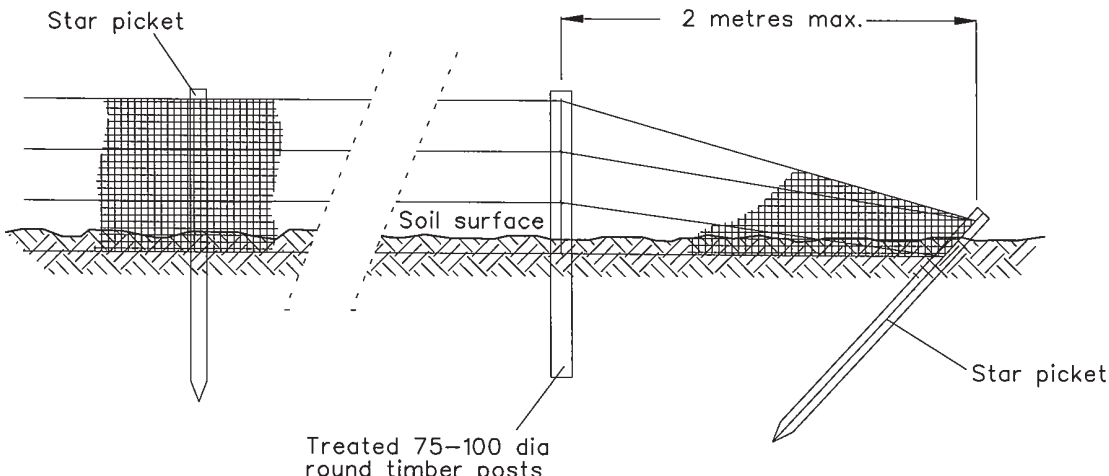
Control of Wind Erosion

1. Install the fence to the height specified in the ESCP/SWMP.
2. Cut a channel 200 mm deep along the fence line.
3. Place wire and light resistant, open-weave polymer mesh with 40 percent porosity on the prevailing wind side of fence.
4. Fasten the mesh to all wires using ring fasteners at 100 mm to 150 mm intervals on top wire and 300 mm intervals on other wires.
5. Use one 75-mm to100-mm diameter treated round timber post every 20 metres.
6. Where star pickets are used, ensure they are fitted with safety caps.

Control of Wind Erosion



Control of Wind Erosion

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