

Construction Exits – Rock pads

SEDIMENT CONTROL TECHNIQUE

Type 1 System		Sheet Flow		Sandy Soils	✓
Type 2 System		Concentrated Flow	[1]	Clayey Soils	✓
Type 3 System		Supplementary Trap	✓	Dispersive Soils	

[1] Minor concentrated flows passing down the access track towards the rock pad must be diverted off the rock pad towards a suitable sediment trap (Photo 3).

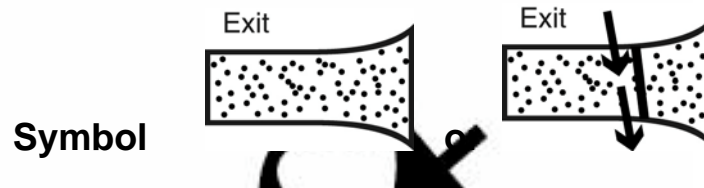


Photo 1 – Stabilised rock pad construction exit



Photo 2 – Stabilised rock pad construction exit

Key Principles

1. Rock pad dimensions and rock specifications are different for small building sites compared to construction sites.
2. Rock pads on small building sites primarily act as sediment placement.
3. Rock pads on construction sites primarily act as sediment trapping.
4. Sediment trapping ability is directly related to rock size and pad thickness.

Design Information

Table 1 provides the recommended dimensions of rock pads.

Table 1: Rock pad dimensions

Parameter	Construction Sites	Building Sites
Minimum width		
Minimum length (where practical)		
Minimum thickness of rock		
Rock size (avoid 75–100mm)		

Figure 1 shows the typical layout of

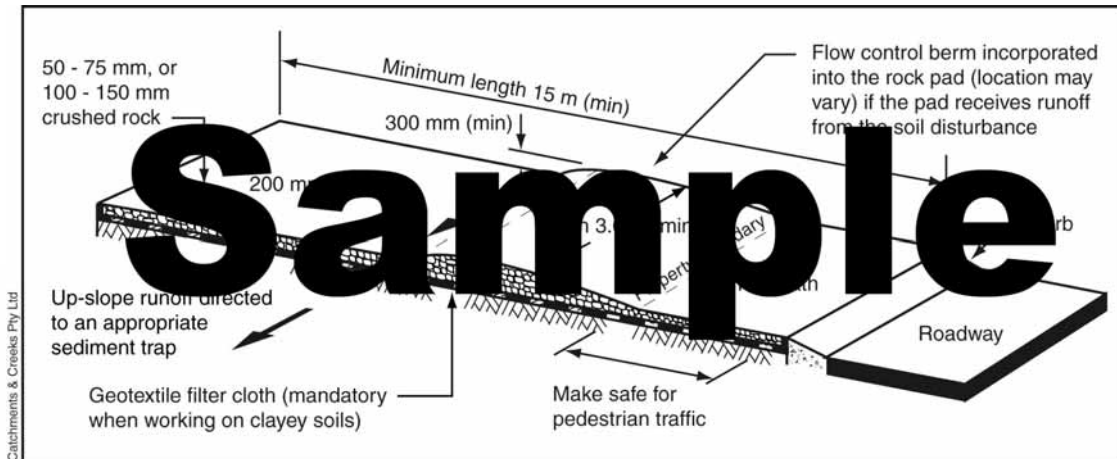


Figure 1 – Rock pad construction exit for civil construction sites

(a) Specification of rock

To the maximum degree practical, the rock size must be near uniform to maximize the available void spacing. Rock size of 50 to 75 mm or 100 to 150 mm is preferred. The rocks should be well rounded and free of sharp edges. The rocks should be free of any contaminants and should not be hooked up between dual tyres.

The rock must be placed on filter cloth (minimum bidim or equivalent) if located on clayey or unstable soils.

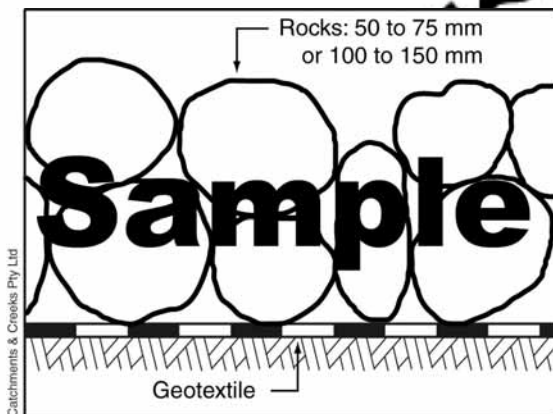


Figure 2: Good rock selection

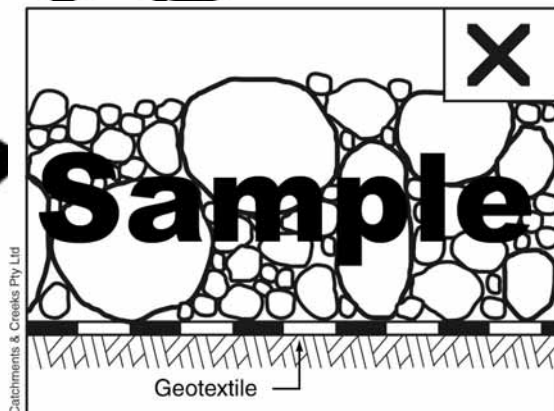


Figure 3: Poor rock selection



Photo 3 – Example of suitable rocks for construction site rock pads



Photo 4 – Warning sign for truck drivers regarding rocks hooked up in dual tyres

(b) Drainage control

In circumstances where surface runoff from the work site is directed towards the rock pad (i.e. where the rock pad is down-slope of the soil disturbance),

The location of this flow control

The mountable flow control berm should have side slopes not exceeding 5:1 (H:V) batters.

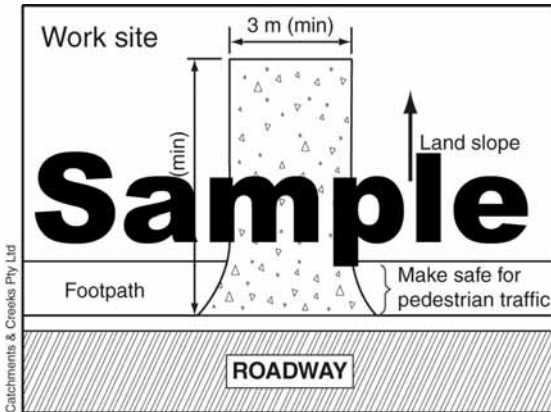


Figure 4: Rock Pad without flow diversion

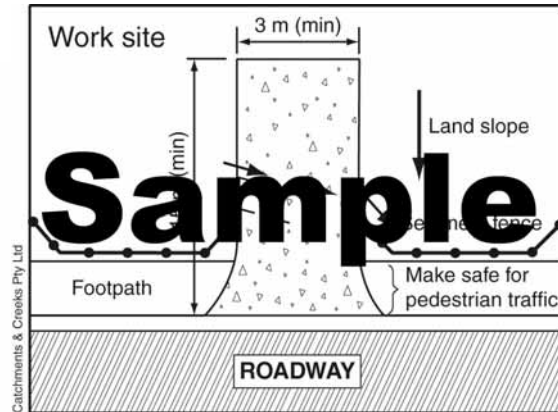


Figure 5: Rock pad with flow diversion



Photo 5 – Flow control of berm



Photo 6 – Passing site runoff under a rock pad



Photo 7 – Drain down-slope of rock pad directing sediment-laden runoff to a nearby sediment trap.



Photo 8 – Rock pad with adjacent, gravelled site entry footpath

(c) Alternative designs

An alternative rock pad design is presented in Figure 6. This concept utilises the moderate speed properties

Further alternatives are discussed in the separate fact sheet for *Vibration Grids*. On-site trials of this and other designs are required to develop the optimum high-efficiency, low-maintenance design.

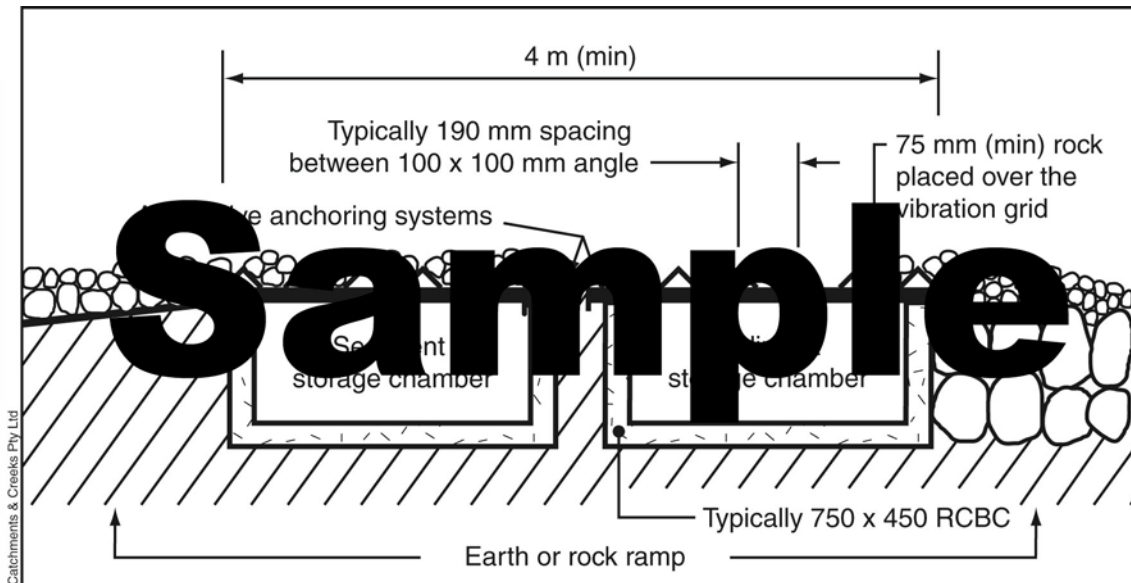


Figure 6 – Alternative low-maintenance rock pad design (concept still under development)

(d) Pedestrian safety

The rock pad must be a safe surface (see section 1). The rock size should be 50-50mm.

Such measures are only required in circumstances where potential risks to pedestrian are considered to exist.

(e) Maintenance

All stabilised construction sites require regular maintenance, including sediment removal, and rock replacement.



Photo 9 – Heavy sedimentation of rock pad adjacent a vibration grid



Photo 10 – Heavy sedimentation should not be allowed to occur at construction exits prior to their maintenance

Description

'Construction exit' is a general term referring to *rock pads*, *vibration grids* and *wash bays*.

Rock pads consist of a short length of roadway covered with crushed rock.

Rock pads have been referred to under a variety of names including stabilised construction exits, entry/exit pads, gravel pads and rumble pads. The term 'rumble pad' is a misnomer because few rock pads are able to significantly rumble or vibrate heavy trucks.

Purpose

Rock pads on building sites primarily act as all-weather parking surfaces that aim to minimise the initial placement of dirt and mud on tyres.

Rock pads on construction sites primarily act as sediment traps aiming to strip from vehicle tyres any dirt and mud generated from soil disturbances elsewhere on the site.

Stabilised construction exits are one of the few sediment control measures that are required during both wet and dry weather.

Limitations

A 'supplementary' sediment trap typically has a low sediment trapping efficiency.

Sediment trapping efficiency is generally related to the soil type and weather conditions.

Rock pads can be ineffective if the soils are highly cohesive (silt and clays).

Advantages

A sediment control technique that generally does not interfere with construction activities.

Various alternative designs exist that can be adapted to the site conditions.

On building site the rock pad can act as an all weather parking area.

Disadvantages

Requires regular maintenance, including placement or addition of more rock.

It is common for these systems to experience less than ideal maintenance.

Rock pads can interfere with road construction if located at the permanent site entry point.

Location

Located at site entry points, or where vehicles pass from unsealed roads onto sealed roads.

It is important to locate the construction exit such that vehicles cannot bypass the rock pad when exiting the site.

Avoid placing site rock pads on steep grades.

The construction site entry/exit point may not necessarily be located at the permanent site entry/exit point.

Common Problems

Rock size too small, or not uniform in grading, resulting in rapid sediment blockage.

Gravel used instead of uniformly-sized, crushed rock.

Sediment regularly removed from the rock pad.

Drainage not adequately controlled at the entry/exit point, allowing sediment-laden stormwater runoff to wash onto public roads.

Special Requirements

If the entry/exit point is down-slope of the soil disturbance or parts of the access road, then the rock pad must contain a flow control berm to deflect sediment-laden runoff to an adjacent sediment trap.

The rock pad must not become a source of sediment runoff onto the adjacent road.

It is noted that even entry only points can still allow sediment to be washed off site. Thus adequate sediment and drainage controls will be required.

A square-edged shovel and large stiff-bristled broom must be available on-site for maintenance.

Site Inspection

Check for excessive sedimentation on the rock pad.

Check for sediment tacked onto the road.

Check if an additional layer of rock is required.

Ensure surface runoff is directed to a suitable sediment trap.

Materials

- Rock: well graded, hard, angular, erosion resistant rock, nominal diameter of 50mm to 75mm (small disturbances) or 100 to 150mm (large disturbances). All reasonable measures must be taken to obtain rock of near uniform size.
- Footpath stabilising aggregate: 25 to 50mm gravel or aggregate.
- Geotextile fabric: heavy-duty, needle-punched, non-woven filter cloth (bidim A34 or equivalent).

Installation

1. Refer to approved plans for location and dimensional details. If there are questions or problems with the location, dimensions, or method of installation, contact the engineer or responsible on-site officer for assistance.
2. Clear the location of the rock pad, removing stumps, roots and other vegetation to provide a firm foundation so that the rock is not pressed into soft ground. Clear sufficient width to allow passage of large vehicles, but clear only that necessary for the exit. Do not clear adjacent areas until the sealed erosion and sediment control devices are in place.
3. If the exposed soil is soft, plastic or clay, place a sub-base of crushed rock or a layer of heavy-duty geotextile cloth to provide a firm foundation.
4. Place the rock pad forming a minimum 200mm layer of clean, open-void rock.
5. If the associated construction site is up-slope of the rock pad, thus causing stormwater runoff to flow towards the rock pad, then form a minimum 300mm high flow control berm across the rock pad to divert such runoff to a suitable sediment trap.
6. The length of the rock pad should be at least 15m where practicable, and as wide as the full width of the entry or exit and at least 3m. The rock pad should commence at the edge of the off-site sealed road or pavement.
7. Flare the end of the rock pad where it meets the pavement so that the wheels of turning vehicles do not travel over unprotected soil.

8. If the footpath is open to pedestrian movement, then cover the coarse rock with fine aggregate or gravel, or otherwise take whatever measures are needed to make the area safe.

Maintenance

1. Inspect all site entry and exit points prior to forecast rain, daily during extended periods of rainfall, after runoff-producing rainfall, or otherwise at fortnightly intervals.
2. If sand, soil, sediment or mud is tracked or washed onto the adjacent sealed roadway, then such must be physically removed, first using a square-edged shovel and then a stiff-bristled broom, and then by a mechanical vacuum unit, if available.
3. If necessary for safety reasons, the roadway shall only be washed clean after all reasonable efforts have been taken to shovel and sweep the material from the roadway.
4. When the voids between the rock pad becomes filled with material and the effectiveness of the rock pad is reduced to a point where sediment is being tracked off the site, a new 100mm layer of rock must be added and/or the rock pad must be extended.
5. Ensure any associated drainage control measures (e.g. flow control berm) are maintained in accordance with their desired operational condition.
6. Dispose of sediment and debris in a manner that will not create an erosion or pollution hazard.

Removal

1. The rock pad should be removed only after they are no longer needed as a sediment trap.
2. Remove materials and collected sediment and dispose of in a suitable manner that will not cause an erosion or pollution hazard.
3. Re-grade and stabilise the disturbed ground as necessary to minimise the erosion hazard.