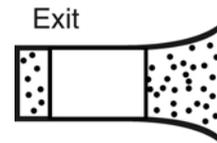


Construction Exits – Wash bays

SEDIMENT CONTROL TECHNIQUE

| | | | | | |
|---------------|--|--------------------|---|------------------|---|
| Type 1 System | | Sheet Flow | | Sandy Soils | ✓ |
| Type 2 System | | Concentrated Flow | | Clayey Soils | ✓ |
| Type 3 System | | Supplementary Trap | ✓ | Dispersive Soils | ✓ |



Symbol



Photo 1 – Automated wash bay located on a land fill site

Photo 2 – Temporary wash bay located on a road construction project

Key Principles

1. The purpose of a wash bay or vehicle washing system may not be restricted to just sediment control, but can include dust, pollution and weed (seed) control.
2. The primary function of the wash bay or vehicle washing system may be different on construction sites as opposed to landfill or mine sites.
3. The critical design parameter is either the length of the wash bay, or the contact time of the vehicle washing system (e.g. jet spray units).
4. Wash bays are primarily used on long-term construction sites, and sites containing very clayey soils.

Design Information

In confined sites, slow-speed wash bays can be formed (Figure 1); however, wherever practical, drive-through wash bays should be designed with sufficient length to allow the wheels to be washed through at least one complete rotation and preferably more.

A vibration grid may need to be incorporated into the wash bay (Figure 2) to allow the unit to be drained and operated in a dry condition during extended periods of dry weather. It is noted that frequent use of a 'wet' wash bay during dry weather conditions can result in sediment-laden wet tracks extending from the wash bay into the public streets.

Numerous commercial (hire or purchase) automated vehicle washing systems exist. These units can typically handle around 500 vehicles passes per day.

An example of the water supply and power requirements of long-term vehicle washing system may be given by the Cooljarloo mine site WA, which used 30L/s at 700kPa delivered through 85 water jets mounted on 7 stations. Power supply consisted of 380V/415V, 3-phase, 100A.

A stop sign or other suitable speed control system is required prior to low-speed wash bays to reduce splash and truck damage.

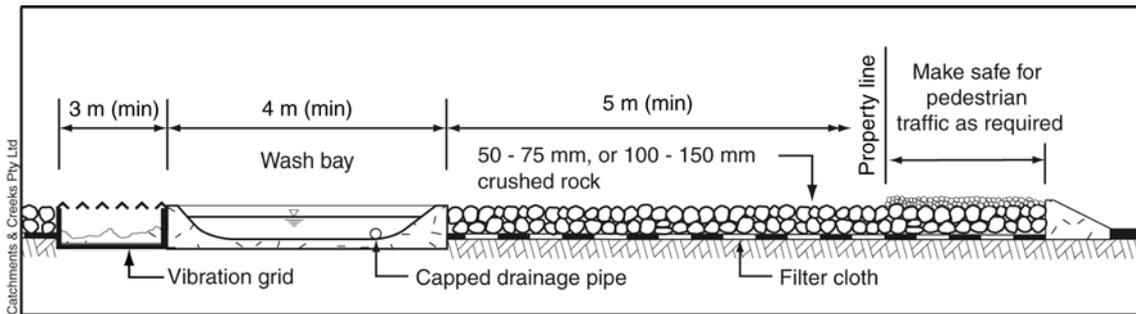


Figure 1 – Example of a low speed vehicle wash bay

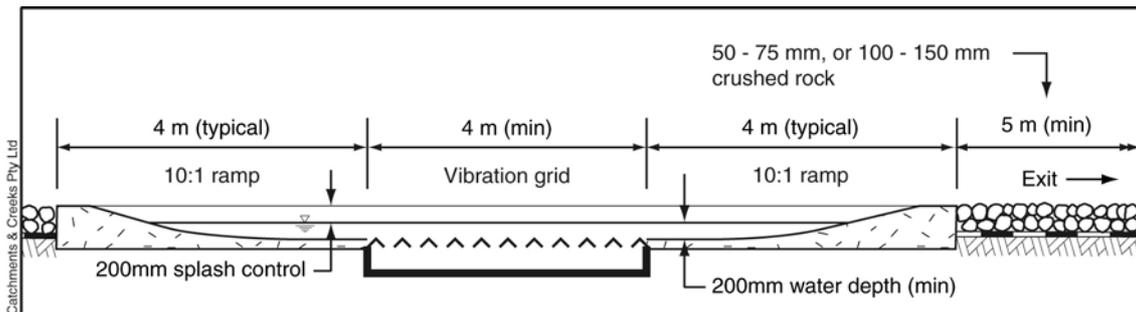


Figure 2 – High traffic volume wash bay with vibration grid sump pit for use during extended periods of dry weather



Photo 3 – Low-speed wash bay



Photo 4 – Speed control sign



Photo 5 – Vibration grids are usually located prior to a wash bay



Photo 6 – Wash bay operating as a dry vibration grid during dry weather

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



Photo 7 – Heavy sediment build-up on a construction exit



Photo 8 – Dividing site entry and exit lanes can result in vehicles bypassing the construction exit

Description

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

There are basically three types of wash bays:

- Concrete-lined ponds of sufficient length to allow at least one rotation of the truck wheels.
- Manually operated vehicle-washing areas where vehicles are hosed down while at rest on a hard surface.
- Automatic vehicle washing systems that clean the trucks with water jets.

Purpose

The basic aim of a wash bay is to prevent sediment being tracked onto public roads, but other objective could include dust, pollution and weed (seed) control.

Vehicle washing systems are used to remove sediment from both the vehicle body and tyres.

Primarily used on long-term construction sites and sites containing very clayey soils.

Automated vehicle washing systems can also be used to control the spread of soil-bound bio-hazards (e.g. Phytoffera organisms) into and out of mine sites.

Limitations

A ‘supplementary’ sediment trap typically of low sediment trapping efficiency.

Efficiency is highly variable and depends on the design of the wash bay.

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

Advantages

Numerous commercial (hire or purchase) automated vehicle washing systems exist.

Can greatly reduce community complaints regarding the tracking of sediment onto public roads.

Disadvantages

Requires regular maintenance, including de-silting the wash bay, and placement of rock (between the wash bay and sealed roadway).

Special Requirements

Pond construction needs to be of concrete or other suitable non-erodible material.

Overflows and stormwater runoff from the wash bay should be directed to a suitable sediment trap. The type of sediment trap being appropriate for the catchment area and erosion hazard.

High volume, vehicle-washing systems generally require an automated water clarification system such as a stilling chamber or centrifuge.

Location

Wash bays should be set back from the public roadway to reduce water tracking onto the road.

The number of site exit points should be minimised, preferably to one.

Site Inspection

- Check for excessive sedimentation on the rock-lined exit pad.
- Check for sediment and/or water being tacked onto the road.
- Ensure overflows are directed to a suitable sediment trap.

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 wash bay, removing stumps, roots and other vegetation to provide a firm foundation. Clear sufficient width to allow passage of large vehicles, but clear only that necessary for the exit. Do not clear adjacent areas until the required erosion and sediment control devices are in place.
3. Grade the location of the wash bay so that runoff from the unit will not flow into the street, but will flow towards an appropriate sediment-trapping device.
4. Place and compact a 150mm thick layer of minimum 50mm rock over the roadway between the wash bay and the sealed street to prevent tyres from picking up more soil after they have been cleaned.
5. Flare the end of the attached rock pad where it meets the pavement so that the wheels of turning vehicles do not travel over unprotected soil.
6. 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.
7. If a mechanical vehicle-washing system is installed, provide a suitable source of power and water supply.
8. If the vehicles are to be washed by manual hosing, then ensure a hose (long enough to reach around any vehicle leaving the site) is connected a suitable pressurised water source.

Maintenance

1. Inspect wash bays prior to forecast rain, daily during extended periods of rainfall, after significant 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 material 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 becomes filled with material and the effectiveness of the attached 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 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 wash bay should be removed only after it is no longer needed as a sediment control device.
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.