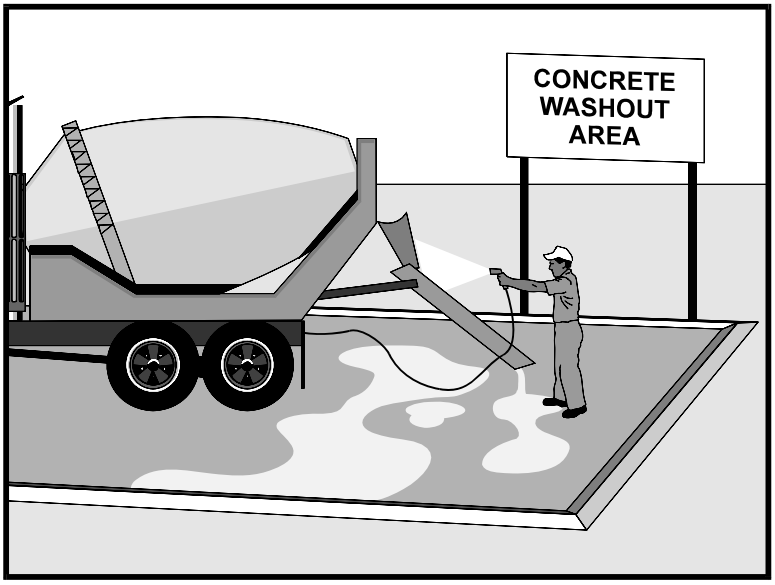
Attachment B

Proposed BMP/Control Methods

Concrete Waste Management SM-5



Source: Caltrans Construction Site Best Management Practices Manual, 2003.

Description

Practices and procedures to prevent or reduce the discharge of concrete waste to the drainage system or adjacent water bodies.

Applications

- Projects involving use of concrete as a construction material or demolition activities generating concrete dust and debris.
- On-site wash areas used for concrete-coated vehicles or equipment.
- Activities such as sawcutting and grinding which result in the formation of slurries containing portland cement concrete or asphalt concrete.

Installation and Implementation Requirements

- Properly store concrete materials away from runoff and under cover.
- Avoid mixing excess concrete, if possible. Discard excess concrete in the designated area.
- Wash concrete-coated vehicles or equipment off-site or in the designated wash area. Locate on-site concrete wash area a minimum of 50 feet away from storm drain inlets, open drainage facilities, or water bodies. Runoff from the on-site concrete wash area shall be contained in a temporary pit or level bermed area where the concrete can set.
- Temporary pit shall be lined with plastic to prevent seepage of the wash water into the ground. Allow wash water to evaporate or collect wash water and all concrete debris in a concrete washout system bin.

Installation and Implementation Requirements (Continued)

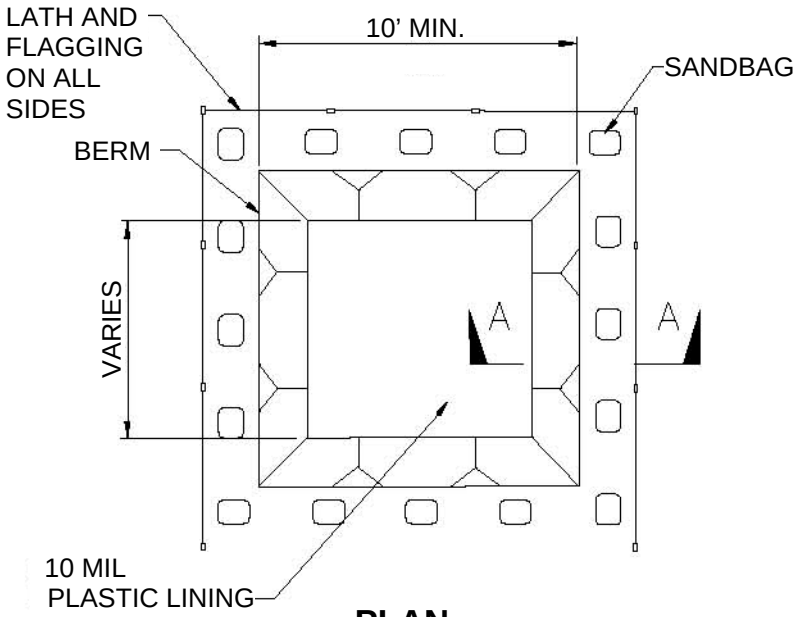
- Break up and properly dispose of hardened concrete from wash area.
- Collect and properly dispose of aggregate concrete sweepings.
- Provide concrete waste management training for employees and contractors.

Limitations

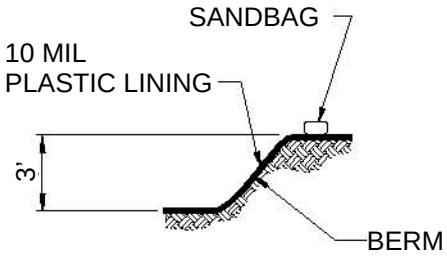
Off-site concrete wash areas may be impracticable.

Inspections and Maintenance

- Inspect concrete wash areas for damage and repair as necessary.
- Regularly remove and dispose hardened concrete.
- Monitor contractors to ensure proper concrete waste management measures are implemented.



PLAN
NTS



SECTION A-A
NTS

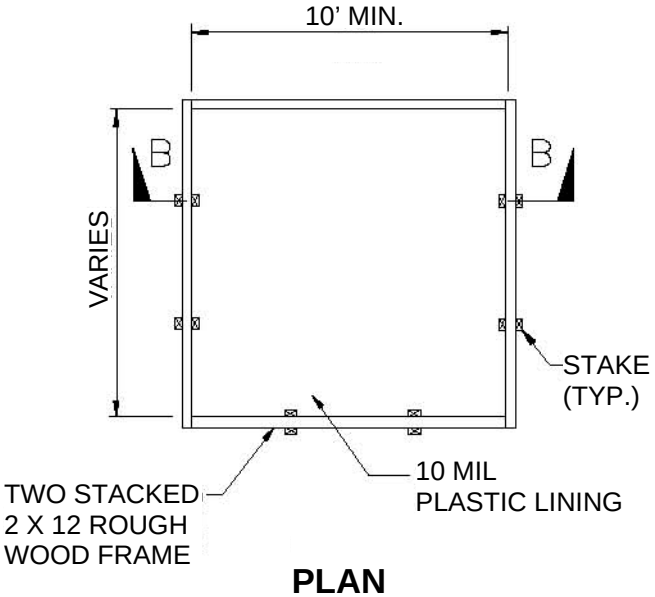
NOTES:

1. ACTUAL LAYOUT DETERMINED IN FIELD.

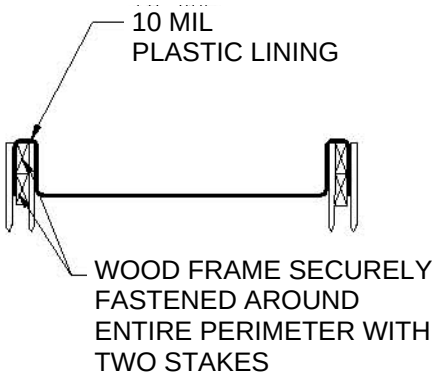
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FEET OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

WASH AREA (BELOW GRADE)

Source: Caltrans Construction Site Best Management Practices Manual, 2003.



PLAN
NTS



SECTION A-A
NTS

NOTES:

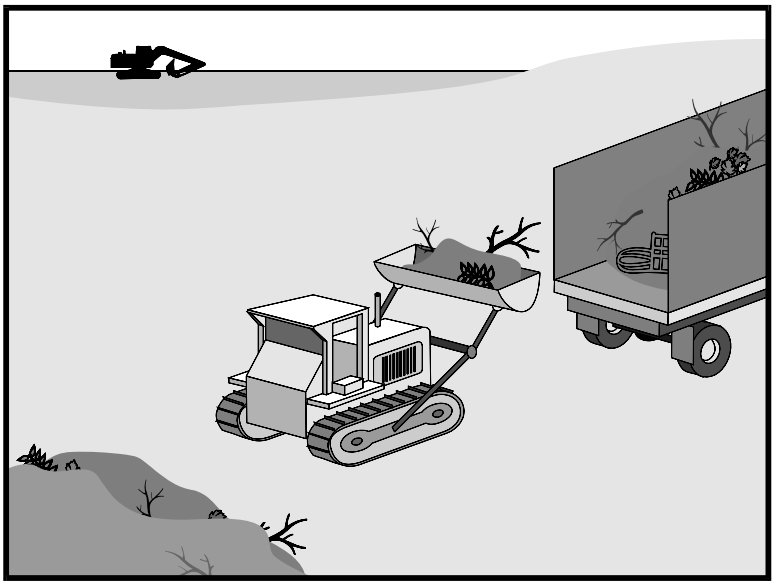
1. ACTUAL LAYOUT DETERMINED IN FIELD.

2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FEET OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

WASH AREA (ABOVE GRADE)

Source: Caltrans Construction Site Best Management Practices Manual, 2003.

Solid Waste Management SM-6



Source: Caltrans Construction Site Best Management Practices Manual, 2003.

Description

Practices and procedures to prevent or reduce the discharge of pollutants from construction site wastes to the drainage system or adjacent water bodies.

Applications

Construction projects generating non-hazardous solid wastes from construction and demolition (C&D) activities. These wastes include C&D wastes, inert fill material, and recycle/reuse material.

C&D wastes include materials originating from the demolition of roads, buildings, or other structures. Materials generated from these activities include concrete, brick, bituminous concrete, wood, masonry, composition roofing, roofing paper, steel, plaster, and minor amounts of metals.

Inert fill materials are wastes that are not contaminated with hazardous materials such as asbestos or lead-based paint. Inert fill materials do not decompose or produce leachate or other products harmful to the environment. Inert fill materials include earth, soil, rock, cured asphalt, brick, and clean concrete (no exposed steel-reinforcing rod) with no dimension greater than eight inches.

Recycle/reuse materials include but are not limited to: asphalt pavement, cardboard, concrete aggregate (no LBP, asbestos-free), electronic equipment, excavated rock, soil (uncontaminated), Freon from appliances, glass, green waste, metals, ferrous/non-ferrous, used tires, wood and lumbers, furniture, etc.

Installation and Implementation Requirements

- Separate contaminated clean up materials from C&D wastes. Contamination may be from hazardous substances, friable asbestos, waste paint, solvents, sealers, or adhesives.
- Inert fill material shall not contain vegetation, organic material, or other solid waste.
- Inert fill materials shall not be mixed with other C&D waste.

Limitations

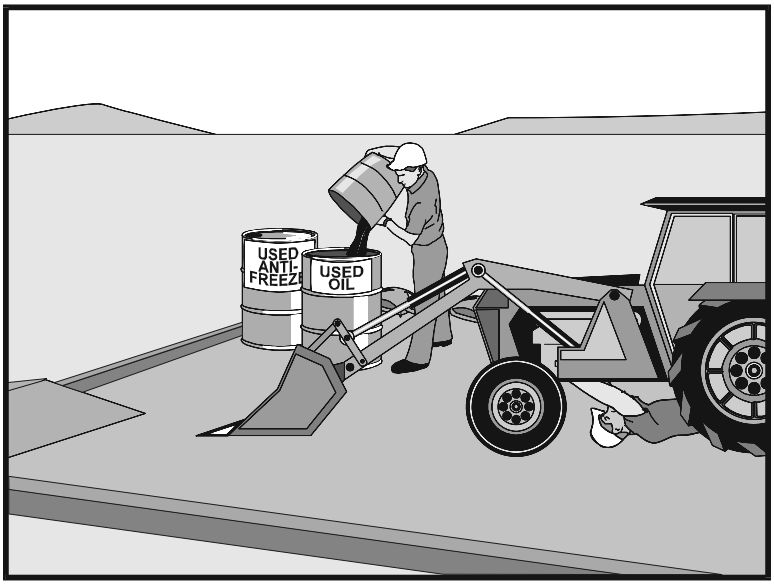
None

Inspections and Maintenance

- Inspect construction waste and recycling areas regularly.
- Schedule solid waste collection regularly.
- Schedule recycling activities based on construction/demolition phases.

Vehicle and Equipment Maintenance

SM-12



Source: Caltrans Construction Site Best Management Practices Manual, 2003.

Description

Practices and procedures to prevent or reduce the discharge of pollutants from vehicular and equipment maintenance procedures into the storm drain system or adjacent water bodies.

Applications

Construction sites with on-site areas for storage and maintenance of vehicles and equipment.

Installation and Implementation Requirements

- Prevent excessive accumulation of oil and grease by keeping vehicles and equipment clean.
- Use off-site repair and maintenance facilities where practical.
- Designate a maintenance area away from drainage courses to prevent pollutants from entering the drainage system.
- Place drip pans or drop cloths under vehicles and equipment to absorb spills or leaks.
- Provide an ample supply of readily accessible spill cleanup materials.
- Use absorbent materials on small spills. Promptly remove and properly dispose of absorbent materials. Do not hose down or bury small spills.
- On-site vehicles and equipment shall be inspected regularly for leaks and all leaks shall be immediately repaired.
- Incoming vehicles and equipment shall be checked for leaks. Leaking vehicles and equipment shall not be allowed on-site.

Installation and Implementation Requirements (Continued)

- Segregate and recycle wastes from vehicle/equipment maintenance activities such as used oil or oil filters, greases, cleaning solutions, antifreeze, automotive batteries, and hydraulic and transmission fluids.
- Properly dispose of wastes generated by vehicle/equipment maintenance activities.
- Provide employee training on proper maintenance and spill cleanup practices and procedures.

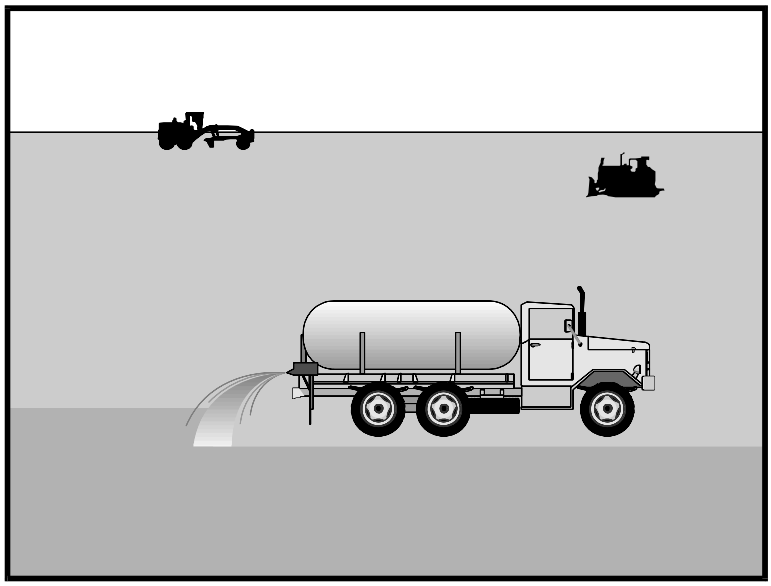
Limitations

Off-site maintenance facility may not be easily accessible.

Inspections and Maintenance

- Regularly inspect vehicle and maintenance areas.
- Ample supplies of spill cleanup materials shall be kept on-site.

Dust Control SM-18



Source: Caltrans Construction Site Best Management Practices Manual, 2003.

Description

Application of water and/or dust control measures to minimize erosion due to wind or reduce the amount of dust generated by construction activities.

Applications

Dust control shall be used on all exposed soils or any construction activity generating dust. Dust control shall apply to the following:

- Clearing, grubbing, and grading;
- Construction vehicular travel on unpaved roads;
- Drilling and blasting;
- Sediment tracking onto paved roads;
- Soil and debris stockpiles;
- Batch drop from front-end loaders; and
- Unstable soil areas.

Installation and Implementation Requirements

- Minimize exposed areas through the schedule of construction activities.
- Utilize vegetation, mulching, sprinkling, and stone/gravel layering to quickly stabilize exposed soil.
- Identify and stabilize primary entrances/exits prior to commencement of construction.
- Anticipate the prevailing wind direction to minimize the amount of dust generated.
- Do not over-spray water for dust control purposes.
- Direct construction vehicular traffic to stabilized roadways.
- Comply with the 2005 Hawaii Standard Specifications for Road and Bridge in sections 209 and 620.

Dust Control SM-18

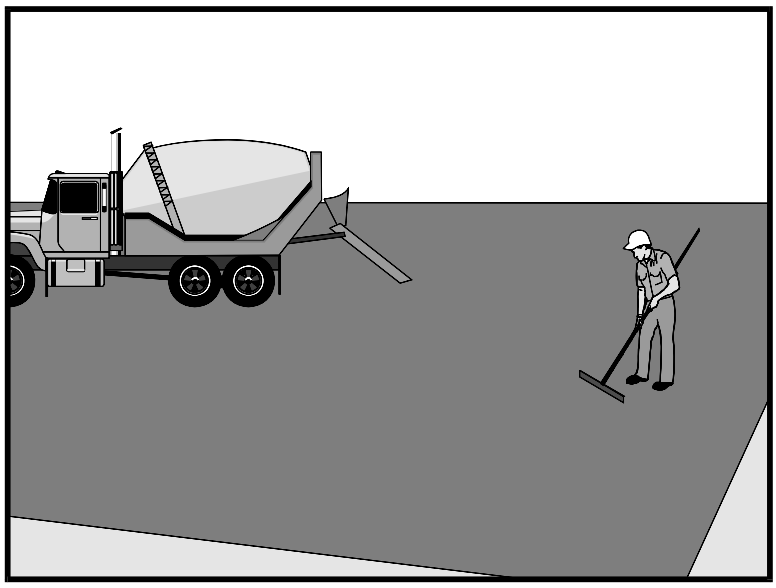
Limitations

- Daily or more frequent applications of water may be necessary since water is a short-term dust preventative.
- Erosion may result from overwatering.
- Oil may not be used for dust control since the oil may discharge into a drainageway or seep into soil.
- Some dust suppression chemicals may cause soil to be water repellent resulting in increased runoff.

Inspections and Maintenance

Inspect construction site periodically and after rain to identify areas requiring installation, repair, or replacement of additional BMPs to cover bare ground or redirect off-site runoff.

Paving Operations SM-19



Source: Caltrans Construction Site Best Management Practices Manual, 2003.

Description

Practices and procedures to prevent or reduce the discharge of pollutants into the storm drain system or adjacent water body from paving, saw cutting, or grinding activities.

Applications

- Paving equipment storage.
- Asphalt cleaning.
- Removal of existing asphalt or concrete.
- Concrete, asphalt, seal coat, tack coat, or slurry applications.
- Recycling of pavement.

Installation and Implementation Requirements

- Limit paving operations during wet weather when possible.
- Store materials for paving activities away from concentrated runoff.
- Use asphalt emulsions as prime coat when possible.
- Place drip pans under paving equipment to contain leaks and spills. Clean up spills with absorbent materials.
- Place geotextile filter fabric over drain inlet structures and manholes during application of tack coat, seal coat, slurry seal, and fog seal.
- Saw cut slurry shall be removed from site by vacuuming. Provide storm drain protection during saw cutting.
- Refer to SM-5 (Concrete Waste Management) in this manual for activities involving Portland cement concrete.
- Adhere to the following when paving involves asphaltic concrete (AC):
  - Properly dispose of old or spilled asphalt. Collect and remove broken asphalt. Recycle asphalt when possible;
  - Excess sand and gravel shall be swept to prevent discharge into

Installation and Implementation Requirements (Continued)

the storm drainage system or adjacent water body; and

- o Comply with storm water permitting requirements for industrial activities if paving requires an on-site mixing plant.

Limitations

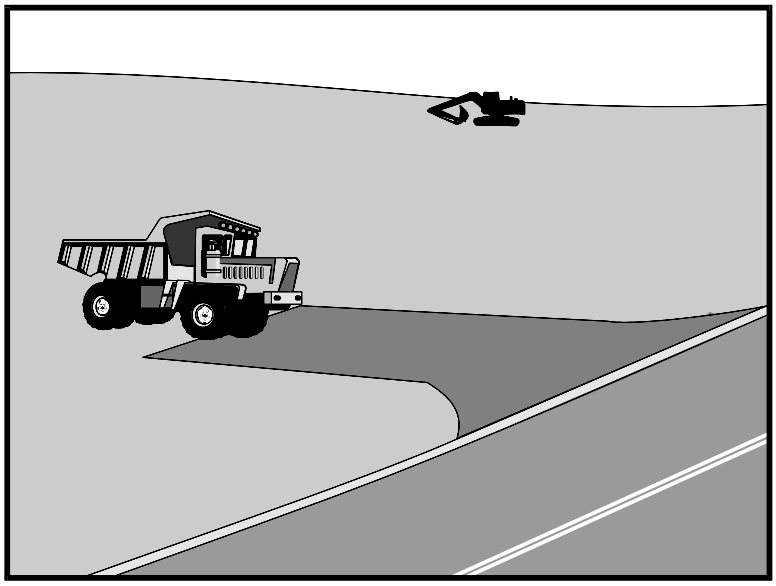
Restrict paving operations during wet weather to prevent contact between storm water and paving materials.

Inspections and Maintenance

- Ample supplies of drip pans and absorbent materials shall be kept on-site.
- Inspect inlet protection equipment.
- Monitor employees to ensure appropriate paving practices and procedures are being implemented.

Stabilized Construction Entrance/Exit

EC-2



Source: Caltrans Construction Site Best Management Practices Manual, 2003.

Description

Stabilized construction entrances/exits are designated areas for entry to or exit from a construction site. Stabilization of the construction entrances/exits reduces the amount of sediment tracked off-site by construction vehicles.

Applications

Stabilized construction entrances/exits shall be used where access to a construction site from paved roads is required.

Installation and Implementation Requirements

- Grade the stabilized entrance/exit to prevent runoff from discharging off-site.
- Direct runoff to a sediment trap or basin prior to discharge.
- Construct stabilized entrance/exit on level ground where possible.
- Provide ample turning radii.
- Crushed aggregate free of fine material shall be 3 to 6 inches in size. The use of crushed asphalt concrete (AC) is not allowed.
- Depth of aggregate shall be 12 inches thick or as recommended by the soils engineer. Contractor is responsible to design stabilized construction entrances/exit to support heaviest vehicles and equipment that will use it.
- Place geotextile filter fabric beneath the aggregate.
- Dimensions shall be a minimum of 50 feet in length and 30 feet in width. If project site layout will not accommodate minimum dimensions identify additional BMPs to minimize tire tracking.

Limitations

- Surface aggregate shall be periodically replenished.
- A sediment trapping device is required if a wash rack is used in

Limitations (Continued)

conjunction with the stabilized construction entrance/exit.

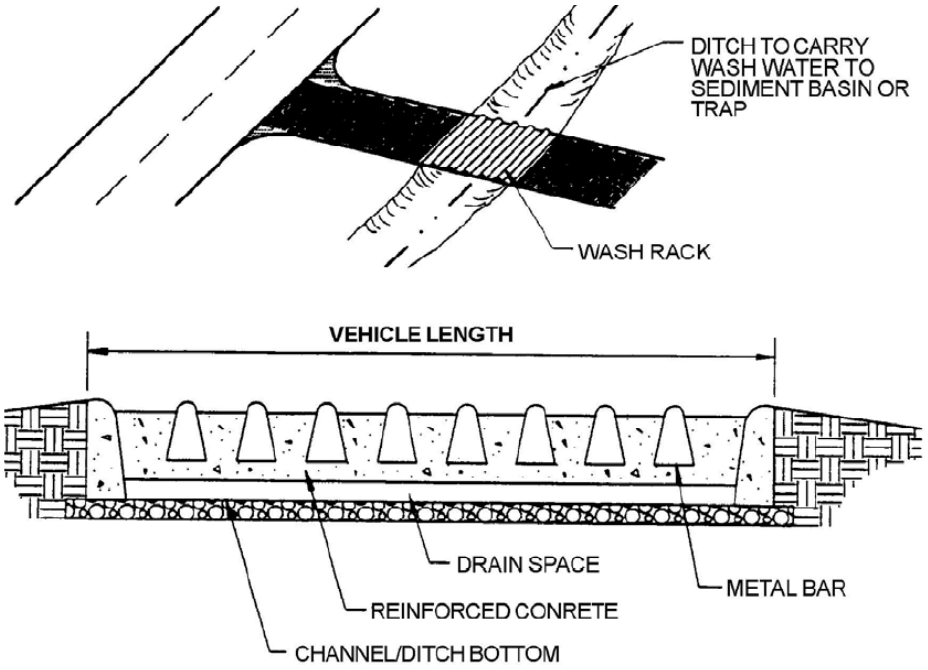
- If the construction entrance is not preventing sediment from being tracked onto the pavement, then alternative measures to keep the streets free of sediment shall be used. This may include street sweeping, and increasing the dimensions of the entrance, or the installation of a wheel wash. Any sediment that is tracked onto the pavement shall be removed by shoveling or street sweeping. The sediment collected by sweeping shall be removed or stabilized on site. The pavement shall not be cleaned by washing down the street, except when sweeping is ineffective and there is a threat to public safety. If it is necessary to wash the streets, the construction of a small sump shall be considered. The sediment would then be washed into the sump where it can be controlled. Use BMPs for adjacent drainage structures.

Inspections and Maintenance

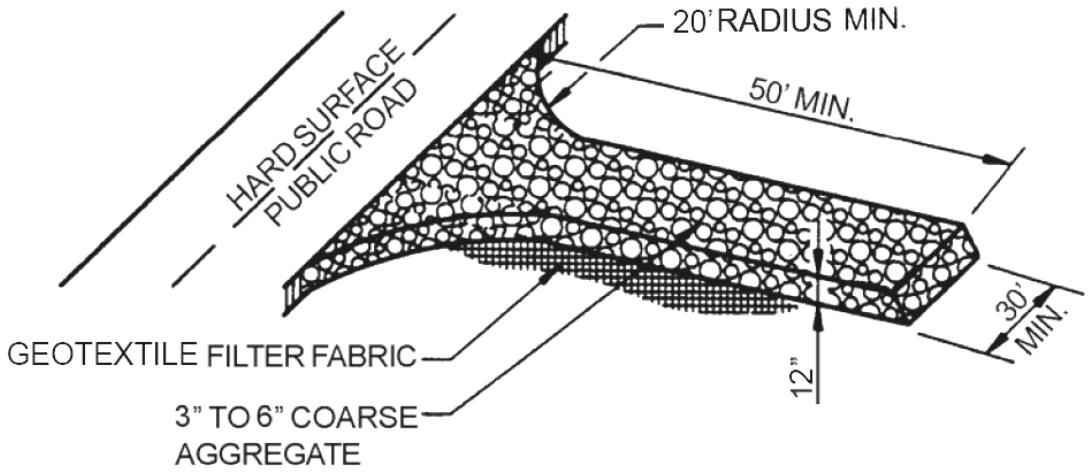
- Inspect construction entrance/exit weekly during dry periods as well as within 24 hours of any rainfall of 0.5 inch or greater which occurs in a 24-hour period and daily during periods of prolonged rainfall for damage.
- Remove deposited sediment from adjacent roadways or paved areas within 24 hours.
- Replenish surface aggregate periodically.
- Upon project completion, all construction entrances/exits shall be removed by the contractor and restore the area to the condition approved by the Engineer.

Stabilized Construction Entrance/Exit

EC-2



WASH RACK (SCHEMATIC)
NTS

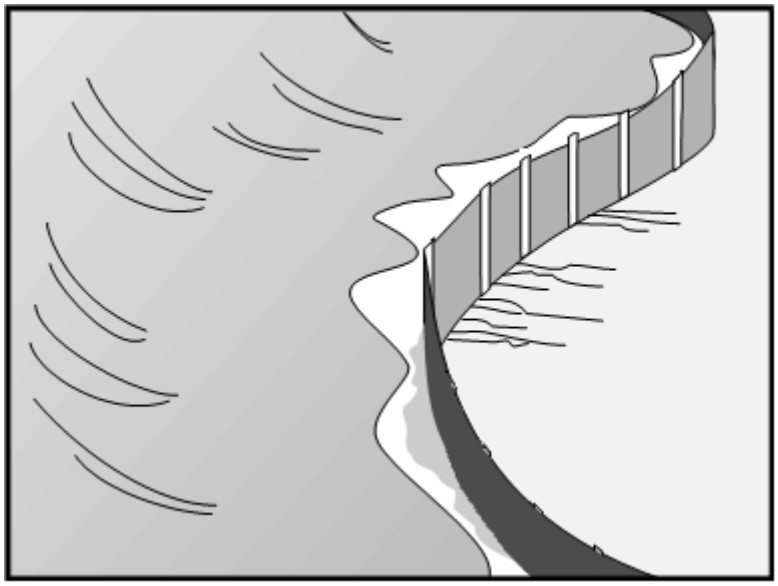


STABILIZED CONSTRUCTION ENTRANCE
NTS

Source: CCH Best Management Practices Manual for Construction Sites in Honolulu, 1999.

Silt Fence or Filter Fabric Fence

SC-1



Source: Caltrans Construction Site Best Management Practices Manual, 2003.

Description

A sediment barrier composed of permeable geotextile filter fabric attached to supporting posts. Wire fencing may provide additional support. The silt fence intercepts the flow of sediment laden runoff, which filters the water and traps the sediment.

Applications

- Along the site perimeter.
- Around temporary stockpiles.
- Along streams and channels.
- Below the toe of cleared or erodible slopes.
- Downslope of exposed soil areas.

Installation and Implementation Requirements

- Primarily use where sheet flow occurs.
- Install silt fence along or parallel to contours.
- Ends of silt fence shall be turned uphill and the geotextiles should be overlapped.
- Silt fence posts shall be driven 14 inches minimum into the trench (see silt fence detail) and the geotextile filter fabric shall be embedded a minimum of 6 inches vertically into the ground or install according to manufacturer's recommendation.

Limitations

- Avoid installing silt fence on slope. However if silt fence is placed on slope, fence posts may need additional embedment.
- Do not install in streams, channels, or areas of concentrated flow.
- Do not use to divert flow.

Silt Fence or Filter Fabric Fence

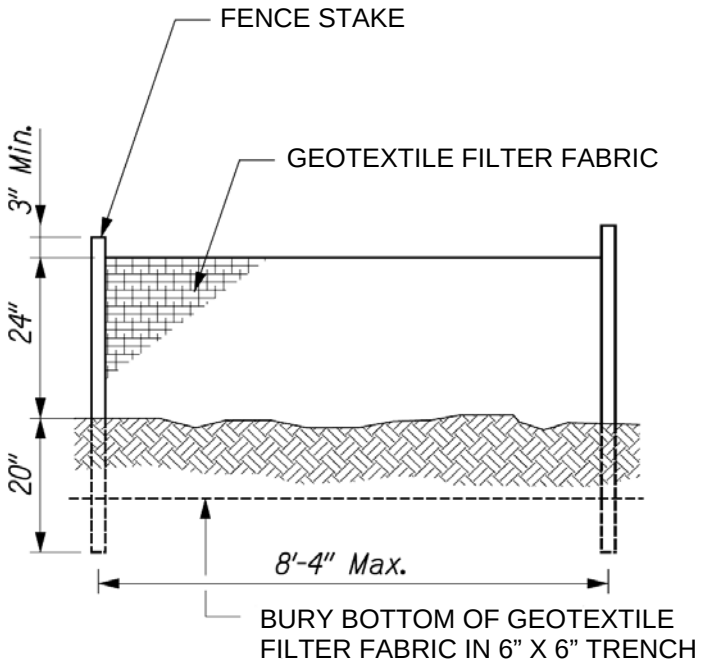
SC-1

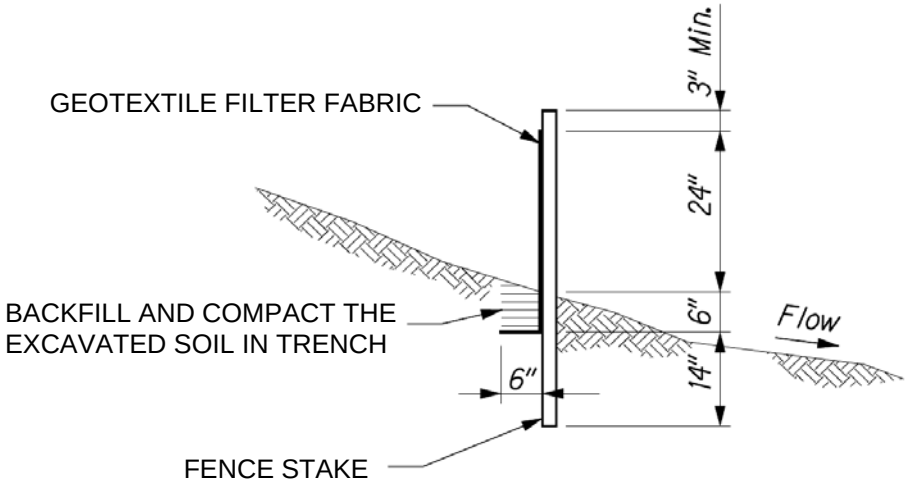
Inspections and Maintenance

- Inspect weekly during dry periods as well as within 24 hours of any rainfall of 0.5 inch or greater which occurs in a 24-hour period and daily during periods of prolonged rainfall.
- Repair or replace damaged fence or posts.
- Remove accumulated sediment when depth reaches 1/3 the barrier height.

Silt Fence or Filter Fabric Fence

SC-1





NOTES:

1. THE FILTER FABRIC SHALL BE A MINIMUM OF 36 INCHES WIDE.
2. IF SILT FENCE IS OBTAINED FROM MANUFACTURER AS A PACKAGE (I.E. FABRIC ATTACHED TO POST) THE MANUFACTURER'S INSTALLATION INSTRUCTION SHALL BE ADHERED TO.
3. FENCE STAKES MAY BE WOOD OR METAL, MUST BE CAPABLE OF SUPPORTING ANTICIPATED LOADS.

SILT FENCE
NTS

Source: Water Pollution and Erosion Control Details, Fort Weaver Road Widening Vicinity of Aawa Drive to Geiger Road, Depart of Transportation Highways Division, 2007.