

# CONSTRUCTION WORK

## Best Management Practices

Chapter 4 of the Best Management Practices Manual for the  
City's Storm Water Management Program



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Public Works Department  
809 Center Street, Santa Cruz, CA 95060

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In the City of Santa Cruz, water in the streets, gutters, and storm drains flows to local creeks, the San Lorenzo River, or Monterey Bay without any treatment. Construction sites have the potential to generate wastewater and runoff that carry sediment, debris, paint, concrete, and other harmful pollutants. Thus, in order to reduce the amount of pollutants reaching the storm drain system and local waterways, the City developed “Best Management Practices (BMPs)” for construction work. All types of construction projects, whether large or small projects, must abide by these BMPs. *Construction work includes, but is not limited to, clearing, grading, excavation, stockpiling, building, masonry and concrete work, and roadwork. These BMPs apply to commercial, retail, industrial, and residential projects, and to both new construction sites and remodeling projects.*

## 1. PLANNING CONSTRUCTION PROJECTS

### 1.1. Site Planning to Minimize Project Impacts

Coordinating BMP implementation and construction activities is critical in preventing erosion and sediment loss. The site planning measures below shall be incorporated in project grading and erosion control plans to reduce the potential for soil erosion and storm water impacts:

- Site development shall closely match the existing topography and soil in order to minimize the potential for erosion. **Minimize disturbed area** and **protect natural features** including soil, trees and shrubs.
- Protect trees** subject to the Heritage Tree Ordinance and other trees designated for protection by a development proposal through the use of fencing, tree armoring, barricades or other appropriate methods during the construction phases.
- Clearly **mark the proposed limits of land disturbance** prior to commencing topsoil or vegetation removal to ensure that only the required land is cleared. Delineate clearing limits, easements, setbacks, sensitive or critical areas, trees, drainage courses, and buffer zones prior to construction to prevent excessive or unnecessary disturbances and exposure.
- Do not remove existing trees** or tree stands located on a site for which a discretionary permit is required until such a permit is approved by the Planning Department.
- Conduct grading operations in phases** in order to reduce the amount of disturbed areas and exposed soil at any one time. Unless specifically approved on the project’s *Erosion Control Plan*, **no clearing, excavation, or grading shall be conducted during rainy weather**. All rainy season grading must be in accordance with Section 18.45.040 of Title 18 of the City’s Municipal Code. An exception may be granted by the Building Official for minor soil disturbance that does not present a hazard.
- Plan to **route construction traffic over areas that must be disturbed** for other construction activities in order to reduce the amount of area that must be cleared.

**HEADS UP!**

**SOIL DISTURBANCE OVER 1 ACRE**

If your project will disturb one acre or more of soil (or is less than one acre but part of a larger development), you must file a Notice of Intent (NOI) with the State Water Resource Control Board (SWRCB) to **obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity** (Construction General Permit) prior to commencing work.

As part of the submittal to the SWRCB, a Storm Water Pollution Prevention Plan (SWPPP) must be prepared for the proposed project by a Qualified SWPPP Developer (QSD). When receiving coverage under the Construction General Permit, the project will be assigned a Waste Discharger Identification (WDID) from the SWRCB. The City of Santa Cruz will not issue a Building permit for the project unless it has received a WDID. For more information on the Construction General Permit, visit

[http://www.waterboards.ca.gov/water\\_issue/s/programs/stormwater/construction.shtml](http://www.waterboards.ca.gov/water_issue/s/programs/stormwater/construction.shtml)

## 1.2. Erosion Control Plan Requirements

Site grading and construction activities shall be implemented in accordance with an approved erosion control plan. Before designing an Erosion Control Plan, gather project background information, including soil type, drainage, topography, and surrounding site conditions. This information will help determine appropriate Construction BMPs. **Erosion Control Plans shall be submitted with all building permit applications involving ground disturbance and shall include at a minimum:**

- Site topography
- Nearby watercourses within 200 feet of the project area
- Proposed grading contours
- Locations of existing utilities, including sewer, storm drain, curb and gutter, as applicable
- Location of **proposed erosion control measures** and installation details (see section 2.1 for requirements)
- Location of **proposed sediment control measures** and installation details (see section 2.2 for requirements)
- Location of **proposed construction waste control measures** (see section 3.4 for requirements)
- Stockpile and equipment **staging areas**
- Total area of disturbance (in acres)
- List of other required permits associated with the grading activity, such as State Construction General Permit, U.S. Army Corps of Engineers 404 permit, State Water Board 401 Water Quality Certification, California Department of Fish and Wildlife 1600 Agreement, as applicable.

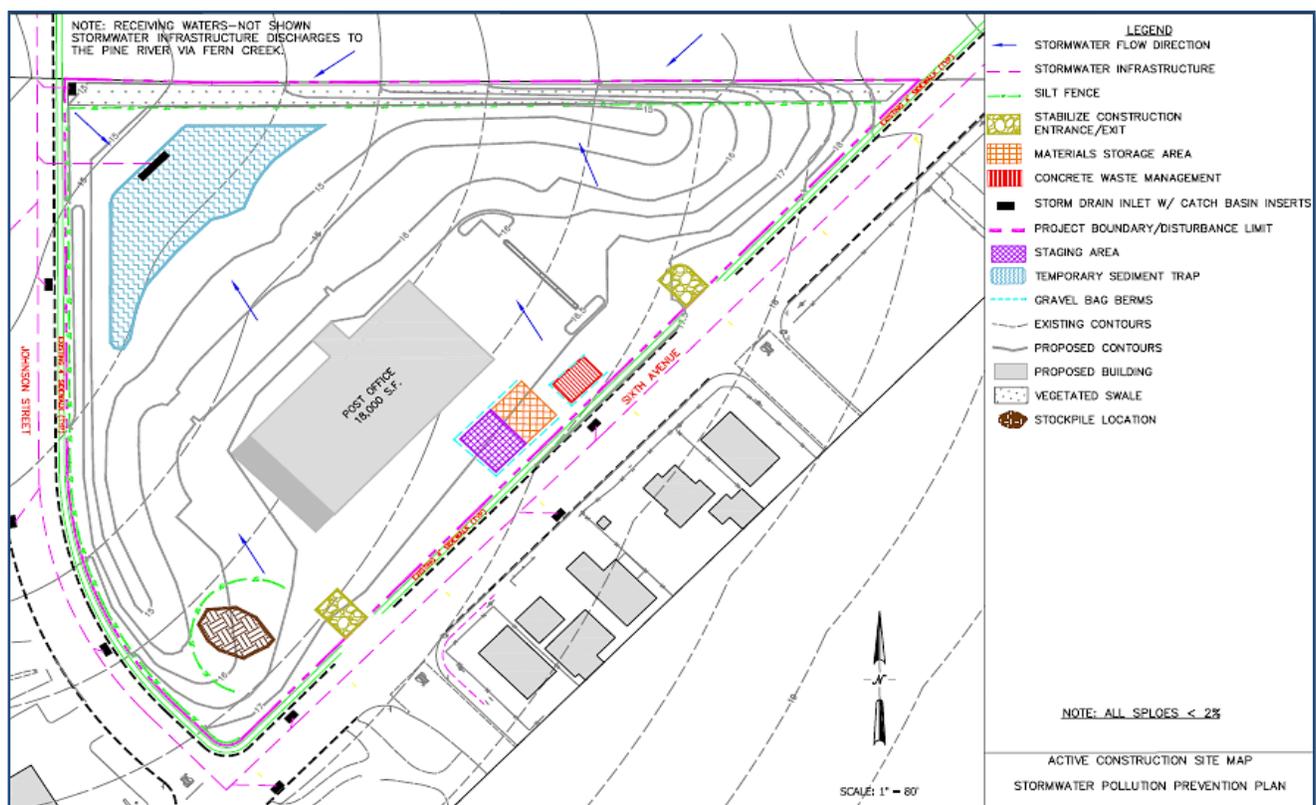


Figure 1: Example Erosion Control Plan

## 2. EROSION AND SEDIMENT CONTROL REQUIREMENTS

Erosion and sediment control BMPs shall be in place and implemented, as appropriate, prior to commencing grading or vegetation removal. These measures shall be maintained on all disturbed areas in order to minimize the release of sediment in a site's storm water discharge.

### 2.1. Erosion Control

**Any project that involves ground disturbance shall include the following minimum erosion control measures on the erosion control plan.** *Note erosion control measures on the plan and provide installation details.*

- Protect and preserve topsoil** to minimize erosion and retain infiltration capacity.
- Minimize land disturbance** such as cuts and fills. Stabilize slopes and all disturbed areas as soon as grading is finished or cut-and-fills are made.
- Cover bare soils and slopes** as soon as possible. Use one or more of the following to reduce the erosion potential from bare, exposed, or disturbed soil: rolled erosion control products (e.g. filter fabric, erosion control blankets, geotextiles), hydraulic mulch or hydroseeding, straw or wood mulch, seeding, vegetation planting, or other appropriate cover material.
- Do not use seeding or loose mulch on slopes greater than 3:1 (H:V)** without additional erosion protection such as geotextiles or hydroseeding. If vegetative cover is used, establish a uniform vegetative cover with a minimum of 70 percent coverage.

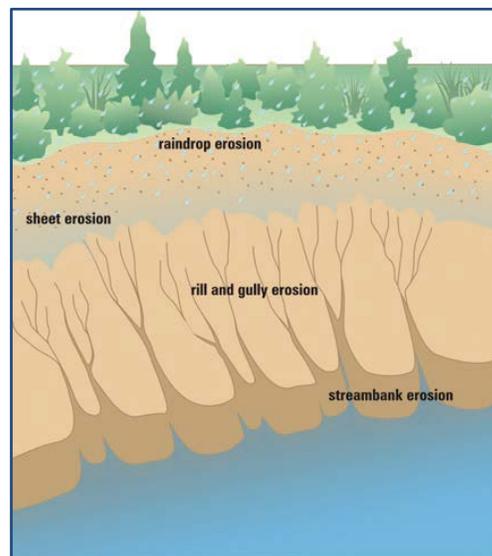


Figure 2: Types of Erosion

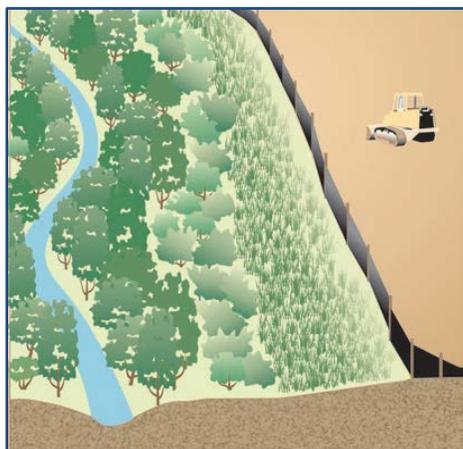


Figure 3: Protect Vegetated Buffers & Riparian Corridors

- Protect vegetated buffer zones and riparian corridors** by using silt fences, that are properly staked in (on flat land or moderate slopes), or use other appropriate sediment controls.
- Properly install and maintain all on-site erosion control measures and structural devices**, both temporary and permanent. Promptly repair or reinstall any erosion control measures and structural devices that were damaged during construction and maintain them so that they do not become nuisances with stagnant water, odors, insect breeding, heavy algae growth, debris, and/or safety hazards.
- A qualified person should conduct **inspections of all on-site BMPs during each rainstorm**, if possible, and after a storm is over to ensure that the BMPs are functioning properly. For sites greater than one-acre, on-site inspections are required in accordance with the State Water Quality Control Board Construction Activities Storm Water General Permit.

## 2.2. Sediment Control

**Any project that involves ground disturbance shall include the following minimum sediment control measures on the erosion control plan.** Note sediment control measures on the plan and provide installation details. Installation standard details can be downloaded from the California Department of Transportation (Caltrans) website at <http://www.dot.ca.gov/hq/construc/stormwater/details.htm> or on the California Stormwater Quality Association (CASQA) website.

- ❑ **Perimeter control.** Use one or more sediment control measures, such as fiber rolls and silt fences, to prevent sediment from leaving the site during the winter season. The measure(s) used will depend upon site conditions and topography.



Figure 4: Perimeter silt fence

**Fiber rolls** can be used around the perimeter of the soil disturbance area on flat sites to prevent or limit sediment from leaving the site. In urban areas or sites directly adjacent to streets, place fiber rolls at the back of the curb or sidewalk. Fiber rolls are also appropriate in combination with erosion control cover on slopes to shorten slope length and spread runoff as sheet flow.

**Silt fences** can be used for perimeter control and/or as interior controls down-slope of disturbed areas on sites where slopes do not exceed 4:1 (H:V). Silt fences are not appropriate in concentrated runoff flow areas, in areas where flooding is a concern, or along slopes.

Silt fences must be properly staked in to be effective. Install silt fences so that the drainage around each fence does not create erosion and rills down-slope of the fence. Turn the ends of the silt fence uphill to prevent storm water from flowing around the fence. If not installed at the same elevation throughout, silt fences will create erosion.

- ❑ **Storm Drain Inlet Protection.** Projects that include storm drain inlets or projects that drain into storm drains shall include measures on the Erosion Control Plan to protect the inlets so silt and other pollutants do not enter the storm drain system. Effective methods to protect storm drain inlets include rock/sand bag barriers, fiber rolls, heavy rubber mats to cover and seal the inlet, and geotextile blankets inserted into the catch basin.

*Do not use sand bags or straw wattles around storm drain inlets exposed to vehicular traffic in streets or parking lots.*

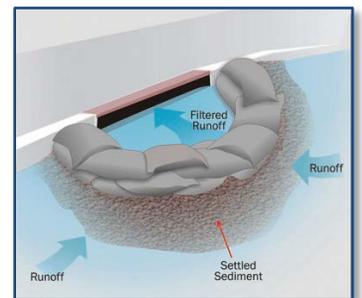


Figure 5: Storm drain inlet protection

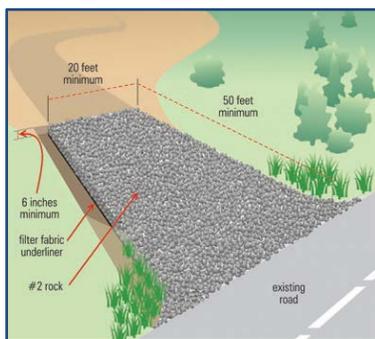


Figure 6: Stabilized construction access

Train employees and contractors to not drive over or park on sand bags, fiber rolls or berms protecting storm drain inlets. If protective barriers are broken or damaged, cleanup and remove any particles entering the storm drain inlet, and replace them immediately.

- ❑ **Stabilized construction access/exit.** All projects that include ground disturbance must include a stabilized construction access/exit, unless construction vehicles and equipment will remain on paved surfaces at all times during construction. Show the location of the stabilized construction access/exit on the Erosion Control Plan as well as construction details and notes.

**Sediment Control on Slopes.** Additional measures will be required to reduce runoff velocity and to trap sediments on slopes. The following measures may be applied individually or in combination: erosion control blankets, fiber rolls, terracing, check dams and energy dissipaters, and/or diversion structures to reduce runoff velocity and trap sediments.

**Long-term sediment control.** Measures are required to ensure that erosion and sedimentation do not become an issue once the project is completed. The following measures can be effective for long term sediment control once the plantings and roots have grown to sufficient size:

- Seeding slopes by hydro-seeding or with seeded blankets; preferably using native seeds
- Landscaping with plant species that grow rapidly and have root systems that are effective at “holding” soil

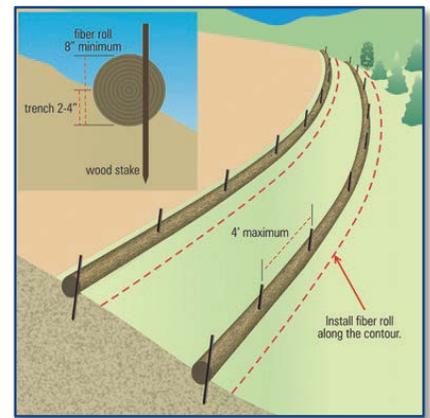


Figure 7: Fiber roll installation

### 3. SITE HOUSEKEEPING REQUIREMENTS

Include the following housekeeping practices on the Erosion Control Plan as applicable. Implement during construction in order to minimize the potential for storm water impacts.

#### 3.1. Equipment and Vehicle Maintenance and Cleaning

- Inspect equipment and vehicles frequently and repair any leaks** as soon as possible. Contain and clean up leaks, spills, and drips of hazardous materials and chemicals as quickly as possible to minimize run-off or soak in. This includes fuel and motor oil, hydraulic fluid, and glycol based anti-freeze from vehicles. Use dry cleanup methods if possible. Perform major maintenance and repairs off-site.
- Remove encountered **abandoned fuel/oil tanks** (and their contents) in a manner consistent with methodology approved by both the City and the Santa Cruz County Environmental Health Department.
- If **repair or refueling of vehicles and equipment** must be done on-site, use a designated location away from storm drain inlets, water bodies, and other sensitive areas.
- If equipment is washed on-site, **wash water may not be discharged to the storm drain system.** If possible, wash vehicles at an appropriate off-site facility.
- Recycle used motor oil**, other vehicle fluids, and vehicle parts whenever possible.

#### 3.2. Material Storage and Soil Stockpiles

- Locate material and soil stockpiles away from gutters, storm drain inlets, and water bodies.** In addition, keep stockpiles away from steep slopes and unstable soil in order to minimize the chance of an accidental release to the environment. Stockpiles may never be stored on a street or in an alley unless specifically approved by the Public Works Department.
- Store materials, including stockpiles and excavation spoils, under cover and protected from wind, rain, and runoff.** Cover piles of soil, construction materials and wastes with plastic sheeting or tarps.

- During the rainy season**, after October 1<sup>st</sup> or sooner if rain is forecast, implement control measures for the items listed below if stored outside in order to prevent sediment, litter, and other pollutants from leaving the site and/or being discharged into the storm drain system.
  - Material stockpiles
  - Soil stockpiles
  - Excavation spoils
  - Construction materials
- Store open bags of particulate, granular, or powder materials (such as plaster or concrete) indoors** if possible. If stored outside, they must be covered or closed, and during the rainy season they must be kept within secondary containment.
- Store paints, chemicals, solvents, and other hazardous materials inside** or within a shed with double containment.
- Keep dumpster lids closed and secured.** For dumpsters or bins that don't have a lid, cover them with plastic sheeting or a tarp during rainy or windy weather.

### 3.3. Dewatering Operations

Proper procedures must be followed before starting construction and during construction to manage the discharge of groundwater or storm water accumulated in construction site excavations or other non-storm water discharges.

#### HEADS UP!

##### DEWATERING OPERATIONS

Water from fire sprinkler and excavation dewatering that cannot be managed onsite shall be directed towards the sanitary sewer. A permit must be obtained from the City's Wastewater Treatment Facility before connecting to the sanitary sewer.

- When it is expected that water encountered during site construction will need to be discharged offsite, make arrangements ahead of time to properly manage and dispose of this water. **Identify the location of dewatering activities and the nearest sanitary sewer connection** where the water will be discharged on the Erosion Control Plan.
- Direct **groundwater or storm water that must be pumped out of an excavation to a settling tank** to allow sediments to settle out of the water.
- Retain water from fire **sprinkler system dewatering** onsite for landscape irrigation or direct it towards the sanitary sewer.

- Apply for a wastewater discharge permit** from the City's Wastewater Treatment Facility before connecting to the sanitary sewer. Contact an Environmental Compliance Inspector, at 420-6050 to request a permit.

### 3.4. Waste Management: Building Materials, Demolition Waste, and Vegetation

- Onsite storage of construction materials.** Store wastes in containers or a dumpster whenever possible. Cover piles of uncontained wastes and wastes stored in open containers during windy conditions and prior to significant forecasted rain (0.25 inches in a 24-hour period). Do not hose dumpsters out on the construction site.

Use construction products made from or packaged in **polystyrene/plastic foam** in a manner preventing the polystyrene/plastic foam from being released into the environment.

- ❑ **Building materials and demolition waste.** All residential and nonresidential construction projects must comply with the mandatory **50% recycle rate** for all construction and demolition waste, per City’s Construction Waste Management Plan (CWMP). If contractors, and/or subcontractors haul their own material as part of the scope of work, they shall not be excluded from complying with the CWMP.

All contractors, and/or subcontractors shall provide the City of Santa Cruz with all required documentation of weight and waste diversion data for the materials hauled. Contact the Green Building coordinator at 420-5120 for more information.

Never leave or abandon materials or excavation spoils at a project site. At the end of a construction project, collect all unused or waste materials and dispose of properly. Do not leave discarded building materials, demolition wastes and waste vegetation in a street, gully, or waterway.

- ❑ **Construction and demolition waste recycling.** Recyclable waste includes broken concrete, green waste, lumber and wood, scrap metal and appliances. Call the City’s Customer Service Division, at telephone (831) 420-5220, for information about what may be recycled and to make arrangements to have recycling bins or dumpsters brought to the work site.

Construction projects at commercial or industrial sites must obtain any detached roll-off boxes, dumpsters, debris-boxes or other containers for collection of waste materials (to be disposed of or recycled) from the City’s Sanitation Services at (831) 420-5220. A private hauling service may be used only if all roll-off boxes or containers are left attached to the service’s vehicle the entire time the box is at the site.

There are reduced rates available for certain waste materials separated according to type. These waste types are: 1) green waste, lumber and wood; 2) mixed construction and demolition debris; 3) dirt; and 4) broken brick, asphalt, and concrete. When calling Customer Service, please ask about the “Other Materials” box rates and tonnage fees for separated materials. The same tonnage fees are also available at the landfill for self-hauled separated loads.

- ❑ **Waste vegetation.** Dispose of waste vegetation and unpainted or untreated lumber through the City’s GreenCycle! program. The program accepts many types of vegetation including brush, plants, branches, untreated boards, and tree trunks (not exceeding 24 inches in diameter and four feet in length). Vegetation may be dropped off at the City’s Resource Recovery Facility or placed in a City GreenCycle! container for pickup by the City. For more details, call the City’s Customer Service Division at (831) 420-5220.



Never dump or leave soil, mulch, vegetation, and other landscape products into the street, gutter, or storm drain system.

- ❑ **Hazardous materials.** Asbestos and other debris containing hazardous materials must be disposed of as hazardous waste. For more information about hazardous waste disposal, please contact the County Environmental Health Department at (831) 454-2022.

### ***3.5. Portable Toilet Facilities***

All sanitary wastes shall be collected and managed through the use of portable toilet facilities, serviced with disposal in the sanitary sewer system, or permanent toilet facilities plumbed to the sanitary sewer.

- ❑ If portable toilets are used, ensure that the leasing company properly maintains the toilets and promptly makes repairs as needed. Conduct visual inspections for leaks.

- ❑ Place portable toilets on a level surface and at a safe distance away from paved areas and, to the extent practical, storm drain inlets. Secure them to prevent blowing over.
- ❑ Provide **secondary containment** for portable toilets located within 20 feet of a stream, storm drain, or street.
- ❑ During pump-out, take appropriate measures to avoid spillage. If spillage occurs it shall be cleaned up immediately.

### 3.6. Site Cleanup

- ❑ When cleaning up, sweep whenever possible. Litter and debris must be picked up and disposed of properly.
- ❑ **Road or sidewalk work.** In the roadway or on the sidewalk, material stockpiles must be removed and cleaned up by the end of each day.
- ❑ **Landscaping work.** Sweep up soil and other landscape products that remain on pavement, such as the sidewalk, driveway, or street by the end of each day.
- ❑ **Sediment Control Devices.** Sweep and remove any solid waste that accumulates at erosion and sediment control devices as soon as possible.

## HEADS UP!

### SITE CLEANUP

Do not clean the street, sidewalk, or other paved areas by washing or by directing sediment, concrete, asphalt, or other particles into the storm drain system. If using water, direct it to a landscaped or grassy area large enough to absorb all the water.

## 4. PAINTING AND MASONRY WORK

### 4.1. Painting

- ❑ Paint, paint thinner, and rinse water containing either of these may never be discharged into the storm drain system.
- ❑ When there is a risk of a spill reaching storm drains, protect nearby storm drain inlets prior to starting painting.
- ❑ Clean up spills immediately.
- ❑ When work is conducted on a bridge, take precautions to prevent runoff from reaching the water body beneath the bridge.
- ❑ When **cleaning brushes and rollers** after painting, brush out excess paint onto newspaper or cardboard. Never clean or rinse paintbrushes, rollers, and containers into a street gutter or storm drain inlet.

If using latex paints, the brush or roller can be rinsed in a sink that is plumbed to the sanitary sewer. If using oil-based paints, the brush or roller needs to be cleaned with paint thinner. *Do not discharge paint thinners to the sanitary sewer.* Paint thinner must be disposed of as hazardous waste.

- ❑ Drain **leftover paint** in the roller pan back into the paint can. If using paint hoses and guns, spray out the paint residue into the paint can.



**Figure 8: Do not let paint, paint thinner, or water containing either flow to the gutter or storm drain system**

## **HEADS UP!**

### **BUILDING EXTERIOR CLEANING**

When using high-pressure water to strip or clean building exteriors prior to painting, cover or berm nearby storm drain inlets to prevent discharge into the storm drain system. The wastewater must be collected and discharged to the sanitary sewer if the paint does not contain lead (usually buildings painted after 1978) or mercury. If paint containing lead or mercury was used, contact an Environmental Compliance Inspector, at (831) 420-6050, for information about the appropriate discharge or disposal options prior to commencing the work.

- Leftover water-based (latex) paint** should be recycled, returned to the supplier or donated to someone who will use it. Dried latex paint and empty paint cans may be disposed of in the garbage.
- Leftover oil-based paint** may be recycled or disposed of as hazardous waste. For more information about hazardous waste disposal, please contact the County Environmental Health Department at (831) 454-2022.
- Non-hazardous paint chips and dust** from dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash. Residue from chemical paint stripping and chips and dust from marine paints or paints containing lead or tributyl tin must be disposed of as a hazardous waste.
- If **grinding or blasting** is used to remove old paint, protect nearby storm drain inlets with some type of a protective cover such as a heavy rubber mat. Paint dust, particles, and other debris must be completely cleaned up, preferably by sweeping, after the job is done.

## **4.2. Masonry and Concrete Work**

- Concrete, cement, and masonry products** may never be discharged into the storm drain system. Concrete, cement, and masonry mixing containers may not be washed or rinsed into the street or storm drain system. If a concrete transit mixer is used, a suitable washout box, excavation or self-washing mixer able to contain the waste material shall be provided on-site.
- Do not mix fresh concrete or cement mortar in a gutter, over a storm drain inlet, or immediately adjacent to a water body.
- During **tile or concrete cutting**, ensure that the slurry water does not run off into the street or storm drain system. Also, dried slurry must be cleaned up and properly disposed so that it will not be carried into the storm drain system by wind, traffic, or rain.
- Store materials under cover and protected from wind, rain, and runoff.
- Small amounts of excess concrete, grout, and mortar may be disposed of in the trash.
- Wash out from concrete mixers** may never be disposed of in the street or storm drain system. If possible, pump the washout back into the mixer for reuse.

## 5. SIDEWALK AND ROADWORK

- ❑ **Protect nearby storm drain inlets** (preferably with heavy rubber mats) and adjacent water bodies prior to breaking up asphalt or concrete.
- ❑ If it rains unexpectedly, take appropriate action to prevent pollution of storm water runoff (e.g., divert runoff around work areas, cover materials).
- ❑ **Saw-cut slurry.** The discharge of saw-cut slurry to the storm drain system is prohibited. Take measures to contain the slurry and, if necessary, protect nearby catch basins or gutters. If slurry enters the storm drain system, remove material immediately.

Dried saw cut slurry must be cleaned up and properly disposed so that it will not be carried into the storm drain system by wind, traffic, or rainfall.



Figure 9: Do not discharge saw cut slurry to the gutter or storm drain system

- ❑ **Oil sealants.** Cover and seal nearby storm drain inlets and manholes before applying seal coat, slurry seal, etc. Leave covers in place until the oil sealant is dry or the end of the day.
- ❑ Park **paving machines** over drip pans or absorbent materials if they have a drip or leak.
- ❑ **Waste and material management.** After breaking up old pavement, sweep up materials and recycle as much material as possible. Properly dispose of non-recyclable materials.

Never wash sweepings from exposed aggregate concrete into a street or a storm drain inlet. Collect and return to aggregate base stockpile or dispose of in the trash.

Remove and clean up material stockpiles (i.e. asphalt and sand) by the end of each week or, if during the rainy season, the end of the day. Stockpiles must be removed by the end of each day if they are located in a public right-of-way.

## 6. References & Credits

Erosion and sediment control illustrations from: U.S. Environmental Protection Agency (EPA), National Pollutant Discharge Elimination System (NPDES), “Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites”, available online at <http://water.epa.gov/polwaste/npdes/stormwater/Stormwater-Pollution-Prevention-Plans-for-Construction-Activities.cfm>

## 7. Contact

For more information, please call the City of Santa Cruz:

Public Works Department: 420-5160

Environmental Compliance Inspector: 420-6050

Planning Department: Building Inspection Services at 420-5120

Planning Department: Green Building at 420-5120