

**SDOT BEST MANAGEMENT PRACTICES  
(BMP) REFERENCE MANUAL**

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Street Maintenance Operations  
Mechanical Cleaning

December 2008



# **SDOT BEST MANAGEMENT PRACTICES (BMP) REFERENCE MANUAL**

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## **Street Maintenance Operations Mechanical Cleaning**

Prepared for

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This best management practice (BMP) reference manual was written to assist you, an SDOT field crew member, in preventing pollution from impacting stormwater. Your actions in the field contribute significantly to preventing stormwater pollution and keeping our streams, lakes, and Puget Sound clean. These manuals also help SDOT comply with the City of Seattle's Stormwater Permit.

We would like to receive your feedback on the information this manual contains. Direct feedback; questions regarding any of the BMPs listed; and information about missing work tasks, pollution sources, or missing BMPs should be directed to Maureen Meehan (SDOT's NPDES Stormwater Advisor) at (206) 684-8750.

To report a spill or any illegal dumping issues you observe while in the field, please call the SPU Water Quality Hotline at (206) 684-7587.

SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 2. Mechanical Cleaning	101	Mechanical Sweeping

## Description of Work

Routine sweeping of streets and alleys with mechanical brooms (see Figure 1) to remove accumulated dirt and debris for safe, clean streets including the sweeping of designated routes, grids, and any non-route sweeping of streets and alleys resulting from complaints or other situations requiring a mechanical sweeper.

## Objectives

Reduce sediments and contaminants, such as petroleum hydrocarbons, heavy metals, road wash-off, snow sand, and debris, from reaching the stormwater, watercourse, stream system and other water bodies. Reduce occurrence of flooding and debris clogged drain inlets, and provide a safe roadway surface for the traveling public.

## Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Sweeping:**
  - Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose). Washing is not an alternative to sweeping and vacuuming because of the risk of pollutant transport.
  - Schedule sand removal as part of the snow and ice emergency response.



**Figure 1. Mechanical street sweeping.**

## **BMP Maintenance During Site Work**

### **1. Sweeping:**

- Control the number of points where vehicles can leave the site to allow focused sweeping and vacuuming efforts.
- Control speed of sweeper to minimize airborne particulates and remove maximum amount of debris.
- Use water spray system on sweeper to reduce dust.
- Use pickup brooms in sensitive areas.
- Avoid sweeping up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- Do not use kick brooms or sweeper attachments.
- Prevent sediment from entering storm drain system.

2. *Optional BMP:* Where feasible, avoid the activity when rain is falling or expected.

## **Site Cleanup**

1. **Sweeping:** Inspect and sweep or vacuum visible sediment tracking on a daily basis.
2. **Equipment and Vehicle Maintenance:**
  - Clean equipment and tools off site in an area where pollutants can be contained.
  - Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system.
3. **Waste Disposal:** Properly dispose of sweeper wastes at an approved dump site after sweeping is finished.

*References*

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Source Control Technical Requirements Manual (Seattle 2009)
2.152 - Sweeping	C1.45 – Solid Waste Handling and Disposal E3.70 - Street Sweeping and Vacuuming	BMP 32 - Dust Control at Manufacturing Sites



SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 2. Mechanical Cleaning	102	Manual Cleaning

## Description of Work

Hand cleaning of streets and sidewalks including sweeping around parked cars, cleaning alley crossings, traffic islands, and other spot cleaning.

## Objectives

Reduce sediments and contaminants, such as petroleum hydrocarbons, heavy metals, road wash-off, and debris from reaching the stormwater, watercourse, stream system, and other water bodies. Reduce occurrence of flooding and debris clogged drain inlets, and provide a safe roadway surface for the traveling public. Clean locations inaccessible to mechanical sweepers and high priority areas.

## Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Sweeping:**
  - Sweeping may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose). Washing is not an alternative to sweeping because of the risk of pollutant transport.
  - Schedule snow sand removal as part of the snow and ice emergency response.

## BMP Maintenance During Site Work

1. **Sweeping** (see Figure 1):
  - Do not sweep up any unknown substance or any object that may be potentially hazardous.
  - Prevent sediment from entering storm drain system.
2. *Optional BMP:* Where feasible, avoid the activity when rain is falling or expected.

## Site Cleanup

**Waste Disposal:** Properly dispose of waste at an approved dump site after sweeping is finished.



**Figure 1. Manual cleaning of City streets.**

*References*

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)
2.152 - Sweeping	E3.70 - Street Sweeping and Vacuuming

SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 2. Mechanical Cleaning	105	Clean Stairways

## Description of Work

Manual cleaning of stairways to remove brush and debris including trimming of brush between and immediately next to stairs and the cleaning of stairway drain gutters.

## Objectives

Reduce sediments and contaminants from reaching the stormwater, watercourse, stream system, and other water bodies. Reduce occurrence of flooding and debris clogged drain inlets. Provide safe, clean passageways.

## Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Sweeping:** Sweeping may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose). Washing is not an alternative to sweeping and vacuuming because of the risk of pollutant transport.

## BMP Maintenance During Site Work

1. **Sweeping** (see Figure 1):
  - Avoid sweeping up any unknown substance or any object that may be potentially hazardous.
  - Keep sediment from entering storm drain system.
2. *Optional BMP:* Where feasible, avoid the activity when rain is falling or expected.

## Site Cleanup

1. **Equipment Maintenance:**
  - Clean equipment and tools off site in an area where pollutants can be contained.
  - Perform equipment maintenance in areas that prevent discharges to the storm drain system.
2. **Waste Disposal:** Properly dispose of wastes at an approved dump site after sweeping is finished.



**Figure 1. Manual cleaning of City streets.**

*References*

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)
2.152 - Sweeping	E3.70 - Street Sweeping and Vacuuming

SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 2. Mechanical Cleaning	109	Leaf Pickup

## Description of Work

Pickup, removal, and disposal of leaves from street surfaces and stairways.

## Objectives

Reduce sediments and contaminants, such as petroleum hydrocarbons, heavy metals, road wash-off, snow sand, and debris, from reaching the stormwater, watercourse, stream system and other water bodies. Reduce occurrence of flooding and debris clogged drain inlets, and provide a safe roadway surface for the traveling public.

## Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Sweeping:** Sweeping (see Figure 1) may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose). Washing is not an alternative to sweeping and vacuuming because of the risk of pollutant transport.



**Figure 1. Mechanical street sweeping.**

## **BMP Maintenance During Site Work**

### **1. Sweeping:**

- Control the number of points where vehicles can leave the site to allow focused sweeping and vacuuming efforts.
- Control speed of sweeper to minimize airborne particulates and remove maximum amount of debris.
- Use water spray system on sweeper to reduce dust.
- Use pickup brooms in sensitive areas.
- Avoid sweeping up any unknown substance or any object that may be potentially hazardous.
- Do not use a vactor truck to remove large debris.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- Do not use kick brooms or sweeper attachments.
- Prevent sediment from entering storm drain system.

2. *Optional BMP:* Where feasible, avoid the activity when rain is falling or expected.

## **Site Cleanup**

1. **Sweeping:** Inspect and sweep or vacuum visible sediment tracking on a daily basis.
2. **Equipment and Vehicle Maintenance:**
  - Clean equipment and tools off site in an area where pollutants can be contained.
  - Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system.
3. **Waste Disposal:** Properly dispose of sweeper wastes at an approved dump site after sweeping is finished.

*References*

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)
2.152 - Sweeping	E3.70 - Street Sweeping and Vacuuming



SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 2. Mechanical Cleaning	113	Pathway Cleaning

## Description of Work

Hand and/or mechanical cleaning of pedestrian or designated bicycle pathways.

## Objectives

Protect storm drain systems and water bodies from flush water and sediment as well as reduce leaves and sediment from reaching these water bodies. Reduce occurrence of flooding and debris clogged drain inlets, and provide a safe roadway surface for the traveling public

## Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Sweeping:** Sweeping (see Figure 1) may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose). Washing is not an alternative to sweeping and vacuuming because of the risk of pollutant transport.



**Figure 1. Mechanical street sweeping.**

3. **Catch Basin Filter Sock:** Use the following best management practices (BMPs) if flush water will discharge to the separate storm drain system:

- **Structures less than 12-inches deep:** Remove debris using a mechanical street sweeper or by hand sweeping before flushing.
- **Structures greater than 12-inches deep:** Install a storm drain or catch basin filter sock (see Figure 2).
  - Place the appropriate size filter sock in the storm drain or catch basin.
  - Place the storm drain or catch basin grate on top of the filter sock to hold it in place.
  - Trim and remove filter sock material that extends beyond the grate.



**Figure 2. Catch basin filter sock.**

## **BMP Maintenance During Site Work**

### **1. Sweeping:**

- Control speed of sweeper to minimize airborne particulates and remove maximum amount of debris.
- Use water spray system on sweeper to reduce dust.
- Use pickup brooms in sensitive areas.
- Avoid sweeping up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently, maximize efficiency of sweeping operations.
- Do not use kick brooms or sweeper attachments.
- Prevent sediment from entering storm drain system.

2. **Catch Basin Filter Sock:** Clean or remove and replace filter sock when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).
3. *Optional BMP:* Avoid the activity when rain is falling or expected, where feasible.

## Site Cleanup

1. **Sweeping:** Inspect and sweep or vacuum visible sediment tracking on a daily basis.
2. **Equipment and Vehicle Maintenance:**
  - Clean equipment and tools off site in an area where pollutants can be contained.
  - Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system.
3. **Waste Disposal:** Properly dispose of sweeper wastes at an approved dump site after sweeping is finished.
4. **Structures less than 12-inches deep:** Use a vactor truck to clean any water and sediment out of the catch basin or storm drain inlets after flushing has been completed.
5. **Structures greater than 12-inches deep:**
  - Remove sediment buildup in front of the catch basin or storm drain inlets by hand sweeping after flushing has been completed.
  - Remove the filter sock and dispose of the collected sediment in a suitable container to be hauled off site.
  - Reuse the filter sock at another site if it remains in good condition (e.g., no rips, tears, or visible staining).
  - *Optional BMP:* Use a vactor truck to clean any water or sediment out of the catch basin or storm drain inlets.

## References

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Stormwater Management Manual for Western Washington (Ecology 2005)
2.79 - Inlet Protection 2.152 - Sweeping	E3.70 - Street Sweeping and Vacuuming E3.25 - Storm Drain Inlet Protection	C220 - Inlet Protection

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<b>SDOT Manual Name</b>	<b>RCAT</b>	<b>RCAT Description</b>
Street Maintenance Operations Mechanical Cleaning	131	CBD Mechanical Sweeping

## Description of Work

Routine sweeping of streets and alleys in the central business district (CBD) with mechanical brooms to remove accumulated dirt and debris for safe clean streets.

## Objectives

Reduce sediments and contaminants, such as petroleum hydrocarbons, heavy metals, road wash-off, snow sand, and debris from reaching the stormwater, watercourse, stream system, and other water bodies. Reduce occurrence of flooding and debris clogged drain inlets, and provide a safe roadway surface for the traveling public.

## Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Sweeping** (see Figure 1):
  - Sweeping may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose). Washing is not an alternative to sweeping and vacuuming because of the risk of pollutant transport.
  - Schedule sand removal as part of the snow and ice emergency response.



**Figure 1. Mechanical street sweeping.**

## **BMP Maintenance During Site Work**

### **1. Sweeping:**

- Control the number of points where vehicles can leave the site to allow focused sweeping and vacuuming efforts.
- Control speed of sweeper to minimize airborne particulates and remove maximum amount of debris.
- Use water spray system on sweeper to reduce dust.
- Use pickup brooms in sensitive areas.
- Avoid sweeping up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- Do not use kick brooms or sweeper attachments.
- Prevent sediment from entering storm drain system.

2. *Optional BMP:* Where feasible, avoid the activity when rain is falling or expected.

## **Site Cleanup**

1. **Sweeping:** Inspect and sweep or vacuum visible sediment tracking on a daily basis.
2. **Equipment and Vehicle Maintenance:**
  - Clean equipment and tools off site in an area where pollutants can be contained.
  - Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system.
3. **Waste Disposal:** Properly dispose of sweeper wastes at an approved dump site after sweeping is finished.

*References*

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Source Control Technical Requirements Manual (Seattle 2009)
2.152 - Sweeping	E3.70 - Street Sweeping and Vacuuming	BMP 32 - Dust Control at Manufacturing Sites



SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 2. Mechanical Cleaning	150	Other Street Maintenance - Cleaning

## Description of Work

All non-routine cleaning performed which is not covered by a specific RCAT.

## Objectives

Reduce sediments and contaminants, such as petroleum hydrocarbons, heavy metals, road wash-off, and debris from reaching the stormwater, watercourse, stream system, and other water bodies. Reduce occurrence of flooding and debris clogged drain inlets, and provide a safe roadway surface for the traveling public.

## Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Sweeping:**
  - Sweeping and vacuuming (see Figure 1) may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose). Washing is not an alternative to sweeping and vacuuming because of the risk of pollutant transport.
  - Schedule sand removal as part of the snow and ice emergency response.



**Figure 1. Mechanical street sweeping.**

## **BMP Maintenance During Site Work**

### **1. Sweeping:**

- Control the number of points where vehicles can leave the site to allow focused sweeping and vacuuming efforts.
- Control speed of sweeper to minimize airborne particulates and remove maximum amount of debris.
- Use water spray system on sweeper to reduce dust.
- Use pickup brooms in sensitive areas.
- Avoid sweeping up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- Do not use kick brooms or sweeper attachments.
- Prevent sediment from entering storm drain system.

2. *Optional BMP:* Avoid the activity when rain is falling or expected, where feasible.

## **Site Cleanup**

1. **Sweeping:** Inspect and sweep or vacuum visible sediment tracking on a daily basis.
2. **Equipment and Vehicle Maintenance:**
  - Clean equipment and tools off site in an area where pollutants can be contained.
  - Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system.
3. **Waste Disposal:** Properly dispose of sweeper wastes at an approved dump site after sweeping is finished.

*References*

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Source Control Technical Requirements Manual (Seattle 2009)
2.152 - Sweeping	C1.45 – Solid Waste Handling and Disposal E3.70 - Street Sweeping and Vacuuming	BMP 32 - Dust Control at Manufacturing Sites



SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 2. Mechanical Cleaning	155	Spill Response

## Description of Work

Any spill not associated with another RCAT (e.g., oil, transmission fluid, rock, concrete, wood, paper, and glass). Large items, such as sofas, should be reported to SPU Illegal Dumping Inspectors if not an immediate hazard.

## Objectives

Protect storm drain systems and water bodies from spills of sediments and contaminants (e.g., oils, solvents, and fuels).

## Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Spill Prevention:**
  - Clearly label all containers that contain potential pollutants.
  - Store and transport liquid materials in appropriate containers with tight-fitting lids.
  - Place drip pans underneath all containers, fittings, valves, where materials are likely to spill or leak (see Figure 1).
  - Use tarpaulins, ground cloths, or drip pans in areas where materials are mixed, carried, and applied to capture any spilled materials.



**Figure 1. Drip pan example.**

## BMP Maintenance During Site Work

1. **Spill Response Plan:** Follow the spill response plan provided by the SDOT safety office.

## 2. Spill Cleanup:

- Block off and seal nearby storm drain or catch basin inlet(s) to the stormwater drainage system using a drain cover (see Figure 2).
- Use appropriate materials to clean up spills. Do not use emulsifiers or dispersants such as liquid detergents or degreasers.
- Immediately report all spills that could reach catch basin or storm drain inlets, the sanitary sewer, streams, rivers, lakes, or Puget Sound to the appropriate agency.
- Do not wash absorbent material into interior floor drains or exterior catch basin or storm drain inlets.



**Figure 2. Storm drain cover.**

## Site Cleanup

1. **Storm Drain Covers:** Remove drain covers from any catch basin or storm drain inlets.
2. **Spill Cleanup:** Collect all absorbent materials used and dispose of them properly. Do not leave absorbent socks, sphagnum moss, or other absorbent materials in the street.
3. **Waste Disposal:** Dispose of used spill control materials in accordance with the Seattle Solid Waste Code, State Dangerous Waste Regulations, and other applicable laws.

## References

Source Control Technical Requirements Manual (Seattle 2009)
BMP 5 - Spill Prevention and Cleanup

SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 2. Mechanical Cleaning	156	Pressure Washing

## Description of Work

Pressure washing to remove graffiti or other substances (e.g., bird droppings, moss, and algae) from streets and sidewalks and to clean litter receptacles.

## Objectives

Protect storm drain systems and water bodies from flush water and sediment.

## Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Catch Basin Filter Sock:** If pressure washing water will discharge to the separate storm drain system, use the following best management practices (BMPs):
  - **Structures less than 12-inches deep:** Remove debris using a mechanical street sweeper or by hand sweeping before pressure washing.
  - **Structures greater than 12-inches deep:** Install a storm drain or catch basin filter sock (see Figure 1).
    - Place the appropriate size filter sock in the storm drain or catch basin.
    - Place the storm drain or catch basin grate on top of the filter sock to hold it in place.
    - Trim and remove filter sock material that extends beyond the grate.



**Figure 1. Catch basin filter sock.**

## BMP Maintenance During Site Work

**Catch Basin Filter Sock:** Clean or remove and replace filter sock when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).

### Site Cleanup

1. **Structures less than 12-inches deep:** Use a vactor truck to clean any water or sediment out of the catch basin or storm drain inlets after flushing has been completed.
  
2. **Structures greater than 12-inches deep:**
  - Remove sediment buildup in front of the catch basin or storm drain inlets by hand sweeping after flushing has been completed.
  - Remove the filter sock and dispose of the collected sediment in a suitable container to be hauled off site.
  - Reuse the filter sock at another site if it remains in good condition (e.g., no rips, tears, or visible staining).
  - *Optional BMP:* Use a vactor truck to clean any water or sediment out of the catch basin or storm drain inlets.

### References

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Stormwater Management Manual for Western Washington (Ecology 2005)
2.79 - Inlet Protection	E3.25 - Storm Drain Inlet Protection	C220 - Inlet Protection

SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 2. Mechanical Cleaning	225	Chip Seal Mechanical Sweeping

## Description of Work

Routine sweeping of streets with mechanical brooms to remove excess chip rock for safe, clean streets including sweeping of chip seal grids, hauling routs, and pre-sweeping the grids.

## Objectives

Reduce sediments and contaminants, such as petroleum hydrocarbons, heavy metals, road wash-off, snow sand, and debris from reaching the stormwater, watercourse, stream system, and other water bodies. Reduce occurrence of flooding and debris clogged drain inlets, and provide a safe roadway surface for the traveling public.

## Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Sweeping:**
  - Sweeping and vacuuming (see Figure 1) may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose). Washing is not an alternative to sweeping and vacuuming because of the risk of pollutant transport.
  - Schedule sand removal as part of the snow and ice emergency response.



**Figure 1. Mechanical street sweeping.**

## **BMP Maintenance During Site Work**

### **1. Sweeping:**

- Control the number of points where vehicles can leave the site to allow focused sweeping and vacuuming efforts.
- Control speed of sweeper to minimize airborne particulates and remove maximum amount of debris.
- Use water spray system on sweeper to reduce dust.
- Use pickup brooms in sensitive areas.
- Avoid sweeping up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- Do not use kick brooms or sweeper attachments.
- Prevent sediment from entering storm drain system.

2. *Optional BMP:* Where feasible, avoid the activity when rain is falling or expected.

## **Site Cleanup**

1. **Sweeping:** Inspect and sweep or vacuum visible sediment tracking on a daily basis.
2. **Equipment and Vehicle Maintenance:**
  - Clean equipment and tools off site in an area where pollutants can be contained.
  - Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system.
3. **Waste Disposal:** Properly dispose of sweeper wastes at an approved dump site after sweeping is finished.

*References*

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Source Control Technical Requirements Manual (Seattle 2009)
2.152 - Sweeping	C1.45 – Solid Waste Handling and Disposal E3.70 - Street Sweeping and Vacuuming	BMP 32 - Dust Control at Manufacturing Sites



SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 2. Mechanical Cleaning	802	Maintain Solid Waste/Transfer Station

## Description of Work

Required maintenance and repair of Solid Waste/Transfer Stations including steel repairs, concrete and asphalt work, painting, pumping basins, flushing, and mechanical sweeping.

## Objectives

- Contain uncured concrete and prevent chemicals from leaving the work site; contain water from exposed aggregate work areas; and contain water from equipment cleanup.
- Prevent sediment and pollutants of concern including petroleum hydrocarbons, toxic organic compounds, oils and greases, metals, suspended solids, and water with high pH from entering the storm drain systems and sensitive areas or water bodies.
- Protect storm drain systems and water bodies from flush water and sediment.
- Protect storm drain systems and water bodies from paint spills and contamination.
- Clean and remove large quantities of sediments and/or other debris from drainage systems before entering watercourses, streams, and/or water bodies.

## Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Concrete and Asphalt Repair, Steel Repair, and Flushing:**
  - Install drain covers (see Figure 1) on any catch basin or storm drain inlets that are connected to the storm drain system and are located downslope or adjacent to the work area.
  - Install catch basin filter socks in any structures that are **greater than 12 inches deep** (see Figure 2).
    - Place the appropriate size filter sock in the storm drain or catch basin.
    - Place the storm drain or catch basin grate on top of the filter sock to hold it in place.
    - Trim and remove filter sock material that extends beyond the grate.



**Figure 1. Storm drain cover.**



**Figure 2. Catch basin filter sock.**

3. **Sweeping:** Sweeping may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose). Washing is not an alternative to sweeping and vacuuming because of the risk of pollutant transport.

4. **Painting:**

- Train employees in the application and cleanup of paints, finishes, and coatings to reduce misuse and overspraying.
- Document and keep records of all training.
- Use the following best management practices (BMPs) if paint could discharge to the separate storm drain system:
  - Paint materials should be stored with secondary containment and have tight fitting lids.
  - Install drain covers (see Figure 1) on any catch basin or storm drain inlets that are connected to the separate storm drain system and are located downslope or adjacent to the work area.

## **BMP Maintenance During Site Work**

1. **Concrete and Asphalt Repair:**

- Vacuum slurry and cuttings during the activity to prevent migration off site and do not leave slurry and cutting on permanent concrete or asphalt paving overnight (see Figure 3).
- Clean or remove and replace filter sock when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).
- Collect, treat, and properly dispose of runoff that comes in contact with diesel or coatings used in asphalt applications.

- Continually monitor operations to determine whether cuttings or wastewater could enter the stormwater system. If observations indicate that a violation of water quality standards could occur, stop operations and immediately implement preventative measures such as berms, barriers, secondary containment, and vector trucks.
- Wash off hand tools (e.g., screeds, shovels, rakes, floats, and trowels) only into formed areas awaiting installation of concrete or use a temporary sump to collect and contain wash water.
- Dispose of collected slurry and cuttings in a manner that does not violate groundwater or surface water quality standards.
- Contain and collect concrete slurry from washing exposed aggregate and properly dispose of the slurry.
- *Optional BMPs:*
  - Avoid the activity when rain is falling or expected, where feasible.
  - Cover portable asphalt mixing equipment with an awning, a lean-to, or other simple structure to avoid contact with rain if feasible.



**Figure 3. Sawcutting and vacuuming.**

## 2. Steel Repair:

- Contain and remove any excess materials such as chemicals and scrap metal.
- Use a vector truck as needed to collect sediment produced during repair activities.

## 3. Flushing:

- Clean or remove and replace filter sock when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).

- Ensure that large debris is picked up and disposed of properly instead of being washed towards the separate storm drain system.

#### 5. **Pumping Basins:**

- Implement BMPs such as blocking facility outlet, using less water, and blocking the downgradient end of the pipe.
- Use appropriate permit procedures including air testing and entry procedures if entering a confined space.
- Clean catch basins when they are more than half full or when the sediment is within 18 inches of the bottom of the outlet pipe.
- Remove organic matter and woody debris that has accumulated in a catch basin as frequently as needed to ensure proper operation of the catch basin.
- Use a vactor truck (see Figure 4) or shovels to properly clean and dispose of material from catch basins.
- Vacuum out solids to reduce sediment and turbidity from moving downgrade throughout the drainage system when using high-pressure flushing equipment.
- Prepare work sequence to address backup equipment or project phasing when the vactor truck tank is full.



**Figure 4. Catch basin cleaning with a vactor truck.**

#### 6. **Sweeping** (see Figure 5):

- Control the number of points where vehicles can leave the site to allow focused sweeping and vacuuming efforts.
- Control speed of sweeper to minimize airborne particulates and remove maximum amount of debris.
- Use water spray system on sweeper to reduce dust.
- Use pickup brooms in sensitive areas.

- Avoid sweeping up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- Do not use kick brooms or sweeper attachments.
- Prevent sediment from entering storm drain system.
- *Optional BMP:* Avoid the activity when rain is falling or expected, where feasible.



**Figure 5. Mechanical street sweeping.**

## 7. Painting:

- Use only the recommended amounts of paint and apply them in a proper manner.
- Continually monitor operations to determine whether paint materials could enter the separate storm drain system. If observations indicate that a violation of water quality standards could occur, stop operations and immediately implement preventative measures such as berms, barriers, secondary containment, and vapor trucks.
- *Optional BMP:* Where feasible, avoid the activity when rain is falling or expected.

## Site Cleanup

### 1. Asphalt Repair:

- Sweep or shovel loose aggregate chunks and dust (do not hose down catch basin or storm drain inlets) and collect the material for recycling or proper disposal at the end of each workday.
- Remove waste materials from the site and dispose of them properly.

- Remove the filter sock and dispose of the collected sediment in a suitable container to be hauled off site. Reuse the filter sock at another site if it remains in good condition (e.g., no rips, tears, or visible staining).
- Remove drain covers from catch basin or storm drain inlets.

## 2. Concrete Repair:

- Perform cleaning of concrete application and mixing equipment or concrete-delivery vehicles in a designated area on site where the rinse water is controlled. Do not discharge to the sanitary sewer without prior approval from King County.
- Sweep or shovel loose aggregate chunks and dust (do not hose down catch basin or storm drain inlets) and collect the material for recycling or proper disposal at the end of each workday.
- Remove waste materials from the site and dispose of them properly.
- Remove material from temporary sump after cleanup is complete.
- Dispose of collected slurry and cuttings in a manner that does not violate groundwater or surface water quality standards.
- Remove the filter sock and dispose of the collected sediment in a suitable container to be hauled off site. Reuse the filter sock at another site if it remains in good condition (e.g., no rips, tears, or visible staining).
- Remove drain covers from catch basin or storm drain inlets.
- *Optional BMP:* Recycle broken concrete.

## 3. Steel Repair:

- Remove the filter sock and dispose of the collected sediment in a suitable container to be hauled off site. Reuse the filter sock at another site if it remains in good condition (e.g., no rips, tears, or visible staining).
- Remove drain covers from catch basin or storm drain inlets.
- Remove waste materials from the site and dispose of them properly.

## 4. Flushing:

- Properly dispose of debris in the closest yard with a controlled sediment disposal area or in a dumpster.
- Place large debris (e.g., pallet boards, cardboard overflowing dumpsters) in existing dumpsters.
- **Structures less than 12-inches deep:** Use a vactor truck to clean any water and/or sediment out of the catch basin or storm drain inlets after flushing has been completed.

- **Structures greater than 12-inches deep:**
  - Remove sediment buildup in front of the catch basin or storm drain inlets by hand sweeping after flushing has been completed.
  - Remove the filter sock and dispose of the collected sediment in a suitable container to be hauled off site.
  - Reuse the filter sock at another site if it remains in good condition (e.g., no rips, tears, or visible staining).
  - *Optional BMP:* Use a vactor truck to clean any water and/or sediment out of the catch basin or storm drain inlets.

#### 5. **Sweeping:**

- Inspect and sweep or vacuum visible sediment tracking on a daily basis.
- Clean equipment and tools offsite in an area where pollutants can be contained.
- Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system.
- Properly dispose of sweeper wastes at an approved dump site after sweeping is finished.

#### 6. **Painting:**

- Use the correct method of washwater disposal based on the material being used:
  - Dispose of wash water from water-based paints into the sanitary sewer, which is regulated by the King County Industrial Waste Program.
  - Dispose of wastes from oil-based paints, cleaning solvents, thinners, and mineral spirits through a licensed waste management firm or treatment, storage, and disposal (TSD) facility.
- Remove additional waste material from site and dispose of properly.
- Dispose of unused paint promptly.
- Recycle paints, paint thinner, solvents, wash water from pressure washers, and any other recyclable materials.
- Remove drain covers from any catch basin or storm drain inlets.
- Store and handle liquid wastes according to applicable special guidelines and permits. Follow the regulations and requirements outlined by the Washington State Department of Ecology and, in some cases, King County.

*References*

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Source Control Technical Requirements Manual (Seattle 2009)	Stormwater Management Manual for Western Washington (Ecology 2005)	Highway Runoff Manual (WSDOT 2008)
2.37 - Concrete Containment (2) 2.79 - Inlet Protection 2.152 – Sweeping 2.166 – Vactoring	C1.15 - Material Delivery, Storage, and Containment C1.20 – Use of Chemicals During Construction C1.35 - Sawcutting and Paving Pollution Prevention C1.45 – Solid Waste Handling and Disposal E3.25 - Storm Drain Inlet Protection E3.65 - Cleaning Inlets and Catch Basins E3.70 - Street Sweeping and Vacuuming	BMP2 - Routine Maintenance of Stormwater Drainage System BMP16 - Concrete Pouring, Concrete/Asphalt Cutting, and Asphalt Application BMP 21 - Painting, Finishing, and Coating of Vehicles, Boats, Buildings, and Equipment BMP 32 - Dust Control at Manufacturing Sites	C151 - Concrete Handling C152 - Sawcutting and Surfacing Pollution Prevention C220 - Inlet Protection	6A-2.33 - Concrete Handling

<b>SDOT Manual Name</b>	<b>RCAT</b>	<b>RCAT Description</b>
Street Maintenance Operations 2. Mechanical Cleaning	813	Building and Grounds Maintenance

## **Description of Work**

Maintenance, repair, and upkeep of all maintenance headquarters, yards, and transfer sites including offices, shops, storage yards, and bridge towers.

## **Objectives**

Use proper techniques for vehicle and equipment maintenance, service, and repair operations to reduce the potential for discharge of pollutants to watercourses or streams.

## **Site Preparation**

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Vehicle and Equipment Maintenance:**
  - Perform vehicle and equipment maintenance, repair, or service at designated repair facilities whenever possible.
  - Routinely inspect equipment, tools, and vehicles for leaks or damage.
  - Promptly repair or replace leaking connections, pipes, hoses, and valves.

## **BMP Maintenance During Site Work**

1. **Vehicle and Equipment Maintenance:**
  - Prohibit discharge of any wastewaters to catch basin or storm drain inlets.
  - Do not pour material down drains or hose down work areas.
  - Use either dry sweeping or damp mopping.
  - Remove buildup of oils and grease on equipment.
  - Perform equipment and vehicle maintenance in areas that prevent discharges to the separate storm drain system.
  - Use drip pans under equipment (see Figure 1) when maintaining, repairing, or servicing.
  - Clean maintenance area storm drain grates regularly.

- Clean up surfaces following any discharge or spill incident.
2. *Optional BMP:* Use non-toxic solvents whenever possible.



**Figure 1. Example of drip pan used for vehicle or equipment maintenance.**

## **Site Cleanup**

### **1. Waste Disposal:**

- Collect and properly manage (recycle or dispose of) used materials such as grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires.
  - Dispose of these wastes at a recycling facility; municipal solid waste disposal facility; hazardous waste treatment, storage, and disposal (TSD) facility; or the sanitary sewer.
  - Do not dispose of collected vegetation in separate storm drainage systems, waterways, water bodies, or greenbelt areas (see Figure 2).
2. *Optional BMP:* Dispose of grass clippings, leaves, sticks, and other collected vegetation by composting, if feasible.



**Figure 2. Hand sweeping.**

*References*

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Source Control Technical Requirements Manual (Seattle 2009)
1.111 – Vegetation (Equipment/Tools Cleanup and Maintenance)	BMP 3 - Dispose of Fluids and Wastes Properly



SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 2. Mechanical Cleaning	815	Clean and Repair Equipment and Tools

### Description of Work

Cleaning and minor maintenance of equipment performed by field personnel including moving maintenance equipment and the repair of small tools.

### Objectives

Use proper techniques for equipment maintenance, service, and repair operations to reduce the potential for discharge of pollutants to watercourses or streams.

### Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
  
2. **Equipment and Tool Repairs:**
  - Perform vehicle and equipment maintenance, repair, and service at designated repair facilities whenever possible.
  - Routinely inspect equipment, tools, and vehicles for leaks or damage.
  - Promptly repair or replace leaking connections, pipes, hoses, and valves.

### BMP Maintenance During Site Work

1. **Washwater:**
  - Discharge all washwater to a sanitary sewer, process treatment system, or holding tank and not to the stormwater drainage system. If a holding tank is used for the storage of washwater, the contents must be pumped out before the tank is full and then discharged into the sanitary sewer or wastewater treatment system.
  - Conduct pressure washing in a designated area (such as a wash pad) that is provided with a sump drain connected to a sanitary sewer or treatment system, or a blind sump or holding tank. Prevent stormwater run-on using a berm or sump.
  - Prohibit discharge of any wastewaters to stormwater drains.

## 2. Equipment and Tool Repairs:

- Do not pour material down drains or hose down work areas.
- Use either dry sweeping or damp mopping.
- Remove buildup of oils and grease on equipment.
- Perform equipment maintenance in areas that prevent discharges to the storm drain system.
- Use drip pans (see Figure 1) under equipment when maintaining, repairing, or servicing in the field.
- Clean surfaces following any discharge or spill incident.

## 3. *Optional BMPs:*

- Use non-toxic solvents whenever possible.
- Minimize water and detergent use in all washing operations.
- Use phosphate-free detergents when practical.
- Consider recycling the washwater by installing a closed-loop water recycling system.



**Figure 1. Example of drip pan used for equipment maintenance.**

## Site Cleanup

### Waste Disposal:

- Collect and properly manage (recycle or dispose of) used materials such as grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires.

- Dispose of these wastes at recycling facilities; municipal solid waste disposal facilities; hazardous waste treatment, storage, and disposal (TSD) facilities; or the sanitary sewer.

*References*

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Source Control Technical Requirements Manual (Seattle 2009)
1.111 – Vegetation (Equipment/Tools Cleanup and Maintenance)	BMP 3 - Dispose of Fluids and Wastes Properly BMP 7 - Cleaning or Washing of Tools, Engines, and Manufacturing Equipment