

Construction

Roads, Sidewalks and Buildings

Stormwater Protection Practices



Objective:

Prevent negative impacts to stormwater from construction of municipal roads, sidewalks and buildings.

Pollutants of Concern:

- Sediment
- Nutrients
- Toxics
- Oil & Grease
- pH (Concrete)
- Trash

Responsible Key Business Units:
Engineering & Property Management

DESCRIPTION

The City of Charlotte engages in extensive construction of roads, sidewalks and buildings. These field operations can result in the discharge of harmful pollutants into our surface waters if certain measures are not implemented. Some discharges into the storm drain system that occur as a result of construction activities are illegal and may violate water quality standards. Following the best practices outlined below will help reduce polluted discharges during road, sidewalk and building construction conducted by the City.

BEST PRACTICES

1. *Erosion & Sedimentation Control*

Sediment is by far the primary pollutant of concern in construction. There are extensive erosion and sedimentation control requirements in local and state laws as well as standards in local and state manuals. City of Charlotte personnel should follow applicable laws and standards. This document will not repeat all of the laws and standards, but rather will highlight key measures that have the greatest positive impact and address the most common situations encountered in the field.



Construction Plans

- A City of Charlotte Erosion Control Inspector will perform a plan review.
- Construction Inspectors will ensure that erosion and sedimentation control measures shown on the plans are adhered to and additional measures are put in place as needed.
- City projects are subject to State erosion control standards; however, Project Managers will incorporate Charlotte Land Development Standards when local standards are recognized as superior to State standards in terms of minimizing sediment runoff.



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Training/Certification

- City of Charlotte Construction Inspectors, Project Managers, Project Coordinators and Engineers involved in construction activities will attend erosion and sedimentation control training a minimum of every 3 years.
- Management personnel will promote training opportunities and allow personnel time to attend training.

Hiring and Accountability

- City personnel will consider erosion and sediment control and stormwater management experience among the factors for selecting consultants.
- Contractors will perform corrective actions and install and maintain additional control measures as requested by the project's Manager, Construction Inspector or any regulatory inspectors during the life of the project.

Permitting

- All projects that disturb 1 acre or more must have a Sedimentation & Erosion Control Plan approved by the State.
- All projects that disturb 1 acre or more must comply with all conditions in the State's Stormwater General Permit for Construction Activities (NCG010000).
- The Contractor will be responsible for paying any non-compliance penalty resulting from negligence on their part.

Site Inspections and Logs

- All erosion and sedimentation control measures and outfalls will be inspected at least weekly and within 24 hours after every rainfall >0.5 in. Corrective actions will be implemented when deficiencies are found.
- For sites >1 acre, all erosion and sedimentation control measures will be inspected after each phase of grading as outlined by the NC Division of Land Quality (http://www.dlr.enr.state.nc.us/pages/sedimentation_new.html)
- The person assigned to erosion control inspections must be a trained and technically competent person.
- Inspection logs for projects with a construction stormwater permit will be filled out during inspections. Completed logs will be readily available upon request and copies of logs will be provided to the City's Construction Inspector.
- The City Construction Inspector, if not the person filling out the inspection logs, will review all logs for completeness and accuracy.
- All logs will be stored in City project files for a minimum of 3 years after project completion (permit requirement).

Silt Fencing

- Sediment deposits should be removed along silt fences when deposits reach half the height of the silt fence.
- In watersheds with 303(d) listed streams and lake watersheds, a double row of silt fence will be used along wetlands and surface waters as well as adjacent to all SWIM or other water quality buffers.
- High hazard silt fence with wire backing and washed stone will be considered for use in the watershed areas listed above as well as on all City projects where surface waters, wetlands and other sensitive areas are present.

Drainage Ditch/Swale Protection

- Ditch liner, erosion control blanket, check dams and similar items will be used to protect drainage ditches/swales.



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Inlet and Outlet Protection

- Silt sacks or similar protective measures will be used in or around existing catch basins and drop inlets. They will be inspected along with other erosion control measures and cleaned out regularly.
- All stormwater inlets and outlets will be protected with approved measures in local or State standards manuals.

Sediment Basins

- In watersheds with 303(d) listed streams, lake watersheds and the Goose Creek watershed, projects will have sediment basins with enhanced sediment-removal features such as skimmers, forebays, porous baffles, and State-approved polyacrylamides (PAMs).
- Sediment deposits will be removed when they accumulate to one-half the basin design depth or, if baffles are used, when they accumulate to one-half the height of the first baffle.

Dewatering

- Measures will be used to reduce sediment discharges associated with pumping or draining of turbid water from the work site. Examples of measures include silt bags, silt tubes, pumping to a sediment or stilling basin, and use of State-approved polyacrylamides (PAMs).
- Discharge locations for dewatering devices will be carefully selected to minimize sediment discharges to drainage channels, surface waters and wetlands (i.e., discharge through vegetated area rather than directly into a creek).

Creek Work

- Work within creeks, including creek crossings and pump around operations, will follow local or State standards or better.
- Special attention will be paid to work done within creeks. Modifications will be made in the field if selected practices are not effective at minimizing negative impacts to the creek.

Exposure and Stabilization

- In order to minimize land disturbance and exposure, clearing, grading and stabilization will be conducted in phases for larger projects .
- Disturbed areas will be stabilized as soon as possible after grading or construction, with State rules being followed as a minimum standard.
- Seeded areas will be fertilized, reseeded, watered and mulched until adequate vegetative cover is established.

Street and Sidewalk Cleaning

- A combination of manual removal of dirt/mud and sweeping, preferably with a water spray for dust control, will be used to clean streets and sidewalks before flushing with water.
- If pressure washing is used for final cleaning of streets and sidewalks, filters will be placed within or around storm drain inlets into which the wash water drains.

2. Concrete Waste Management

Concrete has a high pH, which can negatively impact water quality and aquatic life if discharged into the storm drain system. City of Charlotte personnel should follow the practices listed below to ensure proper management of leftover concrete and concrete wash water during road, sidewalk and building construction.

- Concrete companies should discharge leftover concrete at their plants and not at City project sites.
- In instances when leftover concrete is approved by City personnel for on-site discharge, concrete will be discharged to a designated area designed to fully contain the concrete and washout material. Various methods such as excavated areas, bermed areas and commercially-available items can be used to achieve the same result.
- Contractor personnel will rinse concrete trucks and equipment in a designated discharge area as described above.



3. Waste and Materials Management

Waste and other materials (fuel, paint, chemicals, etc.) stored at construction sites can negatively impact water quality and aquatic life if discharged into storm drains. City of Charlotte personnel should follow the practices listed below to ensure proper management of waste and other materials during road, sidewalk and building construction.

- Waste materials will be stored in appropriate waste bins and emptied frequently enough to prevent overflow.
- Liquid wastes will be stored separately and disposed of according to waste management regulations.
- Fuel and chemical containers will be stored in a manner that prevents leaks and spills from discharging offsite.
- Drums and product containers will be stored with lids/caps in place.



4. Wash Water Management

Construction can be a messy business, so cleaning is often performed to keep the site looking good and equipment in good working condition. Wash water discharged to the storm drain system from cleaning processes often contains pollutants such as sediment, oil and heavy metals. Detergents and chemicals are sometimes used, and they can harm aquatic life if improperly discharged. City of Charlotte personnel should follow the practices listed below to ensure proper management of wash water during road, sidewalk and building construction.



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- Solvents, degreasers, acidic/caustic solutions and similar harsh chemicals will not be used to clean vehicles, equipment or other items at City project sites unless the waste is appropriately collected and disposed of.
- Washing and rinsing of vehicles and equipment will be done in a designated location, such as into a sediment basin or vegetated area, where wash water will not discharge directly into surface waters or storm water conveyances.

5. *Spill Response, Cleanup & Reporting*

Fuel, paint, chemical and other products are often used and stored at construction sites. Spills and leaks of those products can negatively impact water quality and aquatic life if they enter the storm drain system. Proper spill and leak management is also a significant regulatory concern. City of Charlotte personnel should follow the practices listed below to ensure proper response, cleanup and reporting of spills and leaks.

- Contractors who use fuel, chemicals and other hazardous materials at City projects will have a written plan or procedures for spill response and cleanup.
- All leaks and spills of fuel, chemicals and other hazardous materials will be cleaned up immediately by Contractor personnel or a qualified company hired by the Contractor.
- All hazardous material discharges will be reported to local, State and Federal authorities as appropriate.



6. *Sawcutting, Coring and Grinding Operations*

Sawcutting, coring, grinding and similar operations often generate particulates and slurry that can negatively impact water quality and aquatic life. City of Charlotte personnel should follow the practices listed below to ensure proper management of discharges from sawcutting, coring, grinding and similar operations that occur during construction.

- Slurry discharge will be prevented from entering storm drain gutters and drains. This can be accomplished with items such as sawcutting machines with vacuum, wet/dry vacuums, sand bags, rock bags, and hay bales.
- Accumulated or settled particulates resulting from these activities will be cleaned up before leaving the site.

