UNC ENVIRONMENT, HEALTH & SAFETY

UNC EHS Erosion and Sedimentation Control Guidelines for Construction Projects

The following Erosion and Sedimentation Control specifications apply to all projects located on UNC property or conducted for UNC that involve any type of land disturbing activities. These specifications are generally more stringent than the specifications outlined in the "NC Erosion and Sediment Control Planning and Design Manual" and the "NC Erosion and Sediment Control Field Manual."

Required Permits/Approvals

1. All projects one (1) acre or larger are required to submit an ESC plan to the NCDEQ Division of Energy, Mineral and Land Resources (DEMLR), Land Quality Section (LQS). The ESC plan must be reviewed by UNC Environment, Health and Safety before the plan is submitted to LQS. These projects will receive an NC General Permit and must follow all the conditions of the permit.

2. All projects between 0.1 acre and one (1) acre must submit an ESC plan for approval to the UNC Department of Environment, Health and Safety. In addition, the site superintendant is required to fill out inspection checklists at the frequency as required by the NC General Permit (weekly and after rains greater than 0.5 inches).

3. Projects less than 0.1 acre (4,356 square feet) must include in the construction documents ESC measures that comply with the specifications outlined in this document, but do not need to submit those documents to EHS.

References

1. North Carolina Sedimentation Control Act of 1973

http://www.ncga.state.nc.us/enactedlegislation/statutes/html/byarticle/chapter_113a/article_4.html

The superintendent in charge is responsible for complying with all applicable provisions of the North Carolina Sedimentation Control Act of 1973.

2. North Carolina Erosion and Sediment Control Planning and Design Manual (Revised May 2013)

https://ncdenr.s3.amazonaws.com/s3fs-public/Energy%20Mineral%20and%20Land%20Resources/Land%20Resources/Land%20Quality/107579_1%20Erosion%20Field%20Manual.pdf

All work must meet or exceed the standards found in this manual.

3. Provisions of the NC General Permit NCG01000, updated August 4, 2011

http://portal.ncdenr.org/c/document_library/get_file?uuid=e541fd22-27e3-4c7e-aa11-9396bdfcb091&groupId=38364

The NC General Permit is issued upon approval of the ESC plan. The NC General Permit and ESC plan are related, but separate, and both must be adhered to. All ESC measures must be inspected at least weekly and after each 0.5" rain event. Corrective actions must be taken immediately. Inspection records and rain gauge are to be kept on site.

4. NCDEQ DEMLR Self-Monitoring and Self-Inspection Program

http://deq.nc.gov/about/divisions/energy-mineral-land-resources/erosion-sediment-control/forms

Per requirements NCGS 113A-54.1, persons conducting land-disturbing activities larger than one acre must inspect their project after each phase of the project, and document the inspection in writing. The requirement applies to all projects. The phases are:

- Installation of perimeter erosion and sediment control measures;
- Clearing and grubbing of existing ground cover;
- Completion of any phase of grading of slopes or fills;
- Installation of storm drainage facilities;
- Completion of construction or development;
- Establishment of permanent ground cover sufficient to restrain erosion.

5. NC State Cooperative Extension Soil Facts Publications

http://www.soil.ncsu.edu/publications/extension.html

6. UNC Spill Prevention Control and Countermeasure (SPCC) Plan, Construction Site Guidelines

http://ehs.unc.edu/spcc/docs/spcc_construction.pdf

Management of all fuel and oil in containers 55 gallons or greater shall be conducted in accordance with the SPCC. Topics include, but are not limited to, secondary containment, inspections, spill kits, signage, and overfill prevention.

Design Requirements & ESC Management

All grading, erosion and sedimentation control practices, and waterway crossings must meet the design criteria set forth in the most recent version of the *NC DENR Erosion and Sediment Control Planning and Design Manual* (latest update May 2013). This document lists generalized requirements and is not meant to be a complete checklist of required ESC measures.

1. Phasing

Projects must be phased in order to minimize the amount of land disturbed at one time. ESC methods for each phase must be reflected in the construction documents. The entire project limit, including all phases added together, is used in determining the size of the project.

2. Construction Entrance

The construction entrance must be constructed with railroad ballast or surge stone. Do not use #5 or # 57 stone. Soil that is tracked onto the road must be swept up using a dry method (e.g. no water trucks or hoses). If anticipating a large amount of soil tracking onto the road, use a tire wash station. Identify the flow direction of the wastewater discharge, and include measures to treat this water.

3. Temporary Cover and Surface Stabilization

A. Ground stabilization time frame

Reference: "Major Elements of DWQ Construction General Permit – August 4, 2011", http://portal.ncdenr.org/c/document_library/get_file?uuid=89a3cdc5-bc56-43dc-82cf-4b60f4ce4f81&groupId=38364.

Areas that will be unworked for more than 7 or 14 days must be stabilized using mulch, plastic sheeting, or an erosion control blanket. Areas that will be unworked for more than 14 days must be seeded, tacked, and mulched.

B. Rolled erosion control products (RECP)

Rolled erosion control products (nets, blankets or mats) must be free of plastic or synthetic materials, even if labeled "biodegradable" or "photodegradable". These products must be made with natural fibers, for example, jute (NOT "poly jute"), straw, sisal, or coir. Good information from CA government coastal nonpoint source program: http://www.coastal.ca.gov/nps/Wildlife-Friendly_Products.pdf

C. Seeding

Use native seed mixes only. UNC has an approved list of plant seeds that are to be used. Section 6, Table 6.24c of the NC Erosion and Sediment Control Design and Planning Manual has been updated to include Piedmont native seed mixes. Do not use Lespedeza cuneata (serecia lespedeza) or any other non-native Lespedeza species, even though the NC Erosion and Sediment Control Design and Planning Manual contains lespedeza as one of the seeding recommendations. Reference: https://ehs.unc.edu/files/2015/09/soil_stabilization.pdf *Exception: seeding in landscaped areas and approved by EHS and Grounds.*

4. Sediment Traps, Basins, and Diversion Ditches

Sediment basins must be dewatered with surface skimmers. Sediment traps and basins must be installed with porous baffles. Diversion ditches should be lined with RECP or mulched and seeded to prevent scour (see above section for specifications). Polyacrylamide (PAM) or another approved flocculent may be used in conjunction with these devices to improve water treatment. See NC State Soil Facts and NCDEQ Design Manual for specifications.

5. Inlet Protection

Measures must be taken to prevent sediment and other materials from entering the storm drain system. Sediment must be removed from protective devices following a storm. If an inlet is located in an area that is travelled by vehicles, prefabricated protection that drops down into the inlet must be used. Include inlet protection outside of project limits if there is potential for sediment discharge (especially curb gutters) on downslope roads.

6. Silt Fence/Sediment Fence/Compost Socks

A. Silt/Sediment Fence

Silt fence must be constructed using reinforced standard strength filter fabric with wire fence and metal posts. Silt fence outlets must be included in areas where flow concentrates behind the fence. Fence must be maintained at all times for both effectiveness and aesthetics. Outlets can be made using wattles or hardware wire and gravel.

B. Compost Socks

Compost socks can be used as an alternative to silt fence when 6" or less of sediment accumulation is anticipated. Compost socks do not require trenching, and socks can be left in place permanently in some locations. See Manual for restrictions and specifications.

7. Soil Stockpiles

Soil stockpiles must be covered except while in use. Material to cover stockpiles is to be kept on site.

8. Dewatering of Excavations

Dewatering of turbid water from excavations cannot be pumped directly to the storm drain system.

9. Parking Area Stabilization

Parking areas and staging areas should be graveled to prevent the tracking of soil off site.

10. Dust

Measures should be taken to prevent dust from leaving the project site.

11. Fuel and Oil Storage

Fuel and oil containers 55 gallons or greater are required to be stored and inspected according to the UNC SPCC Plan. The SPCC includes requirements for providing secondary containment, conducting inspections, and providing spill kits, signage, and spill and overfill prevention.

12. Concrete Washout

A system for containing concrete washout must be designed into projects of all sizes. Releasing of concrete dust/waste/wastewater to the environment is prohibited, including into stormdrains on the roadway. Chute-rinsing must be positioned to ensure the rinsate is captured in the washout container.

13. Power Washing

Use only plain water for power washing. If soap (including biodegradable or "green" soap) or other chemicals must be used, storm drains must be blocked to prevent any water from entering the system, and wastewater must be collected for disposal at an approved water treatment facility. EHS must approve method of drain-blocking and wastewater collection. Debris and sediment must not be washed into stormdrains. Many projects use power washing that is not included in the initial scope, so plan ahead for unexpected project additions. Refer to the UNC guidelines for specific strategies in managing power washing runoff: http://ehs.unc.edu/environmental/stormwater/mobile.shtml

14. Trash/Litter/Spills

Garbage is to be disposed of properly. Spills generated from equipment are to be cleaned up immediately.

15. Utility Projects

Utility projects should be phased to decrease the amount of ground disturbance to the minimum amount practicable. Excavations should be limited to the amount of work that can be completed within a day or two. Berms shall be constructed to prevent water from running into the excavation. As sections of the utility are installed temporary cover shall be installed in accordance with requirements in this document. Include location of UNC utility work in the limits of construction, even if work will not be performed by contractor.

16. Inspection of ESC Measures

All sites 0.1 acres or larger are required to fill out inspection sheets for ESC measures weekly AND within 24 hours of rain greater than 0.5 inches. Inspection sheets are to be kept in the construction trailer throughout the duration of the project. A rain gauge must be kept on site. Note: Sites smaller than 0.1 acres are required to inspect ESC measures on a regular basis, but are not required to keep records of the inspections.

UNC ENVIRONMENT, HEALTH & SAFETY

Erosion and Sedimentation Control (ESC) Plans

An Erosion and Sedimentation Control (ESC) Plan must include the following:

A. This statement: "Contact UNC EHS at (919) 883-7163 or (919) 962-5507 to schedule and hold a pre-construction meeting before installation of ESC measures and again once ESC measures are in place."

B. A narrative, which includes a general overview of the project and the name(s) and contact information of the superintendent in-charge, contractor, any consulting firm(s) retained and the UNC project manager.

C. A natural resources map identifying soils, forest cover, and resources protected under other sections of this document.

D. A sequence of construction of the development site, including installation of ESC measures, stripping and clearing; rough grading; construction of utilities, infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, installation of temporary sediment and erosion control measures, and establishment of permanent vegetation.

E. A statement that erosion and sedimentation control devices must be installed prior to the start of clearing, demolition, grading, and/or construction.

F. A statement that any land clearing, construction, or development involving the movement of earth shall be in accordance with the approved ESC Plan and that the superintendent in-charge or contractor shall be on site on all days when construction or grading activity takes place.

G. All sediment and erosion control measures necessary to meet the objectives of this document throughout all phases of construction and after completion of development of the site.

H. Techniques designed to prevent the blowing of dust or sediment from the site.

I. Seeding mixtures and rates, types of sod, method of seedbed preparation, expected seeding dates, type and rate of lime and fertilizer application, and kind and quality of mulching for both temporary and permanent vegetative control measures.

J. All items listed on the NCDEQ LQS Erosion and Sedimentation Control Plan Application Checklist must be incorporated, when applicable, into the ESC Plan.

UNC ENVIRONMENT, HEALTH & SAFETY

Power Washing Guidelines: Outdoor power washing can negatively impact water quality if not done correctly. In addition, State and Federal laws dictate the use and disposal of certain cleaning chemicals. Failure to do so can lead to significant fines for both the University and contractors. The following guidelines clarify the correct way to power wash outdoor surfaces.

Type of Surface	Cleaning Method	Proper Disposal of Wastewater
Sidewalks, Plazas	**Without Soap:** Dry cleanup first (broom), then wash.	Screen wash water, if needed, to catch debris, then discharge water to landscaping, gutter, street or storm drain.
	With Soap: Dry cleanup first (broom), then block storm drains and contain runoff.	Collect water, screen water to remove solids, and pump wastewater to the sanitary sewer. Make sure pH is between 6 and 10 before disposing of the water into the sanitary sewer. (Contact EHS if you need help verifying the pH.)
Parking lots, Driveways, Restaurant/Food Handling Areas, DumpsterAreas , Loading Docks, Grease Storage	**With or Without Soap:** Clean up any oil, grease, or dumpster discharge using absorbents. Sweep and bag absorbents for disposal. Block storm drains and contain runoff.	Collect water, screen water to remove solids, make sure pH is between 6 and 10, and pump wastewater to sanitary sewer. Contact EHS for assistance with alternative disposal options if there is a high concentration of petroleum products.
Unpainted Building Surfaces, Exterior Brick and Masonry Walls, Wood Decks, etc.	**Without Soap:** Screen runoff for solids.	Discharge water to landscaping, gutter, street, or storm drain.
	With Soap: Block storm drains and contain runoff.	Collect water, screen to remove solids, make sure pH is between 6 and 10, and pump wastewater to sanitary sewer.
Painted surfaces without loose paint (call EHS for assistance to determine paint's lead content).	**Without Soap**: Use high-pressure water, no soap.	**Lead-free paint:** Screen wash water, if needed, to catch debris, then discharge water to landscaping, gutter, street or storm drain. **Paint contains lead:** Collect water, screen to remove lead and solids, make sure pH is between 6 and 10, and pump to sanitary sewer.
Painted surfaces being cleaned to remove paint or graffiti (call EHS for assistance to determine paint's lead content).	**With or Withought Soap:** Block the storm drain and contain runoff.	Collect water, screen to remove solids, make sure pH is between 6 and 10, and pump to sanitary sewer.

Please note that **biodegradable soap** is subject to the same disposal procedures as any other soap. Contact EHS at 962-5507 if you have questions or need assistance setting up a power washing operation on campus. More details on how to collect and dispose of washwater can be found at http://ehs.unc.edu/environmental/stormwater/mobile.shtml