

*Review of
Erosion and Sedimentation Program
Delegation to the North Carolina Department
of Transportation, Division of Highways*

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Performed by:

NCDEQ

*North Carolina Department of Environmental Quality
Division of Energy, Mineral, and Land Resources
Land Quality Section*

Report by:

*Julie Coco, PE, State Sediment Specialist
Jeevan Neupane, PE, Assistant State Sediment Specialist*

INTRODUCTION

The Land Quality Section reviewed the program delegation to the North Carolina Department of Transportation (NC DOT) between August 29, 2017 and October 31, 2017. The review and the results reported here are in accordance with requirements of the Sedimentation Control Commission (SCC) delegation to the NC DOT and § 113A-54(d)(2) and § 113A-56(b).

§ 113A-54. POWERS AND DUTIES OF THE COMMISSION

(d) In implementing the erosion and sedimentation control program, the [Sedimentation Control] Commission shall: . . . (2) Assist and encourage other State agencies in developing erosion and sedimentation control programs to be administered in their jurisdictions. The Commission shall approve, approve as modified, or disapprove programs submitted pursuant to G.S. 113A-56 and from time to time shall review these programs for compliance with rules adopted by the Commission and for adequate enforcement.

§ 113A-56. JURISDICTION OF THE COMMISSION

(b) The [Sedimentation Control] Commission may delegate the jurisdiction conferred by G.S. 113A-56(a), in whole or in part, to any other State agency that has submitted an erosion and sedimentation control program to be administered by it, if the program has been approved by the Commission as being in conformity with the general State program.

PROJECT REVIEWS

Fourteen contract construction projects were chosen based on the stage of construction and the significance of the projects. Projects were generally between 30 and 99 percent completed.

Land Quality Section personnel from the regional offices and central office accompanied NC DOT personnel to the 14 projects, which were inspected over several weeks. The goal was to inspect each of the selected projects twice. Eleven of these projects were inspected twice, and four of them were inspected just once due to time constraints. The first review for each of the projects consisted of reviewing the erosion control plan for adequacy, inspecting the project for compliance, and examining the project files. The second review consists of just inspecting the projects for compliance. Plans were available for review at thirteen sites.

NC DOT is responsible for two types of inspections on each project. NPDES Self-Monitoring and SPCA Self-Inspections are conducted at least weekly by a project inspector from the office of the resident engineer for active design-build or contract construction, or from the office of the county or district engineer for active maintenance projects. There are 7 Roadside Environmental Unit (REU) Field Operations engineers, each covering 2 of the 14 divisions in the State. The engineers each have generally one technician, who inspects secondary road projects and some contract construction. REU Field Operations staff inspects all DOT projects. Projects are inspected monthly. Each project

is evaluated on a scale of 1-10 for installation of measures, maintenance of measures, effectiveness of measures, plan implementation and overall project evaluation. A score of 6 or less results in the issuance of an “Immediate Corrective Action” report (ICA). The weekly project inspections and monthly REU inspections were reviewed for each project.

Field data was collected on erosion and sediment control measure installation, maintenance and effectiveness. Timely provision of ground cover, phasing of grading, field revisions and sedimentation damage were also evaluated. Each project was evaluated for overall compliance with the Sedimentation Pollution Control Act. A summary of the fourteen projects follows.

CONTRACT PROJECTS

Division	DEMLR-Region	County	TIP #	Route	Contract Amount	Length (miles)
1	Washington	Martin	R-3826	NC-125 From SR-1182 (East College Road) to NC-125 Northwest of Williamston	\$9,472,971.40	2.595
2	Washington	Pitt	R-2250	Greenville Southwest Bypass from South of Old NC -11 to US-264	\$159,647,247.47	12.4
3	Wilmington	Pender	B-4929	Bridge #16 Over Intracoastal waterway on NC-50/210	\$53,651,508.35	0.929
3	Wilmington	New Hanover	I-5760	I-140 From US-421 to 0.64 miles East of I-40	\$4,113,662.08	7.442
5	Raleigh	Wake	I-5710	I-540 From SR-1839 (Leesville Road) to SR- 2000 (Falls of the Neuse Road) in Raleigh	\$2,501,311.75	0.79
6	Fayetteville	Harnett	U-3465	SR-1121 (Ray Road) From NC 210 to SR-1120 (Overhills Road)	\$20,584,528.70	3.805
6	Fayetteville	Robeson	P-4900A	Railroad Bypass of Pembroke	\$10,234,578.30	2.41
7	Winston-Salem	Guilford	R-2612B	US-421 at SR-3418 (Neeley Rd) South of Greensboro	\$13,528,497.85	0.783
7	Raleigh	Orange	P-4405K	Extend Brydsville Road to NC 86 and Remove Rail Crossing	\$1,683,900.00	1.652
8	Winston-Salem	Randolph	R-2536	US-64 Bypass from US-64 W of Asheboro to US-64 E of Asheboro and Zoo Connector from SR-2839 to NC-159/Zoo Entrance	\$244,350,000.00	16.4
11	Asheville	Avery	B-5380	Bridge #141 Over Fall Branch on SR-1114 (Big Plumtree Creek Road)	\$587,873.75	0.05
12	Mooreville	Iredell	K-4908	I-77 Rest Area pair on New Location at Mile Marker #58	\$15,266,347.47	1.572
12	Mooreville	Iredell	I-3819A	I-40/I-77 Interchange, I-40 from West of SR-2003 to SR-2158 and I-77 from South of SR-2171	\$89,072,360.65	3.36
14	Asheville	Polk	R-5756	Intersection of SR 1326 (Pea Ridge Road) and Sr-1330 (John Shehan Road)	\$1,831,299.20	0.83

POSITIVE FINDINGS

- DOT Internal Inspection process

NC DOT is responsible for two types of inspections on each project: NPDES Self-Monitoring Inspection and REU monthly inspection. NPDES Inspections for all active projects are conducted at least weekly by a project inspector from the office of the resident engineer or his designee for design-build or contract construction, or from the office of the county or district engineer for maintenance projects. REU Field Operations staff inspect all DOT projects monthly. The weekly project inspections and monthly REU inspections were reviewed for each project. The recordkeeping for this project was well maintained.

- Maintenance Practices

There seems to be an increase in the use of erosion control matting. The NC DOT should continue this practice on slopes of 2:1 or greater, on slopes 50 feet or greater in length (unless hydro-seeding or other mulching practice is warranted), or in steep channels that accumulate sediment behind silt checks at a frequency greater than what can be reasonably expected to be maintained.

- Educational Efforts

NC DOT has contracted with N. C. State University to train and certify contractors and staff in the design, management and installation of sedimentation and erosion control practices. Three levels of certification have been implemented. NC DOT is also funding extensive research on innovative sedimentation and turbidity control measures.

- Innovative Approach

It is much appreciated that NC DOT takes sediment and erosion control seriously on their construction sites. NC DOT continues to provide good design concepts for contract and maintenance projects. Some innovative approaches for sediment control were noticed during the review, such as use of waddles on steep slopes in conjunction with seeding and mulching, the use of PAM socks inside slope drain inlets to reduce turbidity of water entering basins, and staged seeding. The NC DOT also required their design consultants to ensure basins were constructed as to plan specifications by marking them in the field.

ISSUES NOTED AND RECOMMENDATIONS

- Review of Plans Prepared by Consulting Engineering Firms

The NC DOT should work to ensure that all contracted erosion control plans are reviewed. The plans should be subjected to a detailed and critical review. Measures shall be designed to meet or exceed standards developed by the Roadside Environmental Unit, Soil and Water Engineering Section or the *Erosion and Sediment Control Planning and Design Manual*. Inadequate plans should be sent back for revisions. The Resident Engineer or inspector should also make sure the approved plan is available at the site all the times.

- Concrete Washouts

Any project involving concrete (including those with sidewalks or curb and gutter) should have a designated concrete washout, and a detail(s) provided for its construction/maintenance. Concrete washouts (and earthen material stockpiles) should be located at least 50 feet from storm drains and streams unless no reasonable alternatives are available. Improvement in the installation of concrete washouts onsite was noted throughout this year's review. However, DOT contractors need to be reminded to use the washouts; there were several instances of improperly installed, maintained, or improperly used concrete washout pits during this review.

- Timely Establishment of Groundcover

The current NPDES General Construction Stormwater Permit requires establishment of groundcover (temporary or permanent) within 7 to 14 days. Although adequate temporary and permanent ground cover was provided on bare, inactive and completed areas, several projects appeared to have areas where groundcover had not been established during the required timeframes. Temporary cover (even a thick layer of mulch) may be used if conditions do not allow for establishment of permanent groundcover. In addition, consistency is needed in the use of tackifiers. Mulch and tackifiers should be applied more uniformly, not only from project to project, but also within the same project(s).

The stabilization of road shoulders as soon as practical following their grading, especially on longer projects is highly recommended. Phase grading with stabilization is another recommended alternative. This thinking also follows principles from the AASHTO Drainage Manual.

With the delays in projects (due to utility work or other circumstances), care needs to be taken to provide appropriate stabilization of sites that are inactive for a given time. Measures still need to be maintained onsite unless drainage areas are fully stabilized. If areas will not be worked for at least three months, a permanent seeding would be more appropriate than temporary seeding.

- Maintenance of Measures

Many of the issues with sites noted on this year's review were the result of inadequate maintenance of measures. DOT should focus on maintenance issues during their regular inspections and make it a priority to obtain compliance from the contractor on this item. There were projects noted with maintenance issues that were ultimately corrected, but not in a timely manner. The measures such as construction entrance, silt fence, silt fence outlet, baffles in the skimmer basin, and the skimmer itself needed maintenance in most of the projects that were reviewed. If compliance with maintenance requirements is not obtained within a reasonable timeframe, then DOT should consider using other tools, including the issuance of ICAs, in order to gain compliance.

CONCLUSION

Of the fourteen (14) projects reviewed, twelve (12) of them were in compliance. In most of the cases, measures were effective and had been maintained. Plans were available onsite on thirteen (13) projects and were adequate. Generally, revisions had been noted as such on the plans, where revisions were necessary. The REU staff had periodically inspected all of the projects. Record keeping and monitoring of erosion and sedimentation control measures was good. The record keeping of all the inspection reports was impressive.