

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

November 30, 2010

Performed by:

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The Land Quality Section reviewed the program delegation to the Department of Transportation, Division of Highways (DOT) on September 13 and 14, 2010. The projects selected for review were a mix of contract construction, design-build and maintenance. The review and the results reported here are in accordance with requirements of the Sedimentation Control Commission (SCC) delegation to the DOT.

PROJECT REVIEWS

Twelve contract construction projects, two design-build projects and two maintenance/force account projects were chosen based on the stage of construction and the significance of the projects. Projects were generally 25 to 58 percent complete. The projects selected were:

CONTRACT OR DESIGN-BUILD PROJECTS

Division	County	TIP #	Route	Contract Amount	Length	% Complete
1	Craven	B-4434	US 17 Bridge over Cashie R.	\$1,947,131	0.24	39
2	Lenoir	R-2719	Crescent Road, Kinston	\$37,331,382	4.0	41
3	Brunswick	U-3462	Smith Avenue Ext., Wilmington	\$6,333,360	1.2	56
4	Edgecombe	U-3826	Daniel Street Ext., Tarboro	\$8,340,797	1.7	37
4	Nash	R-2823	Rocky Mount N. Connector	\$31,895,000	4.6	56
6	Cumberland	U-2519E	Fayetteville Outer Loop	\$52,553,157	2.5	35
7	Guilford	U-4006	SR 4126	\$8,840,227	1.0	39
8	Moore	R-2502A	US 1	\$26,633,346	8.2	43
8	Randolph	R-2606B	US 311	\$99,746,802	7.9	33
9	Rowan	R-2911	US 70	\$16,633,382	3.4	43
10	Stanly	B-2320G	US 52 Extension	\$14,242,554	3.1	58
12	Gaston	U-3405	NC 274	5,380,637	1.3	39
13	Rutherford	B-4261	SR 1520, Bridges	1,076,058	0.36	25
14	Henderson	R-0505	NC 225	16,663,083	2.9	47

MAINTENANCE/FORCE ACCOUNT PROJECTS

Division	County	Route	Length
2	Jones	SR 1004, Island Creek Rd.	4.1
3	Duplin	SR 1940, Mail Route Rd.	2.2

OVERALL REVIEW CRITERIA

The Roadside Environmental Unit (REU) notified project construction management personnel of the review on the day preceding each day of review. Each project review consisted of reviewing the erosion control plan for adequacy, inspecting the project for compliance, and examining the project files. LQS regional office personnel participated in the project inspections. Plans were available for review at all sites.

Contract Construction Projects Summary

Division	Route	Plan		Measures		Ground Cover		Overall Effectiveness
		adequacy	Implement- ation	Install- ation	Mainte- nance	timeliness	adequacy	
1	US 17 Bridge over Cashie River	Yes	Yes	Yes	Yes	Yes	Yes	Good
2	Crescent Rd., Kinston	Yes	Yes	Yes	Yes	Yes	Yes	Good
3	Smith Ave.Ext., Wil.	Yes	Yes	Yes	Yes	Yes	Yes	Good
4	Daniel St. Ext., Tarboro	Yes	Yes	Yes	Yes	Yes	Yes	Good
4	Rocky Mount N. Con.	Yes	Yes	Yes	Yes	Yes	Yes	Good
6	Fayetteville Outer Loop	Yes	Yes	Yes	Fair	Yes	Fair	Fair-Good
7	SR 4126	Fair	Yes	Yes	Yes	Yes	Good	Good
8	US 1	Yes	Yes	Yes	Yes	Yes	Good	Good
8	US 311	Yes	Yes	Yes	Yes	Yes	Fair-Good	Good
9	US 70	Yes	Yes	Yes	Yes	Yes	Good	Good
10	US 52 Extension	Yes	Yes	Yes	Yes	Yes	Good	Good
12	NC 274	Yes	Yes	Yes	Yes	Yes	Good	Good
13	SR 1520, Bridges	Yes	Yes	Yes	Yes	No	Fair	Fair-Good
14	NC 225	Yes	Yes (revised)	Yes	Yes	Yes	Good	Good

US 17 Bridge over Cashie River—The project had good stage seeding of slopes. The plan had been revised in the field to add stone outlets at low points in silt fence.

Crscent Road, Kinston —Given the size and complexity of the project, erosion and sedimentation control was very good. The project personnel had done a good job with stage seeding, implementation of measures, documentation of field revisions to the plan and staying on top of erosion control.

Smith Avenue Extension — The project was in good condition. Documentation of site inspections was very detailed and noted needed repairs and corrective actions.

Daniel Street Extension, Tarboro—Disturbed area had been minimized by stage seeding and a good stand of vegetation was established. Runoff was controlled by slope drains. Most runoff was infiltrating through the basins without discharging over the spillways.

Rocky Mount Northern Connector—Ground cover was commendable and the project was in very

good condition.

Fayetteville Outer Loop—The project was in fair condition. Measures needed maintenance and washes had occurred in fill slopes. Complaints had been received about construction traffic tracking mud off the project.

SR 4126, Bridford Parkway—The plan failed to adequately handle off-site stormwater coming onto the project. Revised measures were needed to handle the off-site water separately from runoff from the graded roadbed. One lateral base channel at the toe of a fill slope was classified as an intermittent stream, and it was dry during the review. The channel bed was eroding because DWQ had directed that the coir matting lining the channel should be removed. A delta of sediment from the channel had formed in the receiving stream.



SR 4126, Bridford Parkway



US 1—Top soil had been stockpiled and spread back over the road shoulders and ditches. Consequently, excellent ground cover was established. Despite being approximately 45% complete, the disturbed area was very small.

US 311—Ground cover had not been established on the slopes of sediment traps. Stabilization of highway graded slopes and fills was good. The project had been issued an ICA in the past.

US 70—Slopes in the borrow area had not been adequately stabilized. Otherwise, the project was in good condition.

US 52 Extension—The project had two spots without measures, but no sediment damage was observed. There were also some bare areas where vegetation had not been established. The contractor was described as slow to maintain measures.

NC 274—As a result of a Land Quality inspection on July 29, 2010, the project had been issued an ICA for a lack of ground cover and maintenance. The project was in much better condition during the review. The only issue was straw mulch blowing off slopes because it had not been tacked due to the close proximity of store fronts to the slopes.

SR 1520, Bridges—Attention to detail was lacking in the installation of the skimmer basins. The geotextile fabric lining the spillways was gapped and not well secured. A skimmer was lacking an orifice plate to control the rate of dewatering. Stabilization of exposed slopes was fair.

NC 225—This project was in good condition during the review. A slope had failed earlier in the project, filling a private pond below the project with sediment. The measures shown on the original plan could not be installed as shown, because of the steep topography. The plan had been heavily revised by REU staff from the area and the central office.

Maintenance Projects Summary

Division	Route	Plan adequacy	Plan	Measures		Ground Cover		Overall Effectiveness
			Implement- tation	Install- tion	Mainte- nance	timeliness	adequacy	
2	SR 1004, Island Crk. Rd.	No	Yes	Yes	Yes	Yes	Yes	Good
3	SR 1940, Mail Route Rd.	Yes	Yes	Yes	Yes	Yes	Yes	Good

SR 1004, Island Creek Road--- Some stream sedimentation had occurred in August, 2010. Additional measures were installed and sediment was removed.

SR 1940, Mail Route Road--- Straw wattles had failed from an intense rain storm, resulting in ditch erosion. The wattles had been replaced with rock check dams. The project had been recently seeded and mulched.

ADMINISTRATIVE REVIEW

NC DOT is working a training program for maintenance forces concerning the compaction and preparation of graded slopes and fills for stabilization. A demonstration of a slope compaction tool that can be mounted on a track hoe arm is planned.

NC DOT has also formed a committee concerning requests for trout buffer zone variances for secondary road paving and widening projects. Substantial issues remain unresolved. Division environmental officers from Divisions 11 and 13 objected to treating the cutting of trees as a land disturbing activity, providing culvert design, or providing plan views showing existing elevation contours.

DOT Internal Inspection Process

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). Land Quality records indicate 13 ICA's were issued in from November 1, 2009 through October 31, 2010.

ISSUES NOTED IN THE REVIEW

Skimmer Installation

The PVC barrel pipe on floating skimmers should be at least 6 feet long. The orifice plate should be checked as part of period self-monitoring and self-inspection. Fabric lining of spillways should be carefully shingled (overlapped) and pinned.



Timber Drive Extension, Wake County

Basin stabilization

The interior slopes of sediment traps and basins should be no steeper than 1.5:1 and the slopes should be stabilized with vegetation. Matting is recommended for slopes steeper than 2:1.



US 311, Randolph County

Slope preparation

Graded slopes and fills need adequate seedbed preparation.



NC 225, Henderson County, poor preparation



US 311, Randolph County, good preparation

Constructability

Several basins shown on plans in steep terrain could not be constructed as drawn. If the proposed contours of the basins had been drawn, it would have shown that the basins could not be constructed

without large graded slopes. Drawing proposed basin contours is recommended in steep terrain.



NC 225, Henderson County