

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

November 16, 2023

Performed By:

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

Report By:

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INTRODUCTION

The North Carolina Department of Environmental Quality, Division of Energy, Mineral, and Land Resources, Land Quality Section (DEMLR-LQS) conducted a review of the delegated North Carolina Department of Transportation Erosion and Sedimentation Control Program between May 15, 2023, and October 3, 2023. This review and the results reported here are in accordance with requirements of the Sedimentation Control Commission (SCC) delegation to the North Carolina Department of Transportation (NCDOT), §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 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.

GENERAL CONDITIONS OF THE PROGRAM

The NCDOT Division of Highways Sediment and Erosion Control Program was originally delegated by the Sedimentation Control Commission in 1974 with an updated delegation agreement being approved in 1991. General conditions of the delegated program include but are not limited to the following statements. The NCDOT's Standard Specifications for Roads and Structures shall provide the basic erosion and sedimentation control requirements to be implemented by the NCDOT. The NCDOT will utilize designs and design criteria for application of its erosion and sediment control program that are consistent with minimum standards promulgated by the Sedimentation Control Commission. The NCDOT shall provide adequate rights of way or easements to accommodate installation and maintenance of appropriate sediment and erosion control measures. The NCDOT will take all reasonable measures to protect all public and private property from siltation damage caused by any Departmental activities. The NCDOT will prepare, or have prepared, erosion and sediment control plans consistent with the Sedimentation Control Commission standards governing all land disturbing activity it undertakes which uncovers one or more contiguous acres of erodible surface. Erosion and Sediment Control plans prepared by and for the NCDOT shall address the following basic control objectives:

1. Identification of Critical Areas,
2. Limited Time of Exposure,
3. Limit Exposed Areas,
4. Control Surface Water and Control Sedimentation, and
5. Manage Stormwater Runoff.

The NCDOT is responsible for two types of inspections on each project: weekly NPDES/SPCA self-monitoring inspections (self-inspections) and monthly Roadside Environmental Unit (REU) inspections. Self-inspections are conducted by a project inspector from the office of the Resident Engineer or their designee for active Contract Construction projects, or from the office of the County or District Engineer for State Force projects. The REU inspections are conducted by one of 7 REU Field Operation Engineers (FOEs) or their staff. Generally, each FOE has one or two additional Field Operation Staff Engineers who assist with the project inspections and plan reviews. Each FOE and their staff cover 2 of the 14 DOT Highway Divisions across the state. All projects are to be inspected monthly by the REU. Each project is given a score from 0-10 for the following: installation of measures, maintenance of measures, effectiveness of measures, plan implementation and overall project evaluation. An overall project evaluation score of 0-6 results in the issuance of an “Immediate Corrective Action” report (ICA). An ICA alerts NCDOT Management of an issue that needs immediate attention. The project personnel are then charged with correcting the situation as directed by the Chief Engineer. Notification and subsequent reports on projects that have received an ICA are distributed to the Chief Engineer, Division Engineer, State Roadside Environmental Engineer, DEMLR Regional Engineer, and the DEMLR State Sediment Engineer. ICAs issued during each quarter are reported to the Sedimentation Control Commission during the subsequent quarterly meeting.

During the past fiscal year from July 2022 through June 2023, the NCDOT reports that the REU has reviewed and approved 434 erosion and sedimentation control plans for Contract Construction, NC Turnpike Authority and Division Construction/Bridge/Maintenance Projects. The NCDOT reports that the REU conducted a total of 4,134 compliance inspections on projects of various types across all 14 NCDOT Highway Divisions. During this same period the REU has issued 5 ICAs and 1 ICA extension on 5 different projects respectively.

PROJECT REVIEWS

Sixteen Contract Construction projects were chosen across the state, at random, with varying stages of construction, size, budget, and significance of the project. Selected projects consist of new roadway construction, various roadway improvements and bridge replacements. Projects reviewed were between approximately 20% complete and transitioning into the final vegetation establishment phase after construction was completed.

Contract Construction projects may contain traditional Bid-Build projects and Design-Build projects. Traditional Bid-Build projects are awarded to contractors and completed according to a set of pre-designed and approved plans. Design-Build projects are awarded to a designer and contractor team based on a proposed scope of work. The Designer/Contractor team then completes the design and after approval, begins work on the project in accordance with said approved plans. Contract Construction projects are let for bidding out of the Central and Division

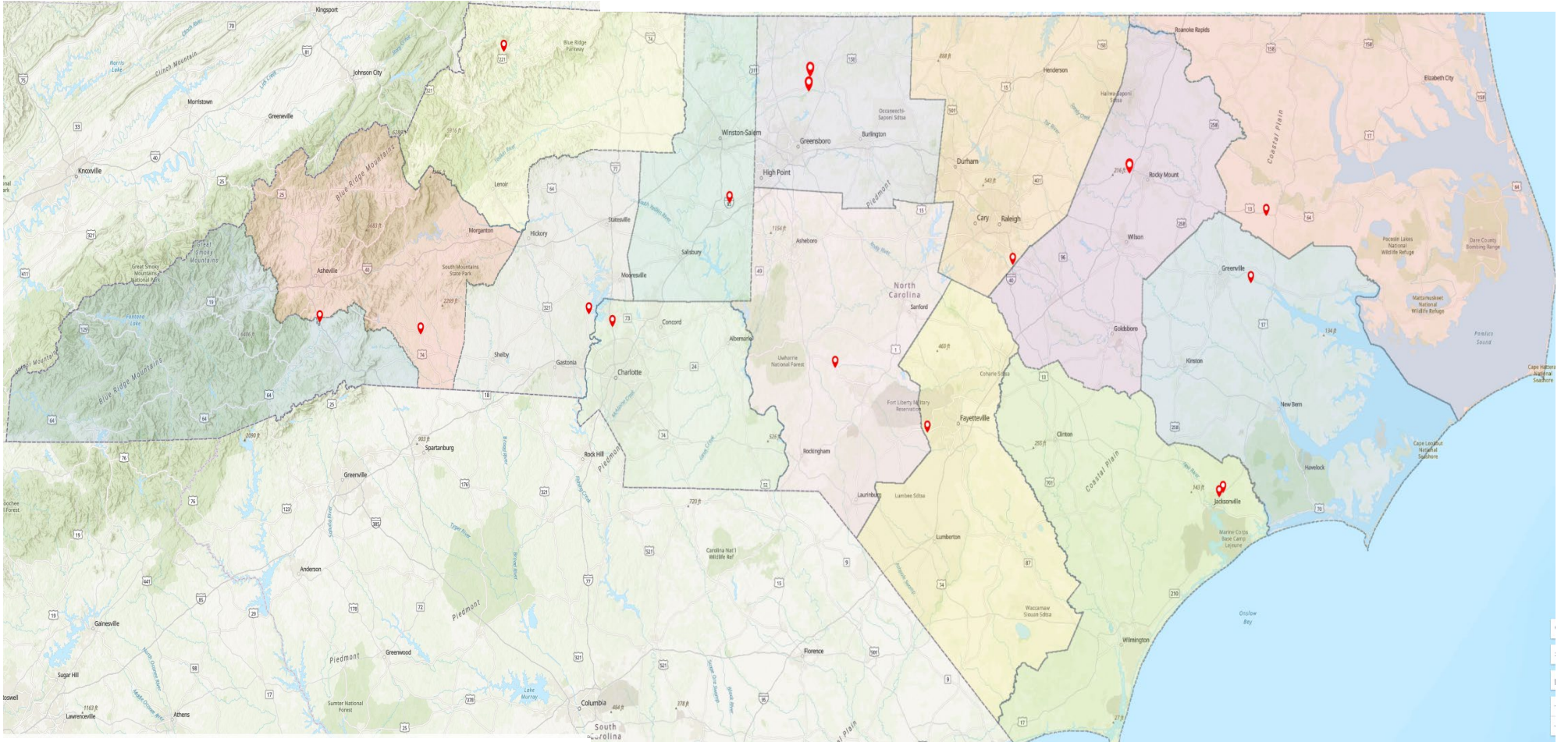
offices. Generally, projects with a total budget of less than \$5,000,000 are let out of the respective Division Offices. State Force projects consist of construction work the Department performs on secondary and primary roadways, including bridge management projects, which are completed using department forces and resources unless the project is contracted. State Force projects are also sometimes referred to as Operations Projects. No State Force projects were reviewed during this audit due to delays to the start of construction of selected projects.

NCDOT personnel from the REU, Division Offices, District Offices, Resident Offices and Contractor representatives accompanied Land Quality Section personnel from the Central and Regional Offices on the 16 projects reviewed. Each project review consisted of reviewing the erosion control plan for adequacy, examining the project files, and an onsite inspection. 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. A summary of the projects reviewed follows.

PROJECTS SELECTED

Div.	DEMLR-Region	County	TIP #	Description	Contract Amount	Length (miles)
1	Washington	Martin	R-4705	SR-1142 (Prison Camp Rd) from NC-903 to SR-1182 (East College Rd.)	\$41,866,866.00	9.60
2	Washington	Pitt	B-5301	Bridge #87 over Norfolk Southern Railroad on NC-33	\$9,574,442.00	0.60
3	Wilmington	Onslow	B-5652	Bridge #33 over Wolf Swamp on US-17 NBL	\$3,470,216.60	0.35
3	Wilmington	Onslow	U-5878	Extension of Commerce Rd. from Fairway Rd. to Piney Green Rd.	\$3,346,670.95	0.38
4	Raleigh	Nash	U-5996	Widen SR-1603 (N Carriage Rd) from North of SR-1770 (Eastern Ave/Sunset Ave) to SR-1601 (Reges Store Rd.)/SR 1609 (Green Hills Rd.)	\$20,329,828.19	1.19
5	Raleigh	Johnston, Wake	R-2828	NC-540 Triangle Expressway Southeast Extension from east of US-401 (Fayetteville Rd) to east of I-40	\$403,200,000.00	8.61
6	Fayetteville	Cumberland	U-5798A	SR-1102 (Gillis Hill Rd) from north of SR-1112 to US-401 and replace bridge over Little Rockfish Creek	\$4,999,975.00	1.20
7	Winston-Salem	Rockingham	B-4807	Replace Bridge #6 on Cunningham Rd. over Haw River	\$1,939,501.70	0.19
7	Winston-Salem	Rockingham		Bridge #9 on Ironworks Rd. over Prong of Troublesome Creek	\$727,260.50	0.06
8	Fayetteville	Moore	R-5726A	NC-211 from south of NC-73 in West End to north of SR-1241 (Holly Grove School Rd.)	\$4,698,961.00	4.81
9	Winston-Salem	Davidson	R-5737	US-29/70 & I-85 Business at SR-1798 (Old Greensboro Rd.)	\$25,893,075.90	1.36
10	Mooresville	Mecklenburg	I-5714/ U-5114	US-21 and Gilead Rd. at I-77 Interchange	\$27,409,543.90	1.30
11	Winston-Salem	Ashe	R-2915E	US-221 from US-221 Bypass to US-221 Business/NC-58 in Jefferson	\$27,409,543.90	3.54
12	Mooresville	Lincoln	W-5601Q	NC-16 Bus. at SR 1394 (N. Pilot Knob Rd.) and SR-1393 (Hagers Ferry Rd.)	\$1,076,777.90	0.17
13	Asheville	Rutherford	R-2233BB	US-221 South of US-74 Bus. (Charlotte Rd.) to north of SR-1366 (Roper Loop Rd.)	\$109,237,300.02	5.0
14	Asheville	Buncombe, Henderson	I-4400BB, I-4400C	I-26 from 0.05 miles north of US-64 to NC-280 (Exit 40)	\$271,226,964.96	8.55

Reviewed Project Locations



PROJECT REVIEW SUMMARIES

TIP R-4705: SR-1142 (Prison Camp Rd.) from NC-903 to SR-1182 (East College Rd.)

NCDOT Division: 1, Martin County

Type of Project: Contract, Central Office Let

Length: 9.60 miles

Contract Amount: \$41,866,866.00

Date of Review: 10/3/2023

Subbasin and River Basin: Lower Roanoke Subbasin of the Roanoke River Basin

Sedimentation Damage: None

Recent Project History:

Rainfall: 2.5" (9/23/23), 2.0" (9/22/23), 0.6" (9/11/23), 2.4" (9/1/23)

DOT Inspection Score: 9 (9/15/23), 9 (8/9/23), 9 (7/12/23), 9 (6/12/23)

Comments/Summary

Construction on this project began in September of 2022 and was approximately 40% complete at the time of our review. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for our review. DEMLR staff recommended that 0" be indicated on days when no rainfall was recorded to ensure that it is clear the self-inspection report had been fully completed each week. Self-inspection records otherwise appeared to be adequate and consistent with monthly REU reports. No revisions had been made to this plan. This project consisted of roadway widening and some realignment for safety. This project also contained a laydown yard/stockpile area. A reclamation plan for the laydown yard/stockpile area had been approved by the REU and appeared to be adequate. These areas were included in both the self-inspection and monthly REU reports. This project contained Environmentally Sensitive Areas (ESA) which had been delineated on the plans and in the field in accordance with NCDOT Policy. During our review sections of this project were in various phases ranging from just beginning with utilities being installed by others to final vegetation establishment. In sections where utilities were being installed by others, NCDOT staff stated that wattles and inlet protection measures would be installed as utilities were completed. The silt fence along the banks of one stream had been removed to install utilities and needed to be reinstalled immediately and the area stabilized. Additional wattles had been installed along the inside of the curve of a completed road realignment section. These wattles were added to help prevent runoff from the road eroding the slope above a wetlands area. These additional measures were approved by the REU Field Operations Engineer ahead of an anticipated heavy rain event. The skimmer device in one basin needed to be reattached and the impervious liner of the emergency spillway needed to be repaired. Basins throughout the remainder of the project appeared to be maintained. Sections of the project which had been completed appeared to be well vegetated. Seed and straw mulch or matting had been installed on recently graded areas. Stone and construction debris had been stockpiled in a small area adjacent to the project in a vacant lot. This area appeared to be outside of the right of way and easements as shown on the

plan. NCDOT staff stated that they had received verbal permission from the landowner to utilize this area. No signs of offsite Sediment loss were noted.



Stone and debris stockpiled outside of ROW and Easements



Utilities by Others being installed



Recently graded area with straw mulch



Skimmer device detached and spillway liner damaged



Roadside ditch with vegetation establishing



Skimmer basin maintained



Roadway realignment complete and area stabilized



Wattles that were added in preparation for rain event as slope was being stabilized

TIP B-5301: Bridge #87 over Norfolk Southern Railroad on NC-33

NCDOT Division: 2, Pitt County

Type of Project: Bridge Replacement, Contract, Central Office Let

Length: 0.60 miles

Contract Amount: \$9,574,442.00

Date of Review: 6/8/2023

Subbasin and River Basin: Lower Tar Subbasin of the Tar-Pamlico River Basin

Sedimentation Damage: None

Recent Project History:

Rainfall: 0.25" (6/8/23), 1" (5/29/23), 2.5" (5/27/23), 0.1" (5/24/23)

DOT Inspection Scores: 9 (5/18/23), 9 (4/20/23), 9 (3/8/23), 9 (2/6/23)

Comments/Summary:

Construction on this project began in October of 2022 and was approximately 20% complete at the time of our review. DOT staff stated that some clearing, and delineation of sensitive areas were completed when work began but grading was delayed and did not begin until April of 2023. This project had received no ICAs prior to our review. No revisions had been made to the plan. This project consisted of construction of a new bridge and a new road alignment. This project also contained two borrow pits. The borrow pit reclamation plans had been reviewed and approved by the REU staff. Self-inspection records and monthly REU inspection reports were reviewed. DOT staff stated that the borrow pits were being inspected during self-inspections, however the borrow pits were not recorded on the self-inspection reports. A reminder to document all areas inspected was given by DEMLR staff. This project contained ESAs which had been delineated on the plans and marked in the field in accordance with NCDOT policy. During our review of the project grading and installation of the bridge pilings were underway. One basin had been excavated but the skimmer had not been installed and the diversion ditch had not been tied into the basin yet. Staff stated that during grading they encountered groundwater and were pumping into and out of the basin as needed. The pumped water was discharged through a rock check into the existing drainage ditch at the perimeter of the project. DEMLR staff recommended fully installing the basin and diversions as soon as possible but to also utilize a floating intake on the pump used to discharge from the basin. The silt fence surrounding the borrow site appeared to be installed properly and maintained. The baffles in the basin at the borrow site were underwater and needed to be raised to reach the elevation of the riser overflow. The perimeter berm around the borrow site had also been installed, seeded, and mulched with straw and asphalt tackifier. The silt fence along one section of the project was being pushed over as material was compacted by equipment driving adjacent to the fence and needed to be reinstalled. No signs of offsite sediment loss were noted.



Silt fence being pushed over



Area being dewatered and pumped into basin



Skimmer device not installed, and diversion ditch not yet tied into basin



Basin and stabilized outlet on Borrow site

TIP B-5652: Bridge #33 over Wolf Swamp on NC-17

NCDOT Division: 3, Onslow County

Type of Project: Bridge Replacement, Contract, Central Office Let

Length: 0.35 miles

Contract Amount: \$ 3,470,216.60

Date of Review: 9/19/2023

Subbasin and River Basin: New River Subbasin of the White Oak River Basin

Sedimentation Damage: Minor losses noted into stream

Recent Project History:

Rainfall: 0.1" (9/14/23), 5" (8/31/23), 0.25" (8/28/23), 1.75" (8/27/23)

DOT Inspection Scores: 9 (8/8/23), 9 (7/11/23), 8 (6/7/23), 9 (5/9/23)

Comments/Summary:

Construction on this project began in April of 2023 and was approximately 40% complete at the time of our review. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for review. Self-inspection records appeared to be complete and consistent with the REU monthly reports. No revisions had been made to this plan. This project consisted of a bridge replacement with an onsite detour. During our review, the onsite detour bridge had been completed and traffic had been shifted onto it. The existing bridge had been removed and the foundations were being installed for the replacement bridge. Silt fence along the top of the stream bank had been installed and the banks had been lined with riprap. The check dam at the end of the ditch adjacent to the detour bridge had been overwhelmed and a small amount of sediment accumulation was noted in the stream. The Division of Water Resources (DWR) had been notified of this loss and conducted an inspection of the area the week prior to our review. A revision to the Section 404/Section 401 permits were underway and awaiting review to address the ditch failure and sediment loss. NCDOT staff provided a follow up report on 9/25/2023 stating that the ditch and check dam had been repaired and restabilized with riprap and that the sediment loss within the stream had been retrieved.



Stream banks lined with riprap and new bridge foundations being installed



Stabilized ditch adjacent to detour bridge



Maintained and stabilized outlet



Sediment loss into stream



Sediment loss retrieved and ditch with check dam repaired (9/25/2023)

TIP U-5878: Extension of Commerce Rd. from Fairway Rd. to Piney Green Rd.

NCDOT Division: 3, Onslow County

Type of Project: Contract, Division Office Let

Length: 0.38 miles

Contract Amount: \$3,346,670.95

Date of Review: 9/19/2023

Subbasin and River Basin: New Subbasin of the White Oak River Basin

Sedimentation Damage: None

Recent Project History:

Rainfall: **0.4"** (9/18/23), **3.50"** (8/30/23), **0.25"** (8/29/23), **2.75"** (8/28/23)

DOT Inspection Score: **9** (8/8/23), **9** (7/11/23), **9** (6/7/23), **9** (5/9/23)

Comments/Summary:

Construction on this project began in August of 2022 and was approximately 95% complete at the time of our review. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for review. The "As-built" erosion control plans were marked up with the date of measure installations; however, the date that measures were removed had not been noted. Self-inspection records appeared to be adequate and consistent with monthly REU reports. No revisions had been made to this plan. This project consisted of new roadway construction. This project contained ESAs which had been delineated on the plans and in the field. During our review culverts had been installed, the adjacent areas were being stabilized and the roadway was nearing completion. Drop inlet protection measures had been removed in one section as the areas were recently brought to final grade. NCDOT staff stated that these would soon be reinstalled until the disturbed areas were stabilized. Drop inlet protection devices throughout the remainder of the site needed to be maintained. One short section of silt fence had been undermined and needed to be repaired. Permanent ditches throughout the site had been completed and stabilized with riprap. Silt fence outlets appeared to be maintained and functioning properly. Completed areas were being stabilized. No signs of offsite sediment loss were noted.



Culvert installed and areas being stabilized



Silt fence undermined



Silt fence outlets maintained



Drop inlet protection measures needing maintenance



Completed permanent ditch and slope being stabilized

TIP U-5996: Widen SR-1603 (N Carriage Rd) from north of SR-1770 (Eastern Ave/ Sunset Ave) to SR-1601 (Regis Store Rd)/ SR-1609 (Green Hills Rd.)

NCDOT Division: 4, Nash County

Type of Project: Contract, Central Office Let

Length: 1.19 miles

Contract Amount: \$ 20,329,828.19

Date of Review: 5/15/2023

Subbasin and River Basin: Upper Tar Subbasin of the Tar-Pamlico River Basin

Sedimentation Damage: Minor offsite sedimentation noted.

Recent Project History:

Rainfall: 1.5" (5/9/2023), 2.5" (5/7/23, weekend total), 2.25" (4/30/2023), 1.25" (5/24/22)

DOT Inspection Scores: 8 (5/5/23), 8 (3/30/23), 8 (2/15/23), 9 (1/13/23)

Comments/Summary:

Construction on this project began in July of 2022 and was approximately 23% complete at the time of our review. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for review. Some inconsistencies were noted between the self-inspection records and monthly REU inspection reports. This project consisted of roadway and an overpass bridge widening. This project also contained a borrow pit. The reclamation plan for the borrow pit had been approved by the REU and appeared to be adequate. The borrow pit area was included on the self-inspection and REU monthly reports. No revisions had been made to this plan. During our review, widening and grading along one side of the road was underway while the other side of the road remained largely undisturbed. This project contained ESAs which had not been fully delineated in the field. No disturbance had been started in this section of the project at the time of our review. Perimeter measures had been installed and appeared maintained throughout the site. REU staff had previously noted the need to maintain and repair basins and silt fence outlets following a recent rain event. The basins had been recently mucked out. Baffles needed to be tied into the basin slopes. Slope drains needed to be staked down and inlet and outlet protection measures installed. Diversion ditches had been rough graded but needed to be fine graded and stabilized to ensure erosion of the ditch did not occur. Sediment was noted beyond the perimeter measures at one of the skimmer basins. This sediment loss appeared to be beyond the right of way and controlled access boundary of the project. REU Staff stated that the offsite sediment would be retrieved, and the areas disturbed by this clean up would be restabilized appropriately. Drop inlet protection measures had been installed and appeared well maintained. Recently graded slopes throughout the project had been tracked properly. Excessive dust was being produced from the access road to the borrow pit. DOT staff stated that the water truck was not operational the day of the review and REU staff asked that hauling was stopped until adequate dust control could be provided.



Slope drains needing to be staked down (both) and an outlet protection measure needed (left)



Recently graded slopes tracked properly



Skimmer basins



Sediment beyond perimeter measures and controlled access/right of way boundary



Diversion Ditch at Borrow Pit



Skimmer basin at Borrow Pit

TIP R-2828: NC-540 Triangle Expressway Southeast Extension from east of US-401 (Fayetteville Rd.) to east of I-40

NCDOT Division: 5, Johnston, Wake County

Type of Project: Contract, Design-Build, Central Office Let

Length: 8.61 miles

Contract Amount: \$ 403,200,000.00

Date of Review: 9/26/2023

Subbasin and River Basin: Upper Neuse Subbasin of the Neuse River Basin

Sedimentation Damage: Multiple areas of sediment loss noted.

Recent Project History:

Rainfall: 3.4" (9/23/23), 0.5" (9/22/23), 0.1" (9/17/23), 0.1" (9/12/23)

DOT Inspection Score: 7 (9/20/23), 7 (8/9/23), 7 (7/20/23), 7 (6/16/23)

Comments/Summary

Construction on this project began in November of 2019 and was approximately 75% complete at the time of our review. This project had received no ICAs prior to our review. NCDOT staff stated that multiple project wide shutdowns had been used when urgent repairs were needed and prior to the REU feeling the need to issue an ICA. Some of these shutdowns were directed by the NCDOT Resident Engineer on the project and one was enacted by the contractor voluntarily. During these shutdowns, construction progress is halted, and resources are rededicated to erosion and sedimentation control repairs and maintenance. Self-inspection records and monthly REU inspection reports were available onsite for review. Self-inspection records appeared to be adequate and consistent with monthly REU reports. As is a Design-Build project, a Vegetative Management Procedure (VMP) is to be created and maintained throughout the project in accordance with the provisions of the contract. The VMP for this project was available onsite for review and appeared to be adequate and properly maintained. The VMP "As-Built" plans showed the areas which had been stabilized and noted the type of stabilization used. The ESC plan for this project had been revised multiple times. In accordance with the provisions of the contract the Design-Build team coordinates with the REU FOE at least monthly to discuss any design changes or needs that should be considered. The Design team had developed an intermediate phase for some areas as it was necessary to address changing field conditions and the transition from the initial to final grading design. All revisions had been reviewed and approved by REU staff. This project consisted of development of a new roadway corridor, multiple areas of wetlands fill, bridges, and stream channel changes. This project contained ESAs which had been delineated on the plans and in the field. The morning of our review, NCDOT staff had notified DEMLR of multiple areas where sediment loss had been discovered following the recent rain from Tropical Storm Ophelia. During our review, various phases of construction were underway throughout the project. Paving was being completed in some sections while mass grading was still underway in others. The fill slopes along the sections which had been paved had been completed and vegetation had established. The channel changes in these areas also appeared to be complete and stable. Signs of previous sediment loss adjacent to a culvert were noted. The silt fence in this area had been repaired, the sediment loss retrieved, and the disturbed area reseeded and matted with coir fiber matting. The areas disturbed by these repairs

and the channel slopes adjacent to the silt fence still needed to be restabilized. Minor sediment was noted in the channel. These areas of loss were previously noted by the REU and within the self-inspection records. Silt fence outlets above this culvert still needed to be maintained. Significant sediment loss was noted along stream sections adjacent to where channel change construction was underway. Crews were onsite and sediment retrieval was underway during our review. The sediment basin west of the Swift Creek bridge needed to be mucked out and accumulated sediment along the basin outlet area needed to be removed and the area restabilized. No offsite sediment was noted in this area. A washout below the liner of the basin berm of the sediment basin on the east side of the Swift Creek Bridge had occurred and sediment had overwhelmed the silt fence and outlets. Repairs to the basin berm were underway during our review. While most measures appeared to be functioning properly, some general maintenance needs to inlet protection devices, silt fence, silt fence outlets and check dams throughout the site were noted. Completed slopes along the active grading sections had been matted and wattle breaks had been installed. Vegetation was beginning to establish along the median ditch through these sections and wattles had also been installed. An existing overpass bridge over a small stream had been removed and railroad ties had been installed in the area where sections of the bridge were cut and dropped onto them. The stream was being pumped around during this operation and remained being pumped around while the ties were being removed. The disturbed areas were being matted and staff stated that work in this ESA would be continuous. NCDOT staff provided follow up as repairs were completed and sediment losses were cleaned up. On 9/29/23 staff stated that the contractor had elected to shutdown construction progress and dedicate resources to ESC maintenance and cleanup operations. This shutdown was anticipated to be in effect until 9/30/23. NCDOT staff provided a status update on 9/29/23 and noted maintenance had begun on the basin and basin outlet area west of Swift Creek. Repairs on the basin east of Swift Creek had been completed and the sediment loss had been retrieved. The area disturbed by the overpass bridge demolition had been completed and the areas matted with coir fiber and excelsior matting. The channel slopes had been stabilized adjacent to the culvert and sediment retrieval in the channel had not yet begun. Recovery of sediment loss at the channel changes was still ongoing. A pump around had been set up around the entire area and the contractor was installing the channel change simultaneously with cleanup operations to ensure that there is minimal risk of future losses once cleanup is completed.



Sediment loss into stream adjacent to channel change



Slopes matted and wattle breaks installed



Stabilization of median and slope, with wattle checks installed



Completed slope and channel change



Basin west of Swift Creek



Basin berm east of Swift Creek



Basin west of Swift Creek repairs underway (9/29/23 follow up)



Basin berm east of Swift Creek repaired (9/29/23 follow up)



Stream where bridge demolition had occurred



Stabilization around stream where bridge demolition had occurred



Channel adjacent previously noted sediment loss



Channel repaired and stabilized (9/29/23 follow up)

TIP U-5798A: SR-1102(Gillis Hill Rd.) from north of SR-1112 to US 401 and replace bridge over Little Rockfish Creek

NCDOT Division: 6, Cumberland County

Type of Project: Contract, Central Office Let

Length: 1.20 miles

Contract Amount: \$ 22,639,926.77

Date of Review: 9/7/2023

Subbasin and River Basin: Lumber Subbasin of the Lumber River Basin

Sedimentation Damage: None

Recent Project History:

Rainfall: 3.0" (8/31/23), 0.125" (8/30/23), 0.125" (8/29/23), 1.2" (8/28/23)

DOT Inspection Score: 9 (8/28/23), 9 (7/25/23), 9 (5/23/23), 9 (4/26/23)

Comments/Summary

Construction on this project began in September of 2022 and was approximately 30% complete at the time of our review. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for review. Self-inspection records appeared to be adequate and consistent with monthly REU reports. No revisions had been made to this plan. This project consisted of roadway widening and contained a waste site. The waste site reclamation plan appeared to be adequate. The waste site area was included within the self-inspection and monthly REU reports. During our review active grading and bridge construction was underway. The construction entrances needed to be refreshed. The roadside ditch and completed slopes had recently been seeded and mulched with straw and asphalt tackifier. The channel change along the new bridge had been partially installed but flow had not yet been diverted as the existing bridge would need to be removed before the new channel could be completed. One section of silt fence had become overwhelmed adjacent to this channel change with some sediment being deposited on the downslope side. This sediment did not appear to have reached the stream. DEMLR staff recommended installing a silt fence outlet in this area to relieve pressure on the fence. Sediment beyond the silt fence needed to be retrieved. Slope drains throughout the project needed inlet and outlet protection measures to be installed. Basins throughout the site appeared to be maintained and functioning properly. Silt fence had been installed surrounding a small stockpile onsite. The basin on the waste site appeared to be functioning, but sediment was accumulating at the outlet of the slope drain. The first bay of the basin needed to be mucked out and rills which had formed in the basin slopes needed to be repaired and restabilized. No signs of offsite sediment loss were noted.



Construction entrances needing maintenance



Skimmer Basin appeared to be functioning and maintained



Sediment noted beyond silt fence adjacent to channel change



Skimmer basin on waste site

TIP B-4807:Replace Bridge #6 on SR-2425 Cunningham Rd. over Haw River

NCDOT Division: 7, Rockingham County

Type of Project: Bridge Replacement, Contract, Division Office Let

Length: 0.19 miles

Contract Amount: \$1,939,501.70

Date of Review: 5/25/2023

Sedimentation Damage: None

Subbasin and River Basin: Haw Subbasin of the Cape Fear River Basin

Recent Project History:

Rainfall: **0.41"** (5/17/23), **0.56"** (4/30/23), **0.54"** (4/29/23), **0.8"** (4/28/23)

DOT Inspection Scores: **8** (5/15/23), **8** (4/5/23), **8** (3/7/23), **8** (2/3/23)

Comments/Summary:

Construction on this project began in July of 2021. At the time of our review, construction had been completed and the project was transitioning into the final vegetation establishment phase. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for review. Some inconsistencies were noted between the self-inspection records and monthly REU inspection reports. Staff stated that borrow and waste sites used for this project were inspected during the self-inspections but were not noted on the self-inspection reports. This project consisted of bridge replacement and an onsite detour bridge. This project also contained a borrow pit, waste site, and staging area. A reclamation plan for all three areas had been reviewed and approved by REU staff. The erosion control plan for this project had been revised to remove the skimmer basins. These revisions were reviewed and approved by the REU and DOT Hydraulics section staff. This project contained ESAs which were properly delineated on the plans. At the time of our review, the borrow pit had been closed out and the waste site and laydown areas had been seeded and mulched with straw. The new bridge was complete, and the on-site detour bridge had been removed. Perimeter measures throughout the project appeared to be installed properly and maintained. Disturbed areas had been seeded and mulched with straw or matted. Wattles had been installed but had not been stapled down. No signs of offsite sediment loss were noted.



Areas being stabilized



Staging Area seeded and mulched with straw



Silt fence wattle break



Wattles along stream bank

Bridge #9 on Ironworks Rd. over Prong of Troublesome Creek

NCDOT Division: 7, Rockingham County

Type of Project: Bridge Replacement, Contract, Central Office Let

Length: 0.06 miles

Contract Amount: \$ 727,260.50

Date of Review: 5/25/2023

Subbasin and River Basin: Haw Subbasin of the Cape Fear River Basin

Sedimentation Damage: None

Recent Project History:

Rainfall: 1.0" (4/30/23), 1.25" (4/28/23), 0.38" (4/22/23), 0.25" (4/14/23)

DOT Inspection Scores: 8 (5/10/23), 8 (4/11/23), 8 (3/8/23), 8 (2/9/23)

Comments/Summary:

Construction on this project began in January of 2023 and was approximately 99% complete at the time of our review. Construction of the new bridge was nearing completion, and the site was transitioning into the final vegetative establishment phase. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for review. Previous REU inspections had noted the need to improve self-inspection records and more recent records appeared to be adequate. This project included ESAs which had been delineated properly within the plan and onsite. During our review, slopes had been matted and wattles along the stream bank below the bridge had been installed properly. Silt fence appeared to be maintained and signs of sections previously replaced were noted. No signs of offsite sedimentation were noted.



Perimeter wattles installed along stream bank



Recently completed areas being stabilized

TIP R-5726A: NC-221 from south of NC-73 in West End to north of SR-1241 (Holly Grove School Rd.)

NCDOT Division: 8, Moore County

Type of Project: Contract, Central Office Let

Length: 4.81 miles

Contract Amount: \$ 4,698,961.00

Date of Review: 8/9/2023

Subbasin and River Basin: Deep and Upper Cape Fear Subbasins of the Cape Fear River Basin and the Lumber Subbasin of the Lumber River Basin

Sedimentation Damage: None

Recent Project History:

Rainfall: 0.25" (7/31), 0.80" (7/10), 1.75" (7/3), 1.75" (6/27), 0.50" (6/23)

DOT Inspection Scores: 8 (8/3/23), 8 (7/12/23), 8 (5/18/23), 8 (4/18/23)

Comments/Summary:

Construction on this project began in October of 2022 and was approximately 90% complete at the time of our review. This project was let as an "early clearing plan". The contract for this proposal included clearing, grubbing, demolition of some existing buildings and the installation of erosion control measures. The overall grading and the roadway construction will not be conducted during this portion of this project. DOT staff stated that due to the potential impact to traffic during the upcoming U.S. Open this project will be let in two phases. Erosion control measures were to be installed and maintained until the second phase of the project began. Upon completion and stabilization of the early clearing plan, the site will enter an idle phase. While the project remains idle, the contractor will be responsible for maintaining measures and conducting self-inspections after rain events of 1 inch or greater and at least every 14 days. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for review. Self-inspection records were complete but lacked detail on corrective actions that needed to be completed. This plan had been revised to move measures which were placed within the roadway and resize basins due to utilities conflicts. These revisions had been reviewed and approved by REU staff and had been marked up on the "As-Built" plans. This project contained ESAs which were delineated on the plans and in the field. During our review, the early clearing plan was nearing completion. Basins throughout the project appeared to be installed properly. Some wattles needed to be maintained or replaced. Check dams throughout the site appeared to be maintained. One basin had recently been installed and the slopes had been matted. The remaining disturbed areas around this basin still needed to be stabilized. The perimeter silt fence adjacent to a diversion ditch and basin had been removed during recent utilities work. This silt fence needed to be reinstalled to ensure no sediment loss occurred. No signs of offsite sediment loss were noted.



Tiered basin installed and cleared area stabilized



Recently installed basin



Silt fence removed and needing to be reinstalled



Area seeded and mulched with straw

TIP R-5737: US-29/70 & I-85 Business at SR-1798 (Old Greensboro Rd.)

NCDOT Division: 9, Davidson County

Type of Project: Contract, Central Office Let

Length: 1.36 miles

Contract Amount: \$ 25,893,075.90

Date of Review: 9/20/2023

Subbasin and River Basin: Lower Yadkin Subbasin of the Yadkin Pee Dee River Basin

Sedimentation Damage: None

Recent Project History:

Rainfall: 0.25" (9/18/23), 1.25" (9/13/23), 0.75" (9/11/23), 0.5" (8/29/23)

DOT Inspection Score: 8 (9/15/23), 8 (8/16/23), 8 (7/13/23), 8 (6/13/23)

Comments/Summary

Construction on this project began in January of 2022 and was approximately 47% complete at the time of our review. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for review. Self-inspection records appeared to be adequate and consistent with monthly REU reports. A couple of sediment basins had not been installed due to the construction sequencing and difficulty accessing the area. Other basins size had been adjusted to fit the field conditions. These revisions were reviewed and approved by REU staff. This project contained a waste site and materials laydown yard. The waste site and laydown yard were noted on both the self-inspection and monthly REU reports. During our review, completed cut slopes had been matted and chemical stabilization in preparation for paving was underway. Rock doughnut inlet protection measures had been installed and appeared maintained throughout the site. A small channel change had been completed and the surrounding areas had been stabilized. Staff stated that the stockpiles in the waste site were scheduled to be stabilized once the contractor was able to get new equipment that would be able to access the site. The basin on the waste site appeared to be functioning, however, the slope drain was placed in the middle bay and sediment had accumulated at the slope drain outlet. No signs of offsite sediment loss were noted.



Slope drain in second bay of waste site basin



Stockpile on waste site awaiting stabilization



Matted slopes



Rock doughnut inlet protection



Completed channel change



Slope drains and inlet protection measures

TIP I-5714/ U-5114: US-21 and Gilead Rd. at I-77 Interchange

NCDOT Division: 10, Mecklenburg County

Type of Project: Contract, Central Office Let

Length: 1.30 miles

Contract Amount: \$ 30,854,850.00

Date of Review: 9/14/2023

Subbasin and River Basin: Upper Catawba Subbasin of the Catawba River Basin

Sedimentation Damage: None

Recent Project History:

Rainfall: **0.85"** (9/10/23), **0.13"** (9/8/23), **0.19"** (8/31/23), **0.33"** (8/30/23)

DOT Inspection Score: **8** (8/15/23), **8** (7/11/23), **8** (6/5/23), **8** (4/1/23)

Comments/Summary

Construction on this project began in September of 2022 and was approximately 60% complete at the time of our review. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for review. Inconsistencies and incomplete self-inspection records were noted around February of 2023. REU monthly reports noted these inconsistencies at the time. Recent self-inspection records appeared to have corrected previously noted deficiencies. This project was let as two separate plans included in one project contract. The Contractor was maintaining a marked up "As-Built" plan for the TIP I-5714 plan set but did not have an "As-Built" plan for the TIP U-5114. No revisions had been made to this plan. A vacant lot adjacent to the project was being utilized as a laydown yard. NCDOT staff stated that this area did not have an approved reclamation plan but had obtained verbal agreement with the Town of Huntersville, who owned the property, to utilize this site. Perimeter silt fence had been installed in this area. During our review, work on the new overpass bridge and the grading for the roadway widening was underway. Check dams had been installed in the recently graded ditch adjacent to the offramp. The basin at the end of the project appeared to be functioning, however, the baffles were not properly spaced. Overall, inlet protection measures appeared to be maintained, however, a few measures needed additional rock. Recently completed areas had been stabilized with seed and straw mulch. Roadway widening, permanent ditch, and stormwater infrastructure at the beginning of the project had been completed and stabilized. NCDOT staff stated that there was a water leak in an adjacent parking lot that was draining onto one section of active grading. To keep this water from saturating the sub grade, a pipe had been placed in the diversion ditch to convey water into the stormwater system. This was a temporary solution until the water leak could be repaired. Additional check dams had been installed in the diversion ditch. No signs of offsite sediment loss were noted.



Check dams installed



Baffles not properly spaced



Inlet protection measures



Pipe placed to convey flow from water leak



Areas recently seeded and mulched with straw

TIP R-2915E: US-221 from US-221 Bypass to US-221 Business/NC-58 in Jefferson

NCDOT Division: 11, Ashe County

Type of Project: Contract, Central Office Let

Length: 3.54 miles

Contract Amount: \$ 1,076,777.90

Date of Review: 8/15/2023

Subbasin and River Basin: Upper New Subbasin of the New River Basin

Sedimentation Damage: None

Recent Project History:

Rainfall: 0.3" (8/15/23), 0.5" (8/11/23), 0.2" (8/8/23), 1.5" (8/7/23), 1.0" (8/4/23)

DOT Inspection Score: 9 (7/20/23), 9 (6/19/23), 8 (5/18/23), 9 (4/20/23),

Comments/Summary

Construction on this project began in February of 2021 and was approximately 80% complete at the time of our review. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for review. Some inconsistencies were noted between the self-inspection records and monthly REU inspection reports. These inconsistencies were noted on multiple REU reports. This project consisted of new roadway construction to widen a two-lane highway to a four-lane split highway. This project contained ESAs and a Trout stream. A Trout Buffer Waiver for this project had been granted. The waiver had not been approved by the time the project was originally let but was distributed to the contractor along with additional project special provisions related to the requirements included in the waiver once issued. ESAs appeared to be properly delineated within the plan and onsite. Grading throughout the project was nearing completion and curb and gutter were being poured in one section. A recently completed section of median had been matted, drop inlet protection measures and wattles had been installed. Wattles had been stapled down properly. A skimmer basin was being converted to a permanent stormwater dry detention basin. A pump and special stilling basin (silt bag) for dewatering were installed in this location but the pump was not actively pumping while we were onsite. Slopes throughout the site appeared to be stabilized. Some rills had formed along recently worked slopes and around the basin. Perimeter measures remained in place throughout the site. One section of silt fence appeared to have been cut off at the ground rather than fully removed. This project included a waste site and the reclamation plan appeared adequate. DOT staff stated that this waste site was nearing completion. The majority of the site had been seeded and mulched with straw. The sediment basin for this waste site had been installed and appeared to be functioning and maintained. During our review, we noted the concrete washout needing to be repaired and a small diesel leak out of a tank truck. The Contractor immediately responded to the diesel leak. No signs of offsite sediment loss were noted.



Median matted with wattles and drop inlet protection measures installed



Special stilling basin (silt bag) for dewatering basin being converted



Basin being converted to permanent stormwater measure



Vegetation establishing on slope

TIP W-5601Q: NC-16 Business at SR-1394 (N. Pilot Knob Rd.) and SR-1393 (Hagers Ferry Rd.)

NCDOT Division: 12, Lincoln County

Type of Project: Contract, Division Office Let

Length: 0.17 miles

Contact Amount: \$1,076,777.90

Date of Review: 9/14/2023

Subbasin and River Basin: Upper Catawba Subbasin of the Catawba River Basin

Sedimentation Damage: None

Recent Project History:

Rainfall: 0.2" (9/12/23), 0.1" (9/11/23), 0.6" (9/10/23), 0.2" (9/8/23)

DOT Inspection Score: 9 (9/6/23), 9 (8/8/23), 9 (7/6/23), 9 (6/8/23)

Comments/Summary

Construction on this project began in November of 2021 and was approximately 80% complete at the time of our review. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for review. Self-inspection records appeared to be adequate and consistent with monthly REU reports. Minor revisions to ditch placement, the addition of measures and silt fence had been approved by REU staff. These revisions had been noted on the marked up "As-Built" plan set. During our review, the project was nearing completion and most disturbed areas were being stabilized. The project included an onsite laydown yard that appeared to extend beyond the right of way. NCDOT staff stated that areas being used were approximately 15-20 feet beyond the right of way and the landowner gave verbal permission for their property to be used. The construction entrance for this area appeared to be functioning and the area had recently been seeded and mulched with straw. The roadside ditches had been matted and vegetation was establishing throughout the majority of the site. Wattles had been installed throughout. No signs of offsite sediment loss were noted.



Recently matted area and wattles installed



Laydown yard area being stabilized



Permanent ditch completed and area being stabilized

TIP R-2233BB: US-221 South of US-74 Business (Charlotte Rd.) to north of SR-1366 (Roper Loop Rd.)

NCDOT Division: 13, Rutherford County

Type of Project: Contract, Central Office Let

Length: 5.0 miles

Contract Amount: \$ 109,237,300.92

Date of Review: 7/26/2023

Subbasin and River Basin: Upper Broad Subbasin of the Broad River Basin

Sedimentation Damage: None

Recent Project History:

Rainfall: 0.4" (7/26/23), 0.5" (7/23/23), 0.1" (7/21/23), 0.15 (7/19/23)

DOT Inspection Score: 8 Permitted Areas/9 Remainder of Project (7/12/23), 9 Permitted Areas/8 Remainder of Project (6/13/23), 8 (5/2/23), 9 (4/5/23)

Comments/Summary

Construction of this project began in March of 2022 and was approximately 30% complete at the time of our review. This project had received no ICAs prior to our review. Self-inspection records and monthly REU inspection reports were available onsite for review. Self-inspection records appeared to be adequate and consistent with monthly REU reports. Revisions had been made to a couple of basins and additional checks had been installed in a few ditches. These revisions had been reviewed and approved by REU staff and were noted on the "As-Built" plans. This project consisted of roadway widening. During our review, active grading was underway throughout the project. The skimmer outlet pipe had been extended on multiple basins to stick out well past the basin berms. DEMLR staff recommended adding a dissipator pad below the skimmer outlet or cut the skimmer outlet pipe so that it would not extend past the spillway liner. Construction entrances throughout the project appeared to be maintained. Recently graded slopes had been hydroseeded or matted throughout the site. Multiple skimmer basins had slope drains placed in the first or second bay, bypassing some of the baffles. Other skimmer basins throughout the site appeared to be functioning properly. Wattles that had been installed in the ditches were staked down but had not been stapled to the ground. Some check dams needed to be reworked to ensure they were installed per the DOT construction details. Idle sections of the project had been stabilized or recently seeded and mulched with straw. No signs of offsite sediment loss were noted.



Skimmer basin and outlet pipe



Basin and drop inlet protection measure



Slope drains placed in the wrong bay of skimmer basins



Wattles with PAM installed



Sediment trap recently mucked out

TIP I-4400BB, I-4400C: I-26 from 0.05 miles north of US-64 to NC-280 (Exit 40)

NCDOT Division: 14, Buncombe/Henderson County

Type of Project: Contract, Central Office Let

Length: 8.55 miles

Contract Amount: \$ 271,226,964.96

Date of Review: 7/25/2023

Subbasin and River Basin: Upper French Broad Subbasin of the French Broad River Basin

Sedimentation Damage: None

Recent Project History:

Rainfall: Trace (7/22/23), **0.36"** (7/21/23), **0.55"** (7/19/23), **0.49"** (7/16/23)

DOT Inspection Score: **8** (7/17/23), **8** (6/26/23), **8** (5/23/23), **8** (4/17/23)

Comments/Summary

Construction on this project began in September of 2019 and was approximately 70% complete at the time of our review. This project had received no ICAs prior to our review. Self-inspection records appeared adequate and consistent with monthly REU inspections. This project consisted of roadway widening and building of two rest areas. This project also contained multiple waste sites. At the time of our review, one waste site was still active while the others were establishing permanent vegetation, had not yet started, or were closed out. Reclamation plans for all waste areas had been reviewed and approved by REU staff. The erosion control plan had been revised to move or resize some basins to fit the onsite conditions. Revisions to basin sizing and position were reviewed and approved by REU staff. Revisions had been noted on the "As-Built" plan set. At the time of our review, construction of the west-bound rest area was complete and establishing permanent vegetation. The east-bound rest area was complete and open to traffic. The permanent hazardous spill basins had been installed and an added temporary skimmer basin remained in place at the east-bound rest area. DOT staff stated that this basin had been added to address complaints from nearby landowners. The beams for the bridge over clear creek were being set, rock armor along the stream bank were being installed. Stockpiled material from the beam installation along the adjacent access road needed to be stabilized or removed. The disturbed areas around the noise wall installation had been seeded and mulched with straw. Silt fence and silt fence outlets throughout the site appeared to be maintained. Some drop inlet protection measures needed to be maintained. Completed slopes throughout the project had been vegetated. Vegetation was growing within some skimmer basins. DEMLR and DOT staff discussed the need to clear the vegetation enough to ensure that skimmer device could function, and baffles could be maintained. A new living retaining wall had been installed near the railroad crossing and appeared to be establishing well. Rills were forming throughout the slopes of the active waste site. These needed to be repaired and then stabilized. The temporary diversion ditch along the toe of the slope appeared to be filling with sediment. The skimmer basin appeared to be functioning properly and well maintained. No signs of offsite sediment loss were noted.



Living retaining wall installed and slopes stabilized



Rills formed on waste site slopes needing repair and stabilization



Drop inlet protection measure needing maintenance



Stream bank stabilization under new bridge



Vegetation growing in basin



Channel change completed and area stabilized

Summary of Findings

Educational and Research Efforts

NCDOT has contracted with N.C. State University to train and certify contractors, engineers and staff in the design, installation, management, and inspection of sedimentation and erosion control practices. There are three levels of certification: Level I and Level II certification for installers and supervisors, and Level III certification for designers. All ESC plans must be designed by someone who has a Level III Certification and project contracts require that at least Level I certified installer, and a Level II certified foreman are onsite to facilitate all ESC work. The NCDOT is also funding research on innovative sedimentation and turbidity control measures.

DOT Internal Inspection Process

The NCDOT is responsible for two types of inspections on each project: NPDES/SPCA Self-Monitoring Inspections (Self-inspections) and monthly REU inspections. Self-inspections for all active projects are conducted at least weekly and within 24 hours of a rain event of 1.0 inch or greater. Self-inspections are to be conducted by a project inspector from the office of the resident engineer or their designee on Contract Construction projects or from the county or district engineer for maintenance on State Force/Operations projects. Self-inspections are to be conducted by personnel who have received the Level II Erosion and Sediment Control/Stormwater Certification. Field Operations staff of the REU conduct monthly inspections on all projects. Staff indicated that monthly inspections will be conducted with the personnel conducting the weekly inspections present. Records of both inspections were reviewed on all projects. Monthly REU inspections appeared consistent across all the divisions and were well maintained on all projects reviewed. Some inconsistencies on the self-inspections were noted, such as missing the date corrective actions were completed, incomplete rainfall data, or lack of detail regarding corrective actions that were needed at the time. It was also noted in some cases that conditions and corrective actions noted in the monthly reports were not reflected in the self-inspection records conducted around the same time. Some of these inconsistencies were noted within the REU monthly inspection reports and in most cases the inconsistencies had been addressed in subsequent self-inspection records.

The NCDOT is also responsible for maintaining a set of marked up "As-Built" erosion and sediment control plans. These "As-Built" are to include the date that measures are installed and removed along with any "redline" changes or revisions that are made to the plan. These plans were available for most projects reviewed. One project which consisted of two sections and two separate plan sets, was only maintaining an "As-Built" for one of the two plan sets. Another project was missing the dates that measures had been removed.

Communication and Project Progression

Pre-construction meetings between the contractors and NCDOT staff are held prior to construction for all projects. DEMLR and other environmental agency staff are invited to attend these meetings as well. During preconstruction meetings, REU staff discuss critical areas of

concern and review the ESC requirements. In addition to pre-construction meetings, monthly meetings are held between NCDOT staff and the contractor's workforce to discuss erosion control and other items that may need attention throughout the life of the project. Thorough discussions between contractors, NCDOT and REU staff, frequent meetings, and coordination beyond the monthly REU inspections are often held. NCDOT retains operational control over all projects and REU staff coordinate with the NCDOT Resident and Division Engineers to ensure that any erosion control concerns, and corrective actions are addressed in a timely manner. The FOE may recommend that the Resident or Division Engineer shutdown work on the project if ESC corrective actions are needed. This is also part of the process when an ICA is issued in order to facilitate an immediate response. Contractors may also elect to shut down a project voluntarily and rededicate resources to address erosion control issues with guidance from the Resident Engineer and the FOE. On Design-Build projects, monthly and sometimes more frequent meetings between the design team and the FOE occur to discuss design considerations and plan revisions that may be needed. These frequent and open channels of communication help to take a proactive approach to addressing potential erosion control concerns and facilitate quick responses to corrective actions and repairs that are needed.

NCDOT Procedures and Policies

The NCDOT has developed a set of standard requirements used for construction contracts. These standards are compiled in the *Standard Specifications for Roads and Structures*. Standards related to all aspects of the construction project, such as concrete and asphalt pavements, earthwork, structures, erosion and sediment control, etc. are included. These standards must be met on all construction projects and are referenced within the project proposal and contracts. As new standard practices emerge, the NCDOT has also developed numerous Special Provisions which can also be added to the contract. Accompanying these standards and special provisions are a set of *Roadway Standard Drawings* or construction details. These standard drawings are incorporated into plan sets by reference while construction details for Special Provisions are to be included within each plan set as necessary. The NCDOT has reviewed and updated both the *Standard Specifications for Roads and Structures* and the *Roadway Standard Drawings* documents. These updates included the addition of Wattle Check, Wattle Barrier, Silt Fence with Wattle Break, Earthen Dam with Skimmer, Rock Silt Check Type-A with Flocculants, Skimmer Basins, and Tiered Skimmer Basins which were all previously Special Provisions. The updates also included various revisions to other erosion control measures. These updates will go into effect on all newly let projects from January 1, 2024.

The NCDOT has created and maintains a list of approved products which are to be used for various aspects of projects including erosion and sedimentation control. The products on this list undergo a review process and may be approved for provisional or field use to be evaluated on certain projects for effectiveness and adequacy. This list, along with Special Provisions within project contracts help to ensure that products and constructed measures used meet the requirements outlined in the NCDOT Standard Specifications and Construction Details and adhere to the regulations and General Statutes. The NCDOT has developed its own *Erosion and Sediment Control Design and Construction Manual* which references the design considerations and requirements within the *DEMLR Erosion and Sediment Control Planning and Design Manual*.

Both manuals are referenced throughout the scope of work proposals for contracted projects and the design procedures specified within must be adhered to. This ensures that plans meet the requirements and basic objectives to control erosion and sedimentation. With the updates that have been made to the Standard Specifications and Construction Details, as mentioned above, updates to the *NCDOT Erosion and Sediment Control Design and Construction Manual* and other guidance documents may also be needed.

The use of small areas that were not within easements or the right of way of the project were noted on multiple projects reviewed this year. In each case, a reclamation plan was not submitted and approved for these areas. NCDOT staff stated that it is common procedure for small areas, such as these, to be used upon a verbal agreement with the property owner. If a reclamation plan is not required for areas such as these, it is recommended that some type of documentation stating what these areas are to be used for and how the area should be remediated after use, be obtained.

Concrete Washout and Matting Specification

In accordance with the National Pollution Discharge Elimination System requirements and the NCG01000 general permit, the NCDOT requires any project involving concrete (including those with sidewalks or curb and gutter) to install and utilize a designated concrete washout. No construction detail for a concrete washout is provided within the plans, rather, a link to an example construction detail can be found within a contract special provision. It is recommended that a construction detail for concrete washouts be included in the ESC plan set.

Matting for erosion control is included in a Soil Stabilization Summary Sheet within the ESC plan set. This table includes the location for placement and the estimated quantity of matting needed. Two types of matting to be used for erosion control have been approved (straw and excelsior) and are listed in the *2018 Standard Specifications for Roads and Structures* book. Which one of these two matting types is not specified in the Soil Stabilization Summary Sheet within the ESC plan set. It is recommended that the type of matting to be used or reference to the standard specification for matting for erosion control be included in the Soil Stabilization Summary Sheet table.

These recommendations were made during the 2022 audit as well. This recommendation has been implemented on a handful of recently let projects; however, it does not appear that it has been widely implemented across all divisions.

Conclusion

Some maintenance or repair needs were noted on most projects; however, overall, the projects reviewed were in good condition and measures appeared to be installed and functioning properly. The REU staff appeared to conduct adequate inspections and noted the same areas seen by DEMLR staff. Completed or inactive areas appeared to be stabilized or had recently been seeded and mulched with straw and tackifier or matted. Self-inspection and monthly REU inspection records were available onsite for all projects reviewed. Overall, self-inspection records appeared to be adequate. On a few projects, some inconsistencies or incomplete records were noted. In most cases, REU staff had previously noted these inconsistencies. REU monthly inspection reports were comprehensive and appeared to capture the corrective actions needed onsite. REU staff should continue to monitor self-inspection records and ensure that they are properly filled out and accurately reflect on-site conditions. Instances of sediment losses were noted on multiple projects. In most cases, these sediment losses had been reported to the appropriate environmental agencies and REU staff or the environmental agency had provided guidance to the contractors for cleanup and repairs. NCDOT staff stated that notification was sent to DWR when sediment losses were noted into wetlands or streams. NCDOT staff should continue to notify DEMLR when sediment losses occur and DWR when losses impact jurisdictional features. Implementation of NCDOT policies and procedures, such as delineation of ESAs in the field, appeared to be consistently implemented throughout all divisions. Inconsistencies in these procedure implementations were noted in previous reviews. The NCDOT continues to provide three certification levels and fund research into the improvement and innovation of practices. The NCDOT has reviewed and updated both the *Standard Specifications for Roads and Structures* and the *Roadway Standard Drawings* documents. These revisions and updates will go into effect on all new projects let beginning January 1, 2024. With these updates, updates to the *NCDOT Erosion and Sediment Control Design and Construction Manual* and other guidance documents may also be needed. It is encouraged that NCDOT staff consider widely implementing the recommendations to specify the matting type used for erosion control and include a construction detail for concrete washouts within the ESC plans.

DEMLR staff recommend continuing delegation of the Erosion and Sedimentation Control Program to the NCDOT Division of Highways, pursuant to §113A-56. This report will be presented to the Sedimentation Control Commission on November 16, 2023.

This report is based on the 2023 Annual Review of the Erosion and Sedimentation Control Program Delegation to the North Carolina Department of Transportation, Division of Highways conducted between May 15 and October 3, 2023.