North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 3.00; Released August 2021)

General Project Information

WBS Element:	49475.1.1	**TIP Number:**	HB-0001	**Project Type:**	Bridge Replacement	**Date:**	11/10/2021
NCDOT Contact:	John Conforti, REM			**Contractor / Designer:**	Jason Patskoski, PE, CFM, PhD		
Address:	Project Management Unit 1582 Birch Ridge Drive Raleigh, NC 27610			**Address:**	Summit Design and Engineering Services 1110 Navaho Dr #600 Raleigh, NC 27609		
Phone:	(919) 707-6015			**Phone:**	(919) 322-0115		
Email:	jgconforti@ncdot.gov			**Email:**	jason.patskoski@summitde.net		
City/Town:	Columbia			**County(ies):**	Dare	Tyrrell	
River Basin(s):	Pasquotank			**CAMA County?**	Yes	Yes	
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	4.246 miles	**Surrounding Land Use:**	Rural Area with Commercial Land Uses				
	Proposed Project			**Existing Site**			
Project Built-Upon Area (ac.)	21.0	ac.		15.0	ac.		
Typical Cross Section Description:	2 lane road with 12' travel lanes and 8'-10' paved shoulders. The total bridge length is 3.3 miles and clear roadway of 40'.			2 lane road with 12' travel lanes with grass shoulder. The bridge length is 2.8 miles and width of 30'.			
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	10000	Year: 2025	Existing:	8400	Year:	2016

General Project Narrative: (Description of Minimization of Water Quality Impacts)

The NCDOT project includes the replacement of NCDOT Bridge 7 on US 64 in Tyrrell and Dare Counties over the Alligator River. The existing structure is approximately 2.8 miles long with a width of 30'. The existing structure has deck drains. The proposed structure will be approximately 3.3 miles long with a clear roadway width of 40'. The Alligator River is the only stream identified in the study area, but it has two separate NCDWR Index Numbers north and south of the existing US 64 bridge. The river section south of the bridge has been designated as an ORW, but the river section north of the existing bridge has not been designated as an ORW. Since the proposed bridge will be located north of the existing bridge, the stormwater from the bridge and approaches will outlet into the non-ORW section of the Alligator River.

Within the project area, the existing impervious area is 15.0 acres, and the proposed impervious area is 21 acres. Please note the project will remove the existing pavement where it is no longer needed. The wider and longer bridge accounts for the majority of the increased area. The existing bridge is 10.6 acres. The proposed bridge will be 15.9 acres. As previously stated, runoff from the proposed bridge will be discharged into the non-ORW segment of the Alligator River. The additional 0.7 acres of impervious area is due to the proposed roadway. The proposed roadway will have shoulder sections as the existing roadway has. For the SEDLM analysis, the location of the analysis was the proposed bridge, and the entire section of US 64 that drains to the Alligator River though the roadside channels was included to be conservative. Even with this conservative approach, the analysis determined that minimum measures can be used to treat stormwater runoff at this stream crossing. Please note that there were several jurisdictional surface waters identified within the study area. These waters all connect to the Alligator River, so the Alligator River was used as the only SELDM analysis point.

The preliminary stormwater management plan includes the use of deck drains in areas on the bridge where there is adequate vertical clearance from the deck drain to the surface water. At this point 12 feet is being considered as the minimum vertical clearance for deck drains. The preliminary roadway profile plan is to provide at least this minimum vertical clearance for as much of the bridge as possible. For the sections between the bridge approach and the deck drains, the preliminary plan is to allow runoff to collect in the shoulder and collect the runoff outside the approach slabs with traditional 2GIs and pipe outlets. The profile and drainage will be designed so that spread is kept out of the travel lane and the bypass from the system is less than 0.1 cfs. With this approach, a closed drainage system attached to the bridge will not be needed. The pipes will outlet at the toe of the roadway embankment. There are wetland areas on both sides of the road at both the begin and end bridge. To minimize impacts to the wetland areas, rip-rap pads will be utilized at the pipe outlets to dissipate energy. The wetland areas outlet to the Alligator River, so no ditching to the Alligator River will not be used to avoid additional wetland impacts. The profile is currently being designed, so the portions of bridge drainage area for the deck drains and closed drainage systems is yet to be determined. Once the drainage system is laid out, an outlet analysis will be conducted to determine if detention or other outlet protection measures are needed to protect against erosion at these discharge points. Given the wetland areas at the bridge approaches, Stormwater Control Measures (SCMs) will result in large wetland impacts. To avoid these impacts, the inclusion of SCMs is not anticipated at this time.

For the roadway sections, fill slopes will be steepened to minimize filling in wetland areas to the greatest extent practicable. Ditching through wetland areas will be avoided, and all ditches will be designed to have non-erosive velocities. To further avoid impacts to the wetland, drainage will be designed so the existing roadside channels can be utilized to the greatest extent practicable. Lastly, all cross-pipes with jurisdictional waters will be buried.

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WBS Element: 49475.1.1 **TIP/Proj No.:** HB-0001 **County(ies):** Dare Tyrrell

General Project Information

Waterbody Information

Surface Water Body (1):	Alligator River		**NCDWR Stream Index No.:**	30-16-(7)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class SC			
		Supplemental Classification:	Swamp Waters (Sw)	Waters (ORW)		
Other Stream Classification:	Areas of Environmental Concern					
Impairments:	None					
Aquatic T&E Species?	Yes	Comments:	See NRTR			
NRTR Stream ID:	30-16-(7)			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	Yes	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (2):	Alligator River		**NCDWR Stream Index No.:**	30-16-(21.5)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class SC			
		Supplemental Classification:	Swamp Waters (Sw)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	Yes	Comments:	See NRTR			
NRTR Stream ID:	30-16-(21.5)			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	Yes	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						