



North Carolina Department of Environment and Natural Resources

Division of Water Quality

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PDEA-OFFICE OF NATURAL ENVIRONMENT
John E. Skvarla, III
Secretary

July 1, 2013

MEMORANDUM

To: Pamela Williams, NCDOT

From: David Wainwright, NC Division of Water Quality, Central Office *dw*

Subject: Division 8 Express Design Build Bridge Replacement Projects in Hoke, Scotland, Richmond, and Montgomery Counties

A field meeting to review several express design build bridge replacement projects in Division 8 has been scheduled for July 9 -10, 2013. Due to prior obligations, I am unable to attend the scheduled meetings. However, I visited the project sites, listed below, on June 24 and provide the following comments.

Summary of Bridge Locations Reviewed

Bridge No.	County	Location	Stream	Basin	DWQ Class	DWQ Stream ID
460023	Hoke	SR 1116	Big Middle Swamp	Lumber	C;Sw	14-10-1.5
460024	Hoke	SR 1116	Fork of Raft Swamp	Lumber	C;Sw	14-10-(1)
460025	Hoke	SR 1116	Fork of Raft Swamp	Lumber	C;Sw	14-10-(1)
460098	Hoke	SR 1135	Big Middle Swamp	Lumber	C;Sw	14-10-1.5
610030	Montgomery	SR 1130	Clarks Creek	Yadkin	C	13-16
610157	Montgomery	SR 1303	Barnes Creek	Yadkin	WS-IV; ORW	13-2-18-(2.5)
610228	Montgomery	SR 1320	Suck Branch	Yadkin	C	13-25-20-11
610232	Montgomery	SR 1188	Clarks Creek	Yadkin	C	13-16
760056	Richmond	SR 1004	Drowning Creek	Lumber	WS-II, Sw, HQW	14-2-(6.5)
760093	Richmond	SR 1148	Dry Creek	Yadkin	C	13-22
760110	Richmond	SR 1305	S. Prong Cartledge Cr.	Yadkin	C	13-35-1
820006	Scotland	SR 1001	Gum Swamp Creek	Lumber	B	14-32-(7)
820011	Scotland	SR 1324	Jordan Creek	Lumber	C;Sw	14-34-4-(2)

The NCDWQ understands the NCDOT most likely does not have a final replacement structure choice at this time; therefore, these comments are meant to be general in nature and may not apply to final designs and situations.

General Comments Applicable to Most or all Projects:

1. No waters are on the 2012 303(d) list of impaired waters.

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2. No waters are in basins with riparian buffer rules in effect.
3. Impacts to the stream and wetlands should be minimized as much as possible.
4. When practicable, bridge bents should not be placed in the stream or main channel.
5. Nearly all bridges have scuppers, allowing untreated stormwater to flow directly into the stream. New bridge designs should not have scuppers which allow water to flow directly into the stream; final designs should capture and treat the stormwater from the bridge.
6. Nearly all bridges have adjacent aerial power lines. If it is necessary to relocate powerlines or other utilities, then any impact to wetlands and/or the stream should be noted in the application and included in the impact summary table(s).
7. If a non-spanning structure is to be used, please consider the following:
 - a. For any bridge replacement in which a spanning structure is replaced with a non-spanning structure, such as one or more box culverts, a sufficient justification to the NCDWQ must be made justifying the use of a non-spanning structure.
 - b. If an aluminum box culvert with a floor is to be used in lieu of a spanning structure, the NCDWQ will be considering the following design criteria*:
 - i. When practicable, these structures should be buried deeper than is typical. The NCDWQ believes that these structures perform better when buried a minimum of two feet.
 - ii. Floodplain benches should be constructed at the inlet and outlet and the structure backfilled with native material to help preserve the natural width of the stream and avoid over widening of the stream entering, exiting, and in the culvert.
 - iii. The slope of the stream and culvert need to be low. Evidence indicates that culverts placed in high slope applications may negatively impact the stream.
8. The NCDWQ prefers offsite detours during construction if practicable. If an onsite detour is used, impacts from the detour, even if temporary, should be reduced to the maximum extent practicable and should have a construction sequence whereby it is left in place for the shortest amount of time possible. If impacts from temporary roads and structures do not obtain jurisdictional status after removal, the NCDWQ may consider the impact permanent and require additional mitigation. Additionally, temporarily disturbed areas should be restored as close to pre-impact conditions as possible.

Project Specific Comments:

Bridge No. 760110 over South Prong to Cartledge Creek on SR 1305, Richmond County:

- There is a roadside drainage ditch on the southwest side of the bridge which is eroding and unstable. This should be addressed as part of the bridge replacement project.

Bridge No. No. 610232 over Clarks Creek on SR 1188, Montgomery County:

- There appears to be several potential utility conflicts at this bridge, including power lines on both sides of the bridge and an aerial sewer line immediately adjacent to the bridge on the south side.
- There appears to be a bedrock slab under the bridge. This may make it difficult to utilize a non-spanning structure, so the NCDWQ recommends a bridge at this site.

* For more information regarding the NCDWQ's guidance on the use of aluminum box culverts report please visit http://www.ncdenr.gov/c/document_library/get_file?uuid=e5b7d067-6785-46f5-8a81-f8f587ba4ba7&groupId=38364.

Bridge No. 610157 over Barnes Creek on SR 1303, Montgomery County:

Please note that Barnes Creek is classified as an Outstanding Resource Water by the NCDWQ, as such:

- Special stormwater measures may need to be considered. Such measures may include directing stormwater flows to vegetated buffer areas, grass-lined ditches, or other means for the purposes of pretreatment prior to discharging to the stream.
- Design and construction practices may need to adhere to the "Design Standards in Sensitive Watersheds" criteria.

Bridge No. 760056 over Drowning Creek on SR 1004, Richmond County:

Please note that Drowning Creek is classified as a High Quality Water (HQW) by the NCDWQ, as such:

- Special stormwater measures may need to be considered. Such measures may include directing stormwater flows to vegetated buffer areas, grass-lined ditches, or other means for the purposes of pretreatment prior to discharging to the stream.
- Design and construction practices may need to adhere to the "Design Standards in Sensitive Watersheds" criteria.

I regret not being able to make the field meeting, but thank you for allowing me to provide comments in advance. If you have any questions please feel free to contact me at (919)807-6405 or David.Wainwright@ncdenr.gov.