



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY  
GOVERNOR

ANTHONY J. TATA  
SECRETARY

October 29, 2013

MEMORANDUM TO: Mr. Mike Holder, PE  
Division 12 Engineer

FROM: Philip S. Harris, III, P.E., Head  
Natural Environment Section  
Project Development and Environmental Analysis Unit

SUBJECT: Cleveland County; US 74 Shelby Bypass from 0.6 miles west of  
SR 1162 to SR 1001; Federal Project No. NHF-74(14); WBS  
Element 34497.1.2; **TIP R-2707B.**

*E. J. Fush*

Attached are Modifications to the U.S. Army Corps of Engineers Section 404 Individual permit and the N.C. Division of Water Quality Section 401 Water Quality Certification for the above referenced project. All of the original permit conditions remain in effect. No additional mitigation is required. Environmental permits have been received for the construction of this project.

A copy of this permit package will be posted on the NCDOT website at:  
<http://www.ncdot.gov/doh/preconstruct/pe/neu/permit.html>

Cc: w/o attachment (see website for attachments):

Mr. Randy Garriss, P.E. State Contract Officer  
Ms. Trish Beam, Division Environmental Officer  
Mr. Majed Alghandour, P. E., Programming and TIP  
Mr. Jay Bennett, P.E., Roadway Design Unit  
Mr. Dewayne Sykes, P.E. Utilities Unit  
Mr. Art McMillan, P.E., Hydraulics Unit  
Mr. Tom Koch, P.E., Structure Design Unit  
Mr. Mark Staley, Roadside Environmental Unit  
Mr. Ron Hancock, P.E., State Roadway Construction Engineer  
Mr. Mike Robinson, P.E., State Bridge Construction Engineer  
Mr. Bill Goodwin, P.E., PDEA Bridge Unit Head  
Ms. Leilani Paugh, Natural Environment Section  
Ms. Beth Harmon, EEP  
Mr. Phillip Ayscue, Office of Inspector General  
Mr. Clarence Coleman, P.E., FHWA

MAILING ADDRESS:  
NC DEPARTMENT OF TRANSPORTATION  
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS  
1598 MAIL SERVICE CENTER  
RALEIGH NC 27699-1598

TELEPHONE: 919-707-6100  
FAX: 919-212-5785

WEBSITE: [WWW.NCDOT.ORG](http://WWW.NCDOT.ORG)

LOCATION:

1020 BIRCH RIDGE DRIVE  
RALEIGH NC 27610-4328



## PROJECT COMMITMENTS

TIP Project No. R-2707A-E  
US 74 Shelby Bypass  
From 0.6 mile west of SR 1162 to SR 1001  
Cleveland County, North Carolina  
Federal-Aid No. NHF-74(14)  
State Project No. 8.1801001  
WBS Number 34497.1.2

### COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

#### **Project Development and Environmental Analysis Unit**

Stream Relocations and Modifications. Stream relocations or modifications will be coordinated with the US Fish and Wildlife Service (USFWS), US Army Corps of Engineers (COE), the North Carolina Department of Environment and Natural Resources, Division of Water Quality (DWQ) and the North Carolina Wildlife Resources Commission (WRC) in accordance with the Fish and Wildlife Coordination Act [72 Stat. 563, as amended; 16 USC 661 et seq. (1976)]. An on-site stream mitigation review will be held with the COE, the USFWS, the WRC, and the DWQ. The assessment will determine where on-site stream mitigation is possible. Bioengineering techniques will be applied to relocated streams. These techniques will result in meandering streams with riffles and pools. Native vegetation will be used to stabilize banks and root wads will be used instead of rip-rap as appropriate. A 2:1 off-site compensatory mitigation ratio will be required unless an on-site stream is being relocated via natural stream design techniques; the latter will be at a 1:1 stream mitigation ratio. Stream mitigation (i.e., enhancement, preservation) adjacent to the project must still be completed at a 2:1 mitigation ratio if the mitigation is not an on-site natural stream design relocation. Based on the preliminary design for this project, two stream relocations will be required:

- A stream relocation will be required for the tributary of Buffalo Creek between SR 2063 and the Light Oak community. An approximately 950-foot segment of this stream will require relocation, most likely to the east of its existing location.
- A stream relocation will be required just to the west of Lithia Springs Road for a tributary of the First Broad River. This relocation is approximately 1,100 feet in length, and will be to the north of the existing stream bed.

***Action: This commitment applies to Sections C and D and these locations will be addressed during the final design phase.***

Stream and Wetland Mitigation Plans. A comprehensive mitigation plan will be coordinated with the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service,



North Carolina Department of Environment and Natural Resources, Division of Water Quality, and North Carolina Wildlife Resources Commission.

Future Air Quality. Any future air quality analysis for this project will include a review of vehicle-mix percentages, given the industrial nature of portions of the project area.

***Action: An Addendum to the Air Quality Impacts can be found in the 2008 Record of Decision.***

~~Transplant of Dwarf Flowered Heartleaf Plants. The North Carolina Plant Conservation Program (NCPCP) will be notified if or when dwarf flowered heartleaf (DFHL) plants will be lost to construction. A qualified botanist from that organization or a designated representative will be allowed to transplant, if desired, any of the plants that would be lost to a different area of protection.~~

***Action: This commitment has been dropped as a Conservation Measure in the Amendment to the Biological Opinion (BO) issued November 9, 2012.***

Dwarf-Flowered Heartleaf Monitoring. The dwarf-flowered heartleaf sites in the right-of-way will be monitored annually for five years to determine their stability and to detect any construction effects (positive or negative) which have not been anticipated (increased light, hydrology changes, etc.) and efforts will be made to control exotics.

***Action: Conservation Measure 5 from the Amendment to the BO replaces this commitment. See Attachment.***

Dwarf-Flowered Heartleaf Report. A written report on dwarf-flowered heartleaf monitoring and management efforts will be provided yearly until the project is completed

***Action: Conservation Measure 5 from the Amendment to the BO replaces this commitment. See Attachment.***

Dwarf-Flowered Heartleaf Conservation Easements. Written documentation will be provided to the US Fish and Wildlife Service and to the North Carolina Natural Heritage Program regarding any successful efforts to obtain conservation easements on dwarf-flowered heartleaf sites 8, 9, 12, 13, 24, 25, 26, 30, 32, 33, 34, 35, and 43.

***Action: Conservation Measure 4 from the Amendment to the BO replaces this commitment. See Attachment.***

Wetlands and Streams Re-Verification. Wetlands and stream information will be re-verified during the Section 404 permit application process.

***Action: Wetlands and stream information was re-verified on November 30, 2009.***



Indirect and Cumulative Effects Analysis. A supplemental Indirect and Cumulative Effects analysis will be performed prior to construction.

***Action: An Indirect and Cumulative Effects and Land Use Scenario Assessment were completed on October 2, 2009.***

**Project Development and Environmental Analysis Unit, Structure Design Unit, Hydraulics Unit, Division 12**

Brushy Creek. The following measures will be implemented at the Brushy Creek crossing to minimize both short-term construction impacts and long-term impacts:

- Trees will be cut at the base to create root wads to help stabilize the banks.
- During final design, the bridges will be designed with sufficient length to allow for wildlife passage. This will be coordinated with USFWS.
- Deck drainage will not be released directly into the waterway.

***Action: Per January 2006 coordination with USFWS, the bridges provide sufficient length to allow for wildlife passage.***

First Broad River. The following measures will be implemented at the First Broad River crossing to minimize both short-term construction impacts and long-term impacts:

- A temporary causeway or work bridge will be constructed.
- A drainage system will be utilized on the bridge for stormwater runoff.
- Coordination will be conducted with the local water supply administrator.
- Hazardous spill basins will be utilized.
- Vegetation will be left in place as much as is practicable.
- Deck drainage will not be released directly into the waterway.

***Action: Hazardous spill basins will be installed on the both sides of the First Broad River and drainage will not directly flow into the river from the bridge. The First Broad River is located between Sections B & C and per current design will not have permitted impacts from this project.***

Stream 4-13 and DFHL Sites 10, 11 and 12. During culvert design and construction, consideration will be given to minimizing disturbance of Stream 4-13 and dwarf-flowered heartleaf sites #10, 11, and 12 - including minimizing clearing, minimizing rip rap on the stream banks, and using native vegetation to revegetate the stream banks.

***Action: DFHL Sites 10 and 11 will incur direct effects from project construction. Avoidance and minimization measures including reduced sloped stake limits and the use of native vegetation can be found in the October 2012 Amended Biological Assessment. NCDOT will attempt to enter into conservation easements with access points for all or portions of several DFHL Sites, including Site 12.***



Cemeteries. Impacts to cemeteries will be avoided and/or minimized to the extent practicable during the final design phase of the project. If required, graves will be relocated according to state guidelines.

***Action: Human remains have been identified, removed, and relocated for impacted grave sites within the Wright-Bostic cemetery. Efforts are being made to avoid impacts to the Eskridge Grove cemetery. The Poston Cemetery will incur impacts.***

Hamilton-McBrayer Farm. Along the existing section of US 74 at the Hamilton-McBrayer Farm, widening will be to the north (away from the property). A service road will be added, extending from Broadway Road, all within existing right-of-way, to service the trailers in the mobile home park to the north and west of the Hamilton-McBrayer Farm. This will comply with the conditions set forth in the NC State Historic Preservation Office effects concurrence form for this historic property, and will ensure that the effect to the Hamilton-McBrayer Farm will not be adverse.

***Action: A service road has been added extending from Broadway Road, within the existing right of way. A temporary easement is required on Broadway Road, resulting in No Adverse Effect on the property.***

Wildlife Passage. During final design, the bridges over Brushy Creek will be designed with sufficient length to allow for wildlife passage. This will be coordinated with USFWS during design.

***Action: Per January 2006 coordination with USFWS, the bridges provide sufficient length to allow for wildlife passage***

Geodetic Markers. The North Carolina Geodetic Survey will be notified prior to construction to allow ample time for relocation of any affected geodetic markers.

#### **Project Development and Environmental Analysis Unit, Division 12, Right-of-Way Branch**

Dwarf-Flowered Heartleaf Mitigation Plan. A plan to mitigate impacts to the dwarf-flowered heartleaf will be developed in consultation with USFWS and WRC. Mitigation efforts will be performed by qualified persons and could include transplanting the vegetative portions of plants from existing sites to preselected, approved alternate sites, dispersing seed, and/or acquiring existing sites for preservation.

***Action: Conservation Measures 3,4,5,6 and 8 from the Amendment to the BO replace this commitment. See Attachment.***



***Project Development and Environmental Analysis Unit, Division 12***

Street Closings. Any street closings will be coordinated with fire, police, and EMS personnel.

**Project Development and Environmental Analysis Branch, Roadway Design Unit, Hydraulics Unit**

Noise Barriers. In areas of impacted noise receptors where abatement measures have been considered and found not to be reasonable, a vegetative barrier will be considered for psychological and aesthetic screening.

Farmland. Efforts will be made to minimize impacts to farmlands during final design, including crossing of farm fields along property boundaries wherever possible to avoid bisecting farm operations.

Lithia Springs. Impacts to Lithia Springs will be avoided and/or minimized to the extent practicable during the final design phase of the project. A study of the impacts to the underground water table due to road grading operations at Lithia Springs will be undertaken during final design.

***Action: This commitment applies to Section C.***

**Project Development and Environmental Analysis Branch, Geotechnical Engineering Unit, Right-of-Way Branch**

Hazardous Materials Sites. Should the Selected Alternative impact any hazardous material site or UST, a Preliminary Site Assessment will be performed prior to right-of-way acquisition to determine the existence and/or extent of any contamination. These assessments will also be used by NCDOT to estimate the associated clean-up costs.

***Action: No hazardous materials sites exist within the project limits.***

**Project Development and Environmental Analysis Unit, Roadway Design Unit, Division 12, Right-of-Way Branch**

Protection of Dwarf-Flowered Heartleaf Sites. Dwarf-flowered heartleaf sites outside of the construction limits of the project in areas where NCDOT owns the property or has a construction easement will be protected and will not be disturbed during construction. Those sites will be left forested and will be protected in perpetuity. The sites will remain on the design plans and will be labeled as sensitive areas.

***Action: Conservation Measures 2,3,4,6 and 8 from the Amendment to the BO replace this commitment. See Attachment.***



## COMMITMENTS FROM PERMITTING

### Natural Environment Section/Division 12

From the 404 Individual Permit, Special Condition z: NCDOT shall implement the 8 conservation measures listed in the US Fish and Wildlife Service November 9, 2012 Biological Opinion (attached) for this project and shall reinitiate consultation with USFWS under Section 7 of the Endangered Species Act for Sections C, D, and E when they are scheduled for construction.

From the 401 Water Quality Certification – the following Conditions of Certification:

- 1) When the final design plans are completed for R-2707 Sections C, D, and E, a modification to the 401 Water Quality Certification shall be submitted with fees to the NC Division of Water Quality. Final designs shall reflect all appropriate avoidance, minimization, and mitigation for impacts to wetlands, streams, and other surface waters. No construction activities that impact any wetlands, streams, or surface waters in R-2707 Sections C, D, or E shall begin until after the permittee applies for and receives a written modification of the 401 Water Quality Certification from the NC Division of Water Quality.
- 2) Compensatory mitigation for impacts to 4.05 acres of wetlands is required. We understand that you have chosen to perform compensatory mitigation for impacts to wetlands through the North Carolina Ecosystem Enhancement Program (EEP) and that EEP has agreed to implement the mitigation for this project. EEP has indicated in a letter dated July 3, 2012 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004.
- 3) Compensatory mitigation for impacts for 4,976 linear feet of impact to streams is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Ecosystem Enhancement Program (EEP) and that EEP has agreed to implement the mitigation for this project. EEP has indicated in a letter dated July 3, 2012 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the EEP Banking Mitigation Instrument signed on July 28, 2010.

From the 404 Individual Permit – Special Conditions

Special Condition aa) The Following Project Commitments included in the R-2007 2008 FEIS Record of Decision are hereby incorporated as Special Conditions of this permit: PDEA, Highway Design Branch, and Division 12: 1) Brushy Creek site: Trees will be cut at the base to create root wads to help stabilize the banks. During final design, the bridges will



be designed with sufficient length to allow for wildlife passage. This will be coordinated with USFWS. Deck drainage will not be released directly into the waterway; 2) First Broad River site: A temporary causeway or work bridge will be constructed. A drainage system will be utilized on the bridge for stormwater runoff. Coordination will be conducted with the local water supply administrator. Hazardous spill basins will be utilized. Vegetation will be left in place as much as is practicable. Deck drainage will not be released directly into the waterway; 3) Stream 4-13 and DFHL Sites 10, 11 and 12: During culvert design and construction, consideration will be given to minimizing disturbance of Stream 4-13 and dwarf-flowered heartleaf sites #10, 11, and 12 - including minimizing clearing, minimizing rip rap on the stream banks, and using native vegetation to revegetate the stream banks; 4) Impacts to cemeteries will be avoided and/or minimized to the extent practicable during the final design phase of the project. If required, graves will be relocated according to state guidelines; 5) Hamilton-McBrayer Farm: Along the existing section of US 74 at the Hamilton-McBrayer Farm, widening will be to the north (away from the property). A service road will be added, extending from Broadway Road, all within existing right-of-way, to service the trailers in the mobile home park to the north and west of the Hamilton-McBrayer Farm; 6) Wildlife Passage. During final design, the bridges over Brushy Creek will be designed with sufficient length to allow for wildlife passage. This will be coordinated with USFWS during design.

*1) Per January 2006 coordination with USFWS, the bridges provide sufficient length to allow for wildlife passage.*

*2) Hazardous spill basins will be installed on the both sides of the First Broad River and drainage will not directly flow into the river from the bridge. The First Broad River is located between Sections B & C and per current design will not have permitted impacts from this project.*

*3) DFHL Sites 10 and 11 will incur direct effects from project construction. Avoidance and minimization measures including reduced sloped stake limits and the use of native vegetation can be found in the October 2012 Amended Biological Assessment. NCDOT will attempt to enter into conservation easements with access points for all or portions of several DFHL Sites, including Site 12.*

*4) Human remains have been identified, removed, and relocated for impacted grave sites within the Wright-Bostic cemetery. Efforts are being made to avoid impacts to the Eskridge Grove cemetery. The Poston Cemetery will incur impacts.*

*5) A service road has been added extending from Broadway Road, within the existing right of way. A temporary easement is required on Broadway Road, resulting in No Adverse Effect on the property.*

*6) Per January 2006 coordination with USFWS, the bridges provide sufficient length to allow for wildlife passage.*

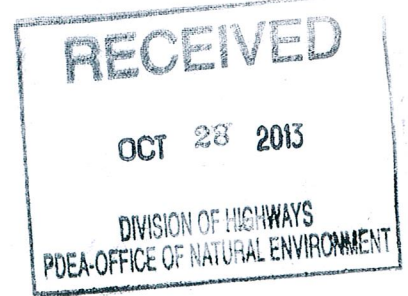




REPLY TO  
ATTENTION OF:

**DEPARTMENT OF THE ARMY**  
WILMINGTON DISTRICT, CORPS OF ENGINEERS  
69 DARLINGTON AVENUE  
WILMINGTON, NORTH CAROLINA 28403-1343

October 23, 2013



Regulatory Division

Action ID. SAW-2009-01449

Mr. Richard Hancock  
Project Development and Environmental Analysis Branch  
N.C. Department of Transportation  
1548 Mail Service Center  
Raleigh, North Carolina 27699-1548

Dear Mr. Hancock:

I refer to your Department of the Army (DA) Individual Permit dated April 12, 2013, in which we authorized the placement of fill material into 4.5 acres of wetlands and 5,190 linear feet (lf) of stream associated with the construction of sections A and B of the Shelby Bypass, located north of the town of Shelby, in Cleveland County, North Carolina (TIP Number R-2707).

I also refer to the letter of August 6, 2013, in which you requested a modification for authorized work at permit site 1 along Section R-2707 B of the project. This modified work will impact roughly the same amount of stream in the original authorization; however the nature of impact will change. A summary of the proposed work is detailed below:

The NC DOT proposes to provide access to a property that would otherwise be cut off by the current proposed configuration of Artee Road west of the R-2707 B permit site 1. Original permanent impacts authorized at this permit site were for 397 linear feet of stream channel for reinforced concrete box culvert (RCBC) installation and 11 linear feet of bank stabilization. Due to changes in the road alignment the new proposed impact associated with this site is 388 linear feet of stream channel for RCBC installation and 80 linear feet of bank stabilization.

After review of the information you submitted we have determined that your existing DA authorization is modified to include the work detailed above. Additional compensatory mitigation is not required for the newly proposed bank stabilization at permit site 1 (R-2707 B). All conditions of the original permit remain applicable.



If you have questions, please contact Liz Hair at (910) 251-4049 or Mr. Steve Kichefski of the Asheville Regulatory Field Office at (828) 271-7980, extension 234.

Sincerely,



Dale Beter, Chief  
Wilmington Regulatory Field Office

Enclosure

Copies Furnished w/enclosure:

Mr. Pete Benjamin  
U.S. Fish and Wildlife Service  
Fish and Wildlife Enhancement  
Post Office Box 33726  
Raleigh, North Carolina 27636-3726

Mr. Todd A. Bowers  
Wetlands and Marine Regulatory Section  
Water Protection Division-Region IV  
U.S. Environmental Protection Agency  
61 Forsyth St. SW  
Atlanta, Georgia 30303-8931

Mr. Alan Johnson  
Division of Water Resources  
Mooresville Regional Office  
610 East Center Ave., Suite 301  
Mooresville, North Carolina 28115

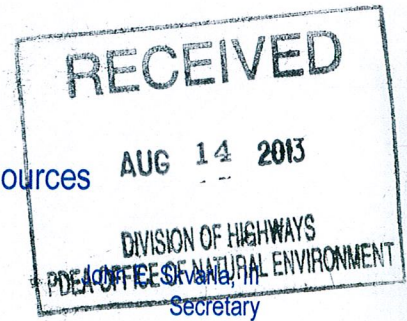




North Carolina Department of Environment and Natural Resources

Division of Water Resources  
Water Quality Programs  
Thomas A. Reeder  
Director

Pat McCrory  
Governor



August 9, 2013

Dr. Greg Thorpe, Manager  
Project Development and Environmental Analysis  
North Carolina Department of Transportation  
1598 Mail Service Center  
Raleigh, North Carolina, 27699-1598

**Subject:** 401 Water Quality Certification (Modification) Pursuant to Section 401 of the Federal Clean Water Act for the proposed construction of US 74, Shelby Bypass, Section B, in Cleveland County, Federal Aid Project No. NHF-74(14), State Project No. 8.1801001, TIP #R-2707, NCDWR Project No. 12-0673V2

Dear Dr. Thorpe:

On August 7, 2013 your application dated August 6, 2013 for a modification to the subject project was received by the Division of Water Resources. You have our approval for the proposed modification shown below:

**Modified Stream Impacts in the Broad River Basin**

Site	Permanent Impact Intermittent Stream (linear ft)	Temporary Impact Intermittent Stream (linear ft)	Permanent Impact Perennial Stream (linear ft)	Temporary Impact Perennial Stream (linear ft)	Riprap Stabilization Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1			388	61	80	529	0
Total			388	61	80	529	0

**New Total Stream Impact for Project: 3680 linear feet.**

This modification shall be in accordance with the prior conditions/requirements of the 401 Water Quality Certification (GC #3941) issued for this project on September 18, 2012.

If you wish to contest any statement of the Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed-provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission. The mailing address for the Office of Administrative Hearings is:

Transportation and Permitting Unit  
1650 Mail Service Center, Raleigh, North Carolina 27699-1650  
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604  
Phone: 919-807-6300 \ FAX: 919-807-6492  
Internet: [www.ncwaterquality.org](http://www.ncwaterquality.org)

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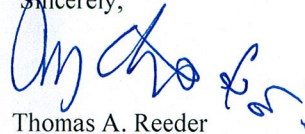
Office of Administrative Hearings  
6714 Mail Service Center  
Raleigh, NC 27699-6714  
Telephone: (919)-431-3000, Facsimile: (919)-431-3100

A copy of the petition must also be served on DENR as follows:

Mr. Lacy Presnell, General Counsel  
Department of Environment and Natural Resources  
1601 Mail Service Center

This letter completes the review of the Division of Water Resources under Section 401 of the Clean Water Act. If you have any questions, please contact Alan Johnson at (704) 663-1699 or [alan.johnson@ncdenr.gov](mailto:alan.johnson@ncdenr.gov)

Sincerely,



Thomas A. Reeder

cc: US Army Corps of Engineers, Asheville Field Office (electronic copy only)  
Sonia Carrillo, Wetlands Transportation Unit  
Trish Beam, Division 12 Environmental Officer  
File Copy





HNTB NORTH CAROLINA  
343 E. SIX FORKS ROAD, SUITE 200  
RALEIGH, NORTH CAROLINA 27609  
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	4
R/W SHEET NO.	4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

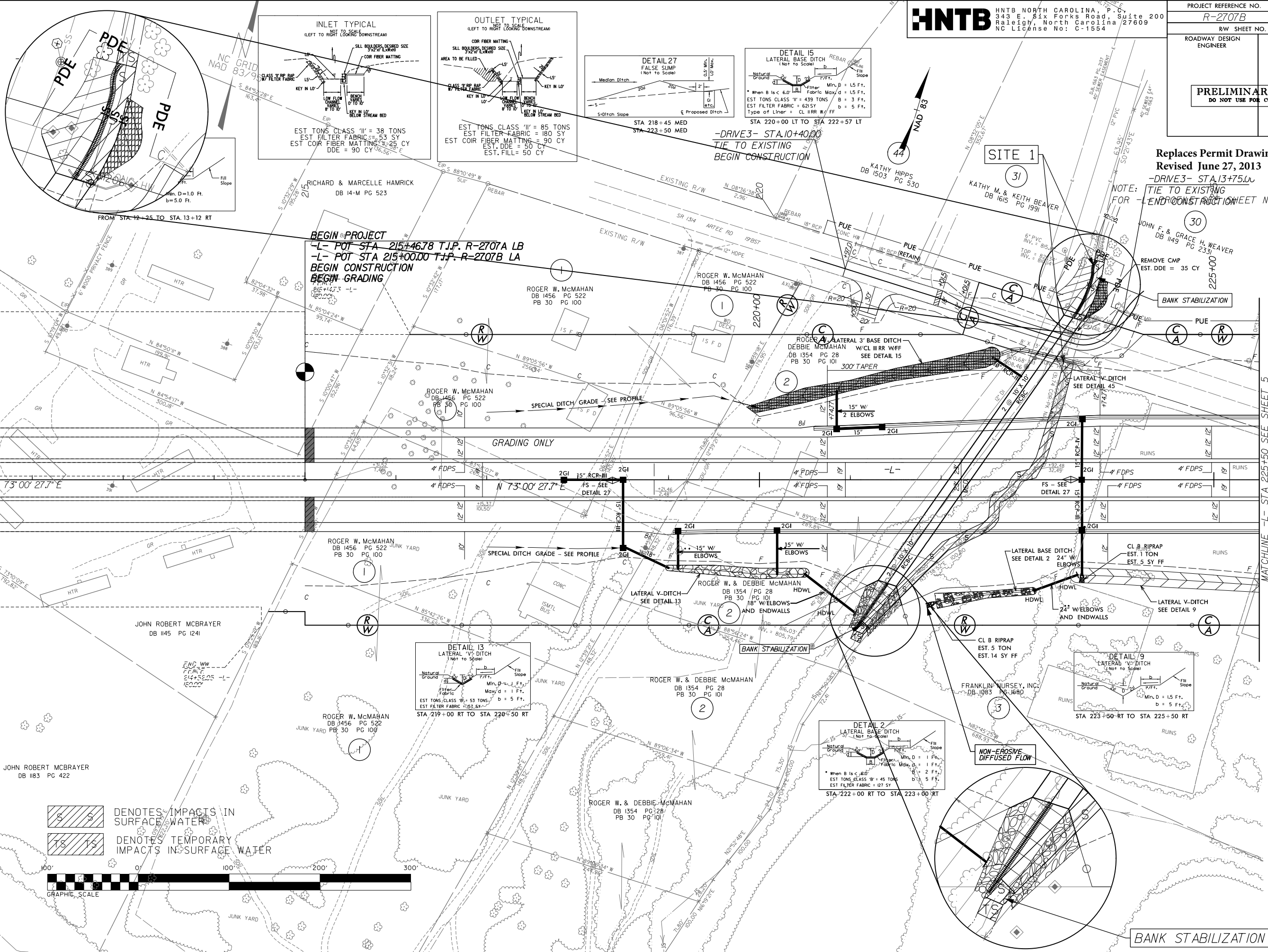
Replaces Permit Drawing Sheet 4 of 30  
Revised June 27, 2013

-DRIVE3- STA.13+75.00  
TIE TO EXISTING  
FOR END OF CONSTRUCTION SHEET No. 16

NOTE:  
REMOVE CMP  
EST. DDE = 35 CY

BANK STABILIZATION

MATCHLINE -L- STA 225+50 SEE SHEET 5



SS DENOTES IMPACTS IN SURFACE WATER  
TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER



REVISIONS  
3/9/2013 R:\Hydraulics\PERMITS\Environmental\Drawings\2707b.hyd.prm.psh.wet.s04.dgn

DATE: 3/9/2013







WETLAND PERMIT IMPACT SUMMARY												
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 220+98 - 223+67	2@10'X10' RCBC						0.10	<0.01	388	20	
		Bank Stabilization						0.02		80		
2	-L- 255+64 - 255+79	Roadway Fill						<0.01		15		
3	-L- 265+48 - 266+92	66" RCP						0.03	<0.01	386	18	
		Bank Stabilization						<0.01		15		
4	-L- 278+37 - 280+52	60" RCP						0.04	<0.01	330	20	
		Bank Stabilization						<0.01		15		
5	-L- 292+39 - 294+80	66" RCP / 54" RCP						0.03	<0.01	585	31	
		Bank Stabilization						<0.01		18		
6	-L- 306+98 - 307+84	54" RCP	<0.01			<0.01		0.02	<0.01	245	21	
		Bank Stabilization						<0.01		15		
7	-L- 325+19 - 333+18	Roadway Fill	3.29			0.25		<0.01	<0.01	5	10	
8	-L- 340+33 - 341+49	Bridge	0.05					<0.01		17		
9	-L- 347+38 - 350+10	66" RCP						0.05	<0.01	568	23	
		Bank Stabilization						<0.01		11		
10	REMOVED											
11	-RPD1- 8+52		0.01					0.05	<0.01	440	10	
12	-Y17- 17+57 - 19+72	Roadway Fill	0.01					0.03	<0.01	547	61	
TOTALS:			3.37			0.25		0.38	0.02	3680	214	

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

CLEVELAND COUNTY  
(R-2707B)

SHEET