Pre-Construction Notification (PCN) Form

For Nationwide Permits and Regional General Permits

(along with corresponding Water Quality Certifications)

September 29, 2018 Ver 3

*Please note: fields marked with a red asterisk * below are required. You will not be able to submit the form until all mandatory questions are answered.*

Also, if at any point you wish to print a copy of the E-PCN, all you need to do is right-click on the document and you can print a copy of the form.

Below is a link to the online help file.

https://edocs.deq.nc.gov/WaterResources/0/edoc/624704/PCN%20Help%20File%202018-1-30.pdf

A. Processing Information

County (or Counties) where the project is located:*

Wake

Is this project a public transportation project?*

(•) Yes ( ) No

This is any publicly funded by municipal,state or federal funds road, rail, airport transportation project.

Is this a NCDOT Project?*

(•) Yes ( ) No

(NCDOT only) T.I.P. or state project number:

B-5326

WBS #*

46040.1.1

(for NCDOT use only)

1a. Type(s) of approval sought from the Corps:*

[x] Section 404 Permit (wetlands, streams and waters, Clean Water Act)

[ ] Section 10 Permit (navigable waters, tidal waters, Rivers and Harbors Act)

1b. What type(s) of permit(s) do you wish to seek authorization?*

[x] Nationwide Permit (NWP)

[ ] Regional General Permit (RGP)

[ ] Standard (IP)

This form may be used to initiate the standard/individual permit process with the Corps. Please contact your Corps representative concerning submittals for standard permits. All required items that are not provided in the E-PCN can be added to the miscellaneous upload area located at the bottom of this form.

1c. Has the NWP or GP number been verified by the Corps?*

(•) Yes ( ) No

Nationwide Permit (NWP) Number: 03 - Maintenance

NWP Numbers (for multiple NWPS):

List all NW numbers you are applying for not on the drop down list.

1d. Type(s) of approval sought from the DWR:*

check all that apply

[x] 401 Water Quality Certification - Regular

[ ] Non-404 Jurisdictional General Permit

[ ] Individual Permit

[ ] 401 Water Quality Certification - Express

[x] Riparian Buffer Authorization

1e. Is this notification solely for the record because written approval is not required?

*

For the record only for DWR 401 Certification: ( ) Yes (•) No

For the record only for Corps Permit: (•) Yes ( ) No

1f. Is this an after-the-fact permit application?*

( ) Yes (•) No

1g. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts?

If so, attach the acceptance letter from mitigation bank or in-lieu fee program.

○ Yes ◉ No

Acceptance Letter Attachment

Click the upload button or drag and drop files here to attach document

FILE TYPE MUST BE PDF

1h. Is the project located in any of NC's twenty coastal counties?*

○ Yes ◉ No

1j. Is the project located in a designated trout watershed?*

○ Yes ◉ No

Link to trout information: http://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/Trout.aspx

B. Applicant Information

1a. Who is the Primary Contact?*

NCDOT

1b. Primary Contact Email:*

jldilday@ncdot.gov

1c. Primary Contact Phone:*

(xxx)xxx-xxxx

(919)707-6111

1d. Who is applying for the permit?*

☑ Owner ☐ Applicant (other than owner)

(Check all that apply)

1e. Is there an Agent/Consultant for this project?*

○ Yes ◉ No

2. Owner Information

2a. Name(s) on recorded deed:*

NCDOT

2b. Deed book and page no.:

2c. Responsible party:

(for Corporations)

2d. Address*

Street Address

1000 Birch Ridge Road

Address Line 2

City

Raleigh

State / Province / Region

NC

Postal / Zip Code

27610

Country

USA

2e. Telephone Number:*

(xxx)xxx-xxxx

(919)707-6111

2f. Fax Number:

(xxx)xxx-xxxx

2g. Email Address:*

pharris@ncdot.gov

C. Project Information and Prior Project History

1. Project Information

1a. Name of project:*

B-5326 Bridge 247 over White Oak Creek on SR 2555 Raynor Rd. (Central)

1b. Subdivision name:

(if appropriate)

1c. Nearest municipality / town:*

Garner

2. Project Identification

2a. Property Identification Number:

(tax PIN or parcel ID)

2b. Property size:

(in acres)

2c. Project Address

Street Address

Address Line 2

City

State / Province / Region

Postal / Zip Code

Country

2d. Site coordinates in decimal degrees

Please collect site coordinates in decimal degrees. Use between 4-6 digits (unless you are using a survey-grade GPS device) after the decimal place as appropriate, based on how the location was determined. (For example, most mobile phones with GPS provide locational precision in decimal degrees to map coordinates to 5 or 6 digits after the decimal place.)

Latitude: *

35.671817

ex: 34.208504

Longitude: *

-78.548724

-77.796371

3. Surface Waters

3a. Name of the nearest body of water to proposed project: *

White Oak Creek

3b. Water Resources Classification of nearest receiving water: *

C, NSW

Surface Water Lookup

3c. What river basin(s) is your project located in? *

Neuse

3d. Please provide the 12-digit HUC in which the project is located. *

030202011003

River Basin Lookup

4. Project Description and History

4a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: *

Land use is comprised of a mix of residential, commercial, industrial, and wooded communities.

4b. Have Corps permits or DWR certifications been obtained for this project (including all prior phases) in the past? *

○ Yes ◉ No ○ Unknown

4d. Attach an 8 1/2 X 11 excerpt from the most recent version of the USGS topographic map indicating the location of the project site. (for DWR)

Click the upload button or drag and drop files here to attach document

File type must be pdf

4e. Attach an 8 1/2 X 11 excerpt from the most recent version of the published County NRCS Soil Survey map depicting the project site. (for DWR)

Click the upload button or drag and drop files here to attach document

File type must be pdf

4f. List the total estimated acreage of all existing wetlands on the property:

0.5 acre

4g. List the total estimated linear feet of all existing streams on the property:

(intermittent and perennial)

500 linear feet

4h. Explain the purpose of the proposed project: *

To replace a functionally obsolete and structurally deficient bridge.

4i. Describe the overall project in detail, including indirect impacts and the type of equipment to be used: *

The project involves replacing a 36-foot, two span bridge with a 150-foot, three span bridge on existing alignment using an on-site detour. Standard road building equipment, such as trucks, dozers, and cranes will be used.

4j. Please upload project drawings for the proposed project.

Click the upload button or drag and drop files here to attach document

File type must be pdf

5. Jurisdictional Determinations

5a. Have the wetlands or streams been delineated on the property or proposed impact areas? *

◉ Yes ○ No ○ Unknown

Comments:

5b. If the Corps made a jurisdictional determination, what type of determination was made? *

(•) Preliminary ( ) Approved ( ) Not Verified ( ) Unknown ( ) N/A

Corps AID Number:

Example: SAW-2017-99999

SAW-2013-01348

5c. If 5a is yes, who delineated the jurisdictional areas?

Name (if known): Jason Dilday

Agency/Consultant Company: NCDOT

Other:

5d. List the dates of the Corp jurisdiction determination or State determination if a determination was made by the Corps or DWR.

USACE PJD dated 7/26/2013

5d1. Jurisdictional determination upload

Click the upload button or drag and drop files here to attach document

B5326PJD.pdf 13.44MB

File type must be PDF

6. Future Project Plans

6a. Is this a phased project? *

( ) Yes (•) No

Are any other NWP(s), regional general permit(s), or individual permits(s) used, or intended to be used, to authorize any part of the proposed project or related activity? This includes other separate and distant crossing for linear projects that require Department of the Army authorization but don't require pre-construction notification.

D. Proposed Impacts Inventory

1. Impacts Summary

1a. Where are the impacts associated with your project? (check all that apply):

☑ Wetlands ☑ Streams-tributaries ☑ Buffers

☐ Open Waters ☐ Pond Construction

2. Wetland Impacts

If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.

"W." will be used in the table below to represent the word "wetland".

2a. Site # * (?)	2a1 Reason * (?)	2b. Impact type * (?)	2c. Type of W. *	2d. W. name *	2e. Forested *	2f. Type of Jurisdicition * (?)	2g. Impact area *
1a	Fill/Mech. Clearing	P	Bottomland Hardwood Forest	WA	Yes	Corps	0.001 (acres)
1b	Fill/Mech. Clearing	P	Bottomland Hardwood Forest	WA	Yes	Corps	0.090 (acres)

2g. Total Temporary Wetland Impact

0.000

2g. Total Permanent Wetland Impact

0.091

2g. Total Wetland Impact

0.091

2h. Comments:

Impacts to wetland from 1a total less than 0.01 ac. combined.

3. Stream Impacts

If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.

"S." will be used in the table below to represent the word "stream".

	3a. Reason for impact * (?)	3b.Impact type *	3c. Type of impact *	3d. S. name *	3e. Stream Type * (?)	3f. Type of Jurisdiction *	3g. S. width *	3h. Impact length *
S1	riprap at embankment	Permanent	Bank Stabilization	White Oak Creek	Perennial	Both	36 Average (feet)	19 (linear feet)

S2	riprap at embankment	Permanent	Bank Stabilization	White Oak Creek	Perennial	Both	36 Average (feet)	26 (linear feet)
S3	riprap at embankment	Temporary	Bank Stabilization	White Oak Creek	Perennial	Both	36 Average (feet)	5 (linear feet)
S4	bridge pier removal	Temporary	Dewatering	White Oak Creek	Perennial	Both	36 Average (feet)	25 (linear feet)
S5	riprap at embankment	Permanent	Bank Stabilization	White Oak Creek	Perennial	Both	36 Average (feet)	135 (linear feet)
S6	riprap at embankment	Temporary	Bank Stabilization	White Oak Creek	Perennial	Both	36 Average (feet)	5 (linear feet)

** All Perennial or Intermittent streams must be verified by DWR or delegated local government.

3i. Total jurisdictional ditch impact in square feet:

0

3i. Total permanent stream impacts:

180

3i. Total temporary stream impacts:

35

3i. Total stream and ditch impacts:

215

3j. Comments:

6. Buffer Impacts (for DWR)

If project will impact a protected riparian buffer, then complete the chart below. Individually list all buffer impacts below.

6a. Project is in which protect basin(s)? *

Check all that apply.

- [x] Neuse
- [ ] Catawba
- [ ] Goose Creek
- [ ] Other
- [ ] Tar-Pamlico
- [ ] Randleman
- [ ] Jordan Lake

6b. Impact Type * (?)	6c. Per or Temp * (?)	6d. Stream name *	6e. Buffer mitigation required? *	6f. Zone 1 impact *	6g. Zone 2 impact *
1a-Fill/Clearing-Parallel	P	SA	Yes	775 (square feet)	4,372 (square feet)
1b-Fill/Clearing-Road Crossing	P	White Oak Creek	No	576 (square feet)	1,255 (square feet)
1c-Fill/Clearing-Road Crossing	P	White Oak Creek	No	0 (square feet)	15 (square feet)
1d-Fill/Clearing-Road Crossing	P	White Oak Creek	No	1,746 (square feet)	1,416 (square feet)
1e-Fill/Clearing-Bridge	P	White Oak Creek	No	1,121 (square feet)	0 (square feet)
1f-Fill/Clearing-Bridge	P	White Oak Creek	No	2,316 (square feet)	1,273 (square feet)
1g-Fill/Clearing-Bridge	P	White Oak Creek	No	2,352 (square feet)	1,473 (square feet)
1h-Fill/Clearing-Bridge	P	White Oak Creek	No	1,016 (square feet)	0 (square feet)

6h. Total buffer impacts:

	Zone 1	Zone 2
Total Temporary impacts:	0.00	0.00

	Zone 1	Zone 2
Total Permanent impacts:	9,902.00	9,804.00

	Zone 1	Zone 2
Total combined buffer impacts:	9,902.00	9,804.00

6i. Comments:

Supporting Documentation - i.e. Impact Maps, Plan Sheet, etc.

Click the upload button or drag and drop files here to attach document

B5326_Permit_Drawings_20190122.pdf	5.08MB
B5326_Permit_Drawings_Buffer_20190122.pdf	2.66MB
B5326_Roadway.pdf	2.71MB

File must be PDF

E. Impact Justification and Mitigation

1. Avoidance and Minimization

1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing the project: *

NCDOT Design Standards in Sensitive Watersheds will be employed. See Stormwater Management Plan for additional measures.

1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques: *

The replacement structure will not have deck drains. All bridge drainage will discharge outside of the buffers. Velocities of stormwater are reduced to non-erosive flows through the use of riprap pads and 'V' ditches. 2:1 slopes will be used in wetlands.

2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?

○ Yes ◉ No

2b. If this project DOES NOT require Compensatory Mitigation, explain why:

Impacts to jurisdictional streams and wetlands within the project area do not require mitigation. Permanent impacts to streams are due to bank stabilization and do not require mitigation. Permanent impacts to wetlands are less than 0.1 acre. Mitigation is required for buffer impacts.

NC Stream Temperature Classification Maps can be found under the Mitigation Concepts tab on the Wilmington District's RIBITS website.

F. Stormwater Management and Diffuse Flow Plan (required by DWR)

*** Recent changes to the stormwater rules have required updates to this section .***

1. Diffuse Flow Plan

1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?

◉ Yes ○ No

1b. All buffer impacts and high ground impacts require diffuse flow or other form of stormwater treatment. If the project is subject to a state implemented riparian buffer protection program, include a plan that fully documents how diffuse flow will be maintained.

All Stormwater Control Measures (SCM)s must be designed in accordance with the NC Stormwater Design Manual. Associated supplement forms and other documentation shall be provided.

What type of SCM are you providing?

- ☐ Level Spreader
- ☐ Vegetated Conveyance (lower SHWT)
- ☐ Wetland Swale (higher SHWT)
- ☐ Other SCM that removes minimum 30% nitrogen
- ☐ Proposed project will not create concentrated stormwater flow through the buffer

(check all that apply)

For a list of options to meet the diffuse flow requirements, click here.

Diffuse Flow Documentation

Click the upload button or drag and drop files here to attach document

File type must be PDF

2. Stormwater Management Plan

2a. Is this a NCDOT project subject to compliance with NCDOT's Individual NPDES permit NCS000250? *

○ Yes ◉ No

2b. Does this project meet the requirements for low density projects as defined in 15A NCAC 02H .1003(2)? *

◉ Yes ○ No

To look up low density requirement click here 15A NCAC 02H .1003(2).

Comments:

G. Supplementary Information

1. Environmental Documentation

1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? *

(•) Yes ( ) No

1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)? *

(•) Yes ( ) No

1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) *

(•) Yes ( ) No

NEPA or SEPA Final Approval Letter

Click the upload button or drag and drop files here to attach document

FILE TYPE MUST BE PDF

2. Violations (DWR Requirement)

2a. Is the site in violation of DWR Water Quality Certification Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), or DWR Surface Water or Wetland Standards or Riparian Buffer Rules (15A NCAC 2B .0200)? *

( ) Yes (•) No

3. Cumulative Impacts (DWR Requirement)

3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? *

( ) Yes (•) No

3b. If you answered "no," provide a short narrative description.

Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.

4. Sewage Disposal (DWR Requirement)

4a. Is sewage disposal required by DWR for this project? *

( ) Yes ( ) No (•) N/A

5. Endangered Species and Designated Critical Habitat (Corps Requirement)

5a. Will this project occur in or near an area with federally protected species or habitat? *

(•) Yes ( ) No

5b. Have you checked with the USFWS concerning Endangered Species Act impacts? *

(•) Yes ( ) No

5c. If yes, indicate the USFWS Field Office you have contacted.

Raleigh

5d. Is another Federal agency involved? *

( ) Yes (•) No ( ) Unknown

5e. Is this a DOT project located within Division's 1-8? *

(•) Yes ( ) No

5j. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? *

N.C. Natural Heritage Program database; USFWS-Raleigh Field Office website; biological surveys for protected species listed for Wake County, which include red-cockaded woodpecker (RCW), dwarf wedgemussel, Tar River spinymussel, yellow lance, Cape Fear shiner and Michaux's sumac. The species received biological conclusions of "No Effect". No habitat is present for RCW, Cape Fear shiner, or the three listed mussels. Habitat for Michaux's sumac exists, however no specimens were observed during a 9/22/2017 survey. There were no bald eagles or nest observed within 660 feet of the project area on 9/22/2017. PBO for Nothern Long Eared bat.

Consultation Documentation Upload

Click the upload button or drag and drop files here to attach document

File type must be PDF

6. Essential Fish Habitat (Corps Requirement)

6a. Will this project occur in or near an area designated as an Essential Fish Habitat? *

( ) Yes (•) No

6b. What data sources did you use to determine whether your site would impact an Essential Fish Habitat? *

NMFS County Index

7. Historic or Prehistoric Cultural Resources (Corps Requirement)

Link to the State Historic Preservation Office Historic Properties Map (does not include archaeological data: http://gis.ncdcr.gov/hpoweb/

7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)? *

○ Yes ◉ No

7b. What data sources did you use to determine whether your site would impact historic or archeological resources? *

NEPA Documentation

7c. Historic or Prehistoric Information Upload

Click the upload button or drag and drop files here to attach document

File must be PDF

8. Flood Zone Designation (Corps Requirement)

Link to the FEMA Floodplain Maps: https://msc.fema.gov/portal/search

8a. Will this project occur in a FEMA-designated 100-year floodplain? *

◉ Yes ○ No

8b. If yes, explain how project meets FEMA requirements:

NCDOT Hydraulics Unit coordination with FEMA

8c. What source(s) did you use to make the floodplain determination? *

FEMA Maps

Miscellaneous

Comments

Miscellaneous attachments not previously requested.

Click the upload button or drag and drop files here to attach document

TalecrisB-5326.pdf 126.75KB

File must be PDF or KMZ

Signature

*

☑ By checking the box and signing below, I certify that:

- I have given true, accurate, and complete information on this form;
- I agree that submission of this PCN form is a “transaction” subject to Chapter 66, Article 40 of the NC General Statutes (the “Uniform Electronic Transactions Act”);
- I agree to conduct this transaction by electronic means pursuant to Chapter 66, Article 40 of the NC General Statutes (the “Uniform Electronic Transactions Act”);
- I understand that an electronic signature has the same legal effect and can be enforced in the same way as a written signature; AND
- I intend to electronically sign and submit the PCN form.

Full Name: *

Mack Christopher Rivenbark, III

Signature

Mack C. Rivenbark, III

Date

1/24/2019

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

WBS Element:	46040.1.1	TIP No.:	B-5326	County(ies):	Wake	Page	1	of	1

General Project Information

WBS Element:	46040.1.1	**TIP Number:**	B-5326	**Project Type:**	Bridge Replacement	**Date:**	4/27/2018
NCDOT Contact:	Tierre Peterson, PE			**Contractor / Designer:**	WSP		
	Address: 1000 Birch Ridge Dr. Raleigh, NC 27610			**Address:**	434 Fayetteville Rd. Suite 1500 Raleigh, NC 27601		
	Phone: 919-707-6488			**Phone:**	9193762704		
	Email: trpeterson@ncdot.gov			**Email:**	john.f.watson@wsp.com		
City/Town:	Garner, NC			**County(ies):**	Wake		
River Basin(s):	Neuse			**CAMA County?**	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	0.29	**Surrounding Land Use:**	Urban Residential, Industrial, and Wooded

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	1.7 ac.	1.2 ac.
Typical Cross Section Description:	3 - 12' asphalt paved lanes w/ center turn lane that transitions to a 2 - 12' lane section at the end of the project. The beginning of the project is designed with 2'-6" Curb and Gutter and 4' concrete sidewalk which turns into 4' paved and 2' grass open shoulder section after the bridge crossing.	3 - 12' asphalt paved lanes w/ center turn lane that transitions to a 2 - 12' lane section prior to the bridge crossing.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 6400 Year: 2040	Existing: 4767 Year: 2019

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

State project B-5326 involves the replacement of Wake County Bridge 247 over White Oak Creek. The existing bridge consists of 2@18'-0" reinforced concrete deck on timber joists. It is to be replaced with a three span bridge (1@40', 1@70', and 1@40') with 21"/24"/21" cored slabs 51' wide (out to out) at the existing location. To facilitate the construction of the proposed bridge, an onsite detour is proposed on the upstream side of SR 2555 (Raynor Rd.).

The project includes 0.13mi of proposed roadway improvements on each end of the bridge. In accordance with Neuse River Buffer Regulations, the proposed bridge does not have deck drains and all bridge drainage is discharges outside of the buffer zones at -L- Sta. 16+70 LT in the Northwest Quadrent. The drainage is conveyed by 15" CMP with elbows that will outlet at 0% slope onto a Class 'B" RipRap Pad to minimize discharge velocity prior to the flow entering the adjacet wetlands. Additional outfalls due to the addition of Curb and Gutter have been added. At -L- 14+68 LT the drainage is conveyed by 15" another CMP with elbows that will outlet at 0% slope onto a Class 'B" RipRap Pad again to minimize discharge velocity prior to the flow entering the adjacet wetlands. At -L- Sta. 10+66 and 12+60 LT in the Northwest quadrent the drainage outfall is conveyed to the adjactent wetlands via a Standard 'V' Ditch which is designed with 0% slope for the last 25' to minimize discharge velocity prior to the flow entering the wetlands. Line ahead of the bridge at roughly -L- Sta. 18+70 LT, the southeast quadrent, drainage is collected prior to the bridge and discharged into the RipRap lined lateral ditches. The drainage structures were placed as close as possible to the approach slab to minimize spread on the bridge and ultimatly minimize bridge width. This resulted in the left side outlet being within Buffer Zone 2, however, since the ditch is RipRap lined there would be no grass swale treatement no matter where the outlet was placed. This design provides filtration in accordance with NCDOT Alternative Design Criteria.

Waterbody Information

Surface Water Body (1):	White Oak Creek		**NCDWR Stream Index No.:**		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)		
Other Stream Classification:					
Impairments:					
Aquatic T&E Species?		Comments:			
NRTR Stream ID:	27-43-11			**Buffer Rules in Effect:**	Neuse
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	No	(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)					

TIP PROJECT: B-5326

CONTRACT:

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5326	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46040.1.1	BRZ-2555(1)	PE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

PERMIT DRAWING
SHEET 1 OF 8

LOCATION: REPLACE BRIDGE NO. 247 OVER WHITE OAK CREEK
ON SR 2555 (RAYNOR RD)
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURES
PERMIT DRAWINGS: WETLAND & STREAM IMPACTS

See Sheet 1B For Conventional Symbols

VICINITY MAP

THIS PROJECT HAS NO CONTROL OF ACCESS.
THIS PROJECT IS PARTIALLY WITHIN THE TOWN OF GARNER MUNICIPAL LIMITS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

NCDOT CONTACT: DAVID STUTTS, PE
STRUCTURES MANAGEMENT UNIT

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

DESIGN DATA

ADT 2019 = 4767
ADT 2040 = 6400
K = 12 %
D = 55 %
T = 4 % *
V = 50 MPH
* (TTST = 1% + DUAL = 3%)
FUNC CLASS = MAJOR COLLECTOR
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT B-5326	=	*0.262 MI*
LENGTH STRUCTURE PROJECT B-5326	=	*0.028 MI*
TOTAL LENGTH PROJECT B-5326	=	*0.290 MI*

PREPARED IN THE OFFICE OF:

WSP
434 Fayetteville Street, Suite 1500 Raleigh, NC 27601
Tel. (919) 836-4040 www.wsp-pb.com
License No. F-0891

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 22, 2018

LETTING DATE:
APRIL 16, 2019

RONYELL A. THIGPEN, PE
PROJECT ENGINEER

HOLLY CHRISTENBURY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:


WETLAND & STREAM IMPACTS
PERMIT DRAWING SHEET 2 OF 8
PLANS PREPARED BY: WSP USA, 434 FAYETTEVILLE STREET, SUITE 1500, RALEIGH, NC 27601, TEL: 1.919.836.4040, FAX: 1.919.836.4099, LICENSE NO. F-0165
PROJECT REFERENCE NO. B-5326
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
REVISIONS
8/17/99
BEGIN APPROACH SLAB -L- Sta. 16+83.00
BEGIN BRIDGE -L- Sta. 16+95.00
END APPROACH SLAB -L- Sta. 18+57.00
END BRIDGE -L- Sta. 18+45.00
TYPE III
2'-6" C&G
3'-5"PS
AT-1
END TIP PROJECT B-5326 -L- STA. 25+59.61
END GRADE -L- STA. 24+70.00
MATCHLINE STA. 24+50.00
BEGIN TIP PROJECT B-5326 -L- STA. 10+30.00
NAD 83/NSRS 2007
DETAIL K: SPECIAL LATERAL 'V' DITCH (Not to Scale). FROM -L- STA 10+66 TO + 12+60 LT
DETAIL E: SPECIAL LATERAL 'V' DITCH (Not to Scale). Min. D= 1.0 Ft. Max. d= 1.0 Ft. Type of Liner= Class I Rip-Rap. FROM -L- STA 20+30 TO 24+70 LT
DETAIL A: STANDARD 'V' DITCH (Not to Scale). Min. D= 1 Ft. FROM -L- STA 12+60 TO 12+70 LT; FROM -L- STA 14+68 TO 14+75 LT
DETAIL B: BANK STABILIZATION (Not to Scale). Type of Liner= Class 'II' Rip-Rap. FROM -L- STA. 17+15 TO 17+55; FROM -L- STA. 17+55 TO 18+55
DETAIL C: LATERAL BASE DITCH (Not to Scale). Min. D= 1.0 Ft. Max. d= 1.0 Ft. B= 2.0 Ft. b= 2.0 Ft. *When B is < 6.0'. Type of Liner= Class I Rip-Rap. FROM -L- STA 18+65 TO 19+00 LT
DETAIL D: LATERAL 'V' DITCH (Not to Scale). Min. D= 1.0 Ft. Max. d= 1.0 Ft. b= 2 Ft. Type of Liner= Class I Rip-Rap. FROM -L- STA 19+00 TO 20+30 LT
DETAIL J: DECK DRAIN DISSIPATOR PAD (Not to Scale). *NOTE: CENTER PAD DIRECTLY BELOW DECK DRAINS. L= 20 FT. Type of Liner= 5 TONS CL B Rip-Rap, 15 SY FF. FROM -L- STA. 18+00 TO STA. 18+20 RT.
W1: MECH. CLEARING IN WETLANDS = 0.06 Ac / 2754 SF; FILL IN WETLANDS = 0.03 Ac / 1367 SF
S1: IMPACTS IN SURFACE WATER = 180 FT / 1635 SF; TEMP IMPACTS IN SURFACE WATER = 10 FT / 342 SF
NOTE: RIPRAP EXTENDS INTO WETLAND (APPROX. 5')
NOTE: MAINLINE IMPACTS INCLUDE DETOUR RIPRAP IMPACTS, WHICH WILL REMAIN AFTER CONSTRUCTION. THEREFORE DETOUR IMPACTS ARE SHOWN WITH THE MAIN PROJECT.
5' TEMPORARY IMPACTS ARE SHOWN ON EITHER END OF PERMANENT IMPACTS (TYP)
DENOTES FILL IN WETLAND
DENOTES MECHANICAL CLEARING
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DETAIL F: RIP RAP AT EMBANKMENT (Not to Scale). Type of Liner= CL II Rip-Rap. FROM -L- STA 17+50 TO 17+65 RT; FROM -L- STA 17+97 TO 18+65 LT
DETAIL G: LATERAL BASE DITCH (Not to Scale). Min. D= 1.0 Ft. Max. d= 1.0 Ft. B= 6.0 Ft. b= 2.0 Ft. *When B is < 6.0'. Type of Liner= Class I Rip-Rap. FROM -L- STA 17+65 TO 18+50 RT
DETAIL H: LATERAL 'V' DITCH (Not to Scale). Min. D= 1.5 Ft. Max. d= 1.5 Ft. b= 2 Ft. Type of Liner= Class I Rip-Rap. FROM -L- STA 18+50 TO 21+00 RT
DETAIL I: SPECIAL LATERAL 'V' DITCH (Not to Scale). Min. D= 1.5 Ft. Max. d= 1.5 Ft. Type of Liner= Class I Rip-Rap. FROM -L- STA 21+00 TO 24+70 RT
CLASS B RIPRAP EST 5 TONS EST 12 SY GF
STANDARD 'V' DITCH SEE DETAIL A. LENGTH A= 30 Ft. SLOPE= 3.0%. LENGTH B= 25 Ft. SLOPE= 0.0%. DDE= 4 CY
CLASS B RIPRAP EST 2 TONS EST 7 SY GF
SPECIAL LATERAL 'V' DITCH SEE DETAIL K
CLASS B RIPRAP EST 1 TON EST 5 SY GF
RIPRAP AT EMBANKMENT SEE DETAIL F EST 20 TONS EST 40 SY OF GEO.
BANK STABILIZATION SEE DETAIL B EST 80 TONS EST 130 SY OF GEO.
LATERAL 2' BASE DITCH SEE DETAIL C EST 17 TONS EST 23 SY OF GEO. DDE = 7 CY
LATERAL 'V' DITCH SEE DETAIL D EST 41 TONS EST 58 SY OF GEO. DDE = 23 CY
SPECIAL LATERAL 'V' DITCH SEE DETAIL E EST 208 TONS EST 293 SY OF GEO.
8" x 4" DECK DRAINS (RIGHT SIDE) 3' SPACING STA 18+34 TO 18+04 RT
CLASS B RIPRAP SEE DETAIL J
BANK STABILIZATION SEE DETAIL B EST 150 TONS EST 230 SY OF GEO
LATERAL 6' BASE DITCH SEE DETAIL G EST 67 TONS EST 94 SY OF GEO. DDE = 54 CY
RIPRAP AT EMBANKMENT SEE DETAIL F EST 30 TONS EST 50 SY OF GEO.
LATERAL 'V' DITCH SEE DETAIL H EST 118 TONS EST 167 SY OF GEO. DDE = 477 CY
SPECIAL LATERAL 'V' DITCH SEE DETAIL I EST 262 TONS EST 370 SY OF GEO.
WHITE OAK CREEK
SR 2555 RAYNOR RD
SED BASIN
B5326-1

WETLAND & STREAM IMPACTS

PERMIT DRAWING SHEET 3 OF 8

PLANS PREPARED BY:
WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
B-5326	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

REVISIONS

BEGIN APPROACH SLAB -L- Sta. 16+83.00

BEGIN BRIDGE -L- Sta. 16+95.00

END APPROACH SLAB -L- Sta. 18+57.00

END BRIDGE -L- Sta. 18+45.00

TYPE III

2'-6" C&G

12'@12'@12'

3'-5"PS

AT-1

DETAIL A
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground, 2:1, D, 2:1, Natural Ground
Min. D= 1 Ft.
FROM -L- STA 12+60 TO 12+70 LT
FROM -L- STA 14+68 TO 14+75 LT

DETAIL B
BANK STABILIZATION
(Not to Scale)
Top of Bank
Proposed Spill Through Abutment
Geotextile
Existing Abutment
Type of Liner= Class 'B' Rip-Rap
NWS
3.5 (TYP.)
EXIST TOE OF BANK
FROM -L- STA 17+15 TO 17+55
FROM -L- STA. 17+55 TO 18+55

DETAIL C
LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 2:1, d, D, 2:1, b, 1':1ft., Fill Slope
GEOTEXTILE
B
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
b= 2.0 Ft.
FROM -L- STA 18+65 TO 19+00 LT

DETAIL D
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 2:1, d, D, 2:1, b, 1':1ft., Fill Slope
Geotextile
Type of Liner= Class I Rip-Rap
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
b= 2 Ft.
FROM -L- STA 19+00 TO 20+30 LT

DETAIL K
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, Fill Slope
Min. D= 1.0 Ft.
FROM -L- STA 10+66 TO + 12+60 LT

DETAIL E
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, d, D, 3:1 or Flatter, Fill Slope
Geotextile
Type of Liner= Class I Rip-Rap
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
FROM -L- STA 20+30 TO 24+70 LT

NAD 83/NSRS 2007

① BEGIN TIP PROJECT B-5326
-L- STA. 10+30.00

W1
MECH. CLEARING IN WETLANDS = 0.06 Ac /2754 SF
FILL IN WETLANDS = 0.03 Ac /1367 SF

S1
IMPACTS IN SURFACE WATER = 180 FT /1635 SF
TEMP IMPACTS IN SURFACE WATER = 10 FT /342 SF

NOTE: RIPRAP EXTENDS INTO WETLAND (APPROX. 5')

NOTE: MAINLINE IMPACTS INCLUDE DETOUR RIPRAP IMPACTS, WHICH WILL REMAIN AFTER CONSTRUCTION. THEREFORE DETOUR IMPACTS ARE SHOWN WITH THE MAIN PROJECT.

5' TEMPORARY IMPACTS ARE SHOWN ON EITHER END OF PERMANENT IMPACTS (TYP)

END TIP PROJECT B-5326
-L- STA. 25+59.61

END GRADE
-L- STA. 24+70.00

MATCHLINE STA. 24+50.00

MATCHLINE STA. 24+50.00

DETAIL J
DECK DRAIN DISSIPATOR PAD
(Not to Scale)
DISSIPATOR PAD
PLAN VIEW
5'
*NOTE: CENTER PAD DIRECTLY BELOW DECK DRAINS
GROUND
GEOTEXTILE
PROFILE VIEW
1.0'
L= 20 FT.
Type of Liner= 5 TONS CL B Rip-Rap
15 SY FF
FROM -L- STA. 18+00 TO STA. 18+20 RT.

DETAIL F
RIP RAP AT EMBANKMENT
(Not to Scale)
10' min.
1.0' min.
Ditch Grade
18"
NWS
GEOTEXTILE
Type of Liner= CL II Rip-Rap
FROM -L- STA 17+50 TO 17+65 RT
FROM -L- STA 17+97 TO 18+65 LT

DETAIL G
LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 2:1, d, D, 2:1, b, 1':1ft., Fill Slope
GEOTEXTILE
B
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 6.0 Ft.
b= 2.0 Ft.
FROM -L- STA 17+65 TO 18+50 RT

DETAIL H
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 2:1, d, D, 2:1, b, 1':1ft., Fill Slope
Geotextile
Type of Liner= Class I Rip-Rap
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
b= 2 Ft.
FROM -L- STA 18+50 TO 21+00 RT

DETAIL I
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 2:1, d, D, 3:1 or Flatter, Fill Slope
Geotextile
Type of Liner= Class I Rip-Rap
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
FROM -L- STA 21+00 TO 24+70 RT

DENOTES FILL IN WETLAND
DENOTES MECHANICAL CLEARING
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

CONSTRUCTION LIMITS
SLOPE STAKING LIMITS

WETLAND & STREAM IMPACTS

PLANS PREPARED BY:
WSP USA
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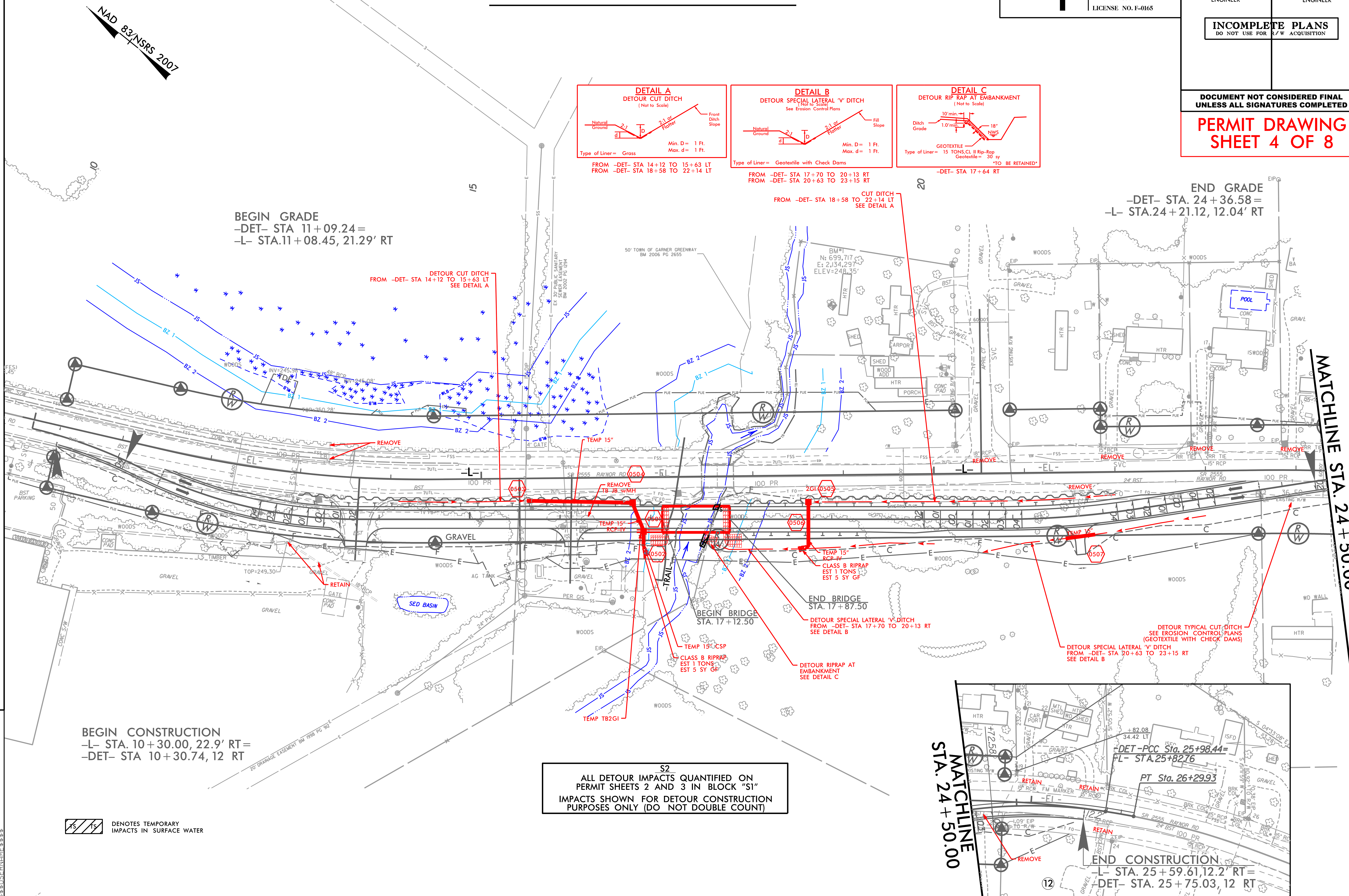
LICENSE NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
B-5326	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 4 OF 8


NAD 83/NSRS 2007
DETAIL A
DETOUR CUT DITCH
(Not to Scale)
Type of Liner= Grass
FROM -DET- STA 14+12 TO 15+63 LT
FROM -DET- STA 18+58 TO 22+14 LT
DETAIL B
DETOUR SPECIAL LATERAL 'V' DITCH
Type of Liner= Geotextile with Check Dams
FROM -DET- STA 17+70 TO 20+13 RT
FROM -DET- STA 20+63 TO 23+15 RT
DETAIL C
DETOUR RIP RAP AT EMBANKMENT
Type of Liner= 15 TONS,CL II Rip-Rap
-DET- STA 17+64 RT
BEGIN GRADE
-DET- STA 11+09.24=
-L- STA.11+08.45, 21.29' RT
END GRADE
-DET- STA. 24+36.58=
-L- STA.24+21.12, 12.04' RT
BEGIN BRIDGE
STA. 17+12.50
END BRIDGE
STA. 17+87.50
MATCHLINE STA. 24+50.00
BEGIN CONSTRUCTION
-L- STA. 10+30.00, 22.9' RT=
-DET- STA 10+30.74, 12 RT
END CONSTRUCTION
-L- STA. 25+59.61,12.2' RT=
-DET- STA. 25+75.03, 12 RT
DETOUR SPECIAL LATERAL 'V' DITCH
FROM -DET- STA 17+70 TO 20+13 RT
SEE DETAIL B
DETOUR SPECIAL LATERAL 'V' DITCH
FROM -DET- STA 20+63 TO 23+15 RT
SEE DETAIL B
DETOUR TYPICAL CUT DITCH
SEE EROSION CONTROL PLANS
(GEOTEXTILE WITH CHECK DAMS)
DETOUR RIPRAP AT EMBANKMENT
SEE DETAIL C
CLASS B RIPRAP
EST 1 TONS
EST 5 SY GF
TEMP 15" CSP
TEMP 15" RCP-IV
REMOVE
RETAIN
SED BASIN
WOODS
GRAVEL

S2
ALL DETOUR IMPACTS QUANTIFIED ON PERMIT SHEETS 2 AND 3 IN BLOCK "S1"
IMPACTS SHOWN FOR DETOUR CONSTRUCTION PURPOSES ONLY (DO NOT DOUBLE COUNT)

TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

8/17/99

WETLAND & STREAM IMPACTS

8/17/99

PLANS PREPARED BY: WSP USA, 434 FAYETTEVILLE STREET, SUITE 1500, RALEIGH, NC 27601, TEL: 1.919.836.4040, FAX: 1.919.836.4099, LICENSE NO. F-0165

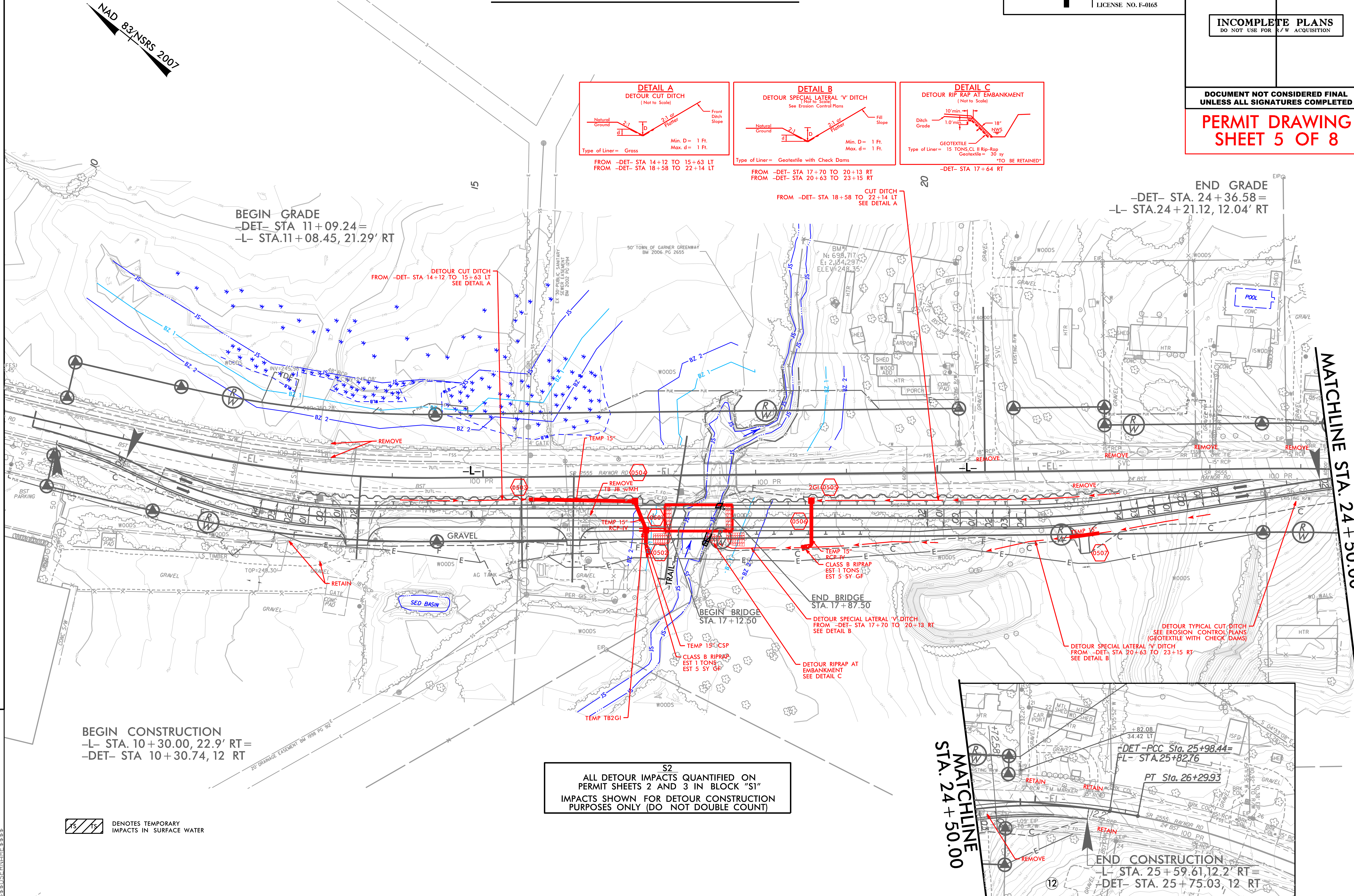
PROJECT REFERENCE NO.	SHEET NO.
B-5326	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 5 OF 8

REVISIONS



NAD 83/NSRS 2007
DETAIL A
DETOUR CUT DITCH
(Not to Scale)
Natural Ground
2:1
2:1 or Flatter
Front Ditch Slope
Min. D= 1 Ft.
Max. d= 1 Ft.
Type of Liner= Grass
FROM -DET- STA 14+12 TO 15+63 LT
FROM -DET- STA 18+58 TO 22+14 LT
DETAIL B
DETOUR SPECIAL LATERAL 'V' DITCH
(Not to Scale)
See Erosion Control Plans
Fill Slope
Type of Liner= Geotextile with Check Dams
FROM -DET- STA 17+70 TO 20+13 RT
FROM -DET- STA 20+63 TO 23+15 RT
DETAIL C
DETOUR RIP RAP AT EMBANKMENT
(Not to Scale)
Ditch Grade
GEOTEXTILE
Type of Liner= 15 TONS,CL II Rip-Rap
Geotextile= 30 sy
TO BE RETAINED
-DET- STA 17+64 RT
CUT DITCH
FROM -DET- STA 18+58 TO 22+14 LT
SEE DETAIL A
BEGIN GRADE
-DET- STA 11+09.24=
-L- STA.11+08.45, 21.29' RT
END GRADE
-DET- STA. 24+36.58=
-L- STA.24+21.12, 12.04' RT
DETOUR CUT DITCH
FROM -DET- STA 14+12 TO 15+63 LT
SEE DETAIL A
BM*1
N: 699,717
E: 2,134,297
ELEV=248.35'
50' TOWN OF GARNER GREENWAY
REMOVE
RETAIN
TEMP 15"
TEMP 15" RCP-IV
TEMP 15" RCP-IV
CLASS B RIPRAP
EST 1 TONS
EST 5 SY GF
TEMP 15" CSP
CLASS B RIPRAP
EST 1 TONS
EST 5 SY GF
TEMP TB2GI
END BRIDGE
STA. 17+87.50
BEGIN BRIDGE
STA. 17+12.50
DETOUR SPECIAL LATERAL 'V' DITCH
FROM -DET- STA 17+70 TO 20+13 RT
SEE DETAIL B
DETOUR RIPRAP AT EMBANKMENT
SEE DETAIL C
DETOUR TYPICAL CUT DITCH
SEE EROSION CONTROL PLANS
(GEOTEXTILE WITH CHECK DAMS)
DETOUR SPECIAL LATERAL 'V' DITCH
FROM -DET- STA 20+63 TO 23+15 RT
SEE DETAIL B
MATCHLINE STA. 24+50.00
BEGIN CONSTRUCTION
-L- STA. 10+30.00, 22.9' RT=
-DET- STA 10+30.74, 12 RT
-DET-PCC Sta. 25+98.44=
-L- STA.25+82.76
PT Sta. 26+29.93
END CONSTRUCTION
-L- STA. 25+59.61,12.2' RT=
-DET- STA. 25+75.03, 12 RT
SR 2555 RAYNOR RD
SED BASIN
WOODS
GRAVEL
TRAIL
POOL

S2
ALL DETOUR IMPACTS QUANTIFIED ON PERMIT SHEETS 2 AND 3 IN BLOCK "S1"
IMPACTS SHOWN FOR DETOUR CONSTRUCTION PURPOSES ONLY (DO NOT DOUBLE COUNT)

TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PLANS PREPARED BY:

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LICENSE NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
B-5326	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

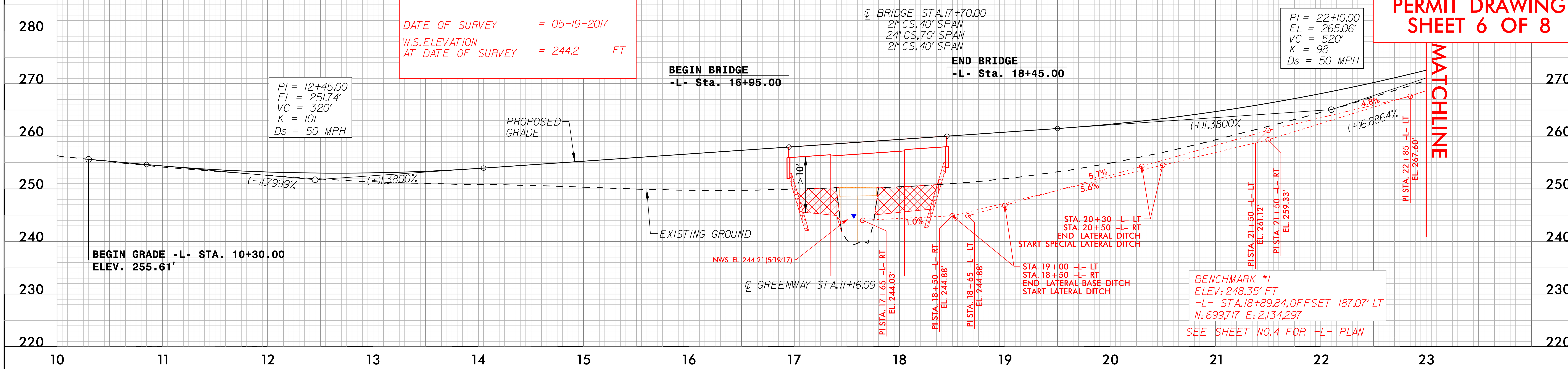
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

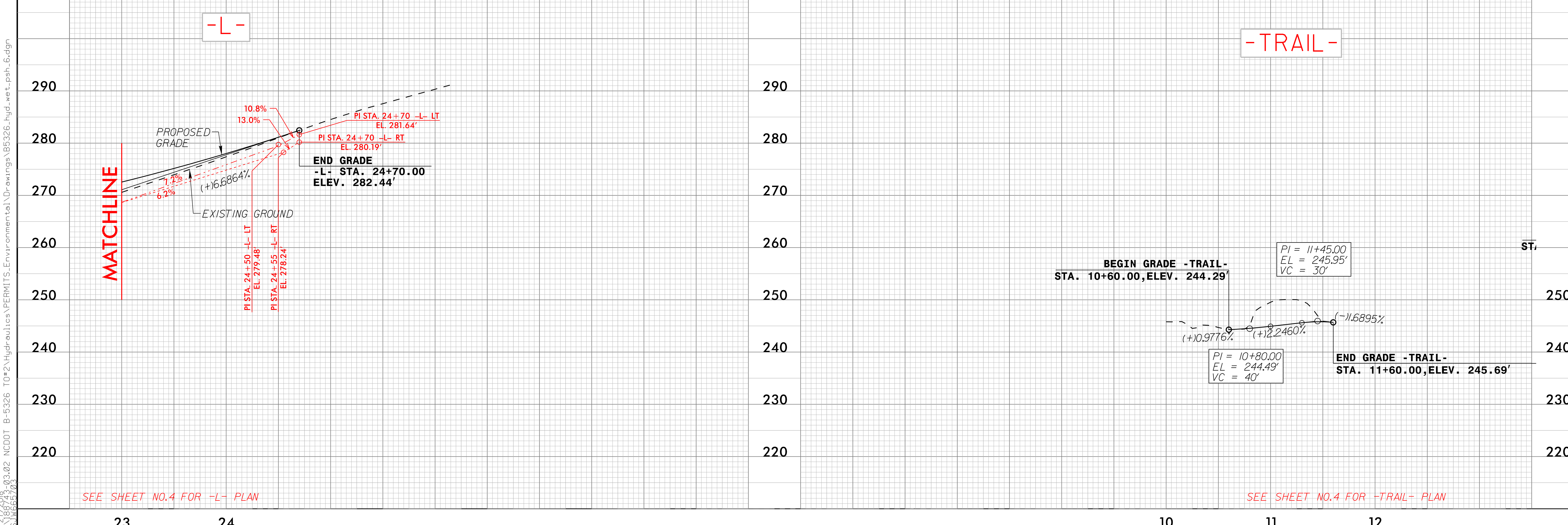
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 6 OF 8

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1820	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 247.9	FT
BASE DISCHARGE	= 2300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 248.6	FT
OVERTOPPING DISCHARGE	= >2960+	CFS
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING ELEVATION	= 253.5	FT
DATE OF SURVEY	= 05-19-2017	
W.S.ELEVATION AT DATE OF SURVEY	= 244.2	FT





5/28/99

4/27/2018 J:\88743-03.02 NCDOT B-5326 TO#2\Hydraulics\PERMITS_Environmental\Drawings\B5326_hyd_wet_psh_6.dgn

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5326	X-4

PERMIT DRAWING SHEET 7 OF 8

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55

265 260 255 250 245 240

256.85

0.020 0.020

2:1

2:1

249.73

–DET–
STA. 16+63.31

16+50.00

256.16

0.020 0.020

4′ 5′–6″ 5′ 5′

2% 2% 2% 8%

PUMP STATION DRIVE

–DET–
STA. 16+13.31

42′–5″

11%

MATCHLINE

2:1

249.74

16+00.00

5′

5%

MATCHLINE

DENOTES MECHANICAL CLEARING

DENOTES FILL IN WETLAND

255.47

0.020 0.007

255.7

2:1

3:1

–DET–
STA. 15+63.30

249.97

15+50.00

DETOUR REMOVAL

–L–

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

J:\88743-03.02 NCDOT B-5326 T04\Hydraulics\PERMITS Environmental\Drawings\B5326 Rdy XPL L.dgn

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	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- Sta. 12+53 to 12+82 LT	RipRap Outlet	< 0.01			< 0.01						
	-L- Sta. 14+56 to 16+41 LT	Roadwy Fill Slope and RipRap	0.03			0.06						
	-L- Sta. 17+20 to 17+55	RipRap at Embankment						< 0.01	< 0.01	19		
	-L- Sta. 17+40 to 17+58 RT	RipRap at Embankment						< 0.01	< 0.01	26	5	
	-L- Sta. 17+58 to 17+64	Bridge Pier Removal							< 0.01			
	-L- Sta. 17+55 to 18+47	RipRap at Embankment						0.02	< 0.01	135	5	
TOTALS*:			0.03			0.06		0.04	< 0.01	180	10	0

*Rounded totals are sum of actual impacts

NOTES:
All Surface Water Impacts (Detour and Mainline) are to remain after construction and therefore are all quantified and accounted for on sheets 2 & 3 and not quantified as detour impacts.
Linear Impacts are shown such that they do not double count due to impacts on both sides of the stream.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1/22/2019
Wake County
B-5326
46040.1.1
SHEET 8 OF 8

TIP PROJECT: B-5326

CONTRACT:

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5326	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
46040.1.1	BRZ-2555(1)	PE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

LOCATION: REPLACE BRIDGE NO. 247 OVER WHITE OAK CREEK ON SR 2555 (RAYNOR RD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURES

PERMIT DRAWINGS: BUFFER IMPACTS

BUFFER DRAWING
SHEET 1 OF 5

See Sheet 1B For Conventional Symbols

VICINITY MAP

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

THIS PROJECT HAS NO CONTROL OF ACCESS.
THIS PROJECT IS PARTIALLY WITHIN THE TOWN OF GARNER MUNICIPAL LIMITS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

NCDOT CONTACT: DAVID STUTTS, PE
STRUCTURES MANAGEMENT UNIT

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2019 = 4767
ADT 2040 = 6400
K = 12 %
D = 55 %
T = 4 % *
V = 50 MPH
* (TTST = 1% + DUAL = 3%)
FUNC CLASS =
MAJOR COLLECTOR
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT B-5326	=	*0.262 MI*
LENGTH STRUCTURE PROJECT B-5326	=	*0.028 MI*
TOTAL LENGTH PROJECT B-5326	=	*0.290 MI*

PREPARED IN THE OFFICE OF:

WSP
434 Fayetteville Street, Suite 1500 Raleigh, NC 27601
Tel. (919) 836-4040 www.wsp-pb.com
License No. F-0891

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 22, 2018

LETTING DATE:
APRIL 16, 2019

RONYELL A. THIGPEN, PE
PROJECT ENGINEER

HOLLY CHRISTENBURY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.


BUFFER IMPACTS
BUFFER DRAWING SHEET 2 OF 5
PLANS PREPARED BY: WSP
WSP USA
434 FAYETTEVILLE STREET SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165
PROJECT REFERENCE NO. B-5326
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
REVISIONS
8/17/99
BEGIN BRIDGE -L- Sta. 16+95.00
BEGIN APPROACH SLAB -L- Sta. 16+83.00
END APPROACH SLAB -L- Sta. 18+57.00
END BRIDGE -L- Sta. 18+45.00
TYPE III
2'-6" C&G
3'-5"PS
AT-1
END TIP PROJECT B-5326
-L- STA. 25+59.61
END GRADE
-L- STA. 24+70.00
MILLING/OVERLAY
-L- STA. 24+70.00 TO 25+59.61
MATCHLINE STA. 24+50.00
BEGIN TIP PROJECT B-5326
-L- STA. 10+30.00
NAD 83/NSRS 2007
DETAIL A
STANDARD 'V' DITCH
FROM -L- STA 12+60 TO 12+70 LT
FROM -L- STA 14+68 TO 14+75 LT
DETAIL B
BANK STABILIZATION
FROM -L- STA. 17+15 TO 17+55
FROM -L- STA. 17+55 TO 18+55
DETAIL C
LATERAL BASE DITCH
FROM -L- STA 18+65 TO 19+00 LT
DETAIL D
LATERAL 'V' DITCH
FROM -L- STA 19+00 TO 20+30 LT
DETAIL E
SPECIAL LATERAL 'V' DITCH
FROM -L- STA 20+30 TO 24+70 LT
DETAIL F
RIP RAP AT EMBANKMENT
FROM -L- STA 17+50 TO 17+65 RT
FROM -L- STA 17+97 TO 18+65 LT
DETAIL G
LATERAL BASE DITCH
FROM -L- STA 17+65 TO 18+50 RT
DETAIL H
LATERAL 'V' DITCH
FROM -L- STA 18+50 TO 21+00 RT
DETAIL I
SPECIAL LATERAL 'V' DITCH
FROM -L- STA 21+00 TO 24+70 RT
DETAIL J
DECK DRAIN DISSIPATOR PAD
FROM -L- STA. 18+00 TO STA. 18+20 RT.
DETAIL K
SPECIAL LATERAL 'V' DITCH
FROM -L- STA 10+66 TO + 12+60 LT
CURVE DATA -TRAIL-
PI Sta 10+23.46 Δ = 11° 00' 44.9" (LT) D = 57° 17' 44.8" L = 19.22' T = 9.64' R = 100.00'
PI Sta 10+52.50 Δ = 22° 01' 29.8" (RT) D = 57° 17' 44.8" L = 38.44' T = 19.46' R = 100.00'
PI Sta 10+81.12 Δ = 11° 00' 44.9" (LT) D = 57° 17' 44.8" L = 19.22' T = 9.64' R = 100.00'
CURVE DATA -L- (RAYNOR RD)
PI Sta 10+15.12 Δ = 0° 05' 03.5" (LT) D = 0° 16' 43.4" L = 30.24' T = 15.12' R = 20,555.87'
PI Sta 12+99.74 Δ = 13° 41' 19.1" (LT) D = 4° 35' 01.2" L = 298.64' T = 150.03' R = 1,250.00' DS = 50mph SE = 4.0% RO = SEE PLANS FOR RO
PI Sta 24+13.64 Δ = 2° 58' 36.3" (RT) D = 2° 39' 53.7" L = 111.70' T = 55.86' R = 2,150.00' DS = 50mph SE = 4.0% RO = SEE PLANS FOR RO
PI Sta 25+42.00 Δ = 8° 19' 22.3" (RT) D = 5° 44' 56.4" L = 144.77' T = 72.51' R = 996.62'
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
NOTE: ALL RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET NO. 5 FOR -DET- PLAN AND PROFILE
SEE SHEET NO. 6 FOR -L- PROFILE
SEE SHEET NO. 6 FOR -TRAIL- PROFILE

BUFFER IMPACTS

BUFFER DRAWING SHEET 3 OF 5

PLANS PREPARED BY:

WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
B-5326	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CURVE DATA -TRAIL-

PI Sta 10+23.46	PI Sta 10+52.50	PI Sta 10+81.12
Δ = 11° 00' 44.9" (LT)	Δ = 22° 01' 29.8" (RT)	Δ = 11° 00' 44.9" (LT)
D = 57° 17' 44.8"	D = 57° 17' 44.8"	D = 57° 17' 44.8"
L = 19.22'	L = 38.44'	L = 19.22'
T = 9.64'	T = 19.46'	T = 9.64'
R = 100.00'	R = 100.00'	R = 100.00'

CURVE DATA -L- (RAYNOR RD.)

PI Sta 10+15.12	PI Sta 12+99.74	PI Sta 24+13.64	PI Sta 25+42.00
Δ = 0° 05' 03.5" (LT)	Δ = 13° 41' 19.1" (LT)	Δ = 2° 58' 36.3" (RT)	Δ = 8° 19' 22.3" (RT)
D = 0° 16' 43.4"	D = 4° 35' 01.2"	D = 2° 39' 53.7"	D = 5° 44' 56.4"
L = 30.24'	L = 298.64'	L = 111.70'	L = 144.77'
T = 15.12'	T = 150.03'	T = 55.86'	T = 72.51'
R = 20,555.87'	R = 1,250.00'	R = 2,150.00'	R = 996.62'
	DS = 50mph	DS = 50mph	
	SE = 4.0%	SE = 4.0%	
	RO = SEE PLANS FOR RO	RO = SEE PLANS FOR RO	

NOTE: ALL RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET NO. 5 FOR -DET- PLAN AND PROFILE
SEE SHEET NO. 6 FOR -L- PROFILE
SEE SHEET NO. 6 FOR -TRAIL- PROFILE

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	-L- 12+24 to 15+83 LT	Road Fill and Clearing			X				775	4372	5147		
	-L- 16+60 to 16+95 RT		X			576	1255	1831					
	-L- 16+94 to 16+95 LT						15	15					
	-L- 18+45 to 18+99 LT					1746	1416	3162					
	-L- 16+95 to 17+27 RT	Bridge Fill and Clearing		X		1121		1121					
	-L- 16+95 to 17+67 LT					2316	1273	3589					
	-L- 17+37 to 18+19 RT					2352	1473	3825					
	-L- 17+73 to 18+45 LT					1016		1016					
TOTALS*:						**9127**	**5432**	**14559**	**775**	**4372**	**5147**	**0**	**0**

NOTES:

Bridge Fill vs. Road Fill determind by begin end bridge station.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1/22/2019
Wake County
B-5326
46040.1.1
SHEET 4 OF 5

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (ft^2)	WETLANDS IN BUFFERS ZONE 2 (ft^2)
1	-L- 12+53 LT	-L- 12+82 LT	270	0
	-L- 14+56 LT	-L- 15+83 LT	125	967
TOTAL:			395	967

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1/22/2019
Wake County
B-5326
46040.1.1
SHEET 5 OF 5

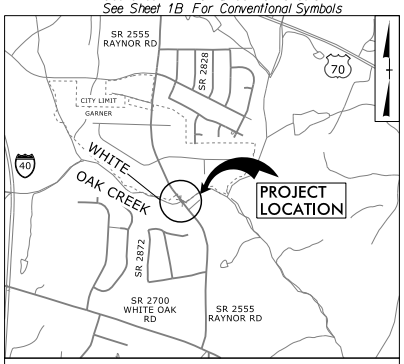
Revised 2018 Feb

Rev. Jan 2009

09/08/99

CONTRACT: C204207 TIP PROJECT: B-5326

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP

NOVEMBER 15, 2018

90% PLAN SUBMITTAL

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

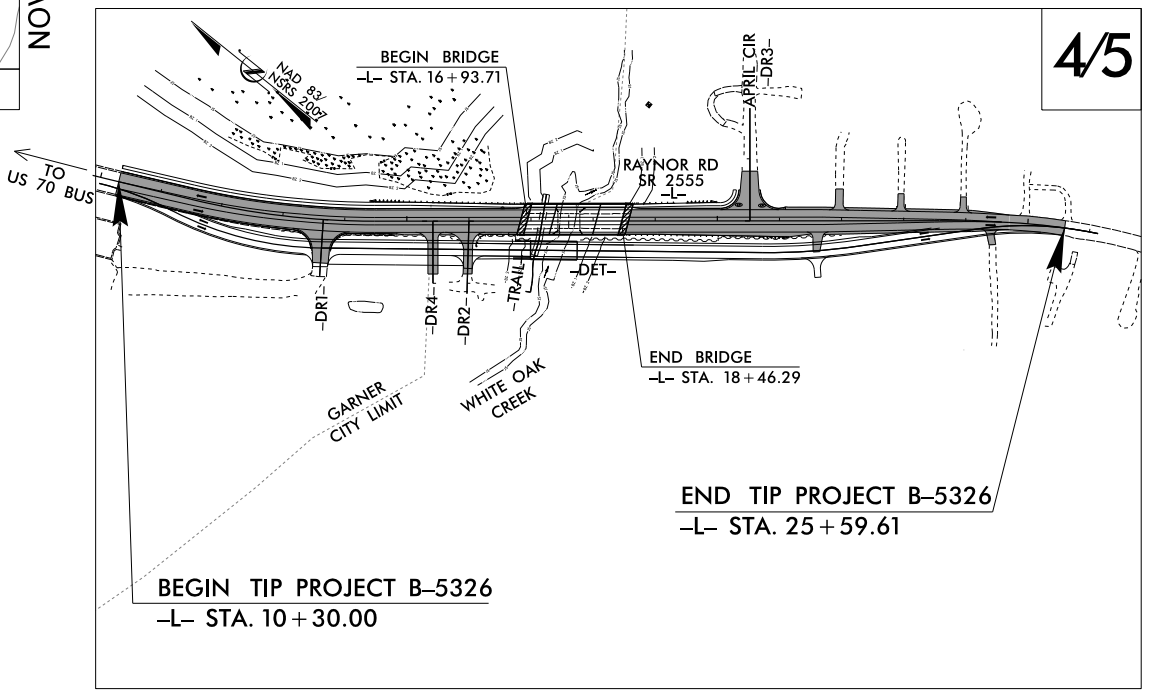
WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5326	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
46040.1.1	BRZ-2555(1)	PE
46040.2.1	BRZ-2555(1)	RW & UTILITY
46040.3.1	BRZ-2555(1)	CONSTRUCTION

LOCATION: REPLACE BRIDGE NO. 247 OVER WHITE OAK CREEK ON SR 2555 (RAYNOR RD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE



THIS PROJECT HAS NO CONTROL OF ACCESS.

NCDOT CONTACT: DAVID STUTTS, PE
STRUCTURES MANAGEMENT UNIT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2019 = 4767
ADT 2040 = 6400
K = 12 %
D = 55 %
T = 4 % *
V = 50 MPH
* (TTST =1% + DUAL =3%)
FUNC CLASS =
MAJOR COLLECTOR
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT B-5326 = *0.261 MI*
LENGTH STRUCTURE PROJECT B-5326 = *0.029 MI*
TOTAL LENGTH PROJECT B-5326 = *0.290 MI*

PREPARED IN THE OFFICE OF:
WSP
434 Fayetteville Street, Suite 1500 Raleigh, NC 27601
Tel. (919) 836-4040 www.wsp-pb.com
License No. F-0891
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 22, 2018

LETTING DATE: APRIL 16, 2019

RONYELL A. THIGPEN, PE
PROJECT ENGINEER

HOLLY CHRISTENBURY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039760 ENGINEER JOHN F. WALKINGTON P.E.

SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 043139 ENGINEER HOLLY E. CHRISTENBURY P.E.

SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

1/3/2019
RS:\Roadway\Proj\B5326_Rdy_TSH.dgn
USHC0407

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
B-5326	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Computed Property Corner
- Property Monument — CM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

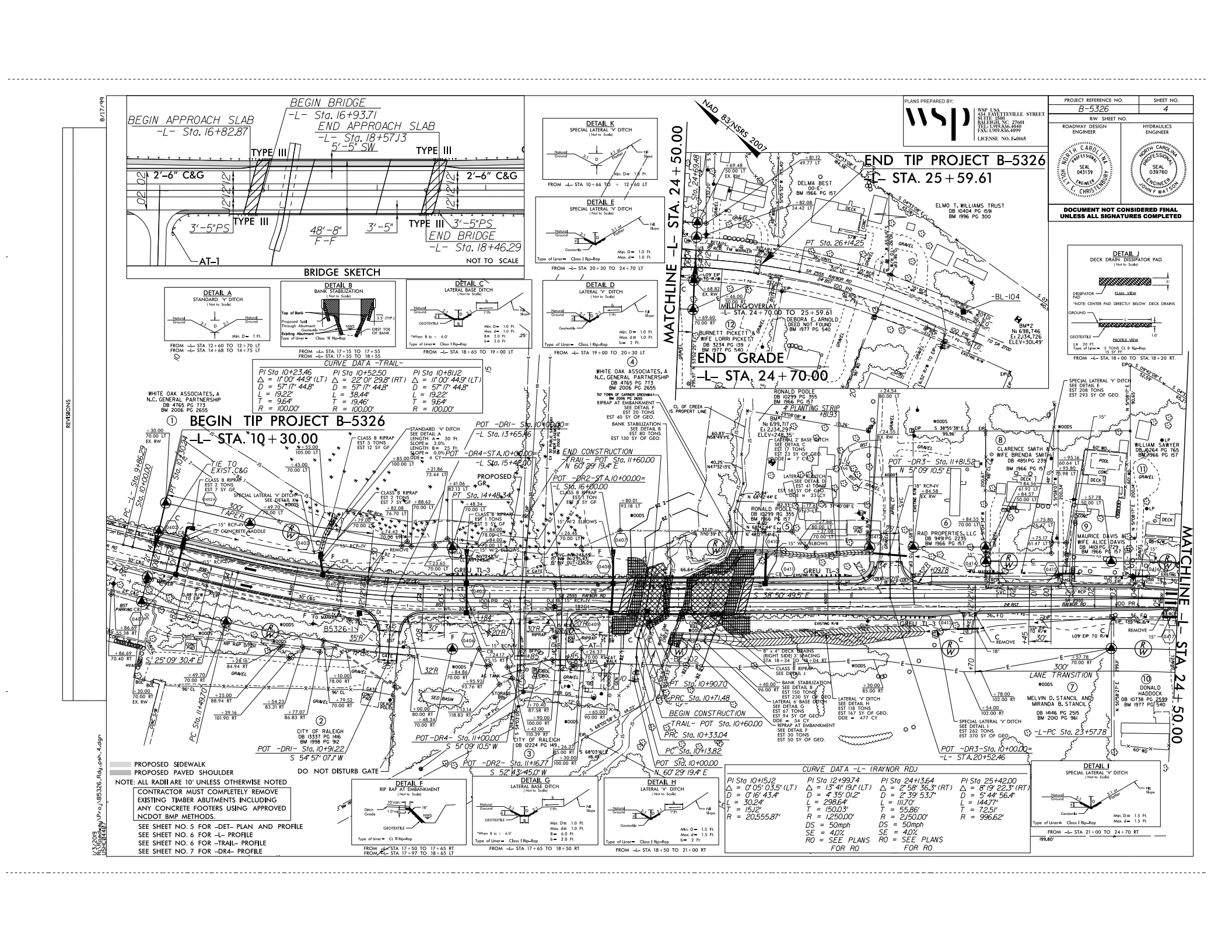
- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?U/L?
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc.
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.


BEGIN BRIDGE
-L- Sta. 16+93.71
BEGIN APPROACH SLAB
-L- Sta. 16+82.87
END APPROACH SLAB
-L- Sta. 18+57.13
5'-5" SW
TYPE III
TYPE III
2'-6" C&G
2'-6" C&G
3'-5"PS
TYPE III
48'-8"
F-F
3'-5"
TYPE III
3'-5"PS
END BRIDGE
-L- Sta. 18+46.29
AT-1
NOT TO SCALE
BRIDGE SKETCH
DETAIL A
STANDARD 'V' DITCH
DETAIL B
BANK STABILIZATION
DETAIL C
LATERAL BASE DITCH
DETAIL D
LATERAL 'V' DITCH
DETAIL E
SPECIAL LATERAL 'V' DITCH
DETAIL K
SPECIAL LATERAL 'V' DITCH
DETAIL J
DECK DRAIN DISSIPATOR PAD
CURVE DATA -TRAIL-
PI Sta 10+23.46
△ = 11° 00' 44.9" (LT)
D = 57° 17' 44.8"
L = 19.22'
T = 9.64'
R = 100.00'
PI Sta 10+52.50
△ = 22° 01' 29.8" (RT)
D = 57° 17' 44.8"
L = 38.44'
T = 19.46'
R = 100.00'
PI Sta 10+81.12
△ = 11° 00' 44.9" (LT)
D = 57° 17' 44.8"
L = 19.22'
T = 9.64'
R = 100.00'
BEGIN TIP PROJECT B-5326
-L- STA. 10+30.00
END TIP PROJECT B-5326
-L- STA. 25+59.61
MATCHLINE -L- STA. 24+50.00
END GRADE
-L- STA. 24+70.00
MILLING/OVERLAY
-L- STA. 24+70.00 TO 25+59.61
NAD 83/NSRS 2007
PLANS PREPARED BY:
WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
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TEL: 1.919.836.4040
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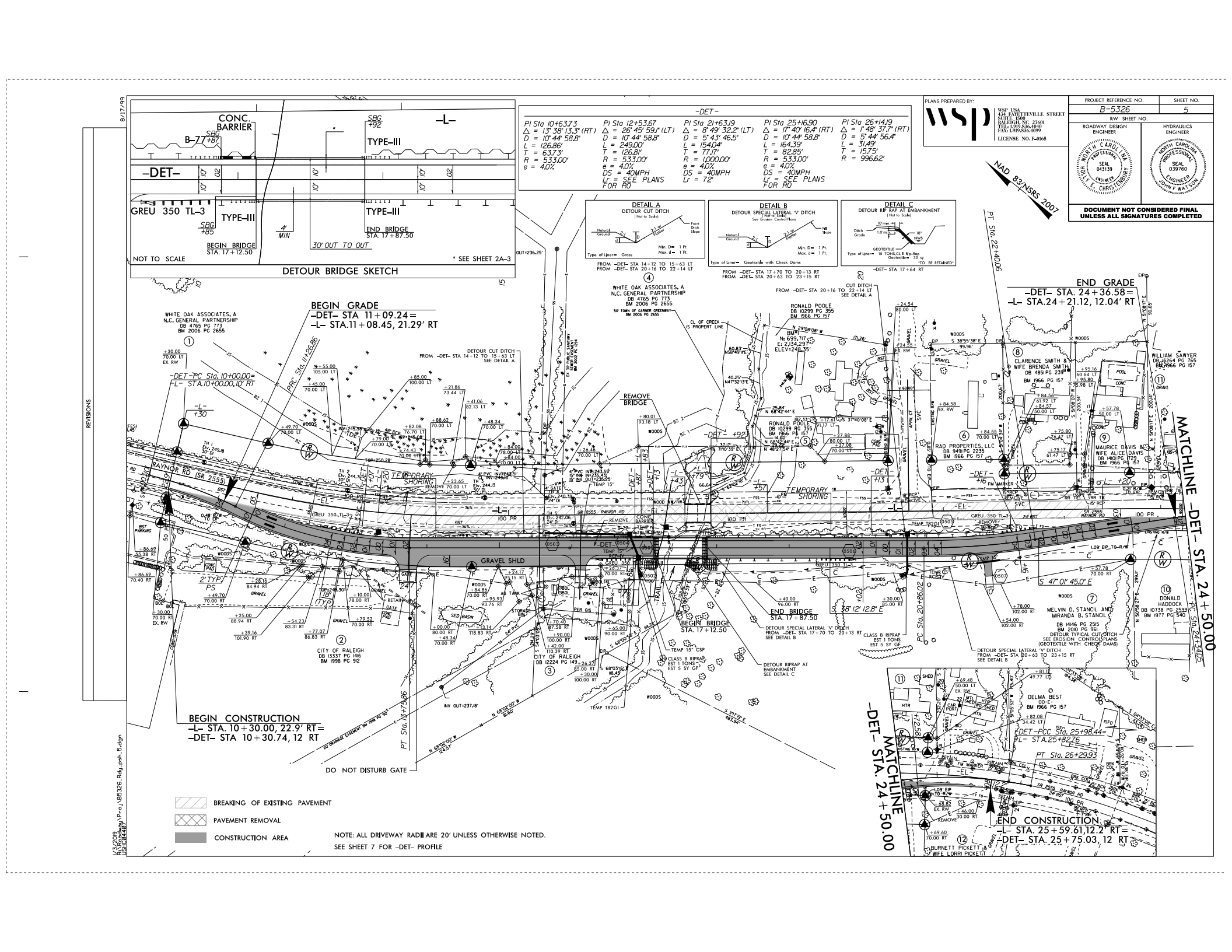
LICENSE NO. F-0165
PROJECT REFERENCE NO.
B-5326
SHEET NO.
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SEAL 043139
SEAL 039760
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WHITE OAK ASSOCIATES, A N.C. GENERAL PARTNERSHIP DB 4765 PG 773 BM 2006 PG 2655
RONALD POOLE DB 10299 PG 355 BM 1966 PG 157
CLARENCE SMITH III & WIFE BRENDA SMITH DB 4851 PG 239 BM 1966 PG 157
WILLIAM SAWYER DB 16264 PG 765 BM 1966 PG 157
RAD PROPERTIES, LLC DB 9419 PG 2235 BM 1966 PG 157
MAURICE DAVIS & WIFE ALICE DAVIS DB 1401 PG 129 BM 1966 PG 157
CITY OF RALEIGH DB 13337 PG 1416 BM 1998 PG 912
CITY OF RALEIGH DB 12224 PG 149
MELVIN D. STANCIL AND MIRANDA B. STANCIL DB 14146 PG 2515 BM 2010 PG 961
DONALD HADDOCK DB 10738 PG 2599 BM 1977 PG 540
DELMA BEST DB 1966 PG 157
ELMO T. WILLIAMS TRUST DB 10404 PG 159 BM 1996 PG 300
DEBORA E. ARNOLD DEED NOT FOUND BM 1977 PG 540
BURNETT PICKETT & WIFE LORRI PICKETT DB 3234 PG 139 BM 1977 PG 540
PROPOSED SIDEWALK
PROPOSED PAVED SHOULDER
NOTE: ALL RADII ARE 10' UNLESS OTHERWISE NOTED
CONTRACTOR MUST COMPLETELY REMOVE EXISTING TIMBER ABUTMENTS INCLUDING ANY CONCRETE FOOTERS USING APPROVED NCDOT BMP METHODS.
SEE SHEET NO. 5 FOR -DET- PLAN AND PROFILE
SEE SHEET NO. 6 FOR -L- PROFILE
SEE SHEET NO. 6 FOR -TRAIL- PROFILE
SEE SHEET NO. 7 FOR -DR4- PROFILE
DO NOT DISTURB GATE
CURVE DATA -L- (RAYNOR RD)
PI Sta 10+15.12
△ = 0° 05' 03.5" (LT)
D = 0° 16' 43.4"
L = 30.24'
T = 15.12'
R = 20,555.87'
PI Sta 12+99.74
△ = 13° 41' 19.1" (LT)
D = 4° 35' 01.2"
L = 298.64'
T = 150.03'
R = 1,250.00'
DS = 50mph
SE = 4.0%
RO = SEE PLANS FOR RO
PI Sta 24+13.64
△ = 2° 58' 36.3" (RT)
D = 2° 39' 53.7"
L = 111.70'
T = 55.86'
R = 2,150.00'
DS = 50mph
SE = 4.0%
RO = SEE PLANS FOR RO
PI Sta 25+42.00
△ = 8° 19' 22.3" (RT)
D = 5° 44' 56.4"
L = 144.77'
T = 72.51'
R = 996.62'
DETAIL F
RIP RAP AT EMBANKMENT
DETAIL G
LATERAL BASE DITCH
DETAIL H
LATERAL 'V' DITCH
DETAIL I
SPECIAL LATERAL 'V' DITCH
REVISIONS
8/17/99


DETOUR BRIDGE SKETCH
NOT TO SCALE
* SEE SHEET 2A-3
CONC. BARRIER
B-77
GREU 350 TL-3
TYPE-III
BEGIN BRIDGE STA. 17+12.50
END BRIDGE STA. 17+87.50
30' OUT TO OUT
4' MIN
-DET-
PI Sta 10+63.73
Δ = 13° 38' 13.3" (RT)
D = 10° 44' 58.8"
L = 126.86'
T = 63.73'
R = 533.00'
e = 4.0%
PI Sta 12+53.67
Δ = 26° 45' 59.1" (LT)
D = 10° 44' 58.8"
L = 249.00'
T = 126.81'
R = 533.00'
e = 4.0%
DS = 40MPH
Lr = SEE PLANS FOR RO
PI Sta 21+63.19
Δ = 8° 49' 32.2" (LT)
D = 5° 43' 46.5"
L = 154.04'
T = 77.17'
R = 1,000.00'
e = 4.0%
DS = 40MPH
Lr = 72'
PI Sta 25+16.90
Δ = 17° 40' 16.4" (RT)
D = 10° 44' 58.8"
L = 164.39'
T = 82.85'
R = 533.00'
e = 4.0%
DS = 40MPH
Lr = SEE PLANS FOR RO
PI Sta 26+14.19
Δ = 1° 48' 37.7" (RT)
D = 5° 44' 56.4"
L = 31.49'
T = 15.75'
R = 996.62'
DETAIL A
DETOUR CUT DITCH
DETAIL B
DETOUR SPECIAL LATERAL 'V' DITCH
DETAIL C
DETOUR RIP RAP AT EMBANKMENT
GEOTEXTILE
Type of Liner= 15 TONS,CL II Rip-Rap
Geotextile= 10 oz
TO BE RETAINED
FROM -DET- STA 14+12 TO 15+63 LT
FROM -DET- STA 20+16 TO 22+14 LT
FROM -DET- STA 17+70 TO 20+13 RT
FROM -DET- STA 20+63 TO 23+15 RT
-DET- STA 17+64 RT
BEGIN GRADE
-DET- STA 11+09.24 =
-L- STA.11+08.45, 21.29' RT
END GRADE
-DET- STA. 24+36.58 =
-L- STA.24+21.12, 12.04' RT
-DET- PC Sta. 10+00.00 =
-L- STA.10+00.00, 10' RT
PT Sta. 13+75.86
PC Sta. 11+26.86
PT Sta. 22+40.06
PC Sta. 20+86.02
PT Sta. 24+34.05
MATCHLINE -DET- STA. 24+50.00
MATCHLINE -DET- STA. 24+50.00
REMOVE BRIDGE
TEMPORARY SHORING
REMOVE 70.00 LT
RAYNOR RD (SR 2555)
GRAVEL SHLD
DO NOT DISTURB GATE
BEGIN CONSTRUCTION
-L- STA. 10+30.00, 22.9' RT =
-DET- STA 10+30.74, 12 RT
END CONSTRUCTION
-L- STA. 25+59.61, 12.2' RT =
-DET- STA. 25+75.03, 12 RT
-DET-PCC Sta. 25+98.44 =
-L- STA.25+82.76
PT Sta. 26+29.93
WHITE OAK ASSOCIATES, A N.C. GENERAL PARTNERSHIP DB 4765 PG 773 BM 2006 PG 2655
RONALD POOLE DB 10299 PG 355 BM 1966 PG 157
RAD PROPERTIES, LLC DB 949PG 2235 BM 1966 PG 157
CLARENCE SMITH & WIFE BRENDA SMITH DB 4851PG 239 BM 1966 PG 157
WILLIAM SAWYER DB 16264 PG 765 BM 1966 PG 157
MAURICE DAVIS & WIFE ALICE DAVIS DB 1401PG 170 BM 1966 PG 157
DONALD HADDOCK DB 10738 PG 2539 BM 1977 PG 540
MELVIN D. STANCIL AND MIRANDA B. STANCIL DB 14146 PG 2515 BM 2010 PG 961
CITY OF RALEIGH DB 13337 PG 1416 BM 1998 PG 912
CITY OF RALEIGH DB 12224 PG 149
DELMA BEST 00-E BM 1966 PG 157
BURNETT PICKETT & WIFE, LORRI PICKETT
DETOUR TYPICAL CUT DITCH SEE EROSION CONTROL PLANS (GEOTEXTILE WITH CHECK DAMS)
DETOUR SPECIAL LATERAL 'V' DITCH FROM -DET- STA 17+70 TO 20+13 RT SEE DETAIL B
DETOUR SPECIAL LATERAL 'V' DITCH FROM -DET- STA 20+63 TO 23+15 RT SEE DETAIL B
DETOUR RIPRAP AT EMBANKMENT SEE DETAIL C
CLASS B RIPRAP EST 1 TONS EST 5 SY GF
TEMP 15" CSP
TEMP TB2GI
BREAKING OF EXISTING PAVEMENT
PAVEMENT REMOVAL
CONSTRUCTION AREA
NOTE: ALL DRIVEWAY RADII ARE 20' UNLESS OTHERWISE NOTED.
SEE SHEET 7 FOR -DET- PROFILE
NAD 83/NSRS 2007
PLANS PREPARED BY:
WSP USA
431 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
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LICENSE NO. F-0165
PROJECT REFERENCE NO.
B-5326
SHEET NO.
5
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SEAL 043139
HOLLY F. CHRISTENBURY
SEAL 039760
JOHN F. WATSON
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
REVISIONS
8/17/99
1/1/2099
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