Pre-Construction Notification (PCN) Form

For Nationwide Permits and Regional General Permits

(along with corresponding Water Quality Certifications)

January 31, 2018 Ver 2.3

*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

Is this a NCDOT Project?*

(•) Yes ( ) No

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

B-5161 Central

WBS #

42336.1.1

(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)

Nationwide Permit (NWP) Number: **03 - Maintenance**

Nationwide Permit (NWP) Number: **12 - Utility Lines**

NWP Number Other:

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

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

check all that apply

- [x] 401 Water Quality Certification - Regular
- [ ] 401 Water Quality Certification - Express
- [ ] Non-404 Jurisdictional General Permit
- [x] Riparian Buffer Authorization

1d. 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

1e. 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

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

○ Yes ◉ No

1h. 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: *

driffey@ncdot.gov

1c. Primary Contact Phone: *

(xxx)xxx-xxxx

(919)707-6151

1d. Who is applying for the permit?

☐ Owner ☐ Applicant (other than owner) ☐ Agent/Consultant

(Check all that apply)

2. Owner Information

2a. Name(s) on recorded deed:

2b. Deed book and page no.:

2c. Responsible party:

(for Corporations)

2d. Address

Street Address

35-723719, -78.904581

Address Line 2

City

State / Province / Region

Postal / Zip Code

Country

2e. Telephone Number:

(xxx)xxx-xxxx

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-5161 Bridge No. 362 on SR 1162 (Apex Barbeque Road) over Beaver Creek

1b. Subdivision name:

(if appropriate)

1c. Nearest municipality / town: *

Apex

1d. Driving directions *

If it is a new project and can not easily be found in a GPS mapping system. Please provide directions.

35.723719, -78904581

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: *

35.723719

ex: 34.208504

Longitude: *

-78.904581

-77.796371

3. Surface Waters

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

Beaver Creek

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

WSIV; NSW

Surface Water Lookup

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

Cape Fear

River Basin Lookup

4. Project Description

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 within the vicinity is agricultural, residential, and forestland. The Clean Water Management Trust Fund (CWMTF) has a conservation easement that runs through property. See attached CWMTF Conservation Easement agreement.

4b. 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

4c. 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

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

0.36 acre

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

(intermittent and perennial)

330 feet

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

Bridge replacement

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

The project involves replacement of existing Bridge No.362, a 46-foot long single span bridge with a two span 80-foot long bridge. The new bridge will have two 11-foot travel lanes with 5-foot paved shoulders and an additional 5 -foot for side walk with 4-foot offset from curb. There will be a 10-foot paved greenway. The new bridge will be placed on the same alignment as the existing bridge. An offsite detour will be used during construction. Standard road building equipment, such as trucks, dozers, and cranes will be used.

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

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

B-5161 Permit Drawings_20180119.pdf	5.14MB
B5161_RDY_Plans 3-2-2018.pdf	2.42MB

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:

Delineation by Soil & Environmental Consultants for Nature Park (Non-NCDOT) ID: SAW-2015-02065. Part of a wetland from Nature Park impacted by NCDOT. See attached 2018 Jurisdictional Features Map for details.

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

(•) Preliminary ( ) Approved ( ) Unknown ( ) N/A

Corps AID Number:

Example: SAW-2017-99999

SAW-2009-01786

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

Name (if known): Deanna Riffey

Agency/Consultant Company: NCDOT

Other: Soil & Environmental Conservation for Wetland WC

5d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.

3/2/2010 & 10/25/2017 (Original PJD and new forms attached for WB & SB)

5d1. Jurisdictional determination upload

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

B-5161 2010 PrelJD.pdf	7.29MB
B-5161 2017 PJD Pkg.pdf	2.11MB

File type must be PDF

6. Project History

6a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past? *

○ Yes ◉ No ○ Unknown

7. Future Project Plans

7a. 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.

2a. Site # - Reason for impact *	2b. Impact type *	2c. Type of wetland *	2d. Wetland name *	2e. Forested *	2f. Type of Jurisdicition *	2g. Impact area *
Site 2- Roadway/ hand clearing Map label (e.g. Road Crossing 1 - Culvert, dewatering, etc)	**T** Permanent (P) or Temporary (T)	**Bottomland Hardwood Forest**	**WB**	**Yes**	**Both** (404, 10) or DWR (401, other)	**0.009** (acres)
Site 3- Utility/ fill Map label (e.g. Road Crossing 1 - Culvert, dewatering, etc)	**P** Permanent (P) or Temporary (T)	**Bottomland Hardwood Forest**	**WC**	**Yes**	**Both** (404, 10) or DWR (401, other)	**0.020** (acres)
Site 3- Utility/ hand clearing Map label (e.g. Road Crossing 1 - Culvert, dewatering, etc)	**T** Permanent (P) or Temporary (T)	**Bottomland Hardwood Forest**	**WC**	**Yes**	**Both** (404, 10) or DWR (401, other)	**0.060** (acres)

2g. Total Temporary Wetland Impact

0.069

2g. Total Permanent Wetland Impact

0.020

2g. Total Wetland Impact

0.089

2h. Comments:

<0.01 acre of temporary fill from erosion control measures in the hand cleared areas.

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.

	3a. Reason for impact *	3b.Impact type *	3c. Type of impact *	3d. Stream name *	3e. Stream Type *	3f. Type of Jurisdiction *	3g. Stream width *	3h. Impact length *
S1	Bridge Map label (e.g. Road Crossing 1)	P Permanent (P) or Temporary (T)	Bank Stabilization	Beaver Creek	Perennial Perennial (PER) or intermittent (INT)	Both	40 Average (feet)	72 (linear feet)
S2	Bridge Map label (e.g. Road Crossing 1)	T Permanent (P) or Temporary (T)	Bank Stabilization	Beaver Creek	Perennial Perennial (PER) or intermittent (INT)	Both	40 Average (feet)	20 (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:

72

3i. Total temporary stream impacts:

20

3i. Total stream and tributary impacts:

92

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.

- ☐ 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 *
S1- Bridge - Exempt Location and Exempt, Allowable, allowable w/ mitigation	P Permanent (P) or Temporary (T)	Beaver Creek	No	7,055 (square feet)	3,718 (square feet)
S1- Road crossing - Allowable Location and Exempt, Allowable, allowable w/ mitigation	P Permanent (P) or Temporary (T)	Beaver Creek	No	0 (square feet)	941 (square feet)

6b. Impact Type *	6c. Per or Temp *	6d. Stream name *	6e. Buffer mitigation required? *	6f. Zone 1 impact *	6g. Zone 2 impact *
S3 - Road Crossing- Allowable Location and Exempt, Allowable, allowable w/ mitigation	P Permanent (P) or Temporary (T)	UT Beaver Creek	No	784 (square feet)	1,432 (square feet)

6h. Total buffer impacts:

	Zone 1	Zone 2
Temporary impacts:	0.00	0.00

	Zone 1	Zone 2
Permanent impacts:	7,839.00	6,091.00

	Zone 1	Zone 2
Total buffer impacts:	7,839.00	6,091.00

6i. Comments:

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

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

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: *

Replace in place was incorporated to minimize jurisdictional impacts along with lengthening the bridge. A couple of rip rap trapezoidal ditches have been designed to allow for treatment of the additional flow from the bridge and has been designed to have non-erosive velocities as it discharges into the buffer/wetland zone. Also, a preformed scour hole at one of the stormwater pipe outlets will be used along with bridge deck drains that discharge over the buffer onto dissipator pads prior to entering stream. Other than no build the minimal effect to the stream on this project is unavoidable.

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

Rip rap has been placed on the embankments of creek under the bridge and where the swale ties into the stream channel to mitigate erosion. Rip rap lined channels have been utilized where needed to eliminate the risk of ditch erosion. A rip rap pad has been placed at the proposed pipe outlet to eliminate localized erosion at the pipe. NCDOT's "Best Management Practices for Construction and Maintenance Activities" will be adhered to.

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:

Bank stabilization does not require mitigation, wetland impacts are minimal, and the impacts for the Jordan Lake riparian buffers are below the required threshold.

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)
- [x] Other SCM that removes minimum 30% nitrogen

(check all that apply)

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

Diffus 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

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

2b. Is this an after-the-fact permit application? *

○ 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? *

USFWS county list and NCNHP database along with field surveys. Habitat exists for Michaux's sumac. A resurvey was last done on September 9, 2017 for Michaux's sumac. Biological conclusion is No Effect for dwarf wedgemussel, red-cockaded woodpecker, and Michaux's sumac.

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

Miscellaneous attachments not previously requested.

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

2004B-004_Easement_Revision_Approval_1-30-2018.pdf 1.08MB

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: *

Colin Mellor

Signature

Date

3/22/2018

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.05; Released April 2016)

WBS Element: 42336.1.1 **TIP No.:** B-5161 **County(ies):** Wake

General Project Information

WBS Element:	42336.1.1	**TIP Number:**	B-5161	**Project Type:**	Bridge Replacement	**Date:**	1/11/2018
NCDOT Contact:	Bill Elam, PE			**Contractor / Designer:**	James Rice		
Address:	Hydraulics Unit 1020 Birch Ridge Dr. Raleigh, NC 27610			**Address:**	555 Fayetteville St., Suite 900 Raleigh, NC 27601		
Phone:	919-707-6718			**Phone:**	919-232-6621		
Email:	belam@ncdot.gov			**Email:**	james.rice@hdrinc.com		
City/Town:	Apex			**County(ies):**	Wake		
River Basin(s):	Cape Fear			**CAMA County?**	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	0.24	**Surrounding Land Use:**	Rural/Residential

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	1.2 ac.	0.7 ac.
Typical Cross Section Description:	2 - 11 ft lanes w/ 5 ft paved shoulders and on the right side 30" C&G with 5 ft sidewalk w/ 4 ft offset from back of curb - Total width of 66 ft. Additionally there is a 10 ft paved greenway.	2- 10 ft lanes w/ 3' unpaved shoulders - Total width of 26'
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 10360 Year: 2038	Existing: 3,970 Year: 2018

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

The purpose of this project (B-5161) is to replace bridge No. 362 over Beaver Creek on SR 1162 (Apex - Barbeque Road). Several options were explored during design to provide treatment of stormwater runoff prior to the buffers;

1 – In the bridge approach, left quadrant of the roadway crossing a 2' Trapezoidal Ditch was used to cut through the Buffer zones. This ditch is cut down to the stream bed elevation and lined with rip rap to reduce slope and avoid head cutting at the bank. A level spreader and a grass swale was considered for this location but due to the topography and length required to meet criteria these were not feasible options.

2 – In the bridge departing, left quadrant of the roadway crossing a 2' Trapezoidal Ditch was used to dissipate the left ditch flow before it entered a wetland area. This represents what occurs in the existing conditions. A grass swale was considered at this location but due to the topography and length required to meet criteria it was not a feasible options.

3 – In the bridge departing, right quadrant of the roadway crossing a preformed scour hole is being used at the outlet of an 18" pipe. The storm system is designed to bring as much roadway runoff away from the buffers . The PSH is used to dissipate the flow before entering an upland area from the buffer zones.

4 – Bridge deck drains are proposed to discharge over the buffer onto dissipator pads in order to meet roadway spread requirements without discharging directly into the stream. The proposed deck drains are spaced on 4' centers with the restrictions of; not being within 10' of the top of bank, not over the greenway path and 3' from the interior bent. The alternative would be to have an increase cost of widening the proposed bridge.

5 – There is no change to the drainage pattern in the bridge approach, right quadrant of the roadway crossing.

Waterbody Information

Surface Water Body (1):	Beaver Creek		**NCDWR Stream Index No.:**	16-41-10-(0.5)	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)		
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	Beaver Creek			**Buffer Rules in Effect:**	Jordan Lake
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	Yes	**Dissipator Pads Provided in Buffer?**	Yes
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)					

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.05; Released April 2016)

WBS Element: 36780.3.GV3 **TIP No.:** B-5161 **County(ies):** Wake

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)	BMP Associated w/ Buffer Rules?
4	-L- 18+75 Rt. 35.722941 / -78.903727	(1)Beaver Creek	PSH	Class 'B'	0.4	Pipe	18	4.6	1.1	

Additional Comments

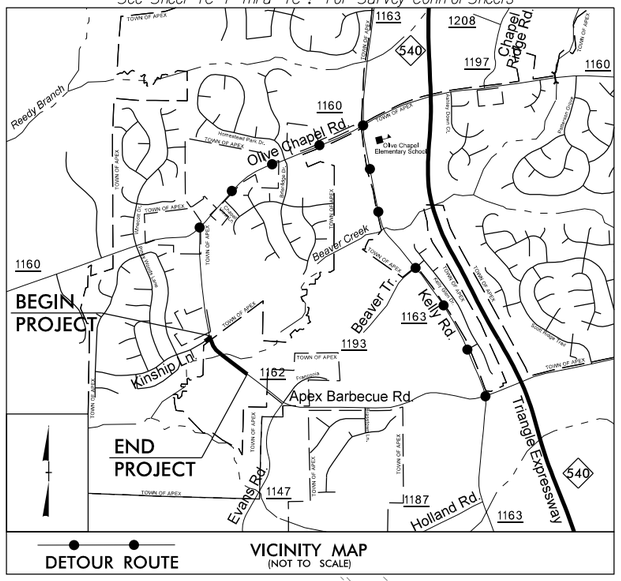
* Refer to the NCDOT Best Management Practices Toolbox (2014), NCDOT Standards, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

09/08/99

TIP PROJECT: B-5161

CONTRACT:

See Sheet 1A for Index of Sheets
See Sheet 1B for Sheet Symbology
See Sheet 1C-1 thru 1C-? for Survey Control Sheets



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	TIP PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5161	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42336.1.1	BRZ-1162(6)	P.E.
42336.2.1		R/W

LOCATION: BRIDGE NO. 362 OVER BEAVER CREEK ON SR 1162
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

WETLAND AND SURFACE WATER IMPACTS
SUBMITTED: 01-11-18

NAD 83/ NSRS 2007

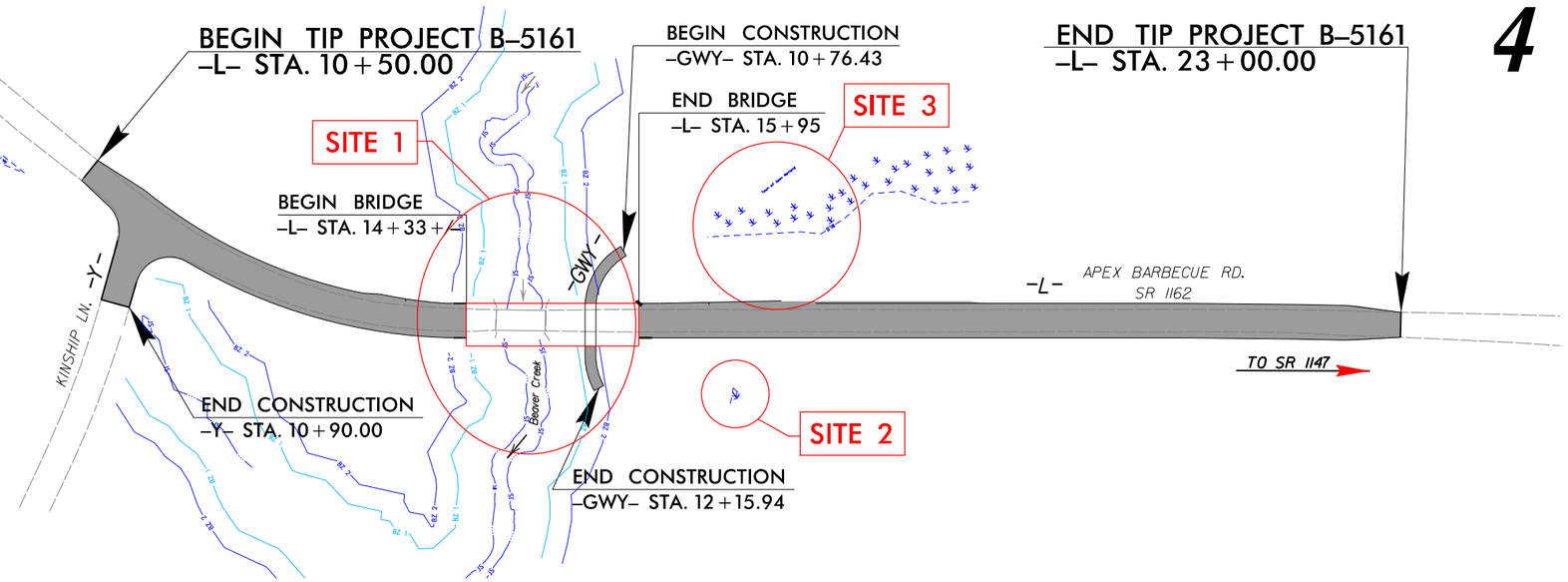
BEGIN TIP PROJECT B-5161
-L- STA. 10+50.00

BEGIN CONSTRUCTION
-GWY- STA. 10+76.43

END BRIDGE
-L- STA. 15+95

END TIP PROJECT B-5161
-L- STA. 23+00.00

4



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF APEX.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

BUFFER DRAWING
SHEET 1 OF 10

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 2018 = 3970
ADT 2038 = 10360
K = 10 %
D = 70 %
T = 5 %*
V = 40 MPH
*TTST=1% DUAL=4%
FUNC CLASS =
LOCAL RURAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5161 = 0.207 MILES
LENGTH STRUCTURES TIP PROJECT B-5161 = 0.030 MILES
TOTAL LENGTH TIP PROJECT B-5161 = 0.237 MILES

Prepared in the Office of:
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, NC 27601
N.C.B.E.L.S. License Number: F-0116

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 16, 2017

LETTING DATE:
FEBRUARY 18, 2018

PHILLIP E. ROGERS, P.E.
PROJECT ENGINEER

T. NATHAN BEDENBAUGH, P.E.
PROJECT DESIGN ENGINEER

DAVID STUTTS
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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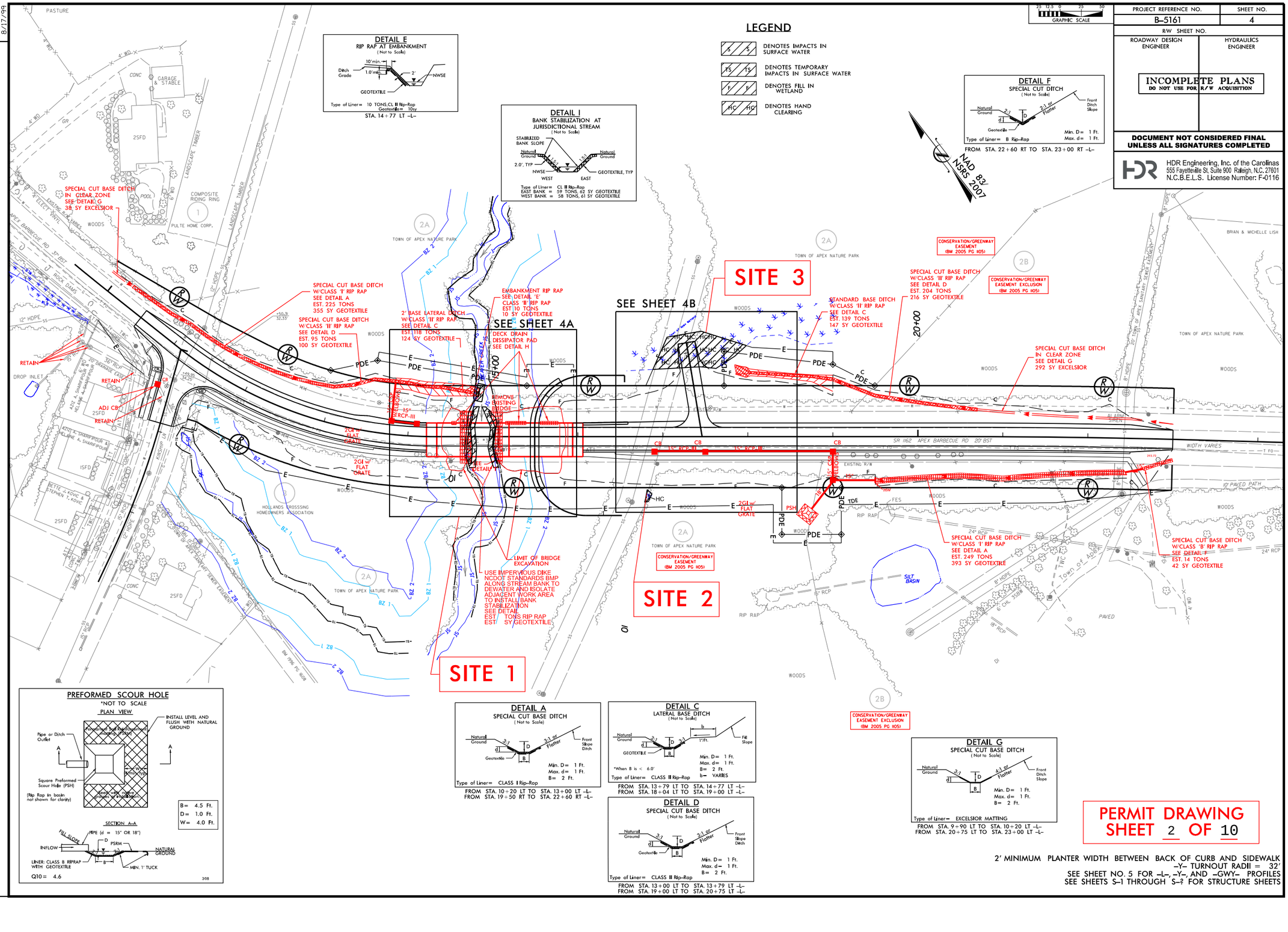

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REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-5161	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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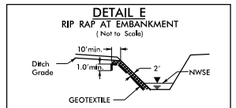
GRAPHIC SCALE 25 12.5 0 25 50

NAD 83/ NSRS 2007

LEGEND

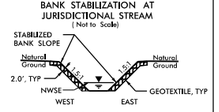
- S S — DENOTES IMPACTS IN SURFACE WATER
- TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- F F — DENOTES FILL IN WETLAND
- HC HC — DENOTES HAND CLEARING

DETAIL E
RIP RAP AT EMBANKMENT
(Not to Scale)



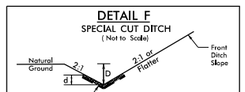
Type of Liner= 10 TONS,CL II Rip-Rap
Geotextile= 10sy
STA. 14+77 LT –L–

DETAIL I
BANK STABILIZATION AT JURISDICTIONAL STREAM
(Not to Scale)



Type of Liner= CL II Rip-Rap
EAST BANK = 59 TONS, 62 SY GEOTEXTILE
WEST BANK = 58 TONS, 61 SY GEOTEXTILE

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= B Rip-Rap
Min. D= 1 Ft.
Max. d= 1 Ft.
FROM STA. 22+60 RT TO STA. 23+00 RT –L–

SITE 3

SITE 2

SITE 1

SEE SHEET 4A

SEE SHEET 4B

SPECIAL CUT BASE DITCH IN CLEAR ZONE SEE DETAIL G 38 SY EXCELSIOR

SPECIAL CUT BASE DITCH W/CLASS 'I' RIP RAP SEE DETAIL A EST. 225 TONS 355 SY GEOTEXTILE

SPECIAL CUT BASE DITCH W/CLASS 'II' RIP RAP SEE DETAIL D EST. 95 TONS 100 SY GEOTEXTILE

2' BASE LATERAL DITCH W/CLASS 'II' RIP RAP SEE DETAIL C EST. 118 TONS 124 SY GEOTEXTILE

EMBANKMENT RIP RAP SEE DETAIL 'E' CLASS 'II' RIP RAP EST. 10 TONS 10 SY GEOTEXTILE

DECK DRAIN DISSIPATOR PAD SEE DETAIL H

REMOVE EXISTING BRIDGE

LIMIT OF BRIDGE EXCAVATION

USE IMPERVIOUS DIKE NCDOT STANDARDS BMP ALONG STREAM BANK TO DEWATER AND ISOLATE ADJACENT WORK AREA TO INSTALL BANK STABILIZATION SEE DETAIL EST. TONS RIP RAP EST. SY GEOTEXTILE

STANDARD BASE DITCH W/CLASS 'II' RIP RAP SEE DETAIL C EST. 139 TONS 147 SY GEOTEXTILE

SPECIAL CUT BASE DITCH W/CLASS 'II' RIP RAP SEE DETAIL D EST. 204 TONS 216 SY GEOTEXTILE

SPECIAL CUT BASE DITCH IN CLEAR ZONE SEE DETAIL G 292 SY EXCELSIOR

SPECIAL CUT BASE DITCH W/CLASS 'I' RIP RAP SEE DETAIL A EST. 249 TONS 393 SY GEOTEXTILE

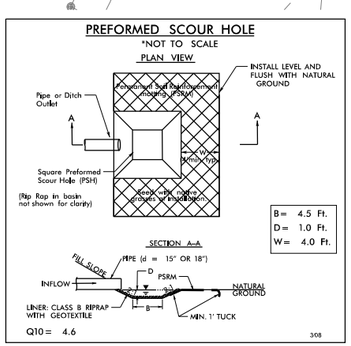
SPECIAL CUT BASE DITCH W/CLASS 'B' RIP RAP SEE DETAIL F EST. 14 TONS 42 SY GEOTEXTILE

CONSERVATION/GREENWAY EASEMENT (BM 2005 PG 1105)

CONSERVATION/GREENWAY EASEMENT EXCLUSION (BM 2005 PG 1105)

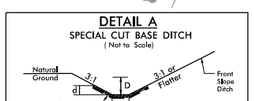
SILT BASIN

PREFORMED SCOUR HOLE
*NOT TO SCALE



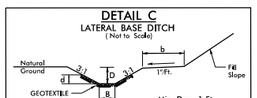
B= 4.5 Ft.
D= 1.0 Ft.
W= 4.0 Ft.

DETAIL A
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
Type of Liner= CLASS I Rip-Rap
FROM STA. 10+20 LT TO STA. 13+00 LT –L–
FROM STA. 19+50 RT TO STA. 22+60 RT –L–

DETAIL C
LATERAL BASE DITCH
(Not to Scale)

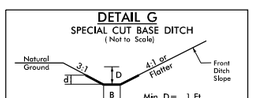


*When B is < 6.0'
Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
b= VARIES
Type of Liner= CLASS II Rip-Rap
FROM STA. 13+79 LT TO STA. 14+77 LT –L–
FROM STA. 18+04 LT TO STA. 19+00 LT –L–

DETAIL D
SPECIAL CUT BASE DITCH
(Not to Scale)

Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
Type of Liner= CLASS II Rip-Rap
FROM STA. 13+79 LT TO STA. 13+79 LT –L–
FROM STA. 19+00 LT TO STA. 20+75 LT –L–

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
Type of Liner= EXCELSIOR MATTING
FROM STA. 9+90 LT TO STA. 10+20 LT –L–
FROM STA. 20+75 LT TO STA. 23+00 LT –L–

PERMIT DRAWING SHEET 3 OF 10

2' MINIMUM PLANTER WIDTH BETWEEN BACK OF CURB AND SIDEWALK
–Y– TURNOUT RADII = 32'
SEE SHEET NO. 5 FOR –L–, –Y–, AND –GWY– PROFILES
SEE SHEETS S-1 THROUGH S-? FOR STRUCTURE SHEETS

REVISIONS

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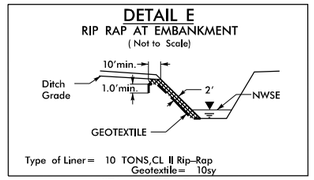
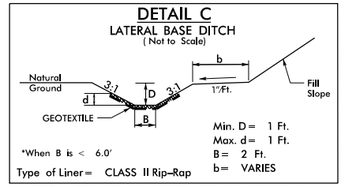
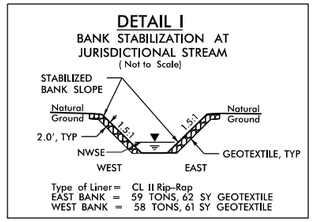
8/17/99

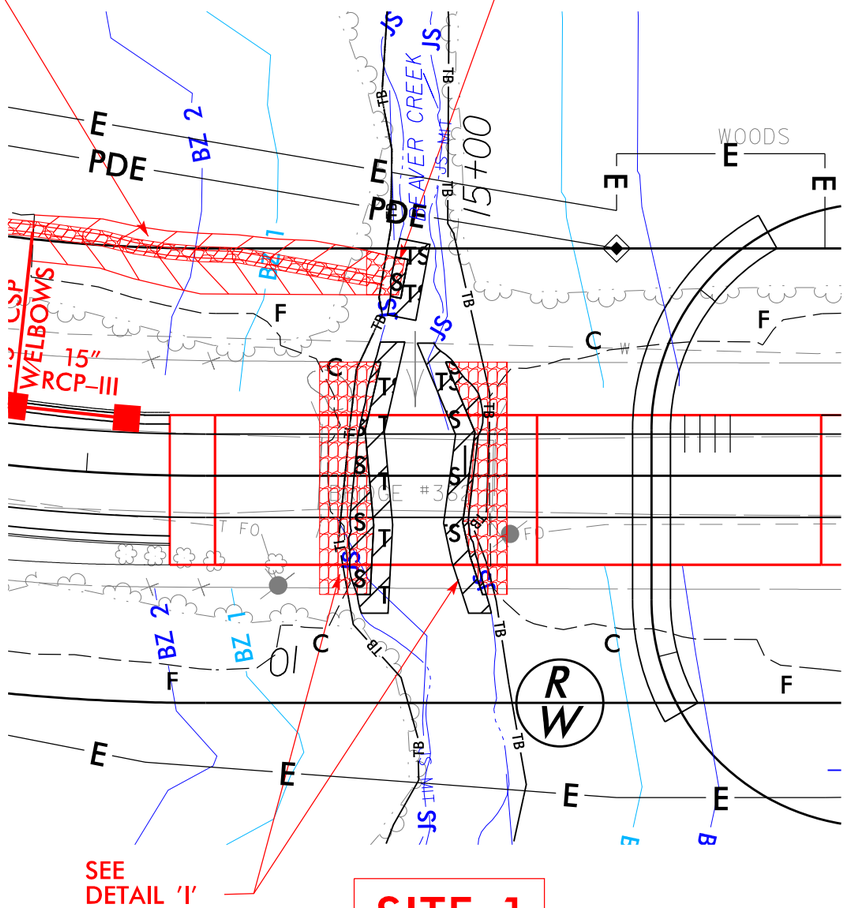






2' BASE LATERAL DITCH
W/CLASS 'II' RIP RAP
SEE DETAIL C
EST. 118 TONS
124 SY GEOTEXTILE

EMBANKMENT RIP RAP
SEE DETAIL 'E'
CLASS 'II' RIP RAP
EST 10 TONS
10 SY GEOTEXTILE



SITE 1

LEGEND

S / S — DENOTES IMPACTS IN SURFACE WATER

TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE 20 10 0 20 40

PROJECT REFERENCE NO.	SHEET NO.
B–5161	4A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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NAD 83/ NSRS 2007

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PERMIT DRAWING
SHEET 4 OF 10

REVISIONS

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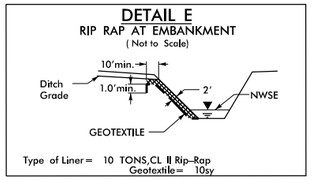
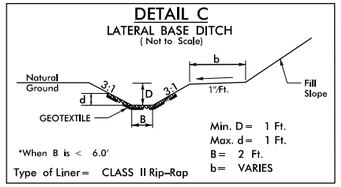
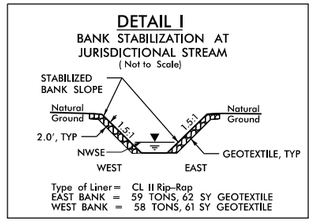
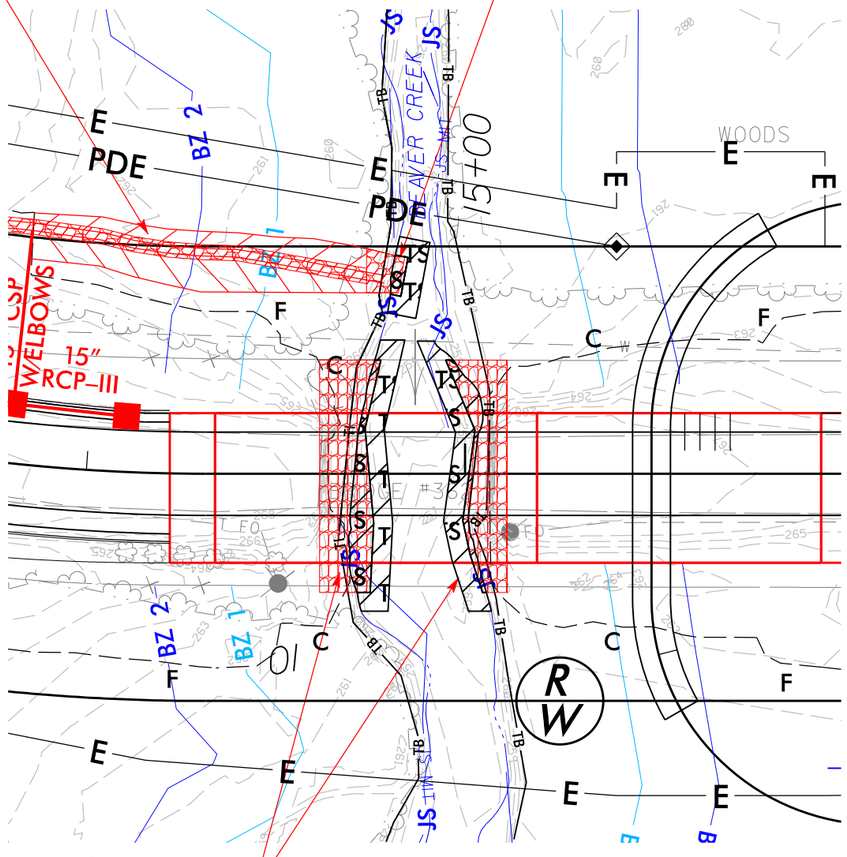






2' BASE LATERAL DITCH
W/CLASS 'II' RIP RAP
SEE DETAIL C
EST. 118 TONS
124 SY GEOTEXTILE

EMBANKMENT RIP RAP
SEE DETAIL 'E'
CLASS 'II' RIP RAP
EST 10 TONS
10 SY GEOTEXTILE



SEE DETAIL 'I'

SITE 1

LEGEND

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE 20 10 0 20 40

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
B-5161	4A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SHEET 5 OF 10

REVISIONS

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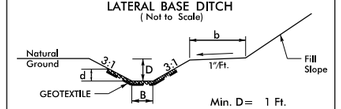
LEGEND

F F — DENOTES FILL IN WETLAND

HC HC — DENOTES HAND CLEARING

DETAIL C
LATERAL BASE DITCH
(Not to Scale)



*When B is < 6.0'

Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
b= VARIES

Type of Liner= CLASS II Rip-Rap

FROM STA. 13+79 LT TO STA. 14+77 LT –L–
FROM STA. 18+04 LT TO STA. 19+00 LT –L–

GRAPHIC SCALE 20 10 0 20 40

PROJECT REFERENCE NO.	SHEET NO.
B–5161	4B
R/W SHEET NO.	

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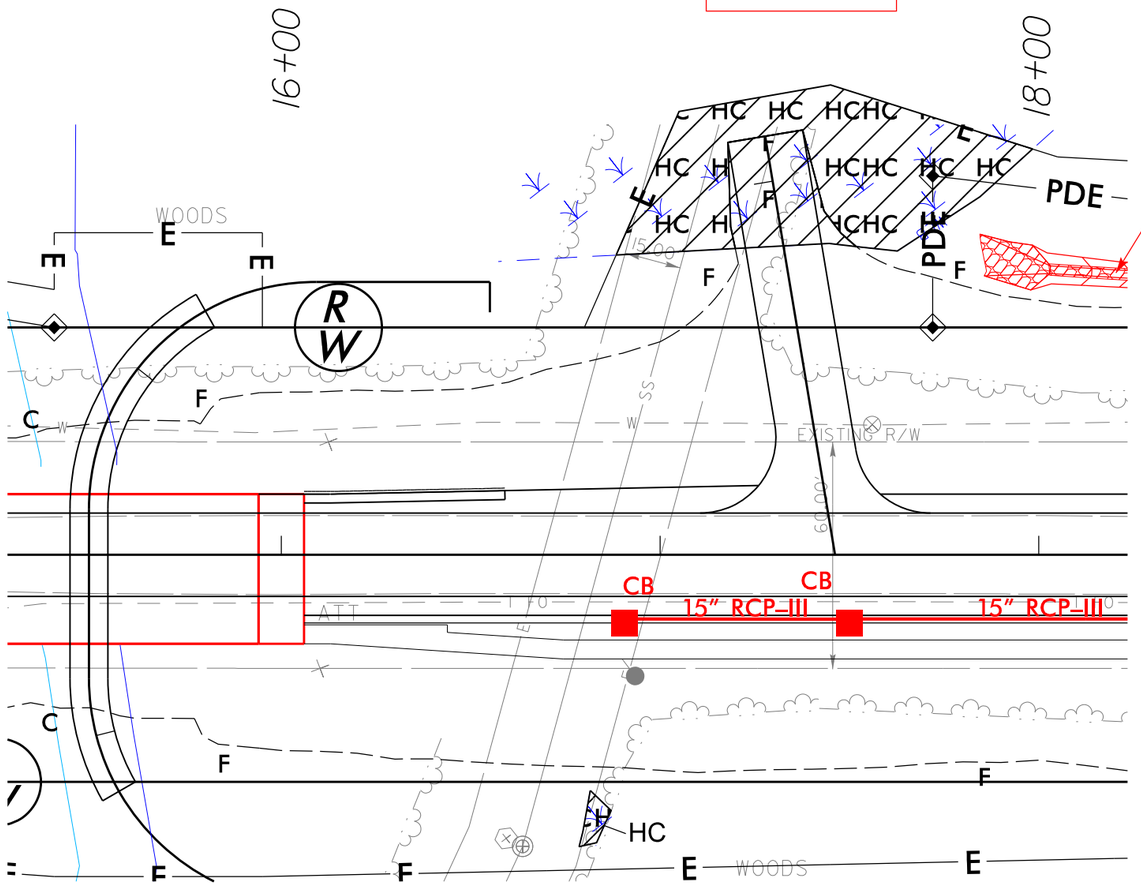
SITE 3



STANDARD BASE DITCH
W/CLASS 'II' RIP RAP
SEE DETAIL C
EST. 139 TONS
147 SY GEOTEXTILE

SITE 2

PERMIT DRAWING
SHEET 6 OF 10

REVISIONS

PLOT DRIVER: NCDOT_pdf_color_eng_100.plt PENTABLE: NCDOT_permits_NOCON.tbl
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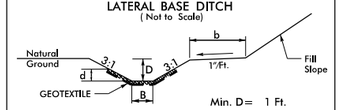
LEGEND

F F — DENOTES FILL IN WETLAND

HC HC — DENOTES HAND CLEARING

DETAIL C
LATERAL BASE DITCH
(Not to Scale)

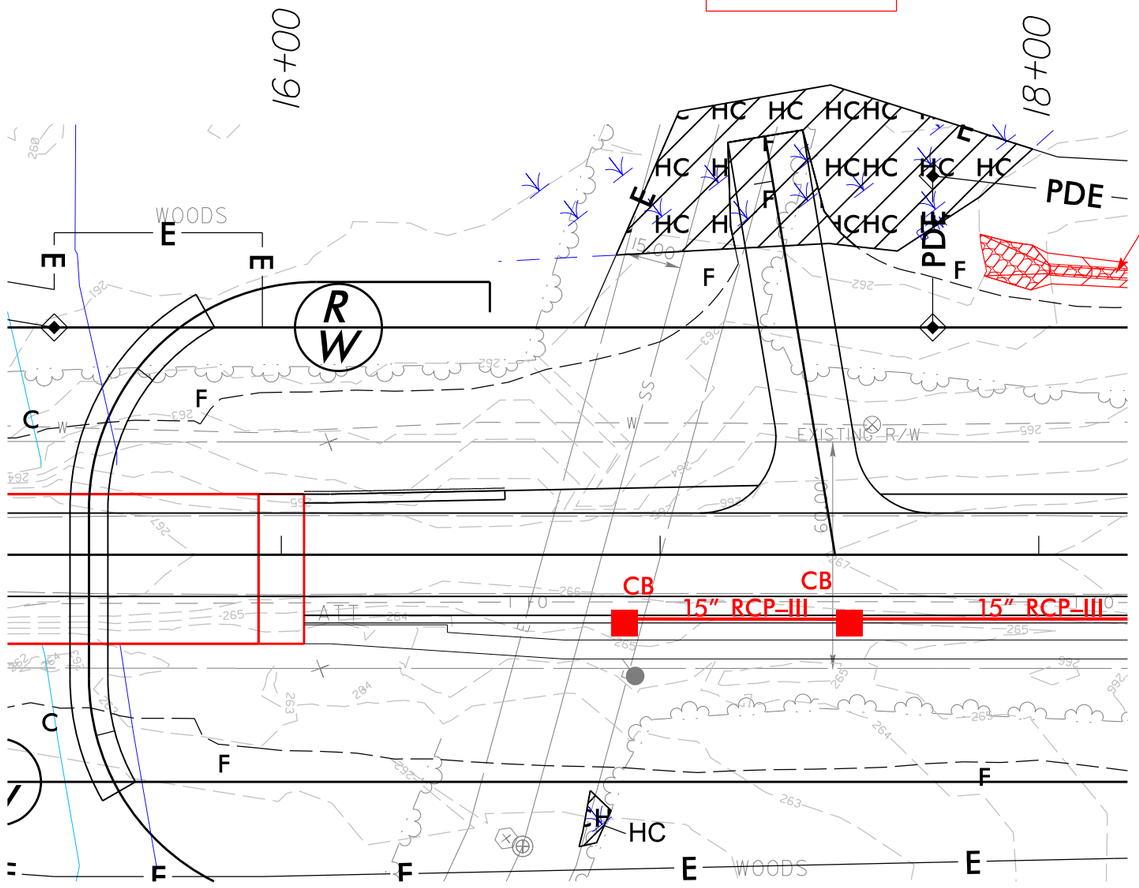


*When B is < 6.0'
Type of Liner = CLASS II Rip-Rap

Min. D = 1 Ft.
Max. d = 1 Ft.
B = 2 Ft.
b = VARIES

FROM STA. 13+79 LT TO STA. 14+77 LT –L–
FROM STA. 18+04 LT TO STA. 19+00 LT –L–

SITE 3



STANDARD BASE DITCH
W/CLASS 'II' RIP RAP
SEE DETAIL C
EST. 139 TONS
147 SY GEOTEXTILE

SITE 2

GRAPHIC SCALE 20 10 0 20 40

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
B-5161	4B
R/W SHEET NO.	

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PERMIT DRAWING
SHEET 7 OF 10

REVISIONS

PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
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PROJECT REFERENCE NO.	SHEET NO.
B-5161	5

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 3100	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 266.2	FT
BASE DISCHARGE	= 4020	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 267.3	FT
OVERTOPPING DISCHARGE	= 21300	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 275.7	FT
DATE OF SURVEY	= 05/28/2016	
W.S. ELEVATION AT DATE OF SURVEY	= 255.1	FT

-L-

BEGIN GRADE
-L- STA. 10+50.00
EL. = 279.46'

PI = 12+10.00
EL = 273.30'
K = 66
VC = 280'

BEGIN BRIDGE
-L- STA. 14+32.81

END BRIDGE
-L- STA. 15+95.19

PI = 20+35.00
EL = 276.39'
K = 73
VC = 530'

PROPOSED GRADE

(-)3.8534%

(+)0.3750%

(+)0.3750%

STA. 10+00.00 LT
ELEV. 279.27

STA. 11+00.00 LT
ELEV. 273.96

STA. 12+00.00 LT
ELEV. 270.38

STA. 13+00.00 LT
ELEV. 267.13

STA. 13+50.00 LT
ELEV. 263.00

STA. 13+79.00 LT
ELEV. 261.68

STA. 14+78.00 LT
ELEV. 258.00

STA. 18+04.00 LT
ELEV. 282.00

STA. 19+00.00 LT
ELEV. 264.50

STA. 19+50.00 LT
ELEV. 270.50

STA. 19+50.00 RT
ELEV. 264.41

STA. 20+75.00 LT
ELEV. 279.35

STA. 21+00.00 RT
ELEV. 279.28

STA. 22+60.00 RT
ELEV. 291.25

STA. 23+00.00 RT
ELEV. 293.59

STA. 23+00.00 LT
ELEV. 294.96

SPECIAL CUT BASE DITCH W/CLASS 'I' RIP RAP @ 5.18%

SPECIAL CUT BASE DITCH W/CLASS 'I' RIP RAP @ 3.58%

SPECIAL CUT BASE DITCH W/CLASS 'I' RIP RAP @ 3.25%

SPECIAL CUT BASE DITCH W/CLASS 'II' RIP RAP @ 4.55%

SPECIAL CUT BASE DITCH W/CLASS 'II' RIP RAP @ 8.26%

SPECIAL CUT BASE DITCH W/CLASS 'II' RIP RAP @ 3.72%

SPECIAL CUT BASE DITCH W/CLASS 'I' RIP RAP @ 5.66%

SPECIAL CUT BASE DITCH W/CLASS 'II' RIP RAP @ 7.08%

SPECIAL CUT BASE DITCH W/CLASS 'II' RIP RAP @ 12.00%

SPECIAL CUT BASE DITCH W/CLASS 'II' RIP RAP @ 7.48%

SPECIAL CUT DITCH W/EXCELSIOR MATTING @ 6.94%

SPECIAL CUT DITCH W/CLASS 'B' RIP RAP @ 5.85%

STANDARD BASE DITCH W/CLASS 'II' RIP RAP @ 2.60%

EXCAVATE TO 260.2

CLASS II RIP RAP SLOPE 1.5:1, 2 FT THICK, NORMAL TO CAP, TYP

3.5' KEY DEPTH, TYP

APPROXIMATE PROPOSED GREENWAY

EXISTING GROUND

NWSE=255.1
5-28-15

PROPOSED BANK STABILIZATION SLOPE 1.5:1 (NORMAL TO TOP OF BANK w/CL II RIP RAP, TYP)

EXISTING BRIDGE #362 TO BE REMOVED

BM 50
-L- POC STA. 13+48 (50' LEFT)
ELEVATION = 267.81'
RRS IN 24" GUM

BM 51
-L- POC STA. 22+64 (76' LEFT)
ELEVATION = 296.56'
RRS IN 16" PINE

END GRADE
-L- STA. 23+00.00
EL. = 296.61'

10' MINIMUM VERTICAL CLEARANCE PROVIDED FOR FUTURE GREENWAY EAST OF BEAVER CREEK
SEE SHEET NO. 4 FOR PLAN VIEW

-Y-

BEGIN GRADE
-Y- STA. 10+17.23=
-L- STA. 11+16.68 (16.00' RT)
EL. = 277.57'

PI = 10+35.00
EL = 277.39'
K = 9
VC = 30'
V = 20 MPH

PI = 10+70.00
EL = 275.82'
K = 12
VC = 40'
V = 15 MPH

(-)4.4853%

(-)11.0000%

(-)11.1500%

EXISTING GROUND

END GRADE
END CONSTRUCTION
-Y- STA. 10+90.00
EL. = 275.59'

-GWY-

BEGIN GRADE
-GWY- STA. 10+76.43
EL. = 261.86'

PI = 11+45.00
EL = 259.80'
K = 18
VC = 110'

(-)3.0000%

(+)3.0000%

END GRADE
-GWY- STA. 12+15.94
EL. = 261.93'

10' MINIMUM VERTICAL CLEARANCE PROVIDED FOR FUTURE GREENWAY EAST OF BEAVER CREEK
SEE SHEET NO. 4 FOR PLAN VIEW

PERMIT DRAWING
SHEET 8 OF 10

2/2/18 PM
B5161 PRNAME.PFL 05.dgn
$$$$USERNAME$$$$

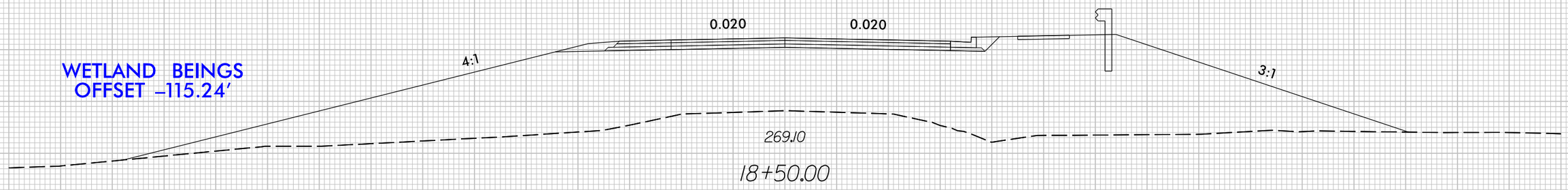
6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5161	X-5

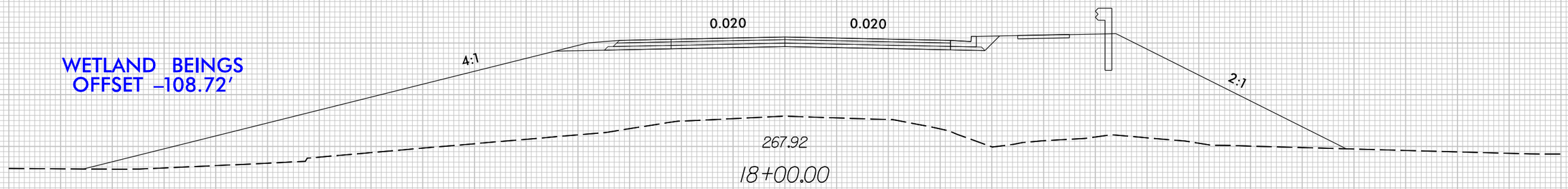
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

280 275 270 265 260

WETLAND BEINGS
OFFSET –115.24'

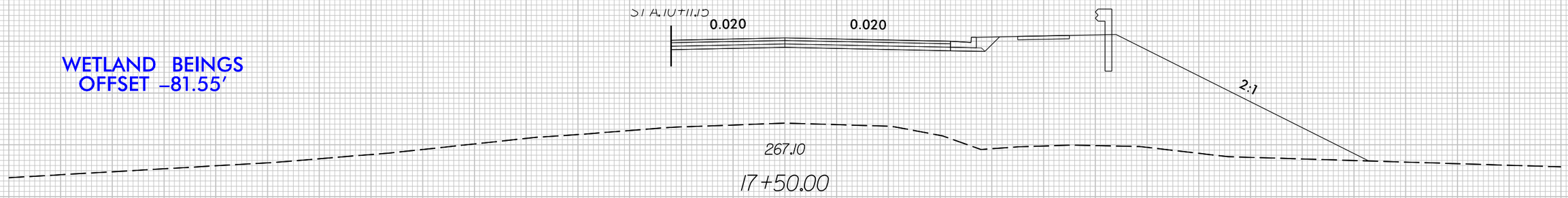


WETLAND BEINGS
OFFSET –108.72'

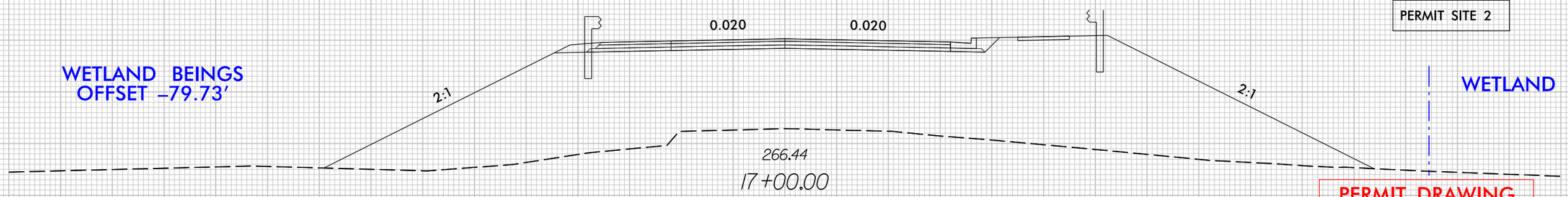


PERMIT SITE 3

WETLAND BEINGS
OFFSET –81.55'



WETLAND BEINGS
OFFSET –79.73'



PERMIT SITE 2

WETLAND

PERMIT DRAWING
SHEET 9 OF 10

WETLAND AND SURFACE 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- 14+77 LT	BANK STABILIZATION						< 0.01	< 0.01	10	10	
1	-L- 14+69 To 15+05	BANK STABILIZATION						< 0.01	0.02	62	10	
2	-L- 16+82 RT	FILL SLOPE					< 0.01					
3	-L- 16+89 To 17+99 LT	UTILITY EASEMENT ACCESS	0.02				0.06					
TOTALS*:			0.02	0.00	0.00	0.00	0.06	0.00	0.02	72	20	0

*Rounded totals are sum of actual impacts

NOTES: <0.01 acre of Temporary Fill in Wetlands for erosion control measures in the Hand Clearing areas

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
01/11/2018
WAKE COUNTY
B-5161
42336.1.1
SHEET 10 OF 10

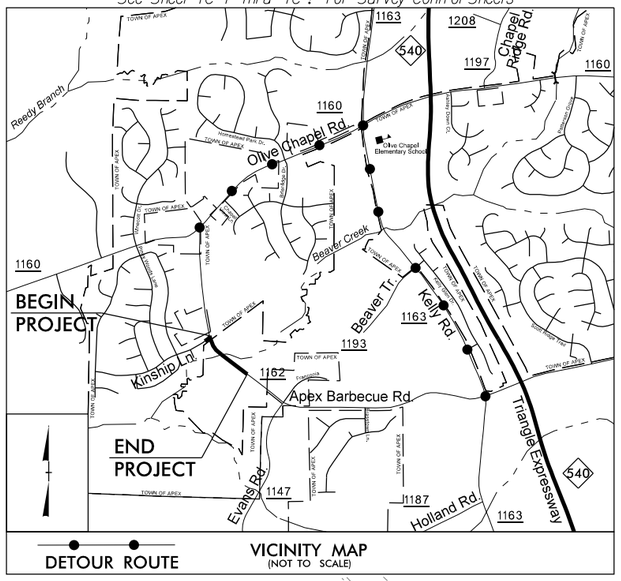
Revised 2016 09 09

09/08/99

TIP PROJECT: B-5161

CONTRACT:

See Sheet 1A for Index of Sheets
See Sheet 1B for Sheet Symbology
See Sheet 1C-1 thru 1C-? for Survey Control Sheets



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	TIP PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5161	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42336.1.1	BRZ-1162(6)	P.E.
42336.2.1		R/W

LOCATION: BRIDGE NO. 362 OVER BEAVER CREEK ON SR 1162
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

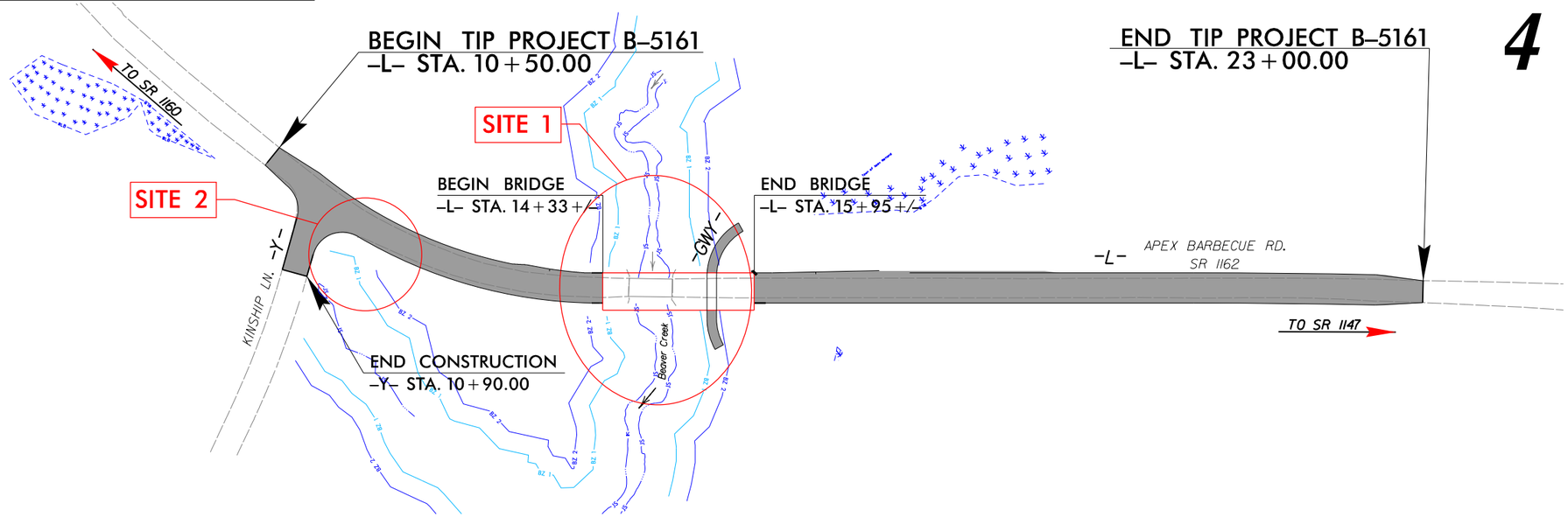
BUFFER IMPACTS SUBMITTED: 01-11-18

NAD 83/ NSRS 2007

BEGIN TIP PROJECT B-5161
-L- STA. 10+50.00

END TIP PROJECT B-5161
-L- STA. 23+00.00

4



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF APEX.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ___

BUFFER DRAWING SHEET 1 OF 4

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 2018 = 3970
ADT 2038 = 10360
K = 10 %
D = 70 %
T = 5 %*
V = 40 MPH
*TTST=1% DUAL=4%
FUNC CLASS =
LOCAL RURAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5161 = 0.207 MILES
LENGTH STRUCTURES TIP PROJECT B-5161 = 0.030 MILES
TOTAL LENGTH TIP PROJECT B-5161 = 0.237 MILES

Prepared in the Office of:
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, NC 27601
N.C.B.E.L.S. License Number: F-0116

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 16, 2017

LETTING DATE:
FEBRUARY 18, 2018

PHILLIP E. ROGERS, P.E.
PROJECT ENGINEER

T. NATHAN BEDENBAUGH, P.E.
PROJECT DESIGN ENGINEER

TATIA L. WHITE, P.E., P.L.S
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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TIME: 3:57:15 PM

REVISIONS

8/17/99

GRAPHIC SCALE 25 12.5 0 25 50

PROJECT REFERENCE NO.	SHEET NO.
B-5161	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

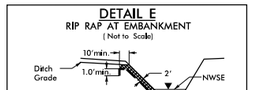
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

LEGEND

- ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 2 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)

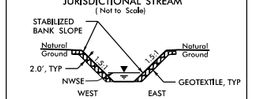
NAD 83/ NSRS 2007

DETAIL E
RIP RAP AT EMBANKMENT
(Not to Scale)



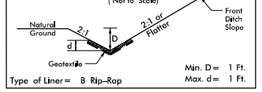
Type of Liner= 10 TONS,CL II Rip-Rap
Geotextile = 10sy
STA. 14+77 LT –L–

DETAIL I
BANK STABILIZATION AT JURISDICTIONAL STREAM
(Not to Scale)



Type of Liner= CL II Rip-Rap
EAST BANK = 59 TONS, 62 SY GEOTEXTILE
WEST BANK = 58 TONS, 61 SY GEOTEXTILE

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= B Rip-Rap
Min. D= 1 Ft.
Max. d= 1 Ft.

FROM STA. 22+60 RT TO STA. 23+00 RT –L–

SPECIAL CUT BASE DITCH IN CLEAR ZONE SEE DETAIL G 38 SY EXCELSIOR

SPECIAL CUT BASE DITCH W/CLASS 'I' RIP RAP SEE DETAIL A EST. 225 TONS 355 SY GEOTEXTILE

SPECIAL CUT BASE DITCH W/CLASS 'II' RIP RAP SEE DETAIL D EST. 95 TONS 100 SY GEOTEXTILE

2' BASE LATERAL DITCH W/CLASS 'II' RIP RAP SEE DETAIL C EST. 118 TONS 124 SY GEOTEXTILE

EMBANKMENT RIP RAP SEE DETAIL 'E' CLASS 'II' RIP RAP EST. 10 TONS 10 SY GEOTEXTILE

SEE SHEET 4A

STANDARD BASE DITCH W/CLASS 'II' RIP RAP SEE DETAIL C EST. 139 TONS 147 SY GEOTEXTILE

SPECIAL CUT BASE DITCH W/CLASS 'II' RIP RAP SEE DETAIL D EST. 204 TONS 216 SY GEOTEXTILE

SPECIAL CUT BASE DITCH IN CLEAR ZONE SEE DETAIL G 292 SY EXCELSIOR

SPECIAL CUT BASE DITCH W/CLASS 'I' RIP RAP SEE DETAIL A EST. 249 TONS 393 SY GEOTEXTILE

SPECIAL CUT BASE DITCH W/CLASS 'B' RIP RAP SEE DETAIL F EST. 14 TONS 42 SY GEOTEXTILE

LIMIT OF BRIDGE EXCAVATION

CONSERVATION/GREENWAY EASEMENT (BM 2005 PG 1105)

CONSERVATION/GREENWAY EASEMENT EXCLUSION (BM 2005 PG 1105)

TOWN OF APEX NATURE PARK

HOLLANDS CROSSSING HOMEOWNERS ASSOCIATION

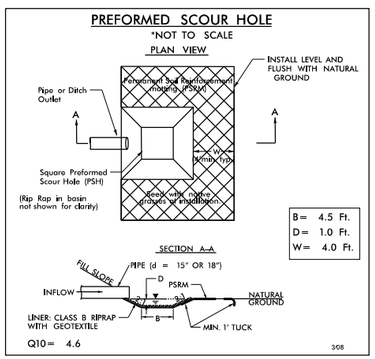
SR 1162 APEX BARBECUE RD 20' BST

SILT BASIN

SITE 2

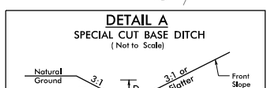
SITE 1

PREFORMED SCOUR HOLE
*NOT TO SCALE



B= 4.5 Ft.
D= 1.0 Ft.
W= 4.0 Ft.

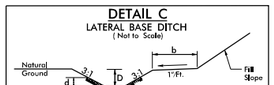
DETAIL A
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
Type of Liner= CLASS I Rip-Rap

FROM STA. 10+20 LT TO STA. 13+00 LT –L–
FROM STA. 19+50 RT TO STA. 22+60 RT –L–

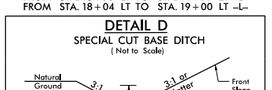
DETAIL C
LATERAL BASE DITCH
(Not to Scale)



*When B is < 6.0'
Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
b= VARIES
Type of Liner= CLASS II Rip-Rap

FROM STA. 13+79 LT TO STA. 14+77 LT –L–
FROM STA. 18+04 LT TO STA. 19+00 LT –L–

DETAIL D
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
Type of Liner= CLASS II Rip-Rap

FROM STA. 13+00 LT TO STA. 13+79 LT –L–
FROM STA. 19+00 LT TO STA. 20+75 LT –L–

DETAIL G
SPECIAL CUT BASE DITCH
(Not to Scale)

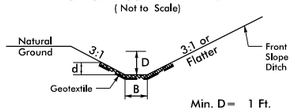
Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
Type of Liner= EXCELSIOR MATTING

FROM STA. 9+90 LT TO STA. 10+20 LT –L–
FROM STA. 20+75 LT TO STA. 23+00 LT –L–

BUFFER DRAWING SHEET 2 OF 4

2' MINIMUM PLANTER WIDTH BETWEEN BACK OF CURB AND SIDEWALK
–Y– TURNOUT RADII = 32'
SEE SHEET NO. 5 FOR –L–, –Y–, AND –GWY– PROFILES
SEE SHEETS S-1 THROUGH S-? FOR STRUCTURE SHEETS

DETAIL A
SPECIAL CUT BASE DITCH
(Not to Scale)

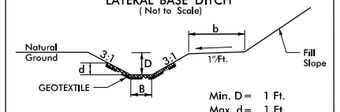


Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.

Type of Liner= CLASS I Rip–Rap

FROM STA. 10+20 LT TO STA. 13+00 LT –L–
FROM STA. 19+50 RT TO STA. 22+60 RT –L–

DETAIL C
LATERAL BASE DITCH
(Not to Scale)



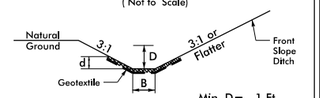
*When B is < 6.0'

Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
b= VARIES

Type of Liner= CLASS II Rip–Rap

FROM STA. 13+79 LT TO STA. 14+77 LT –L–
FROM STA. 18+04 LT TO STA. 19+00 LT –L–

DETAIL D
SPECIAL CUT BASE DITCH
(Not to Scale)

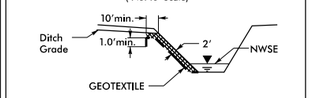


Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.

Type of Liner= CLASS II Rip–Rap

FROM STA. 13+00 LT TO STA. 13+79 LT –L–
FROM STA. 19+00 LT TO STA. 20+75 LT –L–

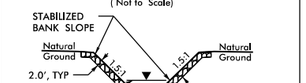
DETAIL E
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 10 TONS,CL II Rip–Rap
Geotextile= 10sy

STA. 14+77 LT –L–

DETAIL I
BANK STABILIZATION AT JURISDICTIONAL STREAM
(Not to Scale)



Type of Liner= CL II Rip–Rap
EAST BANK = 59 TONS, 62 SY GEOTEXTILE
WEST BANK = 58 TONS, 61 SY GEOTEXTILE

GRAPHIC SCALE
20 10 0 20 40

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
B–5161	4A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

SITE 2

SPECIAL CUT BASE DITCH
W/CLASS 'I' RIP RAP
SEE DETAIL A
EST. 225 TONS
355 SY GEOTEXTILE

SPECIAL CUT BASE DITCH
W/CLASS 'II' RIP RAP
SEE DETAIL D
EST. 95 TONS
100 SY GEOTEXTILE

2' BASE LATERAL DITCH
W/CLASS 'II' RIP RAP
SEE DETAIL C
EST. 118 TONS
124 SY GEOTEXTILE

EMBANKMENT RIP RAP
SEE DETAIL 'E'
CLASS 'II' RIP RAP
EST 10 TONS
10 SY GEOTEXTILE

15" CSP W/ELBOWS
15" RCP–III

2GI w/ FLAT GRATE

2GI w/ FLAT GRATE

SEE DETAIL 'I'

CB

BRIDGE #362

WOODS

HOLLANDS CROSSSING HOMEOWNERS ASSOCIATION

KINSHIP LN

MH (FORGE) TOWN OF APEX

BEAVER CREEK

SITE 1

LEGEND

- ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 2 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)

BUFFER DRAWING
SHEET 3 OF 4

REVISIONS

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RIPARIAN BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	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	BRIDGE	14+34 - 15+67		X		7055	3718	10773					
1	ROAD CROSSING	14+17 - 14+34	X				941	941					
2	EXISTING 36" RCP	11+54 - 12+69	X			784	1432	2216					
TOTAL:						7839	6092	13931	0.0	0.0	0.0	0.0	0.0

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE
PROJECT: 42336.1.1 (B-5161)

1/11/2018
SHEET 4 OF 4

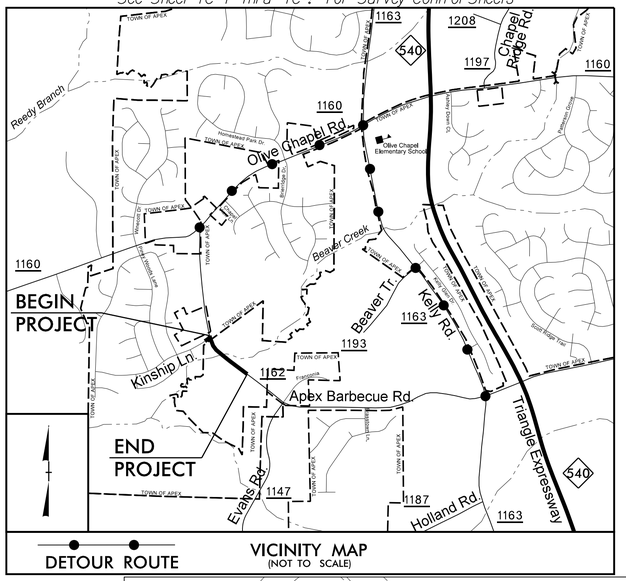
Rev. SEP 2016
Rev. May 2006

09/28/99

TIP PROJECT: B-5161

CONTRACT: C204098

See Sheet 1A for Index of Sheets
See Sheet 1B for Sheet Symbology
See Sheet 1C-1 thru 1C-? for Survey Control Sheets



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

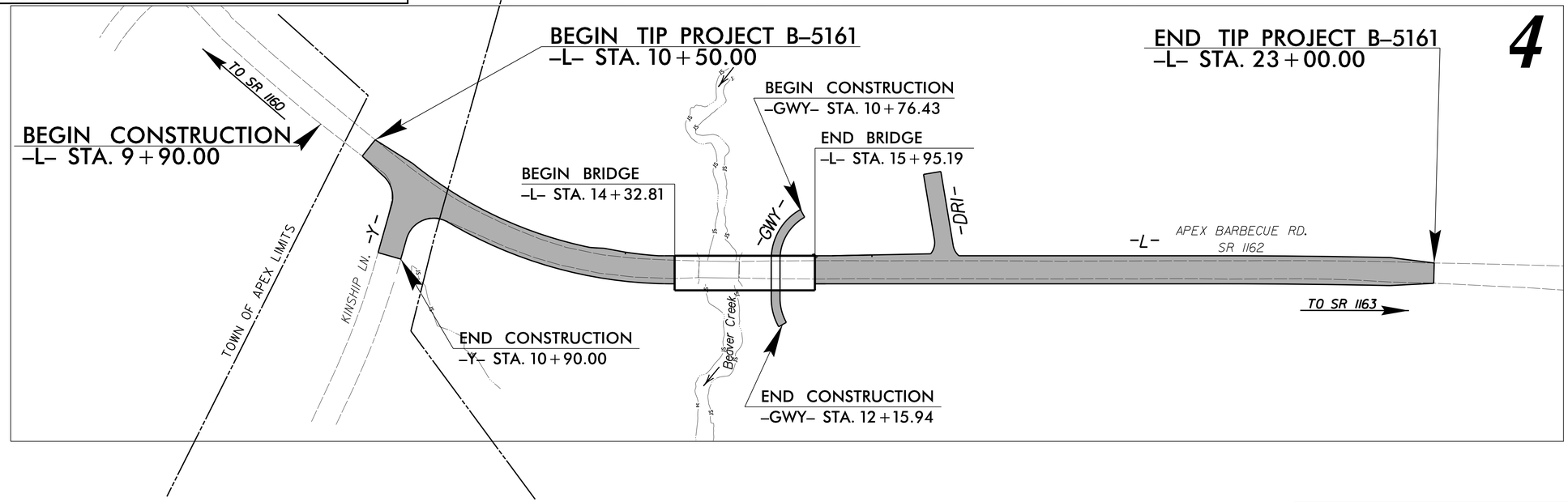
WAKE COUNTY

STATE	TIP PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5161	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42336.1.1	BRZ-1162(6)	P.E.
42336.2.1	BRZ-1162(6)	R/W
42336.3.1	BRZ-1162(6)	CONST.

LOCATION: BRIDGE NO. 362 OVER BEAVER CREEK ON SR 1162 (APEX BARBECUE ROAD)
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

NAD 83/ NSRS 2007



4

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

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 2018 = 3,970
ADT 2038 = 10,360
K = 10 %
D = 70 %
T = 5 %*
V = 40 MPH
*TTST=1% DUAL=4%
FUNC CLASS = LOCAL RURAL SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5161 = 0.206 MILES
LENGTH STRUCTURES TIP PROJECT B-5161 = 0.031 MILES
TOTAL LENGTH TIP PROJECT B-5161 = 0.237 MILES

Prepared in the Office of:
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, NC 27601
N.C.B.E.L.S. License Number: F-0116

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 16, 2017

LETTING DATE: MAY 15, 2018

PHILLIP E. ROGERS, P.E.
PROJECT ENGINEER

CASEY E. HARRIS, P.E.
PROJECT DESIGN ENGINEER

DAVID STUTTS, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

1/19/2018
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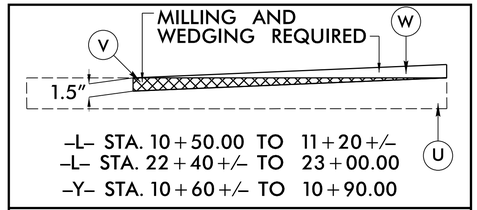
8/17/99

REVISIONS

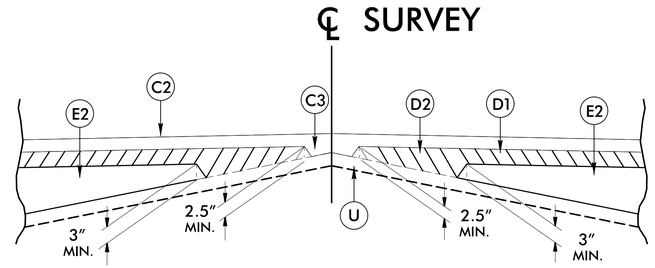
FINAL PAVEMENT SCHEDULE

A1	4″ REINFORCED CONCRETE SIDEWALK.
C1	PROP. APPROX. 2.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD. IN ONE LAYER.
C2	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2.0″ IN DEPTH.
D1	PROP. APPROX. 4.0″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ OR GREATER THAN 4.0″ IN DEPTH.
E1	PROP. APPROX. 4.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT GREATER THAN 5.5″ DEPTH OR LESS THAN 3.0″ IN DEPTH.
J1	PROP. 6″ AGGREGATE BASE COURSE
J2	PROP. 8″ AGGREGATE BASE COURSE
J3	PROP. VAR. DEPTH AGGREGATE BASE COURSE.
R1	2′–6″ CONCRETE CURB & GUTTER
R2	SHOULDER BERM GUTTER
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	VARIABLE MILLING 0″ TO 1.5″ DEPTH.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL, SHEET 2A–2)

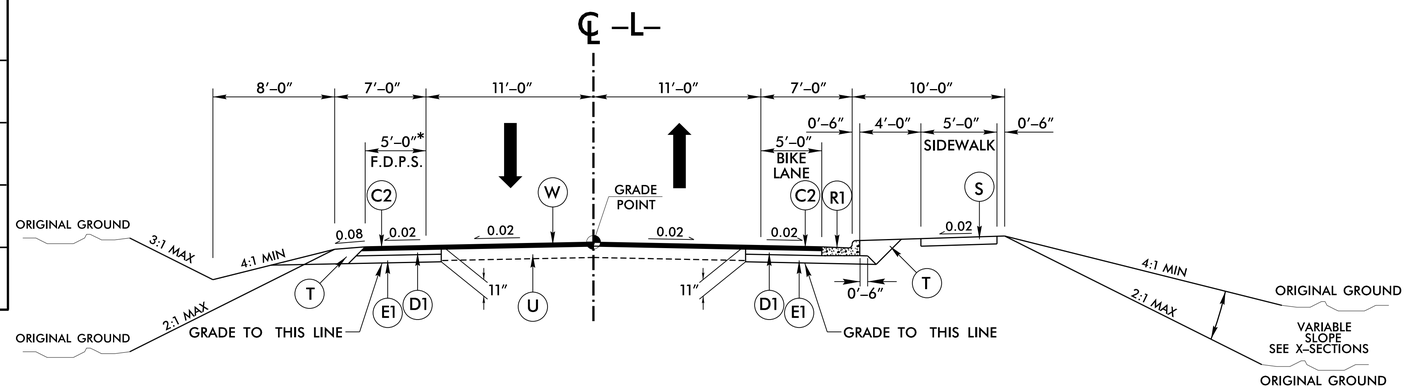
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN.



MILLING DETAIL



Detail Showing Method of Wedging: W



TYPICAL SECTION NO. 1

LINE	FROM STATION	TO STATION
–L–	10+50.00	11+80.00
–L–	21+55.00	23+00.00

*ADDITIONAL WIDTH FOR BICYCLE ACCOMMODATIONS.

PROJECT REFERENCE NO.	SHEET NO.
B–5161	2A–1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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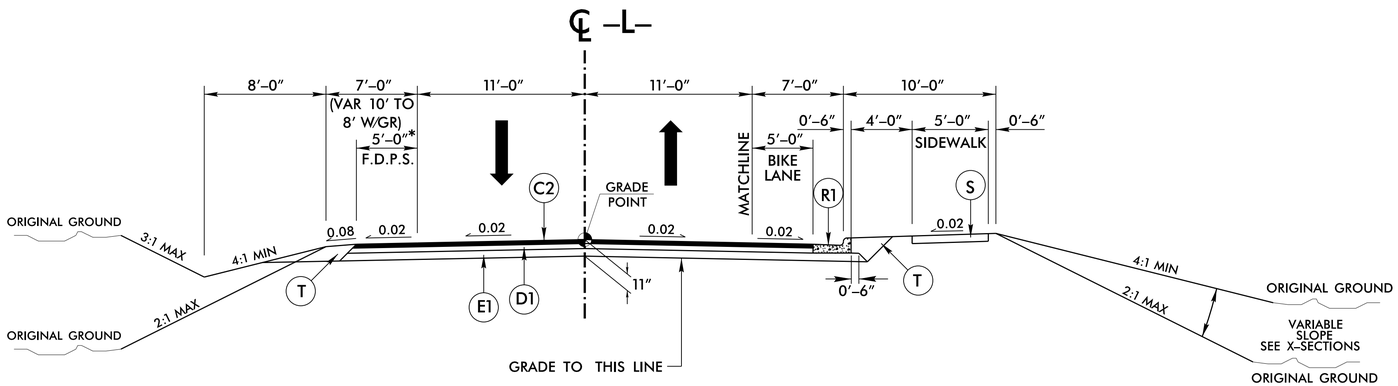
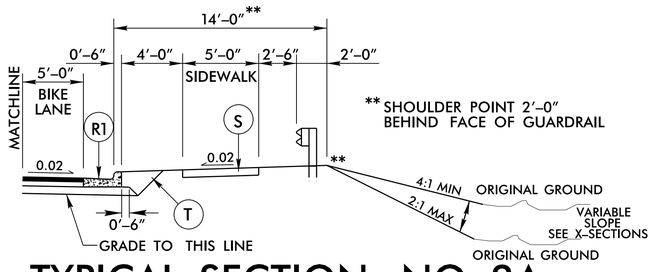


TYPICAL SECTION NO. 2

LINE	FROM STATION	TO STATION
–L–	11+80.00	14+32.81 (BEGIN BRIDGE)
–L–	15+95.19 (END BRIDGE)	21+55.00

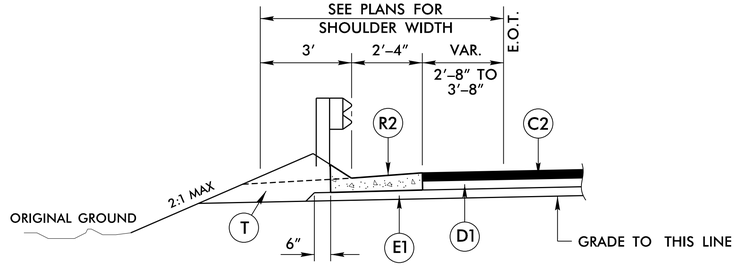
*ADDITIONAL WIDTH FOR BICYCLE ACCOMMODATIONS. PAVE TO FACE OF GUARDRAIL.



TYPICAL SECTION NO. 2A

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2

LINE	FROM STATION	TO STATION
–L–	13+00.00 RT	18+50.00 RT



TYPICAL SECTION NO. 2B

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2

LINE	FROM STATION	TO STATION
–L–	13+76 (LT.)	14+22 (LT.)
–L–	16+06 (LT.)	16+59 (LT.)

PROJECT REFERENCE NO.	SHEET NO.
B–5161	2A–2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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N.C.B.E.L.S. License Number: F-0116

FINAL PAVEMENT SCHEDULE

A1	4″ REINF. CONC. SIDEWALK
C1	2.0″ S9.5B
C2	3.0″ S9.5B
C3	VAR S9.5B
D1	4.0″ I19.0B
D2	VAR I19.0B
E1	4.0″ B25.0B
E2	VAR B25.0B
J1	6″ ABC
J2	8″ ABC
J3	VAR. ABC
R1	2′-6″ CURB AND GUTTER
R2	SHOULDER BERM GUTTER
S	4″ CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	0″ TO 1.5″ MILLING
W	WEDGING

REVISIONS

8/17/99

1/9/2018
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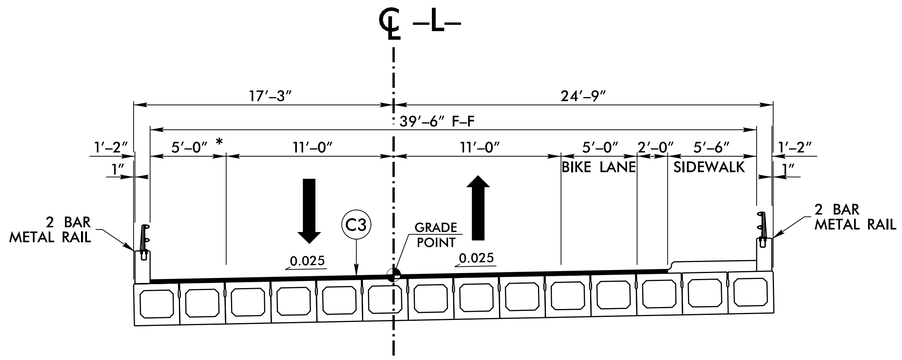
8/17/99

REVISIONS

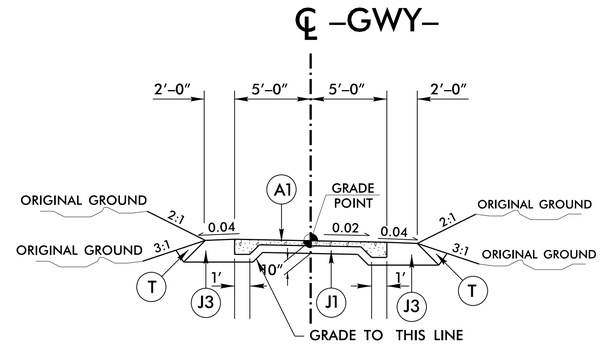


TYPICAL SECTION NO. 3

14 – 33″ BOX BEAM UNITS = 42′–0″

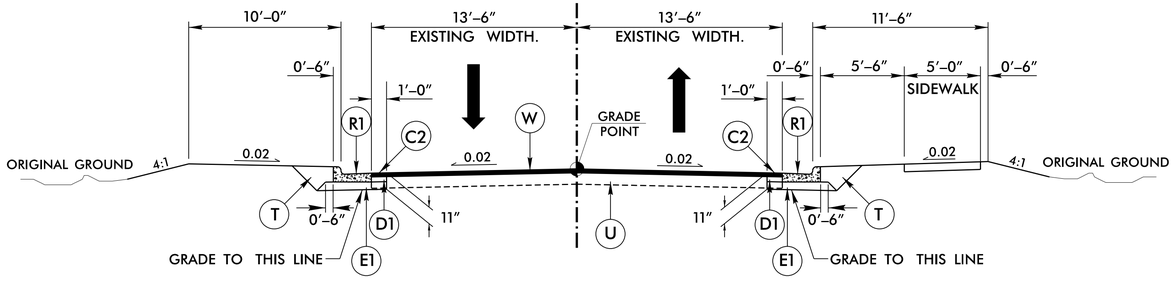
LINE	FROM STATION	TO STATION
–L–	14+32.81 (BEGIN BRIDGE)	15+95.19 (END BRIDGE)

* ADDITIONAL WIDTH FOR BICYCLE ACCOMMODATIONS



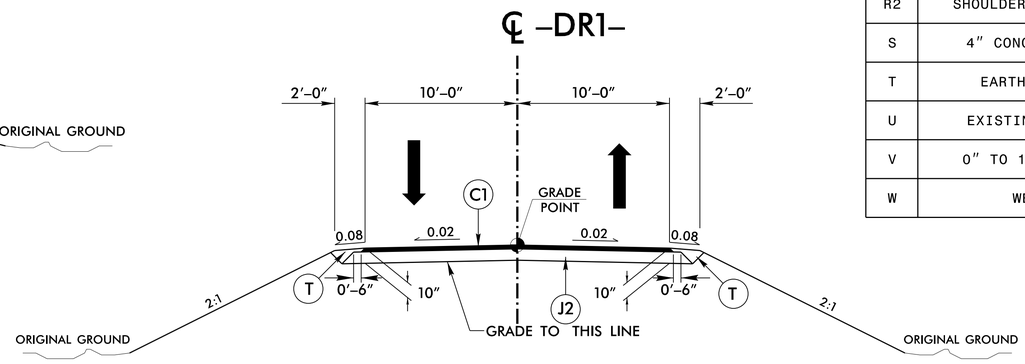
TYPICAL SECTION NO. 4

LINE	FROM STATION	TO STATION
–GWY–	10+76.43	12+15.94



TYPICAL SECTION NO. 5

LINE	FROM STATION	TO STATION
–Y–	10+17.23	10+90.00



TYPICAL SECTION NO. 6

LINE	FROM STATION	TO STATION
–DR1–	10+11.15	11+12.00

PROJECT REFERENCE NO.	SHEET NO.
B–5161	2A–3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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N.C.B.E.L.S. License Number: F-0116

FINAL PAVEMENT SCHEDULE

A1	4″ REINF. CONC. SIDEWALK
C1	2.0″ S9.5B
C2	3.0″ S9.5B
C3	VAR S9.5B
D1	4.0″ I19.0B
D2	VAR I19.0B
E1	4.0″ B25.0B
E2	VAR B25.0B
J1	6″ ABC
J2	8″ ABC
J3	VAR. ABC
R1	2′-6″ CURB AND GUTTER
R2	SHOULDER BERM GUTTER
S	4″ CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	0″ TO 1.5″ MILLING
W	WEDGING

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PROJECT REFERENCE NO. B-5161
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
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HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116
-L-
PI Sta 9+75.00 △ = 1° 15' 58.0" (LT) D = 2° 31' 56.0" L = 50.00' T = 25.00' R = 2,262.66' e = EXIST.
PI Sta 12+75.03 △ = 38° 29' 30.7" (LT) D = 11° 48' 48.8" L = 325.83' T = 169.33' R = 485.00' e = 0.04 Ro = 84' V = 35 MPH
PI Sta 21+83.73 △ = 1° 35' 52.8" (RT) D = 0° 38' 11.8" L = 251.01' T = 125.51' R = 9,000.00' e = NC
-Y-
PI Sta 11+70.09 △ = 9° 12' 02.9" (RT) D = 5° 43' 46.5" L = 160.58' T = 80.47' R = 1,000.00' e = NC
-GWY-
PI Sta 11+05.82 △ = 89° 59' 52.7" (LT) D = 95° 29' 34.7" L = 94.25' T = 60.00' R = 60.00'
PI Sta 12+44.77 △ = 90° 00' 07.3" (LT) D = 95° 29' 34.7" L = 94.25' T = 60.00' R = 60.00'
NAD 83/ NSRS 2007
BEGIN CONSTRUCTION -L- POT STA. 9+90.00
BEGIN TIP PROJECT B-5161 -L- POT STA. 10+50.00
END CONSTRUCTION -DRI- POT Sta. 11+12.00
-DRI- POT Sta. 10+00.00= -L- POT Sta. 17+46.17
BEGIN CONSTRUCTION -GWY- POC STA. 10+76.43
END CONSTRUCTION -Y- POC STA. 10+90.00
END CONSTRUCTION -GWY- POC STA. 12+15.94
END TIP PROJECT B-5161 -L- POC STA. 23+00.00
-L- PT Sta. 23+09.23
S 52° 21' 39.8" E
S 50° 45' 47.1" E
DETAIL E RIP RAP AT EMBANKMENT (Not to Scale) Type of Liner= 10 TONS,CL II Rip-Rap Geotextile= 10sy STA. 14+77 LT -L-
DETAIL I BANK STABILIZATION AT JURISDICTIONAL STREAM (Not to Scale) Type of Liner= CL II Rip-Rap EAST BANK = 59 TONS, 62 SY GEOTEXTILE WEST BANK = 58 TONS, 61 SY GEOTEXTILE
DETAIL F SPECIAL CUT DITCH (Not to Scale) Type of Liner= B Rip-Rap Min. D= 1 Ft. Max. d= 1 Ft. FROM STA. 22+60 RT TO STA. 23+00 RT -L-
SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE
-L- PT Sta. 14+31.53
BEGIN BRIDGE -L- POT STA. 14+32.81
END BRIDGE -L- POT STA. 15+95.19
BEGIN APPROACH SLAB -L- POC STA. 14+21.94
END APPROACH SLAB -L- POT STA. 16+06.06
5'-0" BIKE LANE
5'-6" SIDEWALK
DETAIL A SPECIAL CUT BASE DITCH (Not to Scale) Type of Liner= CLASS I Rip-Rap Min. D= 1 Ft. Max. d= 1 Ft. B= 2 Ft. FROM STA. 10+20 LT TO STA. 13+00 LT -L- FROM STA. 19+50 RT TO STA. 22+60 RT -L-
DETAIL C LATERAL BASE DITCH (Not to Scale) Type of Liner= CLASS II Rip-Rap Min. D= 1 Ft. Max. d= 1 Ft. B= 2 Ft. b= VARIES FROM STA. 13+79 LT TO STA. 14+77 LT -L- FROM STA. 18+04 LT TO STA. 19+00 LT -L-
DETAIL D SPECIAL CUT BASE DITCH (Not to Scale) Type of Liner= CLASS II Rip-Rap Min. D= 1 Ft. Max. d= 1 Ft. B= 2 Ft. FROM STA. 13+00 LT TO STA. 13+79 LT -L- FROM STA. 19+00 LT TO STA. 20+75 LT -L-
DETAIL H DECK DRAIN DISSIPATOR PAD (Not to Scale) *NOTE: CENTER PAD DIRECTLY BELOW DECK DRAINS Type of Liner= 33 TONS CL B Rip-Rap Geotextile= 90sy DRAINS LOCATED ON 4' CENTERS FROM STA 14+43 LT to STA 14+55 LT FROM STA 15+17 LT to STA 15+37 LT FROM STA 15+59 LT to STA 15+87 LT
DETAIL G SPECIAL CUT BASE DITCH (Not to Scale) Type of Liner= EXCELSIOR MATTING Min. D= 1 Ft. Max. d= 1 Ft. B= 2 Ft. FROM STA. 9+90 LT TO STA. 10+20 LT -L- FROM STA. 20+75 LT TO STA. 23+00 LT -L-
PREFORMED SCOUR HOLE *NOT TO SCALE B= 4.5 Ft. D= 1.0 Ft. W= 4.0 Ft. Q10= 4.6 STA. 18+75
2' MINIMUM PLANTER WIDTH BETWEEN BACK OF CURB AND SIDEWALK
-Y- TURNOUT RADII = 32'
SEE SHEET NO. 5 FOR -L-, -Y-, -DR1- AND -GWY- PROFILES
SEE SHEETS S-1 THROUGH S-27 FOR STRUCTURE SHEETS
REVISIONS
8/17/99
1/9/2018 B5161_RDY_PSH04.dgn

HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	PROJECT REFERENCE NO.	SHEET NO.
	B-5161	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 3100	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 266.2	FT
BASE DISCHARGE	= 4020	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 267.3	FT
OVERTOPPING DISCHARGE	= 21300	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 275.7	FT
DATE OF SURVEY	= 05/28/2016	
W.S. ELEVATION AT DATE OF SURVEY	= 255.1	FT

-L-

BEGIN GRADE
-L- STA. 10+50.00
EL. = 279.46'

PI = 12+10.00
EL = 273.30'
K = 66
VC = 280'

BEGIN BRIDGE
-L- STA. 14+32.81

END BRIDGE
-L- STA. 15+95.19

PI = 20+35.00
EL = 276.39'
K = 73
VC = 530'

END GRADE
-L- STA. 23+00.00
EL. = 296.61'

PROPOSED GRADE

EXISTING GROUND

APPROX. GREENWAY

-GWY- 11+52.07 =
-L- STA. 15+49.21

BM 50
-L- POC STA. 13+48 (50' LEFT)
ELEVATION = 267.81'
RRS IN 24" GUM

BM 51
-L- POC STA. 22+64 (76' LEFT)
ELEVATION = 296.56'
RRS IN 16" PINE

EXISTING BRIDGE #362 TO BE REMOVED

10' MINIMUM VERTICAL CLEARANCE PROVIDED FOR FUTURE GREENWAY EAST OF BEAVER CREEK
SEE SHEET NO. 4 FOR PLAN VIEW

-Y-

BEGIN GRADE
-Y- STA. 10+17.23 =
-L- STA. 11+16.68 (16.00' RT)
EL. = 277.57'

PI = 10+35.00
EL = 277.39'
K = 9
VC = 30'
V = 20 MPH

PI = 10+70.00
EL = 275.82'
K = 12
VC = 40'
V = 15 MPH

END GRADE
END CONSTRUCTION
-Y- STA. 10+90.00
EL. = 275.59'

-DR1-

BEGIN GRADE
-DR1- STA. 10+11.15 =
-L- STA. 17+44.33 (11.00' LT)
EL. = 275.09'

PI = 10+35.00
EL = 273.42'
K = 3
VC = 45'

PI = 10+85.00
EL = 260.92'
K = 2
VC = 50'

END GRADE
END CONSTRUCTION
-DR1- STA. 11+12.00
EL. = 261.76'

-GWY-

BEGIN GRADE
-GWY- STA. 10+76.43
EL. = 261.86'

PI = 11+45.00
EL = 259.80'
K = 18
VC = 110'

END GRADE
-GWY- STA. 12+15.94
EL. = 261.93'

10' MINIMUM VERTICAL CLEARANCE PROVIDED FOR FUTURE GREENWAY EAST OF BEAVER CREEK
SEE SHEET NO. 4 FOR PLAN VIEW

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SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: NC DOT.

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☐ U.S. Geological Survey Hydrologic Atlas: .

- ☐ USGS NHD data.
- ☒ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name:1:24,000 :New Hill.

☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Wake County

☐ National wetlands inventory map(s). Cite name: .

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☐ Photographs: ☒ Aerial (Name & Date):Wake sid 08, 2005.
or ☐ Other (Name & Date): .

☐ Previous determination(s). File no. and date of response letter: .

☒ Other information (please specify): NCDWQ Wetland Rating Sheet.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory Project Manager
(REQUIRED)

Deanna Riffey 12/23/09
Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

COPY

2009-01786

ATTACHMENT

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): 3/2/2010

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Deanna Riffey, NCDOT,
1598 Mail Service Center
Raleigh, NC 27699-1598

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: SAW, NCDOT/B-5161/SR1162 Apex-Barbecue Rd/BR362, 2009-01786.

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
B-5161: Replace Bridge No. 362 over Beaver Creek on Apex Barbecue Rd (SR 1162) Wake County. NCDOT Field visit held 8/27/09.

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State:North Carolina County/parish/borough: Wake City: Apex
Center coordinates of site (lat/long in degree decimal format): Lat. 35.7238° N, Long. -78.9047°W, Universal Transverse Mercator:
Name of nearest waterbody: Beaver Creek

Identify (estimate) amount of waters in the review area:
Non-wetland waters: 200 linear feet: 40 width (ft) and/or acres.
Cowardin Class: Riverine/PFO
Stream Flow: Perennial
Wetlands: 0.17 acres.
Cowardin Class: NCWAM Headwater Forest PFO1

Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal:
Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): 12/29/2009

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site.

Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: NC DOT.

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☐ U.S. Geological Survey Hydrologic Atlas: .

- ☐ USGS NHD data.
- ☒ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name:1:24,000 :New Hill.

☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Wake County

☐ National wetlands inventory map(s). Cite name: .

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☐ Photographs: ☒ Aerial (Name & Date):Wake sid 08, 2005.
or ☐ Other (Name & Date): .

☐ Previous determination(s). File no. and date of response letter: .

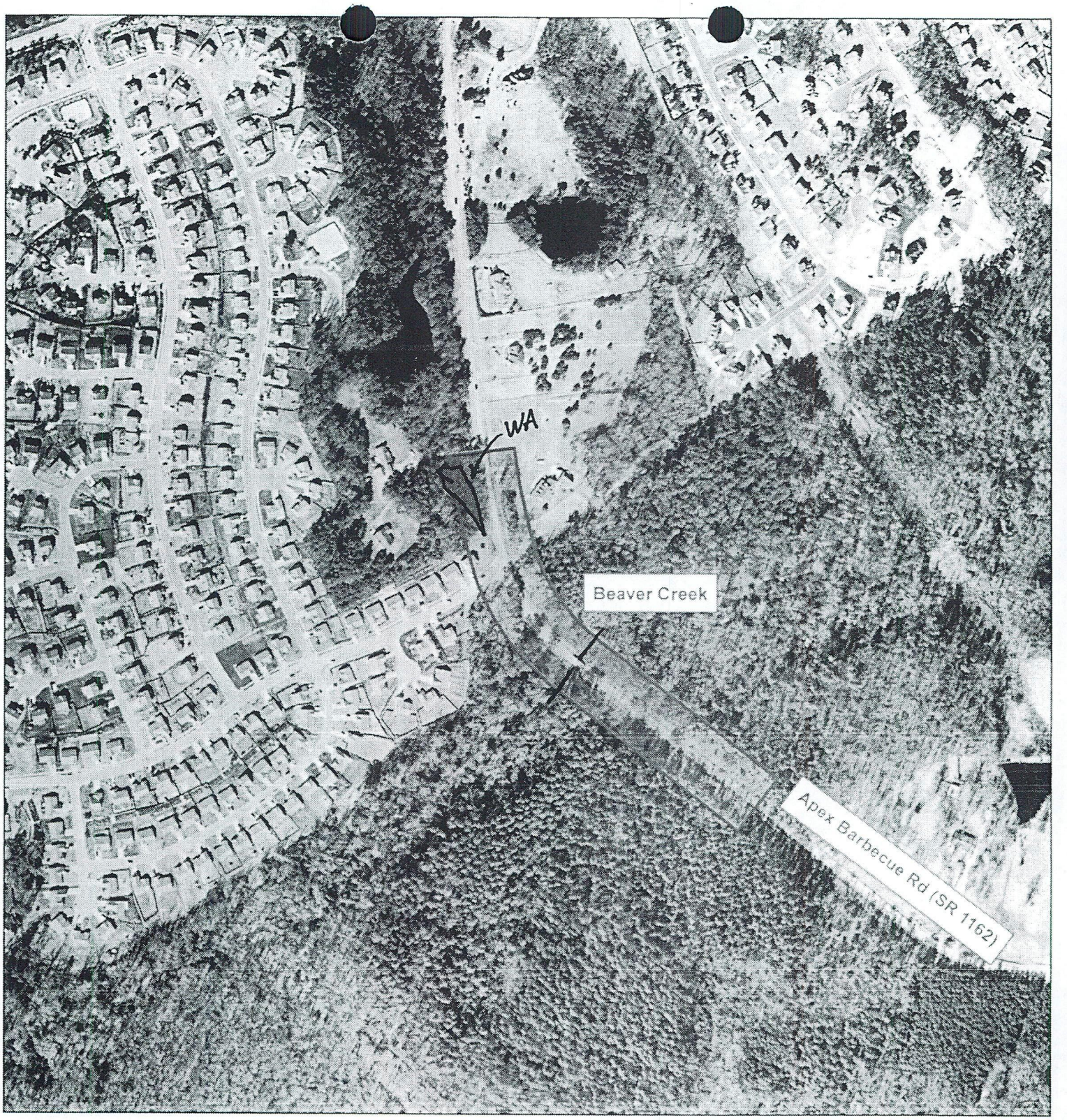
☒ Other information (please specify): NCDWQ Wetland Rating Sheet.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Eric Alt 3/2/2010
Signature and date of
Regulatory Project Manager
(REQUIRED)

Deanna Riffey 12/23/09
Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

Site number	Latitude	Longitude	NCWAM/ Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
Beaver Creek	35.7238°	-78.9047°	Riverine PFO	200	stream non-§10; non-wetland
WA	35.7251°	-78.9057°	Headwater Forest-PFO	0.17	wetland; non-§10



Legend

- Project Study Area
- Wetland & Stream
- Floodplain Forest
- Maintained Disturbed
- Mixed Mesic Hardwood Forest
- Mixed Pine Hardwood Forest

0 250 500 1,000 Feet

Figure 3
Jurisdictional Features & Terrestrial Communities
B-5161

Wake County

Replace Bridge No. 362 on SR 1162 over Beaver Creek

N

CWMTF EASEMENT REVISION FORM

Per protocol adopted 3/9/2015

Project Number	2004B-004
Project Name	Apex Nature Park – Beaver Creek
Date of Request	1-30-2018

Explanation of request (maps and other supporting documents attached)

In 2004, the Board awarded up to $612,000 to the Town of Apex to fund acquisition of a property on Beaver Creek for a future nature park. The easement in question was recorded on July 14th, 2005 and encompasses 44.372 acres of a larger 60.398 tract.

NC DOT is planning to replace the bridge on SR1162 (Apex Barbeque Rd.) in wake County. The bridge has been a safety concern due to it being narrow and there was a fatality on the bridge as recently as May 2017. The bridge will be replaced in place, and the new right of way will be wider and encroach on our conservation easement on both sides of the road 30 feet.

In June 2017, the Board approved a request to amend the conservation easement by approximately 1.2 acres to facilitate the project as requested at that time. However, recently completed design plans indicate that a Permanent Drainage Easement and a general utility easement will be necessary, which will impact and additional approximately 0.54 acres. This will impact 1.2% of the easement area.

(This is an update of a request reviewed in November.)

Staff recommendation

Staff recommends that the request be granted.

Staff Level

If boundary amendments <u>are not</u> involved, does this request pertain only to correcting technical errors that have no effect on the conservation values?	☐Yes	☐No	☒N/A
If boundary amendments <u>are</u> involved, is this a public works project that runs perpendicular to the stream or affects only a minimal area of surface water AND affects less than 1 acre or 5% of the easement area (whichever is smaller)?	☒Yes	☐No	☐N/A

If any of the above questions are "No", then the request must be approved by the Board and this form signed by the Chairman.

Approval Position	Name	Signature	Date
Deputy Director	Will Summer		1/30/18
Executive Director	Walter Clark		1/30/2018

Board Level (if necessary per easement revision protocol)

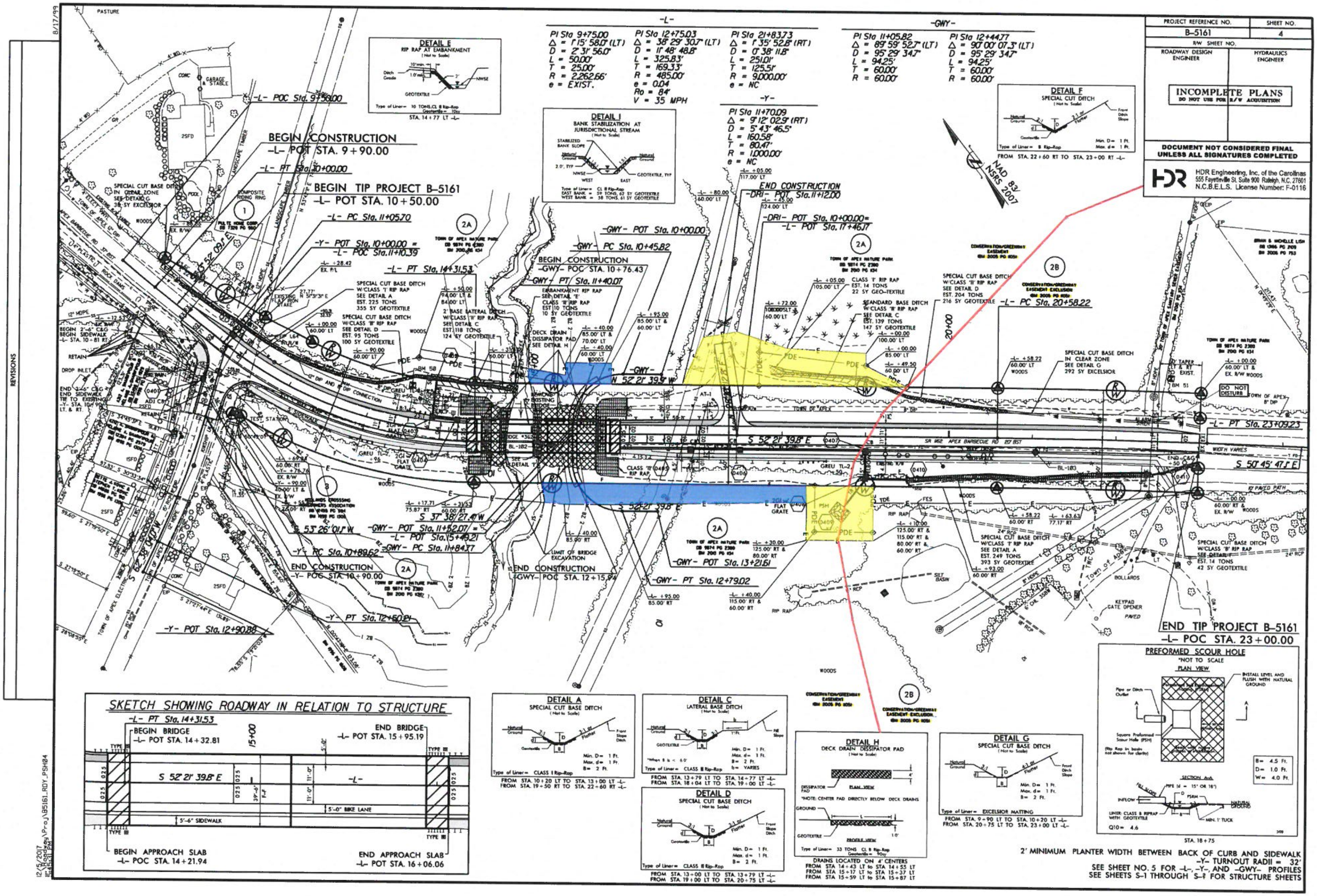
Was the board required to take action on this request?	☐Yes	☒No	☐N/A

Board recommendation

N/A

Board approval date

Approval Position	Name	Signature	Date
Chairman			


PROJECT REFERENCE NO. B-5161
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116
NAD 83/ NSRS 2007
BEGIN CONSTRUCTION -L- POT STA. 9+90.00
BEGIN TIP PROJECT B-5161 -L- POT STA. 10+50.00
END TIP PROJECT B-5161 -L- POC STA. 23+00.00
BEGIN CONSTRUCTION -GWY- POC STA. 10+76.43
END CONSTRUCTION -GWY- POC STA. 12+15.94
END CONSTRUCTION -Y- POC STA. 10+90.00
END CONSTRUCTION -DRI- POT Sta. 11+12.00
DETAIL A SPECIAL CUT BASE DITCH
DETAIL C LATERAL BASE DITCH
DETAIL D SPECIAL CUT BASE DITCH
DETAIL E RIP RAP AT EMBANKMENT
DETAIL F SPECIAL CUT DITCH
DETAIL G SPECIAL CUT BASE DITCH
DETAIL H DECK DRAIN DISSIPATOR PAD
DETAIL I BANK STABILIZATION AT JURISDICTIONAL STREAM
PREFORMED SCOUR HOLE
SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE
BEGIN BRIDGE -L- POT STA. 14+32.81
END BRIDGE -L- POT STA. 15+95.19
BEGIN APPROACH SLAB -L- POC STA. 14+21.94
END APPROACH SLAB -L- POT STA. 16+06.06
2' MINIMUM PLANTER WIDTH BETWEEN BACK OF CURB AND SIDEWALK
-Y- TURNOUT RADII = 32'
SEE SHEET NO. 5 FOR -L-, -Y-, AND -GWY- PROFILES
SEE SHEETS S-1 THROUGH S-? FOR STRUCTURE SHEETS
REVISIONS
8/17/99