



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

JAMES H. TROGDON, III  
SECRETARY

March 12, 2018

U. S. Army Corps of Engineers  
Regulatory Field Office  
3331 Heritage Trade Drive, Suite 105  
Wake Forest, NC 27587

ATTN: Mr. David Bailey  
NCDOT Division 7 Project Coordinator

SUBJECT: **Application for Section 404 Nationwide Permit Nos. 13, 23, and 33, Section 401 Water Quality Certification, and Jordan Lake Riparian Buffer Authorization** for the replacement of Bridge Nos. 237 and 242 over Deep River on US 29/70/I-85 Business, Division 7, Guilford County, Federal Aid Project No. BRNHS-0029(55), WBS # 42841.1.1, TIP Project No. B-5351.  
Debit \$240.00

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge Nos. 237 and 242 on their existing alignment over Deep River with two new bridges. Both new bridges will be 218 feet long to accommodate a multi-use trail along the south side of the Deep River. The proposed bridge replacements will allow adequate vertical clearance to accommodate bicycle and pedestrian activity along the trail. The new bridges will both be three-span structures (1 @ 58'; 1 @ 100'; and 1 @ 60'). There will be onsite detours to maintain traffic along US 29/70/I-85 Business allowing four lanes of traffic to be maintained throughout construction.

There will be 55 linear feet of permanent impacts from a pipe extension, 218 linear feet of permanent bank stabilization impacts, and 157 linear feet of temporary impacts (associated with the pipe extension, bank stabilization and causeways) to streams; 0.02 acre of permanent fill and 0.02 acre of mechanized clearing impacts to wetlands; 21,268 square feet of allowable stream buffer impacts (15,848 square feet in buffer Zone 1 and 8,796 square feet in buffer Zone 2); 4,367 square feet of mitigable stream buffer impacts (2,997 in Zone 1 and 1,370 in Zone 2) and 408 square feet of allowable wetland impacts in Zone 1. The proposed buffer impacts are allowable road and bridge crossings.

Please find enclosed the Pre-Construction Notification (PCN), DMS Acceptance Letter; Preliminary Jurisdictional Determination (PJD) package, Stormwater Management Plan; permit drawings; buffer drawings; and roadway plans for the subject project. A Categorical Exclusion (CE) was completed for this project in July 2017.

*Mailing Address:*  
NC DEPARTMENT OF TRANSPORTATION  
NATURAL ENVIRONMENT SECTION  
1598 MAIL SERVICE CENTER  
RALEIGH NC 27699-1598

*Telephone:* (919) 707-6000  
*Fax:* (919) 212-5785  
*Customer Service:* 1-877-368-4968  
*Website:* [www.ncdot.gov](http://www.ncdot.gov)

*Location:*  
1020 BIRCH RIDGE DRIVE  
RALEIGH NC 27610

The proposed let date for this project is June 19, 2018, with a let review date of October May 1, 2018. However, the let date may advance as additional funds become available.

A copy of this permit application will be posted on the NCDOT Website at <https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx>, under *Quick Links > Permit Applications*. A copy of the CE is also available at the above website address under *Quick Links > Environmental Documents*. Thank you for your assistance with this project. If you have any questions or need additional information, please contact Bill Barrett at either [wabarrett@ncdot.gov](mailto:wabarrett@ncdot.gov) or (919) 707-6103.

Sincerely,

  
for Philip S. Harris III, P.E., C.P.M.  
Environmental Analysis Unit

cc:

NCDOT Permit Application Standard Distribution List

Action History (UTC-05:00) Eastern Time (US & Canada)

Submit

by Anonymous User 3/12/2018 9:19:51 AM (Start Event)

Accept

by Carpenter,Kristi 3/12/2018 12:13:12 PM (DOT Initial Review)

- The task was assigned to Carpenter,Kristi . The due date is: March 15, 2018 5:00 PM  
3/12/2018 9:20 AM



## 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: \*

Guilford

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-5351

WBS #

42841.1.1

(for NCDOT use only)

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

- ☒ 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? \*

- ☒ Nationwide Permit (NWP)  
☐ Regional General Permit (RGP)

|                                 |                             |
|---------------------------------|-----------------------------|
| Nationwide Permit (NWP) Number: | 13 - Bank Stabilization     |
| Nationwide Permit (NWP) Number: | 23 - Categorical Exclusions |
| Nationwide Permit (NWP) Number: | 33 - Temporary Construction |

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

- |                                                                               |                                                                    |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------|
| <input checked="" type="checkbox"/> 401 Water Quality Certification - Regular | <input type="checkbox"/> 401 Water Quality Certification - Express |
| <input type="checkbox"/> Non-404 Jurisdictional General Permit                | <input checked="" type="checkbox"/> 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

#### Acceptance Letter Attachment

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

B-5351 - STR - RW - Buffer - CF 03.pdf

106.94KB

FILETYPE MUST BE PDF

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: \*

wabarrett@ncdot.gov

1c. Primary Contact Phone: \*

(xxx)xxx-xxxx

(919)707-6103

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

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: \*

### 3. Applicant Information (if different from owner)

**3a. Applicant is:**

☐ Agent

☒ Other

If other please specify.

**3b. Name :**

**3c. Business Name:**

(if applicable)

**3d. Address**

Street Address

Address Line 2

City

State / Province / Region

Postal / Zip Code

Country

**3e. Telephone Number:**

(xxx)xxx-xxxx

**3f. Fax Number:**

(xxx)xxx-xxxx

**3g. Email Address: \***

pharris@ncdot.gov

## C. Project Information and Prior Project History

### 1. Project Information

**1a. Name of project: \***

Replacement of Bridge Nos. 237 and 242.

**1b. Subdivision name:**

(if appropriate)

**1c. Nearest municipality / town: \***

High Point

**1d. Driving directions \***

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

Replacement of Bridge No.s 237 and 242.

Where US 29-70/I-85 Business crosses Deep River.

### 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: \*

Longitude: \*

35.972663

-79.917815

ex: 34.208504

-77.796371

## 3. Surface Waters

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

Deep River

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

WS-IV CA

[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 in the project vicinity is primarily low density residential, industrial, agricultural, and forestland.

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:

0.10

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

(intermittent and perennial)

450

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

Replace two (2) structurally deficient bridges.

NCDOT Bridge Management Unit records indicate Bridge No. 237 has a sufficiency rating of 44.75 out of a possible 100 for a new structure. Bridge No. 242 has a sufficiency rating of 46.32 out of a possible 100 for a new structure. According to Federal Highway Administration (FHWA) standards, both Bridge No. 237 and Bridge No. 242 are considered structurally deficient due to a deck condition appraisal of 4 out of 9 and a substructure condition appraisal of 4 out of 9.

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

Replacement of Bridge Nos. 237 and 242 on their existing alignment on US 29-70 and I-85 Business over the Deep River in High Point, NC. The project will utilize two on-site detours, located to the north of the permanent structures. 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

B5351\_PROJECT Drawings.pdf

14.23MB

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:

PJD package to be included with submittal

#### 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

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

Name (if known):

Greg Price

Agency/Consultant Company:

NCDOT

Other:

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

#### 5d1. Jurisdictional determination upload

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

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 Jurisdiction *                    | 2g. Impact area *       |
|---------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------|--------------------|----------------|-----------------------------------------------|-------------------------|
| <b>Site 1: fill</b><br>Map label (e.g. Road Crossing 1 - Culvert, dewatering, etc)                | <b>P</b><br>Permanent (P) or Temporary (T) | <b>Bottomland Hardwood Forest</b> | <b>WB</b>          | <b>Yes</b>     | <b>Corps</b><br>(404, 10) or DWR (401, other) | <b>0.010</b><br>(acres) |
| <b>Site 1: mechanized clearing</b><br>Map label (e.g. Road Crossing 1 - Culvert, dewatering, etc) | <b>P</b><br>Permanent (P) or Temporary (T) | <b>Bottomland Hardwood Forest</b> | <b>WB</b>          | <b>Yes</b>     | <b>Corps</b><br>(404, 10) or DWR (401, other) | <b>0.010</b><br>(acres) |
| <b>Site 2: fill</b><br>Map label (e.g. Road Crossing 1 - Culvert, dewatering, etc)                | <b>P</b><br>Permanent (P) or Temporary (T) | <b>Bottomland Hardwood Forest</b> | <b>WA</b>          | <b>Yes</b>     | <b>Corps</b><br>(404, 10) or DWR (401, other) | <b>0.010</b><br>(acres) |
| <b>Site 2: mechanized clearing</b><br>Map label (e.g. Road Crossing 1 - Culvert, dewatering, etc) | <b>P</b><br>Permanent (P) or Temporary (T) | <b>Bottomland Hardwood Forest</b> | <b>WA</b>          | <b>Yes</b>     | <b>Corps</b><br>(404, 10) or DWR (401, other) | <b>0.010</b><br>(acres) |

### 2g. Total Temporary Wetland Impact

0.000

### 2g. Total Permanent Wetland Impact

0.040

### 2g. Total Wetland Impact

0.040

### 2h. Comments:

## 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 *         | sqfeet                                                               |
|-----------|---------------------------------------------------|--------------------------------------------|---------------------------|------------------------------|-----------------------------------------------------------|----------------------------|-----------------------------|-----------------------------|----------------------------------------------------------------------|
| <b>S1</b> | <b>Site 1</b><br>Map label (e.g. Road Crossing 1) | <b>P</b><br>Permanent (P) or Temporary (T) | <b>Fill</b>               | <b>SB (UT to Deep River)</b> | <b>Perennial</b><br>Perennial (PER) or intermittent (INT) | <b>Both</b>                | <b>4</b><br>Average (feet)  | <b>55</b><br>(linear feet)  | <b>2</b><br><b>2</b><br><b>0</b>                                     |
| <b>S2</b> | <b>Site 1</b><br>Map label (e.g. Road Crossing 1) | <b>T</b><br>Permanent (P) or Temporary (T) | <b>Other</b>              | <b>SB (UT to Deep River)</b> | <b>Perennial</b><br>Perennial (PER) or intermittent (INT) | <b>Both</b>                | <b>4</b><br>Average (feet)  | <b>17</b><br>(linear feet)  | <b>6</b><br><b>8</b>                                                 |
| <b>S3</b> | <b>Site 2</b><br>Map label (e.g. Road Crossing 1) | <b>P</b><br>Permanent (P) or Temporary (T) | <b>Bank Stabilization</b> | <b>SA (Deep River)</b>       | <b>Perennial</b><br>Perennial (PER) or intermittent (INT) | <b>Both</b>                | <b>75</b><br>Average (feet) | <b>218</b><br>(linear feet) | <b>1</b><br><b>6</b><br><b>,</b><br><b>3</b><br><b>5</b><br><b>0</b> |
| <b>S4</b> | <b>Site 2</b><br>Map label (e.g. Road Crossing 1) | <b>T</b><br>Permanent (P) or Temporary (T) | <b>Bank Stabilization</b> | <b>SA (Deep River)</b>       | <b>Perennial</b><br>Perennial (PER) or intermittent (INT) | <b>Both</b>                | <b>75</b><br>Average (feet) | <b>38</b><br>(linear feet)  | <b>2</b><br><b>,</b><br><b>8</b><br><b>5</b><br><b>0</b>             |
| <b>S5</b> | <b>Site 2</b><br>Map label (e.g. Road Crossing 1) | <b>T</b><br>Permanent (P) or Temporary (T) | <b>Workpad/Causeway</b>   | <b>SA (Deep River)</b>       | <b>Perennial</b><br>Perennial (PER) or intermittent (INT) | <b>Both</b>                | <b>75</b><br>Average (feet) | <b>102</b><br>(linear feet) | <b>7</b><br><b>,</b><br><b>6</b><br><b>5</b><br><b>0</b>             |

\*\* 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:**

273

**3i. Total temporary stream impacts:**

157

**3i. Total stream and tributary impacts:**

430

**3j. Comments:**

Temporary stream impact acreages:

Site 1 - &lt;0.01 ac. (S2)

Site 2 - &lt;0.01 ac. (S4) and 0.09 ac. (S5)

**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 \*****Site 1, allowable**

Location and Exempt, Allowable, allowable w/ mitigation

**6c. Per or Temp \*****P**

Permanent (P) or Temporary (T)

**6d. Stream name \*****SB (UT to Deep River)****6e. Buffer mitigation required? \*****No****6f. Zone 1 impact \*****2,478**

(square feet)

**6g. Zone 2 impact \*****1,908**

(square feet)

**Site 2, allowable**

Location and Exempt, Allowable, allowable w/ mitigation

**P**

Permanent (P) or Temporary (T)

**SA (Deep River)****No****10,826**

(square feet)

**6,055**

(square feet)

**Site 3, allowable**

Location and Exempt, Allowable, allowable w/ mitigation

**P**

Permanent (P) or Temporary (T)

**SC (UT to Deep River)****No****2,544**

(square feet)

**833**

(square feet)

**Site 3, allowable w/ mitigation**

Location and Exempt, Allowable, allowable w/ mitigation

**P**

Permanent (P) or Temporary (T)

**SC (UT to Deep River)****Yes****2,997**

(square feet)

**1,370**

(square feet)

**6h. Total buffer impacts:**

|                       | Zone 1    | Zone 2    |
|-----------------------|-----------|-----------|
| Temporary impacts:    | 0.00      | 0.00      |
| Permanent impacts:    | 18,845.00 | 10,166.00 |
| Total buffer impacts: | 18,845.00 | 10,166.00 |

**6i. Comments:**

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

## 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: \*

The proposed structure has been designed to have as little environmental, wetland, and surface water impacts as possible. 2:1 roadway fill slopes will be used in the wetland areas to minimize wetland impacts. Permanent drainage easement (PDE) will be set to have as little wetland impacts as possible. Stormwater impacts to Deep River have been minimized by using grated inlets and pipes to collect bridge stormwater and uses riprap outlet protection at all proposed pipe outlets to dissipate energy to provide a flow with a non-erosive velocity into the stream. The proposed detour bridge will have deck drains and deck drain dissipater pads to minimize any surface water impacts. A temporary storm system for Detour 1 discharges with a non-erosive outlet velocity at -DET1-22+95 LT where it flows for 10' +/- before entering the buffer. Two storm drain systems will be constructed during Detour 1 and retained. The first outlets at -DET1-21+38 LT where it flows through a riprap-lined standard V-ditch for 26' +/- before entering the stream with non-erosive velocity. The second outlets at -DET1-24+30 LT into a preformed scour hole where it then sheet flows for 130' +/- before entering the buffer with a non-erosive velocity. Three storm systems outlet to a stream running parallel to the road. The first outlets at 14+45 RT where it will flow for 50' +/- before entering the buffer with non-erosive velocity. The second outlets at 17+06 RT directly into the stream with a non-erosive velocity. The third outlets at 19+68 RT where it flows for 20' +/- before entering the buffer. An existing storm system will be retained and extended with outlet at -L-23+14 RT and will flow through a riprap-lined lateral V-ditch for 85' +/- before entering the stream with non-erosive velocity. A new system will be constructed and have outlet at -L-24+65 RT where it will flow through a riprap-lined lateral V-ditch for 85' +/- before entering the stream with a non-erosive velocity. Along Detour 1, at Station 12+50 LT, an existing roadside ditch will be lined with PSRM and outlet into an existing storm system with a non-erosive velocity. In the same quadrant, an existing ditch will be turned out through a riprap-lined V-ditch and outlet at -DET1-15+14 LT into the stream with a non-erosive velocity.

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

Design Standards in Sensitive Waters (15A NCAC 04B.0124) will be adhered to throughout the construction of the project to reduce stormwater impacts to the receiving stream due to erosion and runoff.

### 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

#### 2c. If yes, mitigation is required by (check all that apply):

☒ DWR ☒ Corps

#### 2d. If yes, which mitigation option(s) will be used for this project?

☐ Mitigation bank ☒ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

### 4. Complete if Making a Payment to In-lieu Fee Program

#### 4a. Approval letter from in-lieu fee program is attached.

☒ Yes

#### 4b. Stream mitigation requested:

(linear feet)

55

#### 4c. If using stream mitigation, what is the stream temperature:

warm

#### 4d. Buffer mitigation requested (DWR only):

(square feet)

4,367

#### 4e. Riparian wetland mitigation requested:

(acres)

0.04

**4f. Non-riparian wetland mitigation requested:**

(acres)

**4g. Coastal (tidal) wetland mitigation requested:**

(acres)

**4h. Comments**

## 6. Buffer mitigation (State Regulated Riparian Buffer Rules) - required by DWR

**6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation? If yes, you must fill out this entire form - please contact DWR for more information.**

☒ Yes

☐ No

**6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation calculate the amount of mitigation required in the table below.**

|        | 6c. Reason for impact                                        | 6d. Total impact (square feet) | Multiplier | 6e. Required mitigation (square feet) |
|--------|--------------------------------------------------------------|--------------------------------|------------|---------------------------------------|
| Zone 1 | Fill (impact other than road crossing, i.e. parallel impact) | 2,589                          | 3          | 7,767                                 |
| Zone 2 | Fill (impact other than road crossing, i.e. parallel impact) | 1,370                          | 1.5        | 2,055                                 |

**6f. Total buffer mitigation required**

9822

**6g. If buffer mitigation is required, is payment to a mitigation bank or NC Division of Mitigation Services proposed?**

☒ Yes ☐ No

**6h. Attach the acceptance letter from the mitigation bank or NC Division of Mitigation Services.**

B-5351 - STR - RW - Buffer - CF 03.pdf

106.94KB

(PDF only)

**6j. Comments:**

NOTE: There are 408 square feet of 'wetland in buffer' in Zone 1 of the parallel impact. As such, 6d has been revised from 2,997 sq. ft. to 2,589.

## 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
- (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

FILETYPE 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

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 species list, dated March 25, 2015. Small whorled pogonia is the only species listed, and habitat is present in the upland forest community. Surveys conducted on May 8, 2013, found no individuals of this species. This project will have No Effect on small whorled pogonia.

## 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? \*

NMF 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? \*

N/SEPA 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

B-5351 Prelim JD Package.pdf

4.7MB

File must be PDF or KMZ

## Signature

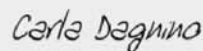
☒ By checking the box and signing below, I certify that:

- 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:** \*

Carla Dagnino

**Signature**



## Initial Review

**Is this project a public transportation project? \*** (?)

☒ Yes ☐ No

Change only if needed.

**Has this project met the requirements for acceptance in to the review process? \***

☒ Yes

☐ No

**BIMS # Assigned \***

20180346

**Version# \***

1

**Reviewing Office \***

Central Office - (919) 707-9000

**Select Project Reviewer \***

April Norton:eads\arnorton

**Is a payment required for this project? \***

☐ No payment required

☒ Fee received

☐ Fee needed - send electronic notification



ROY COOPER  
Governor

January 18, 2018

Mr. Philip S. Harris, P.E., CPM  
Project Development and Environmental Analysis Unit  
North Carolina Department of Transportation  
1598 Mail Service Center  
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

Subject: DMS Mitigation Acceptance Letter:

**B-5351**, Replace Bridge Number 242 on US 29 / US 70 / I-85 Business over the Deep River, Guilford County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the stream, wetland and buffer mitigation for the subject project. Based on the information supplied by you on January 18, 2018, the stream, wetland and buffer impacts are located in CU 03030003 of the Cape Fear River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

| Stream and Wetlands | River Basin | CU Location | Eco-Region | Stream |      |      | Wetlands |              |               |
|---------------------|-------------|-------------|------------|--------|------|------|----------|--------------|---------------|
|                     |             |             |            | Cold   | Cool | Warm | Riparian | Non-Riparian | Coastal Marsh |
| Impacts             | Cape Fear   | 03030003    | CP         | 0      | 0    | 55.0 | 0.04     | 0            | 0             |

\*Some of the stream and/or wetland impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details.

All buffer mitigation requests and approvals are administrated through the Riparian Restoration Buffer Fund. The NCDOT will be responsible to ensure that appropriate compensation for the buffer mitigation will be provided in the agreed upon method of fund transfer. Upon receipt of the NCDWR's Buffer Authorization Certification, DMS will transfer funds from the NCDOT 2984 Fund into the Riparian Restoration Buffer Fund. Upon completion of transfer payment, NCDOT will have completed its riparian buffer mitigation responsibility for TIP Number B-5351. Subsequently, DMS will conduct a review of current NCDOT ILF Program mitigation projects in the river basin to determine if available buffer mitigation credits exist. If there are buffer mitigation credits available, then the Riparian Restoration Buffer Fund will purchase the appropriate amount of buffer mitigation credits from NCDOT ILF Program.



Mr. Harris  
January 18, 2018  
Page Two  
NCDOT TIP B-5351

| Buffer  | River Basin | CU       | Eco-Region | Buffer Impacts |         |         |
|---------|-------------|----------|------------|----------------|---------|---------|
|         |             |          |            | Zone 1         | Zone 2  | TOTAL   |
| Impacts | Cape Fear   | 03030003 | CP         | 2,997.0        | 1,370.0 | 4,367.0 |

The impacts and associated mitigation needs were under projected by the NCDOT in the 2017 impact data. DMS commits to implement sufficient compensatory stream, wetland and buffer mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-707-8420.

Sincerely,



James B. Stanfill  
DMS Credit Management Supervisor

Cc: Mr. David Bailey, USACE – Raleigh Regulatory Field Office  
Ms. Amy Chapman, NC Division of Water Resources  
File: B-5351



**ATTACHMENT A**  
**PRELIMINARY JURISDICTIONAL DETERMINATION FORM**

**BACKGROUND INFORMATION**

- A. **REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD):** \_\_\_\_\_
- B. **NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:**  
Bill Barrett - NCDOT-ECAP, Environmental Senior Specialist  
1598 Mail Service Center, Raleigh NC 27699-1598
- C. **DISTRICT OFFICE, FILE NAME, AND NUMBER:**  
.
- D. **PROJECT LOCATION(S) AND BACKGROUND INFORMATION:**  
NCDOT TIP No. B-5351: Replace Bridge No.s 242 & 237 on US 29/US 70/I-85 Business over Deep River, Guilford County, NC

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

State: NC County/parish/borough: Guilford City: Jamestown

Center coordinates of site (lat/long in degree decimal format):

Lat. 35.97270 °N; Long. 79.91778 °W.  
(XX.XXXXX) (-XX.XXXXX)

Universal Transverse Mercator: Z: Select E: N:

Name of nearest waterbody: Deep River

Identify (estimate) amount of waters in the review area:

Non-wetland waters:

450 linear feet: \_\_\_\_\_ width (ft) and/or \_\_\_\_\_ acres.

Cowardin Class: Riverine

Stream Flow: Perennial

Wetlands: 0.10 acres.

Cowardin Class: PF01

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): \_\_\_\_\_

**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: \_\_\_\_\_

☒ 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: High Point East, NC 24K

☐ USDA Natural Resources Conservation Service Soil Survey.  
Citation: \_\_\_\_\_

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

☐ State/Local wetland inventory map(s): \_\_\_\_\_

☐ FEMA/FIRM maps: \_\_\_\_\_

☐ 100-year Floodplain Elevation is: \_\_\_\_\_  
(National Geodetic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (Name & Date): 2012 SID Guilford County or  
☐ Other (Name & Date): \_\_\_\_\_

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

☐ Other information (please specify): \_\_\_\_\_

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.

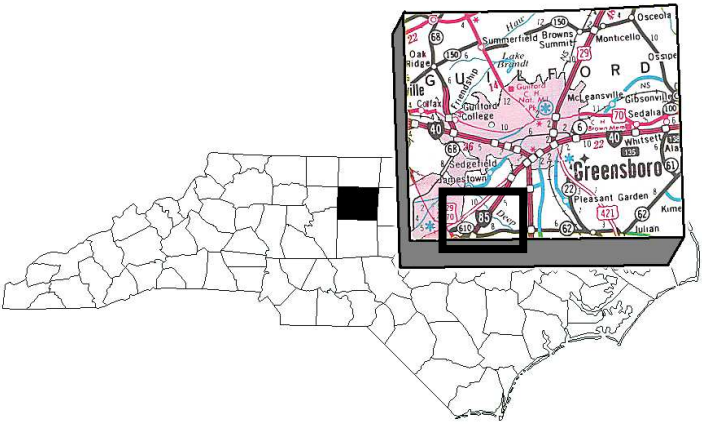
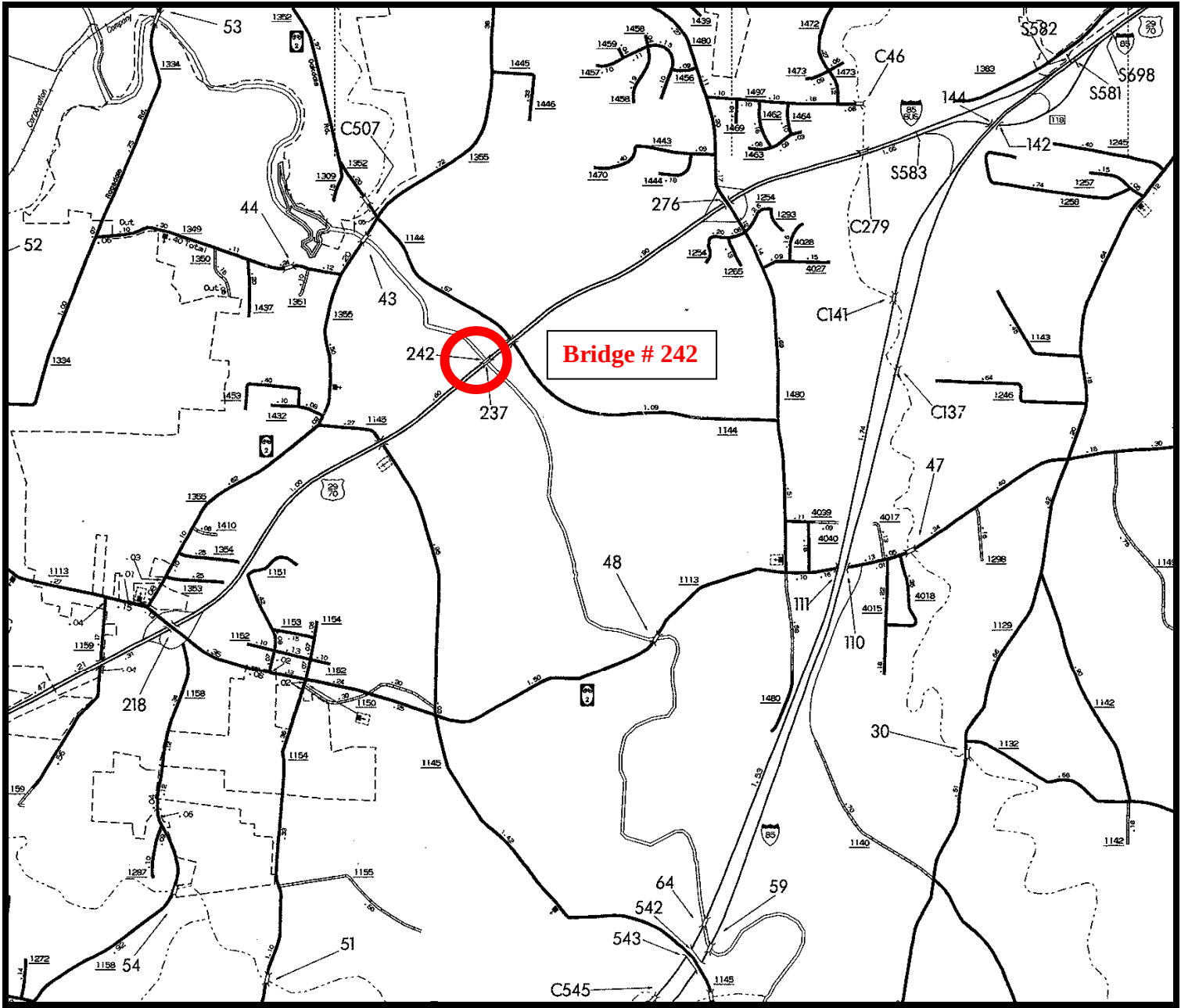
This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

**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)

W. A. B. S. A. 3-12-2018  
Signature and date of  
person requesting preliminary JD  
(REQUIRED, unless obtaining  
the signature is impracticable)

| Site Number | Latitude<br>(xx.xxxxx) | Longitude<br>(-xx.xxxxx) | Cowardin Class | Estimated Amount of Aquatic Resource in the Review Area<br>(lin. ft.or ac.) | Class of Aquatic Resource |
|-------------|------------------------|--------------------------|----------------|-----------------------------------------------------------------------------|---------------------------|
| SA          | 39.97270               | -79.91778                | Riverine       | 250 lf                                                                      | Stream                    |
| SB          | 35.97177               | -79.91978                | Riverine       | 80 lf                                                                       | Stream                    |
| SC          | 35.97148               | -79.91892                | Riverine       | 120 lf                                                                      | Stream                    |
| WA          | 35.97169               | -79.91883                | PF01           | 0.06 ac                                                                     | Wetland                   |
| WB          | 35.97289               | -79.91712                | PF01           | 0.04 ac                                                                     | Wetland                   |
|             |                        |                          |                |                                                                             |                           |
|             |                        |                          |                |                                                                             |                           |
|             |                        |                          |                |                                                                             |                           |
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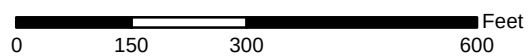
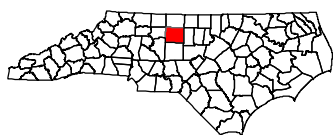
|                                                                                                                                      |                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                      | <p>NORTH CAROLINA DEPARTMENT OF<br/>TRANSPORTATION<br/>DIVISION OF HIGHWAYS<br/>PROJECT DEVELOPMENT &amp;<br/>ENVIRONMENTAL ANALYSIS UNIT</p> |
| <p><b>GUILFORD COUNTY</b><br/><b>REPLACE BRIDGE NO. 242 OVER DEEP RIVER</b><br/><b>ON US 29/US 70/I-85 BUS</b><br/><b>B-5351</b></p> |                                                                                                                                               |
| <p><b>Figure 1</b></p>                                                                                                               |                                                                                                                                               |



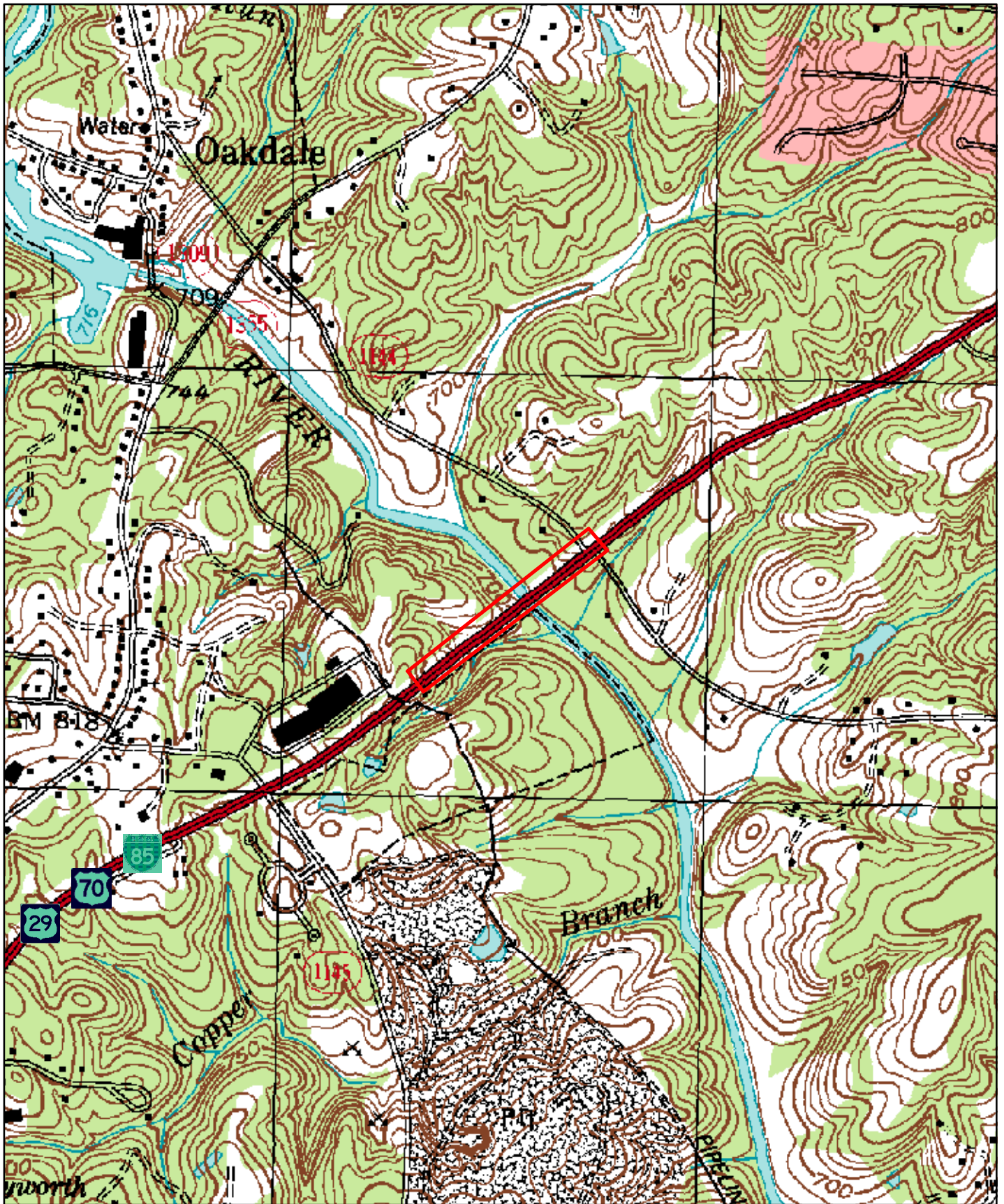


**FIGURE 2: JURISDICTIONAL FEATURES**

B-5351 GUILFORD COUNTY: Replace Bridge Nos. 242 and 237 on US 29/US 70/I-85 Bus over Deep River

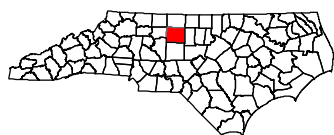






**FIGURE 2: PROJECT STUDY AREA**

B-5351 GUILFORD COUNTY: Replace Bridge No. 242 on US 29/US 70/I-85 Bus over Deep River



Project Study Area

0 625 1,250 2,500 Feet



# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: B-5351 City/County: Guilford County Sampling Date: 5/15/15  
 Applicant/Owner: NCDOT State: NC Sampling Point: WA-Wet  
 Investigator(s): Greg Pate Jim Mason Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2  
 Subregion (LRR or MLRA): 136/P Lat: 35.97169 Long: -79.91883 Datum: NAD83  
 Soil Map Unit Name: WKE Wilkes-Pendexter-Wynott Complex, 15-45° NWI classification: PFO1 estimated

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? No (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

|                                                                                  |                                                                                        |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____ |
| Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____            |                                                                                        |
| Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____      |                                                                                        |
| Remarks:<br><u>NL WARM classification - Bottomland Hardwood Forest</u>           |                                                                                        |

## HYDROLOGY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators (minimum of one is required; check all that apply)</u><br><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks)<br><input type="checkbox"/> Iron Deposits (B5)<br><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input checked="" type="checkbox"/> Water-Stained Leaves (B9)<br><input type="checkbox"/> Aquatic Fauna (B13) |                                                                             | <u>Secondary Indicators (minimum of two required)</u><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input checked="" type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Stunted or Stressed Plants (D1)<br><input type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> Microtopographic Relief (D4)<br><input checked="" type="checkbox"/> FAC-Neutral Test (D5) |
| <b>Field Observations:</b><br>Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____ |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remarks:<br><u>Hydrology criteria met</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WA - Wet

| Tree Stratum (Plot size: <u>30' Rad.</u> ) | Absolute % Cover | Dominant Species? | Indicator Status |
|--------------------------------------------|------------------|-------------------|------------------|
| 1. <u>Acer rubrum</u>                      | <u>25</u>        | <u>Y</u>          | <u>FAC</u>       |
| 2. <u>Fraxinus pennsylvanica</u>           | <u>20</u>        | <u>Y</u>          | <u>FACW</u>      |
| 3. <u>Diospyros virginiana</u>             | <u>5</u>         | <u>N</u>          | <u>FAC</u>       |
| 4. <u>Carpinus caroliniana</u>             | <u>5</u>         | <u>N</u>          | <u>FAC</u>       |
| 5. <u>Betula nigra</u>                     | <u>5</u>         | <u>N</u>          | <u>FACW</u>      |
| 6. _____                                   | _____            | _____             | _____            |
| 7. _____                                   | _____            | _____             | _____            |

50% of total cover: 30 60 = Total Cover  
20% of total cover: 12

| Sapling/Shrub Stratum (Plot size: <u>30' Rad.</u> ) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------------------------------------|------------------|-------------------|------------------|
| 1. <u>Carpinus caroliniana</u>                      | <u>15</u>        | <u>Y</u>          | <u>FAC</u>       |
| 2. <u>Acer floridanum</u>                           | <u>10</u>        | <u>Y</u>          | <u>NI</u>        |
| 3. <u>Rosa multiflora</u>                           | <u>10</u>        | <u>Y</u>          | <u>FACU</u>      |
| 4. <u>Acer rubrum</u>                               | <u>5</u>         | <u>N</u>          | <u>FAC</u>       |
| 5. <u>Lindera benzoin</u>                           | <u>5</u>         | <u>N</u>          | <u>FACW</u>      |
| 6. <u>Fraxinus pennsylvanica</u>                    | <u>5</u>         | <u>N</u>          | <u>FACW</u>      |
| 7. <u>Corylus americana</u>                         | <u>2</u>         | <u>N</u>          | <u>FACU</u>      |
| 8. <u>Asimina triloba</u>                           | <u>2</u>         | <u>N</u>          | <u>FAC</u>       |
| 9. _____                                            | _____            | _____             | _____            |

50% of total cover: 27 54 = Total Cover  
20% of total cover: 10.8

| Herb Stratum (Plot size: <u>30' Rad.</u> ) | Absolute % Cover | Dominant Species? | Indicator Status |
|--------------------------------------------|------------------|-------------------|------------------|
| 1. <u>Glyceria striata</u>                 | <u>20</u>        | <u>Y</u>          | <u>OBL</u>       |
| 2. <u>Microstegium vimineum</u>            | <u>20</u>        | <u>Y</u>          | <u>FAC</u>       |
| 3. _____                                   | _____            | _____             | _____            |
| 4. _____                                   | _____            | _____             | _____            |
| 5. _____                                   | _____            | _____             | _____            |
| 6. _____                                   | _____            | _____             | _____            |
| 7. _____                                   | _____            | _____             | _____            |
| 8. _____                                   | _____            | _____             | _____            |
| 9. _____                                   | _____            | _____             | _____            |
| 10. _____                                  | _____            | _____             | _____            |
| 11. _____                                  | _____            | _____             | _____            |

50% of total cover: 20 40 = Total Cover  
20% of total cover: 8

| Woody Vine Stratum (Plot size: <u>30' Rad.</u> ) | Absolute % Cover | Dominant Species? | Indicator Status |
|--------------------------------------------------|------------------|-------------------|------------------|
| 1. <u>Lonicera japonica</u>                      | <u>5</u>         | <u>Y</u>          | <u>FAC</u>       |
| 2. <u>Toxicodendron radicans</u>                 | <u>5</u>         | <u>Y</u>          | <u>FAC</u>       |
| 3. _____                                         | _____            | _____             | _____            |
| 4. _____                                         | _____            | _____             | _____            |
| 5. _____                                         | _____            | _____             | _____            |

50% of total cover: 5 10 = Total Cover  
20% of total cover: 2

Remarks: (Include photo numbers here or on a separate sheet.)

**Dominance Test worksheet:**

 Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

 Total Number of Dominant Species Across All Strata: 9 (B)

 Percent of Dominant Species That Are OBL, FACW, or FAC: 78 (A/B)

**Prevalence Index worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by:

OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_

FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_

FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_

FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_

UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is  $\leq 3.0^1$
- ☐ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Four Vegetation Strata:**

**Tree** – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/Shrub** – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vine** – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes ☒ No ☐

Sampling Point: WA-Wet

Eastern Mountains and Piedmont – Version 2.0



# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: B-5351 City/County: Guilford Sampling Date: 5/15/15  
 Applicant/Owner: NC DOT State: NC Sampling Point: WA-Upland  
 Investigator(s): Greg Prie, Jim Mason Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): Floodplain Terrace Local relief (concave, convex, none): None Slope (%): 0-2  
 Subregion (LRR or MLRA): 136/P Lat: 35.97285 Long: -79.917120 Datum: NAD83  
 Soil Map Unit Name: \_\_\_\_\_ NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? No (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

|                                                                                  |                                                                                        |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ | Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> |
| Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>            |                                                                                        |
| Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>      |                                                                                        |
| Remarks:<br><u>Point taken ~15 feet northeast of wetland U/A</u>                 |                                                                                        |

## HYDROLOGY

| Wetland Hydrology Indicators:                                                                                             |                                                                             | Secondary Indicators (minimum of two required)                     |
|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------|
| Primary Indicators (minimum of one is required; check all that apply)                                                     |                                                                             |                                                                    |
| <input type="checkbox"/> Surface Water (A1)                                                                               | <input type="checkbox"/> True Aquatic Plants (B14)                          | <input type="checkbox"/> Surface Soil Cracks (B6)                  |
| <input type="checkbox"/> High Water Table (A2)                                                                            | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                         | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |
| <input type="checkbox"/> Saturation (A3)                                                                                  | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)         | <input type="checkbox"/> Drainage Patterns (B10)                   |
| <input type="checkbox"/> Water Marks (B1)                                                                                 | <input type="checkbox"/> Presence of Reduced Iron (C4)                      | <input type="checkbox"/> Moss Trim Lines (B16)                     |
| <input type="checkbox"/> Sediment Deposits (B2)                                                                           | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)         | <input type="checkbox"/> Dry-Season Water Table (C2)               |
| <input type="checkbox"/> Drift Deposits (B3)                                                                              | <input type="checkbox"/> Thin Muck Surface (C7)                             | <input type="checkbox"/> Crayfish Burrows (C8)                     |
| <input type="checkbox"/> Algal Mat or Crust (B4)                                                                          | <input type="checkbox"/> Other (Explain in Remarks)                         | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5)                                                                               |                                                                             | <input type="checkbox"/> Stunted or Stressed Plants (D1)           |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)                                                        |                                                                             | <input type="checkbox"/> Geomorphic Position (D2)                  |
| <input type="checkbox"/> Water-Stained Leaves (B9)                                                                        |                                                                             | <input type="checkbox"/> Shallow Aquitard (D3)                     |
| <input type="checkbox"/> Aquatic Fauna (B13)                                                                              |                                                                             | <input type="checkbox"/> Microtopographic Relief (D4)              |
|                                                                                                                           |                                                                             | <input type="checkbox"/> FAC-Neutral Test (D5)                     |
| Field Observations:                                                                                                       |                                                                             |                                                                    |
| Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____                             | Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/> |                                                                    |
| Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____                               |                                                                             |                                                                    |
| Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe) |                                                                             |                                                                    |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:                |                                                                             |                                                                    |
| Remarks:                                                                                                                  |                                                                             |                                                                    |

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WA- Upland

| Tree Stratum (Plot size: <u>30' Rad</u> )                                             | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------|------------------|-------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. <u>Liquidambar styraciflua</u>                                                     | <u>25</u>        | <u>Y</u>          | <u>FAC</u>       | Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>5</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)                                                                                                                                                                                                                                                                                           |
| 2. <u>Liriodendron tulipifera</u>                                                     | <u>20</u>        | <u>Y</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3. <u>Fagus grandifolia</u>                                                           | <u>5</u>         | <u>N</u>          | <u>FACU</u>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 4. <u>Ulmus alata</u>                                                                 | <u>5</u>         | <u>N</u>          | <u>FACU</u>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 5. _____                                                                              | _____            | _____             | _____            | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species _____ x 3 = _____<br>FACU species _____ x 4 = _____<br>UPL species _____ x 5 = _____<br>Column Totals: _____ (A) _____ (B)<br><br>Prevalence Index = B/A = _____                                                                                                                                                                                  |
| 6. _____                                                                              | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 7. _____                                                                              | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 8. _____                                                                              | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 50% of total cover: <u>27.5</u> 20% of total cover: <u>11</u> <u>55</u> = Total Cover |                  |                   |                  | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation<br><input checked="" type="checkbox"/> 2 - Dominance Test is >50%<br><input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)                                     |
| <b>Sapling/Shrub Stratum (Plot size: <u>30' Rad</u>)</b>                              |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1. <u>Corylus americana</u>                                                           | <u>15</u>        | <u>Y</u>          | <u>FACU</u>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 2. <u>Asimina triloba</u>                                                             | <u>10</u>        | <u>Y</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3. <u>Acer floridanum</u>                                                             | <u>5</u>         | <u>N</u>          | <u>NI</u>        | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.                                                                                                                                                                                                                                                                                                                                                                                                       |
| 4. _____                                                                              | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 5. _____                                                                              | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 6. _____                                                                              | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 50% of total cover: <u>15</u> 20% of total cover: <u>6</u> <u>30</u> = Total Cover    |                  |                   |                  | <b>Definitions of Four Vegetation Strata:</b><br><br><b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.<br><br><b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.<br><br><b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.<br><br><b>Woody vine</b> – All woody vines greater than 3.28 ft in height. |
| <b>Herb Stratum (Plot size: <u>30' Rad</u>)</b>                                       |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1. <u>Lonicera japonica</u>                                                           | <u>35</u>        | <u>Y</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 2. <u>Trillium erectum</u>                                                            | <u>5</u>         | <u>N</u>          | <u>FACU</u>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3. _____                                                                              | _____            | _____             | _____            | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 4. _____                                                                              | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 5. _____                                                                              | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 6. _____                                                                              | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 50% of total cover: <u>20</u> 20% of total cover: <u>8</u> <u>40</u> = Total Cover    |                  |                   |                  | <b>Woody Vine Stratum (Plot size: <u>30' Rad</u>)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Woody Vine Stratum (Plot size: <u>30' Rad</u>)</b>                                 |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1. <u>Lonicera japonica</u>                                                           | <u>2</u>         | <u>N</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 2. _____                                                                              | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3. _____                                                                              | _____            | _____             | _____            | _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4. _____                                                                              | _____            | _____             | _____            | _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5. _____                                                                              | _____            | _____             | _____            | _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 50% of total cover: _____ 20% of total cover: _____ _____ = Total Cover               |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

Remarks: (Include photo numbers here or on a separate sheet.)

Sampling Point: WA-Upland

Eastern Mountains and Piedmont – Version 2.0

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: B-535/ City/County: Guilford Sampling Date: 5/15/15  
 Applicant/Owner: NCDOT State: NC Sampling Point: WB-Wet  
 Investigator(s): Greg Price, Jim Mason Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2  
 Subregion (LRR or MLRA): 136/P Lat: 35.97289 Long: -79.91712 Datum: NAD83  
 Soil Map Unit Name: WKE Willas-Pandexter-Lynott Complex, 15-45° NWI classification: PFD1  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? No (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

|                                                                                  |                                                                                        |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____ |
| Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____            |                                                                                        |
| Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____      |                                                                                        |
| Remarks:<br><u>NWAM classification - Bottomland hardwood Forest</u>              |                                                                                        |

## HYDROLOGY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators (minimum of one is required; check all that apply)</u><br><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14)<br><input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input checked="" type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks)<br><input type="checkbox"/> Iron Deposits (B5)<br><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input checked="" type="checkbox"/> Water-Stained Leaves (B9)<br><input type="checkbox"/> Aquatic Fauna (B13) |                                                                             | <u>Secondary Indicators (minimum of two required)</u><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Stunted or Stressed Plants (D1)<br><input checked="" type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> Microtopographic Relief (D4)<br><input type="checkbox"/> FAC-Neutral Test (D5) |
| <b>Field Observations:</b><br>Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2</u><br>Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u><br>(includes capillary fringe)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____ |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remarks:<br><u>Wetland hydrology met</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |



VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WB-Wet

| Tree Stratum (Plot size: <u>30' Rad</u> )                                                                |                  |                   |                  | Dominance Test worksheet:                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |
|----------------------------------------------------------------------------------------------------------|------------------|-------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
|                                                                                                          | Absolute % Cover | Dominant Species? | Indicator Status |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 1. <u>Fagus grandifolia</u>                                                                              | <u>25</u>        | <u>Y</u>          | <u>FACU</u>      | Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u>                                                                                                                                                                                                                                                                                                                                                                                                 | (A)   |
| 2. <u>Liriodendron tulipifera</u>                                                                        | <u>20</u>        | <u>Y</u>          | <u>FAC</u>       | Total Number of Dominant Species Across All Strata: <u>5</u>                                                                                                                                                                                                                                                                                                                                                                                                    | (B)   |
| 3. <u>Carpinus caroliniana</u>                                                                           | <u>7.5</u>       | <u>N</u>          | <u>FAC</u>       | Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60</u>                                                                                                                                                                                                                                                                                                                                                                                               | (A/B) |
| 4. <u>Salix nigra</u>                                                                                    | <u>5</u>         | <u>N</u>          | <u>OBL</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 5. _____                                                                                                 | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 6. _____                                                                                                 | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 7. _____                                                                                                 | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| _____ = Total Cover                                                                                      |                  |                   |                  | Prevalence Index worksheet:                                                                                                                                                                                                                                                                                                                                                                                                                                     |       |
| 50% of total cover: _____ 20% of total cover: _____                                                      |                  |                   |                  | Total % Cover of: _____ Multiply by: _____                                                                                                                                                                                                                                                                                                                                                                                                                      |       |
| Sapling/Shrub Stratum (Plot size: <u>30' Rad</u> )                                                       |                  |                   |                  | OBL species _____ x 1 = _____                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |
| 1. <u>Fraxinus pennsylvanica</u>                                                                         | <u>20</u>        | <u>Y</u>          | <u>FACW</u>      | FACW species _____ x 2 = _____                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |
| 2. <u>Fagus grandifolia</u>                                                                              | <u>10</u>        | <u>Y</u>          | <u>FACU</u>      | FAC species _____ x 3 = _____                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |
| 3. <u>Acer floridanum</u>                                                                                | <u>7.5</u>       | <u>N</u>          | <u>NI</u>        | FACU species _____ x 4 = _____                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |
| 4. <u>Carpinus caroliniana</u>                                                                           | <u>5</u>         | <u>N</u>          | <u>FAC</u>       | UPL species _____ x 5 = _____                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |
| 5. <u>Platanus occidentalis</u>                                                                          | <u>5</u>         | <u>N</u>          | <u>FACW</u>      | Column Totals: _____ (A) _____ (B)                                                                                                                                                                                                                                                                                                                                                                                                                              |       |
| 6. _____                                                                                                 | _____            | _____             | _____            | Prevalence Index = B/A = _____                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |
| 7. _____                                                                                                 | _____            | _____             | _____            | Hydrophytic Vegetation Indicators:                                                                                                                                                                                                                                                                                                                                                                                                                              |       |
| 8. _____                                                                                                 | _____            | _____             | _____            | <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation<br><input type="checkbox"/> 2 - Dominance Test is >50%<br><input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)                                        |       |
| 9. _____                                                                                                 | _____            | _____             | _____            | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.                                                                                                                                                                                                                                                                                                                                                  |       |
| _____ = Total Cover                                                                                      |                  |                   |                  | Definitions of Four Vegetation Strata:                                                                                                                                                                                                                                                                                                                                                                                                                          |       |
| 50% of total cover: _____ 20% of total cover: _____                                                      |                  |                   |                  | <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.<br><br><b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.<br><br><b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.<br><br><b>Woody vine</b> – All woody vines greater than 3.28 ft in height. |       |
| Herb Stratum (Plot size: <u>30' Rad</u> )                                                                |                  |                   |                  | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                             |       |
| 1. <u>Microsagittaria virginiana</u>                                                                     | <u>20</u>        | <u>Y</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 2. <u>Glyceria striata</u>                                                                               | <u>5</u>         | <u>N</u>          | <u>OBL</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 3. <u>Sagittaria latifolia</u>                                                                           | <u>5</u>         | <u>N</u>          | <u>OBL</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 4. <u>Arisaema triphyllum</u>                                                                            | <u>2</u>         | <u>N</u>          | <u>FACW</u>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 5. <u>Parthenocissus quinquefolia</u>                                                                    | <u>2</u>         | <u>N</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 6. _____                                                                                                 | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 7. _____                                                                                                 | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 8. _____                                                                                                 | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 9. _____                                                                                                 | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| _____ = Total Cover                                                                                      |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 50% of total cover: <u>17</u> 20% of total cover: <u>6.8</u>                                             |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| Woody Vine Stratum (Plot size: <u>30' Rad</u> )                                                          |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 1. _____                                                                                                 | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 2. _____                                                                                                 | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 3. _____                                                                                                 | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 4. _____                                                                                                 | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 5. _____                                                                                                 | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| _____ = Total Cover                                                                                      |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 50% of total cover: _____ 20% of total cover: _____                                                      |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| Remarks: (Include photo numbers here or on a separate sheet.)<br><u>Hydrophytic vegetation met - 60%</u> |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |

Sampling Point: WB-Wet

[illegible]<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- |                                                                                   |                                                                                 |                                                              |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------|
| <input type="checkbox"/> Histosol (A1)                                            | <input type="checkbox"/> Dark Surface (S7)                                      | <input type="checkbox"/> 2 cm Muck (A10) ( <b>MLRA 147</b> ) |
| <input type="checkbox"/> Histic Epipedon (A2)                                     | <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>MLRA 147, 148</b> )  | <input type="checkbox"/> Coast Prairie Redox (A16)           |
| <input type="checkbox"/> Black Histic (A3)                                        | <input type="checkbox"/> Thin Dark Surface (S9) ( <b>MLRA 147, 148</b> )        | <input type="checkbox"/> ( <b>MLRA 147, 148</b> )            |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                                    | <input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)                    | <input type="checkbox"/> Piedmont Floodplain Soils (F19)     |
| <input type="checkbox"/> Stratified Layers (A5)                                   | <input type="checkbox"/> Depleted Matrix (F3)                                   | <input type="checkbox"/> ( <b>MLRA 136, 147</b> )            |
| <input type="checkbox"/> 2 cm Muck (A10) ( <b>LRR N</b> )                         | <input type="checkbox"/> Redox Dark Surface (F6)                                | <input type="checkbox"/> Very Shallow Dark Surface (TF12)    |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)                        | <input type="checkbox"/> Depleted Dark Surface (F7)                             | <input type="checkbox"/> Other (Explain in Remarks)          |
| <input type="checkbox"/> Thick Dark Surface (A12)                                 | <input type="checkbox"/> Redox Depressions (F8)                                 |                                                              |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) ( <b>LRR N, MLRA 147, 148</b> ) | <input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR N, MLRA 136</b> ) |                                                              |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                                 | <input type="checkbox"/> Umbric Surface (F13) ( <b>MLRA 136, 122</b> )          |                                                              |
| <input type="checkbox"/> Sandy Redox (S5)                                         | <input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 148</b> )    |                                                              |
| <input type="checkbox"/> Stripped Matrix (S6)                                     | <input type="checkbox"/> Red Parent Material (F21) ( <b>MLRA 127, 147</b> )     |                                                              |
- <sup>3</sup>Indicators of hydrophytic vegetation wetland hydrology must be present, unless disturbed or problematic.

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ✓ No       

Remarks:

Hydric soil criteria met

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: B-5351 City/County: Guilford Sampling Date: 5/15/15  
 Applicant/Owner: NC DOT State: NC Sampling Point: WB-Upland  
 Investigator(s): Greg Price, Jim Mason Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2  
 Subregion (LRR or MLRA): 136/P Lat: 35.97177 Long: -79.91865 Datum: NAD83  
 Soil Map Unit Name: WKE NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? No (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

|                                                                                  |                                                                                        |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ | Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> |
| Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>            |                                                                                        |
| Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>      |                                                                                        |
| Remarks:<br><u>upland data point for Wetland WB.</u>                             |                                                                                        |

## HYDROLOGY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators</u> (minimum of one is required; check all that apply)<br><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks)<br><input type="checkbox"/> Iron Deposits (B5)<br><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input type="checkbox"/> Water-Stained Leaves (B9)<br><input type="checkbox"/> Aquatic Fauna (B13) |                                                                             | <u>Secondary Indicators</u> (minimum of two required)<br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Stunted or Stressed Plants (D1)<br><input type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> Microtopographic Relief (D4)<br><input type="checkbox"/> FAC-Neutral Test (D5) |
| <b>Field Observations:</b><br>Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Remarks:<br><u>Wetland hydrology not met</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WB- Upland

| Tree Stratum (Plot size: <u>30' Rad</u> ) | Absolute % Cover | Dominant Species? | Indicator Status |
|-------------------------------------------|------------------|-------------------|------------------|
| 1. <u>Acer rubrum</u>                     | <u>25</u>        | <u>Y</u>          | <u>FAC</u>       |
| 2. <u>Fagus grandifolia</u>               | <u>25</u>        | <u>Y</u>          | <u>FACU</u>      |
| 3. <u>Fraxinus pennsylvanica</u>          | <u>15</u>        | <u>N</u>          | <u>FACW</u>      |
| 4. <u>Platanus occidentalis</u>           | <u>10</u>        | <u>N</u>          | <u>FACW</u>      |
| 5. <u>Carpinus caroliniana</u>            | <u>5</u>         | <u>N</u>          | <u>FAC</u>       |
| 6. _____                                  | _____            | _____             | _____            |
| 7. _____                                  | _____            | _____             | _____            |

50% of total cover: 40 80 = Total Cover  
20% of total cover: 16

| Sapling/Shrub Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------------------|------------------|-------------------|------------------|
| 1. <u>Acer rubrum</u>                    | <u>10</u>        | <u>Y</u>          | <u>FAC</u>       |
| 2. <u>Carya tomentosa</u>                | <u>5</u>         | <u>Y</u>          | <u>FAC</u>       |
| 3. <u>Corylus americana</u>              | <u>5</u>         | <u>Y</u>          | <u>FACU</u>      |
| 4. <u>Alcegastrum</u>                    | <u>5</u>         | <u>Y</u>          | <u>NI</u>        |
| 5. _____                                 | _____            | _____             | _____            |
| 6. _____                                 | _____            | _____             | _____            |
| 7. _____                                 | _____            | _____             | _____            |
| 8. _____                                 | _____            | _____             | _____            |
| 9. _____                                 | _____            | _____             | _____            |

50% of total cover: 12.5 25 = Total Cover  
20% of total cover: 5

| Herb Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------------------|------------------|-------------------|------------------|
| 1. <u>Podophyllum peltatum</u>  | <u>5</u>         | <u>Y</u>          | <u>FACU</u>      |
| 2. <u>Lonicera japonica</u>     | <u>5</u>         | <u>Y</u>          | <u>FAC</u>       |
| 3. <u>Hexastylis arifolia</u>   | <u>2</u>         | <u>N</u>          | <u>FAC</u>       |
| 4. _____                        | _____            | _____             | _____            |
| 5. _____                        | _____            | _____             | _____            |
| 6. _____                        | _____            | _____             | _____            |
| 7. _____                        | _____            | _____             | _____            |
| 8. _____                        | _____            | _____             | _____            |
| 9. _____                        | _____            | _____             | _____            |
| 10. _____                       | _____            | _____             | _____            |
| 11. _____                       | _____            | _____             | _____            |

50% of total cover: 6 12 = Total Cover  
20% of total cover: 2.4

| Woody Vine Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------------------------|------------------|-------------------|------------------|
| 1. <u>Muscadinia rotundifolia</u>     | <u>5</u>         | <u>Y</u>          | <u>FAC</u>       |
| 2. _____                              | _____            | _____             | _____            |
| 3. _____                              | _____            | _____             | _____            |
| 4. _____                              | _____            | _____             | _____            |
| 5. _____                              | _____            | _____             | _____            |

50% of total cover: 2.5 5 = Total Cover  
20% of total cover: 1

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 56 (A/B)

**Prevalence Index worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_

FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_

FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_

FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_

UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50% ✓

3 - Prevalence Index is ≤3.0<sup>1</sup>

4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Four Vegetation Strata:**

**Tree** – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/Shrub** – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vine** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** Yes ✓ No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation = 56%

## SOIL

Sampling Point: WB-Upland

[illegible]



| Waters_Name           | Cowadin_Code | HGM_C | Measurement_Type | Amount     | Units | Waters_Types | Latitude    | Longitude    | Local_Waterway |
|-----------------------|--------------|-------|------------------|------------|-------|--------------|-------------|--------------|----------------|
| SA (Deep River)       | R3           |       | Linear           | 250.000000 | FOOT  | RPW          | 39.97270000 | -79.91778000 |                |
| SB (UT to Deep River) | R3           |       | Linear           | 80.000000  | FOOT  | RPW          | 35.97177000 | -79.91978000 |                |
| SC (UT to Deep River) | R3           |       | Linear           | 120.000000 | FOOT  | RPW          | 35.97148000 | -79.91892000 |                |
| WA                    | PFO1         |       | Area             | 0.060000   | ACRE  | RPWWN        | 35.97169000 | -79.91883000 |                |
| WB                    | PFO1         |       | Area             | 0.040000   | ACRE  | RPWWD        | 35.97289000 | -79.91712000 |                |

|                                                                                      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
|--------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------|--|
|     |          | North Carolina Department of Transportation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                       |                                                                                                                                                   |  |                   |  |
|                                                                                      |          | Highway Stormwater Program<br>STORMWATER MANAGEMENT PLAN<br>FOR NCDOT PROJECTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| (Version 2.07; Released October 2016)                                                |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| WBS Element: 46065.1.1                                                               |          | TIP No.: B-5351                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       | County(ies): Guilford                                                                                                                             |  | Page 1 of 2                                                                                          |  |
| General Project Information                                                          |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| WBS Element:                                                                         |          | 46065.1.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                       | TIP Number: B-5351                                                                                                                                |  | Project Type: Bridge Replacement                                                                     |  |
| NCDOT Contact:                                                                       |          | Matthew Lauffer, PE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                       | Contractor / Designer:                                                                                                                            |  | Trenton Cormier, PE                                                                                  |  |
|                                                                                      | Address: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | NCDOT Hydraulics Unit<br>1590 Mail Services Unit<br>Raleigh, NC 27560 |                                                                                                                                                   |  | Address: ICA Engineering, Inc.<br>5121 Kingdom Way, Suite 100<br>Raleigh, NC 27607                   |  |
|                                                                                      | Phone:   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | (919) 707-6703                                                        |                                                                                                                                                   |  | Phone: (919) 900-1608                                                                                |  |
|                                                                                      | Email:   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | mslauffer@ncdot.gov                                                   |                                                                                                                                                   |  | Email: <a href="mailto:trenton.cormier@hdrinc.com">trenton.cormier@hdrinc.com</a>                    |  |
| City/Town:                                                                           |          | Jamestown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                       | County(ies): Guilford                                                                                                                             |  |                                                                                                      |  |
| River Basin(s):                                                                      |          | Cape Fear                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                       | CAMA County?                                                                                                                                      |  | No                                                                                                   |  |
| Wetlands within Project Limits?                                                      |          | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Project Description                                                                  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Project Length (lin. miles or feet):                                                 |          | 0.465 miles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                       | Surrounding Land Use:                                                                                                                             |  | Residential, Commercial, Wooded                                                                      |  |
|                                                                                      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       | Proposed Project                                                                                                                                  |  | Existing Site                                                                                        |  |
| Project Built-Upon Area (ac.)                                                        |          | 3.73 ac.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                       | 3.36 ac.                                                                                                                                          |  |                                                                                                      |  |
| Typical Cross Section Description:                                                   |          | US 29/70/I-85 Business: 4 paved lanes (total 48' wide), 30' median, 6" shoulder on inside lane, 12' shoulder on outside lane (15' with guardrail)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                       | US 29/70/I-85 Business: 4 paved lanes (total 48' wide), 30' median, 6' shoulder on inside lane, 12' shoulder on outside lane (15' with guardrail) |  |                                                                                                      |  |
| Annual Avg Daily Traffic (veh/hr/day):                                               |          | Design/Future: 42,900                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                       | Year: 2038                                                                                                                                        |  | Existing: 34,500                                                                                     |  |
| General Project Narrative:<br>(Description of Minimization of Water Quality Impacts) |          | The North Carolina Department of Transportation (NCDOT) has proposed to replace Guilford County Bridges #242 and #237 on US 29/70/I-85 Business over Deep River. The existing structure is a five span bridge (5@40') with reinforced concrete deck girders, RC caps on timber pile end bents, and RC posts and beam interior bents. The proposed structure is a three span [1@58' (45" prestressed concrete girder), 1@100' (54" prestressed concrete girder), 1@60' (45" prestressed concrete girder)] with 4' deep caps. This structure has been designed to have as little environmental, wetland, and surface water impacts as possible. 2:1 roadway fill slope will be used in the wetland areas to minimize wetland impacts. Permanent drainage easement (PDE) will be set to have as little wetland impacts as possible. To avoid direct discharge of bridge storm water into the receiving water in the permanent condition, deck drains are not required for the proposed permanent bridge. Storm water impacts to the river have been minimized by utilizing grated inlets and pipes to collect bridge storm water and use rip rap outlet protection at all proposed pipe outlets to dissipate energy to provide a flow with a non-erosive velocity into the stream. The proposed detour bridge will have deck drains and deck drain dissipater pads to minimize any surface water impacts. A temporary storm system for Detour 1 discharges with a non-erosive outlet velocity at -DET1- 22+95 LT where it flows for 10'+/- before entering the buffer. Two storm drain systems will be constructed during Detour 1 and retained. The first outlets at -DET1-21+38 LT where it flows through a rip rap lined standard v-ditch for 26'+/- before entering the stream with a non-erosive outlet velocity. The second outlets at -DET1-24+30 LT into a preformed scour hole where it then sheet flows for 130'+/- before entering the buffer with a non-erosive velocity. Three storm systems outlet to a stream running parallel to the road. The first outlets at 14+45 RT where it will flow for 50'+/- before entering the buffer with a non-erosive velocity. The second outlets at 17+06 RT directly into the stream with a non-erosive velocity. The third outlets at 19+68 RT where it flows for 20'+/- before entering the buffer. An existing storm system will be retained and extended with outlet at -L-23+14 RT and will flow through a rip rap lined lateral V-ditch for 85'+/- before entering the stream with a non-erosive velocity. A new system will be constructed and have outlet at -L-24+65 RT where it will flow through a rip rap lined lateral V-ditch for 100'+/- before entering the stream with a non-erosive velocity. Along detour 1 at station 12+50 LT, an existing roadside ditch will be lined with PSRM and outlet into an existing storm system with a non-erosive velocity. In the same quadrant, an existing ditch will be turned out through a rip rap lined lateral v-ditch and outlet at -DET1-15+14 LT into the stream with a non-erosive velocity. |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Waterbody Information                                                                |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Surface Water Body (1):                                                              |          | Deep River                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                       | NCDWR Stream Index No.:                                                                                                                           |  | 17-(4)                                                                                               |  |
| NCDWR Surface Water Classification for Water Body                                    |          | Primary Classification:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                       | Water Supply IV (WS-IV)                                                                                                                           |  |                                                                                                      |  |
|                                                                                      |          | Supplemental Classification:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                       | Critical Area: Water Supply                                                                                                                       |  |                                                                                                      |  |
| Other Stream Classification:                                                         |          | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Impairments:                                                                         |          | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Aquatic T&E Species?                                                                 |          | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       | Comments:                                                                                                                                         |  |                                                                                                      |  |
| NRTR Stream ID:                                                                      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  | Buffer Rules in Effect: Randleman Lake                                                               |  |
| Project Includes Bridge Spanning Water Body?                                         |          | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                       | Deck Drains Discharge Over 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)                     |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| WBS Element: 46065.1.1                                                               |          | TIP No.: B-5351                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       | County(ies): Guilford                                                                                                                             |  | Page 2 of 2                                                                                          |  |
| Additional Waterbody Information                                                     |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Surface Water Body (2):                                                              |          | UT 1 to Deep River                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       | NCDWR Stream Index No.:                                                                                                                           |  | 17-(4)                                                                                               |  |
| NCDWR Surface Water Classification for Water Body                                    |          | Primary Classification:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                       | Water Supply IV (WS-IV)                                                                                                                           |  |                                                                                                      |  |
|                                                                                      |          | Supplemental Classification:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                       | Critical Area: Water Supply                                                                                                                       |  |                                                                                                      |  |
| Other Stream Classification:                                                         |          | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Impairments:                                                                         |          | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Aquatic T&E Species?                                                                 |          | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       | Comments:                                                                                                                                         |  |                                                                                                      |  |
| NRTR Stream ID:                                                                      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  | Buffer Rules in Effect: Randleman Lake                                                               |  |
| Project Includes Bridge Spanning Water Body?                                         |          | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       | Deck Drains Discharge Over Buffer?                                                                                                                |  | N/A                                                                                                  |  |
| Deck Drains Discharge Over Water Body?                                               |          | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                       | (If yes, provide justification in the General Project Narrative)                                                                                  |  | (If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative) |  |
| (If yes, provide justification in the General Project Narrative)                     |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Surface Water Body (3):                                                              |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Surface Water Body (3):                                                              |          | UT2 to Deep River                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                       | NCDWR Stream Index No.:                                                                                                                           |  | 17-(4)                                                                                               |  |
| NCDWR Surface Water Classification for Water Body                                    |          | Primary Classification:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
|                                                                                      |          | Supplemental Classification:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Other Stream Classification:                                                         |          | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Impairments:                                                                         |          | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |
| Aquatic T&E Species?                                                                 |          | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       | Comments:                                                                                                                                         |  |                                                                                                      |  |
| NRTR Stream ID:                                                                      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  | Buffer Rules in Effect: Randleman Lake                                                               |  |
| Project Includes Bridge Spanning Water Body?                                         |          | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       | Deck Drains Discharge Over Buffer?                                                                                                                |  | N/A                                                                                                  |  |
| Deck Drains Discharge Over Water Body?                                               |          | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                       | (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)                     |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |                                                                                                                                                   |  |                                                                                                      |  |

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | B-5351                      | 1           |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 46065.1.1       | BRNHS-0029(55)              | PE          |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |

PERMIT DRAWING  
SHEET 1 OF 16



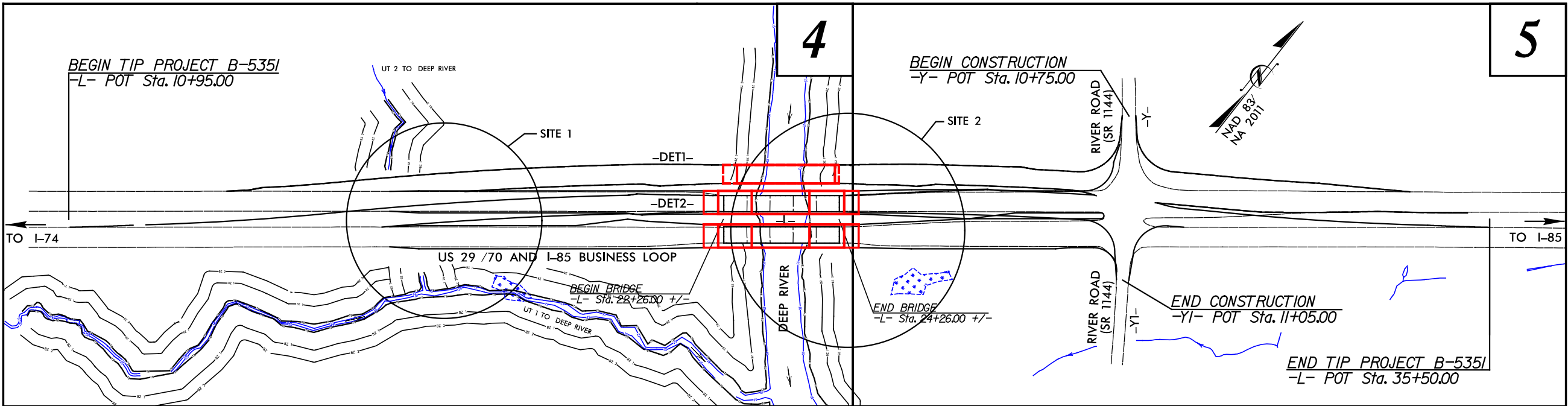
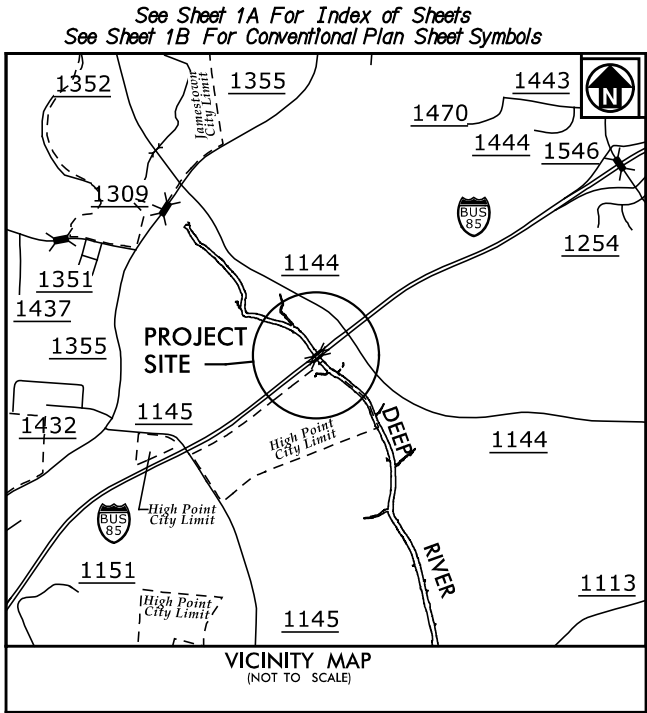
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**GUILFORD COUNTY**

**LOCATION: REPLACE BRIDGE NO. 242 AND BRIDGE NO. 237 OVER DEEP RIVER  
IN HIGH POINT ON US 29 /70 /I-85 BUSINESS**

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

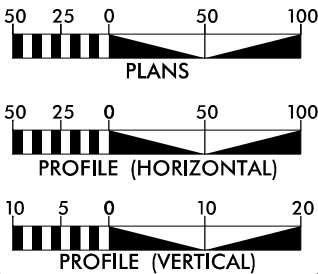
**WETLAND AND SURFACE WATER IMPACTS PERMIT**



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS  
ESTABLISHED BY METHOD \_\_\_\_\_

**GRAPHIC SCALES**



**DESIGN DATA**

ADT 2018 = 34,500  
ADT 2038 = 42,900  
K = 10 %  
D = 55 %  
T = 8 % \*  
V = 60 MPH  
\* (TTST = 3% + DUAL 5%)  
FUNC CLASS =  
MAJOR ARTERIAL  
REGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-5351 = 0.427 MILES  
LENGTH STRUCTURE TIP PROJECT B-5351 = 0.038 MILES  
TOTAL LENGTH OF TIP PROJECT B-5351 = 0.465 MILES

PLANS PREPARED FOR THE NCDOT BY:

**ICA Engineering**

5121 Kingdom Way,  
Suite 100  
Raleigh, NC 27607  
NC License No. F-1728

DAVID C. WALLER, PE  
PROJECT ENGINEER  
PEF ENGINEER

JORDAN WOODARD, PE  
PROJECT DESIGN ENGINEER  
PEF ENGINEER

GARY LOVERING, PE  
PROJECT ENGINEER  
NCDOT ROADWAY DESIGN

RIGHT OF WAY DATE:  
DECEMBER 15, 2017

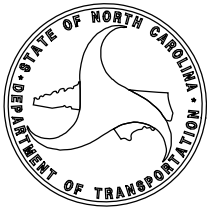
LETTING DATE:  
DECEMBER 18, 2018

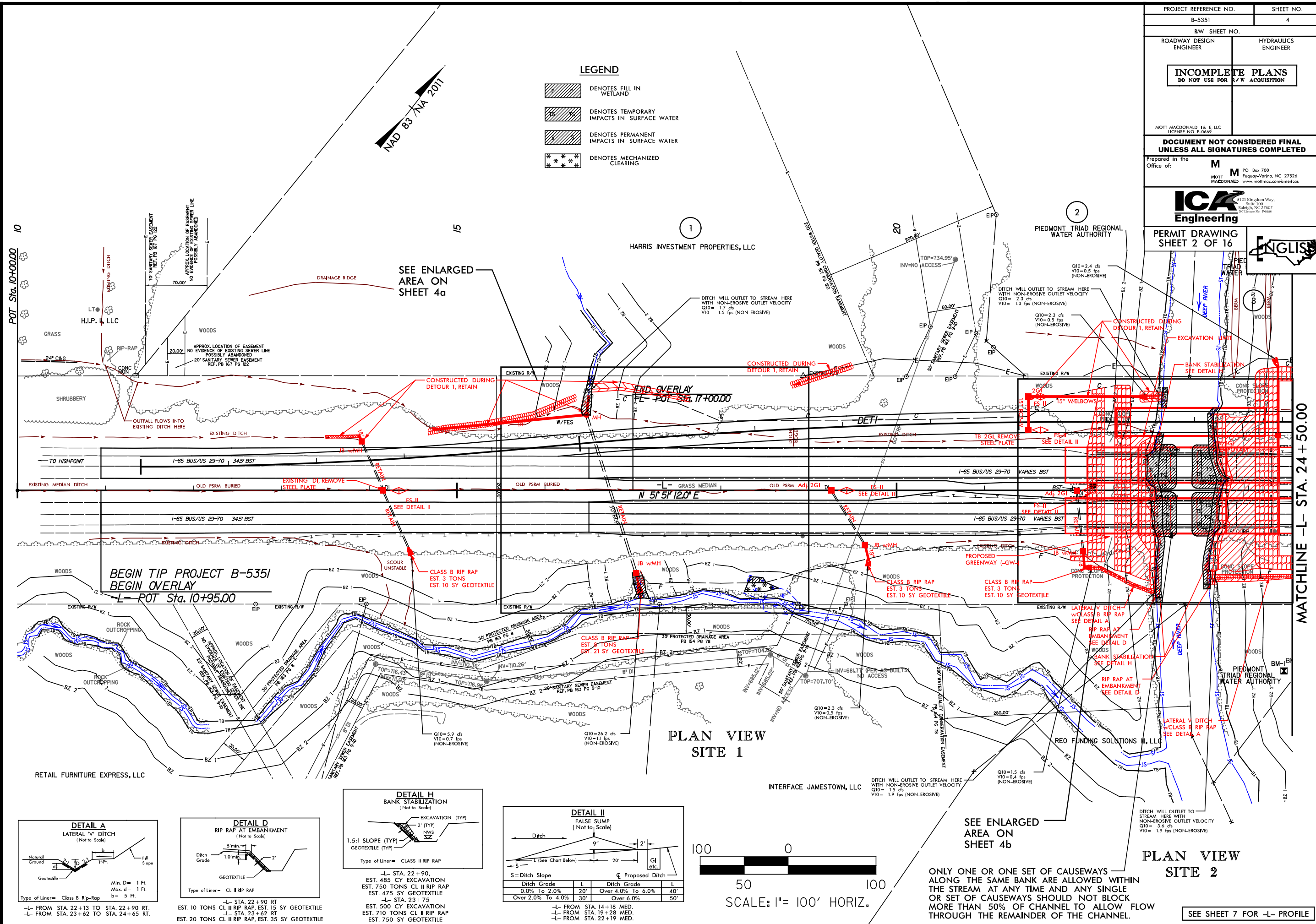
**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

ROADWAY DESIGN  
ENGINEER

SIGNATURE: \_\_\_\_\_ P.E.





PROJECT REFERENCE NO. B-5351 SHEET NO. 4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

**INCOMPLETE PLANS**  
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD, P.E. LLC  
LICENSE NO. E-0569

**DOCUMENT NOT CONSIDERED FINAL**  
UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: **M** MOTT MACDONALD, P.E. LLC  
PO Box 700  
Fuquay-Varina, NC 27526  
www.mottmac.com/america

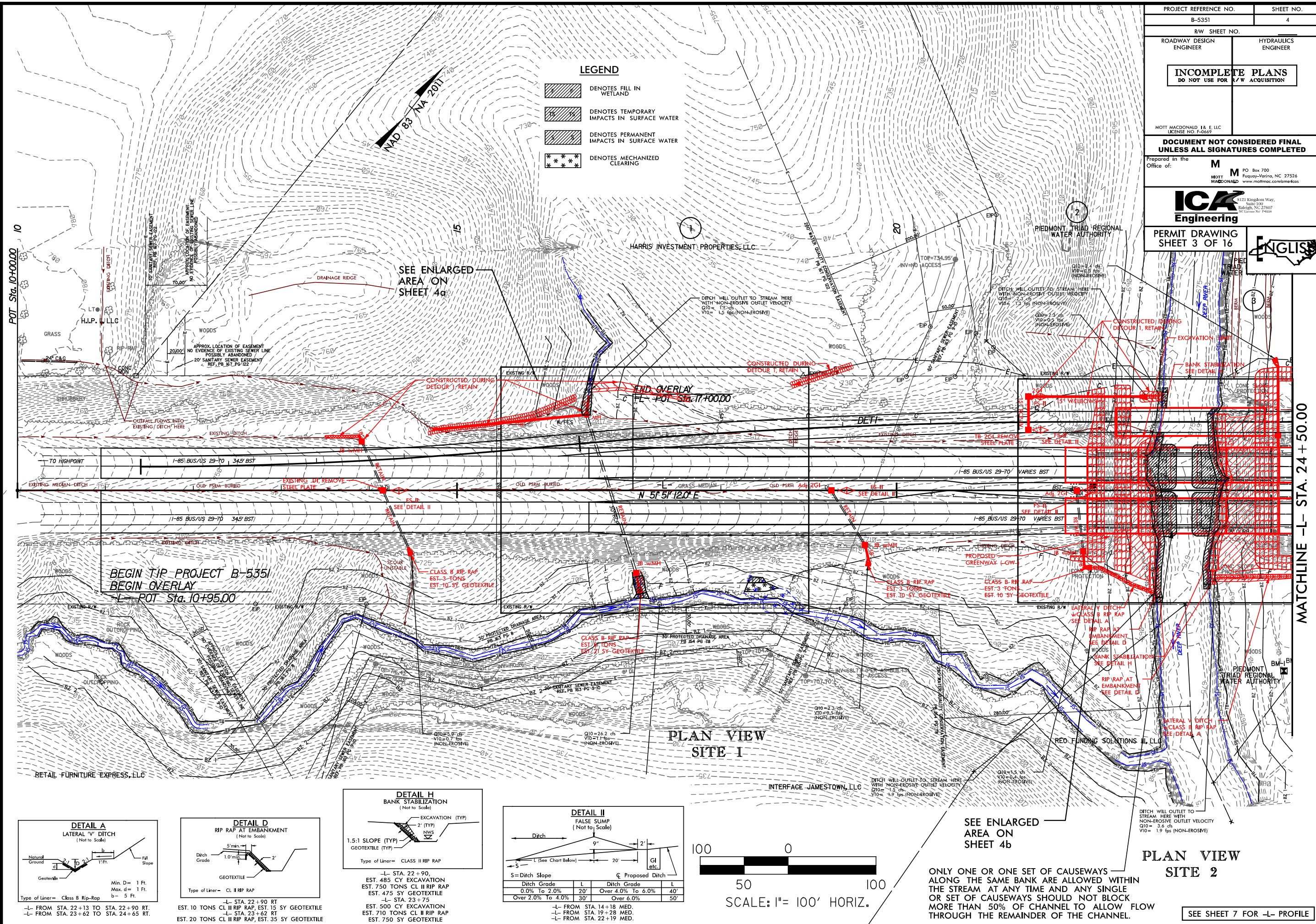
**ICA Engineering**  
1121 Kingdom Way, Suite 100  
Raleigh, NC 27607  
NC License No. PE00018

**PERMIT DRAWING**  
SHEET 2 OF 16

**ENGLISH**



9/25/2017 10:41:11 AM ICA Engineering, Inc. B:\6351\Drawings\B6351\_hyd.prm\_wet.psh04.candgn



|                                                                                                                                                                   |  |                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------|--|
| PROJECT REFERENCE NO.<br>B-5351                                                                                                                                   |  | SHEET NO.<br>4      |  |
| RW SHEET NO.                                                                                                                                                      |  | HYDRAULICS ENGINEER |  |
| ROADWAY DESIGN ENGINEER                                                                                                                                           |  | HYDRAULICS ENGINEER |  |
| <b>INCOMPLETE PLANS</b><br>DO NOT USE FOR R/W ACQUISITION                                                                                                         |  |                     |  |
| MOTT MACDONALD, P.E. & LLC<br>LICENSE NO. E-0669                                                                                                                  |  |                     |  |
| <b>DOCUMENT NOT CONSIDERED FINAL</b><br>UNLESS ALL SIGNATURES COMPLETED                                                                                           |  |                     |  |
| Prepared in the Office of:<br><b>M</b><br>MOTT MACDONALD, P.E. & LLC<br>10000 Fuquay-Varina Road, Suite 100<br>Fuquay-Varina, NC 27526<br>www.mottmac.com/mottmac |  |                     |  |
| <b>ICA Engineering</b><br>1121 Kingdom Way, Suite 100<br>Raleigh, NC 27607<br>www.ica-engineering.com                                                             |  |                     |  |
| PERMIT DRAWING<br>SHEET 3 OF 16                                                                                                                                   |  |                     |  |
| ENGLISH                                                                                                                                                           |  |                     |  |



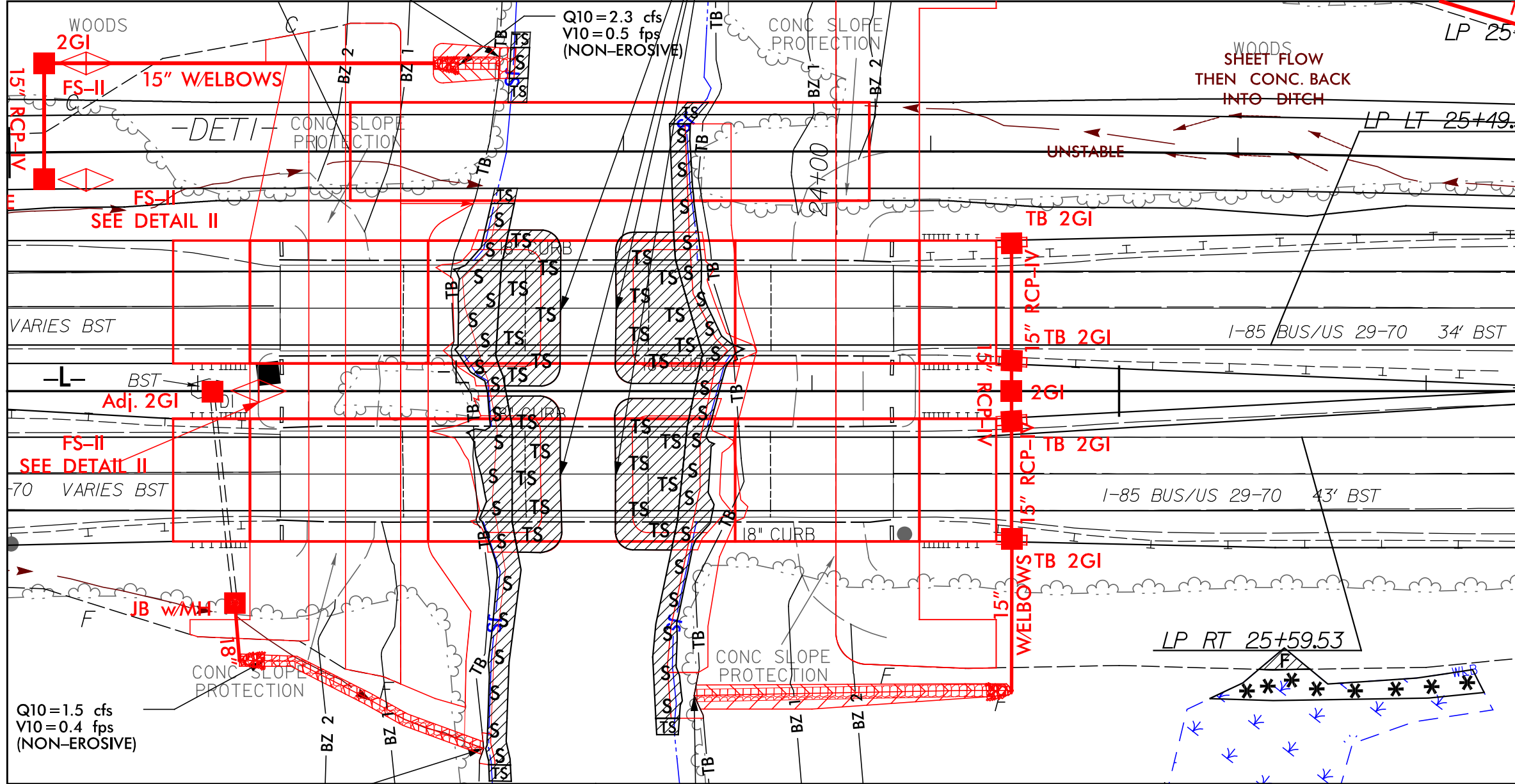




8/17/99

9/25/2017  
ICA ENGINEERING, INC.  
R:\5.0\_CAD\_BIM\6.2\_Work\_In\_Progress\Hydraulics\PERMITS\Environmental\Drawings\B5351\_hyd\_prm\_wet\_psh04b.dgn

DITCH WILL OUTLET TO STREAM HERE  
WITH NON-EROSIVE OUTLET VELOCITY  
Q10= 2.3 cfs  
V10= 1.3 fps (NON-EROSIVE)



DITCH WILL OUTLET TO STREAM HERE  
WITH NON-EROSIVE OUTLET VELOCITY  
Q10= 1.5 cfs  
V10= 1.9 fps (NON-EROSIVE)

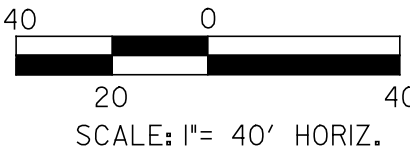
CAUSEWAYS WILL BE CONSTRUCTED IN PHASES.  
CONSTRUCT AND DECONSTRUCT CAUSEWAYS IN  
A MANNER SO AS NOT TO BLOCK MORE THAN  
HALF THE STREAM WIDTH AT ANY TIME.

DITCH WILL OUTLET TO STREAM HERE  
WITH NON-EROSIVE OUTLET VELOCITY  
Q10= 3.6 cfs  
V10= 1.9 fps (NON-EROSIVE)

### LEGEND

- TS TS** DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- S S** DENOTES PERMANENT IMPACTS IN SURFACE WATER
- F F** DENOTES FILL IN WETLAND
- \*\*\*** DENOTES MECHANIZED CLEARING

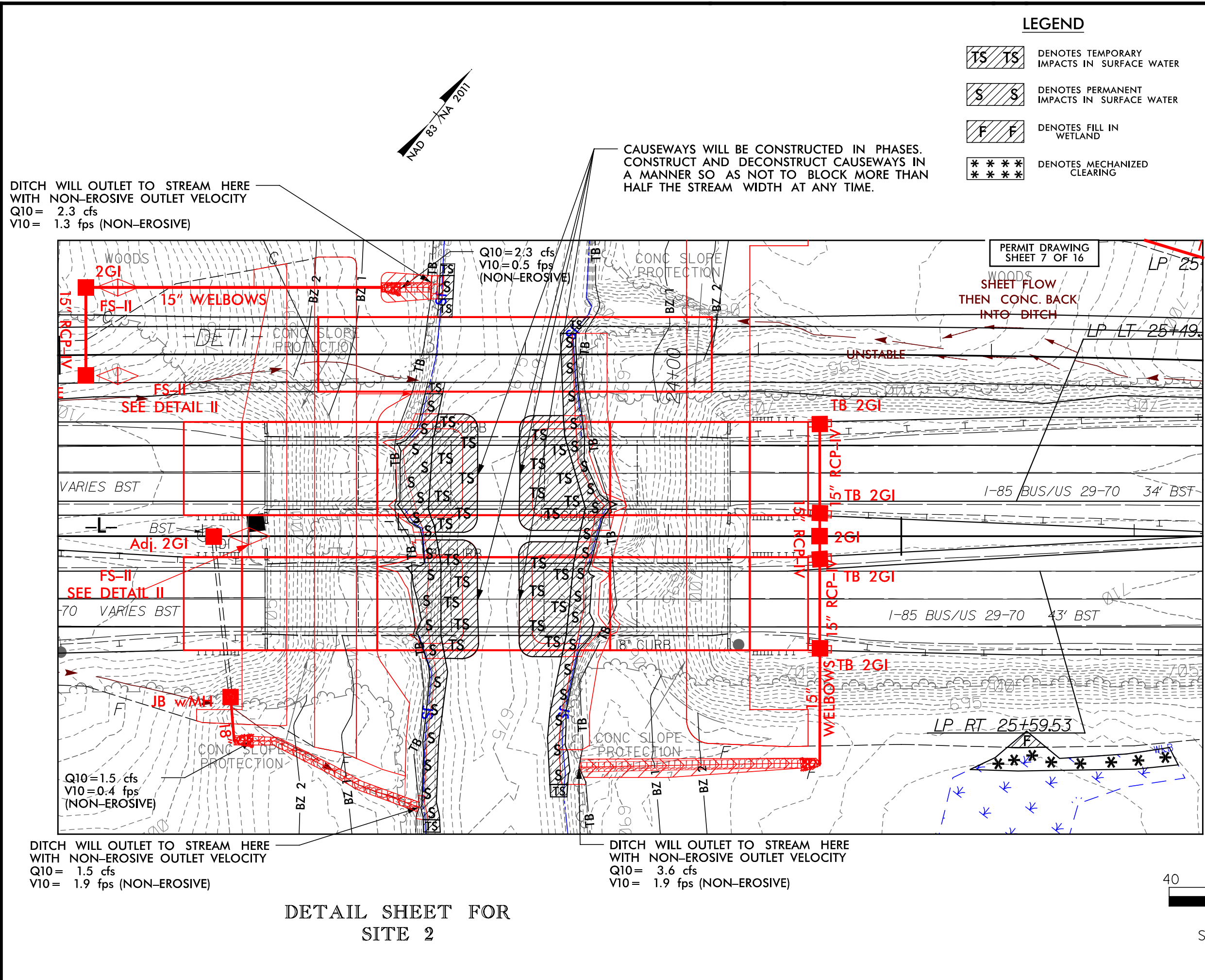
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|-------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.<br>B-5351                                         |  | SHEET NO.<br>4b                                                                               |  |
| RW SHEET NO.                                                            |  | HYDRAULICS ENGINEER                                                                           |  |
| ROADWAY DESIGN ENGINEER                                                 |  | HYDRAULICS ENGINEER                                                                           |  |
| <b>INCOMPLETE PLANS</b><br>DO NOT USE FOR R/W ACQUISITION               |  |                                                                                               |  |
| MOTT MACDONALD, I & E, LLC<br>LICENSE NO. F-0669                        |  |                                                                                               |  |
| <b>DOCUMENT NOT CONSIDERED FINAL</b><br>UNLESS ALL SIGNATURES COMPLETED |  |                                                                                               |  |
| Prepared in the Office of:                                              |  | MOTT MACDONALD, I & E, LLC<br>PO Box 700<br>Fuquay-Varina, NC 27526<br>www.mottmac.com/mentos |  |
| <b>ICA Engineering</b>                                                  |  | 5121 Kingdom Way,<br>Suite 100<br>Raleigh, NC 27607<br>(919) 876-1100                         |  |
| PERMIT DRAWING<br>SHEET 6 OF 16                                         |  | <b>ENGLISH</b>                                                                                |  |



SEE SHEET 7 FOR -L- PROFILE



8/17/99  
9/25/2017  
ICA ENGINEERING, INC.  
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- LEGEND**
- TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
  - S S DENOTES PERMANENT IMPACTS IN SURFACE WATER
  - F F DENOTES FILL IN WETLAND
  - \* \* \* \* DENOTES MECHANIZED CLEARING

|                                                                         |  |                                                                                                |  |
|-------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.<br>B-5351                                         |  | SHEET NO.<br>4b                                                                                |  |
| RW SHEET NO.                                                            |  | HYDRAULICS ENGINEER                                                                            |  |
| ROADWAY DESIGN ENGINEER                                                 |  | HYDRAULICS ENGINEER                                                                            |  |
| <b>INCOMPLETE PLANS</b><br>DO NOT USE FOR R/W ACQUISITION               |  |                                                                                                |  |
| MOTT MACDONALD, I & E, LLC<br>LICENSE NO. F-0669                        |  |                                                                                                |  |
| <b>DOCUMENT NOT CONSIDERED FINAL</b><br>UNLESS ALL SIGNATURES COMPLETED |  |                                                                                                |  |
| Prepared in the Office of:                                              |  | MOTT MACDONALD, I & E, LLC<br>PO Box 700<br>Fuquay-Varina, NC 27526<br>www.mottmac.com/mottmac |  |
| <b>ICA Engineering</b>                                                  |  | 5121 Kingdom Way,<br>Suite 100<br>Raleigh, NC 27607<br>(919) 876-1100                          |  |
| PERMIT DRAWING SHEET 6 OF 16                                            |  |                                                                                                |  |

DITCH WILL OUTLET TO STREAM HERE WITH NON-EROSIVE OUTLET VELOCITY  
Q10= 1.5 cfs  
V10= 1.9 fps (NON-EROSIVE)

DETAIL SHEET FOR  
SITE 2

DITCH WILL OUTLET TO STREAM HERE WITH NON-EROSIVE OUTLET VELOCITY  
Q10= 3.6 cfs  
V10= 1.9 fps (NON-EROSIVE)



SEE SHEET 7 FOR -L- PROFILE



PROJECT REFERENCE NO.  
B-5351

SHEET NO.  
5

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS  
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD, P.E., LLC  
LICENSE NO. E-0669

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

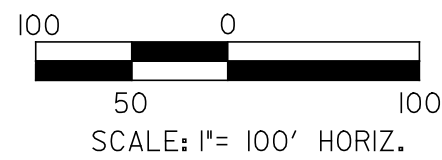
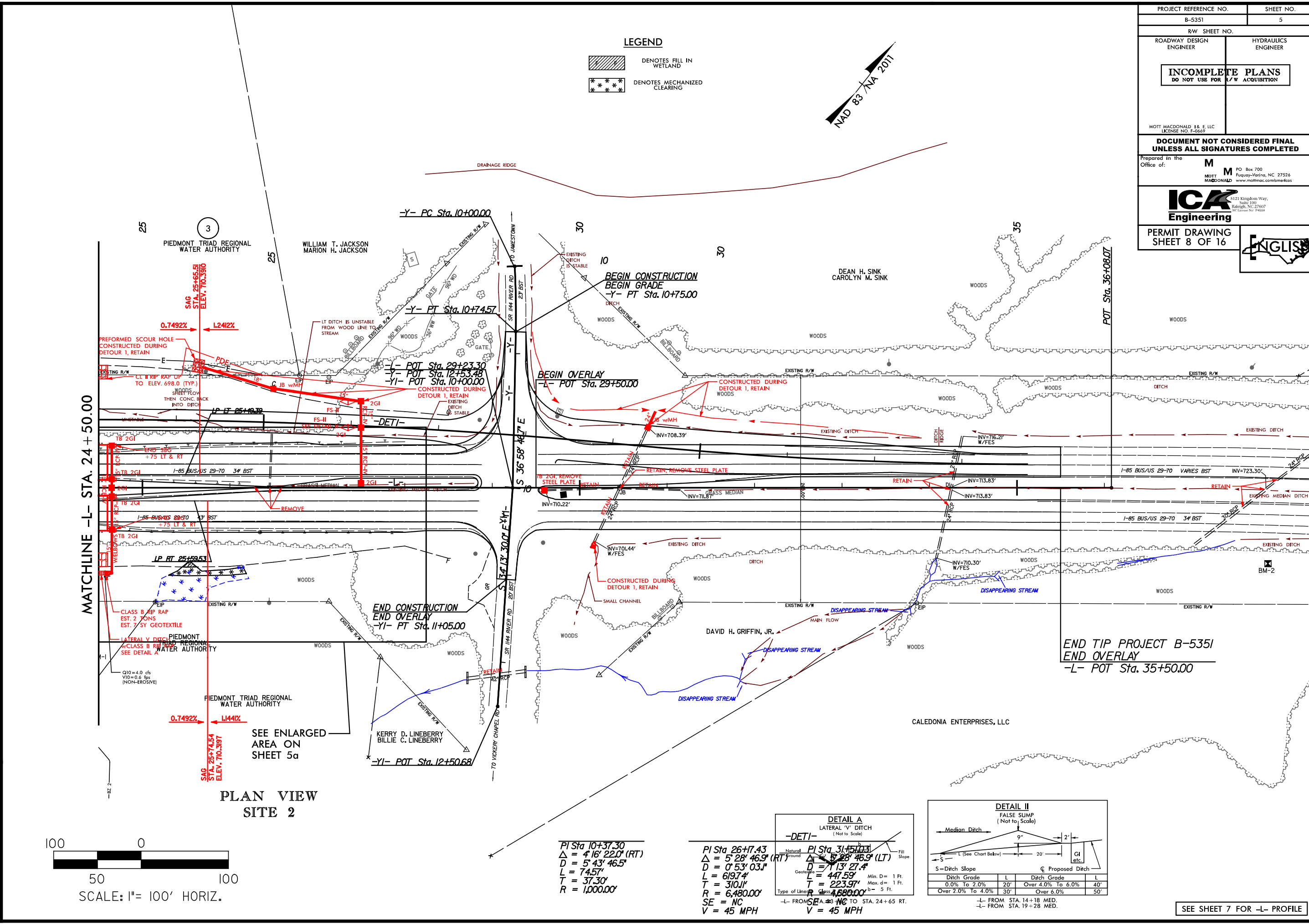
Prepared in the Office of:

MOTT MACDONALD, P.E., LLC  
Fuquay-Varina, NC 27526  
www.mottmac.com/members

ICA Engineering

PERMIT DRAWING  
SHEET 8 OF 16

ENGLISH



PI Sta 10+37.30  
Δ = 4' 16" 22.0" (RT)  
D = 5' 43' 46.5"  
L = 74.57'  
T = 37.30'  
R = 1,000.00'

PI Sta 26+17.43  
Δ = 5' 28' 46.9" (RT)  
D = 0' 53' 03.1"  
L = 619.74'  
T = 310.11'  
R = 6,480.00'  
SE = NC  
V = 45 MPH

DETAIL A  
LATERAL V DITCH  
(Not to Scale)

-DET1-

PI Sta 31+57.03  
Δ = 5' 28' 46.9" (LT)  
D = 1' 13' 27.4"  
L = 447.59'  
T = 223.97'  
R = 1,000.00'  
SE = NC  
V = 45 MPH

Min. D = 1 Ft.  
Max. d = 1 Ft.  
Type of Liner = Glass  
-L- FROM STA. 24+65 RT. TO STA. 24+65 RT.

DETAIL II  
FALSE SUMP  
(Not to Scale)

Median Ditch

S = Ditch Slope

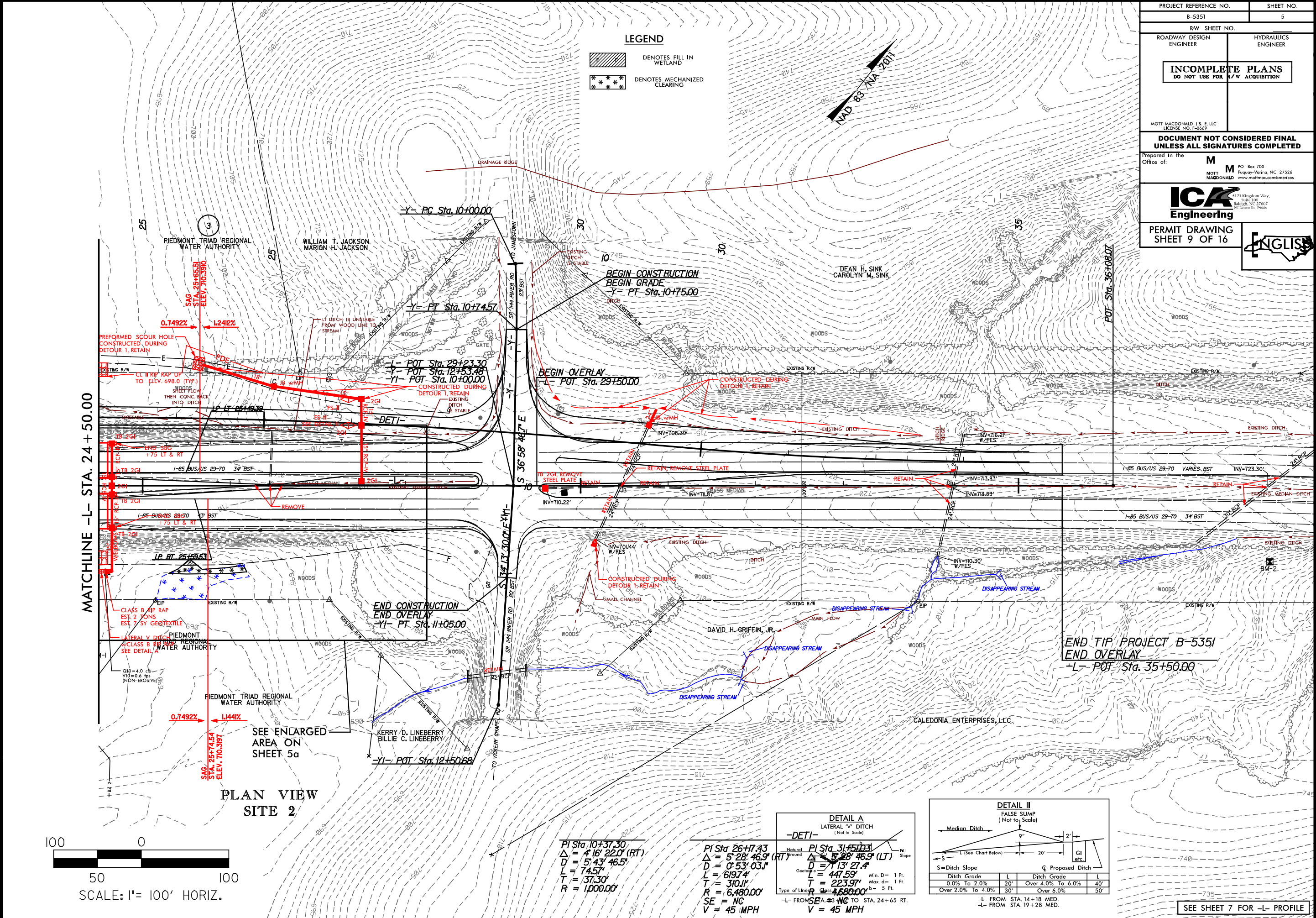
Q = Proposed Ditch

| Ditch Grade       | L   | Ditch Grade       | L   |
|-------------------|-----|-------------------|-----|
| 0.0% To 2.0%      | 20' | Over 4.0% To 6.0% | 40' |
| Over 2.0% To 4.0% | 30' | Over 6.0%         | 50' |

-L- FROM STA. 14+18 MED.  
-L- FROM STA. 19+28 MED.

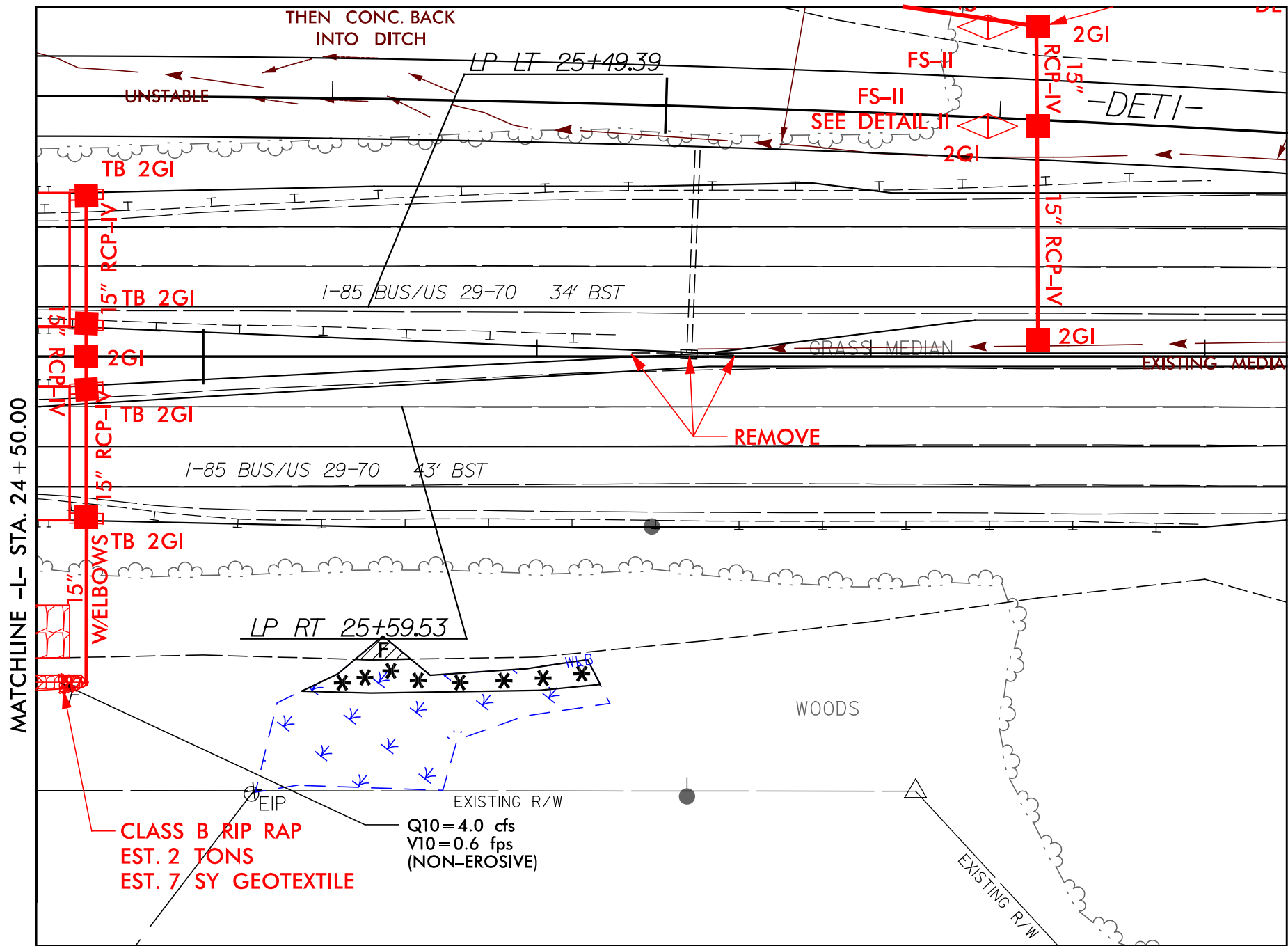
SEE SHEET 7 FOR -L- PROFILE



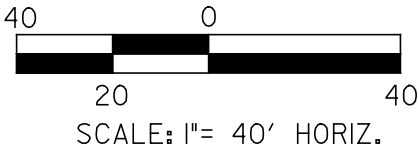


9/25/2017  
ICA ENGINEERING, INC.  
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8/17/99



DETAIL SHEET FOR  
SITE 2



|                                                                                                        |  |                                                                                                |  |
|--------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.<br>B-5351                                                                        |  | SHEET NO.<br>5                                                                                 |  |
| R/W SHEET NO.                                                                                          |  |                                                                                                |  |
| ROADWAY DESIGN ENGINEER                                                                                |  | HYDRAULICS ENGINEER                                                                            |  |
| <b>INCOMPLETE PLANS</b><br>DO NOT USE FOR R/W ACQUISITION                                              |  |                                                                                                |  |
| MOTT MACDONALD, I & E, LLC<br>LICENSE NO. E-0669                                                       |  |                                                                                                |  |
| <b>DOCUMENT NOT CONSIDERED FINAL</b><br><b>UNLESS ALL SIGNATURES COMPLETED</b>                         |  |                                                                                                |  |
| Prepared in the Office of:                                                                             |  | MOTT MACDONALD, I & E, LLC<br>PO Box 700<br>Fuquay-Varina, NC 27526<br>www.mottmac.com/members |  |
| <b>ICA Engineering</b><br>5121 Kingdom Way,<br>Suite 100<br>Raleigh, NC 27607<br>NC License No. PE0008 |  |                                                                                                |  |
| PERMIT DRAWING<br>SHEET 10 OF 16                                                                       |  |                                                                                                |  |

LEGEND

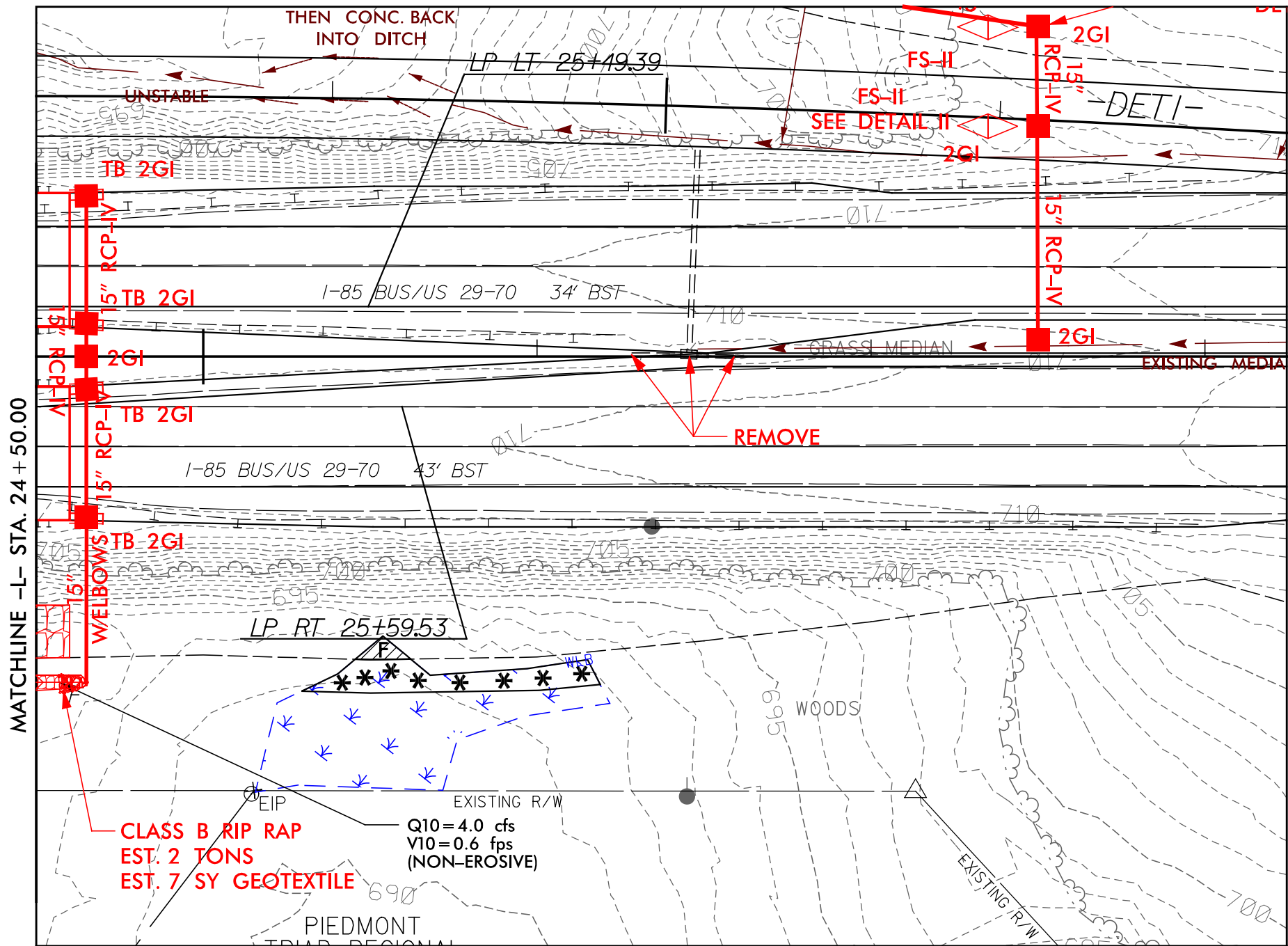
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING

SEE SHEET 7 FOR -L- PROFILE

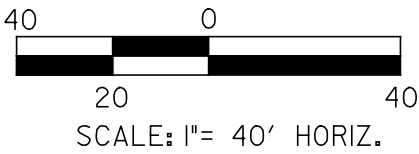


8/17/99

9/25/2017  
ICA ENGINEERING, INC.  
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DETAIL SHEET FOR  
SITE 2



|                                                                                                        |  |                                                                                                |  |
|--------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.<br>B-5351                                                                        |  | SHEET NO.<br>5                                                                                 |  |
| R/W SHEET NO.                                                                                          |  |                                                                                                |  |
| ROADWAY DESIGN ENGINEER                                                                                |  | HYDRAULICS ENGINEER                                                                            |  |
| <b>INCOMPLETE PLANS</b><br>DO NOT USE FOR R/W ACQUISITION                                              |  |                                                                                                |  |
| MOTT MACDONALD, I & E, LLC<br>LICENSE NO. E-0669                                                       |  |                                                                                                |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                               |  |                                                                                                |  |
| Prepared in the Office of:                                                                             |  | MOTT MACDONALD, I & E, LLC<br>PO Box 700<br>Fuquay-Varina, NC 27526<br>www.mottmac.com/mottmac |  |
| <b>ICA Engineering</b><br>5121 Kingdom Way,<br>Suite 100<br>Raleigh, NC 27607<br>NC License No. PE0008 |  |                                                                                                |  |
| PERMIT DRAWING<br>SHEET 11 OF 16                                                                       |  |                                                                                                |  |

LEGEND

-  DENOTES FILL IN WETLAND
-  DENOTES MECHANIZED CLEARING

SEE SHEET 7 FOR -L- PROFILE

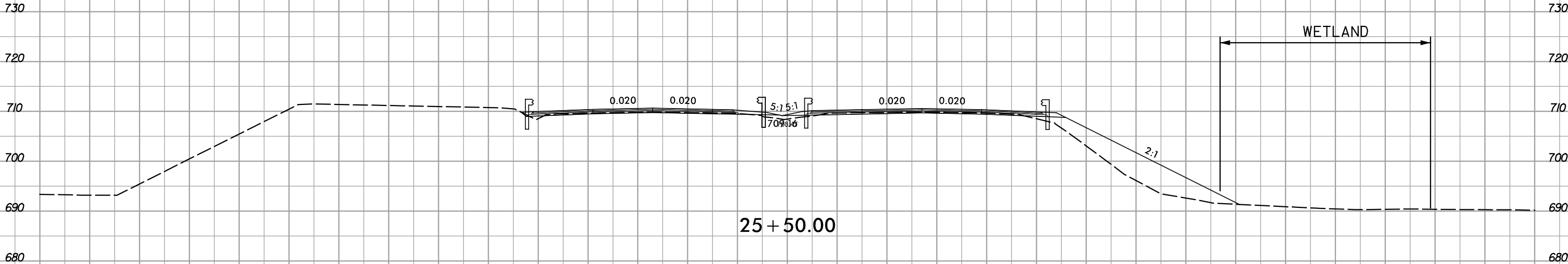




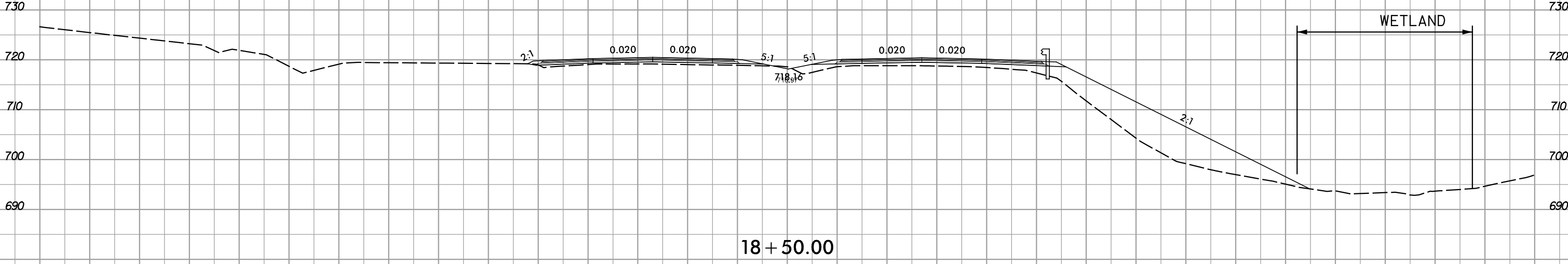
8/23/99

SITE 2

PERMIT DRAWING  
SHEET 13 OF 16



SITE 1



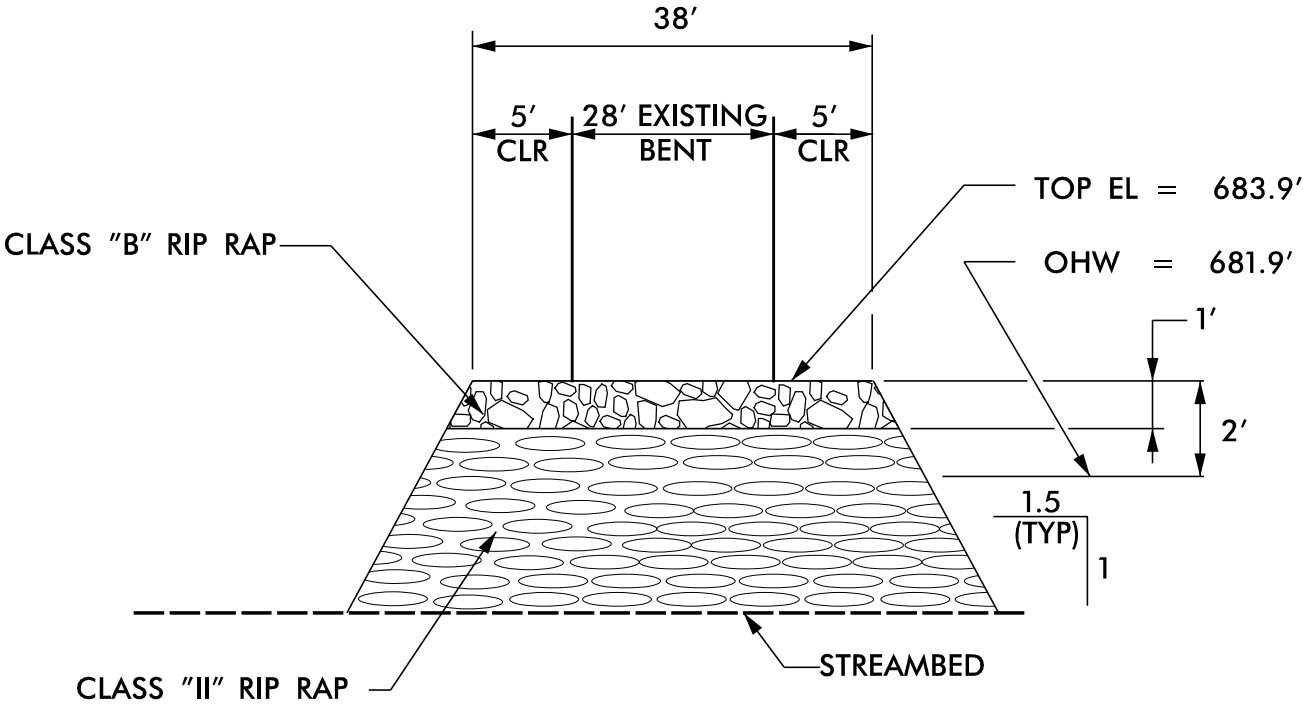
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DATE: 8/23/99  
BY: [illegible]  
CHECKED: [illegible]  
APPROVED: [illegible]  
SCALE: AS SHOWN  
SHEET: 13 OF 16



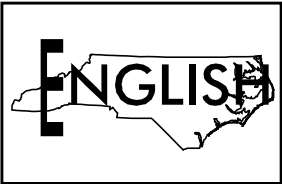
DETAIL OF CAUSEWAY  
FOR PROPOSED BRIDGE

-L- 23+07 LT FOR BENT #1 (SOUTH SIDE)  
-L- 23+47 LT FOR BENT #2 (NORTH SIDE)



VOLUME OF CLASS "II" RIP RAP  
BELOW OHW: 619 CY

315 CY (BENT #1 - SOUTH SIDE)  
304 CY (BENT #2 - NORTH SIDE)



N. C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GUILFORD COUNTY

PROJECT: B-5351  
BRIDGE NO. 242 AND NO. 247  
OVER DEEP RIVER  
ON US 29 / 70 / I-85 BUSINESS

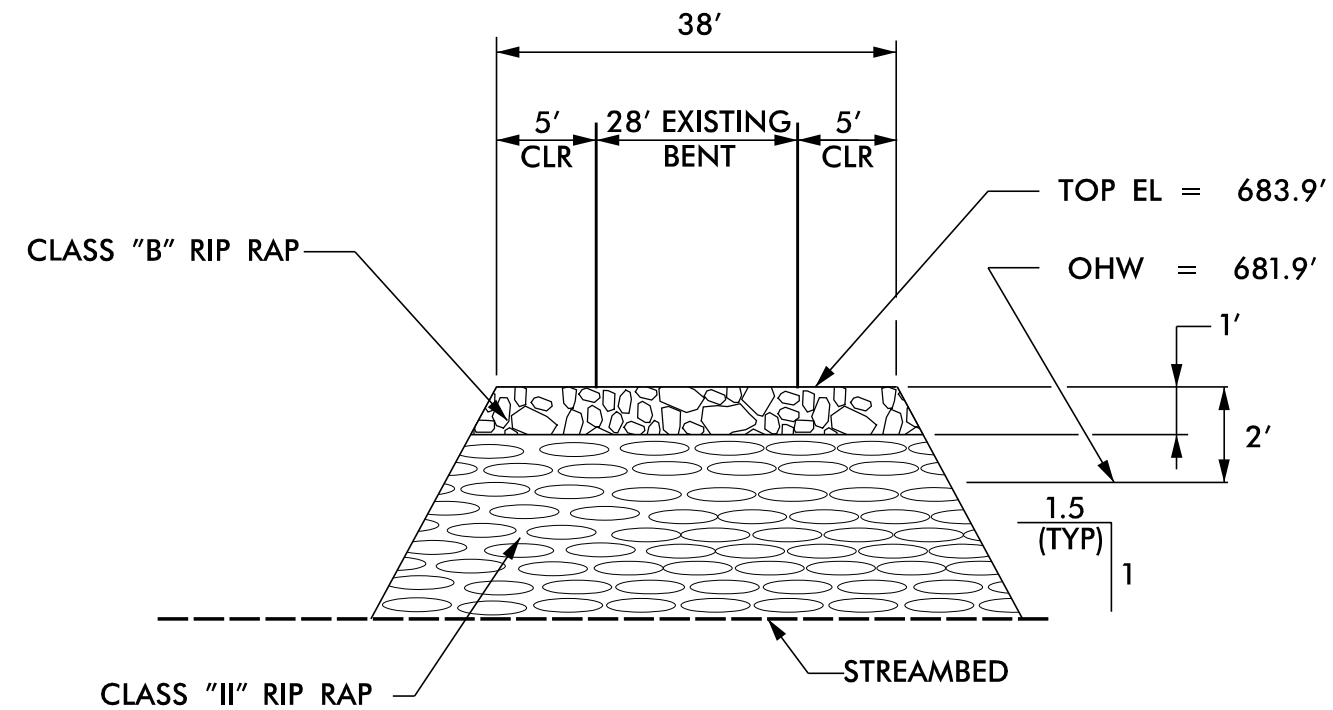
SHEET 15 OF 16



# DETAIL OF CAUSEWAY FOR PROPOSED BRIDGE

-L- 23+07 RT FOR BENT #3 (SOUTH SIDE)

-L- 23+47 RT FOR BENT #4 (NORTH SIDE)



VOLUME OF CLASS "II" RIP RAP  
BELOW OHW: 562 CY

247 CY (BENT #3 - SOUTH SIDE)

315 CY (BENT #4 - NORTH SIDE)



N. C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GUILFORD COUNTY

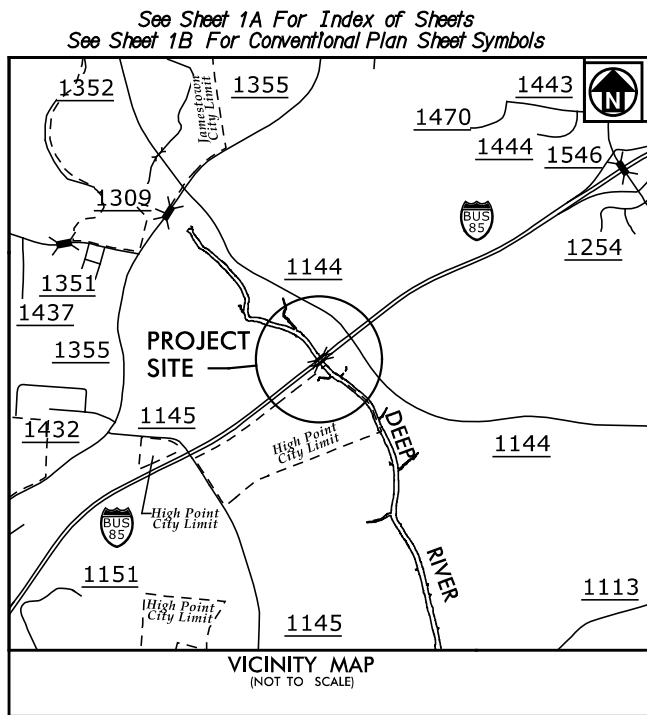
PROJECT: B-5351  
BRIDGE NO. 242 AND NO. 247  
OVER DEEP RIVER  
ON US 29 / 70 / I-85 BUSINESS

SHEET 16 OF 16

09/08/99  
9/25/2017  
ICA ENGINEERING, INC.  
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TIP PROJECT: B-5351

CONTRACT:



25% PLANS

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**GUILFORD COUNTY**

LOCATION: REPLACE BRIDGE NO. 242 AND BRIDGE NO. 237 OVER DEEP RIVER  
IN HIGH POINT ON US 29 /70 /I-85 BUSINESS

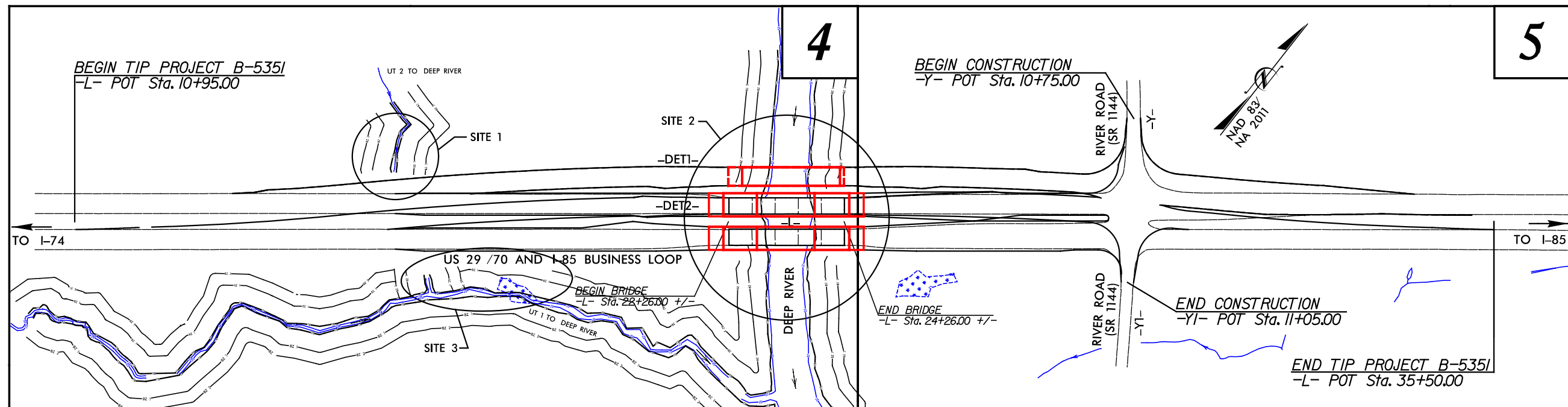
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

BUFFER IMPACTS PERMIT

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | B-5351                      | 1           |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 46065.1.1       | BRNHS-0029(55)              | PE          |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |

BUFFER DRAWING  
SHEET 1 OF 5

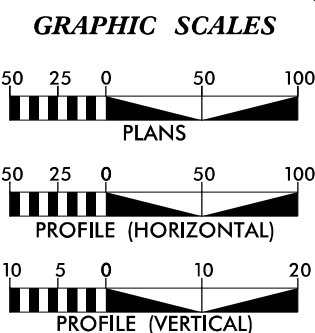
ENGLISH



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS  
ESTABLISHED BY METHOD \_\_\_\_\_

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



DESIGN DATA

ADT 2018 = 34,500  
ADT 2038 = 42,900  
K = 10 %  
D = 55 %  
T = 8 % \*  
V = 60 MPH  
\* (TTST = 3% + DUAL 5%)  
FUNC CLASS =  
MAJOR ARTERIAL  
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5351 = 0.427 MILES  
LENGTH STRUCTURE TIP PROJECT B-5351 = 0.038 MILES  
TOTAL LENGTH OF TIP PROJECT B-5351 = 0.465 MILES

PLANS PREPARED FOR THE NCDOT BY:  
MOTT MACDONALD  
PO Box 700  
Fuquay-Varina, NC 27526  
(919) 552-2253  
(919) 552-2254 (Fax)  
www.mottmac.com/america  
LICENSE NO. F-0669

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
DECEMBER 15, 2017

LETTING DATE:  
DECEMBER 18, 2018

ICA Engineering  
5121 Kingdom Way,  
Suite 100  
Raleigh, NC 27607  
NC License No. F-0669

DAVID C. WALLER, PE  
PROJECT ENGINEER  
PEF ENGINEER

JORDAN WOODARD, PE  
PROJECT DESIGN ENGINEER  
PEF ENGINEER

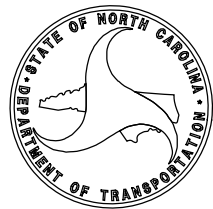
GARY LOVERING, PE  
PROJECT ENGINEER  
NCDOT ROADWAY DESIGN

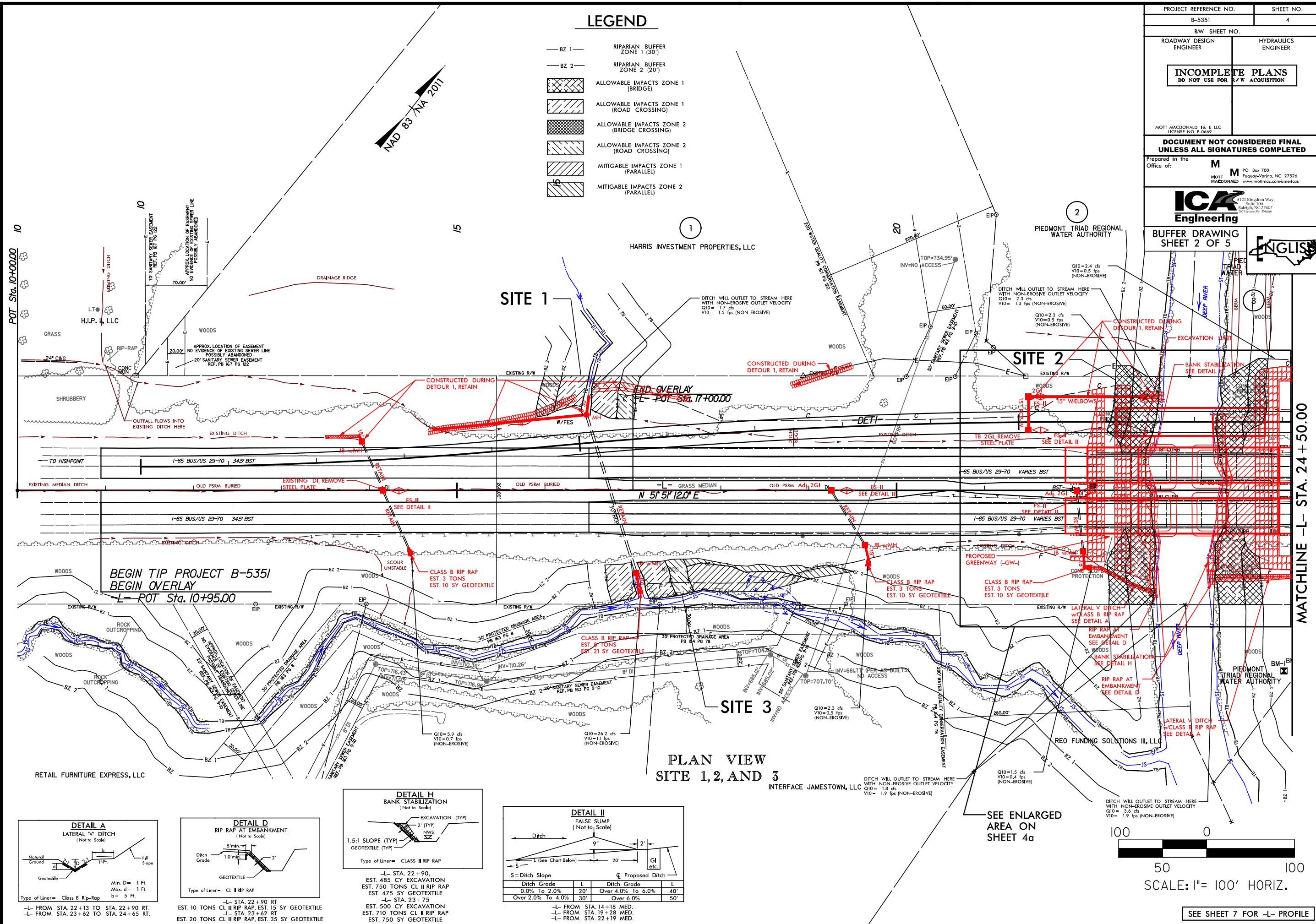
HYDRAULICS ENGINEER

SIGNATURE: \_\_\_\_\_ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: \_\_\_\_\_ P.E.





LEGEND

- BZ 1 RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (BRIDGE CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)
- MITIGABLE IMPACTS ZONE 1 (PARALLEL)
- MITIGABLE IMPACTS ZONE 2 (PARALLEL)

PROJECT REFERENCE NO. B-5351 SHEET NO. 4

R/W SHEET NO. ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS  
DO NOT USE FOR R/W ACQUISITION

MOTT MACDONALD, P.E., LLC  
LICENSE NO. E-0569

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: MOTT MACDONALD, P.E., LLC  
PO Box 700  
Fuquay-Varina, NC 27526  
www.mottmac.com/mottmac

ICA Engineering  
1121 Kingdom Way,  
Suite 100  
Raleigh, NC 27607  
NC License No. 00000

BUFFER DRAWING  
SHEET 2 OF 5

ENGLISH

PLAN VIEW  
SITE 1, 2, AND 3

**DETAIL A**  
LATERAL V DITCH  
(Not to Scale)

Type of Liner = Class B Rip-Rap  
Min. D = 1 Ft.  
Max. d = 1 Ft.  
b = 5 Ft.

**DETAIL D**  
RIP RAP AT EMBANKMENT  
(Not to Scale)

Type of Liner = CL II RIP RAP  
EST. 10 TONS CL II RIP RAP, EST. 15 SY GEOTEXTILE  
-L- STA. 22+90 RT.  
-L- FROM STA. 22+13 TO STA. 22+90 RT.  
-L- FROM STA. 23+62 TO STA. 24+65 RT.

**DETAIL H**  
BANK STABILIZATION  
(Not to Scale)

Type of Liner = CLASS II RIP RAP  
-L- STA. 22+90.  
EST. 485 CY EXCAVATION  
EST. 750 TONS CL II RIP RAP  
EST. 475 SY GEOTEXTILE  
-L- STA. 23+75  
EST. 500 CY EXCAVATION  
EST. 710 TONS CL II RIP RAP  
EST. 750 SY GEOTEXTILE

**DETAIL II**  
FALSE SUMP  
(Not to Scale)

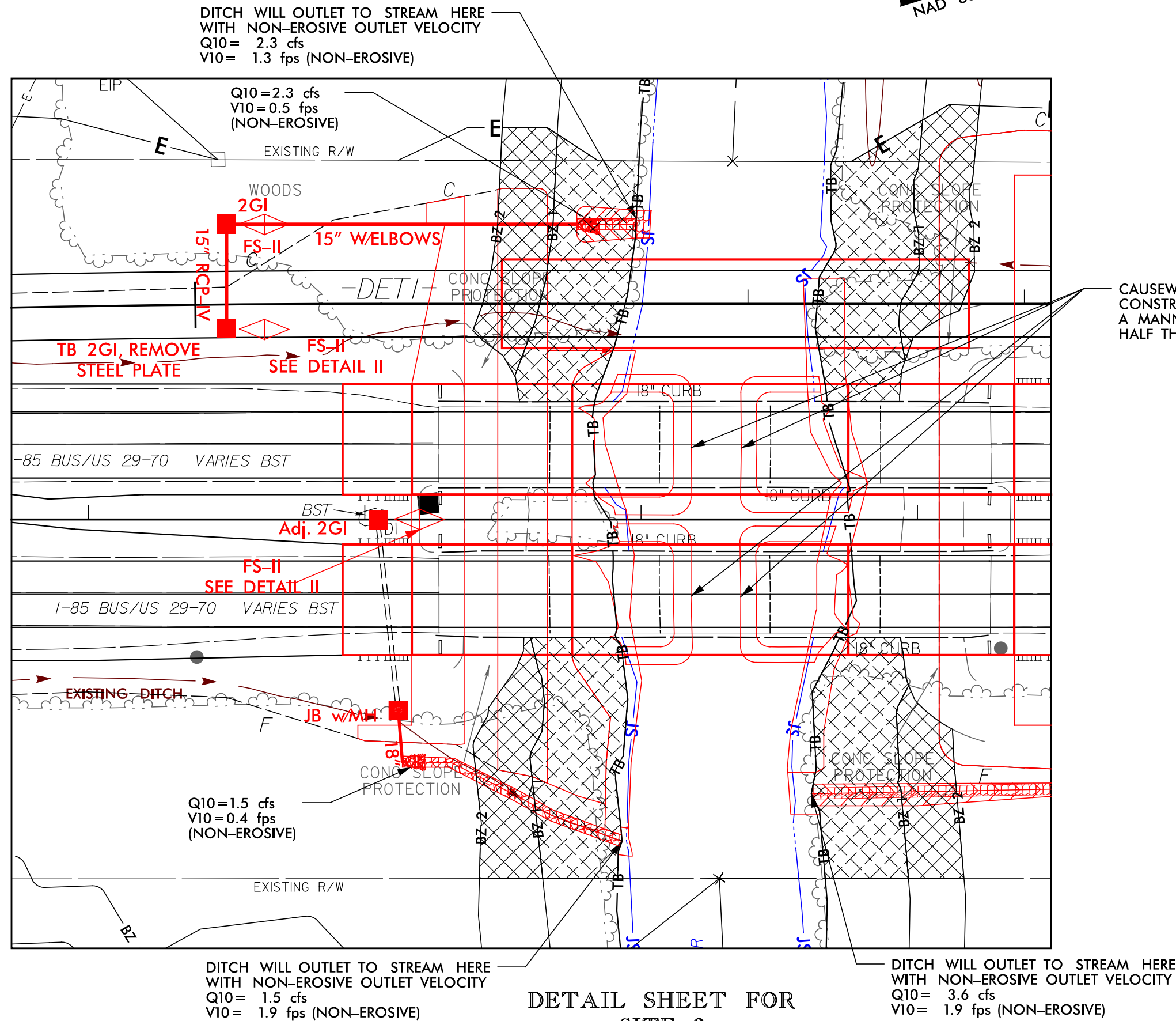
S = Ditch Slope  
Ditch Grade  
Proposed Ditch  
L = From Sta. 14+18 MED.  
L = From Sta. 19+28 MED.  
L = From Sta. 22+19 MED.

100 0 100  
SCALE: 1" = 100' HORIZ.  
SEE SHEET 7 FOR -L- PROFILE



8/17/99

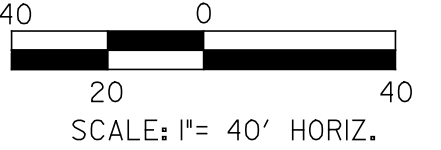
9/25/2017  
ICA ENGINEERING, INC.  
R:\6.0\_CAD\_BIM\6.2\_Work\_In\_Progress\Hydraulics\PERMITS\Environmental\Drawings\B5351\_hyd\_prm\_buf\_psh04a.dgn



CAUSEWAYS WILL BE CONSTRUCTED IN PHASES.  
CONSTRUCT AND DECONSTRUCT CAUSEWAYS IN  
A MANNER SO AS NOT TO BLOCK MORE THAN  
HALF THE STREAM WIDTH AT ANY TIME.

## LEGEND

- BZ 1 RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 2 (BRIDGE CROSSING)



SEE SHEET 7 FOR -L- PROFILE

|                                                                  |  |                                                                                                |  |
|------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.<br>B-5351                                  |  | SHEET NO.<br>4                                                                                 |  |
| R/W SHEET NO.                                                    |  | HYDRAULICS ENGINEER                                                                            |  |
| ROADWAY DESIGN ENGINEER                                          |  | HYDRAULICS ENGINEER                                                                            |  |
| INCOMPLETE PLANS<br>DO NOT USE FOR R/W ACQUISITION               |  |                                                                                                |  |
| MOTT MACDONALD, I & E, LLC<br>LICENSE NO. E-0669                 |  |                                                                                                |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED |  |                                                                                                |  |
| Prepared in the Office of:                                       |  | MOTT MACDONALD, I & E, LLC<br>PO Box 700<br>Fuquay-Varina, NC 27526<br>www.mottmac.com/mottmac |  |
| ICA Engineering                                                  |  | 5121 Kingdom Way,<br>Suite 100<br>Raleigh, NC 27607<br>Tel: 919.396.7400<br>Fax: 919.396.7401  |  |
| BUFFER DRAWING<br>SHEET 3 OF 5                                   |  | ENGLISH                                                                                        |  |



## BUFFER IMPACTS SUMMARY

[illegible]

N.C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
  
GUILFORD COUNTY  
PROJECT: B-5351 (BRIDGE #242, #237)  
  
9/18/2017  
SHEET 4 OF 5

## WETLANDS IN BUFFER IMPACTS SUMMARY

|               |                      |  | WETLANDS IN BUFFERS          |                              |
|---------------|----------------------|--|------------------------------|------------------------------|
| SITE NO.      | STATION<br>(FROM/TO) |  | ZONE 1<br>(ft <sup>2</sup> ) | ZONE 2<br>(ft <sup>2</sup> ) |
|               |                      |  |                              |                              |
| 3             | -L- 18+27 to 18+65   |  | 408                          |                              |
|               |                      |  |                              |                              |
|               |                      |  |                              |                              |
|               |                      |  |                              |                              |
|               |                      |  |                              |                              |
|               |                      |  |                              |                              |
|               |                      |  |                              |                              |
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|               |                      |  |                              |                              |
|               |                      |  |                              |                              |
|               |                      |  |                              |                              |
|               |                      |  |                              |                              |
|               |                      |  |                              |                              |
|               |                      |  |                              |                              |
|               |                      |  |                              |                              |
| <b>TOTAL:</b> |                      |  | 408                          | 0                            |

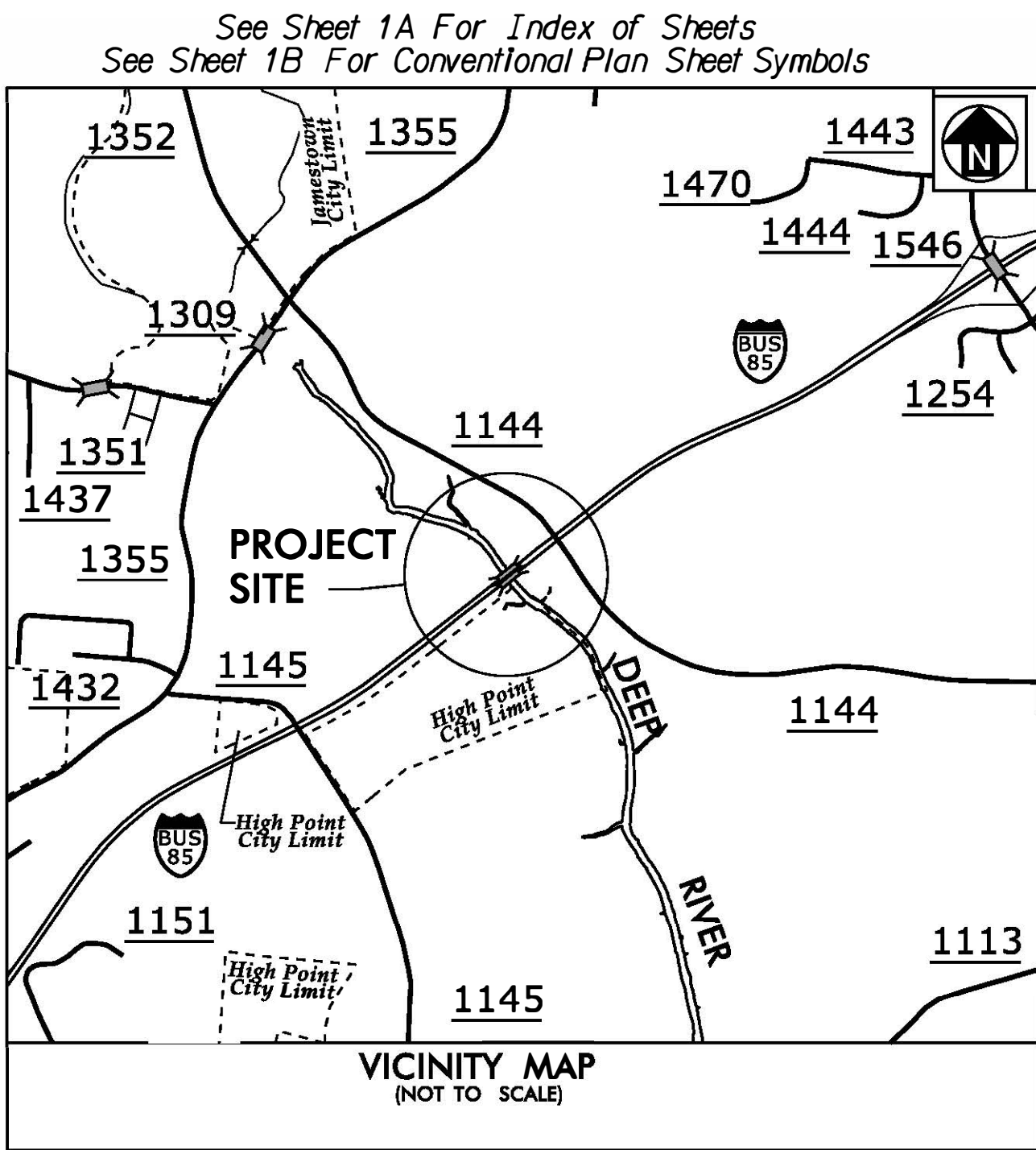
N.C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS

GUILFORD COUNTY  
PROJECT: B-5351 (BRIDGE #242, #237)

9/18/2017  
SHEET 5 OF 5

TIP PROJECT: B-5351

CONTRACT: C204100



ROW PLANS

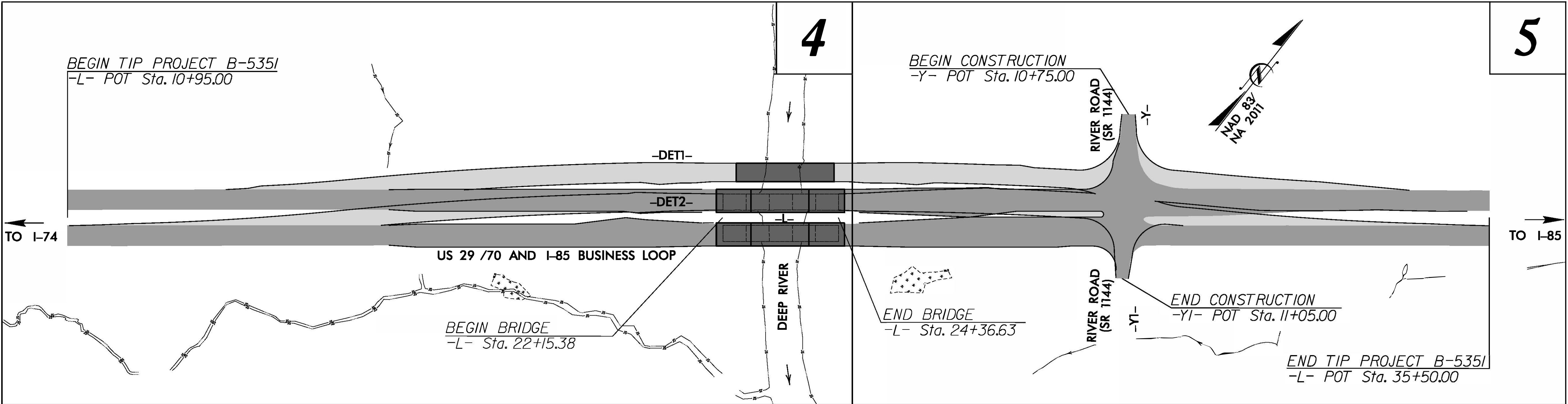
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

GUILFORD COUNTY

LOCATION: REPLACE BRIDGE NO. 242 AND BRIDGE NO. 237 OVER DEEP RIVER  
IN HIGH POINT ON US 29 /70 /I-85 BUSINESS

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

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | B-5351                      | 1           |              |
| STATE PROJ. NO. | P.A. PROJ. NO.              | DESCRIPTION |              |
| 46065.1.1       | BRNHS-0029(55)              | PE          |              |
| 46035.2.1       |                             | ROW, UTIL   |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |



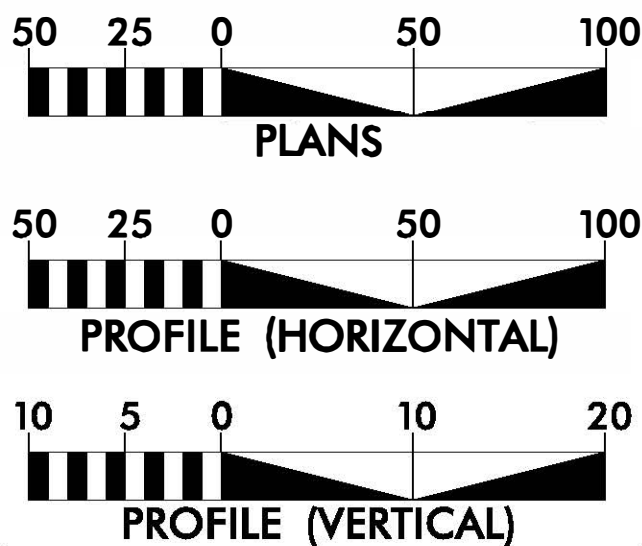
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS  
ESTABLISHED BY METHOD II

THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS  
BEING LIMITED TO POINTS AS SHOWN ON PLANS.

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2018 = 34,500  
ADT 2038 = 42,900  
K = 10 %  
D = 55 %  
T = 8 % \*  
V = 60 MPH  
\* (TTST = 3% + DUAL 5%)  
FUNC CLASS =  
MAJOR ARTERIAL  
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5351 = 0.423 MILES  
LENGTH STRUCTURE TIP PROJECT B-5351 = 0.042 MILES  
TOTAL LENGTH OF TIP PROJECT B-5351 = 0.465 MILES

PLANS PREPARED FOR THE NCDOT BY:

**MOTT MACDONALD**  
PO Box 700  
Fuquay-Varina, NC 27526  
(919) 552-2253  
(919) 552-2254 (Fax)  
www.mottmac.com/americas  
LICENSE NO. F-0669

**ICA Engineering**  
5121 Kingdom Way,  
Suite 100  
Raleigh, NC 27607  
NC License No. P-0088

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
OCTOBER 20, 2017

LETTING DATE:  
JUNE 19, 2018

DAVID C. WALLER, PE  
PROJECT ENGINEER  
PEF ENGINEER

JORDAN WOODARD, PE  
PROJECT DESIGN ENGINEER  
PEF ENGINEER

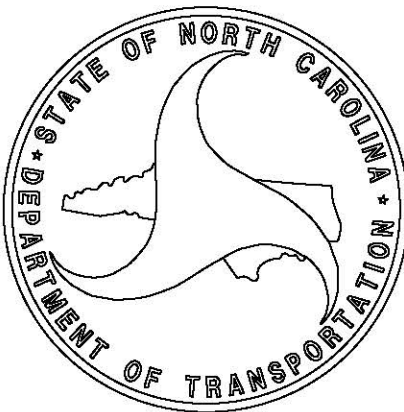
DAVID STUTTS, PE  
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: P.E.

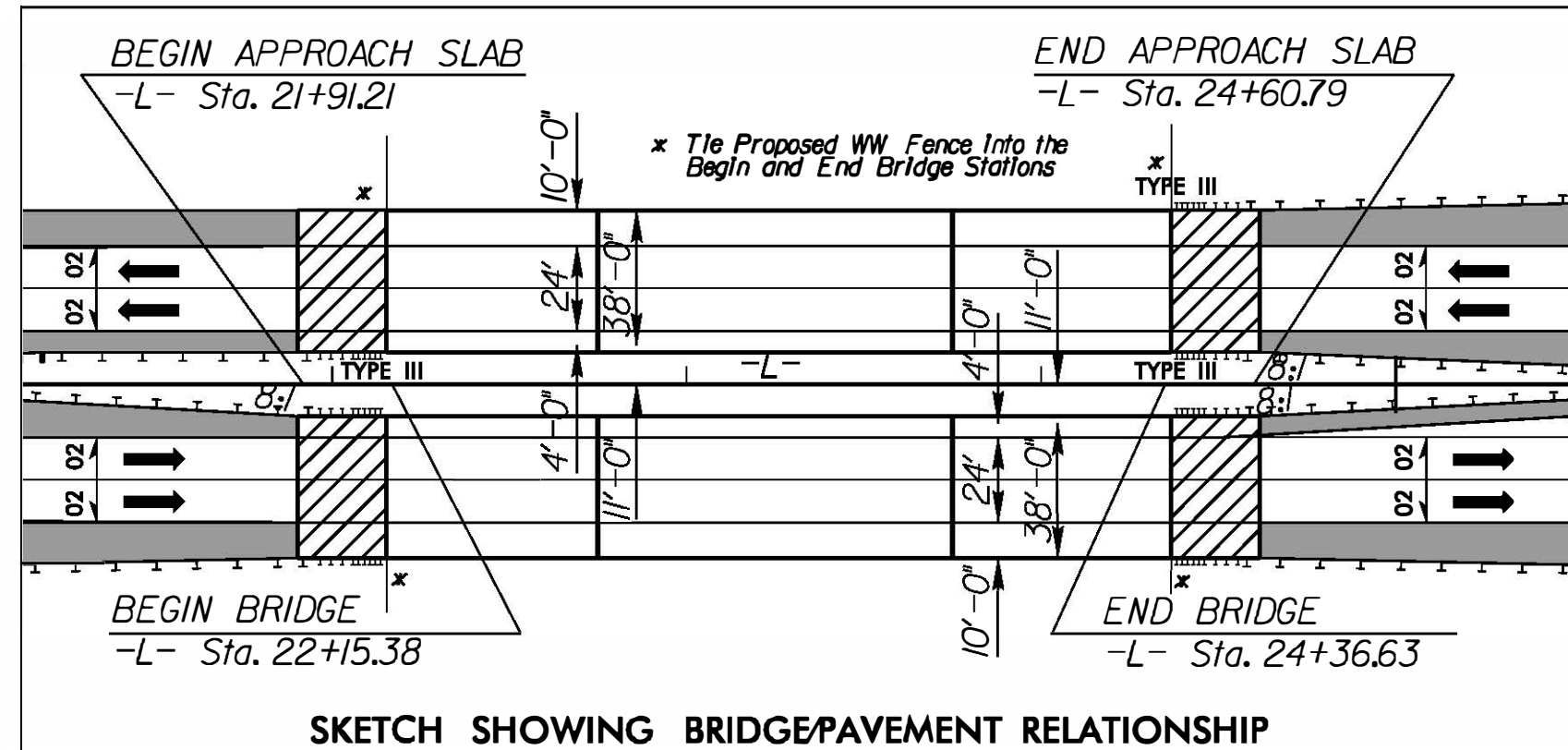
ROADWAY DESIGN  
ENGINEER

SIGNATURE: P.E.

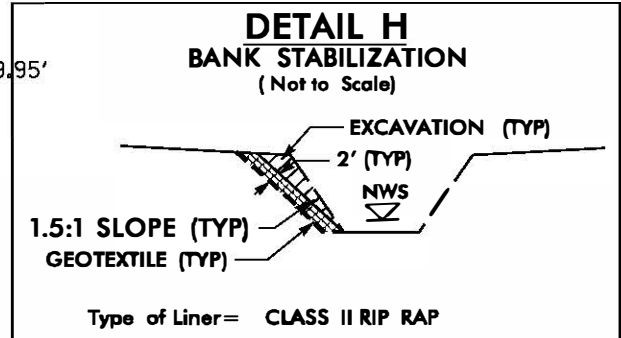
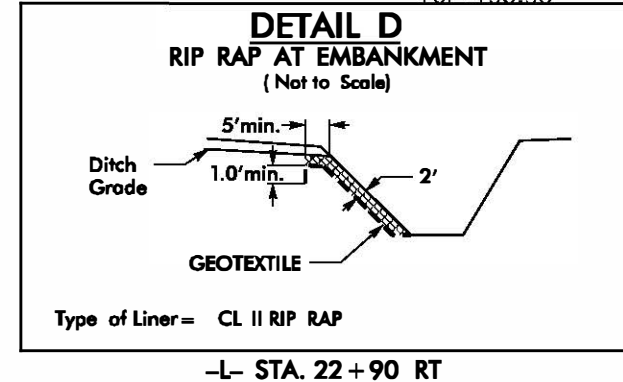
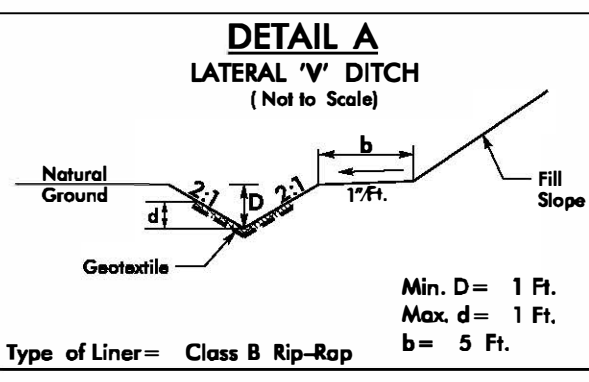
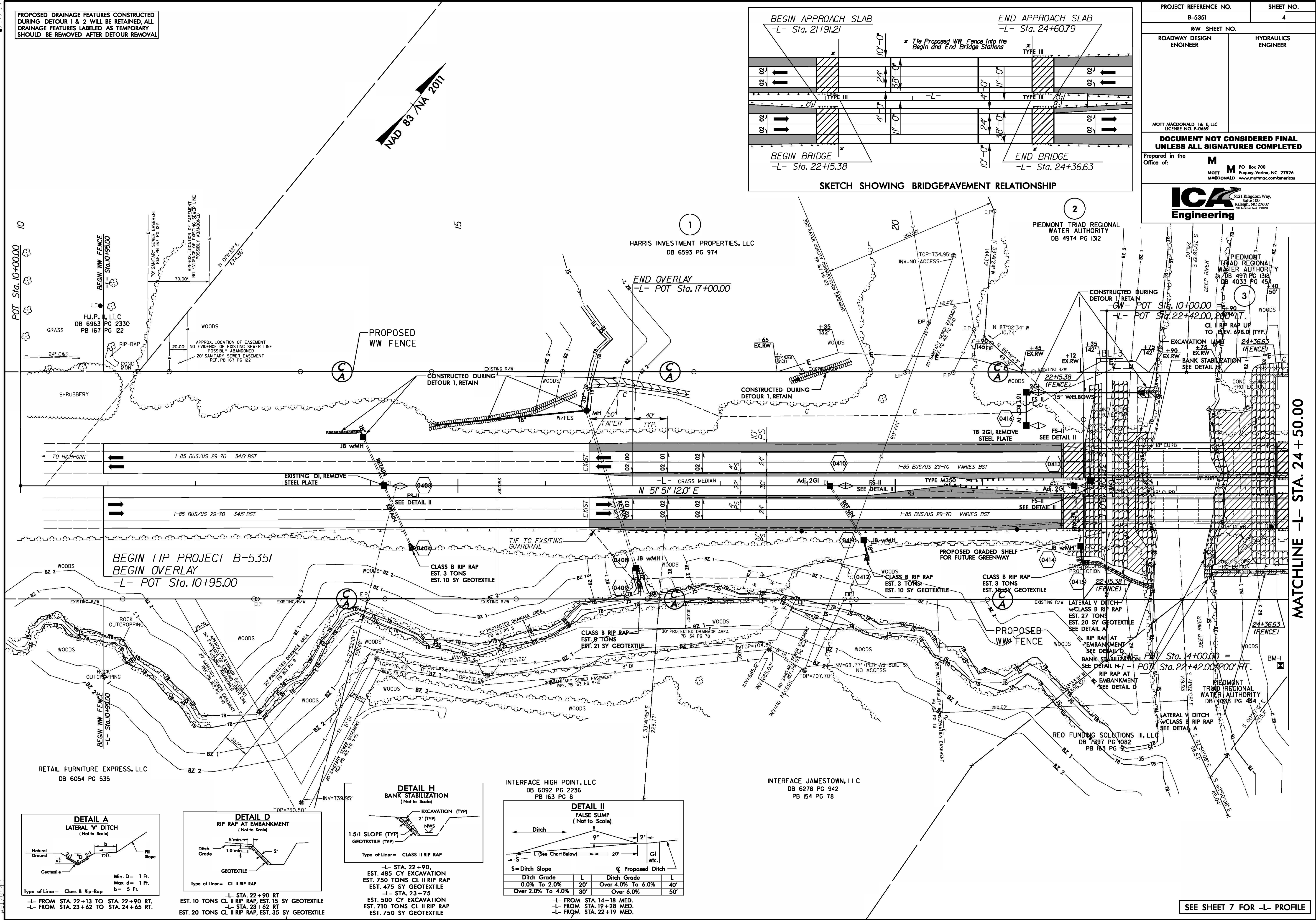




PROPOSED DRAINAGE FEATURES CONSTRUCTED DURING DETOUR 1 & 2 WILL BE RETAINED. ALL DRAINAGE FEATURES LABELED AS TEMPORARY SHOULD BE REMOVED AFTER DETOUR REMOVAL



|                                                                                                     |  |                                                                                 |  |
|-----------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.<br>B-5351                                                                     |  | SHEET NO.<br>4                                                                  |  |
| RW SHEET NO.                                                                                        |  | HYDRAULICS ENGINEER                                                             |  |
| ROADWAY DESIGN ENGINEER                                                                             |  | HYDRAULICS ENGINEER                                                             |  |
| MOTT MACDONALD I & E, LLC<br>5121 Kingdom Way, Suite 100<br>Raleigh, NC 27607<br>License No. E-0669 |  |                                                                                 |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                            |  |                                                                                 |  |
| Prepared in the Office of:                                                                          |  | MOTT MACDONALD I & E, LLC<br>Fuquay-Varina, NC 27526<br>www.mottmac.com/marinas |  |
| <b>ICA Engineering</b>                                                                              |  |                                                                                 |  |



INTERFACETECH, LLC  
DB 6092 PG 2236  
PB 163 PG 8

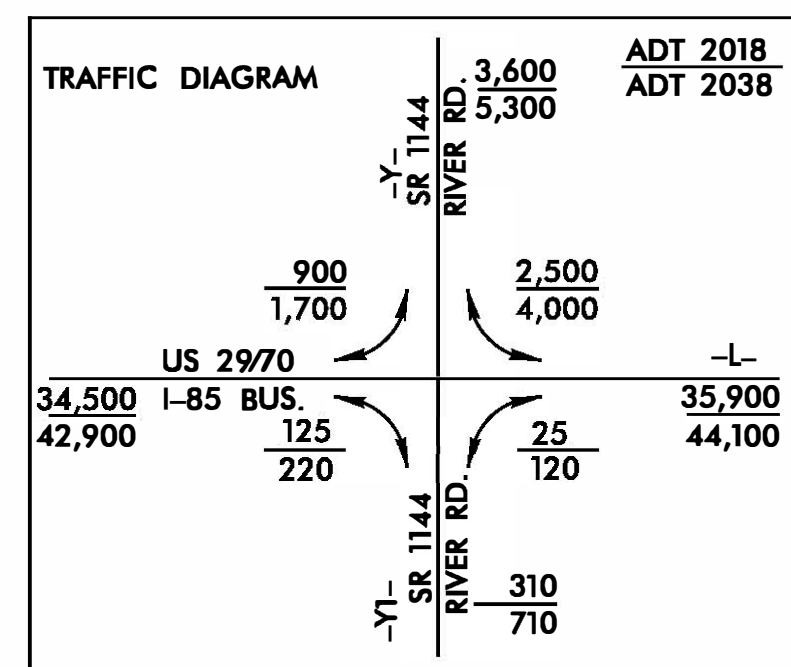
**DETAIL II**  
(FALSE SUMP (Not to Scale))

SEE SHEET 7 FOR -L- PROFILE

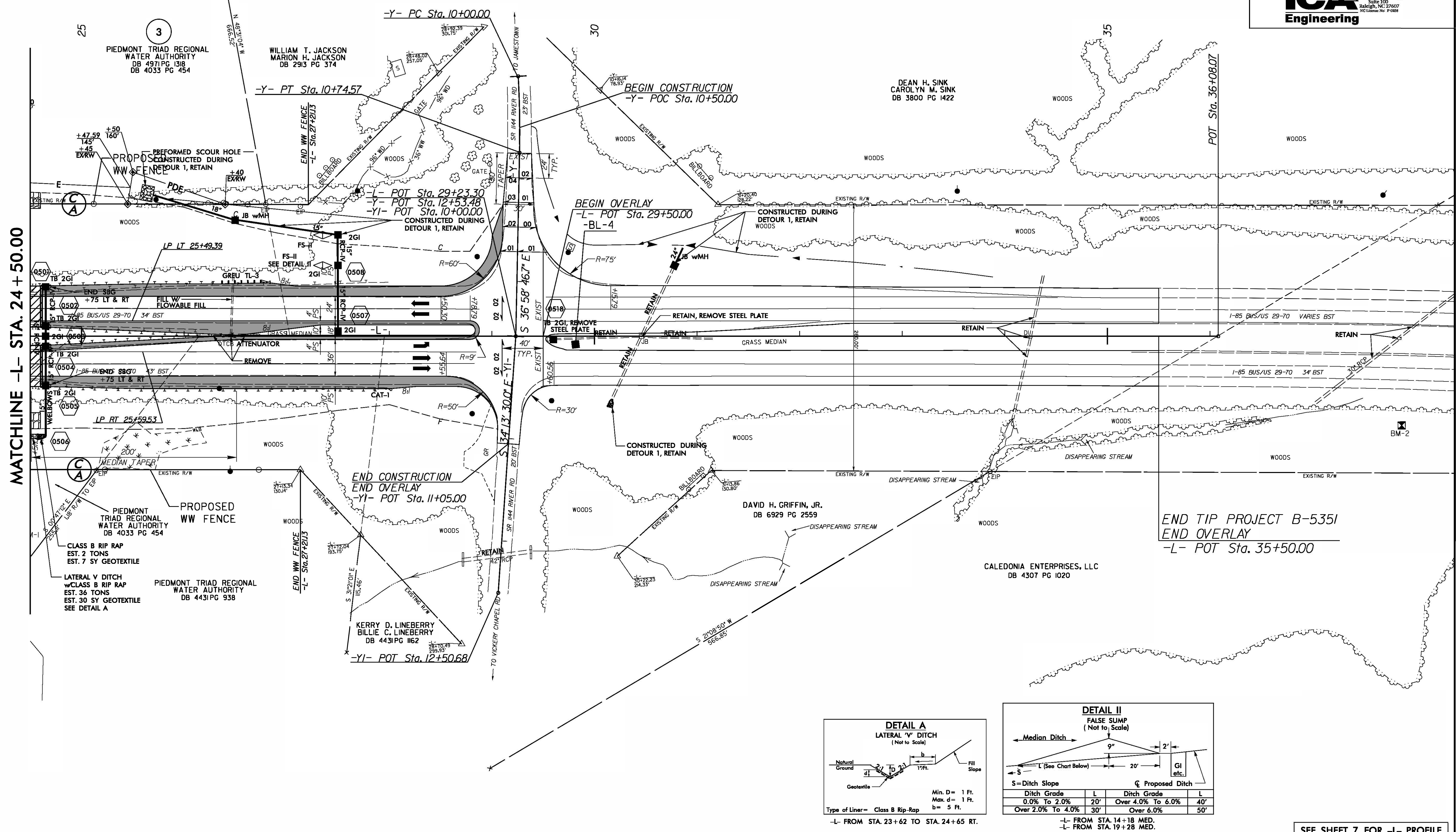


**PROPOSED DRAINAGE FEATURES CONSTRUCTED DURING DETOUR 1 & 2 WILL BE RETAINED, ALL DRAINAGE FEATURES LABELED AS TEMPORARY SHOULD BE REMOVED AFTER DETOUR REMOVAL**

NAD 83 / NA 2011



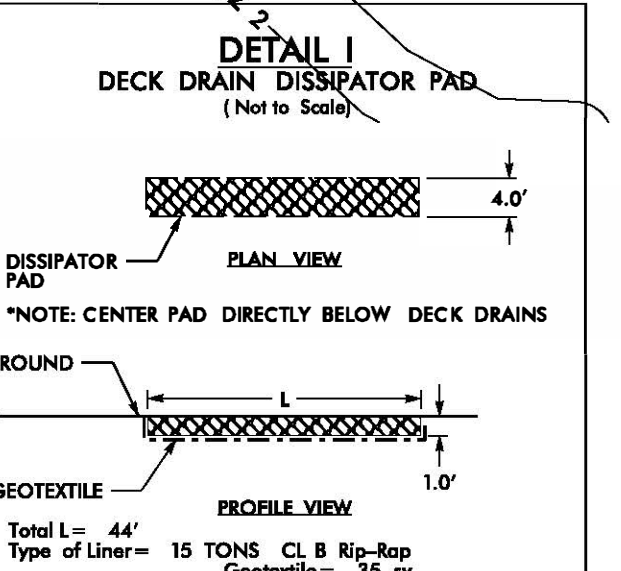
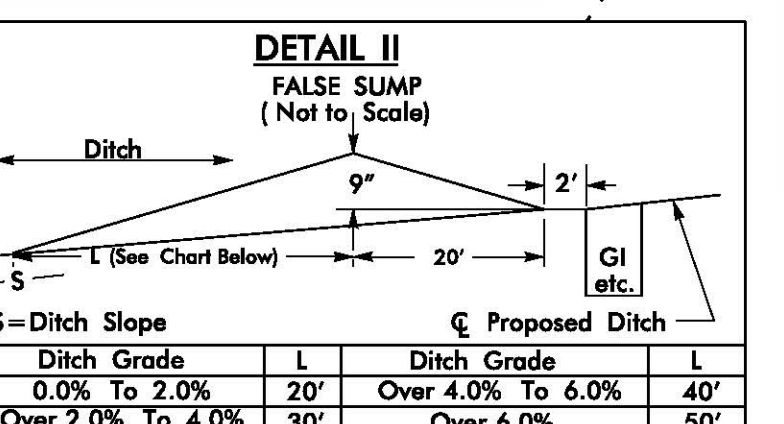
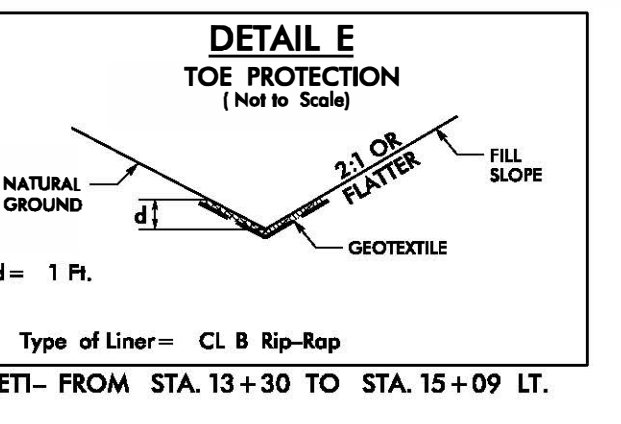
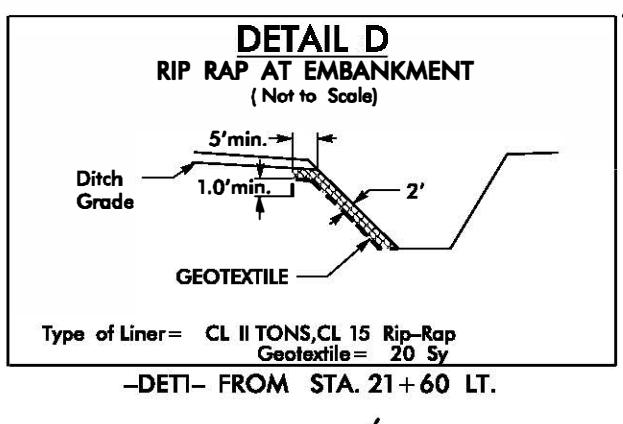
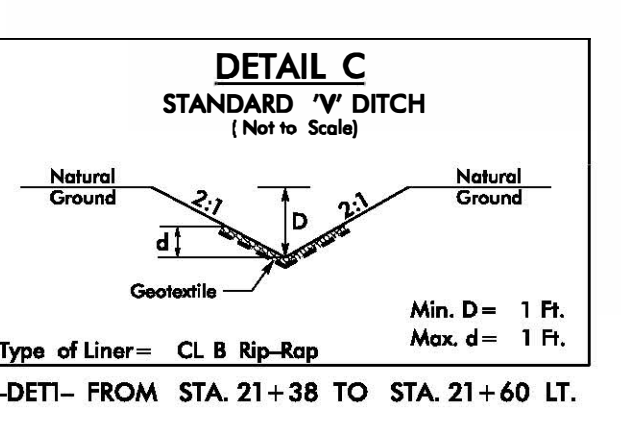
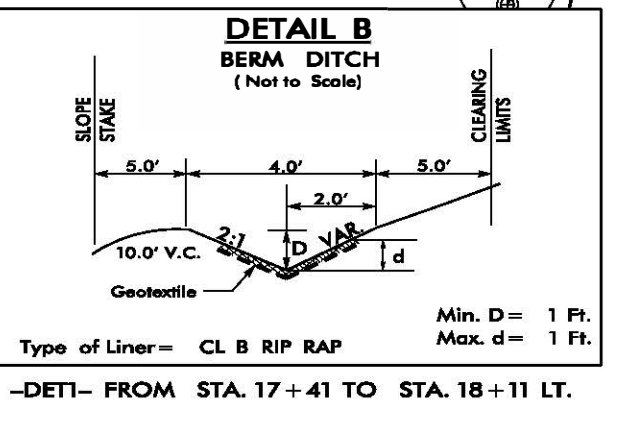
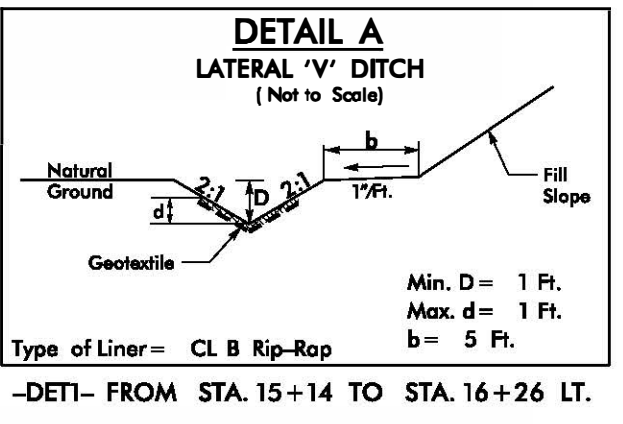
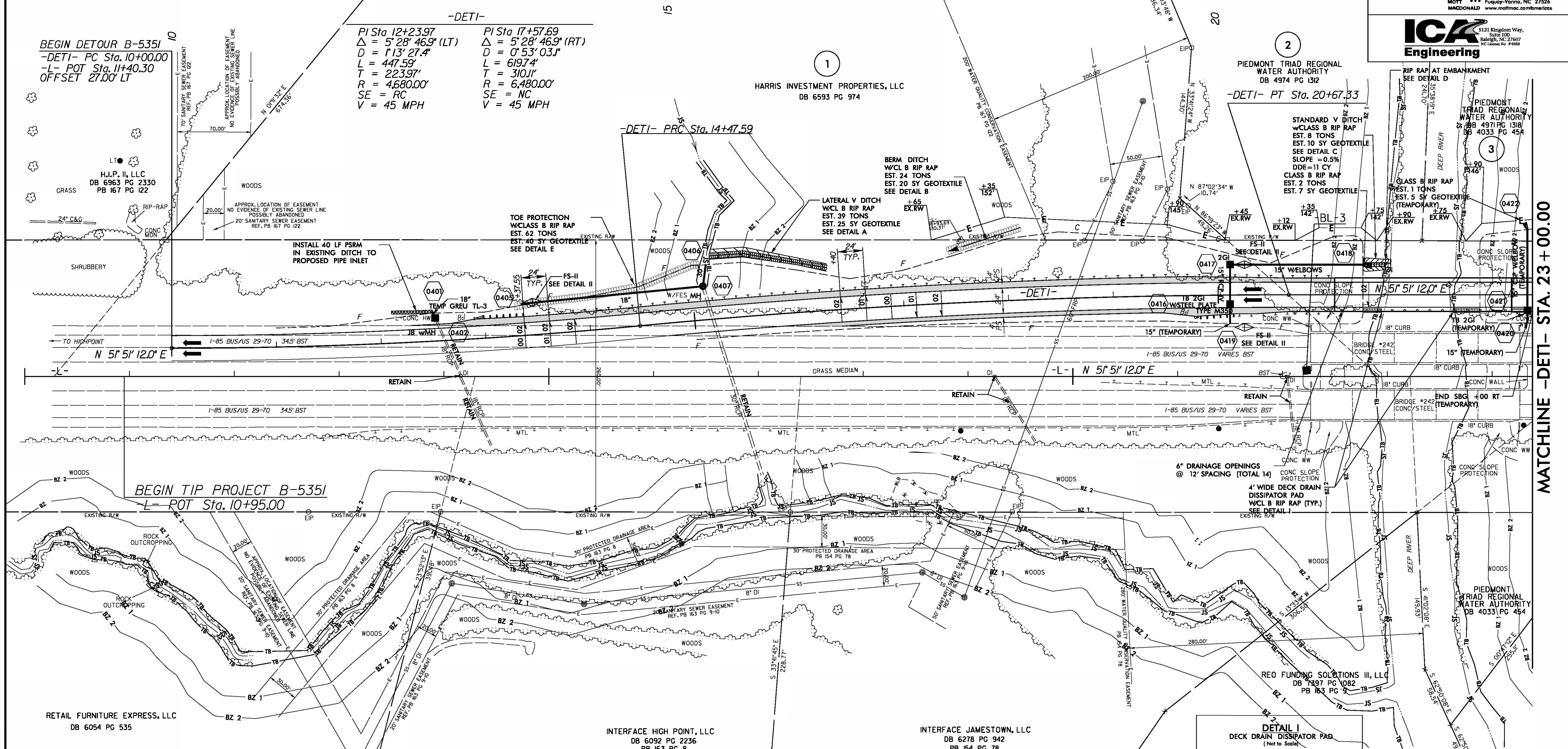
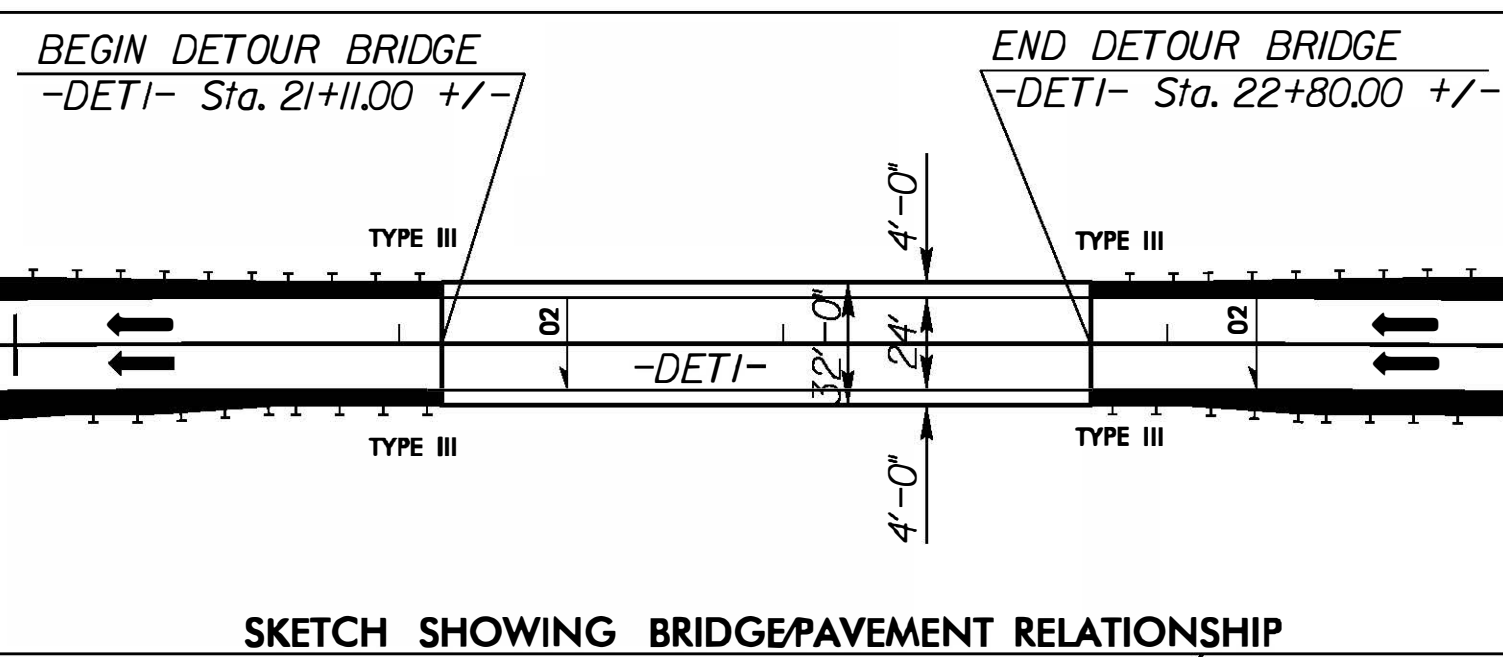
|                                                                                     |  |                                                                                                                 |  |
|-------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.                                                               |  | SHEET NO.                                                                                                       |  |
| B-5351                                                                              |  | 5                                                                                                               |  |
| R/W SHEET NO.                                                                       |  |                                                                                                                 |  |
| ROADWAY DESIGN<br>ENGINEER                                                          |  | HYDRAULICS<br>ENGINEER                                                                                          |  |
| MOTT MACDONALD I & E LLC<br>LICENSE NO. F-0669                                      |  |                                                                                                                 |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>            |  |                                                                                                                 |  |
| Prepared in the<br>Office of:                                                       |  | <b>M</b><br>MOTT<br>MACDONALD                                                                                   |  |
|                                                                                     |  | PO Box 700<br>Fuquay-Varina, NC 27526<br><a href="http://www.mottmac.com/americas">www.mottmac.com/americas</a> |  |
|  |  |                                                                                                                 |  |
| 5121 Kingdom Way,<br>Suite 100<br>Raleigh, NC 27607<br>NC License No. F-0588        |  |                                                                                                                 |  |





DETAIL OF TEMPORARY DETOUR

-DET1-



SEE SHEETS 4 & 5 FOR DETAILS ON PROPOSED DESIGN  
SEE SHEET 8 FOR -DET1- PROFILE

PROJECT REFERENCE NO. B-5351 SHEET NO. 2B-1

RW SHEET NO. ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

MOTT MACDONALD I & E, LLC LICENSE NO. E-0669

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: MOTT MACDONALD I & E, LLC

ICA Engineering 5121 Kingdom Way, Suite 100 Raleigh, NC 27607

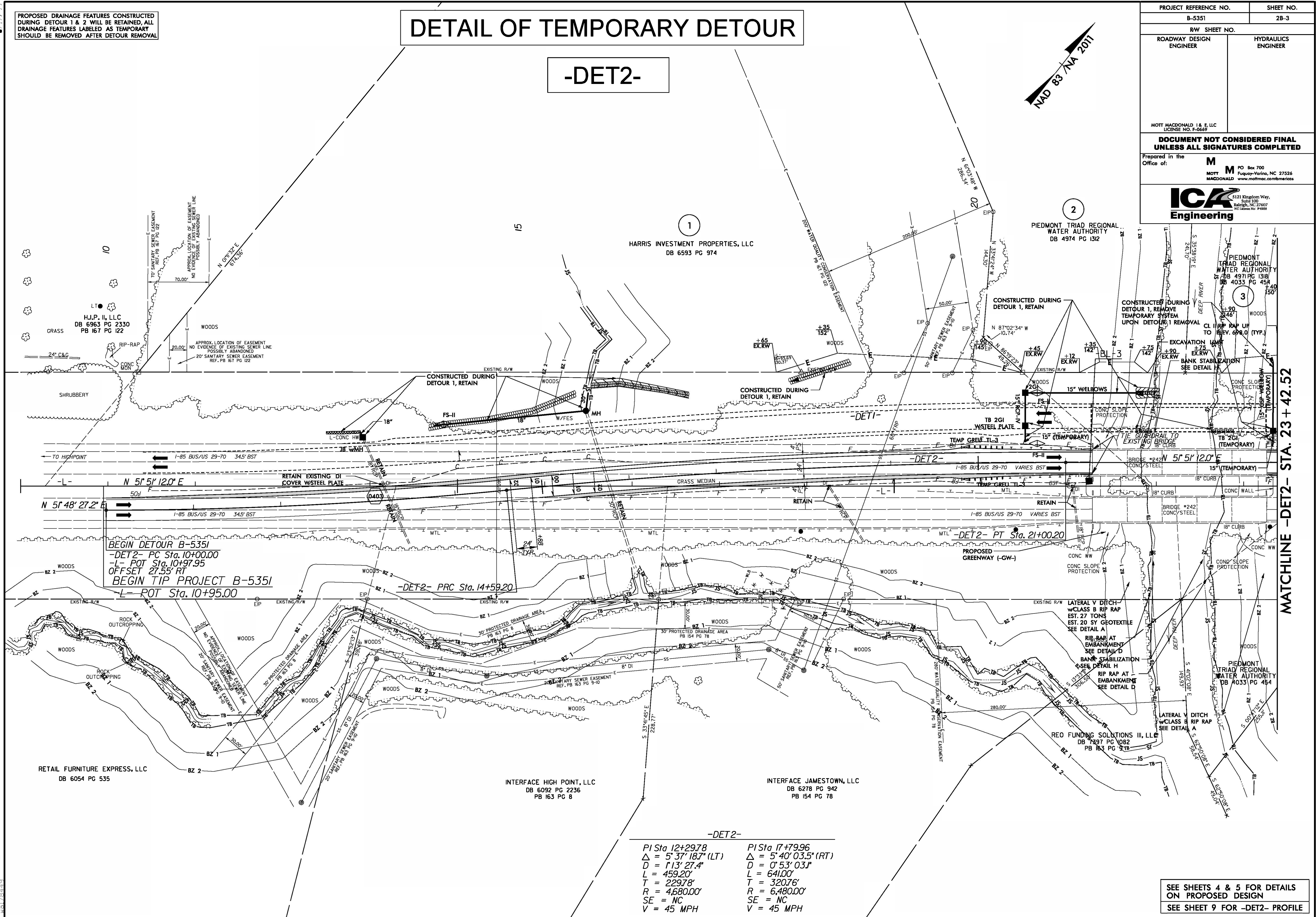
MATCHLINE -DET1- STA. 23+00.00



**-DET1-**

[illegible]





17/09  
16:47 PM  
HY-90W5H (Pro) B531 11V-det.2 03dgn



PROPOSED DRAINAGE FEATURES CONSTRUCTED DURING DETOUR 1 & 2 WILL BE RETAINED, ALL DRAINAGE FEATURES LABELED AS TEMPORARY SHOULD BE REMOVED AFTER DETOUR REMOVAL

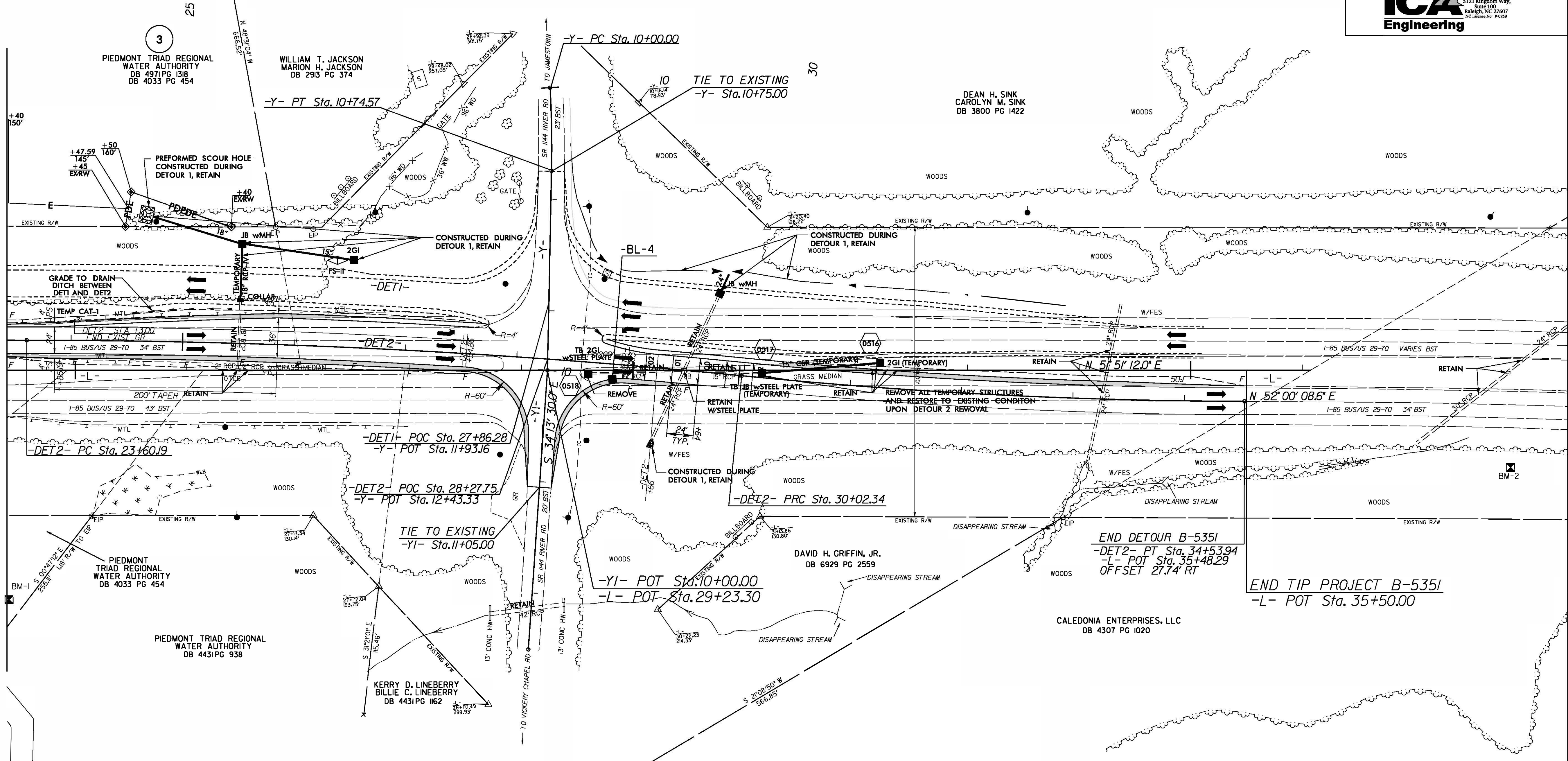
# DETAIL OF TEMPORARY DETOUR

-DET2-

NAD 83 / NA 2011

|                                                                                     |                        |                                                                               |  |
|-------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.                                                               |                        | SHEET NO.                                                                     |  |
| B-5351                                                                              |                        | 2B-4                                                                          |  |
| RW SHEET NO.                                                                        |                        |                                                                               |  |
| ROADWAY DESIGN<br>ENGINEER                                                          | HYDRAULICS<br>ENGINEER |                                                                               |  |
| MOTT MACDONALD I & E, LLC<br>LICENSE NO. P-0669                                     |                        |                                                                               |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>            |                        |                                                                               |  |
| Prepared in the<br>Office of: <b>M</b>                                              |                        |                                                                               |  |
| <b>MOTT MACDONALD</b>                                                               |                        |                                                                               |  |
| PO Box 700<br>Fuquay-Varina, NC 27526<br>www.motmac.com/america                     |                        |                                                                               |  |
|  |                        | 5121 Kingdom Way,<br>Suite 100<br>Raleigh, NC 27607<br>www.motmac.com/america |  |

MATCHLINE -DET2- STA. 23+42.52



-Y-  
PI Sta 10+37.30  
Δ = 4' 16' 22.0" (RT)  
D = 5' 43' 46.5"  
L = 74.57'  
T = 37.30'  
R = 1,000.00'

-DET2-  
PI Sta 26+81.53  
Δ = 5' 40' 40.4" (RT)  
D = 0' 53' 03.1"  
L = 642.15'  
T = 321.34'  
R = 6,480.00'  
SE = NC  
V = 45 MPH

PI Sta 32+28.32  
Δ = 5' 31' 43.8" (LT)  
D = 1' 13' 27.4"  
L = 451.60'  
T = 225.98'  
R = 4,680.00'  
SE = NC  
V = 45 MPH

SEE SHEETS 4 & 5 FOR DETAILS  
ON PROPOSED DESIGN  
SEE SHEET 9 FOR -DET2- PROFILE