STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

May 17, 2019

U.S. Army Corps of Engineers
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTN: Mr. Steve Kichefski
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 14, and Section 401 Water Quality Certification** for the Proposed Replacement of Bridge 105 on US 421 over Yadkin River Overflow in Yadkin County, Division 11, TIP No. B-5389, Debit $570 from WBS 46104.1.1.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace bridge number 105 on US 421 with a new bridge on the existing alignment. Traffic will be detoured on-site during construction.

As a result of replacing the existing bridge and stabilization at a new ditch outlet, there will be 23 linear feet of stream bank stabilization, 0.03 acre of temporary stream impacts, and 0.03 acre of permanent wetland fill.

Please see enclosed copies of the Pre-Construction Notification (PCN), Stormwater Management Plan, Permit Drawings, Roadway Plan Sheets, and northern long-eared bat memo. A Minimum Criteria Determination Checklist (MCDC) was completed in April 2018 and distributed shortly thereafter. Additional copies are available upon request.

This project calls for a letting date of July 16, 2019 and a review date of May 28, 2019.

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: http://connect.ncdot.gov/resources/Environmental. If you have any questions or need additional information, please call Erin Cheely at (919) 707-6108.

Sincerely,

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

Cc: NCDOT Permit Application Standard Distribution List

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

Telephone: (919) 707-6000
Fax: (919) 250-4224
Customer Service: 1-877-368-4968
Website: www.ncdot.gov

Location:
1000 BIRCH RIDGE DRIVE
RALEIGH NC 27610

Pre-Construction Notification (PCN) Form

For Nationwide Permits and Regional General Permits

(along with corresponding Water Quality Certifications)

September 29, 2018 Ver 3

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

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

Below is a link to the online help file.

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

A. Processing Information

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

Yadkin

Is this project a public transportation project?*

(•) Yes ( ) No

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

Is this a NCDOT Project?*

(•) Yes ( ) No

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

B-5389

WBS #*

46104.1.1

(for NCDOT use only)

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

- [x] Section 404 Permit (wetlands, streams and waters, Clean Water Act)
- [ ] Section 10 Permit (navigable waters, tidal waters, Rivers and Harbors Act)

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

- [x] Nationwide Permit (NWP)
- [ ] Regional General Permit (RGP)
- [ ] Standard (IP)

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

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

( ) Yes (•) No

Nationwide Permit (NWP) Number: 14 - Linear transportation

NWP Numbers (for multiple NWPS):

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

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

check all that apply

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

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

*

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

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

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

( ) Yes (•) No

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

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

(•) Yes ( ) No

Acceptance Letter Attachment

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

B-5389 DMS Acceptance.pdf 67.76KB

FILE TYPE MUST BE PDF

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

( ) Yes (•) No

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

( ) Yes (•) No

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

B. Applicant Information

1a. Who is the Primary Contact?*

NCDOT

1b. Primary Contact Email:*

ekcheely@ncdot.gov

1c. Primary Contact Phone:*

(xxx)xxx-xxxx

(919)707-6108

1d. Who is applying for the permit?*

[x] Owner [ ] Applicant (other than owner)

(Check all that apply)

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

( ) Yes (•) No

2. Owner Information

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

NC Department of Transportation

2b. Deed book and page no.:

2c. Responsible party:

(for Corporations)

2d. Address*

Street Address

1598 Mail Service Center

Address Line 2

City

Raleigh

State / Province / Region

NC

Postal / Zip Code

27699

Country

USA

2e. Telephone Number:*

(xxx)xxx-xxxx

(919)707-6108

2f. Fax Number:

(xxx)xxx-xxxx

2g. Email Address:*

pharris@ncdot.gov

C. Project Information and Prior Project History

1. Project Information

1a. Name of project:*

Replace Bridge 105 over Yadkin River Overflow on US 421 Northbound Lane

1b. Subdivision name:

(if appropriate)

1c. Nearest municipality / town:*

Lewisville

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: *

36.105545

ex: 34.208504

Longitude: *

-80.515655

-77.796371

3. Surface Waters

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

Deep Creek

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

WS-IV

Surface Water Lookup

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

Yadkin-PeeDee

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

030401011103

River Basin Lookup

4. Project Description and History

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

Surrounding land use is primarily agricultural land, with a row of trees along the unnamed tributary.

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

○ Yes ◉ No ○ Unknown

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

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

File type must be pdf

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

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

File type must be pdf

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

0.03

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

(intermittent and perennial)

209

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

The B-5389 project is needed to replace bridge 105 because it is functionally obsolete. Its sufficiency rating is 64.7. The project purpose is to replace the functionally obsolete bridge with one that meets current NCDOT design standards.

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

The proposed project will replace the existing two-lane bridge (Bridge No. 105) with another two-lane bridge in the same location. The proposed replacement structure will be a multi-span structure that is approximately 455 feet in length, with a 38-foot wide clear deck width. The project's total length is 1,500 feet. The existing northbound lane bridge will be replaced with a new structure at the existing location. Traffic on the northbound lanes will be maintained during construction with an on-site detour located north of the existing bridge location. Standard road building equipment such as trucks, dozers, and cranes will be used.

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

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

B-5389 Permit Drawings.pdf	2.13MB
B-5389 Roadway Plans.pdf	2.27MB

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:

Two small wetland areas and one intermittent stream were identified in the study area. No JD site visit was held.

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

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

Corps AID Number:

Example: SAW-2017-99999

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

Name (if known): Carolina Ecosystems, Inc.

Agency/Consultant Company:

Other:

5d1. Jurisdictional determination upload

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

File type must be PDF

6. Future Project Plans

6a. Is this a phased project? *

( ) Yes (•) No

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

No.

D. Proposed Impacts Inventory

1. Impacts Summary

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

☑ Wetlands ☑ Streams-tributaries ☐ Buffers

☐ Open Waters ☐ Pond Construction

2. Wetland Impacts

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

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

2a. Site # * (?)	2a1 Reason * (?)	2b. Impact type * (?)	2c. Type of W. *	2d. W. name *	2e. Forested *	2f. Type of Jurisdicition * (?)	2g. Impact area *
3	Bridge replacement	P	Headwater Forest	WA	No	Corps	0.020 (acres)
4	Bridge replacement	P	Headwater Forest	WB	No	Corps	0.010 (acres)

2g. Total Temporary Wetland Impact

0.000

2g. Total Permanent Wetland Impact

0.030

2g. Total Wetland Impact

0.030

2h. Comments:

Both wetlands are a total take.

3. Stream Impacts

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

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

	3a. Reason for impact * (?)	3b.Impact type *	3c. Type of impact *	3d. S. name *	3e. Stream Type * (?)	3f. Type of Jurisdiction *	3g. S. width *	3h. Impact length *

S1	Site 1 - Ditch outlet protection	Permanent	Bank Stabilization	SA	Intermittent	Both	6 Average (feet)	23 (linear feet)
S2	Site 2 - Bridge Replacement	Temporary	Dewatering	SA	Intermittent	Both	6 Average (feet)	145 (linear feet)
S3	Site 5 - Temporary stream crossing	Temporary	Dewatering	SA	Intermittent	Both	6 Average (feet)	89 (linear feet)

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

3i. Total jurisdictional ditch impact in square feet:

0

3i. Total permanent stream impacts:

23

3i. Total temporary stream impacts:

234

3i. Total stream and ditch impacts:

257

3j. Comments:

Temporary impacts total 0.03 acre

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 replacement bridge will be on the same alignment as the existing bridge. Deck drains on the proposed structure will not be discharged over open water, reducing stream pollution associated with roadway runoff. The runoff from deck drains will be discharged onto a Class B rip rap dissipator pad. Additional measures implemented to reduce impacts to the stream and surrounding properties include maintaining existing drainage patterns and using rip rap at drainage outlets to dissipate energy and reduce erosion.

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

NCDOT will adhere to Best Management Practices for Construction and Maintenance Activities.

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 [x] Corps

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

[ ] Mitigation bank [x] 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 ( ) No

4b. Stream mitigation requested:

(linear feet)

0

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

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

4d. Buffer mitigation requested (DWR only):

(square feet)

0

4e. Riparian wetland mitigation requested:

(acres)

0.03

4f. Non-riparian wetland mitigation requested:

(acres)

0

4g. Coastal (tidal) wetland mitigation requested:

(acres)

0

4h. Comments

No mitigation is required for the stream bank stabilization or temporary stream impacts as these impacts do not constitute a loss of waters of the US.

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

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

If no, explain why:

No buffered resources within project area.

2. Stormwater Management Plan

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

◉ Yes ○ No

Comments:

G. Supplementary Information

1. Environmental Documentation

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

◉ Yes ○ No

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

◉ Yes ○ No

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

◉ Yes ○ No

NEPA or SEPA Final Approval Letter

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

FILE TYPE MUST BE PDF

2. Violations (DWR Requirement)

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

○ Yes ◉ No

3. Cumulative Impacts (DWR Requirement)

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

○ Yes ◉ No

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

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

4. Sewage Disposal (DWR Requirement)

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

○ Yes ○ No ◉ N/A

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

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

◉ Yes ○ No

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

◉ Yes ○ No

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

Asheville

5d. Is another Federal agency involved? *

○ Yes ◉ No ○ Unknown

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

○ Yes ◉ No

5f. Will you cut any trees in order to conduct the work in waters of the U.S.? *

◉ Yes ○ No

5g. Does this project involve bridge maintenance or removal? *

◉ Yes ○ No

5g(1). If yes, have you inspected the bridge for signs of bat use such as staining, guano, bats, etc.? Representative photos of signs of bat use can be found in the NLEB SLOPES, Appendix F, pages 3-7.

◉ Yes ○ No

Link to the NLEB SLOPES document: http://saw-reg.usace.army.mil/NLEB/1-30-17-signed_NLEB-SLOPES&apps.pdf

If you answered "Yes" to 5g(1), did you discover any signs of bat use? *

◉ Yes ○ No ○ Unknown

*** **If yes, please show the location of the bridge on the permit drawings/project plans.**

5h. Does this project involve the construction/installation of a wind turbine(s)?* *

○ Yes ◉ No

5i. Does this project involve (1) blasting, and/or (2) other percussive activities that will be conducted by machines, such as jackhammers, mechanized pile drivers, etc.? *

◉ Yes ○ No

If yes, please provide details to include type of percussive activity, purpose, duration, and specific location of this activity on the property.

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

File must be PDF

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

As of June 27, 2018, the USFWS lists one protected species for Yadkin County, the northern long-eared bat (NLEB). Please see the attached SLOPES memo dated December 11, 2018 for NLEB. While evidence of bat use was found at Bridge 105 during a May 2018 site visit, the neared recorded NLEB hibernacula is 72 miles away and the closest red HUC is approximately 70 miles away.

Consultation Documentation Upload

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

B-5389 NLEB SLOPES Yadkin.pdf 179.74KB

File type must be PDF

6. Essential Fish Habitat (Corps Requirement)

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

○ Yes ◉ No

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

NMFS County Index

7. Historic or Prehistoric Cultural Resources (Corps Requirement)

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

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

○ Yes ◉ No

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

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

Comments

There will be 0.97 acre of tree clearing on this project.

Miscellaneous attachments not previously requested.

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

B-5389 Signed Cover Letter.pdf 1.25MB

File must be PDF or KMZ

Signature

*

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

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

Full Name: *

Mack Christopher Rivenbark III

Signature

Date

5/17/2019

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
TIM BAUMGARTNER
Director

NORTH CAROLINA
Environmental Quality

May 16, 2019

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

Dear Mr. Harris:

Subject: Mitigation Acceptance Letter:

B-5389, Replace Bridge 105 over the Yadkin River overflow on US 421 Northbound, Yadkin County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory wetland mitigation for the subject project. Based on the information supplied by you on May 13, 2019, the impacts are located in CU 03040101 of the Yadkin River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Yadkin 03040101 CP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	0	0.03	0	0	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.

The impacts and associated mitigation needs were under projected by the NCDOT in the 2019 impact data. DMS will commit to implement sufficient compensatory wetland 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 Beth Harmon at 919-707-8420.

Sincerely,

James B. Stanfill
DMS Asset Management Supervisor

cc: Mr. Monte Matthews, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: B-5389

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

December 11, 2018

TO: Erin Cheely, Environmental Program Consultant
Environmental Coordination & Permitting Group, EAU

FROM: Melissa Miller, Environmental Program Consultant
Biological Surveys Group, EAU

SUBJECT: Section 7 survey results for the northern long-eared bat *(Myotis septentrionalis)* associated with the replacement of Bridge No. 105 over the Yadkin River overflow on US 421 NBL in Yadkin County, **TIP No. B-5389**.

The North Carolina Department of Transportation (NCDOT, Division 11) proposes to replace Bridge No. 105 the Yadkin River overflow on US 421 NBL in Yadkin County, TIP No. B-5389. The existing bridge is a nine span structure with concrete beams, deck, guard rails and end walls. The overall length of the structure is 451 feet.

The project to replace Bridge No. 105 has been reviewed for effects on the northern long-eared bat (NLEB). As of May 4, 2015, NLEB is listed by the U.S. Fish and Wildlife Service (USFWS) as "Threatened" under the Endangered Species Act of 1973. As of December 11, 2018, NLEB is listed by USFWS (http://www.fws.gov/raleigh/species/cntylist/nc_counties.html) as "probable/potential" in Yadkin County.

According to the North Carolina Natural Heritage Program (NHP) Biotics Database, most recently updated October 2018, **the nearest NLEB hibernacula record is 72 miles northwest of the project (EO ID 32171) and no known NLEB roost trees occur within 150 feet of the project area**. EO 32171 represents Grandfather Mountain site with multiple observations from 1986 to 2011.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-707-6000
FAX: 919-212-5785

WEBSITE:NCDOT.GOV

Location:
CENTURY CENTER, BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

NCDOT has also reviewed the USFWS Asheville Field office website (http://www.fws.gov/asheville/htmls/project_review/NLEB_in_WNC.html) for consistency with NHP records. This project is located entirely outside of the red highlighted areas (12-digit HUC) that the USFWS Asheville Field Office has determined to be representative of an area that may require consultation. The closest 12 digit (030501010502) red HUC is approximately 70 miles away (Upper Wilson Creek).

On May 30, 2018, NCDOT biologists assessed Bridge No. 105 for potential northern long-eared bat habitat. Shallow vertical top sealed crevices and deep vertical unsealed crevices suitable for roosting were present on the structure. Evidence (bats, staining, and guano) of bats was observed. At least five big brown bats (*Eptesicus fuscus*) were observed roosting in four joints. Almost all joints had guano present.

Final design, tree clearing, and percussive activities information will be provided in the permit application.

If you need any additional information, please contact Melissa Miller at 919-707-6127.

North Carolina Department of Transportation
Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 46104.1.1 **TIP No.:** B-5389 **County(ies):** Yadkin

General Project Information

WBS Element:	46104.1.1	**TIP Number:**	B-5389	**Project Type:** Bridge Replacement	**Date:** 4/24/2019
NCDOT Contact:	Tierre Peterson (Structures Management Unit)		**Contractor / Designer:**	Sungate Design Group, P.A.	
Address:	1000 Birch Ridge Drive Raleigh, NC 27610		**Address:**	905 Jones Franklin Road Raleigh, NC 27606	
Phone:	919-707-6488		**Phone:**	919-859-2243	
Email:	trpeterson@ncdot.gov		**Email:**	jdalton@sungatedesign.com	
City/Town:	Lewisville		**County(ies):**	Yadkin	
River Basin(s):	Yadkin-Pee Dee		**CAMA County?**	No	
Wetlands within Project Limits?	Yes				

Project Description

Project Length (lin. miles or feet):	0.343 miles	**Surrounding Land Use:**	Rural; Agricultural		
	Proposed Project			**Existing Site**	
Project Built-Upon Area (ac.)	1.7 ac.			1.4 ac.	
Typical Cross Section Description:	Two 12' lanes with 4' inside paved shoulder and 10' outside paved shoulder; 4:1 median slopes 2:1 outside slopes			Two 12' lanes with 4' inside paved shoulder and 10' outside paved shoulder; 4:1 median slopes 2:1 outside slopes	
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 30,300	Year: 2040		Existing: 25,000	Year: 2020
General Project Narrative: (Description of Minimization of Water Quality Impacts)	The proposed bridge replacement project will replace Yadkin County bridge #105, on US 421 North Bound over the Yadkin River overflow. The proposed bridge is 4 @ 115' 63" Modified Bulb Tee bridge. The existing bridge is 9 @ 50' concrete girder on concrete bents. Deck Drains on the proposed structure will not be discharged over open water, reducing stream pollution associated with roadway runoff. The runoff from deck drains will be discharged onto a class B rip rap dissipator pad. Additional measures implemented to reduce impacts to the stream and surrounding properties include, maintaining existing drainge patterns, and using rip rap pads at drainage outlets to dissipate energy and reduce erosion.				

Waterbody Information

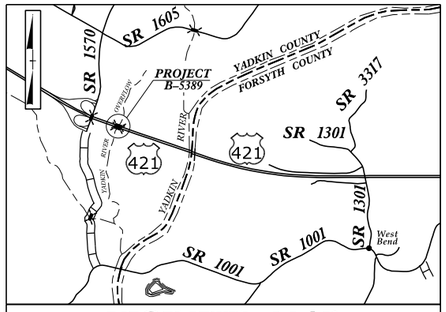
Surface Water Body (1):	Deep Creek		**NCDWR Stream Index No.:**	12-84	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:				**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

09/08/99

TIP PROJECT: B-5389

CONTRACT: ___

See Sheet 1-B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YADKIN COUNTY

LOCATION: BRIDGE NO.105 OVER YADKIN RIVER OVERFLOW ON US 421 NORTHBOUND LANES

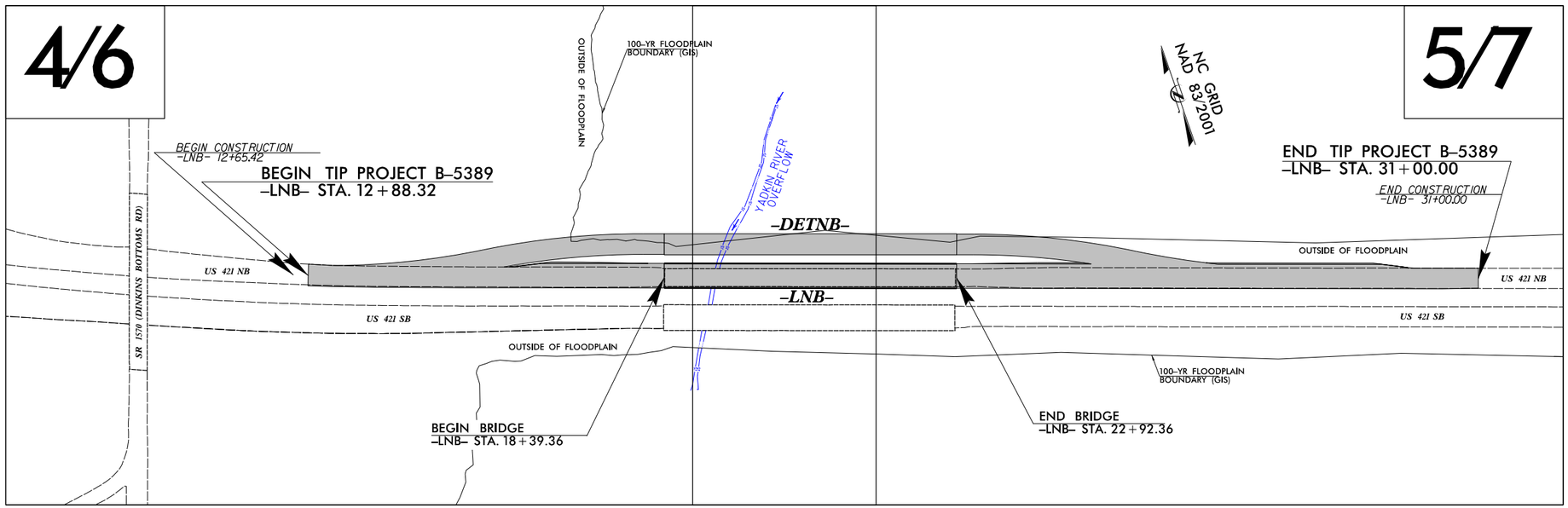
TYPE OF WORK: DRAINAGE, GRADING, PAVING, & STRUCTURE

PERMIT DRAWING SHEET 1 OF 6

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5389	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46104.1.1	N/A	PE

WETLAND AND SURFACE WATER IMPACTS PERMIT



THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
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

GRAPHIC SCALES

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

DESIGN DATA

ADT 2020 = 25,000
ADT 2040 = 30,300
K = 10 %
D = 65 %
T = 6 % *
V = 70 MPH
Vdet = 55 MPH
* (TTST = 3% + DUAL = 3%)
FUNC CLASS = RURAL FREEWAY
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5389 = 0.257 MI.
LENGTH STRUCTURE TIP PROJECT B-5389 = 0.086 MI.
TOTAL LENGTH TIP PROJECT B-5389 = 0.343 MI.

AMT
NCBELS LICENSE # F-1049

Prepared for the North Carolina Department of Transportation in the Office of:
A. Morton Thomas and Associates, Inc.
CONSULTING ENGINEERS
6131 FALLS OF NEUSE ROAD, SUITE 106, RALEIGH, NC 27609
(919) 855-9889 FAX (919) 855-9687
EMAIL: AMT1@AMTENGINEERING.COM

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 26, 2018

LETTING DATE: MAY 21, 2019

JOHN E. RICHARDS, III, PE
PROJECT ENGINEER

RICHARD HINTON, EI
PROJECT DESIGN ENGINEER

JACQUELYN BOWLES, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

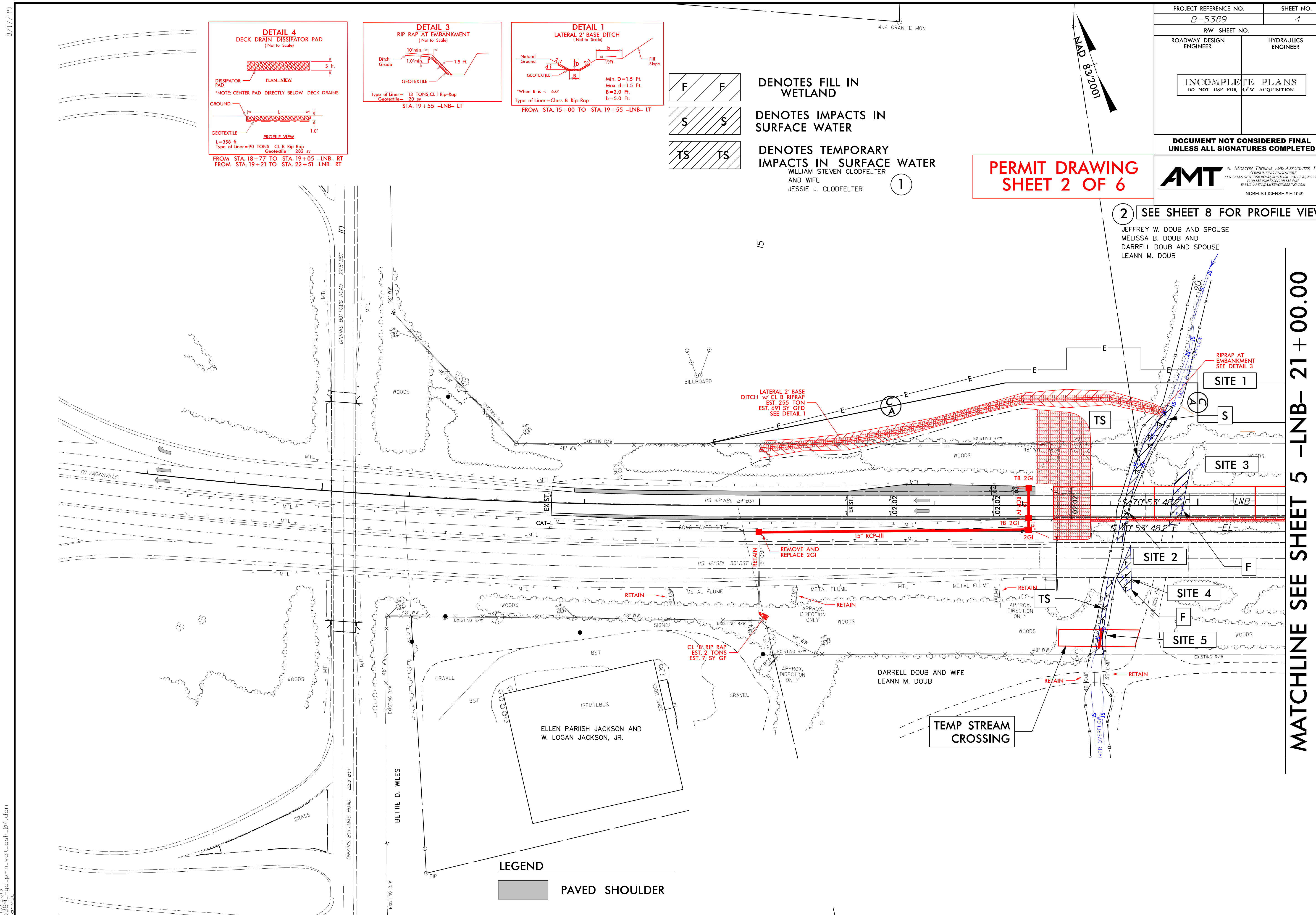
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

5/10/2019
B5389_Hyd_prm_wet_psh_01.dgn
jharvey



PROJECT REFERENCE NO. B-5389
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
AMT A. Morton Thomas and Associates, Inc. CONSULTING ENGINEERS
NCBELS LICENSE # F-1049
PERMIT DRAWING SHEET 2 OF 6
SEE SHEET 8 FOR PROFILE VIEW
MATCHLINE SEE SHEET 5 -LNB- 21+00.00
NAD 83/2011
DETAIL 4 DECK DRAIN DISSIPATOR PAD (Not to Scale)
FROM STA. 18+77 TO STA. 19+05 -LNB- RT
FROM STA. 19+21 TO STA. 22+51 -LNB- RT
DETAIL 3 RIP RAP AT EMBANKMENT (Not to Scale)
STA. 19+55 -LNB- LT
DETAIL 1 LATERAL 2' BASE DITCH (Not to Scale)
FROM STA. 15+00 TO STA. 19+55 -LNB- LT
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
WILLIAM STEVEN CLODFELTER AND WIFE JESSIE J. CLODFELTER
JEFFREY W. DOUB AND SPOUSE MELISSA B. DOUB AND DARRELL DOUB AND SPOUSE LEANN M. DOUB
DARRELL DOUB AND WIFE LEANN M. DOUB
ELLEN PARIISH JACKSON AND W. LOGAN JACKSON, JR.
BETTIE D. WILES
SITE 1
SITE 2
SITE 3
SITE 4
SITE 5
TEMP STREAM CROSSING
LATERAL 2' BASE DITCH w/ CL B RIPRAP EST. 255 TON EST. 691 SY GFD SEE DETAIL 1
RIPRAP AT EMBANKMENT SEE DETAIL 3
REMOVE AND REPLACE 2GI
CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF
US 421 NBL 24' BST
US 421 SBL 35' BST
DINKINS BOTTOMS ROAD
TO YADKINVILLE
LEGEND
PAVED SHOULDER

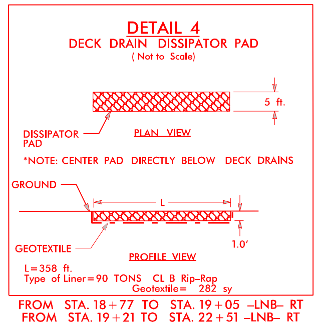
PROJECT REFERENCE NO.	SHEET NO.
B-5389	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

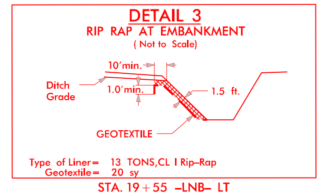
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

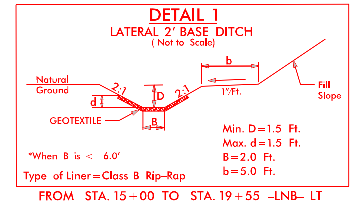
AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
NCBELS LICENSE # F-1049

PERMIT DRAWING SHEET 3 OF 6



DETAIL 4
DECK DRAIN DISSIPATOR PAD
(Not to Scale)
DISSIPATOR PAD
PLAN VIEW
*NOTE: CENTER PAD DIRECTLY BELOW DECK DRAINS
GROUND
GEOTEXTILE
PROFILE VIEW
L=358 ft.
Type of Liner=90 TONS CL B Rip-Rap
Geotextile= 282 sy
FROM STA. 18+77 TO STA. 19+05 -LNB- RT
FROM STA. 19+21 TO STA. 22+51 -LNB- RT

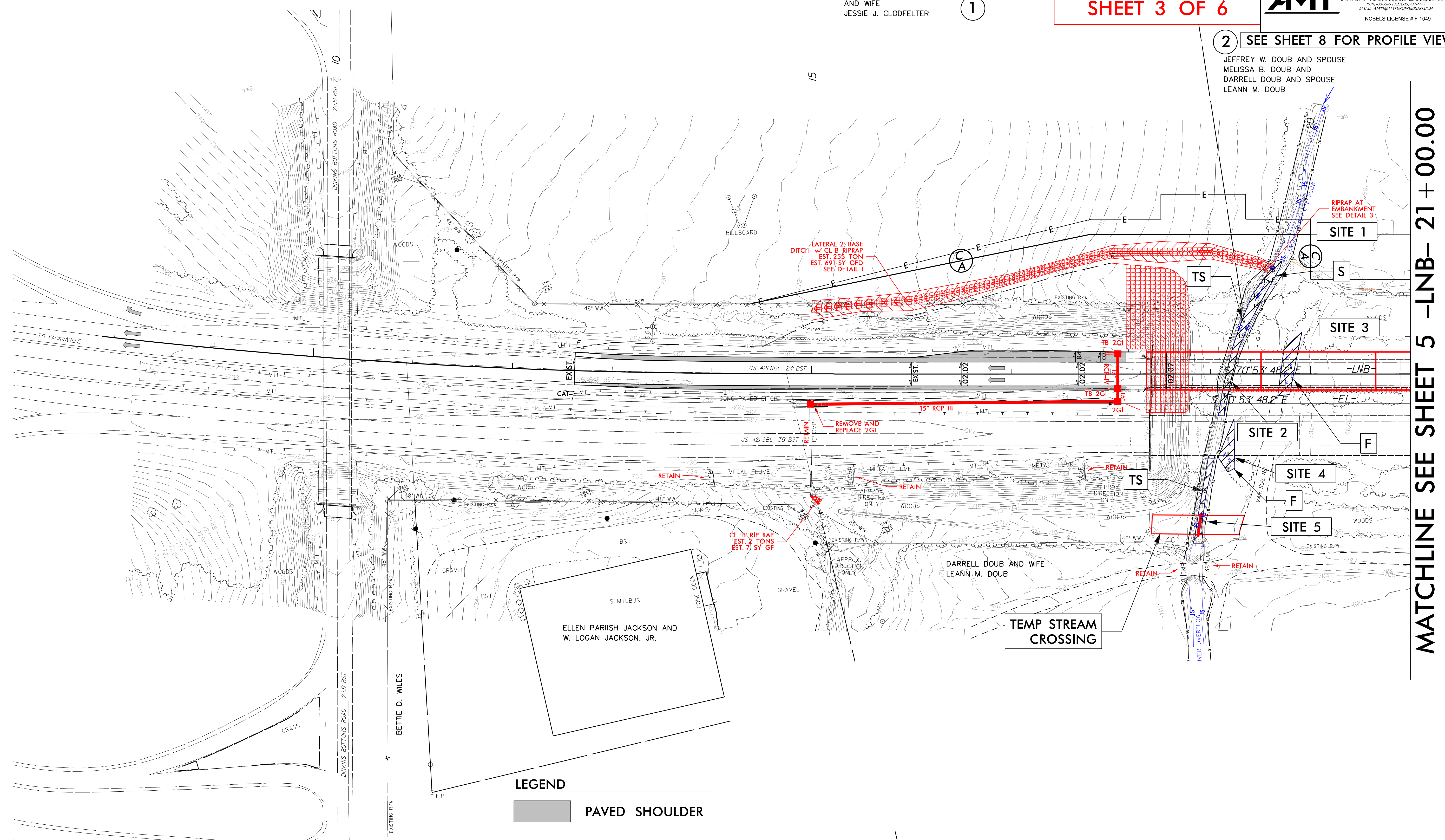




F / F — DENOTES FILL IN WETLAND

S / S — DENOTES IMPACTS IN SURFACE WATER

TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER



WILLIAM STEVEN CLODFELTER AND WIFE JESSIE J. CLODFELTER
1
2
SEE SHEET 8 FOR PROFILE VIEW
JEFFREY W. DOUB AND SPOUSE MELISSA B. DOUB AND DARRELL DOUB AND SPOUSE LEANN M. DOUB
NAD 83/2001
4x4 GRANITE MON
SITE 1
SITE 2
SITE 3
SITE 4
SITE 5
TS
S
F
RIPRAP AT EMBANKMENT SEE DETAIL 3
LATERAL 2' BASE DITCH w/ CL B RIPRAP EST. 255 TON EST. 691 SY GFD SEE DETAIL 1
BILLBOARD
WOODS
TO YADKINVILLE
US 421 NBL 24' BST
US 421 SBL 35' BST
-LNB-
-EL-
TB 2GI
15" RCP-III
2GI
REMOVE AND REPLACE 2GI
RETAIN
METAL FLUME
APPROX. DIRECTION ONLY
CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF
DINKINS BOTTOMS ROAD 22.5' BST
BETTIE D. WILES
ELLEN PARIISH JACKSON AND W. LOGAN JACKSON, JR.
ISFMTLBUS
GRAVEL
GRASS
DARRELL DOUB AND WIFE LEANN M. DOUB
TEMP STREAM CROSSING
MATCHLINE SEE SHEET 5 -LNB- 21+00.00

LEGEND

PAVED SHOULDER

8/17/99
5/10/2019
B5389_Hyd_prm_wet_psh_04a_con.dgn

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-5389	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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CONSULTING ENGINEERS
6131 FALLS OF NEUSE ROAD, SUITE 106, RALEIGH, NC 27609
(919) 855-9909 FAX (919) 855-9407
EMAIL: AMT1@AMTENGINEERING.COM
NCBELS LICENSE # F-1049

DETOUR –DETNB–
DESIGN SPEED 55 MPH

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING SHEET 4 OF 6

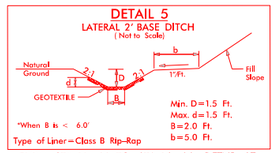
NAD 83/2001

4x4 GRANITE MON

DETAIL 7
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= 13 TONS,CL I Rip-Rap
Geotextile = 20 sy
STA. 16+96 –DETNB– LT

DETAIL 5
LATERAL 2' BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap
FROM STA. 12+38 TO STA. 16+96 –DETNB– LT

WILLIAM STEVEN CLODFELTER
AND WIFE
JESSIE J. CLODFELTER
(1)

(2) SEE SHEET 9 FOR PROFILE VIEW

JEFFREY W. DOUB AND SPOUSE
MELISSA B. DOUB AND
DARRELL DOUB AND SPOUSE
LEANN M. DOUB

BILLBOARD

LAT. 2' BASE DITCH w/CL B RIPRAP EST 254 TONS EST 689 SY GFD SEE DETAIL 5

RIPRAP AT EMBANKMENT SEE DETAIL 7

SITE 1

SITE 2

SITE 3

SITE 4

SITE 5

TS

S

F

TEMP. CONC FLUME

GRADE TO DRAIN

TEMP. 15" w/ELBOWS

TEMP. RIP RAP
EST. TONS
EST. SY GF

TEMP STREAM CROSSING

DARRELL DOUB AND WIFE
LEANN M. DOUB

ELLEN PARIISH JACKSON AND
W. LOGAN JACKSON, JR.

BETTIE D. WILES

DINKINS BOTTOMS ROAD 225' BST

TO YADKINVILLE

US 421 NBL 24' BST

US 421 SBL 35' BST

-DETNB-
S 15° 53' 48.2" E

MATCHLINE SEE SHEET 7 –DETNB– 18+00.00

LEGEND

PAVED SHOULDER

5/10/2019
B5389_Hyd_prm_wet_psh_06.dgn
hpriest

PROJECT REFERENCE NO.	SHEET NO.
B-5389	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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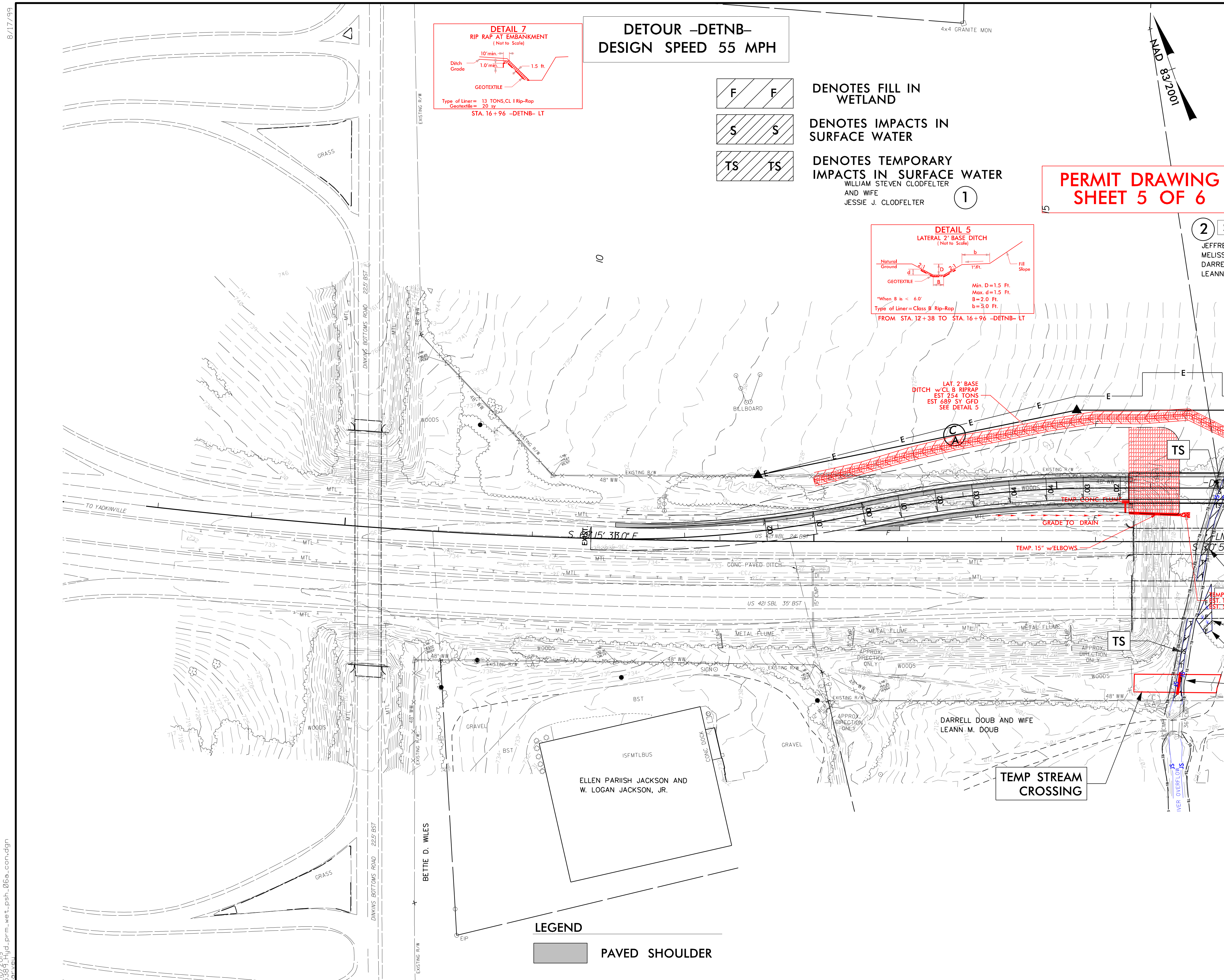
CONSULTING ENGINEERS
NCBELS LICENSE # F-1049

PERMIT DRAWING SHEET 5 OF 6

DETOUR -DETNB-
DESIGN SPEED 55 MPH


DETAIL 7
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner = 13 TONS,CL I Rip-Rap
Geotextile = 20 sy
STA. 16+96 -DETNB- LT
F F DENOTES FILL IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
WILLIAM STEVEN CLODFELTER AND WIFE JESSIE J. CLODFELTER
DETAIL 5
LATERAL 2' BASE DITCH
(Not to Scale)
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.
b=5.0 Ft.
Type of Liner=Class B Rip-Rap
FROM STA. 12+38 TO STA. 16+96 -DETNB- LT
NAD 83/2001
2 SEE SHEET 9 FOR PROFILE VIEW
JEFFREY W. DOUB AND SPOUSE
MELISSA B. DOUB AND
DARRELL DOUB AND SPOUSE
LEANN M. DOUB
LAT. 2' BASE DITCH w/CL B RIPRAP
EST 254 TONS
EST 689 SY GFD
SEE DETAIL 5
RIPRAP AT EMBANKMENT
SEE DETAIL 7
SITE 1
SITE 2
SITE 3
SITE 4
SITE 5
TEMP. CONC. FLUME
GRADE TO DRAIN
TEMP. 15" w/ELBOWS
TO YADKINVILLE
BILLBOARD
DINKINS BOTTOMS ROAD
US 421 SBL 35' BST
CONC. PAVED DITCH
DARRELL DOUB AND WIFE
LEANN M. DOUB
ELLEN PARIISH JACKSON AND
W. LOGAN JACKSON, JR.
BETTIE D. WILES
TEMP STREAM CROSSING
MATCHLINE SEE SHEET 7 -DETNB- 18+00.00

LEGEND

PAVED SHOULDER

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	19+38 to 19+61-L-LT	DITCH (BANK STABILIZATION)						< 0.01		23		
2	19+08 to 19+61-L-	BRIDGE							0.02		145	
3	19+67 to 19+91-L-	BRIDGE	0.02									
4	19+07 to 19+24-L-RT	BRIDGE	0.01									
5	18+82 to 19+04-L-RT	STREAM CROSSING							0.01		89	
TOTALS*:			0.03					< 0.01	0.03	23	234	0

*Rounded totals are sum of actual impacts

NOTES:
SITES 3 and 4 are a Total Take

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
05-10-2019
YADKIN
B-5389
46104.1.1
SHEET 6 OF 6

Revised 2018 Feb

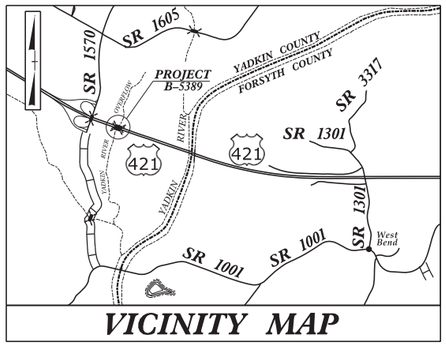
09/08/99

TIP PROJECT: B-5389

CONTRACT: C204220

5/13/2019
X:\Raleigh\I4-783C - NCDOT Bridge Group 0 B-5389\05-CAD\B5389\Roadway\Proj\B5389_Rdy_tsh.dgn
jbeauchaine

See Sheet 1-B For Conventional Symbols



VICINITY MAP

90% PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YADKIN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5389	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46104.1.1	N/A	PE
46104.2.1	N/A	R/W & UTILITIES
46104.3.1	N/A	CONSTRUCTION

LOCATION: BRIDGE NO.105 OVER YADKIN RIVER OVERFLOW ON US 421 NORTHBOUND LANES

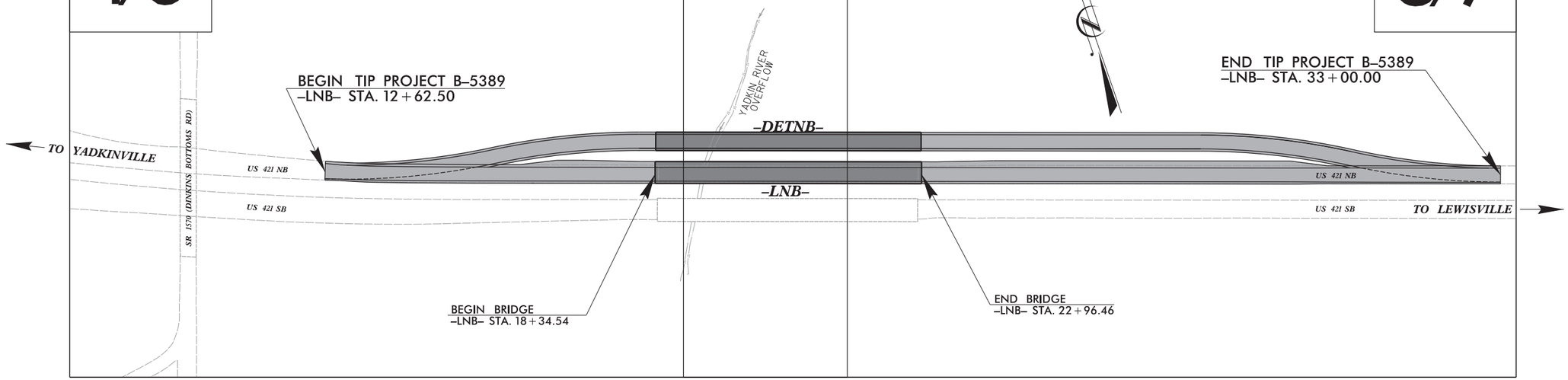
TYPE OF WORK: GRADING, DRAINAGE, PAVING, & STRUCTURE

4/6

5/7

BEGIN TIP PROJECT B-5389
–LNB– STA. 12+62.50

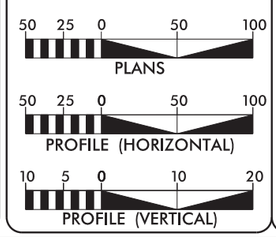
END TIP PROJECT B-5389
–LNB– STA. 33+00.00



THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2020 = 25,000
ADT 2040 = 30,300
K = 10 %
D = 65 %
T = 6 % *
V = 70 MPH
Vdet = 55 MPH
* (TTST = 3% + DUAL = 3%)
FUNC CLASS = RURAL FREEWAY
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5389 = 0.299 MI.

LENGTH STRUCTURE TIP PROJECT B-5389 = 0.087 MI.

TOTAL LENGTH TIP PROJECT B-5389 = 0.386 MI.

AMT
NCBELS LICENSE # F-1049

Prepared for the North Carolina Department of Transportation in the Office of:
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
6131 FALLS OF NEUSE ROAD, SUITE 106, RALEIGH, NC 27609
(919) 855-9989 FAX:(919) 855-5687
EMAIL: AMT1@AMTENGINEERING.COM

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: APRIL 2, 2019

LETTING DATE: JULY 17, 2019

NICK RAMIREZ, PE
PROJECT ENGINEER

JAMES CROUSE, PE
PROJECT DESIGN ENGINEER

DAVID STUTTS, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA C. DALTON

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 40655 ENGINEER NICK RAMIREZ

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-5389	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

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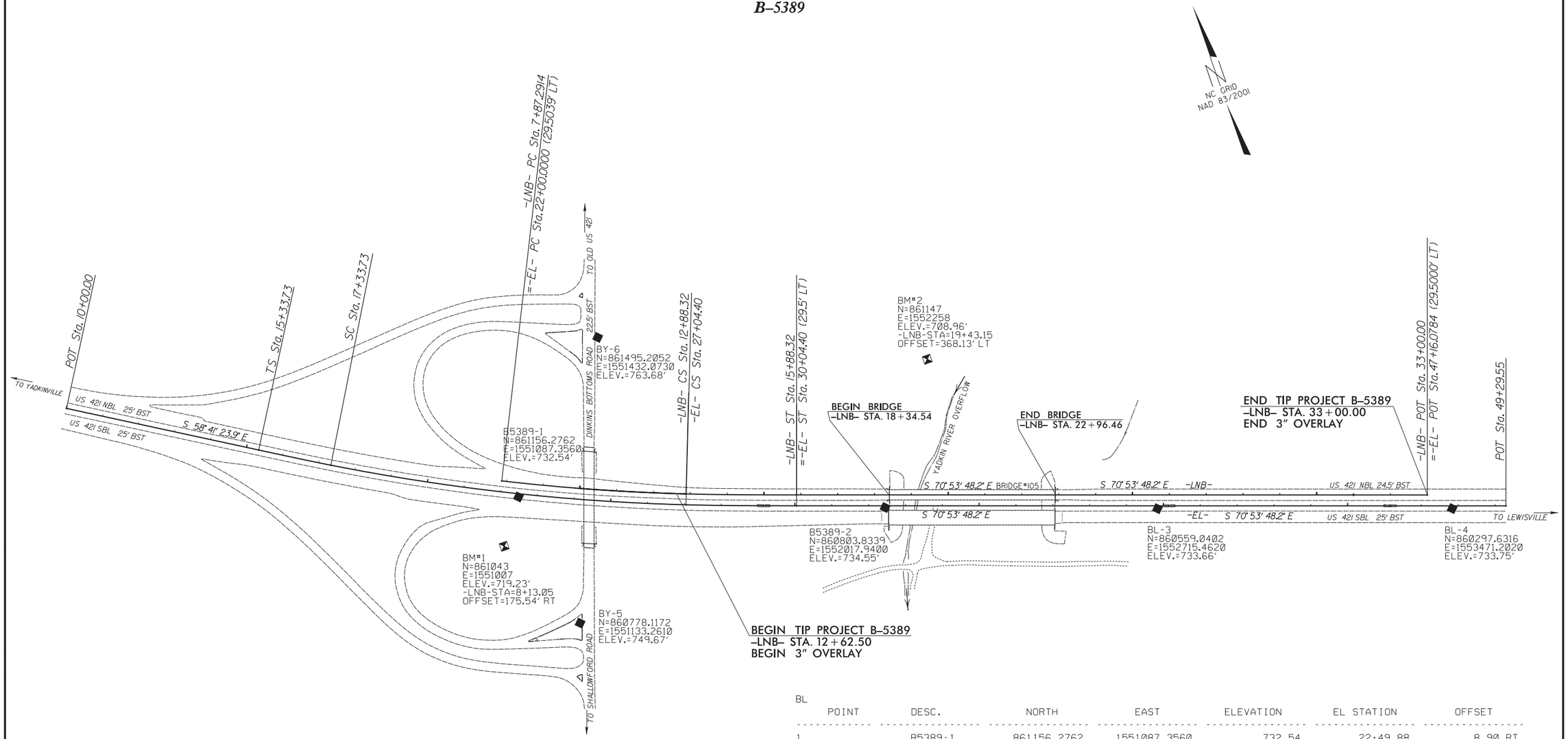
PROJECT REFERENCE NO.	SHEET NO.
B-5389	1C-1
Location and Surveys	

SURVEY CONTROL SHEET

B-5389



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5389-2"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 860803.8339(ft) EASTING: 1552017.9400(ft)
ELEVATION: 734.55(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99995370
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"B5389-2" TO -L- STATION 10+00.00 IS
N 64° 00' 09.42" W 2237.39'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

```
****************************************
BM#1       ELEVATION = 719.23'
N 861043       E 1551007
EL STATION 22+26.00 146' RIGHT
RR SPIKE SET IN 13" TREE
****************************************
****************************************
BM#2       ELEVATION = 708.96'
N 861147       E 1552258
EL STATION 33+59.00 398' LEFT
RR SPIKE SET IN 18" SYCAMORE
****************************************
```

BL

POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
1	B5389-1	861156.2762	1551087.3560	732.54	22+49.88	8.90 RT
2	B5389-2	860803.8339	1552017.9400	734.55	32+44.75	4.81 RT
3	BL-3	860559.0402	1552715.4620	733.66	39+83.97	7.84 RT
4	BL-4	860297.6316	1553471.2020	733.75	47+83.65	7.52 RT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
5	BY-5	860778.1172	1551133.2610	749.67	24+41.00	335.07 RT
6	BY-6	861495.2052	1551432.0730	763.68	24+31.95	441.73 LT

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

6/2/99

5/13/2019
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beaucaire

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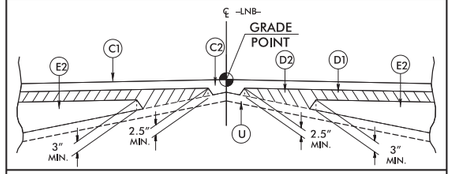
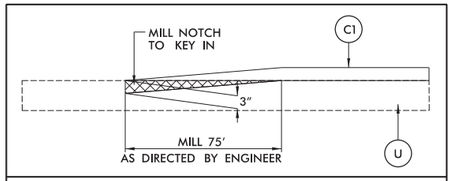


DETAIL W1 SHOWING METHOD OF WEDGING



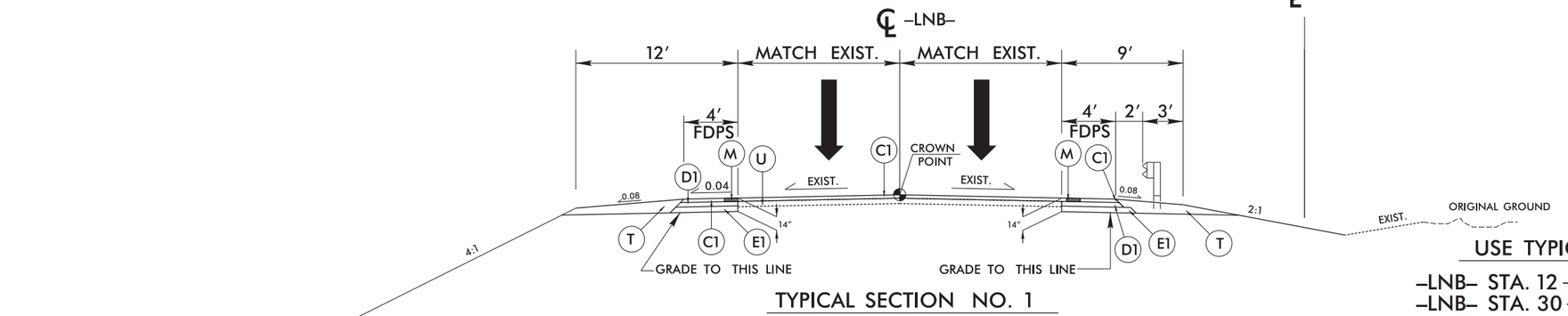
INCIDENTAL MILLING DETAIL AT PAVEMENT TIE–INS

NOTE: OVERLAY 3" USING DETAIL
–LNB– STA. 12+62.50 TO STA. 13+37.50
–LNB– STA. 32+25.00 TO STA. 33+00.00

FINAL PAVEMENT DESIGN SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J2	PROP. 7" AGGREGATE BASE COURSE.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	M	MILLED RUMBLE STRIPS (STD 665.01)
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	P	PRIME COAT (0.35 GAL/SY)
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	T	EARTH MATERIAL
E1	PROP. APPROX. 7" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	U	EXISTING PAVEMENT
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL W1)
J1	PROP. 10" AGGREGATE BASE COURSE.		

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

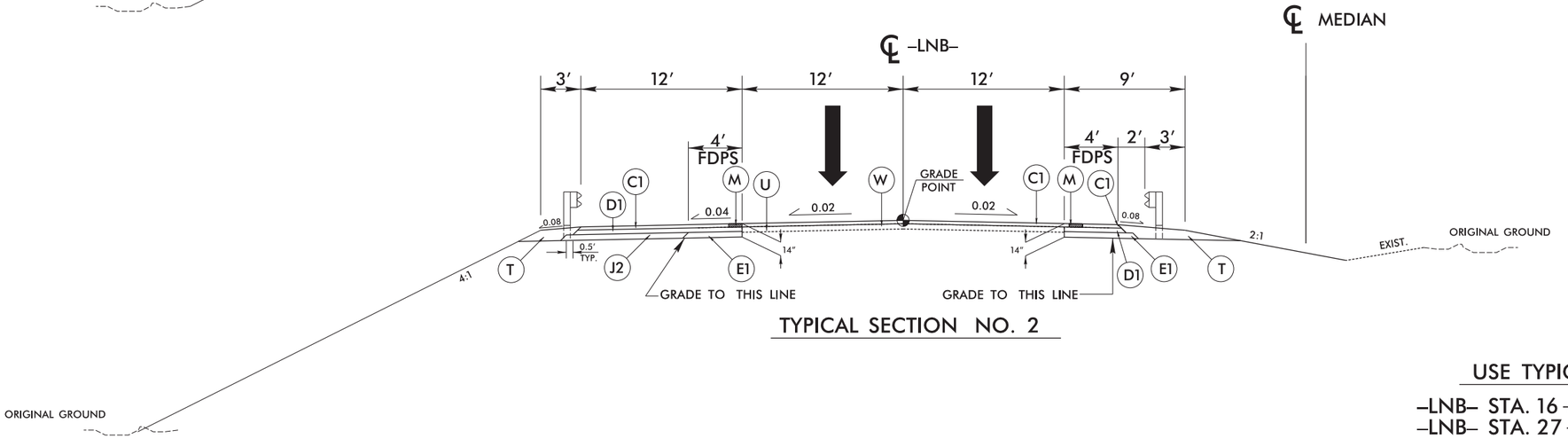


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

–LNB– STA. 12+62.50 TO STA. 16+00.00
–LNB– STA. 30+00.00 TO STA. 33+00.00

SEE INCIDENTAL MILLING DETAIL FOR PAVEMENT TIE–INS



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

–LNB– STA. 16+00.00 TO STA. 17+94.00
–LNB– STA. 27+00.00 TO STA. 30+00.00

PROJECT REFERENCE NO.	SHEET NO.
B-5389	2A-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 40655 ENGINEER NICK RAMIREZ

PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
6131 FALLS OF NEUSE ROAD, SUITE 100, RALEIGH, NC 27609
(919) 855-9909 FAX (919) 855-5687
EMAIL: AMT@AMTENGINEERING.COM

NCBELS LICENSE # F-1049

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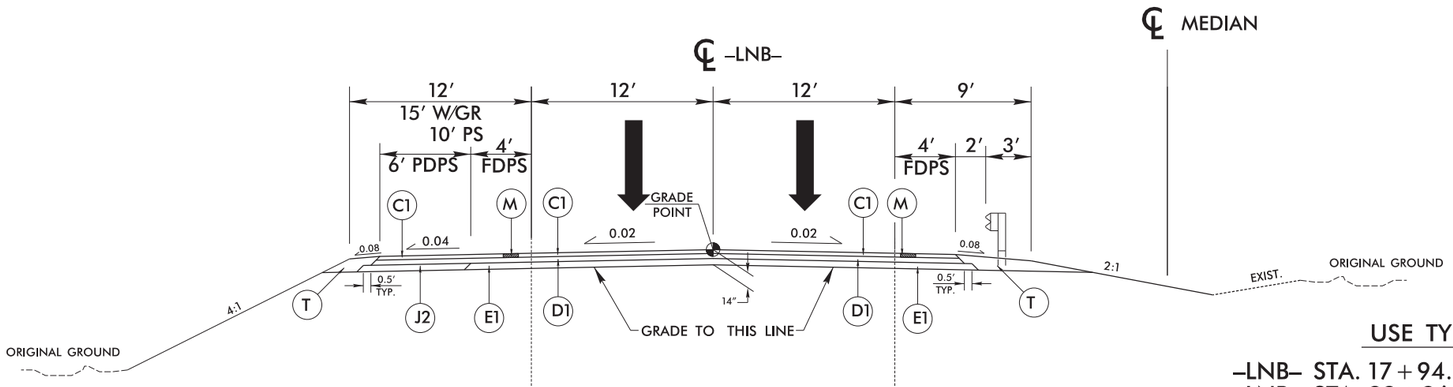
Beauchamp

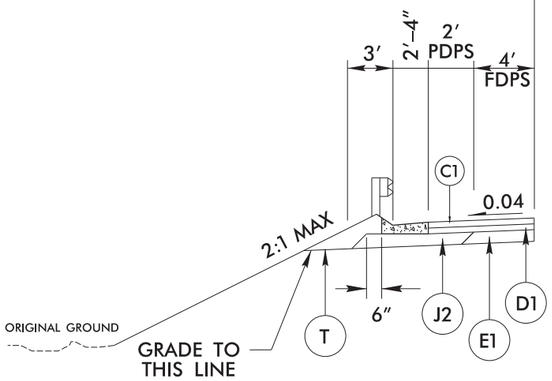
6/2/99



USE TYPICAL SECTION NO. 3

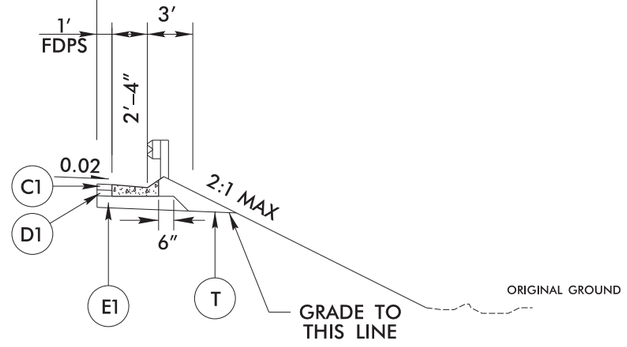
–LNB– STA. 17+94.00 TO STA. 18+34.54 (BEG. BRIDGE)
–LNB– STA. 22+96.46 (END BRIDGE) TO STA. 27+00.00

TYPICAL SECTION NO. 3



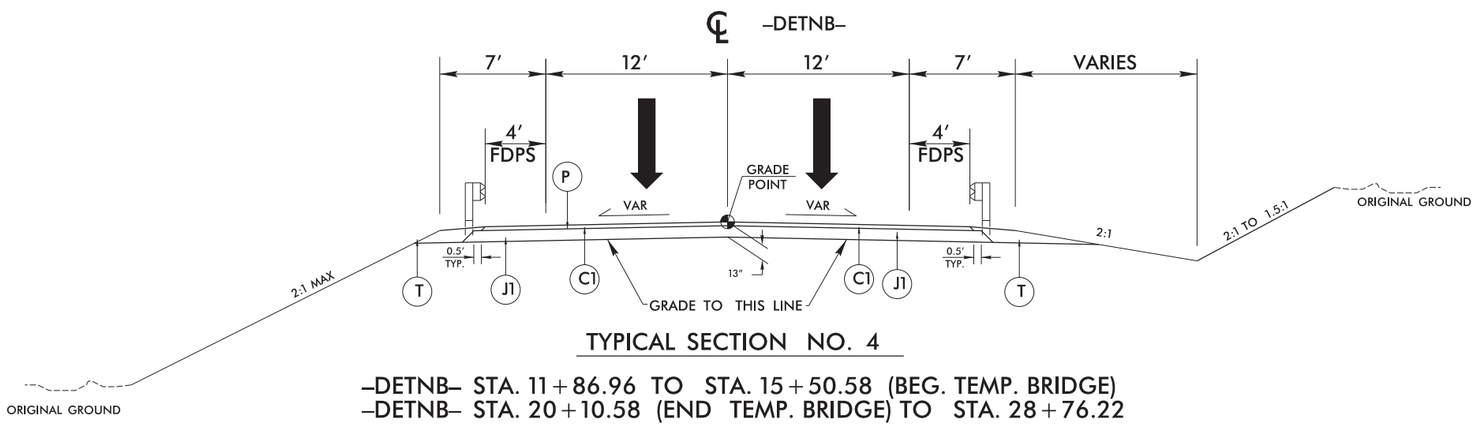
TYPICAL SECTION NO. 3A

SHOULDER BERM GUTTER SECTION
–LNB– STA. 17+94.00 TO –LNB–
STA. 18+10.54 (BEGIN APPROACH SLAB)



TYPICAL SECTION NO. 3B

SHOULDER BERM GUTTER SECTION
–LNB– STA. 17+94.00 TO –LNB–
STA. 18+10.54 (BEGIN APPROACH SLAB)



TYPICAL SECTION NO. 4

–DETNB– STA. 11+86.96 TO STA. 15+50.58 (BEG. TEMP. BRIDGE)
–DETNB– STA. 20+10.58 (END TEMP. BRIDGE) TO STA. 28+76.22

PROJECT REFERENCE NO.	SHEET NO.
B-5389	2A-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 40655 ENGINEER NICK RAMIREZ

PAVEMENT DESIGN ENGINEER

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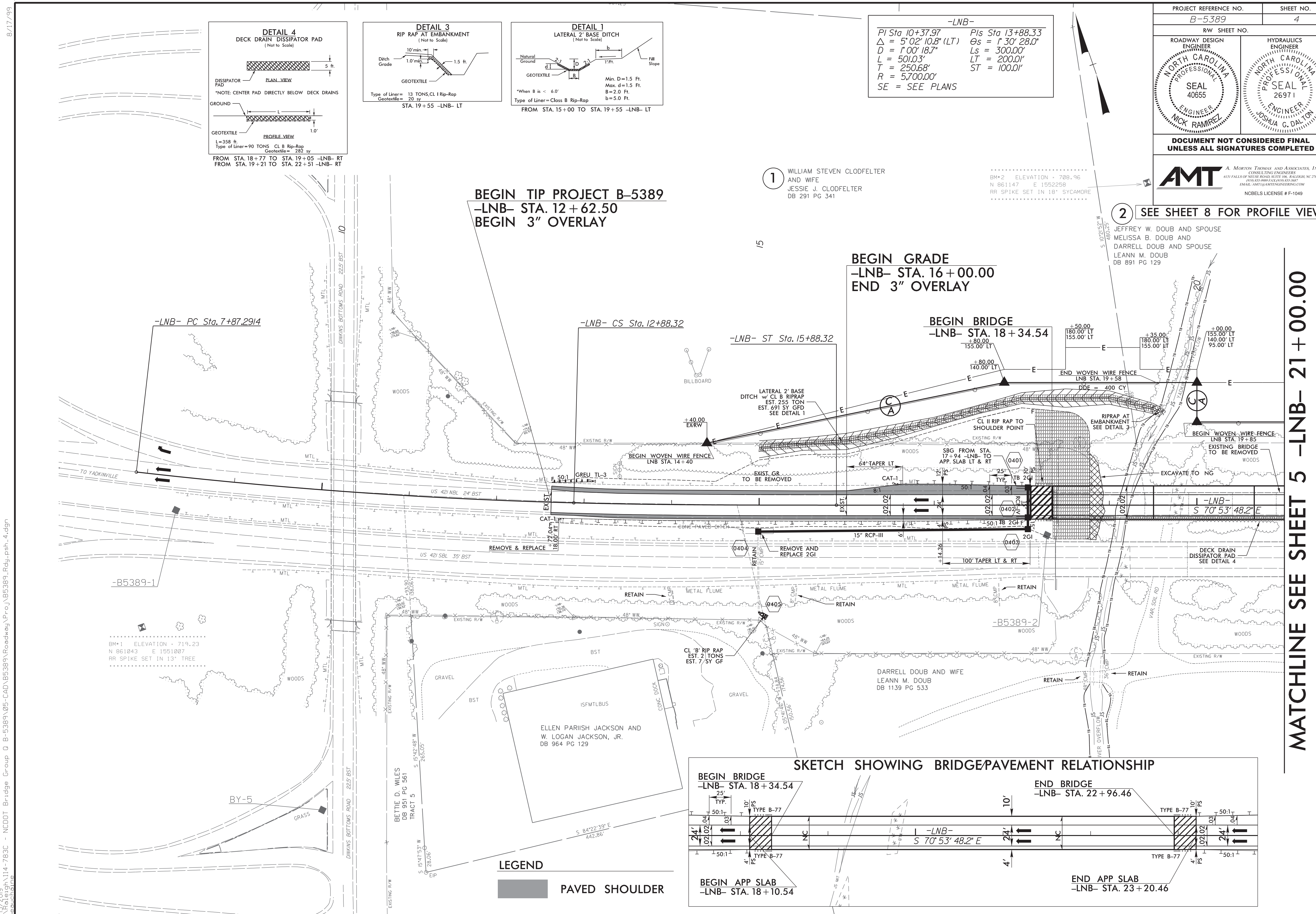
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
6131 FALLS OF NEUSE ROAD, SUITE 100, RALEIGH, NC 27609
(919) 855-9909 FAX (919) 855-5687
EMAIL: AMT@AMTENGINEERING.COM
NCBELS LICENSE # F-1049

FINAL PAVEMENT DESIGN SCHEDULE	
C1	3″ S9.5C
C2	VAR. S9.5C
D1	4″ I19.0C
D2	VAR. I19.0C
E1	7″ B25.0C
E2	VAR. B25.0C
J1	10″ ABC
J2	7″ ABC
P	PRIME COAT
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VAR. WEDGE

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


PROJECT REFERENCE NO.
B-5389
SHEET NO.
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 40655 ENGINEER NICK RAMIREZ
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
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A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
NCBELS LICENSE # F-1049
-LNB-
PI Sta 10+37.97
△ = 5°02' 10.8" (LT)
D = 1°00' 18.7"
L = 501.03'
T = 250.68'
R = 5,700.00'
SE = SEE PLANS
Pls Sta 13+88.33
Θs = 1° 30' 28.0"
Ls = 300.00'
LT = 200.01'
ST = 100.01'
DETAIL 4
DECK DRAIN DISSIPATOR PAD
(Not to Scale)
DISSIPATOR PAD
PLAN VIEW
*NOTE: CENTER PAD DIRECTLY BELOW DECK DRAINS
GROUND
GEOTEXTILE
PROFILE VIEW
L=358 ft.
Type of Liner=90 TONS CL B Rip-Rap
Geotextile= 282 sy
FROM STA. 18+77 TO STA. 19+05 -LNB- RT
FROM STA. 19+21 TO STA. 22+51 -LNB- RT
DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)
Ditch Grade
GEOTEXTILE
Type of Liner= 13 TONS,CL I Rip-Rap
Geotextile= 20 sy
STA. 19+55 -LNB- LT
DETAIL 1
LATERAL 2' BASE DITCH
(Not to Scale)
Natural Ground
GEOTEXTILE
Fill Slope
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.
b=5.0 Ft.
*When B is < 6.0'
Type of Liner=Class B Rip-Rap
FROM STA. 15+00 TO STA. 19+55 -LNB- LT
1 WILLIAM STEVEN CLODFELTER AND WIFE JESSIE J. CLODFELTER DB 291 PG 341
BM•2 ELEVATION = 708.96 N 861147 E 1552258 RR SPIKE SET IN 18" SYCAMORE
2 SEE SHEET 8 FOR PROFILE VIEW
JEFFREY W. DOUB AND SPOUSE
MELISSA B. DOUB AND
DARRELL DOUB AND SPOUSE
LEANN M. DOUB
DB 891 PG 129
BEGIN TIP PROJECT B-5389
-LNB- STA. 12+62.50
BEGIN 3" OVERLAY
BEGIN GRADE
-LNB- STA. 16+00.00
END 3" OVERLAY
BEGIN BRIDGE
-LNB- STA. 18+34.54
-LNB- PC Sta. 7+87.2914
-LNB- CS Sta. 12+88.32
-LNB- ST Sta. 15+88.32
BILLBOARD
LATERAL 2' BASE DITCH w/ CL B RIPRAP EST. 255 TON EST. 691 SY GFD SEE DETAIL 1
END WOVEN WIRE FENCE LNB STA. 19+58
DDE = 400 CY
RIPRAP AT EMBANKMENT SEE DETAIL 3
CL II RIP RAP TO SHOULDER POINT
BEGIN WOVEN WIRE FENCE LNB STA. 14+40
BEGIN WOVEN WIRE FENCE LNB STA. 19+85
EXISTING BRIDGE TO BE REMOVED
EXCAVATE TO NG
64' TAPER LT
SBG FROM STA. 17+94 -LNB- TO APP. SLAB LT & RT
EXIST GR TO BE REMOVED
GREU TL-3
US 421 NBL 24' BST
US 421 SBL 35' BST
TO YADKINVILLE
REMOVE & REPLACE
15" RCP-III
REMOVE AND REPLACE 2GI
100' TAPER LT & RT
DECK DRAIN DISSIPATOR PAD SEE DETAIL 4
-LNB- S 70° 53' 48.2" E
-B5389-1
-B5389-2
RETAIN
METAL FLUME
WOODS
CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF
BM•1 ELEVATION = 719.23 N 861043 E 1551007 RR SPIKE SET IN 13" TREE
DINKINS BOTTOMS ROAD 22.5' BST
DARRELL DOUB AND WIFE LEANN M. DOUB DB 1139 PG 533
ELLEN PARIISH JACKSON AND W. LOGAN JACKSON, JR. DB 964 PG 129
BETTIE D. WILES DB 951 PG 561 TRACT 5
GRAVEL
BST
GRASS
BY-5
MATCHLINE SEE SHEET 5 -LNB- 21+00.00
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
BEGIN BRIDGE -LNB- STA. 18+34.54
END BRIDGE -LNB- STA. 22+96.46
BEGIN APP SLAB -LNB- STA. 18+10.54
END APP SLAB -LNB- STA. 23+20.46
TYPE B-77
-LNB- S 70° 53' 48.2" E
LEGEND
PAVED SHOULDER
8/17/99
5/13/2019

8/17/99

REVISIONS

MATCHLINE SEE SHEET 4 –LNB– 21+00.00

PROJECT REFERENCE NO.	SHEET NO.
B-5389	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 40655 ENGINEER NICK RAMIREZ

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON

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CONSULTING ENGINEERS
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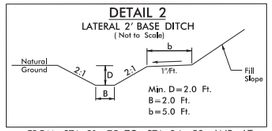
(919) 855-9889 FAX (919) 855-9887
EMAIL: AMT1@AMTENGINEERING.COM
NCBELS LICENSE # F-1049

SEE SHEET 8 FOR PROFILE VIEW

DETAIL 2
LATERAL 2' BASE DITCH
(Not to Scale)



FROM STA. 21+75 TO STA. 24+58 –LNB– LT

25

30

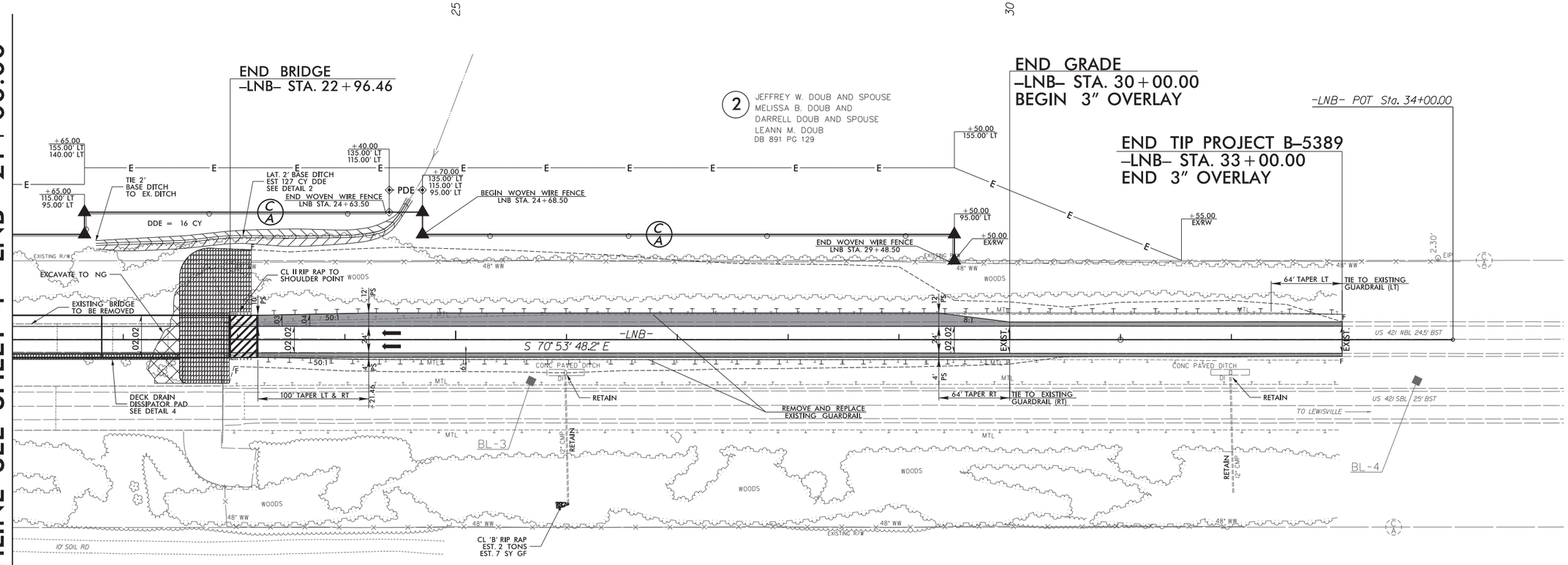
END BRIDGE
–LNB– STA. 22+96.46

END GRADE
–LNB– STA. 30+00.00
BEGIN 3" OVERLAY

–LNB– POT Sta. 34+00.00

END TIP PROJECT B-5389
–LNB– STA. 33+00.00
END 3" OVERLAY

2 JEFFREY W. DOUB AND SPOUSE
MELISSA B. DOUB AND
DARRELL DOUB AND SPOUSE
LEANN M. DOUB
DB 891 PG 129

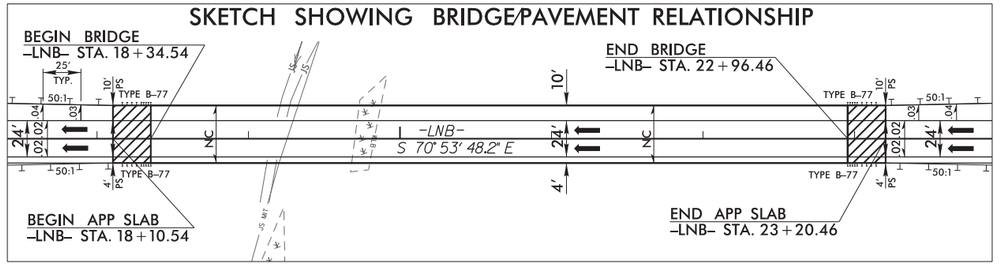


DARRELL DOUB AND WIFE
LEANN M. DOUB
DB 1139 PG 533

LEGEND

PAVED SHOULDER

SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP



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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-5389	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 40655 ENGINEER NICK RAMIREZ

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON

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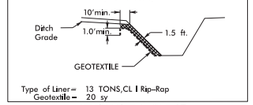
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
6131 FALLS OF NEUSE ROAD, SUITE 106, RALEIGH, NC 27609
(919) 855-9089 FAX (919) 855-5687
EMAIL: AMT1@AMTENGINEERING.COM
NCBELS LICENSE # F-1049

DETOUR –DETNB– DESIGN SPEED 55 MPH

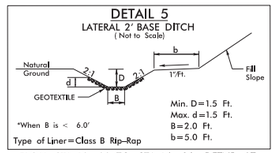
DETAIL 7
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 13 TONS,CL I Rip-Rap
Geotextile = 20 sy
STA. 16+96 –DETNB– LT

–DETNB–	
PI Sta 11+46.99	PI Sta 14+20.69
Δ = 13° 58' 02.2" (LT)	Δ = 12° 11' 59.9" (RT)
D = 4° 46' 33.7"	D = 4° 46' 33.7"
L = 292.45'	L = 255.44'
T = 146.99'	T = 128.24'
R = 1,200.00'	R = 1,200.00'
SE = 0.04	SE = 0.04
ROFF = 154'	ROFF = 154'
DS = 55 MPH	DS = 55 MPH

DETAIL 5
LATERAL 2' BASE DITCH
(Not to Scale)



Type of Liner=Class B Rip-Rap
FROM STA. 12+38 TO STA. 16+96 –DETNB– LT

BEGIN –DETNB– GRADE
–DETNB– STA. 11+86.96=
–NBL– STA. 14+49.08 11.90' LT

(1) WILLIAM STEVEN CLODFELTER AND WIFE
JESSIE J. CLODFELTER
DB 291 PG 341

BM•2 ELEVATION • 708.96
N 861147 E 1552258
RR SPIKE SET IN 18" SYCAMORE

(2) SEE SHEET 9 FOR PROFILE VIEW

JEFFREY W. DOUB AND SPOUSE
MELISSA B. DOUB AND
DARRELL DOUB AND SPOUSE
LEANN M. DOUB
DB 891 PG 129

-LNB- PC Sta. 7+87.2914

BEGIN CONSTRUCTION
-DETNB- PC Sta. 10+00.00 =
-NBL- POC Sta.12+62.50

-DETNB- PRC Sta. 12+92.45

-DETNB- PT Sta. 15+47.89

BEGIN TEMP BRIDGE
–DETNB– STA. 15+76.69

LAT. 2' BASE DITCH w/CL B RIPRAP
EST 254 TONS
EST 689 SY GFD
SEE DETAIL 5

DDE = 374 CY

RIPRAP AT EMBANKMENT SEE DETAIL 7

TIE TO EXISTING GUARDRAIL

TEMP. CONC FLUME

TEMP. GREU TL-3 GRADE TO DRAIN

TEMP. 15" w/ELBOWS

CONC PAVED DITCH

TEMP. CL 'B' RIP RAP
EST. 1 TON
EST. 5 SY GF

-DETNB- S 70°53' 48.2" E

-LNB- S 70°53' 48.2" E

-LNB- ST Sta. 15+88.32=
-EL- ST Sta. 30+04.40 (29.5' LT)

+40.00 EXRW
+80.00 155.00' LT
+80.00 140.00' LT
+50.00 180.00' LT 155.00' LT
+35.00 180.00' LT 155.00' LT
+00.00 155.00' LT 140.00' LT 95.00' LT

SEAT=730.32'
SEAT=729.75'
SEAT=729.64'

BILLBOARD

WOODS

GRASS

CONC

MTL

48" WW

EXISTING R/W

DINKINS BOTTOMS ROAD 225' BST

TO YADKINVILLE

US 421 NBL 24' BST

US 421 SBL 35' BST

S 69°15' 33.0" E

52.75' TYP.

39.30' TYP.

-B5389-1

BM•1 ELEVATION • 719.23
N 861043 E 1551007
RR SPIKE SET IN 13" TREE

-B5389-2

APPROX. DIRECTION ONLY

BST

GRAVEL

ISFMTLBUS

CONC DOCK

ELLEN PARIISH JACKSON AND
W. LOGAN JACKSON, JR.
DB 964 PG 129

BETTIE D. WILES
DB 951 PG 561
TRACT 5

S 15°42'48" W 265.05'

S 15°47'53" W 28.06'

S 84°22'39" E 442.86'

EIP

DARRELL DOUB AND WIFE
LEANN M. DOUB
DB 1139 PG 533

S 10°41'16" W 150.56'

YADKIN RIVER OVERFLOW

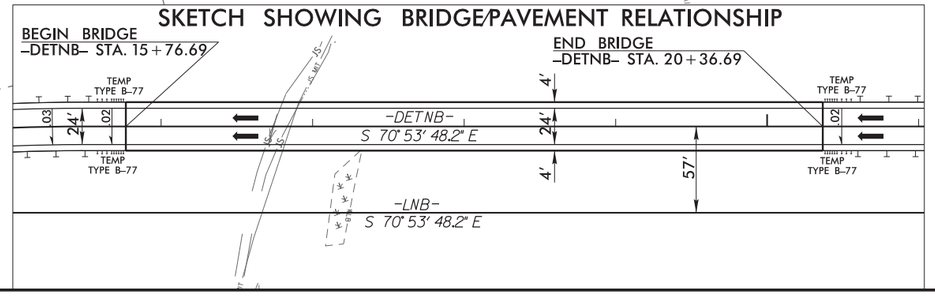
VAR. SOIL RD

SIGN

BY-5

BY-6

SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP



LEGEND

PAVED SHOULDER

MATCHLINE SEE SHEET 7 –DETNB– 18+00.00

5/13/2019
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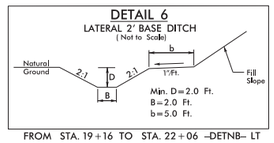
-DETNB-	
PI Sta 26+52.76	PI Sta 29+14.74
△ = 12° 30' 43.8" (RT)	△ = 12° 30' 43.6" (LT)
D = 4° 46' 33.7"	D = 4° 46' 33.7"
L = 261.98'	L = 261.98'
T = 131.55'	T = 131.55'
R = 1,200.00'	R = 1,200.00'
SE = 0.04	SE = 0.04
ROFF = 154'	ROFF = 154'
DS = 55 MPH	DS = 55 MPH

DETOUR –DETNB– DESIGN SPEED 55 MPH

DETAIL 6
LATERAL 2' BASE DITCH
(Not to Scale)



FROM STA. 19+16 TO STA. 22+06 –DETNB– LT

PROJECT REFERENCE NO.	SHEET NO.
B-5389	7
R/W SHEET NO.	

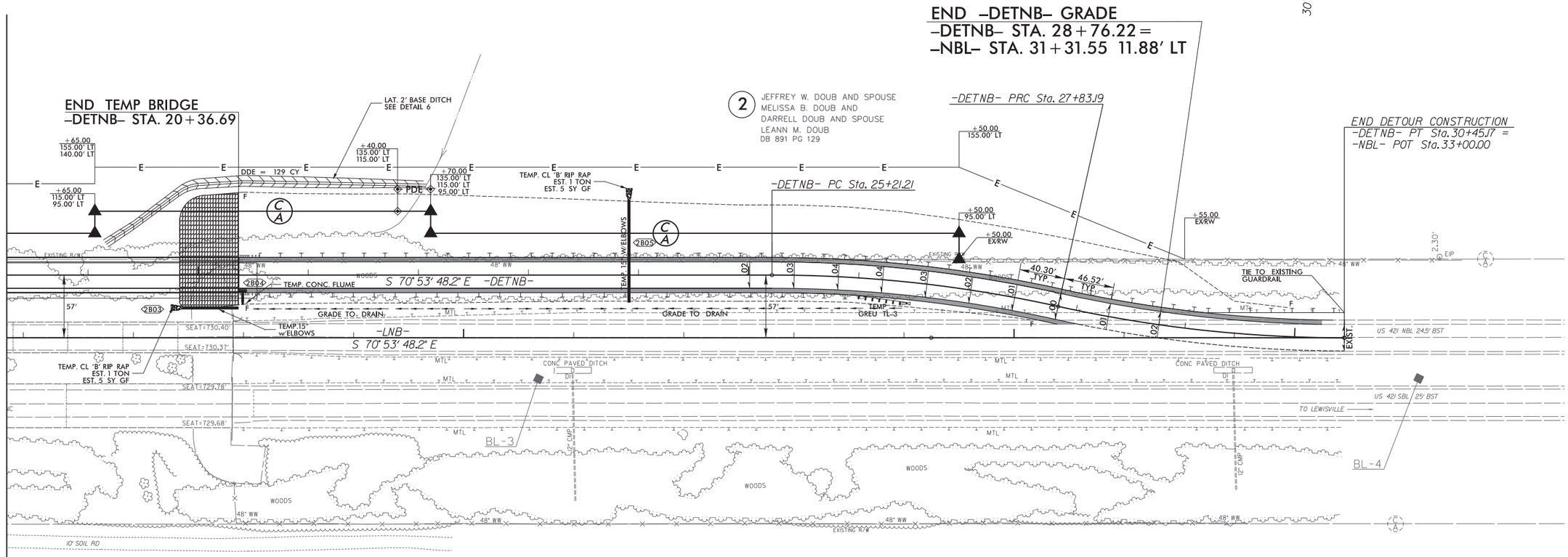
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 40655 ENGINEER NICK RAMIREZ

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
6131 FALLS OF NEUSE ROAD, SUITE 100, RALEIGH, NC 27609
(919) 855-9999 FAX (919) 855-9887
EMAIL: AMT1@AMTENGINEERING.COM
NCBELS LICENSE # F-1049

SEE SHEET 9 FOR PROFILE VIEW



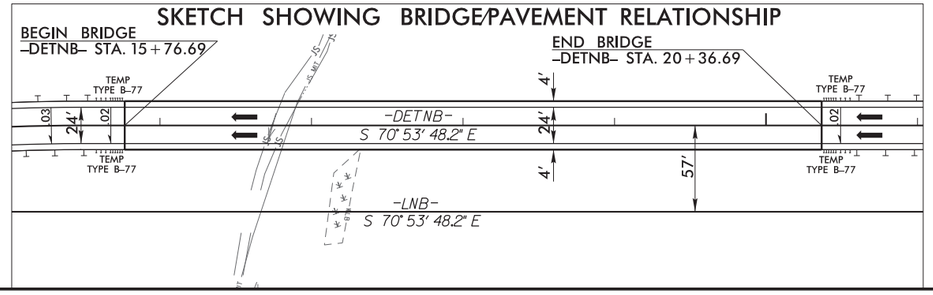
(2) JEFFREY W. DOUB AND SPOUSE
MELISSA B. DOUB AND
DARRELL DOUB AND SPOUSE
LEANN M. DOUB
DB 891 PG 129

DARRELL DOUB AND WIFE
LEANN M. DOUB
DB 1139 PG 533

LEGEND

PAVED SHOULDER

SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP



MATCHLINE SEE SHEET 6

REVISIONS 8/17/99

5/13/2019
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PROJECT REFERENCE NO.	SHEET NO.
B-5389	8

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 40655 NICK RAMIREZ

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 JOSHUA G. DALTON

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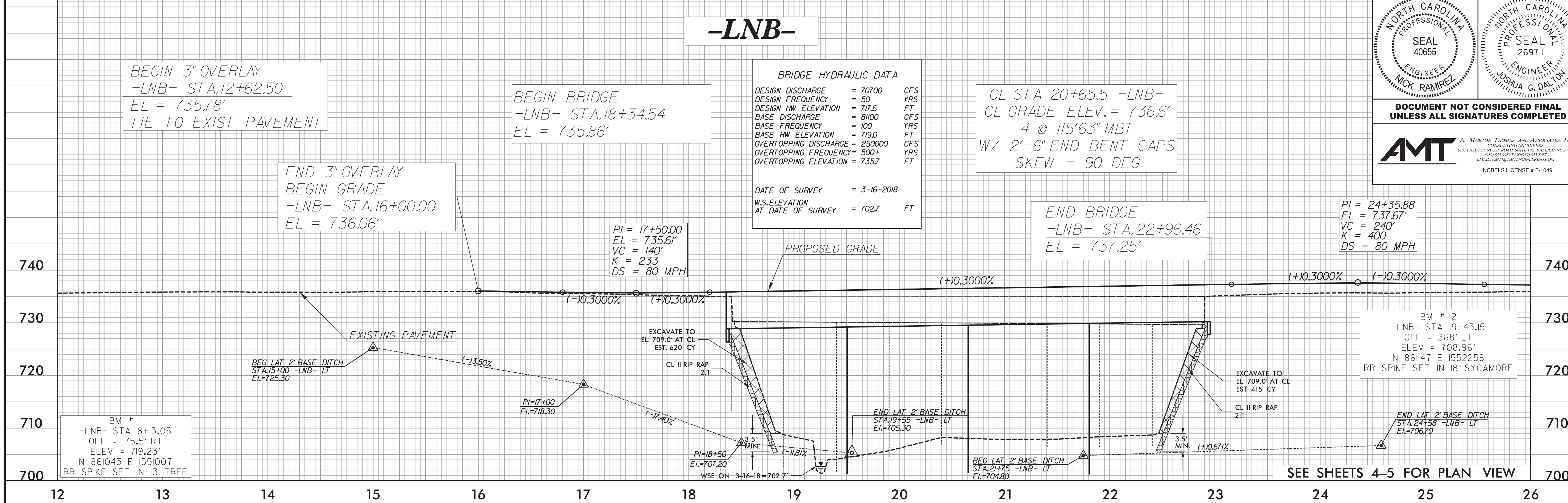
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
6131 FALLS OF NEUSE ROAD, SUITE 106, RALEIGH, NC 27609
(919) 855-9989 FAX:(919) 855-5687
EMAIL: AMT1@AMTENGINEERING.COM
NCBELS LICENSE # F-1049

-LNB-

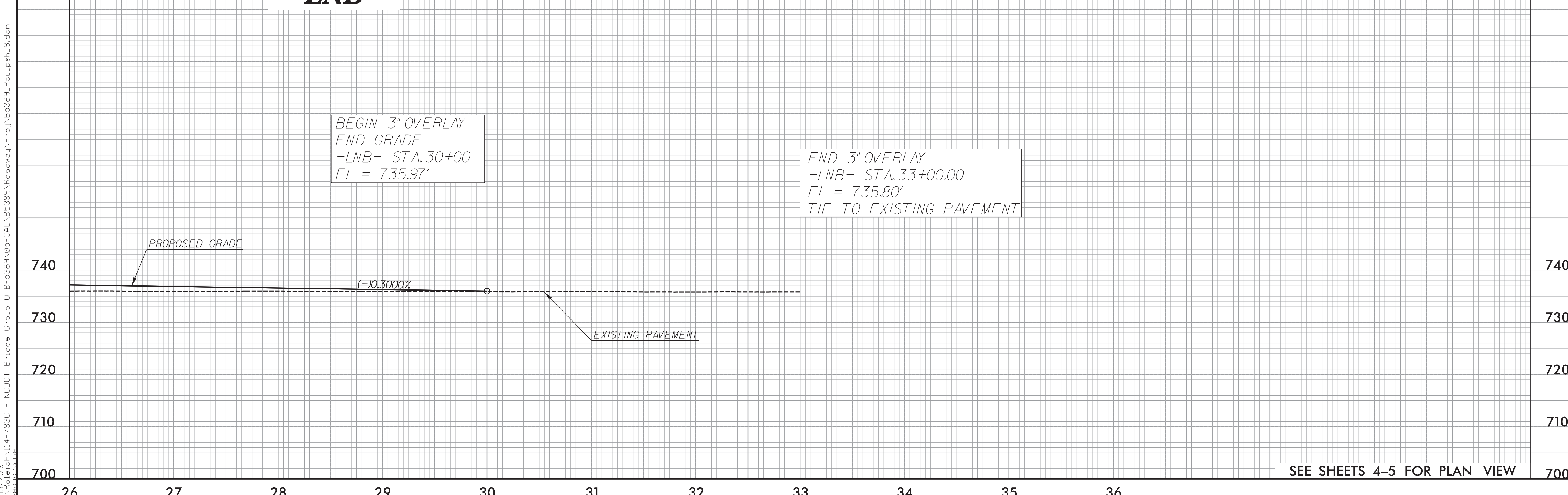
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 70700	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 717.6	FT
BASE DISCHARGE	= 81100	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 719.0	FT
OVERTOPPING DISCHARGE	= 250000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 735.7	FT
DATE OF SURVEY	= 3-16-2018	
W.S.ELEVATION AT DATE OF SURVEY	= 702.7	FT



BEGIN 3" OVERLAY
-LNB- STA.12+62.50
EL = 735.78'
TIE TO EXIST PAVEMENT
BEGIN BRIDGE
-LNB- STA.18+34.54
EL = 735.86'
CL STA 20+65.5 -LNB-
CL GRADE ELEV.= 736.6'
4 @ 115'63" MBT
W/ 2'-6" END BENT CAPS
SKEW = 90 DEG
END 3" OVERLAY
BEGIN GRADE
-LNB- STA.16+00.00
EL = 736.06'
PI = 17+50.00
EL = 735.61'
VC = 140'
K = 233
DS = 80 MPH
PROPOSED GRADE
END BRIDGE
-LNB- STA.22+96.46
EL = 737.25'
PI = 24+35.88
EL = 737.67'
VC = 240'
K = 400
DS = 80 MPH
(-)0.3000%
(+)0.3000%
(+)0.3000%
(+)0.3000%
(-)0.3000%
EXISTING PAVEMENT
EXCAVATE TO
EL. 709.0' AT CL
EST. 620 CY
CL II RIP RAP
2:1
EXCAVATE TO
EL. 709.0' AT CL
EST. 415 CY
CL II RIP RAP
2:1
BM # 2
-LNB- STA. 19+43.15
OFF = 368' LT
ELEV = 708.96'
N 861147 E 1552258
RR SPIKE SET IN 18" SYCAMORE
BEG LAT 2' BASE DITCH
STA.15+00 -LNB- LT
El.=725.30
(-)13.50%
PI=17+00
El.=718.30
(-)17.40%
3.5' MIN.
(-)1.81%
PI=18+50
El.=707.20
WSE ON 3-16-18=702.7'
END LAT 2' BASE DITCH
STA.19+55 -LNB- LT
El.=705.30
BEG LAT 2' BASE DITCH
STA.21+75 -LNB- LT
El.=704.80
3.5' MIN.
(+)0.671%
END LAT 2' BASE DITCH
STA.24+58 -LNB- LT
El.=706.70
BM # 1
-LNB- STA. 8+13.05
OFF = 175.5' RT
ELEV = 719.23'
N 861043 E 1551007
RR SPIKE SET IN 13" TREE
SEE SHEETS 4-5 FOR PLAN VIEW
740
730
720
710
700
12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

-LNB-



5/28/99

5/13/2019
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5/28/99

–DETNB–

CL STA 18+06.70 – DETNB–
CL GRADE ELEV.= 736.77'
DETOUR BRIDGE (DAL = 460')
SPAN ARRANGEMENT TO BE DETERMINED BY CONTRACTOR
W/ 2'-6" END BENT CAPS
SKEW = 90 DEG

BEGIN TEMP.BRIDGE
–DETNB– Sta.15+76.69
EL = 736.47'

BEGIN GRADE
–DETNB– Sta.11+86.96
EL = 735.67'
= –LNB– Sta.14+49.08 (11.90' LT)

PI = 12+49.31
EL = 735.48'
VC = 120'
K = 200

PI = 17+45.00
EL = 736.97'
VC = 180'
K = 300

END TEMP.BRIDGE
–DETNB– Sta.20+36.69
EL = 736.09'

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 48200	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 714.1	FT
DATE OF SURVEY	= 3-16-2018	
W.S.ELEVATION AT DATE OF SURVEY	= 702.7	FT

(–)0.3000% (+)0.3000% (+)0.3000% (–)0.3000%

EXISTING GROUND

CL II RIP RAP 2:1

BEG LAT 2' BASE DITCH
STA.12+38 –DETNB– LT
El.=725.30

(–)3.645%

PI=14+41
El.=717.90

(–)6.90%

PI=15+51
El.=711.00

(–)13.677%

3.5 MIN

END LAT 2' BASE DITCH
STA.16+96 –DETNB– LT
El.=705.30

WSE ON 3-16-18
=702.7'

CL II RIP RAP 2:1

BEG LAT 2' BASE DITCH
STA.19+16 –DETNB– LT
El.=704.80

(+)0.655%

END LAT 2' BASE DITCH
STA.22+06 –DETNB– LT
El.=706.70

740 730 720 710 700

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

–DETNB–

END GRADE
–DETNB– Sta.28+76.22
EL = 735.63'
= –LNB– Sta.31+31.55 (11.88' LT)

PI = 25+33.94
EL = 734.60'
VC = 200'
K = 333

(–)0.3000% (+)0.3000%

EXISTING PAVEMENT

SEE SHEET 6–7 FOR PLAN VIEW

740 730 720 710 700

24 25 26 27 28 29 30

PROJECT REFERENCE NO.	SHEET NO.
B-5389	9

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 40655 ENGINEER NICK RAMIREZ

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON

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A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
6131 FALLS OF NEUSE ROAD, SUITE 100, RALEIGH, NC 27609
(919) 855-9888 FAX (919) 855-5687
EMAIL: AMT@AMTENGINEERING.COM
NCBELS LICENSE # F-1049

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