STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

March 6, 2017

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

Attention: Eric Alsmeyer
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide 23 Section and 401 Water Quality Certification** for the replacement of Bridge No. 49 on SR 1300 (Concord Church Road) over Hyco Lake in Person County. TIP No. B-5327. Debit $240 from WBS 46041.1.1.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Person County Bridge No. 49 on SR 1300 (Concord Church Road) over Hyco Lake.

The purpose of this letter is to request approval for a Section 404 Nationwide Permit No. 23 and Section 401 Water Quality Certification. In addition to this cover letter, this application package includes the following for B-5327: stormwater management plan, permit drawings, and roadway plans.

This project calls for a letting date of September 19, 2017 and a review date of August 1, 2017.

Impacts to Jurisdictional Resources

The project will have permanent surface water impacts of 0.08 acre and 0.03 acre of temporary surface water impacts. There are no wetland impacts associated with the project. The temporary surface water impacts are due to the need for barge access to facilitate removal of the existing bents and construction of the new structure. It is thought that the bridge is too wide and the water too deep for effective use of a temporary causeway

Section 404: Application is hereby made for a USACE Nationwide 23 Permit as required for the above-described activities.

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

Location:
1020 BIRCH RIDGE DRIVE
RALEIGH, NC 27699

Section 401: We are requesting a Section 401 Water Quality Certification from NCDWR. We are providing this application to NCDWR for their approval. Authorization to debit the $240 Permit Application Fee from WBS Element 46041.1.1 is hereby given.

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 Programmatic Categorical Exclusion (PCE) was completed for this project in July 2015. A copy of the PCE 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 Gordon Cashin at or (919) 707-6107.

Sincerely,

for Philip S. Harris III, P.E., CPM, Manager
Natural Environment Section

cc: NCDOT Permit Application Standard Distribution List

Office Use Only:
Corps action ID no. _____
DWQ project no. _____
Form Version 1.4 January 2009

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit	☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 23	or General Permit (GP) number:	
1c. Has the NWP or GP number been verified by the Corps?	☒ Yes	☐ No

1d. Type(s) of approval sought from the DWQ (check all that apply):

☒ 401 Water Quality Certification – Regular ☐ Non-404 Jurisdictional General Permit

☐ 401 Water Quality Certification – Express ☐ Riparian Buffer Authorization

1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: ☐ Yes ☒ No	For the record only for Corps Permit: ☐ Yes ☒ No
1f. 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
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.		☐ Yes ☒ No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?		☐ Yes ☒ No

2. Project Information

2a. Name of project:	Replacement of Bridge No. 49 on SR 1300.
2b. County:	Person
2c. Nearest municipality / town:	Roxboro
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-5327

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	*not applicable*
3c. Responsible Party (for LLC if applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6107
3g. Fax no.:	(919) 212-5785
3h. Email address:	gcashin@ncdot.gov

4. Applicant Information (if different from owner)	
4a. Applicant is:	☐ Agent ☐ Other, specify:
4b. Name:	*not applicable*
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
5. Agent/Consultant Information (if applicable)	
5a. Name:	*not applicable*
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

B. Project Information and Prior Project History		
1. Property Identification		
1a. Property identification no. (tax PIN or parcel ID):	*not applicable*	
1b. Site coordinates (in decimal degrees):	Latitude: 36.443803 (DD.DDDDDD)	Longitude: -79.092628 (-DD.DDDDDD)
1c. Property size:	5.7 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Hyco Lake	
2b. Water Quality Classification of nearest receiving water:	WS-V & B	
2c. River basin:	Roanoke	
3. Project Description		
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: The study area includes the existing roadway and bridge. Land use is residential.		
3b. List the total estimated acreage of all existing wetlands on the property: N/A		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: N/A		
3d. Explain the purpose of the proposed project: To replace a deteriorated bridge.		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 5-span 200.5-foot bridge with a 210-foot, 3-span bridge on the existing alignment with an off-site detour. Standard road building equipment, such as trucks, dozers, and cranes will be used.		
4. Jurisdictional Determinations		
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments: JD requested on 4/2/2012	☒ Yes	☐ No ☐ Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☐ Preliminary	☐ Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	Agency/Consultant Company: Michael Baker Engineering Other:	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.		
5. Project History		
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ Yes	☒ No ☐ Unknown
5b. If yes, explain in detail according to “help file” instructions.		
6. Future Project Plans		
6a. Is this a phased project?	☐ Yes	☒ No
6b. If yes, explain.		

C. Proposed Impacts Inventory

1. Impacts Summary

1a. Which sections were completed below for 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. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction	2f. Area of impact (acres)
Site 1 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 2 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 3 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 4 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	

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. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 2 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	

3i. Comments:

4. Open Water Impacts

If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.

4a. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O1 ☒ P ☐ T	Hyco Lake	Rock embankment and slope protection	lake	0.08 perm.
O1 ☐ P ☒ T	Hyco Lake	25' Barge landing area	lake	0.03 temp.
			4f. Total open water impacts	0.08 Perm. 0.03 temp.

4g. Comments:

5. Pond or Lake Construction

If pond or lake construction proposed, then complete the chart below.

5a. Pond ID number	5b. Proposed use or purpose of pond	5c. Wetland Impacts (acres)			5d. Stream Impacts (feet)			5e. Upland (acres)
		Flooded	Filled	Excavated	Flooded	Filled	Excavated	Flooded
	5f. Total							

5g. Comments:

5h. Is a dam high hazard permit required?	☐ Yes ☐ No If yes, permit ID no:
5i. Expected pond surface area (acres):	
5j. Size of pond watershed (acres):	
5k. Method of construction:	

6. Buffer Impacts (for DWQ)

If project will impact a protected riparian buffer, then complete the chart below. If yes, then individually list all buffer impacts below. If any impacts require mitigation, then you **MUST** fill out Section D of this form.

6a. Project is in which protected basin?			☐ Neuse ☐ Catawba	☐ Tar-Pamlico ☐ Randleman	☐ Other:
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 ☐ P ☐ T			☐ Yes ☐ No		
B2 ☐ P ☐ T			☐ Yes ☐ No		
B3 ☐ P ☐ T			☐ Yes ☐ No		
B4 ☐ P ☐ T			☐ Yes ☐ No		
			6h. **Total buffer impacts**		
6i. Comments:					

D. Impact Justification and Mitigation

1. Avoidance and Minimization

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

This structure has been designed to have as little environmental and surface water impacts as possible. To avoid direct discharge of bridge stormwater into the receiving water, deck drains are not required for the proposed bridge. Storm water impacts to the creek have been minimized by utilizing grated inlets and pipes to collect bridge stormwater which will be outlet on Class II rip-rap before entering the stream. The proposed rock plating in all four quadrants allowed 1.5:1 slopes to be incorporated, minimizing fill within the creek. The project also utilizes a temporary detour.

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

Construction impacts will be minimized through the use of 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 If no, explain: The project has minimal impacts on surface waters only.
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☐ Corps
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☐ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

3b. Credits Purchased (attach receipt and letter)	Type	Quantity

3c. Comments:

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
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☐ cold
4d. Buffer mitigation requested (DWQ only):	square feet
4e. Riparian wetland mitigation requested:	acres
4f. Non-riparian wetland mitigation requested:	acres
4g. Coastal (tidal) wetland mitigation requested:	acres

4h. Comments:

5. Complete if Using a Permittee Responsible Mitigation Plan

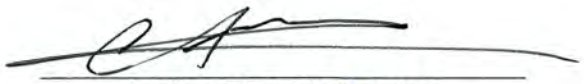
5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ				
6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?			☐ 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.				
Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1			3 (2 for Catawba)	
Zone 2			1.5	
	6f. **Total buffer mitigation required:**			
6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).				
6h. Comments:				

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
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. If yes, then is a diffuse flow plan included? If not, explain why. Comments: See attached buffer permit drawings.	☐ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☒ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No N/A
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☐ Yes ☐ No N/A
5b. Have all of the 401 Unit submittal requirements been met?	☐ Yes ☐ No N/A

F. Supplementary Information		
1. Environmental Documentation (DWQ Requirement)		
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.) Comments:	☒ Yes	☐ No
2. Violations (DWQ Requirement)		
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ 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
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):		
3. Cumulative Impacts (DWQ 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 "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact resulting from this improvement and existing urban development, 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 (DWQ Requirement)		
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable		

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☐ Yes	☒ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☒ Yes	☐ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☒ Raleigh ☐ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? USFWS website, field surveys. All species have biological conclusions of No Effect.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☐ Yes	☒ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
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		

for Philip S. Harris III, P.E. Applicant/Agent's Printed Name	 Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	03-06-2017 Date

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.06; Released June 2016)

WBS Element:	46041.1.1	TIP No.:	B-5327	County(ies):	Person	Page	1	of	1

General Project Information

WBS Element:	46041.1.1	**TIP Number:**	B-5327	**Project Type:**	Bridge Replacement	**Date:**	10/4/2016
NCDOT Contact:	Matthew Lauffer, PE			**Contractor / Designer:**	Trent Cormier, PE		
Address:	NCDOT Hydraulics Unit 1590 Mail Services Unit Raleigh, NC 27560			**Address:**	ICA Engineering, Inc. 5121 Kingdom Way, Suite 100 Raleigh, NC 27607		
Phone:	(919) 707-6703			**Phone:**	(919) 900-1608		
Email:	mslauffer@ncdot.gov			**Email:**	trenton.cormier@hdrinc.com		
City/Town:	Roxboro			**County(ies):**	Person		
River Basin(s):	Roanoke			**CAMA County?**	No		
Wetlands within Project Limits?	No						

Project Description

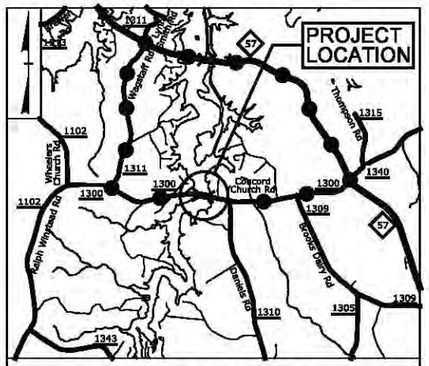
Project Length (lin. miles or feet):	0.15	**Surrounding Land Use:**	Recreation, Low Residential, Wooded

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	0.4 ac.	0.3 ac.
Typical Cross Section Description:	Concord Church Road (SR 1300): 2 paved lanes (total 20' wide), 4' shoulder on each side (7' with guardrail).	Concord Church Road (SR 1300): 2 paved lanes (total 20' wide), open shoulder section.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 1260 Year: 2035	Existing: 650 Year: 2015
General Project Narrative: (Description of Minimization of Water Quality Impacts)	The North Carolina Department of Transportation (NCDOT) has proposed to replace Person County Bridge #49 on Concord Church Road (SR 1300) over South Hyco Creek. The existing structure is a five span bridge (1@40'3", 3@40', 1@40'3") and is a reinforced concrete deck on I-Beams supported by reinforced concrete caps and precast prestressed concrete piles. The proposed structure is a three span (3@70'), 24" precast concrete cored slab with 4' deep caps. This structure has been designed to have as little environmental and surface water impacts as possible. To avoid direct discharge of bridge stormwater into the receiving water, deck drains are not required for the proposed bridge. Storm water impacts to the creek have been minimized by utilizing grated inlets and pipes to collect bridge storm water which will be outlet on Class II rip-rap before entering the stream. The proposed rock plating in all four quadrants allowed 1.5:1 slopes to be incorporated, minimizing fill within the creek. Arppoximately 325 cubic yards of fill is required beneath the normal water surface elevation. At all four quadrants, there are no proposed roadside ditches with concentrated flows. Due to the nature of low impact bridge replacement, the increases in stormwater discharges (post vs pre condition) are insignificant and the existing ditches do not need to be modified. Therefore, additional stormwater measures are not required.	

Waterbody Information

Surface Water Body (1):	South Hyco Creek		**NCDWR Stream Index No.:**	22-58-(0.5)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply V (WS-V)	Class B		
		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)						

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet 1C-1 For Survey Control Sheet



VICINITY MAP

OFF-SITE DETOUR

TIP PROJECT: B-5327

CONTRACT:

R/W PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PERSON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5327	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
46041.1.1	BRZ-1300(13)	P.E.
46041.2.1		R.O.W.
46041.2.2		UTIL.

ENGLISH

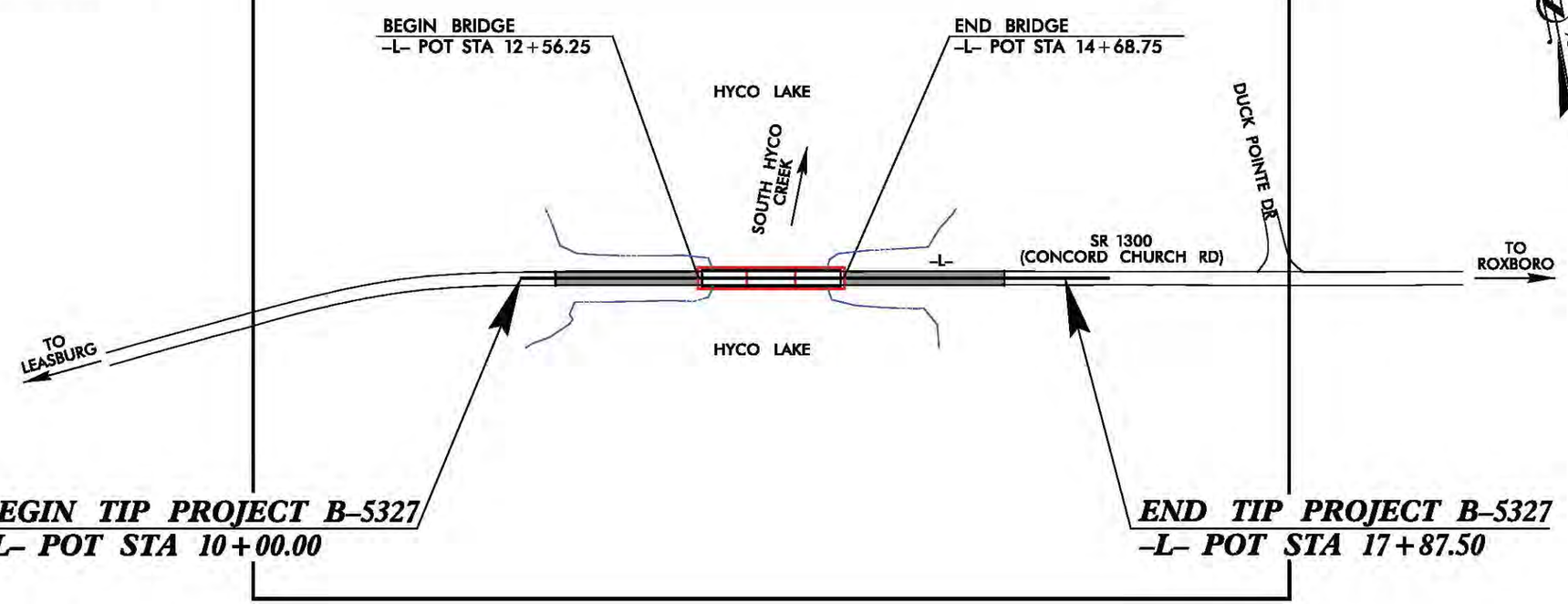
PERMIT DRAWING SHEET 1 OF 7

LOCATION: BRIDGE 49 OVER SOUTH HYCO CREEK ON SR 1300 (CONCORD CHURCH RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

WETLAND AND SURFACE WATER IMPACTS PERMIT

4



NAD 83/ NSRS 2007

NOTES:
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES
CLEARING ON THIS PROJECT SHALL BE PERFORMED.
TO THE LIMITS ESTABLISHED BY METHOD III .

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 2017 = 650
ADT 2037 = 1,260
K = 9 %
D = 60 %
T = 9 % *
V = 45 MPH
* (TTST =3% + DUAL 6%)
FUNC CLASS = LOCAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5327 = 0.109 MILES
LENGTH STRUCTURE TIP PROJECT B-5327 = 0.040 MILES
TOTAL LENGTH TIP PROJECT B-5327 = 0.149 MILES

Prepared for the North Carolina Department of Transportation In the office of:

HDR | ICA — 5121 Kingdom Way, Suite 100, Raleigh, NC 27607, NC License No. F-0258

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 23, 2016

LETTING DATE: SEPTEMBER 19, 2017

DENA C. SNEAD, PE — *PROJECT ENGINEER*

ALEXANDER D. SNIDER, PE — *PROJECT DESIGN ENGINEER*

TATIA L. WHITE, PE, PLS — *ROADWAY DESIGN – PROJECT DESIGN ENGINEER*

HYDRAULICS ENGINEER

SIGNATURE: _____ *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

2/2/2017
ICA ENGINEERING, INC.
R:\Hydraulics\PERMITS Environmental\Drawings\b5327 hyd prm wet lsh.dgn

8/17/99

HDR | ICA
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC Licenses No: P-0238

PROJECT REFERENCE NO.	SHEET NO.
B-5327	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

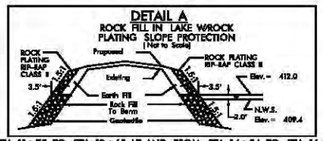
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 2 OF 7

ENGLISH

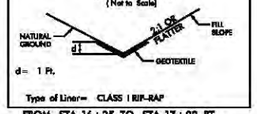
NAD 83/NSRS 2007

DETAIL A
ROCK FILL IN LAKE WROCK PLATING SLOPE PROTECTION
(Not to Scale)

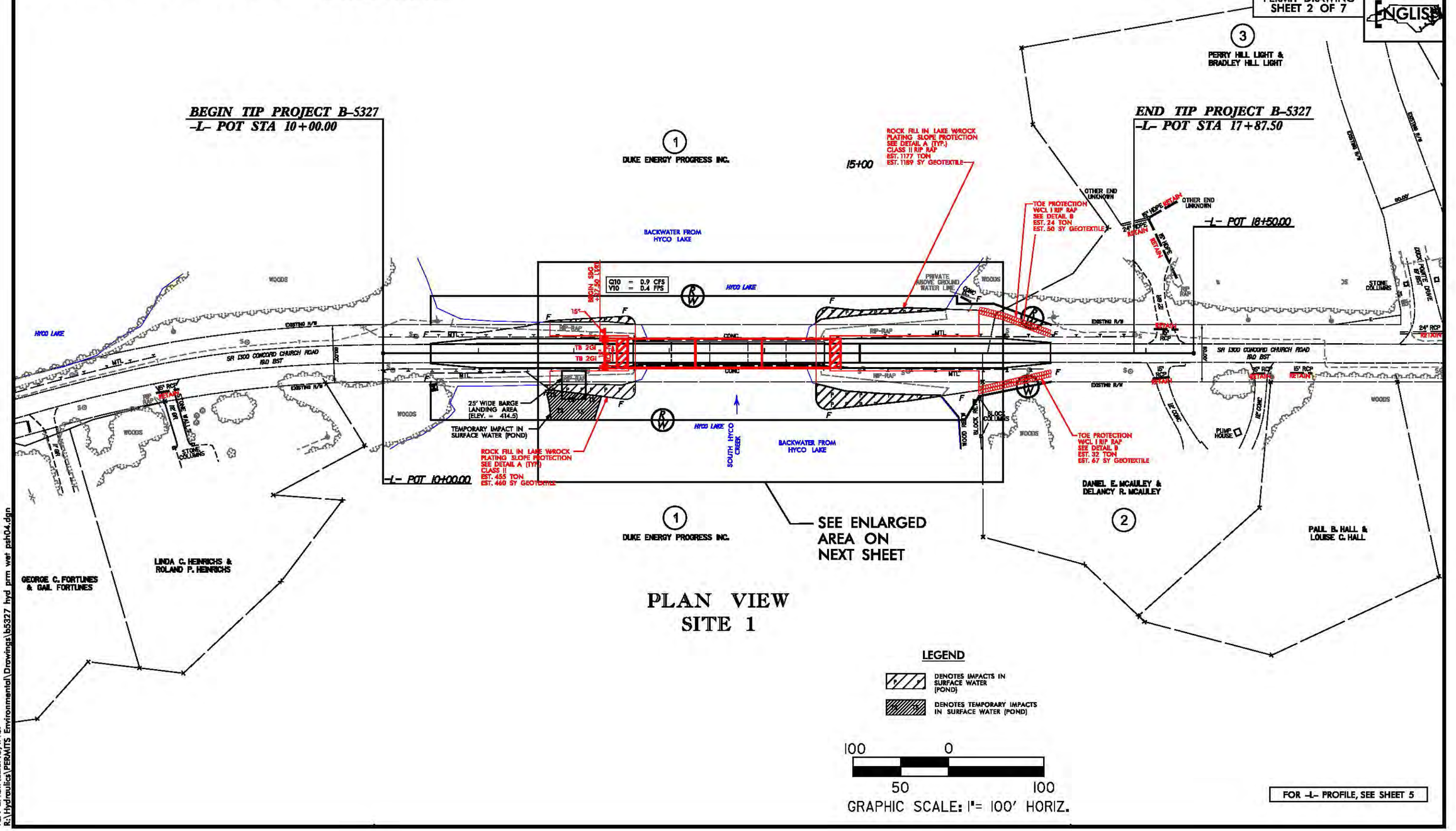


FROM STA. 11+75 TO STA. 12+65 LT AND FROM STA. 14+54 TO STA. 16+25 LT
FROM STA. 11+75 TO STA. 12+65 RT AND FROM STA. 14+54 TO STA. 16+25 RT

DETAIL B
TOE PROTECTION
(Not to Scale)



Type of Liner= CLASS I RIP-RAP
FROM STA. 16+25 TO STA. 17+00 RT.
FROM STA. 16+25 TO STA. 17+00 LT.



PLAN VIEW
SITE 1

LEGEND

DENOTES IMPACTS IN SURFACE WATER (POND)

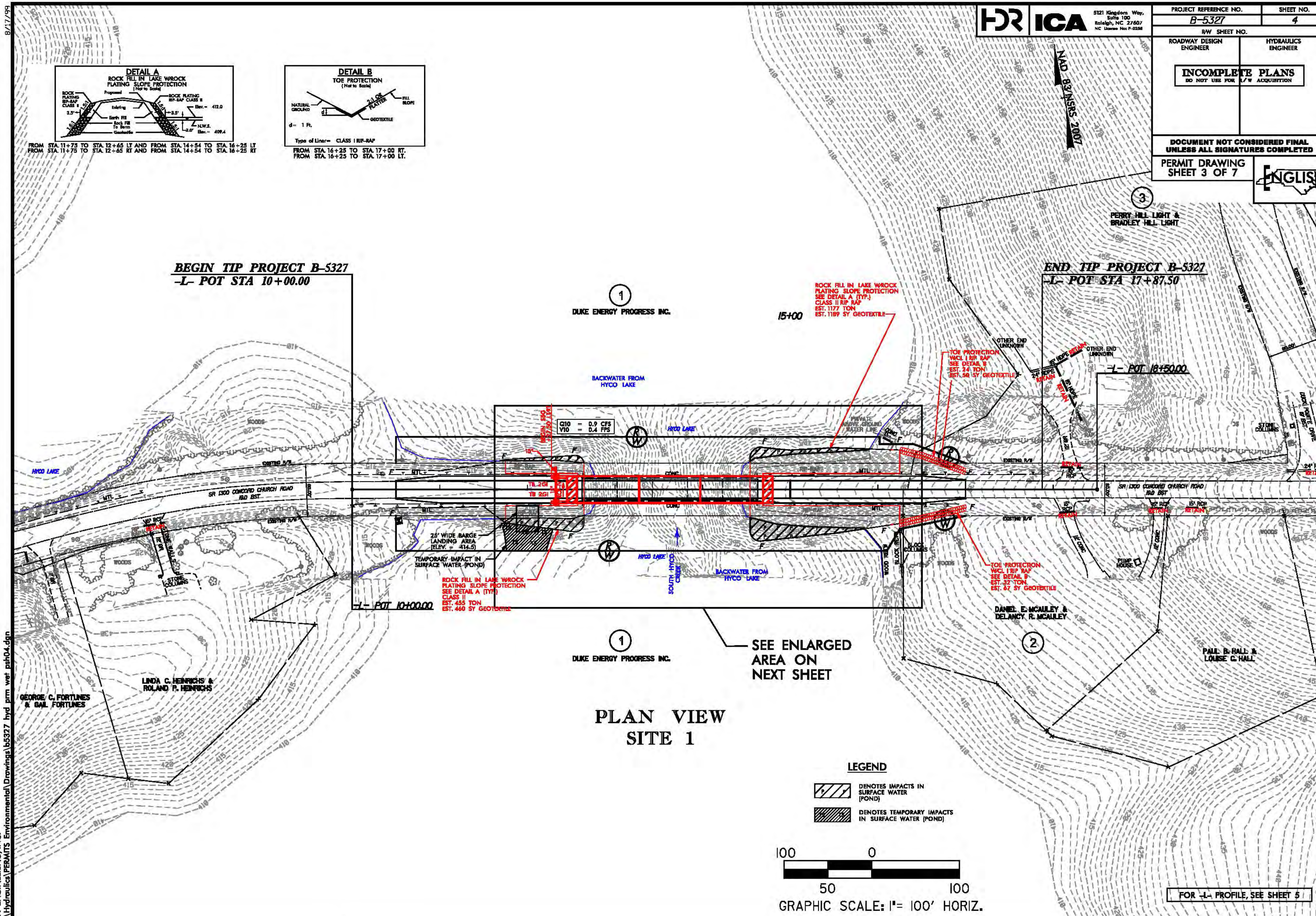
DENOTES TEMPORARY IMPACTS IN SURFACE WATER (POND)

100 0 50 100
GRAPHIC SCALE: 1"= 100' HORIZ.

FOR -L- PROFILE, SEE SHEET 5

2/2/2017
ICA ENGINEERING, INC.
R:\Hydraulics\PERMITS Environmental\Drawings\b5327 hyd prm wet psh04.dgn

8/17/99



2/2/2017
ICA ENGINEERING, INC.
R:\Hydraulics\PERMITS Environmental\Drawings\b5327_hyd_prm_wet_psh04.dgn

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
B-5327	4A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

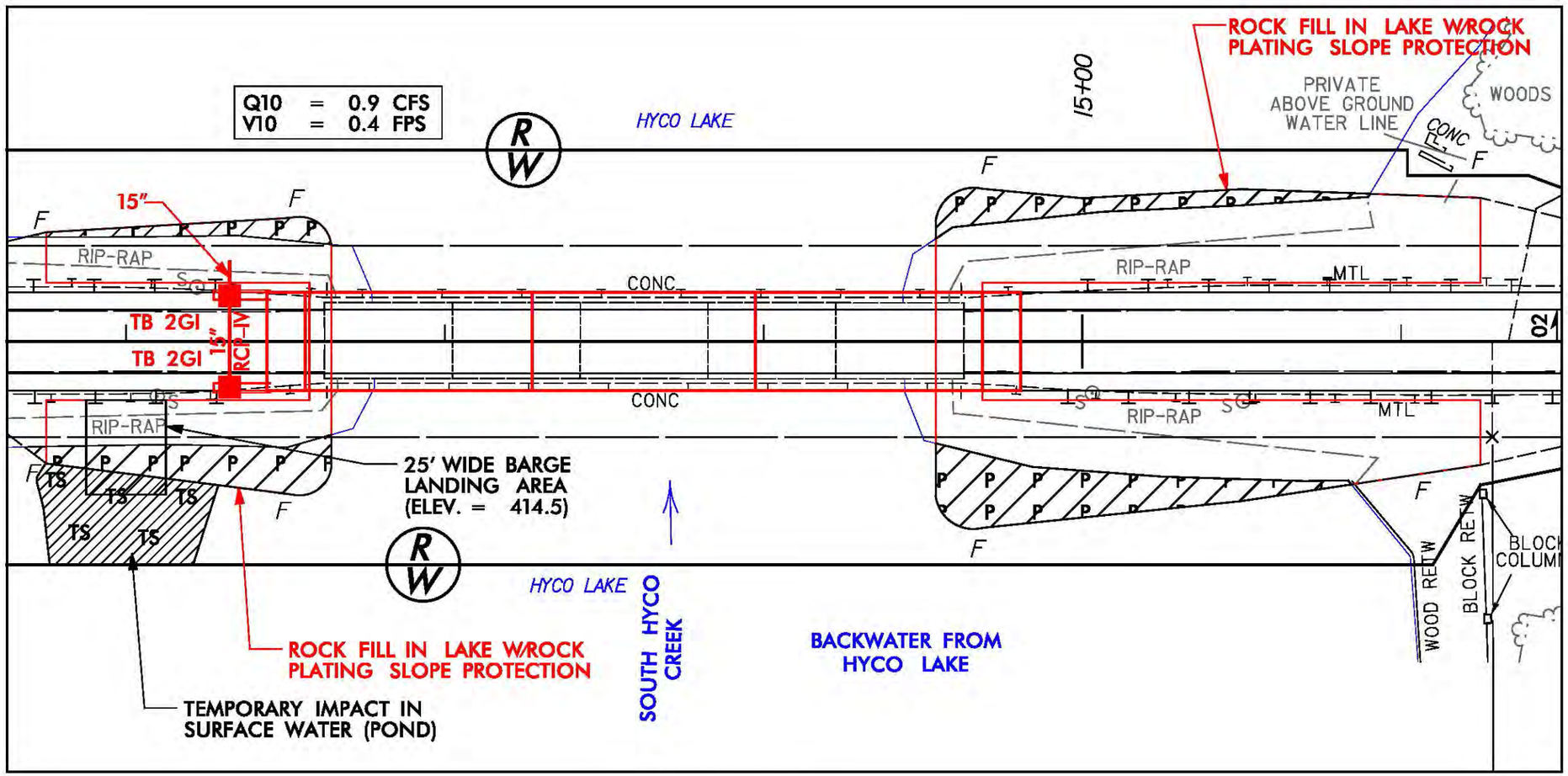
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 4 OF 7

ENGLISH

NAD 83/NSRS 2007



ENLARGED PLAN VIEW SITE 1

40 0 20 40
GRAPHIC SCALE: 1"= 40' HORIZ.

LEGEND

P P — DENOTES IMPACTS IN SURFACE WATER (POND)

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER (POND)

FOR -L- PROFILE, SEE SHEET 5

2/2/2017
ICA ENGINEERING, INC.
R:\Hydraulics\PERMITS Environmental\Drawings\b5327 hyd prm wet psh04A.dgn

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
B-5327	4A

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

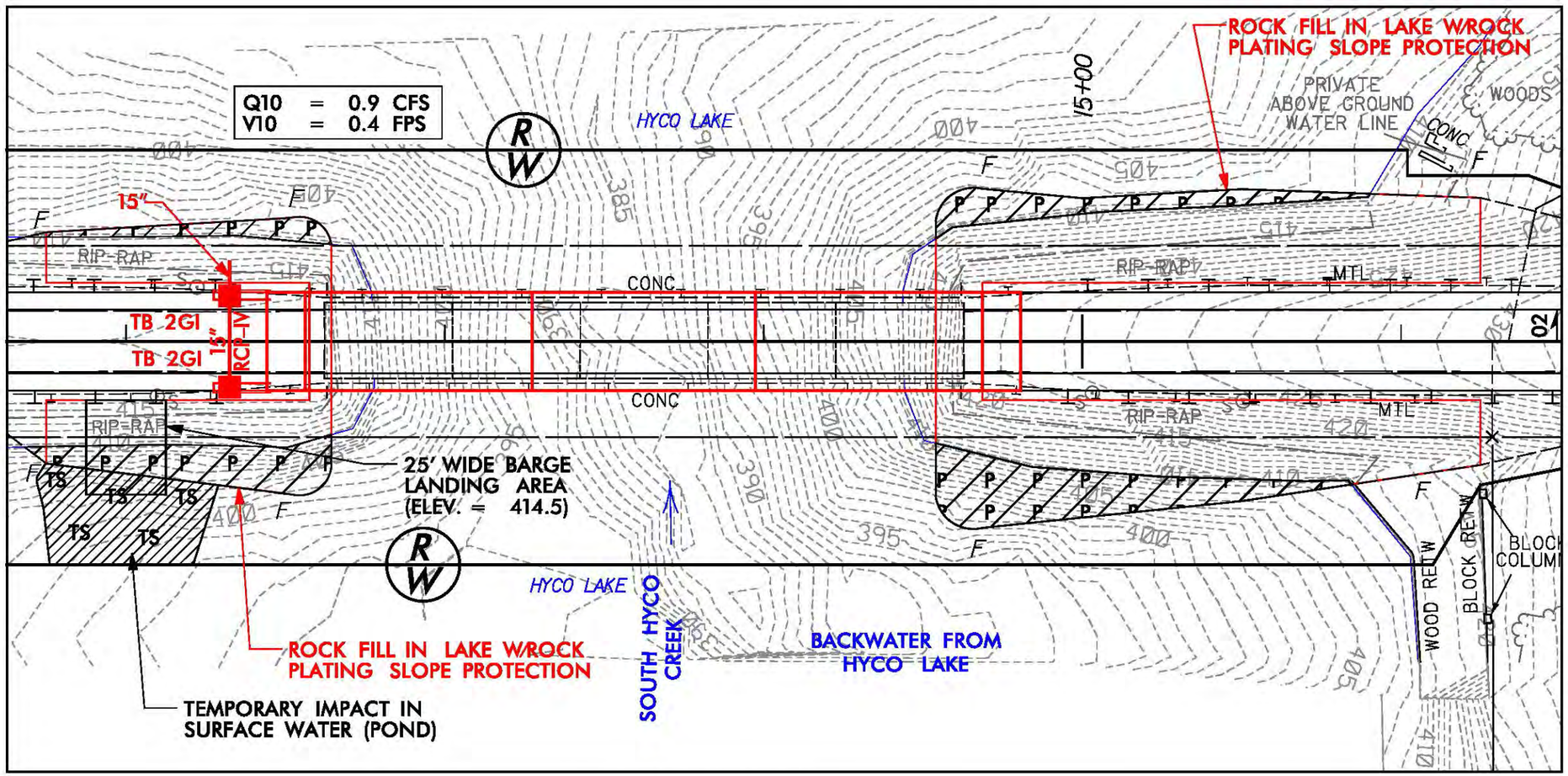
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 5 OF 7

ENGLISH

NAD 83/NSRS 2007



ENLARGED PLAN VIEW SITE 1

40 0 20 40

GRAPHIC SCALE: 1"= 40' HORIZ.

LEGEND

P P — DENOTES IMPACTS IN SURFACE WATER (POND)

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER (POND)

FOR -L- PROFILE, SEE SHEET 5

2/2/2017
ICA ENGINEERING, INC.
R:\Hydraulics\PERMITS Environmental\Drawings\b5327 hyd prm wet psh04A.dgn

5/14/99

HDR ICA
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC Licenses No: P-0238

PROJECT REFERENCE NO.	SHEET NO.
B-5327	5

ROADWAY DESIGN ENGINEER

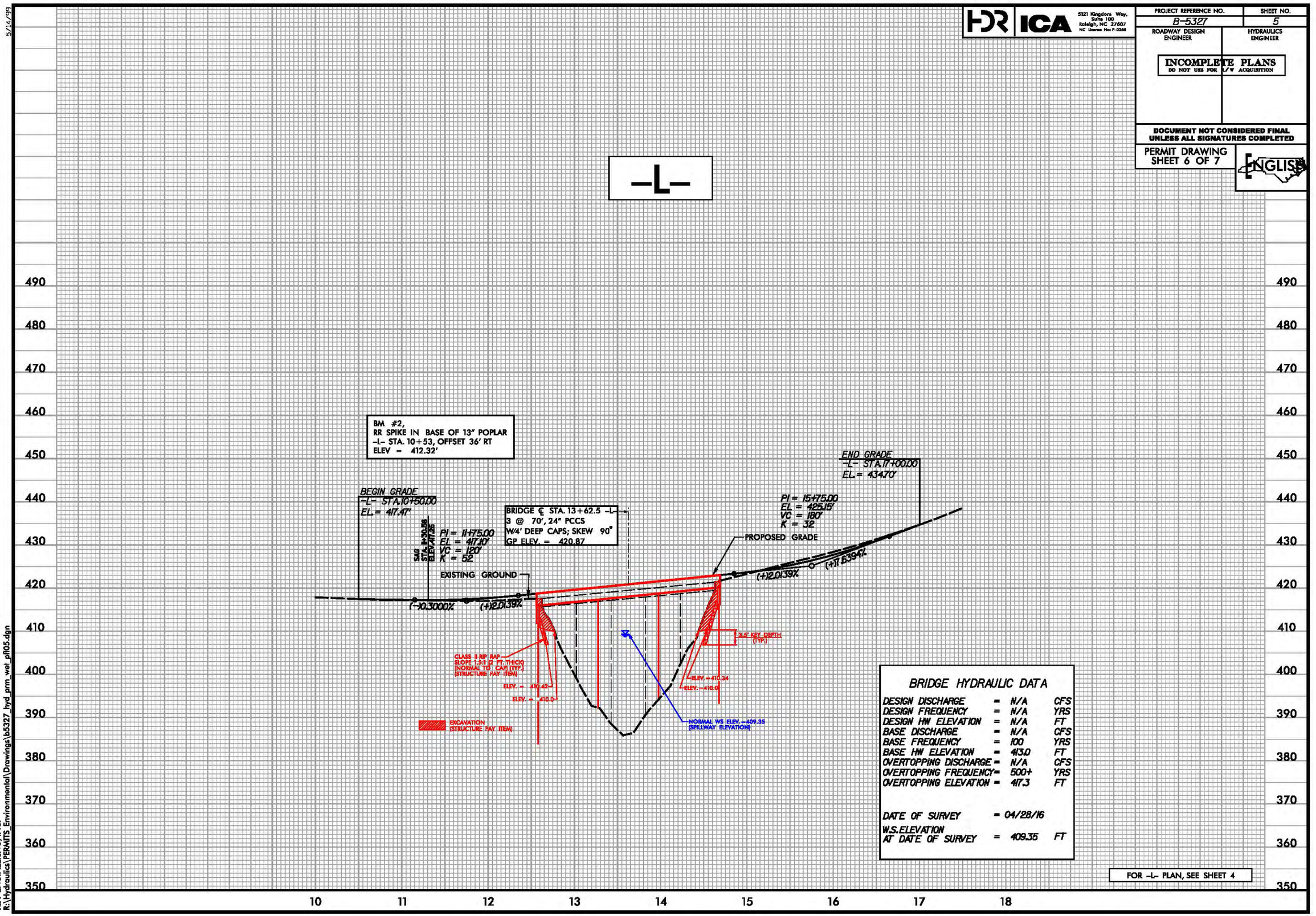
HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 6 OF 7

ENGLISH



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	N/A	CFS
DESIGN FREQUENCY	=	N/A	YRS
DESIGN HW ELEVATION	=	N/A	FT
BASE DISCHARGE	=	N/A	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	413.0	FT
OVERTOPPING DISCHARGE	=	N/A	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	417.3	FT
DATE OF SURVEY	=	04/28/16	
W.S.ELEVATION AT DATE OF SURVEY	=	409.35	FT

FOR –L– PLAN, SEE SHEET 4

2/2/2017
ICA ENGINEERING, INC.
R:\Hydraulics\PERMITS_Environmental\Drawings\b5327_hyd_prm_wer_pl05.dgn

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	FROM -L- STA. 11+75 TO STA. 12+65 LT. & RT.	ROCK EMBANKMENT & SLOPE PROTECTION						0.04				
1	FROM -L- STA. 14+54 TO STA. 16+25 LT. & RT.	ROCK EMBANKMENT & SLOPE PROTECTION						0.05				
1	FROM -L- STA. 11+27 TO STA. 12+27 LT.	25' BARGE LANDING AREA							0.03			
TOTALS*:								0.09	0.03	0	0	0

*Rounded totals are sum of actual impacts

NOTES: PER STRUCTURES, IMPACT DUE TO PROPOSED DRILLED PIERS EQUAL 58 SQ. FT.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
FEBRUARY 02, 2017
PERSON COUNTY
B-5327

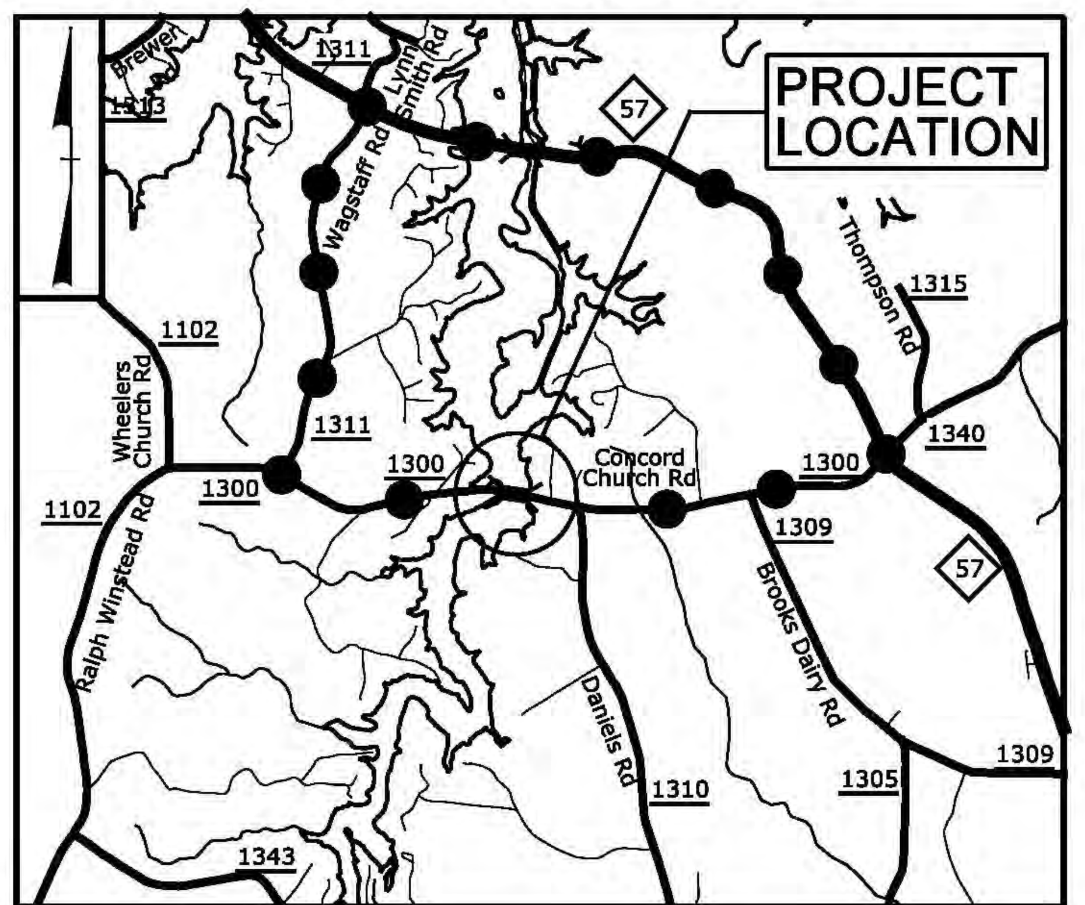
Revised 2013 10 24

09/08/99

TIP PROJECT: B-5327

CONTRACT:

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet 1C-1 For Survey Control Sheet



VICINITY MAP

●—●—●—●—● OFF-SITE DETOUR

R/W PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

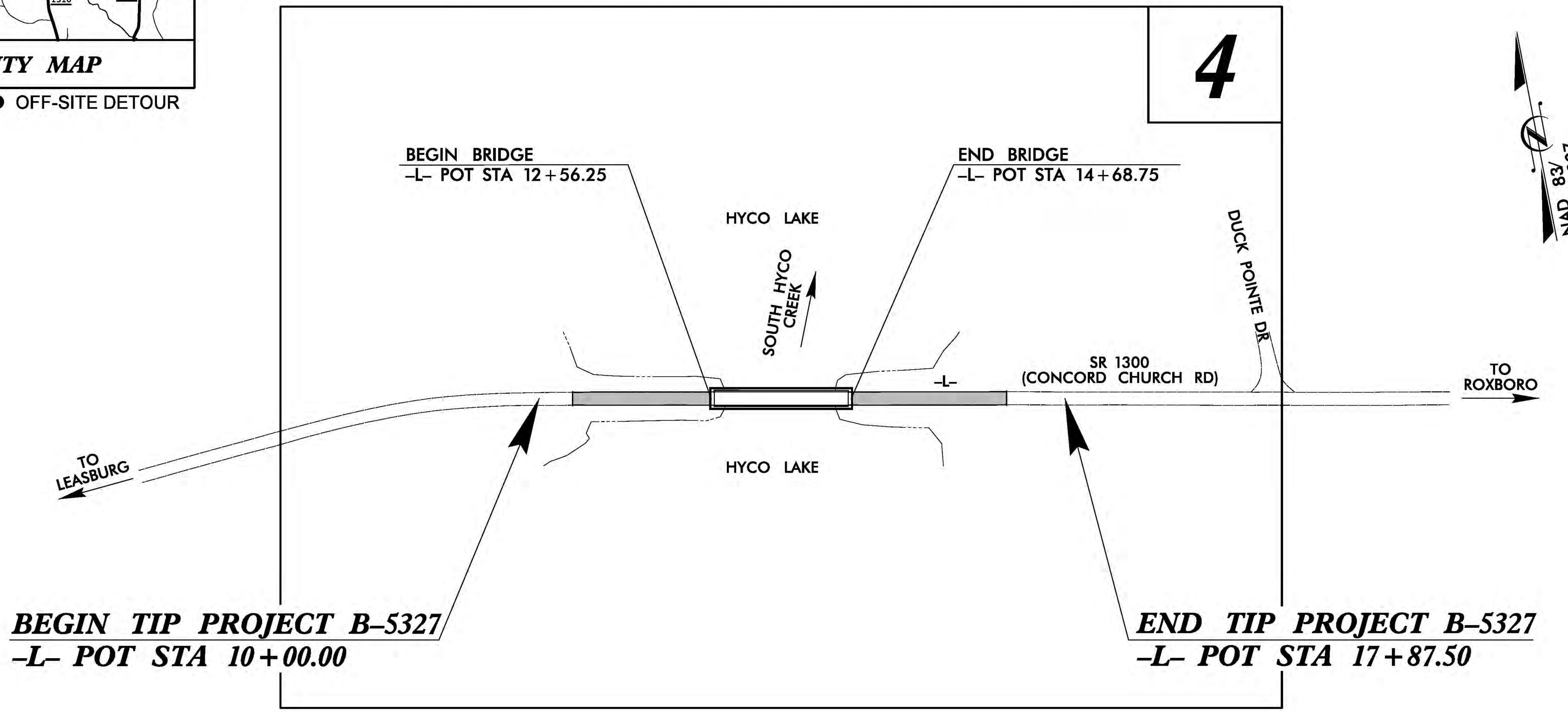
PERSON COUNTY

LOCATION: BRIDGE 49 OVER SOUTH HYCO CREEK ON SR 1300 (CONCORD CHURCH RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5327	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46041.1.1	BRZ-1300(13)	P.E.
46041.2.1		R.O.W.
46041.2.2		UTIL.



NOTES:
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES
CLEARING ON THIS PROJECT SHALL BE PERFORMED.
TO THE LIMITS ESTABLISHED BY METHOD III .

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2017 = 650
ADT 2037 = 1,260
K = 9 %
D = 60 %
T = 9 % *
V = 45 MPH
* (TTST = 3% + DUAL 6%)
FUNC CLASS = LOCAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5327 = 0.109 MILES
LENGTH STRUCTURE TIP PROJECT B-5327 = 0.040 MILES
TOTAL LENGTH TIP PROJECT B-5327 = 0.149 MILES

Prepared for the North Carolina Department of Transportation In the office of:

HDR | ICA 5121 Kingdom Way, Suite 100 Raleigh, NC 27607 NC License No: F-0258

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 23, 2016

LETTING DATE:
SEPTEMBER 19, 2017

DENA C. SNEAD, PE
PROJECT ENGINEER

ALEXANDER D. SNIDER, PE
PROJECT DESIGN ENGINEER

TATIA L. WHITE, PE, PLS
ROADWAY DESIGN - PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

9/23/2016
R:\Roadway\Proj\b5327_rdy_tsh.dgn
ICA ENGINEERING, INC.

PROJECT REFERENCE NO.	SHEET NO.
B-5327	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
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	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
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:

Baseline Control Point	
Existing Right of Way Marker	
Existing Right of Way Line	
Proposed Right of Way Line	R/W
Proposed Right of Way Line with Iron Pin and Cap Marker	R/W
Proposed Right of Way Line with Concrete or Granite R/W Marker	R/W
Proposed Control of Access Line with Concrete C/A Marker	C/A
Existing Control of Access	C/A
Proposed Control of Access	C/A
Existing Easement Line	E
Proposed Temporary Construction Easement	E
Proposed Temporary Drainage Easement	TDE
Proposed Permanent Drainage Easement	PDE
Proposed Permanent Drainage / Utility Easement	DUE
Proposed Permanent Utility Easement	PUE
Proposed Temporary Utility Easement	TUE
Proposed Aerial Utility Easement	AUE
Proposed Permanent Easement with Iron Pin and Cap Marker	

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	
Single Shrub	
Hedge	
Woods Line	
Orchard	
Vineyard	Vineyard

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	S
Utility Unknown U/G Line LOS B (S.U.E.*)	?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.

04/06/15

9/12/2016
R:\Roadway\Proj\b5327_rdy_tsh.dgn
ICA ENGINEERING, INC.

HDR | ICA
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

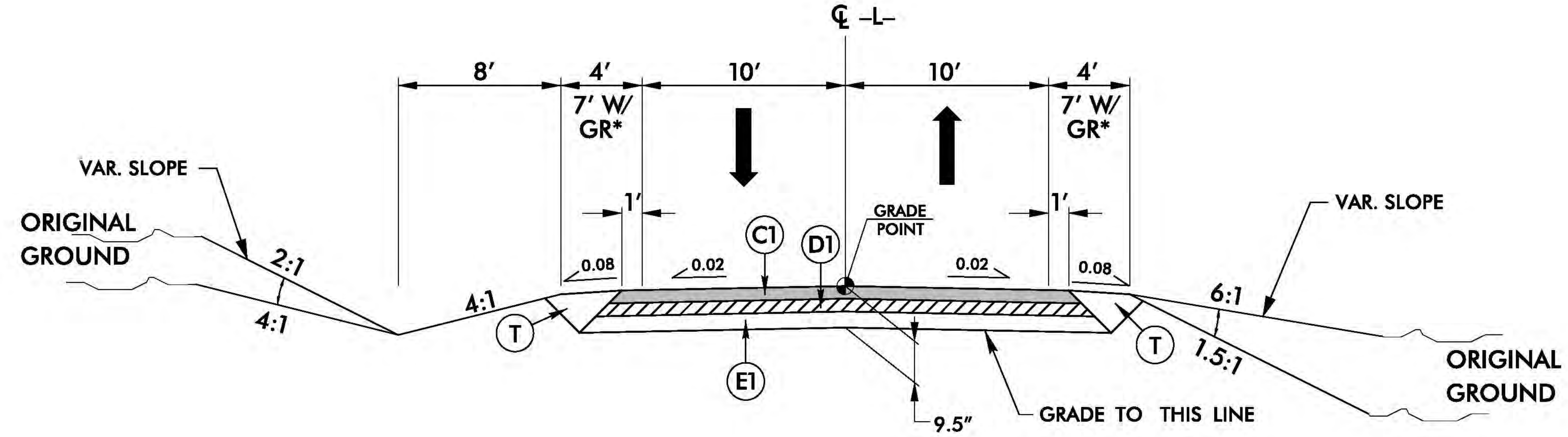
PROJECT REFERENCE NO.	SHEET NO.
B-5327	2A-1
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER INCH. TO BE PLACED IN LAYERS NOT TO EXCEED 4" OR LESS THAN 2.5"IN DEPTH.
E1	PROP. APPROX 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER INCH. TO BE PLACED IN LAYERS NOT TO EXCEED 5.5" OR LESS THAN 3"IN DEPTH.
J1	AGGREGATE BASE COURSE
R1	SHOULDER BERM GUTTER (SEE DETAIL SHEET 2C-1)
T	EARTH MATERIAL
W	WEDGING (SEE DETAIL SHOWING METHOD OF WEDGING)

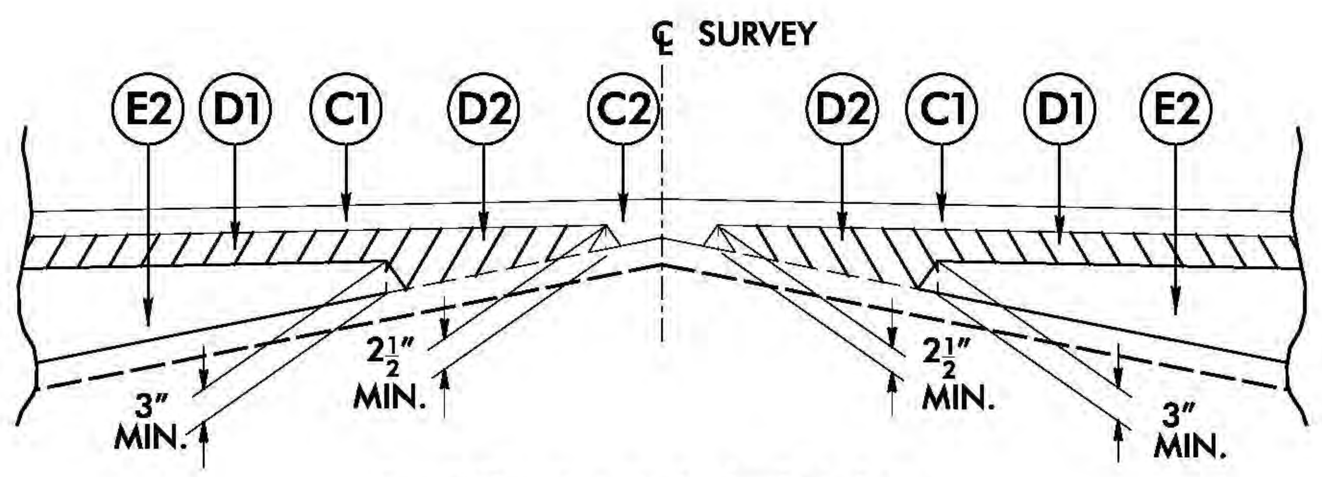
NOTE: ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



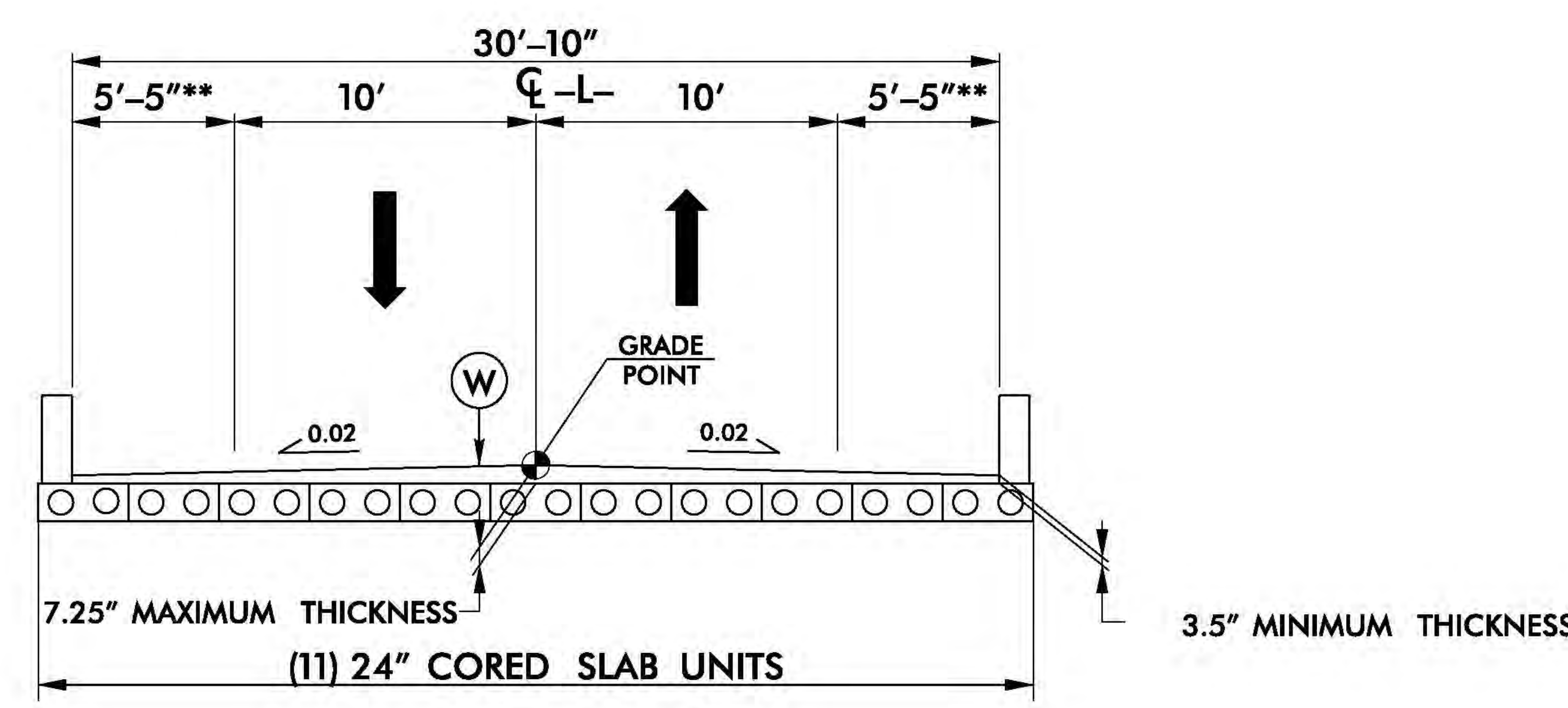
TYPICAL SECTION NO. 1

-L- CONCORD CHURCH RD

USE TYPICAL SECTION NO. 1 FROM:
-L- STA 10+50.00 TO -L- STA 12+56.25
-L- STA 14+68.75 TO -L- STA 17+00.00
*PAVE TO FACE OF GUARDRAIL



Detail Showing Method of Wedging
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2

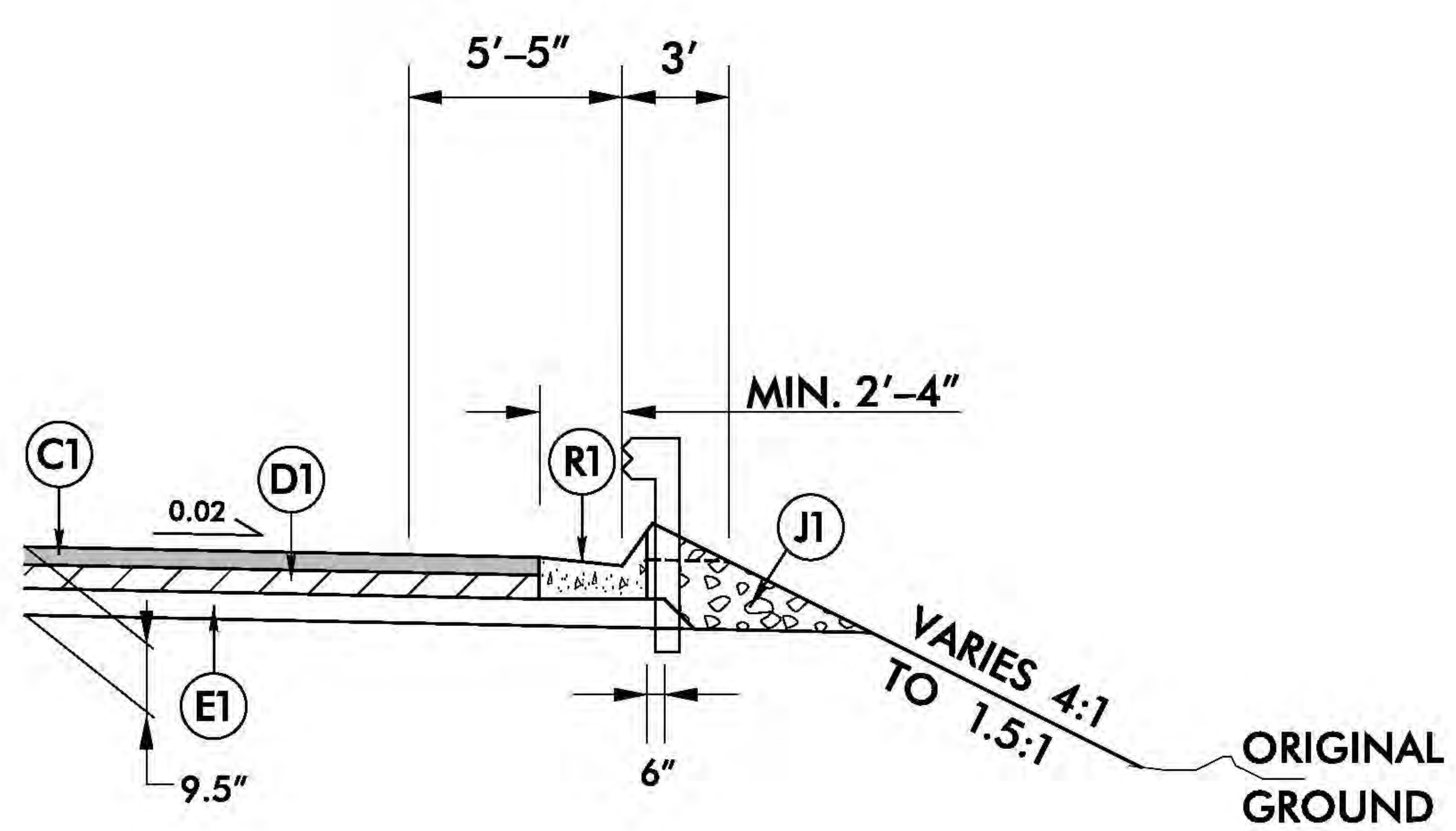


TYPICAL SECTION NO. 2

-L- CONCORD CHURCH RD

USE TYPICAL SECTION NO. 2 FROM:
-L- STA 12+56.25 (BEGIN BRIDGE) TO -L- STA 14+68.75 (END BRIDGE)

**ADDITIONAL WIDTH REQUIRED FOR HYDRAULIC SPREAD



SHOULDER BERM GUTTER
PARTIAL TYPICAL SECTION NO. 1A

USE PARTIAL TYPICAL SECTION NO. 1A
IN CONJUNCTION WITH TYPICAL
SECTION NO. 1 AS FOLLOWS:
-L- STA 12+27.50 TO -L- STA 12+45.25 LT & RT

HDR ICA	5121 Kingdom Way, Suite 100 Raleigh, NC 27607 NC License No: F-0258

PROJECT REFERENCE NO.	SHEET NO.
B-5327	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

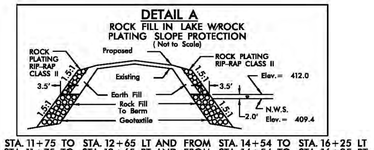
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2007

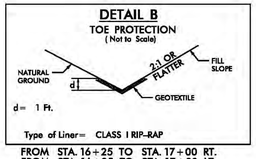
8/17/99

REVISIONS

12/01/16 – R/W REVISIONS: ADJUSTED THE STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 1, 2, AND 3 – ADS



FROM STA. 11+75 TO STA. 12+65 LT AND FROM STA. 14+54 TO STA. 16+25 LT
FROM STA. 11+75 TO STA. 12+65 RT AND FROM STA. 14+54 TO STA. 16+25 RT



FROM STA. 16+25 TO STA. 17+00 RT.
FROM STA. 16+25 TO STA. 17+00 LT.

BEGIN TIP PROJECT B-5327
-L- POT STA 10+00.00

END TIP PROJECT B-5327
-L- POT STA 17+87.50

BEGIN BRIDGE
-L- POT STA 12+56.25

END BRIDGE
-L- POT STA 14+68.75

NOTE: COMPLETELY REMOVE EXISTING CONCRETE PIERS

EXCAVATION & CLASS II RIP RAP UNDER BRIDGE ARE STRUCTURE PAY ITEMS

ROCK FILL IN LAKE WROCK PLATING SLOPE PROTECTION SEE DETAIL A (TYP.) CLASS II RIP RAP EST. 1177 TON EST. 1189 SY GEOTEXTILE

ROCK FILL IN LAKE WROCK PLATING SLOPE PROTECTION SEE DETAIL A (TYP.) CLASS II EST. 455 TON EST. 460 SY GEOTEXTILE

TOE PROTECTION W/CL I RIP RAP SEE DETAIL B EST. 24 TON EST. 50 SY GEOTEXTILE

TOE PROTECTION W/CL I RIP RAP SEE DETAIL B EST. 32 TON EST. 67 SY GEOTEXTILE

DO NOT DISTURB WATER LINE

DO NOT DISTURB BLOCK WALL

1 DUKE ENERGY PROGRESS INC. DB 902 PG 276

1 DUKE ENERGY PROGRESS INC. DB 902 PG 276

2 DANIEL E. MCAULEY & DELANCY R. MCAULEY DB 578 PG 177

3 PERRY HILL LIGHT & BRADLEY HILL LIGHT DB 784 PG 163

PAUL B. HALL & LOUISE C. HALL DB 632 PG 449

LINDA C. HEINRICHS & ROLAND P. HEINRICHS DB 832 PG 357

GEORGE C. FORTUNES & GAIL FORTUNES DB 856 PG 852

HYCO LAKE

SR 1300 CONCORD CHURCH ROAD 19.0 BST

EXISTING R/W

GRAU 350 TL-2

TYPE-III

CONC

WOODS

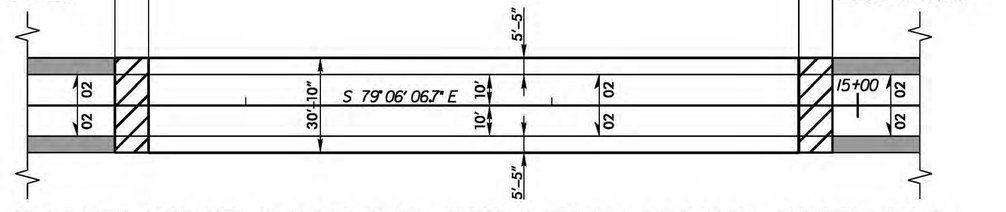
STONE COLUMNS

BLOCK COLUMNS

PUMP HOUSE

DUCK POINTE DRIVE

10'X70' SIGHT EASEMENT



PAVEMENT–BRIDGE RELATIONSHIP SKETCH

FOR -L- PROFILE, SEE SHEET 5

HDR | ICA
5121 Kingdom Way,
Suite 100
Raleigh, NC 27607
NC License No: F-0258

PROJECT REFERENCE NO.	SHEET NO.
B-5327	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–L–

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	N/A	CFS
DESIGN FREQUENCY	=	N/A	YRS
DESIGN HW ELEVATION	=	N/A	FT
BASE DISCHARGE	=	N/A	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	413.0	FT
OVERTOPPING DISCHARGE	=	N/A	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	417.3	FT
DATE OF SURVEY	=	04/28/16	
W.S.ELEVATION AT DATE OF SURVEY	=	409.35	FT

FOR –L– PLAN, SEE SHEET 4

5/14/99
9/12/2016
R:\Roadway\Proj\b5327_rdy_pf105.dgn
ICA ENGINEERING, INC.