



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
 FOR NCDOT PROJECTS



(Version 2.07; Released October 2016)

WBS Element: 17BP.2.R.88 TIP No.: County(ies): Beaufort Page 1 of 3

General Project Information

WBS Element:	17BP.2.R.88	TIP Number:		Project Type:	Bridge Replacement	Date:	7/17/2018
NCDOT Contact:	Robert T. Turnbull, Environmental Services, Inc.		Contractor / Designer:	HNTB North Carolina, P.C. / James A. Byrd, PE			
Address:	4901 Trademark Dr. Raleigh, NC 27610		Address:	343 E. Six Forks Road Suite 200 Raleigh, NC 27609			
	Phone:	(919) 212-1760		Phone:	(919) 424-0437		
	Email:	rturnbull@esinc.cc		Email:	jabyrd@hntb.com		
City/Town:	Bath		County(ies):	Beaufort			
River Basin(s):	Tar-Pamlico		CAMA County?	Yes			
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	0.14 mi.	Surrounding Land Use:	Rural Residential and Agriculture					
	Proposed Project		Existing Site					
Project Built-Upon Area (ac.)	0.8	ac.	0.4	ac.				
Typical Cross Section Description:	2-11' asphalt paved lanes with 2' paved shoulders, 4' grass shoulders.			2-10' asphalt paved lanes with grass shoulders. Wetlands are present in the northwest, northeast, and southeast quadrants.				
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	720	Year:	2035	Existing:	360	Year:	2015
General Project Narrative: (Description of Minimization of Water Quality Impacts)	<p>State project 17BP.2.R.88 involves the replacement of Beaufort County Bridge #060135 on SR 1742 (Post Rd.) over Rowland Creek. The existing bridge consists of 1 @ 20'-6", 1 @ 30'-0", and 1 @ 20'-6" spans with prestressed concrete channels on timber joists, caps, and piles. It is to be replaced with a 1 @ 70'-0", 24" cored slab bridge at the same location.</p> <p>The project includes 0.07 miles of roadway improvements on the south end of the bridge, and 0.06 miles on the north end of the bridge. In accordance with the Tar-Pamlico River Buffer Regulations, the proposed bridge does not contain deck drains. All stormwater from the bridge and approaches will be collected by a storm drain system at -L- station 15+83 on both sides of the road, and is to be discharged into the proposed ditch on the northeast quadrant. Class 'B' rip rap pad was specified at the drainage outlet to lower discharge velocity and minimize impacts.</p> <p>The roadside ditch in the northeast quadrant will be impacted. The redesigned ditch will tie into Rowland Creek and match existing drainage patterns. The ditch will be a special lateral V-ditch with 3:1 slopes.</p>							

Waterbody Information

Surface Water Body (1):	Rowland Creek		NCDWR Stream Index No.:	29-19-2				
NCDWR Surface Water Classification for Water Body	Primary Classification:	Class C						
	Supplemental Classification:	Nutrient Sensitive Waters (NSW)						
Other Stream Classification:								
Impairments:								
Aquatic T&E Species?	Comments:							
NRTR Stream ID:							Buffer Rules in Effect:	Tar-Pamlico
Project Includes Bridge Spanning Water Body?	Yes	Deck Drains Discharge Over Buffer?	No	Dissipator Pads Provided in Buffer?				No
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)								



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County(ies): Beaufort

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Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
4	-L- Sta. 15+17.50 RT 35.51168, -76.79233	(1)Rowland Creek	0.0	3.0	3.0	0.9	90	131	1.18%	2.4	1.7	3.1	1.8	No	No

Additional Comments



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WBS Element: TIP No.: County(ies): Beaufort Page 3 of 3

Preformed Scour Holes and Energy Dissipators

Table with 11 columns: Sheet No., Station & Coordinates (Road and Non Road Projects), Surface Water Body, Energy Dissipator Type, Riprap Type, Drainage Area (ac), Conveyance Structure, Pipe/Structure Dimensions (in), Q10 (cfs), V10 (fps), BMP Associated w/ Buffer Rules?. Row 1 contains data for Sheet No. 4, Station -L- Sta. 15+83, Surface Water Body (1)Rowland Creek, Energy Dissipator Type Riprap Energy Dissipator Basin, Riprap Type Class 'B', Drainage Area 0.9, Conveyance Structure Pipe, Pipe/Structure Dimensions 15" RCP, Q10 0.5, V10 0.5, BMP Associated w/ Buffer Rules? No.

Additional Comments

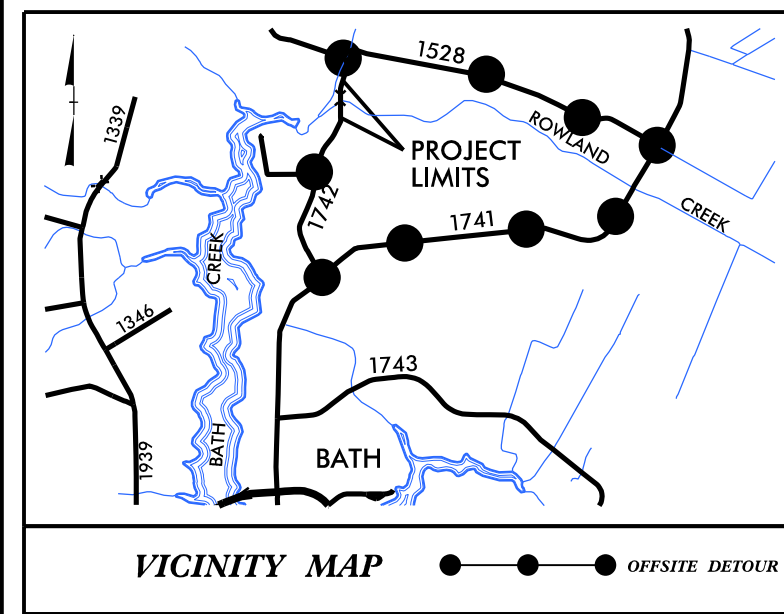
Empty large rectangular area for additional comments.

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

09.08/99

CONTRACT: TIP PROJECT: 17BP.2.R.88

See Sheet 1A For Index of Sheets
See Sheet 1B for Symbology Sheet



APPROVED RW PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
BEAUFORT COUNTY

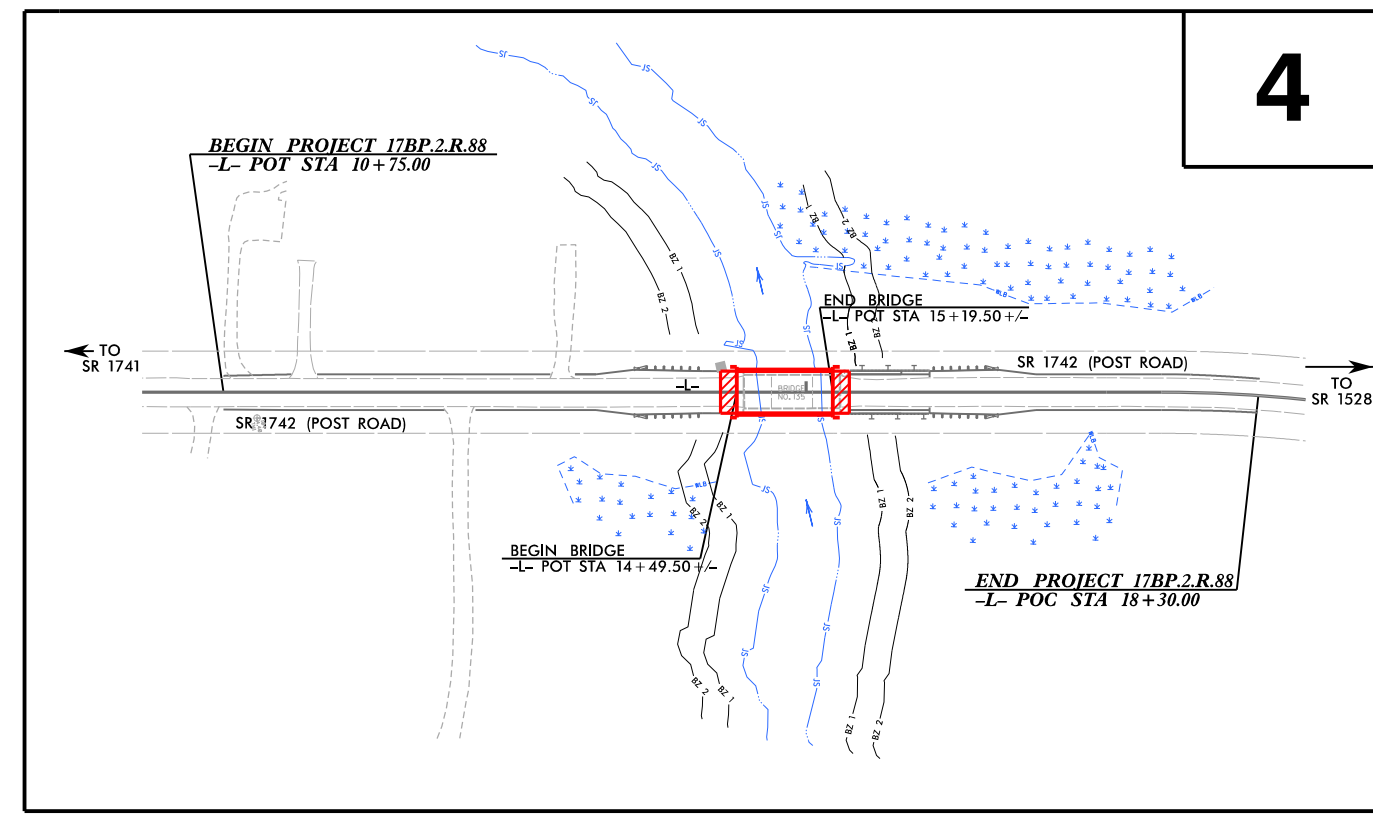
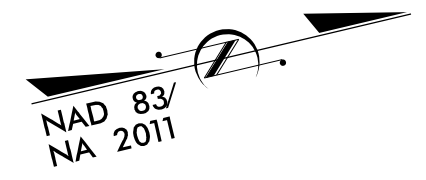
**LOCATION: REPLACE BRIDGE NO. 135 OVER ROWLAND CREEK
ON SR 1742 (POST ROAD)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

WETLAND AND SURFACE WATER IMPACTS PERMIT

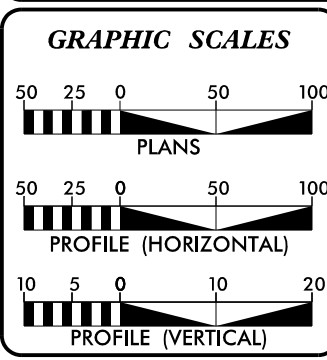
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.2.R.88	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.2.R.88		PE	
17BP.2.R.88		RW/UTIL	

**PERMIT DRAWING
SHEET 1 OF 7**



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

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2015	=	360
ADT 2035	=	720
K	=	10 %
D	=	60 %
T	=	4 % *
V	=	60 MPH
* TTST = 1% DUAL 3%		
FUNC CLASS = LOCAL		
SUB-REGIONAL TIER		

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 17BP.2.R.88	=	0.130 MILES
LENGTH OF STRUCTURE PROJECT 17BP.2.R.88	=	0.013 MILES
TOTAL LENGTH OF PROJECT 17BP.2.R.88	=	0.143 MILES

Prepared in the Office of:

HNTB
2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 29, 2018

LETTING DATE: JANUARY 9, 2019

DOUGLAS M. WHEATLEY, PE
PROJECT ENGINEER

ROY H. TELLIER, PE
PROJECT DESIGN ENGINEER

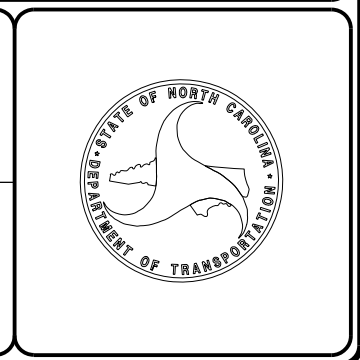
HEATHER C. LANE, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.



7/17/2018
17BP.2.R.88_hyd_prm_tsh.dgn
HNTB

8/17/99

NAD 83/NA 2011

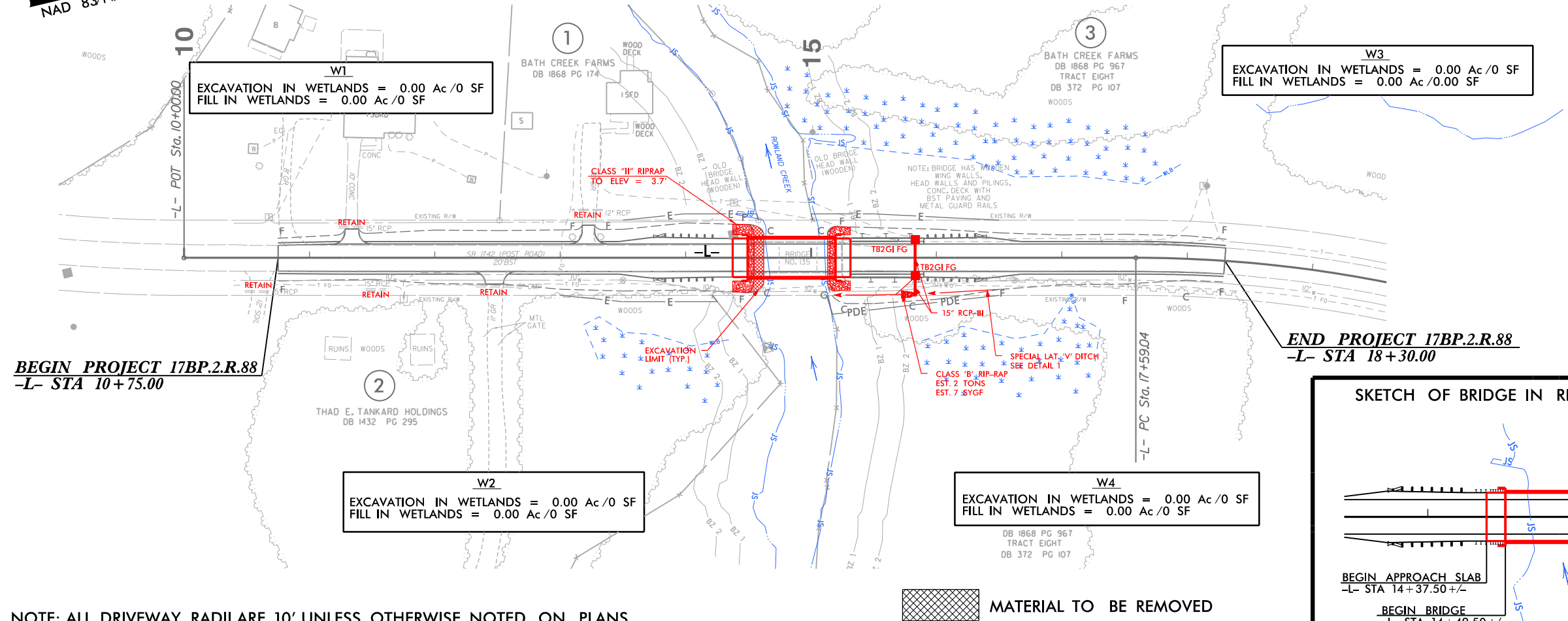
WETLAND & STREAM IMPACTS

HNTB HNTB NORTH CAROLINA, P.C.
343 E. SIX FORKS ROAD, SUITE 200
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO: C-1554

PROJECT REFERENCE NO. 17BP.2.R.88	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

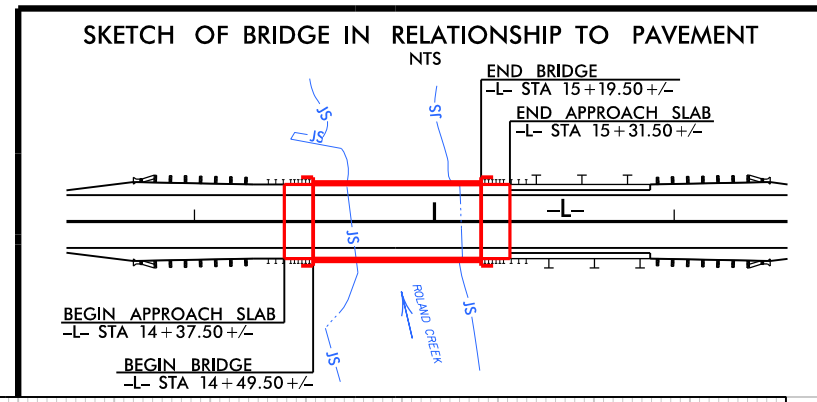
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 2 OF 7



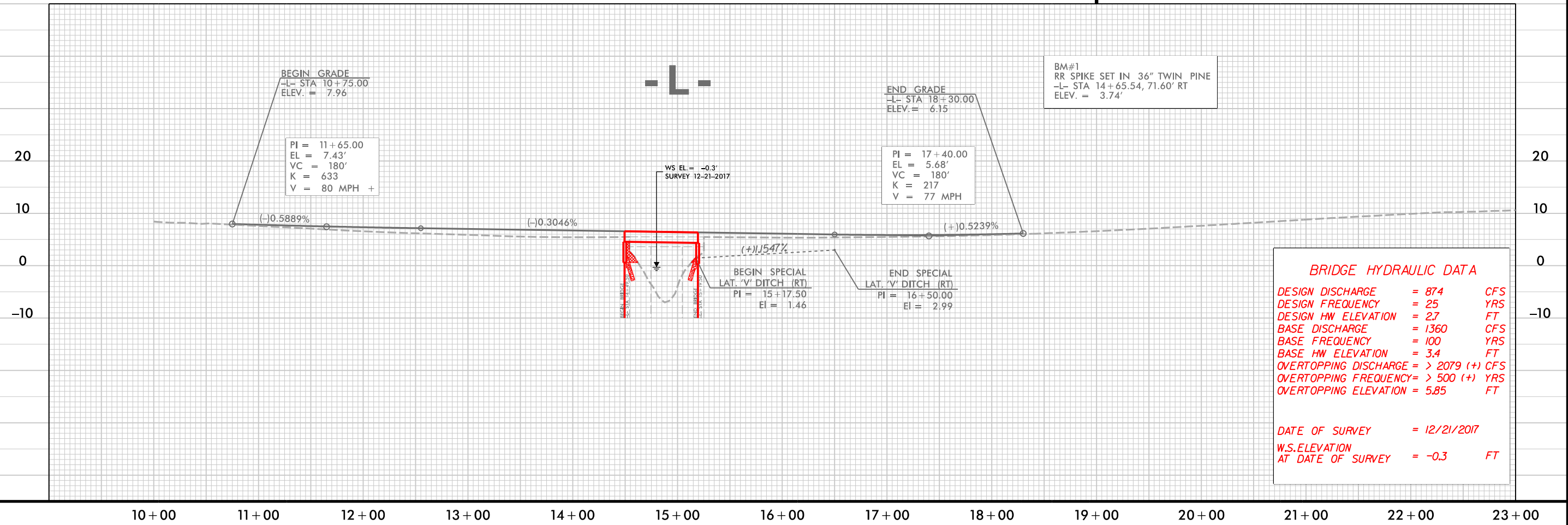
BEGIN PROJECT 17BP.2.R.88
-L- STA 10+75.00

END PROJECT 17BP.2.R.88
-L- STA 18+30.00



NOTE: ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED ON PLANS.

MATERIAL TO BE REMOVED



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 874	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2.7	FT
BASE DISCHARGE	= 1360	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 3.4	FT
OVERTOPPING DISCHARGE	= > 2079 (+)	CFS
OVERTOPPING FREQUENCY	= > 500 (+)	YRS
OVERTOPPING ELEVATION	= 5.85	FT

DATE OF SURVEY = 12/21/2017
W.S.ELEVATION AT DATE OF SURVEY = -0.3 FT

7/17/2018 2.R.88_hyd_perm_psh4.dgn

8/17/99

NAD 83/NA 2011

WETLAND & STREAM IMPACTS

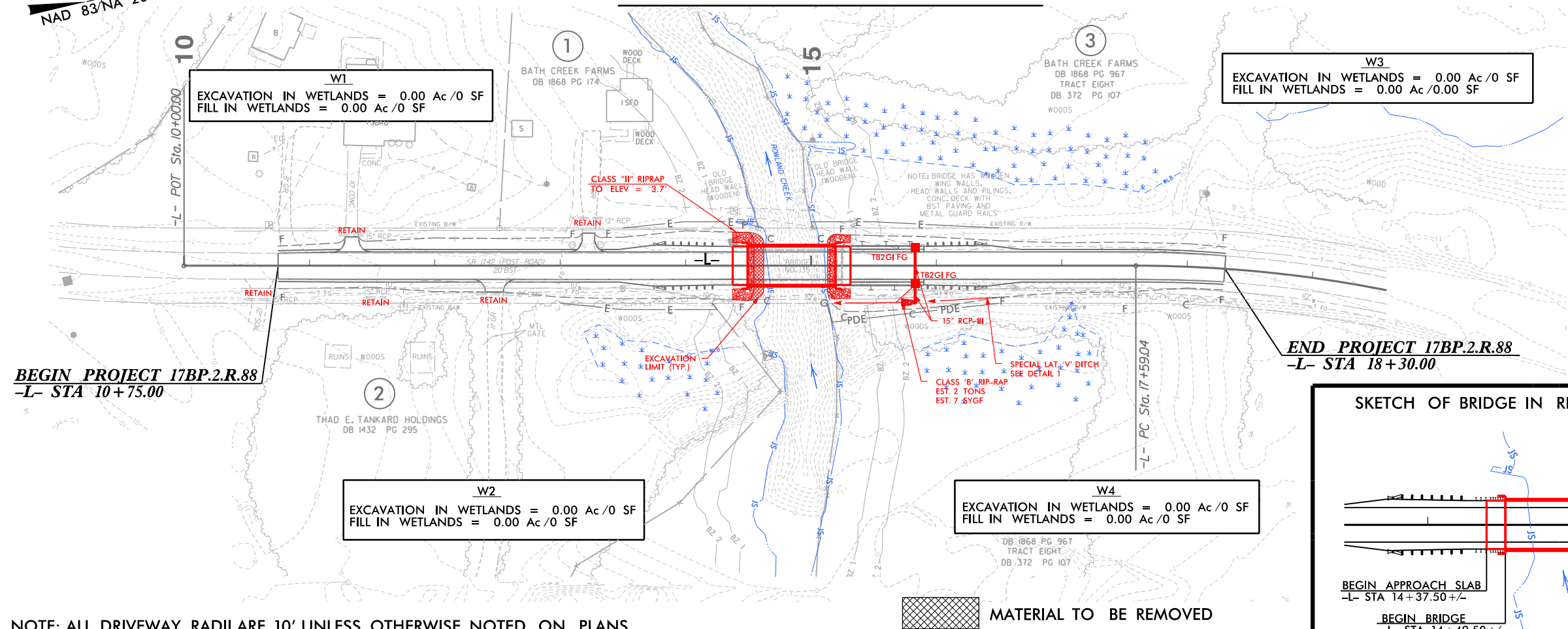
HNTB HNTB NORTH CAROLINA, P.C.
343 E. SIX FORKS ROAD, SUITE 200
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO: C-1554

PROJECT REFERENCE NO.	SHEET NO.
17BP.2.R.88	4

RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

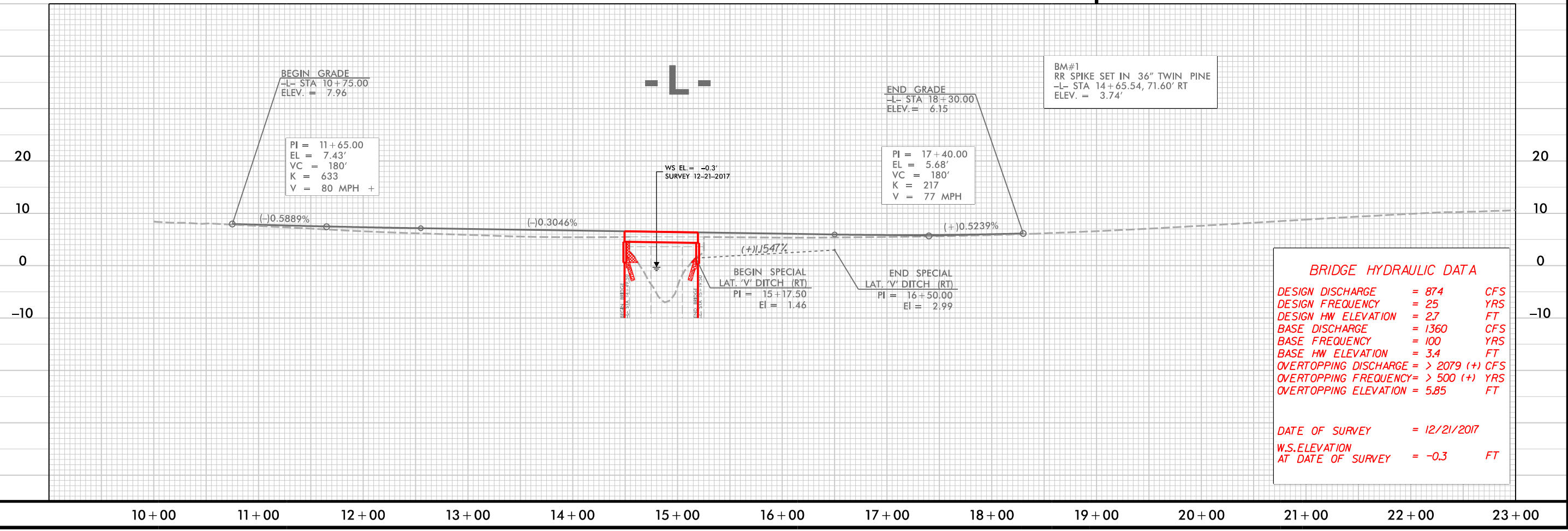
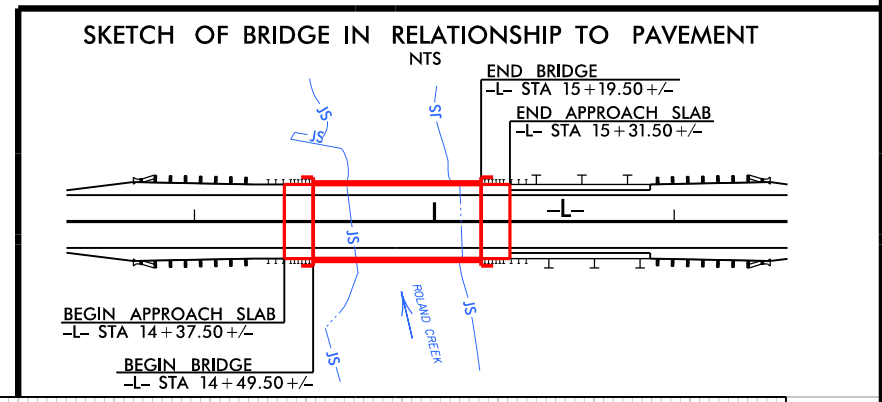
PERMIT DRAWING
SHEET 3 OF 7



BEGIN PROJECT 17BP.2.R.88
-L- STA 10+75.00

END PROJECT 17BP.2.R.88
-L- STA 18+30.00

NOTE: ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED ON PLANS.



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 874	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2.7	FT
BASE DISCHARGE	= 1360	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 3.4	FT
OVERTOPPING DISCHARGE	= > 2079 (+)	CFS
OVERTOPPING FREQUENCY	= > 500 (+)	YRS
OVERTOPPING ELEVATION	= 5.85	FT

DATE OF SURVEY = 12/21/2017
W.S.ELEVATION AT DATE OF SURVEY = -0.3 FT

7/17/2018 2.R.88_hyd_perm_psh4.dgn

8/17/99
7/17/2018
17BP.2.R.88_hyd_buf.f_psh4.dgn

NAD 83/NA 2011

BUFFER IMPACTS

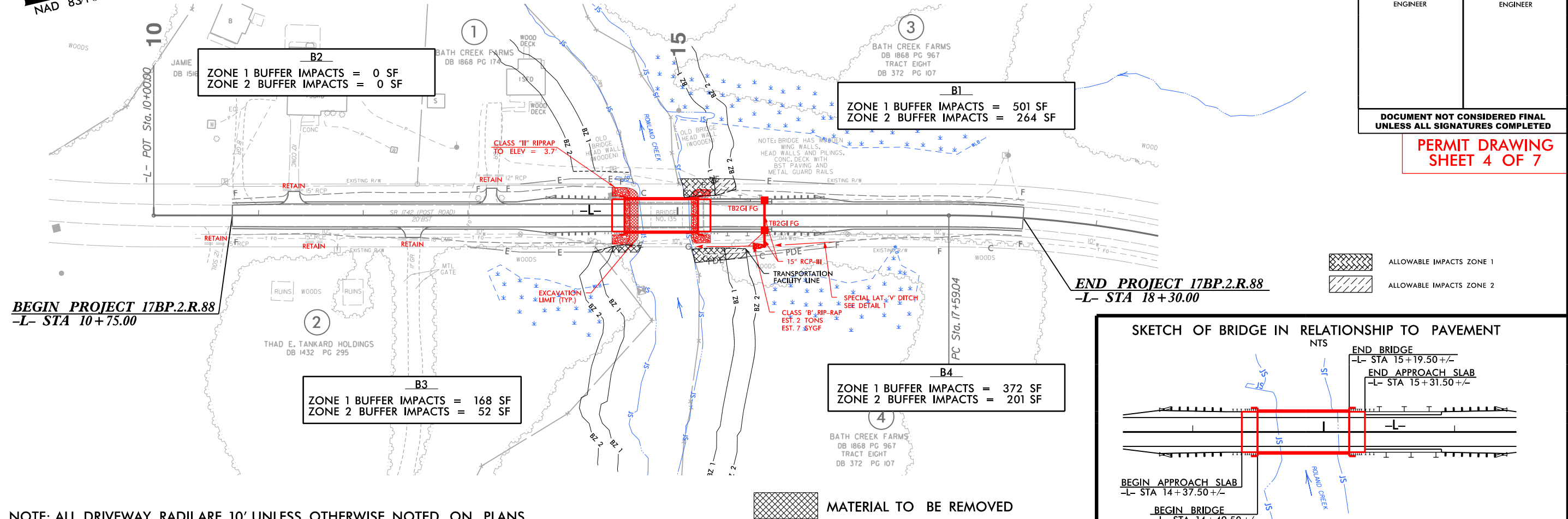
HNTB HNTB NORTH CAROLINA, P.C.
343 E. SIX FORKS ROAD, SUITE 200
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO: C-1554

PROJECT REFERENCE NO.	SHEET NO.
17BP.2.R.88	4

RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

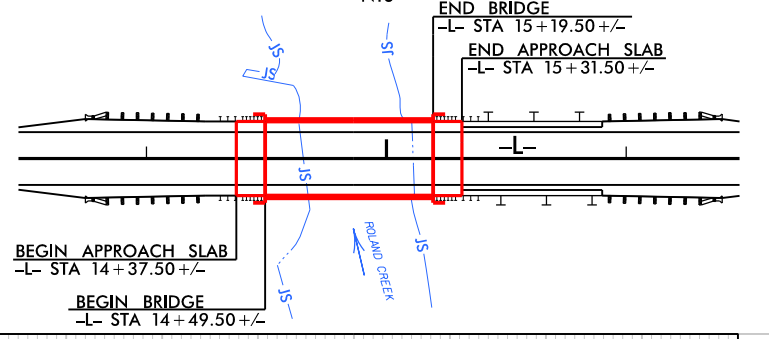
PERMIT DRAWING SHEET 4 OF 7



BEGIN PROJECT 17BP.2.R.88
-L- STA 10+75.00

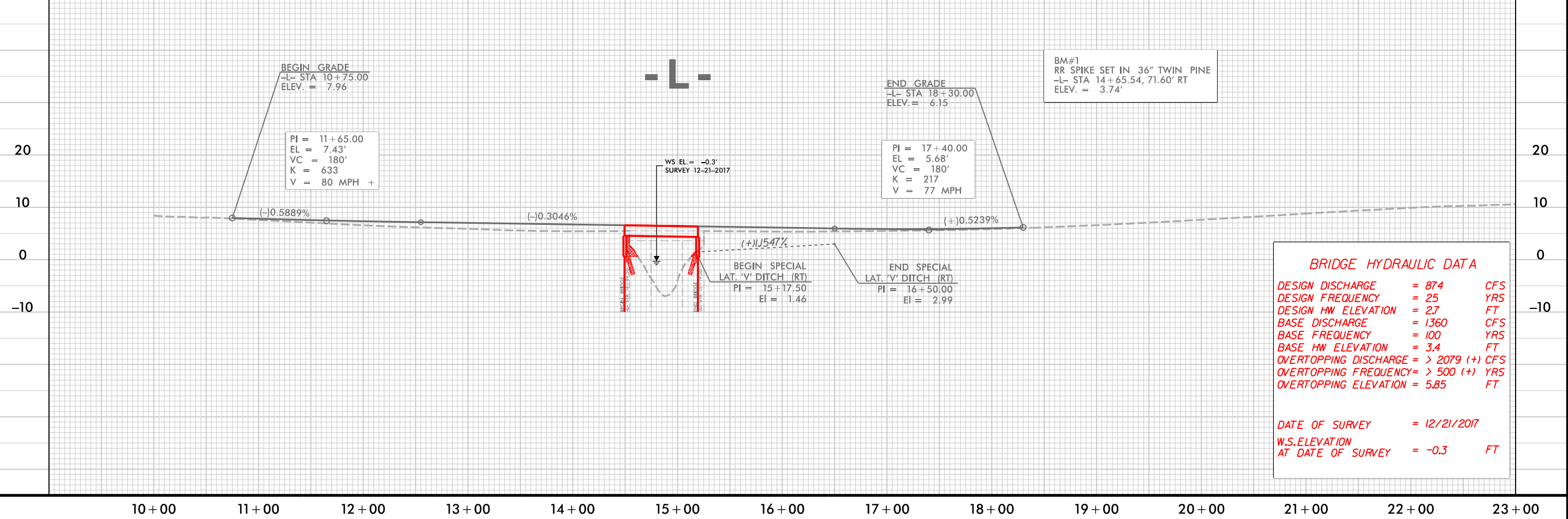
END PROJECT 17BP.2.R.88
-L- STA 18+30.00

SKETCH OF BRIDGE IN RELATIONSHIP TO PAVEMENT



NOTE: ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED ON PLANS.

MATERIAL TO BE REMOVED



BM#1
RR SPIKE SET IN 36" TWIN PINE
-L- STA 14+65.54, 71.60' RT
ELEV. = 3.74'

BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 874 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2.7 FT
BASE DISCHARGE	= 1360 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 3.4 FT
OVERTOPPING DISCHARGE	= > 2079 (+) CFS
OVERTOPPING FREQUENCY	= > 500 (+) YRS
OVERTOPPING ELEVATION	= 5.85 FT
DATE OF SURVEY	= 12/21/2017
W.S.ELEVATION AT DATE OF SURVEY	= -0.3 FT

WETLAND AND SURFACE WATER IMPACTS 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	no impacts	24" Cored Slab										
TOTALS*:												

*Rounded totals are sum of actual impacts

NOTES:
No Wetland Impacts

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 7/17/2018
 Beaufort County Bridge #135
 17BP.2.R.88
 SHEET 5 OF 7

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)		
B1	-L- 15+02 to 15+56	24" Cored Slab Bridge		x		501	264	765					
B2	no impacts	24" Cored Slab Bridge		x		0	0	0					
B3	-L- 14+19 to 14+66	24" Cored Slab Bridge		x		168	52	220					
B4	-L- 15+14 to 15+66	24" Cored Slab Bridge		x		372	201	573					
TOTALS*:						1041	517	1558					

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 7/17/2018
 Beaufort County Bridge #135
 17BP.2.R.88

 SHEET 6 OF 7

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)	WETLANDS IN BUFFERS	
		ZONE 1 (ft ²)	ZONE 2 (ft ²)
1	no impacts	0	0
TOTAL:		0	0

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 7/17/2018
 Beaufort County Bridge #135
 17BP.2.R.88

SHEET 7 OF 7