



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.82      TIP No.: SF-530161      County(ies): Lenoir      Page 1 of 2

General Project Information

WBS Element:	17BP.2.R.82	TIP Number:	SF-530161	Project Type:	Bridge Replacement	Date:	10/11/2017
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:			County(ies):	Lenoir			
River Basin(s):	Neuse		CAMA County?	No			
Wetlands within Project Limits?	No						

Project Description

Project Length (lin. miles or feet):	0.12	Surrounding Land Use:	Rural, Residential, and Agriculture					
	Proposed Project		Existing Site					
Project Built-Upon Area (ac.)	0.5	ac.	0.4	ac.				
Typical Cross Section Description:	2 - 10' asphalt paved lanes with 4' to 6' paved shoulders and 2' to 3' grass shoulders. Ditches in all four quadrants are to be replaced with 3:1 front slopes and 3:1 back slopes.		2 - 10' asphalt paved lanes with grass shoulders. Roadside ditches exist in all four quadrants and discharge directly into Strawberry Branch.					
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	1700	Year:	2032	Existing:	850	Year:	2012
General Project Narrative: (Description of Minimization of Water Quality Impacts)	<p>State project 17BP.2.R.82 involves the replacement of Lenoir County Bridge #0161 on SR 1913 (Elijah Lofin Road) over Strawberry Branch. The existing bridge consists of 1 @ 31' - 0", prestressed concrete channels on PPC caps with timber piles. It is to be replaced with a 1 @ 32'-9" x 8'-6" ALBC at the same location.</p> <p>Ditches in all four quadrants will be 3:1 front slopes and 3:1 back slopes and tie to Strawberry Branch with rip rap at embankments, to prevent head cutting. There are no wetlands present within the project limits.</p>							

Waterbody Information

Surface Water Body (1):	Strawberry Branch		NCDWR Stream Index No.:	27-80-7				
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C					
	Supplemental Classification:		Swamp Waters (Sw)		(NSW)			
Other Stream Classification:								
Impairments:								
Aquatic T&E Species?	Comments:							
NRTR Stream ID:						Buffer Rules in Effect:	Neuse	
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)								



See Sheet 1A For Index of Sheets

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**LENOIR COUNTY**

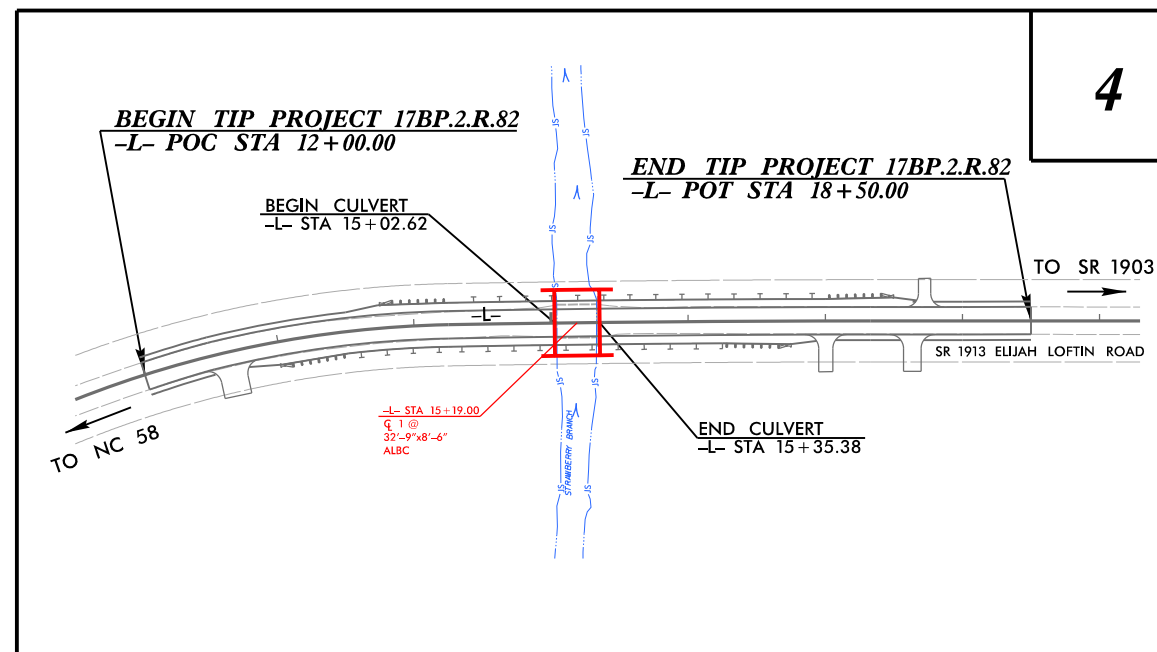
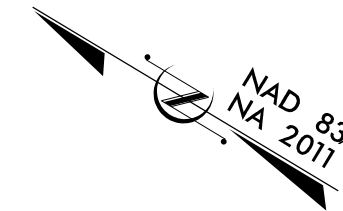
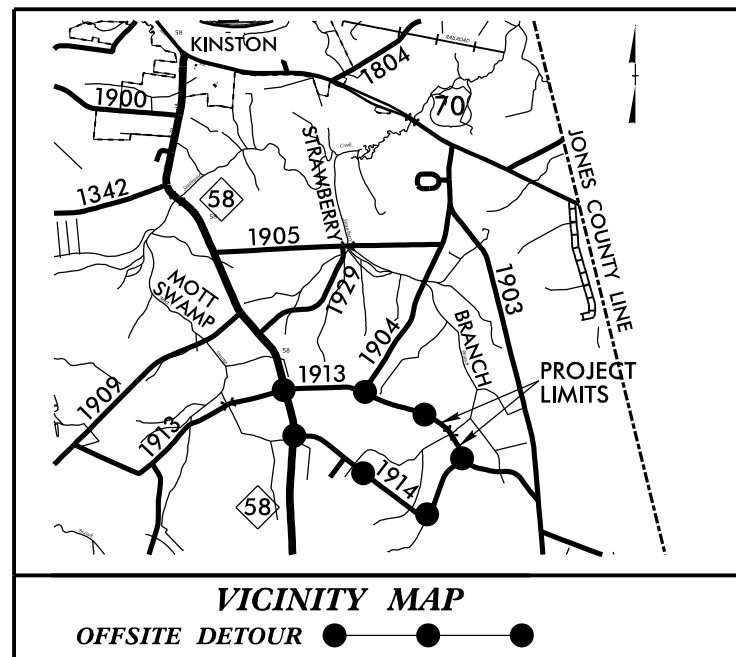
**LOCATION: REPLACE BRIDGE NO.161 OVER STRAWBERRY BRANCH  
ON SR 1913 (ELIJAH LOFTIN ROAD)**

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

**WETLAND AND SURFACE  
WATER IMPACTS PERMIT**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.2.R.82	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.2.R.82		PE	
17BP.2.R.82		ROWUTIL.	

**PERMIT DRAWING  
SHEET 1 OF 7**



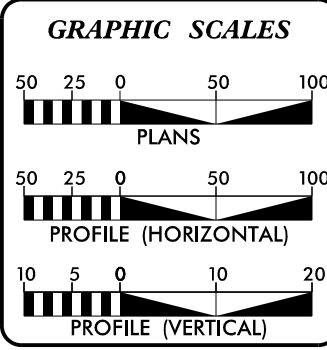
**NOTES:**

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

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**TIP PROJECT: 17BP.2.R.82**

**CONTRACT:**



**DESIGN DATA**

ADT 2012 =	850
ADT 2032 =	1700
K =	10 %
D =	60 %
T =	6 % *
V =	60 MPH
* TTST = 2% DUAL 4%	
FUNC CLASS =	LOCAL
SUB-REGIONAL TIER	

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT 17BP.2.R.82	=	0.117 MILES
LENGTH OF CULVERT TIP PROJECT 17BP.2.R.82	=	0.006 MILES
TOTAL LENGTH OF TIP PROJECT 17BP.2.R.82	=	0.123 MILES

Prepared In the Office of:

**HNTB**  
HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

2012 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
SEPTEMBER 13, 2017

**LETTING DATE:**  
MARCH 21, 2018

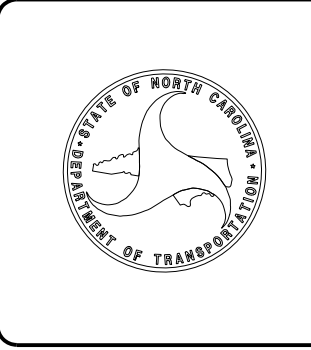
<b>DAVID W. BASS, PE</b> PROJECT ENGINEER
<b>MONICA J. DUVAL</b> PROJECT DESIGN ENGINEER
<b>HEATHER C. LANE, PE</b> NCDOT CONTACT

**HYDRAULICS ENGINEER**

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

**ROADWAY DESIGN ENGINEER**

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



10/11/2017 10:08:59 AM \\17BP.2.R.82\_hyd\_permits.tsh.dgn HNTB

# WETLAND & STREAM IMPACTS

**LEGEND**

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

**HNTB** HNTB NORTH CAROLINA, P.C.  
349 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No. C-1554

PROJECT REFERENCE NO.	SHEET NO.
17BP.2.R.82	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

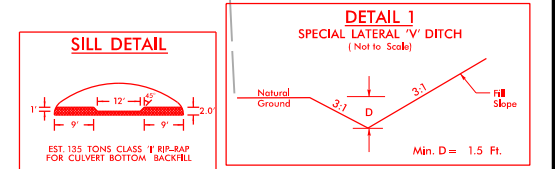
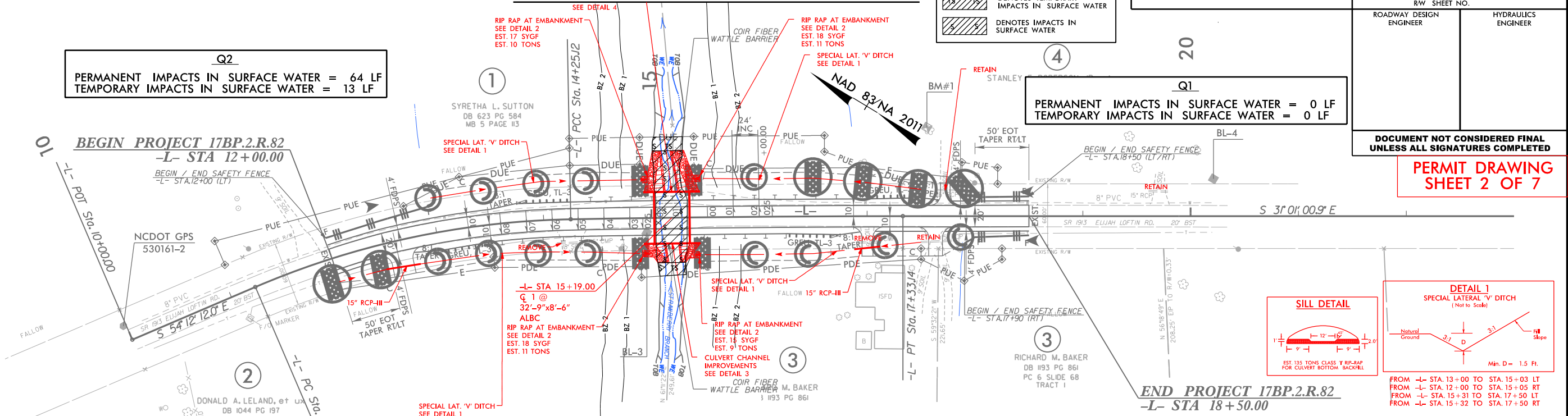
**Q2**  
PERMANENT IMPACTS IN SURFACE WATER = 64 LF  
TEMPORARY IMPACTS IN SURFACE WATER = 13 LF

**Q1**  
PERMANENT IMPACTS IN SURFACE WATER = 0 LF  
TEMPORARY IMPACTS IN SURFACE WATER = 0 LF

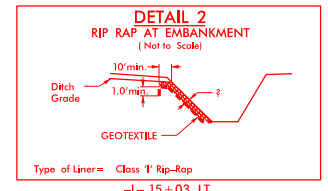
**Q3**  
PERMANENT IMPACTS IN SURFACE WATER = 41 LF  
TEMPORARY IMPACTS IN SURFACE WATER = 12 LF

**Q4**  
PERMANENT IMPACTS IN SURFACE WATER = 0 LF  
TEMPORARY IMPACTS IN SURFACE WATER = 0 LF

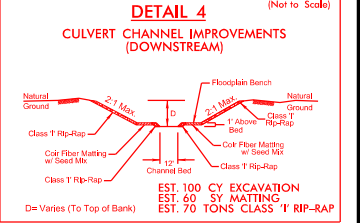
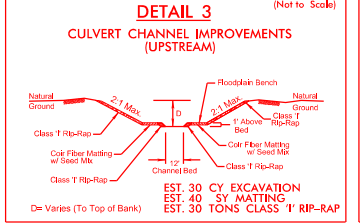
NOTE: ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED ON THE PLANS.



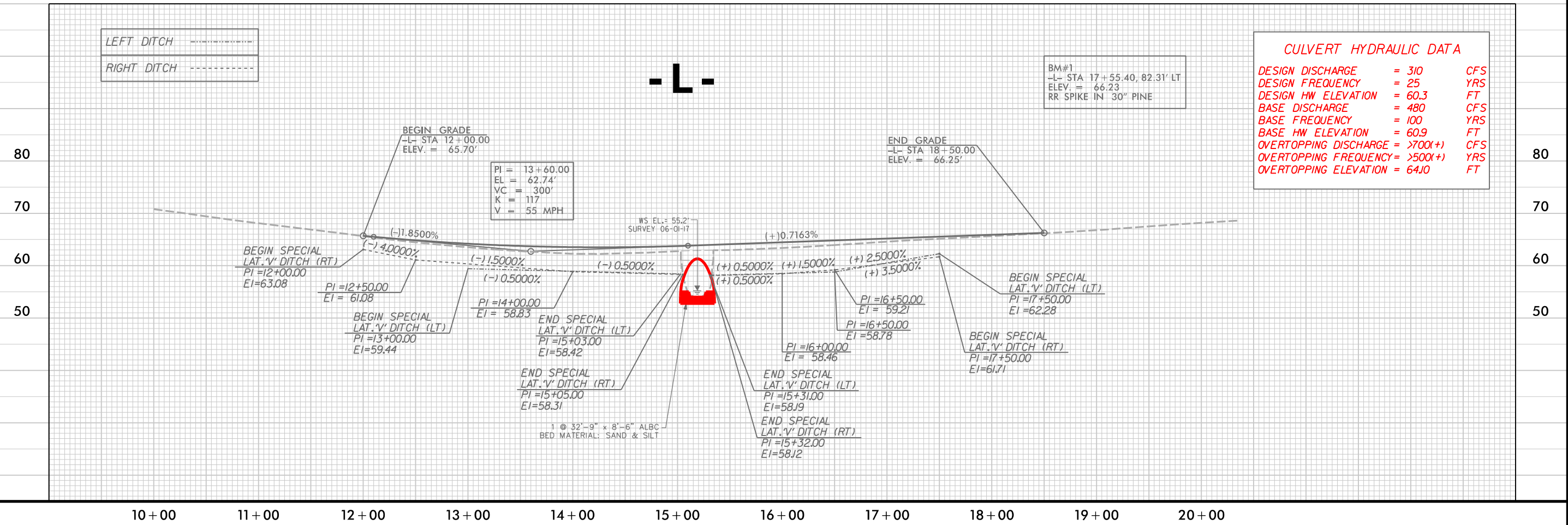
FROM STA. 13+00 TO STA. 15+03 LT  
FROM STA. 12+00 TO STA. 15+05 RT  
FROM STA. 15+31 TO STA. 17+50 LT  
FROM STA. 15+32 TO STA. 17+50 RT



From STA. 15+03 LT  
From STA. 15+05 RT  
From STA. 15+31 LT  
From STA. 15+32 RT



LEFT DITCH  
RIGHT DITCH



**CULVERT HYDRAULIC DATA**

DESIGN DISCHARGE	= 310	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 60.3	FT
BASE DISCHARGE	= 480	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 60.9	FT
OVERTOPPING DISCHARGE	= >700(+)	CFS
OVERTOPPING FREQUENCY	= >500(+)	YRS
OVERTOPPING ELEVATION	= 64.0	FT

BM#1  
-L- STA 17+55.40, 82.31' LT  
ELEV. = 66.23  
RR SPIKE IN 30" PINE

10/17/2017 17BP.2.R.82\_hyd\_perm.mts.psh4.dgn

# WETLAND & STREAM IMPACTS

**LEGEND**  

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER  
 DENOTES IMPACTS IN SURFACE WATER

**HNTB** HNTB NORTH CAROLINA, P.C.  
 3409 E. Six Forks Road, Suite 200  
 Raleigh, North Carolina 27609  
 NC License No. C-1654

PROJECT REFERENCE NO. <b>17BP.2.R.82</b>	SHEET NO. <b>4</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**Q2**  
 PERMANENT IMPACTS IN SURFACE WATER = 64 LF  
 TEMPORARY IMPACTS IN SURFACE WATER = 13 LF

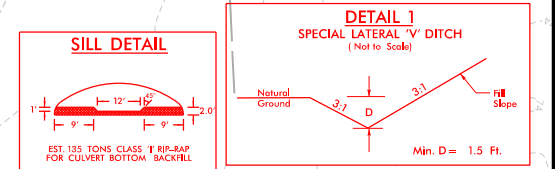
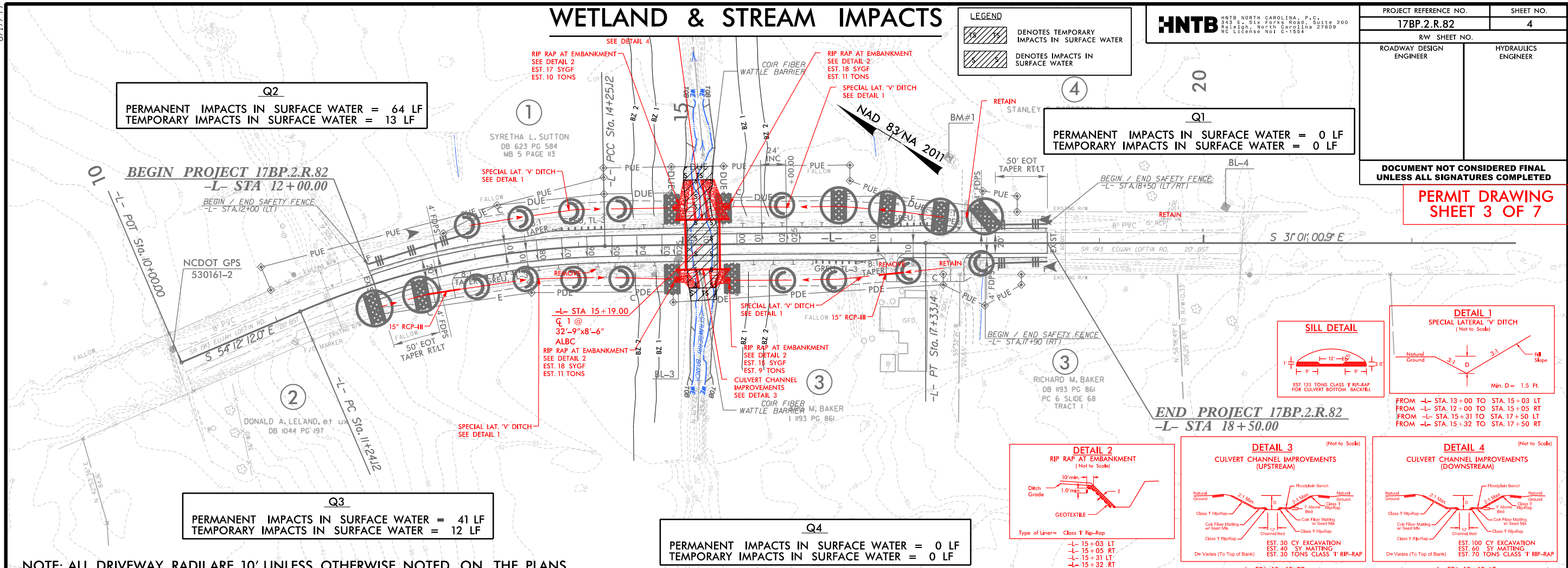
**Q1**  
 PERMANENT IMPACTS IN SURFACE WATER = 0 LF  
 TEMPORARY IMPACTS IN SURFACE WATER = 0 LF

**Q3**  
 PERMANENT IMPACTS IN SURFACE WATER = 41 LF  
 TEMPORARY IMPACTS IN SURFACE WATER = 12 LF

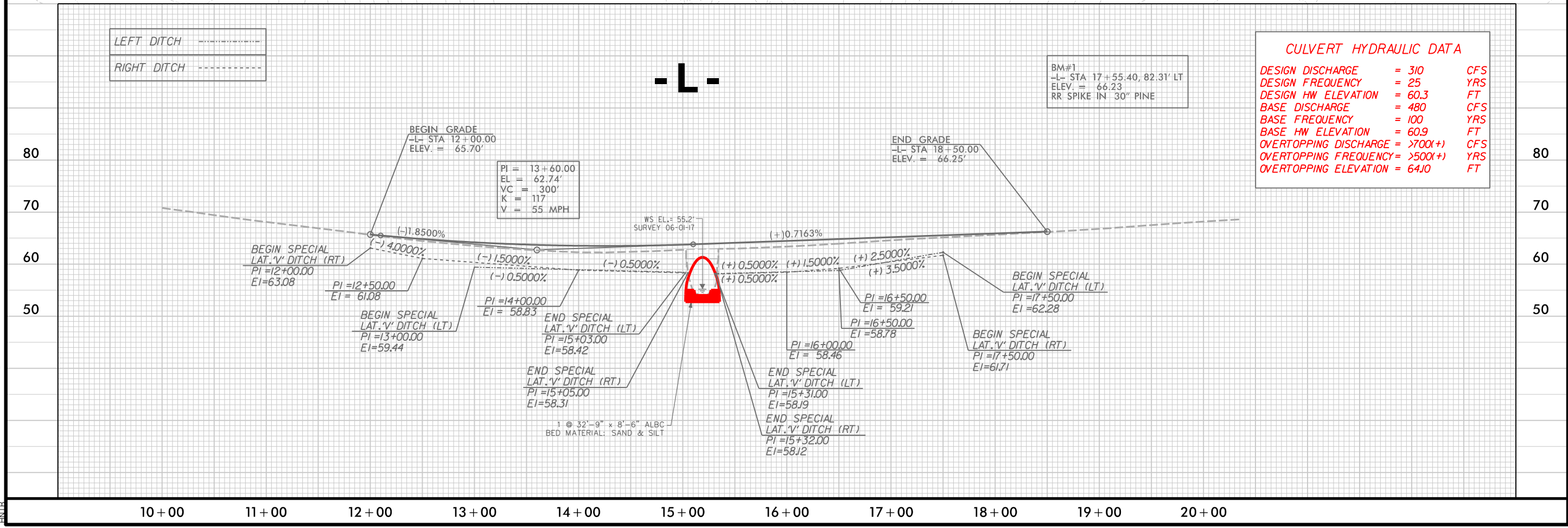
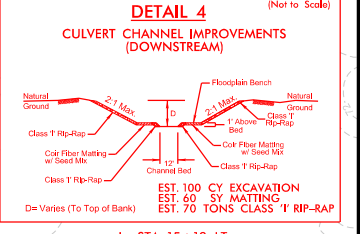
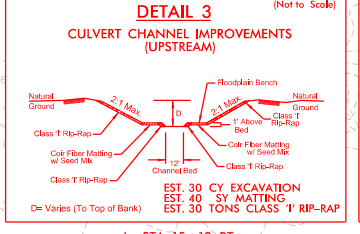
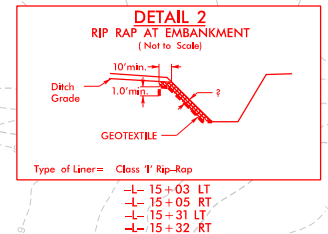
**Q4**  
 PERMANENT IMPACTS IN SURFACE WATER = 0 LF  
 TEMPORARY IMPACTS IN SURFACE WATER = 0 LF

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

**PERMIT DRAWING SHEET 3 OF 7**



FROM -L- STA. 13+00 TO STA. 15+03 LT  
 FROM -L- STA. 12+00 TO STA. 15+05 RT  
 FROM -L- STA. 15+31 TO STA. 17+50 LT  
 FROM -L- STA. 15+32 TO STA. 17+50 RT



**CULVERT HYDRAULIC DATA**

DESIGN DISCHARGE	= 310	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 60.3	FT
BASE DISCHARGE	= 480	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 60.9	FT
OVERTOPPING DISCHARGE	= >700(+)	CFS
OVERTOPPING FREQUENCY	= >500(+)	YRS
OVERTOPPING ELEVATION	= 64.0	FT

10/17/2017 17BP.2.R.82\_hyd\_permits.psh4.dgn

# BUFFER IMPACTS

LEGEND	
	ALLOWABLE IMPACTS ZONE 1
	ALLOWABLE IMPACTS ZONE 2

<b>HNTB</b> HNTB NORTH CAROLINA, P.C. 349 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No. C-1554	PROJECT REFERENCE NO. <b>17BP.2.R.82</b>	SHEET NO. <b>4</b>
	RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

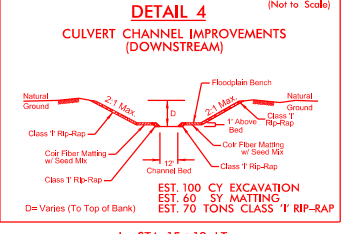
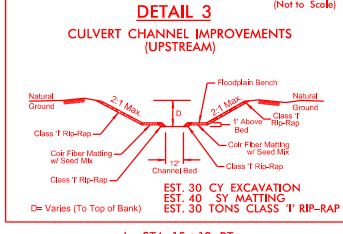
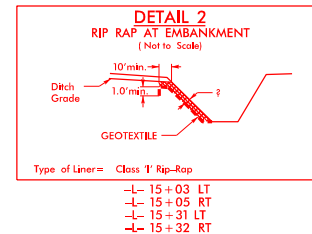
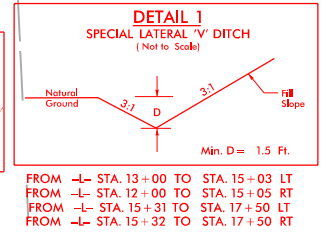
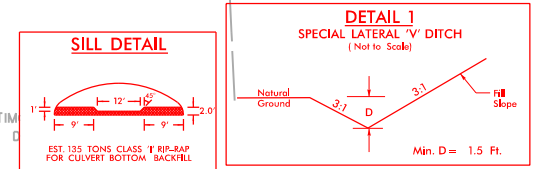
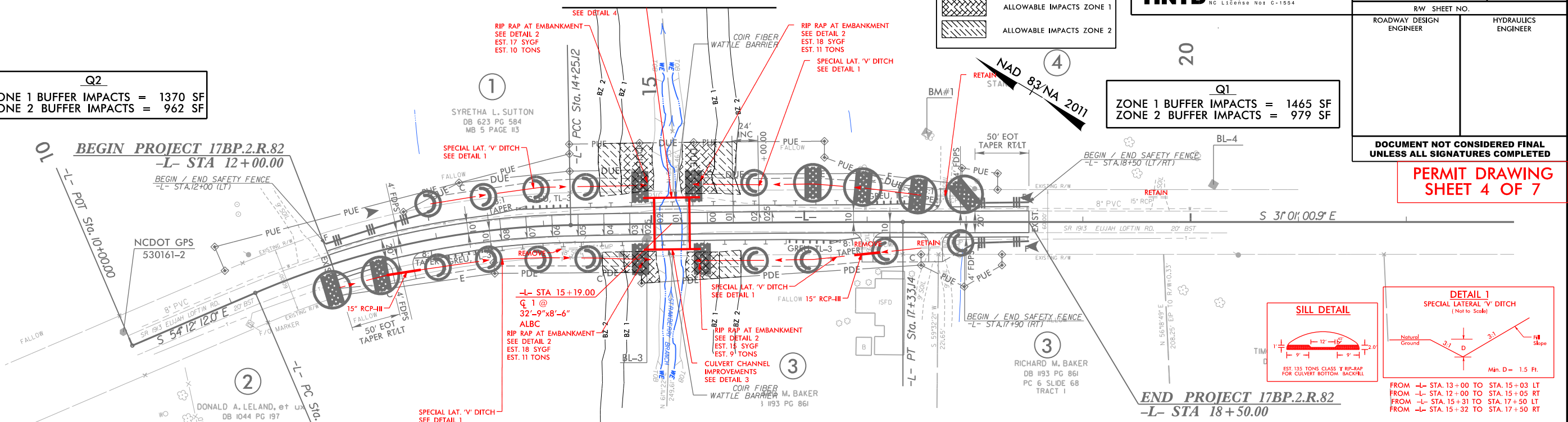
**Q2**  
ZONE 1 BUFFER IMPACTS = 1370 SF  
ZONE 2 BUFFER IMPACTS = 962 SF

**Q1**  
ZONE 1 BUFFER IMPACTS = 1465 SF  
ZONE 2 BUFFER IMPACTS = 979 SF

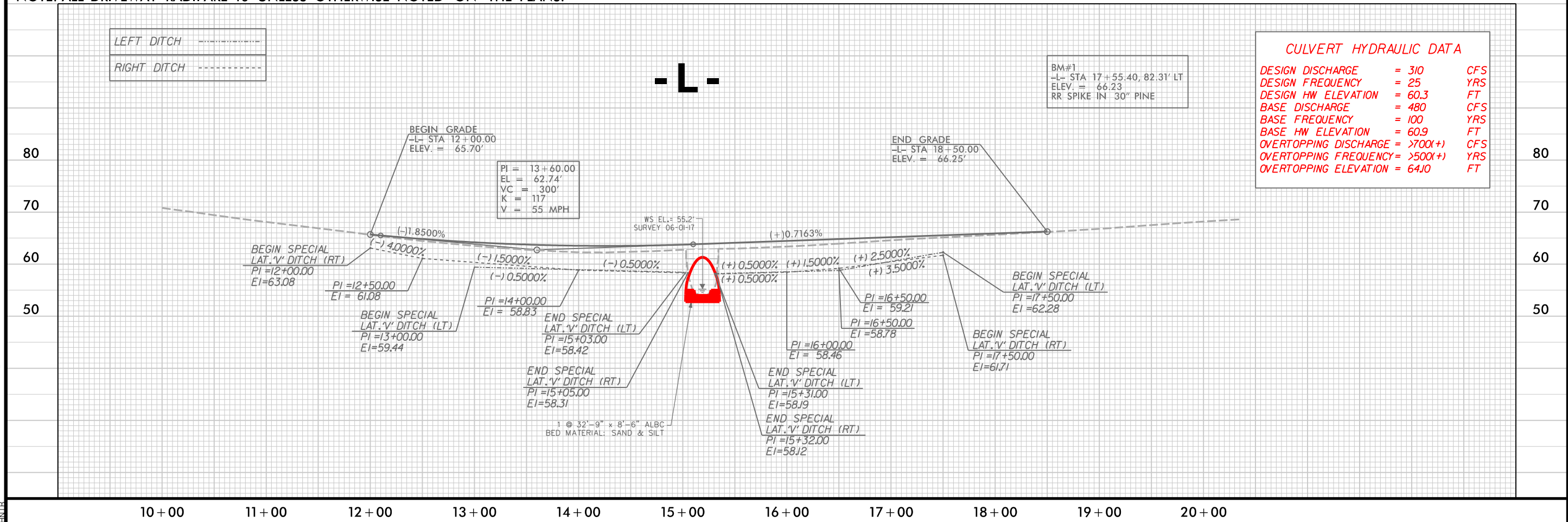
**Q3**  
ZONE 1 BUFFER IMPACTS = 744 SF  
ZONE 2 BUFFER IMPACTS = 385 SF

**Q4**  
ZONE 1 BUFFER IMPACTS = 778 SF  
ZONE 2 BUFFER IMPACTS = 491 SF

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



LEFT DITCH  
RIGHT DITCH



CULVERT HYDRAULIC DATA	
DESIGN DISCHARGE	= 310 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 60.3 FT
BASE DISCHARGE	= 480 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 60.9 FT
OVERTOPPING DISCHARGE	= >700(+) CFS
OVERTOPPING FREQUENCY	= >500(+) YRS
OVERTOPPING ELEVATION	= 64.0 FT

BM#1  
-L- STA 17+55.40, 82.31' LT  
ELEV. = 66.23  
RR SPIKE IN 30" PINE

8.17/99  
10/17/2017 17BP.2.R.82\_hyd\_buffers\_psh4.dgn

**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	-L- 15+04 TO 15+33	ALBC						0.03		48		
1	-L- 15+04 TO 15+33	US Channel Improvements						0.01		18		
1	-L- 15+01 TO 15+31	DS Channel Improvements						0.02		39		
1	-L- 15+02 TO 15+32	ALBC Phasing							0.02		25	
<b>TOTALS*:</b>								0.07	0.02	105	25	0

\*Rounded totals are sum of actual impacts

NOTES:  
 Existing channel impacts are measured along the centerline of the stream.  
 Permanent SW impacts: 2839 SF  
 Temporary SW impacts: 654 SF

NC DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 10/11/2017  
 Lenoir County  
 17BP.2.R.82

## RIPARIAN BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )
			ROAD CROSSING	CULVERT	PARALLEL IMPACT	ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )	TOTAL (ft <sup>2</sup> )	ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )	TOTAL (ft <sup>2</sup> )		
1	ALBC	-L- 14+52 TO 15+83		X		4357	2817	7174					
<b>TOTAL:</b>						4357	2817	7174	0	0	0	0	0

N.C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
  
 LENOIR COUNTY BRIDGE NO. 161  
 17BP.2.R.82  
  
 10/10/2017  
 SHEET 6 OF 7



## WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS	
			ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )
1	N/A		0	0
<b>TOTAL:</b>			0	0

N.C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
  
 LENOIR COUNTY BRIDGE NO. 161  
 17BP.2.R.82  
  
 10/10/2017  
 SHEET 7 OF 7