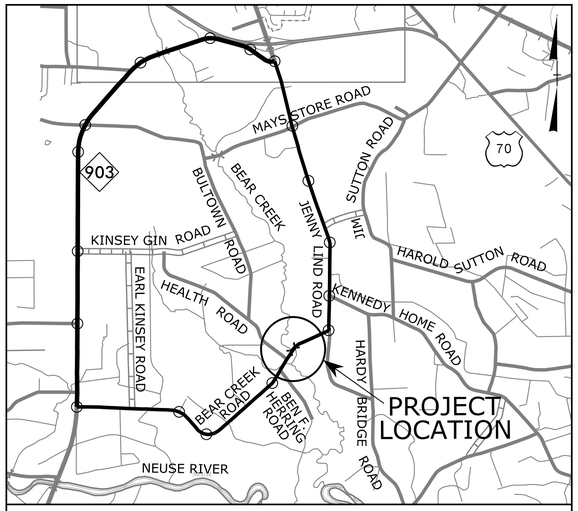
PROJECT: SF-530049

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 ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LENOIR COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-530049	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
17BP.2.R.84		PE	

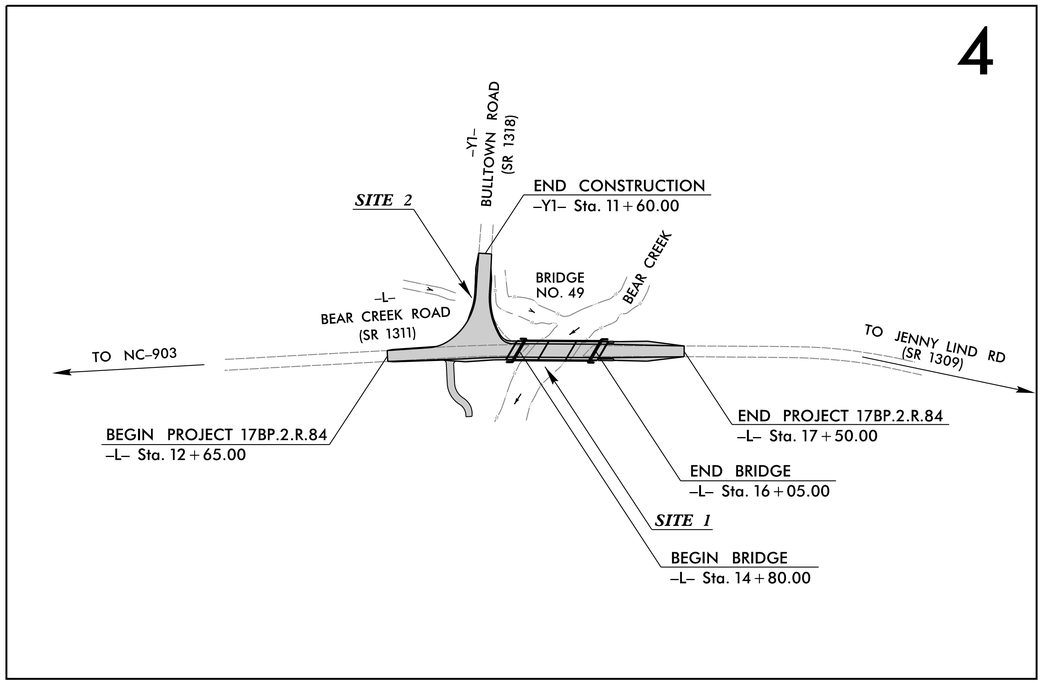
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWINGS

LOCATION: *BRIDGE NO. 49 OVER BEAR CREEK ON SR 1311 (BEAR CREEK ROAD)*

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

BUFFER IMPACTS



NC GRID
NAD 83/NSRS 2011

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

*DESIGN EXCEPTION REQUIRED FOR HORIZONTAL INTERSECTION STOPPING SIGHT DISTANCE AT INTERSECTION OF –L– AND –Y1–

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 2013 = 230 vpd
ADT 2040 = XXXX vpd
K = XX%
D = 6%
T = 6%
V = 60 MPH

FUNC CLASS =
LOCAL SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.2.R.84 = 0.097 MILES
LENGTH STRUCTURE PROJECT 17BP.2.R.84 = 0.024 MILES
TOTAL LENGTH PROJECT 17BP.2.R.84 = 0.121 MILES

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn ©2017
NC LICENSE #C-0102
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NORTH CAROLINA 27601
PHONE: (919) 677-2000

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 31, 2018

LETTING DATE:
APRIL 25, 2018

DAN ROBINSON, P.E.
PROJECT ENGINEER

ERIN THOMPSON, P.E.
PROJECT DESIGN ENGINEER

HEATHER C. LANE, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

K:\RAL_Roadway\0II0336378 - Bridge49\Hydraulics\PERMITS_Environmental\Drawings\0II0336378_hyd_prm_buf_1shdgn
10/16/2017

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			PERMANENT			TEMPORARY				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	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)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	BRIDGE 49	-L- 14+80 TO 16+05		X		2459	1932	4391	4431	1000	5431		
2	72" CAP (BURIED 1')	-Y1- 10+70 TO 10+90	X			1194	356	1550	1958	307	2265		
TOTAL:						3653	2288	5941	6389	1307	7696		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

LENOIR COUNTY
PROJECT: BRIDGE 49 REPLACEMENT

10/13/2017
SHEET 2 OF 5

Kimley»Horn ©2017
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	
RW SHEET NO.	
ROADWAY ENGINEER	HYDRAULICS ENGINEER

RIGHT-OF-WAY REV.

CONST. REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

10/16/2017 K:\RAL_Roadway\0I036378 - Bridge#49\Hydraulics\PERMITS_Environmental\Drawings\0I036378_hyd_prm_bur_pshdgn

-L-
PI Sta 14+42.69
Δ = 3° 22' 24.0" (RT)
D = 4° 14' 38.9"
L = 79.48'
T = 39.75'
R = 1,350.00'

PI Sta 20+14.27
Δ = 12° 21' 22.6" (RT)
D = 6° 05' 43.1"
L = 202.72'
T = 101.75'
R = 940.00'

-DI-
PI Sta 10+69.44
Δ = 55° 51' 21.1" (LT)
D = 159° 09' 17.8"
L = 35.10'
T = 19.08'
R = 36.00'

PI Sta 10+98.05
Δ = 55° 22' 47.6" (RT)
D = 238° 43' 56.7"
L = 23.20'
T = 12.59'
R = 24.00'

(1) HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32

(3) BOBBY G. HERRING, et ux
DB 1284 PG 606
PC 7 PG 35

(5) KEVIN P. HATCH
DB 490 PG 367
PC 10 PG 376

WOODS HOG FARM INC.
DB 303 PG 98
MB 4 PG 141
PC 13 PG 101

DEWEY L. PELLETIER, et ux
DB 938 PG 619

DEWEY L. PELLETIER, et ux
DB 1519 PG 780
PC 11 PG 63

(2) HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32

-Y1- POT Sta. 12+14.75

-Y1- POT 11+60.00
END CONSTRUCTION
N 52° 29' 29.3" W

-Y1- BULLTOWN RD (SR 1318)

-L- POT 12+65.00
BEGIN PROJECT 17BP.2.R.84
BEGIN CONSTRUCTION

-L- POT Sta. 10+00.00

-L- BEAR CREEK RD (SR 1311)
N 30° 50' 10.7" E

-L- PT Sta. 14+82.42

-L- POT 17+50.00
END PROJECT 17BP.2.R.84
END CONSTRUCTION

-L- PC Sta. 19+12.52

-L- PT Sta. 21+15.24

N 34° 12' 34.7" E

INSTALL SHOULDER BERM GUTTER FROM STA.16+24.70 TO STA.16+35.00 -L- LT

END APPROACH SLAB
-L- POT 16+17.14

END BRIDGE
-L- POT 16+05.14
INSTALL SHOULDER BERM GUTTER FROM STA.16+09.59 TO STA.16+35.00 -L- RT

REMOVE EXISTING BRIDGE (STRUCTURE ITEM)

-L- POT Sta.13+66.26 =
-DI- POT Sta. 10+00.00
S 59° 09' 49.3" E
-DI- PC Sta. 10+50.36

-L- PC Sta. 14+02.93

-L- POC Sta.14+14.88 =
-YI- POT Sta. 10+00.00
-DI- PRC Sta.10+85.45

-DI- PT Sta.11+08.65
S 59° 38' 22.7" E
-DI- POT Sta. 11+20.00

BEGIN APPROACH SLAB
-L- POC 14+67.81

BEGIN BRIDGE
-L- POC 14+79.85

BM #1
ELEV = 45.24'
N 547446 E 2362907
-L- STATION 13+61.17
137.71' RIGHT
RR SPIKE SET IN
24" HARDWOOD

HIGH WATER LEVEL DURING HURRICANE MATTHEW PER PROPERTY OWNER ELEVATION=55.37'

PROPERTY LINE ALONG BEAR CREEK

EXISTING R/W MONUMENT EL 14+83.08 39' LT

DATUM DESCRIPTION

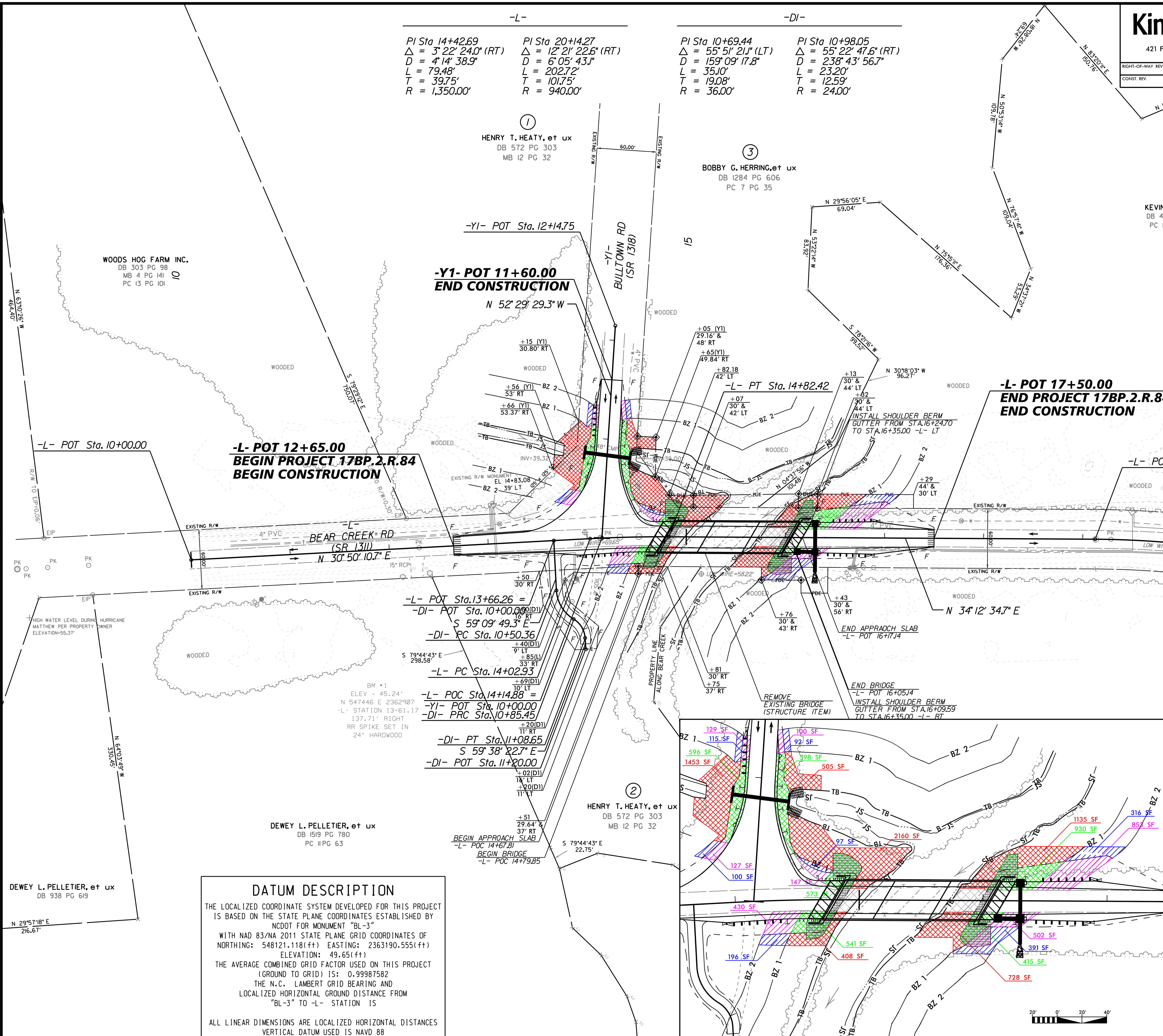
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 548121.118(ft) EASTING: 2363190.555(ft) ELEVATION: 49.65(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987582 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NC GRID NAD 83/NSRS 2011

BRIDGE EXCAVATION
TEMPORARY IMPACTS ZONE 1
TEMPORARY IMPACTS ZONE 2
PERMANENT IMPACTS ZONE 1
PERMANENT IMPACTS ZONE 2

*DESIGN EXCEPTION REQUIRED FOR HORIZONTAL INTERSECTION STOPPING SIGHT DISTANCE AT INTERSECTION OF -L- AND -Y1-



-L-
PI Sta 14+42.69
△ = 3° 22' 24.0" (RT)
D = 4° 14' 38.9"
L = 79.48'
T = 39.75'
R = 1,350.00'
PI Sta 20+14.27
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D = 6° 05' 43.1"
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PI Sta 10+69.44
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L = 35.10'
T = 19.08'
R = 36.00'
PI Sta 10+98.05
△ = 55° 22' 47.6" (RT)
D = 238° 43' 56.7"
L = 23.20'
T = 12.59'
R = 24.00'
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HENRY T. HEATY, et ux
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MB 12 PG 32
3
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DB 1284 PG 606
PC 7 PG 35
5
KEVIN P. HATCH
DB 490 PG 367
PC 10 PG 376
NC GRID
NAD 83/NSRS 2011
WOODS HOG FARM INC.
DB 303 PG 98
MB 4 PG 141
PC 13 PG 101
-Y1- POT Sta. 12+14.75
-Y1-
BULLTOWN RD
(SR 1318)
-Y1- POT 11+60.00
END CONSTRUCTION
N 52° 29' 29.3" W
-L- PT Sta. 14+82.42
-L- POT 17+50.00
END PROJECT 17BP.2.R.84
END CONSTRUCTION
INSTALL SHOULDER BERM
GUTTER FROM STA.16+24.70
TO STA.16+35.00 -L- LT
-L- POT Sta. 10+00.00
-L- POT 12+65.00
BEGIN PROJECT 17BP.2.R.84
BEGIN CONSTRUCTION
-L- PC Sta. 19+12.52
-L- PT Sta. 21+15.24
-L-
BEAR CREEK RD
(SR 1311)
N 30° 50' 10.7" E
N 34° 12' 34.7" E
-L- POT Sta.13+66.26 =
-DI- POT Sta. 10+00.00
S 59° 09' 49.3" E
-DI- PC Sta. 10+50.36
-L- PC Sta. 14+02.93
-L- POC Sta.14+14.88 =
-Y1- POT Sta. 10+00.00
-DI- PRC Sta. 10+85.45
-DI- PT Sta. 11+08.65
S 59° 38' 22.7" E
-DI- POT Sta. 11+20.00
BEGIN APPROACH SLAB
-L- POC 14+67.81
BEGIN BRIDGE
-L- POC 14+79.85
END APPROACH SLAB
-L- POT 16+17.14
END BRIDGE
-L- POT 16+05.14
INSTALL SHOULDER BERM
GUTTER FROM STA.16+09.59
TO STA.16+35.00 -L- RT
REMOVE
EXISTING BRIDGE
(STRUCTURE ITEM)
PROPERTY LINE
ALONG BEAR CREEK
HIGH WATER LEVEL DURING HURRICANE
MATTHEW PER PROPERTY OWNER
ELEVATION=55.37'
BM #1
ELEV = 45.24'
N 547446 E 2362907
-L- STATION 13+61.17
137.71' RIGHT
RR SPIKE SET IN
24" HARDWOOD
2
HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32
DEWEY L. PELLETIER, et ux
DB 1519 PG 780
PC 11 PG 63
DEWEY L. PELLETIER, et ux
DB 938 PG 619
WOODED
BRIDGE EXCAVATION
TEMPORARY IMPACTS ZONE 1
TEMPORARY IMPACTS ZONE 2
PERMANENT IMPACTS ZONE 1
PERMANENT IMPACTS ZONE 2
129 SF
115 SF
596 SF
1453 SF
100 SF
92 SF
398 SF
505 SF
1135 SF
930 SF
316 SF
852 SF
2160 SF
97 SF
127 SF
100 SF
147 SF
573 SF
430 SF
541 SF
408 SF
196 SF
502 SF
391 SF
415 SF
728 SF

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 548121.118(ft) EASTING: 2363190.555(ft)
ELEVATION: 49.65(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987582
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

*DESIGN EXCEPTION REQUIRED FOR HORIZONTAL INTERSECTION STOPPING SIGHT DISTANCE AT INTERSECTION OF -L- AND -Y1-

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	
RW SHEET NO.	
ROADWAY ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

K:\RAL_Roadway\011036378 - Bridge49\Hydraulics\PERMITS_Environmental\Drawings\011036378_hyd_prm_buf_psh_con.dgn
10/16/2017

BM #1
-L- STA 13+61.17 (137.71' RT)
ELEV 45.24'
R/R SPIKE IN 24" HARDWOOD

Kimley»Horn ©2017
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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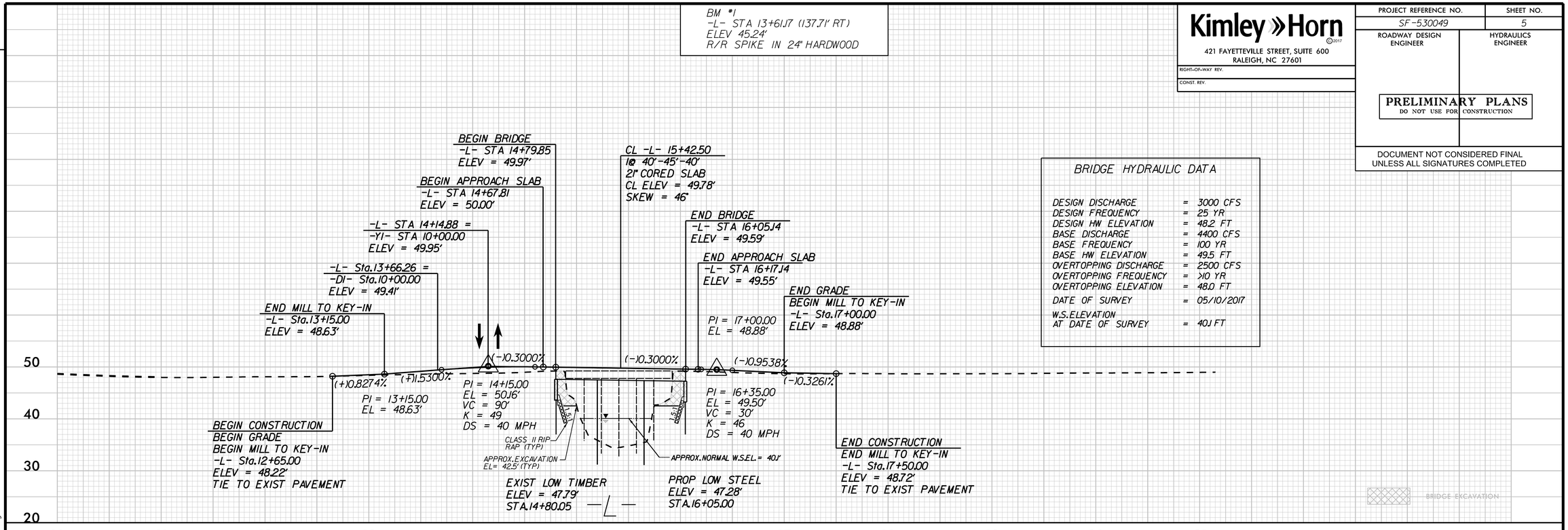
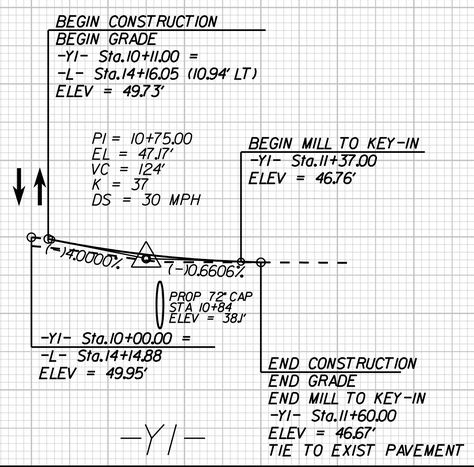
REVISIONS



BRIDGE HYDRAULIC DATA

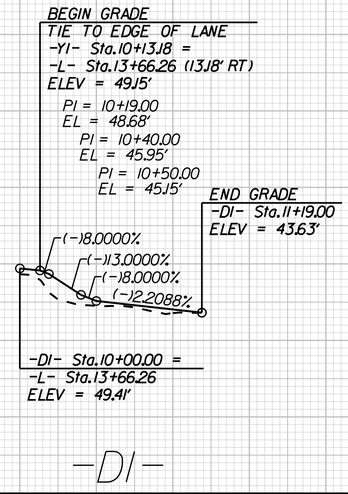
DESIGN DISCHARGE	=	3000 CFS
DESIGN FREQUENCY	=	25 YR
DESIGN HW ELEVATION	=	48.2 FT
BASE DISCHARGE	=	4400 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	49.5 FT
OVERTOPPING DISCHARGE	=	2500 CFS
OVERTOPPING FREQUENCY	=	>10 YR
OVERTOPPING ELEVATION	=	48.0 FT
DATE OF SURVEY	=	05/10/2017
W.S.ELEVATION AT DATE OF SURVEY	=	40.1 FT

BRIDGE EXCAVATION



PIPE HYDRAULIC DATA
72" CAP W/ HEADWALL (BURIED 1')

DESIGN DISCHARGE	= 200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 46.02	FT
BASE DISCHARGE	= 300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 47.11	FT
OVERTOPPING DISCHARGE	= 223	CFS
OVERTOPPING FREQUENCY	= >25	YRS
OVERTOPPING ELEVATION	= 46.6	FT



PROJECT: SF-530049

See Sheet 1A For Index of Sheets
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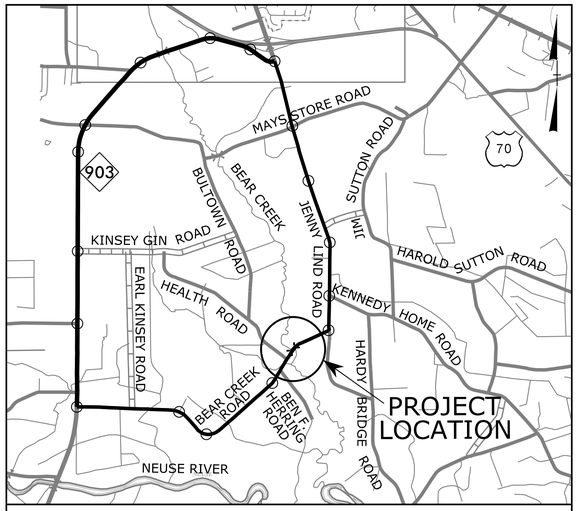

VICINITY MAP

OFF SITE DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LENOIR COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-530049	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.2.R.84		PE

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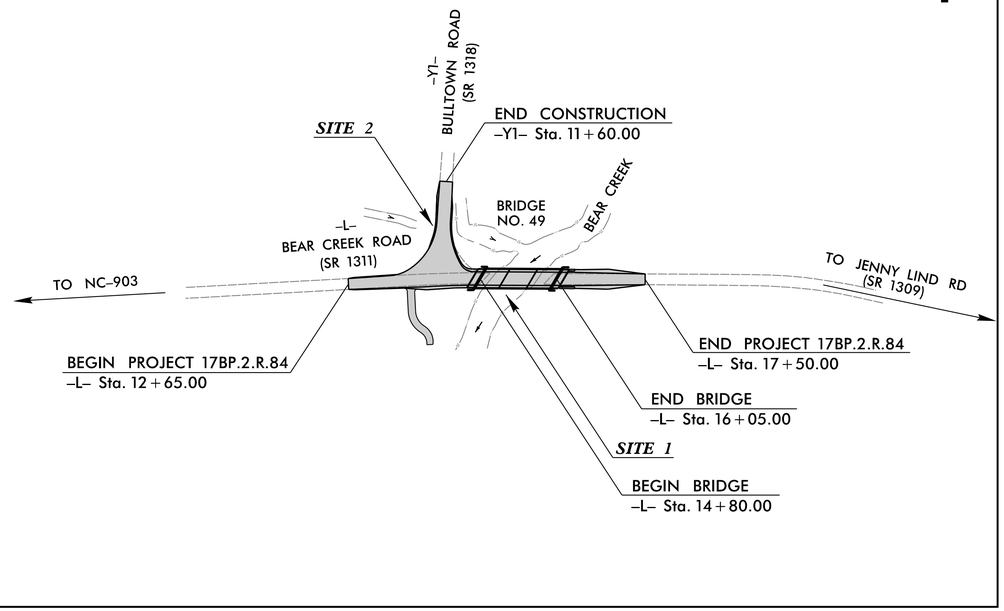
PERMIT DRAWINGS

LOCATION: *BRIDGE NO. 49 OVER BEAR CREEK ON SR 1311 (BEAR CREEK ROAD)*

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

STREAM IMPACTS

4



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

*DESIGN EXCEPTION REQUIRED FOR HORIZONTAL INTERSECTION STOPPING SIGHT DISTANCE AT INTERSECTION OF –L– AND –Y1–

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT:

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	2013	=	230 vpd
ADT	2040	=	XXXX vpd
K		=	XX%
D		=	6%
T		=	6%
V		=	60 MPH

FUNC CLASS =
LOCAL SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.2.R.84	=	0.097 MILES
LENGTH STRUCTURE PROJECT 17BP.2.R.84	=	0.024 MILES
TOTAL LENGTH PROJECT 17BP.2.R.84	=	0.121 MILES

PLANS PREPARED FOR THE NCDOT BY:

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NC LICENSE #C-0102
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PHONE: (919) 677-2000

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NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

K:\RAL_Roadway\0II0336378 - Bridge49\Hydraulics\PERMITS_Environmental\Drawings\0II0336378_hyd_prm_wet_tshdgn
10/16/2017

WETLAND PERMIT IMPACT SUMMARY

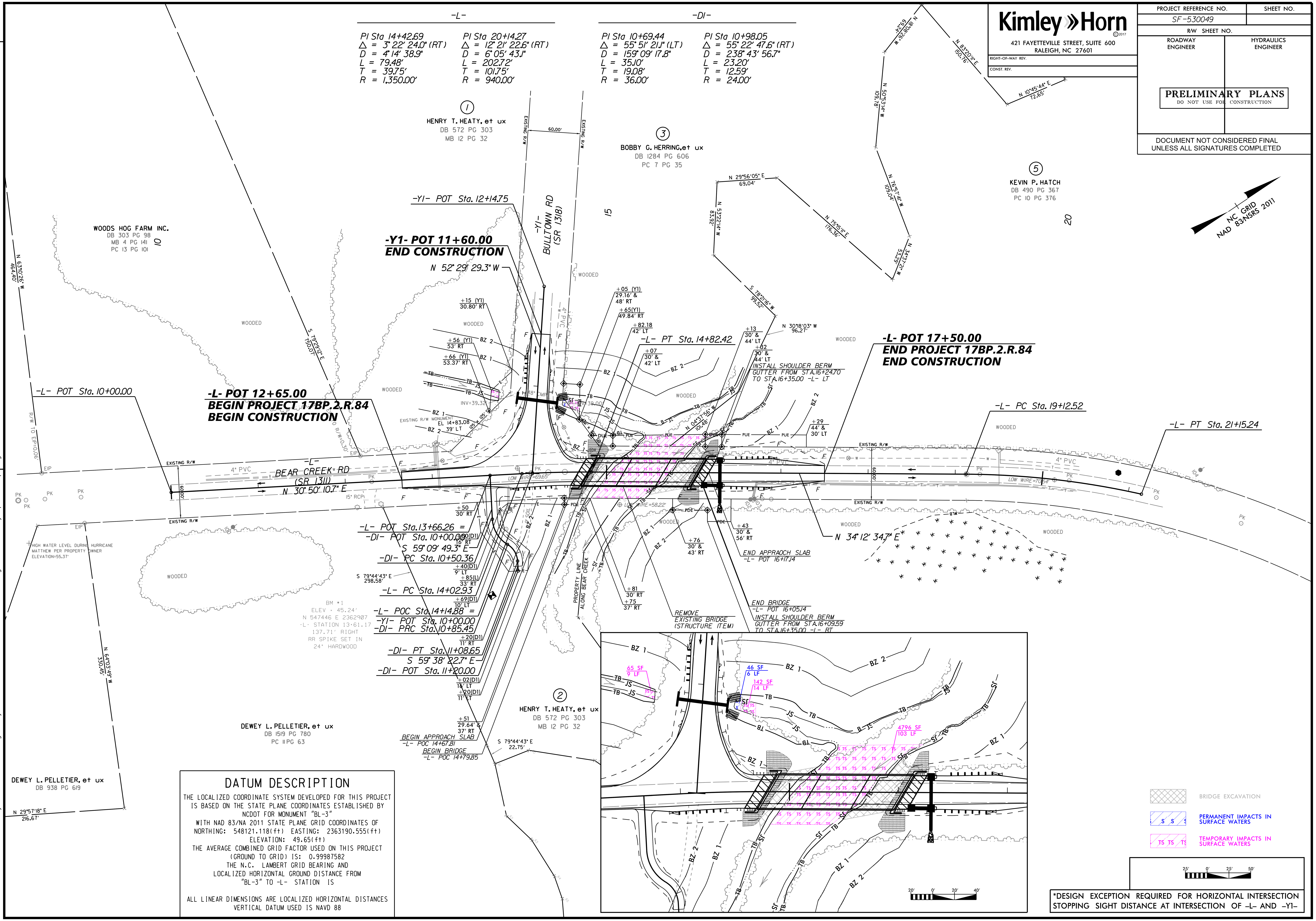
			WETLAND IMPACTS					SURFACE WATER IMPACTS					
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Temp. Disturbance in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)	Non-404 Existing Channel Impacts Permanent (ft)
1	-L- STA 14+80 TO 16+05	BRIDGE 49							0.110		103.000		
2	-Y1- STA 10+70 TO 10+90	72" CAP (BURIED 1')						< 0.01	< 0.01	6.000	23.000		
TOTALS*:								< 0.01	0.110	6	126	0	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
10-13-2017
LENOIR COUNTY
BRIDGE 49 REPLACEMENT

Revised 2017 05 25



-Y1- POT 11+60.00
END CONSTRUCTION
N 52° 29' 29.3" W
-Y1- POT Sta. 12+14.75
-Y1-
BULLTOWN RD
(SR 1318)
-L- POT Sta. 10+00.00
-L- POT 12+65.00
BEGIN PROJECT 17BP.2.R.84
BEGIN CONSTRUCTION
-L-
BEAR CREEK RD
(SR 1311)
N 30° 50' 10.7" E
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-L- POT 17+50.00
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END CONSTRUCTION
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-L- PT Sta. 21+15.24
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-DI- PC Sta. 10+50.36
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BEGIN APPROACH SLAB
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-L- POT 16+17.14
END BRIDGE
-L- POT 16+05.14
REMOVE EXISTING BRIDGE (STRUCTURE ITEM)
INSTALL SHOULDER BERM GUTTER FROM STA.16+24.70 TO STA.16+35.00 -L- LT
INSTALL SHOULDER BERM GUTTER FROM STA.16+09.59 TO STA.16+35.00 -L- RT
1
HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32
2
HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32
3
BOBBY G. HERRING, et ux
DB 1284 PG 606
PC 7 PG 35
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WOODS HOG FARM INC.
DB 303 PG 98
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PC 11 PG 63
DEWEY L. PELLETIER, et ux
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BM #1
ELEV = 45.24'
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137.71' RIGHT
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HIGH WATER LEVEL DURING HURRICANE MATTHEW PER PROPERTY OWNER ELEVATION=55.37'
PROPERTY LINE ALONG BEAR CREEK
NC GRID NAD 83/NSRS 2011
WOODED
EXISTING R/W
4" PVC
LOW WIRE=69.65'
65 SF
9 LF
46 SF
6 LF
142 SF
14 LF
4796 SF
103 LF
BRIDGE EXCAVATION
PERMANENT IMPACTS IN SURFACE WATERS
TEMPORARY IMPACTS IN SURFACE WATERS

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	
RW SHEET NO.	
ROADWAY ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

PI Sta 14+42.69	PI Sta 20+14.27
Δ = 3° 22' 24.0" (RT)	Δ = 12° 21' 22.6" (RT)
D = 4° 14' 38.9"	D = 6° 05' 43.1"
L = 79.48'	L = 202.72'
T = 39.75'	T = 101.75'
R = 1,350.00'	R = 940.00'

-DI-

PI Sta 10+69.44	PI Sta 10+98.05
Δ = 55° 51' 21.1" (LT)	Δ = 55° 22' 47.6" (RT)
D = 159° 09' 17.8"	D = 238° 43' 56.7"
L = 35.10'	L = 23.20'
T = 19.08'	T = 12.59'
R = 36.00'	R = 24.00'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 548121.118(ft) EASTING: 2363190.555(ft)
ELEVATION: 49.65(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987582
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

*DESIGN EXCEPTION REQUIRED FOR HORIZONTAL INTERSECTION STOPPING SIGHT DISTANCE AT INTERSECTION OF -L- AND -Y1-

REVISIONS

10/16/2017 K:\RAL_Roadway\011036378 - Bridge49\Hydraulics\PERMITS_Environmental\Drawings\011036378_hyd_prm_wet_psh.dgn

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RALEIGH, NC 27601

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	
RW SHEET NO.	
ROADWAY ENGINEER	HYDRAULICS ENGINEER

RIGHT-OF-WAY REV.

CONST. REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

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-L-
PI Sta 14+42.69
△ = 3° 22' 24.0" (RT)
D = 4° 14' 38.9"
L = 79.48'
T = 39.75'
R = 1,350.00'

PI Sta 20+14.27
△ = 12° 21' 22.6" (RT)
D = 6° 05' 43.1"
L = 202.72'
T = 101.75'
R = 940.00'

-DI-
PI Sta 10+69.44
△ = 55° 51' 21.1" (LT)
D = 159° 09' 17.8"
L = 35.10'
T = 19.08'
R = 36.00'

PI Sta 10+98.05
△ = 55° 22' 47.6" (RT)
D = 238° 43' 56.7"
L = 23.20'
T = 12.59'
R = 24.00'

(1) HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32

(3) BOBBY G. HERRING, et ux
DB 1284 PG 606
PC 7 PG 35

(5) KEVIN P. HATCH
DB 490 PG 367
PC 10 PG 376

WOODS HOG FARM INC.
DB 303 PG 98
MB 4 PG 141
PC 13 PG 101

DEWEY L. PELLETIER, et ux
DB 938 PG 619

DEWEY L. PELLETIER, et ux
DB 1519 PG 780
PC 11 PG 63

(2) HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32

-Y1- POT Sta. 12+14.75

-Y1- POT 11+60.00
END CONSTRUCTION
N 52° 29' 29.3" W

-Y1- BULLTOWN RD (SR 1318)

-L- POT 12+65.00
BEGIN PROJECT 17BP.2.R.84
BEGIN CONSTRUCTION

-L- POT Sta. 10+00.00

-L- BEAR CREEK RD (SR 1311)
N 30° 50' 10.7" E

-L- PT Sta. 14+82.42

-L- POT 17+50.00
END PROJECT 17BP.2.R.84
END CONSTRUCTION

INSTALL SHOULDER BERM GUTTER FROM STA.16+24.70 TO STA.16+35.00 -L- LT

-L- PC Sta. 19+12.52

-L- PT Sta. 21+15.24

N 34° 12' 34.7" E

-L- POT Sta.13+66.26 = -DI- POT Sta. 10+00.00
S 59° 09' 49.3" E
-DI- PC Sta. 10+50.36

S 79°44'43" E 298.58'

-L- PC Sta. 14+02.93

-L- POC Sta.14+14.88 = -Y1- POT Sta.10+00.00 -DI- PRC Sta.10+85.45

-DI- PT Sta.11+08.65
S 59° 38' 22.7" E
-DI- POT Sta. 11+20.00

BEGIN APPROACH SLAB
-L- POC 14+67.81

BEGIN BRIDGE
-L- POC 14+79.85

END APPROACH SLAB
-L- POT 16+17.14

END BRIDGE
-L- POT 16+05.14

INSTALL SHOULDER BERM GUTTER FROM STA.16+09.59 TO STA.16+35.00 -L- RT

REMOVE EXISTING BRIDGE (STRUCTURE ITEM)

PROPERTY LINE ALONG BEAR CREEK

BM #1
ELEV = 45.24'
N 547446 E 2362907
-L- STATION 13+61.17
137.71' RIGHT
RR SPIKE SET IN
24" HARDWOOD

HIGH WATER LEVEL DURING HURRICANE MATTHEW PER PROPERTY OWNER ELEVATION=55.37'

N 63°10'36" W 464.40'

S 19°29'12" E 150.01'

N 64°03'49" W 330.45'

N 29°57'18" E 216.67'

N 29°56'05" E 69.04'

N 52°22'44" W 81.52'

N 75°16'11" E 176.36'

N 16°57'41" W 103.42'

N 34°17'21" W 51.29'

N 30°18'03" W 96.27'

S 78°21'16" W 99.52'

N 52°22'44" W 81.52'

N 30°50'44" W 103.78'

N 83°20'11" E 150.76'

N 10°45'44" E 12.85'

NC GRID NAD 83/NSRS 2011

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 548121.118(ft) EASTING: 2363190.555(ft) ELEVATION: 49.65(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987582 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

BRIDGE EXCAVATION
PERMANENT IMPACTS IN SURFACE WATERS
TEMPORARY IMPACTS IN SURFACE WATERS

*DESIGN EXCEPTION REQUIRED FOR HORIZONTAL INTERSECTION STOPPING SIGHT DISTANCE AT INTERSECTION OF -L- AND -Y1-

BM #1
-L- STA 13+61.17 (137.71' RT)
ELEV 45.24'
R/R SPIKE IN 24" HARDWOOD

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RALEIGH, NC 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	5

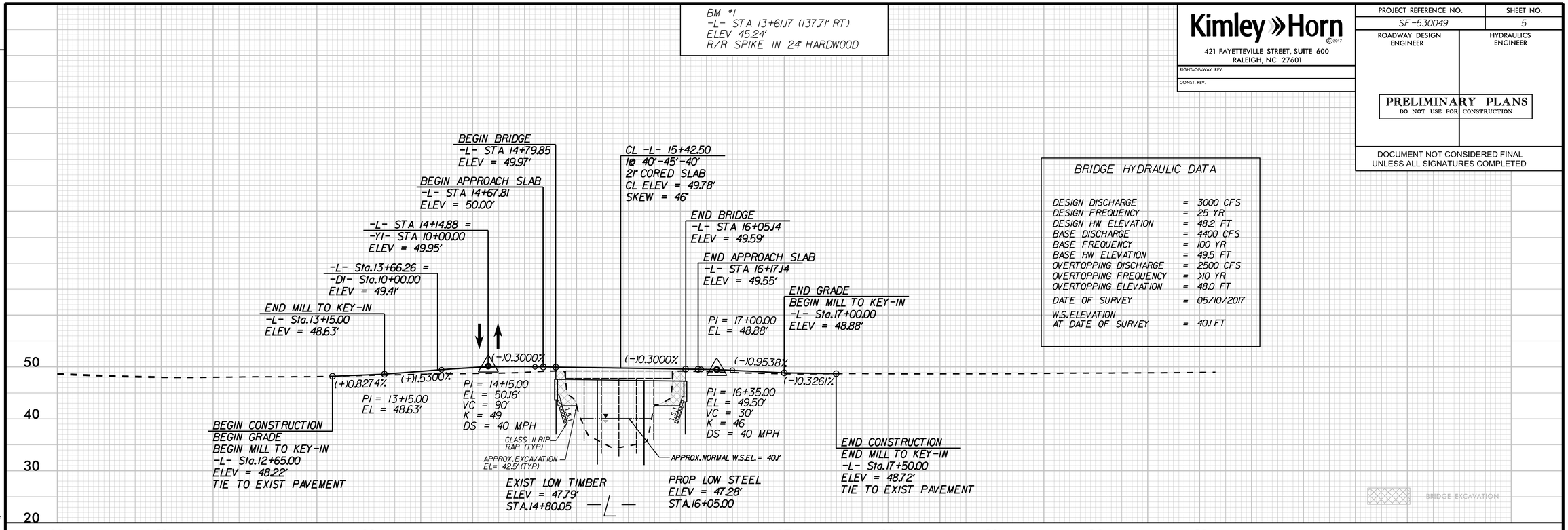
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

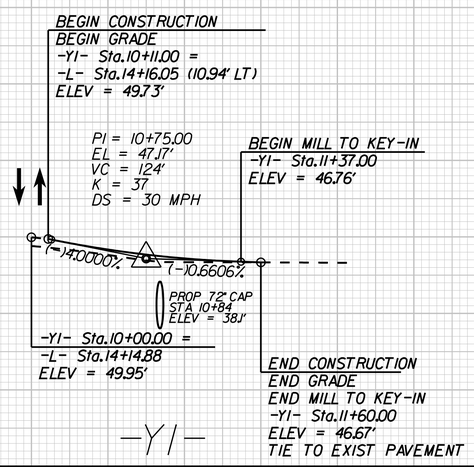
REVISIONS



BRIDGE HYDRAULIC DATA

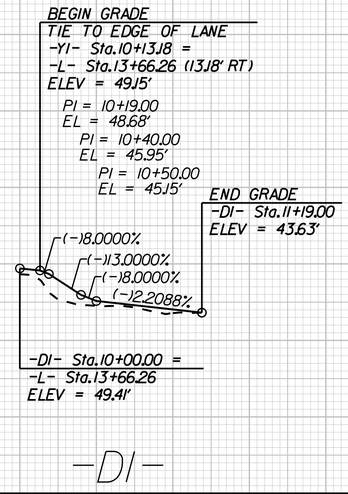
DESIGN DISCHARGE	=	3000 CFS
DESIGN FREQUENCY	=	25 YR
DESIGN HW ELEVATION	=	48.2 FT
BASE DISCHARGE	=	4400 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	49.5 FT
OVERTOPPING DISCHARGE	=	2500 CFS
OVERTOPPING FREQUENCY	=	>10 YR
OVERTOPPING ELEVATION	=	48.0 FT
DATE OF SURVEY	=	05/10/2017
W.S.ELEVATION AT DATE OF SURVEY	=	40.1 FT

BRIDGE EXCAVATION



PIPE HYDRAULIC DATA
72" CAP W/ HEADWALL (BURIED 1')

DESIGN DISCHARGE	= 200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 46.02	FT
BASE DISCHARGE	= 300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 47.11	FT
OVERTOPPING DISCHARGE	= 223	CFS
OVERTOPPING FREQUENCY	= >25	YRS
OVERTOPPING ELEVATION	= 46.6	FT



PROJECT: SF-530049

CONTRACT:

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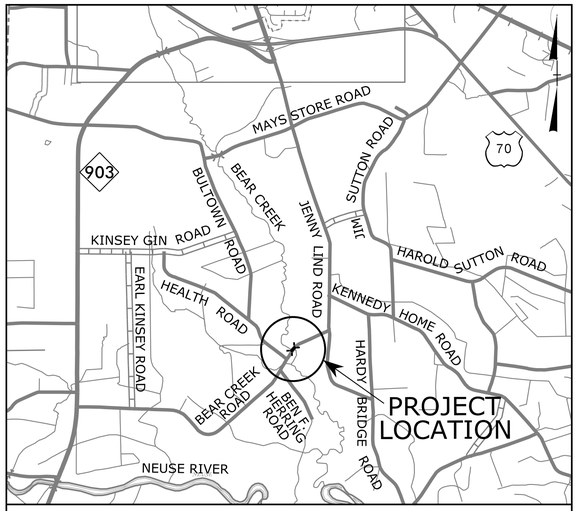
10/16/2017



VICINITY MAP

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LENOIR COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-530049	EC-1	

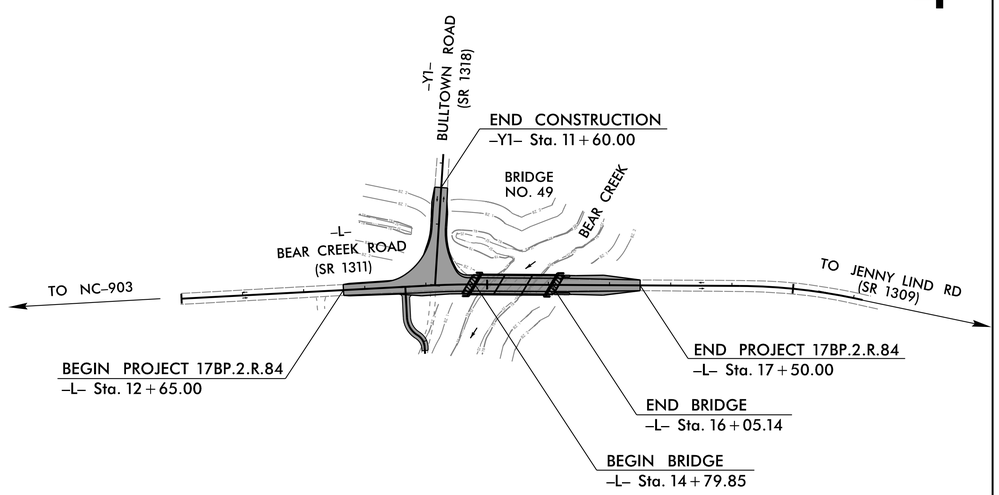
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.2.R.84		PE

LOCATION: *BRIDGE NO. 49 OVER BEAR CREEK ON SR 1311 (BEAR CREEK ROAD)*

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

NC GRID
NAD 83/NSRS 2011

4



THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2018 STANDARD SPECIFICATIONS

Erin Thompson
LEVEL IIIA NAME

4031
LEVEL IIIA CERTIFICATION NO.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

PLANS PREPARED FOR THE NCDOT BY:

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NC LICENSE #C-0102
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NORTH CAROLINA 27601
PHONE: (919) 677-2000

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 31, 2018

LETTING DATE:
APRIL 25, 2018

DAN ROBINSON, P.E.
PROJECT ENGINEER

ERIN THOMPSON, P.E.
PROJECT DESIGN ENGINEER

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin for Pumped Effluent	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	EC-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

EROSION CONTROL PLAN

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RALEIGH, NC 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	EC-3
R/W SHEET NO.	

REVISIONS

10/16/2017 K:\RAL_Roadway\011036378 - Bridge#49\Roadway\Pro\011036378_rdy_ero_psh_3.dgn

HENRY T. HEATY, et ux
DB 572 PG 303
PB 12 PG 32

BOBBY G. HERRING, et ux
DB 1284 PG 606
PC 7 PG 35

KEVIN P. HATCH
DB 490 PG 367
PC 10 PG 376

WOODS HOG FARM INC.
DB 303 PG 98
MB 4 PG 141
PC 13 PG 101

DEWEY L. PELLETIER, et ux
DB 1519 PG 780
PC 11 PG 63

DEWEY L. PELLETIER, et ux
DB 938 PG 619

KELLEY M. KINCAID
DB 1093 PG 540
PC 4 PG 345

-Y1- POT Sta. 12+14.75

-Y1- POT 11+60.00
END CONSTRUCTION
N 52° 29' 29.3" W

-L- POT Sta. 10+00.00

-L- POT 12+65.00
BEGIN PROJECT 17BP.2.R.84
BEGIN CONSTRUCTION

-L- PT Sta. 14+82.42

CONCRETE WASHOUT STRUCTURE

-L- POT 17+50.00
END PROJECT 17BP.2.R.84
END CONSTRUCTION

-L- PC Sta. 19+12.52

NCDOT GPS BL-3
-L- STA 20+84.69
OFF 18.68' LT

-L- PT Sta. 21+15.24

-BL- 1
-L- STA 10+23.89
OFF 13.91' RT

-L- POT Sta. 13+66.26 =
-DI- POT Sta. 10+00.00
S 59° 09' 49.3" E

-DI- PC Sta. 10+50.36

S 79°44'43" E
298.58'

-L- PC Sta. 14+02.93

-L- POC Sta. 14+14.88 =
-Y1- POT Sta. 10+00.00
-DI- PRC Sta. 10+85.45

-DI- PT Sta. 11+08.65
S 59° 38' 22.7" E

-DI- POT Sta. 11+20.00

-BL- 2
-L- STA 14+52.85
OFF 13.43' RT

N 34° 12' 34.7" E

INSTALL TURBIDITY CURTAIN (ANCHOR AS NEEDED) SEE DETAIL, SHEET EC-7

NOTE: BRIDGE NO. 49 HAS WOODEN DECK, SEAT, HEADWALLS, WING WALLS, GUARDRAILS AND PILES.

NC GRID
NAD 83/NSRS 2011

WETLANDS

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

NOTE: UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

CULVERT CONSTRUCTION SEQUENCE

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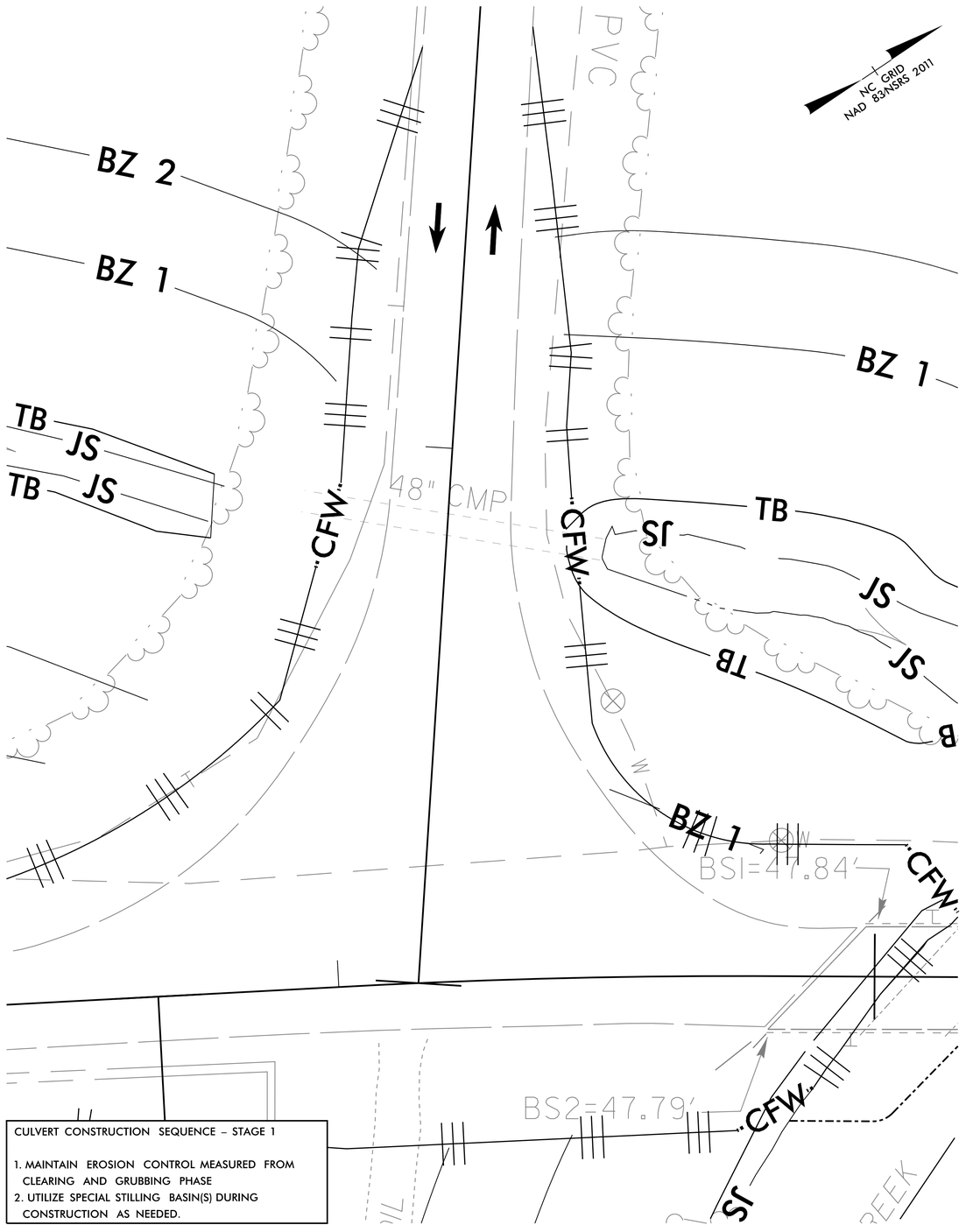
RIGHT-OF-WAY REV.
CONST. REV.

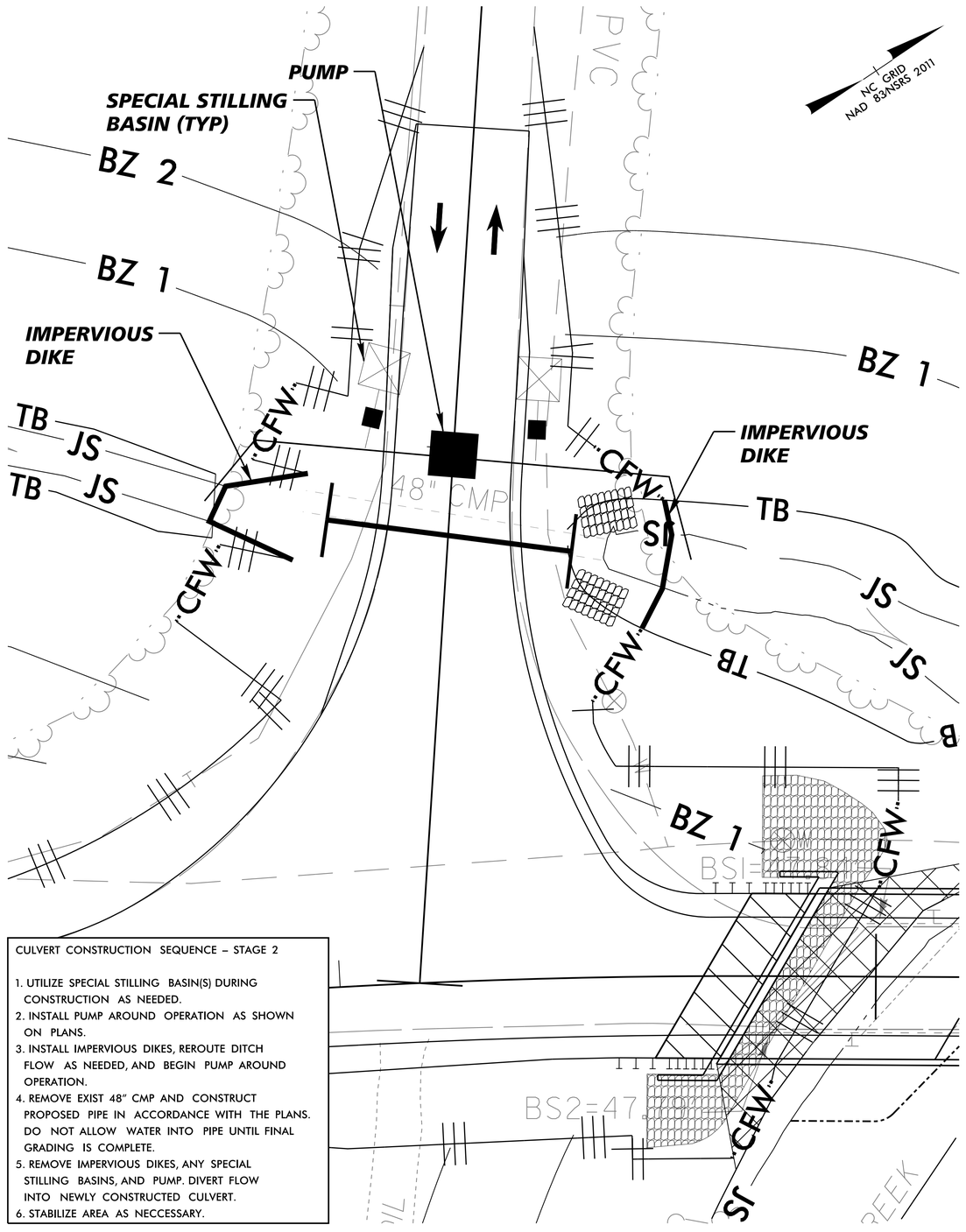
PROJECT REFERENCE NO.	SHEET NO.
SF-530049	EC-4
R/W SHEET NO.	

REVISIONS



CULVERT CONSTRUCTION SEQUENCE – STAGE 1

1. MAINTAIN EROSION CONTROL MEASURED FROM CLEARING AND GRUBBING PHASE
2. UTILIZE SPECIAL STILLING BASIN(S) DURING CONSTRUCTION AS NEEDED.



CULVERT CONSTRUCTION SEQUENCE – STAGE 2

1. UTILIZE SPECIAL STILLING BASIN(S) DURING CONSTRUCTION AS NEEDED.
2. INSTALL PUMP AROUND OPERATION AS SHOWN ON PLANS.
3. INSTALL IMPERVIOUS DIKES, REROUTE DITCH FLOW AS NEEDED, AND BEGIN PUMP AROUND OPERATION.
4. REMOVE EXIST 48" CMP AND CONSTRUCT PROPOSED PIPE IN ACCORDANCE WITH THE PLANS. DO NOT ALLOW WATER INTO PIPE UNTIL FINAL GRADING IS COMPLETE.
5. REMOVE IMPERVIOUS DIKES, ANY SPECIAL STILLING BASINS, AND PUMP. DIVERT FLOW INTO NEWLY CONSTRUCTED CULVERT.
6. STABILIZE AREA AS NECCESSARY.

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EROSION CONTROL PLAN

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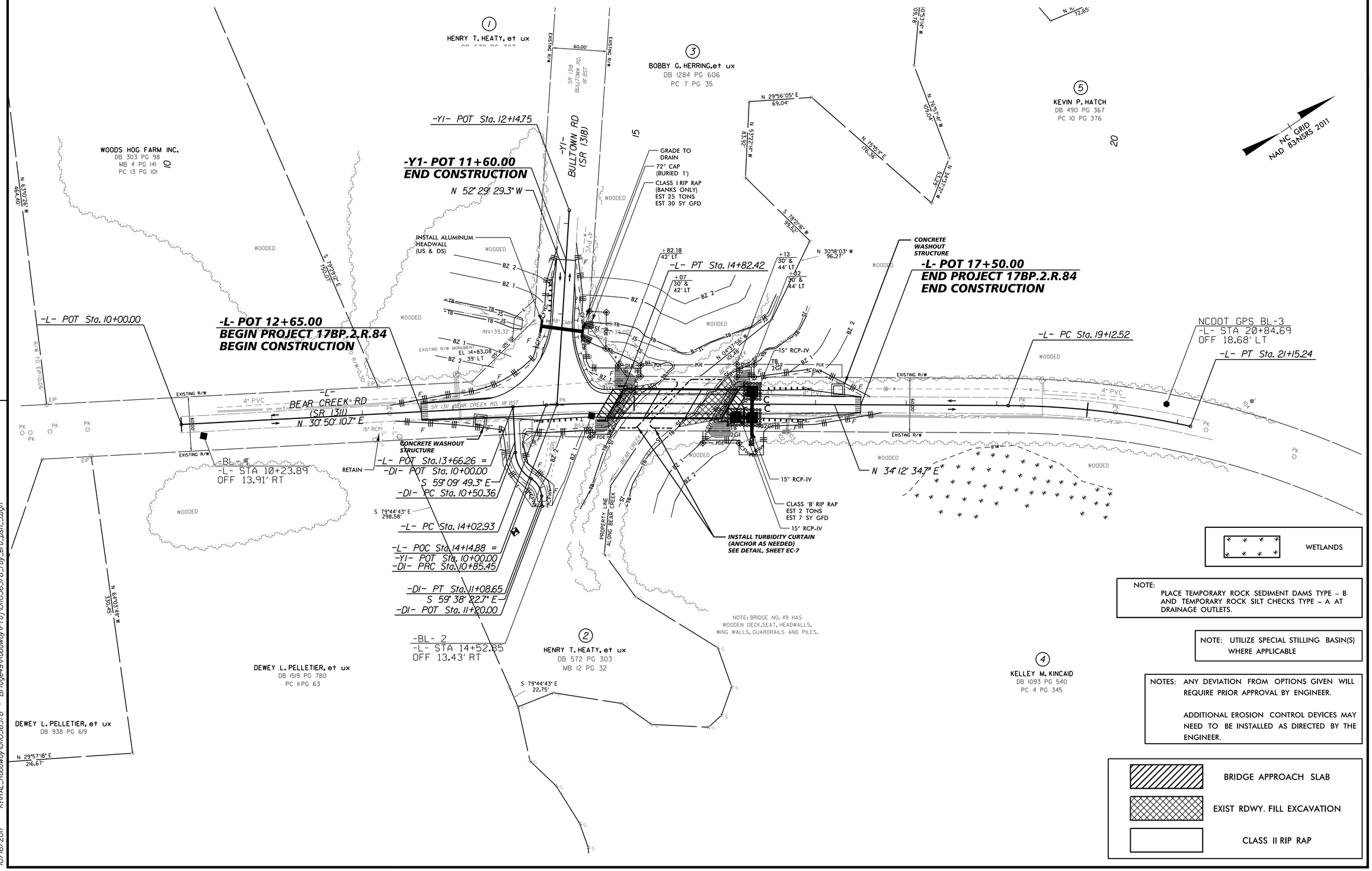
RALEIGH, NC 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	EC-5
R/W SHEET NO.	

REVISIONS



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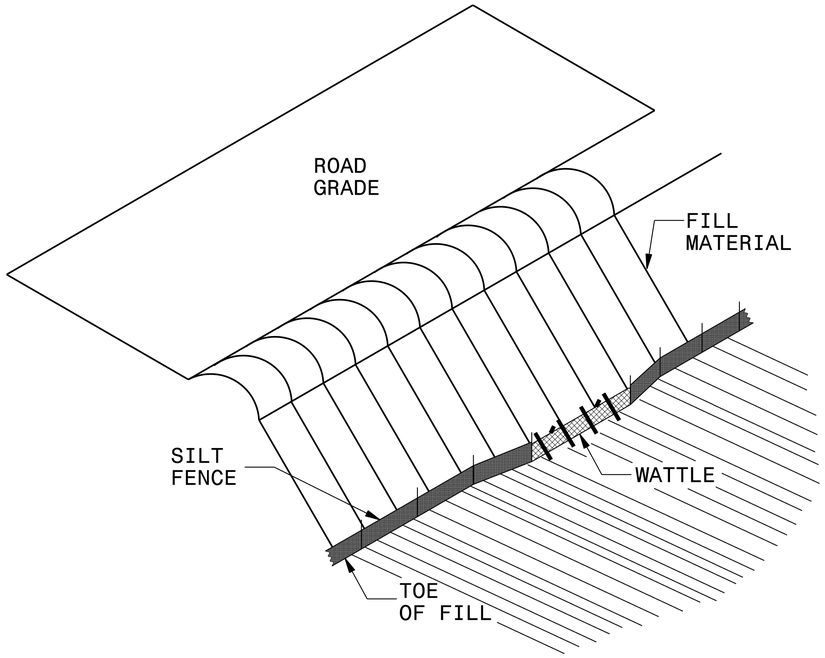
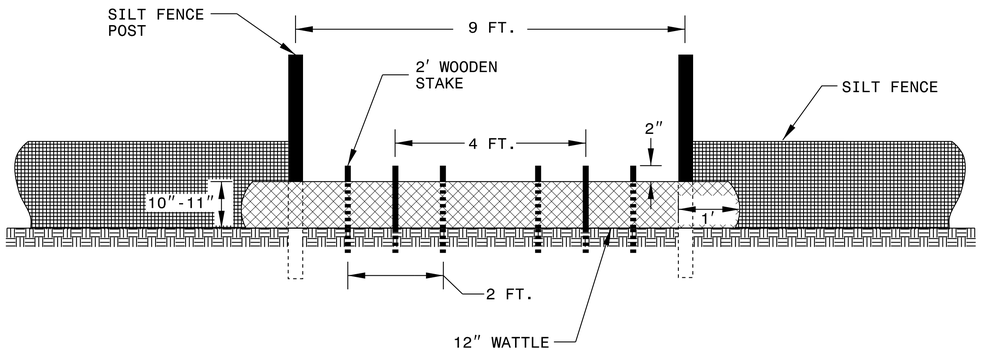
PROJECT REFERENCE NO.	SHEET NO.
SF-530049	EC-6
R/W SHEET NO.	

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

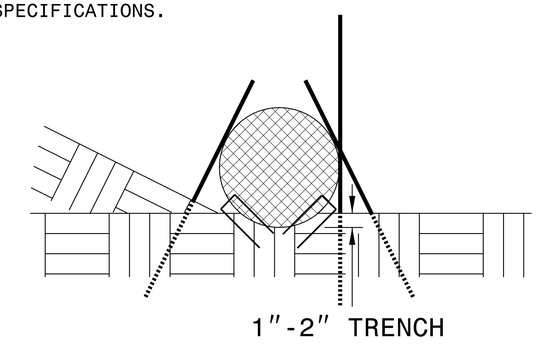
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

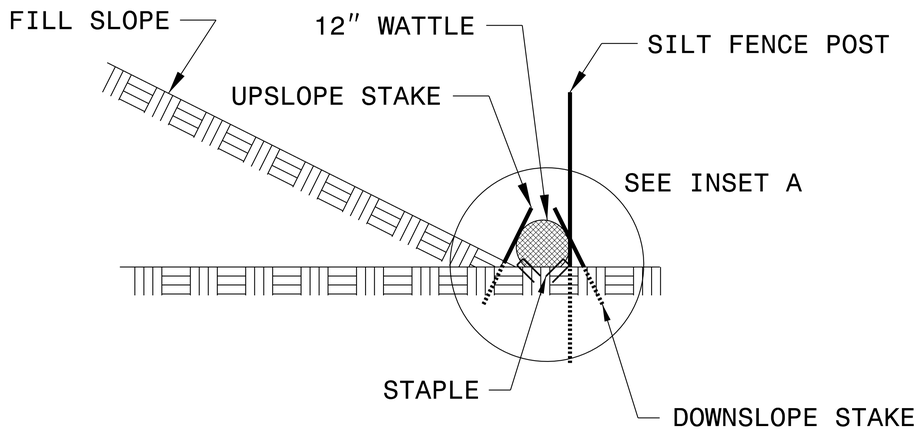
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	EC-7

FLOATING TURBIDITY CURTAIN

USE THIS DEVICE FOR CONSTRUCTION OF THE PROPOSED BULKHEADS WITHIN THE EXISTING WATERWAY.

MATERIAL AND INSTALLATION REFERENCES:

NCDOT - "BMP'S FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES"
(AUGUST 2003, PAGES 74 AND 75)
SECTION 5.2.5 "TURBIDITY CURTAIN"
(http://www.ncdot.org/doh/operations/BMP_manual/download/BMP_Manual.pdf)

NCDOT SPECIAL PROVISION -
"FLOATING TURBIDITY CURTAIN"
(http://www.ncdot.org/doh/operations/dp_chief_eng/roadside/soil_water/pdf/FloatingTurbidityCurtain.pdf)

FLOATING TURBIDITY CURTAIN:

Description
This work consists of furnishing a Floating Turbidity Curtain to deter silt suspension and movement of silt particles during construction. The floating turbidity curtain shall be constructed at locations as directed.

Materials
The curtain material shall be made of a tightly woven nylon, plastic or other nondeteriorating material meeting the following specifications:

Property	Value
Grab tensile strength	*md-370 lbs *cd-250 lbs
Mullen burst stength	480 psi
Trapezoid tear strength	*md-100 lbs *cd-60 lbs
Apparent opening size	70 US standard sieve
Percent open area	4% permittivity 0.28 sec-1

*md - machine direction
*cd - cross machine direction

In the event that more than one width of fabric is required, a 6" overlap of the material shall also be required.
The curtain material shall be supported by a flotation material having over 29 lbs/ft buoyancy. The floating curtain shall have a 5/16" galvanized chain as ballast and dual 5/16" galvanized wire ropes with a heavy vinyl coating as load lines.

Construction Methods
The Contractor shall maintain the Floating Turbidity Curtain in a satisfactory condition until its removal is requested by the Engineer. The curtain shall extend to the bottom of the jurisdictional resource. Anchor the curtain according to manufacturer recommendations.

Measurement and Payment
Floating Turbidity Curtain will be measured and paid for as the actual number of square yards of curtain furnished as specified and accepted. Such price and payment will be full compensation for the work as described in this section including but not limited to furnishing all materials, tools, equipment, and all incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Floating Turbidity Curtain	Square Yard

5.2.5 Turbidity Curtain

Purpose

Used as instream erosion control filtration device to isolate the streambank work from the normal flow of the stream. This device is normally used in open waters for containment in work zones. May also be used across channels with very low flow for short-term work when anchored properly.

Figure 33. Turbidity Curtain

Conditions Where Practice Applies

- ✓ When performing work on a stream bank in a small localized area.
- ✓ When the repair or construction activities will not require an extended period of time to complete.

Conditions Where Practice Does Not Apply

- ✓ Across flowing streams. Turbidity curtains are not designed as prefabricated dams.

Construction

The curtain should be made of a tightly woven nylon, plastic or other non-deteriorating material. The material shall meet the following specifications:

Property	Value
Grab tensile strength	*md-370 lbs. (1.65 Kn) *cd-250 lbs. (1.11 Kn)
Mullen burst strength	480 psi (3307 kpa)
Trapezoid tear strength	*md-100 lbs. (0.45 Kn) *cd-60 lbs. (0.27 Kn)
Apparent opening size	70 us standard sieve (0.210 mm)
Percent open area	4% permittivity 0.28 sec-1

*md – machine direction
*cd – cross machine direction

- A flotation material with over 29 lbs./ft. (43 kg/m) buoyancy shall support the curtain material. A 5/16 inch (7.8 mm) galvanized chain shall act as ballast for the floating curtain. Dual 5/16 inch (7.8 mm) galvanized wire ropes with a heavy vinyl coating shall be used as the load lines.

Maintenance

- Inspect the curtain, flotation and ballast to ensure the work area is securely partitioned from the stream flow.
- Remove accumulated sediment and debris.

Typical Problems

- Does not permanently remove sediment.
- Improper anchoring of curtain on channel bottom.
- Tidal flows requiring frequent repositioning

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	RF-1

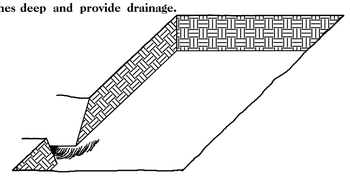
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-530055	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

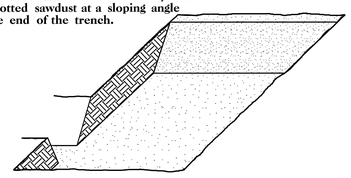
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

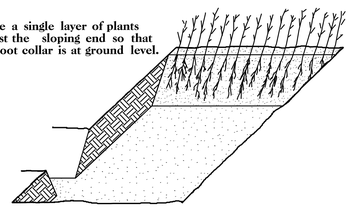
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



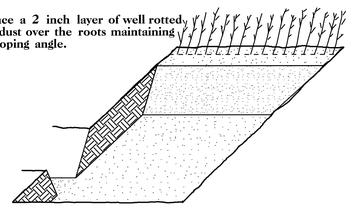
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

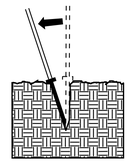


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

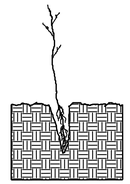


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

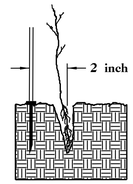
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



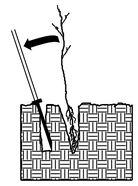
1. Insert planting bar as shown and pull handle toward planter.



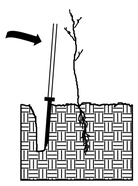
2. Remove planting bar and place seedling at correct depth.



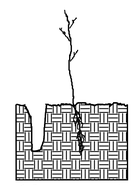
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in – 18 in BR
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in – 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

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10/16/2017