North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 3.00; Released August 2021)

General Project Information

WBS Element:	44638.1.1	**TIP Number:**	R-5763	**Project Type:**	Roadway Widening	**Date:**	5/16/2023
NCDOT Contact:	David McHenry			**Contractor / Designer:**	HNTB North Carolina, P.C. / Rhonda B. Early, PE		
Address:	253 Webster Road Sylva, NC 28779			**Address:**	343 E. Six Forks Road Suite 200 Raleigh, NC 27609		
Phone:	828-586-2141			**Phone:**	(919) 424-0426		
Email:	dgmchenry@ncdot.gov			**Email:**	rearly@HNTB.com		
City/Town:	Brevard			**County(ies):**	Transylvania		
River Basin(s):	French Broad			**CAMA County?**	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	3.58	**Surrounding Land Use:**	Rural, Residential, and Agriculture		
	Proposed Project			**Existing Site**	
Project Built-Upon Area (ac.)	19.8	ac.		13.6	ac.
Typical Cross Section Description:	2 - 12' paved lanes with 8' shoulders. Wetlands are present along this project and will be impacted.			2 - 9" paved lanes with no shoulders.	
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	Year:		Existing:	Year:

General Project Narrative: (Description of Minimization of Water Quality Impacts)

R-5763 involved raising Wilson Road (SR 1540) to prevent overtopping during a 50-year storm event, flattening existing curves and shifting part of Wilson Road to new alignment from Greenville Highway (US 276) to Old Hendersonville Highway (Old US 64). Bridges over Williamson Creek and over the French Broad River will be replaced on new alignment. Wetlands and Jurisdictional streams are present within project limit. Class I Rip Rap pad has been utilitized throughout the entire project at pipe outlet to reduce erosive velocity at pipe outlet.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 3.00; Released August 2021)

WBS Element: 44638.1.1 **TIP/Proj No.:** R-5763 **County(ies):** Transylvania

General Project Information

Waterbody Information

Surface Water Body (1):	Cateechee Branch		**NCDWR Stream Index No.:**	6-29		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class B			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?	No	Comments:	No listed species in this stream; endangered Appalachian elktoe mussel are present in the FBR downstream.			
NRTR Stream ID:	Cateechee Branch			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?	N/A	(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)						

Surface Water Body (2):	French Broad River		**NCDWR Stream Index No.:**	6-(27)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class B			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?	Yes	Comments:	Occupied by endangered Appalachian elktoe mussel within project area.			
NRTR Stream ID:	French Broad River			**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)						

Surface Water Body (3):	Williamson Creek		**NCDWR Stream Index No.:**	6-32		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	High Quality Waters (HQW)	Trout Waters (Tr)		
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?	No	Comments:	No listed species in this stream; endangered Appalachian elktoe mussel are present in the FBR downstream.			
NRTR Stream ID:	Williamson Creek			**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)						

North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS

(Version 3.00; Released August 2021)

WBS Element:	44638.1.1	TIP No.:	R-5763	County(ies):	Transylvania	Page	3	of	3

Additional Waterbody Information

Surface Water Body (4):	UT to French Broad River		**NCDWR Stream Index No.:**	6-(27)			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class B				
		Supplemental Classification:					
Other Stream Classification:							
Impairments:							
Aquatic T&E Species?	No	Comments:	No listed species in this stream; endangered Appalachian elktoe mussel are present in the FBR downstream.				
NRTR Stream ID:	SA, SB, SC, SD, SDD, SE, SEE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SP, SQ, SR, SS, ST, SU, SW, SX, SY, SZ			**Buffer Rules in Effect:**	N/A		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A		
Deck Drains Discharge Over Water Body?	N/A	(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)							

Surface Water Body (5):	UT to Cateechee Branch		**NCDWR Stream Index No.:**	6-29			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class B				
		Supplemental Classification:					
Other Stream Classification:							
Impairments:							
Aquatic T&E Species?		Comments:					
NRTR Stream ID:	SO			**Buffer Rules in Effect:**	N/A		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A		
Deck Drains Discharge Over Water Body?	N/A	(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)							

Surface Water Body (6):	UT to Williamson Creek		**NCDWR Stream Index No.:**	6-32			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C				
		Supplemental Classification:	High Quality Waters (HQW)	Trout Waters (Tr)			
Other Stream Classification:							
Impairments:							
Aquatic T&E Species?		Comments:					
NRTR Stream ID:	SV			**Buffer Rules in Effect:**	N/A		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A		
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)			
(If yes, provide justification in the General Project Narrative)							

09/08/99

CONTRACT: **TIP PROJECT: R-5763**

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSYLVANIA COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5763	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
44638.1.1		P.E.
44638.2.1		ROW
44638.2.2		UTILITIES
44638.3.1		CONST.

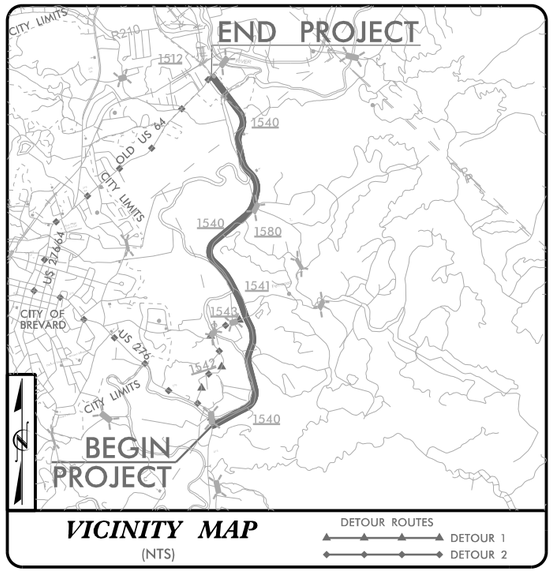
PERMIT DRAWING
SHEET 1 OF 44

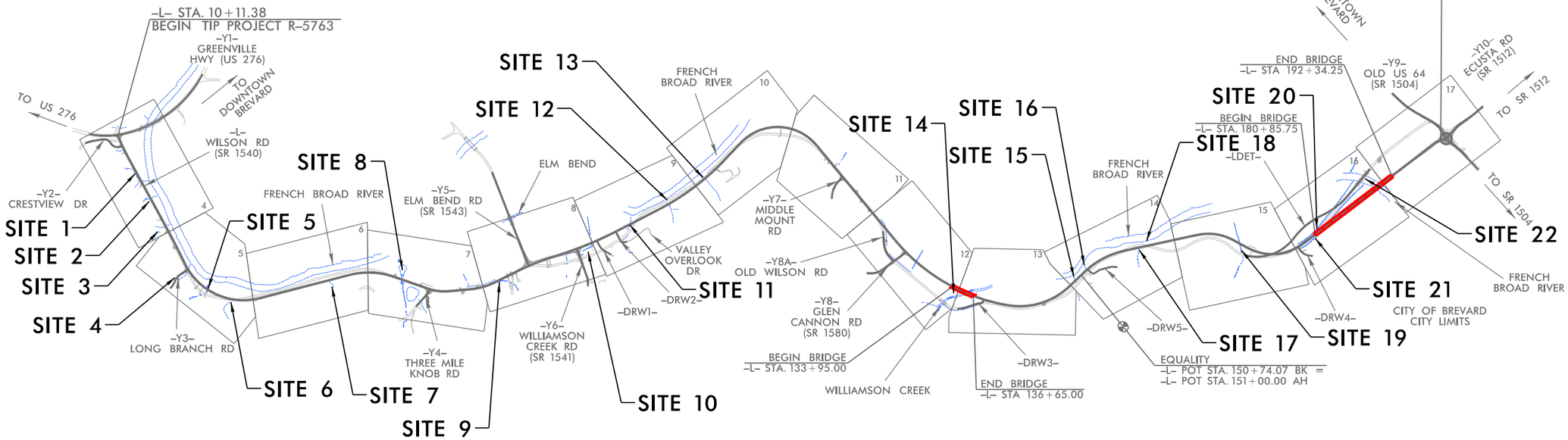
LOCATION: *SR 1540 (WILSON ROAD) FROM SR 1504 (OLD US 64) TO US 276*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, STRUCTURES, AND RETAINING WALLS*

NAD 83/NA 2011

WETLAND AND SURFACE WATER IMPACTS PERMIT





NOTES:
1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
2. THIS PROJECT IS PARTIALLY WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF BREVARD.

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 2022 = 4,290
ADT 2042 = 5,420
K = 9 %
D = 60 %
T = 6 % *
V = 40 MPH
* TTST =1% DUAL 5%
FUNC CLASS =
MAJOR COLLECTOR
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY T.I.P. PROJECT R-5763 = 3.313 MILES
LENGTH OF STRUCTURES T.I.P. PROJECT R-5763 = 0.269 MILES
TOTAL LENGTH OF T.I.P. PROJECT R-5763 = 3.582 MILES

LENGTH BASED ON –L– CENTERLINE

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
FOR NCDOT DIVISION 14

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 14, 2022

LETTING DATE:
MAY 21, 2024

J. MATTHEW PICKENS, PE
PROJECT ENGINEER

TATYANA S. GIBBS, EI
PROJECT DESIGN ENGINEER

BARRY MOSTELLER
NCDOT CONTACT

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

3/30/2023
...\Drawings\R5763_HYD_PRM_TSH.dgn
HNTB

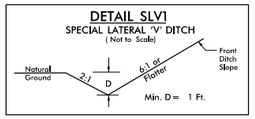
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R–5763	2D–1
HYDRAULICS ENGINEER	

R–5763 DRAINAGE DETAILS

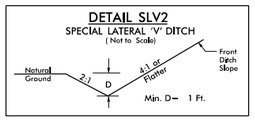
PERMIT DRAWING SHEET 2 OF 44

DETAIL SLV1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



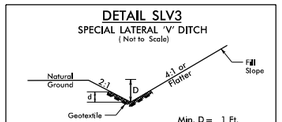
FROM –L– STA. 13+50 TO STA. 14+20 RT
FROM –L– STA. 117+50 TO STA. 122+00 RT
FROM –L– STA. 154+00 TO STA. 155+50 RT

DETAIL SLV2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM –L– STA. 11+64 TO STA. 12+12 RT
FROM –L– STA. 17+00 TO STA. 17+85 RT
FROM –L– STA. 28+60 TO STA. 30+50 RT
FROM –L– STA. 73+80 TO STA. 75+50 RT
FROM –L– STA. 80+00 TO STA. 83+50 RT
FROM –L– STA. 83+50 TO STA. 85+00 RT
FROM –L– STA. 111+50 TO STA. 114+00 RT
FROM –L– STA. 144+61 TO STA. 149+74 RT
FROM –L– STA. 150+50 TO STA. 151+80 RT
FROM –L– STA. 170+00 TO STA. 172+50 RT
FROM –L– STA. 173+00 TO STA. 175+00 RT
FROM –L– STA. 175+00 TO STA. 178+50 LT
FROM –Y2– STA. 10+32 TO STA. 11+00 LT
FROM –Y2– STA. 10+25 TO STA. 11+25 RT
FROM –Y7– STA. 10+41 TO STA. 10+75 LT

DETAIL SLV3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= Class B Rip–Rap

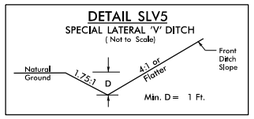
FROM –L– STA. 17+85 TO STA. 18+20 RT
FROM –L– STA. 114+00 TO STA. 115+00 RT
FROM –L– STA. 165+00 TO STA. 168+50 RT
FROM –L– STA. 177+00 TO STA. 178+12 RT
FROM –Y4– STA. 10+31 TO STA. 11+00 LT

DETAIL SLV4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Type of Liner= Class B Rip–Rap

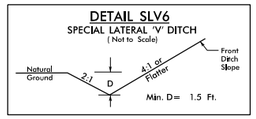
FROM –L– STA. 18+37 TO STA. 18+75 RT

DETAIL SLV5
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



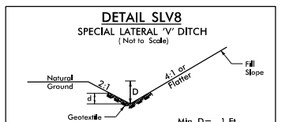
FROM –L– STA. 18+75 TO STA. 21+00 RT

DETAIL SLV6
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM –L– STA. 22+50 TO STA. 24+00 RT
FROM –L– STA. 138+00 TO STA. 142+00 RT

DETAIL SLV8
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= Class I Rip–Rap

FROM –L– STA. 94+00 TO STA. 94+43 RT

DETAIL SLV9
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

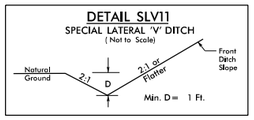
FROM –L– STA. 96+50 TO STA. 99+50 RT
FROM –L– STA. 155+50 TO STA. 158+00 RT
FROM –L– STA. 158+54 TO STA. 160+02 RT

DETAIL SLV10
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Type of Liner= Class B Rip–Rap

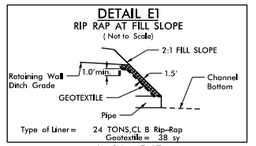
FROM –L– STA. 87+55 TO STA. 89+00 RT
FROM –L– STA. 89+00 TO STA. 90+50 RT
FROM –L– STA. 158+00 TO STA. 158+54 RT

DETAIL SLV11
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM –Y8A– STA. 10+75 TO STA. 12+25 RT
FROM –Y8A– STA. 10+50 TO STA. 13+00 LT

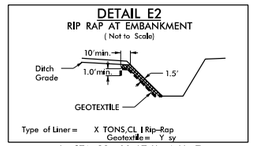
DETAIL E1
RIP RAP AT FILL SLOPE
(Not to Scale)



Type of Liner= 24 TONS,CL B Rip–Rap
Geotextile= 38 sy

–L– 84+45 LT

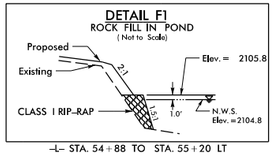
DETAIL E2
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= X TONS,CL I Rip–Rap
Geotextile= Y sy

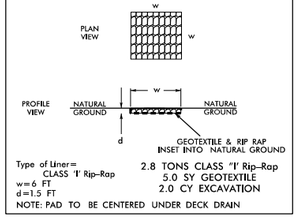
–L– STA. 89+00 LT X=4, Y=7
–L– STA. 134+70 RT X=7, Y=16

DETAIL F1
ROCK FILL IN POND
(Not to Scale)



–L– STA. 54+88 TO STA. 55+20 LT

DETAIL DP1
DECK DRAIN DISSIPATER PAD
(Not to Scale)

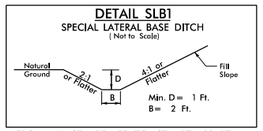


Type of Liner= CLASS 'I' Rip–Rap
w=6 FT
d=1.5 FT

2.8 TONS CLASS "I" Rip–Rap
5.0 SY GEOTEXTILE
2.0 CY EXCAVATION

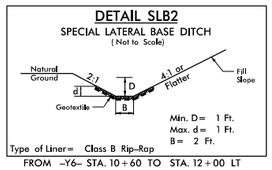
NOTE: PAD TO BE CENTERED UNDER DECK DRAIN

DETAIL SLB1
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 25+50 TO STA. 27+60 RT
FROM –L– STA. 59+00 TO STA. 61+50 LT
FROM –L– STA. 100+60 TO STA. 105+00 RT
FROM –L– STA. 108+00 TO STA. 111+50 RT
FROM –L– STA. 122+00 TO STA. 126+47 RT
FROM –L– STA. 161+50 TO STA. 165+00 RT
FROM –Y3– STA. 10+60 TO STA. 11+50 RT

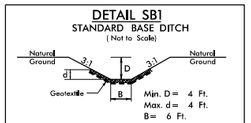
DETAIL SLB2
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip–Rap

FROM –Y6– STA. 10+60 TO STA. 12+00 LT

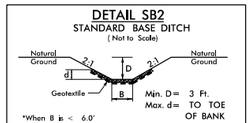
DETAIL SB1
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class I Rip–Rap

–L– STA. 31+00 RT

DETAIL SB2
STANDARD BASE DITCH
(Not to Scale)

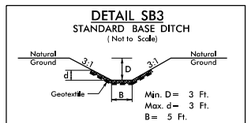


*When B is < 6.0'

Type of Liner= Class I Rip–Rap

–L– STA. 31+22 LT

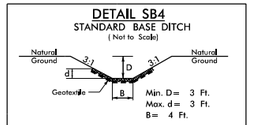
DETAIL SB3
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class I Rip–Rap

–L– STA. 51+00 LT
FROM –Y4– STA. 10+40 (58.5' RT) TO STA. 11+14 (48.3' RT)

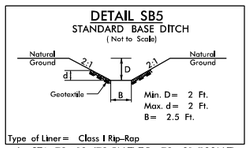
DETAIL SB4
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class I Rip–Rap

FROM –L– STA. 55+23 (31' RT) TO STA. 55+49 (60.1' RT)

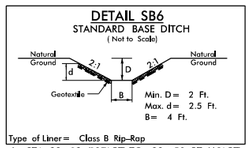
DETAIL SB5
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class I Rip–Rap

–L– STA. 79+10 (79.5' LT) TO 79+21 (133' LT)

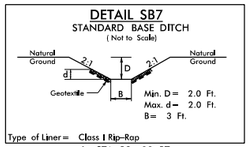
DETAIL SB6
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip–Rap

–L– STA. 83+18 (107' RT) TO 83+50 RT (69' RT)

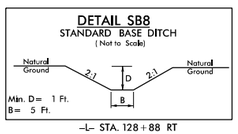
DETAIL SB7
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class I Rip–Rap

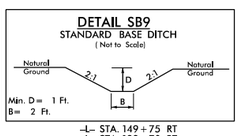
–L– STA. 89+00 RT

DETAIL SB8
STANDARD BASE DITCH
(Not to Scale)



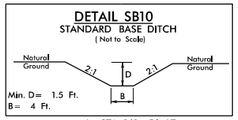
–L– STA. 128+88 RT

DETAIL SB9
STANDARD BASE DITCH
(Not to Scale)



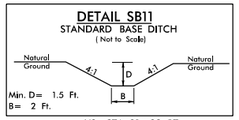
–L– STA. 149+75 RT
–L– STA. 133+70 RT

DETAIL SB10
STANDARD BASE DITCH
(Not to Scale)



–L– STA. 161+50 LT

DETAIL SB11
STANDARD BASE DITCH
(Not to Scale)

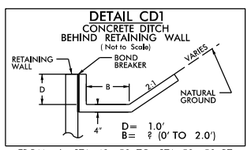


–Y9– STA. 21+93 RT

–L– STA. 186+23 LT
–L– STA. 186+61 LT
–L– STA. 186+99 LT
–L– STA. 187+37 LT
–L– STA. 187+75 LT
–L– STA. 188+13 LT
–L– STA. 188+51 LT
–L– STA. 188+89 LT
–L– STA. 189+27 LT
–L– STA. 189+65 LT
–L– STA. 190+85 LT
–L– STA. 191+29 LT
–L– STA. 191+73 LT
–L– STA. 192+17 LT

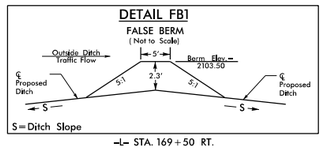
–L– STA. 186+33 RT
–L– STA. 186+71 RT
–L– STA. 187+09 RT
–L– STA. 187+47 RT
–L– STA. 187+85 RT
–L– STA. 188+23 RT
–L– STA. 188+61 RT
–L– STA. 188+99 RT
–L– STA. 189+37 RT
–L– STA. 189+75 RT
–L– STA. 190+95 RT
–L– STA. 191+39 RT
–L– STA. 191+83 RT
–L– STA. 192+27 RT

DETAIL CD1
CONCRETE DITCH
BEHIND RETAINING WALL
(Not to Scale)



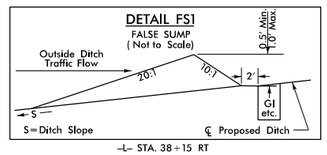
FROM –L– STA. 49+50 TO STA. 53+50 RT
FROM –L– STA. 84+50 TO STA. 91+00 LT

DETAIL FB1
FALSE BERM
(Not to Scale)



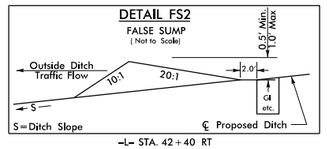
–L– STA. 169+50 RT.

DETAIL FS1
FALSE SUMP
(Not to Scale)



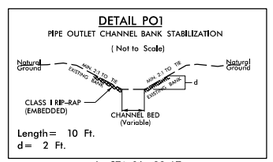
–L– STA. 38+15 RT

DETAIL FS2
FALSE SUMP
(Not to Scale)



–L– STA. 42+40 RT

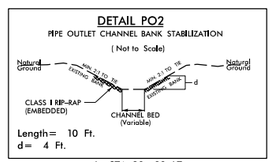
DETAIL PO1
PIPE OUTLET CHANNEL BANK STABILIZATION
(Not to Scale)



Length= 10 Ft.
d= 2 Ft.

–L– STA. 16+39 LT
–L– STA. 94+38 LT
–L– STA. 114+00 LT
–L– STA. 149+87 LT
–L– STA. 151+97 LT

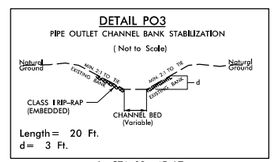
DETAIL PO2
PIPE OUTLET CHANNEL BANK STABILIZATION
(Not to Scale)



Length= 10 Ft.
d= 4 Ft.

–L– STA. 22+32 LT
–L– STA. 27+73 LT

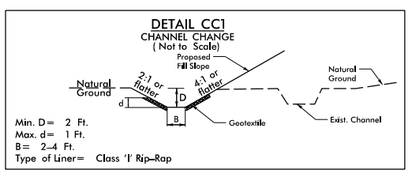
DETAIL PO3
PIPE OUTLET CHANNEL BANK STABILIZATION
(Not to Scale)



Length= 20 Ft.
d= 3 Ft.

–L– STA. 18+45 LT
–L– STA. 84+39 LT
–L– STA. 128+63 LT
–L– STA. 170+78 LT

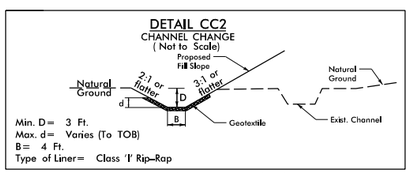
DETAIL CC1
CHANNEL CHANGE
(Not to Scale)



Type of Liner= Class 'I' Rip–Rap

FROM –L– STA. 14+55 TO STA. 16+25 RT
FROM –L– STA. 77+76 TO STA. 78+75 RT

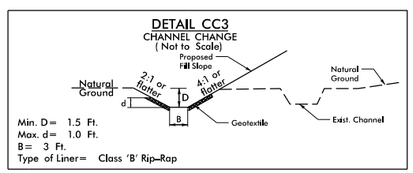
DETAIL CC2
CHANNEL CHANGE
(Not to Scale)



Type of Liner= Class 'I' Rip–Rap

FROM –L– STA. 67+00 TO STA. 67+69 RT

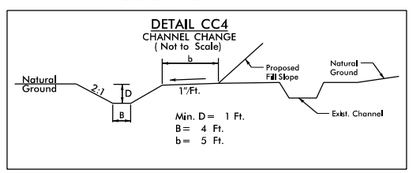
DETAIL CC3
CHANNEL CHANGE
(Not to Scale)



Type of Liner= Class 'B' Rip–Rap

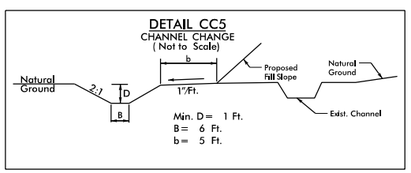
FROM –L– STA. 75+50 TO STA. 76+46 RT

DETAIL CC4
CHANNEL CHANGE
(Not to Scale)



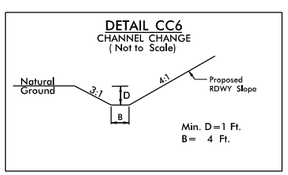
FROM –L– STA. 178+00 TO STA. 181+24 LT

DETAIL CC5
CHANNEL CHANGE
(Not to Scale)



FROM –L– STA. 178+75 TO STA. 181+48 RT

DETAIL CC6
CHANNEL CHANGE
(Not to Scale)



FROM –Y3– STA. 10+65 TO STA. 11+15 LT

DETAIL LB1
LATERAL BASE DITCH
(Not to Scale)

FROM –L– STA. 127+62 TO STA. 128+85 RT, X=2
FROM –L– STA. 128+91 TO STA. 133+70 RT, X=1

DETAIL TP1
TOE PROTECTION
(Not to Scale)

Type of Liner= Class B Rip–Rap

FROM –L– STA. 31+53 TO STA. 35+30 RT
FROM –L– STA. 44+00 TO STA. 49+50 RT
FROM –L– STA. 94+42 TO STA. 94+75 RT
FROM –L– STA. 100+00 TO STA. 100+60 RT

EXCAVATION DETAIL FBR FOR EX. ROAD AND BRIDGE

DETAIL ES1
EMBANKMENT STABILIZATION AT WILLIAMSON CREEK

DETAIL SCD1
SPECIAL CUT DITCH
(Not to Scale)

Type of Liner= Class 'B' Rip–Rap, Keyed–In d= 1 Ft.

FROM –DRW6 STA. 10+30 TO STA. 10+75 RT

3/30/2023
R5763_HYD_PRM_DRN_details.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

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.
R-5763	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 3 OF 44

NAD 83/NA 2011

TURF MOUNTAIN SOD, INC.

WILLIAM P. McKELVEY HEIRS (7A)

DREW'S LIVING, LLC (7)

LOIS M. GIBBS HEIRS

JAMES AUSTRD (2)

RICHARD J. RIDEOUT

CEDAR MOUNTAIN (4)

SUMMER RAIN LLC (5)

JOSEPH C. HAJKOWSKI AND WIFE, DAWN HAJKOWSKI (6)

FRENCH BROAD RIVER

15+00 –L–

20+00 –L–

SEE PERMIT DRAWING SHEET 5 OF 44 FOR ENLARGEMENT

SURFACE WATER IMPACTS (SPECIAL LATERAL 'V' DITCH)

SURFACE WATER IMPACTS (CHANNEL RELOCATION)

SURFACE WATER IMPACTS (30" RCP)

SURFACE WATER IMPACTS (24" RCP)

FILL IN WETLAND

SURFACE WATER IMPACTS (24" PIPE)

TEMP. SURFACE WATER IMPACTS

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV1

CHANNEL CHANGE EST. 70 TON CL 1 RIP RAP EST. 98 SYGF SLOPE = 1.5% EST DDE = 263 CY SEE DETAIL CC1

WETLAND EXCAVATION

MECHANIZED CLEARING

SURFACE WATER IMPACTS (BANK STABILIZATION)

BANK STABILIZATION EST. 6 TON CL I RIP RAP SEE DETAIL PO1

SURFACE WATER IMPACTS (30" RCP)

SURFACE WATER IMPACTS (54" RCP)

BANK STABILIZATION EST. 12 TON CL I RIP RAP SEE DETAIL PO3

SURFACE WATER IMPACTS (BANK STABILIZATION)

SURFACE WATER IMPACTS (48" RCP)

BANK STABILIZATION EST. 12 TON-CL I RIP RAP SEE DETAIL PO2

SPECIAL LATERAL 'V' DITCH EST. 18 TON CL B RIP RAP EST. 27 SYGE SEE DETAIL SLV3

SPECIAL LATERAL 'V' DITCH EST. 18 TON CL B RIP RAP EST. 27 SYGE SEE DETAIL SLV4

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV5

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV6

SITE 1: SA | SB | SEE | WQ | WA | WB

SITE 2: SD | WC

SITE 3: WD

SITE 3 SE

MATCHLINE –L– 23+00 SEE SHEET 5

INTERSECTION OF WILSON ROAD (–L–) AND GREENVILLE HIGHWAY (–Y1–)

2022 ADT 6140
2042 ADT 7870

–Y1–: 850/1020 (–L–), 2680/3370, 1830/2350

GRAPHIC SCALE 50' 0' 50' 100' 150'

LEGENDS

- FILL IN WETLAND
- WETLAND EXCAVATION
- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

FOR –L– PROFILE, SEE SHEET 18
FOR –Y2– PROFILE, SEE SHEET 25
FOR INTERSECTION DETAIL, SEE SHEET 2B–1

4/14/2023
R5763_HYD_PRM_PSH_4.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

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.
R-5763	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 4 OF 44

NAD 83/NA 2011

TURF MOUNTAIN SOD, INC.

FRENCH BROAD RIVER

7A WILLIAM P. McKELVEY HEIRS

SEE PERMIT DRAWING SHEET 6 OF 44 FOR ENLARGEMENT

15+00 -L-

20+00 -L-

LOIS M. GIBBS HEIRS

DREW'S LIVING, LLC

7

SURFACE WATER IMPACTS (BANK STABILIZATION)

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (SPECIAL LATERAL 'V' DITCH)

SURFACE WATER IMPACTS (30" RCP)

SURFACE WATER IMPACTS (CHANNEL RELOCATION)

SURFACE WATER IMPACTS (24" RCP)

FILL IN WETLAND

SURFACE WATER IMPACTS (54" RCP)

SURFACE WATER IMPACTS (BANK STABILIZATION)

SURFACE WATER IMPACTS (48" RCP)

SURFACE WATER IMPACTS (24" PIPE)

BANK STABILIZATION EST. 6 TON CL I RIP RAP SEE DETAIL PO1

BANK STABILIZATION EST. 12 TON CL I RIP RAP SEE DETAIL PO3

BANK STABILIZATION EST. 12 TON-CL I RIP RAP SEE DETAIL PO2

Q10 = FS
V10 = FS

Q10 = 2.3 CFS
V10 = 2.7 FPS

Q10 = 4.8 CFS
V10 = 3.8 FPS

Q10 = 14.7 CFS
V10 = 3.9 FPS

30" RCP-IV (BURIED 0.5 FT)

54" RCP-IV (BURIED 1.0 FT)

48" RCP-IV (BURIED 0.8 FT)

24" (BURIED 0.4')

REMOVE SYSTEM 20' BST

REMOVE 18" RCP-IV

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV1

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

SPECIAL LATERAL 'V' DITCH EST. 18 TON CL B RIP RAP EST. 27 SYGE SEE DETAIL SLV4

SPECIAL LATERAL 'V' DITCH EST. 18 TON-CL I RIP RAP EST. 27 SYGE SEE DETAIL SLV5

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV6

SPECIAL LATERAL 'V' DITCH EST. 18 TON CL B RIP RAP EST. 27 SYGE SEE DETAIL SLV3

CHANNEL CHANGE EST. 70 TON CL I RIP RAP EST. 98 SYGF SLOPE = 1.5% EST DDE = 263 CY SEE DETAIL CC1

WETLAND EXCAVATION

MECHANIZED CLEARING

JB W/MH AND SILL

TEMP. SURFACE WATER IMPACTS

SITE 1
SA | SB | SEE
WQ | WA | WB

SITE 2
SD | WC

SITE 3
WD

SITE 3
SE

SHEET 5

MATCHLINE -L- 23+00 SEE SHEET 5

JAMES AUSTIN

RICHARD J. RIDEOUT

CEDAR MOUNTAIN

SUMMER RAIN LLC

JOSEPH C. HAJKOWSKI AND WIFE, DAWN HAJKOWSKI

RETAIN

INTERSECTION OF WILSON ROAD (-L-) AND GREENVILLE HIGHWAY (-Y1-)

2022 ADT 6140
2042 ADT 7870

-L- 850/1020 2680/3370

-Y1- 1830/2350

GRAPHIC SCALE 50' 0' 50' 100' 150'

LEGENDS

- FILL IN WETLAND
- WETLAND EXCAVATION
- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

FOR -L- PROFILE, SEE SHEET 18
FOR -Y2- PROFILE, SEE SHEET 25
FOR INTERSECTION DETAIL, SEE SHEET 2B-1

4/14/2023
R5763_HYD_PRM_PSH_4.dgn
HNTB

WETLAND & STREAM IMPACTS

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.
R-5763	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 5 OF 41

NAD 83/NA 2011

SURFACE WATER IMPACTS (SPECIAL LATERAL 'V' DITCH)

SURFACE WATER IMPACTS (CHANNEL RELOCATION)

BANK STABILIZATION EST. 6 TON CL I RIP RAP SEE DETAIL PO1

SURFACE WATER IMPACTS (BANK STABILIZATION)

SURFACE WATER IMPACTS (30" RCP)

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (24" PIPE)

WETLAND EXCAVATION

REMOVE 18"

18" RCP-IV

REMOVE SYSTEM 20' BST

REMOVE

Q10 = 14.7 CFS
V10 = 3.9 FPS

REMOVE 24" CMP

30" RCP-IV (BURIED 0.5 FT)

24" (BURIED 0.4')

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV1

24" (BURIED 0.4')

TEMP. SURFACE WATER IMPACTS

CHANNEL CHANGE
EST. 70 TON CL 'I' RIP RAP
EST. 98 SYGF
SLOPE = 1.5%
EST DDE = 263 CY
SEE DETAIL CC1

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

TEMP. SURFACE WATER IMPACTS

MECHANIZED CLEARING

SURFACE WATER IMPACTS (30" RCP)

WETLAND EXCAVATION

SURFACE WATER IMPACTS (24" RCP)

MECHANIZED CLEARING

SR 1540 WILSON ROAD

MAINTAINED R/W

EXISTING R/W

DRAIN LINES

SEPTIC FIELD

WOODS

2 SBRK

JAMES A. BYRD

ALAN LEITCH

RICHARD J. RIDEOUT

2

3

SITE 1

SA	SB	SEE
WQ	WA	WB

50' 0' 50' 100' 150'
GRAPHIC SCALE

LEGENDS

- F F — FILL IN WETLAND
- E E — WETLAND EXCAVATION
- S S — SURFACE WATER IMPACTS
- TS TS — TEMPORARY SURFACE WATER IMPACTS

WETLAND & STREAM IMPACTS

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.
R-5763	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 6 OF 41

NAD 83/NA 2011

SURFACE WATER IMPACTS (SPECIAL LATERAL 'V' DITCH)

SURFACE WATER IMPACTS (CHANNEL RELOCATION)

BANK STABILIZATION EST. 6 TON CL I RIP RAP SEE DETAIL PO1

SURFACE WATER IMPACTS (BANK STABILIZATION)

SURFACE WATER IMPACTS (30" RCP)

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (24" PIPE)

WETLAND EXCAVATION

REMOVE 18"

18" RCP-IV

REMOVE SYSTEM 20' BST

REMOVE

REMOVE 24" (BURIED 0.4')

30" RCP-IV (BURIED 0.5 FT)

Q10 = 14.7 CFS
V10 = 3.9 FPS

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV1

24" (BURIED 0.4')

TEMP. SURFACE WATER IMPACTS

CHANNEL CHANGE
EST. 70 TON CL 'I' RIP RAP
EST. 98 SYGF
SLOPE = 1.5%
EST DDE = 263 CY
SEE DETAIL CC1

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

TEMP. SURFACE WATER IMPACTS

MECHANIZED CLEARING

WETLAND EXCAVATION

SURFACE WATER IMPACTS (30" RCP)

SURFACE WATER IMPACTS (24" RCP)

MECHANIZED CLEARING

SITE 1

SA	SB	SEE
WQ	WA	WB

50' 0' 50' 100' 150'
GRAPHIC SCALE

LEGENDS

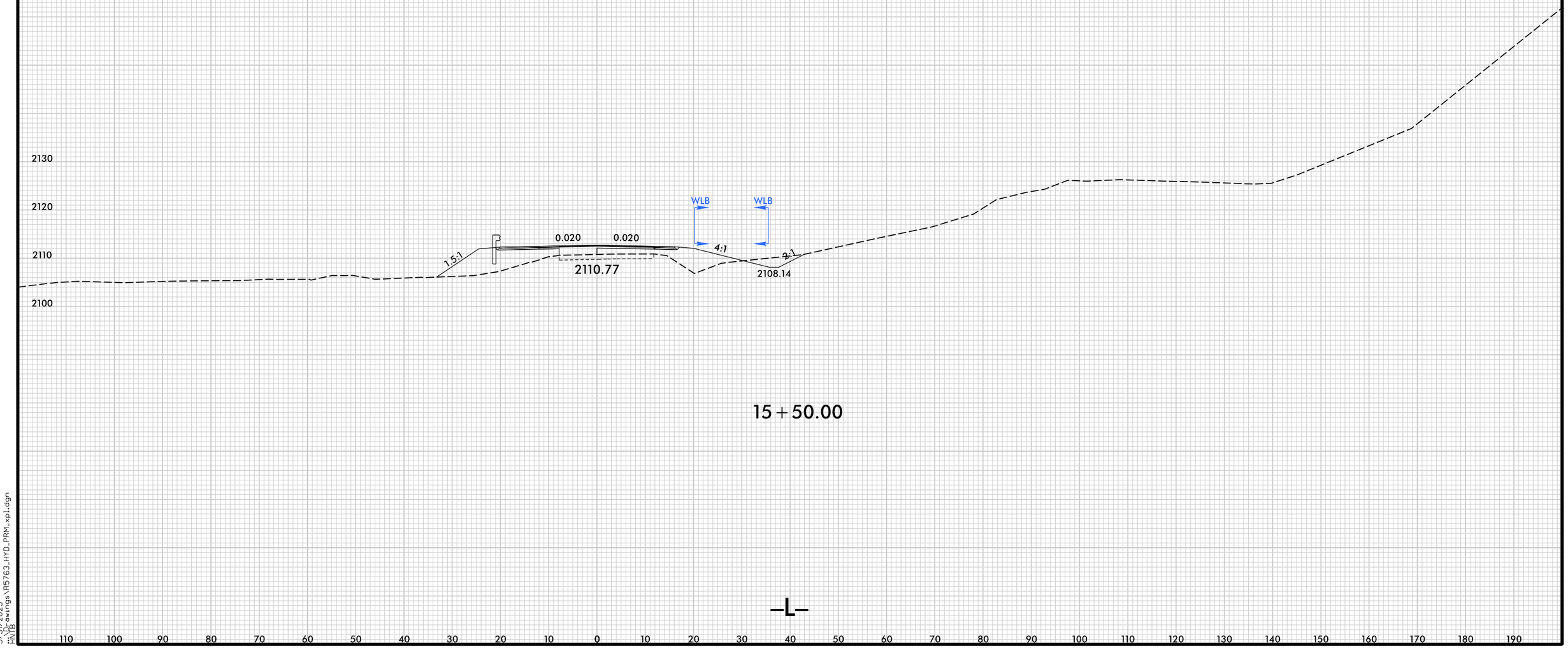
F F	FILL IN WETLAND
E E	WETLAND EXCAVATION
S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5763	

PERMIT DRAWING
SHEET 7 OF 44

SITE 1



15+50.00

–L–

3/31/2023
HNTB
...Drawings\R5763_HYD_PRM_xp1.dgn

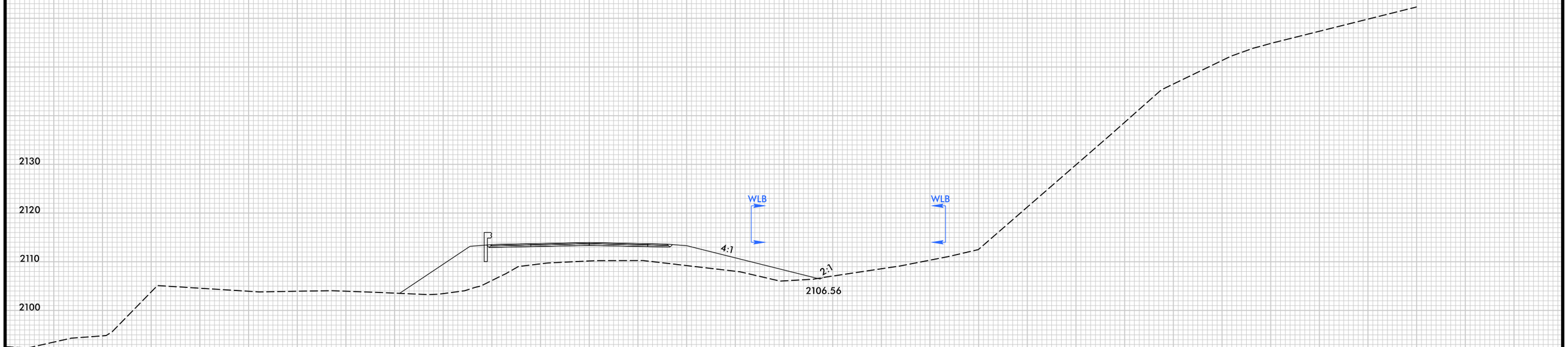
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5763	

PERMIT DRAWING
SHEET 8 OF 44

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

SITE 2



18+25

–L–

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190

3/31/2023
...\Drawings\R5763_HYD_PRM_xpl.dgn
jmg

8/23/99

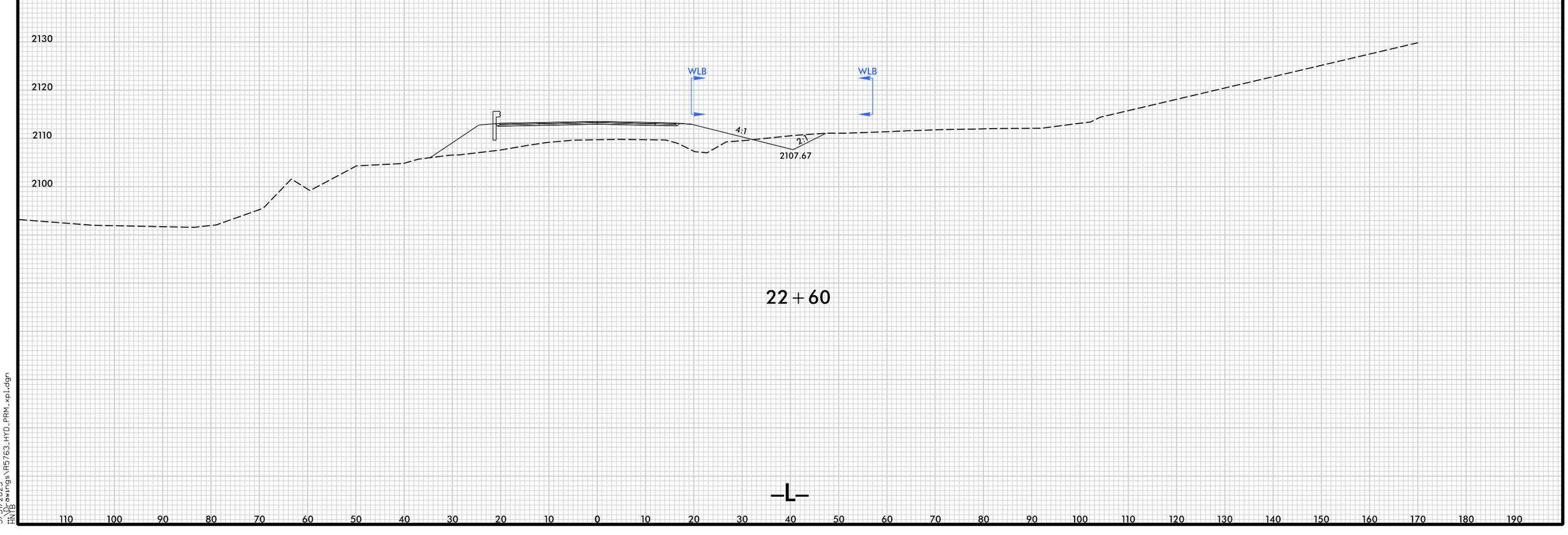
PROJ. REFERENCE NO.	SHEET NO.
R-5763	

0 5 10

PERMIT DRAWING
SHEET 9 OF 44

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

SITE 3



22 + 60

–L–

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190

3/31/2023
11:18
...Drawings\R5763_HYD_PRM_xp1.dgn

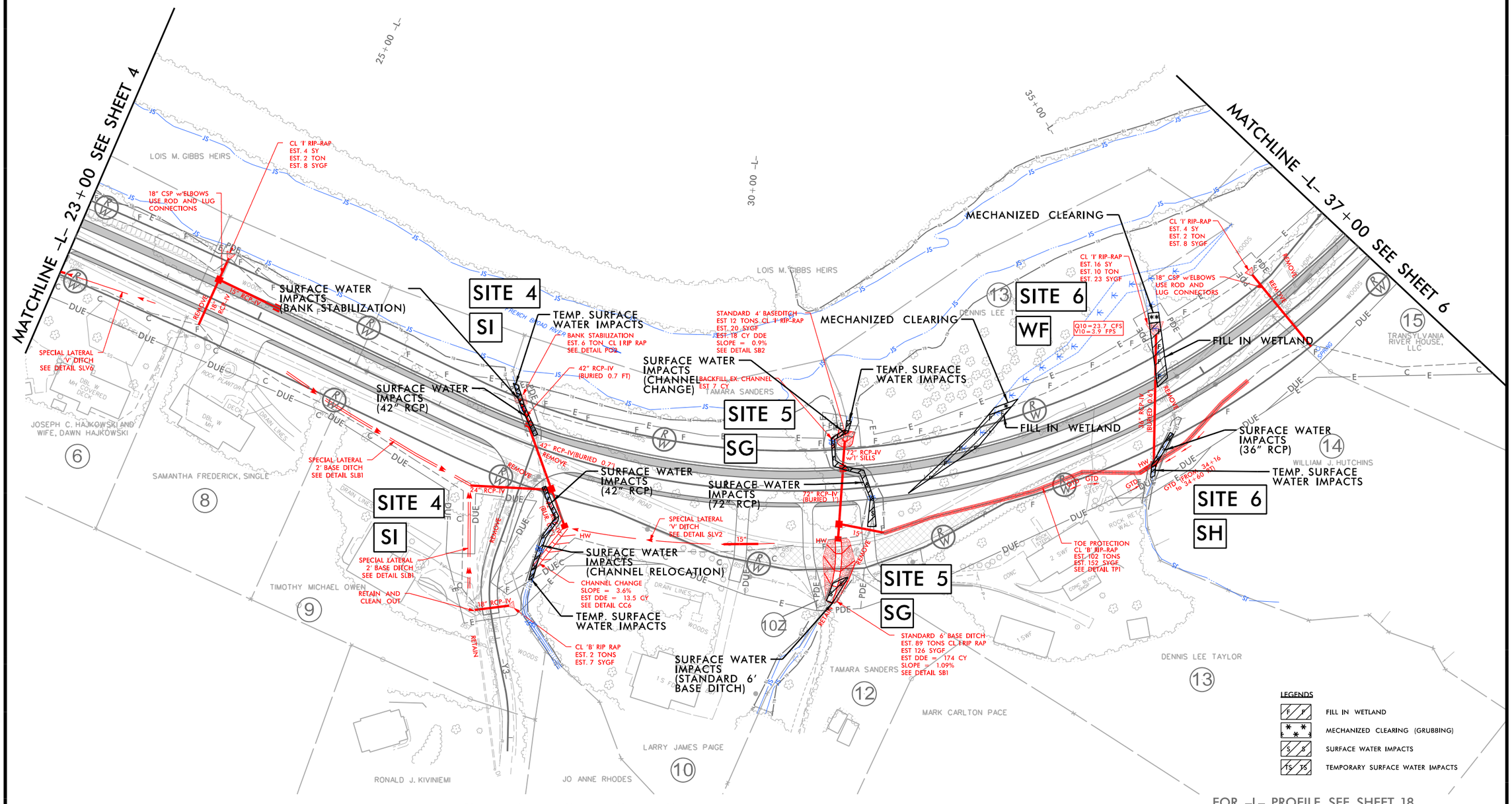
8/17/99

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.
	R-5763	5
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 10 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011



NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR -L- PROFILE, SEE SHEET 18
FOR -Y3- PROFILE, SEE SHEET 25
FOR INTERSECTION DETAIL, SEE SHEET 2B-2

3/31/2023
R-5763_HYD_PRM_PSH_5.dgn
HNTB

8/17/99

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.
R–5763	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 11 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011

MATCHLINE –L– 23+00 SEE SHEET 4

MATCHLINE –L– 37+00 SEE SHEET 6

25+00 –L–

30+00 –L–

35+00 –L–

LOIS M. GIBBS HEIRS

CL 'I' RIP-RAP
EST. 4 SY
EST. 2 TON
EST. 8 SYGF

18" CSP w/ELBOWS
USE ROD AND LUG
CONNECTIONS

SURFACE WATER IMPACTS (BANK STABILIZATION)

SITE 4
SI

TEMP. SURFACE WATER IMPACTS
BANK STABILIZATION
EST. 6 TON CL I RIP RAP
SEE DETAIL PO2

42" RCP-IV (BURIED 0.7 FT)

STANDARD 4' BASEDITCH
EST 12 TONS CL I RIP-RAP
EST. 20 SYGF
EST. 18 CY DDE
SLOPE = 0.9%
SEE DETAIL SB2

SURFACE WATER IMPACTS (CHANNEL CHANGE)

BACKFILL EX. CHANNEL
EST 7 CY

SITE 5
SG

MECHANIZED CLEARING

SITE 6
WF

CL 'I' RIP-RAP
EST. 16 SY
EST. 10 TON
EST. 23 SYGF

Q10=23.7 CFS
V10=3.9 FPS

18" CSP w/ELBOWS
USE ROD AND
LUG CONNECTORS

CL 'I' RIP-RAP
EST. 4 SY
EST. 2 TON
EST. 8 SYGF

FILL IN WETLAND

SPECIAL LATERAL 'V' DITCH
SEE DETAIL SLV6

SURFACE WATER IMPACTS (42" RCP)

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL SLB1

SURFACE WATER IMPACTS (42" RCP)

SURFACE WATER IMPACTS (72" RCP)

72" RCP-IV w/ 1' SILLS

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (36" RCP)

TEMP. SURFACE WATER IMPACTS

SITE 6
SH

SITE 4
SI

SPECIAL LATERAL 'V' DITCH
SEE DETAIL SLV2

SURFACE WATER IMPACTS (CHANNEL RELOCATION)

CHANNEL CHANGE
SLOPE = 3.6%
EST DDE = 13.5 CY
SEE DETAIL CC6

TEMP. SURFACE WATER IMPACTS

CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SYGF

SURFACE WATER IMPACTS (STANDARD 6' BASE DITCH)

SITE 5
SG

STANDARD 6' BASE DITCH
EST. 89 TONS CL I RIP RAP
EST 126 SYGF
EST DDE = 174 CY
SLOPE = 1.09%
SEE DETAIL SB1

TOE PROTECTION
CL 'B' RIP-RAP
EST. 102 TONS
EST. 152 SYGF
SEE DETAIL TP1

JOSEPH C. HAJKOWSKI AND WIFE, DAWN HAJKOWSKI

SAMANTHA FREDERICK, SINGLE

TIMOTHY MICHAEL OWEN

TAMARA SANDERS

DENNIS LEE TAYLOR

TRANSYLVANIA RIVER HOUSE, LLC

WILLIAM J. HUTCHINS

MARK CARLTON PACE

LARRY JAMES PAIGE

RONALD J. KIVINIEMI

JO ANNE RHODES

LEGENDS

- F F — FILL IN WETLAND
- * * — MECHANIZED CLEARING (GRUBBING)
- S S — SURFACE WATER IMPACTS
- TS TS — TEMPORARY SURFACE WATER IMPACTS

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR –L– PROFILE, SEE SHEET 18
FOR –Y3– PROFILE, SEE SHEET 25
FOR INTERSECTION DETAIL, SEE SHEET 2B–2

3/31/2023
R-5763_HYD_PRM_PSH_5.dgn
HNTB

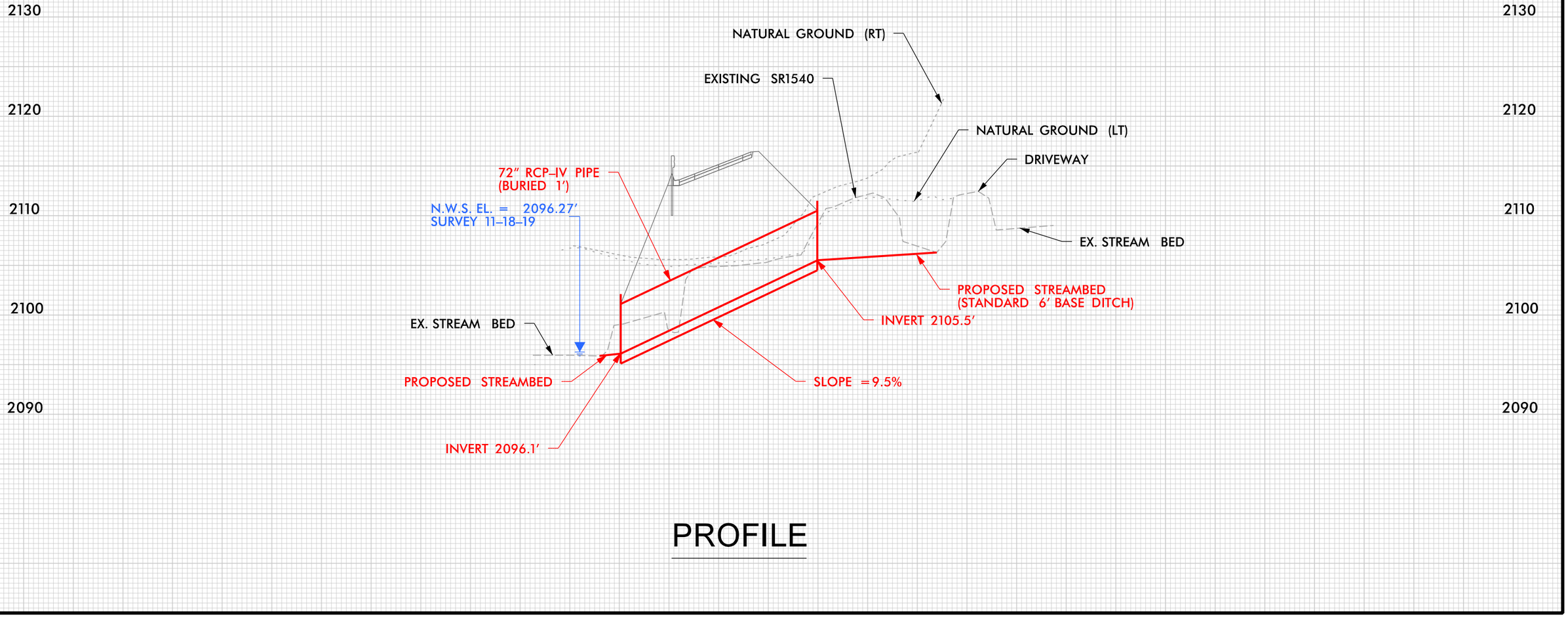
6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5763	

PERMIT DRAWING
SHEET 12 OF 44

(–) 150 (–) 100 (–) 50 0 50 100 150

Site 5

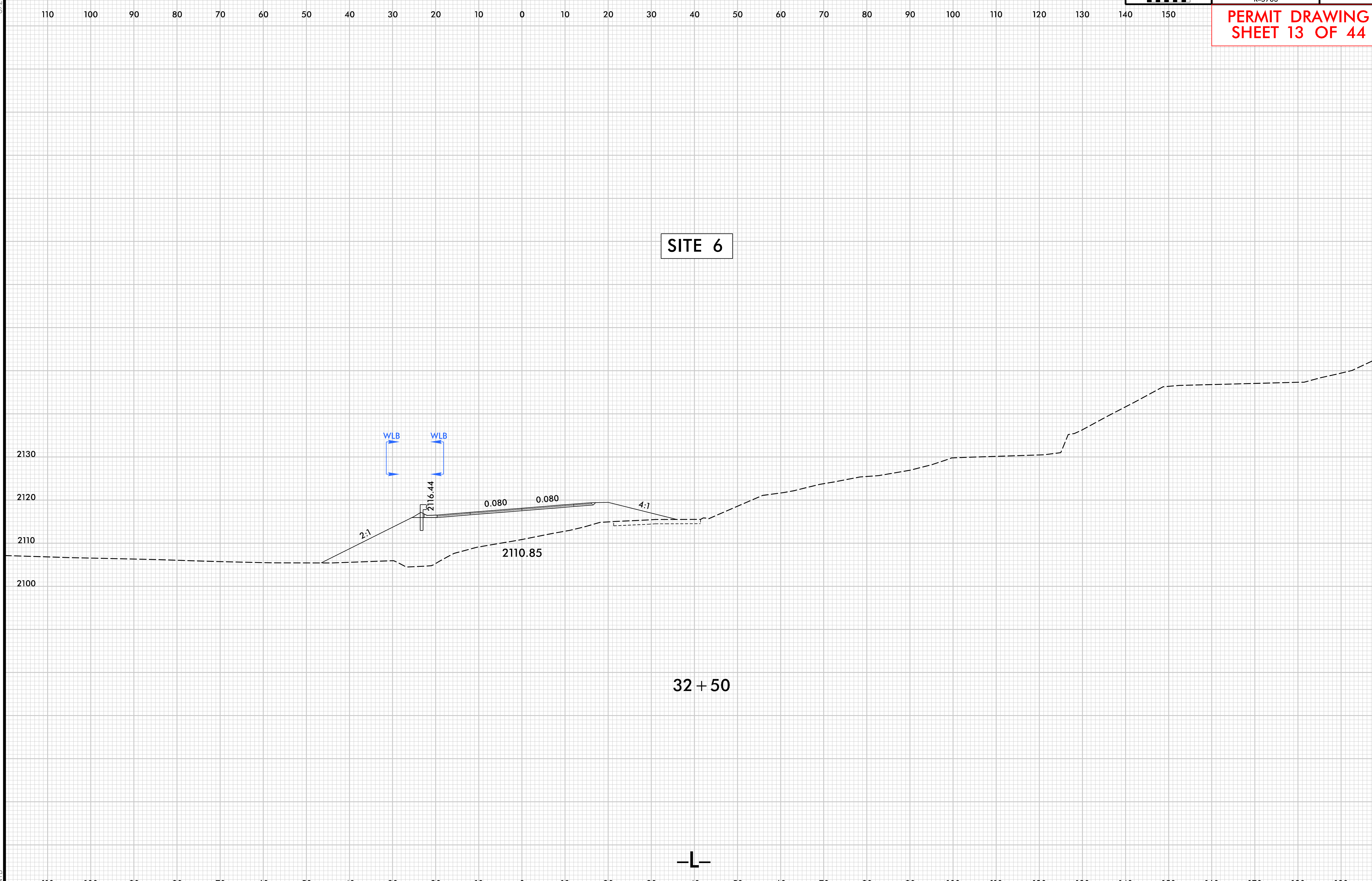


PROFILE

3/31/2023
R5763_HYD_PRM_PSH_5 72RCP PFL.dgn
HNTB

PROJ. REFERENCE NO.	SHEET NO.
R-5763	

PERMIT DRAWING
SHEET 13 OF 44



8/17/99

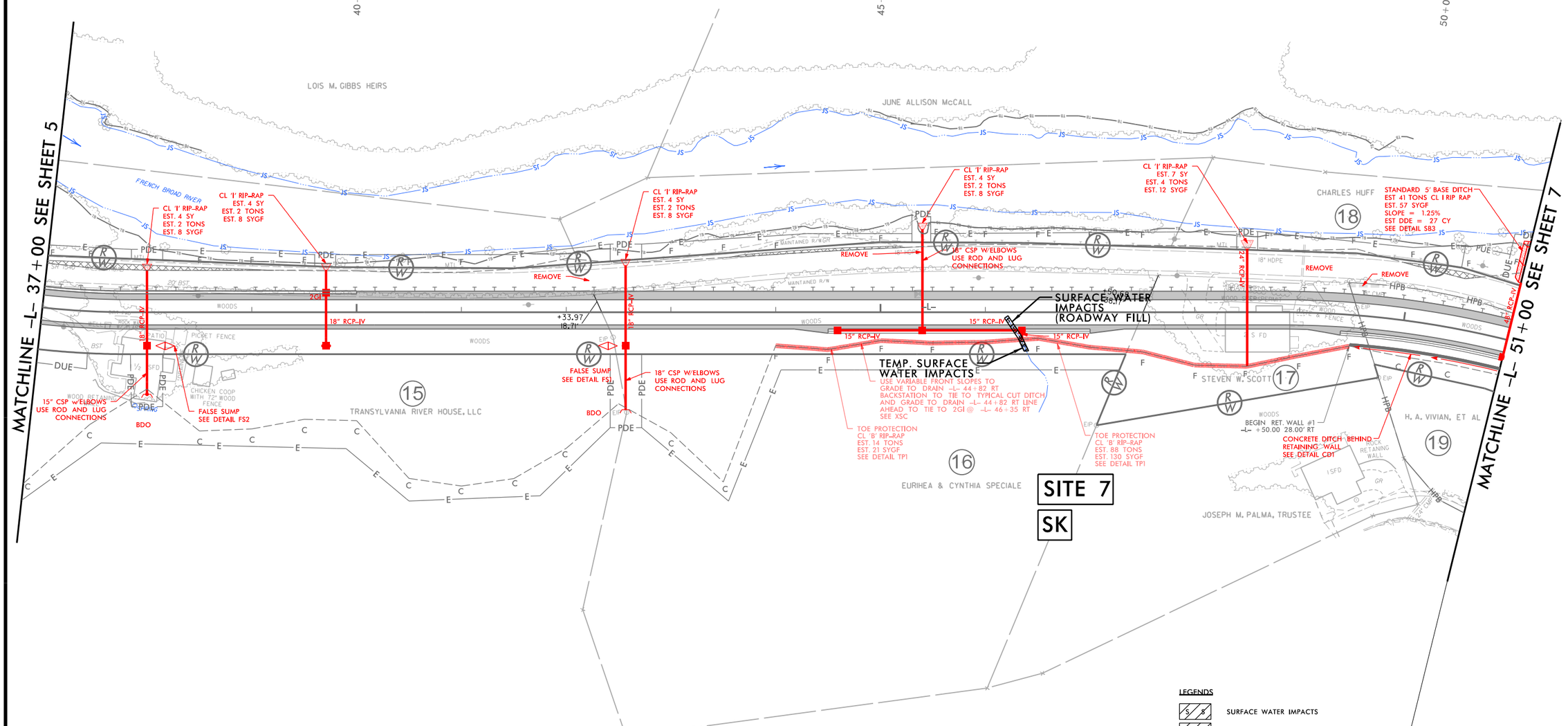
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-5763	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 14 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011



PAVEMENT REMOVAL

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR -L- PROFILE, SEE SHEET 19

5/18/2023
R-5763_HYD_PRM_PSH_6.dgn
HNTB

8/17/99

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.
R-5763	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 15 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011

MATCHLINE –L– 37+00 SEE SHEET 5

MATCHLINE –L– 51+00 SEE SHEET 7

40+00 –L–

45+00 –L–

50+00 –L–

LOIS M. GIBBS HEIRS

JUNE ALLISON McCALL

CHARLES HUFF

TRANSYLVANIA RIVER HOUSE, LLC

EURIHEA & CYNTHIA SPECIALE

STEVEN W. SCOTT

H. A. VIVIAN, ET AL

JOSEPH M. PALMA, TRUSTEE

FRENCH BROAD RIVER

SITE 7

SK

CL 'I' RIP-RAP
EST. 4 SY
EST. 2 TONS
EST. 8 SYGF

CL 'I' RIP-RAP
EST. 4 SY
EST. 2 TONS
EST. 8 SYGF

CL 'I' RIP-RAP
EST. 4 SY
EST. 2 TONS
EST. 8 SYGF

CL 'I' RIP-RAP
EST. 7 SY
EST. 4 TONS
EST. 12 SYGF

STANDARD 5' BASE DITCH
EST. 41 TONS CL I RIP RAP
EST. 57 SYGF
SLOPE = 1.25%
EST DDE = 27' CY
SEE DETAIL SB3

REMOVE

18" CSP W/ELBOWS
USE ROD AND LUG
CONNECTIONS

SURFACE WATER
IMPACTS
(ROADWAY FILL)

15" RCP-IV

18" RCP-IV

24" RCP-IV

+33.97
18.71'

15" CSP W/ELBOWS
USE ROD AND LUG
CONNECTIONS

FALSE SUMP
SEE DETAIL FS2

FALSE SUMP
SEE DETAIL FS1

18" CSP W/ELBOWS
USE ROD AND LUG
CONNECTIONS

TEMP. SURFACE
WATER IMPACTS

USE VARIABLE FRONT SLOPES TO GRADE TO DRAIN –L– 44+82 RT BACKSTATION TO TIE TO TYPICAL CUT DITCH AND GRADE TO DRAIN –L– 44+82 RT LINE AHEAD TO TIE TO ZGI@ –L– 46+35 RT SEE XSC

TOE PROTECTION
CL 'B' RIP-RAP
EST. 14 TONS
EST. 21 SYGF
SEE DETAIL TP1

TOE PROTECTION
CL 'B' RIP-RAP
EST. 88 TONS
EST. 130 SYGF
SEE DETAIL TP1

BEGIN RET. WALL #1
–L– +50.00 28.00' RT

CONCRETE DITCH BEHIND
RETAINING WALL
SEE DETAIL CD1

LEGENDS

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

PAVEMENT REMOVAL

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR –L– PROFILE, SEE SHEET 19

5/18/2023
...\R-5763_HYD_PRM_PSH_6.dgn
HNTB

8/17/99

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.
R–5763	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 16 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011

SITE 8
PA

SITE 9
SO
CATEECHEE BRANCH

MATCHLINE –L– 51+00 SEE SHEET 6

MATCHLINE –L– 65+00 SEE SHEET 8

55+00 –L–

60+00 –L–

65+00 –L–

FRENCH BROAD RIVER

CHARLES HUFF

MARY ANN DUVALL

AQUA NORTH CAROLINA, INC.

KNOB CREEK PROPERTIES, INC.

BIG INC. CONSTRUCTION

H. A. VIVIAN, ET AL

PHILIPPA D. HACKETT

STEPHEN M. PERRAS

SHANE P. CHAPMAN

ROBERT D. MICHAEL

KNOB CREEK HOMEOWNERS ASSN.

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (60" RCP / ROCK FILL IN POND)

ROCK FILL IN POND
CL I RIP RAP
SEE DETAIL F1

STANDARD 5' BASE DITCH
EST 41 TONS CL I RIP RAP
EST. 57 SYGF
SLOPE = 1.25%
EST DDE = 27 CY
SEE DETAIL SB3

SURFACE WATER IMPACTS (72" RCP)

CONCRETE DITCH BEHIND RETAINING WALL
SEE DETAIL CD1

END RET. WALL #1
–L– +50.00 28.00' RT

STANDARD 4' BASE DITCH
EST 70 TONS CL I RIP RAP
EST 98 SYGF
EST DDE = 35 CY
SLOPE = 12.8%
SEE DETAIL SB4

SURFACE WATER IMPACTS (STANDARD 4' BASE DITCH)

SURFACE WATER IMPACTS (SPECIAL LATERAL 3' BASE DITCH)

TEMP. SURFACE WATER IMPACTS

SPECIAL LATERAL 3' BASE DITCH
EST 22 TONS CL I RIP RAP
EST 31 SYGF
EST DDE = 27 CY
SEE DETAIL SLB3

STANDARD 5' BASE DITCH
EST 190 TONS CL I RIP RAP
EST 269 SYGF
SLOPE = 8.03%
EST DDE = 35 CY
SEE DETAIL SB3

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL SLB1

CL 'B' RIP-RAP
EST. 3 TON
EST. 10 SYGF

SPECIAL LATERAL 'V' DITCH
EST. 26 TONS
EST. 39 SYGF
SEE DETAIL SLV3

SPECIAL CUT DITCH
EST. 10 TONS
EST. 22 SYGF
SEE DETAIL SCD1

SURFACE WATER IMPACTS (ROADWAY FILL)

TEMP. SURFACE WATER IMPACTS

CL 'I' RIP-RAP
EST. 73 SY
EST. 40 TON
EST. 75 SYGF

SURFACE WATER IMPACTS (ROADWAY FILL)

SITE 8
SL SM

LEGENDS

- S / S — SURFACE WATER IMPACTS
- TS / TS — TEMPORARY SURFACE WATER IMPACTS
- P / P — SURFACE WATER IMPACTS POND

50' 0' 50' 100' 150'
GRAPHIC SCALE

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

FOR –L– PROFILE, SEE SHEET 19
FOR –Y4– PROFILE, SEE SHEET 25
FOR –DRW6– PROFILE, SEE SHEET 29
FOR INTERSECTION DETAIL, SEE SHEET 2B–2

5/16/2023
R-5763_HYD_PRM_PSH_7.dgn
HNTB

8/17/99

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.
R–5763	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 17 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011

SITE 8
PA

SITE 9
SO
CATEECHEE BRANCH

MATCHLINE –L– 51+00 SEE SHEET 6

MATCHLINE –L– 65+00 SEE SHEET 8

55+00 –L–

60+00 –L–

65+00 –L–

FRENCH BROAD RIVER

MARY ANN DUVALL

CHARLES HUFF

AQUA NORTH CAROLINA, INC.

KNOB CREEK PROPERTIES, INC.

BIG INC. CONSTRUCTION

H. A. VIVIAN, ET AL

PHILIPPA B. HACKETT

STEPHEN M. PERRAS

SHANE P. CHAPMAN

ROBERT D. MICHAEL

KNOB CREEK HOMEOWNERS ASSN.

WILSON ROAD

WOOD RETAINING WALL

STANDARD 5' BASE DITCH
EST. 41 TONS CL I RIP RAP
EST. 52 SYGF
SLOPE = 1.25%
EST DDE = 27 CY
SEE DETAIL SB3

ROCK FILL IN POND
CL I RIP RAP
SEE DETAIL FI

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (60" RCP / ROCK FILL IN POND)

SURFACE WATER IMPACTS (72" RCP)

CONCRETE DITCH BEHIND RETAINING WALL
SEE DETAIL CD1
END RET. WALL #1 –L– +50.00 28.00' RT

STANDARD 4' BASE DITCH
EST 70 TONS CL I RIP RAP
EST 98 SYGF
EST DDE = 35 CY
SLOPE = 12.8%
SEE DETAIL SB4

SURFACE WATER IMPACTS (STANDARD 4' BASE DITCH)

SURFACE WATER IMPACTS (SPECIAL LATERAL 3' BASE DITCH)

TEMP. SURFACE WATER IMPACTS

SPECIAL LATERAL 3' BASE DITCH
EST 22 TONS CL I RIP RAP
EST 31 SYGF
EST DDE = 27 CY
SEE DETAIL SLB3

STANDARD 5' BASE DITCH
EST 190 TONS CL I RIP RAP
EST 269 SYGF
SLOPE = 8.03%
EST DDE = 35 CY
SEE DETAIL SB3

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL SLB1

CL 'B' RIP-RAP
EST. 3 TON
EST. 10 SYGF

SPECIAL LATERAL 'V' DITCH
EST. 26 TONS
EST. 39 SYGF
SEE DETAIL SLV3

SPECIAL CUT DITCH
EST. 10 TONS
EST. 22 SYGF
SEE DETAIL SCD1

SURFACE WATER IMPACTS (ROADWAY FILL)

TEMP. SURFACE WATER IMPACTS

CL 'I' RIP-RAP
EST. 73 SY
EST. 40 TON
EST. 75 SYGF

SURFACE WATER IMPACTS (ROADWAY FILL)

SITE 8
SL SM

LEGENDS

- S / S — SURFACE WATER IMPACTS
- TS / TS — TEMPORARY SURFACE WATER IMPACTS
- F / F — SURFACE WATER IMPACTS POND

50' 0' 50' 100' 150'
GRAPHIC SCALE

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

FOR –L– PROFILE, SEE SHEET 19
FOR –Y4– PROFILE, SEE SHEET 25
FOR –DRW6– PROFILE, SEE SHEET 29
FOR INTERSECTION DETAIL, SEE SHEET 2B–2

5/18/2023
R-5763_HYD_PRM_PSH_7.dgn
HNTB

8/17/99

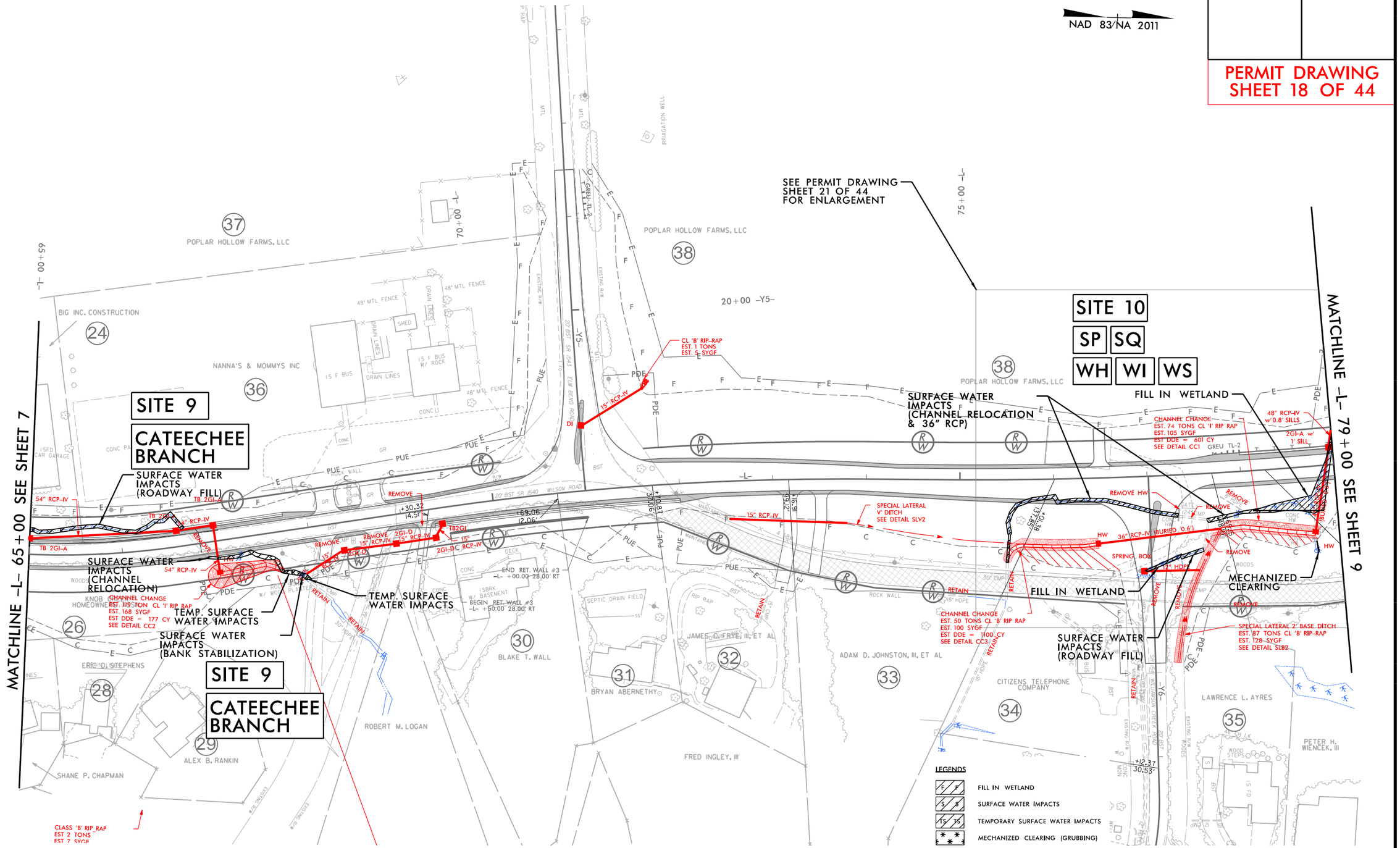
WETLAND & STREAM IMPACTS

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.
R-5763	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/NA 2011

PERMIT DRAWING
SHEET 18 OF 44



NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

FOR –L– PROFILE, SEE SHEET 20
FOR –Y5– PROFILE, SEE SHEET 25
FOR –Y6– PROFILE, SEE SHEET 26
FOR INTERSECTION DETAILS, SEE SHEET 2B–3

5/18/2023
R-5763_HYD_PRM_PSH_8.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

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.
R-5763	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 19 OF 44

NAD 83/NA 2011

SEE PERMIT DRAWING SHEET 21 OF 44 FOR ENLARGEMENT

MATCHLINE –L– 65+00 SEE SHEET 7

MATCHLINE –L– 79+00 SEE SHEET 9

SITE 9
CATEECHEE BRANCH

SITE 10
SP | SQ
WH | WI | WS

SURFACE WATER IMPACTS (ROADWAY FILL)

SURFACE WATER IMPACTS (CHANNEL RELOCATION)

SURFACE WATER IMPACTS (BANK STABILIZATION)

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (CHANNEL RELOCATION & 36" RCP)

FILL IN WETLAND

MECHANIZED CLEARING

CL 'B' RIP-RAP EST. 1 TONS EST. 5 SYGF

CHANNEL CHANGE EST. 74 TONS CL 'I' RIP RAP EST. 105 SYGF EST DDE = 601 CY SEE DETAIL CC1

CHANNEL CHANGE EST. 115 TON CL 'I' RIP RAP EST. 168 SYGF EST DDE = 177 CY SEE DETAIL CC2

CHANNEL CHANGE EST. 50 TONS CL 'B' RIP RAP EST. 100 SYGF EST DDE = 1100 CY SEE DETAIL CC3

SPECIAL LATERAL V DITCH SEE DETAIL SLV2

SPECIAL LATERAL 2' BASE DITCH EST. 87 TONS CL 'B' RIP-RAP EST. 128 SYGF SEE DETAIL SLB2

CLASS 'B' RIP RAP EST. 2 TONS EST. 7 SYGF

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

50' 0' 50' 100' 150'
GRAPHIC SCALE

LEGENDS
- F F FILL IN WETLAND
- S S SURFACE WATER IMPACTS
- TS TS TEMPORARY SURFACE WATER IMPACTS
- * * * MECHANIZED CLEARING (GRUBBING)

FOR –L– PROFILE, SEE SHEET 20
FOR –Y5– PROFILE, SEE SHEET 25
FOR –Y6– PROFILE, SEE SHEET 26
FOR INTERSECTION DETAILS, SEE SHEET 2B–3

5/18/2023
R-5763_HYD_PRM_PSH_8.dgn
HNTB

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

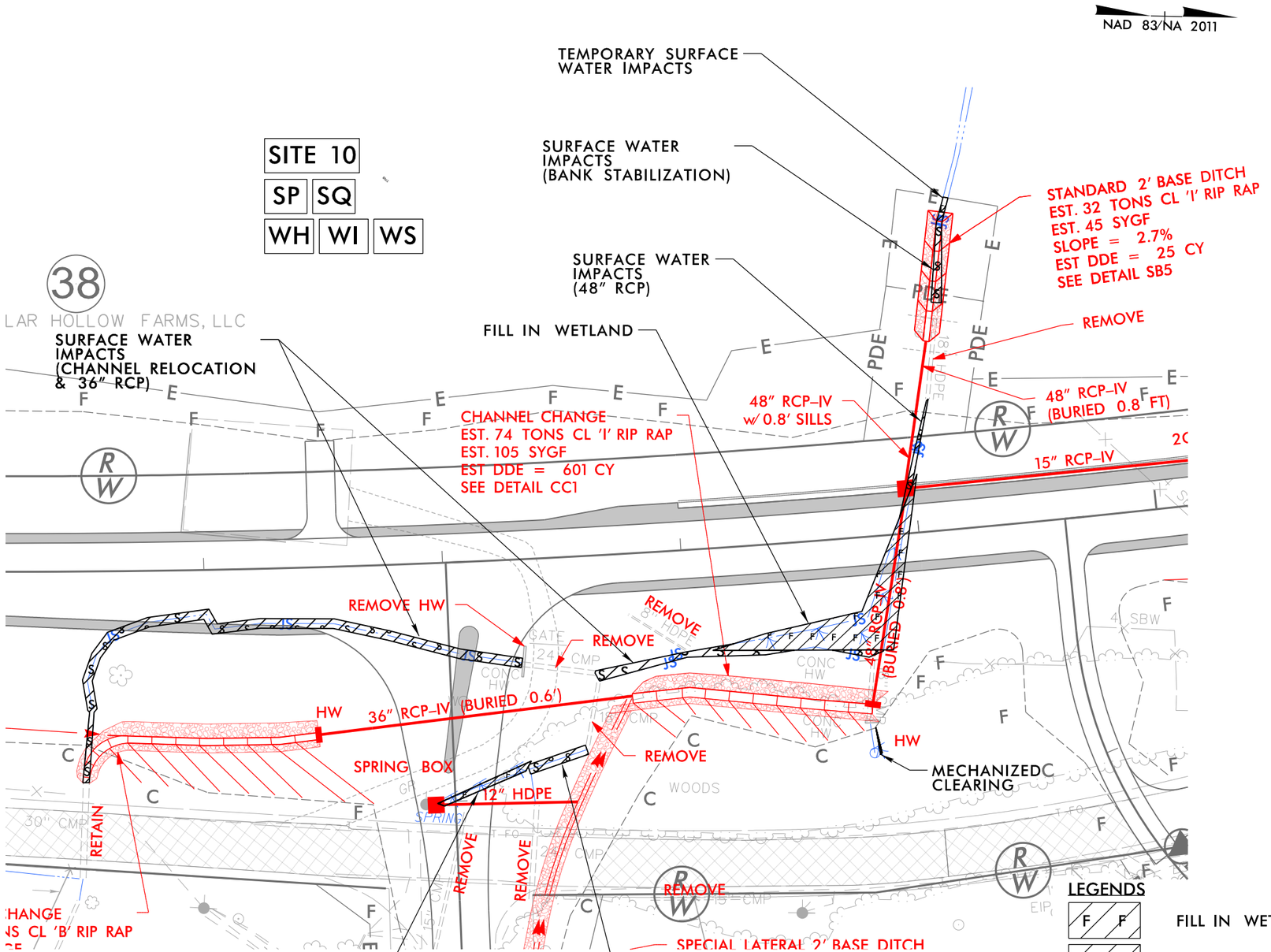
PROJECT REFERENCE NO.	SHEET NO.
R-5763	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 20 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011

SITE 10
SP SQ
WH WI WS



50' 0' 50' 100' 150'
GRAPHIC SCALE

LEGENDS

- FILL IN WETLAND
- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS
- MECHANIZED CLEARING (GRUBBING)

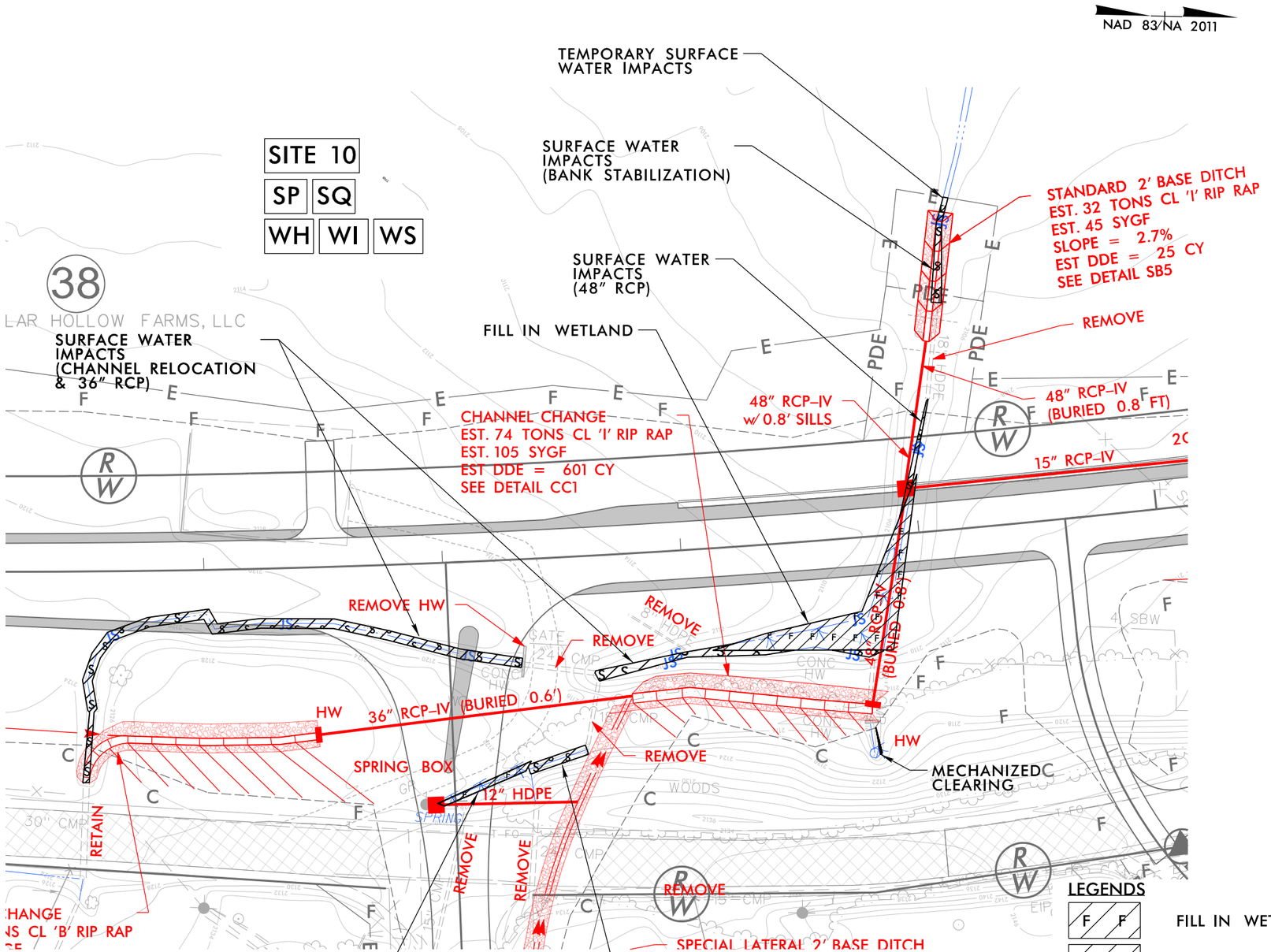
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-5763	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 21 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011



50' 0' 50' 100' 150'
GRAPHIC SCALE

LEGENDS

- F F — FILL IN WETLAND
- S S — SURFACE WATER IMPACTS
- TS TS — TEMPORARY SURFACE WATER IMPACTS
- * * — MECHANIZED CLEARING (GRUBBING)

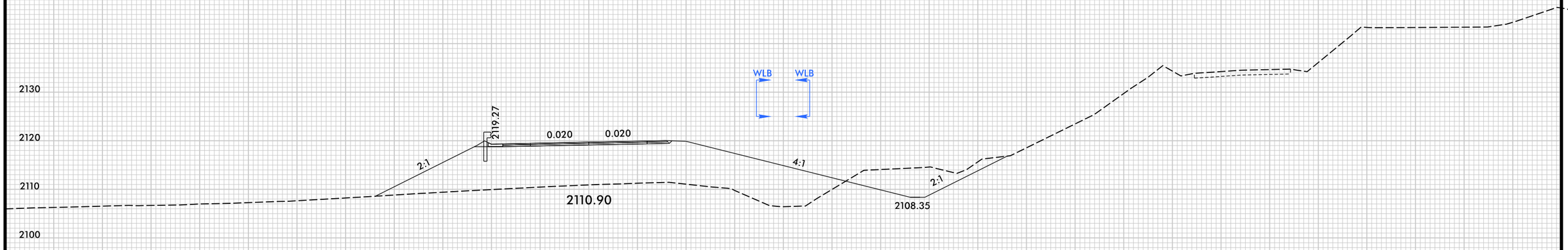
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5763	

PERMIT DRAWING
SHEET 22 OF 44

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

SITE 10



78+50

–L–

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190

3/31/2023
...Drawings\R5763_HYD_PRM_xpl.dgn
jhill

8/17/99

WETLAND & STREAM IMPACTS

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.
R-5763	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 23 OF 44

NAD 83/NA 2011

MATCHLINE –L– 79+00 SEE SHEET 8

MATCHLINE –L– 93+00 SEE SHEET 10

80+00 –L–

85+00 –L–

90+00 –L–

SITE 10
SP

SEE PERMIT DRAWING SHEET 21 OF 44 FOR ENLARGEMENT

TEMP. SURFACE WATER IMPACTS

STANDARD 2' BASE DITCH
EST. 32 TONS CL 'I' RIP RAP
EST. 45 SYGF
SLOPE = 2.7%
EST DDE = 25 CY
SEE DETAIL SB5

REMOVE

SURFACE WATER IMPACTS (BANK STABILIZATION)

48" RCP-IV (BURIED 0.8 FT)

15" RCP-IV

2GI

SURFACE WATER IMPACTS (48" RCP)

SITE 11
SR

BANK STABILIZATION
EST. 6 TON CL I RIP RAP
SEE DETAIL PO3

BEGIN RET. WALL #2
–L– +50.00 40.00' LT

RIP RAP AT EMBANKMENT
SEE DETAIL E1

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (BANK STABILIZATION)

FRENCH BROAD RIVER

SURFACE WATER IMPACTS (CHANNEL CHANGE)

42" CSP (BURIED 0.7 FT)
USE ROD AND LUG CONNECTORS

SURFACE WATER IMPACTS (42" CSP)

JB RCP-IV

REMOVE

HW

SPECIAL LATERAL 'V' DITCH
SEE DETAIL SLV2

SPECIAL LATERAL 'V' DITCH
SEE DETAIL SLV2

STANDARD 4' BASE DITCH
EST 122 TONS CL B RIP RAP
EST 181 SYGF
SLOPE = 0.1%
EST DDE = 46 CY
SEE DETAIL SB6

TEMP. SURFACE WATER IMPACTS

SITE 12
FRENCH BROAD RIVER

CONCRETE DITCH BEHIND RETAINING WALL
SEE DETAIL CD1

TEMP. SURFACE WATER IMPACTS
CL 'I' RIP RAP
EST. 2 SY
EST. 1 TONS
EST. 4 SYGF

RIP RAP AT EMBANKMENT
EST. 4 TON CL 'I' RIP RAP
EST. 7 SYGF
SEE DETAIL E2

END RET. WALL #2
–L– +00.00 40.00' LT

42" RCP-IV w/ 0.7' SILLS

15" RCP-IV

15" CSP W/ELBOWS
USE ROD AND LUG CONNECTIONS

JB w/MH

JB w/SLAB LID

2GI

SURFACE WATER IMPACTS (42" RCP)

42" RCP-IV (BURIED 0.7 FT)

SURFACE WATER IMPACTS (STANDARD 3' BASE DITCH)

SPECIAL LATERAL 'V' DITCH
EST TON CL 'B' RIP-RAP
EST SYGF
SEE DETAIL SLV10

STANDARD 3' BASE DITCH
EST. 21 TONS CL 'I' RIP RAP
EST. 29 SYGF
SLOPE = 3.4%
EST DDE = 65 CY
SEE DETAIL SB7

SITE 12
SS

SPECIAL LATERAL 'V' DITCH
EST TON CL 'B' RIP-RAP
EST SYGF
SEE DETAIL SLV10

TEMP. SURFACE WATER IMPACTS

SR 1540 WILSON ROAD

38 EDGEWATER FARMS, LLC

45 JAMES S. LINDSAY, TRUSTEE

46 JASON E. LEISTNER

42 WILLIAM L. VAUGHAN

44 LORI C. SHOOK

43 RUSSELL E. ZIEGLER

CLARENCE D. WHITMIRE, JR.

39 SHERMAN RAY DEVORE

SHERMAN DEVORE

40 THOMAS W. SNYDER

PETER H. WIENCEK, III

LEGENDS

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

PAVEMENT REMOVAL

GRAPHIC SCALE 50' 0' 50' 100' 150'

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

FOR –L– PROFILE, SEE SHEET 20
FOR –DRW1– PROFILE, SEE SHEET 28
FOR –DRW2– PROFILE, SEE SHEET 28

5/16/2023
R-5763_HYD_PRM_PSH_9.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

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.
R-5763	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 24 OF 44

NAD 83/NA 2011

MATCHLINE –L– 79+00 SEE SHEET 8

MATCHLINE –L– 93+00 SEE SHEET 10

SITE 10
SP

SEE PERMIT DRAWING SHEET 21 OF 44 FOR ENLARGEMENT

TEMP. SURFACE WATER IMPACTS

STANDARD 2' BASE DITCH
EST. 32 TONS CL 'I' RIP RAP
EST. 45 SYGF
SLOPE = 2.7%
EST DDE = 25 CY
SEE DETAIL SB5

REMOVE

SURFACE WATER IMPACTS (BANK STABILIZATION)

48" RCP-IV (BURIED 0.8 FT)

15" RCP-IV

2GI

SURFACE WATER IMPACTS (48" RCP)

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

JB w/MH F

REMOVE

SITE 11
SR

BANK STABILIZATION
EST. 6 TON CL I RIP RAP
SEE DETAIL PO3

BEGIN RET. WALL #2
–L– +50.00 40.00' LT

RIP RAP AT EMBANKMENT
SEE DETAIL E1

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (BANK STABILIZATION)

FRENCH BROAD RIVER

CONCRETE DITCH BEHIND RETAINING WALL
SEE DETAIL CD1

SURFACE WATER IMPACTS (CHANNEL CHANGE)

SURFACE WATER IMPACTS (42" CSP)

42" CSP (BURIED 0.7 FT)
USE ROD AND LUG CONNECTORS

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

STANDARD 4' BASE DITCH
EST 122 TONS CL B RIP RAP
EST 181 SYGF
SLOPE = 0.1%
EST DDE = 46 CY
SEE DETAIL SB6

TEMP. SURFACE WATER IMPACTS

SITE 12
FRENCH BROAD RIVER

TEMP. SURFACE WATER IMPACTS
EST. 2 SY
EST. 1 TONS
EST. 4 SYGF

CL 'I' RIP RAP

RIP RAP AT EMBANKMENT
EST. 4 TON CL 'I' RIP RAP
EST. 7 SYGF
SEE DETAIL E2

END RET. WALL #2
–L– +00.00 40.00' LT

42" RCP-IV w/ 0.7' SILLS

15" RCP-IV

15" CSP W/ELBOWS USE ROD AND LUG CONNECTIONS

JB w/SLAB LID

2GI

SURFACE WATER IMPACTS (42" RCP)

42" RCP-IV (BURIED 0.7 FT)

SURFACE WATER IMPACTS (STANDARD 3' BASE DITCH)

SPECIAL LATERAL 'V' DITCH EST TON CL 'B' RIP-RAP EST SYGF SEE DETAIL SLV10

STANDARD 3' BASE DITCH
EST. 21 TONS CL 'I' RIP RAP
EST. 29 SYGF
SLOPE = 3.4%
EST DDE = 65 CY
SEE DETAIL SB7

SITE 12
SS

SPECIAL LATERAL 'V' DITCH
EST TON CL 'B' RIP-RAP
EST SYGF
SEE DETAIL SLV10

TEMP. SURFACE WATER IMPACTS

SITE 11
SR

TEMP. SURFACE WATER IMPACTS

JAMES S. LINDSAY, TRUSTEE

JASON E. LEISTNER

LORI C. SHOOK

WILLIAM L. VAUGHAN

SHERMAN DEVORE

RUSSELL E. ZIEGLER

CLARENCE D. WHITMIRE, JR.

PETER H. WIENCEK, III

SHERMAN RAY DEVORE

THOMAS W. SNYDER

WILSON ROAD

SR 1540

LEGENDS

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

PAVEMENT REMOVAL

50' 0' 50' 100' 150'
GRAPHIC SCALE

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

FOR –L– PROFILE, SEE SHEET 20
FOR –DRW1– PROFILE, SEE SHEET 28
FOR –DRW2– PROFILE, SEE SHEET 28

5/16/2023
R-5763_HYD_PRM_PSH_9.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

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.
R-5763	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 25 OF 44

NAD 83/NA 2011

MATCHLINE –L– 93+00 SEE SHEET 9

95+00 –L–

100+00 –L–

105+00 –L–

MATCHLINE –L– 107+00 SEE SHEET 11

46 JASON E. LEISTNER

JOHN W. FELTY

FRENCH BROAD RIVER

54 TURF MOUNTAIN SOD, INC.

SITE 13
SU

SURFACE WATER IMPACTS (BANK STABILIZATION)

TEMP. SURFACE WATER IMPACTS

BANK STABILIZATION
EST. 6 TON CL I RIP RAP
SEE DETAIL PO1

CL 'I' RIP-RAP
EST. 11 SY
EST. 7 TONS
EST. 17 SYGF

REMOVE

30" CSP

15" RCP-IV

2GI

SURFACE WATER IMPACTS (24" RCP)

24" RCP (BURIED 0.4 FT)

15" JB W/MH

30" RCP-IV

SPECIAL LATERAL 'V' DITCH
SEE DETAIL SLV9

TOE PROTECTION
CLASS 'B' RIP-RAP
EST. 23 TONS
EST. 65 SYGF
SEE DETAIL TP1

SPECIAL LATERAL 'V' DITCH
EST 23 TONS CL 'I' RIP-RAP
EST. 33 SYGF
SEE DETAIL SLV8

TEMP. SURFACE WATER IMPACTS

SITE 13
SU

LORI C. SHOOK

JAMES G. HARDY

47

48 JAMES G. HARDY

49 BREVARD COLLEGE CORPORATION

50 BREVARD COLLEGE CORPORATION

TOE PROTECTION
CL 'B' RIP-RAP
EST. 16 TONS
EST. 24 SYGF
SEE DETAIL TP1

SPECIAL LATERAL
2' BASE DITCH
SEE DETAIL SLB1

REMOVE

51 MAMIE L. GIBBS HENDERSON

52 WENDELL HODGES

53 WENDELL HODGES

CL 'I' RIP-RAP
EST. 7 SY
EST. 4 TONS
EST. 12 SYGF

24" RCP-IV

44

GREU TL-2

PUE

DUE

LEGENDS

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR –L– PROFILE, SEE SHEET 21

3/31/2023
...\R5763_HYD_PRM_PSH_10.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

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.
R-5763	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 26 OF 44

NAD 83/NA 2011

MATCHLINE –L– 93+00 SEE SHEET 9

MATCHLINE –L– 107+00 SEE SHEET 11

SITE 13 SU

SITE 13 SU

SURFACE WATER IMPACTS (BANK STABILIZATION)

TEMP. SURFACE WATER IMPACTS

BANK STABILIZATION EST. 6 TON CL I RIP RAP SEE DETAIL P01

CL 'I' RIP-RAP EST. 11 SY EST. 7 TONS EST. 17 SYGF

SURFACE WATER IMPACTS (24" RCP)

SPECIAL LATERAL 'V' DITCH EST 23 TONS CL 'I' RIP-RAP EST. 33 SYGF SEE DETAIL SLV8

TOE PROTECTION CLASS 'B' RIP-RAP EST. 23 TONS EST. 65 SYGF SEE DETAIL TP1

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV9

TOE PROTECTION CL 'B' RIP-RAP EST. 16 TONS EST. 24 SYGF SEE DETAIL TP1

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL SLB1

CL 'I' RIP-RAP EST. 7 SY EST. 4 TONS EST. 12 SYGF

JOHN W. FELTY

JASON E. LEISTNER

LORI C. SHOOK

JAMES C. HARDY

BREVARD COLLEGE CORPORATION

MAMIE L. GIBBS HENDERSON

WENDELL HODGES

TURF MOUNTAIN SOD, INC.

FRENCH BROAD RIVER

LEGENDS

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR –L– PROFILE, SEE SHEET 21

3/31/2023
R5763_HYD_PRM_PSH_10.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

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.
R-5763	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 27 OF 44

NAD 83/NA 2011

MATCHLINE –L– 121+00 SEE SHEET 11

MATCHLINE –L– 135+00 SEE SHEET 13

125+00 –L–

130+00 –L–

135+00 –L–

SITE 14
WILLIAMSON CREEK

TEMP. SURFACE WATER IMPACTS

CL 'I' RIP RAP
EST. 3 SY
EST. 2 TONS
EST. 6 SYGF

15" CSP w/ELBOWS
USE ROD & LUG
CONNECTORS

CLASS 'II' RIP-RAP
TO ELEV. =2104.5' (TYP.)

BANK STABILIZATION
EST. 6 TON CL I RIP RAP
SEE DETAIL PO3

CL 'B' RIP RAP
EST. 1 TONS
EST. 4 SYGF

SPRING BOX

REMOVE

SPECIAL LATERAL 'V' DITCH
SEE DETAIL SLV1

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL SLB1

CL 'B' RIP RAP
EST. 3 TONS
EST. 10 SYGF

SPECIAL LATERAL
'V' DITCH: SEE
DETAIL SLV11

30" RCP-IV (BURIED 0.5 FT.)

24" CSP

SPECIAL LATERAL
'V' DITCH
SEE DETAIL SLV11

CL 'B' RIP RAP
EST. 8 TONS
EST. 21 SYGF

18" RCP-IV (BURIED 0.5 FT.)

30" RCP-IV

CL 'B' RIP RAP
EST. 5 TONS
EST. 14 SYGF

LATERAL 2' BASE
DITCH W/BERM
SEE DETAIL LB1

REMOVE

RETAIN

STANDARD 5' BASE DITCH
EST DDE = 17 CY
SLOPE = 4.1%
SEE DETAIL SB8

SEE PERMIT DRAWING
SHEET 29 OF 44
FOR ENLARGEMENT

LATERAL 2' BASE DITCH W/BERM
SEE DETAIL LB1

REMOVE EXISTING ROADBED
AND GRADE TO NATURAL
GROUND ELEV.

STANDARD 2' BASE DITCH
SEE DETAIL SB9
LENGTH = 100'
SLOPE = 8.2%
DDE = 90 CY

EMBANKMENT
STABILIZATION
CL 'II' RIP-RAP
SEE DETAIL ES1

RIPRAP AT
EMBANKMENT
EST. 21 TONS
CL 'I' RIP-RAP
EST. 29 SYGF
SEE DETAIL E2

EMBANKMENT
STABILIZATION
CL 'II' RIP-RAP
SEE DETAIL ES1

TEMP. SURFACE
WATER IMPACTS

SITE 14
WILLIAMSON
CREEK

61 ROBERT COMMAROTA

62 JOSEPH B. CHAPMAN AND WIFE, MAUREEN W. CHAPMAN, AND SHANE P. CHAPMAN, AS JOINT TENANTS WITH RIGHTS OF SURVIVORSHIP

63 JOSEPH B. CHAPMAN

64 WALTER S. BECKER

65 LE PARC, LLC.

66 PHILLIP J. JEROME

67 BARBARA GRAHAM ET. AL.

54 TURF MOUNTAIN SOD, INC.

20' BST SR 1540 WILSON ROAD

LEGENDS

TS TS TEMPORARY SURFACE WATER IMPACTS

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR –L– PROFILE, SEE SHEET 22
FOR –Y8– PROFILE, SEE SHEET 26
FOR –Y8A– PROFILE, SEE SHEET 26
FOR INTERSECTION DETAIL, SEE SHEET 2B–4

3/31/2023
R5763_HYD_PRM_PSH_12.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

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.
R–5763	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 28 OF 44

NAD 83/NA 2011

MATCHLINE –L– 121+00 SEE SHEET 11

MATCHLINE –L– 135+00 SEE SHEET 13

SITE 14
WILLIAMSON CREEK

TEMP. SURFACE WATER IMPACTS

CL 'I' RIP RAP
EST. 3 SY
EST. 2 TONS
EST. 6 SYGF

15" CSP w/ELBOWS
USE ROD & LUG
CONNECTORS

CLASS 'II' RIP-RAP
TO ELEV. =2104.5' (TYP.)

BANK STABILIZATION
EST. 6 TON CL I RIP RAP
SEE DETAIL PO3

CL 'B' RIP RAP
EST. 1 TONS
EST. 4 SYGF

SPRING BOX

REMOVE

SPECIAL LATERAL 'V' DITCH
SEE DETAIL SLV1

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL SLB1

CL 'B' RIP RAP
EST. 3 TONS
EST. 10 SYGF

SPECIAL LATERAL
'V' DITCH. SEE
DETAIL SLV11

30" RCP-IV (BURIED 0.5 FT.)

24" CSP

SPECIAL LATERAL
'V' DITCH
SEE DETAIL SLV11

CL 'B' RIP RAP
EST. 8 TONS
EST. 21 SYGF

48" RCP-IV (BURIED 0.5 FT.)

CL 'B' RIP RAP
EST. 5 TONS
EST. 14 SYGF

LATERAL 2' BASE
DITCH W/BERM
SEE DETAIL LB1

REMOVE

RETAIN

STANDARD 5' BASE DITCH
EST DDE = 17 CY
SLOPE = 4.1%
SEE DETAIL SB8

SEE PERMIT DRAWING
SHEET 30 OF 44
FOR ENLARGEMENT

STANDARD 2' BASE DITCH
SEE DETAIL SB9
LENGTH = 100'
SLOPE = 8.2%
DDE = 90 CY

EMBANKMENT
STABILIZATION
CL 'II' RIP-RAP
SEE DETAIL ES1

RIPRAP AT
EMBANKMENT
EST. 21 TONS
CL 'I' RIP-RAP
EST. 29 SYGF
SEE DETAIL E2

LATERAL 2' BASE DITCH W/BERM
SEE DETAIL LB1

REMOVE EXISTING ROADBED
AND GRADE TO NATURAL
GROUND ELEV.

TEMP. SURFACE
WATER IMPACTS

SITE 14
WILLIAMSON CREEK

TURF MOUNTAIN SOD, INC.

BARBARA GRAHAM ET. AL.

ROBERT COMMAROTA

JOSEPH B. CHAPMAN AND WIFE, MAUREEN W. CHAPMAN, AND SHANE P. CHAPMAN, AS JOINT TENANTS WITH RIGHTS OF SURVIVORSHIP

JOSEPH B. CHAPMAN

WALTER S. BECKER

LE PARC, LLC.

PHILLIP J. JEROME

20' BST SR 1540 WILSON ROAD

LEGENDS

TS TS TEMPORARY SURFACE WATER IMPACTS

NOTE:
1. ALL DRIVEWAYS HAVE 10' RADII UNLESS OTHERWISE NOTED.

50' 0' 50' 100' 150'
GRAPHIC SCALE

FOR –L– PROFILE, SEE SHEET 22
FOR –Y8– PROFILE, SEE SHEET 26
FOR –Y8A– PROFILE, SEE SHEET 26
FOR INTERSECTION DETAIL, SEE SHEET 2B–4

4/18/2023
HNTB
R5763_HYD_PRM_PSH_12.dgn

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

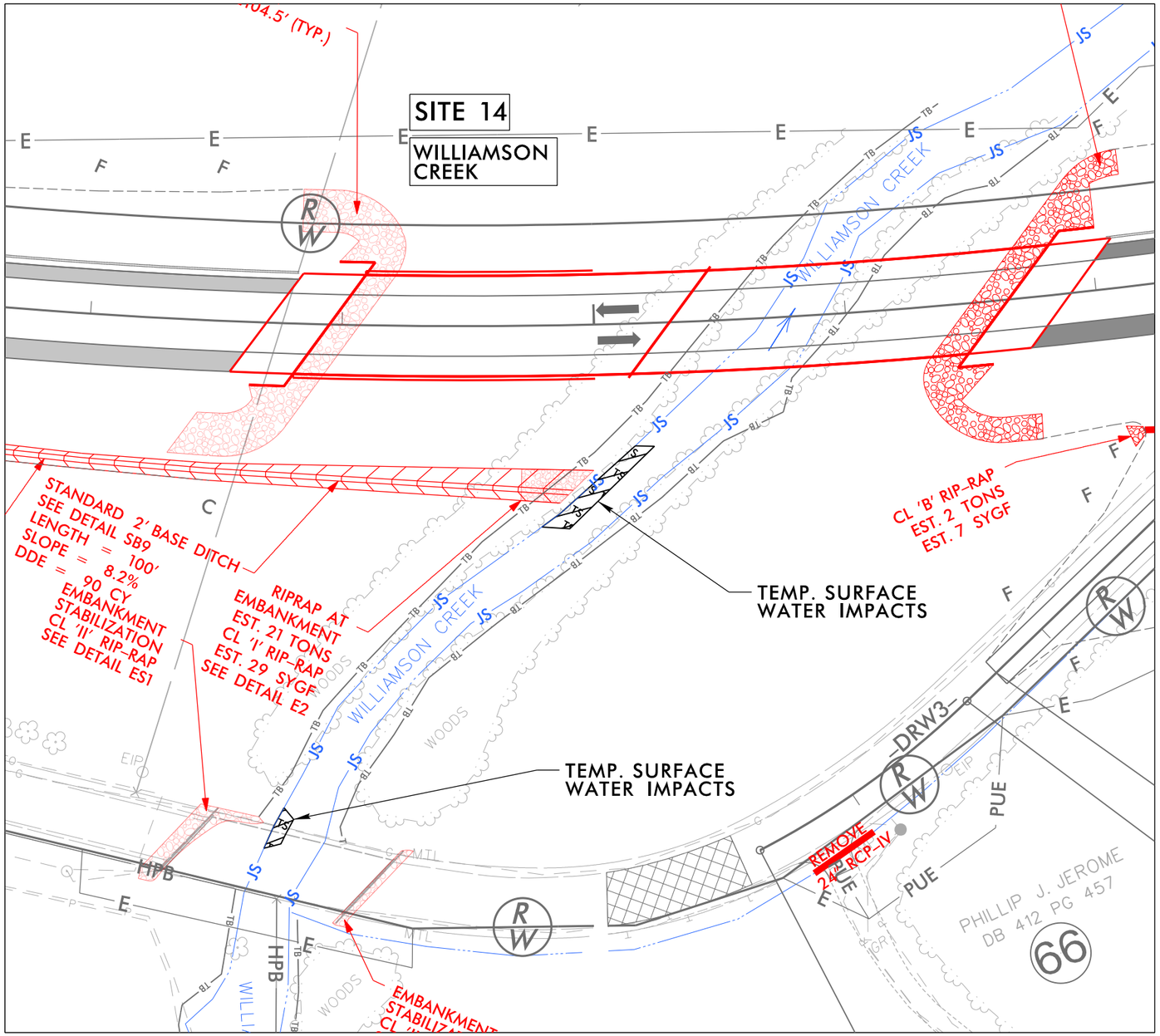
PROJECT REFERENCE NO.	SHEET NO.
R–5763	12

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 29 OF 44

WETLAND & STREAM IMPACTS



50' 0' 50' 100' 150'
GRAPHIC SCALE

LEGENDS

TS TS TEMPORARY SURFACE WATER IMPACTS

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

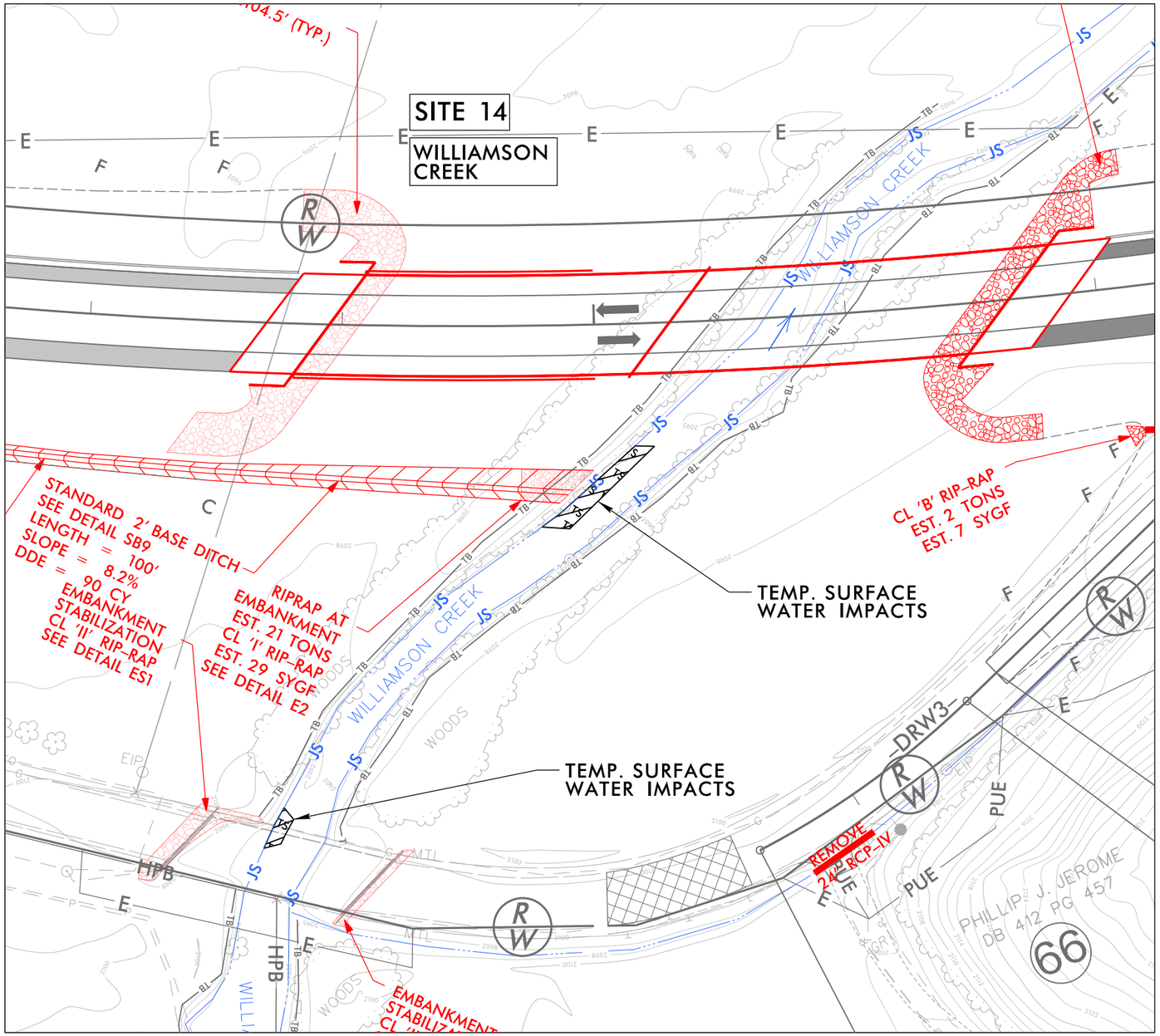
PROJECT REFERENCE NO.	SHEET NO.
R-5763	12

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 30 OF 44

WETLAND & STREAM IMPACTS



50' 0' 50' 100' 150'
GRAPHIC SCALE

LEGENDS

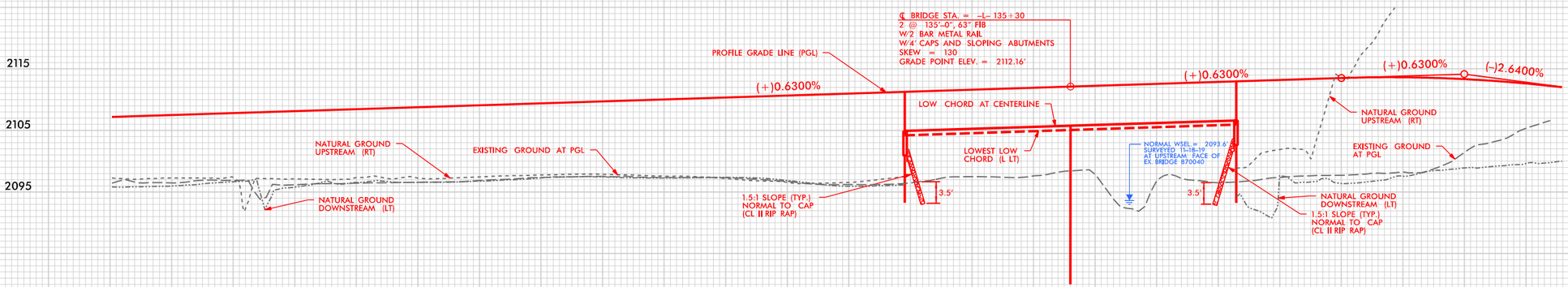
TS TS TEMPORARY SURFACE WATER IMPACTS

3/29/2021

PROJ. REFERENCE NO.	SHEET NO.
R-5763	

PERMIT DRAWING
SHEET 31 OF 44

Site 14



PROFILE

8/17/99

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.
R-5763	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 32 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011

SITE 14

WILLIAMSON CREEK

MATCHLINE -L- 135+00 SEE SHEET 12

MATCHLINE -L- 149+00 SEE SHEET 14

135+00 -L-

140+00 -L-

145+00 -L-

SEE PERMIT DRAWING SHEET 29 OF 44 FOR ENLARGEMENT

CLASS 'II' RIP-RAP TO ELEV. =2104.5' (TYP.)

TEMP. SURFACE WATER IMPACTS

15" w/ELBOWS USE ROD & LUG CONNECTORS

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV6

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

REMOVE 2 EXIST. RCP-IV

70
LINGERLONG, LLC.

67
BARBARA GRAHAM, ET. AL.

66
PHILLIP J. JEROME

20' BST SR 1540 WILSON ROAD

WILLIAMSON CREEK

LEGENDS

TEMPORARY SURFACE WATER IMPACTS

50' 0' 50' 100' 150'
GRAPHIC SCALE

-L-

PI Sta 132+79.85	PIs Sta 141+04.08	PI Sta 145+57.33
Δ = 38° 04' 31.4" (LT)	θs = 9° 19' 17.7"	Δ = 46° 50' 48.6" (LT)
D = 2° 34' 51.2"	Ls = 200.00'	D = 6° 44' 26.4"
L = 1,475.28'	LT = 115.09'	L = 694.99'
T = 766.04'	ST = 85.33'	T = 368.24'
R = 2,220.00'		R = 850.00'
e = 4%		e = 8%
R0 = 100'		R0 = 200'

-DRW3-

PI Sta 10+41.90	PI Sta 10+93.61	PI Sta 12+92.36
Δ = 68° 41' 30.3" (RT)	Δ = 9° 52' 30.4" (LT)	Δ = 16° 31' 32.3" (RT)
D = 168° 05' 50.1"	D = 14° 30' 00.0"	D = 16° 15' 00.0"
L = 40.86'	L = 68.10'	L = 101.70'
T = 23.29'	T = 34.14'	T = 51.20'
R = 34.08'	R = 395.14'	R = 352.59'

4/3/2023
R-5763_HYD_PRM_PSH_13.dgn
HNTB

8/17/99

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.
R-5763	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 33 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011

SITE 14

WILLIAMSON CREEK

MATCHLINE -L- 135+00 SEE SHEET 12

MATCHLINE -L- 149+00 SEE SHEET 14

SEE PERMIT DRAWING SHEET 30 OF 44 FOR ENLARGEMENT

CLASS 'II' RIP-RAP TO ELEV. =2104.5' (TYP.)

TEMP. SURFACE WATER IMPACTS

15" w/ELBOWS USE ROD & LUG CONNECTORS

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV6

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

REMOVE 21" RCP-IV

18" RCP-IV

WOODS

20' BST SR 1540 WILSON ROAD

MTL GATE

25FD

67 BARBARA GRAHAM, ET. AL.

66 PHILLIP J. JEROME

70 LINGERLONG, LLC.

135+00 -L-

140+00 -L-

145+00 -L-

LEGENDS

15 15 TEMPORARY SURFACE WATER IMPACTS

-L-

PI Sta 132+79.85
Δ = 38° 04' 31.4" (LT)
D = 2° 34' 51.2"
L = 1,475.28'
T = 766.04'
R = 2,220.00'
e = 4%
RO = 100'

PIs Sta 141+04.18
θs = 9° 19' 17.7"
Ls = 200.00'
LT = 115.09'
ST = 85.33'

PI Sta 145+57.33
Δ = 46° 50' 48.6" (LT)
D = 6° 44' 26.4"
L = 694.99'
T = 368.24'
R = 850.00'
e = 8%
RO = 200'

-DRW3-

PI Sta 10+41.90
Δ = 68° 41' 30.3" (RT)
D = 168° 05' 50.1"
L = 40.86'
T = 23.29'
R = 34.08'

PI Sta 10+93.61
Δ = 9° 52' 30.4" (LT)
D = 14° 30' 00.0"
L = 68.10'
T = 34.14'
R = 395.14'

PI Sta 12+92.36
Δ = 16° 31' 32.3" (RT)
D = 16° 15' 00.0"
L = 101.70'
T = 51.20'
R = 352.59'

50' 0' 50' 100' 150'
GRAPHIC SCALE

4/6/2023
R-5763_HYD_PRM_PSH_13.dgn
HNTB

8/17/99

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.
R-5763	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 34 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011

155+00 -L-

150+00 -L-

160+00 -L-

SITE 15
SW

SITE 16
SX

SITE 17
SY

SITE 18
FRENCH BROAD RIVER

MATCHLINE -L- 149+00 SEE SHEET 13

MATCHLINE -L- 163+00 SEE SHEET 15

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (BANK STABILIZATION)

BANK STABILIZATION EST. 6 TON CL I RIP RAP SEE DETAIL PO1

BANK STABILIZATION EST. 6 TON CL II RIP RAP SEE DETAIL PO1

SURFACE WATER IMPACTS (36" RCP)

36" RCP-IV (BURIED 0.6 FT)

SURFACE WATER IMPACTS (24" CSP)

STANDARD 2' BASE DITCH SEE DETAIL SB9

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV1

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV9

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV10

18" CSP W/ELBOWS USE ROD AND LUG CONNECTIONS

STANDARD 4' BASE DITCH EST 30 CY DDE SLOPE = 0.5% SEE DETAIL SB10

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL SLB1

SURFACE WATER IMPACTS (24" RCP)

REMOVE HW

RETAIN

RETAIN REMOVE

REMOVE

FRENCH BROAD RIVER

20' BST SR 1540 WILSON ROAD

MAINTAINED RIGHT OF WAY

BARBARA GRAHAM, ET. AL. (67)

FRANKLIN P. HOLMAN (68)

LINGERLONG, LLC & TWILDO, LLC (69)

LINGERLONG, LLC. (70)

LINGERLONG, LLC.

LEGENDS

S S — SURFACE WATER IMPACTS

TS TS — TEMPORARY SURFACE WATER IMPACTS

50' 0' 50' 100' 150'
GRAPHIC SCALE

4/3/2023
\\Hntb.com\...\R5763_HYD_PRM_PSH_14.dgn
HNTB

8/17/99

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.
R-5763	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 35 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011

SITE 15
SW

SITE 16
SX

SITE 17
SY

SITE 18
FRENCH BROAD RIVER

MATCHLINE -L- 149+00 SEE SHEET 13

MATCHLINE -L- 163+00 SEE SHEET 15

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (BANK STABILIZATION)

BANK STABILIZATION EST. 6 TON CL I RIP RAP SEE DETAIL PO1

SURFACE WATER IMPACTS (36" RCP)

36" RCP-IV (BURIED 0.6 FT)

SURFACE WATER IMPACTS (24" CSP)

STANDARD 2' BASE DITCH SEE DETAIL SB9

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV1

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV9

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV10

18" CSP W/ELBOWS USE ROD AND LUG CONNECTIONS

SURFACE WATER IMPACTS (24" RCP)

STANDARD 4' BASE DITCH EST 30 CY DDE SLOPE = 0.5% SEE DETAIL SB10

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL SLB1

30" RCP-IV

REMOVE

RETAIN

RETAIN/REMOVE

20 BST SR 1540 WILSON ROAD

FRENCH BROAD RIVER

BARBARA GRAHAM, ET. AL.

FRANKLIN P. HOLMAN

LINGERLONG, LLC & TWILDO, LLC

LINGERLONG, LLC.

67

68

69

70

LEGENDS

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

50' 0' 50' 100' 150'
GRAPHIC SCALE

4/3/2023
R-5763_HYD_PRM_PSH_14.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

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.
R-5763	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 36 OF 44

NAD 83/NA 2011

MATCHLINE –L– 163+00 SEE SHEET 14

MATCHLINE –L– 178+00 SEE SHEET 16

–L– TS Sta. 164+90.69

165+00 –L–

–L– SC Sta. 166+90.69

170+00 –L–

175+00 –L–

–L– CS Sta. 169+15.78

–L– SRS Sta. 171+15.78

–L– SC Sta. 173+15.78

–L– CS Sta. 177+96.95

LINGERLONG, LLC.

70

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (BANK STABILIZATION)

BANK STABILIZATION EST. 10 TON CL I RIP RAP SEE DETAIL PO3

SITE 19

SZ

SURFACE WATER IMPACTS (54" RCP)

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL SLB1

SPECIAL LATERAL 'V' DITCH EST. 75 TONS CL B RIP RAP EST 207 SYGF SEE DETAIL SLV3

FALSE BERM BERM ELEV.=2103.5' SEE DETAIL FB1

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

SPECIAL LATERAL 'V' DITCH EST 23 TONS CL 'B' RIP RAP EST 50 SYGF SEE DETAIL SLV3

REMOVE

RETAIN

HW

BM #23

BM #24

BL-30

BL-31

BL-32

SR 1940 (SOW ROAD)

WOODS

GRD

PUE

DUE

LEGENDS

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

-L-

PIs Sta 166+24.22	PI Sta 168+04.63	PIs Sta 169+82.63	PIs Sta 172+49.32	PI Sta 175+70.81
Θs = 9° 45' 38.8"	△ = 21° 58' 16.4" (RT)	Θs = 9° 45' 38.8"	Θs = 9° 45' 38.8"	△ = 46° 57' 57.9" (LT)
Ls = 200.00'	D = 9° 45' 38.8"	Ls = 200.00'	Ls = 200.00'	D = 9° 45' 38.8"
LT = 133.54'	L = 225.10'	LT = 133.54'	LT = 133.54'	L = 481.17'
ST = 66.85'	T = 113.95'	ST = 66.85'	ST = 66.85'	T = 255.03'
	R = 587.00'			R = 587.00'
	e = 8%			e = 8%
	RO = 200'			RO = 200'

50' 0' 50' 100' 150'

GRAPHIC SCALE

4/3/2023
15763_HYD_PRM_PSH_15.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

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.
R-5763	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 37 OF 44

NAD 83/NA 2011

MATCHLINE –L– 163+00 SEE SHEET 14

MATCHLINE –L– 178+00 SEE SHEET 16

–L– TS Sta. 164+90.69

–L– SC Sta. 166+90.69

–L– CS Sta. 169+15.78

–L– SRS Sta. 171+15.78

–L– SC Sta. 173+15.78

–L– CS Sta. 177+96.95

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL SLB1

REMOVE

SPECIAL LATERAL 'V' DITCH EST. 75 TONS CL B RIP RAP EST 207 SYGF SEE DETAIL SLV3

FALSE BERM BERM ELEV.=2103.5' SEE DETAIL FB1

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

RETAIN

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (BANK STABILIZATION)

BANK STABILIZATION EST. 10 TON CL I RIP RAP SEE DETAIL PO3

SITE 19

SZ

SURFACE WATER IMPACTS (54" RCP)

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

SPECIAL LATERAL 'V' DITCH SEE DETAIL SLV2

SPECIAL LATERAL 'V' DITCH EST. 23 TONS CL 'B' RIP RAP EST 30 SYGF SEE DETAIL SLV3

15" RCP-IV

18" RCP-IV

LINGERLONG, LLC.

BM #23

BM #24

BL-30

BL-31

BL-32

WOODS

DUE

PUE

-L-

PIs Sta 166+24.22	PI Sta 168+04.63	PIs Sta 169+82.63	PIs Sta 172+49.32	PI Sta 175+70.81
Θs = 9° 45' 38.8"	Δ = 21° 58' 16.4" (RT)	Θs = 9° 45' 38.8"	Θs = 9° 45' 38.8"	Δ = 46° 57' 57.9" (LT)
Ls = 200.00'	D = 9° 45' 38.8"	Ls = 200.00'	Ls = 200.00'	D = 9° 45' 38.8"
LT = 133.54'	L = 225.10'	LT = 133.54'	LT = 133.54'	L = 481.17'
ST = 66.85'	T = 113.95'	ST = 66.85'	ST = 66.85'	T = 255.03'
	R = 587.00'			R = 587.00'
	e = 8%			e = 8%
	RO = 200'			RO = 200'

LEGENDS

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

50' 0' 50' 100' 150'
GRAPHIC SCALE

4/3/2023
15763_HYD_PRM_PSH_15.dgn
HNTB

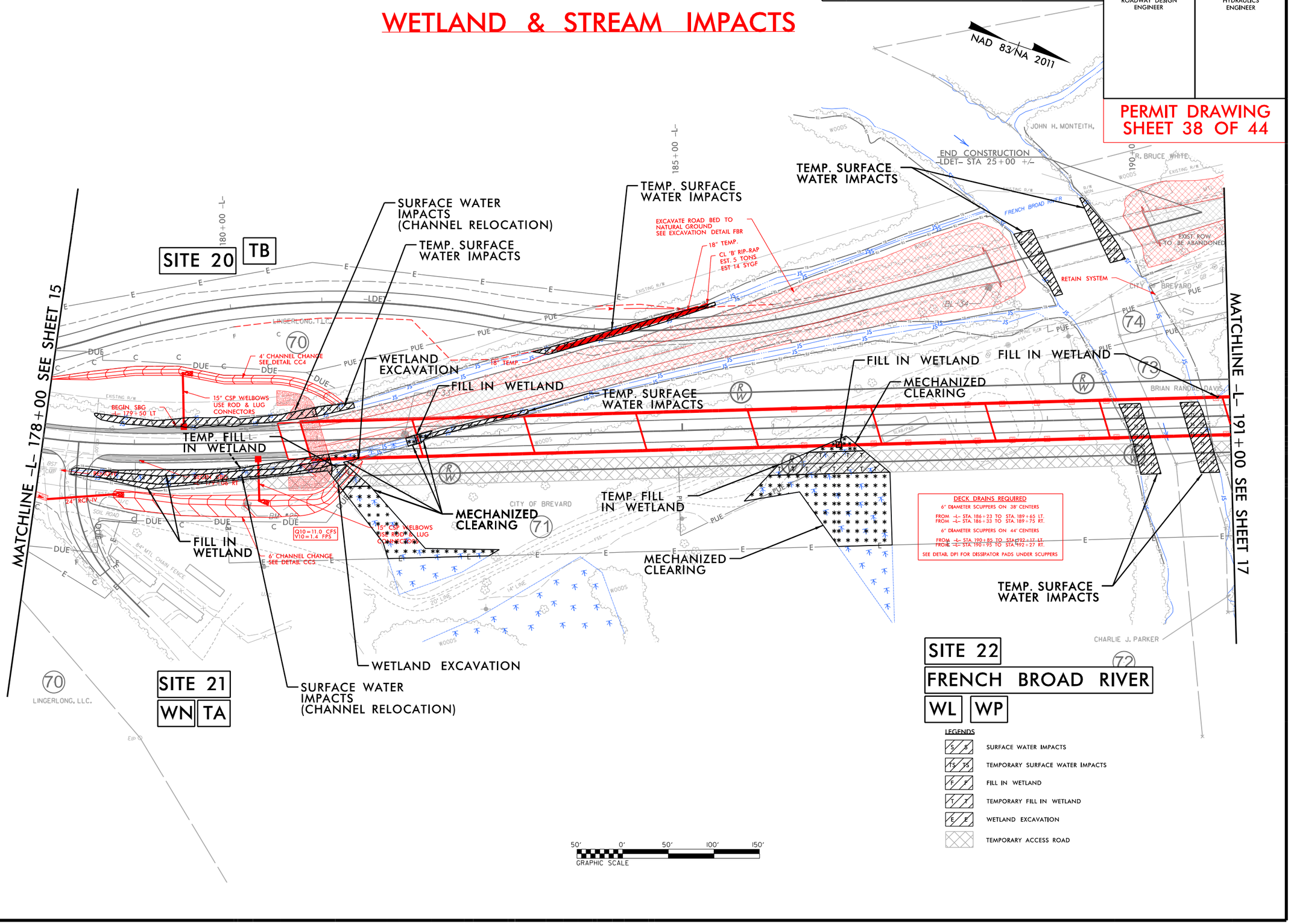
8/17/99

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.
R-5763	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 38 OF 44

WETLAND & STREAM IMPACTS



5/17/2023
...\R5763_HYD_PRM_PSH_16_with access rd.dgn
HNTB

8/17/99

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.
R-5763	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 39 OF 44

WETLAND & STREAM IMPACTS

NAD 83/NA 2011

SITE 20 TB

MATCHLINE -L- 178+00 SEE SHEET 15

MATCHLINE -L- 191+00 SEE SHEET 17

SURFACE WATER IMPACTS (CHANNEL RELOCATION)

TEMP. SURFACE WATER IMPACTS

WETLAND EXCAVATION

FILL IN WETLAND

TEMP. FILL IN WETLAND

MECHANIZED CLEARING

TEMP. SURFACE WATER IMPACTS

EXCAVATE ROAD BED TO NATURAL GROUND SEE EXCAVATION DETAIL FBR

18" TEMP.

CL 'B' RIP-RAP EST. 5 TONS EST 14 SYGF

END CONSTRUCTION -LDET- STA 25+00 +/-

RETAIN SYSTEM

4' CHANNEL CHANGE SEE DETAIL CC4

15" CSP W/ELBOWS USE ROD & LUG CONNECTORS

BEGIN SBG -L- 179+50 LT

Q10=11.0 CFS
V10=1.4 FPS

6' CHANNEL CHANGE SEE DETAIL CC5

24" RCP IV

DECK DRAINS REQUIRED
6" DIAMETER SCUPPERS ON 38' CENTERS
FROM -L- STA. 186+23 TO STA. 189+65 LT.
FROM -L- STA. 186+33 TO STA. 189+75 RT.
6" DIAMETER SCUPPERS ON 44' CENTERS
FROM -L- STA. 190+85 TO STA. 192+17 LT.
FROM -L- STA. 190+95 TO STA. 192+27 RT.
SEE DETAIL DP1 FOR DISSIPATOR PADS UNDER SCUPPERS

SITE 21
WN TA

SITE 22
FRENCH BROAD RIVER
WL WP

LEGENDS

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS
- FILL IN WETLAND
- TEMPORARY FILL IN WETLAND
- WETLAND EXCAVATION
- TEMPORARY ACCESS ROAD

GRAPHIC SCALE 50' 0' 50' 100' 150'

5/17/2023
...\R5763_HYD_PRM_PSH_16_with access rd.dgn
HNTB

8/23/99

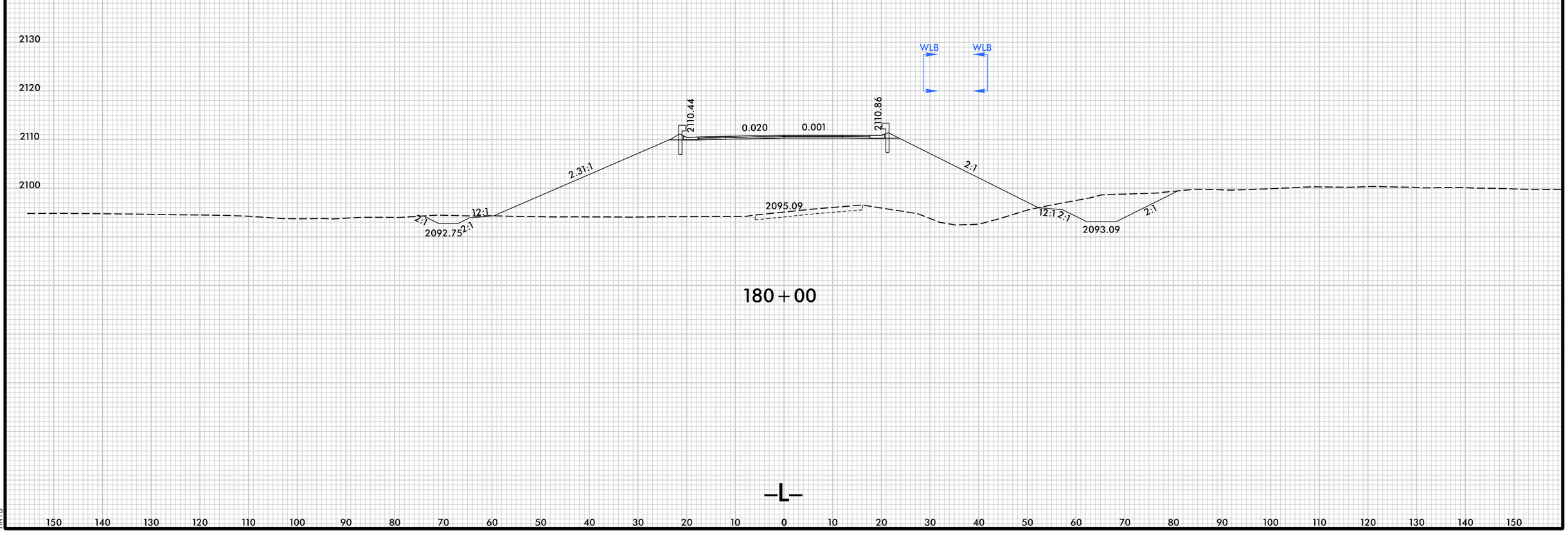
PROJ. REFERENCE NO.	SHEET NO.
R-5763	

0 5 10

PERMIT DRAWING
SHEET 40 OF 44

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

SITE 21



180+00

–L–

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

4/4/2023
11:18
N:\Drawings\R5763_HYD_PRM_xp1.dgn

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-5763	

PERMIT DRAWING
SHEET 41 OF 44

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

SITE 22

WLB

2130

2120

2110

2100

2090

DECK DRAIN DISSIPATOR PAD
SEE DETAIL DP1

190+87

–L–

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

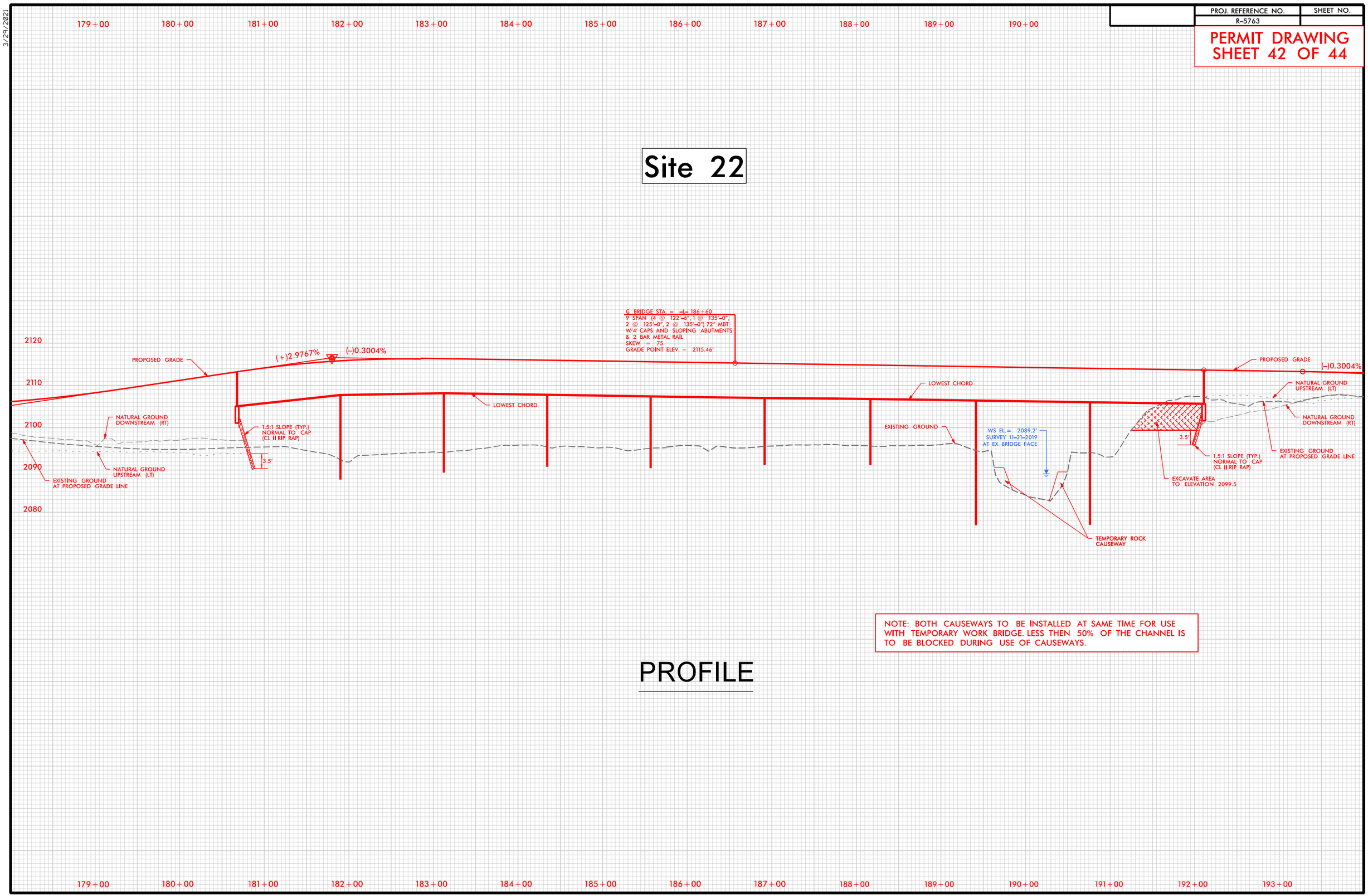
4/4/2023
N:\Drawings\R5763_HYD_PRM_xp1.dgn
jinTB

3/29/2021

PROJ. REFERENCE NO.	SHEET NO.
R-5763	

PERMIT DRAWING
SHEET 42 OF 44

Site 22



NOTE: BOTH CAUSEWAYS TO BE INSTALLED AT SAME TIME FOR USE WITH TEMPORARY WORK BRIDGE. LESS THEN 50% OF THE CHANNEL IS TO BE BLOCKED DURING USE OF CAUSEWAYS.

PROFILE

WETLAND AND SURFACE WATER IMPACTS SUMMARY

Site No.	Stream Name Stream ID	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	UT to French Broad River / SA	L Sta. 11+87 to 11+93 LT/RT	Special Lateral 'V' Ditch						<0.01	<0.01	22	10	
	UT to French Broad River / SA	L Sta. 14+63 to 16+17 LT/RT	Channel Relocation						<0.01		67		
	UT to French Broad River / SA	L Sta. 16+22 to 16+41 LT/RT	Proposed 30" RCP						<0.01		26		
	UT to French Broad River / SA	L Sta. 16+37 to 16+43 LT	Bank Stabilization						<0.01	<0.01	10	10	
	UT to French Broad River / SB	L Sta. 14+10 to 14+27 RT	Special Lateral 'V' Ditch and Proposed 24" pipe						<0.01	<0.01	10	12	
	WA	L Sta. 15+11 to 15+77 RT	Channel Relocation	0.020		<0.01	<0.01						
	UT to French Broad River / SEE	L Sta. 16+17 to 16+27 RT	Channel Relocation						<0.01		24		
	WB	L Sta. 16+22 to 16+38 RT	Proposed 30" RCP			<0.01	<0.01						
2	UT to French Broad River / SD	L Sta. 18+37 to 18+57 LT/RT	Proposed 54" RCP						<0.01		42		
	UT to French Broad River / SD	L Sta. 18+41 to 18+62 LT	Bank Stabilization						<0.01	<0.01	23	10	
	WC	L Sta. 18+16 to 18+38 RT	Special Lateral 'V' ditch	<0.01		<0.01	<0.01						
3	UT to French Broad River / SE	L Sta. 22+14 to 22+34 RT	Proposed 48" RCP						<0.01		27		
	UT to French Broad River / SE	L Sta. 22+31 to 22+37 RT	Bank Stabilization						<0.01		8		
	WD	L Sta. 22+11 to 22+71 RT	Roadway Fill and Proposed 48" RCP and 18" pipe	0.013			<0.01						
4	UT to French Broad River / SI	L Sta. 28+37 to 28+46 LT/RT	Channel Relocation						<0.01	<0.01	50	10	
	UT to French Broad River / SI	L Sta. 27+74 to 28+47 LT/RT	Proposed 42" RCP						<0.01		75		
	UT to French Broad River / SI	L Sta. 27+60 to 27+79 LT	Bank Stabilization						<0.01	<0.01	11	10	
5	UT to French Broad River / SG	L Sta. 30+97 to 31+17 RT	Bank Stabilization						<0.01		31		
	UT to French Broad River / SG	L Sta. 31+08 to 31+46 LT/RT	Proposed 72" RCP						0.011		115		
	UT to French Broad River / SG	L Sta. 31+15 to 31+31 LT	Channel Change at Downstream of 72" RCP						<0.01	<0.01	10	10	
6	WF	L Sta. 31+81 to 34+93 LT	Roadway Fill and Proposed 36" RCP	0.039			<0.01						
	UT to French Broad River / SH	L Sta. 34+07 to 34+45 RT	Proposed 36" RCP						<0.01	<0.01	38	10	
7	UT to French Broad River / SK	L Sta. 46+18 to 46+41 RT	Roadway Fill						<0.01	<0.01	28	10	
8	UT to French Broad River / SL	L Sta. 55+15 to 55+52 RT	Channel Change at Inlet of 72" RCP						0.010	<0.01	49	8	
	UT to French Broad River / SL	L Sta. 55+15 to 55+31 RT	Proposed 72" RCP						<0.01		15		
	UT to French Broad River / SM	L Sta. 55+29 to 55+56 RT	Channel Change at Inlet of 72" RCP						<0.01		28		
	PA	L Sta. 54+85 to 55+19 LT	Roadway Fill						0.012	<0.01	32	10	
9	UT to Cateechee Branch / SO	L Sta. 63+08 to 63+34 RT	Roadway Fill						<0.01		26		
	Cateechee Branch	L Sta. 63+25 to 63+35 LT	Channel Change at outlet of 54" RCP						<0.01	<0.01	15	9	
	Cateechee Branch	L Sta. 63+31 to 66+69 LT	Roadway Fill						0.033		313		
	Cateechee Branch	L Sta. 66+88 to 67+77 RT	Channel Relocation						<0.01	<0.01	92	9	
	Cateechee Branch	L Sta. 67+77 to 67+96 RT	Bank Stabilization						<0.01	<0.01	6	14	
TOTALS*:				0.077		0.010	0.022		0.131	0.020	1193	142	

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
5/17/2023
Transylvania
R-5763
44638.1.1

WETLAND AND SURFACE WATER IMPACTS SUMMARY

Site No.	Stream Name Stream ID	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)
10	UT to French Broad River / SP	L Sta. 75+49 to 79+09 LT/RT	Channel relocation, Proposed 36" RCP, and 48" RCP						0.029		355		
	UT to French Broad River / SP	L Sta. 79+14 to 79+25 LT	Bank Stabilization						< 0.01	< 0.01	38	6	
	WS	L Sta. 76+94 to 77+33 RT	Roadway Fill	< 0.01									
	UT to French Broad River / SQ	L Sta. 77+32 to 77+57 RT	Roadway Fill						< 0.01		26		
	WI	L Sta. 78+11 to 79+01 RT	Roadway Fill	0.028									
	WH	L Sta. 78+75 to 78+77 RT	Channel relocation				< 0.01						
11	UT to French Broad River / SR	L Sta. 83+08 to 84+41 LT/RT	Standard 4' Base Ditch and Proposed 42" CSP						0.014	< 0.01	152	10	
	UT to French Broad River / SR	L Sta. 83+34 to 84+36 LT	Channel Change at downstream of 42" CSP						< 0.01		12		
	UT to French Broad River / SR	L Sta. 84+36 to 84+41 LT	Bank Stabilization						< 0.01	< 0.01	16	4	
12	UT to French Broad River / SS	L Sta. 88+93 to 89+09 RT	Standard 3' Base Ditch						< 0.01	< 0.01	45	10	
	UT to French Broad River / SS	L Sta. 88+87 to 89+06 RT	Proposed 42" RCP						< 0.01		94		
	French Broad River	L Sta. 88+90 to 89+10 LT	Rip Rap at Embankment							< 0.01		2	
13	UT to French Broad River / SU	L Sta. 94+37 to 94+45 LT/RT	Proposed 24" RCP						< 0.01	< 0.01	76	10	
	UT to French Broad River / SU	L Sta. 94+32 to 94+41 LT	Bank Stabilization						< 0.01	< 0.01	11	5	
14	Williamson Creek	L Sta. 133+76 to 135+22 RT	Rip Rip at Embankment and Embankment Stabilization							< 0.01		67	
15	UT to French Broad River / SW	L Sta. 149+64 to 149+89 LT/RT	Proposed 24" RCP						< 0.01		64		
	UT to French Broad River / SW	L Sta. 149+86 to 149+94 LT	Bank Stabilization						< 0.01	< 0.01	10	10	
16	UT to French Broad River / SX	L Sta. 151+76 to 151+99 LT/RT	Proposed 36" RCP						< 0.01	< 0.01	62	10	
	UT to French Broad River / SX	L Sta. 151+95 to 152+02 LT	Bank Stabilization						< 0.01	< 0.01	10	10	
17	UT to French Broad River / SY	L Sta. 158+46 to 158+88 LT	Proposed 24" RCP						< 0.01	< 0.01	79	10	
18	French Broad River	L Sta. 161+30 to 161+50 LT	Standard 4' Base Ditch							< 0.01		22	
19	UT to French Broad River / SZ	L Sta. 170+77 to 171+78 LT/RT	Proposed 54" RCP						0.010		154		
	UT to French Broad River / SZ	L Sta. 170+56 to 170+79 LT	Bank Stabilization						< 0.01	< 0.01	20	10	
20	UT to French Broad River / SBB	L Sta. 178+54 to 181+50 LT	Channel Relocation						0.044	0.037	244	42	
	French Broad River / TB	L Sta. 183+39 to 185+40 LT	Temporary Roadway Fill and 18" Temporary pipe							0.029		199	
21	WN	L Sta. 178+34 to 182+14 RT	Roadway Fill and Bridge bent	0.100	< 0.01	< 0.01	0.095						
	UT to French Broad River / SAA	L Sta. 178+34 to 182+14 RT	Channel Relocation						0.051				
	French Broad River / TA	L Sta. 182+18 to 183+32 RT	Proposed Bridge							0.011		114	
22	French Broad River	L Sta. 189+79 to 190+87 LT/RT	Temporary Rock Causeway for Proposed Bridge							0.076		81	
	French Broad River	L Sta. 188+69 to 189+90 LT	Temporary Rock Causeway for Existing Bridge							0.047		89	
	WL	L Sta. 186+68 to 186+74 RT	Deck Drain Dissipator Pad	< 0.01	0.056		0.189						
	WP	L Sta. 190+86 to 190+88 LT	Deck Drain Dissipator Pad	< 0.01									
TOTALS*:				0.126	0.064	0.007	0.285		0.198	0.219	1468	711	
TOTALS FOR R-5763:				0.203		0.017	0.307		0.329	0.238	2661	853	

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
5/17/2023
Transylvania
R-5763
44638.1.1
SHEET 44 OF 44