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:	32572.1.15	**TIP Number:**	A-0009CC	**Project Type:**	Roadway Widening	**Date:**	11/1/2021
NCDOT Contact:	Josh B. Deyton, PE			**Contractor / Designer:**	TGS Engineers / David B. Petty, PE		
Address:	253 Webster Rd Sylva, NC 28779			**Address:**	706 Hillsborough St. - Suite 200 Raleigh, NC 27603		
Phone:	828-586-2141			**Phone:**	919-773-8887 Ext. 104		
Email:	jbdeyton@ncdot.gov			**Email:**	dpetty@tgsengineers.com		
City/Town:	Robbinsville, NC			**County(ies):**	Graham		
River Basin(s):	Little Tennessee			**CAMA County?**	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	4.10 Miles	**Surrounding Land Use:**	Forested, Agriculture, Rural Residential				
	Proposed Project			**Existing Site**			
Project Built-Upon Area (ac.)	29.0	ac.		15.5	ac.		
Typical Cross Section Description:	1.) -L-: Three 12' paved lanes, 10' shoulders (8' paved / 2' grassed), grassed side slopes ranging from 4:1 to 2:1 - 1.1 Miles 2.) -Y2-: Three 12' paved lanes, 10' shoulders (8' paved / 2' grassed), grassed side slopes ranging from 4:1 to 2:1 - 2.1 Miles 3.) -Y2-: Three 12' paved lanes,curb&gutter with 10' Multiuse Path, grassed side slopes ranging from 4:1 to 2:1 - 0.8 Miles			1.) -L-: Two 12' paved lanes, 0 to 12' paved shoulders, 2' to 8' grassed shoulders, grassed side slopes ranging from 4:1 to 2:1 - 1.1 Miles 2.) -Y2-: Two 12' paved lanes, 2' to 8' grassed shoulders, grassed side slopes ranging from 4:1 to 2:1 - 3.0 Miles			
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	8800	Year: 2045	Existing:	6590	Year:	2022

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

STIP project A-0009C is part of Corridor K of the Appalachian Development Highway System (ADHS) and improves the existing alignments of US 129, NC 143 and NC 28 between US 129 south of Robbinsville and the existing four-lane section of NC 28 east of Stecoah in Graham County, NC. The project improves roadway shoulders and adds passing & climbing lanes for the length of the project. A-0009C is broken into three projects (A-0009CA, A-0009CB & A-0009CC).

A-0009CC improves NC 143 (-L-, an urban arterial) from 0.5 miles north of the Appalachian Trail to NC 28 and improves NC 28 (-Y2-, an urban arterial) from 0.2 miles west of NC 143 to 0.3 miles east of SR 1235 (Gunters Gap Rd). ADT listed above is for -L-. ADT for -Y2- is 3800 in 2022 and 5200 in 2045.

Project minimization measures include:

>2:1 fill slopes.
>1.5:1 cut slopes where possible.
>Expressway gutter and shoulder berm gutter to reduce cross-section width.
>Alignment shifts to avoid relocations and avoid / minimize stream, wetland, and historic resource impacts.
>Alignment shifts and either symmetrical or asymmetrical widening to fit a best-fit alignment to avoid / minimize impacts and reduce earthwork.
>Overall maintain existing alignment to minimize cumulative impacts to resources.
>Maximizing shoulder section.
>Providing adequate ground cover.
>Stabilizing embankments and drainage ditches.
>Minimizing culvert slopes.
>Removing existing perched outlets.
>Providing adequate energy dissipation.
>Utilizing natural features and drainage pathways - Existing drainage pathways were utilized to the maximum extent practicable.
>Retaining and extending existing culverts where practicable to minimize in-stream work.
>Site 17: As mentioned during 4B meeting, floodplain benches have been added along this stream to lower velocities and dissipate energy.

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(Version 3.00; Released August 2021)

WBS Element:	32572.1.15	TIP/Proj No.:	A-0009CC	County(ies):	Graham	Page	2	of	4

General Project Information

Waterbody Information

Surface Water Body (1):	Cody Branch		**NCDWR Stream Index No.:**	2-130-1			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C				
		Supplemental Classification:	None				
Other Stream Classification:	None						
Impairments:	None						
Aquatic T&E Species?	No	Comments:					
NRTR Stream ID:	SBB			**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 (2):	Carver Branch		**NCDWR Stream Index No.:**	2-130-3-1			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C				
		Supplemental Classification:	None				
Other Stream Classification:	None						
Impairments:	None						
Aquatic T&E Species?	No	Comments:					
NRTR Stream ID:	Carver Branch, SBC, SBG, SBD, SFT, SFP, SFH, SFM, SFN, SBJ, SBN, SBP, SBO			**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 (3):	Johnson Gap Branch		**NCDWR Stream Index No.:**	2-131-2			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C				
		Supplemental Classification:	None				
Other Stream Classification:	None						
Impairments:	None						
Aquatic T&E Species?	No	Comments:					
NRTR Stream ID:	Johnson Gap Branch, SEY, SEX			**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)							

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 3.00; Released August 2021)

WBS Element: 32572.1.15 **TIP No.:** A-0009CC **County(ies):** Graham

Additional Waterbody Information

Surface Water Body (4):	Edwards Branch		**NCDWR Stream Index No.:**	2-130-3		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	Edwards Branch, SBV			**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):	Stecoah Creek		**NCDWR Stream Index No.:**	2-130		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Trout Waters (Tr)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	Stecoah Creek, SCB, SCD, SDT			**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)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 3.00; Released August 2021)

WBS Element: 32572.1.15 **TIP/Proj No.:** A-0009CC **County(ies):** Graham

Swale

Sheet No.	Line	Station	Location (LT,RT,CL)	Latitude	Longitude	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
47	Y2	132+00	RT	35.37139	-83.67977	(5)Stecoah Creek	0.0	4.0	4.0	0.6	60	300	1.34%	1.0	1.2	1.3	1.3	No	No
47*	Y2	130+29	LT	35.37163	-83.68043	(5)Stecoah Creek	5.0	3.0	3.0	9.9	990	246	0.40%	15.0	1.9	20.3	2.0	No	No

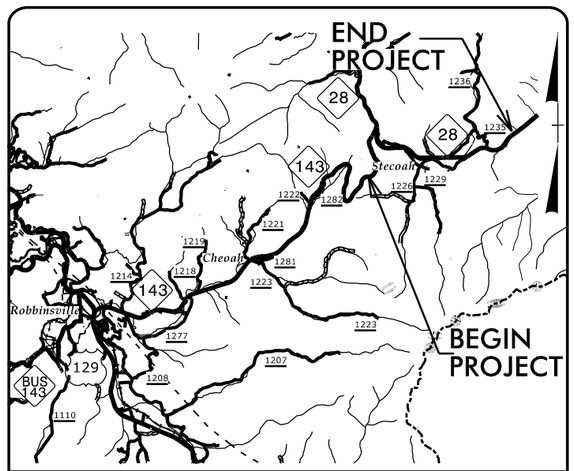
Additional Comments

*Provided length exceeds the recommended length for the portion of the contributing drainage area within NCDOT right of way.

09/08/99

CONTRACT: **TIP PROJECT: A–0009CC**

See Sheet 1A For Index of Sheets



VICINITY MAP

3R GUIDELINES WERE USED FROM –L– 414+50 TO –L– STA 474+20 AND FROM –Y2– 12+60± TO 23+00± TO MINIMIZE IMPACTS TO USFS PROPERTY AND NATURAL RESOURCES.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GRAHAM COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	A–0009CC	1	

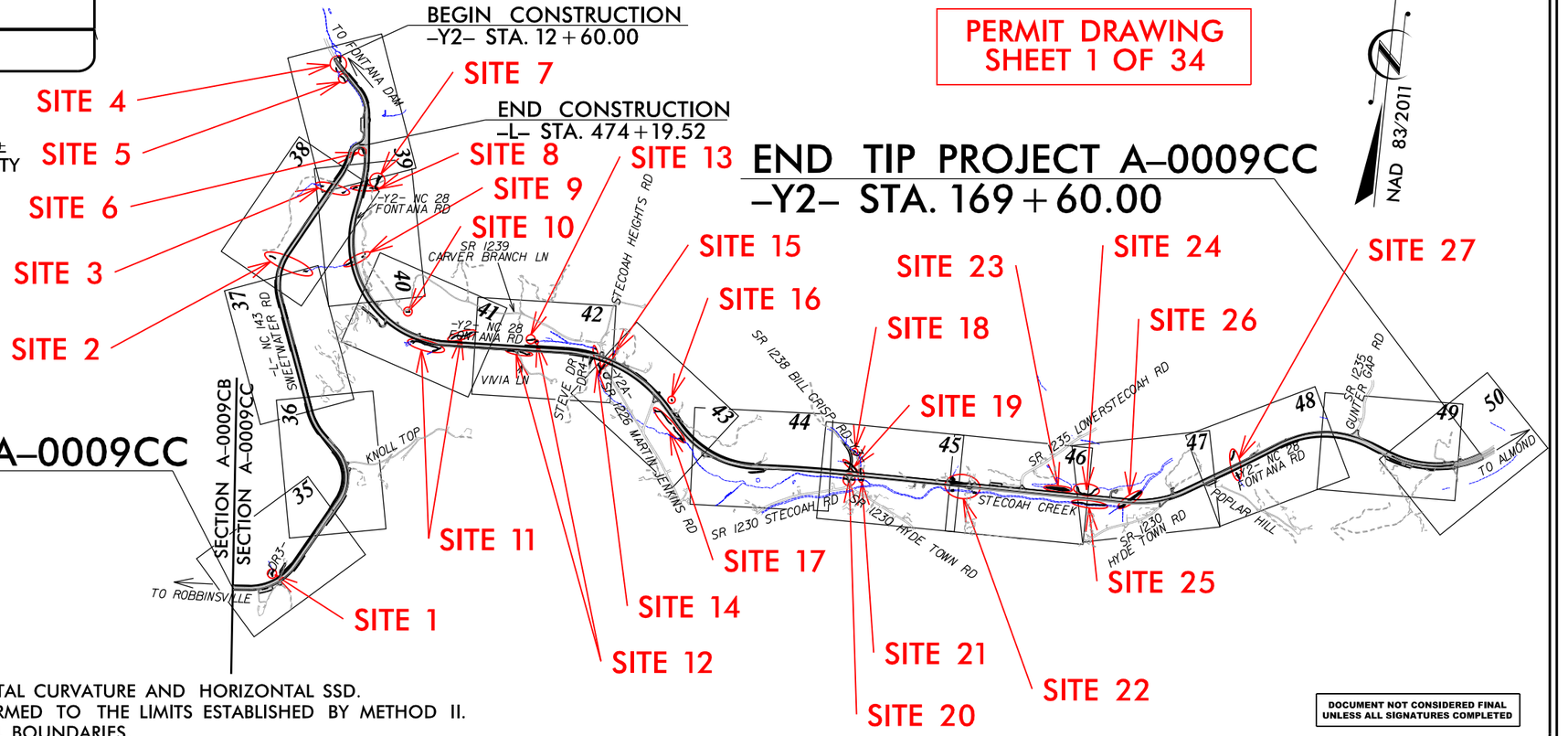
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
32572.1.15	APD–0074(178)	PE
32572.2.15	APD–0074(178)	ROW,UTIL.
32572.3.15	APD–0074(178)	CONST.

LOCATION: *UPGRADE NC 143 FROM 0.5 MILES NORTH OF APPALACHIAN TRAIL TO NC 28*
UPGRADE NC 28 FROM 0.2 MILES WEST OF NC 143 TO 0.3 MILES EAST OF SR 1235 (GUNTERS GAP RD)

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, CULVERTS, & RETAINING WALLS*

WETLAND & STREAM IMPACTS FOR 11–18–2021 4C MEETING

PERMIT DRAWING
SHEET 1 OF 34



DESIGN EXCEPTION REQUIRED FOR HORIZONTAL CURVATURE AND HORIZONTAL SSD.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

–L– DESIGN DATA

ADT 2022 = 6590
ADT 2045 = 8800
K = 11 %
D = 57.5 %
T = 7 % *
V = 60 MPH
* TTST = 2% DUAL = 5%
FUNC CLASS = RURAL ARTERIAL
REGIONAL TIER

–Y2– DESIGN DATA

ADT 2022 = 3800
ADT 2045 = 5200
K = 11 %
D = 67.5 %
T = 7 % *
V = 50 MPH
* TTST = 2% DUAL = 5%
FUNC CLASS = RURAL ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT A–0009CC
–L– = 1.131 MILES
–Y2– = 2.973 MILES
TOTAL LENGTH TIP PROJECT A–0009CC = 4.104 MILES

NCDOT CONTACT: WANDA H. AUSTIN, PE

PLANS PREPARED BY:
TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PLANS PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF TRANSPORATION
DIVISION 14
252 Webster Rd
Sylva, NC 28779

RIGHT OF WAY DATE: AUGUST 12, 2021

LETTING DATE: OCTOBER 18, 2022

2018 STANDARD SPECIFICATIONS

JIMMY L. TERRY, PE
PROJECT ENGINEER

AUSTIN TURNER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION • REG.

11/1/202
X:\NCDOT\A-0009\Hydraulics\PERMITS_Environmental\Drawings\A-0009CC PSH\A-0009CC_Hyd_tsh.dgn
User:zrichard

8/17/99

-L- CURVE DATA
PI Sta 419+44.60
△ = 56° 20' 44.5" (LT)
D = 9° 32' 57.5"
L = 590.05'
T = 321.35'
R = 600.00'
DS = 45 MPH
SE = 0.08

-DR3- CURVE DATA
PI Sta 10+68.68
△ = 13° 52' 12.2" (RT)
D = 22° 55' 05.9"
L = 60.52'
T = 30.41'
R = 250.00'
SE = SEE PLANS

PI Sta 11+40.26
△ = 75° 57' 23.4" (LT)
D = 114° 35' 29.6"
L = 66.28'
T = 39.03'
R = 50.00'
SE = SEE PLANS

B1 S 33° 09' 58.9" W
1 -DR3- PC 11+01.23
2 -DR3- PT 11+67.51
B2 S 42° 47' 24.5" E

PAVEMENT REMOVAL
PROP MONOLITHIC CONC ISLAND – SURFACE MOUNTED

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED. END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

DETAIL 35A
BERM BASE DITCH
(Not to Scale)
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.
b=5.0 Ft.
Type of Liner= Class I Rip-Rap
-L- STA. 419+00 TO STA. 419+50 LT

DETAIL 35B
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
S=Ditch Slope
℄ Proposed Ditch
-L- STA. 414+93 LT
-L- STA. 416+37 LT
-L- STA. 418+09 LT
-L- STA. 419+48 LT

-L-/-DR3- INTERSECTION

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	35
R/W SHEET NO.	
ROADWAY DESIGN	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PERMIT DRAWING
SHEET 2 OF 34

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S S DENOTES IMPACTS IN SURFACE WATER
E E DENOTES EXCAVATION IN WETLAND
HC HC DENOTES HAND CLEARING
F F DENOTES FILL IN WETLAND

END SECTION A-0009CB
BEGIN SECTION A-0009CC

BEGIN TIP PROJECT A-0009CC
-L- STA. 414+50.00

HAND CLEARING IN WETLANDS
EXCAVATION IN WETLANDS
TEMPORARY IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER

116 HOUSE OF PRAYER
115 U.S. FOREST SERVICE
120 MARCIA G. WILLIAMS
117 DELMAR L. HOLDER, ET AL

SITE 1

BEGIN CONSTRUCTION
-DR3 STA. 10+20.00

PROP. RETAINING WALL #21
W/CONCRETE DITCH
BEGIN -L- STA. 420+39±
END -L- STA. 436+65±

PROP. SINGLE FACED CONCRETE BARRIER

MATCH LINE STA -L- 428+00.00
MATCH TO SHEET NO. 36

PROP. RETAINING WALL #27
BEGIN -L- STA. 427+50±
END -L- STA. 431+42±

PROP. RETAINING WALL #26
BEGIN -L- STA. 421+44±
END -L- STA. 423+54±

PROP. CONCRETE DRIVE
PROP. DRIVE
REMOVE EXIST. CONCRETE DRIVE
TIE CONCRETE TO EXISTING SIGN
MONO. CONC. ISLAND

FALSE SUMP SEE DETAIL 35B
FALSE SUMP SEE DETAIL 35C
BERM BASE DITCH SEE DETAIL 35A Class I RIP-RAP 30 TONS, 60 SY GEO
SPECIAL CUT DITCH SEE DETAIL 35E CLASS I RIPRAP 65 TONS
SPECIAL CUT DITCH SEE DETAIL 35E CLASS I RIPRAP 35 TONS
CONCRETE SILL SEE DETAIL 35F
CONC. DITCH BEHIND RETAINING WALL SEE DETAIL 35D
CLASS I RIPRAP 7 TONS, 15 SY GEO
CLASS I RIPRAP (KEYED-IN) 20 TONS
CLASS I RIPRAP 1 TONS, 5 SY GEO
CLASS I RIPRAP (KEYED-IN) 11 TONS
CLASS I RIPRAP (KEYED-IN) 7 TONS
CLASS I RIPRAP (KEYED-IN) 22 TONS
CLASS B RIPRAP 2 TONS, 7 SY GEO
ROD AND LUG WITH GASKETS (ELBOWS)
MAX 1.0% PIPE SLOPE THIS SIDE OF ELBOW
FLOWABLE FILL
REMOVE CONC. DITCH
REMOVE PLUG
2GI (Top Wall)
TB 2GI

50' 0' 50' 100'
25'
FOR CONCRETE ISLAND & DRIVE LAYOUT SEE DETAIL SHT 2B-

DETAIL 35C
FALSE SUMP
(Not to Scale)
S=Ditch Slope
℄ Proposed Ditch
-L- STA. 421+00 RT
-L- STA. 426+19 RT

DETAIL 35D
CONCRETE DITCH BEHIND RETAINING WALL
(Not to Scale)
-L- STA. 420+39 TO 428+00 LT
(SEE WALL ENVELOPES FOR DITCH GRADE)

DETAIL 35E
SPECIAL CUT DITCH
(Not to Scale)
Class I Riprap (Keyed-in)
Type of Liner= Class I Rip-Rap
-DR3- STA. 10+20 TO 12+00 RT
-DR3- STA. 10+38 TO 11+20 LT
(SEE XSCs FOR TYPICAL DITCH GRADE)

DETAIL 35F
CONCRETE SILL DETAIL
(Not to Scale)
-L- STA. 422+70 LT
-L- STA. 426+07 LT

FOR -L- PROFILE, SEE SHEET NO.69
FOR -DR3- PROFILE, SEE SHEET NO. 77

8/17/99

-L- CURVE DATA
PI Sta 419+44.60
△ = 56° 20' 44.5" (LT)
D = 9° 32' 57.5"
L = 590.05'
T = 321.35'
R = 600.00'
DS = 45 MPH
SE = 0.08

-DR3- CURVE DATA
PI Sta 10+68.68
△ = 13° 52' 12.2" (RT)
D = 22° 55' 05.9"
L = 60.52'
T = 30.41'
R = 250.00'
SE = SEE PLANS

PI Sta 11+40.26
△ = 75° 57' 23.4" (LT)
D = 114° 35' 29.6"
L = 66.28'
T = 39.03'
R = 50.00'
SE = SEE PLANS

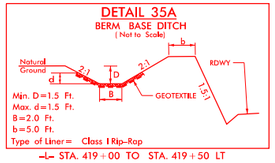
(B1) S 33° 09' 58.9" W
(1) -DR3- PC 11+01.23
(2) -DR3- PT 11+67.51
(B2) S 42° 47' 24.5" E

PAVEMENT REMOVAL

PROP MONOLITHIC CONC ISLAND – SURFACE MOUNTED

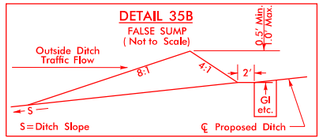
NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED. END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

DETAIL 35A
BERM BASE DITCH
(Not to Scale)

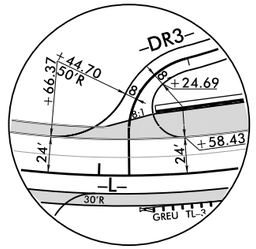


-L- STA. 419+00 TO STA. 419+50 LT

DETAIL 35B
FALSE SUMP
(Not to Scale)



-L- STA. 414+93 LT
-L- STA. 416+37 LT
-L- STA. 418+09 LT
-L- STA. 419+48 LT



-L-/-DR3- INTERSECTION

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	35
R/W SHEET NO.	

ROADWAY DESIGN | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PERMIT DRAWING
SHEET 3 OF 34

TS / TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S / S DENOTES IMPACTS IN SURFACE WATER
E / E DENOTES EXCAVATION IN WETLAND
HC / HC DENOTES HAND CLEARING
F / F DENOTES FILL IN WETLAND

END SECTION A-0009CB
BEGIN SECTION A-0009CC

BEGIN TIP PROJECT A-0009CC
-L- STA. 414+50.00

EXCAVATION IN WETLANDS
IMPACTS IN SURFACE WATER
HAND CLEARING IN WETLANDS
TEMPORARY IMPACTS IN SURFACE WATER

MATCH LINE STA -L- 428+00.00
MATCH TO SHEET NO. 36

116 HOUSE OF PRAYER
115 U.S. FOREST SERVICE
117 DELMAR L. HOLDER, ET AL
120 MARCIA G. WILLIAMS

SITE 1

BEGIN CONSTRUCTION
-DR3 STA. 10+20.00

PROP. RETAINING WALL #21
W/CONCRETE DITCH
BEGIN -L- STA. 420+39±
END -L- STA. 436+65±

PROP. SINGLE FACED CONCRETE BARRIER

PROP. RETAINING WALL #27
BEGIN -L- STA. 427+50±
END -L- STA. 431+42±

PROP. RETAINING WALL #26
BEGIN -L- STA. 421+44±
END -L- STA. 423+54±

PROP. CONCRETE DRIVE

PROP. DRIVE

REMOVE EXIST. CONCRETE DRIVE

MONO CONC. ISLAND

TIE CONCRETE TO EXISTING SIGN

FALSE SUMP SEE DETAIL 35B

FALSE SUMP SEE DETAIL 35C

SPECIAL CUT DITCH SEE DETAIL 35E CLASS I RIPRAP 65 TONS

SPECIAL CUT DITCH SEE DETAIL 35E CLASS I RIPRAP 35 TONS

BERM BASE DITCH SEE DETAIL 35A Class I RIP-RAP 30 TONS, 60 SY GEO

CONCRETE SILL SEE DETAIL 35F

CONC. DITCH BEHIND RETAINING WALL SEE DETAIL 35D

ROD AND LUG WITH GASKETS (ELBOWS)

MAX 1.0% PIPE SLOPE THIS SIDE OF ELBOW

CLASS I RIPRAP (KEYED-IN) 7 TONS, 15 SY GEO

CLASS I RIPRAP (KEYED-IN) 20 TONS

CLASS I RIPRAP 1 TONS, 5 SY GEO

CLASS I RIPRAP (KEYED-IN) 22 TONS

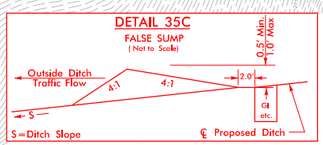
CLASS I RIPRAP (KEYED-IN) 11 TONS

CLASS I RIPRAP (KEYED-IN) 7 TONS

CLASS B RIPRAP 2 TONS, 7 SY GEO

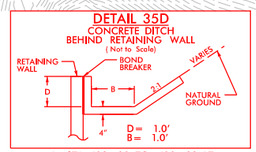
50' 0' 50' 100'
25'
FOR CONCRETE ISLAND & DRIVE LAYOUT SEE DETAIL SHT 2B-__

DETAIL 35C
FALSE SUMP
(Not to Scale)



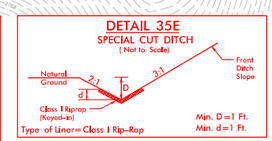
-L- STA. 421+00 RT
-L- STA. 426+19 RT

DETAIL 35D
CONCRETE DITCH
BEHIND RETAINING WALL
(Not to Scale)



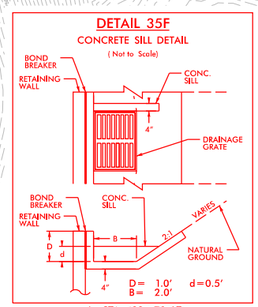
-L- STA. 420+39 TO 428+00 LT
(SEE WALL ENVELOPES FOR DITCH GRADE)

DETAIL 35E
SPECIAL CUT DITCH
(Not to Scale)



-DR3- STA. 10+20 TO 12+00 RT
-DR3- STA. 10+38 TO 11+20 LT
(SEE XSCs FOR TYPICAL DITCH GRADE)

DETAIL 35F
CONCRETE SILL DETAIL
(Not to Scale)



-L- STA. 422+70 LT
-L- STA. 426+07 LT

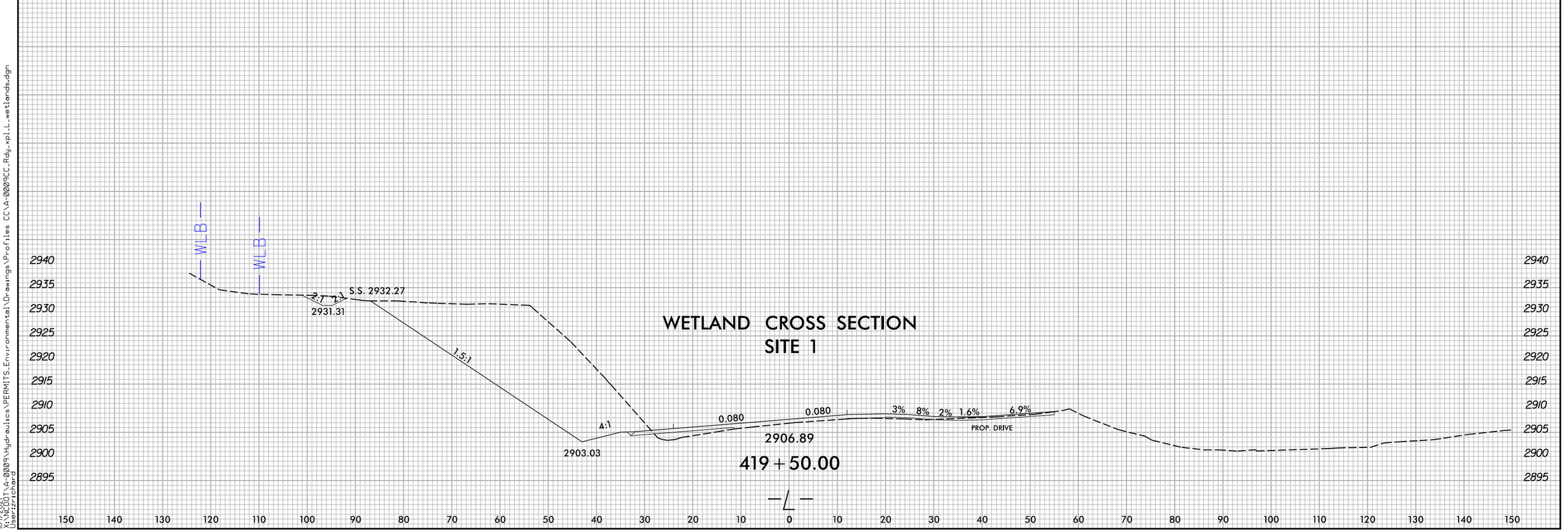
FOR -L- PROFILE, SEE SHEET NO.69
FOR -DR3- PROFILE, SEE SHEET NO. 77

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	X-7

PERMIT DRAWING
SHEET 4 OF 34

SCALE
1" = 20' HORIZONTAL
1" = 20' VERTICAL



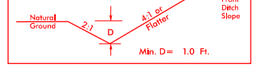
WETLAND CROSS SECTION
SITE 1

8/17/99

-L- CURVE DATA

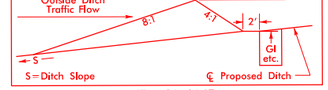
PI Sta 456+91.51	PI Sta 470+84.26
Δ = 49° 15' 00.2" (RT)	Δ = 21° 31' 55.6" (LT)
D = 9° 32' 57.5"	D = 7° 32' 20.1"
L = 515.75'	L = 285.61'
T = 275.02'	T = 144.51'
R = 600.00'	R = 760.00'
SE = 0.08	SE = 0.04
DS = 45 MPH	DS = 45 MPH

DETAIL 38A
SPECIAL CUT DITCH
(Not to Scale)



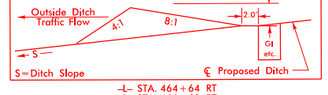
-L- STA. 461+50 TO STA. 464+00 LT
SEE PFL FOR DITCH GRADES

DETAIL 38B
FALSE SUMP
(Not to Scale)



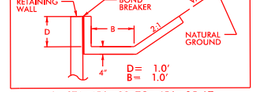
-L- STA. 464+64 LT

DETAIL 38C
FALSE SUMP
(Not to Scale)



-L- STA. 464+64 RT
-L- STA. 466+63 RT

DETAIL 38D
CONCRETE DITCH
BEHIND RETAINING WALL
(Not to Scale)



-L- STA. 456+00 TO 456+25 LT
-L- STA. 468+75 TO 470+00 LT
(SEE WALL ENVELOPES FOR DITCH GRADE)

DETAIL 38E
OUTLET CHANNEL STABILIZATION
(Not to Scale)

-L- STA 458+35 RT

DETAIL 38F
OUTLET CHANNEL STABILIZATION
(Not to Scale)

-L- STA 468+04 RT

DETAIL 38G
SPECIAL CUT DITCH
(Not to Scale)

-L- STA. 456+50 TO STA. 457+50 LT
SEE PFL FOR DITCH GRADES

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	38
R/W SHEET NO.	
ROADWAY DESIGN	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PERMIT DRAWING
SHEET 5 OF 34

PROP. RETAINING WALL #24
W/CONCRETE DITCH
BEGIN -L- STA. 453+25±
END -L- STA. 456+25±

PROP. RETAINING WALL #25
W/CONCRETE DITCH
BEGIN -L- STA. 468+75±
END -L- STA. 471+75±

PROP. SINGLE FACED
CONCRETE BARRIER

MATCH LINE STA -L- 470+00.00
MATCH TO SHEET NO. 39

MATCH LINE STA -L- 456+00.00
MATCH TO SHEET NO. 37

TEMPORARY IMPACTS
IN SURFACE WATER

TEMPORARY IMPACTS
IN SURFACE WATER

SITE 2

SITE 2

SITE 3

SITE 3

CONC. DITCH BEHIND
RETAINING WALL
SEE DETAIL 38D

TRANSITION STONE
CLASS II RIPRAP
(KEYED-IN)
55 TONS

TIE TO EXISTING DITCH

SPECIAL CUT DITCH
SEE DETAIL 38G
CLASS II RIPRAP
(KEYED-IN)
105 TONS

2GI-D
(Top Wall)

TYPE B-77

GTD

CLASS I RIPRAP
(KEYED-IN)
25 TONS

DO NOT
DISTURB
SIGN

RETAIN 36" CMP
AND LINE WITH CIPP

RETAIN
HW

UT TO CARVER
BRANCH (PERM)

DO NOT
DISTURB SIGNS

PERMANENT EASEMENT FOR
WARBLER HABITAT ESTABLISHMENT

DO NOT
DISTURB SIGN

REMOVE
SEPARATED PIPE
(20 LF)

JB
MH

36" CSP

DO NOT BURY INVERT

OUTLET CHANNEL STABILIZATION
SEE DETAIL 38E
CLASS I RIPRAP
11 TONS, NO GEO

UT TO CARVER
BRANCH (TEMP)

SPECIAL CUT DITCH
SEE DETAIL 38A

FALSE SUMP
SEE DETAIL 38B

REMOVE
CONC. DITCH

REMOVE
PLUG

FLOWABLE FILL

18" RCP-IV

FALSE SUMP
SEE DETAIL 38C

REMOVE
CONC. DITCH

ROD AND LUG
WITH GASKETS
(ELBOWS)
REMOVE CONC DITCH

FALSE SUMP
SEE DETAIL 38C

CONC. DITCH BEHIND
RETAINING WALL
SEE DETAIL 38D

PROP. DRIVE

RETAIN
HW

15" RCP-IV

2GI
(Top Wall)

TB 2GI

PLUG

FLOWABLE FILL

CLASS I RIPRAP
(KEYED-IN)
12 TONS

RETAIN 36" CMP
AND LINE WITH CIPP

OUTLET CHANNEL STABILIZATION
SEE DETAIL 38F
CLASS II RIPRAP
14 TONS, NO GEO

CLASS I RIPRAP
4 TONS, 10 SY GEO

IMPACTS IN
SURFACE WATER

TEMPORARY IMPACTS
IN SURFACE WATER

IMPACTS IN
SURFACE WATER

TEMPORARY IMPACTS
IN SURFACE WATER

U.S. FOREST SERVICE (124)

ALLEN H. LAKEY (126)

CARVER BRANCH

UT TO CARVER BRANCH (PERM)

UT TO CARVER BRANCH (TEMP)

WOODS

50' 0' 50' 100'
25'

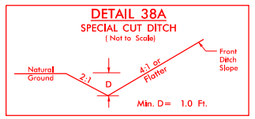
FOR -L- PROFILE, SEE SHEET NO. 70

8/17/99

-L- CURVE DATA

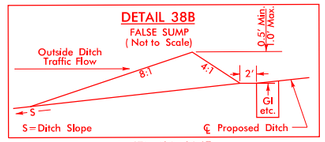
PI Sta 456+91.51	PI Sta 470+84.26
Δ = 49° 15' 00.2" (RT)	Δ = 21° 31' 55.6" (LT)
D = 9° 32' 57.5"	D = 7° 32' 20.1"
L = 515.75'	L = 285.61'
T = 275.02'	T = 144.51'
R = 600.00'	R = 760.00'
SE = 0.08	SE = 0.04
DS = 45 MPH	DS = 45 MPH

DETAIL 38A
SPECIAL CUT DITCH
(Not to Scale)



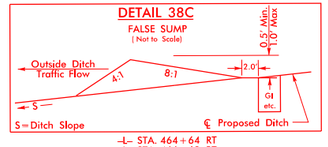
-L- STA. 461+50 TO STA. 464+00 LT
SEE PFL FOR DITCH GRADES

DETAIL 38B
FALSE SUMP
(Not to Scale)



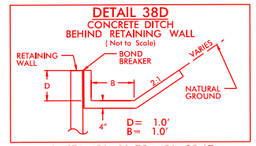
-L- STA. 464+64 LT

DETAIL 38C
FALSE SUMP
(Not to Scale)



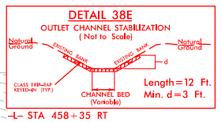
-L- STA. 464+64 RT
-L- STA. 466+63 RT

DETAIL 38D
CONCRETE DITCH
BEHIND RETAINING WALL
(Not to Scale)



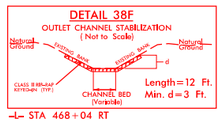
-L- STA. 456+00 TO 456+25 LT
-L- STA. 468+75 TO 470+00 LT
(SEE WALL ENVELOPES FOR DITCH GRADE)

DETAIL 38E
OUTLET CHANNEL STABILIZATION
(Not to Scale)



-L- STA 458+35 RT

DETAIL 38F
OUTLET CHANNEL STABILIZATION
(Not to Scale)



-L- STA 468+04 RT

DETAIL 38G
SPECIAL CUT DITCH
(Not to Scale)

-L- STA. 456+50 TO STA. 457+50 LT
SEE PFL FOR DITCH GRADES

15 15 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

PERMIT DRAWING SHEET 6 OF 34

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	38
R/W SHEET NO.	

ROADWAY DESIGN | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PROP. RETAINING WALL #24
W/CONCRETE DITCH
BEGIN -L- STA. 453+25±
END -L- STA. 456+25±

PROP. RETAINING WALL #25
W/CONCRETE DITCH
BEGIN -L- STA. 468+75±
END -L- STA. 471+75±

PROP. SINGLE FACED
CONCRETE BARRIER

MATCH LINE STA -L- 470+00.00
MATCH TO SHEET NO. 39

MATCH LINE STA -L- 456+00.00
MATCH TO SHEET NO. 37

TEMPORARY IMPACTS
IN SURFACE WATER

TEMPORARY IMPACTS
IN SURFACE WATER

SITE 2

SITE 2

SITE 3

SITE 3

CONC. DITCH BEHIND
RETAINING WALL
SEE DETAIL 38D

TRANSITION STONE
CLASS II RIPRAP
(KEYED-IN)
55 TONS

TIE TO EXISTING DITCH

SPECIAL CUT DITCH
SEE DETAIL 38G
CLASS II RIPRAP
(KEYED-IN)
105 TONS

RETAIN
HW

GTD

DO NOT
DISTURB
SIGN

CLASS I RIPRAP
(KEYED-IN)
25 TONS

RETAIN 36" CMP
AND LINE WITH CIPP

DO NOT
DISTURB SIGNS

PERMANENT EASEMENT FOR
WARBLER HABITAT ESTABLISHMENT

DO NOT
DISTURB SIGN

JB
MH

REMOVE
SEPARATED PIPE
(20 LF)

36" CSP

DO NOT BURY INVERT

OUTLET CHANNEL STABILIZATION
SEE DETAIL 38E
CLASS I RIPRAP
11 TONS, NO GEO

IMPACTS IN
SURFACE WATER

TEMPORARY IMPACTS
IN SURFACE WATER

SPECIAL CUT DITCH
SEE DETAIL 38A

FALSE SUMP
SEE DETAIL 38B

REMOVE
CONC. DITCH

PROP. DRIVE

RETAIN
HW

REMOVE

PLUG

FLOWABLE FILL

REMOVE
CONC. DITCH

FALSE SUMP
SEE DETAIL 38C

ROD AND LUG
WITH GASKETS
(ELBOWS)
REMOVE CONC. DITCH

FALSE SUMP
SEE DETAIL 38C

OUTLET CHANNEL STABILIZATION
SEE DETAIL 38F
CLASS II RIPRAP
14 TONS, NO GEO

CLASS I RIPRAP
(KEYED-IN)
12 TONS

RETAIN 36" CMP
AND LINE WITH CIPP

CLASS I RIPRAP
4 TONS, 10 SY GEO

PLUG

FLOWABLE FILL

CARVER BRANCH

UT TO CARVER BRANCH (SEE)

UT TO CARVER BRANCH (SEE)

UT TO CARVER BRANCH (SEE)

124
U.S. FOREST SERVICE

126
ALLEN H. LAKEY

50' 0' 50' 100'
25'

FOR -L- PROFILE, SEE SHEET NO. 70

11/1/2021
K:\NCDOT\A-0009\Hydraulics\PERMITS_Environmental\D-aerial\A-0009CC_PSHA-0009CC_Hyd_prm_ash_38.dgn
User:rchad

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	39
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

PERMIT DRAWING
SHEET 7 OF 34

NAD 83/2011

CONTRACTOR TO LOCATE AS DIRECTED BY ENGINEER.

CONTRACTOR TO LOCATE AS DIRECTED BY ENGINEER.

CONTRACTOR TO FIELD VERIFIY UNDERGROUND STREAM ELEVATION & DIMENSIONS & COORDINATE WITH ENGINEER PRIOR TO ORDERING STRUCTURE #3904.

PROP. RETAINING WALL #40
W/CONCRETE DITCH
BEGIN -Y2- STA. 16+75±
END -Y2- STA. 18+60±

PROP. RETAINING WALL #39
W/CONCRETE DITCH
BEGIN -Y2- STA. 14+75±
END -Y2- STA. 16+25±

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

END CONSTRUCTION
-L- STA. 474+19.52

BEGIN CONSTRUCTION
-Y2- STA. 12+60.00

SITE 4

SITE 5

SITE 6

127 KATHY D. BRUCE, ET AL

128 BARBARA LAKEY

124 U.S. FOREST SERVICE

126 ALLEN H. LAKEY

STREAM GOES U/G UNABLE TO LOCATE

U/G STREAM

STREAM GOES UNDERGROUND

CLASS B RIP-RAP 3 TONS, 6 SY GEO

CONC. DITCH BEHIND RETAINING WALL SEE DETAIL 39D

SINGLE FACED CONCRETE BARRIER

CLASS B RIP-RAP 15 TONS, 32 SY GEO

STANDARD 'V' DITCH SEE DETAIL 39B DDE=5 CY

REMOVE HW

REMOVE 15 LF

SPRING BOX

30" RCP-IV

18" RCP-IV

TB JB w/MH

SPEC. DSN TB 2GI-A

CLASS B RIP-RAP 6 TONS, 12 SY GEO

SPECIAL CUT DITCH SEE DETAIL 39A

CLASS B RIPRAP 2 TONS, 7 GEO

BANK STABILIZATION SEE DETAIL 39F CLASS I RIPRAP 7 TONS, NO GEO

USE EXTRA DEPTH POSTS

PLUG

DO NOT BURY INVERT

CLASS I RIPRAP 15 TONS, NO GEO

FOR CONCRETE ISLAND & PARKING AREA LAYOUT SEE DETAIL SHT 2B-

CLASS B RIPRAP 3 TONS, 10 SY GEO

GRADE TO DRAIN

REMOVE GTD

REMOVE 12 LF

REMOVE 16 LF

TOE PROTECTION SEE DETAIL 39C CLASS B RIPRAP 190 TONS, 270 SY GEO

6" PVC

PDE

PUE

FOR CONCRETE ISLAND LAYOUT SEE DETAIL SHT 2B-

TOE PROTECTION SEE DETAIL 39C CLASS B RIPRAP 20 TONS, 43 SY GEO

BM#23 ELEV. 2523.73'
-BL- STA. 470+19.00 70' LT.
SPIKE NAIL IN BASE OF 15" POPLAR

CONC. DITCH BEHIND RETAINING WALL SEE DETAIL 39D

FALSE SUMP SEE DETAIL 39E ALLEN H. LAKEY

PROP. RETAINING WALL #25
W/CONCRETE DITCH
BEGIN -L- STA. 468+75±
END -L- STA. 471+75±

MATCH LINE STA -L- 470+00.00
MATCH TO SHEET NO. 38

MATCH LINE STA -L- 476+00.00
-Y2- 26+00.00
MATCH TO SHEET NO. 40

AVERAGE DAILY TRAFFIC

-Y2- NC 28		-NC- NC 28
1,930 / 2,900	740 / 1,000	3,790 / 5,200
	-L- NC 145	2,600 / 3,300
		3,330 / 4,300

2022 ADT
2045 ADT

FOR -L- PROFILE, SEE SHEET NO. 71
FOR -Y2- PROFILE, SEE SHEET NO. 71

50' 0' 50' 100'
25'

T1 T2	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S S	DENOTES IMPACTS IN SURFACE WATER
E E	DENOTES EXCAVATION IN WETLAND
HC HC	DENOTES HAND CLEARING
F F	DENOTES FILL IN WETLAND

DETAIL 39A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, 3:1, Front Ditch Slope, D, Min. D=1.0 Ft.
-Y2- STA. 13+73 TO 14+50 LT
SEE PFL FOR DITCH GRADE (9.0%)

DETAIL 39B
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground, 2:1, 2:1, Natural Ground, D, Min. D=1.0 Ft.
-Y2- STA 18+80 TO 18+91 LT
SEE PFL FOR CHANNEL CHANGE GRADE (17.5%)

DETAIL 39C
TOE PROTECTION
(Not to Scale)
Natural Ground, b, 2:1 or Flatter Fill Slope, d, Geotextile
d=1 Ft.
b=3 Ft.
Type of Liner=See Below
-L- STA. 471+75 TO 472+50 LT (Class B Rip-Rap)
-Y2- STA. 22+75 TO 26+45 LT (Class I Rip-Rap)

DETAIL 39F
BANK STABILIZATION
(Not to Scale)
Natural Ground, Existing Bank Slope, Varies, Natural Ground, d, CLASS I RIPRAP STONE (TYP.), CHANNEL BED (Variable), Length=12 Ft., Min. d=3 Ft.
-Y2- STA 13+06 LT

DETAIL 39D
CONCRETE DITCH BEHIND RETAINING WALL
(Not to Scale)
RETAINING WALL, BOND BREAKER, VARIES, D, 8", 2:1, NATURAL GROUND, 4", D= 1.0', B= 1.0'
-L- STA. 470+00 TO 471+75 LT
-Y2- STA. 14+75 TO 16+25 LT
-Y2- STA. 16+75 TO 18+60 LT
(SEE WALL ENVELOPES FOR DITCH GRADE)

DETAIL 39E
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow, 5:1, 10:1, 2.0', 0.5' Min., 1.0' Max., S, S=Ditch Slope, ℄ Proposed Ditch
-Y2- STA. 25+39 RT

8/17/99
REVISIONS
11/1/2021
K:\NCDOT\A-0009\Hydraulics\PERMITS_Environmental\Drawings\A-0009CC_PSH\A-0009CC_Hyd_prm_psh_39.dgn
User:richard

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	39
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

8/17/99

REVISIONS

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

PERMIT DRAWING
SHEET 8 OF 34

NAD 83/2011

CONTRACTOR TO LOCATE AS DIRECTED BY ENGINEER

CONTRACTOR TO LOCATE AS DIRECTED BY ENGINEER.

CONTRACTOR TO FIELD VERIFIY UNDERGROUND STREAM ELEVATION & DIMENSIONS & COORDINATE WITH ENGINEER PRIOR TO ORDERING STRUCTURE #3904.

PROP. RETAINING WALL #40
W/CONCRETE DITCH
BEGIN -Y2- STA. 16+75±
END -Y2- STA. 18+60±

PROP. RETAINING WALL #39
W/CONCRETE DITCH
BEGIN -Y2- STA. 14+75±
END -Y2- STA. 16+25±

END CONSTRUCTION
-L- STA. 474+19.52

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

SITE 4

SITE 5

SITE 6

BEGIN CONSTRUCTION
-Y2- STA. 12+60.00

FOR CONCRETE ISLAND & PARKING AREA LAYOUT SEE DETAIL SHT 2B-__

FOR CONCRETE ISLAND LAYOUT SEE DETAIL SHT 2B-__

MATCH LINE STA -L- 470+00.00
MATCH TO SHEET NO. 38

MATCH LINE STA -L- 476+00.00
-Y2- 26+00.00
MATCH TO SHEET NO. 40

127 KATHY D. BRUCE, ET AL

128 BARBARA LAKEY

124 U.S. FOREST SERVICE

126 ALLEN H. LAKEY

BM#23 ELEV. 2523.73'
-BL- STA. 470+19.00 TO LT.
SPIKE NAIL IN BASE OF 15" POPLAR

50' 0' 50' 100'
25'

T/S T/S	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S S	DENOTES IMPACTS IN SURFACE WATER
E E	DENOTES EXCAVATION IN WETLAND
HC HC	DENOTES HAND CLEARING
F F	DENOTES FILL IN WETLAND

DETAIL 39A
SPECIAL CUT DITCH
(Not to Scale)
Min. D=1.0 Ft.
-Y2- STA. 13+73 TO 14+50 LT
SEE PFL FOR DITCH GRADE (9.0%)

DETAIL 39B
STANDARD 'V' DITCH
(Not to Scale)
Min. D=1.0 Ft.
-Y2- STA 18+80 TO 18+91 LT
SEE PFL FOR CHANNEL CHANGE GRADE (17.5%)

DETAIL 39C
TOE PROTECTION
(Not to Scale)
d=1 Ft.
b=3 Ft.
Type of Liner=See Below
-L- STA. 471+75 TO 472+50 LT (Class B Rip-Rap)
-Y2- STA. 22+75 TO 26+45 LT (Class I Rip-Rap)

DETAIL 39F
BANK STABILIZATION
(Not to Scale)
Length=12 Ft.
Min. d=3 Ft.
-Y2- STA 13+06 LT

DETAIL 39D
CONCRETE DITCH BEHIND RETAINING WALL
(Not to Scale)
D= 1.0'
B= 1.0'
-L- STA. 470+00 TO 471+75 LT
-Y2- STA. 14+75 TO 16+25 LT
-Y2- STA. 16+75 TO 18+60 LT
(SEE WALL ENVELOPES FOR DITCH GRADE)

DETAIL 39E
FALSE SUMP
(Not to Scale)
S=Ditch Slope
-Y2- STA. 25+39 RT

PROP. RETAINING WALL #25
W/CONCRETE DITCH
BEGIN -L- STA. 468+75±
END -L- STA. 471+75±

AVERAGE DAILY TRAFFIC

-Y2- NC 28		-NC- NC 28
1,930 / 2,900	740 / 1,000	2,600 / 3,300
-L- NC 161		3,330 / 4,300

2022 ADT
2045 ADT

FOR -L- PROFILE, SEE SHEET NO. 71
FOR -Y2- PROFILE, SEE SHEET NO. 71

K:\NCDOT\A-0009\Hydraulics\PERMITS\Environmental\Drawings\A-0009CC_PSHA-0009CC_Hyd_prm_esh_39.dgn
11/1/2021
User:richard

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	40
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

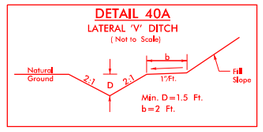
NAD 83/2011

8/17/99

REVISIONS

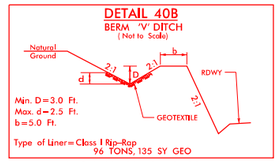
PAVEMENT REMOVAL

DETAIL 40A
LATERAL 'V' DITCH
(Not to Scale)



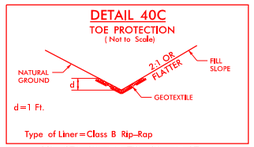
–Y2– STA. 32+40 TO 32+63 RT
SEE PFL FOR DITCH GRADE (1.4%)

DETAIL 40B
BERM 'V' DITCH
(Not to Scale)



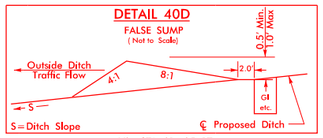
–Y2– STA. 39+00 TO 40+00 RT
SEE PFL FOR DITCH GRADES

DETAIL 40C
TOE PROTECTION
(Not to Scale)



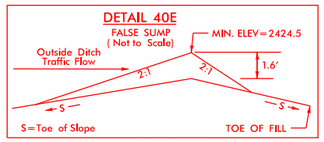
–Y2– STA. 29+75 TO 30+45 LT
–Y2– STA. 32+70 TO 33+00 RT

DETAIL 40D
FALSE SUMP
(Not to Scale)



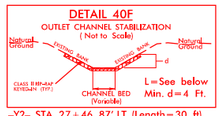
–Y2– STA. 31+85 RT
–Y2– STA. 34+12 RT
–Y2– STA. 35+62 RT
–Y2– STA. 39+63 RT

DETAIL 40E
FALSE SUMP
(Not to Scale)



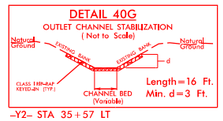
–L– STA. 36+50 RT

DETAIL 40F
OUTLET CHANNEL STABILIZATION
(Not to Scale)



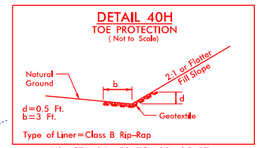
–Y2– STA 27+46 87' LT (Length=30 ft)
–Y2– STA 27+38 140' LT (Length=18 ft)

DETAIL 40G
OUTLET CHANNEL STABILIZATION
(Not to Scale)



–Y2– STA 35+57 LT

DETAIL 40H
TOE PROTECTION
(Not to Scale)



–Y2– STA. 36+50 TO 38+25 RT

MECHANIZED CLEARING IN WETLANDS

HAND CLEARING IN WETLANDS

FILL IN WETLANDS

MATCH LINE STA –Y2– 26+00.00
MATCH TO SHEET NO. 39

MATCH LINE STA –Y2– 40+00.00
MATCH TO SHEET NO. 41

PERMIT DRAWING
SHEET 9 OF 34

SITE 7

SITE 8

SITE 9

TOE PROTECTION SEE DETAIL 39C CLASS I RIPRAP

DO NOT DISTURB

OUTLET CHANNEL STABILIZATION SEE DETAIL 40F CLASS II RIPRAP 20 TONS, NO GEO

MAX 0.5% PIPE SLOPE THIS SIDE OF ELBOW

TEMPORARY IMPACTS IN SURFACE WATER

OUTLET CHANNEL STABILIZATION SEE DETAIL 40F CLASS II RIPRAP 30 TONS, NO GEO

PROP. RETAINING WALL #30
BEGIN –Y2– STA. 26+60±
END –Y2– STA. 28+75±

IMPACTS IN SURFACE WATER

ROD AND LUG WITH GASKETS (ELBOWS)

24" CSP

TB JB w/MH

24" RCP IV

TB PRECAST DRAINAGE STRUCTURE w/ MH FRAME & GRATE STD 840.46

48" CSP

ELBOWS

DO NOT BURY INVERT

CLASS B RIPRAP 2 TONS, 7 SY GEO

SHOULDER BERM GUTTER –Y2– STA. 27+00 TO 28+25, RT

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

CLASS B RIPRAP 2 TONS, 7 SY GEO

CLASS I RIPRAP 4 TONS, 10 SY GEO

TOE PROTECTION SEE DETAIL 40C CLASS B RIPRAP 14 TONS, 31 SY GEO

MAX 1% PIPE SLOPE THIS SIDE OF ELBOW

ROD AND LUG WITH GASKETS (ELBOWS)

PLUG

FLOWABLE FILL

18" CSP

REMOVE HW

2GI

FALSE SUMP SEE DETAIL 40D

LATERAL 'V' DITCH SEE DETAIL 40A DDE=10 CY

TOE PROTECTION SEE DETAIL 40C CLASS B RIPRAP 7 TONS, 15 SY GEO

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

OUTLET CHANNEL STABILIZATION SEE DETAIL 40G CLASS I RIPRAP 20 TONS, NO GEO

DO NOT BURY INVERT

PROP. DRIVE

FALSE SUMP SEE DETAIL 40D

MAX 1% PIPE SLOPE THIS SIDE OF ELBOW

ROD AND LUG WITH GASKETS (ELBOWS)

48" CSP

FLOWABLE FILL

JB w/MH

48" RCP IV

FALSE SUMP SEE DETAIL 40E

DO NOT BURY INVERT

CLASS I RIPRAP 4 TONS, NO GEO

FALSE SUMP SEE DETAIL 40D

TOE PROTECTION SEE DETAIL 40H CLASS B RIPRAP 45 TONS, 100 SY GEO

BERM 'V' DITCH SEE DETAIL 40B

ROD AND LUG WITH GASKETS (ELBOW)

BDO SPEC DSN

BERM 'V' DITCH SEE DETAIL 40B

ROBERT K. NORCROSS

ROBERT K. NORCROSS

CARVER BRANCH

UTD CARVER BRANCH (SBC)

ALLEN H. LAKEY

BARBARA LAKEY

2 S F BARN

ROCK D

BBQ

DECK

SEPTIC TANK

DRAIN LINES

WD STEPS

ROCK WALL

EXISTING R/W

RETAIN 40' FROM R/W AND LINE WITH CIPP

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

DENOTES HAND CLEARING

DENOTES FILL IN WETLAND

50′ 0′ 50′ 100′
25′

FOR –Y2– PROFILE, SEE SHEET NO. 72

11/1/2021
K:\NCDOT\A-0009\Hydraulics\PERMITS_Environmental\Drawings\A-0009CC_PSH\A-0009CC_Hyd_prm_psh_40.dgn
User:richard

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	40
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
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SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

NAD 83/2011

8/17/99
REVISIONS

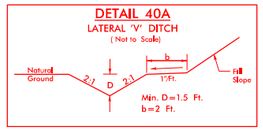
PAVEMENT REMOVAL

MECHANIZED CLEARING IN WETLANDS

HAND CLEARING IN WETLANDS

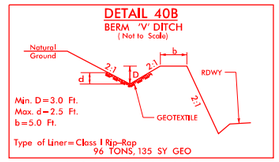
FILL IN WETLANDS

DETAIL 40A
LATERAL 'V' DITCH
(Not to Scale)



–Y2– STA. 32+40 TO 32+63 RT
SEE PFL FOR DITCH GRADE (1.4%)

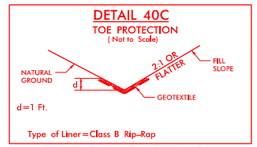
DETAIL 40B
BERM 'V' DITCH
(Not to Scale)



Type of Liner = Class I Rip-Rap
96 TONS, 135 SY GEO

–Y2– STA. 39+00 TO 40+00 RT
SEE PFL FOR DITCH GRADES

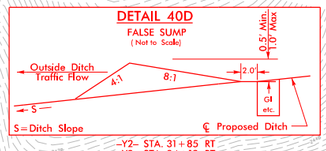
DETAIL 40C
TOE PROTECTION
(Not to Scale)



Type of Liner = Class B Rip-Rap

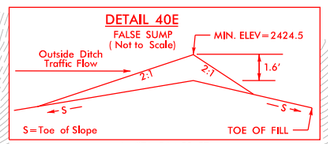
–Y2– STA. 29+75 TO 30+45 LT
–Y2– STA. 32+70 TO 33+00 RT

DETAIL 40D
FALSE SUMP
(Not to Scale)



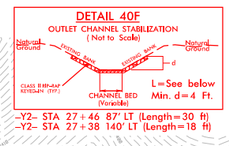
–Y2– STA. 31+85 RT
–Y2– STA. 34+12 RT
–Y2– STA. 35+62 RT
–Y2– STA. 39+63 RT

DETAIL 40E
FALSE SUMP
(Not to Scale)



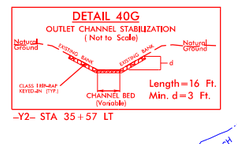
–L– STA. 36+50 RT

DETAIL 40F
OUTLET CHANNEL STABILIZATION
(Not to Scale)



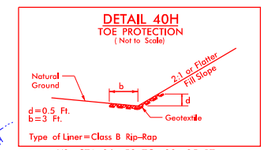
–Y2– STA 27+46 87' LT (Length=30 ft)
–Y2– STA 27+38 140' LT (Length=18 ft)

DETAIL 40G
OUTLET CHANNEL STABILIZATION
(Not to Scale)



–Y2– STA 35+57 LT

DETAIL 40H
TOE PROTECTION
(Not to Scale)



Type of Liner = Class B Rip-Rap

–Y2– STA. 36+50 TO 38+25 RT

PERMIT DRAWING
SHEET 10 OF 34

MATCH LINE STA –Y2– 26+00.00
MATCH TO SHEET NO. 39

MATCH LINE STA –Y2– 40+00.00
MATCH TO SHEET NO. 41

SITE 7

SITE 8

SITE 9

TOE PROTECTION SEE DETAIL 39C CLASS I RIPRAP

DO NOT DISTURB

OUTLET CHANNEL STABILIZATION SEE DETAIL 40F CLASS II RIPRAP 20 TONS, NO GEO

MAX 0.5% PIPE SLOPE THIS SIDE OF ELBOW

TEMPORARY IMPACTS IN SURFACE WATER

OUTLET CHANNEL STABILIZATION SEE DETAIL 40F CLASS II RIPRAP 30 TONS, NO GEO

PROP. RETAINING WALL #30
BEGIN –Y2– STA. 26+60±
END –Y2– STA. 28+75±

IMPACTS IN SURFACE WATER

ROD AND LUG WITH GASKETS (ELBOWS)

24" CSP

TB JB w/MH

24" RCP-IV

REMOVE HW

CLASS B RIPRAP 2 TONS, 7 SY GEO

TOE PROTECTION SEE DETAIL 40C CLASS B RIPRAP 14 TONS, 31 SY GEO

CLASS I RIPRAP 4 TONS, 10 SY GEO

TB PRECAST DRAINAGE STRUCTURE W/ MH FRAME & GRATE STD. 840.36

48" CSP

TB 2GI

ELBOWS

DO NOT BURY INVERT

CLASS B RIPRAP 2 TONS, 7 SY GEO

SHOULDER BERM GUTTER –Y2– STA. 27+00 TO 28+25, RT

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

MAX 1% PIPE SLOPE THIS SIDE OF ELBOW

ROD AND LUG WITH GASKETS (ELBOWS)

PLUG

FLOWABLE FILL

48" CSP

REMOVE HW

2GI

FALSE SUMP SEE DETAIL 40D

LATERAL 'V' DITCH SEE DETAIL 40A DDE=10 CY

TOE PROTECTION SEE DETAIL 40C CLASS B RIPRAP 7 TONS, 15 SY GEO

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

OUTLET CHANNEL STABILIZATION SEE DETAIL 40G CLASS I RIPRAP 20 TONS, NO GEO

DO NOT BURY INVERT

PROP. DRIVE

FALSE SUMP SEE DETAIL 40D

MAX 1% PIPE SLOPE THIS SIDE OF ELBOW

ROD AND LUG WITH GASKETS (ELBOWS)

48" CSP

JB w/MH

48" RCP-IV

REMOVE HW

2GI

18"

FALSE SUMP SEE DETAIL 40E

DO NOT BURY INVERT

CLASS I RIPRAP 4 TONS, NO GEO

FALSE SUMP SEE DETAIL 40D

TOE PROTECTION SEE DETAIL 40H CLASS B RIPRAP 45 TONS, 100 SY GEO

BERM 'V' DITCH SEE DETAIL 40B

BDO SPEC DSN

BERM 'V' DITCH SEE DETAIL 40B

ROD AND LUG WITH GASKETS (ELBOW)

ROBERT K. NORCROSS

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

ROBERT K. NORCROSS

BARBARA LAKEY

ALLEN H. LAKEY

CARVER BRANCH

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

DENOTES HAND CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100'
25'

FOR –Y2– PROFILE, SEE SHEET NO. 72

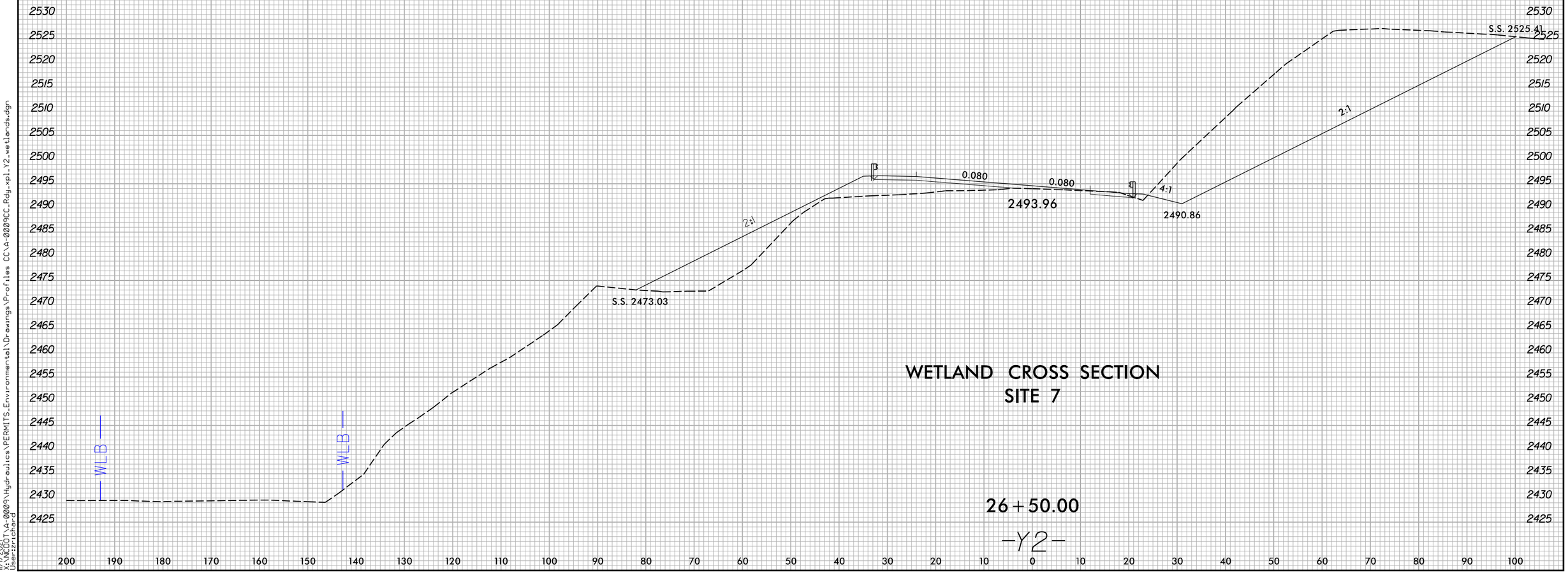
11/1/2021
K:\NCDOT\A-0009\Hydraulics\PERMITS_Environmental\0-drings\A-0009CC_PSHA-0009CC_Hyd_prm_sh_40.dgn
User:richard

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	X-119

PERMIT DRAWING
SHEET 11 OF 34

SCALE
1" = 20' HORIZONTAL
1" = 20' VERTICAL



WETLAND CROSS SECTION
SITE 7

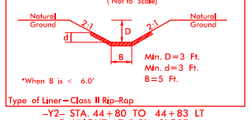
26+50.00

-Y2-

11/1/2021
X:\NCDOT\A-0009\Hydraulics\PERMITS_Environmental\Drawings\Profiles CC\A-0009CC_Rdy_xpl_Y2_wetlands.dgn
User:rrichard

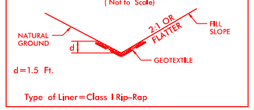
METES & BOUNDS OLD NC 28			
From	To	Direction	Distance
A	B	S 41° 15' 05" E	90.11'
B	C	S 50° 40' 15" E	37.42'
C	D	S 85° 45' 59" E	39.64'
D	E	N 58° 32' 14" E	42.05'
E	F	N 25° 05' 07" E	37.05'
F	G	N 2° 03' 42" E	39.94'
G	H	N 2° 07' 51" W	84.63'
H	J	N 3° 00' 57" E	66.88'

DETAIL 41A
STANDARD BASE DITCH
(Not to Scale)



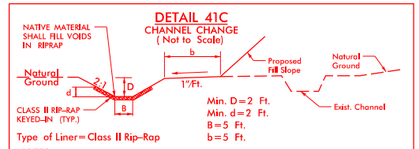
Min. D=3 Ft.
Min. d=3 Ft.
B=5 Ft.
*When B is < 6.0'
Type of Liner=Class II Rip-Rap
–Y2– STA. 44+80 TO 44+83 LT
DAYLIGHT AT 3.5% SLOPE

DETAIL 41B
TOE PROTECTION
(Not to Scale)



d=1.5 Ft.
Type of Liner=Class I Rip-Rap
–Y2– STA. 48+00 TO 50+50 LT

DETAIL 41C
CHANNEL CHANGE
(Not to Scale)

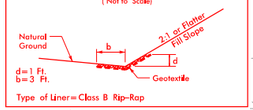


Min. D=2 Ft.
Min. d=2 Ft.
B=5 Ft.
b=5 Ft.
Type of Liner=Class II Rip-Rap

NOTES:
1) CLASS II RIP-RAP SHALL BE EMBEDDED IN ORDER TO NOT IMPEDE AQUATIC ORGANISM PASSAGE. NATIVE MATERIAL SHALL BE PLACED ON TOP OF CLASS II RIP-RAP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT PROJECT SITE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER.

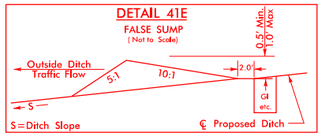
–Y2– STA. 46+95 TO 49+50 RT
–Y2– STA. 52+00 TO 53+00 LT
SEE PFL FOR CHANNEL CHANGE GRADE

DETAIL 41D
TOE PROTECTION
(Not to Scale)



d=1 Ft.
b=3 Ft.
Type of Liner=Class B Rip-Rap
–Y2– STA. 49+50 TO 51+00 RT

DETAIL 41E
FALSE SUMP
(Not to Scale)



S=Ditch Slope
–Y2– STA. 41+38 RT
–Y2– STA. 44+00 RT

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

PERMIT DRAWING SHEET 12 OF 34

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	41
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

8/17/99

REVISIONS

NAD 83/2011

MATCH LINE STA –Y2– 40+00.00
MATCH TO SHEET NO. 40

MATCH LINE STA –Y2– 54+00.00
MATCH TO SHEET NO. 42

JOHN M. STUART, III

SHED

I S F D

DECK

I S ROCK D

CONC WALL

POSSIBLE DRAIN FIELD
COULD N'T FIND TANK

DANNY K. JORDAN

130
DAVID M. HOLDER

131
JAMES P. EWING, TRUSTEE, ET AL

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

CHANNEL CHANGE
SEE DETAIL 41C
CLASS II RIPRAP
153 TONS, NO GEO
DDE=185 CY

CLASS I RIPRAP
3 TONS, 7 SY GEO

SITE 11

STANDARD BASE DITCH
SEE DETAIL 41A
CLASS II RIPRAP
38 TONS, NO GEO

DO NOT BURY INVERT

SITE 10

TOE PROTECTION
SEE DETAIL 41B
CLASS I RIPRAP
115 TONS, 160 SY GEO

SHOULDER BERM GUTTER
–Y2– STA. 47+50 TO 52+57, LT

BARBARA LAKEY

121

ROD AND LUG WITH GASKETS (ELBOWS)

MAX 1.0% PIPE SLOPE THIS SIDE OF ELBOW

MIN 1.5% PIPE SLOPE THIS SIDE OF ELBOW

SPRING BOX

JB wSlab Lid

CUT TO FILL TRANSITION
CLASS I RIPRAP
25 TONS, 35 SY GEO

PROP. DRIVE

GRADE TO DRAIN

REMOVE DI

FLOWABLE FILL

REMOVE HW

FALSE SUMP
SEE DETAIL 41E

ELBOW

BDO SPEC DSN

BDO REMOVE HW

REALIGN SOIL DRIVE

RELOCATE GATE BY OWNER

CUT TO FILL TRANSITION
CLASS B RIPRAP
8 TONS, 18 SY GEO

FILL EXISTING CHANNEL W/ COMPACTED BACKFILL

CHANNEL CHANGE
SEE DETAIL 41C
CLASS II RIPRAP
420 TONS, NO GEO
DDE=835 CY

125
ROBERT K. NORCROSS

DO NOT BURY INVERT

TOE PROTECTION
SEE DETAIL 41D
CLASS B RIPRAP
44 TONS, 98 SY GEO

EXPRESSWAY GUTTER
–Y2– STA. 51+25 TO 57+76±, RT

CREWS BROTHERS, LLC

UT TO CARVER BRANCH (SP5)

CARVER BRANCH

WOODS

SOIL

NC 28 (FONTANA RD)

50' 0' 50' 100'
25'

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

FOR –Y2– PROFILE, SEE SHEET NO. 72

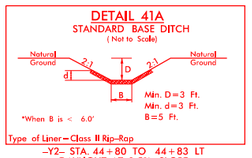
METES & BOUNDS OLD NC 28			
From	To	Direction	Distance
A	B	S 41° 15' 05" E	90.11'
B	C	S 50° 40' 15" E	37.42'
C	D	S 85° 45' 59" E	39.64'
D	E	N 58° 32' 14" E	42.05'
E	F	N 25° 05' 07" E	37.05'
F	G	N 2° 03' 42" E	39.94'
G	H	N 2° 07' 51" W	84.63'
H	J	N 3° 00' 57" E	66.88'

8/17/99

REVISIONS

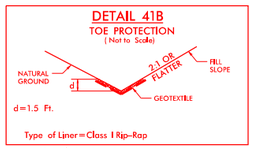
MATCH LINE STA –Y2– 40+00.00
MATCH TO SHEET NO. 40

DETAIL 41A
STANDARD BASE DITCH
(Not to Scale)



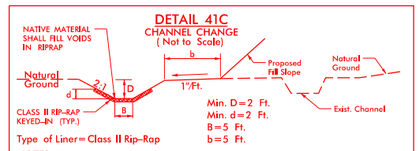
Type of Liner=Class II Rip-Rap
–Y2– STA. 44+80 TO 44+83 LT
DAYLIGHT AT 3.5% SLOPE

DETAIL 41B
TOE PROTECTION
(Not to Scale)



Type of Liner=Class I Rip-Rap
–Y2– STA. 48+00 TO 50+50 LT

DETAIL 41C
CHANNEL CHANGE
(Not to Scale)

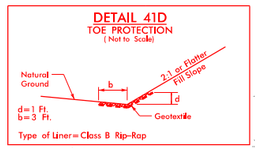


Type of Liner=Class II Rip-Rap

NOTES:
1) CLASS II RIP-RAP SHALL BE EMBEDDED IN ORDER TO NOT IMPEDE AQUATIC ORGANISM PASSAGE. NATIVE MATERIAL SHALL BE PLACED ON TOP OF CLASS II RIP-RAP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT PROJECT SITE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER.

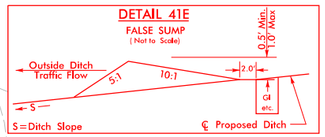
–Y2– STA. 46+95 TO 49+50 RT
–Y2– STA. 52+00 TO 53+00 LT
SEE PFL FOR CHANNEL CHANGE GRADE

DETAIL 41D
TOE PROTECTION
(Not to Scale)



Type of Liner=Class B Rip-Rap
–Y2– STA. 49+50 TO 51+00 RT

DETAIL 41E
FALSE SUMP
(Not to Scale)



–Y2– STA. 41+38 RT
–Y2– STA. 44+00 RT

JS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

JS DENOTES IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 13 OF 34

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	41
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

TEMPORARY IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
JOHN M. STUART, III
SHED
POSSIBLE DRAIN FIELD
COULD BE SEPTIC TANK
DECK
TS ROCK R
STONE WALL
DANNY K. JORDAN
GRADE TO DRAIN
PROP. DRIVE
GRADE TO DRAIN
42"
2GI-A
FS
FALSE SUMP SEE DETAIL 41E
REALIGN SOIL DRIVE
RELOCATE GATE BY OWNER
PROP. DRIVE
130
DAVID M. HOLDER
STANDARD BASE DITCH SEE DETAIL 41A CLASS II RIPRAP 38 TONS, NO GEO
DO NOT BURY INVERT
UT TO CARVER BRANCH (SPDI)
JS
ST
SITE 10
MAX 1.0% PIPE SLOPE THIS SIDE OF ELBOW
ROD AND LUG WITH GASKETS (ELBOWS)
MIN 1.5% PIPE SLOPE THIS SIDE OF ELBOW
54" CMP
ABANDON
REMOVE DI
FLOWABLE FILL
PLUG
REMOVE HW
FALSE SUMP SEE DETAIL 41E
GRADE TO DRAIN
ELBOW
BDO SPEC DSN
PROP. DRIVE
PROP. DRIVE
SHOULDER BERM GUTTER
–Y2– STA. 47+50 TO 52+57, LT
TOE PROTECTION SEE DETAIL 41B CLASS I RIPRAP 115 TONS, 160 SY GEO
CUT TO FILL TRANSITION CLASS B RIPRAP 8 TONS, 18 SY GEO
CUT TO FILL TRANSITION CLASS I RIPRAP 25 TONS, 35 SY GEO
CHANNEL CHANGE SEE DETAIL 41C CLASS II RIPRAP 420 TONS, NO GEO DDE=835 CY
FILL EXISTING CHANNEL W/ COMPACTED BACKFILL
125
ROBERT K. NORCROSS
121
BARBARA LAKEY
CHANNEL CHANGE SEE DETAIL 41C CLASS II RIPRAP 153 TONS, NO GEO DDE=185 CY
CLASS I RIPRAP 3 TONS, 7 SY GEO
SITE 11
131
JAMES P. EWING, TRUSTEE, ET AL
DO NOT BURY INVERT
MAX 1.0% PIPE SLOPE THIS SIDE OF ELBOW
ROD AND LUG WITH GASKETS (ELBOWS)
SPRING BOX
15" CSP
JB wSlab Lid
JB SGI
PLUG
ELBOW
BDO
REMOVE HW
GRADE TO DRAIN
JB wMH
EXPRESSWAY GUTTER
–Y2– STA. 51+25 TO 57+76±, RT
DO NOT BURY INVERT
TOE PROTECTION SEE DETAIL 41D CLASS B RIPRAP 44 TONS, 98 SY GEO
IMPACTS IN SURFACE WATER
TEMPORARY IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
TEMPORARY IMPACTS IN SURFACE WATER
CREWS BROTHERS, LLC
WOODS
SPRING
SOIL
EXISTING R/W
NC 28 (FONTANA RD.)

MATCH LINE STA –Y2– 54+00.00
MATCH TO SHEET NO. 42

50' 0' 50' 100'
25'

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

FOR –Y2– PROFILE, SEE SHEET NO. 72

W:\2021
K:\NCDOT\A-0009\Hydraulics\PERMITS_Environmental\Drawings\A-0009CC_PSH\A-0009CC_Hyd_prm_psh_41.dgn
User:rrichard

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	42
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PERMIT DRAWING SHEET 14 OF 34

NAD 83/2011

-Y2- 54+00.00 MATCH LINE STA -Y2- SHEET NO. 41

-Y2- 68+00.00 MATCH LINE STA -Y2- SHEET NO. 43

-Y2- CURVE DATA

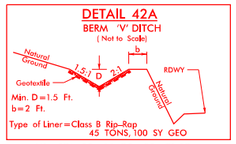
PI Sta 70+28.18
△ = 50°56'38.0" (RT)
D = 3°53'51.6"
L = 1,307.03'
T = 700.27'
R = 1,470.00'
SE = 0.08
DS = 60 MPH

-DR4- CURVE DATA

PI Sta 10+77.95	PI Sta 11+22.09
△ = 24°42'06.2" (LT)	△ = 10°28'29.8" (RT)
D = 57°17'44.8"	D = 22°55'05.9"
L = 43.11'	L = 45.71'
T = 21.90'	T = 22.92'
R = 100.00'	R = 250.00'

① ② ③

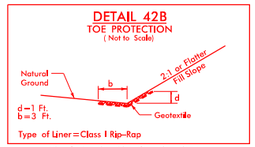
DETAIL 42A
BERM 'V' DITCH
(Not to Scale)



Type of Liner=Class B Rip-Rap
45 TONS, 100 SY GEO

-Y2- STA. 55+00 TO 55+71 RT
SEE PFL FOR DITCH GRADES

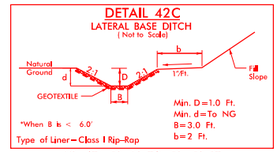
DETAIL 42B
TOE PROTECTION
(Not to Scale)



Type of Liner=Class I Rip-Rap

-Y2- STA. 58+49 TO 59+18 RT

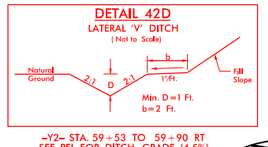
DETAIL 42C
LATERAL BASE DITCH
(Not to Scale)



Type of Liner=Class I Rip-Rap

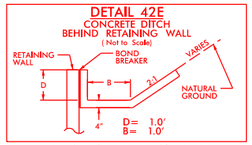
-Y2- STA. 59+18 TO 59+53 RT
SEE PFL FOR DITCH GRADE (18.6%)

DETAIL 42D
LATERAL 'V' DITCH
(Not to Scale)



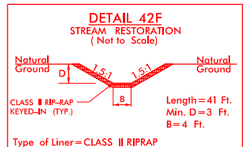
-Y2- STA. 59+53 TO 59+90 RT
SEE PFL FOR DITCH GRADE (4.5%)

DETAIL 42E
CONCRETE DITCH
BEHIND RETAINING WALL
(Not to Scale)



-Y2- STA. 63+75 TO 66+02 RT
(SEE WALL ENVELOPES FOR DITCH GRADE)

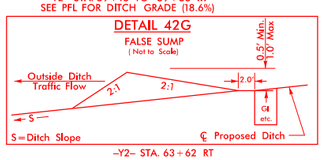
DETAIL 42F
STREAM RESTORATION
(Not to Scale)



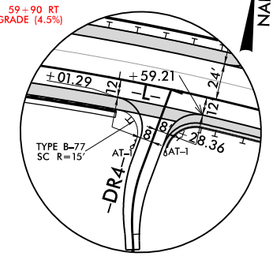
Type of Liner=CLASS II RIPRAP
120 TONS

-Y2- STA 67+96(68' LT) TO 68+26(90' LT)
SEE PFL FOR CHANNEL GRADE (4.9%)

DETAIL 42G
FALSE SUMP
(Not to Scale)



-Y2- STA. 63+62 RT



-L-/-DR4- INTERSECTION

PROP. RETAINING WALL #32
BEGIN -Y2- STA. 58+90±
END -Y2- STA. 66+83±

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

END CONSTRUCTION
-DR4- STA. 11+10.00

TEMPORARY IMPACTS IN SURFACE WATER

JAMES P. EWING, TRUSTEE, ET AL (131)

CREWS BROTHERS, LLC (134)

EUGENE R. WIECZOREK

DEAN A. HORNING (134A)

ROBERT K. NORCROSS (135)

ROBERT PEASE

JOHN B. NORCROSS (133)

CREWS BROTHERS, LLC

CARVER BRANCH

UT TO CARVER BRANCH (SFM)

SITE 12

SITE 13

SITE 14

SITE 15

CLASS I RIPRAP
4 TONS, 12 SY GEO

DO NOT BURY INVERT

PDE 6" PVC

SPRING BOX

SHOULDER BERM GUTTER
-Y2- STA. 58+90 TO 63+22, LT

ROD AND LUG WITH GASKETS (ELBOWS)

24" CSP

PLUG

BDO

REMOVE HW

EXPRESSWAY GUTTER
-Y2- STA. 51+25 TO 57+76±, RT

100' R

20' R

15" RCP-IV

2GI

REMOVE

PROP. DRIVE

CONSIDER ADDING AGGREGATE SHOULDER DRAIN OR SPRING BOX BEFORE FINAL PLANS.

BERM 'V' DITCH
SEE DETAIL 42A

CLASS I RIPRAP
3 TONS, 7 SY GEO

TOE PROTECTION
SEE DETAIL 42B
CLASS I RIPRAP
35 TONS, 50 SY GEO

LATERAL BASE DITCH
SEE DETAIL 42C
CLASS I RIPRAP
55 TONS, 77 SY GEO
DDE=40 CY

OUTLET CHANNEL STABILIZATION
SEE DETAIL 42H
CLASS II RIPRAP
8 TONS, NO GEO

24" RCP-IV WITH FLARE END SECTION

24" COLLAR AND EXTEND

LATERAL 'V' DITCH
SEE DETAIL 42D
DDE=35 CY

TOE PROTECTION
SEE DETAIL 42J
CLASS I RIPRAP
68 TONS, 95 SY GEO

FALSE SUMP
SEE DETAIL 42G

SINGLE FACED CONCRETE BARRIER

CONC. DITCH BEHIND RETAINING WALL
SEE DETAIL 42E

PROP. RETAINING WALL #33
W/CONCRETE DITCH
BEGIN -Y2- STA. 63+75±
END -Y2- STA. 66+02±

ROCK EMBANKMENT -DR4- 10+35 TO 11+30 LT
SEE DETAIL SHEET 24-X TRANSITION FROM TYPICAL AT 10+35 TO 1.5:1 AT 10+60.
MAINTAIN 1.5:1 FROM 10+60 TO 11+30.

CULVERT OUTLET CHANNEL
SEE DETAIL 42I
35 TONS CLASS II

DO NOT BURY INVERT

CLASS I RIPRAP
2 TON, 8 SY GEO

SHOULDER BERM GUTTER
-DR4- STA. 10+36 LT
TO -Y2- STA 70+50, RT

STREAM RESTORATION
SEE DETAIL 42F
DDE=160 CY

CLASS B RIPRAP
2 TONS, 7 CY GEO

RETAIN AND EXTEND 1@6'x6' RCBC AT OUTLET

REMOVE

JB w/Slab Lid

TB 2GI

RCP-IV

FES

SR 1239 CARVER BRANCH LN

SFN

SFM

SFS

SPRING

SPRING BOX

ROCK WALL

STEEL PANTS

WOODS

BST

GR

MTL

EIP

EIPO

ROCK HW

CONC HW

STOCKPILE

HOUSE

BARN

SILO

GAZEBO

GO ROCK WALL

NC 280 FRONTANA RD

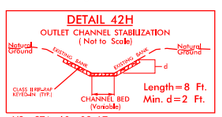
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

50' 0' 50' 100'
25'

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

DETAIL 42H
OUTLET CHANNEL STABILIZATION
(Not to Scale)

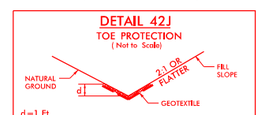


-Y2- STA 60+03 LT

DETAIL 42I
OUTLET CHANNEL DETAIL
(Not to Scale)

-Y2- STA 67+56 RT

DETAIL 42J
TOE PROTECTION
(Not to Scale)



Type of Liner=Class I Rip-Rap

-Y2- STA. 61+50 TO 63+50 RT

FOR -Y2- PROFILE, SEE SHEET NO. 73
FOR -DR4- PROFILE, SEE SHEET NO. 77

W:\2021 Projects\A-0009A\Hydraulics\PERMITS_Environmental\Drawings\A-0009CC_PSH\A-0009CC_Hyd_prm_psh_42.dgn
11/4/2021
User:richard

8/17/99

REVISIONS

–Y2– 54+00.00 SHEET NO. 41

–Y2– CURVE DATA

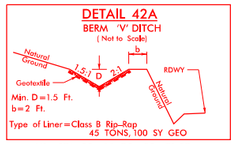
PI Sta 70+28.18
△ = 50° 56' 38.0" (RT)
D = 3° 53' 51.6"
L = 1,307.03'
T = 700.27'
R = 1,470.00'
SE = 0.08
DS = 60 MPH

–DR4– CURVE DATA

PI Sta 10+77.95	PI Sta 11+22.09
△ = 24° 42' 06.2" (LT)	△ = 10° 28' 29.8" (RT)
D = 57° 17' 44.8"	D = 22° 55' 05.9"
L = 43.11'	L = 45.71'
T = 21.90'	T = 22.92'
R = 100.00'	R = 250.00'

① ② ③

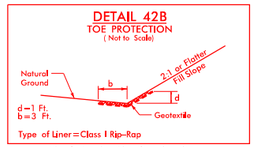
DETAIL 42A
BERM 'V' DITCH
(Not to Scale)



Type of Liner=Class B Rip-Rap
45 TONS, 100 SY GEO

–Y2– STA. 55+00 TO 55+71 RT
SEE PFL FOR DITCH GRADES

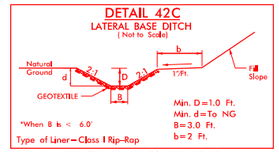
DETAIL 42B
TOE PROTECTION
(Not to Scale)



Type of Liner=Class I Rip-Rap

–Y2– STA. 58+49 TO 59+18 RT

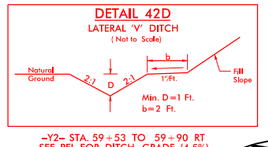
DETAIL 42C
LATERAL BASE DITCH
(Not to Scale)



*When B is < 6.0'
Type of Liner=Class I Rip-Rap

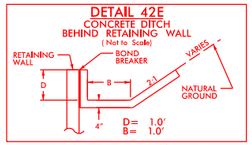
–Y2– STA. 59+18 TO 59+53 RT
SEE PFL FOR DITCH GRADE (18.6%)

DETAIL 42D
LATERAL 'V' DITCH
(Not to Scale)



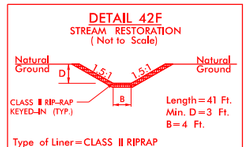
–Y2– STA. 59+53 TO 59+90 RT
SEE PFL FOR DITCH GRADE (4.5%)

DETAIL 42E
CONCRETE DITCH
BEHIND RETAINING WALL
(Not to Scale)



–Y2– STA. 63+75 TO 66+02 RT
(SEE WALL ENVELOPES FOR DITCH GRADE)

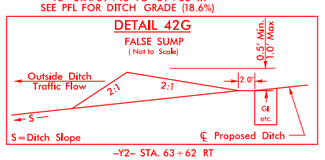
DETAIL 42F
STREAM RESTORATION
(Not to Scale)



Type of Liner=CLASS II RIPRAP
120 TONS

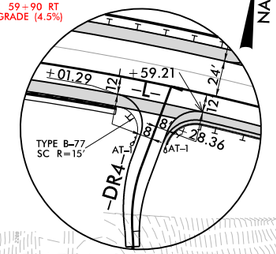
–Y2– STA. 67+96(68' LT) TO 68+26(90' LT)
SEE PFL FOR CHANNEL GRADE (4.9%)

DETAIL 42G
FALSE SUMP
(Not to Scale)



–Y2– STA. 63+62 RT

NAD 83/2011



PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	42
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PERMIT DRAWING
SHEET 15 OF 34

–L–/–DR4– INTERSECTION

PROP. RETAINING WALL #32
BEGIN –Y2– STA. 58+90±
END –Y2– STA. 66+83±

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

END CONSTRUCTION
–DR4– STA. 11+10.00

TEMPORARY IMPACTS IN SURFACE WATER

MATCH LINE STA –Y2– 54+00.00
MATCH TO SHEET NO. 41

MATCH LINE STA –Y2– 68+00.00
MATCH TO SHEET NO. 43

JAMES P. EWING, TRUSTEE, ET AL (131)
CREWS BROTHERS, LLC (134)
EUGENE R. WIECZOREK (134A)
DEAN A. HORNING
ROBERT K. NORCROSS (135)
ROBERT PEASE
JOHN B. NORCROSS (133)

SITE 12 | SITE 13 | SITE 14 | SITE 15

CARVER BRANCH
UT TO CARVER BRANCH
UT TO CARVER BRANCH (SFM)
SR 1239 CARVER BRANCH LN

CLASS I RIPRAP
4 TONS, 12 SY GEO

DO NOT BURY INVERT

SHOULDER BERM GUTTER
–Y2– STA. 58+90 TO 63+22, LT

ROD AND LUG WITH GASKETS (ELBOWS)

*PLUG

EXPRESSWAY GUTTER
–Y2– STA. 51+25 TO 57+76±, RT

BERM 'V' DITCH
SEE DETAIL 42A

PROP. DRIVE

CONSIDER ADDING AGGREGATE SHOULDER DRAIN OR SPRING BOX BEFORE FINAL PLANS

CLASS I RIPRAP
3 TONS, 7 SY GEO

TOE PROTECTION
SEE DETAIL 42B
CLASS I RIPRAP
35 TONS, 50 SY GEO

LATERAL BASE DITCH
SEE DETAIL 42C
CLASS I RIPRAP
55 TONS, 77 SY GEO
DDE=40 CY

OUTLET CHANNEL STABILIZATION
SEE DETAIL 42H
CLASS II RIPRAP
8 TONS, NO GEO

COLLAR AND EXTEND

LATERAL 'V' DITCH
SEE DETAIL 42D
DDE=35 CY

TOE PROTECTION
SEE DETAIL 42J
CLASS I RIPRAP
68 TONS, 95 SY GEO

FALSE SUMP
SEE DETAIL 42G

SINGLE FACED CONCRETE BARRIER

CONC. DITCH BEHIND RETAINING WALL
SEE DETAIL 42E

PROP. RETAINING WALL #33
W/CONCRETE DITCH
BEGIN –Y2– STA. 63+75±
END –Y2– STA. 66+02±

CLASS B RIPRAP
2 TONS, 7 CY GEO

RETAIN AND EXTEND
1@6'x6' RCBC
AT OUTLET

STREAM RESTORATION
SEE DETAIL 42F
DDE=160 CY

CULVERT OUTLET CHANNEL
SEE DETAIL 42I
35 TONS CLASS II

ROCK EMBANKMENT –DR4– 10+35 TO 11+30 LT
SEE DETAIL SHEET 24-X TRANSITION FROM
TYPICAL AT 10+35 TO 1.5:1 AT 10+60
MAINTAIN 1.5:1 FROM 10+60 TO 11+30

SHOULDER BERM GUTTER
–DR4– STA. 10+36 LT
TO –Y2– STA. 70+50, RT

DO NOT BURY INVERT
CLASS I RIPRAP
2 TON, 8 SY GEO

24" CMP
24" CSP
24" RCP
15" RCP-IV
18" RCP-IV
2GI
TB 2GI
JB w/Slab Lid
REMOVE
REMOVE HW
PLUG
BDO
PDE
SPRING BOX
SFN
SFM
SFI
SFK
SFL
SFT
JS
SF
SS
E
F
C
Sf
MTL
WOODS
BST
GR
ROCK
HW
BARN
GO ROCK WALL

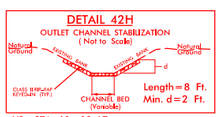
TS = DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S = DENOTES IMPACTS IN SURFACE WATER

50' 0' 50' 100'
25'

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE–IN PER CROSS–SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

DETAIL 42H
OUTLET CHANNEL STABILIZATION
(Not to Scale)

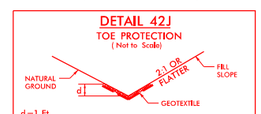


–Y2– STA 60+03 LT

DETAIL 42I
OUTLET CHANNEL DETAIL
(Not to Scale)

–Y2– STA 67+56 RT

DETAIL 42J
TOE PROTECTION
(Not to Scale)



Type of Liner=Class I Rip-Rap

–Y2– STA. 61+50 TO 63+50 RT

FOR –Y2– PROFILE, SEE SHEET NO. 73

FOR –DR4– PROFILE, SEE SHEET NO. 77

W:\2021 A-0009CC\TVA-0009\Hydraulics\PERMITS_Environmental\Drawings\A-0009CC_PSHA-0009CC_Hyd_prm_pth_42.dgn
11/4/2021
User:richard

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 16 OF 34

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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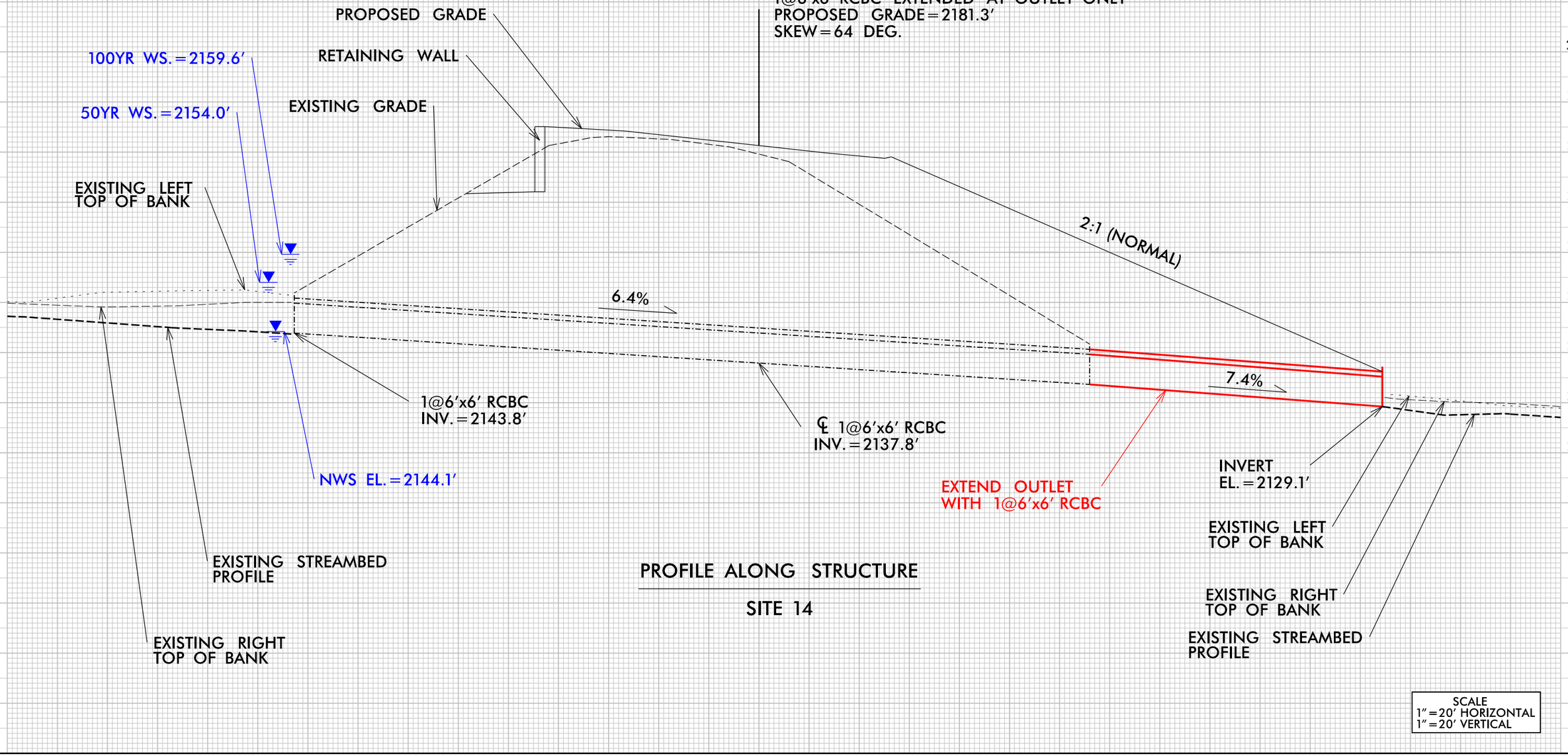
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

–Y2–
NC 28

℄ –Y2– STA. 66+85
1@6'x6' RCBC EXTENDED AT OUTLET ONLY
PROPOSED GRADE=2181.3'
SKEW=64 DEG.



PROFILE ALONG STRUCTURE

SITE 14

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PERMIT DRAWING
SHEET 17 OF 34

–Y2–
NC 28

℄ –Y2– STA 67+82
66" WSP
PROP. GRADE=2172.9'
SKEW=102 DEG.

100YR WSEL=2157.6'

50YR WSEL=2156.0'

PROPOSED GRADE

EXISTING GRADE

2:1 NORMAL

2:1 NORMAL

JB W/ SLAB LID

TB RT

TB LT

TB RT

TB LT

13.7%

10.6%

NWS=2152.8'

INV=2152.4'

INV=2150.4'

INV=2134.8'

INV=2129.2'

66" CAAP

RESTORED CHANNEL
LINED WITH CLASS II
RIPRAP AT 4.9%

EXISTING 42" CMP
TO BE REMOVED

FLOWABLE FILL
EXISTING 48" CMP

66" WSP
(TRECHLESS CONSTRUCTION)

CLASS II RIPRAP

EXISTING STREAM
BED PROFILE

2020
2010
2200
2190
2180
2170
2160
2150
2140
2130
2120
2110
2100

–150 –100 –50 0 50 100 150

PROFILE ALONG STRUCTURE

SITE 15

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

8/17/99

REVISIONS

-Y2- CURVE DATA

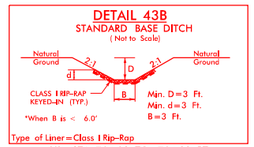
PI Sta 70+28.18	PI Sta 83+84.46
Δ = 50° 56' 38.0" (RT)	Δ = 52° 00' 01.9" (LT)
D = 3° 53' 51.6"	D = 5° 24' 18.9"
L = 1,307.03'	L = 962.04'
T = 700.27'	T = 517.00'
R = 1,470.00'	R = 1,060.00'
SE = 0.08	SE = 0.08
DS = 60 MPH	DS = 55 MPH

DETAIL 43A
LATERAL BASE DITCH
(Not to Scale)

Min. D=1.0 Ft.
B=5 Ft.
b=5 Ft.

-Y2- STA. 71+00 TO 74+00 RT
SEE PFL FOR DITCH GRADES

DETAIL 43B
STANDARD BASE DITCH
(Not to Scale)

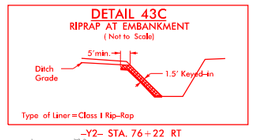


Min. D=3 Ft.
Min. d=3 Ft.
B=3 Ft.
*When B is < 6.0'

Type of Liner=Class I Rip-Rap

-Y2- STA. 76+08 TO 76+22 RT
SEE PFL FOR DITCH GRADE (0.3%)

DETAIL 43C
RIPRAP AT EMBANKMENT
(Not to Scale)



Type of Liner=Class I Rip-Rap

-Y2- STA. 76+22 RT

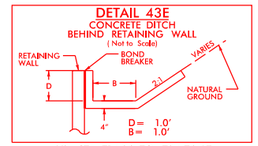
DETAIL 43D
STREAM RESTORATION
(Not to Scale)

*When B is < 6.0'
B=MatchExisting(2to4Ft)

Type of Liner=Class II Rip-Rap

-Y2- STA 78+00 TO 78+46 RT

DETAIL 43E
CONCRETE DITCH
BEHIND RETAINING WALL
(Not to Scale)



D= 1.0'
B= 1.0'

-Y2- STA. 71+26 TO 72+76 LT
-Y2- STA. 77+92 TO 82+00 LT
(SEE WALL ENVELOPES FOR DITCH GRADE)

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	43
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PERMIT DRAWING SHEET 18 OF 34

MATCH LINE STA -Y2- 68+00.00
MATCH TO SHEET NO. 42

MATCH LINE STA -Y2- 82+00.00
MATCH TO SHEET NO. 44

133 JOHN B. NORCROSS
136 JAMES M. JENKINS
137 RICKEY D. McCRACKEN
138 ROBERT K. NORCROSS
139 THOMAS E. SCHIESSLE
140 GLEN McCOY
141 LESTER A. JENKINS, ET AL
135 ROBERT K. NORCROSS
138 ROBERT K. NORCROSS
ARNOLD D. CODY
FLOYD J. CODY

TEMPORARY IMPACTS IN SURFACE WATER

PROP. RETAINING WALL #34 W/CONCRETE DITCH
BEGIN -Y2- STA. 71+25±
END -Y2- STA. 72+75±

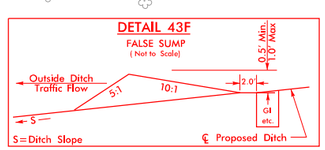
PROP. RETAINING WALL #35 W/CONCRETE DITCH
BEGIN -Y2- STA. 77+92±
END -Y2- STA. 88+25±

STREAM RESTORATION SEE DETAIL 42F
FILL 42" CMP AFTER PROPOSED SYSTEM IS IN SERVICE
REMOVE 42" CMP & DI AFTER PROPOSED SYSTEM IS IN SERVICE
CONC. DITCH BEHIND RETAINING WALL SEE DETAIL 43E
SITE 15
PROP. DRIVE
DO NOT DISTURB
REMOVE
CLASS B RIP-RAP 5 TONS, 12 SY GEO
REMOVE HW
FALSE SUMP SEE DETAIL 43F
SITE 16
DO NOT DISTURB
PROP. DRIVE
BURY INVERT 0.7'
SINGLE FACED CONCRETE BARRIER
CONC. DITCH BEHIND RETAINING WALL SEE DETAIL 43E
REMOVE DI
GRADE TO DRAIN
REMOVE
TB PRECAST DRAINAGE STRUCTURE w/2GI STD 840.46
SPEC DSN TB 2GI-A
ROD AND LUG WITH GASKETS (ELBOWS)
ABANDON
DO NOT DISTURB ROCK WALL OR STEPS
CLASS I RIPRAP 4 TONS, 10 SY GEO
SHOULDER BERM GUTTER -DR4- STA. 10+36, LT TO 70+50, RT
LATERAL BASE DITCH SEE DETEIL 43A DDE=200 CY
REMOVE 11 LF
FALSE SUMP SEE DETAIL 43F
MAX 1.0% PIPE SLOPE THIS SIDE OF ELBOW
CLASS B RIPRAP 3 TONS, 11 SY GEO
END CONSTRUCTION -Y2A- STA. 11+25.00
RIPRAP AT EMBANKMENT SEE DETAIL 43C CLASS I RIPRAP 6 TONS, NO GEO
STANDARD BASE DITCH SEE DETAIL 43B CLASS I RIPRAP 18 TONS, NO GEO DDE=50 CY
FLOODPLAIN BENCH SEE DETAIL 43G 570 SY COIR FIBER MATTING DDE=210 CY
STREAM RESTORATION SEE DETAIL 43D CLASS II RIPRAP 60 TONS DDE=130 CY
REMOVE 5 LF
SITE 17
NOTE: MATCH PAVEMENT SLOPE TO EXISTING SLOPE
SR 1226 MARTIN JENKINS RD.
SR 1226 STEDMAN RD.
CARVER BRANCH
UT TO CARVER BRANCH (TSIP)
IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

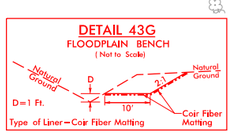
50' 0' 50' 100'
25'

DETAIL 43F
FALSE SUMP
(Not to Scale)



-Y2- STA. 74+13 LT
-Y2- STA. 74+15 RT

DETAIL 43G
FLOODPLAIN BENCH
(Not to Scale)



-Y2- STA. 76+25 TO 80+10 RT

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

FOR -Y2- PROFILE, SEE SHEET NO. 73

W:\A0009CC\TVA-0009\Hydraulics\PERMITS_Environmental\Drawings\A-0009CC_PSHA-0009CC_Hyd_prm_psh_43.dgn
11/4/2021
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User:richard

8/17/99

REVISIONS

-Y2- CURVE DATA

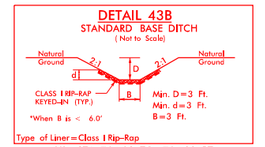
PI Sta 70+28.18	PI Sta 83+84.46
Δ = 50° 56' 38.0" (RT)	Δ = 52° 00' 01.9" (LT)
D = 3° 53' 51.6"	D = 5° 24' 18.9"
L = 1,307.03'	L = 962.04'
T = 700.27'	T = 517.00'
R = 1,470.00'	R = 1,060.00'
SE = 0.08	SE = 0.08
DS = 60 MPH	DS = 55 MPH

DETAIL 43A
LATERAL BASE DITCH
(Not to Scale)

Min. D=1.0 Ft.
B=5 Ft.
b=5 Ft.

-Y2- STA. 71+00 TO 74+00 RT
SEE PFL FOR DITCH GRADES

DETAIL 43B
STANDARD BASE DITCH
(Not to Scale)



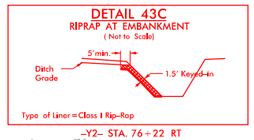
Min. D=3 Ft.
Min. d=3 Ft.
B=3 Ft.

*When B is < 6.0'

Type of Liner=Class I Rip-Rap

-Y2- STA. 76+08 TO 76+22 RT
SEE PFL FOR DITCH GRADE (0.3%)

DETAIL 43C
RIPRAP AT EMBANKMENT
(Not to Scale)



Type of Liner=Class I Rip-Rap

-Y2- STA. 76+22 RT

DETAIL 43D
STREAM RESTORATION
(Not to Scale)

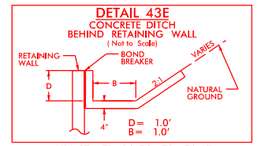
*When B is < 6.0'

B=MatchExisting(2to4Ft)

Type of Liner=Class II Rip-Rap

-Y2- STA 78+00 TO 78+46 RT

DETAIL 43E
CONCRETE DITCH
BEHIND RETAINING WALL
(Not to Scale)



D= 1.0'
B= 1.0'

-Y2- STA. 71+26 TO 72+76 LT
-Y2- STA. 77+92 TO 82+00 LT
(SEE WALL ENVELOPES FOR DITCH GRADE)

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	43
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PERMIT DRAWING
SHEET 19 OF 34

MATCH LINE STA -Y2- 68+00.00
MATCH TO SHEET NO. 42

MATCH LINE STA -Y2- 82+00.00
MATCH TO SHEET NO. 44

133 JOHN B. NORCROSS
136 JAMES M. JENKINS
137 RICKEY D. McCRACKEN
138 ROBERT K. NORCROSS
139 THOMAS E. SCHIESSLE
140 GLEN McCOY
141 LESTER A. JENKINS, ET AL
135 ROBERT K. NORCROSS
138 ROBERT K. NORCROSS
FLOYD J. CODY
ARNOLD D. CODY

TEMPORARY IMPACTS IN SURFACE WATER

PROP. RETAINING WALL #34 W/CONCRETE DITCH
BEGIN -Y2- STA. 71+25±
END -Y2- STA. 72+75±

PROP. RETAINING WALL #35 W/CONCRETE DITCH
BEGIN -Y2- STA. 77+92±
END -Y2- STA. 88+25±

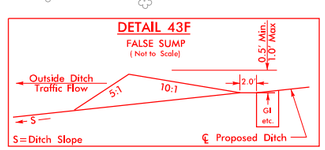
SITE 15
SITE 16
SITE 17

STREAM RESTORATION SEE DETAIL 42F
FILL 42" CMP AFTER PROPOSED SYSTEM IS IN SERVICE
REMOVE 42" CMP & DI AFTER PROPOSED SYSTEM IS IN SERVICE
CONC. DITCH BEHIND RETAINING WALL SEE DETAIL 43E
CLASS B RIP-RAP 5 TONS, 12 SY GEO
REMOVE HW
FALSE SUMP SEE DETAIL 43F
PROP. DRIVE
BURY INVERT 0.7'
DO NOT DISTURB
REMOVE
GRADE TO DRAIN
SINGLE FACED CONCRETE BARRIER
REMOVE DI
FLOWABLE FILL
PLUG
ABANDON
DO NOT DISTURB ROCK WALL OR STEPS
ROD AND LUG WITH GASKETS (ELBOWS)
MAX 1.0% PIPE SLOPE THIS SIDE OF ELBOW
CLASS I RIPRAP 4 TONS, 10 SY GEO
SHOULDER BERM GUTTER -DR4- STA. 10+36, LT TO 70+50, RT
LATERAL BASE DITCH SEE DETEIL 43A DDE=200 CY
REMOVE 11 LF
END CONSTRUCTION -Y2A- STA. 11+25.00
RIPRAP AT EMBANKMENT SEE DETAIL 43C CLASS I RIPRAP 6 TONS, NO GEO
STANDARD BASE DITCH SEE DETAIL 43B CLASS I RIPRAP 18 TONS, NO GEO DDE=50 CY
FLOODPLAIN BENCH SEE DETAIL 43G 570 SY COIR FIBER MATTING DDE=270 CY
REMOVE 5 LF
STREAM RESTORATION SEE DETAIL 43D CLASS II RIPRAP 60 TONS DDE=30 CY
TB PRECAST DRAINAGE STRUCTURE w/2GI STD 840.46
SPEC. DSK TB 2GI-A
NOTE: MATCH PAVEMENT SLOPE TO EXISTING SLOPE
CARVER BRANCH
UT TO CARVER BRANCH (SEP)
UT TO CARVER BRANCH (TSEP)
SR 1226 MARTIN JENKINS RD.
SR 1205 STEDMAN RD.

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

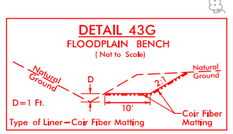
50' 0' 50' 100'
25'

DETAIL 43F
FALSE SUMP
(Not to Scale)



-Y2- STA. 74+13 LT
-Y2- STA. 74+15 RT

DETAIL 43G
FLOODPLAIN BENCH
(Not to Scale)



Type of Liner=Coir Fiber Matting

-Y2- STA. 76+25 TO 80+10 RT

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

FOR -Y2- PROFILE, SEE SHEET NO. 73

IV\2021
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8/17/99

REVISIONS

MATCH LINE STA –Y2– 96+00.00
MATCH TO SHEET NO. 44

MATCH LINE STA –Y2– 110+00.00
MATCH TO SHEET NO. 46

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

DENOTES HAND CLEARING

DENOTES FILL IN WETLAND

HAND CLEARING IN WETLANDS

EXCAVATION IN WETLANDS

FILL IN WETLANDS

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE–IN PER CROSS–SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

METES & BOUNDS

From	To	Direction	Dist.
A	B	N 07°53'20" E	17.13'
B	C	N 10°35'28" E	23.71'
C	D	N 32°56'27" E	21.45'
D	E	S 21°07'17" W	24.54'

PERMIT DRAWING
SHEET 20 OF 34

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	45
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476–0003
CORP. LICENSE NO.: C–0275

NAD 83/2011

SCALE: 1"=50'

BEGIN CONSTRUCTION
–Y3– STA. 10+50.00

–L–/–Y3– INTERSECTION

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

SITE 18

SITE 19

SITE 20

SITE 21

SITE 22

PROP. DRIVE

PROP. CONCRETE DRIVE

10' MULTIUSE PATH W/ TIMBER RAIL FENCE

SHOT ROCK
–Y2– STA. 102+70 TO 103+95, RT
SEE DETAIL SHT 2_–

SHOT ROCK
–Y2– STA. 108+45 TO 110+05, RT
SEE DETAIL SHT 2_–

RIPRAP AT EMBANKMENT
SEE DETAIL 45H
CLASS II RIPRAP
35 TONS, NO GEO

FOLLOWING CULVERT INSTALLATION, CONTRACTOR SHALL RESTORE STECOAH RD. TO EXISTING GRADE WHILE UTILIZING 3' TURF SHOULDERS AND 3:1 MAX FILL SLOPES

JOSEPH L. EDWARDS (146)

GREGORY D. BURCHFIELD (147)

WILLIAM CARR (148)

AARON E. FARLEY (150)
DB 288 PG 202

ROANNE GORDON (149)

JEFFERY HYDE, ET AL

ODELL LOVIN

LEONARD BRIDGES

JAIME J. HOOPER

UT TO STECOAH CREEK (SCB)

STECOAH CREEK

CARVER BRANCH

UT TO EDWARDS BRANCH (SBV)

STECOAH BAPTIST CHURCH

50' 0' 50' 100'
25'

DETAIL 45G
UP AND DOWNSTREAM FLOODPLAIN BENCH
(Not to Scale)
EST. 24 CY DDE
EST. 54 TONS CLASS I RIP RAP
–Y2– STA. 99+76 LT (U/S LENGTH=24 FT)
–Y2– STA. 99+90 RT (D/S LENGTH=12 FT)

DETAIL 45A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
2:1
D
4:1 or Flatter
Front Ditch Slope
Min. D=2 Ft.
–Y3– STA. 11+50 TO 12+00 RT
SEE PFL FOR DITCH GRADE (7.6%)

DETAIL 45B
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground
2:1
D
2:1
Natural Ground
Min. D=1.5 Ft.
–Y3– STA. 12+00(29' LT) TO 12+00(54' LT)
DAYLIGHT AT 1.0% SLOPE

DETAIL 45C
FALSE SUMP
(Not to Scale)
1.5' Min.
Outside Ditch Traffic Flow
4:1
4:1
PIPE
S
S=Ditch Slope
℄ Proposed Ditch
–Y3– STA. 12+10 RT

DETAIL 45D
CHANNEL CHANGE
(Not to Scale)
Natural Ground
D
2:1
2:1
Natural Ground
CLASS I RIP-RAP KEYED-IN (TYP.)
Exist. Channel
B
Length=22 Ft.
Min. D=3.0 Ft.
B=5 Ft.
Type of Liner=CLASS II RIPRAP 25 TONS
–Y2– STA 109+73(57' LT) TO 109+81(37' LT)
SEE PFL FOR CHANNEL CHANGE GRADE (15%)

DETAIL 45E
SPECIAL BERM
(Not to Scale)
10'
2:1
2:1
ELEV=2002 ft
Pipe Inlet
Exist. Ground
–Y2– STA. 109+98 LT

DETAIL 45F
CHANNEL CHANGE
(Not to Scale)
b
Natural Ground
2:1
D
2:1
Proposed Fill Slope
Natural Ground
1'/Ft.
B
Exist. Channel
Min. D=2 Ft.
B=3 Ft.
Min. b=3 Ft.
Type of Liner=Grass
–Y2– STA 99+04 TO 99+74 LT
SEE PFL FOR CHANNEL CHANGE GRADE (0.5%)

DETAIL 45H
RIPRAP AT EMBANKMENT
(Not to Scale)
L
Pipe Outlet
2' Keyed-in
Length=18 ft
Type of Liner=Class II Rip-Rap
–Y2– STA. 109+81 RT

DETAIL 45I
UP AND DOWNSTREAM FLOODPLAIN BENCH
(Looking Downstream, Not to Scale)
EST. 20 CY DDE
EST. 42 TONS CLASS II RIP RAP
–Y2– STA. 98+12 TO 98+39 RT (U/S L=27 FT)
–Y2– STA. 98+89 TO 99+12 RT (D/S L=23 FT)

SA ELIGIBLE AND UNASSESSED SITES

FOR –Y2– PROFILE, SEE SHEET NO. 74

FOR –Y3– PROFILE, SEE SHEET NO. 77

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User:richard

8/17/99

REVISIONS

MATCH LINE STA –Y2– 96+00.00
MATCH TO SHEET NO. 44

MATCH LINE STA –Y2– 110+00.00
MATCH TO SHEET NO. 46

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

DENOTES HAND CLEARING

DENOTES FILL IN WETLAND

HAND CLEARING IN WETLANDS

EXCAVATION IN WETLANDS

FILL IN WETLANDS

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE–IN PER CROSS–SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

METES & BOUNDS

From	To	Direction	Dist.
A	B	N 07°53'20" E	17.13'
B	C	N 10°35'28" E	23.71'
C	D	N 32°56'27" E	21.45'
D	E	S 21°07'17" W	24.54'

PERMIT DRAWING
SHEET 21 OF 34

PROJECT REFERENCE NO.	SHEET NO.
A–0009CC	45
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476–0003
CORP. LICENSE NO.: C–0275

NAD 83/2011

BEGIN CONSTRUCTION
–Y3– STA. 10+50.00

–L–/–Y3– INTERSECTION

SCALE: 1"=50'

PROP. DRIVE

TEMPORARY IMPACTS IN SURFACE WATER

SITE 18

SITE 19

SITE 20

SITE 21

SITE 22

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

CLASS B RIPRAP 3 TONS, 10 SY GEO

SPECIAL CUT DITCH SEE DETAIL 45A

STANDARD "V" DITCH SEE DETAIL 45B DDE=15 CY

FALSE SUMP SEE DETAIL 45C

CHANNEL CHANGE SEE DETAIL 45F DDE=125 CY

CLASS I RIPRAP (KEYED–IN) BANK STABILIZATION 14 TONS

BURY INVERT 0.5'

RETAIN

FLOODPLAIN BENCH SEE DETAIL 45G

CHANNEL CHANGE SEE DETAIL 45D DDE=15 CY

SPECIAL BERM SEE DETAIL 45E

DO NOT BURY INVERT

RETAIN TO HERE

REMOVE 22 LF

10' MULTIUSE PATH W/ TIMBER RAIL FENCE

SILLS & BAFFLES (TYP.)

FOLLOWING CULVERT INSTALLATION, CONTRACTOR SHALL RESTORE STECOAH RD. TO EXISTING GRADE WHILE UTILIZING 3' TURF SHOULDERS AND 3:1 MAX FILL SLOPES

SHOT ROCK –Y2– STA. 102+70 TO 103+95, RT SEE DETAIL SHT 2_–

SHOT ROCK –Y2– STA. 108+45 TO 110+05, RT SEE DETAIL SHT 2_–

RIPRAP AT EMBANKMENT SEE DETAIL 45H CLASS II RIPRAP 35 TONS, NO GEO

PROP. CONCRETE DRIVE

PROP. DRIVE

FLOWABLE FILL

CB–G REMOVE

PLUG

CB–F

CB–G

15" RCP–IV

18" RCP–IV

ELBOW 15" RCP–IV

42"

18"

GTD 15" RCP–IV

UT TO STECOAH CREEK (SCB)

STECOAH CREEK

UT TO EDWARDS BRANCH (SBV)

CARVER BRANCH

10' MULTIUSE PATH W/TIMBER RAIL FENCE

JOSEPH L. EDWARDS

GREGORY D. BURCHFIELD

WILLIAM CARR

AARON E. FARLEY
DB 288 PG 202

ROANNE GORDON (BY WILL)

LEONARD BRIDGES

ODELL LOVIN

JEFFERY HYDE, ET AL

STECOAH BAPTIST CHURCH

JAIME J. HOOPER

50' 0' 50' 100'
25'

DETAIL 45G
UP AND DOWNSTREAM FLOODPLAIN BENCH
(Not to Scale)

EST. 24 CY DDE
EST. 54 TONS CLASS I RIP RAP

–Y2– STA. 99+76 LT (U/S LENGTH=24 FT)
–Y2– STA. 99+90 RT (D/S LENGTH=12 FT)

DETAIL 45A
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 2:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D=2 Ft.

–Y3– STA. 11+50 TO 12+00 RT
SEE PFL FOR DITCH GRADE (7.6%)

DETAIL 45B
STANDARD "V" DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground
Min. D=1.5 Ft.

–Y3– STA. 12+00(29' LT) TO 12+00(54' LT)
DAYLIGHT AT 1.0% SLOPE

DETAIL 45C
FALSE SUMP
(Not to Scale)

1.5' Min., Outside Ditch Traffic Flow, 4:1, 4:1, PIPE, S, S=Ditch Slope, ℄ Proposed Ditch

–Y3– STA. 12+10 RT

DETAIL 45D
CHANNEL CHANGE
(Not to Scale)

Natural Ground, D, 2:1, 2:1, Natural Ground, B, Exist. Channel
CLASS I RIP–RAP KEYED–IN (TYP.)
Length=22 Ft.
Min. D=3.0 Ft.
B=5 Ft.
Type of Liner=CLASS II RIPRAP 25 TONS

–Y2– STA 109+73(57' LT) TO 109+81(37' LT)
SEE PFL FOR CHANNEL CHANGE GRADE (15%)

DETAIL 45E
SPECIAL BERM
(Not to Scale)

10', 2:1, 2:1, ELEV=2002 ft, Pipe Inlet, Exist. Ground

–Y2– STA. 109+98 LT

DETAIL 45F
CHANNEL CHANGE
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, Proposed Fill Slope, Natural Ground, B, Exist. Channel
1'/Ft.
Min. D=2 Ft.
B=3 Ft.
Min. b=3 Ft.
Type of Liner=Grass

–Y2– STA 99+04 TO 99+74 LT
SEE PFL FOR CHANNEL CHANGE GRADE (0.5%)

DETAIL 45H
RIPRAP AT EMBANKMENT
(Not to Scale)

L, Pipe Outlet, 2' Keyed–in
Length=18 ft
Type of Liner=Class II Rip–Rap

–Y2– STA. 109+81 RT

DETAIL 45I
UP AND DOWNSTREAM FLOODPLAIN BENCH
(Looking Downstream, Not to Scale)

EST. 20 CY DDE
EST. 42 TONS CLASS II RIP RAP

–Y2– STA. 98+12 TO 98+39 RT (U/S L=27 FT)
–Y2– STA. 98+89 TO 99+12 RT (D/S L=23 FT)

SA ELIGIBLE AND UNASSESSED SITES

FOR –Y2– PROFILE, SEE SHEET NO. 74

FOR –Y3– PROFILE, SEE SHEET NO. 77

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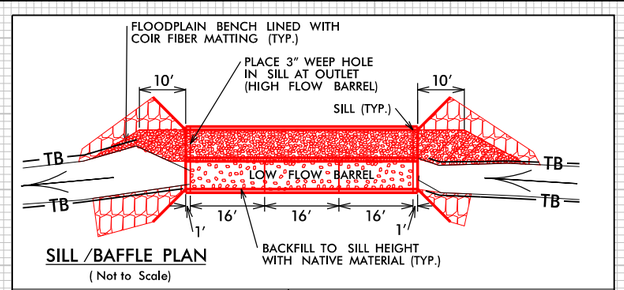
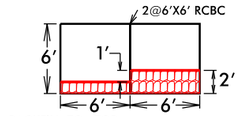


SILL /BAFFLE PLAN

(Not to Scale)

SILL DETAIL

(Not to Scale)



NOTES:

1) TOP OF SILLS AT EACH END OF LOW FLOW BARREL SHALL MATCH STREAM BED ELEVATION IN CHANNEL OF STREAM (THALWEG).

2) NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL. RIP RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL IN THE HIGH FLOW CULVERT BARREL. IF RIP RAP IS USED TO LINE THE HIGH FLOW CULVERT BARREL, NATIVE MATERIAL SHALL BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

–Y3A–
NC 28

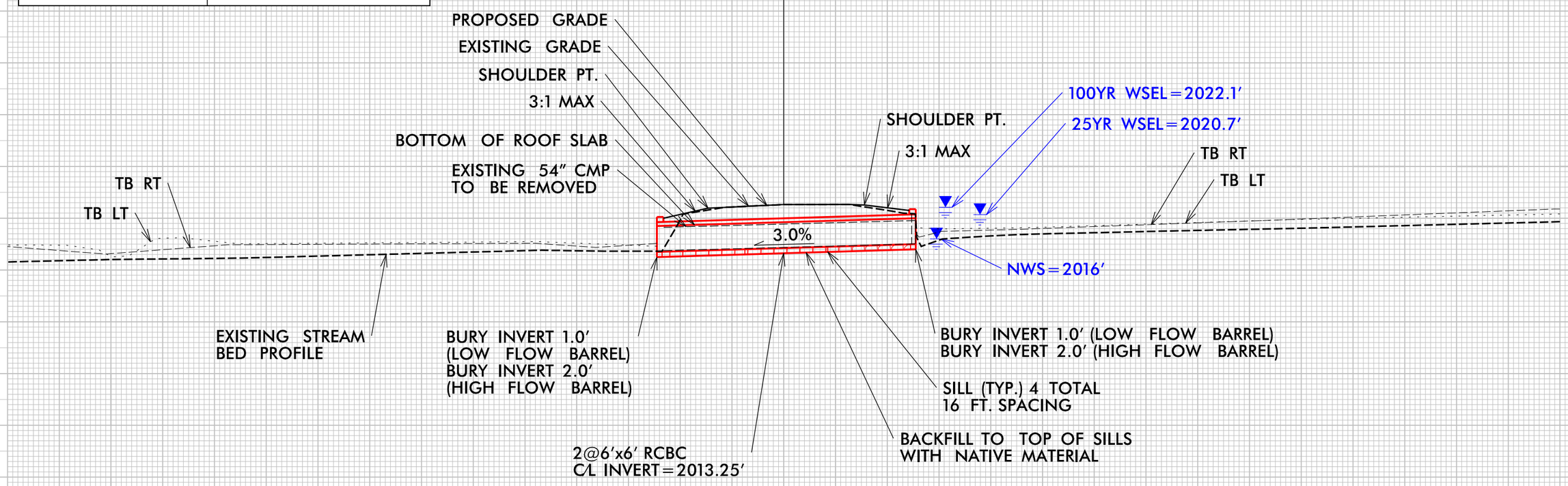
PERMIT DRAWING
SHEET 22 OF 34

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

℄ –Y3A– STA 10+67
2@ 6'x6' RCBC
BURIED 1.0' & 2.0'
PROP. GRADE=2022.6'
SKEW=90 DEG.



PROFILE ALONG STRUCTURE

SITE 20

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

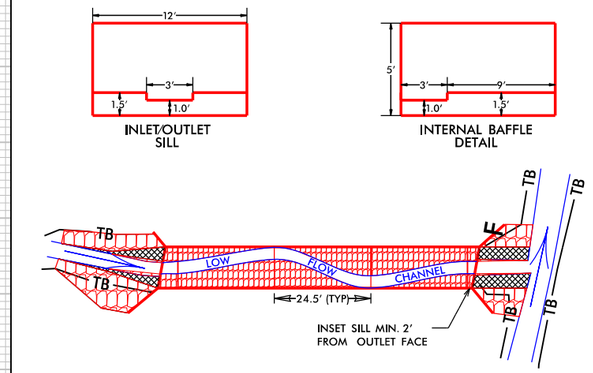
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

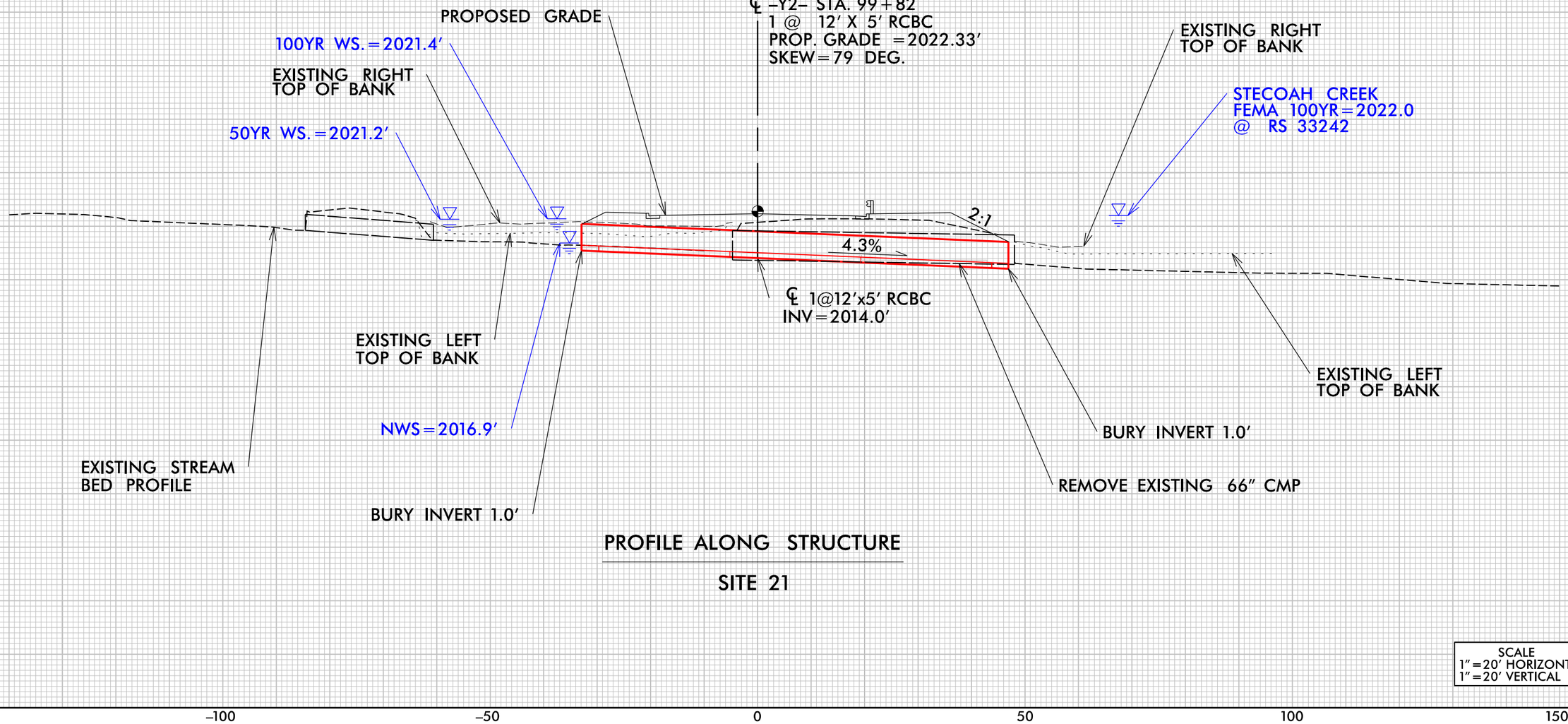
TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PERMIT DRAWING
SHEET 23 OF 34

–Y2–
NC 28

CULVERT SILL DETAIL
NOT TO SCALE





PROFILE ALONG STRUCTURE

SITE 21

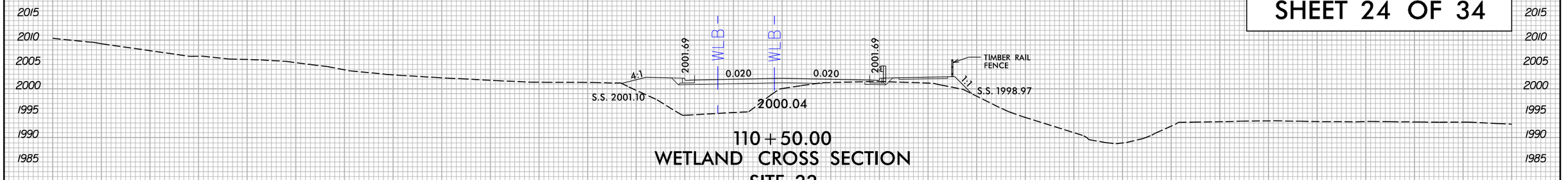
SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

6/23/16

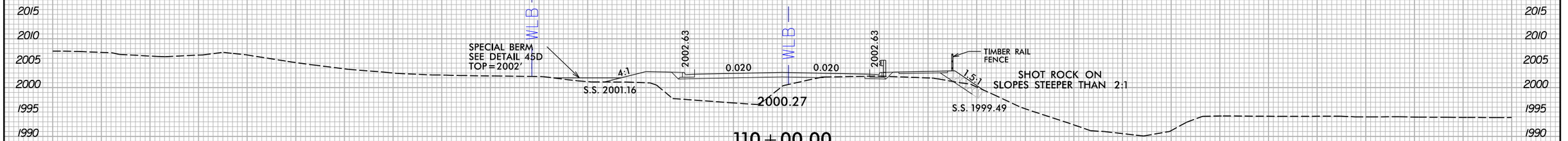
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	X-221

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

PERMIT DRAWING
SHEET 24 OF 34



110+50.00
WETLAND CROSS SECTION
SITE 22



110+00.00
WETLAND CROSS SECTION
SITE 22

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

-Y2-

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

11/1/2021
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User:rrichard

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	46
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

NAD 83/2011

REVISIONS 8/17/99

PERMIT DRAWING SHEET 25 OF 34

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S S DENOTES IMPACTS IN SURFACE WATER
E E DENOTES EXCAVATION IN WETLAND
HC HC DENOTES HAND CLEARING
F F DENOTES FILL IN WETLAND

MATCH LINE STA -Y2- 110+00.00
MATCH TO SHEET NO. 45

MATCH LINE STA -Y2- 124+00.00
MATCH TO SHEET NO. 47

FILL IN WETLANDS

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

SITE 22

SITE 23

SITE 24

SITE 25

150 AARON E. HARLEY

151 DANA KILBY

152 RANDALL WILSON, ET AL DB 343 PG 632

DANNY JENKINS

LEONDUS McCRACKEN

JAIME J. HOOPER

BILLY HOLDER

JAMES R. HYDE, TRUSTEE

DAVID R. HYDE

PROP. DRIVE

REMOVE HW

TOE PROTECTION SEE DETAIL 46E CLASS B RIPRAP 68 TONS, 150 SY GEO

ROD AND LUG WITH GASKETS (ELBOWS)

MAX 1% PIPE SLOPE THIS SIDE OF ELBOW

ROCK FILL IN POND SEE DETAIL 46A NATURAL RIPRAP 385 TONS

FILL EXISTING CHANNEL W/ COMPACTED BACKFILL

CHANNEL CHANGE SEE DETAIL 46B DDE=135 CY

CLASS B RIPRAP 3 TONS, 11 SY GEO

CLASS B RIPRAP 1 TONS, 5 SY GEO

CLASS B RIPRAP 1 TON, 5 SY GEO

24" RCP-IV

15" RCP-IV

18" RCP-IV

SPEC DSN TB 2GI-A

TB 2GI

GRADE TO DRAIN

DI

CB-E

CB-G

CB-F

24" CS

PLUG

FLOWABLE FILL

ELBOWS

DO NOT BURY INVERT

RIPRAP AT EMBANKMENT SEE DETAIL 46C CLASS II RIPRAP 20 TONS, NO GEO

REMOVE R/R

SHOT ROCK -Y2- STA. 115+25 TO 116+75, RT SEE DETAIL SHT. 2_--

SHOT ROCK -Y2- STA. 117+75 TO 128+25, RT SEE DETAIL SHT. 2 --

10' MULTIUSE PATH W/ TIMBER RAIL FENCE

FLOODPLAIN BENCH SEE DETAIL 46D 470 SY COIR FIBER MATTING DDE=345 CY

CLASS I RIPRAP 2 TON, 6 SY GEO

UT TO STECOAH CREEK (SCU)

STECOAH CREEK

SR 1235 (LOWER STECOAH RD)

NC 28 (FONTANA RD)

24" BST

24" CMP

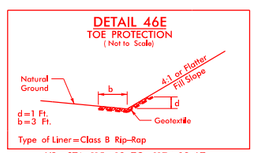
24" ROCK WALL

48" CROSS TIE WALL

POND (PL)

POND (PH)

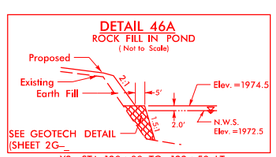
DETAIL 46E
TOE PROTECTION
(Not to Scale)



Type of Liner=Class B Rip-Rap

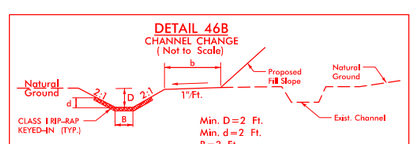
-Y2- STA 115+18 TO 117+08 LT

DETAIL 46A
ROCK FILL IN POND
(Not to Scale)



-Y2- STA. 120+00 TO 122+50 LT

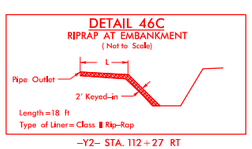
DETAIL 46B
CHANNEL CHANGE
(Not to Scale)



Type of Liner=Class I Riprap 175 TONS

-Y2- STA. 123+47 TO 125+20 LT
SEE PFL FOR CHANNEL CHANGE GRADE (3.56%)

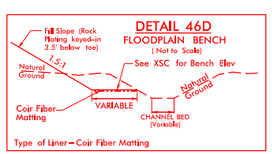
DETAIL 46C
RIPRAP AT EMBANKMENT
(Not to Scale)



Type of Liner=Class II Rip-Rap

-Y2- STA. 112+27 RT

DETAIL 46D
FLOODPLAIN BENCH
(Not to Scale)



Type of Liner=Coir Fiber Matting

-Y2- STA. 123+25 TO 126+25 RT

50' 0' 50' 100'
25'

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED. END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

PROP MONOLITHIC CONC ISLAND - SURFACE MOUNTED

FOR -Y2- PROFILE, SEE SHEET NO. 46

11/1/2021
K:\NCDOT\A-0009\Hydraulics\PERMITS_Environmental\Drawings\A-0009CC_PSH\A-0009CC_Hyd_prm_psh_46.dgn
User:richard

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	46
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

NAD 83/2011

PERMIT DRAWING
SHEET 26 OF 34

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S S DENOTES IMPACTS IN SURFACE WATER
E E DENOTES EXCAVATION IN WETLAND
HC HC DENOTES HAND CLEARING
F F DENOTES FILL IN WETLAND

FILL IN WETLANDS

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

MATCH LINE STA -Y2- 110+00.00
MATCH TO SHEET NO. 45

MATCH LINE STA -Y2- 124+00.00
MATCH TO SHEET NO. 47

REVISIONS 8/17/99

150 AARON E. PARLEY

151 DANA KILBY

152 RANDALL WILSON, ET AL DB 343 PG 632

DANNY JENKINS

LEONDUS McCRACKEN

JAMES R. HYDE, TRUSTEE

DAVID R. HYDE

JAIME J. HOOPER

BILLY HOLDER

SITE 22

SITE 23

SITE 24

SITE 25

PROP. DRIVE

REMOVE HW

REMOVE & RE-SET

TOE PROTECTION
SEE DETAIL 46E
CLASS B RIPRAP
68 TONS, 150 SY GEO

ROD AND LUG WITH GASKETS (ELBOWS)

MAX 1% PIPE SLOPE THIS SIDE OF ELBOW

CLASS B RIPRAP
3 TONS, 11 SY GEO

CLASS B RIPRAP
1 TONS, 5 SY GEO

ROCK FILL IN POND
SEE DETAIL 46A
NATURAL RIPRAP
385 TONS

FILL EXISTING CHANNEL W/ COMPACTED BACKFILL

CHANNEL CHANGE
SEE DETAIL 46B
DDE=135 CY

GRADE TO DRAIN

15" RCP-IV

18" RCP-IV

24" RCP-IV

24" CS

TB 2GI

SPEC DSN TB 2GI-A

CB-E

CB-G

CB-F

PLUG

FLOWABLE FILL

ELBOWS

DO NOT BURY INVERT

RIPRAP AT EMBANKMENT
SEE DETAIL 46C
CLASS II RIPRAP
20 TONS, NO GEO

CLASS B RIPRAP
1 TON, 5 SY GEO

SHOT ROCK
-Y2- STA. 115+25 TO 116+75, RT
SEE DETAIL SHT. 2_-_

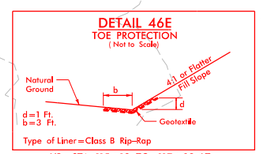
SHOT ROCK
-Y2- STA. 117+75 TO 128+25, RT
SEE DETAIL SHT. 2_-_

CLASS I RIPRAP
2 TON, 6 SY GEO

FLOODPLAIN BENCH
SEE DETAIL 46D
470 SY COIR FIBER MATTING
DDE=345 CY

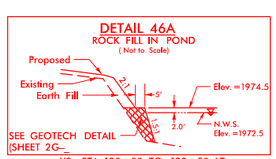
10' MULTIUSE PATH W/ TIMBER RAIL FENCE

DETAIL 46E
TOE PROTECTION
(Not to Scale)



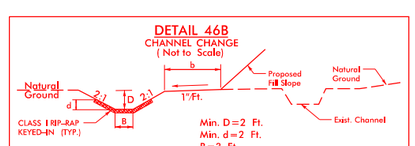
Type of Liner=Class B Rip-Rap
-Y2- STA 115+18 TO 117+08 LT

DETAIL 46A
ROCK FILL IN POND
(Not to Scale)



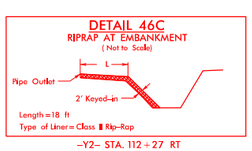
-Y2- STA. 120+00 TO 122+50 LT

DETAIL 46B
CHANNEL CHANGE
(Not to Scale)



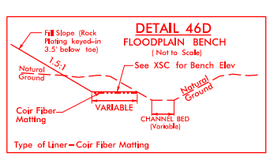
Type of Liner=Class I Riprap
175 TONS
Min. D=2 Ft.
Min. d=2 Ft.
B=3 Ft.
b=5 Ft.
-Y2- STA. 123+47 TO 125+20 LT
SEE PFL FOR CHANNEL CHANGE GRADE (3.56%)

DETAIL 46C
RIPRAP AT EMBANKMENT
(Not to Scale)



Type of Liner=Class II Rip-Rap
-Y2- STA. 112+27 RT

DETAIL 46D
FLOODPLAIN BENCH
(Not to Scale)



Type of Liner=Coir Fiber Matting
-Y2- STA. 123+25 TO 126+25 RT

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED. END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

50' 0' 50' 100'
25'

PROP MONOLITHIC CONC ISLAND - SURFACE MOUNTED

FOR -Y2- PROFILE, SEE SHEET NO. 46

11/1/2021
K:\NCDOT\A-0009\Hydraulics\PERMITS_Environmental\Drawings\A-0009CC_PSH\A-0009CC_Hyd_prm_psh_46.dgn
User:richard

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	47
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

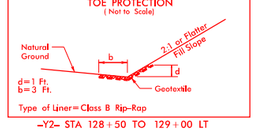
PERMIT DRAWING
SHEET 27 OF 34

8/17/99

REVISIONS

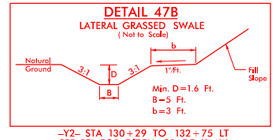
-Y2- CURVE DATA
PI Sta 132+08.73
Δ = 30° 56' 09.8" (LT)
D = 4° 48' 53.2"
L = 642.52'
T = 329.30'
R = 1190.00'
SE = 0.04
DS = 55 MPH

DETAIL 47A
TOE PROTECTION
(Not to Scale)



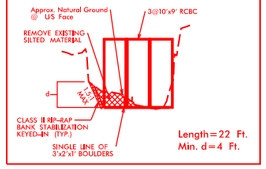
Type of Liner= Class B Rip-Rap
-Y2- STA 128+50 TO 129+00 LT

DETAIL 47B
LATERAL GRASSED SWALE
(Not to Scale)



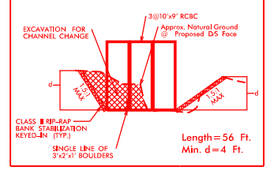
-Y2- STA 130+29 TO 132+75 LT
SEE PFL FOR DITCH GRADE (0.4%)

DETAIL 47C
CULVERT INLET CHANNEL DETAIL
Looking Downstream (Not to Scale)



-Y2- STA. 128+47 RT

DETAIL 47D
CULVERT OUTLET CHANNEL DETAIL
Looking Downstream (Not to Scale)



-Y2- STA. 129+26 LT

DETAIL 47E
SPECIAL CUT DITCH
(Not to Scale)

-Y2- STA 129+00 TO 132+06 RT
SEE PFL FOR DITCH GRADE (1.34%)

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED. END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83/2011

MATCH LINE STA -Y2- 124+00.00
MATCH TO SHEET NO. 46

MATCH LINE STA -Y2- 138+00.00
MATCH TO SHEET NO. 48

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

SITE 24

SITE 25

SITE 26

SITE 26

CHANNEL CHANGE SEE DETAIL 46B

PROP. DRIVE

CLASS B RIPRAP 1 TONS, 5 SY GEO

BANK STABILIZATION SEE CULVERT OUTLET CHANNEL DETAIL 47D 85 TONS CLASS II

CHANNEL CHANGE/ BENCH ELEV=1951.4'

SINGLE LINE OF 3'x2'x1' BOULDERS TO MAINTAIN LOW FLOW IN EASTERNMOST BARRELS 10 TONS

TOE PROTECTION SEE DETAIL 47A CLASS B RIPRAP 13 TONS, 28 SY GEO

LATERAL GRASSED SWALE SEE DETAIL 47B DDE=320 CY

EXCAVATION DDE 77 CY

CLASS B RIPRAP 3 TONS, 7 SY GEO

CLASS B RIPRAP 3 TONS, 7 SY GEO

REMOVE 30 LF

ROD AND LUG WITH GASKETS (ELBOWS)

CLASS I RIPRAP 11 TONS,22 SY GEO

PROP. DRIVE

DO NOT DISTURB SIGN

FLOODPLAIN BENCH SEE DETAIL 46D

SHOT ROCK -Y2- STA. 117+75 TO 128+25, RT SEE DETAIL SHT. 2_-_

10' MULTIUSE PATH W/TIMBER RAIL FENCE

CLASS I RIPRAP 2 TON, 6 SY GEO

BANK STABILIZATION SEE CULVERT INLET CHANNEL DETAIL 47C 15 TONS CLASS II

SINGLE LINE OF 3'x2'x1' BOULDERS TO MAINTAIN LOW FLOW IN EASTERNMOST BARRELS 5 TONS

EXCAVATION DDE 17 CY

GRADE TO DRAIN

RETAIN AND EXTEND D'S WITH 3@10'x9' RCBC

REMOVE EXISTING SILTED MATERIAL FROM ALL BARRELS DDE 157 CY

SPECIAL CUT DITCH SEE DETAIL 47E

REMOVE

TB 2GI

SHOULDER BERM GUTTER -Y2- STA. 133+32 TO 133+60, RT

DOUBLE FACED CONCRETE BARRIER TYPE T-2

PROP. DRIVE

10' MULTIUSE PATH W/TIMBER RAIL FENCE

CLASS B RIPRAP 3 TONS, 10 SY GEO

CLASS B RIPRAP 2 TONS, 7 SY GEO

JAMES R. HYDE, TRUSTEE

DAVID R. HYDE

WILLIAM D. IVEY

WILLIAM M. HYDE

JAMES R. HYDE, TRUSTEE

GRAHAM WELL DRILLING, LLC

KICKSTAND LODGE, LTD.

CIRCLE G MANAGEMENT, LLC

MICHAEL CABLE, ET AL

RANDALL WILSON, ET AL

UT TO STECOAH CREEK (SCD)

STECOAH CREEK

POND (PG)

NC 28 (FONTANA RD)

SR 1230 (HYDE TOWN RD)

WOODS

50' 0' 50' 100'
25'

FOR -Y2- PROFILE, SEE SHEET NO. 75

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	47
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

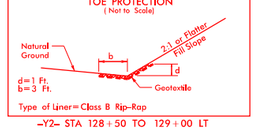
PERMIT DRAWING SHEET 28 OF 34

8/17/99

REVISIONS

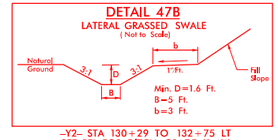
-Y2- CURVE DATA
PI Sta 132+08.73
Δ = 30° 56' 09.8" (LT)
D = 4° 48' 53.2"
L = 642.52'
T = 329.30'
R = 1,190.00'
SE = 0.04
DS = 55 MPH

DETAIL 47A
TOE PROTECTION
(Not to Scale)



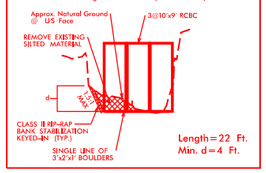
-Y2- STA 128+50 TO 129+00 LT

DETAIL 47B
LATERAL GRASSED SWALE
(Not to Scale)



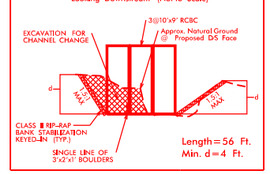
-Y2- STA 130+29 TO 132+75 LT
SEE PFL FOR DITCH GRADE (0.4%)

DETAIL 47C
CULVERT INLET CHANNEL DETAIL
Looking Downstream (Not to Scale)



-Y2- STA. 128+47 RT

DETAIL 47D
CULVERT OUTLET CHANNEL DETAIL
Looking Downstream (Not to Scale)



-Y2- STA. 129+26 LT

DETAIL 47E
SPECIAL CUT DITCH
(Not to Scale)

-Y2- STA 129+00 TO 132+06 RT
SEE PFL FOR DITCH GRADE (1.34%)

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED. END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

MATCH LINE STA -Y2- 124+00.00
MATCH TO SHEET NO. 46

MATCH LINE STA -Y2- 138+00.00
MATCH TO SHEET NO. 48

NAD 83/2011

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

SITE 24

SITE 25
10' MULTIUSE PATH W/TIMBER RAIL FENCE

SITE 26

SITE 26

CHANNEL CHANGE SEE DETAIL 46B

PROP. DRIVE

CLASS B RIPRAP 1 TONS, 5 SY GEO

BANK STABILIZATION SEE CULVERT OUTLET CHANNEL DETAIL 47D 85 TONS CLASS II

CHANNEL CHANGE/ BENCH ELEV=1951.4'

SINGLE LINE OF 3'x2'x1' BOULDERS TO MAINTAIN LOW FLOW IN EASTERNMOST BARRELS 10 TONS

TOE PROTECTION SEE DETAIL 47A CLASS B RIPRAP 13 TONS, 28 SY GEO

LATERAL GRASSED SWALE SEE DETAIL 47B DDE=320 CY

EXCAVATION DDE 77 CY

CLASS B RIPRAP 3 TONS, 7 SY GEO

CLASS B RIPRAP 3 TONS, 7 SY GEO

CLASS I RIPRAP 11 TONS,22 SY GEO

PROP. DRIVE

DO NOT DISTURB SIGN

REMOVE 30 LF

ROD AND LUG WITH GASKETS (ELBOWS)

ELBOWS

ELBOWS

ELBOWS

GRADE TO DRAIN

GRADE TO DRAIN

GRADE TO DRAIN

RETAIN AND EXTEND D/S WITH 3@10'x9' RCBC

SPECIAL CUT DITCH SEE DETAIL 47E

REMOVE

REMOVE

REMOVE

REMOVE EXISTING SILTED MATERIAL FROM ALL BARRELS DDE EST 10 CY

BANK STABILIZATION SEE CULVERT INLET CHANNEL DETAIL 47C 15 TONS CLASS II

SINGLE LINE OF 3'x2'x1' BOULDERS TO MAINTAIN LOW FLOW IN EASTERNMOST BARRELS 5 TONS

CLASS I RIPRAP 2 TON, 6 SY GEO

EXCAVATION DDE 17 CY

SHOT ROCK -Y2- STA. 117+75 TO 128+25, RT SEE DETAIL SHT. 2_-_

FLOODPLAIN BENCH SEE DETAIL 46D

CLASS B RIPRAP 3 TONS, 10 SY GEO

CLASS B RIPRAP 2 TONS, 7 SY GEO

DOUBLE FACED CONCRETE BARRIER TYPE T-2

SHOULDER BERM GUTTER -Y2- STA. 133+32 TO 133+60, RT

10' MULTIUSE PATH W/TIMBER RAIL FENCE

JAMES R. HYDE, TRUSTEE

DAVID R. HYDE

WILLIAM D. IVEY

WILLIAM M. HYDE

JAMES R. HYDE, TRUSTEE

GRAHAM WELL DRILLING, LLC

KICKSTAND LODGE, LTD.

CIRCLE G MANAGEMENT, LLC

MICHAEL CABLE, ET AL

RANDALL WILSON, ET AL

UT TO STECOAH CREEK (SCD)

STECOAH CREEK

POND (PG)

NC 28 (FONTANA RD)

SR 1230 (HYDE TOWN RD)

50' 0' 50' 100'
25'

FOR -Y2- PROFILE, SEE SHEET NO. 75

11/1/2021
X:\NCDOT\A-0009\Hydraulics\PERMITS\Environmental\Drawings\A-0009CC_PSH\A-0009CC_Hyd_prm_psh_47.dgn
User:richard

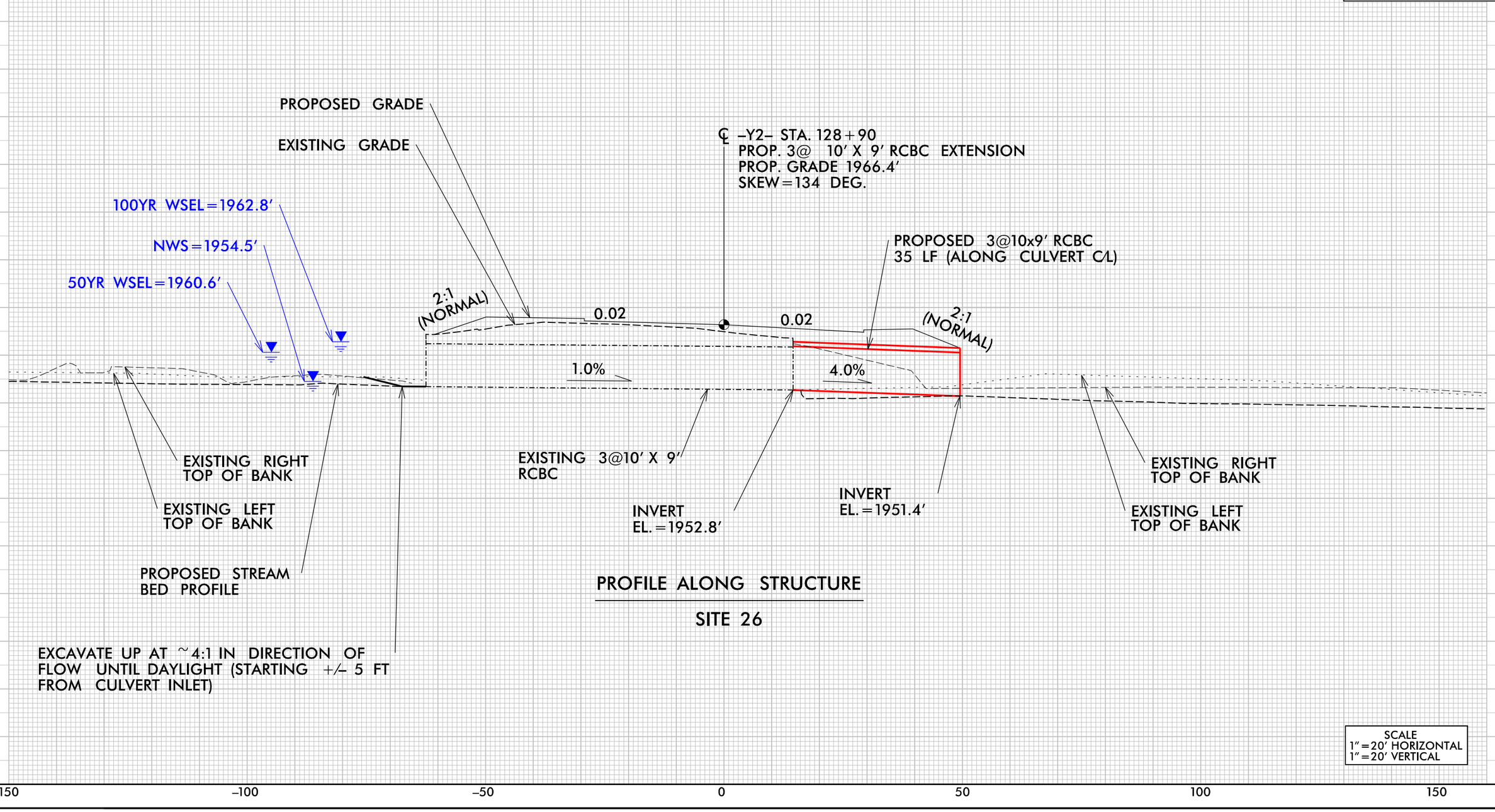
PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 29 OF 34

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

–Y2–
NC 28



PROFILE ALONG STRUCTURE

SITE 26

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	48
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

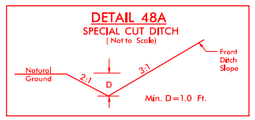
8/17/99

REVISIONS

-Y2- CURVE DATA

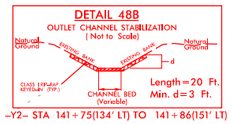
PI Sta 142+30.76	PI Sta 152+17.13
Δ = 1°24'23.1" (LT)	Δ = 5°4'14.50" (RT)
D = 0°28'38.9"	D = 5°21'17.1"
L = 294.56'	L = 1,013.07'
T = 147.29'	T = 548.10'
R = 12,000.00'	R = 1,070.00'
SE = NC	SE = 0.08
DS = 60 MPH	DS = 55 MPH

DETAIL 48A
SPECIAL CUT DITCH
(Not to Scale)



-Y2- STA. 139+00 TO 139+34 RT
SEE PFL FOR DITCH GRADE (0.5%)

DETAIL 48B
OUTLET CHANNEL STABILIZATION
(Not to Scale)

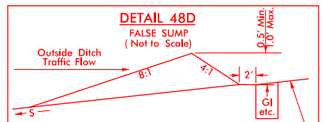


-Y2- STA 141+75(134' LT) TO 141+86(151' LT)

DETAIL 48C
SPECIAL CUT DITCH
(Not to Scale)

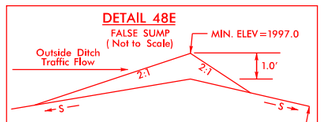
-Y2- STA. 143+50 TO 144+50 RT
SEE XSC FOR DITCH GRADE

DETAIL 48D
FALSE SUMP
(Not to Scale)



-Y2- STA. 145+87 RT
-Y2- STA. 151+10 RT

DETAIL 48E
FALSE SUMP
(Not to Scale)

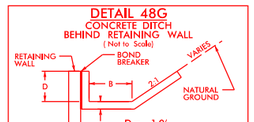


-L- STA. 142+67 RT

DETAIL 48F
TOE PROTECTION
(Not to Scale)

-Y2- STA 139+34 TO 141+09 RT
-Y2- STA 141+20 TO 142+25 RT

DETAIL 48G
CONCRETE DITCH
BEHIND RETAINING WALL
(Not to Scale)



-Y2- STA. 146+60 TO 148+80 RT
(SEE WALL ENVELOPES FOR DITCH GRADE)

NAD 83/2011

PERMIT DRAWING
SHEET 30 OF 34

MATCH LINE STA -Y2- 138+00.00
MATCH TO SHEET NO. 47

MATCH LINE STA -Y2- 152+00.00
MATCH TO SHEET NO. 49

TEMPORARY IMPACTS IN SURFACE WATER

SITE 27

IMPACTS IN SURFACE WATER

154 KICKSTAND LODGE, LTD.

156 T. J. EDWARDS

155 CIRCLE G MANAGEMENT, LLC

157 MICHAEL HOLDER

MICHAEL HOLDER

DO NOT DISTURB

PROP. DRIVE

DO NOT BURY INVERT

OUTLET CHANNEL STABILIZATION
SEE DETAIL 48B
CLASS I RIPRAP
30 TONS, NO GEO

CLASS B RIPRAP
3 TONS, 11 GEOTECH

MAX 1.0% PIPE SLOPE
THIS SIDE OF ELBOW

ROD AND LUG W/ GASKETS (ELBOWS)

CLASS B RIPRAP
3 TONS, 10 SY GEO

CLASS I RIPRAP
4 TONS, 10 GEOTECH

REMOVE 20 LF

REMOVE HW

REMOVE 18" RCP-W

JB w/Slab Lid

JB w/MH

SPECIAL CUT DITCH
SEE DETAIL 48A

FALSE SUMP
SEE DETAIL 48E

FALSE SUMP
SEE DETAIL 48D

CUT TO FILL TRANSISTION
CLASS II RIPRAP
40 TONS, 42 SY GEO

CONC. DITCH
BEHIND
RETAINING WALL
SEE DETAIL 48G

CLASS B RIP-RAP
3 TONS, 7 SY GEO

TOE PROTECTION
SEE DETAIL 48F
CLASS I RIPRAP
57 TONS, 80 SY GEO

TOE PROTECTION
SEE DETAIL 48F
CLASS I RIPRAP
80 TONS, 112 SY GEO

SPECIAL CUT DITCH
SEE DETAIL 48C
CLASS B RIPRAP
45 TONS, 100 CY GEO

PROP. RETAINING WALL #41
W/CONCRETE DITCH
BEGIN -Y2- STA. 146+60±
END -Y2- STA. 148+80±

DO NOT DISTURB PUMPS

DO NOT DISTURB SHED

CONTRACTOR TO REPAVE POPLAR HILL DRIVE IF DAMAGED DURING CONSTRUCTION

SHOULDER BERM GUTTER
-Y2- STA. 139+50 TO 142+00, RT

IMPACTS IN SURFACE WATER

TEMPORARY IMPACTS IN SURFACE WATER

15 15 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

50' 0' 50' 100'
25'

FOR -Y2- PROFILE, SEE SHEET NO. 76

11/1/2021
K:\NCDOT\A-0009\Hydraulics\PERMITS_Environmental\Drawings\A-0009CC_PSH\A-0009CC_Hyd_prm_psh_48.dgn
User:richard

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	48
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PERMIT DRAWING
SHEET 31 OF 34

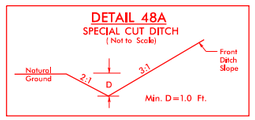
NAD 83/2011

REVISIONS 8/17/99

-Y2- CURVE DATA

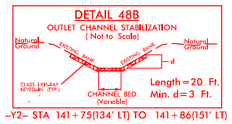
PI Sta 142+30.76	PI Sta 152+17.13
Δ = 1° 24' 23.1" (LT)	Δ = 5° 14' 50.1" (RT)
D = 0° 28' 38.9"	D = 5° 21' 17.1"
L = 294.56'	L = 1,013.07'
T = 147.29'	T = 548.10'
R = 12,000.00'	R = 1,070.00'
SE = NC	SE = 0.08
DS = 60 MPH	DS = 55 MPH

DETAIL 48A
SPECIAL CUT DITCH
(Not to Scale)



-Y2- STA. 139+00 TO 139+34 RT
SEE PFL FOR DITCH GRADE (0.5%)

DETAIL 48B
OUTLET CHANNEL STABILIZATION
(Not to Scale)

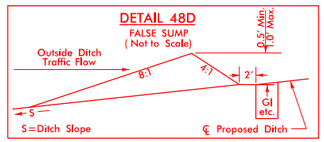


-Y2- STA 141+75(134' LT) TO 141+86(151' LT)

DETAIL 48C
SPECIAL CUT DITCH
(Not to Scale)

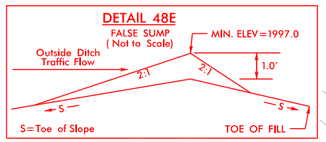
-Y2- STA. 143+50 TO 144+50 RT
SEE XSC FOR DITCH GRADE

DETAIL 48D
FALSE SUMP
(Not to Scale)



-Y2- STA. 145+87 RT
-Y2- STA. 151+10 RT

DETAIL 48E
FALSE SUMP
(Not to Scale)

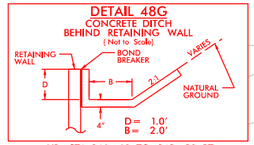


-L- STA. 142+67 RT

DETAIL 48F
TOE PROTECTION
(Not to Scale)

-Y2- STA 139+34 TO 141+09 RT
-Y2- STA 141+20 TO 142+25 RT

DETAIL 48G
CONCRETE DITCH
BEHIND RETAINING WALL
(Not to Scale)



-Y2- STA. 146+60 TO 148+80 RT
(SEE WALL ENVELOPES FOR DITCH GRADE)

MATCH LINE STA -Y2- 138+00.00
MATCH TO SHEET NO. 47

MATCH LINE STA -Y2- 152+00.00
MATCH TO SHEET NO. 49

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

SITE 27

154 KICKSTAND LODGE, LTD.

156 T. J. EDWARDS

155 CIRCLE G MANAGEMENT, LLC

157 MICHAEL HOLDER

DO NOT DISTURB

DO NOT BURY INVERT

OUTLET CHANNEL STABILIZATION
SEE DETAIL 48B
CLASS I RIPRAP
30 TONS, NO GEO

CLASS B RIPRAP
3 TONS, 11 GEOTECH

MAX 1.0% PIPE SLOPE THIS SIDE OF ELBOW

ROD AND LUG WITH GASKETS (ELBOWS)

PROP. DRIVE

REMOVE 20 LF

CLASS B RIPRAP
3 TONS, 10 SY GEO

CLASS I RIPRAP
4 TONS, 10 GEOTECH

REMOVE HW

REMOVE 16" RCP-IV

JB w/Slab Lid

JB w/MH

FALSE SUMP
SEE DETAIL 48E

FALSE SUMP
SEE DETAIL 48D

CUT TO FILL TRANSITION
CLASS II RIPRAP
40 TONS, 42 SY GEO

TOE PROTECTION
SEE DETAIL 48F
CLASS I RIPRAP
57 TONS, 80 SY GEO

CLASS B RIP-RAP
3 TONS, 7 SY GEO

SPECIAL CUT DITCH
SEE DETAIL 48A

SPECIAL CUT DITCH
SEE DETAIL 48C
CLASS B RIPRAP
45 TONS, 100 CY GEO

CONC. DITCH
BEHIND
RETAINING WALL
SEE DETAIL 48G

PROP. RETAINING WALL #41
W/CONCRETE DITCH
BEGIN -Y2- STA. 146+60±
END -Y2- STA. 148+80±

DO NOT DISTURB PUMPS

DO NOT DISTURB SHED

TOE PROTECTION
SEE DETAIL 48F
CLASS I RIPRAP
80 TONS, 112 SY GEO

SHOULDER BERM GUTTER
-Y2- STA. 139+50 TO
142+00, RT

CONTRACTOR TO REPAVE POPLAR HILL DRIVE IF DAMAGED DURING CONSTRUCTION

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

50' 0' 50' 100'
25'

FOR -Y2- PROFILE, SEE SHEET NO. 76

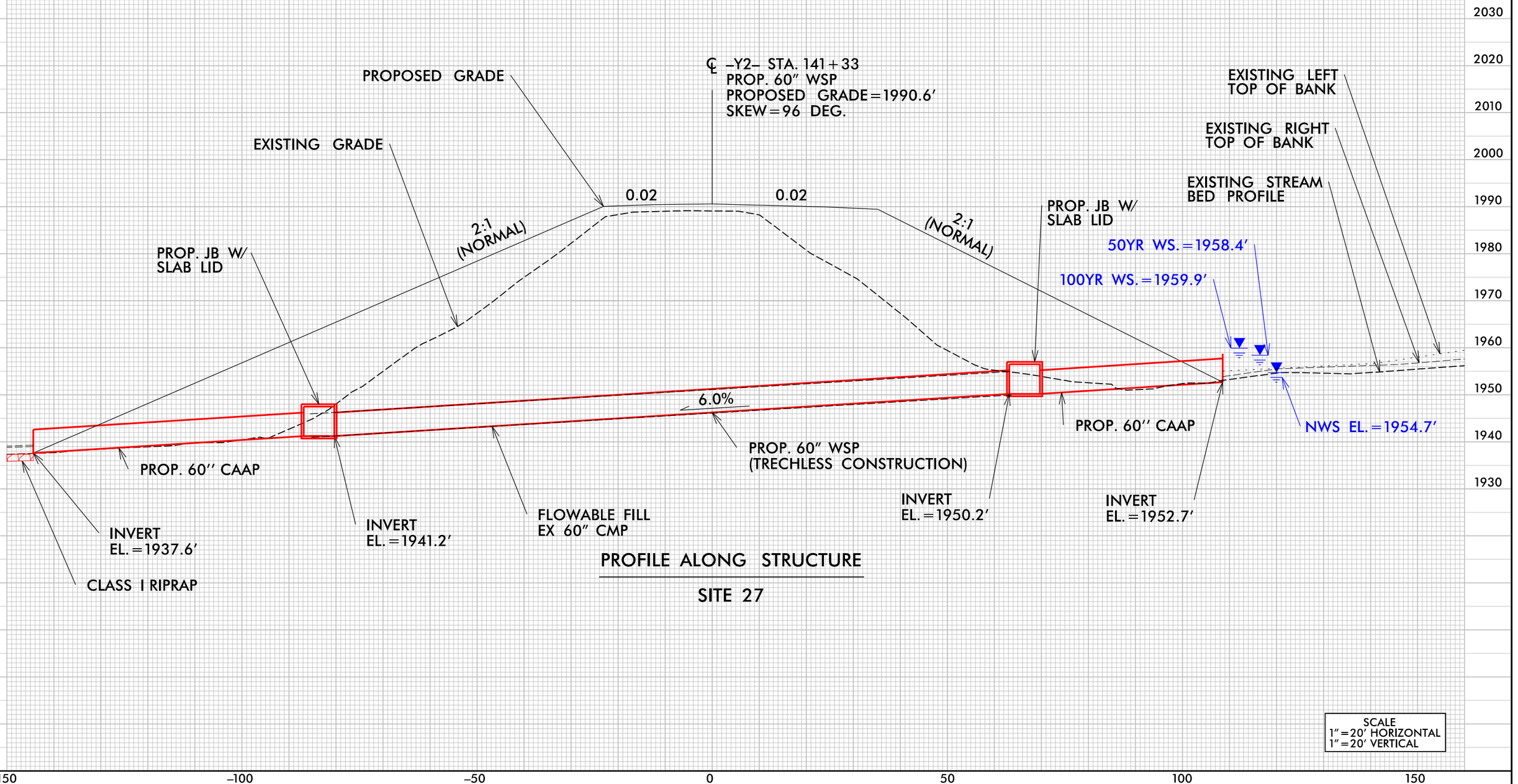
PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PERMIT DRAWING
SHEET 32 OF 34

–Y2–
NC 28



PROFILE ALONG STRUCTURE

SITE 27

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	NRTR Map ID	NCSAM / NCWAM Rating	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 Mitigable (ft)	Existing Channel Impacts Permanent Non-Mitigable (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 419+21 to 419+65 LT	24" CSP/Berm Ditch	SBB							< 0.01	< 0.01	38		54	
1	-L- 419+21 to 419+44 LT	Impacts to Wetland	WBB	Medium			< 0.01		< 0.01						
2	-L- 458+23 to 458+31 LT	36" CMP Inlet	SBC								< 0.01			69	
2	-L- 458+27 to 458+53 RT	36" CMP Outlet	SBC							< 0.01	< 0.01	18		17	
3	-L- 467+36 to 467+47 LT	36" CMP Inlet	Carver Branch	Low							< 0.01			16	
3	-L- 468+02 to 468+28 RT	36" CMP Outlet	Carver Branch	Low						< 0.01	< 0.01	12		20	
4	-Y2- 13+50 to 13+73 RT	36" CMP Inlet	Johnson Gap Branch								< 0.01			27	
4	-Y2- 12+79 to 13+07 LT	36" CMP Outlet	Johnson Gap Branch							< 0.01	< 0.01		12	24	
4	-Y2- 13+06 to 13+24 LT	36" CMP Outlet	SEY								< 0.01			18	
4	-Y2- 12+60 to 12+84 LT	36" CMP Outlet	SEZ								< 0.01			24	
5	-Y2- 14+46 to 15+25 RT	36" RCP Outlet	Johnson Gap Branch								< 0.01			83	
6	-Y2- 23+52 to 23+92 RT	Roadway	SBG							< 0.01		43			
7	-Y2- 26+08 to 27+35 LT	Roadway	WBV	Low	< 0.01			< 0.01	0.02						
8	-Y2- 27+79 to 28+01 RT	48" CSP Inlet	Carver Branch	Low						< 0.01	< 0.01	22		21	
8	-Y2- 27+32 to 27+47 LT	42" & 54" Outlet Channel	Carver Branch	Low						< 0.01	< 0.01	47		11	
9	-Y2- 35+91 to 36+06 RT	48" RCP Inlet	SBC							< 0.01	< 0.01	50	8	19	
9	-Y2- 35+16 to 35+53 LT	48" CSP Outlet	SBC							< 0.01	< 0.01	14		14	
10	-Y2- 44+52 to 45+01 LT	54" CAAP Outlet Channel	SBD							< 0.01	< 0.01		23	26	
11	-Y2- 46+92 to 47+00 RT	Channel Change	SFT							< 0.01	< 0.01	4		16	
11	-Y2- 46+67 to 49+75 RT	Channel Change	SFP	Medium						0.04	< 0.01	288		29	
11	-Y2- 49+06 to 49+87 RT	48" CSP Inlet	SFH							< 0.01	< 0.01	37	20	38	
11	-Y2- 50+88 to 53+14 LT	42" CSP / Channel Change	SFH							0.03	< 0.01	240		16	
12	-Y2- 57+08 to 59+56 RT	Roadway/Toe Protection	SFM							< 0.01		191			
12	-Y2- 60+02 to 60+23 LT	24" CMP Outlet	SFM							< 0.01	< 0.01	16		8	
13	-Y2- 59+10 to 59+95 LT	Roadway Fill	SFN							< 0.01	< 0.01	72		15	
14	-Y2- 66+30 to 66+49 LT	6'x6'x RCBC Inlet	Carver Branch	Low							< 0.01			19	
SHEET TOTALS*:					< 0.01					0.11	0.05	1092	63	584	

*Rounded totals are sum of actual impacts

**Notes:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
11/1/2021
GRAHAM
A-0009CC
32572.1.15

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	NRTR Map ID	NCSAM / NCWAM Rating	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 Mitigable (ft)	Existing Channel Impacts Permanent Non-Mitigable (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
14	-Y2- 67+12 to 67+69 RT	6'x6' RCBC Outlet	Carver Branch	Low						0.01	< 0.01	84		20	
15	-Y2- 68+25 to 68+35 LT	Stream Restoration	SBJ								< 0.01			20	
15	-Y2- 67+66 to 67+91 RT	66" CAAP	SBJ							< 0.01		67			
16	-Y2- 75+85 to 76+04 LT	42" RCP Inlet	SBN								< 0.01			22	
17	-Y2- 75+67 to 75+89 RT	Construction Easement	SBP								< 0.01			21	
17	-Y2- 75+89 to 80+17 RT	Floodplain Bench	SBO							< 0.01	0.02		6	419	
17	-Y2- 79+70 to 80+15 RT	Floodplain Bench	Carver Branch	Low							< 0.01			50	
18	-Y3- 11+91 to 12+04 LT	18" RCP Outlet Ditch	Edwards Branch								< 0.01			16	
19	-Y2- 97+95 to 99+45 LT	30" RCP & Channel Change	SBV							< 0.01	< 0.01	67	77	42	
20	-Y2- 98+02 to 99+22 RT	2@6'x6' RCBC	Carver Branch	Low						< 0.01	< 0.01		50	20	
21	-Y2- 99+73 to 99+85 LT	1@12'x5' RCBC Inlet	Edwards Branch							< 0.01	< 0.01	30	24	3	
21	-Y2- 99+89 to 99+94 RT	1@12'x5' RCBC Outlet	Edwards Branch							< 0.01			10		
21	-Y2- 99+71 to 100+13 RT	Floodplain Bench Const.	Carver Branch	Low						< 0.01	< 0.01		23	20	
22	-Y2- 109+70 to 112+01 LT&RT	Roadway/Channel Change	SCB							0.01	< 0.01	209		12	
22	-Y2- 109+60 to 111+38 LT	Roadway/Channel Change	WBR	Medium	0.07		< 0.01		0.01						
22	-Y2- 109+73 to 112+43 RT	Bank Stabilization	Stecoah Creek							< 0.01	< 0.01		31	20	
23	-Y2- 119+92 to 122+49 LT	Rock Fill in Pond	PH							0.06	0.06				
24	-Y2- 123+32 to 125+51 LT	Channel Change	SCD							0.02	< 0.01	226		66	
25	-Y2- 122+95 to 126+55 RT	Floodplain Bench Const.	Stecoah Creek								0.04			361	
26	-Y2- 128+02 to 128+66 RT	Bank Stabilization	Stecoah Creek							0.01	0.01		31	31	
26	-Y2- 128+93 to 130+43 LT	3@10'x9' RCBC Outlet	Stecoah Creek							0.04	0.03	35	54	65	
27	-Y2- 141+09 to 141+21 RT	60" CAAP Inlet	SDT							0.01	< 0.01	43	9	16	
27	-Y2- 141+25 to 141+97 LT	60" CAAP Outlet	SDT							0.02	< 0.01	91		11	
SHEET TOTALS*:					0.07		< 0.01		0.01	0.22	0.20	852	315	1235	
PROJECT TOTALS*:					0.07	0.00	0.01	0.01	0.04	0.33	0.25	1944	378	1819	

*Rounded totals are sum of actual impacts

**Notes:

NC DEPARTMENT OF TRANSPORTATION
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