

09/08/09

See Combined Sheet 1-A for Index of Sheets
See Combined Sheet 1-B for Conventional Symbols
See Sheets 1-C thru 1-D for Survey Control Sheets

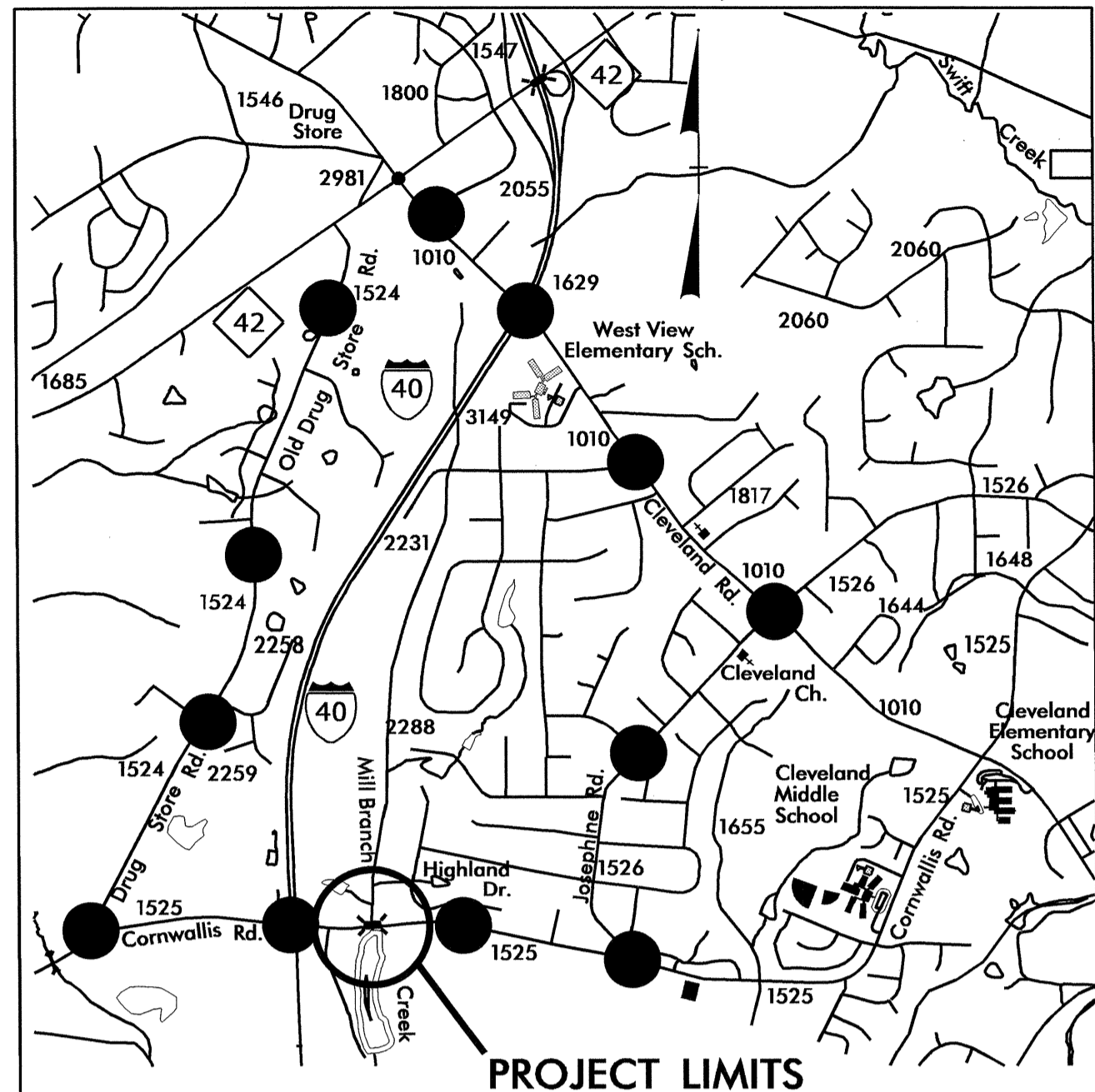
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

LOCATION: BRIDGE NO. 326 OVER MILL BRANCH CREEK ON SR 1525 (CORNWALLIS ROAD)
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4772	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38544.1.1	BRZ-1525(9)	P.E.	
38544.2.1	BRZ-1525(9)	R.W.	
33772.3.1	BRZ-1525(5)	CONST.	

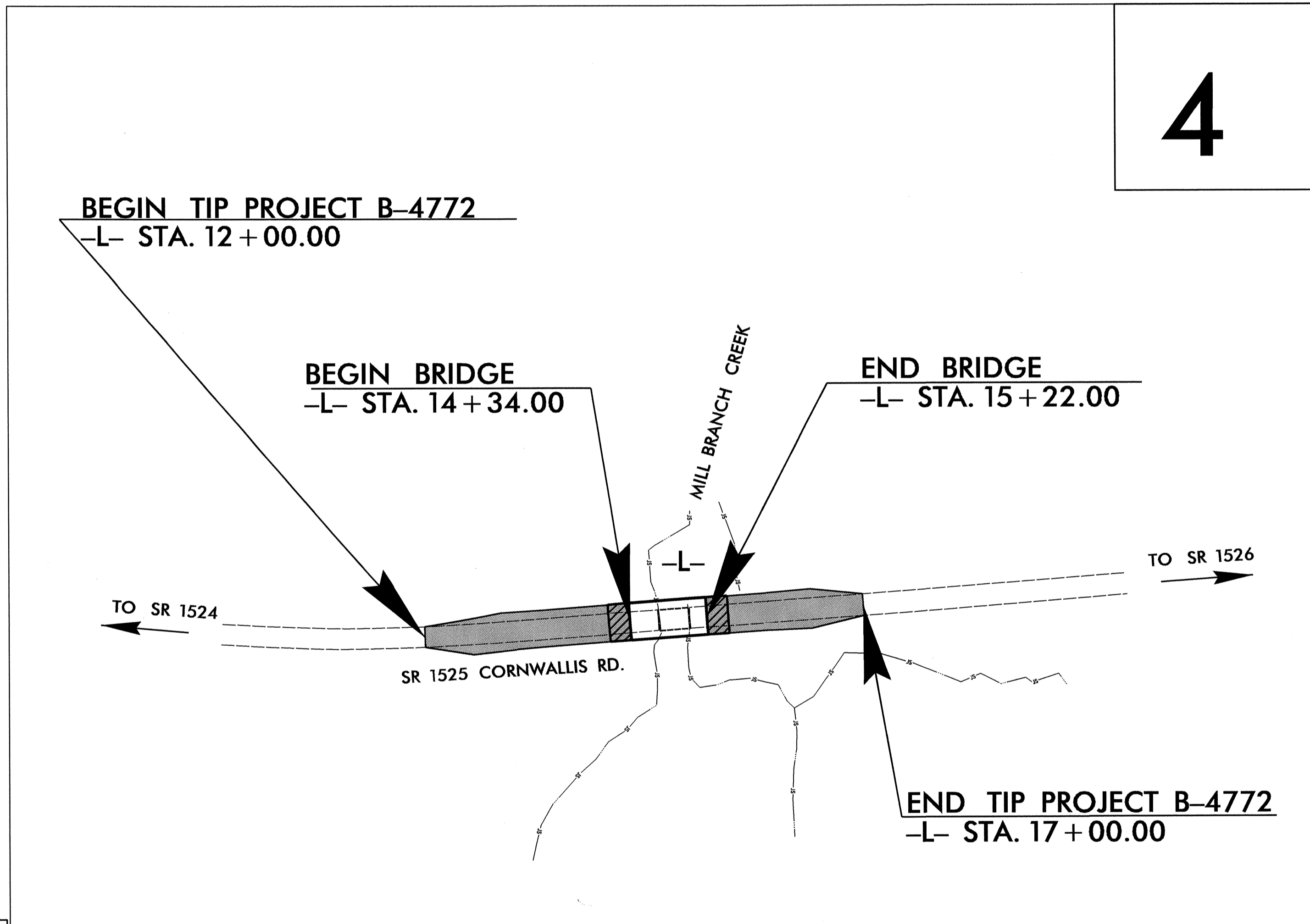
TIP PROJECT: B-4772



VICINITY MAP

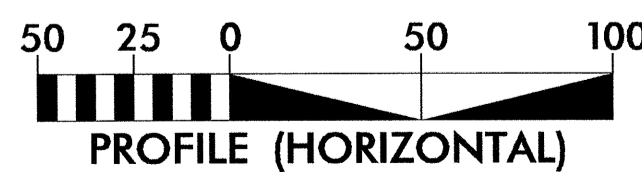
OFF-SITE DETOUR

4



** DESIGN EXCEPTION REQUIRED FOR VERTICAL STOPPING SIGHT DISTANCE, MAXIMUM GRADE AND SAG VERTICAL CURVE K VALUE.

GRAPHIC SCALES



DESIGN DATA

ADT 2013 = 3,860
 ADT 2033 = 7,715
 DHV = 12 %
 D = 60 %
 T = 6 % *
 V = 60 MPH **
 *(TTST 1% + DUAL 5%)
 FUNC. CLASS = LOCAL RURAL
 TIER = SUBREGIONAL

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4772 = 0.078 MI
 LENGTH OF STRUCTURE TIP PROJECT B-4772 = 0.017 MI
 TOTAL LENGTH TIP PROJECT B-4772 = 0.095 MI

Prepared in the Office of:
DIVISION OF HIGHWAYS
 1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

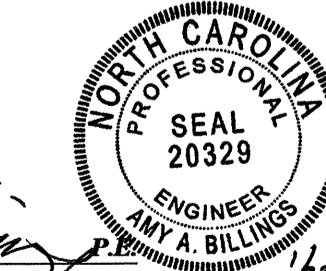
RIGHT OF WAY DATE:
 MAY 7, 2012

LETTING DATE:
 APRIL 16, 2013

BRENDA MOORE, PE
 PROJECT ENGINEER

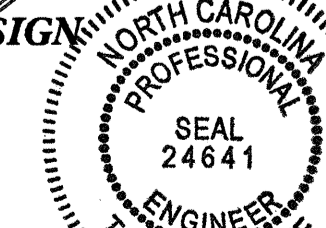
TATIA L. WHITE, PE
 PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

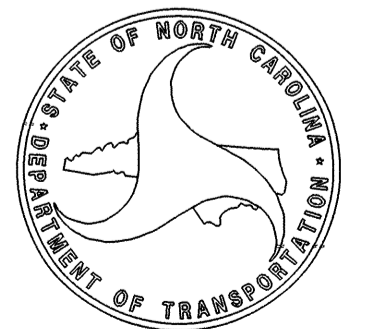


Amy A. Billings
 SIGNATURE

ROADWAY DESIGN ENGINEER



Tatia L. White
 SIGNATURE



I7-JAN-2013 14:29
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\$\$\$\$USERNAME\$\$\$\$

CONTRACT: C203088

6/2/09

SURVEY CONTROL SHEET B-4772

PROJECT REFERENCE NO.	SHEET NO.
B-4772	1-C
Location and Surveys	

BASELINE DATA

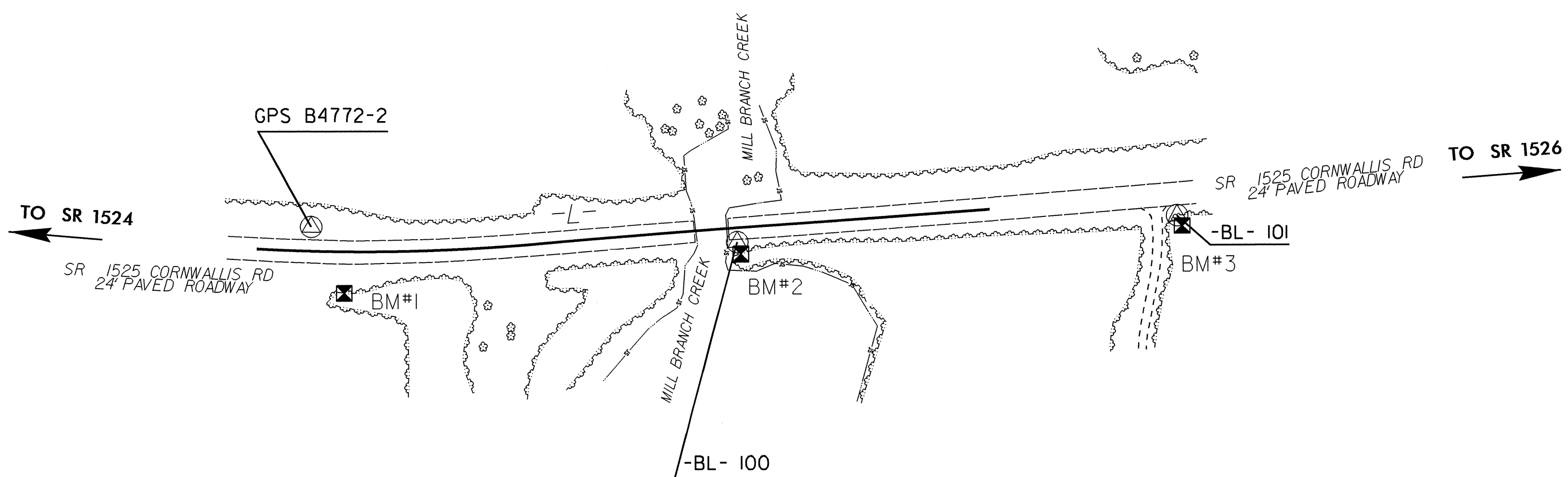
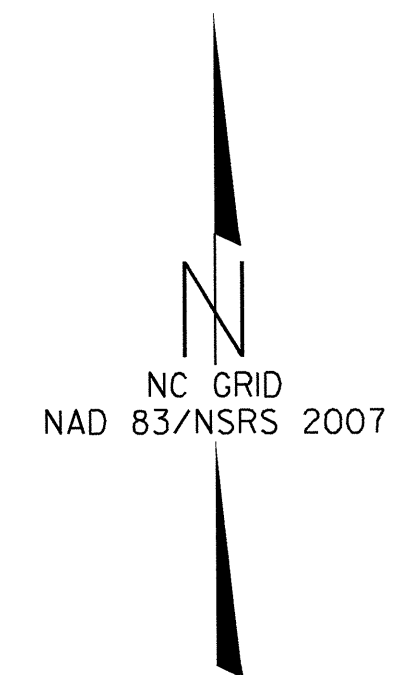
BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
2		GPS B4772-2	664037.5790	2126683.4070	241.63	10+57.39	26.17 LT
100		BL-100	664020.2060	2127136.3710	211.37	15+10.89	15.24 RT
101		BL-101	664047.4120	2127604.2230	225.08	OUTSIDE PROJECT LIMITS	

BENCHMARK DATA

1229 ELEVATION = 241.97
 N 663967 E 2126718
 L STATION 10+94.00 44 RIGHT
 BM #1 RR SPIKE IN BASE OF 8" PINE

1092 ELEVATION = 210.17
 N 664008 E 2127140
 L STATION 15+14.00 28 RIGHT
 BM #2 RR SPIKE IN BASE OF 15" BIRCH

1097 ELEVATION = 226.58
 N 664036 E 2127610
 L STATION 10+00.00
 N 88°41'21.89" E DIST 984.42
 BM #3 RR SPIKE IN BASE OF 8" OAK



NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B4772_LS_CONTROL.TXT
- SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- ⊗ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS B4772-2"

WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
 NORTHING: 664037.579(ft) EASTING: 2126683.407(ft)
 ELEVATION: 241.63(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988159

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS B4772-2" TO -L- STATION 10+00.00 IS
 N 76°07'53" E 91.92 (ft.)

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

NOTE: DRAWING NOT TO SCALE

17-JAN-2013 11:47 AM
 RA: YOGESHVANKAR
 PROJECT: 0620081502

SURVEY CONTROL SHEET B-4772

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+00.00	-30.00	664042.2219	2126824.0624
L	12+00.00	30.00	663982.2693	2126826.4479
L	12+00.00	-50.00	664062.2061	2126823.2673
L	12+00.00	50.00	663962.2852	2126827.2430
L	12+98.92	50.00	663968.6929	2126928.3035
L	12+98.92	-50.00	664068.3158	2126919.6272
L	15+91.99	-50.00	664090.9648	2127212.7965
L	15+91.99	50.00	663991.1914	2127219.5247
L	16+81.61	-50.00	664097.1552	2127302.0044
L	17+00.00	30.00	664018.6762	2127326.0693
L	17+00.00	50.00	663998.7281	2127327.5086

PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+00.00	-65.00	664077.1941	2126822.6699
L	12+98.92	-65.00	664083.2591	2126918.3247
L	13+55.00	50.00	663973.4384	2126983.9971
L	13+55.00	70.00	663953.5064	2126985.6580
L	13+60.00	-65.00	664088.4573	2126979.4512
L	13+60.00	-75.00	664098.4230	2126978.6242
L	13+80.00	-70.00	664095.0890	2126999.0683
L	13+80.00	-50.00	664075.1550	2127000.6908
L	13+80.00	-75.00	664100.0721	2126998.6564
L	13+95.00	70.00	663956.7606	2127025.3391
L	13+95.00	50.00	663976.6958	2127023.7305
L	14+20.00	-70.00	664098.3056	2127039.1220
L	14+20.00	-65.00	664093.3210	2127039.5146
L	14+20.00	-50.00	664078.3675	2127040.6953
L	15+91.99	-65.00	664105.9307	2127211.7862
L	16+81.61	-65.00	664112.1172	2127300.9368

ALIGNMENT

TYPE	STATION	NORTH	EAST
PC	10+00.00	664013.8152	2126625.3369
PRC	12+98.92	664018.5043	2126923.9653
PRC	15+91.99	664041.0781	2127216.1606
PT	17+81.14	664054.5809	2127404.8326
POT	17+81.14	664054.5809	2127404.8326

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)

THE FILES TO BE FOUND ARE AS FOLLOWS:
B4772_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

Ⓢ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS B4772-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 664037.579(±) EASTING: 2126683.407(±)
ELEVATION: 241.63(±)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988159
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS B4772-2" TO -L- STATION 10+00.00 IS
N 76°07'53" E 91.92 (±)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

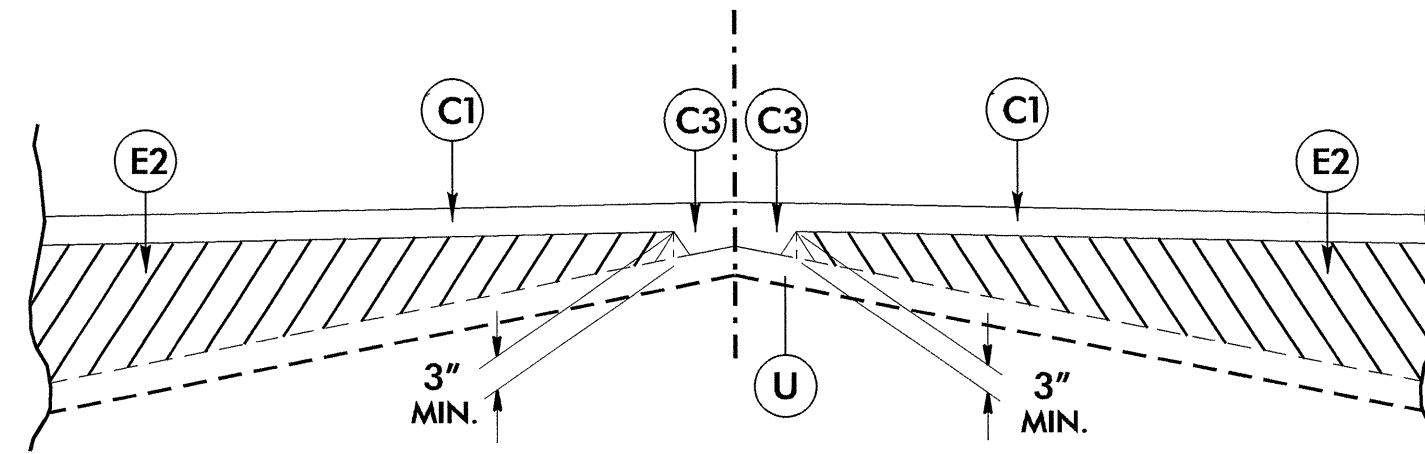
6/2/09

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FINAL PAVEMENT SCHEDULE

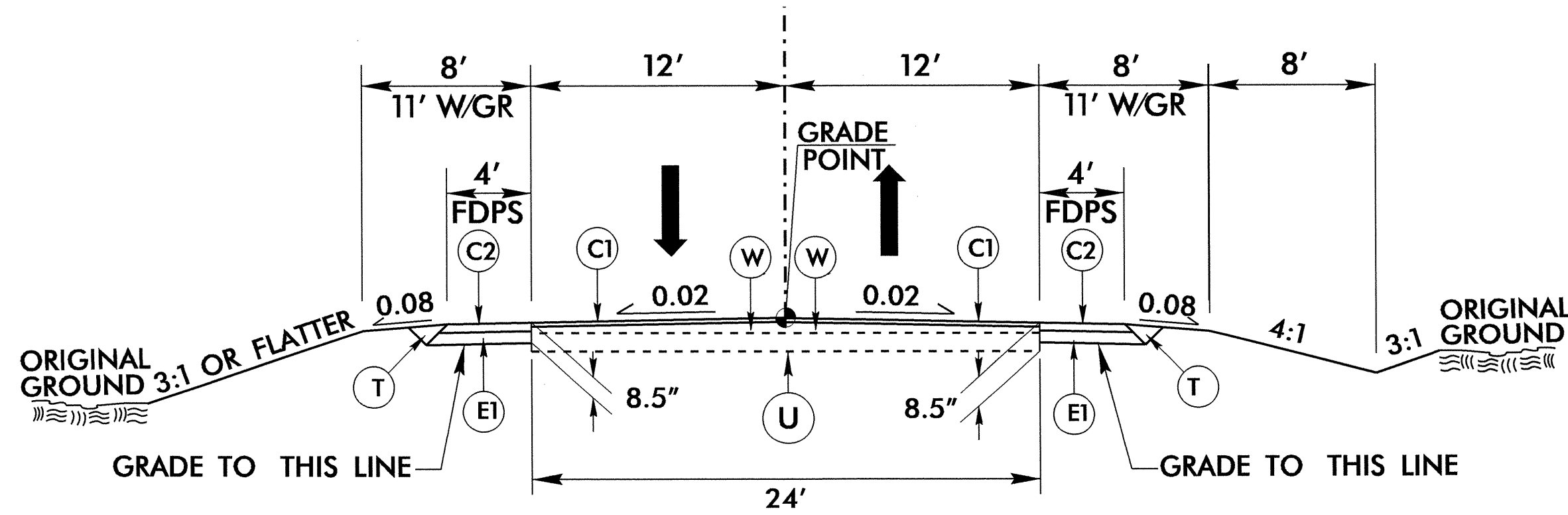
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING MATERIAL

☑ SURVEY



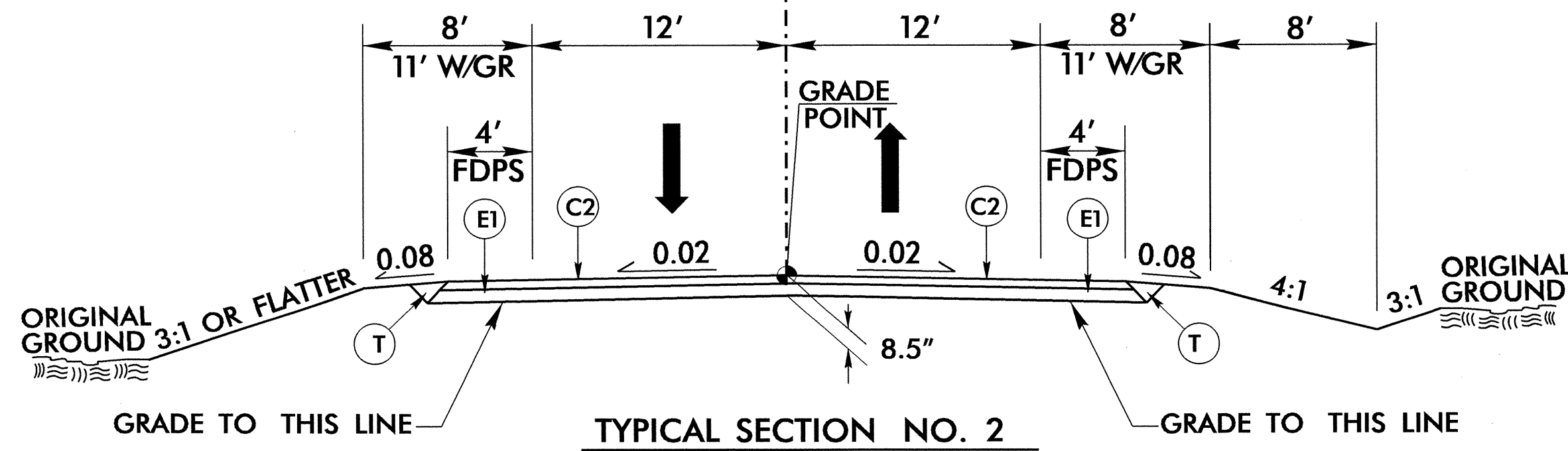
Detail Showing Method of Wedging

☑ -L-



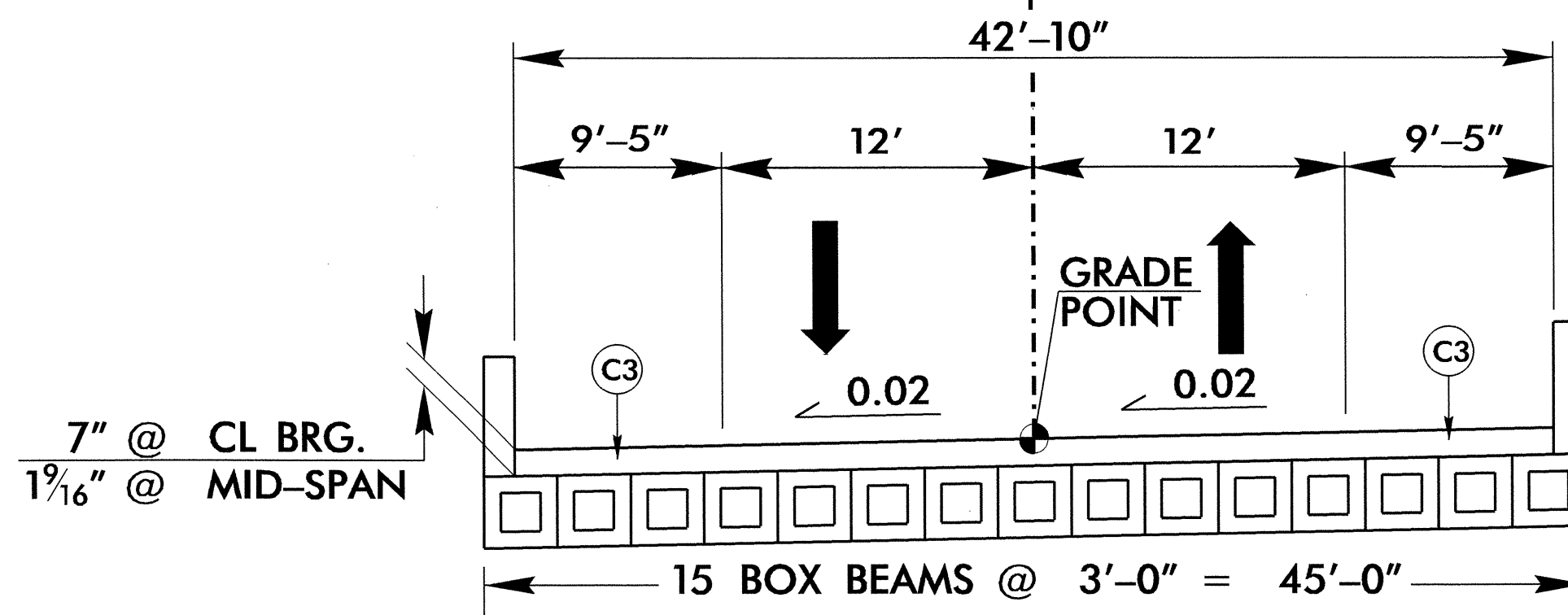
TYPICAL SECTION NO. 1

☑ -L-



TYPICAL SECTION NO. 2

☑ -L-



TYPICAL SECTION NO. 3

PROJECT REFERENCE NO. B-4772	SHEET NO. 2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER TATIA L. WHITE SEAL 24641 1/19/13	HYDRAULICS ENGINEER CHARLES MORRIS SEAL 22898 11/9/13

USE TYPICAL SECTION NO. 1
AT THE FOLLOWING LOCATIONS:

TRANSITION FROM EXISTING AT -L- STA. 12+00.00
TO TYPICAL SECTION NO. 1 AT -L- STA. 12+50.00

-L- STA. 12+50.00 TO -L- STA. 13+50.00
-L- STA. 15+47.00 TO 16+50.00

TRANSITION FROM TYPICAL NO. 1 AT -L- STA. 16+50.00
TO EXISTING AT -L- STA. 17+00.00

USE TYPICAL SECTION NO. 2
AT THE FOLLOWING LOCATIONS:

-L- STA. 13+50.00 TO -L- STA. 14+34.00 (BEGIN BRIDGE)
-L- STA. 15+22.00 (END BRIDGE) TO -L- STA. 15+47.00

USE TYPICAL SECTION NO. 3
AT THE FOLLOWING LOCATIONS:

-L- STA. 14+34.00 (BEGIN BRIDGE) TO -L- STA. 15+22.00 (END BRIDGE)

REVISIONS

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\$\$\$\$\$

8/17/99

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Station	Station	Uncl. Excav.	Embank. +%	Borrow
-L- 12+00.00	-L- 14+34.00 (BEGIN BRIDGE)	389	569	180
SUBTOTALS:		389	569	180
-L- 15+22.00 (END BRIDGE)	-L- 17+00.00	7	643	636
SUBTOTALS:		7	643	636
PROJECT TOTALS:		396	1212	816
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				41
GRAND TOTALS:		396	1212	857
SAY:		410		870

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	Station	Station	LOC. LT/RT/CL	SY
-L-	13+50.00	14+66.39	CL	310.58
-L-	15+02.35	15+47.00	CL	118.15
TOTAL:				428.73
SAY:				430

SHOULDER BERM GUTTER

LOC.	SIDE	BEG. STA.	END STA.	LENGTH
-L-	LT	15+46.00	15+90.72	44.7
TOTAL:				44.7
SAY:				50

Notes:
1) Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.
2) Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing & grubbing, and removal of existing asphalt pavement will be paid for at the lump sum price for "Grading".

UNDERCUT = 250 CY - PER GEOTECH RECOMMENDATIONS DATED: AUGUST 16, 2010
 GEOTEXTILE FOR SOIL STABILIZATION = 250 SY - PER GEOTECH RECOMMENDATIONS DATED: AUGUST 16, 2010
 SELECT GRANULAR MATERIAL = 250 CY - PER GEOTECH RECOMMENDATIONS DATED: AUGUST 16, 2010

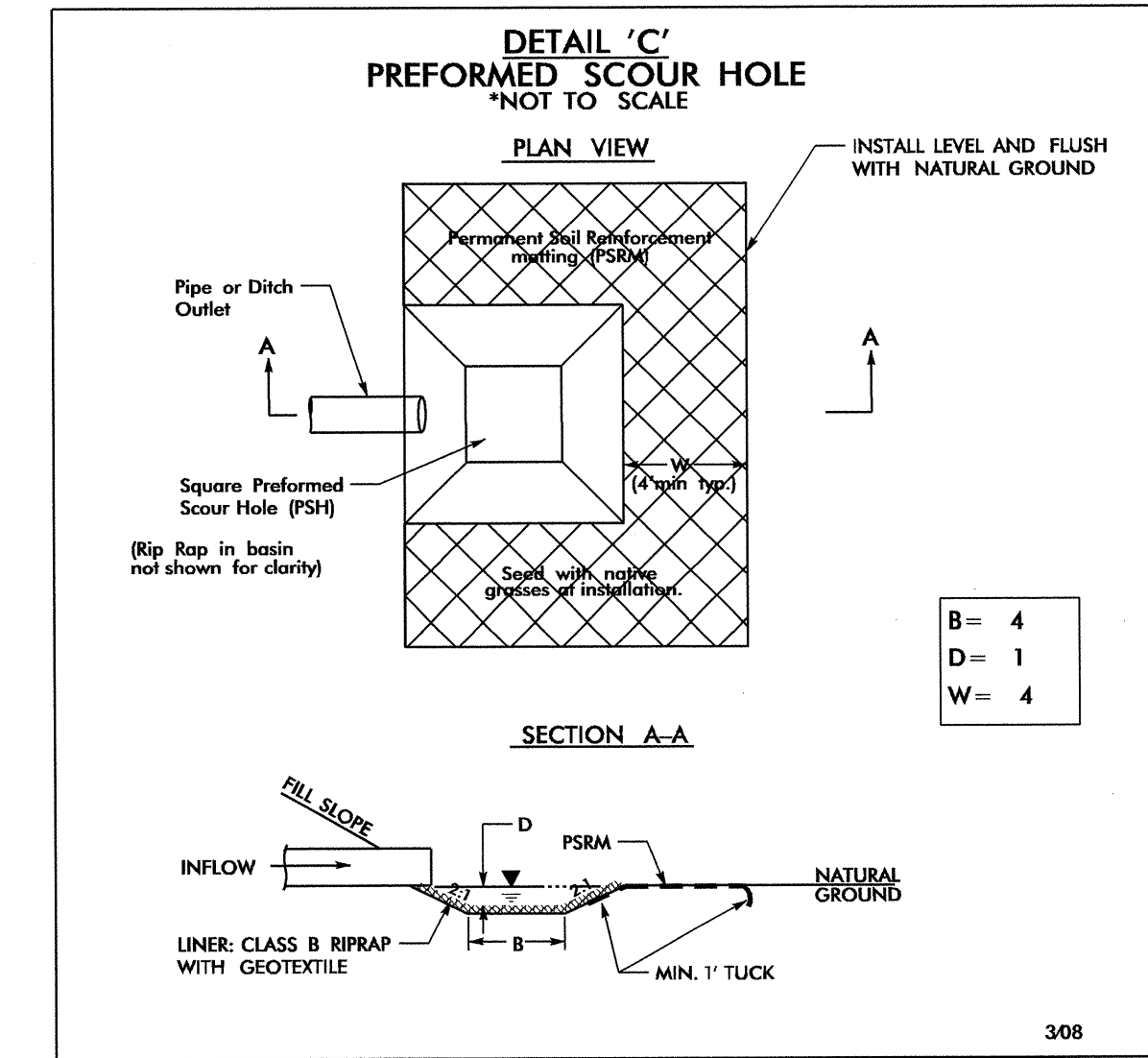
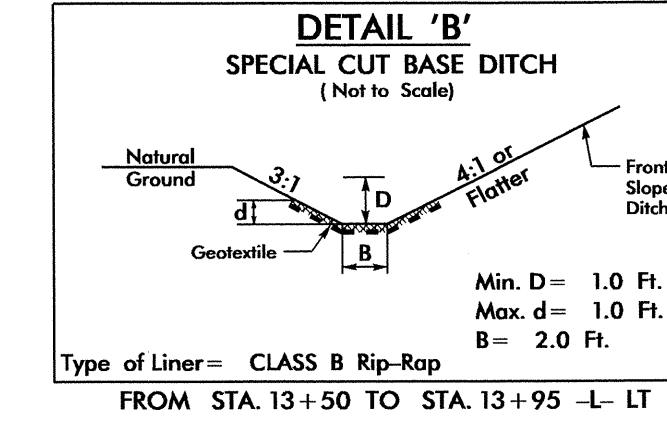
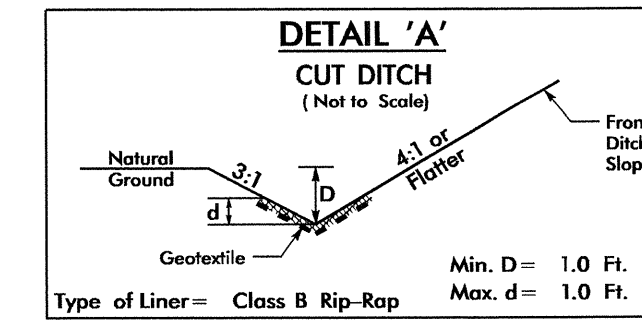
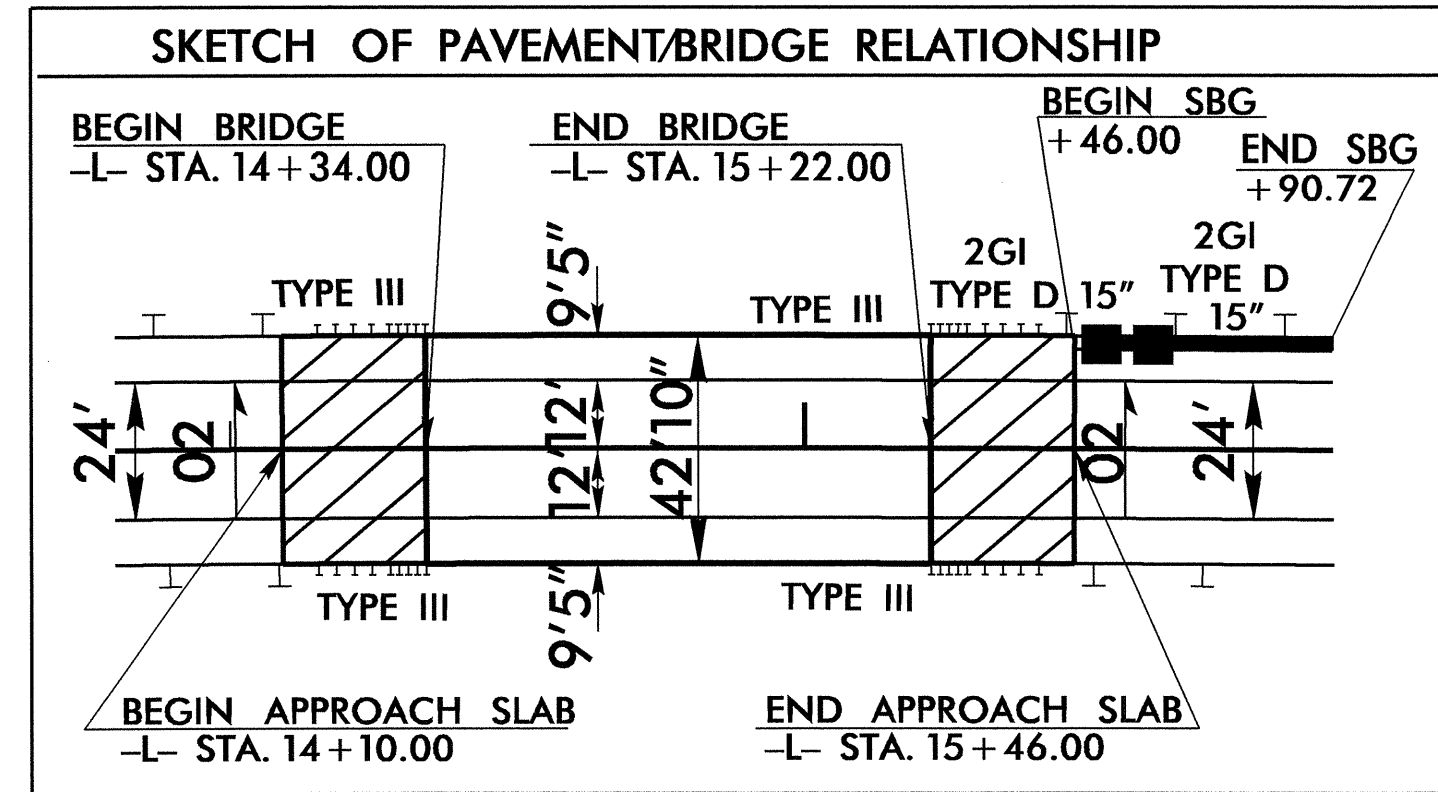
"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
 G = GATING IMPACT ATTENUATOR TYPE 350
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH			WARRANT POINT		"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLAIR LENGTH		W		ANCHORS						IMP. ATTEN. TYPE 350			REMOVE EXISTING GRDRAIL	REMARKS	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	GRAU-350 (TL-3)	XI	TYPE III	M-350	XII	CAT-1	VI MOD	EA	G			NG
-L-	12+90.25	14+34.00	LT	143.75					9.42	12.42					1											
-L-	12+52.75	14+34.00	RT	181.25			BRIDGE		9.42	12.42	50		1		1											
-L-	15+22.00	16+40.75	LT	118.75			BRIDGE		9.42	12.42	50		1		1											
-L-	15+22.00	16+40.75	RT	118.75			BRIDGE		9.42	12.42	50		1		1											
SUBTOTAL:				562.5											4											
ANCHOR DEDUCTIONS:																										
GRAU-350 (TL-3) 4 @ 50.00'				-200.00																						
TYPE III 4 @ 18.75'				-75.00																						
TOTAL:				287.50																						
SAY:				300																						
ADDITIONAL GUARDRAIL POSTS				5																						

RD226349

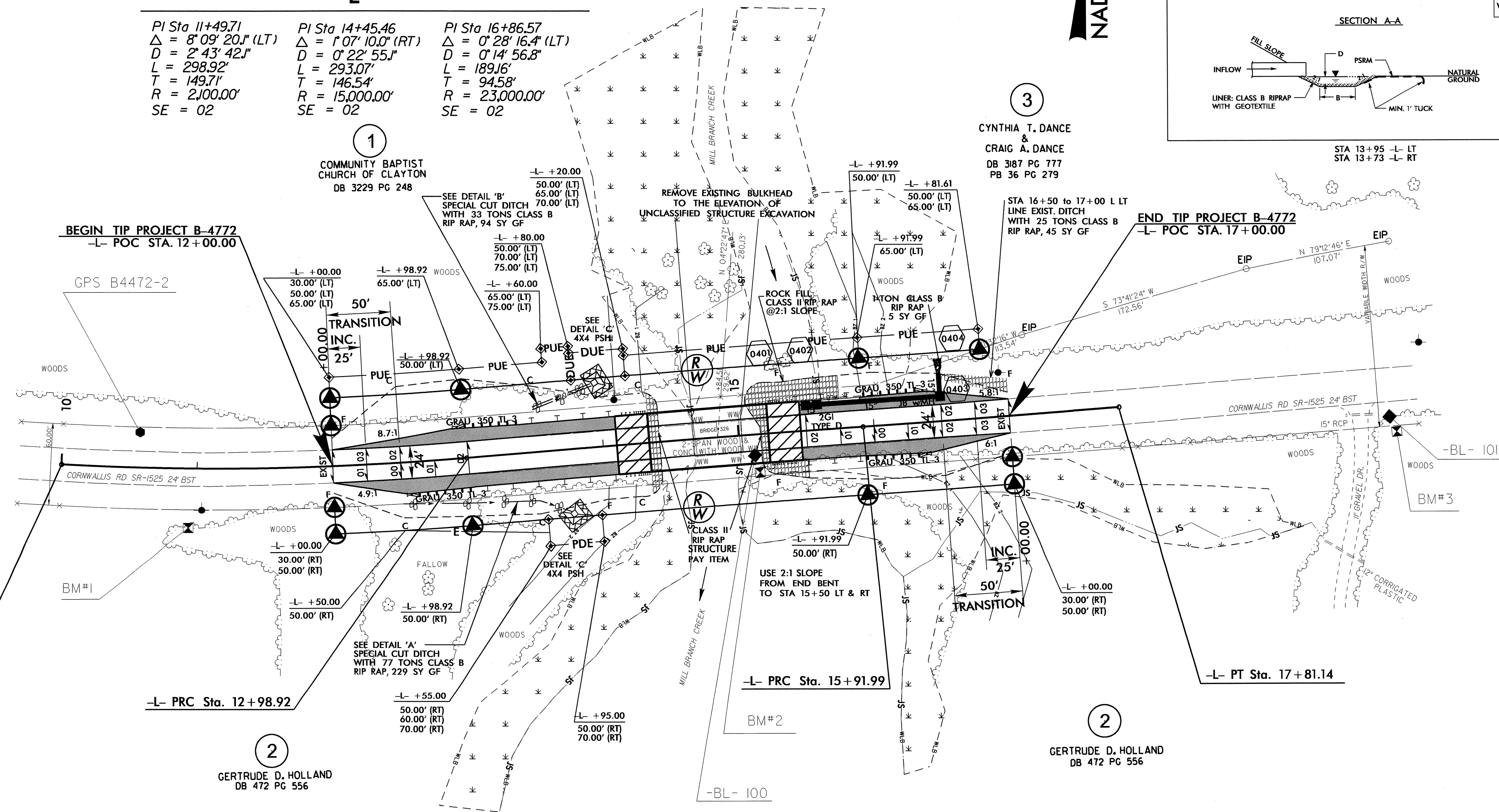
** DESIGN EXCEPTION REQUIRED FOR VERTICAL STOPPING SIGHT DISTANCE, MAXIMUM GRADE AND SAG VERTICAL CURVE K VALUE.



NAD 83/NSRS 2007

-L-

$PI\ Sta\ 11+49.71$ $\Delta = 8^{\circ}09'20.1"\ (LT)$ $D = 2^{\circ}43'42.1"$ $L = 298.92'$ $T = 149.71'$ $R = 2,100.00'$ $SE = 02$	$PI\ Sta\ 14+45.46$ $\Delta = 1^{\circ}07'10.0"\ (RT)$ $D = 0^{\circ}22'55.1"$ $L = 293.07'$ $T = 146.54'$ $R = 15,000.00'$ $SE = 02$	$PI\ Sta\ 16+86.57$ $\Delta = 0^{\circ}28'16.4"\ (LT)$ $D = 0^{\circ}14'56.8"$ $L = 189.16'$ $T = 94.58'$ $R = 23,000.00'$ $SE = 02$
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REVISIONS

NOTE:
 1) SEE SHEET 5 FOR -L- PROFILE
 2) SEE SHEETS S-1 TO S-20 FOR STRUCTURE PLANS

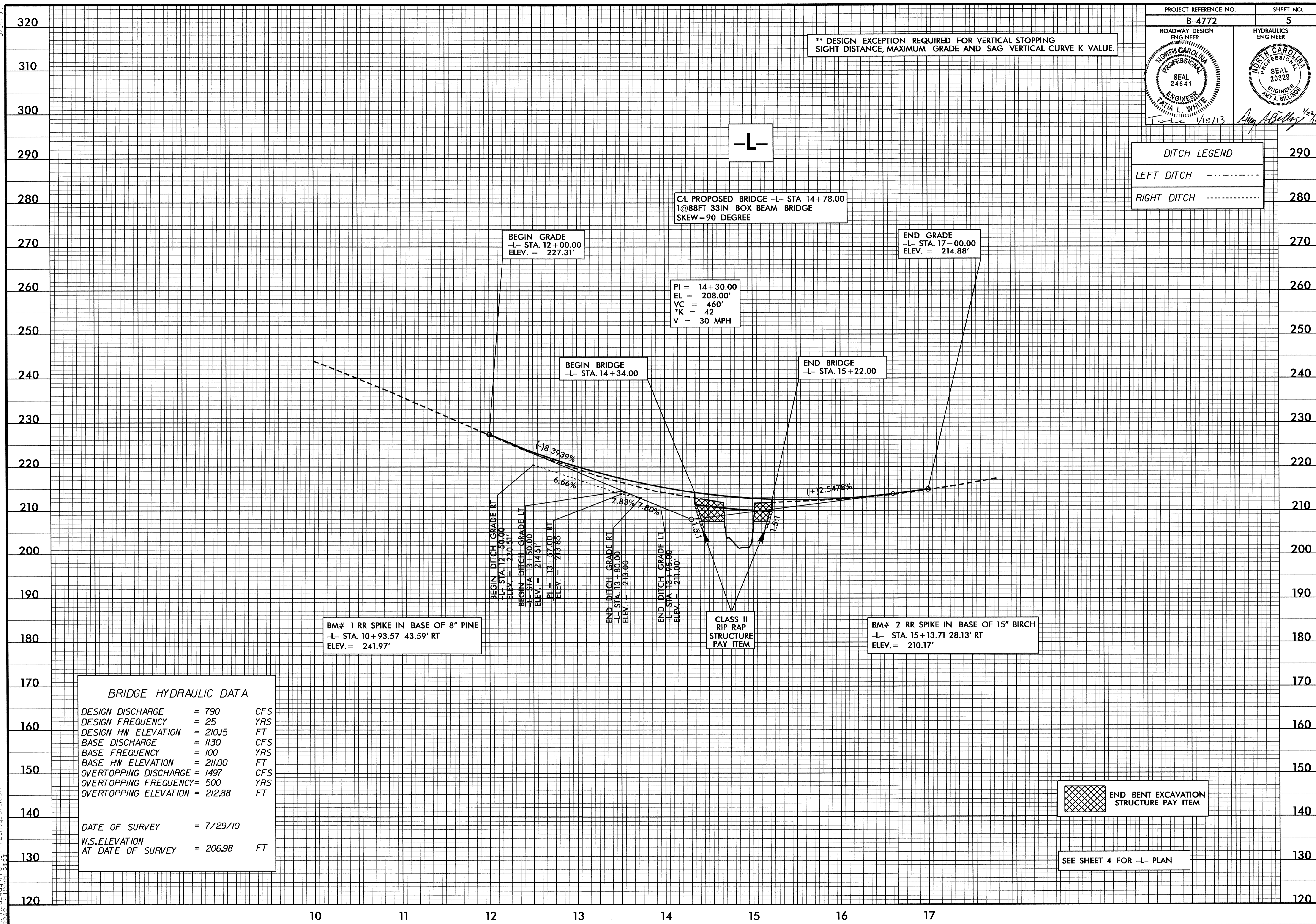
5/14/99

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PROJECT REFERENCE NO. B-4772	SHEET NO. 5
ROADWAY DESIGN ENGINEER TATIA L. WHITE SEAL 24641 1/18/13	HYDRAULICS ENGINEER AMY A. BILLINGS SEAL 20329 1/24/13

** DESIGN EXCEPTION REQUIRED FOR VERTICAL STOPPING SIGHT DISTANCE, MAXIMUM GRADE AND SAG VERTICAL CURVE K VALUE.

DITCH LEGEND	
LEFT DITCH	-----
RIGHT DITCH	-----



PI = 14+30.00
 EL = 208.00'
 VC = 460'
 *K = 42
 V = 30 MPH

CL PROPOSED BRIDGE -L- STA 14+78.00
 1@88FT 33IN BOX BEAM BRIDGE
 SKEW=90 DEGREE

BEGIN GRADE
 -L- STA. 12+00.00
 ELEV. = 227.31'

END GRADE
 -L- STA. 17+00.00
 ELEV. = 214.88'

BEGIN BRIDGE
 -L- STA. 14+34.00

END BRIDGE
 -L- STA. 15+22.00

BM# 1 RR SPIKE IN BASE OF 8" PINE
 -L- STA. 10+93.57 43.59' RT
 ELEV. = 241.97'

BM# 2 RR SPIKE IN BASE OF 15" BIRCH
 -L- STA. 15+13.71 28.13' RT
 ELEV. = 210.17'

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 790	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 210.15	FT
BASE DISCHARGE	= 1130	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 211.00	FT
OVERTOPPING DISCHARGE	= 1497	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 212.88	FT
DATE OF SURVEY	= 7/29/10	
W.S.ELEVATION AT DATE OF SURVEY	= 206.98	FT

END BENT EXCAVATION STRUCTURE PAY ITEM

SEE SHEET 4 FOR -L- PLAN