



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

April 22, 2009

Mr. Brad Shaver
U. S. Army Corps of Engineers
Regulatory Field Office
Post Office Box 1890
Wilmington, NC 28402-1890

Mr. Brian Wrenn
N. C. Division of Water Quality
1650 Mail Service Center
Raleigh, NC 27699-1650

Dear Sirs:

Subject: Revision to the Applications for Nationwide Permits 12, 23, & 33, & CAMA Major Development Permit Request for the Replacement of Bridge No. 9 over Bear Branch on NC 130 in Brunswick County; TIP Project B-4030; Federal Aid Project No. BRSTP-130(3); State Project No.8.1231801.

References: Application for Nationwide Permits 12, 23, & 33, & CAMA dated January 23, 2009
NC Division of Water Quality (DWQ) letter dated February 20, 2009

The purpose of this letter is to revise the referenced application with new drawings and answer questions posed by the US Army Corps of Engineers (USACE) and DWQ.

Please replace the permit drawings and half-size plans with the revised drawings and plans. The major change was relocating the ditch on the north side of the road to the south. The permanent impacts to wetlands increased by 0.01 acre and the impact to the existing channel decreased by 2 feet.

The NC Ecosystem Enhancement Program (EEP) has been sent a revised request form for the extra 0.01 acre of permanent wetland impacts. A copy of the acceptance letter will be provided as soon as it is available.

The answers to the above referenced letter from DWQ are as follows:

1. There will be no in-stream work.
2. A temporary bridge will be used for the detour.
3. Geotextile fabric will be used under the temporary fill for the detour.
4. There is no mechanized clearing proposed for under the temporary fill.
5. Approximately 100 feet² is the area of the riprap at the outlet end of the grassed swale.

A copy of the letter is provided.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-733-3141
FAX: 919-733-9794

WEBSITE: WWW.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

The following questions were posed by the USACE and DWQ concerning the ditch: Is one needed? & Will it be less than 15" deep?

A ditch is needed to provide drainage from the northeast (there is a pipe under each driveway). Also, the ditch will have a minimum depth of 12".

A copy of this revised permit application will be posted on the NCDOT website at: <http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html>.

If you have any questions or need additional information, please contact Chris Underwood at (919) 715-1451.

Sincerely,



per

Gregory J. Thorpe, Ph.D., Environmental Management Director
Project Development and Environmental Analysis

w/attachment

Mr. Brian Wrenn, NCDWQ (4 copies)
Mr. Stephen Lane, NCDCM
Mr. Steve Sollod, NCDCM

W/o attachment (see website for attachments)

Dr. David Chang, P.E., Hydraulics
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Ron Sechler, NMFS
Ms. Anne Deaton, NCDMF
Mr. Vince Rhea, P.E., Planning Engineer
Mr. Mark Staley, Roadside Environmental
Mr. Greg Perfetti, P.E., Structure Design
Mr. Victor Barbour, P.E., Project Services Unit
Mr. H. Allen Pope, P.E., Division 3 Engineer
Mr. Mason Herndon, Division 3 Environmental Officer
Ms. Beth Harmon, EEP
Mr. Todd Jones, NCDOT External Audit Branch

RECEIVED
Division of Highways

FEB 25 2009

Preconstruction

Project Development and
Environmental Analysis Branch



North Carolina Department of Environment and Natural Resources

Division of Water Quality

Coleen H. Sullins

Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

February 20, 2009

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

Dr. Greg Thorpe, Ph.D., Manager
Planning and Environmental Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina, 27699-1548

Subject: Replacement of Bridge No. 9 over Bear Branch on NC 130, Brunswick County
TIP Project B-4030, State Project No. 8.1231801
DWQ Project No. 090072

Dear Mr. Thorpe:

The Division of Water Quality has reviewed your submittal for a 401 Water Quality Certification for the aforementioned project. Review of your application revealed it lacking necessary information required for making an informed permit decision. The permit application was deficient in the following areas:

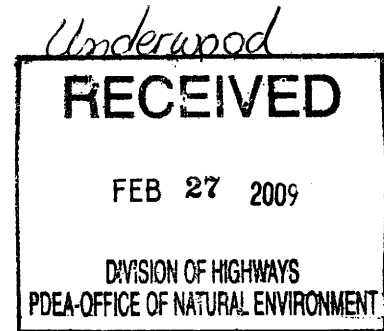
1. Please confirm that there will be no in-stream work on this project, if that is the case.
2. The CE document indicates that the temporary detour will use two 84" corrugated metal pipes for the temporary crossing. The application indicates a temporary bridge. Please confirm that a bridge will be used and address the placement of temporary pilings in the stream, if needed.
3. Will geotextile fabric be placed under the temporary fill material used in the detour? Though this is a fairly common practice, we found no reference to such a proposal in the application.
4. Please explain the need for mechanized clearing of the 5 ft. strip beyond the toe of the temporary fill area. This area, like the area under the temporary fill, should be hand cleared flush with the ground surface, resulting in minimal disturbance to the existing soil.
5. Please provide an approximation of the area of rip-rap to be placed at the outlet end of the grassed swale.

Therefore, pursuant to 15A NCAC 2H .0507(a)(5), we will have to place the permit application on hold until we are supplied the necessary information. You have 21 days to respond in writing with the requested information or notification to this office that the information is forthcoming. If, at the end of the 21 days, this office has not received this information in writing, we will assume you are withdrawing your application and it will be

225 Green St., Suite 714, Fayetteville, NC 28301-5043
Phone: 910-433-3300 \ FAX: 910-486-0707 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org

An Equal Opportunity \ Affirmative Action Employer

One
North Carolina
Naturally



Dr. Greg Thorpe, Ph.D.

February 20, 2009

Page 2

returned. Furthermore, until the information is received by the NC Division of Water Quality, we request (by copy of this letter) that the US Army Corps of Engineers place the permit application on hold.

If you have any questions or require additional information, please contact Ken Averitte at (910) 433-3303.

Sincerely,

Belinda d. Henson
for Coleen H. Sullins
Director

CHS/BH/ka

cc: Brad Shaver, US Army Corps of Engineers, Wilmington Field Office
Mason Herndon, Division 3 Environmental Officer
Travis Wilson, NC Wildlife Resources Commission
Stephen Lane, Division of Coastal Management
Brian Wrenn, DWQ
FRO

Brun.B4030.hold.ltr.doc

5/14/99

STANDARD BASE DITCH (Not to Scale)

SPECIAL LATERAL BASE DITCH (Not to Scale)

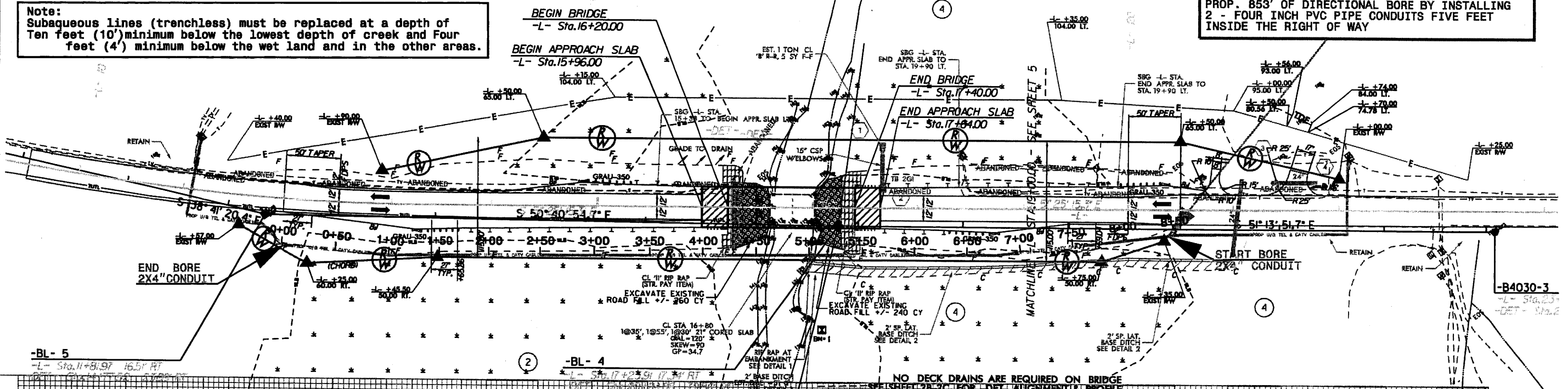
Note:
 The Utility company's Contractor's attention is directed to Section 1550, 102 and 107 of the Standard Specifications concerning the trenchless installation.
 No damage is allowed to the wetlands or stream by the trenchless installation.
 The Contractor's Engineer shall design the installation method and provide on-site oversight.

Utility
 Permit Drawing
 Sheet 1 of 1
 TELEPHONE AND TV CABLE
 BELONGS TO ATMC

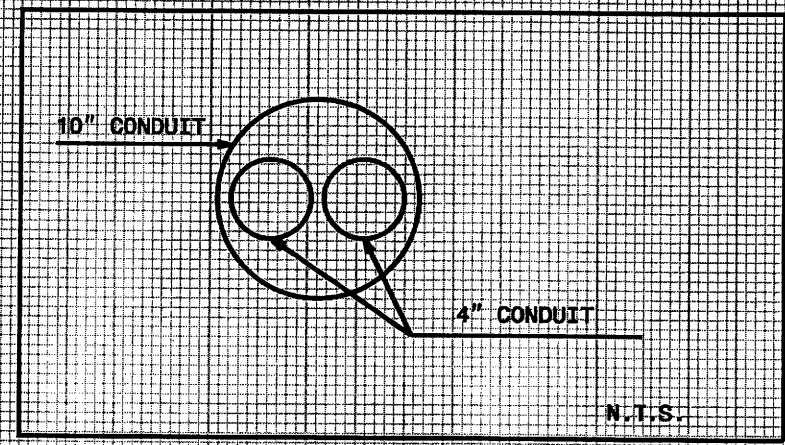
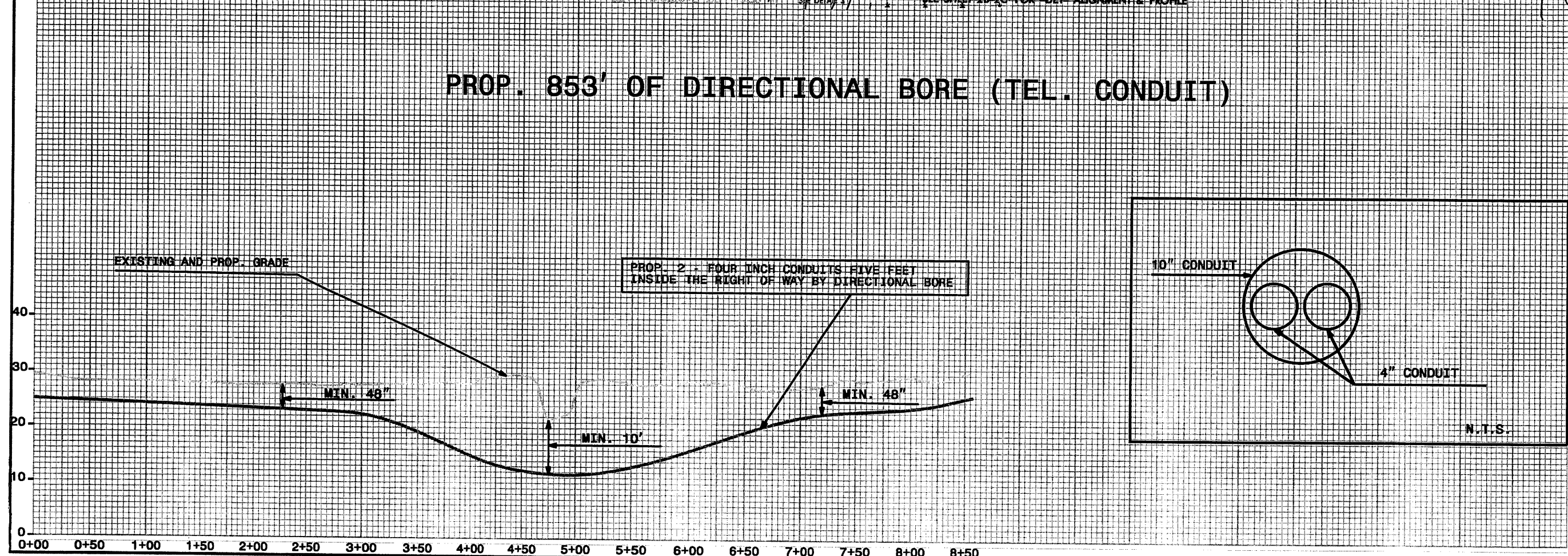
PROJECT REFERENCE NO. B-4030 SHEET NO. U0-2
UTILITIES BY OTHERS
 NOTE:
 ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

Note:
 Subaqueous lines (trenchless) must be replaced at a depth of Ten feet (10') minimum below the lowest depth of creek and Four feet (4') minimum below the wet land and in the other areas.

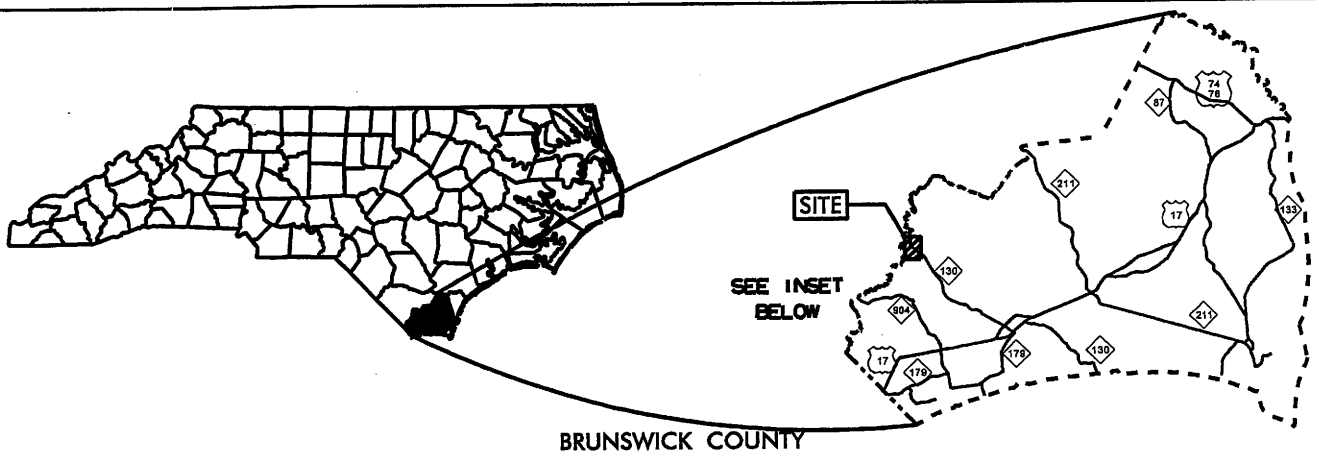
PROP. 853' OF DIRECTIONAL BORE BY INSTALLING 2 - FOUR INCH PVC PIPE CONDUITS FIVE FEET INSIDE THE RIGHT OF WAY



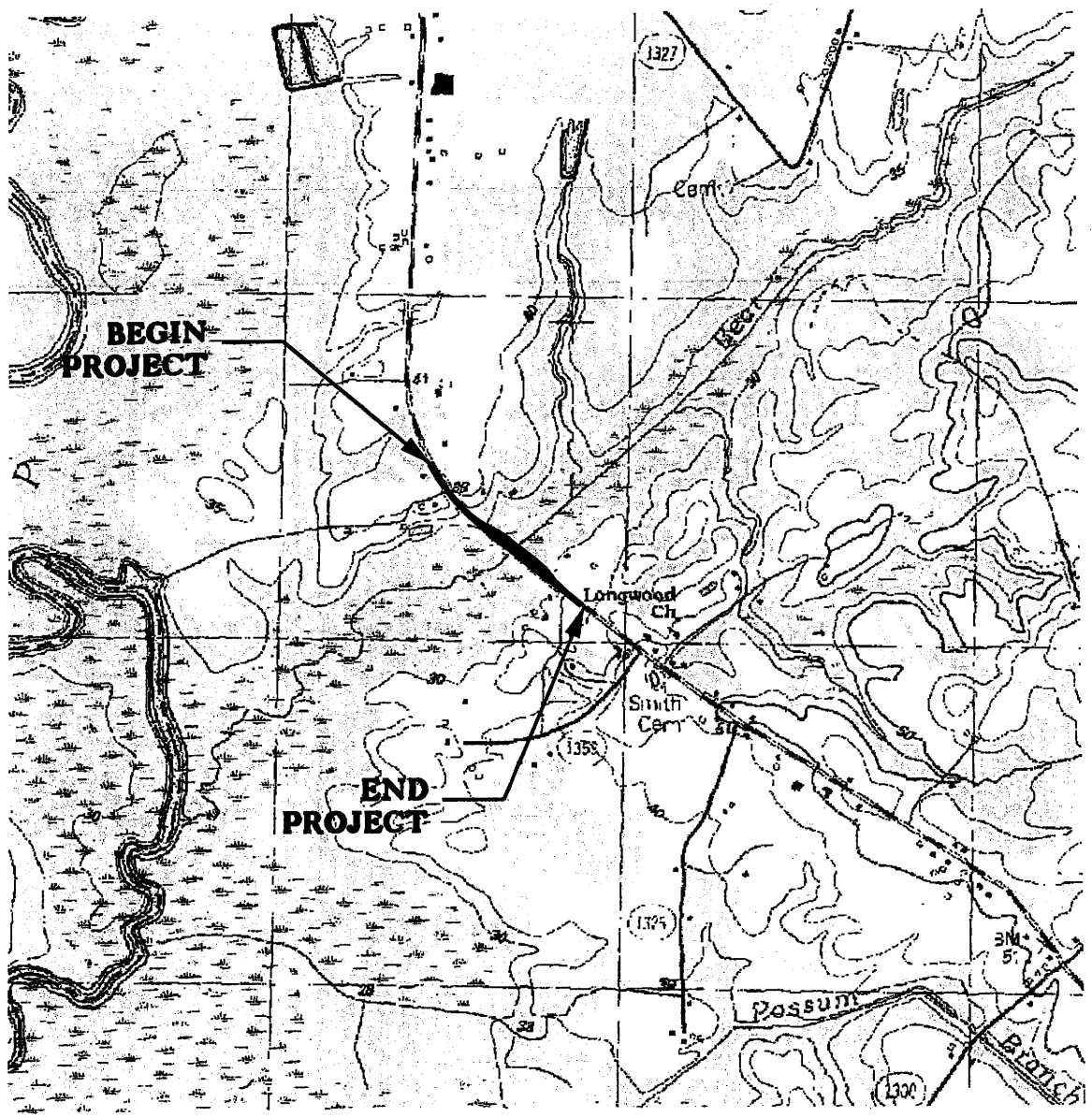
PROP. 853' OF DIRECTIONAL BORE (TEL. CONDUIT)



3/19/09



BRUNSWICK COUNTY



WETLAND/STREAM IMPACTS
VICINITY MAP

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRUNSWICK COUNTY
PROJECT: 33397.1.1 (B-4030)
BRIDGE NO. 9 OVER
BEAR BRANCH ON NC 130

Permit Drawing
Sheet 1 of 14

SHEET ____ OF ____

3/30/09

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS						SURFACE WATER IMPACTS									
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)						
1	14+12-15+33 -L- LT	ROADWAY FILL	0.04															
	12+19-15+95 -L- RT	ROADWAY FILL	0.08		0.06													
	17+29-19+82 -L- LT	ROADWAY FILL	0.07															
	17+29-20+09 -L- RT	ROADWAY FILL/DITCH BANK STABILIZATION	0.02		0.11	0.07							20					
	17+26-19+21 -DET-	DETOUR FILL		0.13		0.02												
	20+19-22+66 -DET-	DETOUR FILL		0.28		0.03												
TOTALS:			0.21	0.41	0.11	0.18	0.00	0.00	<0.01	20	0.00	0	0	0				

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY
PROJECT: 33397.1.1 (B-4030)

SHEET REV 3/30/2009

Permit Drawing
Sheet 2 of 14

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	RALPH C. KING ET UX	4780 WHITEVILLE RD NW ASH, NC 28420
3	JOSEPH CLYMER SMITH, ET AL	P.O. BOX 2403 CULLOWHEE, NC 28723
4	WILLIE R. WARREN ET UX	4968 WHITEVILLE RD NW ASH, NC 28420

NCDOT

DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

**PROJECT: 33397.1.1 (B-4030)
BRIDGE NO. 9 ON OVER
BEAR BRANCH ON NC 130**

SHEET

OF

3/30/09

**Permit Drawing
Sheet 3 of 14**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4030	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33397.1.1	BRSTP-130 (3)	PE	
33397.2.1	BRSTP-130 (3)	R/W + UTIL.	
33397.3.1	BRSTP-130 (3)	CONST.	

Permit Drawing
Sheet 4 of 14

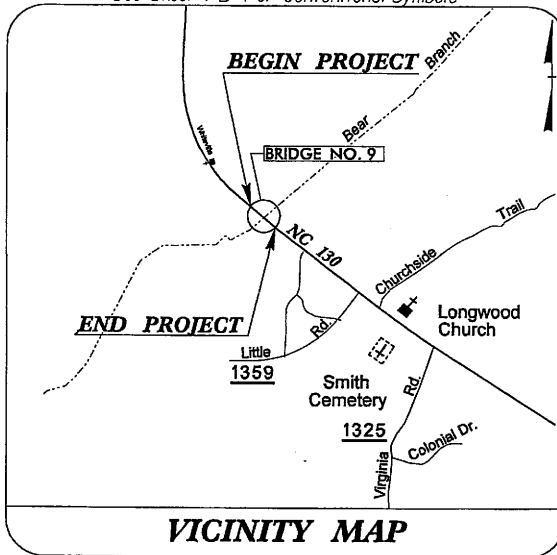


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

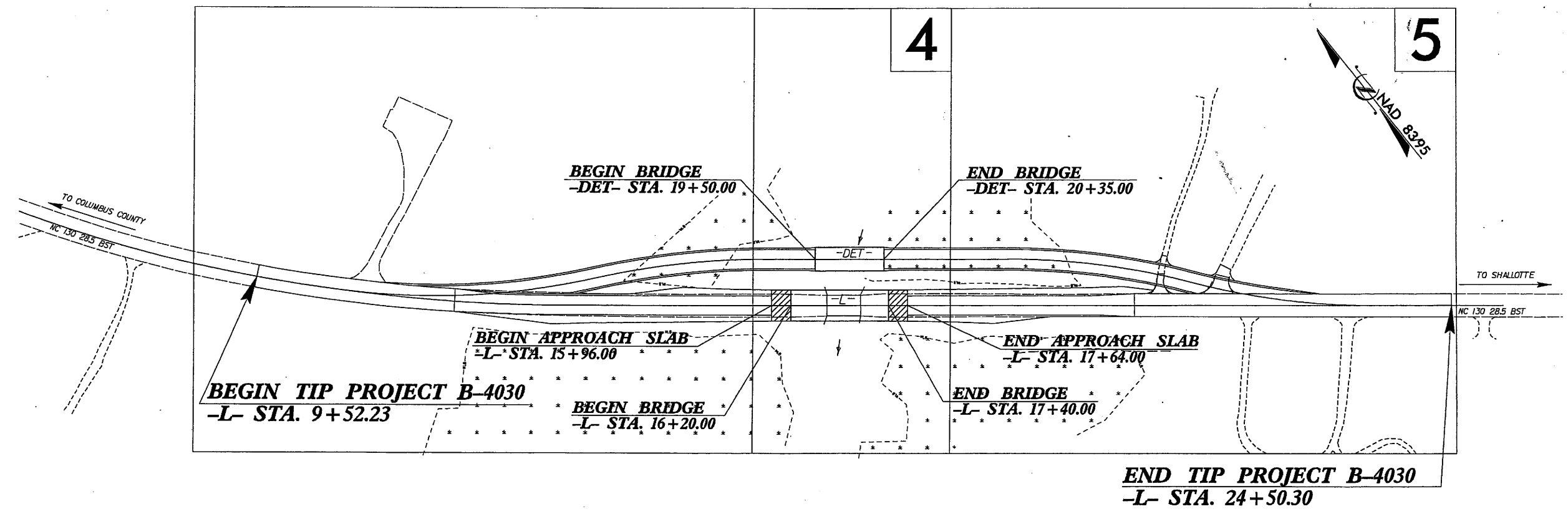
LOCATION: BRIDGE NO.9 OVER BEAR BRANCH ON NC 130
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



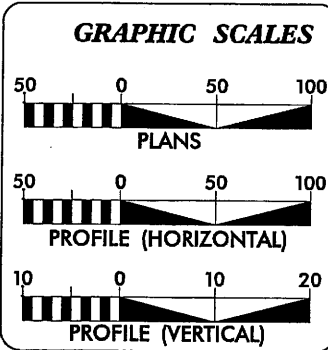
VICINITY MAP

WETLAND/STREAM
IMPACTS



NCDOT CONTACT : DOUG TAYLOR, P.E.
ROADWAY DESIGN-ENGINEERING COORDINATION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DESIGN DATA

ADT 2009 =	4950
ADT 2029 =	7900
DHV =	9 %
D =	55%
T =	7 % *
V =	60 MPH
* TTST 4% DUAL 3%	
FUNC. CLASS =	RURAL MINOR ARTERIAL

PROJECT LENGTH

Length Roadway Tip Project B-4030 =	0.261 Miles
Length Structure Tip Project B-4030 =	0.023 Miles
Total Length Tip Project B-4030 =	0.284 Miles

Prepared in the Office of:

THE LPA GROUP
TRANSPORTATION CONSULTANTS

THE LPA GROUP of North Carolina, p.a.
5000 Falls of Neuse Rd., Suite 304
Raleigh, North Carolina 27609

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 18, 2008

LETTING DATE:
JULY 21, 2009

Jeanne K. Richter, P.E.
PROJECT ENGINEER

Jody L. Cole
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

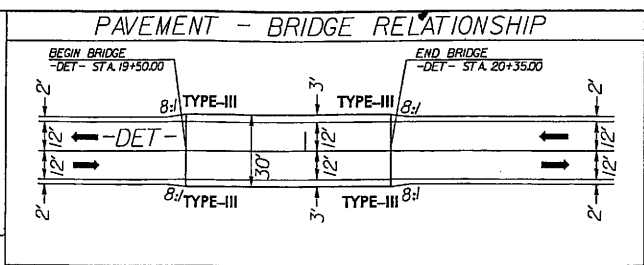
STATE HIGHWAY DESIGN ENGINEER P.E.

TIP PROJECT: B-4030

CONTRACT: C202102

3/30/09

-DET-		
PI Sta 12+97.66	PI Sta 15+14.10	PI Sta 17+83.43
$\Delta = 2' 30'' 06.9''$ (LT)	$\Delta = 20' 39'' 41.5''$ (LT)	$\Delta = 12' 50'' 23.2''$ (RT)
$D = 2' 37'' 30.3''$	$D = 6' 11'' 14.8''$	$D = 6' 11'' 14.8''$
$L = 95.31'$	$L = 333.93'$	$L = 207.51'$
$T = 47.66'$	$T = 168.80'$	$T = 104.19'$
$R = 2182.62'$	$R = 926.00'$	$R = 926.00'$
$e(max) = EXISTING$	$e(max) = EXISTING$	$e(max) = .04$
$Ds = 50$ MPH	$Ds = 50$ MPH	$Ds = 50$ MPH

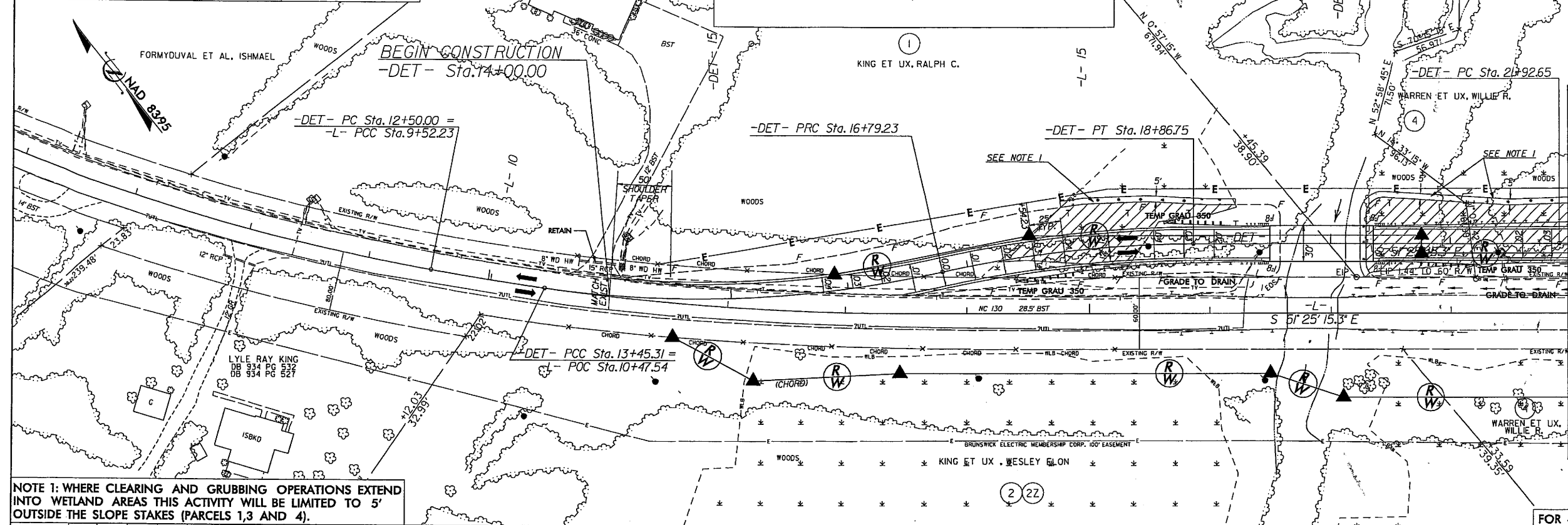


PROJECT REFERENCE NO. B-4030	SHEET NO. 2B
ROADWAY DESIGN ENGINEER SMITH ET AL., JOSEPH CLYMER	HYDRAULICS ENGINEER WARREN ET UX, WILLIE R.
PROFESSIONAL SEAL 24277 ENGINEER JAMES L. CLYMER	PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS



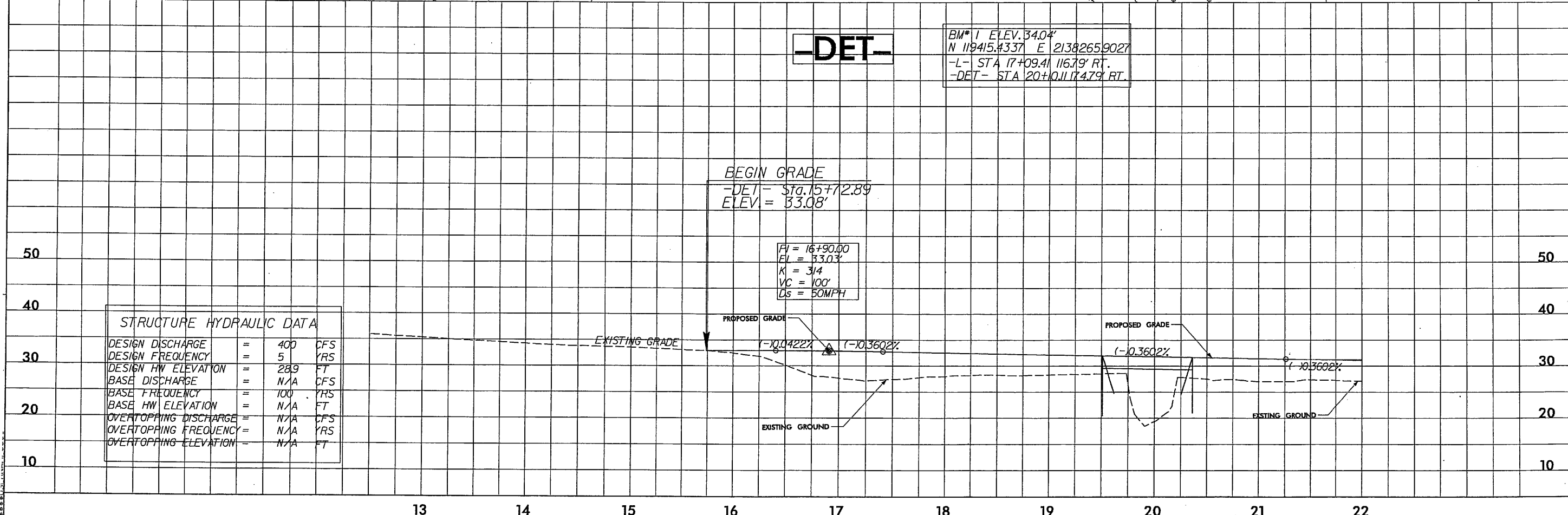
..... DENOTES MECHANIZED CLEARING
 // DENOTES TEMPORARY FILL IN WETLAND

Permit Drawing Sheet 5 of 14



NOTE 1: WHERE CLEARING AND GRUBBING OPERATIONS EXTEND INTO WETLAND AREAS THIS ACTIVITY WILL BE LIMITED TO 5' OUTSIDE THE SLOPE STAKES (PARCELS 1,3 AND 4).

FOR -L- PLAN AND PROFILE, SEE SHEETS 4-5



3/30/09

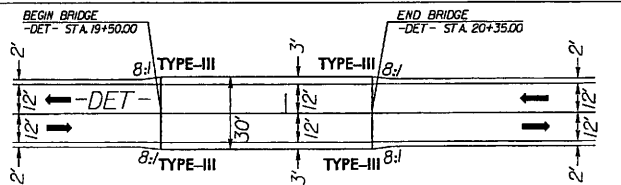
REVISIONS

8/17/99

-DET-

PI Sta 12+97.66 Δ = 2° 30' 06.9" (LT) D = 2' 37" 30.3" L = 95.3' T = 47.66' R = 2182.62' e(max) = EXISTING Ds = 50 MPH	PI Sta 15+14.10 Δ = 20° 39' 41.5" (LT) D = 6' 11" 14.8" L = 333.93' T = 168.80' R = 926.00' e(max) = EXISTING Ds = 50 MPH	PI Sta 17+83.43 Δ = 12° 50' 23.2" (RT) D = 6' 11" 14.8" L = 207.51' T = 104.19' R = 926.00' e(max) = .04 Ds = 50 MPH
---	--	---

PAVEMENT - BRIDGE RELATIONSHIP



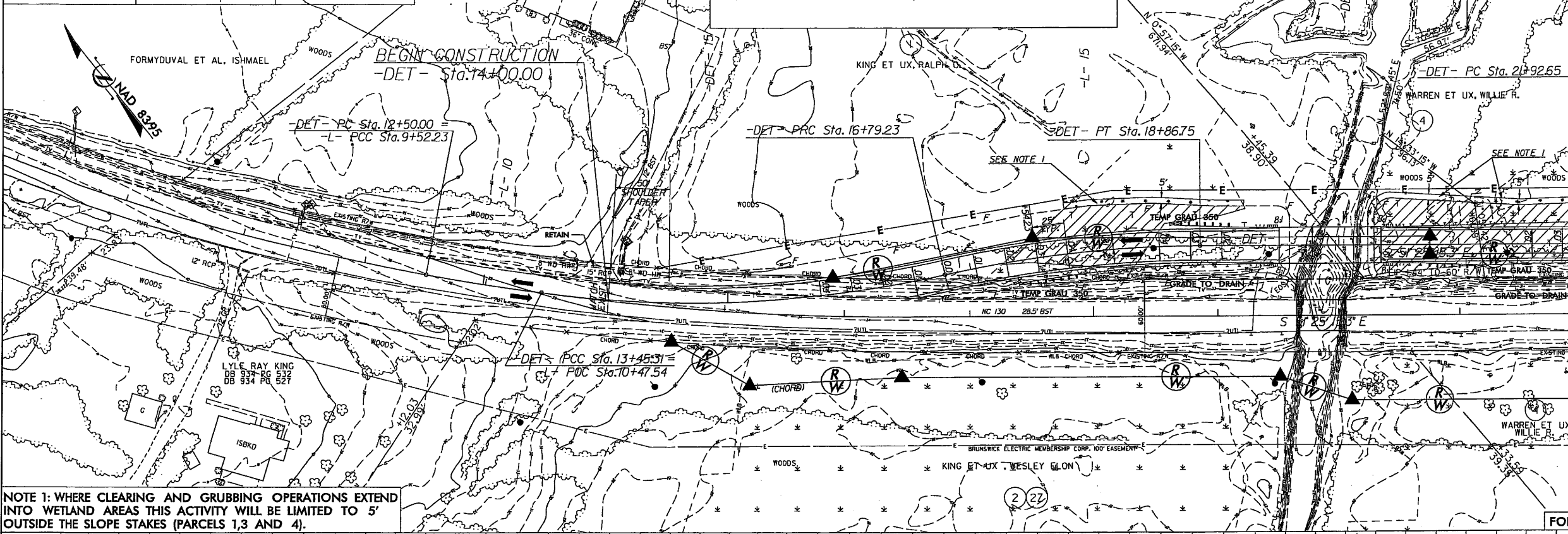
PROJECT REFERENCE NO. B-4030	SHEET NO. 2B
ROADWAY DESIGN ENGINEER SMITH ET AL, JOSEPH CLYMER	HYDRAULICS ENGINEER
PROFESSIONAL SEAL 24277 ENGINEER JOSEPH E. SMITH	PROFESSIONAL SEAL 9334 ENGINEER HENRY W. WILSON



••••• DENOTES MECHANIZED CLEARING
 ▨ DENOTES TEMPORARY FILL IN WETLAND

Permit Drawing Sheet 6 of 14

MATCH LINE -DET- STA. 22+00 SEE SHEET 2C



NOTE 1: WHERE CLEARING AND GRUBBING OPERATIONS EXTEND INTO WETLAND AREAS THIS ACTIVITY WILL BE LIMITED TO 5' OUTSIDE THE SLOPE STAKES (PARCELS 1,3 AND 4).

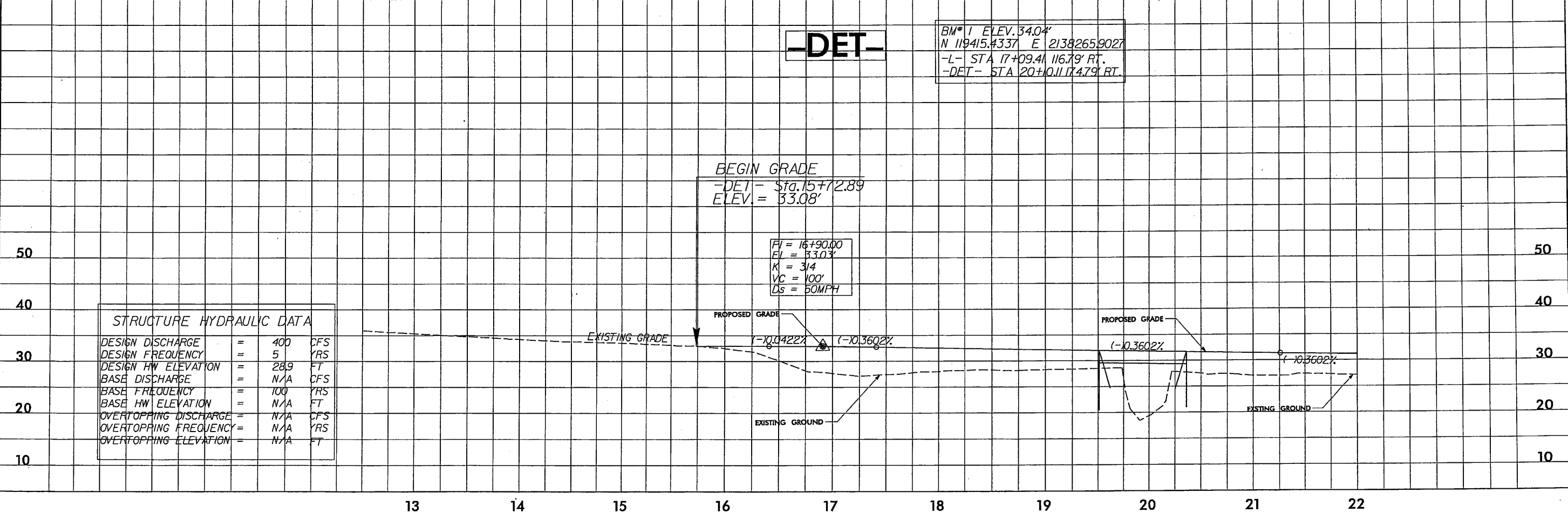
FOR -L- PLAN AND PROFILE, SEE SHEETS 4-5

-DET-
 BM#1 ELEV. 34.04'
 N 119415.4337 E 2138265.9027
 -L- STA 17+09.41 116.79' RT.
 -DET- STA 20+10.11 174.79' RT.

BEGIN GRADE
 -DET- Sta. 15+72.89
 ELEV. = 53.08'

F1 = 16+90.00
 EL = 33.03'
 K = 3/4
 VC = 100'
 Ds = 50MPH

STRUCTURE HYDRAULIC DATA		
DESIGN DISCHARGE	=	400 CFS
DESIGN FREQUENCY	=	5 YRS
DESIGN HW ELEVATION	=	28.9 FT
BASE DISCHARGE	=	N/A CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	N/A FT
OVERTOPPING DISCHARGE	=	N/A CFS
OVERTOPPING FREQUENCY	=	N/A YRS
OVERTOPPING ELEVATION	=	N/A FT



REVISIONS

3/30/09

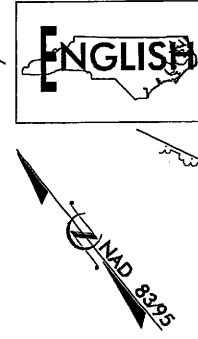
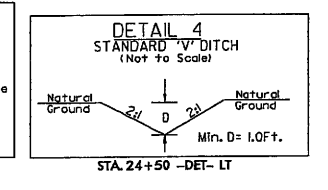
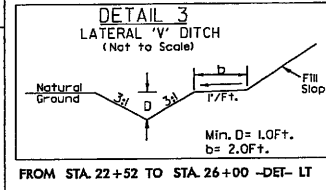
8/17/99

NOTE 1: WHERE CLEARING AND GRUBBING OPERATIONS EXTEND INTO WETLAND AREAS THIS ACTIVITY WILL BE LIMITED TO 5' OUTSIDE THE SLOPE STAKES (PARCELS 1,3 AND 4).

••••• DENOTES MECHANIZED CLEARING
// // // DENOTES TEMPORARY FILL IN WETLAND

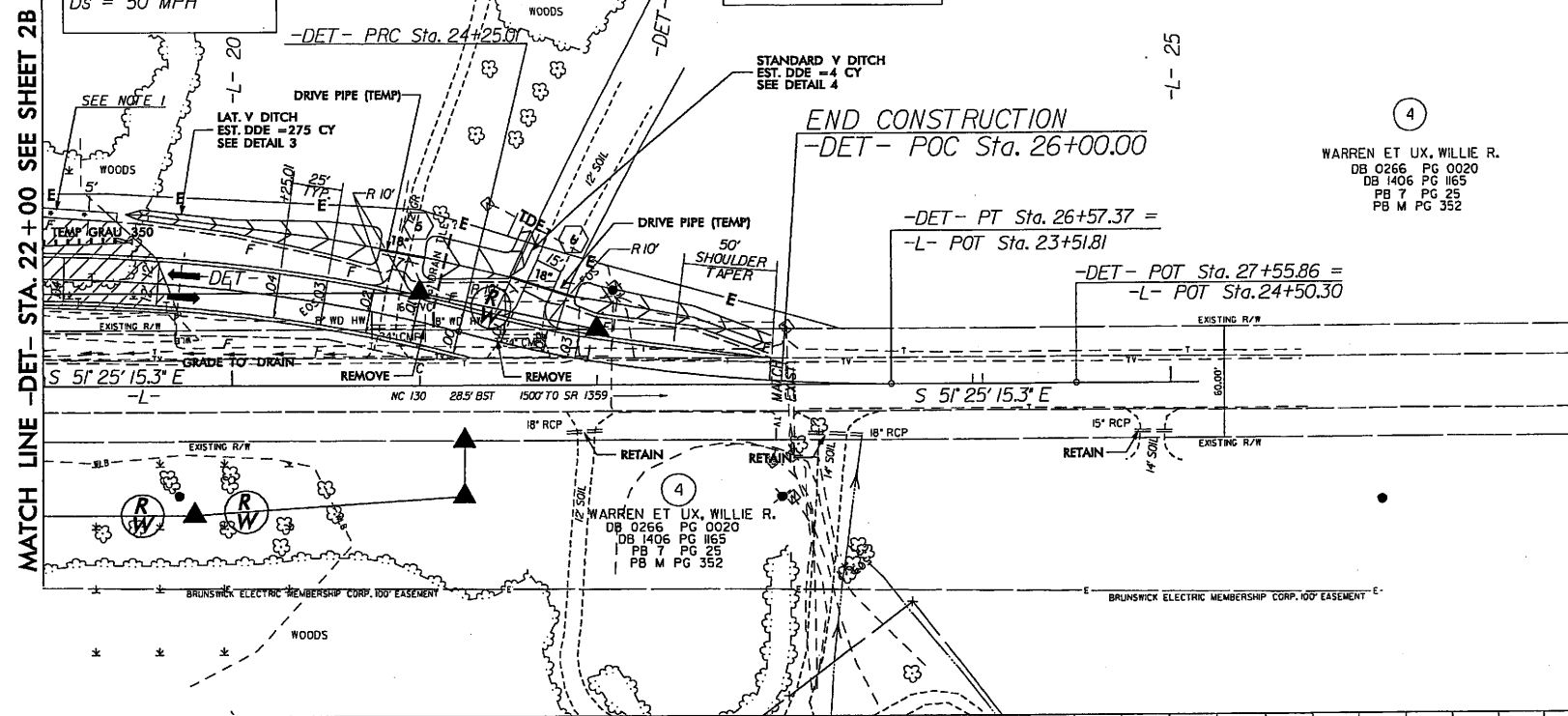
-DET-
PI Sta 23+09.45
 $\Delta = 14' 22' 37.5" (RT)$
D = 6' 11' 14.8"
L = 232.36'
T = 116.79'
R = 926.00'
e(max) = .04
Ds = 50 MPH

-DET-
PI Sta 25+41.81
 $\Delta = 14' 22' 37.5" (LT)$
D = 6' 11' 14.8"
L = 232.36'
T = 116.79'
R = 926.00'
e(max) = .04
Ds = 50 MPH



PROJECT REFERENCE NO. B-4030	SHEET NO. 2C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER [Professional Seal: Seal 24277]	HYDRAULICS ENGINEER [Professional Seal: Seal 9334]

Permit Drawing Sheet 7 of 14



FOR -L- PLAN AND PROFILE, SEE SHEETS 4-5

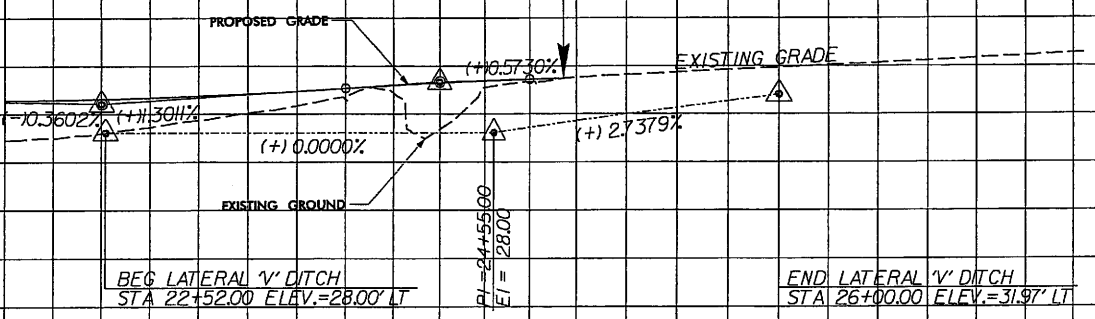
-DET-

DITCH LEGEND
LEFT DITCH

END GRADE
-DET- Sta. 24+93.10
ELEV. = 33.68'

PI = 22+50.00
EL = 31.0'
VC = 250'
K = 150
Ds = 50MPH

PI = 24+25.00
EL = 33.29'
VC = 100'
K = 137
Ds = 50MPH





3/30/09

REVISIONS

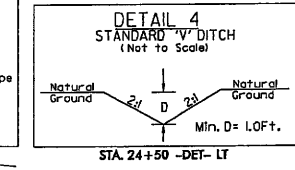
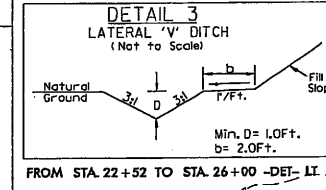
NOTE 1: WHERE CLEARING AND GRUBBING OPERATIONS EXTEND INTO WETLAND AREAS THIS ACTIVITY WILL BE LIMITED TO 5' OUTSIDE THE SLOPE STAKES (PARCELS 1,3 AND 4).

8/17/09



 DENOTES MECHANIZED CLEARING
 DENOTES TEMPORARY FILL IN WETLAND

-DET-
 PI Sta 23+09.45
 $\Delta = 14' 22' 37.5" (RT)$
 $D = 6' 11' 14.8"$
 $L = 232.36'$
 $T = 116.79'$
 $R = 926.00'$
 $e(max) = .04$
 $Ds = 50 MPH$

-DET-
 PI Sta 25+41.81
 $\Delta = 14' 22' 37.5" (LT)$
 $D = 6' 11' 14.8"$
 $L = 232.36'$
 $T = 116.79'$
 $R = 926.00'$
 $e(max) = .04$
 $Ds = 50 MPH$



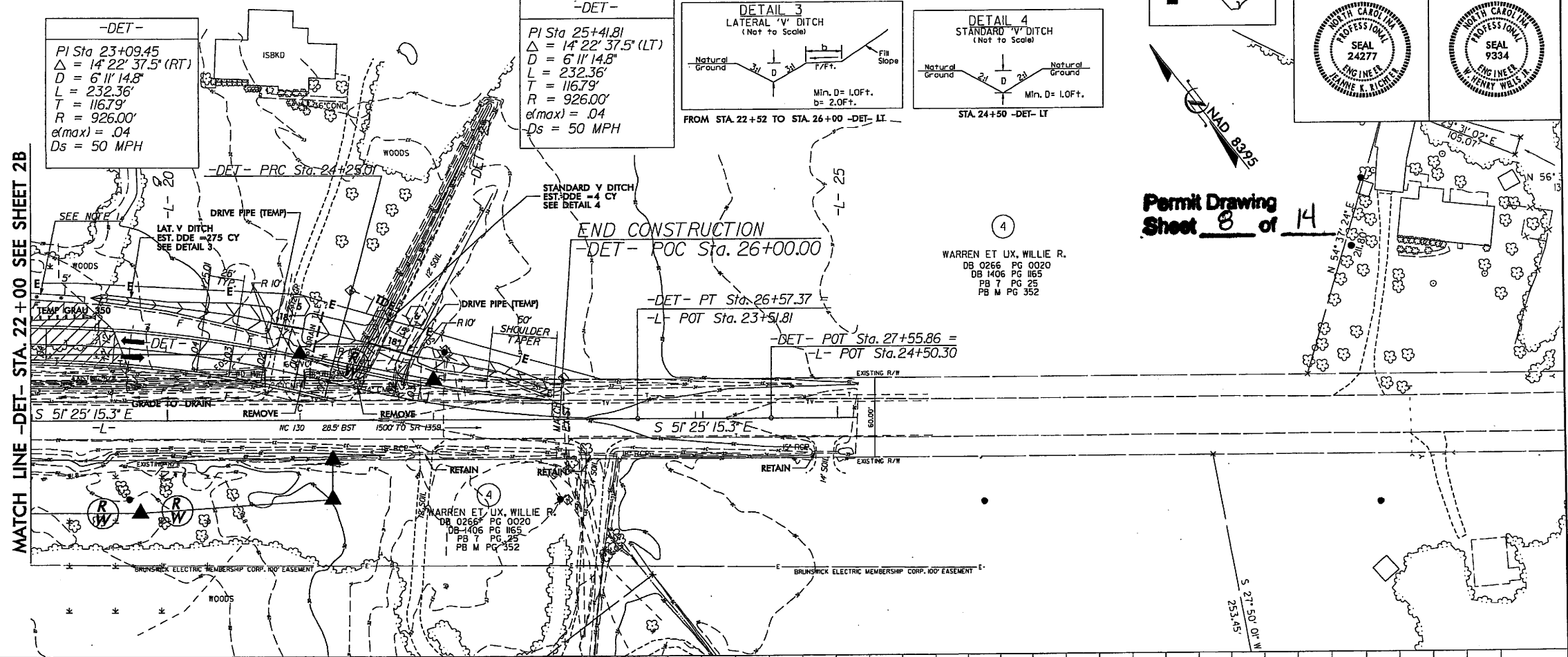
ENGLISH

PROJECT REFERENCE NO. B-4030	SHEET NO. 2C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

Permit Drawing
Sheet 8 of 14

4
 WARREN ET UX, WILLIE R.
 DB 0266 PG 0020
 DB 1406 PG 1165
 PB 7 PG 25
 PB M PG 352

MATCH LINE -DET- STA. 22+00 SEE SHEET 2B



FOR -L- PLAN AND PROFILE, SEE SHEETS 4-5

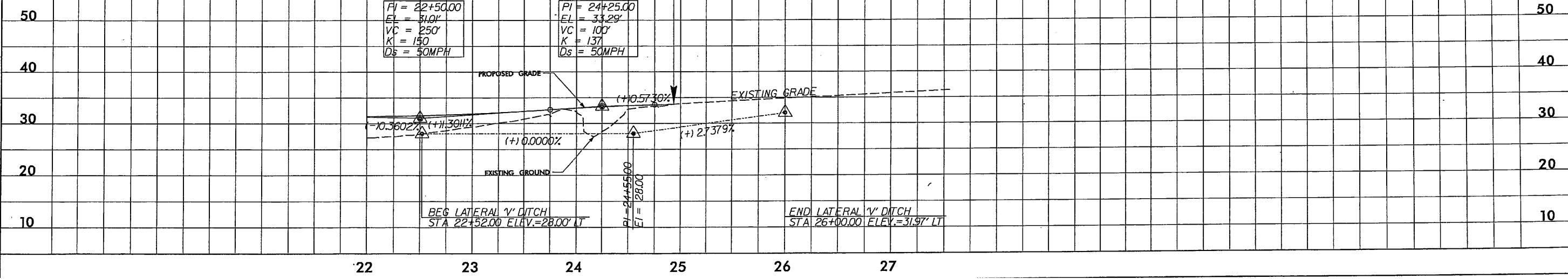
-DET-

DITCH LEGEND
LEFT DITCH

END GRADE
 -DET- Sta. 24+93.10
 ELEV. = 33.68'

PI = 22+50.00
 EL = 31.01'
 VC = 250'
 K = 150
 Ds = 50MPH

PI = 24+25.00
 EL = 33.29'
 VC = 100'
 K = 137
 Ds = 50MPH

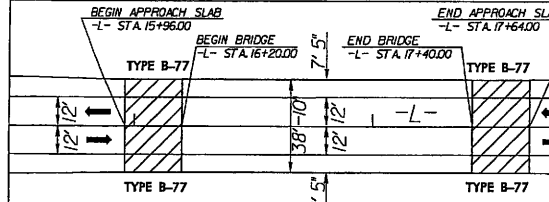


3/30/09

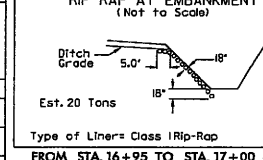
REVISIONS

8/17/99

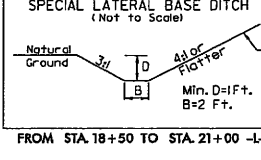
PAVEMENT - BRIDGE RELATIONSHIP



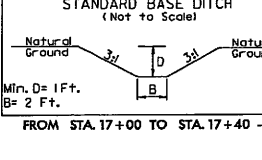
DETAIL 1 RIP RAP AT EMBANKMENT (Not to Scale)



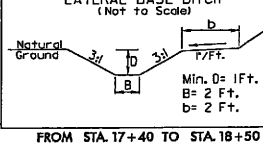
DETAIL 2 SPECIAL LATERAL BASE DITCH (Not to Scale)



DETAIL 3 STANDARD BASE DITCH (Not to Scale)



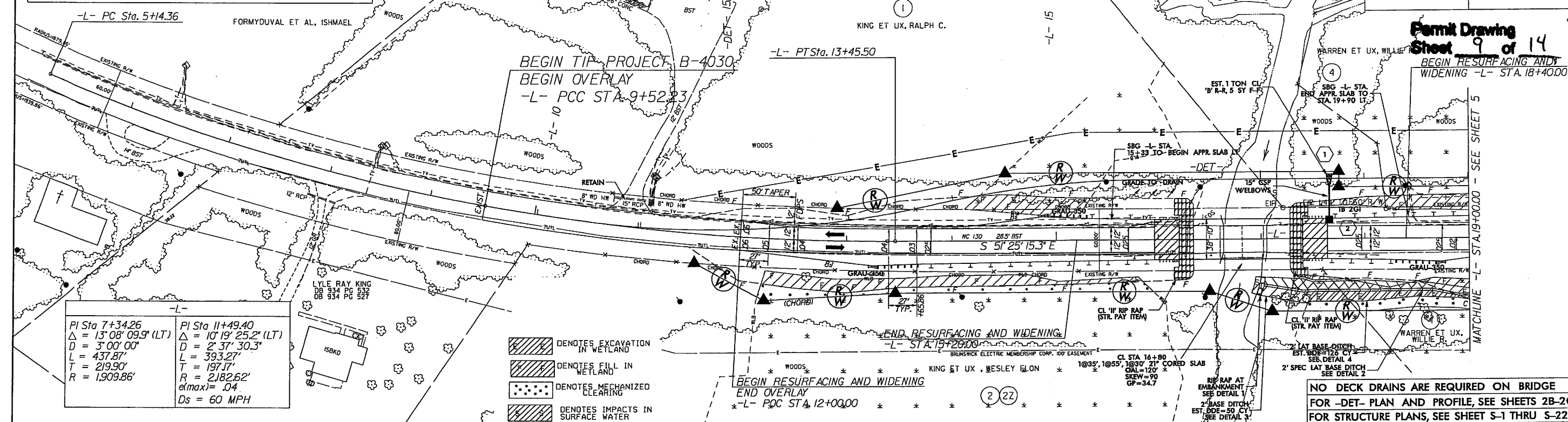
DETAIL 4 LATERAL BASE DITCH (Not to Scale)



SMITH ET AL, JOSEPH CLYMER

PROJECT REFERENCE NO. B-4030	SHEET NO. 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

Permit Drawing
Sheet 9 of 14
BEGIN RESURFACING AND WIDENING -L- STA. 18+40.00



PI Sta 7+34.26 Δ = 13° 08' 09.9" (LT) D = 3' 00' 00" L = 437.87' T = 219.90' R = 1,909.86'	PI Sta 11+49.40 Δ = 10° 19' 25.2" (LT) D = 2' 37' 30.3" L = 393.27' T = 197.17' R = 2,182.62' e(max) = .04 Ds = 60 MPH
---	---

- DENOTES EXCAVATION IN WETLAND
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES IMPACTS IN SURFACE WATER

NO DECK DRAINS ARE REQUIRED ON BRIDGE
FOR -DET- PLAN AND PROFILE, SEE SHEETS 2B-2C
FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-22

REVISIONS

-L-

BM* 1 ELEV. 34.04'
N 119415.4337 E 2138265.9027
-BL- STA 16+68 100' RT.
-L- STA 17+09.41 116.79' RT.
-DET- STA 20+10.11 174.79' RT.

DITCH LEGEND	
	RIGHT DITCH
	EXIST. ROAD FILL TO BE EXCAVATED

BEGIN PROJECT B-4030
-L- Sta. 9+52.23
BEGIN OVERLAY

BEGIN GRADE
END OVERLAY
-L- Sta. 12+00.00
ELEV. = 34.27'

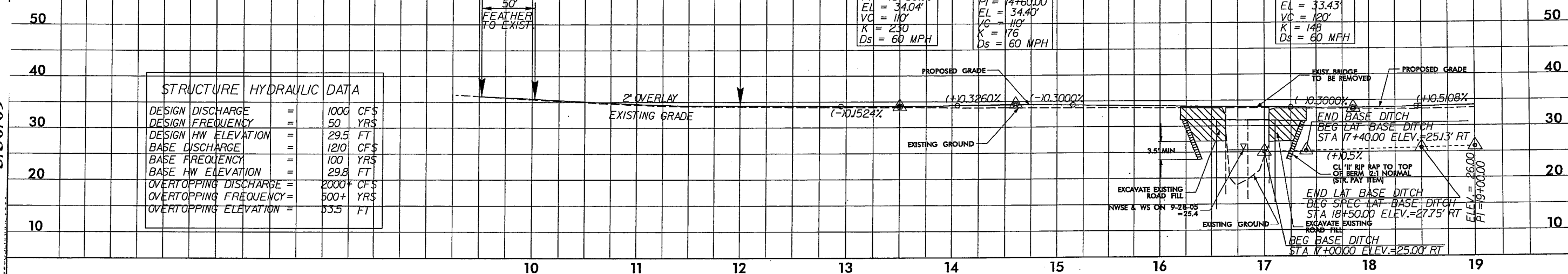
PI = 13+50.00
EL = 34.04'
VC = 110'
K = 230
Ds = 60 MPH

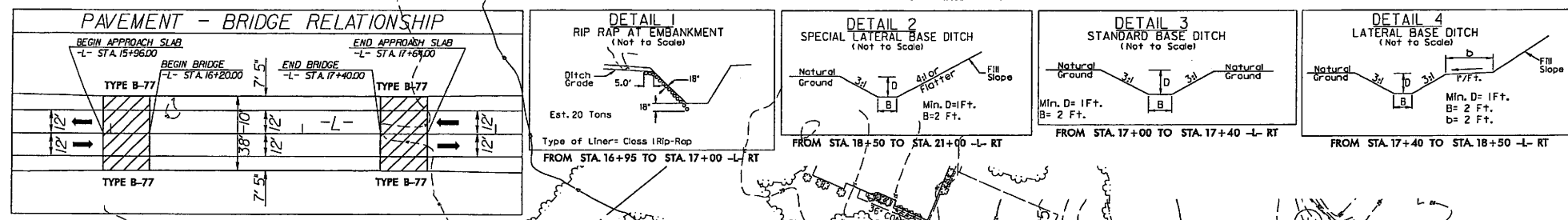
PI = 17+60.00
EL = 34.40'
VC = 120'
K = 76
Ds = 60 MPH

PI = 17+85.00
EL = 33.43'
VC = 120'
K = 148
Ds = 60 MPH

STRUCTURE HYDRAULIC DATA		
DESIGN DISCHARGE	=	1000 CFS
DESIGN FREQUENCY	=	50 YRS
DESIGN HW ELEVATION	=	29.5 FT
BASE DISCHARGE	=	1210 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	29.8 FT
OVERTOPPING DISCHARGE	=	2000 CFS
OVERTOPPING FREQUENCY	=	500+ YRS
OVERTOPPING ELEVATION	=	33.5 FT

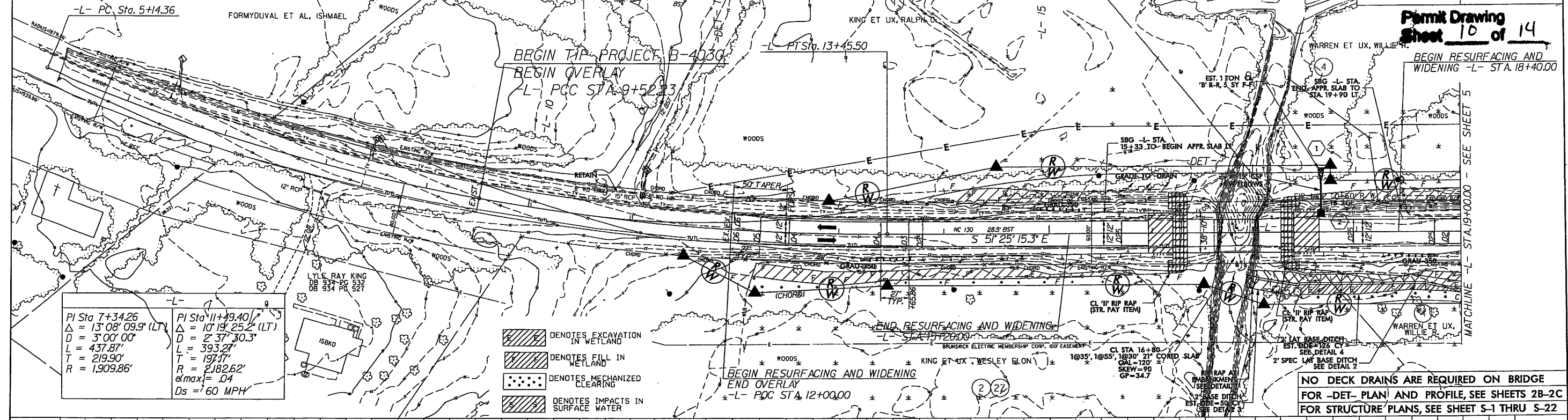
3/30/09





ENGLISH

8/17/99



PI Sta 7+34.26 Δ = 13° 08' 09.9" (LT) D = 3° 00' 00" L = 437.87' T = 219.90' R = 1,909.86'	PI Sta 11+49.40 Δ = 10° 19' 25.2" (LT) D = 2° 37' 30.3" L = 393.27' T = 197.71' R = 2,182.62' d _{max} = .04 D _s = 60 MPH
---	---

- DENOTES EXCAVATION IN WETLAND
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES IMPACTS IN SURFACE WATER

NO DECK DRAINS ARE REQUIRED ON BRIDGE
 FOR -DET- PLAN AND PROFILE, SEE SHEETS 2B-2C
 FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-22

REVISIONS

-L-

BM #1 ELEV. 34.04'
 N 119415.4337 E 2138265.9027
 -BL- STA 16+68.1001 RT.
 -L- STA 17+09.411679' RT.
 -DET- STA 20+0.117479' RT.

DITCH LEGEND

	RIGHT DITCH
	EXIST. ROAD FILL TO BE EXCAVATED

BEGIN PROJECT B-4030
 -L- Sta. 9+52.23
 BEGIN OVERLAY

BEGIN GRADE
 END OVERLAY
 -L- Sta. 12+00.00
 ELEV. = 34.27'

PI = 13+50.00
 EL = 34.04'
 VC = 110'
 K = 2.30
 D_s = 60 MPH

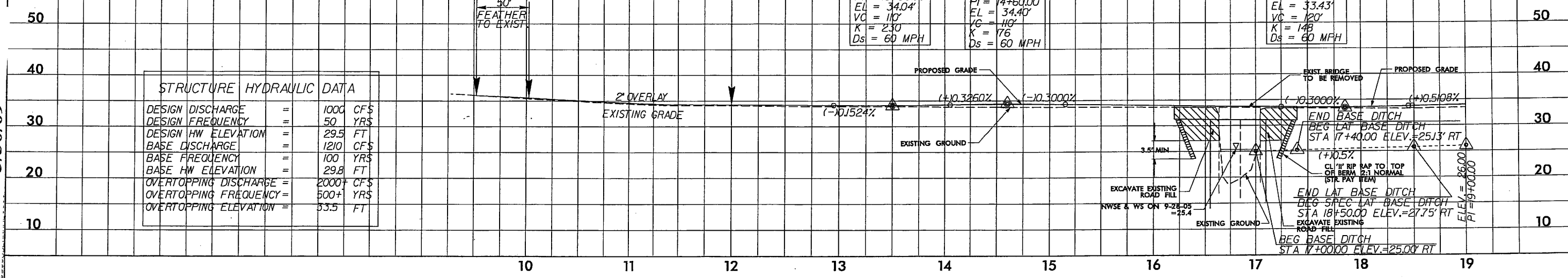
PI = 14+60.00
 EL = 34.40'
 VC = 110'
 K = 176
 D_s = 60 MPH

PI = 17+85.00
 EL = 33.43'
 VC = 120'
 K = 148
 D_s = 60 MPH



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	=	1000	CF'S
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	29.5	FT
BASE DISCHARGE	=	1210	CF'S
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	29.8	FT
OVERTOPPING DISCHARGE	=	2000	CF'S
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	33.5	FT




3/30/09

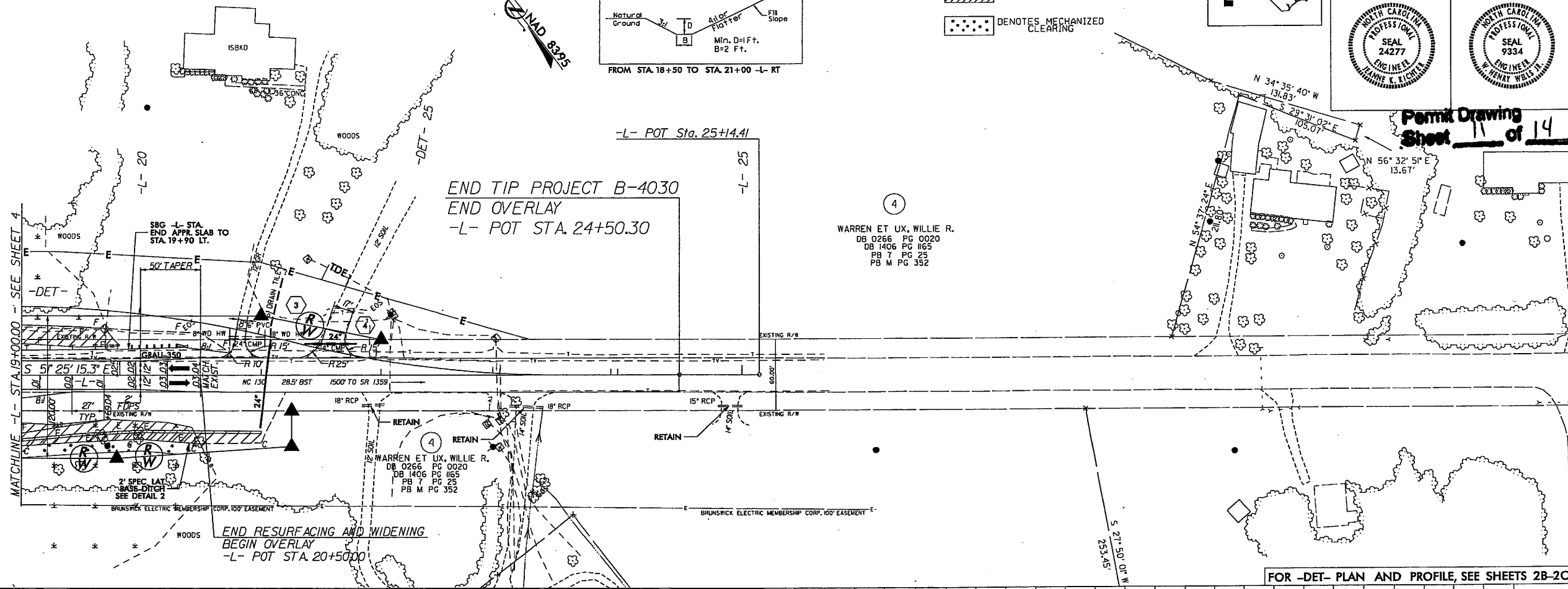
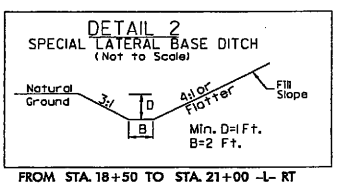


8/17/99

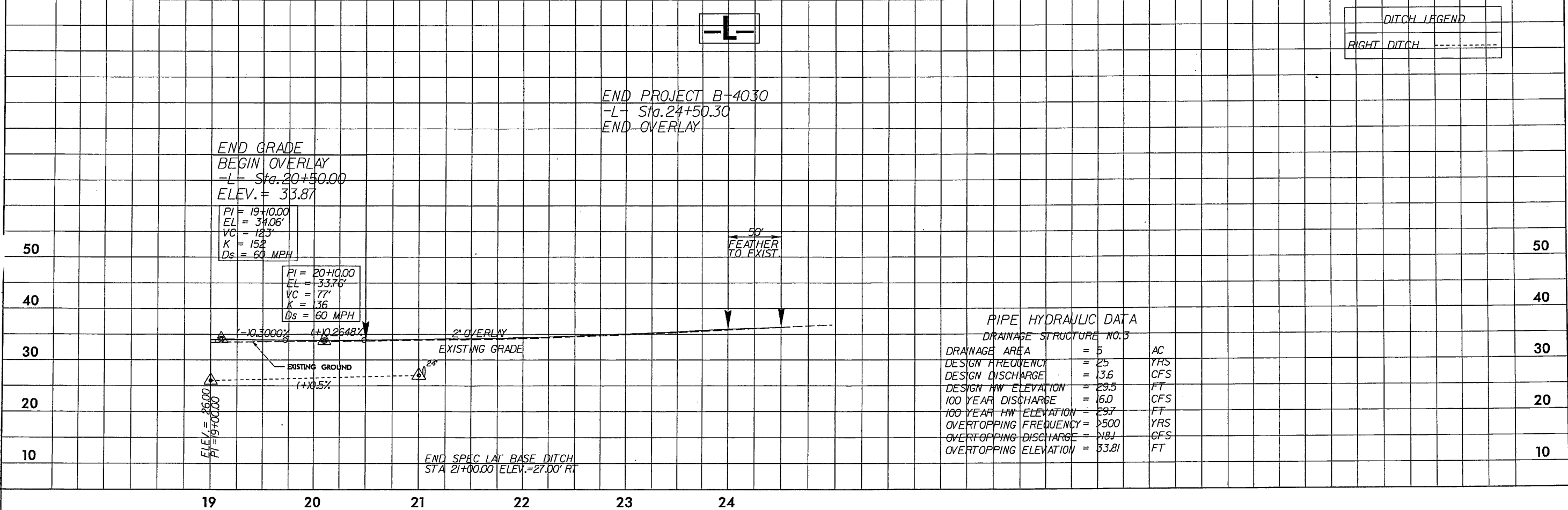
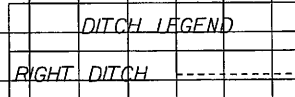
PROJECT REFERENCE NO. B-4030	SHEET NO. 5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 



-  DENOTES EXCAVATION IN WETLAND
-  DENOTES FILL IN WETLAND
-  DENOTES MECHANIZED CLEARING



FOR -DET- PLAN AND PROFILE, SEE SHEETS 2B-2C



END GRADE
BEGIN OVERLAY
-L- Sta. 20+50.00
ELEV. = 33.87

PI = 19+10.00
EL = 34.06'
VC = 123'
K = 152
Ds = 60 MPH

PI = 20+10.00
EL = 33.76'
VC = 77'
K = 136
Ds = 60 MPH

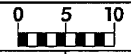
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 3

DRAINAGE AREA	= 5	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 13.6	CFS
DESIGN HW ELEVATION	= 29.5	FT
100 YEAR DISCHARGE	= 16.0	CFS
100 YEAR HW ELEVATION	= 29.7	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 18.1	CFS
OVERTOPPING ELEVATION	= 33.81	FT

3/30/09

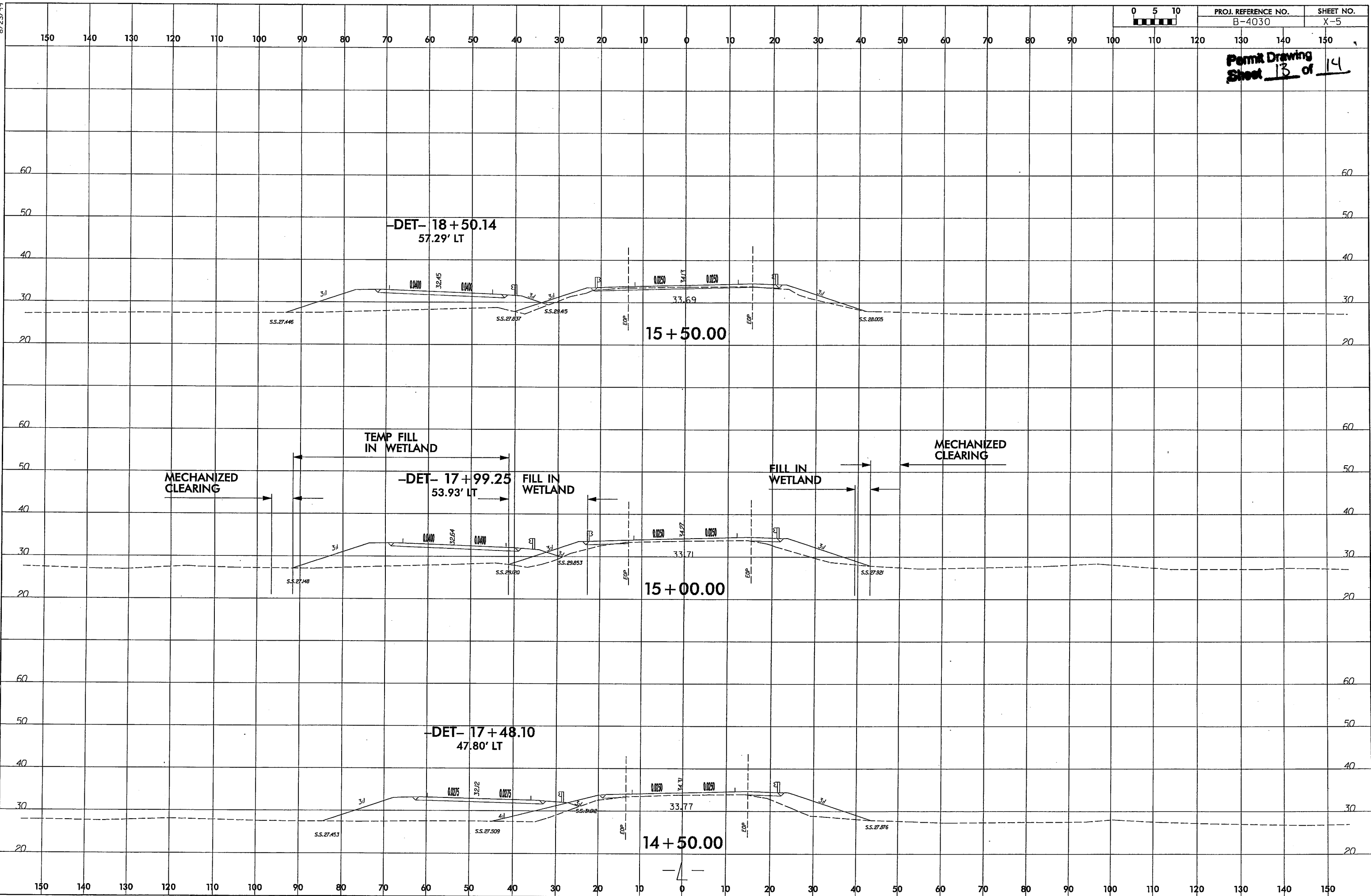
REVISIONS

8/23/99



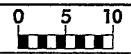
PROJ. REFERENCE NO. B-4030 SHEET NO. X-5

Permit Drawing Sheet 13 of 14



3/30/09

8/23/99

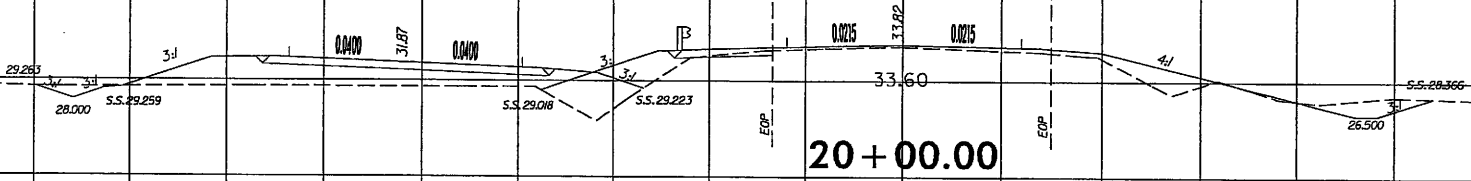


PROJ. REFERENCE NO. B-4030 SHEET NO. X-8

Permit Drawing Sheet 14 of 14

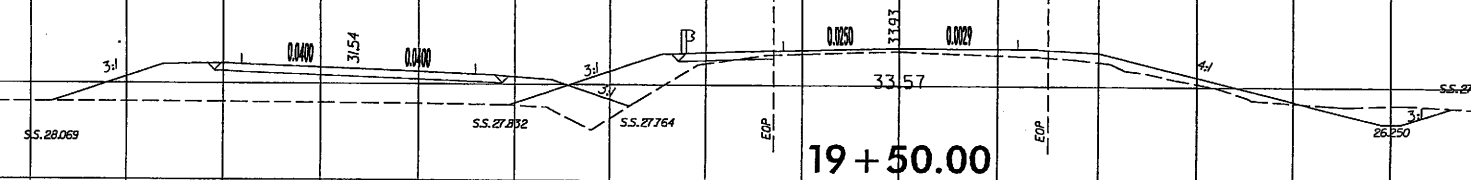
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

-DET- 23 + 02.62
51.58' LT



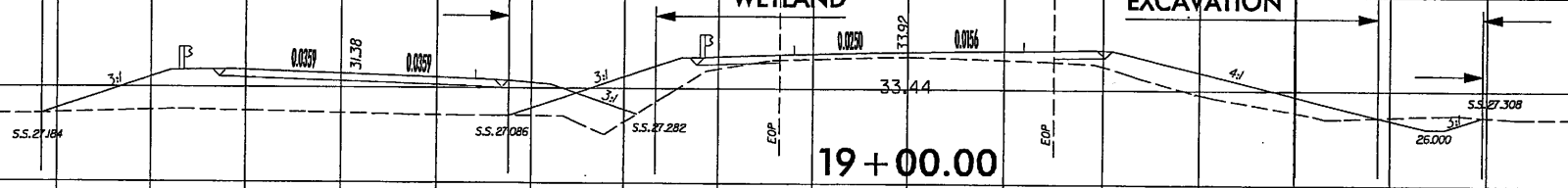
20 + 00.00

-DET- 22 + 51.63
56.15' LT



19 + 50.00

TEMP. FILL
IN WETLAND
DET- 22 + 00.83
57.96' LT



19 + 00.00

3/30/09

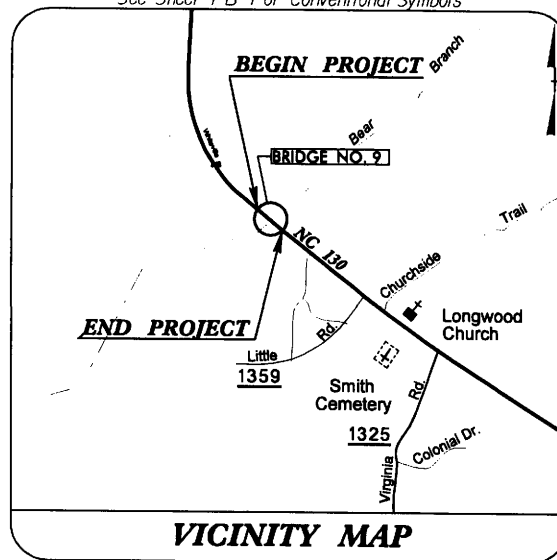
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

09/08/09

TIP PROJECT: B-4030

CONTRACT: C202102

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



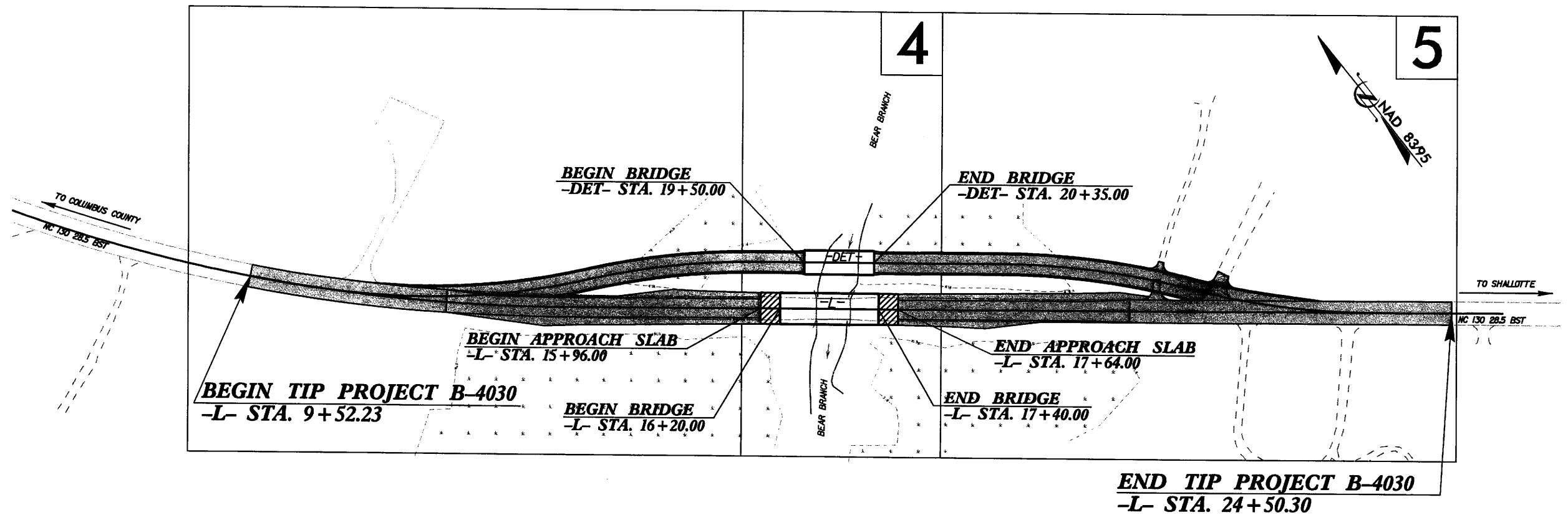
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

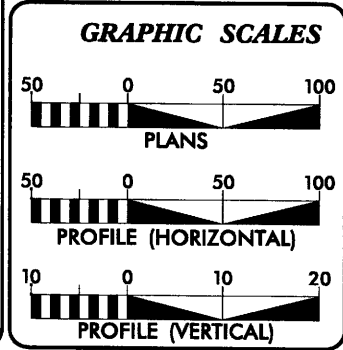
LOCATION: BRIDGE NO.9 OVER BEAR BRANCH ON NC 130
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4030	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33397.1.1	BRSTP-130 (3)	PE	
33397.2.1	BRSTP-130 (3)	RW+UTIL.	
33397.3.1	BRSTP-130 (3)	CONST.	



NCDOT CONTACT : DOUG TAYLOR, P.E.
ROADWAY DESIGN-ENGINEERING COORDINATION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DESIGN DATA

ADT 2009 =	4950
ADT 2029 =	7900
DHV =	9 %
D =	55%
T =	7 % *
V =	60 MPH
* TTST	4% DUAL 3%
FUNC. CLASS =	RURAL MINOR ARTERIAL

PROJECT LENGTH

Length Roadway Tip Project B-4030 =	0.261 Miles
Length Structure Tip Project B-4030 =	0.023 Miles
Total Length Tip Project B-4030 =	0.284 Miles

Prepared In the Office of:
THE LPA GROUP
TRANSPORTATION CONSULTANTS
5000 Falls of Neuse Rd., Suite 304
Raleigh, North Carolina 27609

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 18, 2008

LETTING DATE:
JULY 21, 2009

Jeanne K. Richter, P.E.
PROJECT ENGINEER

Jody L. Cole
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.
ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.
STATE HIGHWAY DESIGN ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.

01-APR-2009 10:40 Y:\Projects\NCDOT\Bridges Group 46 FinalDesign\B4030\Roadway\Proj\B4030_rdy_tsh.dgn jcole ALP20625

EFF. 07-18-06
REV. 01-02-07

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2 THRU 2A	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2B THRU 2C	DETOUR PLAN AND PROFILE SHEET
2D	ANCHORAGE FOR FRAMES (DETAIL)
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF EARTHWORK, PARCEL INDEX, AND SUMMARY OF ASPHALT PAVEMENT REMOVAL
3B	SUMMARY OF DRAINAGE QUANTITIES, GUARDRAIL SUMMARY, AND TEMPORARY GUARDRAIL SUMMARY
4 THRU 5	PLAN AND PROFILE SHEETS
TCP-1 THRU TCP-6	TRAFFIC CONTROL PLANS
RF-1	REFORESTATION PLAN
EC-1 THRU EC-8	EROSION CONTROL PLANS
UD-1 THRU UD-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS SECTION SUMMARY SHEET
X-1 THRU X-10	CROSS-SECTIONS
S-1 THRU S-22	STRUCTURE PLANS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 09-12-08

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE AT&M

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT

2006 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superlevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
816.01	Concrete Pads - for Shoulder Drain Installation
816.04	Markers for Drainage Structure and Concrete Pad
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchor End of Guardrail - B-77 and B-83 Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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 8/17/99

3/15/06

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○
Property Corner	-----
Property Monument	□
Parcel/Sequence Number	(23)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-----
Proposed Wetland Boundary	-----
Existing Endangered Animal Boundary	-----
Existing Endangered Plant Boundary	-----

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or UG Tank Cap	○
Sign	○
Well	○
Small Mine	⊗
Foundation	□
Area Outline	□
Cemetery	⊕
Building	□
School	□
Church	⊕
Dam	⊕

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	-----
Buffer Zone 1	-----
Buffer Zone 2	-----
Flow Arrow	←
Disappearing Stream	-----
Spring	○
Wetland	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	▽

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite Marker	-----
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----
Proposed Slope Stakes Fill	-----
Proposed Wheel Chair Ramp	-----
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	-----

VEGETATION:

Single Tree	○
Single Shrub	○
Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	-----

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□
Paved Ditch Gutter	-----
Storm Sewer Manhole	○
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊗
UG Power Cable Hand Hole	⊕
H-Frame Pole	●
Recorded UG Power Line	-----
Designated UG Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊗
UG Telephone Cable Hand Hole	⊕
Recorded UG Telephone Cable	-----
Designated UG Telephone Cable (S.U.E.*)	-----
Recorded UG Telephone Conduit	-----
Designated UG Telephone Conduit (S.U.E.*)	-----
Recorded UG Fiber Optics Cable	-----
Designated UG Fiber Optics Cable (S.U.E.*)	-----

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded UG Water Line	-----
Designated UG Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

TV:

TV Satellite Dish	⊕
TV Pedestal	⊕
TV Tower	⊗
UG TV Cable Hand Hole	⊕
Recorded UG TV Cable	-----
Designated UG TV Cable (S.U.E.*)	-----
Recorded UG Fiber Optic Cable	-----
Designated UG Fiber Optic Cable (S.U.E.*)	-----

GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded UG Gas Line	-----
Designated UG Gas Line (S.U.E.*)	-----
Above Ground Gas Line	-----

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
UG Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

MISCELLANEOUS:

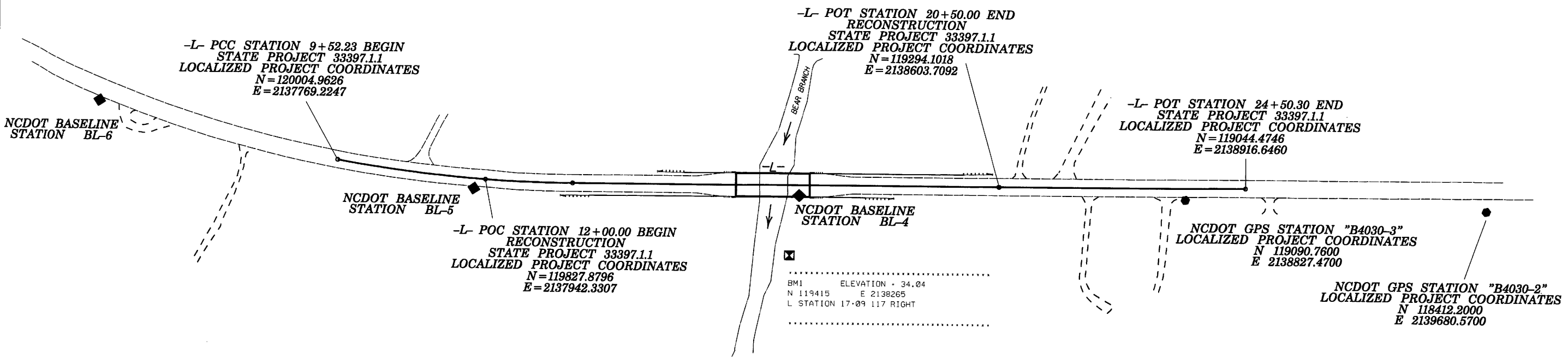
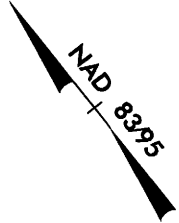
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown UG Line	-----
UG Tank; Water, Gas, Oil	□
AG Tank; Water, Gas, Oil	□
UG Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

SURVEY CONTROL SHEET B-4030

PROJECT REFERENCE NO. B-4030	SHEET NO. 1C
Location and Surveys	

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4030-3" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 119090.7600(±) EASTING: 2138827.4700(±) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000084320 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4030-3" TO -L- STATION POC 9+52.23 IS N 49°10'36" W 1.398'-45" ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88



CONTROL DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
6	BL-6		120325.7355	2137519.2222	40.76		OUTSIDE PROJECT LIMITS
5	BL-7		119827.9929	2137917.8325	34.40	11+81.97	16.51 RT
4	BL-4		119483.8894	2138337.9732	32.87	17+23.91	17.35 RT
3	B4030-3		119090.7600	2138827.4700	34.23	23+51.73	19.43 RT
2	B4030-2		118412.2000	2139680.5700	45.95		OUTSIDE PROJECT LIMITS

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:
 TIP B4030_LS_CONTROL_060811.TXT

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

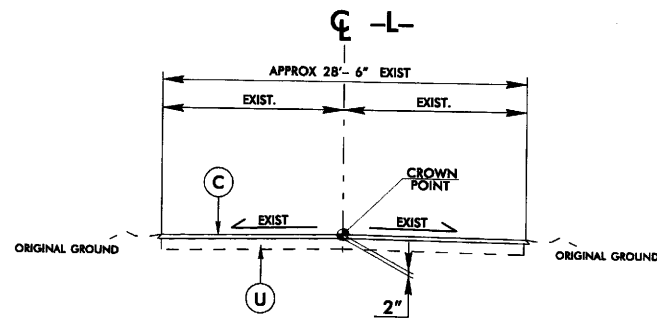
Ⓢ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
 SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

6/2/99
 01-APR-2009 10:40
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 Group 46 Final Design\B4030\Roadway\Proj\B4030_LS_1C.dgn
 11/15/05

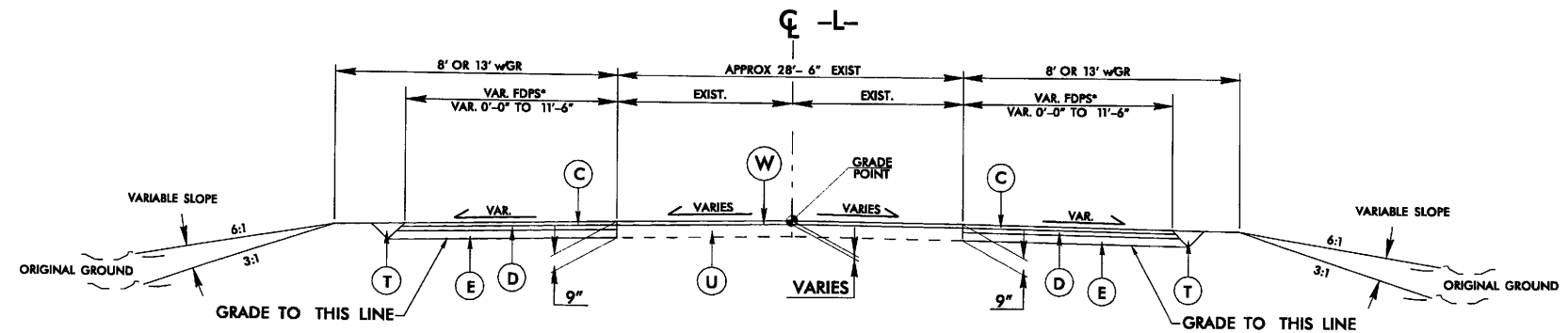
PAVEMENT SCHEDULE					
A	5 1/2" PORTLAND CEMENT CONCRETE PAVEMENT.	E	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	T	EARTH MATERIAL.
C	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	E1	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 5 1/2" IN DEPTH.	U	EXISTING PAVEMENT.
C1	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.	J	PROP. 8" AGGREGATE BASE COURSE.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET 2A)
D	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.	NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.	
D1	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R	SHOULDER BERM GUTTER.		

PROJECT REFERENCE NO. B-4030	SHEET NO. 2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



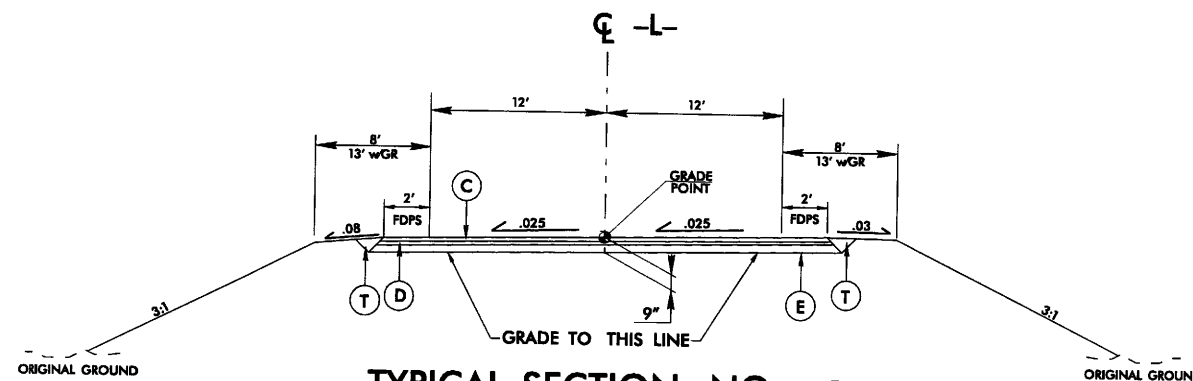
TYPICAL SECTION NO. 1

-L- STA. 9+52.23 TO STA. 12+00.00
 -L- STA. 20+50.00 TO STA. 24+50.30



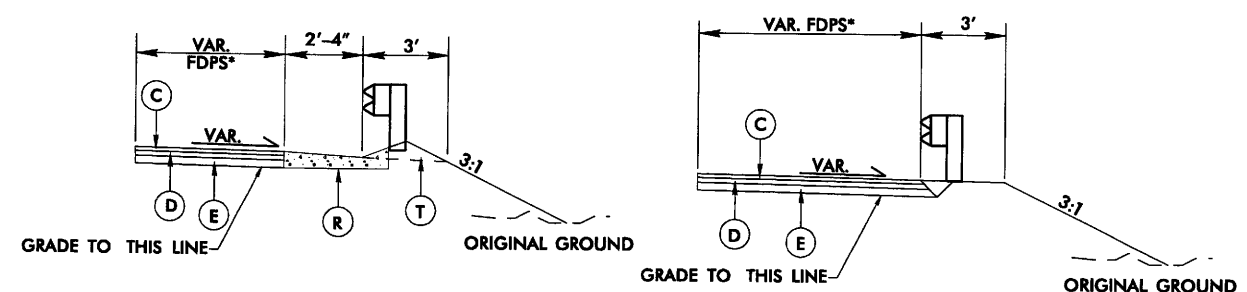
TYPICAL SECTION NO. 2

-L- STA. 12+00.00 TO STA. 15+20.00
 -L- STA. 18+40.00 TO STA. 20+50.00
 *SEE PLANS FOR LIMITS OF VARIABLE FDPS



TYPICAL SECTION NO. 3

-L- STA. 15+20.00 TO STA. 16+20.00 (BEGIN BRIDGE)
 -L- STA. 17+40.00 (END BRIDGE) TO STA. 18+40.00



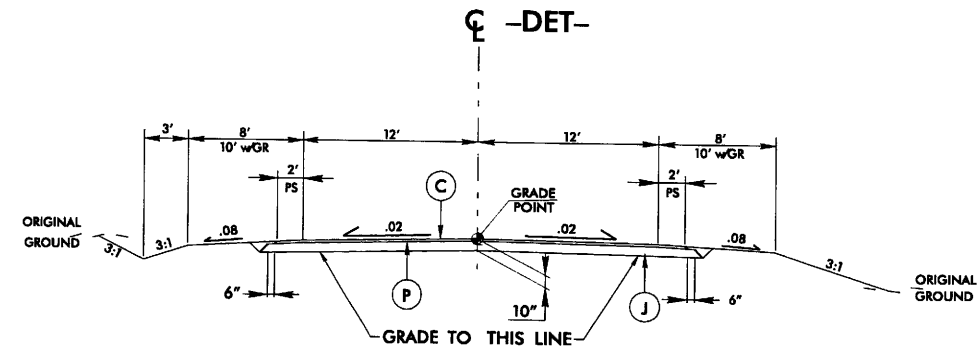
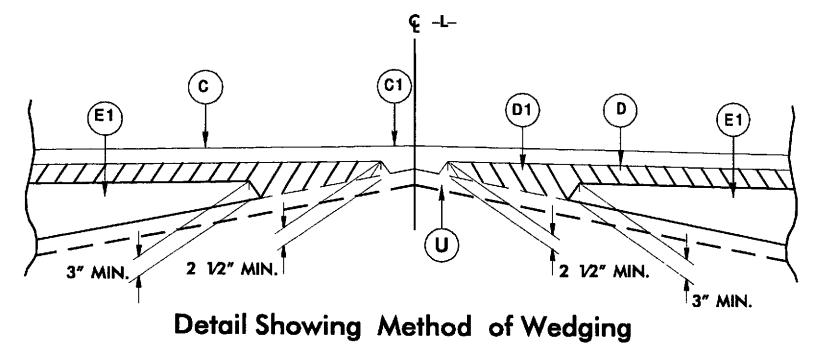
USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 2&3

(SEE PLANS FOR LOCATIONS)
 *SEE PLAN FOR LIMITS OF FDPS

PAVEMENT SCHEDULE	
A	6½" PORTLAND CEMENT CONCRETE PAVEMENT.
C	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.S9, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
C1	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.S9, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D	PROP. APPROX. 2¼" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.09, AT AN AVERAGE RATE OF 295 LBS. PER SQ. YD.
D1	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.09, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.09, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E1	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.09, 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.
J	PROP. 8" AGGREGATE BASE COURSE.
P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
R	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL BELOW)

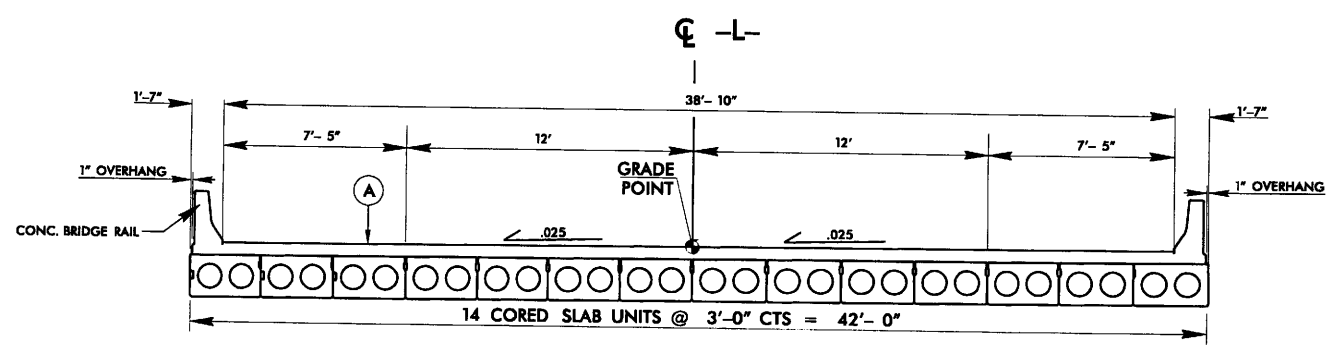
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

PROJECT REFERENCE NO. B-4030	SHEET NO. 2A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



TYPICAL SECTION NO. 4

-DET- STA. 15+72.89 TO STA. 19+50.00 (BEGIN BRIDGE)
 -DET- STA. 20+35.00 (END BRIDGE) TO STA. 24+93.10



TYPICAL BRIDGE SECTION NO. 5

-L- STA. 16+20.00 (BEGIN BRIDGE) TO STA. 17+40.00 (END BRIDGE)

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 File Group 36
 5016 AT LPA20635
 Design\B4030\Roadway\Proj\B4030_rdl_tjg.dgn

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

5/28/9

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SCALE AT 1/8"=1'-0"

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK
 IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
PHASE I					
-DET- 14+00.00 TO 19+50.00 (BEGIN BRIDGE)	31		2,871	2,840	
-DET- 20+35.00 (END BRIDGE) TO 26+00.00	26		2,586	2,560	
SUBTOTAL	57		5,457	5,400	
PHASE II					
-L- 12+00.00 TO 16+20.00 (BEGIN BRIDGE)	65		1,254	1,189	
-L- 17+40.00 (END BRIDGE) TO 21+00.00	233		1,094	861	
SUBTOTAL	298		2,348	2,050	
PHASE III (-L- /W-DET- REMOVAL)					
-L- 11+50.00 TO 16+49.30 (BEGIN BRIDGE)	2,125				2,125
-L- 17+34.30 (END BRIDGE) TO 22+50.00	1,834				1,834
SUBTOTAL	3,959				3,959
TOTALS	4,314		7,805	7,450	3,959
PROJECT TOTALS	4,314		7,805	7,450	3,959
EST. 5% FOR REPLACING TOPSOIL ON ON BORROW PIT				373	
GRAND TOTALS	4,314			7,823	
SAY	4,400			7,900	

EST. DDE = 450 C.Y.
 EST. UNDERCUT EXCAVATION = 300 C.Y.
 EST. SELECT GRANULAR MATERIAL = 200 C.Y.

NOTE: 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.

SUMMARY OF PAVEMENT REMOVAL
 IN SQUARE YARDS

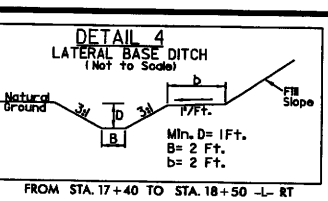
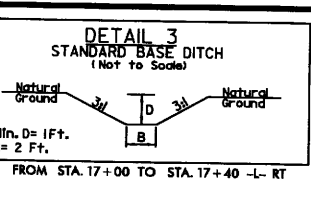
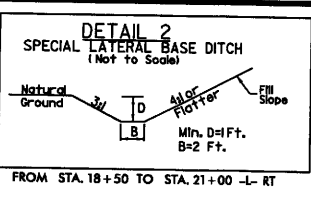
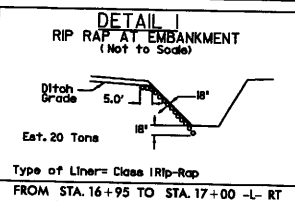
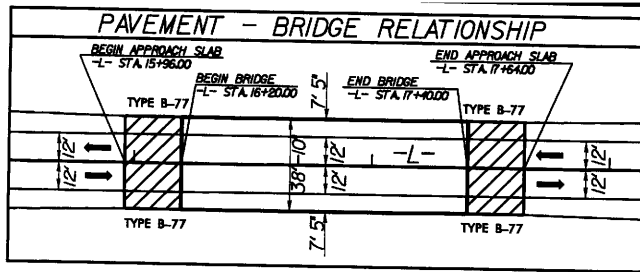
LOCATION	ASPHALT REMOVAL
-L- 15+20.00 TO 16+60.46	432.30
-L- 17+01.95 TO 18+40.00	427.96
-DET- 14+00.00 TO 16+51.74	282.36
-DET- 16+51.74 TO 19+42.06	903.22
-DET- 19+42.06 TO 19+50.00	25.58
-DET- 20+35.00 TO 20+42.94	25.58
-DET- 20+42.94 TO 24+29.01	1201.11
-DET- 24+29.01 TO 25+93.81	220.32
TOTAL	3,518.43
SAY	3,520

PARCEL INDEX

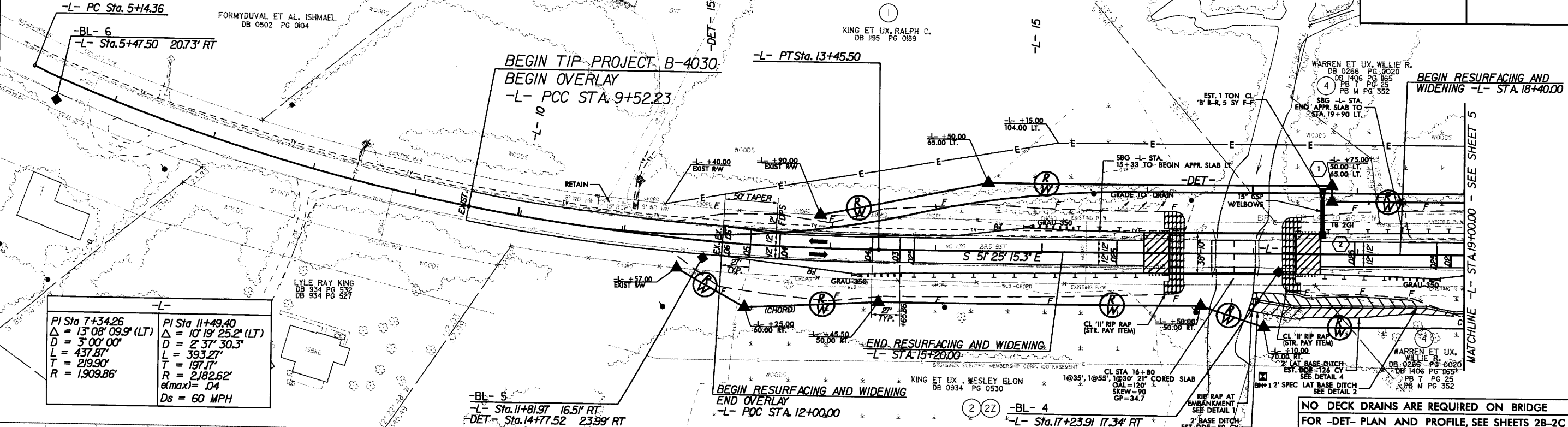
PARCEL NO.	PROPERTY OWNER	SHEET NO.
1	RALPH C. KING, ET UX	4
2	WESLEY ELON KING, ET UX	4
3	JOSEPH CLYMER SMITH, ET AL	4
4	WILLIE R. WARREN, ET UX	4+5

NOTE: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

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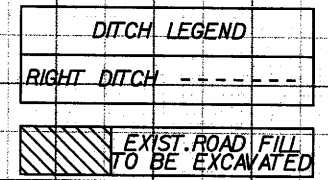


PROJECT REFERENCE NO. B-4030	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

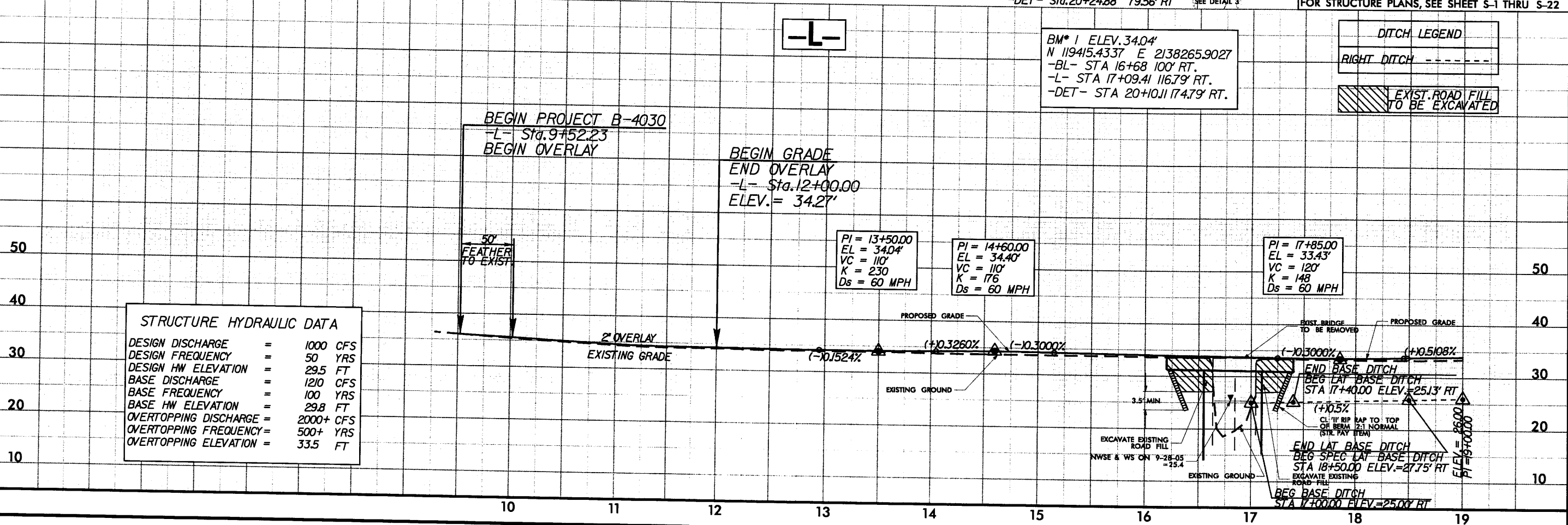


PI Sta 7+34.26 $\Delta = 13^{\circ} 08' 09.9''$ (LT) $D = 3^{\circ} 00' 00''$ $L = 437.87'$ $T = 219.90'$ $R = 1,909.86'$	PI Sta 11+49.40 $\Delta = 10^{\circ} 19' 25.2''$ (LT) $D = 2^{\circ} 37' 30.3''$ $L = 393.27'$ $T = 197.17'$ $R = 2,182.62'$ $e(max) = .04$ $Ds = 60$ MPH
--	--

NO DECK DRAINS ARE REQUIRED ON BRIDGE
 FOR -DET- PLAN AND PROFILE, SEE SHEETS 2B-2C
 FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-22



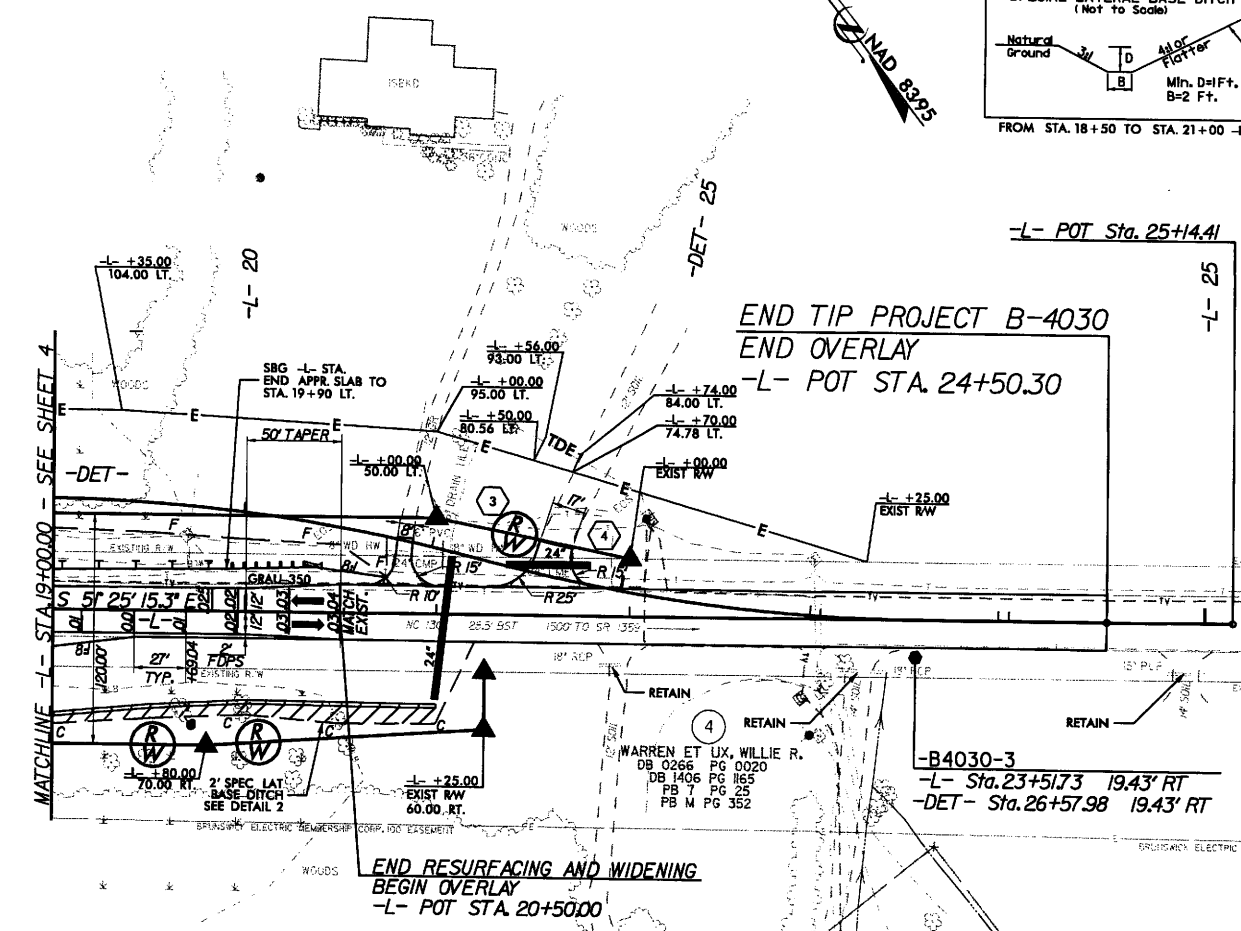
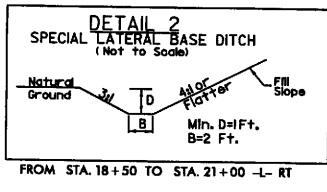
BM* 1 ELEV. 34.04'
 N 119415.4337 E 2138265.9027
 -BL- STA 16+68 100' RT.
 -L- STA 17+09.41 116.79' RT.
 -DET- STA 20+10.11 174.79' RT.



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	=	1000 CFS
DESIGN FREQUENCY	=	50 YRS
DESIGN HW ELEVATION	=	29.5 FT
BASE DISCHARGE	=	1210 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	29.8 FT
OVERTOPPING DISCHARGE	=	2000+ CFS
OVERTOPPING FREQUENCY	=	500+ YRS
OVERTOPPING ELEVATION	=	33.5 FT

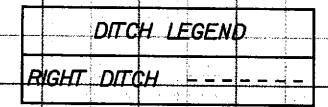
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4
WARREN ET UX, WILLIE R.
DB 0266 PG 0020
DB 1406 PG 165
PB 7 PG 25
PB M PG 352

4
WARREN ET UX, WILLIE R.
DB 0266 PG 0020
DB 1406 PG 165
PB 7 PG 25
PB M PG 352

FOR -DET- PLAN AND PROFILE, SEE SHEETS 2B-2C



-L-

END PROJECT B-4030
-L- Sta. 24+50.30
END OVERLAY

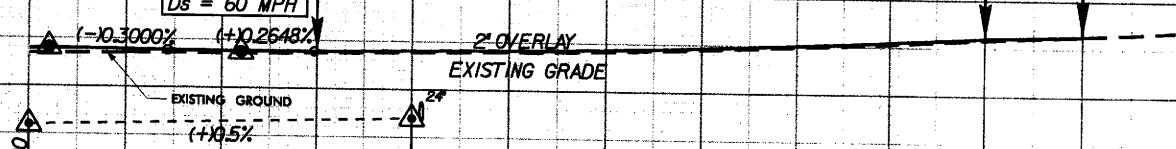
END GRADE
BEGIN OVERLAY
-L- Sta. 20+50.00
ELEV. = 33.87

PI = 19+10.00
EL = 34.06'
VC = 123'
K = 152
Ds = 60 MPH

PI = 20+10.00
EL = 33.76'
VC = 77'
K = 136
Ds = 60 MPH

50
40
30
20
10

50
40
30
20
10



PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO. 3		
DRAINAGE AREA	= 5	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 13.6	CFS
DESIGN HW ELEVATION	= 29.5	FT
100 YEAR DISCHARGE	= 16.0	CFS
100 YEAR HW ELEVATION	= 29.7	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 18.1	CFS
OVERTOPPING ELEVATION	= 33.81	FT

END SPEC LAT BASE DITCH
STA 21+00.00 ELEV. = 27.00 RT

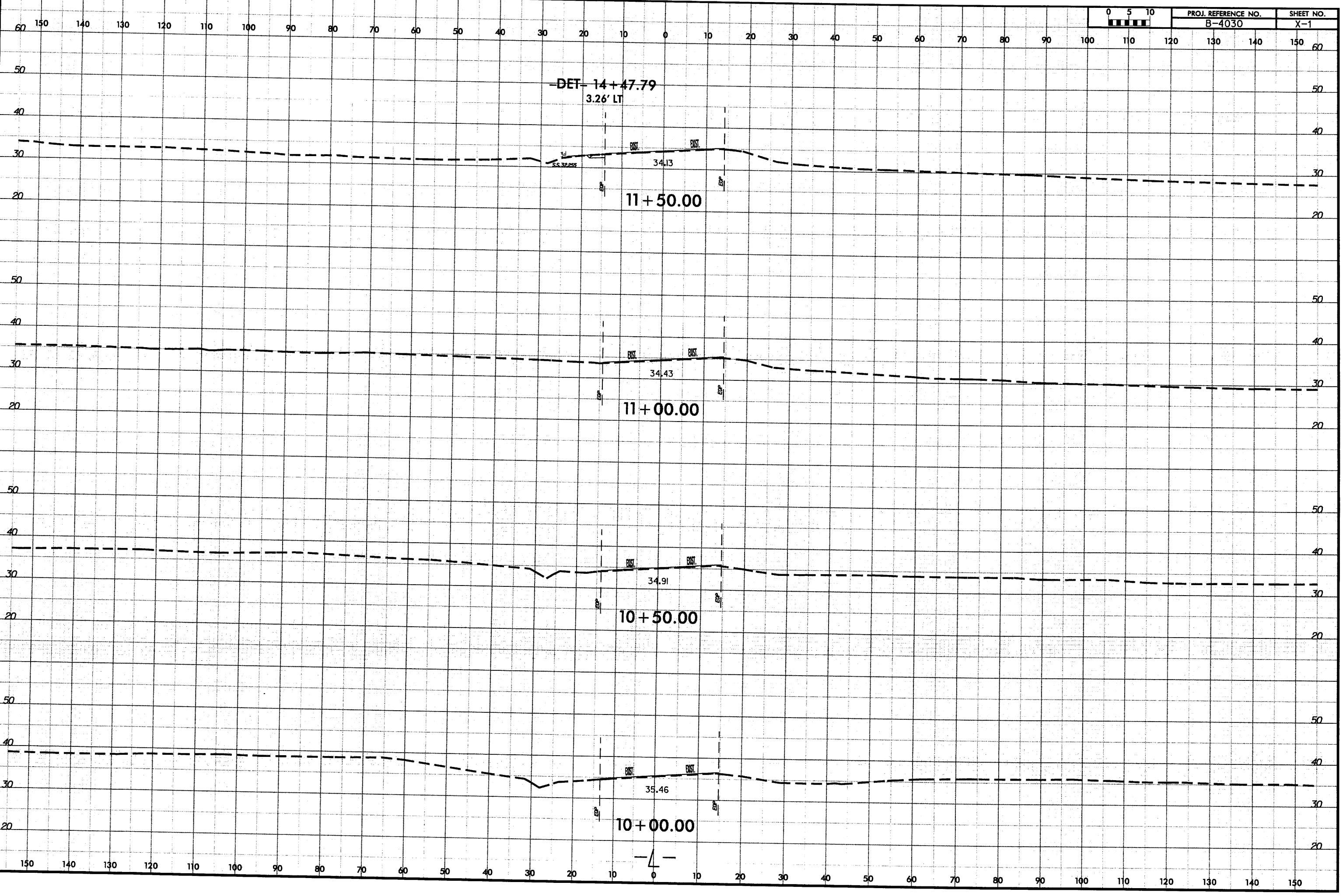
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REVISIONS

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8/23/

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4030	X-1

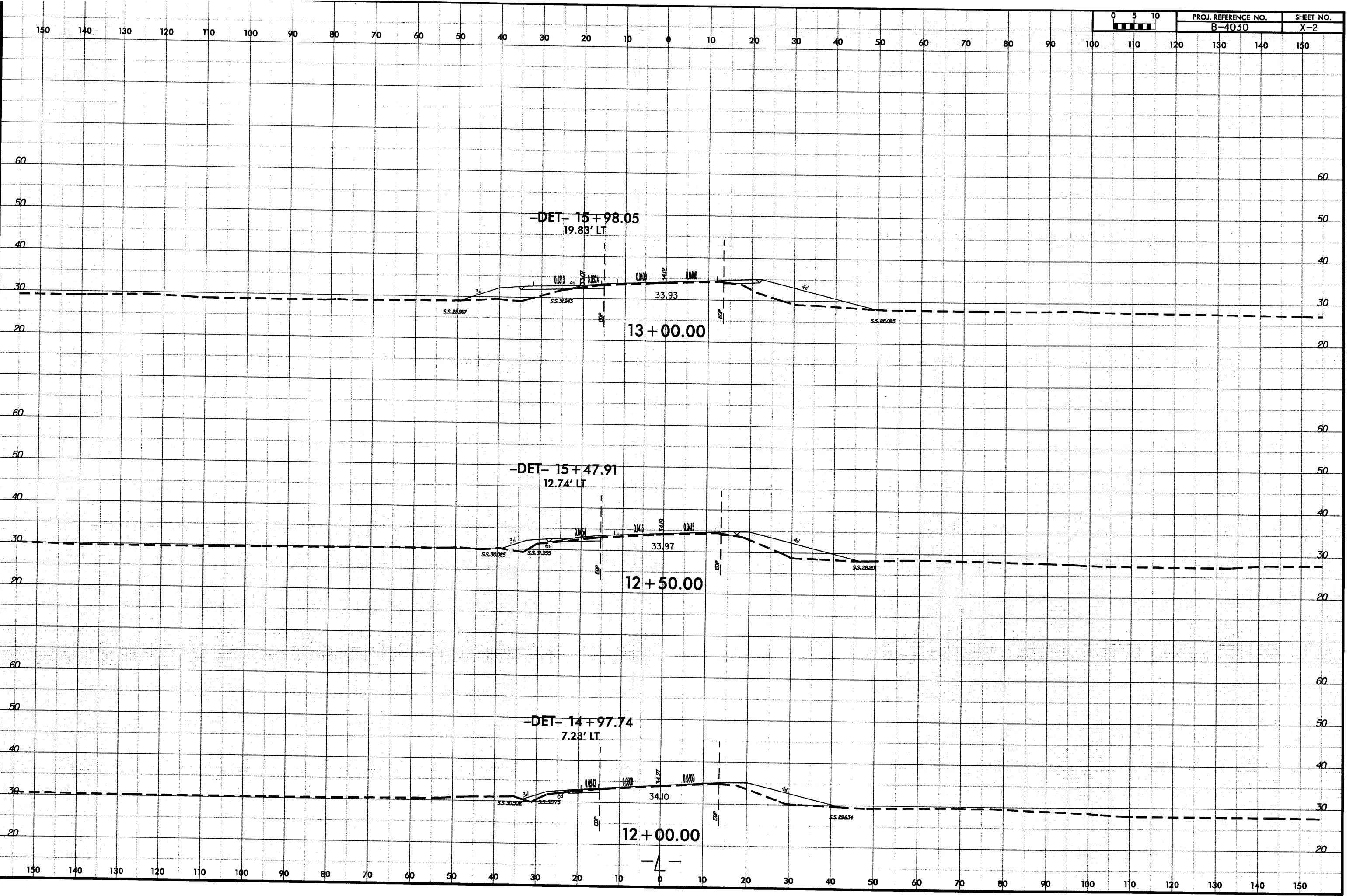


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8/23/09

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4030	X-2



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Scale: 1" = 10'

-DET- 17 + 48.10
47.80' LT

14 + 50.00

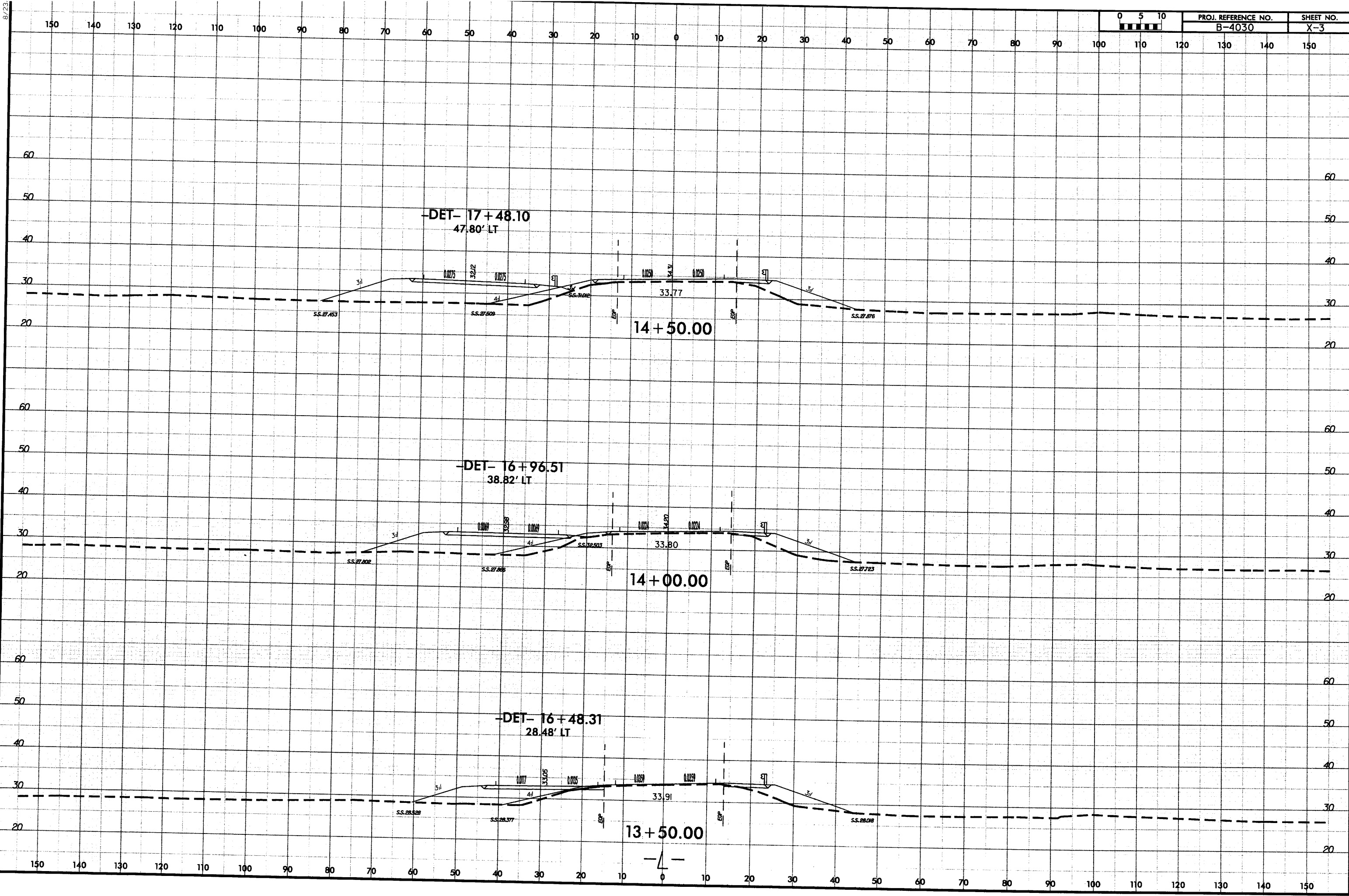
-DET- 16 + 96.51
38.82' LT

14 + 00.00

-DET- 16 + 48.31
28.48' LT

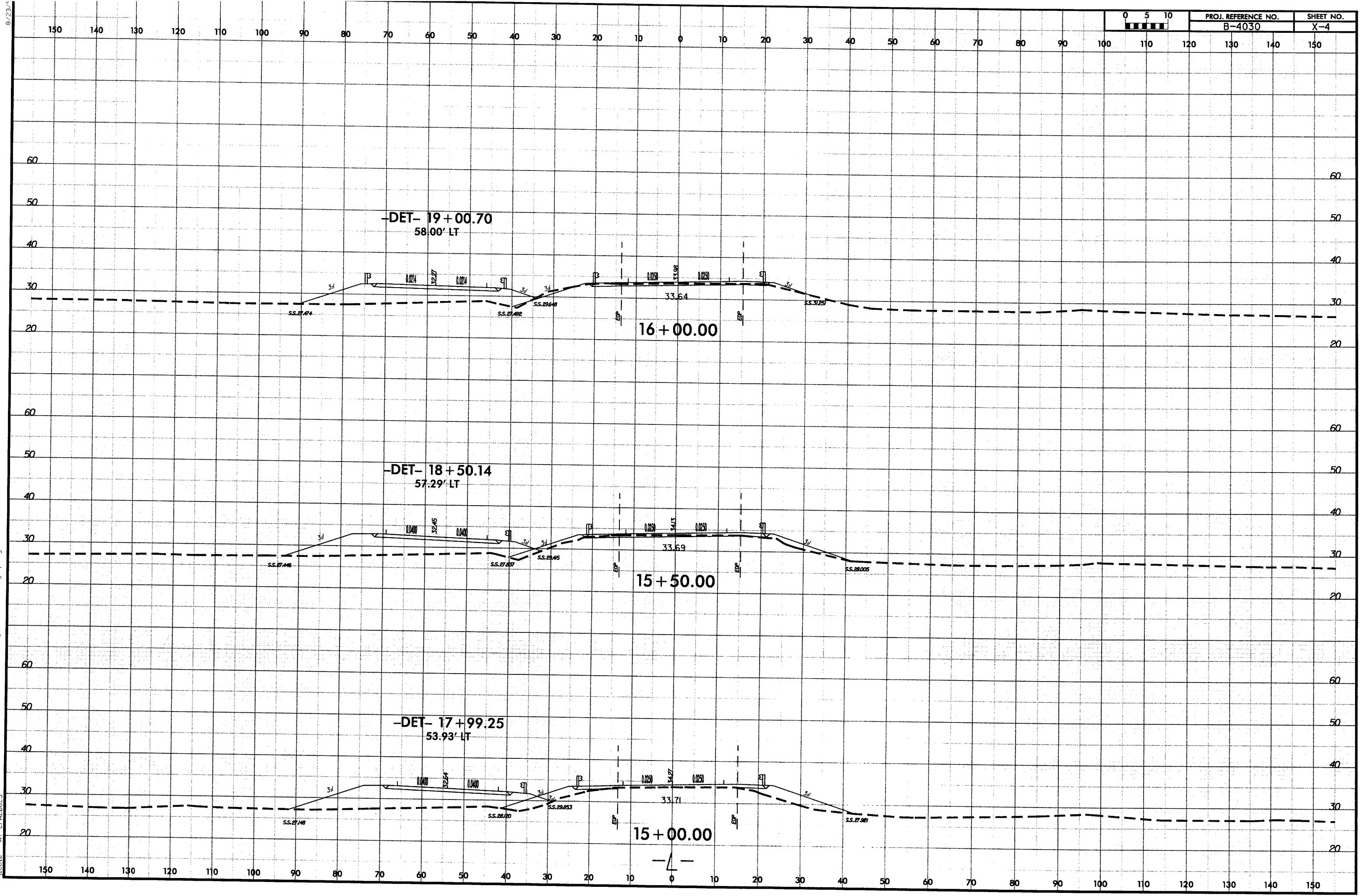
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8/23/06

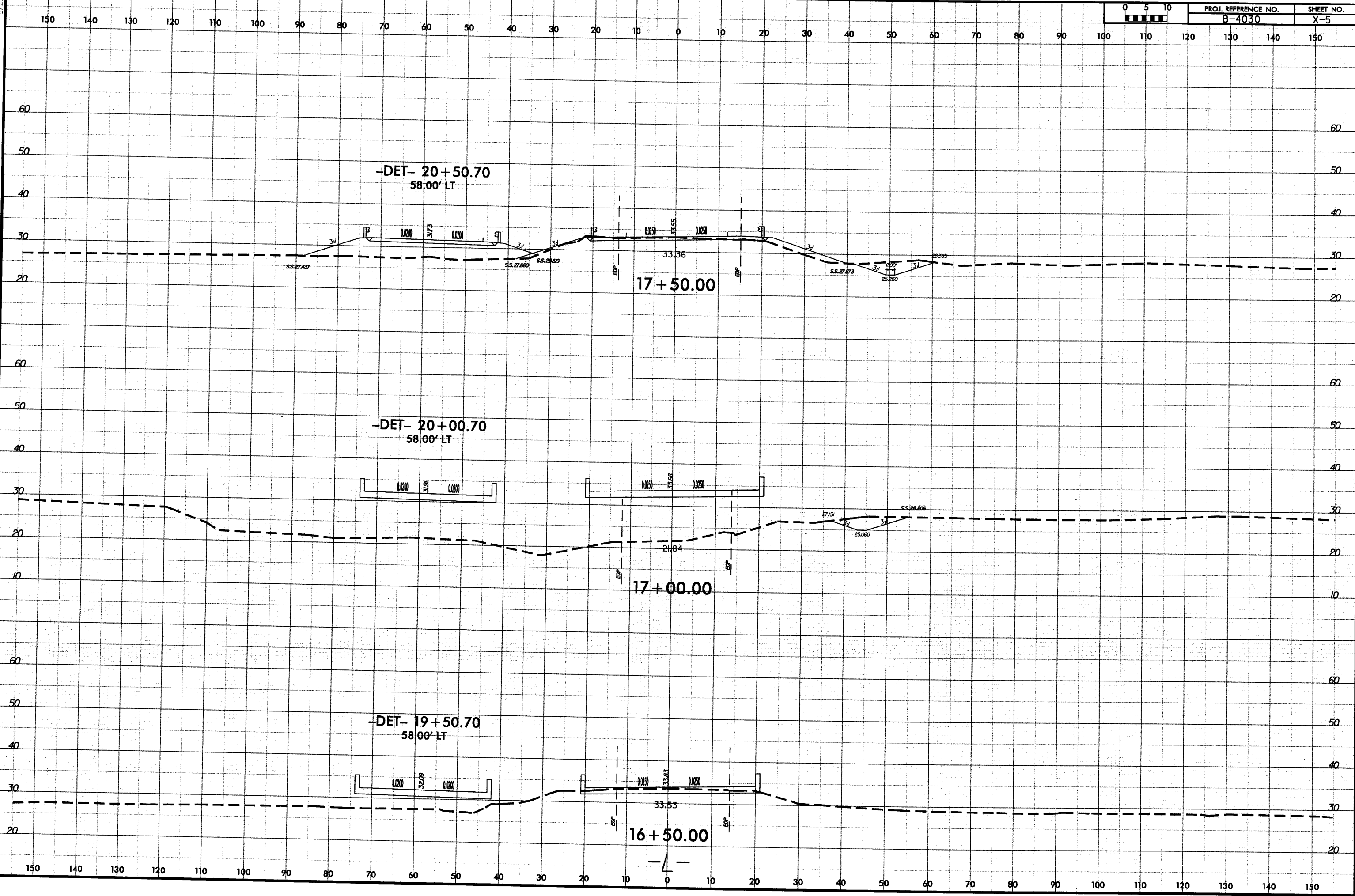
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	B-4030	X-4



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8/23/07

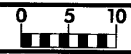
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8/23/

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PROJ. REFERENCE NO. B-4030 SHEET NO. X-8

-DET- 25+04.88
12.53' LT

22+00.00

-DET- 24+53.93
22.26' LT

21+50.00

-DET- 24+05.77
33.95' LT

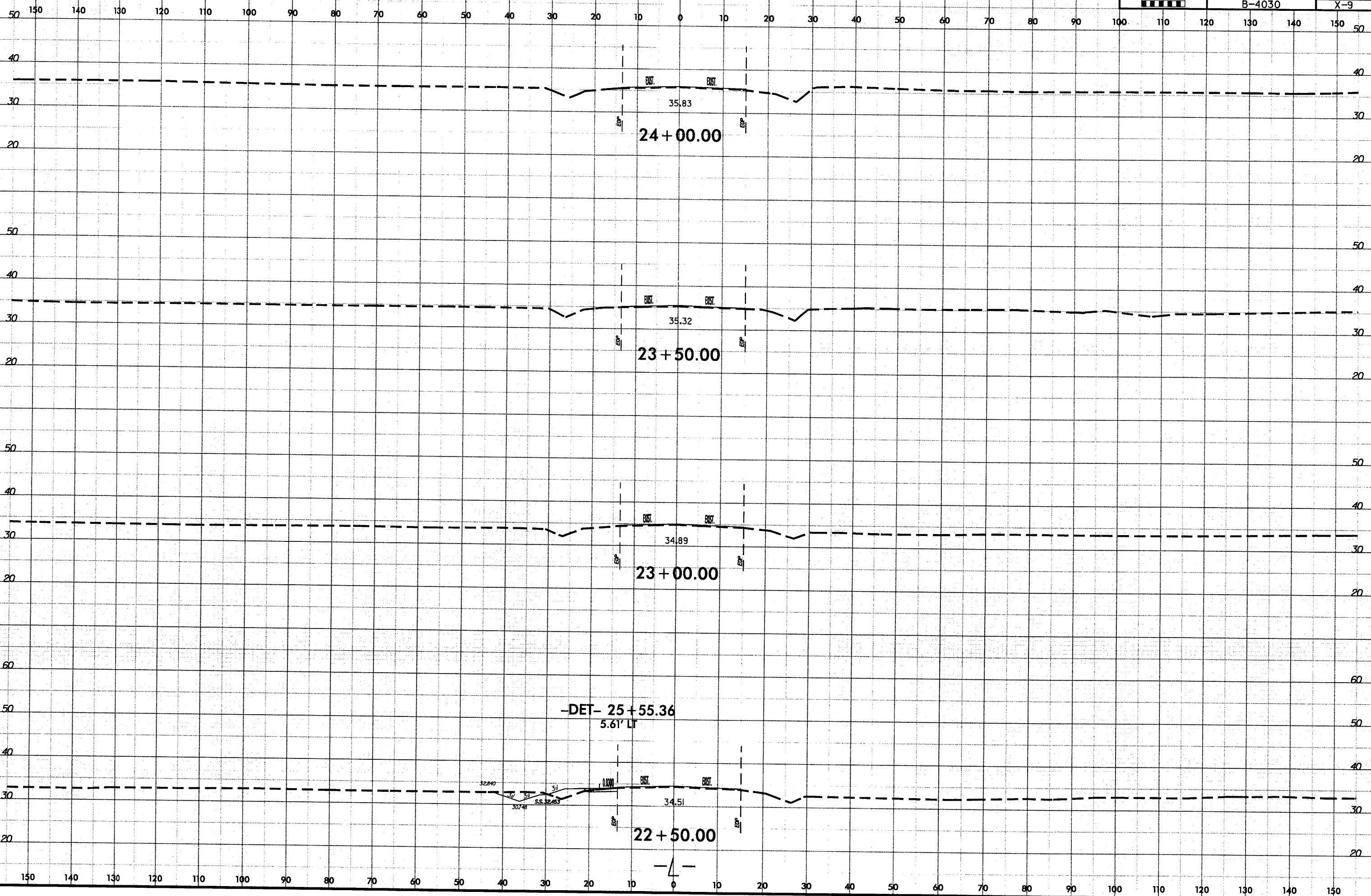
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4

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	B-4030	X-9



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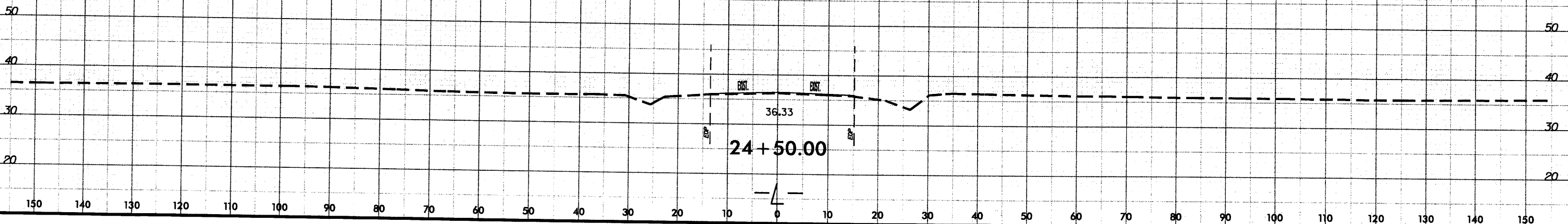
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PROJ. REFERENCE NO.
B-4030

SHEET NO.
X-10

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LPA20625



36.33

24 + 50.00

