



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

July 13, 2005

U.S. Army Corps of Engineers
Asheville Regulatory Field Office
151 Patton Avenue / Room 208
Asheville, North Carolina 28801-5006

Attention: Ms. Angie Pennock
NCDOT Coordinator

Dear Madam:

Subject: Revised Plans for the proposed replacement of Bridge No. 265 on SR-1791 (Ballenger Road) over Dunn Creek in Henderson County. Federal Project No. BRZ-1791(1), State Project No. 8.2952001, T.I.P. B-3665.

Reference: Nationwide Permit 23 Application, dated April 8, 2005; Action I.D. 200230311; and May 10, 2005 Memo (Subject: Response to Incomplete Application status)

On April 8, 2005 NCDOT applied for a Nationwide Permit 23. Subsequently, NCDOT became aware that a wetland boundary line was inadvertently omitted from the permit drawings. Please note in the attached revised drawings the addition of the wetland boundary in the Northeast Quadrant (Sta. 16+30 - Sta. 18+00) of the project site. Impacts to 0.019 acre due to mechanized clearing are proposed for this wetland. A letter from the Ecosystem Enhancement Program (EEP) indicating their willingness and ability to provide the additional mitigation for the unavoidable wetland impacts is forthcoming. The project has a Let Date of November 15, 2005 with a Review Date of September 27, 2005. With the submittal of this additional information, NCDOT hereby requests that these activities be authorized by a Nationwide Permit 23.

Copies of these revised plans along with the permit application will be posted on the NCDOT website at: <http://www.ncdot.org/planning/pe/naturalunit/Permit.html>. If you have any questions or need additional information, please contact Tyler Stanton at tstanton@dot.state.nc.us or (919) 715-1439.

Sincerely,

A handwritten signature in black ink, appearing to read "Gregory J. Thorpe".

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

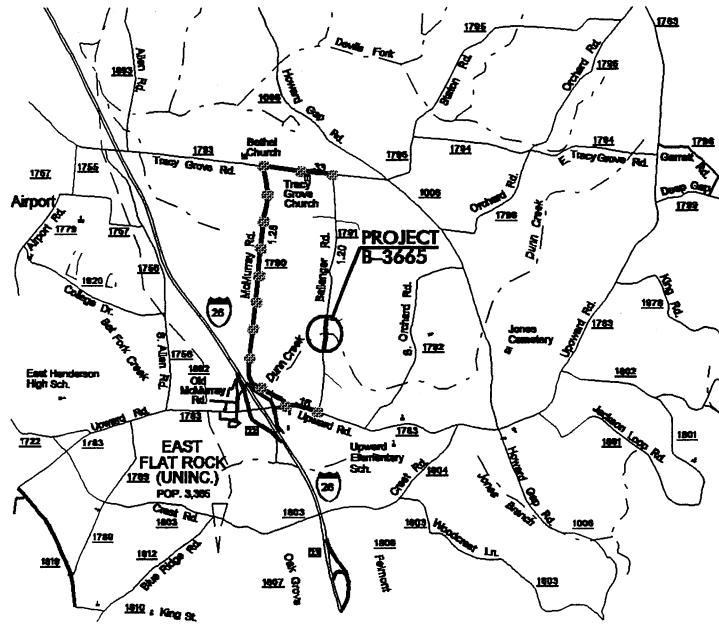
W/attachment:

Mr. John Hennessy, NCDWQ (2 copies)
Ms. Marella Buncick, USFWS
Ms. Marla Chambers, NCWRC
Mr. Harold Draper, TVA
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. J. B. Setzer, P.E., Division Engineer
Mr. Mark Davis, DEO

W/o attachment:

Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. David Franklin, USACE, Wilmington
Ms. Beth Harmon, EEP
Mr. Todd Jones, NCDOT External Audit Branch
Mr. Khaled Al-Akhdar, P.E., PDEA

NORTH CAROLINA




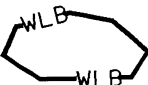


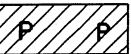
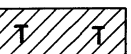

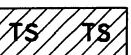
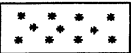

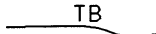
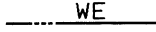
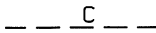


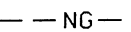
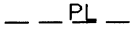
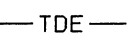
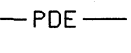
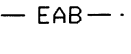
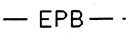

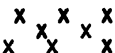



(NOT TO SCALE)

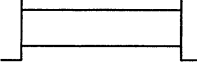
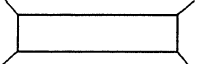

DETOUR ROUTE


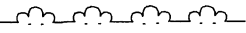
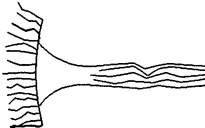
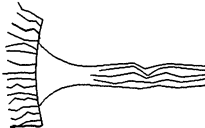



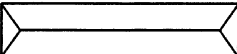
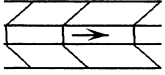

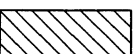
VICINITY MAPS

NCDOT
DIVISION OF HIGHWAYS
HENDERSON COUNTY
PROJECT: 33210.1.1 (B-3665)
BRIDGE NO. 265 OVER
DUNN CREEK AND
APPROACHES ON SR 1791

LEGEND

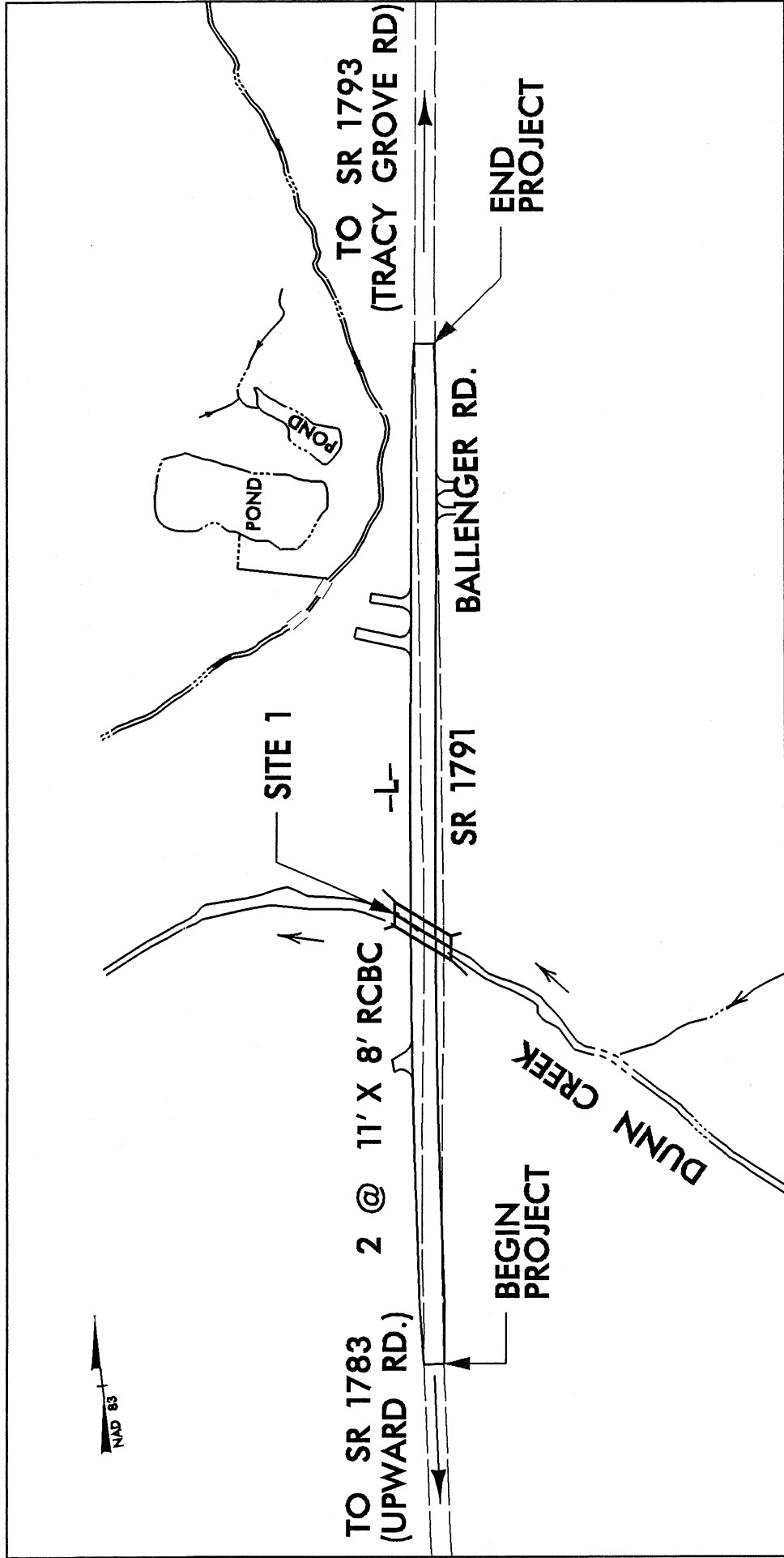
-  WETLAND BOUNDARY
-  WETLAND
-  DENOTES FILL IN WETLAND
-  DENOTES FILL IN SURFACE WATER
-  DENOTES FILL IN SURFACE WATER (POND)
-  DENOTES TEMPORARY FILL IN WETLAND
-  DENOTES EXCAVATION IN WETLAND
-  DENOTES TEMPORARY FILL IN SURFACE WATER
-  DENOTES MECHANIZED CLEARING
-  FLOW DIRECTION
-  TOP OF BANK
-  EDGE OF WATER
-  PROP. LIMIT OF CUT
-  PROP. LIMIT OF FILL
-  PROP. RIGHT OF WAY
-  NATURAL GROUND
-  PROPERTY LINE
-  TEMP. DRAINAGE EASEMENT
-  PERMANENT DRAINAGE EASEMENT
-  EXIST. ENDANGERED ANIMAL BOUNDARY
-  EXIST. ENDANGERED PLANT BOUNDARY
-  WATER SURFACE
-  LIVE STAKES
-  BOULDER
-  CORE FIBER ROLLS
-  DENOTES AREA TO BE EXCAVATED

-  PROPOSED BRIDGE
-  PROPOSED BOX CULVERT
-  PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE
- (DASHED LINES DENOTE EXISTING STRUCTURES)

-  SINGLE TREE
-  WOODS LINE
-  DRAINAGE INLET
-  ROOTWAD
-  RIP RAP
-  ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE
-  PREFORMED SCOUR HOLE
-  LEVEL SPREADER (LS)
-  DITCH / GRASS SWALE
-  DENOTES IMPACTS TO BUFFER ZONE 1
-  DENOTES IMPACTS TO BUFFER ZONE 2

NCDOT
DIVISION OF HIGHWAYS
HENDERSON COUNTY
PROJECT: 33210.1.1 (B-3665)
BRIDGE NO. 265 OVER
DUNN CREEK AND
APPROACHES ON SR 1791

SHEET 2 OF 7 4/13/04



NCDOT
 DIVISION OF HIGHWAYS
 HENDERSON COUNTY
 PROJECT: 33210.1.1 (B-3665)
 BRIDGE NO. 265 OVER
 DUNN CREEK AND
 APPROACHES ON SR 1791

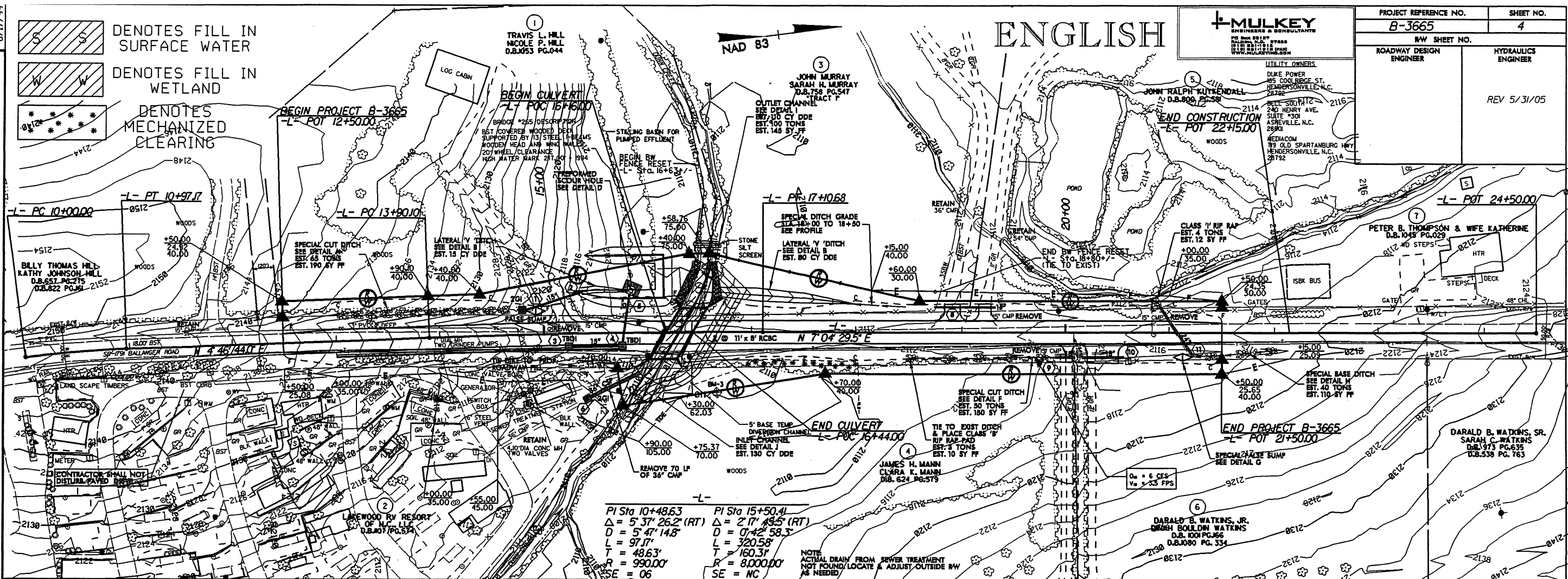
SITE MAP
 NOT TO SCALE

B.17/99

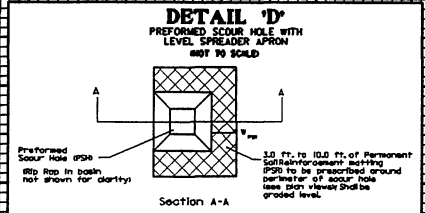
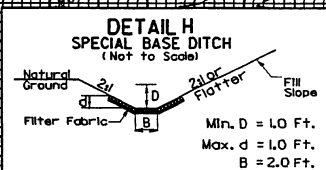
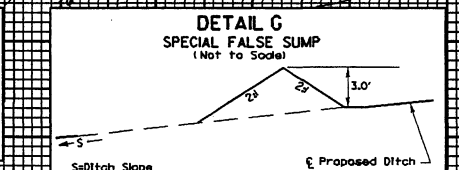
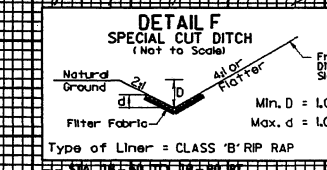
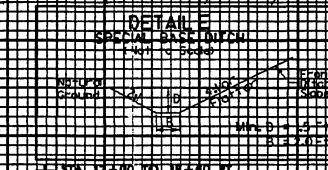
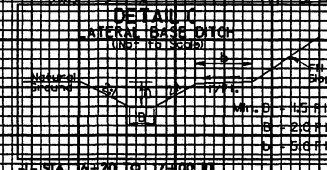
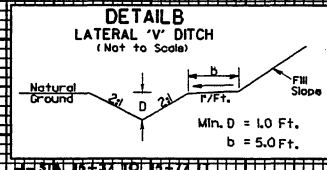
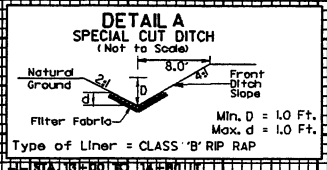
- DENOTES FILL IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING

MULKEY
ENGINEERS & SURVEYORS
1110 EAST 11TH ST
ASHEVILLE, N.C. 28702
WWW.MULKEYINC.COM

PROJECT REFERENCE NO. B-3665	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REV 5/31/05	



PI Sta 10+48.63 PI Sta 15+50.41
 $\Delta = 5' 37'' 26.2 (RT)$ $\Delta = 2' 17'' 43.5 (RT)$
 $D = 5' 47'' 14.8$ $D = 0' 42'' 58.3$
 $L = 97.17'$ $L = 320.58'$
 $T = 48.63'$ $T = 160.31'$
 $R = 990.00'$ $R = 8,000.00'$
 $SE = 06$ $SE = NC$

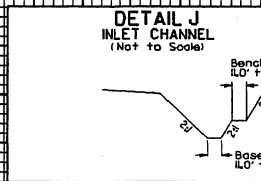
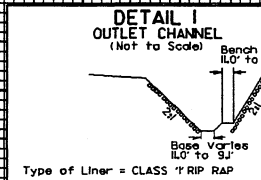


CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 750 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2113.0 FT
BASE DISCHARGE	= 1200 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2113.8 FT
OVERTOPPING DISCHARGE	= 565 CFS
OVERTOPPING FREQUENCY	= 10+ YRS
OVERTOPPING ELEVATION	= 2112.2 FT

-L- STA. 21+06 24' RCP - 60' SKEW

DRAINAGE AREA	= 17 AC
DESIGN FREQUENCY	= 25 YRS
DESIGN DISCHARGE	= 17 CFS
DESIGN HW ELEVATION	= 2115.32 FT
BASE DISCHARGE	= 27 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2116.71 FT
OVERTOPPING FREQUENCY	= 50+ YRS
OVERTOPPING DISCHARGE	= 22 CFS
OVERTOPPING ELEVATION	= 2116.00 FT



REVISIONS

2.150
2.140
2.130
2.120
2.110
2.100
2.090
2.080

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

8/17/95

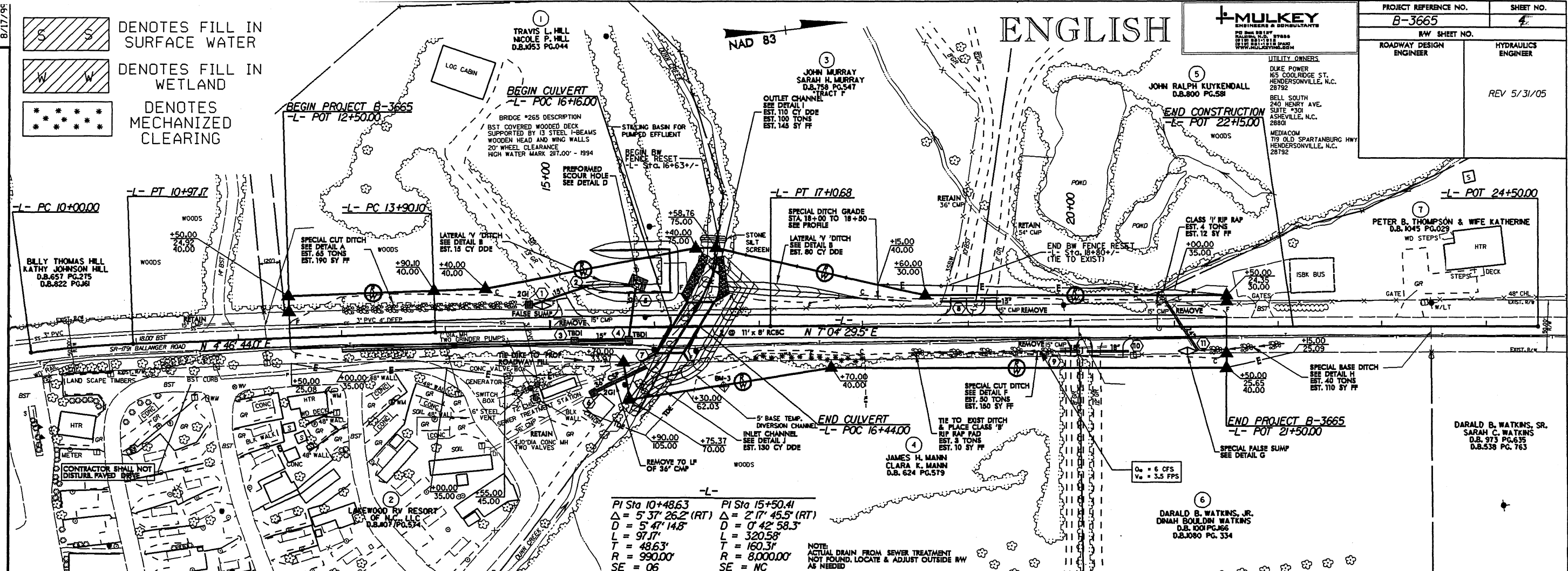
- DENOTES FILL IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING

MULKEY
ENGINEERS & ARCHITECTS
1111 EAST 10TH ST.
SUITE 100
ASHEVILLE, N.C. 28801
TEL: 252-399-1111
WWW.MULKEY.COM

PROJECT REFERENCE NO. B-3665	SHEET NO. 4
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	REV 5/31/05

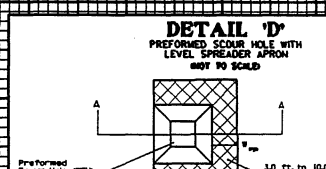
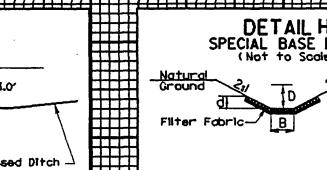
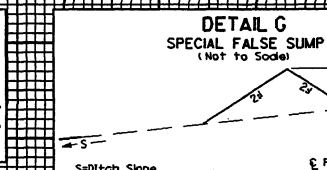
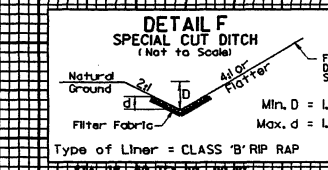
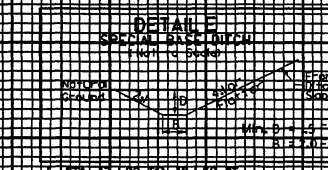
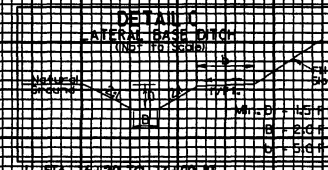
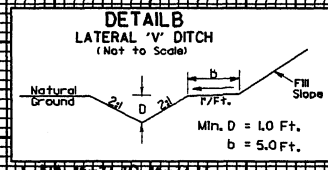
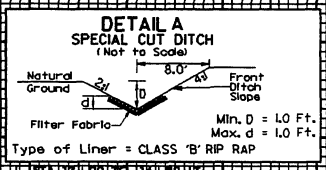
ENGLISH

NAD 83



PI Sta 10+48.63 **PI Sta 15+50.41**
 $\Delta = 5' 37'' 26.2''$ (RT) $\Delta = 2' 17'' 45.5''$ (RT)
 $D = 5' 47'' 14.8''$ $D = 0' 42'' 58.3''$
 $L = 97.17'$ $L = 320.58'$
 $T = 48.63'$ $T = 160.31'$
 $R = 990.00'$ $R = 8,000.00'$
 $SE = 06$ $SE = NC$

NOTE: ACTUAL DRAIN FROM SEWER TREATMENT NOT FOUND. LOCATE & ADJUST OUTSIDE RW AS NEEDED

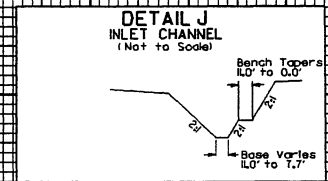
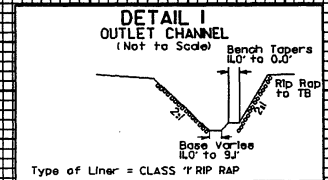


CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 750 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2113.0 FT
BASE DISCHARGE	= 1200 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2113.8 FT
OVERTOPPING DISCHARGE	= 565 CFS
OVERTOPPING FREQUENCY	= 10+ YRS
OVERTOPPING ELEVATION	= 2112.2 FT

-L- STA. 21+06 24" RCP - 60' SKEW

DRAINAGE AREA	= 17 AC
DESIGN FREQUENCY	= 25 YRS
DESIGN DISCHARGE	= 17 CFS
DESIGN HW ELEVATION	= 2115.32 FT
BASE DISCHARGE	= 27 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2116.71 FT
OVERTOPPING FREQUENCY	= 50+ YRS
OVERTOPPING DISCHARGE	= 22 CFS
OVERTOPPING ELEVATION	= 2116.00 FT



REVISIONS

DATE

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

PROPERTY OWNERS

NAMES AND ADDRESSES

REFERENCE NO.	NAMES	ADDRESSES
1	Billy & Kathy Hill	Rt. 1 Box 494A Flat Rock, NC 28731
2	Bruce & Joyce Marsteller	Rt. 1 Box 495B Flat Rock, NC 28731
3	John & Sarah Murray	Rt. 1 Box 493A Flat Rock, NC 28731
4	James & Clara Mann	Rt. 1 Box 493 Flat Rock, NC 28731

NCDOT

DIVISION OF HIGHWAYS
HENDERSON COUNTY

PROJECT: 33210.1.1 (B-3665)

BRIDGE NO. 265 OVER
DUNN CREEK AND
APPROACHES ON SR 1791

WETLANDS IMPACT PERMIT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Cleaning (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	16+30-L-	2 @ 11' x 8' RCBC	0	0	0	0.019	0.030	0	0	170	0
TOTALS:			0	0	0	0.019	0.03	0	0	170	0

NCDOT

DIVISION OF HIGHWAYS
 HENDERSON COUNTY
 PROJECT 33210.1.1 (B-3665)
 BRIDGE NO. 265 OVER
 DUNN CREEK AND
 APPROACHES ON SR 1791

Form Revised 3/22/01

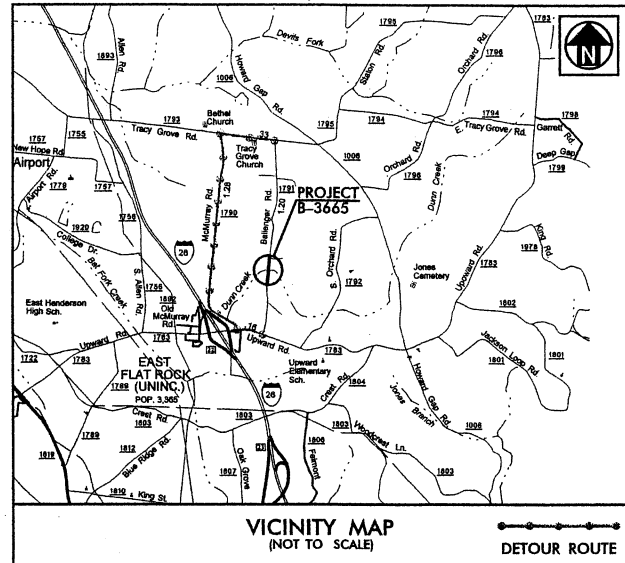
WETLANDS IMPACT PERMIT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	16+30 -L-	2 @ 11' x 8' RCBC	0	0	0	0.019	0.030	0	0	170	0
TOTALS:			0	0	0	0.019	0.03	0	0	170	0

NCDOT
 DIVISION OF HIGHWAYS
 HENDERSON COUNTY
 PROJECT 33210.1.1 (B-3665)
 BRIDGE NO. 265 OVER
 DUNN CREEK AND
 APPROACHES ON SR 1791
 SHEET 7 OF 7
 5/31/2005

CONTRACT: C201229 **TIP PROJECT: B-3665**

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

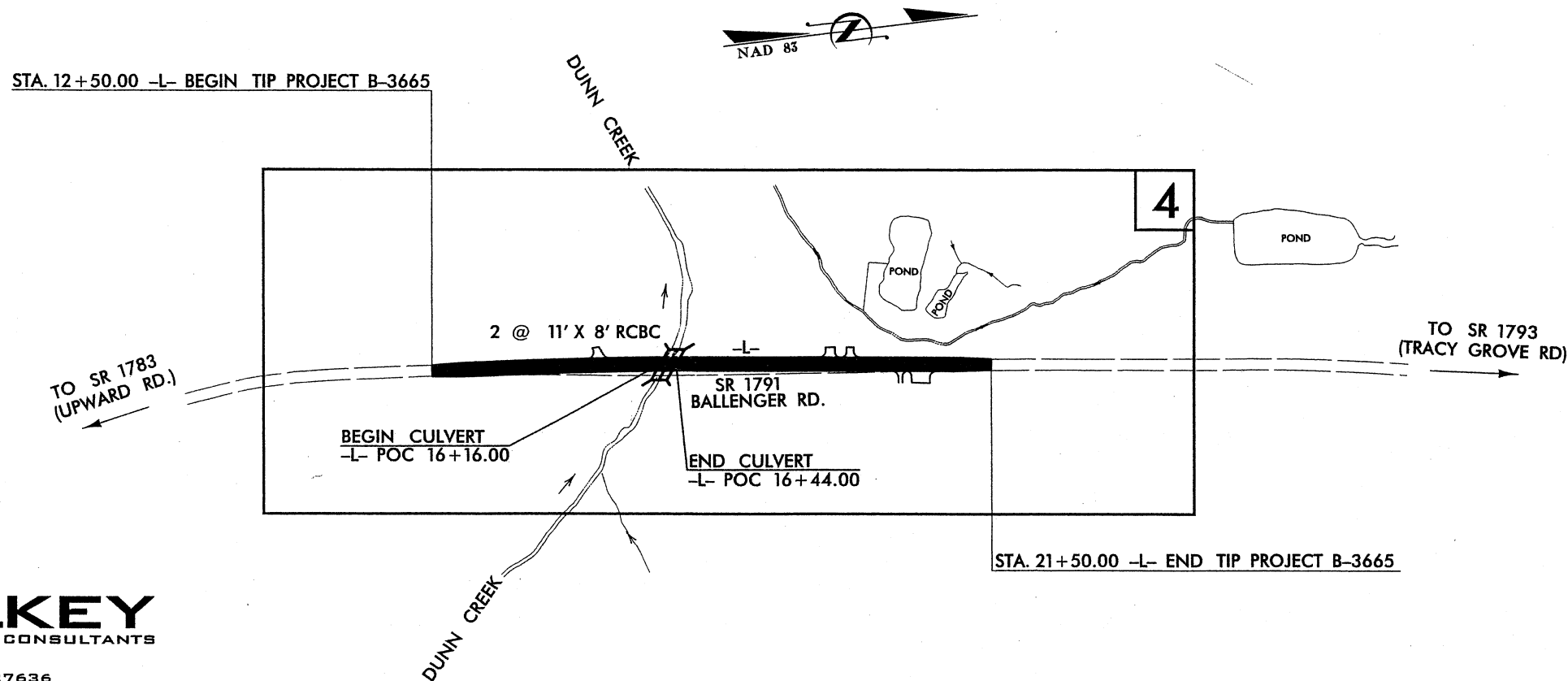


STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
HENDERSON COUNTY

LOCATION: BRIDGE NO. 265 OVER DUNN CREEK ON SR 1791 (BALLENGER ROAD)

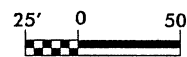
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3665	1	
WBS NO.	F.A. PROJ. NO.	DESCRIPTION	
33210.1.1	BRZ-1791(1)	P.E.	
33210.2.1	BRZ-1791(2)	RW, UTL	
33210.3.1	BRZ-1791(3)	CONST	

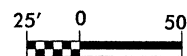


MULKEY
 ENGINEERS & CONSULTANTS
 PO Box 33127
 RALEIGH, N.C. 27636
 (919) 851-1912
 (919) 851-1918 (FAX)
 WWW.MULKEYINC.COM

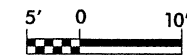
GRAPHIC SCALE



PLANS



PROFILE (HORIZONTAL)



PROFILE (VERTICAL)

DESIGN DATA

ADT 2005 = 778
 ADT 2025 = 1,300
 DHV = 14%
 D = 55%
 * T = 3%
 ** V = 50 mph
 Func Class = Local
 * (Duals = 2% + TTST = 1%)
 ** Design Exception -
 Design Speed

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3665 = 0.165 MILE
 LENGTH STRUCTURES TIP PROJECT B-3665 = 0.005 MILE
 TOTAL LENGTH TIP PROJECT B-3665 = 0.170 MILE

Prepared in the Office of:

Mulkey Engineers & Consultants

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

APRIL 30, 2004

LETTING DATE:

MAY 17, 2005

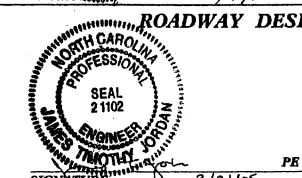
NCDOT CONTACT:

TIM JORDAN, PE
MULKEY E & C
PROJECT MANAGER

JONATHAN SCARCE, PE
MULKEY E & C
HYDRAULICS ENGINEER

TERESA BRUTON, P.E.
DESIGN SERVICES - PROJECT ENGINEER

HYDRAULICS ENGINEER



ROADWAY DESIGN

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

ant m. millan PE
 STATE HIGHWAY ENGINEER - DESIGN
 DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION

APPROVED FOR: _____ DATE: _____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

ROADS & RELATED ITEMS

Edge of Pavement	—————
Curb	—————
Prop. Slope Stakes Cut	————— C
Prop. Slope Stakes Fill	————— F
Prop. Woven Wire Fence	○ ○
Prop. Chain Link Fence	□ □
Prop. Barbed Wire Fence	◇ ◇
Prop. Wheelchair Ramp	NCP
Curb Cut for Future Wheelchair Ramp	CCPR
Exist. Guardrail	—————
Prop. Guardrail	—————
Exist. Cable Guiderail	—————
Prop. Cable Guiderail	—————
Equality Symbol	⊕
Pavement Removal	⊗

RIGHT OF WAY

Baseline Control Point	◆
Existing Right of Way Marker	△
Exist. Right of Way Line w/Marker	———△———
Prop. Right of Way Line with Proposed	———▲———
R/W Marker (Iron Pin & Cap)	▲
Prop. Right of Way Line with Proposed	———▲———
(Concrete or Granite) R/W Marker	●
Exist. Control of Access Line	⊙
Prop. Control of Access Line	⊙
Exist. Easement Line	—E—
Prop. Temp. Construction Easement Line	—E—
Prop. Temp. Drainage Easement Line	—TDE—
Prop. Perm. Drainage Easement Line	—PDE—

HYDROLOGY

Stream or Body of Water	—————
Flow Arrow	→
Disappearing Stream	Y
Spring	⊙
Swamp Marsh	⋈
Shoreline	—————
Falls, Rapids	———+———
Prop Lateral, Tail, Head Ditches	—————

STRUCTURES

MAJOR	
Bridge, Tunnel, or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW

MINOR

Head & End Wall	CONC HW
Pipe Culvert	—————
Footbridge	—————
Drainage Boxes	□ CB
Paved Ditch Gutter	—————

UTILITIES

Exist. Pole	•
Exist. Power Pole	•
Prop. Power Pole	•
Exist. Telephone Pole	•
Prop. Telephone Pole	•
Exist. Joint Use Pole	•
Prop. Joint Use Pole	•
Telephone Pedestal	□
Cable TV Pedestal	□
Hydrant	⊕
Satellite Dish	⋈
Exist. Water Valve	⊕
Sewer Clean Out	⊕
Power Manhole	⊕
Telephone Booth	⊕
Water Manhole	⊕
Light Pole	⊕
H-Frame Pole	⊕
Power Line Tower	⊕
Pole with Base	⊕
Gas Valve	⊕
Gas Meter	⊕
Telephone Manhole	⊕
Power Transformer	⊕
Sanitary Sewer Manhole	⊕
Storm Sewer Manhole	⊕
Tank; Water, Gas, Oil	⊕
Water Tank With Legs	⊕
Traffic Signal Junction Box	⊕
Fiber Optic Splice Box	⊕
Television or Radio Tower	⊕
Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement	TS

Recorded Water Line	———
Designated Water Line (S.U.E.*)	———
Sanitary Sewer	———
Recorded Sanitary Sewer Force Main	———
Designated Sanitary Sewer Force Main(S.U.E.*)	———
Recorded Gas Line	———
Designated Gas Line (S.U.E.*)	———
Storm Sewer	———
Recorded Power Line	———
Designated Power Line (S.U.E.*)	———
Recorded Telephone Cable	———
Designated Telephone Cable (S.U.E.*)	———
Recorded U/G Telephone Conduit	———
Designated U/G Telephone Conduit (S.U.E.*)	———
Unknown Utility (S.U.E.*)	———
Recorded Television Cable	———
Designated Television Cable (S.U.E.*)	———
Recorded Fiber Optics Cable	———
Designated Fiber Optics Cable (S.U.E.*)	———
Exist. Water Meter	⊕
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to U/G Record	ATTUR
End of Information	E.O.I.

BOUNDARIES & PROPERTIES

State Line	—————
County Line	—————
Township Line	—————
City Line	—————
Reservation Line	—————
Property Line	—————
Property Line Symbol	⊕
Exist. Iron Pin	⊕
Property Corner	⊕
Property Monument	⊕
Property Number	123
Parcel Number	6
Fence Line	———X———
Existing Wetland Boundaries	———WLB———
Proposed Wetland Boundaries	———WLB———
Existing Endangered Animal Boundaries	———EAB———
Existing Endangered Plant Boundaries	———EPB———

BUILDINGS & OTHER CULTURE

Buildings	⊕
Foundations	⊕
Area Outline	⊕
Gate	⊕
Gas Pump Vent or U/G Tank Cap	⊕
Church	⊕
School	⊕
Park	⊕
Cemetery	⊕
Dam	⊕
Sign	⊕
Well	⊕
Small Mine	⊕
Swimming Pool	⊕

TOPOGRAPHY

Loose Surface	—————
Hard Surface	—————
Change in Road Surface	—————
Curb	—————
Right of Way Symbol	R/W
Guard Post	⊕ GP
Paved Walk	—————
Bridge	—————
Box Culvert or Tunnel	—————
Ferry	—————
Culvert	—————
Footbridge	—————
Trail, Footpath	—————
Light House	⊕

VEGETATION

Single Tree	⊕
Single Shrub	⊕
Hedge	—————
Woods Line	—————
Orchard	⊕
Vineyard	VINEYARD

RAILROADS

Standard Gauge	—————
RR Signal Milepost	⊕
Switch	⊕

7/12/99
12/29/2004 07:52:23 AM
F:\Roadway\Proj\N3665_1_01_1_1.dgn

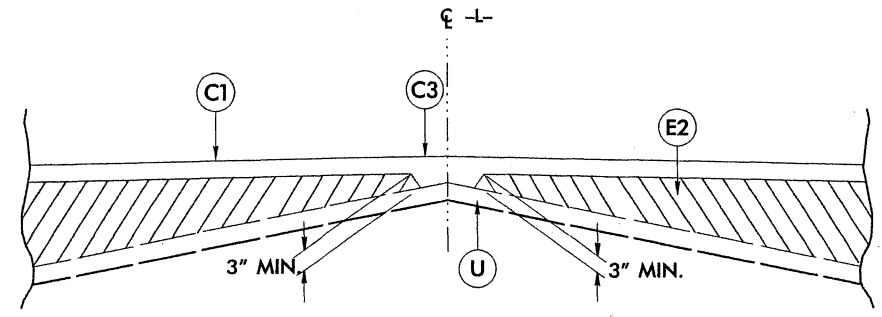
7/2/99

04/17/16 PM
Roadway\Proj\3665_r.dwg, typ.dgn

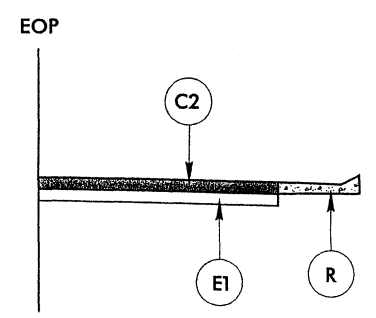
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 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 5 1/2" IN DEPTH.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE WEDGING DETAIL)

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



DETAIL SHOWING METHOD OF WEDGING
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1

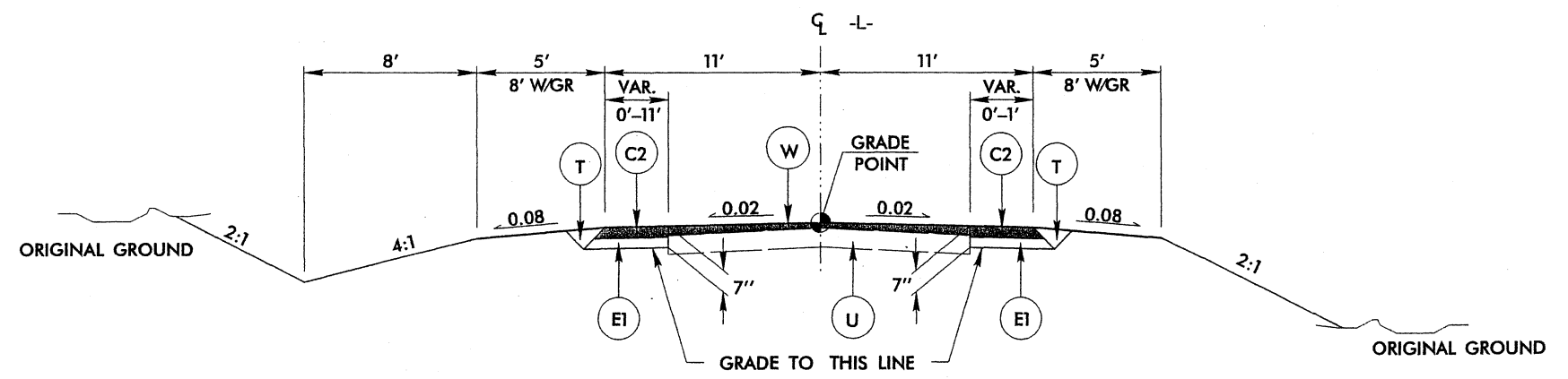


DETAIL No. 1

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2
-L- STA 13+00.00 TO STA 15+75.00 RT

MULKEY
ENGINEERS & CONSULTANTS
P.O. BOX 22127
RALEIGH, N.C. 27628
(919) 851-1010
(919) 851-1012 (FAX)
WWW.MULKEYINC.COM

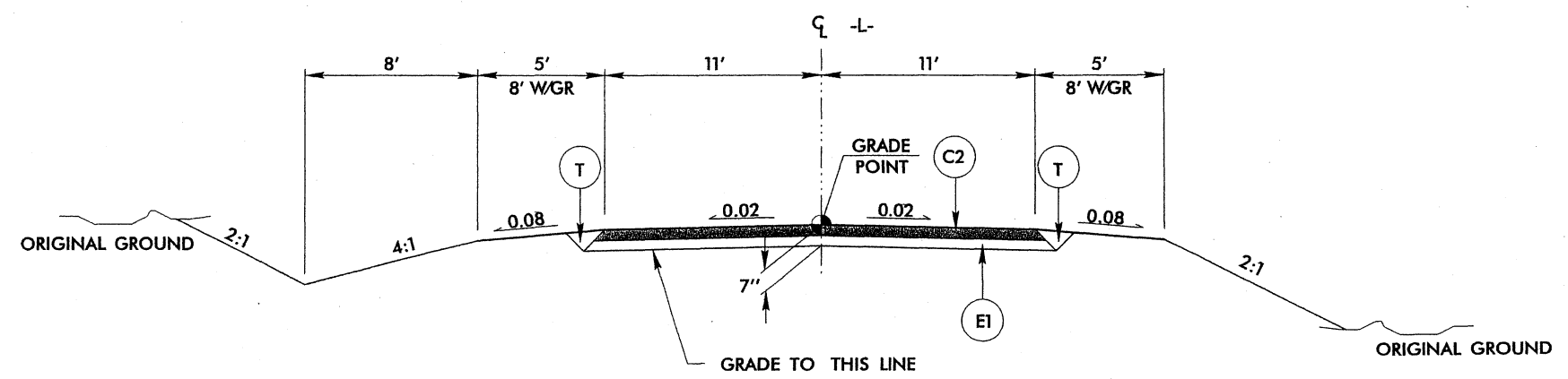
PROJECT REFERENCE NO. B-3665	SHEET NO. 2
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	SEAL 22896 CLARK S. MORRISON
SEAL 21102 JAMES TIMOTHY JORDAN	2/21/95



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
AT THE FOLLOWING LOCATIONS:

- L- STA 12+50.00 TO STA 13+75.00
- L- STA 17+50.00 TO STA 21+50.00

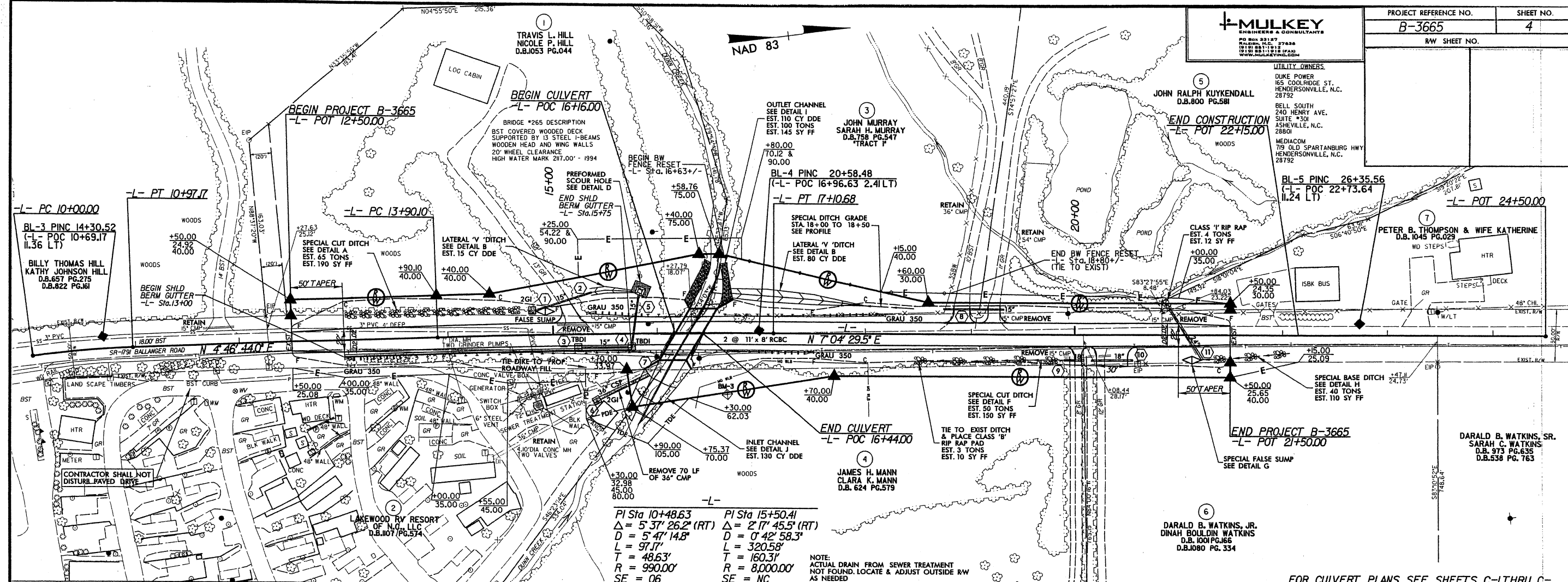


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
AT THE FOLLOWING LOCATIONS:

- L- STA 13+75.00 TO STA 17+50.00

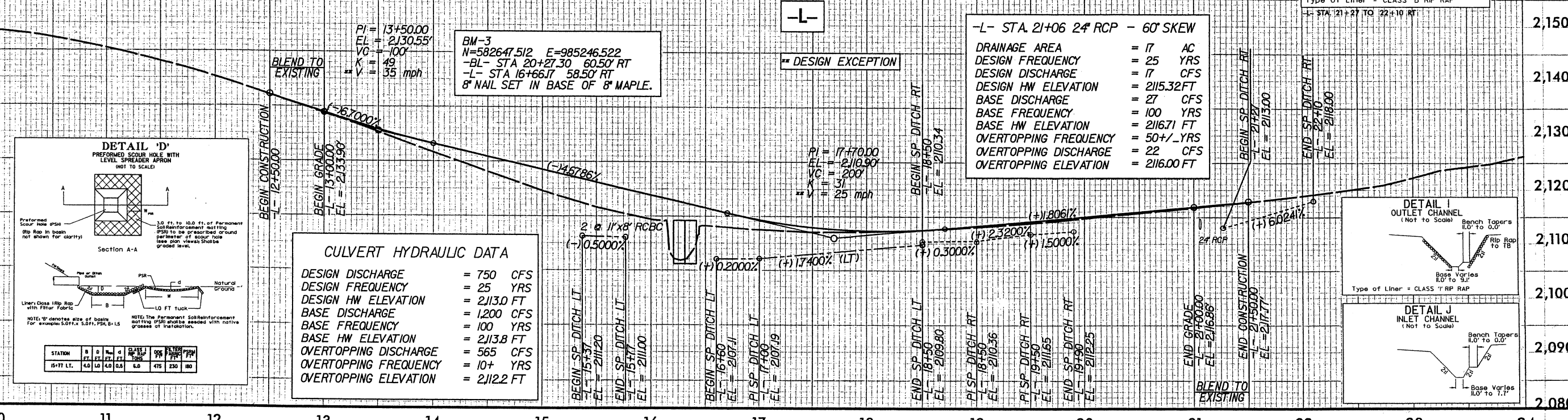
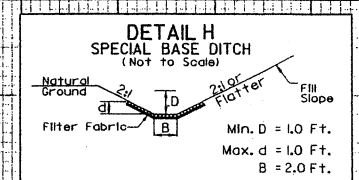
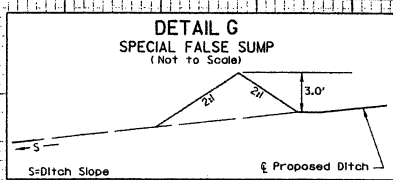
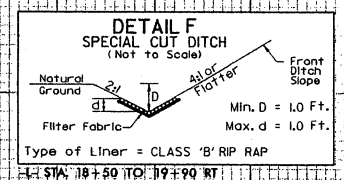
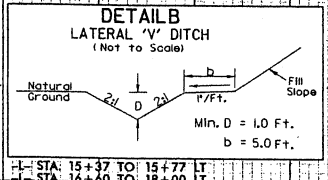
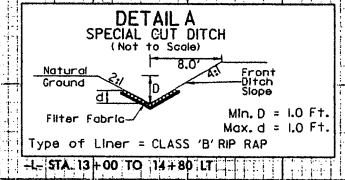
UTILITY OWNERS:
DUKE POWER
165 COOLRIDGE ST.
HENDERSONVILLE, N.C.
28792
BELL SOUTH
240 HENRY AVE.
SUITE 300
ASHEVILLE, N.C.
28801
MEDIACOM
719 OLD SPARTANBURG HWY
HENDERSONVILLE, N.C.
28792



PI Sta 10+48.63 PI Sta 15+50.41
 $\Delta = 5' 37'' 26.2''$ (RT) $\Delta = 2' 17'' 45.5''$ (RT)
 $D = 5' 47'' 14.8''$ $D = 0' 42'' 58.3''$
 $L = 97.17'$ $L = 320.58'$
 $T = 48.63'$ $T = 160.31'$
 $R = 990.00'$ $R = 8,000.00'$
 $SE = 06$ $SE = NC$

NOTE:
ACTUAL DRAIN FROM SEWER TREATMENT
NOT FOUND. LOCATE & ADJUST OUTSIDE RW
AS NEEDED

FOR CULVERT PLANS SEE SHEETS C-1 THRU C-



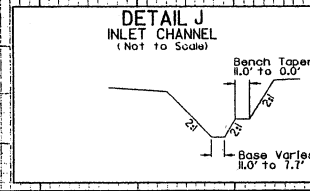
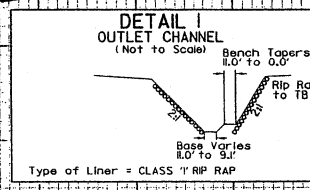
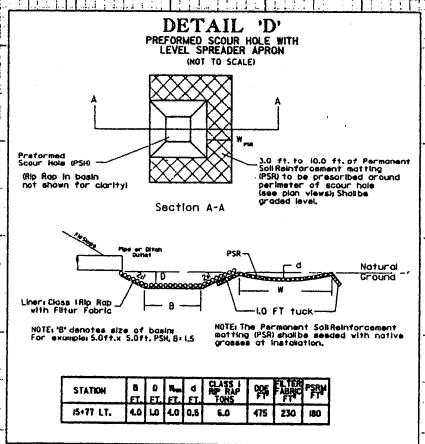
BM-3
N=582647.512 E=985246.522
-BL- STA 20+27.30 60.50' RT
-L- STA 16+66.17 58.50' RT
8" NAIL SET IN BASE OF 8" MAPLE.

-L- STA. 21+06 24" RCP - 60' SKEW

DRAINAGE AREA	= 17 AC
DESIGN FREQUENCY	= 25 YRS
DESIGN DISCHARGE	= 17 CFS
DESIGN HW ELEVATION	= 2115.32 FT
BASE DISCHARGE	= 27 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2116.71 FT
OVERTOPPING FREQUENCY	= 50+/- YRS
OVERTOPPING DISCHARGE	= 22 CFS
OVERTOPPING ELEVATION	= 2116.00 FT

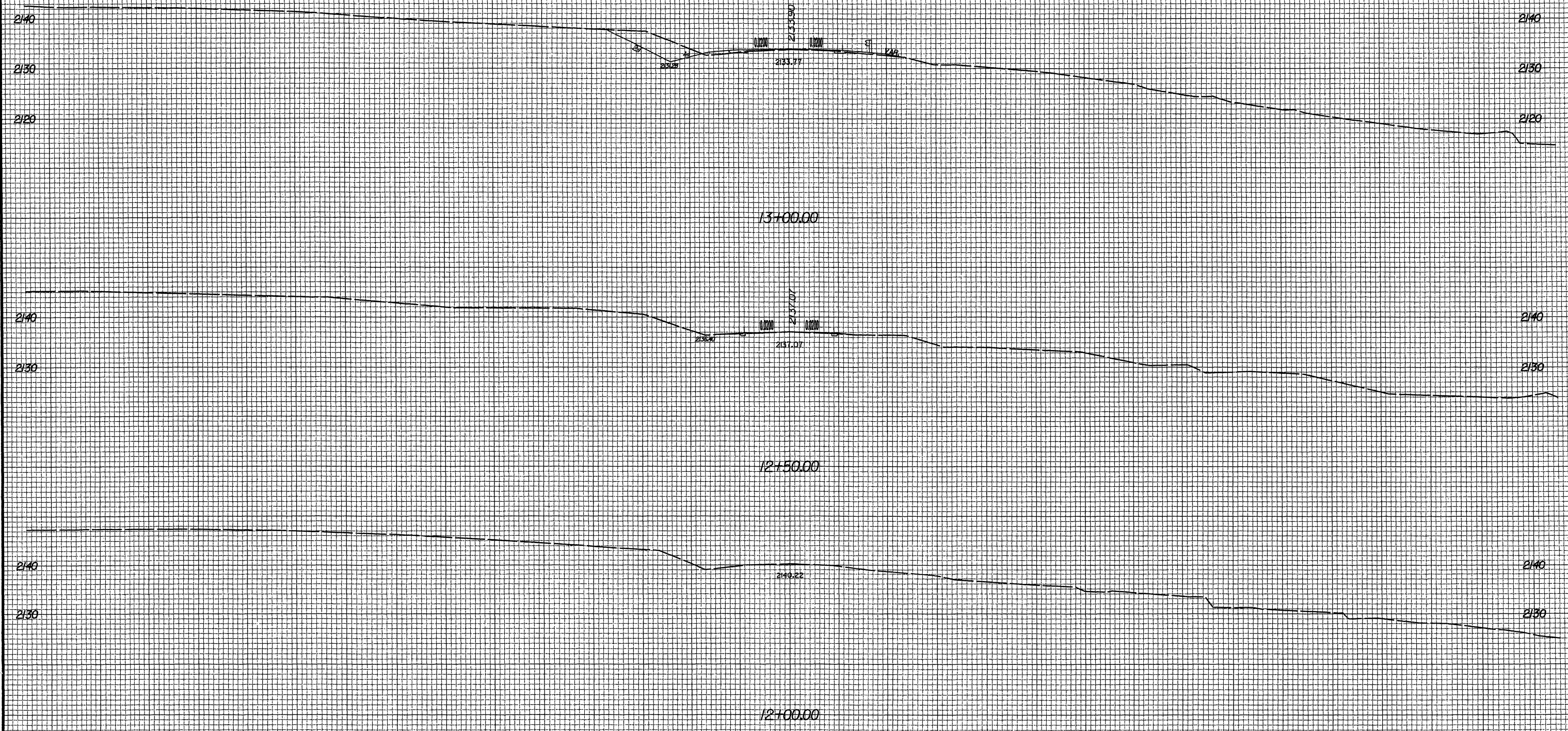
CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 750 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2113.0 FT
BASE DISCHARGE	= 1200 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2113.8 FT
OVERTOPPING DISCHARGE	= 565 CFS
OVERTOPPING FREQUENCY	= 10+ YRS
OVERTOPPING ELEVATION	= 2112.2 FT



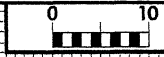
8/23/99

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



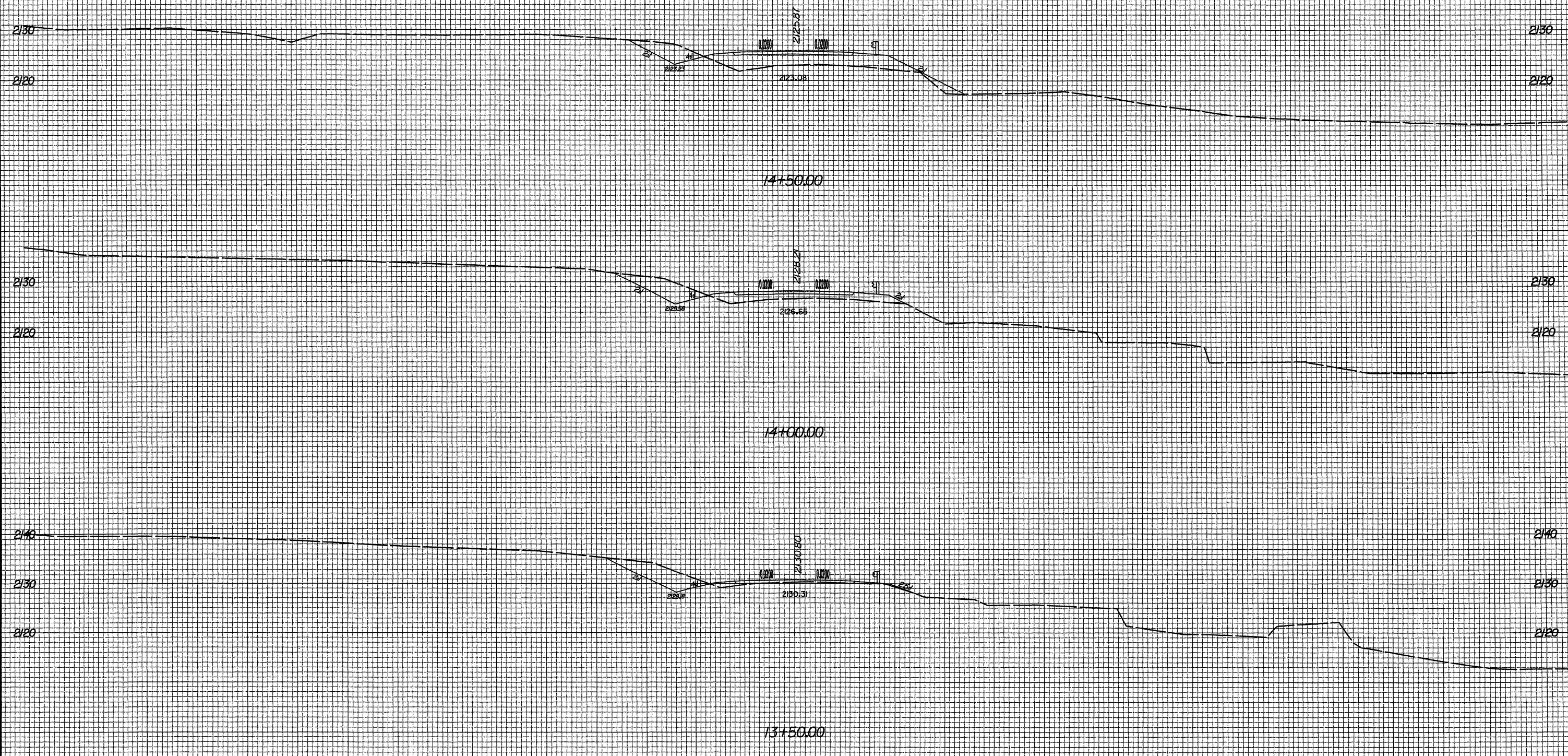
12/28/2004 07:55:40 AM
P:\Roadway\New\3665\2707.dwg

8/23/99



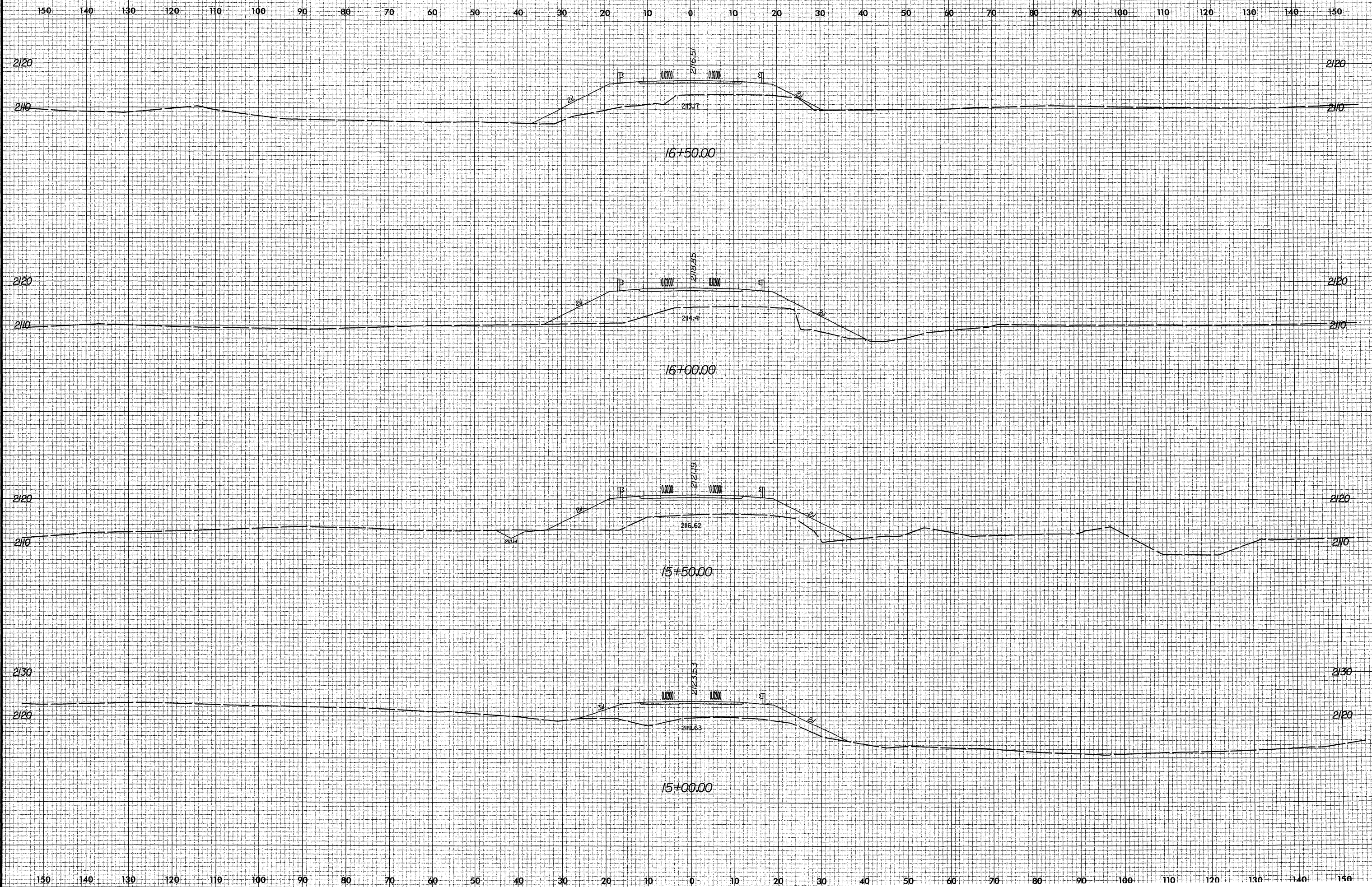
PROJ. REFERENCE NO.	SHEET NO.
B-3665	X-3

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



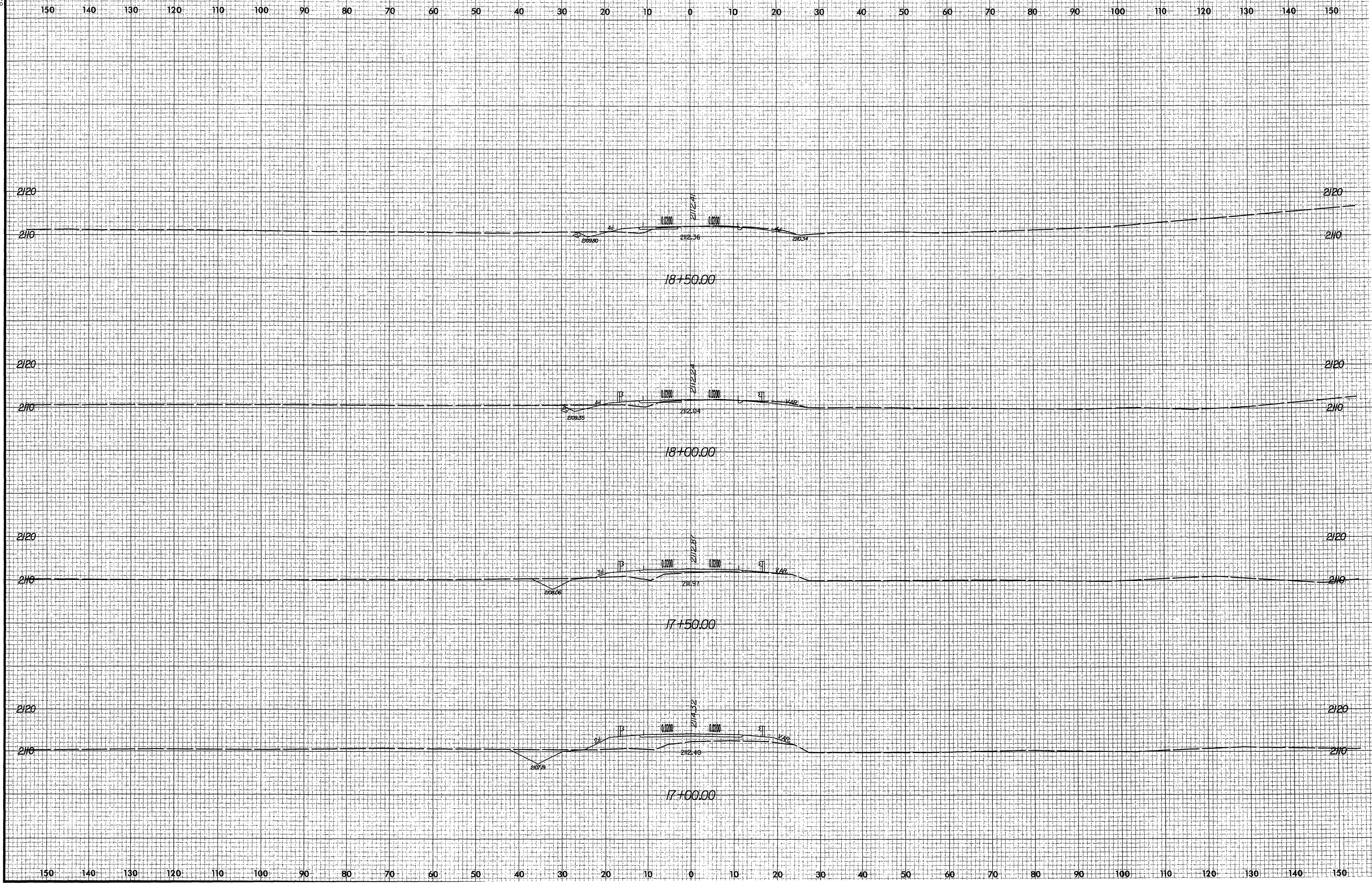
04/01/2005 06:28:32 PM
P:\Roadway\Xao\33665_70_xpl.dgn

8/23/99



8/23/2005 4:48:48 PM
C:\Roadway\New\3665\3665_cy_spl.dgn

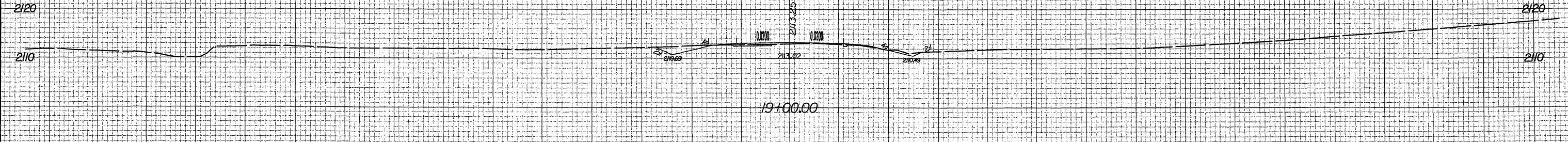
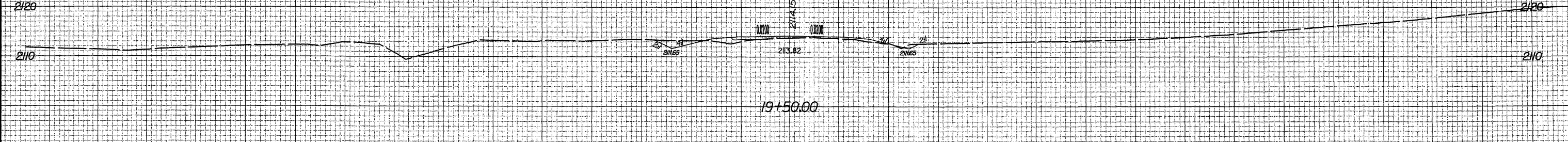
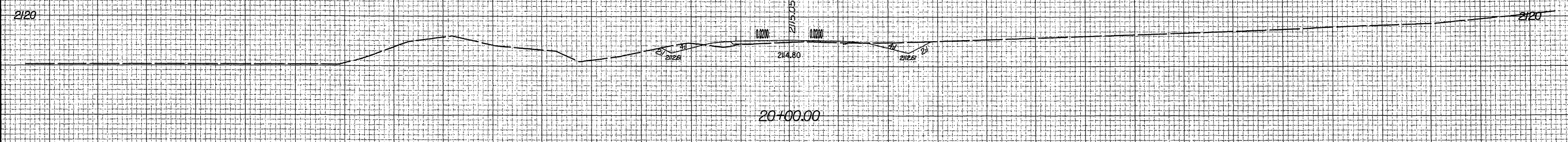
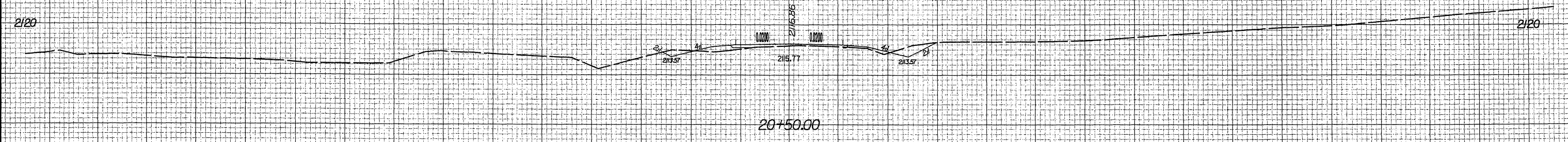
8/23/99



5/27/2005 8:02 AM
F:\Roadway\Map\3665_rdy_xpl.dgn

8/23/99

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



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

8/23/99

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

0 10	PROJ. REFERENCE NO. B-3665	SHEET NO. X-7
------	-------------------------------	------------------

2120 2120.22 2120

22150.00

2120 218.94 2120

22100.00

2120 217.77 214.59 2120

21150.00

2120 216.73 214.55 2120

21100.00

8/23/2004 07:56:24 AM
P:\Roadway\2003\3665\99-X-7.dgn

