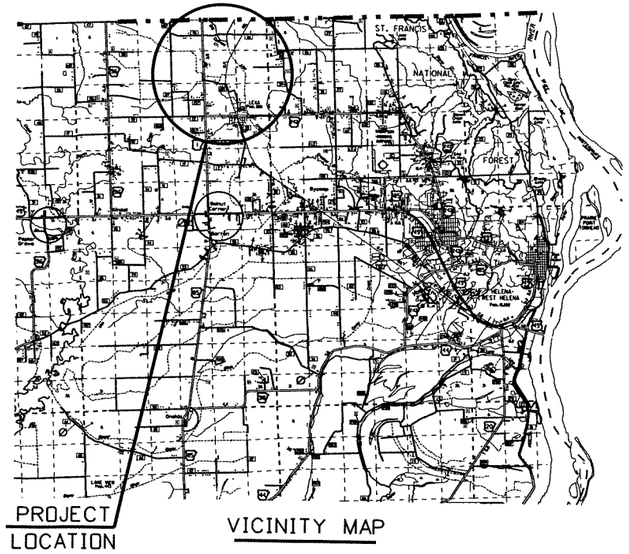
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	1	70
				(4)	BIG CYPRESS & LICK CREEK STRS. & APPRS. (S)			



VICINITY MAP

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR PROPOSED COUNTY ROAD

BIG CYPRESS & LICK CREEK STRS. & APPRS. (S)

COUNTY ROAD 76
PHILLIPS COUNTY
FED. AID PROJECT BRO-0054(18)

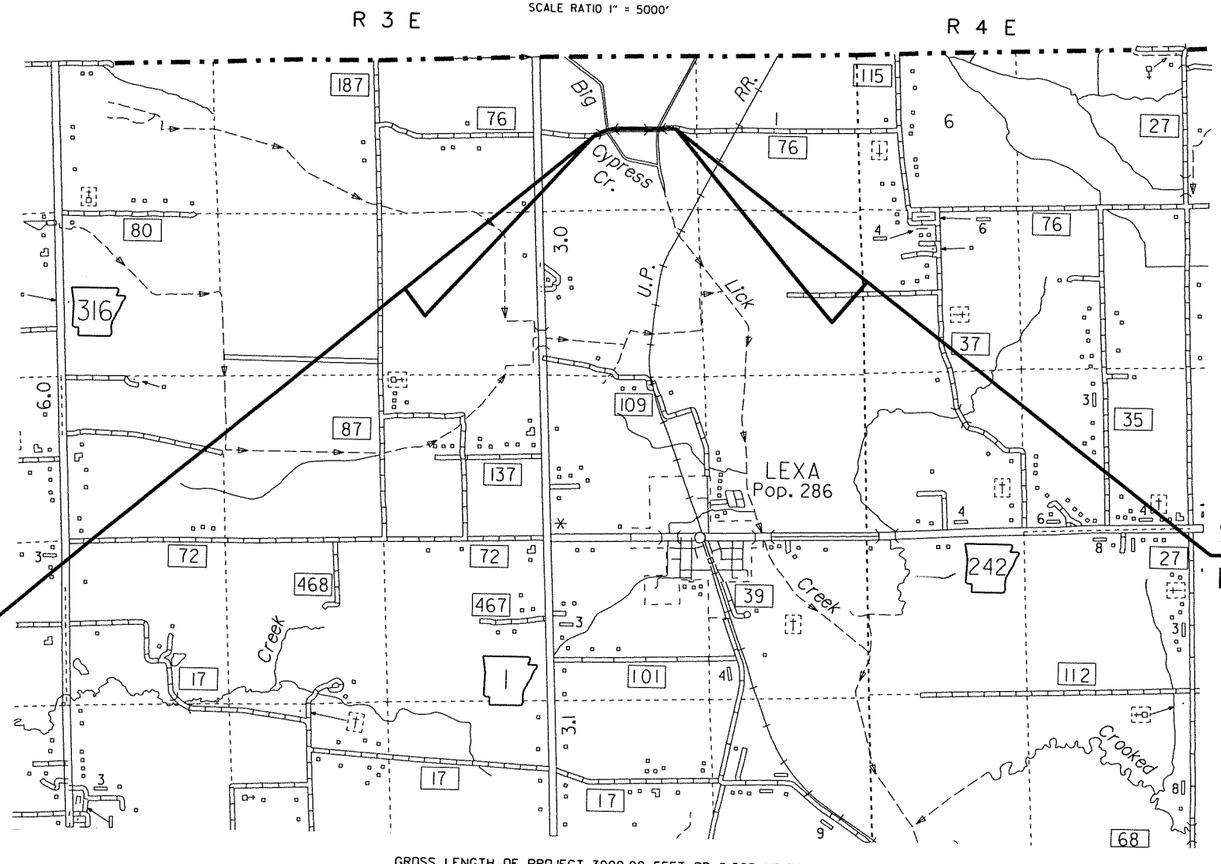
JOB BR5405

2500 0 2500 5000
SCALE IN FEET
SCALE RATIO 1" = 5000'

ARKANSAS HIGHWAY DIST. 1

R 3 E R 4 E

T 1 S



① STA. 102+96.50 BRIDGE END
126'-00" COMPOSITE W-BEAM
BRIDGE NO. 04921
24'-0" CLEAR ROADWAY
TO BE CONSTRUCTED
STA. 104+22.50 BRIDGE END

② STA. 120+33.50 BRIDGE END
81'-00" COMPOSITE W-BEAM
BRIDGE NO. 04922
24'-0" CLEAR ROADWAY
TO BE CONSTRUCTED
STA. 121+14.50 BRIDGE END

STA. 100+00.00 BEGIN JOB BR5405
FED. AID PROJECT BRO-0054(18)

	BEGIN	MID-POINT	END
LATITUDE	N34° 38'08"	N34° 38'09"	N34° 38'08"
LONGITUDE	W90° 45'41"	W90° 45'24"	W90° 45'05"

GROSS LENGTH OF PROJECT 3000.00 FEET OR 0.568 MILES
NET " " ROADWAY 2793.00 " " 0.529 "
NET " " BRIDGE 207.00 " " 0.039 "
NET " " PROJECT 3000.00 " " 0.568 "

DESIGN TRAFFIC DATA

DESIGN YEAR.....2033
2013 ADT.....50
2033 ADT.....60
2033 DHV.....7.5
DIRECTIONAL DISTRIBUTION....0.60
TRUCKS.....20%
DESIGN SPEED.....40 MPH

STA. 130+00.00 END JOB BR5405
FED. AID PROJECT BRO-0054(18)

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 3917
FRANK VOZEL

2/22/13

DEPUTY DIRECTOR
AND CHIEF ENGINEER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	2	70

(4) INDEX OF SHEETS, GOV. SPECS. & GEN. NOTES

INDEX OF SHEETS

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. UTILITIES INTERFERING WITH CONSTRUCTION SHALL BE MOVED BY THE OWNERS.
3. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
4. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
6. SUPERELEVATION SHALL BE COMPUTED IN ACCORDANCE WITH STD. DRWG. SE-2 USING 40 M.P.H. DESIGN VALUES AND REVOLVE ABOUT THE INNER EDGE OF TRAVEL LANE UNLESS OTHERWISE SHOWN.
7. ALL SALVAGEABLE PIPE CULVERTS AND EXISTING BRIDGE STRUCTURES SHALL BE STORED ON THE RIGHT-OF-WAY AND REMAIN THE PROPERTY OF PHILLIPS COUNTY.
8. THE ROAD WILL BE CLOSED TO THRU TRAFFIC UNTIL THE NEW BRIDGES ARE COMPLETED AND OPEN TO TRAFFIC.

GOVERNING SPECIFICATIONS

THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS FOR THIS PROJECT SUPPLEMENT THE STANDARD SPECIFICATIONS, EDITION OF 2003. IN CASE OF CONFLICT, THE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL GOVERN.

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - REVISIONS OF FHWA-1273 FOR OFF-SYSTEM PROJECTS
100-2	MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
102-1	BIDDING REQUIREMENTS AND CONDITIONS
103-1	DETERMINATION OF DBE PARTICIPATION
105-1	CONSTRUCTION CONTROL MARKINGS
105-2	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
105-3	CONTROL OF WORK
107-1	WORKER VISIBILITY
108-1	LIQUIDATED DAMAGES
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
303-1	AGGREGATE BASE COURSE
403-1	POLYMER/LATEX MODIFIED CATIONIC EMULSIFIED ASPHALT FOR ASPHALT SURFACE TREATMENTS
409-1	MINERAL AGGREGATES
600-1	WATER FOR VEGETATION
603-1	MAINTENANCE OF TRAFFIC
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-2	INSPECTION OF TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
606-2	PIPE CULVERTS
723-1	GENERAL REQUIREMENTS FOR SIGNS
804-1	INSTALLATION OF DOWEL BARS AND TIE BARS
JOB BR5405	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB BR5405	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB BR5405	DRIVEN STEEL PILING BY METHOD B
JOB BR5405	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB BR5405	GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION (BIG CYPRESS CREEK)
JOB BR5405	GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION (LICK CREEK)
JOB BR5405	INTERNET BIDDING
JOB BR5405	NESTING SITES OF MIGRATORY BIRDS
JOB BR5405	PLASTIC PIPE
JOB BR5405	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB BR5405	SOIL STABILIZATION
JOB BR5405	STEEL SHELL PILES
JOB BR5405	STORM WATER POLLUTION PREVENTION PLAN
JOB BR5405	UTILITY ADJUSTMENTS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 5368
DAVID R. MAYO JR.

2/22/2013

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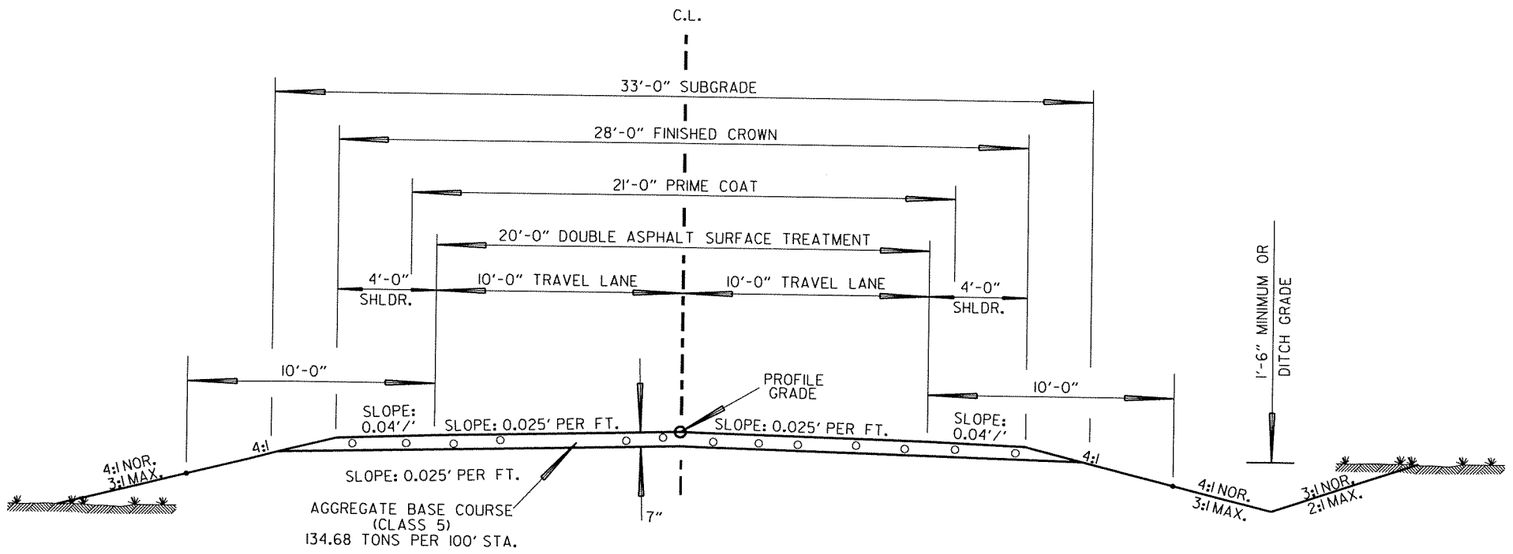
				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	3	70

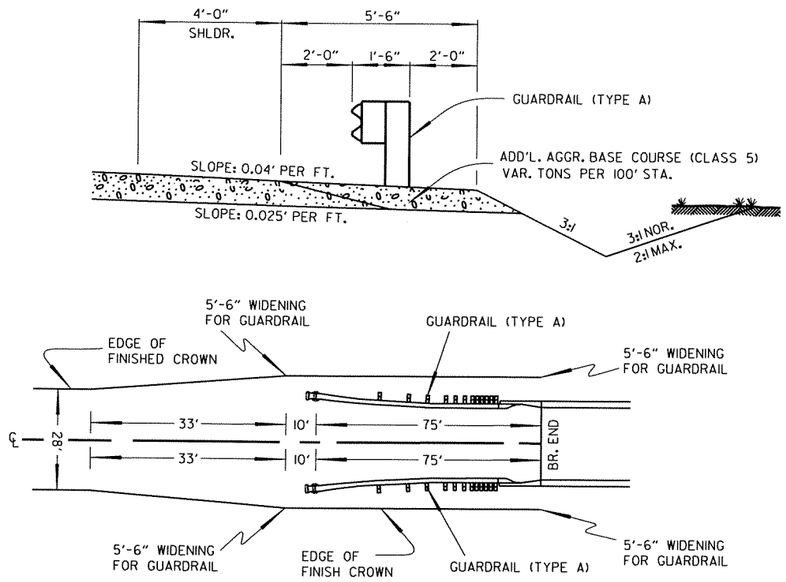
(4) TYPICAL SECTION OF IMPROVEMENT & SPECIAL DTLS.



TYPICAL SECTION OF IMPROVEMENT

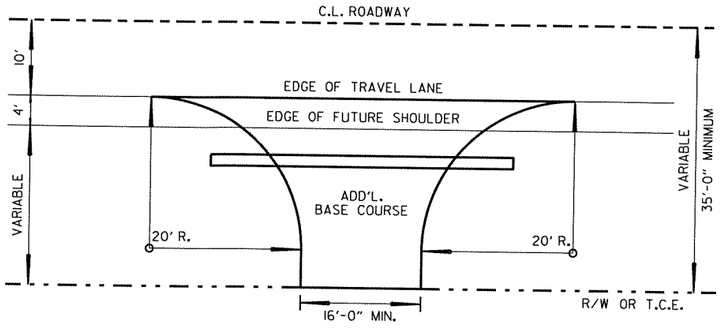
NOTES:
THE THICKNESS OF BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET THE TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.



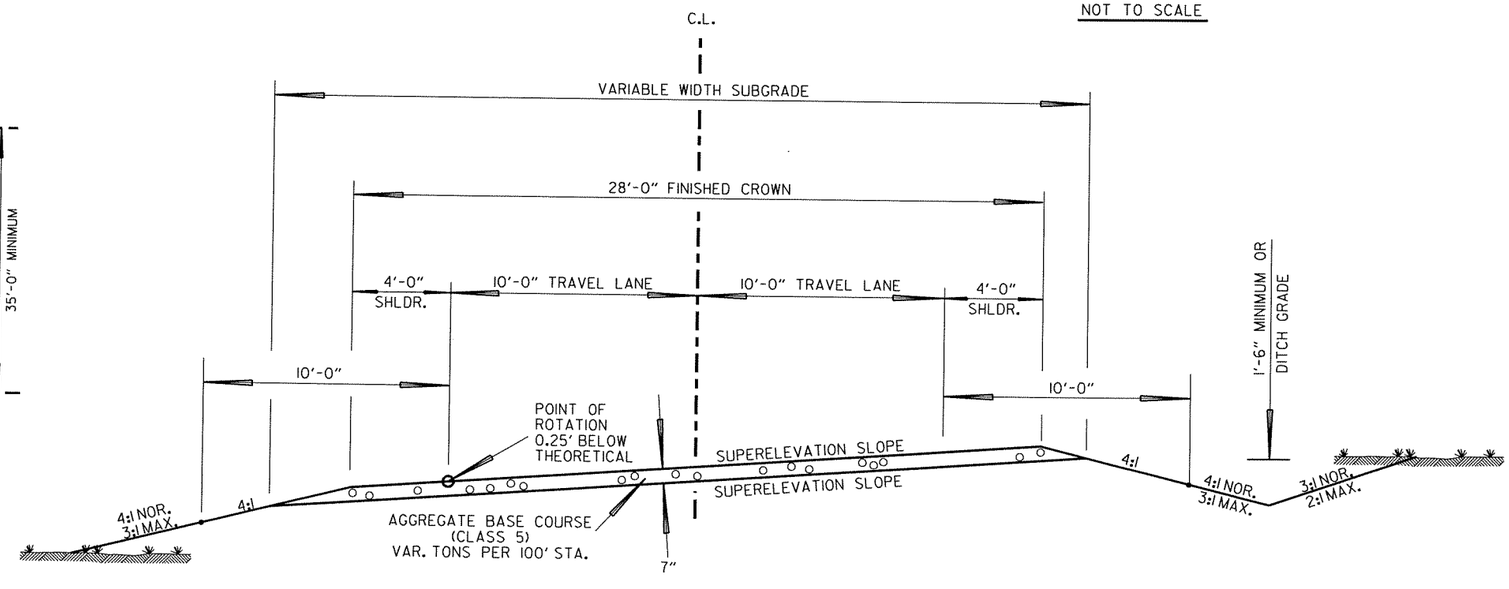
DETAILS OF WIDENING FOR GUARDRAIL

NOT TO SCALE



DETAIL OF PRIVATE ENTRANCES

ADD'L. BASE COURSE



SUPERELEVATED SECTION OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
DAVID R. MAYOTTE

2/15/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	4	70
				(4)	SURVEY CONTROL DETAIL			

COORDINATES
APPROXIMATE STATE PLANE, DETERMINED FROM A SCALED LATITUDE, AND LONGITUDE FOR THE POSITION OF THE SOLAR OBSERVATION, AS PLOTTED ON A QUADRANGLE SHEET, PROJECTED TO GROUND.

POINT NAME	NORTHING	EASTING	ELEVATION	STYLE	DESCRIPTION
100	2031111.69360	1685389.94300	198.50	GPS	AHTD GPS 540009
101	2031261.10800	1686873.22710	199.85	GPS	AHTD GPS 540009A
200	2031078.86690	1693585.05290	207.58	IP	Found Monument
201	2028581.15550	1685647.81800	197.46	IP	1/2" REBAR NO CAP
900	2031171.19440	1685132.85110	196.81	TBM	5/8" REBAR NO CAP BM INFORMATION LEXA
901	2031261.86160	1687228.98070	197.88	BM	5/8" REBAR NO CAP PHILLIPS LEXA 1
911	2038994.83410	1686017.77320	203.78	TBM	TOP OF CONC R\W MARKER 121LAGRANGE
912	2036246.90660	1682810.83860	200.66	TBM	TOP OF 1/2" BOLT STICKING 1LAGRANGE
913	2034121.18600	1682961.27490	205.47	TBM	ALUMINUM CAP SET IN SE 1LAGRANGE
914	2031161.24600	1683022.69900	202.40	TBM	CHIS SQ. CUT IN 3' X 3' 1LAGRANGE
990	2038810.31660	1688274.29040	204.40	BM	NGS MARK Y 171
991	2039034.13450	1682942.18320	202.86	BM	NGS MARK Z 171 RESET

SURVEY CONTROL COORDINATES

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.9999504515 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME sFA0312gi.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

REFERENCE POINTS (1500 SERIES) ARE TO BE USED TO ESTABLISH CONTROL IF THE PRIMARY CONTROL POINTS LISTED ABOVE HAVE BEEN DESTROYED.
REFERENCE POINTS ARE NOT TO BE USED FOR VERTICAL CONTROL

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 030009, 030009A, 030010, 030011A, 030013, 030014, 030015, 690009
CONVERGENCE ANGLE: 0-08-31 LEFT AT LT:36-07-33.2 LG:092-14-38.4
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

SURVEY BASELINE

POINT NAME	NORTHING	EASTING	ELEVATION	STYLE	DESCRIPTION
1	2031092.82660	1684043.84290	198.75	CTL	5/8" REBAR W/2"CAP CR 240 LAGRANGE
2	2031086.60440	1684808.95170	196.10	CTL	5/8" REBAR W/2"CAP CR 240 LAGRANGE
3	2031203.96350	1685324.45880	198.81	CTL	5/8" REBAR W/2"CAP CR 240 LAGRANGE
4	2031269.29980	1686136.96440	198.83	CTL	5/8" REBAR W/2"CAP CR 240 LAGRANGE
5	2031190.94510	1686923.65400	200.47	CTL	5/8" REBAR W/2"CAP CR 240 LAGRANGE
6	2031170.56040	1687735.97850	197.77	CTL	5/8" REBAR W/2"CAP CR 240 LAGRANGE
7	2031134.55210	1688382.69220	198.65	CTL	5/8" REBAR W/2"CAP CR 240 LAGRANGE

CONSTRUCTION CENTERLINE

POINT NAME	STATION	NORTHING	EASTING	ELEVATION
8000	POB 100+00.00	2031093.73728	1684931.76532	0.00
8001	PC 105+89.55	2031255.46581	1685498.69618	0.00
8003	PT 107+47.57	2031276.54124	1685654.75696	0.00
8004	PC 126+54.10	2031258.58068	1687561.20733	0.00
8006	PT 128+26.46	2031236.33422	1687731.70288	0.00
8007	POE 130+00.00	2031193.38694	1687899.84504	0.00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
DAVID R. MAYO JR.
2/15/2013

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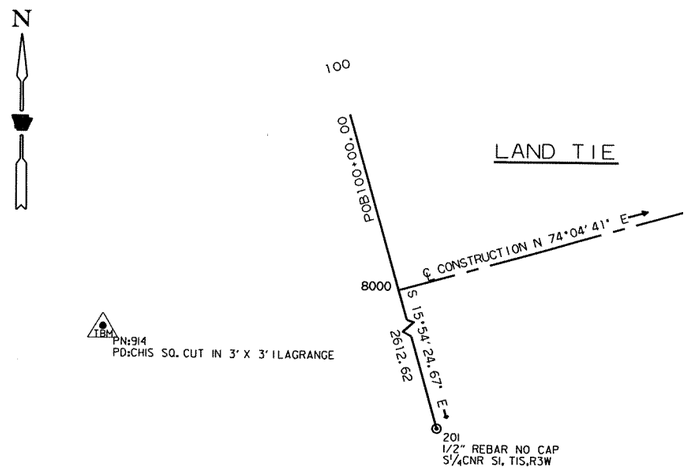
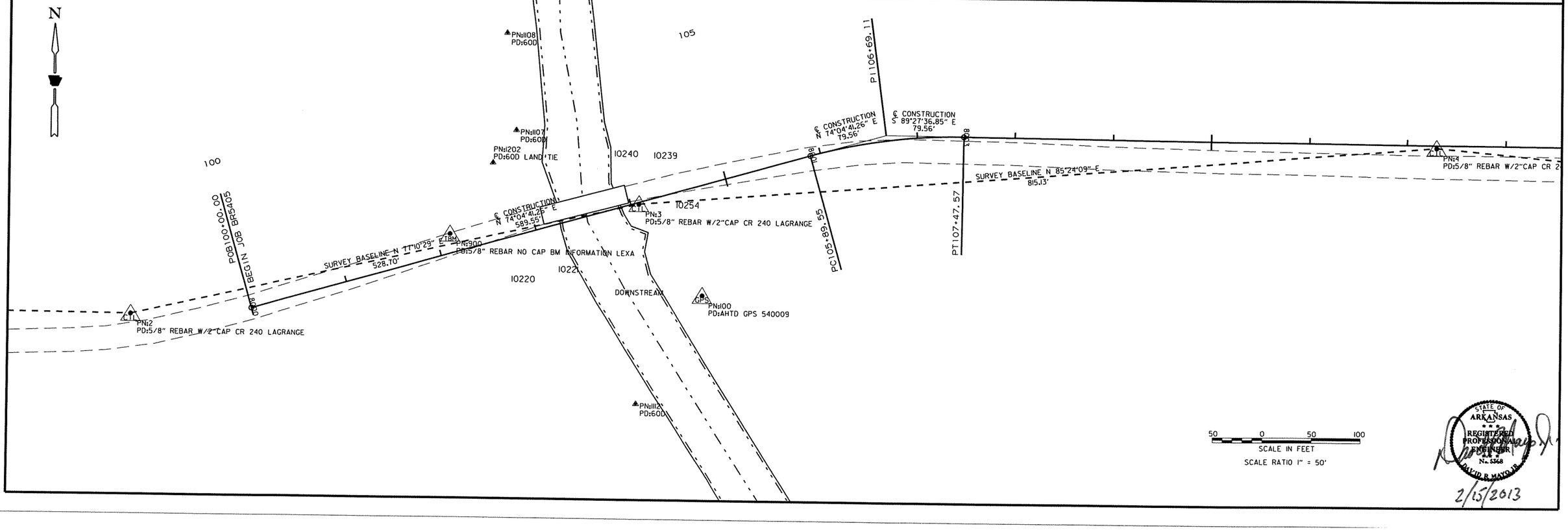
				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	5	70
				(4)	SURVEY CONTROL DETAIL			



PN:1
PD:5/8" REBAR W/2"CAP CR 240 LAGRANGE

SURVEY BASELINE S 89°32'03" E
765.13'



STATE OF ARKANSAS
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DAVID R. MAYO JR.

2/15/2013

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				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	6	70

4 SURVEY CONTROL DETAIL

N

115

120

125

PN:1104
PD:600'

PN:1103
PD:600

PN:1102
PD:600

℄ CONSTRUCTION
S 89°27'36.85" E
1906.54'

PN:4
PD:5/8" REBAR W/2"CAP CR 240 LAGRANGE

SURVEY BASELINE S 84°18'43" E
790.58'

PN:1201
PD:600

PN:1101 10498
PD:AHTD GPS 540009A

10499

10531

PN:1100
PD:600

10530

10529

10532

10533

PN:1203
PD:Traverse Point

PN:901
PD:5/8" REBAR NO CAP PHILLIPS LEXA I

10534

10528

10527

PN:5
PD:5/8" REBAR W/2"CAP CR 240 LAGRANGE

SURVEY BASELINE S 88°33'45" E
812.58'

DOWNSTREAM

PC126+54.10

N

125

PN:1203
PD:Traverse Point

10533

PN:901
PD:5/8" REBAR NO CAP PHILLIPS LEXA I

10534

℄ CONSTRUCTION
S 89°27'36.85" E
86.60'

PC126+54.10

P.I.27+40.70

℄ CONSTRUCTION
S 75°40'18.20" E
86.60'

℄ CONSTRUCTION
S 75°40'18.20" E
173.39'

130

POE130+00.00
END JOB BR5405

SURVEY BASELINE S 88°33'45" E
812.58'

PT128+26.46

PN:6
PD:5/8" REBAR W/2"CAP CR 240 LAGRANGE

SURVEY BASELINE S 86°48'47" E
647.72'

PN:1212
PD:Traverse Point

PN:1204
PD:Traverse Point

PN:7
PD:5/8" REBAR W/2"CAP CR 240 LAGRANGE

100

LAND TIE

POB 100+00.00

℄ CONSTRUCTION N 74°04'41" E

8000

S 15°54'24.67" E

2612.62

201
1/2" REBAR NO CAP
S1/4CNR SI, T1S,R3W

50 0 50 100
SCALE IN FEET
SCALE RATIO 1" = 50'

STATE OF ARKANSAS
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No. 5368
DAVID R. MAYO

2/15/2013

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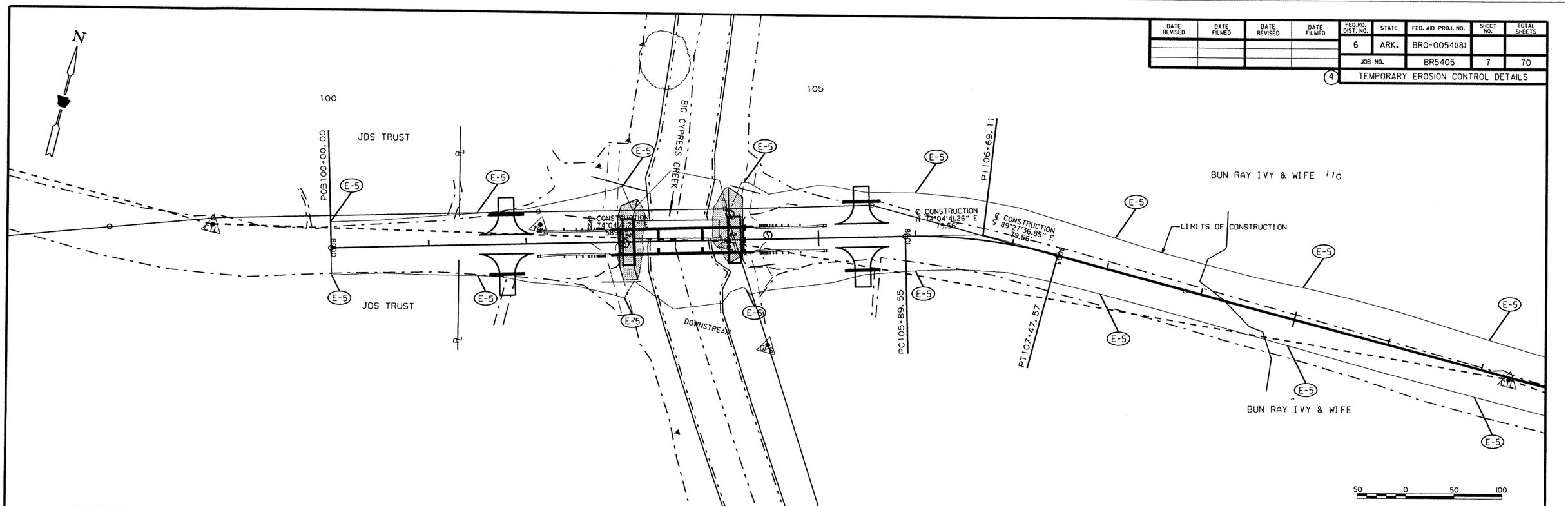
FED.RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.	BRO-0054(18)		
JOB NO.		BR5405	7	70

4 TEMPORARY EROSION CONTROL DETAILS



TEMPORARY EROSION CONTROL DEVICES

SAND BAG DITCH CHECKS (E-5) SEDIMENT REMOVAL AND DISPOSAL

STA. 100+00	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 101+50	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 103+00	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 104+25	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 106+00	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 108+00	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 110+00	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 112+00	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 114+00	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 116+00	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 117+50	RT.	= 6 BAGS	1	CU. YD.
STA. 118+00	LT.	= 6 BAGS	1	CU. YD.
STA. 118+50	RT.	= 6 BAGS	1	CU. YD.
STA. 120+25	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 121+25	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 123+00	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 124+50	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 126+00	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 128+00	LT. & RT.	= 12 BAGS	2	CU. YD.
STA. 130+00	LT. & RT.	= 12 BAGS	2	CU. YD.

SILT FENCE (E-11) SEDIMENT REMOVAL AND DISPOSAL

STA. 117+50 - STA. 118+50 RT. = 100' 3 CU. YD.

REVISION NO.	REVISION
1.	
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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
DAVID R. MAYO
2/15/2013

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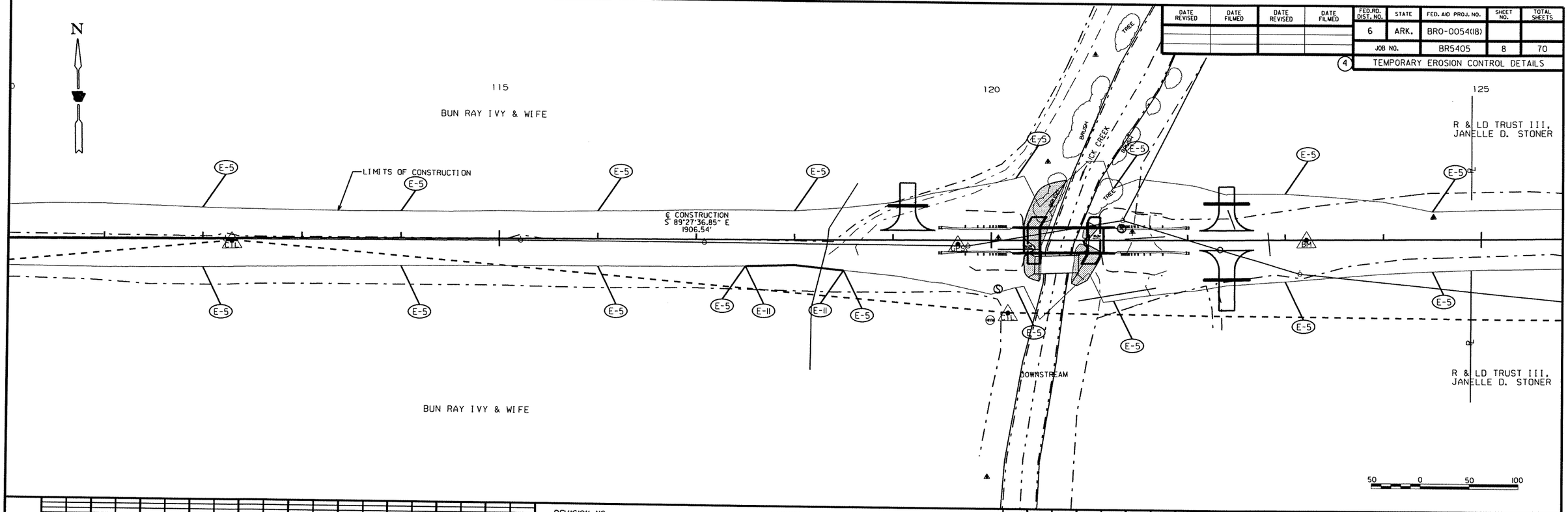
				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	8	70

4 TEMPORARY EROSION CONTROL DETAILS



REVISION NO. REVISION

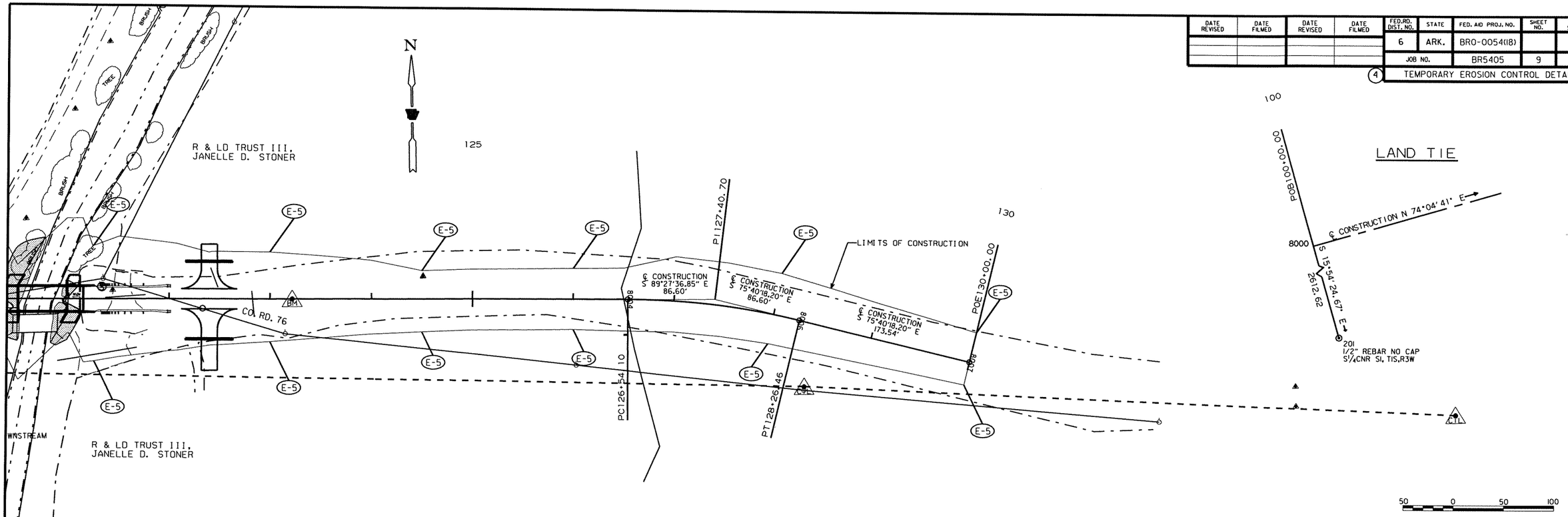
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
DAVID R. MAYO, JR.

2/15/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	9	70

4 TEMPORARY EROSION CONTROL DETAILS



REVISION NO.	REVISION
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				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	10	70
				(4) QUANTITY SHEET				

EARTHWORK

STATION	STATION	UNCLASSIFIED EXCAVATION			COMPACTED EMBANKMENT			COMPACTED EMBANKMENT (SPECIAL)	SOIL STABILIZATION
		NORMAL	ADDITIONAL	TOTAL	NORMAL	ADDITIONAL	TOTAL		
		CUBIC YARDS							TON
100+00	130+00	3527		3527	8488		8488		100
101+80						105	105		
102+47	104+73		1774	1774				1782	
102+96.50	104+22.50		485	485					
105+45						140	140		
119+15						75	75		
119+84	121+65		3361	3361				3481	
120+33.50	121+14.50		320	320					
122+40						190	190		
TOTALS:		3527	5940	9467	8488	510	8998	5263	100

NOTE: EARTHWORK QUANTITIES SHOWN SHALL BE PAID AS PLAN QUANTITY.
SOIL STABILIZATION TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

APPROACH SLABS

STATION	STATION	APPROACH SLAB (TYPE SPECIAL)	REINFORCING STEEL ROWY. (GRADE 60)	BRIDGE DRAWING NUMBER
		CU. YDS.	POUNDS	
102+70.50	102+96.50	29.59	2146	53345
104+22.50	104+48.50	29.59	2146	53345
120+07.50	120+33.50	29.59	2146	53345
121+14.50	121+40.50	29.59	2146	53345
TOTALS:		118.36	8584	

STRUCTURES

STATION	DESCRIPTION	SIDE DRAIN 18"	STANDARD DRAWING
		LIN. FT.	
101+80	18" X 35' PIPE CULVERT LT.	35	PCC-1, PCM-1
101+80	18" X 35' PIPE CULVERT RT.	35	PCC-1, PCM-1
105+45	18" X 38' PIPE CULVERT LT.	38	PCC-1, PCM-1
105+45	18" X 35' PIPE CULVERT RT.	35	PCC-1, PCM-1
119+15	18" X 40' PIPE CULVERT LT.	40	PCC-1, PCM-1
122+40	18" X 46' PIPE CULVERT LT.	46	PCC-1, PCM-1
122+40	18" X 47' PIPE CULVERT RT.	47	PCC-1, PCM-1
TOTAL:		276	

GUARDRAIL

STATION	STATION	SIDE	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	TERMINAL ANCHOR POSTS (TYPE I)	STANDARD DRAWING NO.
			LIN. FT.	EACH		
102+39	102+89	LT. & RT.	100	2	2	GR-8, 9, 10, 10A & GRT-1
104+30	104+80	LT. & RT.	100	2	2	GR-8, 9, 10, 10A & GRT-1
119+74	120+24	LT. & RT.	100	2	2	GR-8, 9, 10, 10A & GRT-1
121+24	121+74	LT. & RT.	100	2	2	GR-8, 9, 10, 10A & GRT-1
TOTALS:			400	8	8	

STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES

STATION	SIDE	STANDARD SIGN NUMBER										SUPPORT ASSEMBLIES (TYPE A)	SUPPORT ASSEMBLIES (TYPE C)	STANDARD DRAWING NUMBER
		W1-2 LT.		W1-2 RT.		W13-1		OM-3L		OM-3R				
		NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	EACH	EACH	
102+96.50	LT.							1	3.00				1	SHS - 1& 2
102+96.50	RT.									1	3.00		1	SHS - 1& 2
103+65	RT.			1	9.00	1	2.25					1		SHS - 1& 2
104+22.50	LT.									1	3.00		1	SHS - 1& 2
104+22.50	RT.							1	3.00				1	SHS - 1& 2
109+73	LT.	1	9.00			1	2.25					1		SHS - 1& 2
120+33.50	LT.							1	3.00				1	SHS - 1& 2
120+33.50	RT.									1	3.00		1	SHS - 1& 2
121+14.50	LT.									1	3.00		1	SHS - 1& 2
121+14.50	RT.							1	3.00				1	SHS - 1& 2
124+29	RT.			1	9.00	1	2.25					1		SHS - 1& 2
130+51	LT.	1	9.00			1	2.25					1		SHS - 1& 2
TOTALS:		2	18.00	2	18.00	4	9.00	4	12.00	4	12.00	4	8	

NOTE: ALL STANDARD SIGN BLANKS TO BE 0.080" THICK. REFER TO STARNDARD DWG. SHS-2 FOR CHANNEL POST SPLICING DETAILS.

TRAFFIC CONTROL DEVICES

LOCATION	W20-3				R11-2		R11-3A		BARRICADES	STANDARD DRAWING NUMBER
	1000 FT.		500 FT.							
	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	LIN. FT.	
HWY. 1							1	12.5		TC-1, 2 & 3
STA. 90+00	2	32								TC-1, 2 & 3
STA. 95+00			2	32						TC-1, 2 & 3
STA. 99+00					1	10			24	TC-1, 2 & 3
STA. 131+00					1	10			24	TC-1, 2 & 3
STA. 135+00			2	32						TC-1, 2 & 3
STA. 140+00	2	32								TC-1, 2 & 3
CO. RD. 115							1	12.5		TC-1, 2 & 3
TOTALS:	4	64	4	64	2	20	2	25.0	48	
USE:		64		64		20		25	48	

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
DAVID R. MAYO JR.

2/22/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	11	70

(4) QUANTITY SHEET

BASE & SURFACING

STATION	STATION	DESCRIPTION	LENGTH	AGGREGATE BASE CRS. (CLASS 5)	20' DBL. ASPH. SURFACE TREATMENT			21' PRIME COAT	
					SQ. YDS.	MIN. AGGR. (CLASS 1)	ASPHALT (CRS-2P)	SQ. YDS.	GAL.
			LIN. FT.	TON		TON	GAL.		
100+00	102+70.50	COUNTY ROAD 76	270.50	365	601.1	21.0	510.9	631.2	252.5
101+71.50	102+96.50	WIDENING FOR GUARDRAILS		38					
102+70.50	102+96.50	BASE FOR APPROACH SLABS		30					
104+22.50	104+48.50	BASE FOR APPROACH SLABS		30					
104+22.50	105+48.50	WIDENING FOR GUARDRAILS		38					
104+48.50	120+07.50	COUNTY ROAD 76	1559	2100	3464.4	121.3	2944.8	3637.7	1455.1
119+06.50	120+33.50	WIDENING FOR GUARDRAILS		38					
120+07.50	120+33.50	BASE FOR APPROACH SLABS		30					
121+14.50	121+40.50	BASE FOR APPROACH SLABS		30					
121+14.50	122+41.50	WIDENING FOR GUARDRAILS		38					
121+40.50	130+00	COUNTY ROAD 76	859.50	1158	1910.0	66.9	1623.5	2005.5	802.2
101+80		PRIVATE DRIVE LT. SIDE		36					
101+80		PRIVATE DRIVE RT. SIDE		39					
105+45		PRIVATE DRIVE LT. SIDE		36					
105+45		PRIVATE DRIVE RT. SIDE		38					
119+15		PRIVATE DRIVE LT. SIDE		43					
122+40		PRIVATE DRIVE LT. SIDE		40					
122+40		PRIVATE DRIVE RT. SIDE		53					
TOTALS:			2689	4180		209.2	5079.2		2509.8
						209	5079		2510

USE:

BASIS OF ESTIMATE:

AGGREGATE BASE COURSE (CLASS 5) 134.68 TONS PER 100' STA. (MAIN LANES)

MINERAL AGGREGATE IN DBL. ASPH. SURF. TREATMENT (1ST APPLICATION) 35 LBS. PER SQ. YD.
MINERAL AGGREGATE IN DBL. ASPH. SURF. TREATMENT (2ND APPLICATION) 35 LBS. PER SQ. YD.

ASPHALT IN DBL. ASPH. SURF. TREATMENT (1ST APPLICATION) 0.40 GAL. PER SQ. YD.
ASPHALT IN DBL. ASPH. SURF. TREATMENT (1ST APPLICATION) 0.45 GAL. PER SQ. YD.

PRIME COAT 0.40 GAL. PER SQ. YD.

TEMPORARY EROSION CONTROL

STATION	STATION	SIDE	SAND BAG DITCH CKS. (E-5)	SILT FENCE (E-11)	SEDIMENT REMOVAL & DISPOSAL	STANDARD DRAWING NUMBER
			BAGS	LIN. FT.	CU. YDS.	
100+00		LT. & RT.	12		2	TEC-1, 2&3
101+50		LT. & RT.	12		2	TEC-1, 2&3
103+00		LT. & RT.	12		2	TEC-1, 2&3
104+25		LT. & RT.	12		2	TEC-1, 2&3
106+00		LT. & RT.	12		2	TEC-1, 2&3
108+00		LT. & RT.	12		2	TEC-1, 2&3
110+00		LT. & RT.	12		2	TEC-1, 2&3
112+00		LT. & RT.	12		2	TEC-1, 2&3
114+00		LT. & RT.	12		2	TEC-1, 2&3
116+00		LT. & RT.	12		2	TEC-1, 2&3
117+50		RT.	6		1	TEC-1, 2&3
117+50	118+50	RT.		100	3	TEC-1, 2&3
118+00		LT.	6		1	TEC-1, 2&3
118+50		RT.	6		1	TEC-1, 2&3
120+25		LT. & RT.	12		2	TEC-1, 2&3
121+25		LT. & RT.	12		2	TEC-1, 2&3
123+00		LT. & RT.	12		2	TEC-1, 2&3
124+50		LT. & RT.	12		2	TEC-1, 2&3
126+00		LT. & RT.	12		2	TEC-1, 2&3
128+00		LT. & RT.	12		2	TEC-1, 2&3
130+00		LT. & RT.	12		2	TEC-1, 2&3
TOTALS:			222	100	40	

NOTE: THE TEMPORARY EROSION CONTROL DEVICES SHOWN ABOVE AND ON THE PLANS SHALL BE INSTALLED IN SUCH A SEQUENCE AS TO DETER EROSION AND SEDIMENTATION ON U.S. WATERWAYS AS EXPLAINED BY THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT.

CLEARING AND GRUBBING

STATION	STATION	CLEARING	GRUBBING
		STATIONS	STATIONS
100+00	103+00	3	3
104+00	120+00	16	16
121+00	130+00	9	9
TOTALS:		28	28

TEMPORARY & PERMANENT SEEDING

STATION	TEMPORARY SEEDING	LIME	SEEDING	MULCH COVER	WATER	STANDARD DRAWING NO.
	ACRES	TONS	ACRES	ACRES	M. GAL.	
ENTIRE PROJECT	10.04	10	5.02	15.06	716.9	TEC-3
TOTALS:	10.04	10	5.02	15.06	716.9	

BASIS OF ESTIMATE:

LIME 2 TONS PER ACRE
WATER 102 M. GALS. PER ACRE PERMANENT SEEDING
WATER 20.4 M. GALS. PER ACRE TEMPORARY SEEDING

REMOVAL AND DISPOSAL OF ITEMS

STATION	LOCATION	DESCRIPTION	PIPE CULVERTS
			EACH
102+97	RT.	24" X 40' C.M. PIPE CULVERT SIDE DRAIN	1
102+97	LT.	15" C.M. PIPE CULVERT SIDE DRAIN W/ONE END SUBMERGED IN CREEK	1
104+26	LT.	18" X 30' C.M. PIPE CULVERT SIDE DRAIN	1
104+41	RT.	12" C.M. PIPE CULVERT SIDE DRAIN W/ONE END SUBMERGED IN CREEK	1
120+29	LT.	18" X 44' C.M. PIPE CULVERT SIDE DRAIN	1
121+28	RT.	24" X 78' C.M. PIPE CULVERT SIDE DRAIN	1
121+57	LT.	18" X 40' C.M. PIPE CULVERT SIDE DRAIN	1
122+45	LT.	18" X 20' C.M. PIPE CULVERT SIDE DRAIN	1
122+83	CROSS DRAIN	18" X 24' C.M. PIPE CULVERT CROSS DRAIN	1
TOTAL:			9

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
DAVID R. MAYO, JR.
2/22/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	12	70
				① 04921 & 04922		QUANTITIES		53327

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. BR5405

BRIDGE NO.	CODE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	802	802	803	SS & 804	SS & 804	SP & 805	SP & 805	805	805	807	812	816	816
				ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. _)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	① STEEL SHELL PILING (16" DIAMETER)	① STEEL SHELL PILING (18" DIAMETER)	PILE ENCASEMENT	PREBORING	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	BRIDGE NAME PLATE (TYPE C)	DUMPED RIPRAP	FILTER BLANKET
				UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	EACH	CU. YD.	SQ. YD.
04921	X071	BIG CYPRESS CREEK	END BENT NO. 1			19	10.00			967	273	280			40			49	87
			INTERIOR BENT NO. 2				9.05			933	182		280	56					
			INTERIOR BENT NO. 3				9.05			933	182		280	56					
			END BENT NO. 4			12	10.00			967	273	280			40			49	87
			125'-0" INTEGRAL COMP. W-BEAM UNIT					138.60	9.1	27,820	460					43,220	1		
			SITE NO. 1 STA. 103+59.5		1														
			TOTALS FOR BRIDGE NO. 04921			31	38.10	138.60	9.1	31,620	1,370	560	560	112	80	43,220	1	98	174
04922	X071	LICK CREEK	END BENT NO. 1			9	10.00			976	396	350			50			53	95
			END BENT NO. 2			4	10.00			976	396	350			50			55	99
			80'-0" INTEGRAL COMP. W-BEAM SPAN					102.00	5.9	18,308	458					63,170	1		
			SITE NO. 2 STA. 120+74		1														
			TOTALS FOR BRIDGE NO. 04922			13	20.00	102.00	5.9	20,260	1,250	700	0	0	100	63,170	1	108	194
			TOTALS FOR JOB NO. BR5405			44	58.10	240.60	15.0	51,880	2,620	1,260	560	112	180	106,390	2	206	368

① Steel Shell Piles shall conform to ASTM A252, Grade 3. Fy = 45 ksi.

Only Conical or Vaned Pile Tips shall be permitted for Steel Shell Piles in End Bents of all bridges. Flat Pile Tips may be used at Interior Bents.

AILEEN SCHUBEL
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Carl J. Puseliер
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/2012
CARL J. PUSELIER

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
BIG CYPRESS AND LICK CREEK
STRS. & APPRS. (S)
PHILLIPS COUNTY

COUNTY ROAD 76

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 08-28-12 FILENAME: bbr5405_q1.dgn
CHECKED BY: JYP DATE: 1-9-13 SCALE: NONE
DESIGNED BY: ACP DATE: 08-12

BRIDGE NO. 04921 & 04922 DRAWING NO. 53327

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	13	70

(4) SUMMARY OF QUANTITIES AND REVISIONS

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	28	STA.
201	GRUBBING	28	STA.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	9	EACH
210	UNCLASSIFIED EXCAVATION	9467	CU. YD.
210	COMPACTED EMBANKMENT	8998	CU. YD.
SP & 210	COMPACTED EMBANKMENT (SPECIAL)	5263	CU. YD.
SP & 210	SOIL STABILIZATION	100	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 5)	4180	TON
401	PRIME COAT	2510	GAL.
402	MINERAL AGGREGATE IN ASPHALT SURFACE TREATMENT (CLASS 1)	209	TON
SS & 402	POLYMER MODIFIED CATIONIC EMULSIFIED ASPHALT (CRS-2P)	5079	GAL.
504	APPROACH SLABS (TYPE SPECIAL)	118.36	CU. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
SS & 603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
SS & 604	SIGNS	173	SQ. FT.
SS & 604	BARRICADES	48	LIN. FT.
SP. SS & 606	18" SIDE DRAIN	276	LIN. FT.
SS & 617	GUARDRAIL (TYPE A)	400	LIN. FT.
SS & 617	TERMINAL ANCHOR POST (TYPE 1)	8	EACH
SS & 617	THRIE BEAM GUARDRAIL TERMINAL	8	EACH
620	LIME	10	TON
620	SEEDING	5.02	ACRE
620	MULCH COVER	15.06	ACRE
SS & 620	WATER	716.9	M. GAL.
621	TEMPORARY SEEDING	10.04	ACRE
621	SILT FENCE	100	LIN. FT.
621	SAND BAG DITCH CHECKS	222	BAG
621	SEDIMENT REMOVAL AND DISPOSAL	40	CU. YD.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
SS & 726	STANDARD SIGN	69.00	SQ. FT.
729	CHANNEL POST SIGN SUPPORT (TYPE A)	4	EACH
729	CHANNEL POST SIGN SUPPORT (TYPE C)	8	EACH
SS & 804	REINFORCING STEEL - ROADWAY (GRADE 60)	8584	LB.
	STRUCTURES OVER 20'-0" SPAN		
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES - BRIDGE	44	CU. YD.
802	CLASS S CONCRETE - BRIDGE	58.10	CU. YD.
802	CLASS S (AE) CONCRETE - BRIDGE	240.60	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	15.0	GAL.
SS & 804	REINFORCING STEEL - BRIDGE (GRADE 60)	51880	LB.
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	2620	LB.
SP & 805	STEEL PILING (16" DIAMETER)	1260	LIN. FT.
SP & 805	STEEL PILING (18" DIAMETER)	560	LIN. FT.
805	PILE ENCASEMENT	112	LIN. FT.
805	PREBORING	180	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)	106390	LB.
812	BRIDGE NAME PLATE (TYPE C)	2	EACH
816	DUMPED RIPRAP	206	CU. YD.
816	FILTER BLANKET	368	SQ. YD.

REVISIONS

DATE	REVISION	SHEET NUMBER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5568
DAVID R. MAYO, JR.

2/22/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	14	70

(4) PLAN & PROFILE STA. 100+00-STA. 112+00

N

APPROACH SLABS (TYPE SPECIAL)
STA. 102+70.50 TO STA. 102+96.50 = 29.59 CU. YDS.
STA. 104+22.50 TO STA. 104+48.50 = 29.59 CU. YDS.

CONCRETE	REINFORCING STEEL
29.59 CU. YDS.	2146 LBS.
29.59 CU. YDS.	2146 LBS.

STA. 102+97 IN PLACE
15" C.M. PIPE CULVERT
W/ONE END SUBMERGED IN CREEK
LT. SIDE DRAIN
REMOVE

STA. 101+80 INSTALL
18" X 35' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 45 CU. YDS.

STA. 104+26 IN PLACE
18" X 30' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 105+45 INSTALL
18" X 38' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 50 CU. YDS.

℄ CONST.
PI = 106+69.11
Δ = 16°27'41.9" RT.
D = 10°25'02.7"
T = 79.56'
L = 158.02'
e = 0.092
PC = 105+89.55
PT = 107+47.57
BEGIN SUPER TRANS. 104+23.05
BEGIN MAX. SUPER 106+58.05
END MAX. SUPER 106+88.82
END SUPER TRANS. 109+23.82

STA. 109+73
WI-2L & WI3-1 (40 MPH)
ON LT.

BUN RAY IVY & WIFE 1/0

LIMITS OF CONSTRUCTION

CLEARING AND GRUBBING
STA. 100+00 - STA. 103+00 = 3 STATIONS
STA. 104+00 - STA. 120+00 = 16 STATIONS
STA. 121+00 - STA. 130+00 = 9 STATIONS
TOTAL = 28 STATIONS

LEGEND
- POWER POLE
- POLE W/GUY

JDS TRUST

POB 100+00.00

T.C.E.

℄ CONSTRUCTION N 74°04'41.26" E 79.56'

℄ CONSTRUCTION S 89°27'36.85" E 79.56'

BIG CYPRESS CREEK

DOWNSTREAM

PI 106+69.11

POB

PC 105+89.55

PT 107+47.57

LIMITS OF FLOODPLAIN

BUN RAY IVY & WIFE

STA. 101+80 INSTALL
18" X 35' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 50 CU. YDS.

STA. 103+65
WI-2R & WI3-1 (40 MPH)
ON RT.

STA. 102+97 IN PLACE
24" X 40' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 104+41 IN PLACE
12" C.M. PIPE CULVERT
W/ONE END SUBMERGED IN CREEK
RT. SIDE DRAIN
REMOVE

GUARDRAIL (TYPE A)
GUARDRAIL
STA. 102+39 - STA. 102+89 LT. & RT. = 100 LIN. FT.
STA. 104+30 - STA. 104+80 LT. & RT. = 100 LIN. FT.
TERMINAL ANCHOR POSTS (TYPE 1) = 4 EACH
THRIE BEAM GUARDRAIL TERMINAL = 4 EACH

STA. 103+10 - 103+99 IN PLACE
18' X 89' METAL RAIL CAR BRIDGE
BRIDGE STRUCTURE NO. 20998
REMOVAL OF EXISTING BRIDGE STRUCTURE
(SITE NO. 1) = 1.00 LUMP SUM

STA. 105+45 INSTALL
18" X 35' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 45 CU. YDS.

EARTHWORK

UNCLASSIFIED EXCAVATION (NORMAL)	3095	CU. YDS.
UNCLASSIFIED EXCAVATION (ADDITIONAL)	4690	CU. YDS.
COMPACTED EMBANKMENT (NORMAL)	9419	CU. YDS.
COMPACTED EMBANKMENT (ADDITIONAL)	510	CU. YDS.
COMPACTED EMBANKMENT (SPECIAL)	5585	CU. YDS.

EARTHWORK TO BE PAID FOR AS A PLAN QUANTITY.

50 0 50 100
SCALE: 1"= 50'

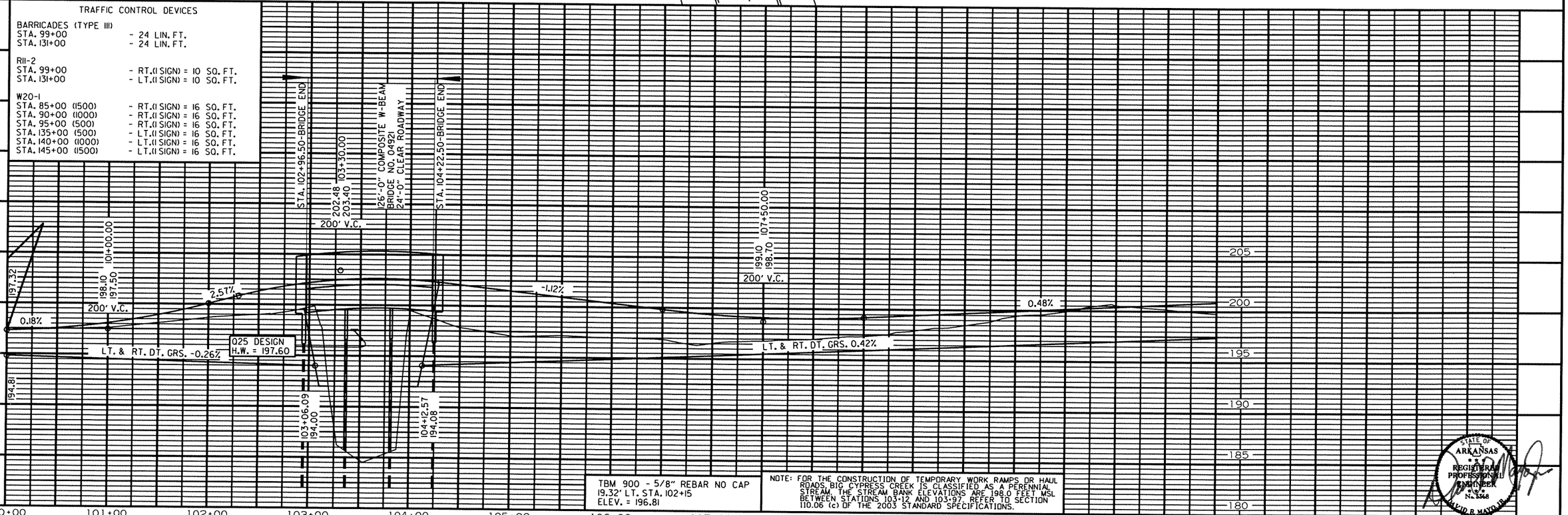
BEGIN JOB STA. 100+00.00

TRAFFIC CONTROL DEVICES

BARRICADES (TYPE III)
STA. 99+00 - 24 LIN. FT.
STA. 131+00 - 24 LIN. FT.

RII-2
STA. 99+00 - RT.(1 SIGN) = 10 SQ. FT.
STA. 131+00 - LT.(1 SIGN) = 10 SQ. FT.

W20-1
STA. 85+00 (1500) - RT.(1 SIGN) = 16 SQ. FT.
STA. 90+00 (1000) - RT.(1 SIGN) = 16 SQ. FT.
STA. 95+00 (500) - RT.(1 SIGN) = 16 SQ. FT.
STA. 135+00 (500) - LT.(1 SIGN) = 16 SQ. FT.
STA. 140+00 (1000) - LT.(1 SIGN) = 16 SQ. FT.
STA. 145+00 (1500) - LT.(1 SIGN) = 16 SQ. FT.



TBM 900 - 5/8" REBAR NO CAP
19.32' LT. STA. 102+15
ELEV. = 196.81

NOTE: FOR THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, BIG CYPRESS CREEK IS CLASSIFIED AS A PERENNIAL STREAM. THE STREAM BANK ELEVATIONS ARE 198.0 FEET MSL BETWEEN STATIONS 103+12 AND 103+97. REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
DAVID R. MAYO, P.E.

2/22/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	15	70

4 PLAN & PROFILE STA. 111+00-STA. 124+00

N

STA. 120+29 IN PLACE
18" X 44' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

GUARDRAIL (TYPE A)
STA. 119+74 - STA. 120+24 LT. & RT. = 100 LIN. FT.
STA. 121+24 - STA. 121+74 LT. & RT. = 100 LIN. FT.
TERMINAL ANCHOR POSTS (TYPE 1) = 4 EACH
THRIE BEAM GUARDRAIL TERMINAL = 4 EACH

115 120 125

BUN RAY IVY & WIFE

STA. 119+15 INSTALL
18" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 55 CU. YDS.

STA. 122+40 INSTALL
18" X 46' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 70 CU. YDS.

STA. 121+57 IN PLACE
18" X 40' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 122+45 IN PLACE
18" X 20' C.M. PIPE CULVERT
LT. SIDE DRAIN THROUGH LEVEE
REMOVE

R & LD TRUST III,
JANELLE D. STONER

LIMITS OF CONSTRUCTION

℄ CONSTRUCTION
S 89°27'36.85" E
1906.54'

T.C.E.

LIMITS OF FLOODPLAIN

LEGEND
- POWER POLE
- POLE W/GUY

APPROACH SLABS (TYPE SPECIAL) — CONCRETE — REINFORCING STEEL
STA. 120+07.50 TO STA. 120+33.50 = 29.59 CU. YDS. — 2146 LBS.
STA. 121+14.50 TO STA. 121+40.50 = 29.59 CU. YDS. — 2146 LBS.

BUN RAY IVY & WIFE

HISTORICAL HIGH WATER MARK
ELEV. = 199.82' IN APRIL 2011
PER JAMES WALLACE, AHTD
AREA MAINTENANCE SUPERVISOR

STA. 120+45 - 120+89 IN PLACE
18' X 44' METAL RAIL CAR BRIDGE
BRIDGE STRUCTURE NO. 20999
REMOVAL OF EXISTING BRIDGE STRUCTURE
(SITE NO. 2) = 1.00 LUMP SUM

DOWNSTREAM

STA. 121+28 IN PLACE
24" X 78' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 122+40 INSTALL
18" X 47' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 90 CU. YDS.

R & LD TRUST III,
JANELLE D. STONER

STA. 122+83 IN PLACE
18" X 24' C.M. PIPE CULVERT
CROSS DRAIN
REMOVE

50 0 50 100
SCALE: 1"= 50'

STA. 120+33.50-BRIDGE END
8'-0" COMPOSITE W-BEAM
BRIDGE NO. 04922
24'-0" CLEAR ROADWAY
STA. 121+44.50-BRIDGE END

118+00.00
199.93

200' V.C.

120+43.97
194.81

121+02.67
194.04

121+04.49
194.95

204.66
205.30

121+30.00

0.48%

-2.09%

LT. & RT. DT. GRS. 0.42%

LT. & RT. DT. GRS. -2.10%

LT. DT. GR. 0.32%

RT. DT. GR. 0.34%

025 DESIGN
H.W. = 199.00

205 200 195 190 185 180

111+00 112+00 113+00 114+00 115+00 116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00

NOTE: FOR THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, LICK CREEK IS CLASSIFIED AS A PERENNIAL STREAM. THE STREAM BANK ELEVATIONS ARE 198.0 FEET MSL BETWEEN STATIONS 120+40 AND 121+40. REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

TBM 900 - 5/8" REBAR NO CAP
19.32' LT. STA. 102+15
ELEV. = 196.81

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
DAVID R. MAYOLO
2/22/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRO-0054(18)		
				JOB NO.		BR5405	16	70
				(4)	PLAN & PROFILE STA. 122+00-STA. 130+00			

N

℄ CONST.

PI = 127+40.70
Δ = 13°47'18.6" RT.
D = 8°00'00.0"
T = 86.60'
L = 172.36'
e = 0.084
PC = 126+54.10
PT = 128+26.46
BEGIN SUPER TRANS. 124+89.12
BEGIN MAX. SUPER 127+09.10
END MAX. SUPER 127+71.46
END SUPER TRANS. 129+91.44

STA. 130+51
W1-2L & W13-1 (40 MPH)
ON LT.

R & LD TRUST III,
JANELLE D. STONER

LIMITS OF FLOODPLAIN

LIMITS OF CONSTRUCTION

℄ CONSTRUCTION
S 89°27'36.85" E
86.60'

℄ CONSTRUCTION
S 75°40'18.20" E
86.60'

℄ CONSTRUCTION
S 75°40'18.20" E
173.54

CO. RD. 76

T.C.E.

STA. 124+29
W1-2R & W13-1 (40 MPH)
ON RT.

WINSTREAM

R & LD TRUST III,
JANELLE D. STONER

POB 130+00.00

PI 127+40.70

PC 126+54.10

PT 128+26.46

POE 130+00.00

END JOB STA. 130+00.00

LAND TIE

POB 130+00.00

℄ CONSTRUCTION N 74°04'41" E

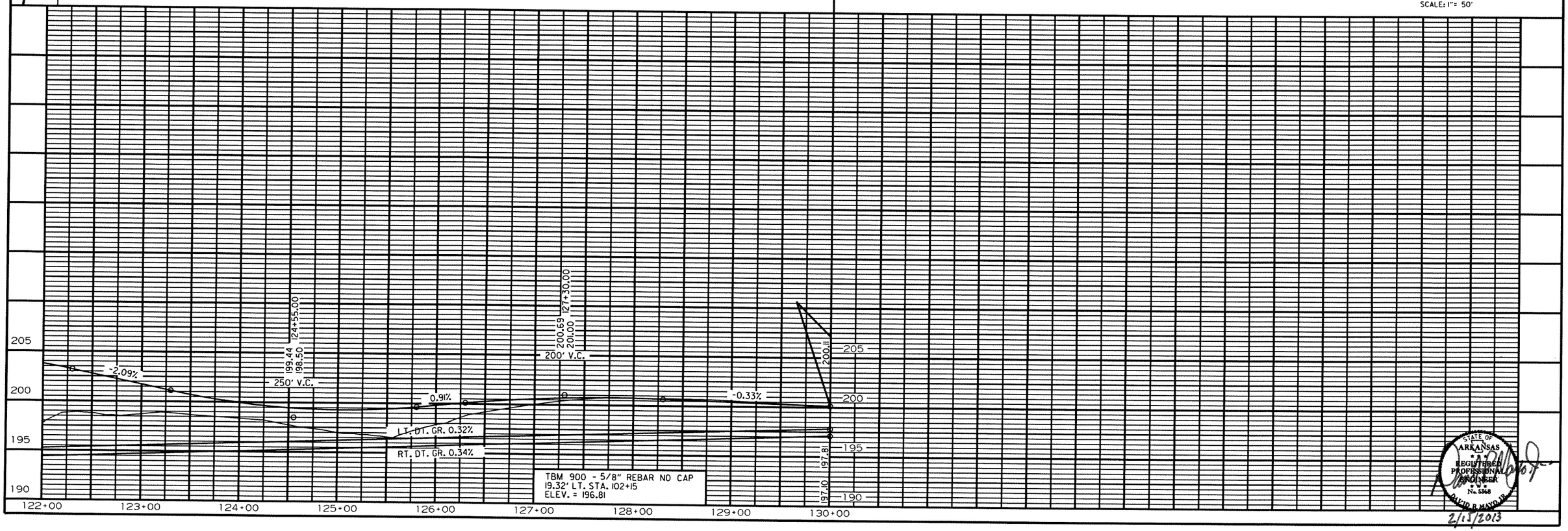
8000

S 15°54'24.67" E
2612.62

201
1/2" REBAR NO CAP
S¼CNR SI, T15,R3W

LEGEND
- POWER POLE
- POLE W/GUY

50 0 50 100
SCALE: 1"= 50'



TBM 900 - 5/8" REBAR NO CAP
19.32' LT. STA. 102+15
ELEV. = 196.81

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
DAVID B. MAYNARD

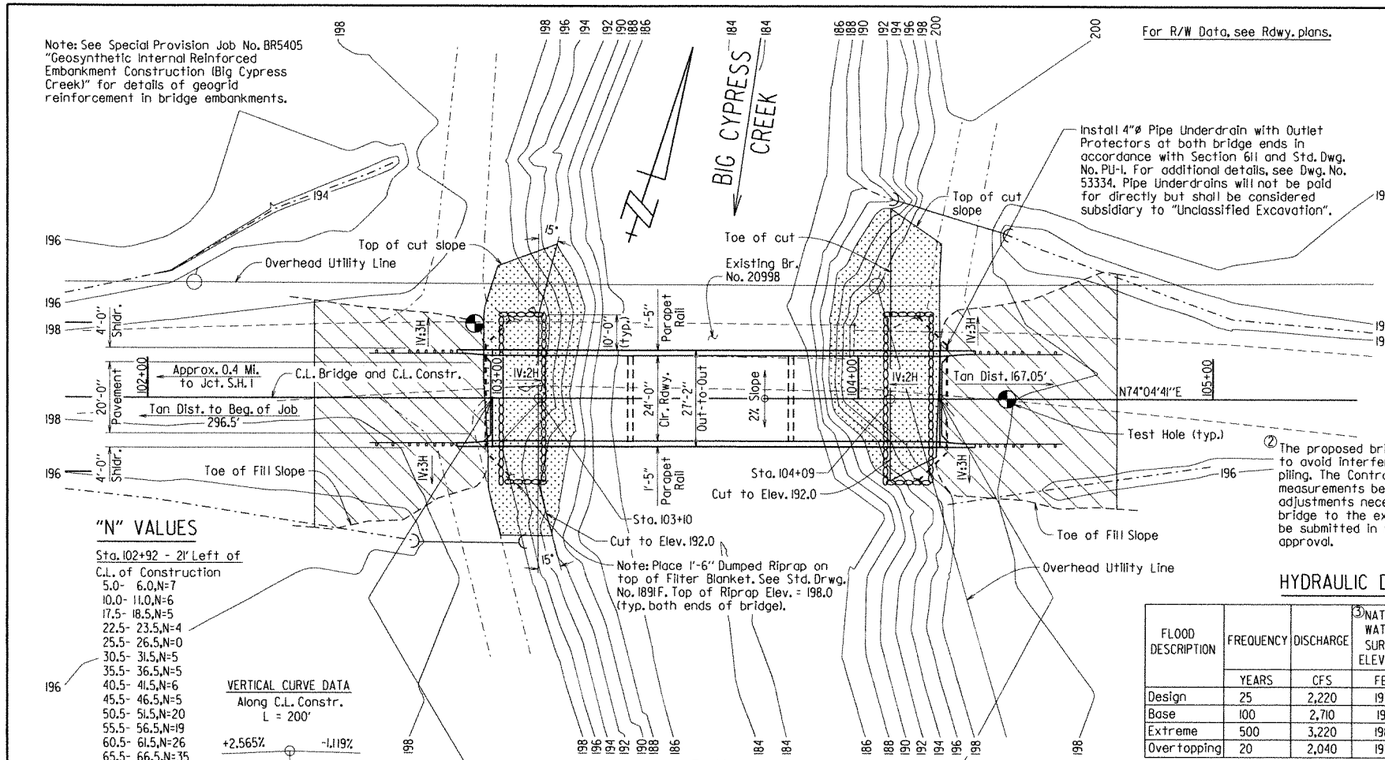
2/15/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	17	70
				① 04921		LAYOUT	53328	

Note: See Special Provision Job No. BR5405 "Geosynthetic Internal Reinforced Embankment Construction (Big Cypress Creek)" for details of geogrid reinforcement in bridge embankments.

For R/W Data, see Rdwy. plans.

Install 4"ø Pipe Underdrain with Outlet Protectors at both bridge ends in accordance with Section 611 and Std. Dwg. No. PU-1. For additional details, see Dwg. No. 53334. Pipe Underdrains will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".



"N" VALUES

Sta. 102+92 - 21' Left of C.L. of Construction

5.0- 6.0,N=7
10.0- 11.0,N=6
17.5- 18.5,N=5
22.5- 23.5,N=4
25.5- 26.5,N=0
30.5- 31.5,N=5
35.5- 36.5,N=5
40.5- 41.5,N=6
45.5- 46.5,N=5
50.5- 51.5,N=20
55.5- 56.5,N=19
60.5- 61.5,N=26
65.5- 66.5,N=35
70.5- 71.5,N=43
75.5- 76.5,N=29
80.5- 81.5,N=35
85.5- 86.5,N=32
90.5- 91.5,N=37
95.5- 96.5,N=37
100.5-101.5,N=39

"N" VALUES

Sta. 104+42 - C.L. of Construction

4.5- 5.5,N=9
9.5- 10.5,N=6
15.5- 16.5,N=4
22.5- 23.5,N=6
25.5- 26.5,N=7
30.5- 31.5,N=6
35.5- 36.5,N=6
40.5- 41.5,N=2
45.5- 46.5,N=16
50.5- 51.5,N=13
55.5- 56.5,N=25
60.5- 61.5,N=19
65.5- 66.5,N=23
70.5- 71.5,N=40
75.5- 76.5,N=58
80.5- 81.5,N=25
85.5- 86.5,N=22
90.5- 91.5,N=37
95.5- 96.5,N=38
100.5-101.5,N=23
105.5-106.5,N=28
110.5-111.5,N=46
115.5-116.5,N=53
120.5-121.5,N=104

② The proposed bridge shall be constructed to avoid interference with the existing piling. The Contractor shall verify measurements before driving any piling. Any adjustments necessary to fit the proposed bridge to the existing bridge location shall be submitted in writing for the Engineer's approval.

VERTICAL CURVE DATA

Along C.L. Constr.
L = 200'

+2.565% -1.119%

PVI Sta. 103+30.00
Elev. 203.40

PLAN

Total Length of Bridge = 126'-0"

6" 125'-0" Integral Composite W-Beam Unit (40'-45'-40') 6"

End of Beam — Begin Br. Sta. 102+96.50 Elev. 202.13

End of Beam — End Br. Sta. 104+22.50 Elev. 201.36

Slope Intercept Sta. 102+90.00

Slope Intercept Sta. 104+29.00

Guard Rail (See Rdwy. Plans)

Concrete Parapet Railing

C.L. Bt. Sta. 103+37.00 C.L. Deck Elev. 202.53

3'-3½" ⑤

2'-10⅞" C.L. Deck ① to Low Steel

C.L. Bt. Sta. 103+82 C.L. Deck Elev. 202.61

1.7' Low Steel ① to Design H.W.

Proposed Grade Line Along C.L. Constr.

Elev. 199.1

Elev. 198.8

Existing Ground Line Along C.L. Constr.

Int. Fix Fix Int.

Pile Encasement (Typ.)

025 DESIGN H.W. Elev. 197.6

Unclassified Excavation for Geogrid Reinforcement - See Rdwy. Plans.

70' Piles

① Low Bridge chord elevation of 199.26 occurs at Sta. 102+99.33

⑤ Dimension taken at C.L. Deck at C.L. Bent to low side top of cap. (Typ. at Bents 2 and 3).

Notes:

Use Type Special Approach Slabs at both ends of bridge, see Dwg. No. 53345.

The Contractor shall remove a portion of the existing approach embankment at Bents 1 and 4 as shown to Elev. 192.0 using a 1V:2H cut slope. Approximately 485 cubic yards of excavation.

All Stations and elevations are taken along C.L. Construction & C.L. Bridge. Elevations are at working point, see Dwg. No. 53332.

Bent No. 1 2 3 4

Sta. 102+92 21' Left of Center Line of Construction

Sta. 104+42 Center Line of Construction

ELEVATION

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	③ NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER	
				PLANNED EMBANKMENT	④ FUTURE EMBANKMENT
	YEARS	CFS	FEET	FEET	FEET
Design	25	2,220	197.6	197.6	197.6
Base	100	2,710	198.1	198.2	198.2
Extreme	500	3,220	198.6	198.7	198.7
Overtopping	20	2,040	197.2	197.4	N/A

③ Unconstricted water surface without structure or roadway approaches.

④ Future embankment height is assumed to be 197.7 and overtops at flows greater than 025.

0100 backwater elevation for existing structure = 198.1

Proposed Low Bridge Chord Elev. = 199.26
Drainage area = 43.7 square miles.

BORING LEGEND

AI-Moist, Medium Stiff, Gray Silty Clay
BI-Moist, Medium Stiff, Gray Clay
CI-Wet, Medium Stiff, Gray and Brown Silty Clay
DI-Wet, Soft, Gray Silty Clay
EI-Wet, Very Loose, Gray Silt
FI-Wet, Medium Stiff, Gray Silty Clay with Shells
GI-Wet, Loose, Gray Silt
HI-Wet, Medium Stiff, Gray Clay with Trace of Shells
JI-Wet, Loose, Gray Clayey Sand
KI-Wet, Medium Dense, Gray Sand with Silt and some Gravel
LI-Wet, Medium Dense, Gray Sand with Silt
MI-Wet, Dense, Gray Sand with Silt
NI-Wet, Dense, Gray Sand with Silt and Trace of Gravel
PI-Wet, Medium Dense, Gray Sand with Silt and Trace of Gravel
QI-Wet, Dense, Gray Silty Sand with some Gravel
RI-Wet, Dense, Gray and Brown Silty Sand with some Gravel
SI-Moist, Stiff, Gray and Brown Clay with Trace of Gravel
TI-Moist, Medium Stiff, Gray and Brown Silty Clay with Trace of Gravel
UI-Wet, Medium Stiff, Gray Silty Clay with Trace of Shells
VI-Wet, Soft, Gray Sandy Clay
WI-Wet, Medium Dense, Gray Sand with Trace of Clay
XI-Wet, Medium Dense, Gray Sand
YI-Wet, Medium Dense, Gray Sand with Trace of Gravel
ZI-Wet, Dense, Gray Sand
A2-Wet, Very Dense, Gray Sand with Trace of Gravel
B2-Wet, Medium Dense, Gray Sand with some Gravel
C2-Wet, Medium Dense, Gray and Brown Sand with Gravel
D2-Wet, Dense, Gray and Brown Sand with Gravel
E2-Wet, Very Dense, Gray Sand

GENERAL NOTES

BENCHMARK: ⅝" REBAR, 19.32' Lt. of Sta. 102+14.62, Elevation = 196.81.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Section and subsection refer to the Standard Construction Specifications unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Sixth Edition, 2012.

LIVE LOADING: HL93
SEISMIC PERFORMANCE ZONE: 3

MATERIALS AND STRENGTHS

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M31 or M53, Gr. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.

② STEEL SHELL PILING: Piling in Bents 1 and 4 shall be 16" dia. concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 142 tons per pile. Piling in Bents 2 and 3 shall be 18" dia. concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 235 tons per pile. All piling shall be driven with an approved air, steam or diesel hammer in accordance with Section 805 and Special Provision Job BR5405 "Driven Steel Piling by Method B". Piling in end bents shall be driven after embankment to bottom of cap is in place. All piling shall be driven to a minimum tip elevation of 129.0 or lower. Lengths of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. No additional payment will be made for cut-off or build-up. Test piles are not required but may be driven for the Contractor's information in accordance with subsection 805.08(g).

Water jetting may be needed to achieve minimum pile penetration. Water jetting shall stop once the minimum tip elevation is achieved. Any cost associated with achieving the minimum pile penetration shall be included in the item "Steel Shell Piling".

DRIVING SYSTEM: The driving system approval and ultimate bearing capacity determination for piling shall be based on the requirements of subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum rated hammer energy required to obtain the ultimate bearing capacity at Bents 1 and 4 will be 22,000 foot pounds per blow. It is estimated that the minimum rated hammer energy required to obtain the ultimate bearing capacity at Bents 2 and 3 will be 48,000 foot pounds per blow.

PREBORING: Preboring is required for all piling in Bents 1 and 4 to a depth of 10' below bottom of cap. Prebored holes shall be 6" greater than the diameter of the pile and shall be backfilled with sand or pea gravel after piles have been driven. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casings or other methods. The required preboring will be paid for at the unit price bid for the item "Preboring". The method used to keep the prebored holes free of debris will not be paid for directly, but will be considered subsidiary to the item "Steel Shell Piling".

PILE ENCASEMENT: Pile encasement for Bents 2 and 3 shall extend from bottom of cap to 3' below natural ground. See Drawing Number 53331 for additional information.

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in Subsection 802.19 for Class S Tined Bridge Roadway Surface Finish.

DETAIL DRAWINGS:	DRAWING NO.
End Bents	53329
Int. Bents	53330
Concrete Filled Steel Shell Piling	53331
125'-0" Integral W-Beam Unit	53332 - 53337
Type Special Approach Slabs	53345

EXISTING BRIDGE: The existing three-span bridge, No. 20998, (L.M. 1.49) is 19.2' wide and 89' long, and consists of a split railroad flat car placed side by side and spanned in between by a steel plate supported by timber bulkheads and piling.

REMOVAL AND SALVAGE: Existing Bridge No. 20998 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor except the railroad flat car units which shall remain the property of the County. The Contractor shall stockpile the salvaged railroad cars at the job site until the time of pickup by the County. Salvaged items shall be loaded on County vehicles by the Contractor. Payment for this work shall be considered incidental to the item "Removal of Existing Bridge Structure (Site No. 1)".

MAINTENANCE OF TRAFFIC: The road will be closed until the new bridge is complete and open to traffic.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/20/12
CARL J. FUSELIER

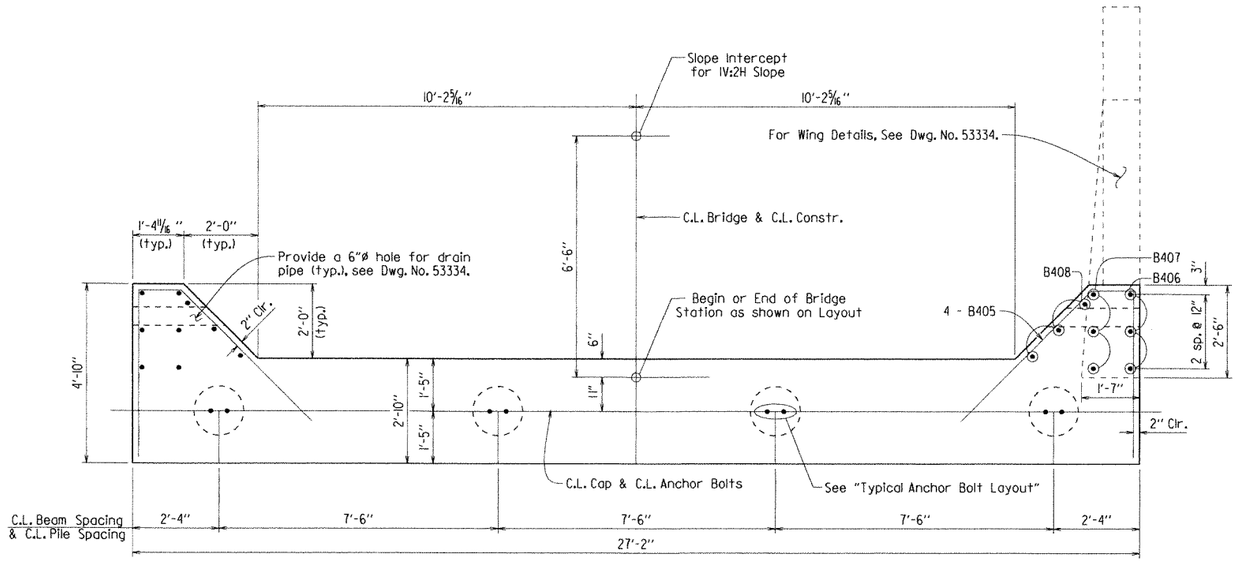
BRIDGE ENGINEER

LAYOUT OF BRIDGE OVER BIG CYPRESS CREEK
BIG CYPRESS AND LICK CREEK
STRS. & APPRS. (S)
PHILLIPS COUNTY
COUNTY ROAD 76
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

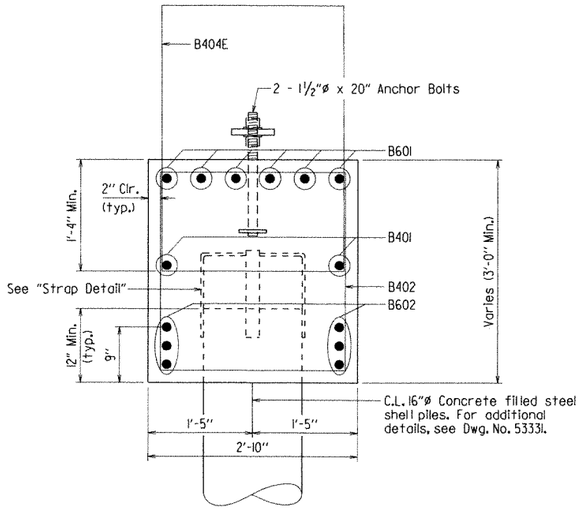
DRAWN BY:	ACP	DATE:	06/29/12	FILENAME:	bbr5405xl_11.dgn
CHECKED BY:	JYP	DATE:	1-9-13	SCALE:	1"=20'
DESIGNED BY:	ACP	DATE:	06-12		

BRIDGE NO. 04921 DRAWING NO. 53328

DATE	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE		SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	18	70
				①	04921 -	END BENTS - 53329		



PLAN
1/2" = 1'-0"



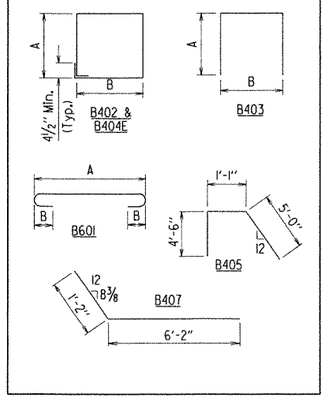
SECTION A-A
1" = 1'-0"

For Details of Anchor Bolts and Anchor Bolt Plate, See Dwg. No. 53335.

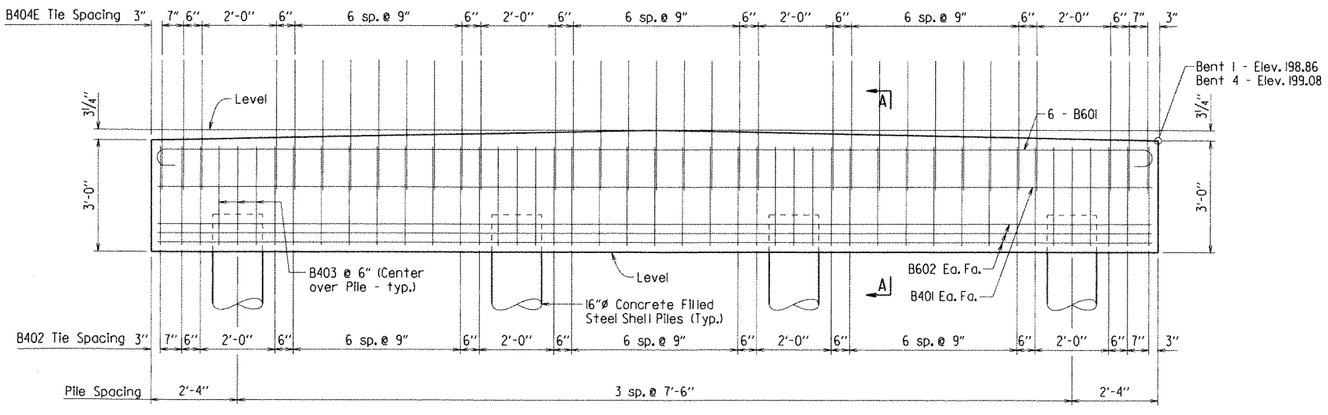
BAR LIST (PER END BENT)

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	26'-10"	-	-	Str.
B402	33	10'-8"	2'-8"	2'-6"	2"
B403	12	7'-8"	2'-8"	2'-6"	2"
B404E	33	12'-4"	3'-6"	2'-6"	2"
B405	8	10'-6"	-	-	2"
B406	6	8'-5"	-	-	Str.
B407	6	7'-4"	-	-	2"
B408	6	4'-11"	-	-	Str.
B601	6	28'-2"	26'-10"	6"	4 1/2"
B602	6	26'-10"	-	-	Str.

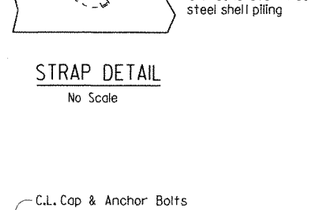
BENDING DIAGRAMS
(DIMENSIONS ARE OUT TO OUT OF BARS.)



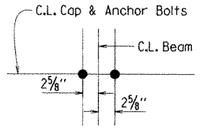
Bars designated with an "E" are epoxy coated.



ELEVATION
1/2" = 1'-0"



STRAP DETAIL
No Scale



TYPICAL ANCHOR BOLT LAYOUT
1" = 1'-0"

GENERAL NOTES

All concrete Shall be Class "S" with a minimum 28-Day compressive Strength f'c=3500 psi. Concrete shall be poured in the dry and all exposed corners to be Chamfered 3/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 OR M53 Grade 60 (fy = 60,000 psi).

Top reinforcing bars and pile anchorage in cap shall be properly placed to avoid interference with anchor bolts.

Granular Backfill and Pipe Underdrain required behind Cap. See Dwg. No. 53334.

For additional information, See Layout.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/20/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF END BENTS
BIG CYPRESS CREEK

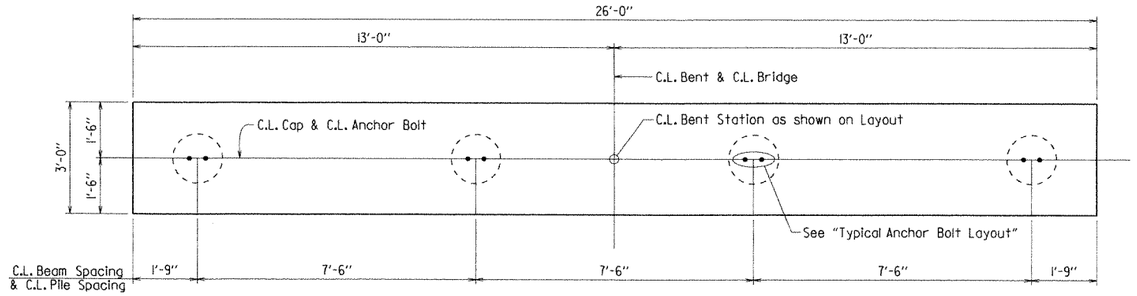
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 09-12-12 FILENAME: bbr5405x1_bl.dgn
CHECKED BY: JVP DATE: 12-20-12 SCALE: As Noted
DESIGNED BY: ACP DATE: 09-12-12

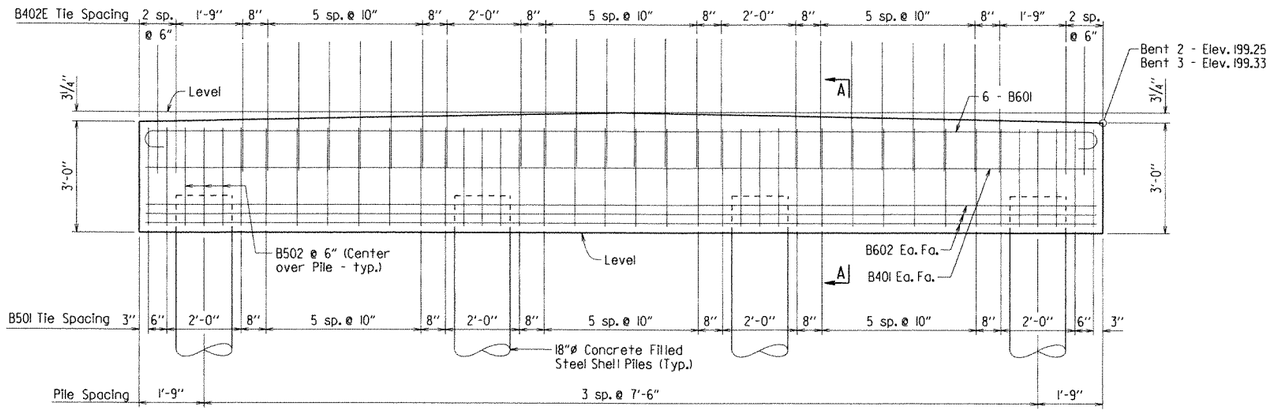
BRIDGE NO. 04921 DRAWING NO. 53329

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	19	70
				①	04921 - INT. BENTS - 53330			



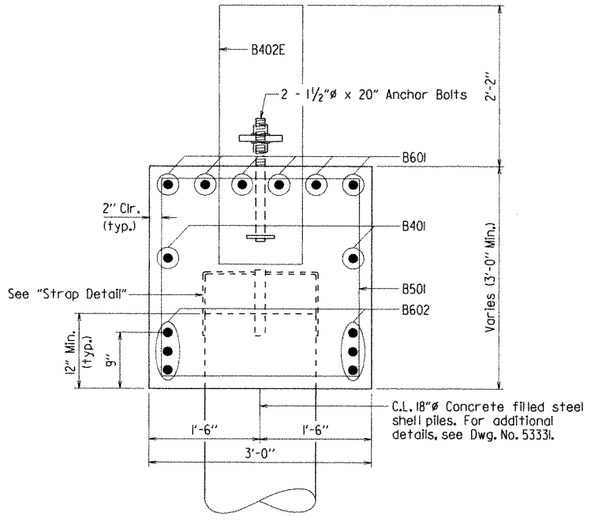
PLAN

1/2" = 1'-0"



ELEVATION

1/2" = 1'-0"



SECTION A-A

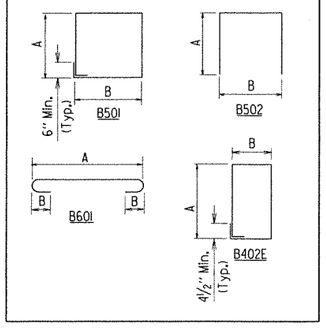
1" = 1'-0"

For Details of Anchor Bolts and Anchor Bolt Plate, See Dwg. No. 53335.

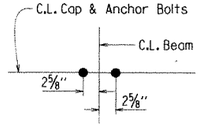
BAR LIST (PER INT. BENT)

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	25'-8"	-	-	Str.
B402E	28	9'-8"	3'-6"	1'-2"	2"
B501	28	11'-2"	2'-8"	2'-8"	2 1/2"
B502	12	7'-10"	2'-8"	2'-8"	2 1/2"
B601	6	27'-0"	25'-8"	6"	4 1/2"
B602	6	25'-8"	-	-	Str.

BENDING DIAGRAMS
(DIMENSIONS ARE OUT TO OUT OF BARS.)

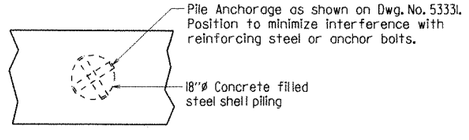


Bars designated with an "E" are epoxy coated.



TYPICAL ANCHOR BOLT LAYOUT

1" = 1'-0"



STRAP DETAIL

No Scale

GENERAL NOTES

All concrete Shall be Class "S" with a minimum 28-Day compressive Strength f'c=3500 psi. Concrete shall be poured in the dry and all exposed corners to be Chamfered 3/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 OR M53 Grade 60 (fy = 60,000 psi).

Top reinforcing bars and pile anchorage in cap shall be properly placed to avoid interference with anchor bolts.

For additional information, See Layout.

STATE OF ARKANSAS
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REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/20/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENTS BIG CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 09-13-12 FILENAME: bbr5405xl_bl.dgn

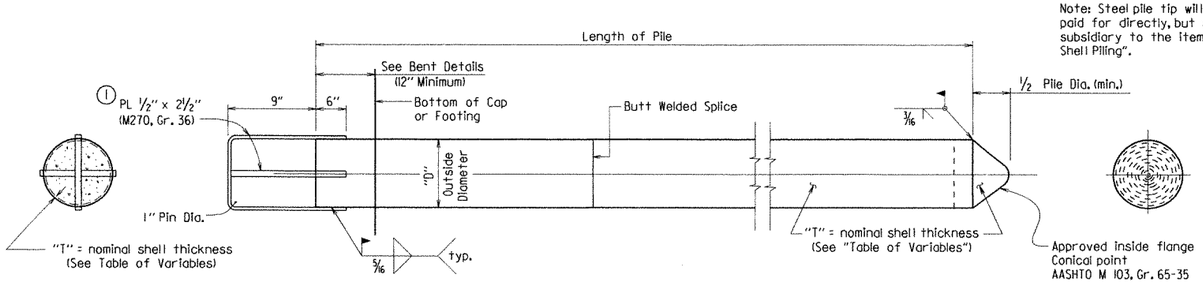
CHECKED BY: JNP DATE: 12-20-12 SCALE: As Noted

DESIGNED BY: ACP DATE: 09-12

BRIDGE NO. 04921 DRAWING NO. 53330

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	20	70

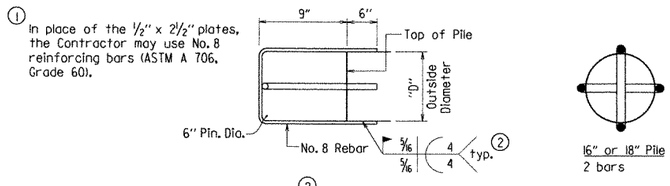
(1) 04921 & 04922 STEEL SHELL PILES 53331



Note: Steel pile tip will not be paid for directly, but shall be subsidiary to the item "Steel Shell Piling".

CONCRETE FILLED STEEL SHELL PILE

(1) Pile anchorage shall be placed to minimize interference with anchor bolts and reinforcing in cap or footing.



(1) In place of the ½" x 2½" plates, the Contractor may use No. 8 reinforcing bars (ASTM A 706, Grade 60).

(2) Welding shall comply with ANSI/AWS D1.4 Structural Welding Code-Reinforcing Steel and applicable portions of ANSI/AWS D1.5 Bridge Welding Code.

ALTERNATE FOR ½" X 2½" PLATE

GENERAL NOTES FOR CONCRETE FILLED STEEL SHEEL PILES:

Seismic Performance Zone: 3

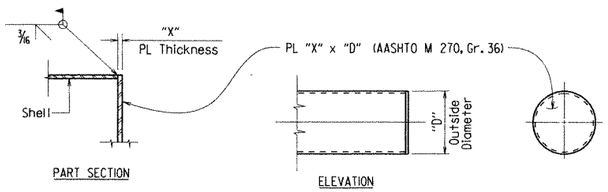
Steel shells shall conform ASTM A252, Grade 3, (Fy = 45,000 psi.).

Concrete used for filling of steel shell shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. and shall be poured in the dry.

Steel shell piling that extends above the ground and is not protected by pile encasement shall be painted in accordance with subsection 805.02 of the Standard Specifications for Highway Construction.

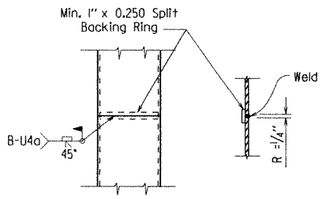
See Bridge Layout for size and estimated length of steel shell piles and for additional driving information.

Concrete, structural steel, reinforcing steel (including welding), and painting will not be paid for separately, but will be considered included in the contract unit price bid for "Steel Shell Piling".

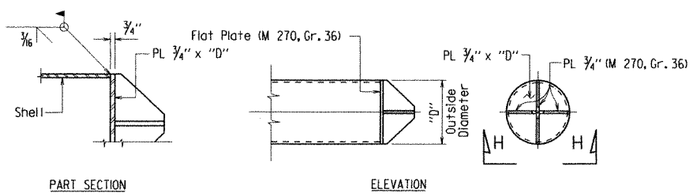


ALTERNATE FLAT TIP DETAIL

(Alternate Flat Pile Tips shall not be used on Piles in End Bents)



TYPICAL SPLICE DETAILS



ALTERNATE VANED TIP DETAIL

TABLE OF VARIABLES

OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	PLATE THICKNESS "X"
16"	0.50"	1"
18"	0.50"	1¼"

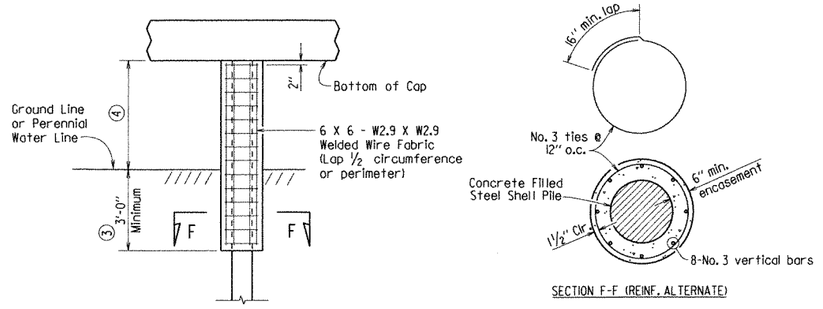
GENERAL NOTES FOR PILE ENCASEMENTS:

See Bridge Layout for required location of pile encasements. Only interior trestle pile bents shall have pile encasements.

Concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

Reinforcing steel shall conform to AASHTO M 31 or M 53, Grade 60.

Concrete, welded wire fabric or reinforcing steel, and galvanized pipe will not be paid for separately, but will be considered included in the unit price bid for "Pile Encasement".



SECTION F-F (REINF. ALTERNATE)

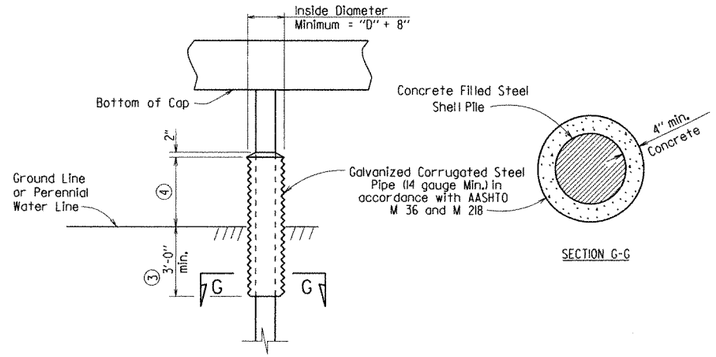
PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(Shown with Encasement to Bottom of Cap) (5)

(3) Unless otherwise noted on Bridge Layout.

(4) See Bridge Layout for height of pile encasement (3'-0" Minimum).

(5) Pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the detail for partial height encasement.



SECTION G-G

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(Shown with Partial Height Encasement)

STATE OF ARKANSAS
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No. 7510
12/20/12
CARL J. FUSSLIKER

BRIDGE ENGINEER

DETAILS OF CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 12/05/12 FILENAME: bbr5405_pl.dgn

CHECKED BY: JYP DATE: 1/9/13 SCALE: NONE

DESIGNED BY: STD. DATE: —

BRIDGE NO. 04921 & 04922 DRAWING NO. 53331

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	21	70
				① 04921 -	125'-0" UNIT	- 53332		

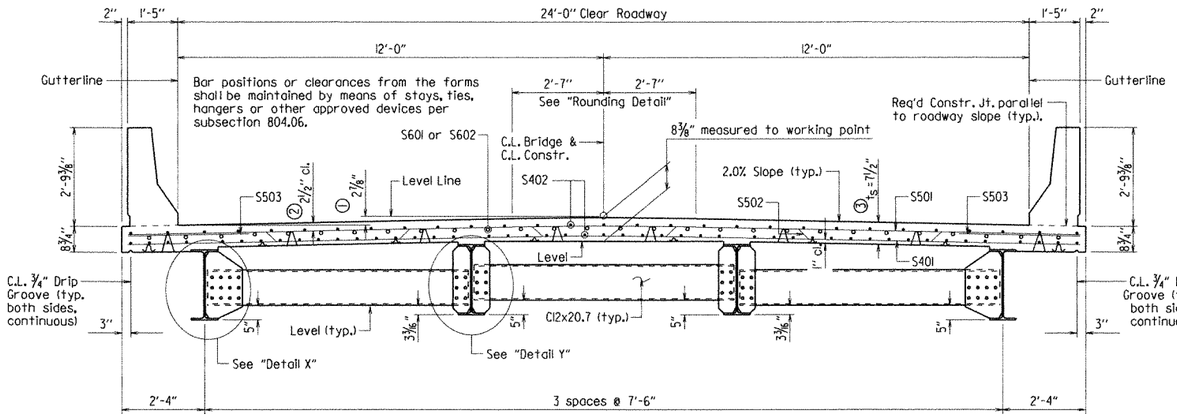
Slab Reinforcing:

Longitudinal: S402 as shown
S601 or S602 as shown, see "Reinforcing Plan & Pouring Sequence", Dwg. No. 53334.

Transverse: S502 @ 12" o.c. bent up over beams — Alternate
S501 @ 12" o.c. in top, S401 @ 12" o.c. in bottom
S503 @ 6" in top of overhangs (bundled with #5 bars)

NOTE: At the Contractor's option, in lieu of providing bars S502, one #5 bar top and bottom may be substituted for each bar. Payment for reinforcing will be based on the weight of bars S502.

NOTE: Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Face & Top of the Concrete Parapet Rail.



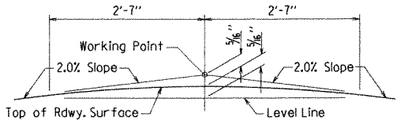
TYPICAL ROADWAY SECTION

1/2" = 1'-0"

① Working point to gutterline.

② Tolerance: Minus = 1/4"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".

③ See "Adjustment for Slab Thickness Tolerance".

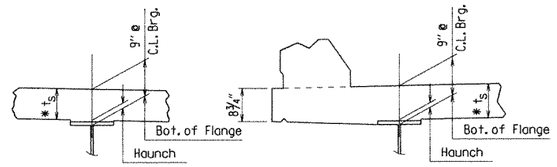


NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

No Scale

t_s = slab thickness as shown in "Typ. Roadway Section"



* Tolerance when removable deck forming is used is + 1/2", - 1/4". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

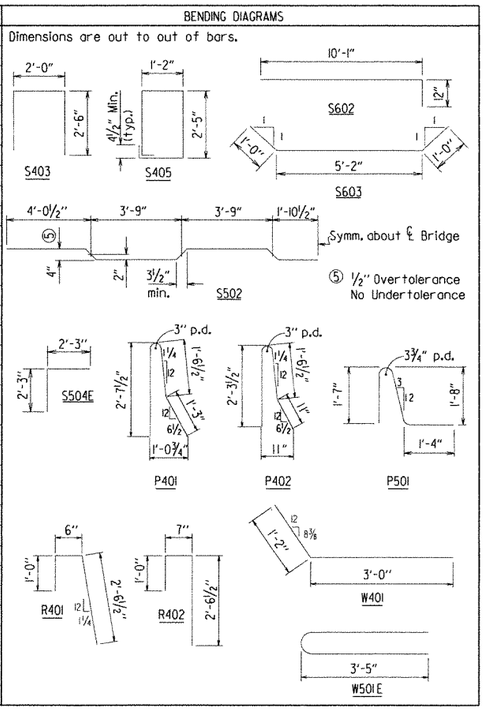
No Scale

NOTES:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus 1 3/4". No increase in concrete and structural steel quantities will be made to maintain tolerances.

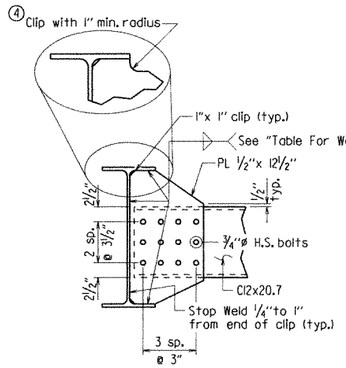
Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 14991 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
S401	136	26'-10"	Str.	Dimensions are out to out of bars.
S402	304	32'-9"	Str.	
S403	66	6'-10"	2"	
S404	12	24'-8"	Str.	
S405	56	7'-6"	2"	
S501	130	26'-10"	Str.	
S502	121	27'-6"	3"	
S503	486	3'-5"	Str.	
S504E	48	4'-5"	2 1/2"	
S601	56	14'-0"	Str.	
S602	56	10'-11"	4 1/2"	
S603	12	7'-2"	4 1/2"	
P401	448	5'-6"	3"	
P402	64	4'-10"	3"	
P403	56	4'-0"	Str.	
P404	28	8'-8"	Str.	
P405	112	13'-2"	Str.	
P501	448	4'-8"	3 3/4"	
R401	16	3'-11"	2"	
R402	16	4'-0"	2"	
R403	24	9'-8"	Str.	
R404	24	3'-10"	Str.	
R601	32	5'-3"	Str.	
R602	12	5'-0"	Str.	
W401	20	4'-2"	2"	
W402	20	5'-3"	Str.	
W501E	32	7'-1"	3 3/4"	
W701	32	12'-0"	Str.	

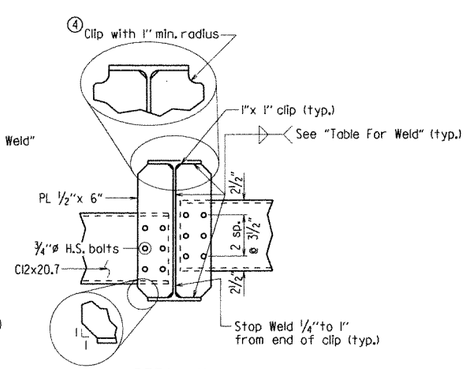


Bars designated with an "E" are epoxy coated.



DETAIL X

1" = 1'-0"



DETAIL Y

1" = 1'-0"

④ If permanent steel bridge deck forms are used, the Fabricator shall clip plates as necessary to accomodate the deck form supports.

TABLE FOR WELD

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To 3/4" Inclusive	1/4"	
Over 3/4"	5/16"	

NOTE: When a fillet weld size, as shown on the plans, is larger than the minimum, the first pass shall be that specified for minimum size of fillet weld.

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SHEET 1 OF 5

DETAILS OF 125'-0" INTEGRAL COMPOSITE W-BEAM UNIT BIG CYPRESS CREEK

ROUTE SEC.

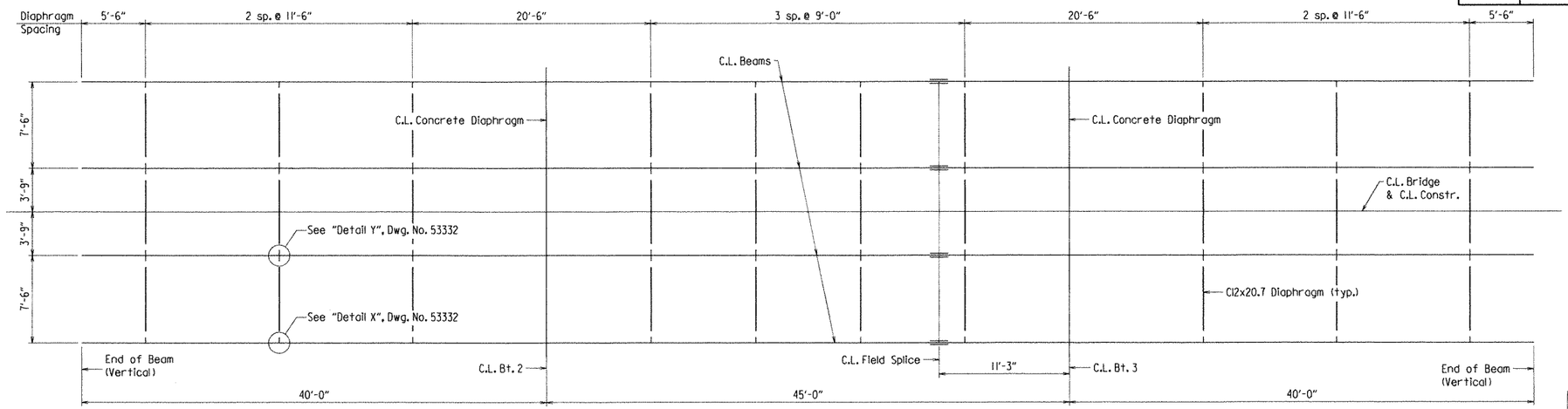
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 8-22-12
CHECKED BY: AGP DATE: 12-20-12
DESIGNED BY: AGP DATE: 08-12
FILENAME: bbr5405xl_sl.dgn
SCALE: As Noted

BRIDGE NO. 04921 DRAWING NO. 53332

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	22	70
				①	04921 -	125'-0" UNIT	- 53333	



FRAMING PLAN

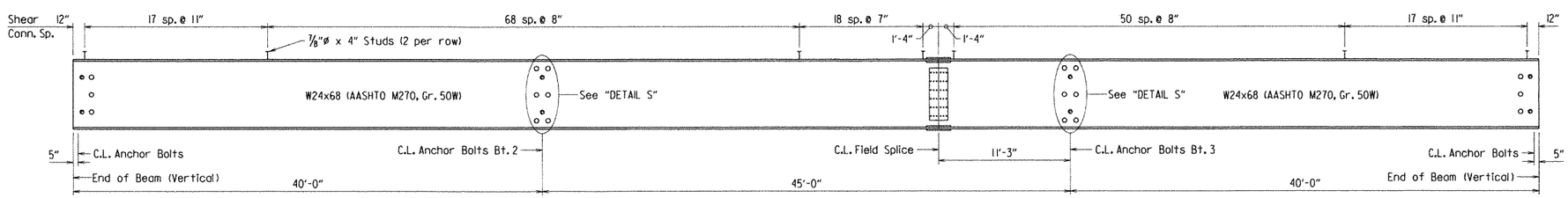
3/16" = 1'-0"

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

POINT OF DEFLECTION	STRUCTURAL STEEL		STRUCTURAL STEEL + SLAB		STRUCTURAL STEEL + SLAB + RAIL	
	EXT. BEAM	INT. BEAM	EXT. BEAM	INT. BEAM	EXT. BEAM	INT. BEAM
1.0	0	0	0	0	0	0
1.1	0.014	0.015	0.133	0.161	0.146	0.174
1.2	0.026	0.028	0.246	0.299	0.271	0.322
1.3	0.034	0.037	0.326	0.395	0.359	0.426
1.4	0.038	0.041	0.363	0.440	0.399	0.474
1.5	0.037	0.040	0.355	0.431	0.391	0.465
1.6	0.032	0.035	0.308	0.373	0.339	0.402
1.7	0.024	0.026	0.229	0.278	0.252	0.300
1.8	0.014	0.015	0.136	0.165	0.150	0.178
1.9	0.005	0.006	0.051	0.061	0.056	0.066
2.0	0	0	0	0	0	0
2.1	0.001	0.001	0.011	0.013	0.012	0.014
2.2	0.007	0.007	0.066	0.080	0.073	0.086
2.3	0.014	0.015	0.131	0.159	0.144	0.171
2.4	0.019	0.020	0.180	0.218	0.198	0.235
2.5	0.021	0.022	0.198	0.240	0.218	0.259

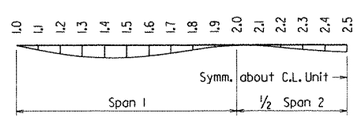
Symm. about C.L. Unit

Note:
Camber for Dead Load Deflection plus Vertical Curve ± 1/4" tolerance. Deflections shown are along C.L. Beam from a chord from C.L. Anchor Bolt to C.L. Anchor Bolt. Vertical Curve corrections not included.



TYPICAL BEAM ELEVATION

No Scale

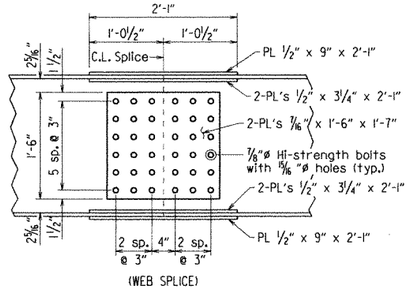


DEAD LOAD DEFLECTION DIAGRAM

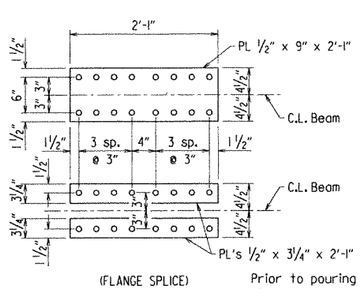
No Scale

Notes:
Bolted field splices shown may be eliminated or shop welded splices may be substituted with the approval of the Engineer. Payment will be made on the basis of the plan quantities.

All field splice bolts shall be 7/8"ø Hi-str. bolts.
All holes for splice bolts shall be 15/16"ø.
All field splice plates shall be AASHTO M270 Gr. 50W steel.



(WEB SPLICE)

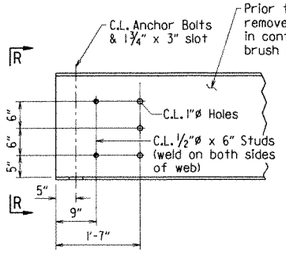


(FLANGE SPLICE)

DETAILS OF FIELD SPLICE

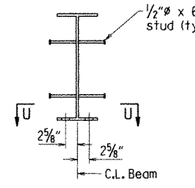
1" = 1'-0"

Prior to pouring concrete diaphragm, remove mill scale from surfaces to be in contact with concrete with a wire brush.



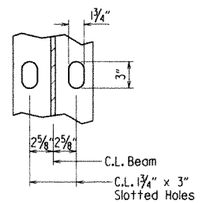
DETAIL OF BEAM END (TYP.)

3/4" = 1'-0"



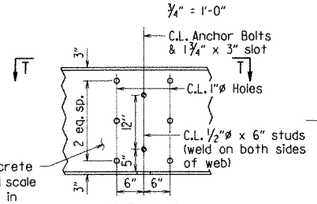
VIEW R-R

3/4" = 1'-0"



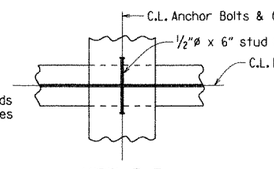
VIEW U-U

1 1/2" = 1'-0"



DETAIL S

3/4" = 1'-0"



VIEW T-T

3/4" = 1'-0"

STATE OF ARKANSAS
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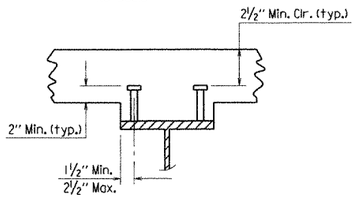
CARL J. FUSELIER

BRIDGE ENGINEER



Stud Shear Connectors shown shall be 7/8"ø x 4" automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. 3/4"ø studs may be used in place of the 7/8"ø studs shown at the ratio of 1.361-3/4"ø studs in place on one 7/8"ø stud. 7/8"ø studs will be used as the basis for measurement of structural steel in shear connectors.

SHEAR CONNECTOR DETAIL

No Scale

SHEET 2 OF 5

DETAILS OF 125'-0" INTEGRAL COMPOSITE W-BEAM UNIT BIG CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

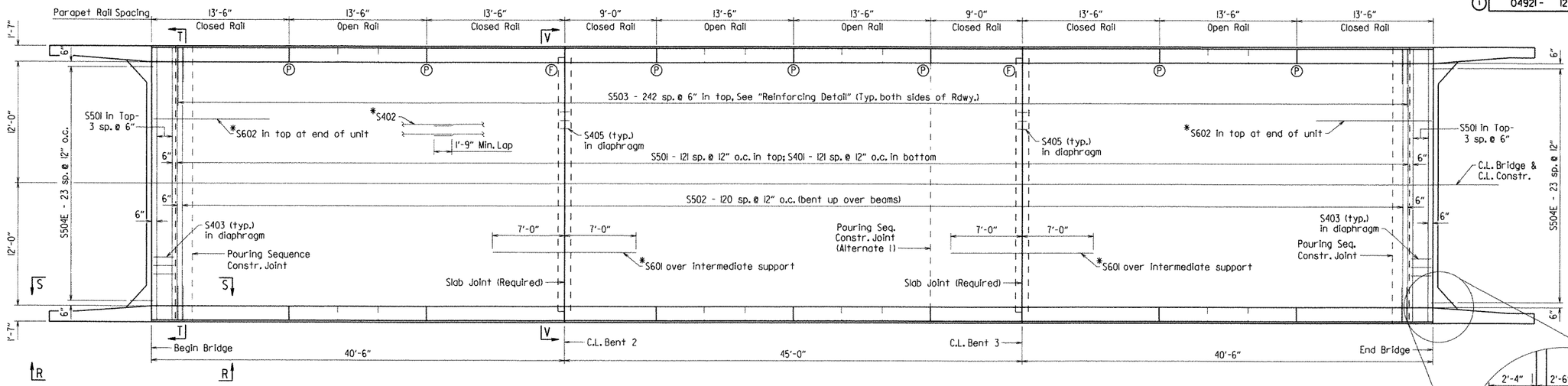
DRAWN BY: JYP DATE: 8-22-12 FILENAME: bbr5405xl_sl.dgn
CHECKED BY: ACP DATE: 12-20-12 SCALE: As Noted
DESIGNED BY: ACP DATE: 08-12

BRIDGE NO. 04921 DRAWING NO. 53333

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	23	70
				(1) 04921 - 125'-0" UNIT - 53334				

*Place reinforcing as shown in "Typical Roadway Section", see Dwg. No. 53332.

(P) Partial depth parapet joint at this location
(F) Full depth parapet joint at this location



REINFORCING PLAN

3/16" = 1'-0"

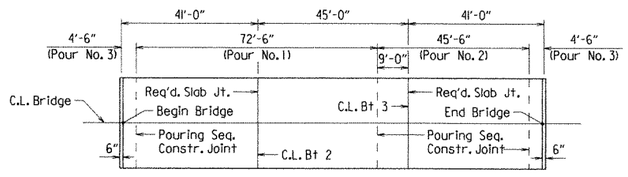
Notes:
Parapet rail spacing and joint depth shown are typical for both sides of roadway.
For reinforcing details, see Dwg. No. 53332.

Rails and wings are included in span construction and are included in span quantities.

Required slab joints and pouring sequence joints shall align with parapet open joints (except at end bent closure pour joints) at the gutterline.

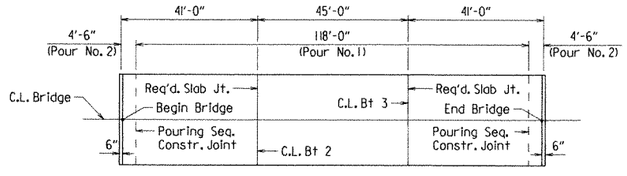
For "View R-R" and "View S-S", see Dwg. No. 53336.

For "View T-T" and "View V-V", see Dwg. No. 53335.



Note: Pours with the same number may be poured simultaneously or separately. Pour 1 must be placed before Pour 2 can be placed. Pour 2 must be placed before Pours 3 can be placed. 72 hours shall elapse between the end of pour and the start of an adjacent pour.

ALTERNATE NO. 1



Note: Pours with the same number may be poured simultaneously or separately. Pour 1 must be placed before Pour 2 can be placed. 72 hours shall elapse between the end of Pour 1 and the start of Pour 2.

ALTERNATE NO. 2

ALTERNATES FOR SLAB POURING SEQUENCE

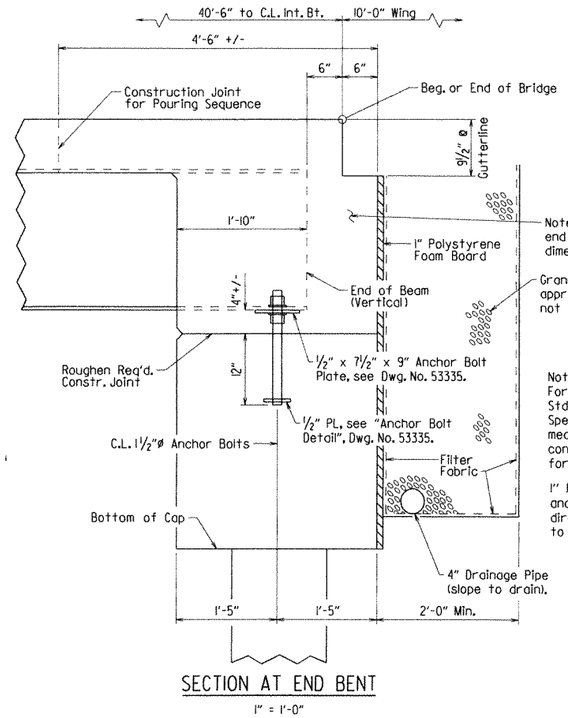
No Scale

Concrete in bridge superstructure shall be consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequences shown.

Any railing pours made before the entire slab unit has been placed must be approved by the Engineer.

Concrete diaphragms at ends of unit shall be poured monolithically with the deck. Interior bent diaphragms shall be poured separately from the deck.

For "Screed Rail Support Detail", see Dwg. No. 53336.

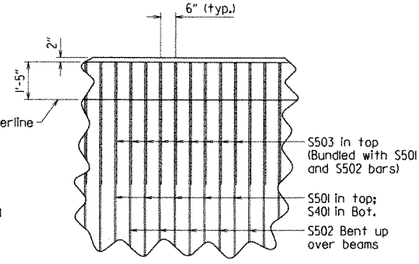


SECTION AT END BENT

1" = 1'-0"

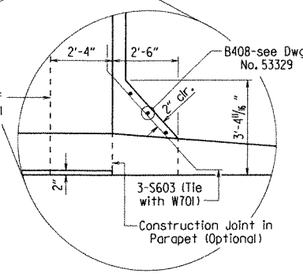
Notes:
For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611 of the Standard Specifications. Pipe underdrains will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation".

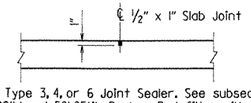
1" Polystyrene Foam Board, Filter Fabric and Granular Material shall not be paid for directly, but shall be considered subsidiary to the various bid items.



REINFORCING DETAIL

No Scale





Use Type 3, 4, or 6 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face of the parapet. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab Joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck from gutterline to gutterline.

SLAB JOINT DETAIL

No Scale

STATE OF ARKANSAS
Carl J. Puseliter
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No. 7510
12/20/12
CARL J. PUSELIER

BRIDGE ENGINEER

SHEET 3 OF 5

DETAILS OF 125'-0" INTEGRAL COMPOSITE W-BEAM UNIT BIG CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

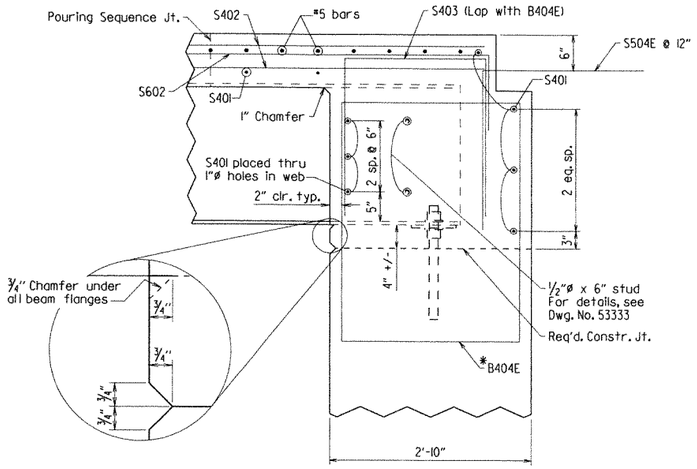
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 8-22-12
CHECKED BY: ACP DATE: 12-20-12
DESIGNED BY: ACP DATE: 08-12

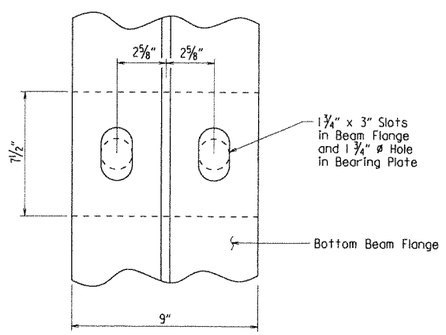
FILENAME: bbr5405x1_si.dgn
SCALE: As Noted

BRIDGE NO. 04921 DRAWING NO. 53334

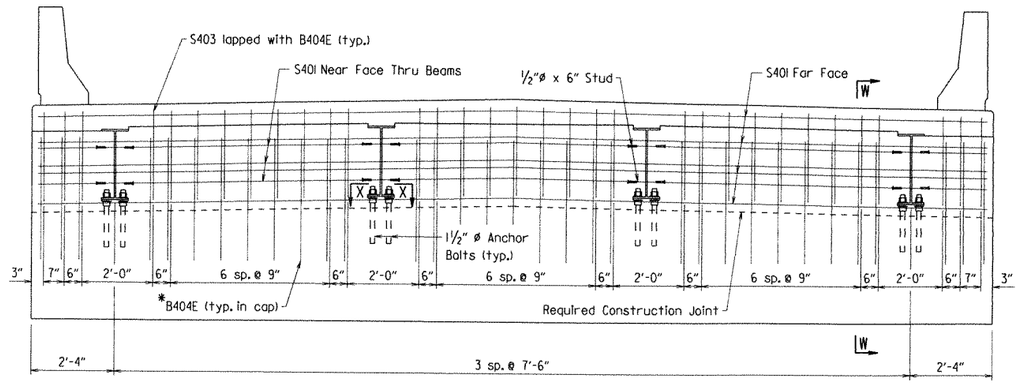
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	24	70
				① 04921-		125'-0" UNIT	- 53335	



SECTION W-W
1" = 1'-0"

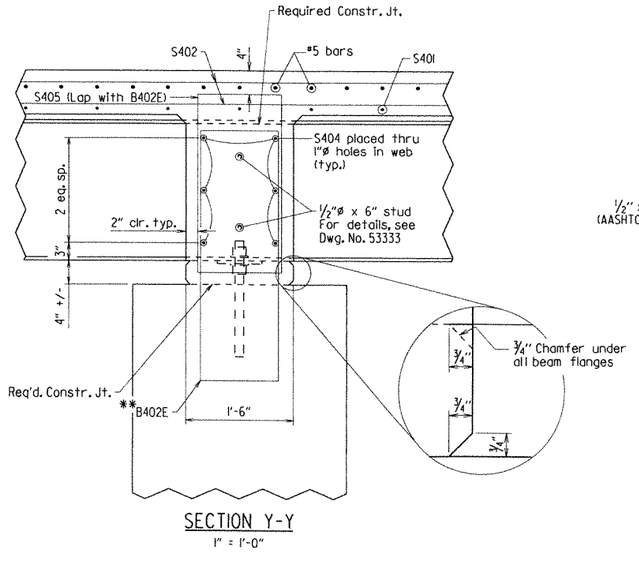


SECTION X-X
No Scale

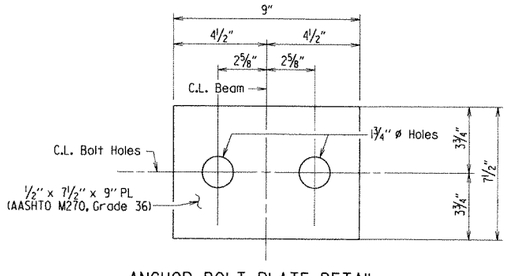


VIEW T-T
(AT END BENTS)
1/2" = 1'-0"

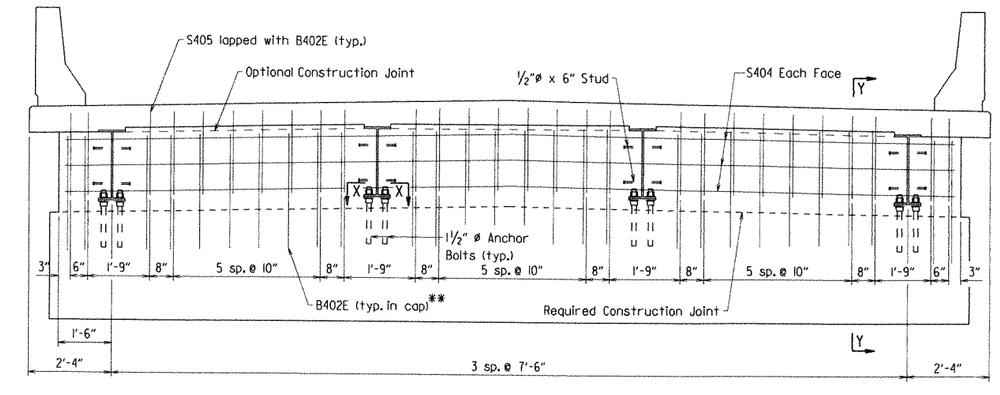
*See End Bent Details on Dwg. No. 53329 for reinforcing and additional details.



SECTION Y-Y
1" = 1'-0"

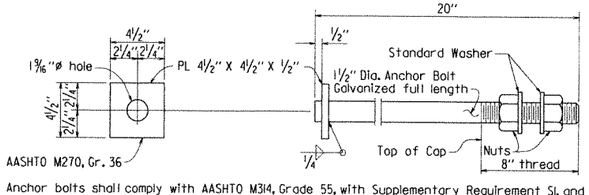


ANCHOR BOLT PLATE DETAIL
No Scale



VIEW V-V
(AT INTERIOR BENTS)
1/2" = 1'-0"

**See Int. Bent Details on Dwg. No. 53330 for reinforcing and additional details.



Anchor bolts shall comply with AASHTO M314, Grade 55, with Supplementary Requirement S1, and galvanized according to Section 807.07. Nuts and Washers for bolts shall be as specified in Section 807.07.

Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.

Bolts, nuts, and washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans".

ANCHOR BOLT DETAIL
No Scale

STATE OF ARKANSAS
Carl J. Fuselier
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No. 7510
12/20/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 4 OF 5

DETAILS OF 125'-0" INTEGRAL COMPOSITE W-BEAM UNIT BIG CYPRESS CREEK

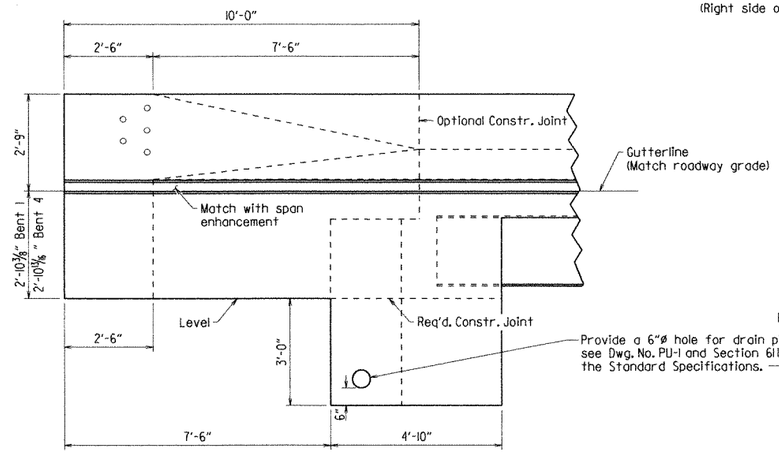
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 8-22-12 FILENAME: bbr5405x1_s1.dgn
CHECKED BY: ACP DATE: 12-20-12 SCALE: As Noted
DESIGNED BY: ACP DATE: 08-12

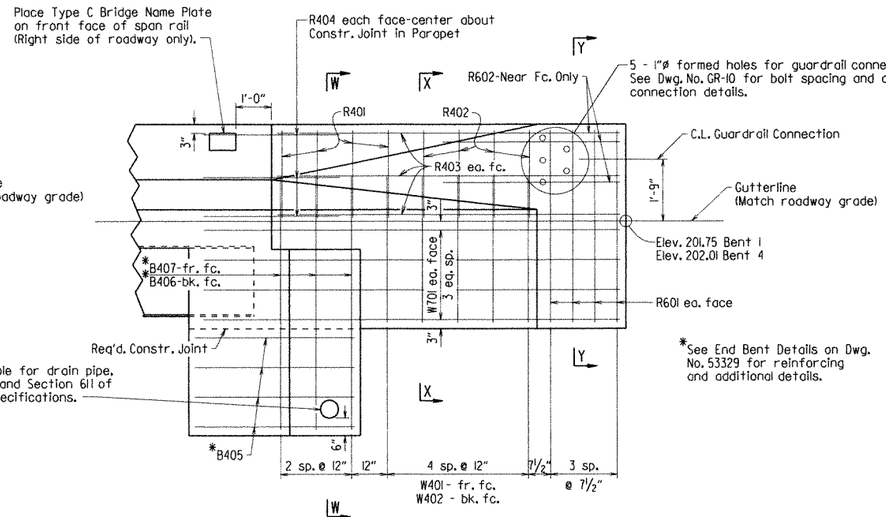
BRIDGE NO. 04921 DRAWING NO. 53335

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	25	70
				① 04921 -		125'-0" UNIT	- 53336	



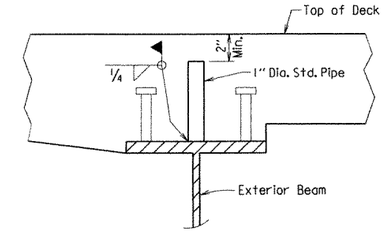
VIEW R-R

½" = 1'-0"



VIEW S-S

½" = 1'-0"



SCREED RAIL SUPPORT DETAIL

No Scale

Notes: The screed rail supports shall be centered over the beam web and centered between adjacent rows of shear connectors.

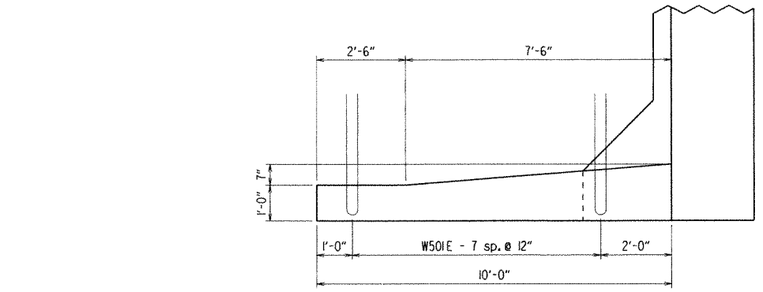
The pipe shall not interfere with the proper vertical position of the deck reinforcing steel.

The pipe shall be free of dirt, grease, rust, or other foreign substance before the deck is poured.

Care shall be exercised so as air voids do not exist in the pipe after placement of the deck concrete.

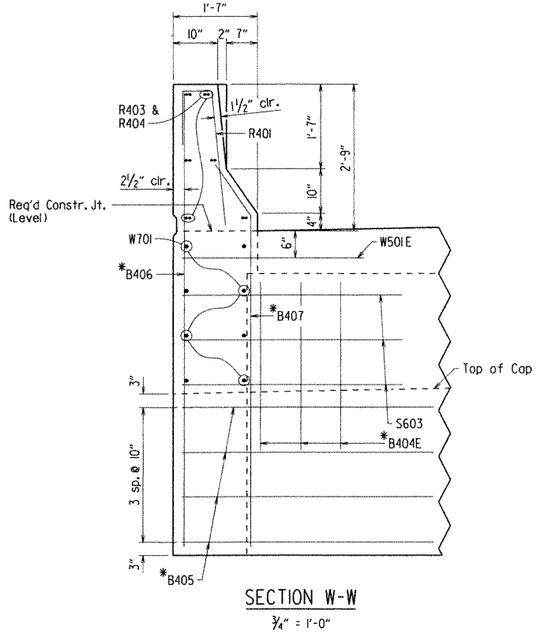
Welding shall be done by a certified welder.

If a transverse finishing machine is used, the screed rail shall be supported directly over the exterior beams, see "SCREED RAIL SUPPORT DETAIL".



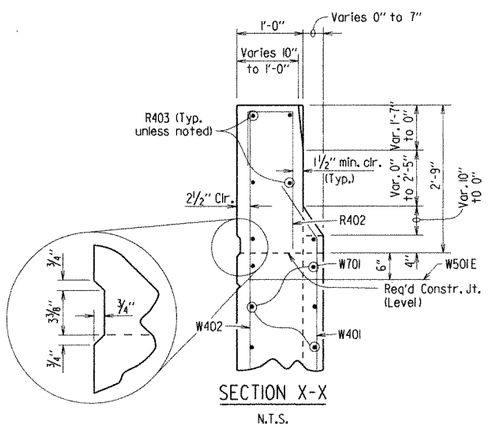
PLAN OF RAIL

½" = 1'-0"



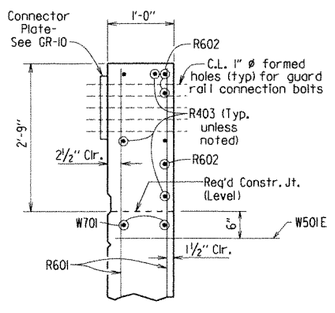
SECTION W-W

¾" = 1'-0"



SECTION X-X

N.T.S.



SECTION Y-Y

N.T.S.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/20/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 5 OF 5

DETAILS OF 125'-0" INTEGRAL COMPOSITE W-BEAM UNIT BIG CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 8-22-12 FILENAME: bbr5405xl_sl.dgn

CHECKED BY: ACP DATE: 12-20-12 SCALE: As Noted

DESIGNED BY: ACP DATE: 08-12

BRIDGE NO. 04921 DRAWING NO. 53336

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	26	70
				① 04921 & 04922 - COMMON - 53337				

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Sixth Edition, 2012.

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c = 4,000 psi
Reinforcing Steel (AASHTO M31 or M53, Gr. 60)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi

CONCRETE:
Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted. All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 14991 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

Concrete in bridge superstructure shall be placed, consolidated and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

The concrete deck shall be given a tine finish in accordance with subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam. If a longitudinal strike-off is used, a vertical camber adjustment must be made in the strike-off to account for the future dead load deflection due to the railing. A minimum of 72 hours shall elapse between completion of the slab and the pouring of the parapet railing. Any railing pours made before the entire slab has been placed and cured must be approved by the Engineer.

Removable forms shall be used for concrete diaphragms. Interior bent diaphragms shall be poured separately from deck. End bent diaphragms shall be poured monolithically with deck. See details on Dwg. No. 53334 for Bridge No. 04921 and Dwg. No. 53342 for Br. No. 04922.

REINFORCING STEEL:
All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Reinforcing Steel (Grade 60)".

STRUCTURAL STEEL:
Structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)". Grade 50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with subsection 807.84(e). Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36 unless otherwise noted.

Drawings show general features of design only. Shop drawings shall be made in accordance with the specifications, submitted and approval secured before fabrication is begun.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Payment will be based on the basis of shapes and materials shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

Beams and field splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

All beams shall be blocked to their true position with webs horizontal. Beams in continuous units shall be assembled in the shop as specified in subsection 807.54 with component parts match marked in this assembly and these marks shall be shown on the erection diagram. The camber, length of sections, and distance between bearings shall be measured and this information shall become part of the permanent records. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4" +/- is allowed for camber.

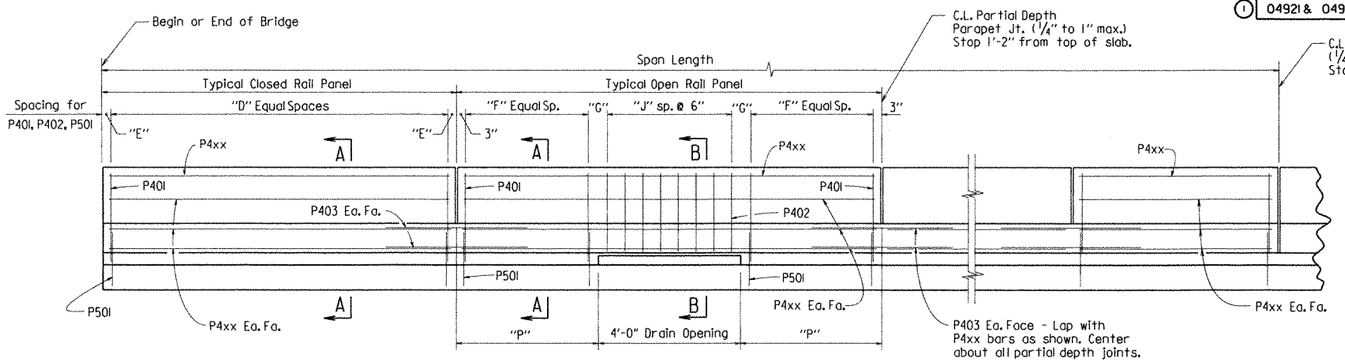
Flange field splice plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether permanent or temporary, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching falsework support devices or screed rail supports to the structural steel that do not exceed the limitations of subsection 802.13 will not require approval prior to construction. All welding shall conform to subsection 807.26.

Field connections shall be bolted with high-strength bolts and shall be ¾"ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges. Holes for ¾"ø high-strength bolts may be 15/16 "ø if a washer is supplied for use under both the nut and head of the bolt.

Steel diaphragms shall be installed as beams are erected. All bolts in diaphragms and field splices shall be installed and tightened in accordance with subsection 807.71 prior to pouring the concrete deck unless otherwise noted.

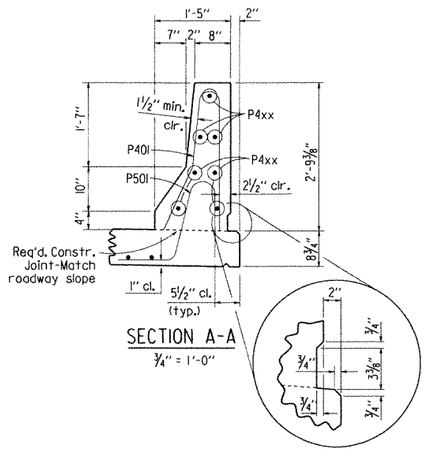
All stud shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with recommendations of the manufacturer.



ELEVATION - CONCRETE PARAPET RAIL

½" = 1'-0"

Note:
For location of full and partial depth parapet joints, See Dwg. No. 53334 for Br. No. 04921 and Dwg. No. 53342 for Br. No. 04922.

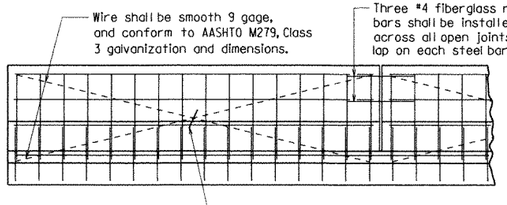


SECTION A-A

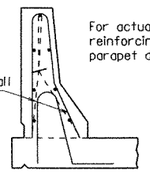
¾" = 1'-0"

SECTION B-B

¾" = 1'-0"



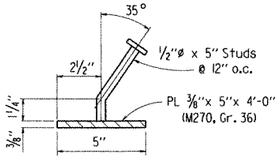
All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practicalto a minimum width of ¼". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.



The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture. Unless otherwise noted, exposed surfaces may be given a light brush finish or a Class 3 Textured Coating Finish in place of Class 2 Rubbed Finish.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale



Note:
Parapet Studs shall be 5" long, granular flux filled, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as Structural Steel in Beam Spans (M270, Gr. 50W).

The surfaces of the ⅜" Plates which will not be in contact with concrete shall be painted in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the Fabricator's shop. Painting will not be paid for directly, but will be considered subsidiary to "Structural Steel in Beam Spans (M270, Gr. 50W)".

DETAIL Z

No Scale

TABLES OF VARIABLES

	Closed Rail Panels				Open Rail Panels					
	Panel Length	"D"	"E"	P4xx Bar	Panel Length	"F"	"G"	"J"	"P"	P4xx Bar
BIG CYPRESS	9'-0"	17	3"	P404	13'-6"	9	6"	7	4'-8"	P405
	13'-6"	26	3"	P405						
LICK CREEK	15'-0"	29	3"	P405	17'-0"	12	6"	7	6'-6"	P404

STATE OF ARKANSAS
Carl J. Pusateri
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/20/12
CARL J. PUSATERI

BRIDGE ENGINEER

COMMON DETAILS
BIG CYPRESS AND LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

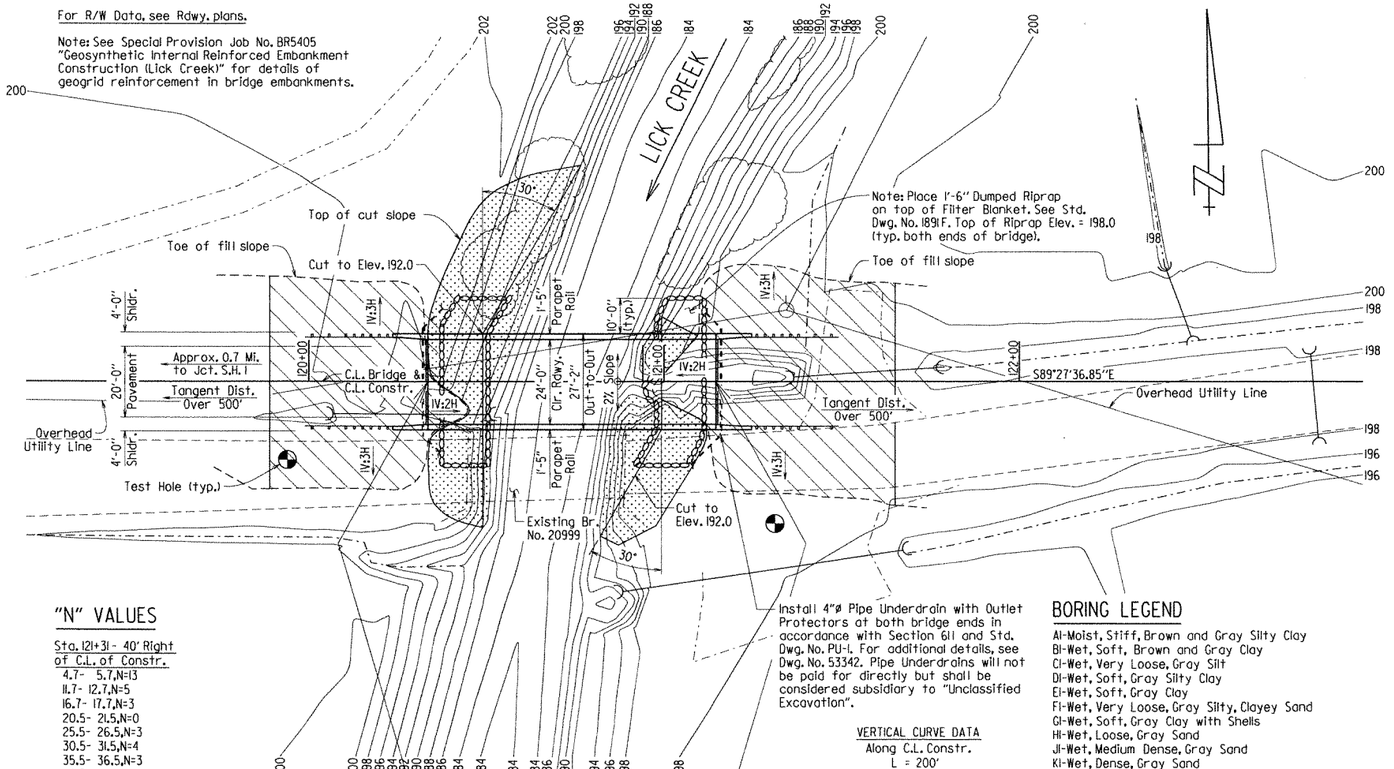
DRAWN BY: JYP DATE: 8-24-12
CHECKED BY: AGP DATE: 12-20-12
DESIGNED BY: AGP DATE: 08-12
FILENAME: bbr5405xl_sl.dgn
SCALE: As Noted

BRIDGE NO. 04921 & 04922 DRAWING NO. 53337

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	27	76
				(1) 04922		LAYOUT		53338

For R/W Data, see Rdwy. plans.

Note: See Special Provision Job No. BR5405 "Geosynthetic Internal Reinforced Embankment Construction (Lick Creek)" for details of geogrid reinforcement in bridge embankments.



"N" VALUES

Sta. 121+31 - 40' Right of C.L. of Constr.

4.7- 5.7,N=13
11.7- 12.7,N=5
16.7- 17.7,N=3
20.5- 21.5,N=0
25.5- 26.5,N=3
30.5- 31.5,N=4
35.5- 36.5,N=3
40.5- 41.5,N=4
45.5- 46.5,N=6
50.5- 51.5,N=10
55.5- 56.5,N=49
60.5- 61.5,N=17
65.5- 66.5,N=40
70.5- 71.5,N=37
75.5- 76.5,N=45
80.5- 81.5,N=44
85.5- 86.5,N=36
90.5- 91.5,N=38
95.5- 96.5,N=53
100.5-101.5,N=51

Sta. 119+94 - 22' Right of C.L. of Constr.

4.8- 5.8,N=10
17.5- 18.5,N=4
22.5- 23.5,N=4
25.5- 26.5,N=3
30.5- 31.5,N=5
35.5- 36.5,N=4
40.5- 41.5,N=4
45.5- 46.5,N=4
50.5- 51.5,N=9
55.5- 56.5,N=24
60.5- 61.5,N=27
65.5- 66.5,N=26
70.5- 71.5,N=30
75.5- 76.5,N=45
80.5- 81.5,N=35
85.5- 86.5,N=33
90.5- 91.5,N=49
95.5- 96.5,N=46
100.5-101.5,N=34

VERTICAL CURVE DATA

Along C.L. Constr.
L = 200'
+0.478% -2.092%
PVI Sta. 121+30.00
Elev. 205.30

BORING LEGEND

Al-Moist, Stiff, Brown and Gray Silty Clay
Bl-Wet, Soft, Brown and Gray Clay
Cl-Wet, Very Loose, Gray Silt
Dl-Wet, Soft, Gray Silty Clay
El-Wet, Soft, Gray Clay
Fl-Wet, Very Loose, Gray Silty, Clayey Sand
Gl-Wet, Soft, Gray Clay with Shells
Hl-Wet, Loose, Gray Sand
Jl-Wet, Medium Dense, Gray Sand
Kl-Wet, Dense, Gray Sand
Ll-Wet, Dense, Gray Sand with Gravel
Ml-Wet, Dense, Gray Sand with Trace of Gravel
Nl-Moist, Stiff, Brown Clay
Pl-Moist, Stiff to Medium Stiff, Brown and Gray Silty Clay
Ql-Moist, Medium Stiff, Gray Silty Clay
Rl-Wet, Medium Stiff, Gray Sandy Clay
Sl-Wet, Loose, Gray Clayey Sand
Tl-Wet, Dense, Gray Sand with Silt
Ul-Wet, Medium Dense, Gray Sand with Silt
Vl-Wet, Dense, Gray Sand with Silt and Trace of Gravel
Wl-Wet, Very Dense, Gray Sand with Silt
Xl-Wet, Very Dense, Gray Silty Sand

Notes:

Use Type Special Approach Slabs at both ends of bridge, see Dwg. No. 53345.

The Contractor shall remove a portion of the existing approach embankment at Bents 1 and 2 as shown to Elev. 192.0 using a 1V:2H cut slope. Approximately 320 cubic yards of excavation.

All Stations and elevations are taken along C.L. Construction & C.L. Bridge. Elevations are at working point, see Dwg. No. 53340.

GENERAL NOTES

BENCHMARK: AHTD GPS 540009A, 3.95' Rt. of Sta. 119+66.13, Elevation = 199.85.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Section and subsection refer to the Standard Construction Specifications unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Sixth Edition, 2012.

LIVE LOADING: HL93
SEISMIC PERFORMANCE ZONE: 3

MATERIALS AND STRENGTHS

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M31 or M53, Gr. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.

STEEL SHELL PILING: All piling shall be 16" dia. concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 185 tons per pile. All piling shall be driven with an approved air, steam or diesel hammer in accordance with Section 805 and Special Provision Job BR5405 "Driven Steel Piling by Method B". Piling shall be driven after embankment to bottom of cap is in place to a minimum tip elevation of 129.0 or lower. Lengths of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. No additional payment will be made for cut-off or build-up. Test piles are not required but may be driven for the Contractor's information in accordance with subsection 805.08(g).

Water jetting may be needed to achieve minimum pile penetration. Water jetting shall stop once the minimum tip elevation is achieved. Any cost associated with achieving the minimum pile penetration shall be included in the item "Steel Shell Piling".

DRIVING SYSTEM: The driving system approval and ultimate bearing capacity determination for piling shall be based on the requirements of subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum rated hammer energy required to obtain the ultimate bearing capacity will be 40,000 foot pounds per blow.

PREBORING: Preboring is required for all piling in Bents 1 and 2 to a depth of 10' below bottom of cap. Prebored holes shall be 6" greater than the diameter of the pile and shall be backfilled with sand or pea gravel after piles have been driven. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casings or other methods. The required preboring will be paid for at the unit price bid for the item "Preboring". The method used to keep the prebored holes free from debris will not be paid for directly, but will be considered subsidiary to the item "Preboring".

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.

DETAIL DRAWINGS:	DRAWING NO.
End Bents	53339
80'-0" Integral W-Beam Span	53337, 53340 - 53344
Concrete Filled Steel Shell Piling	53331
Type Special Approach Slabs	53345

EXISTING BRIDGE: The existing simple-span bridge, No. 20999, (L.M. 1.83) is 18.6' wide and 45' long, and consists of a split railroad flat car placed side by side and spanned in between by a steel plate supported by timber bulkheads and piling.

REMOVAL AND SALVAGE: Existing Bridge No. 20999 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor except the railroad flat car units which shall remain the property of the County. The Contractor shall stockpile the salvaged railroad cars at the job site until time of pickup by the County. Salvaged items shall be loaded on County vehicles by the Contractor. Payment for this work shall be considered incidental to the item "Removal of Existing Bridge Structure (Site No. 2)".

MAINTENANCE OF TRAFFIC: The road will be closed until the new bridge is complete and open to traffic.

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	(2) NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	25	3,100	198.6	199.1
Base	100	4,170	198.8	199.7
Extreme	500	5,440	199.0	199.9
Overtopping	35	3,350	198.6	199.3

(2) Unconstricted water surface without structure or roadway approaches.

(3) Q100 backwater elevation for existing structure = 199.6

Proposed Low Bridge Chord Elev. = 200.65
Drainage area = 26.0 square miles.
Historical H.W. Elev = 199.8

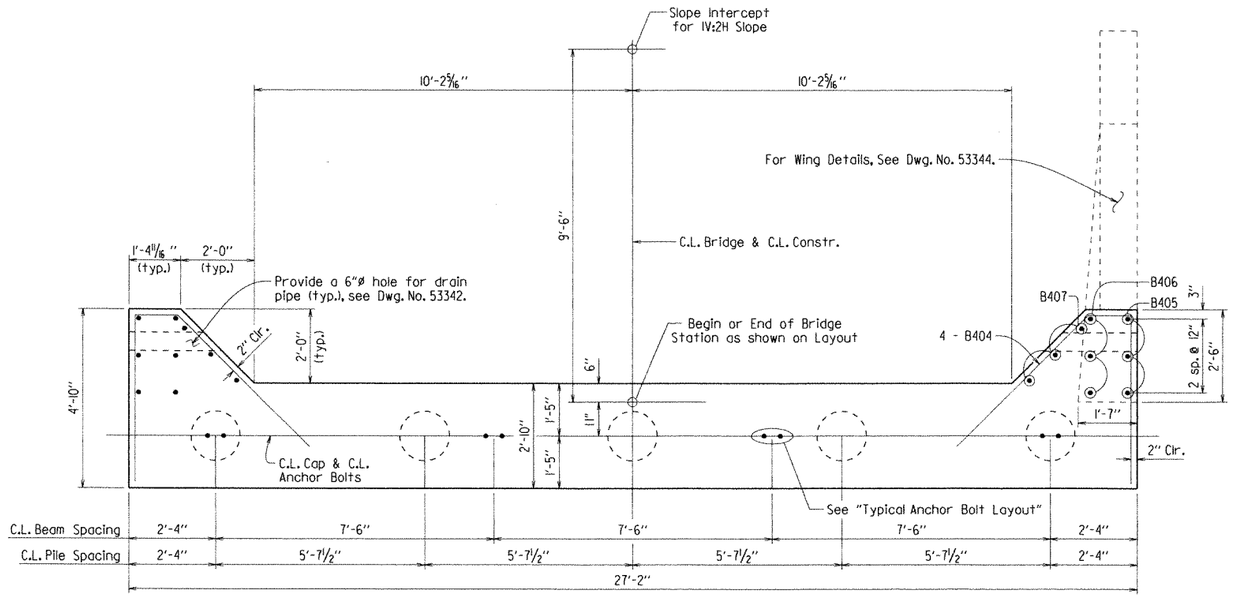
STATE OF ARKANSAS
Carl E. Franklin
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/2013
CARL E. FRANKLIN
BRIDGE ENGINEER

LAYOUT OF BRIDGE OVER LICK CREEK
BIG CYPRESS AND LICK CREEK
STRS. & APPRS. (S)
PHILLIPS COUNTY
COUNTY ROAD 76
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 07/17/12 FILENAME: bbr5405x2_ll.dgn
CHECKED BY: KW4 DATE: 1/4/13 SCALE: 1"=20'
DESIGNED BY: ACP DATE: 07-12

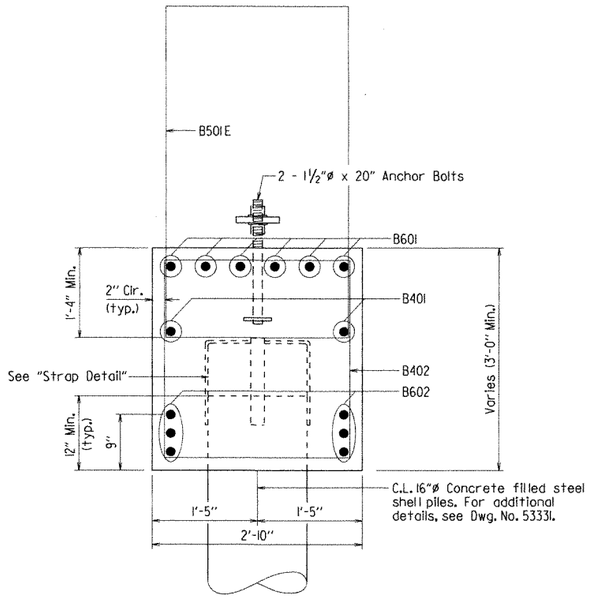
BRIDGE NO. 04922 DRAWING NO. 53338

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	28	70
				(1)	04922 - END BENTS - 53339			



PLAN

1/2" = 1'-0"



SECTION A-A

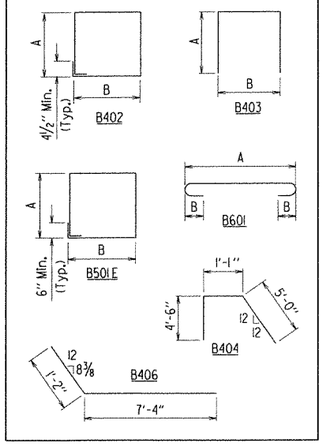
1" = 1'-0"

For Details of Anchor Bolts and Anchor Bolt Plate, See Dwg. No. 53341.

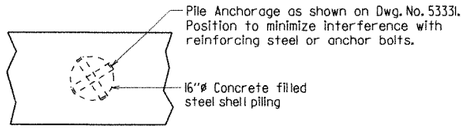
BAR LIST (PER END BENT)

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	26'-10"	-	-	Str.
B402	30	10'-8"	2'-8"	2'-6"	2"
B403	15	7'-8"	2'-8"	2'-6"	2"
B404	8	10'-6"	-	-	2"
B405	6	9'-8"	-	-	Str.
B406	6	8'-6"	-	-	2"
B407	6	6'-2"	-	-	Str.
B501E	25	15'-2"	4'-8"	2'-8"	2 1/2"
B601	6	28'-2"	26'-10"	6"	4 1/2"
B602	6	26'-10"	-	-	Str.

BENDING DIAGRAMS
(DIMENSIONS ARE OUT TO OUT OF BARS.)

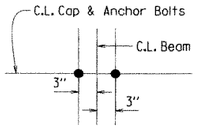


Bars designated with an "E" are epoxy coated.



STRAP DETAIL

No Scale



TYPICAL ANCHOR BOLT LAYOUT

1" = 1'-0"

GENERAL NOTES

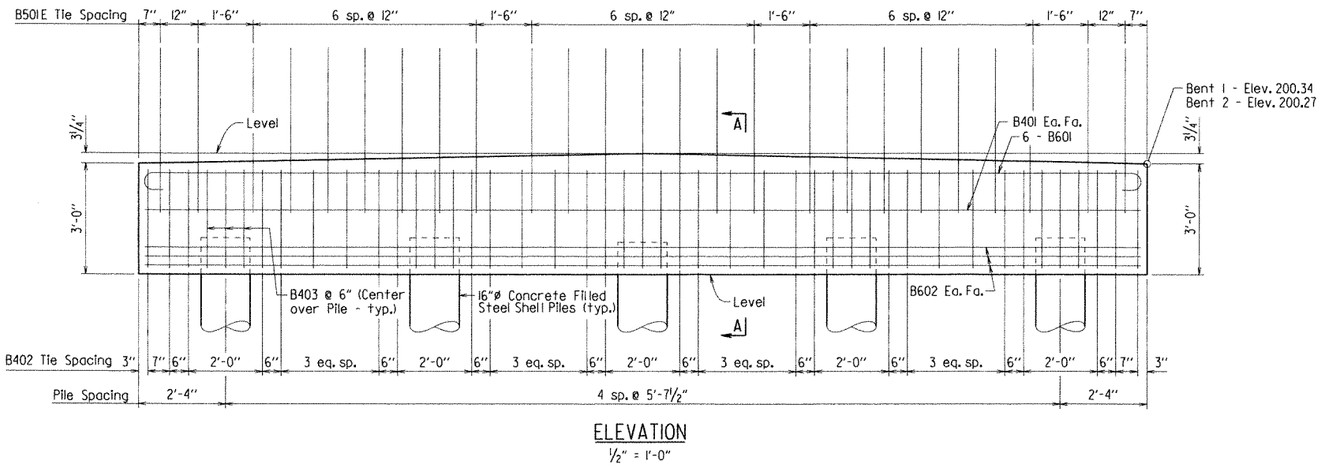
All concrete Shall be Class "S" with a minimum 28-Day compressive Strength f'c=3500 psi. Concrete shall be poured in the dry and all exposed corners to be Chamfered 3/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 OR M53 Grade 60 (fy = 60,000 psi).

Top reinforcing bars and pile anchorage in cap shall be properly placed to avoid interference with anchor bolts.

Granular Backfill and Pipe Underdrain required behind Cap. See Dwg. No. 53342.

For additional information, See Layout.



ELEVATION

1/2" = 1'-0"

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/20/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF END BENTS
LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 10-15-12 FILENAME: bbr5405x2_bl.dgn

CHECKED BY: JVP DATE: 12-20-12 SCALE: As Noted

DESIGNED BY: ACP DATE: 10-12

BRIDGE NO. 04922 DRAWING NO. 53339

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	29	70
				(1) 04922		SPAN DETAILS		53340

Slab Reinforcing:

Longitudinal: S402 as shown
S601 (not shown, see "Typical Roadway Section Near End of Span", Dwg. No. 53343)

Transverse: S502 @ 12" o.c. bent up over beams — Alternate
S501 @ 12" o.c. in top, S401 @ 12" o.c. in bottom —
S503 @ 6" in top of overhangs (bundled with No. 5 bars)

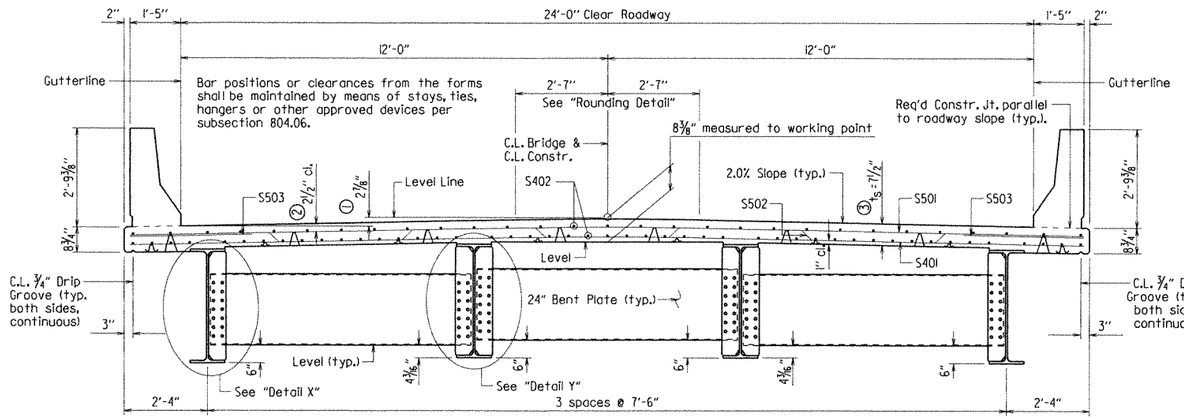
NOTE: At the Contractor's option, in lieu of providing bars S502, one No. 5 bar top and bottom may be substituted for each bar. Payment for reinforcing will be based on the weight of bars S502.

NOTE: Class I Protective Surface Treatment shall be applied to the roadway surface and the face and top of concrete parapet rail.

(1) Working point to gutterline.

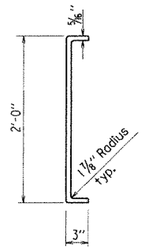
(2) Tolerance: Minus = 1/4"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".

(3) See "Adjustment for Slab Thickness Tolerance".



TYPICAL ROADWAY SECTION

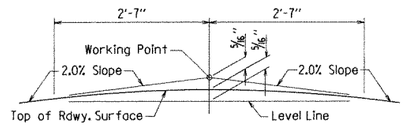
1/2" = 1'-0"



Typ. cross-section for all 24" bent plate diaphragms.

SECTION Z-Z

No Scale

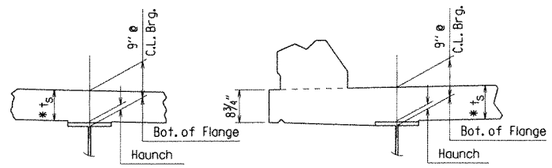


NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

No Scale

t_s = slab thickness as shown in "Typ. Roadway Section"



INTERIOR BEAM EXTERIOR BEAM

*Tolerance when removable deck forming is used is + 1/2", - 1/4". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale

NOTES:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus 1 3/4". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 149911 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

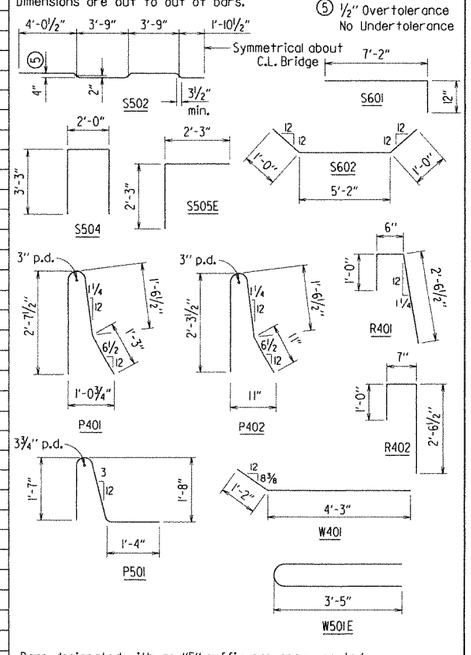
BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
S401	95	26'-10"	Str.
S402	228	28'-2"	Str.
S501	85	26'-10"	Str.
S502	76	27'-6"	3"
S503	302	3'-5"	Str.
S504	50	8'-4"	2 1/2"
S505E	48	4'-5"	2 1/2"
S601	56	8'-0"	4 1/2"
S602	20	7'-2"	4 1/2"
P401	276	5'-6"	3"
P402	48	4'-10"	3"
P403	32	4'-0"	Str.
P404	42	16'-8"	Str.
P405	28	14'-8"	Str.
P501	276	4'-8"	3 3/4"
R401	16	3'-11"	2"
R402	16	4'-0"	2"
R403	24	9'-8"	Str.
R404	24	3'-10"	Str.
R601	32	6'-7"	Str.
R602	12	5'-0"	Str.
W401	20	5'-5"	2"
W402	20	6'-7"	Str.
W501E	32	7'-1"	3 3/4"
W701	48	11'-8"	Str.

BENDING DIAGRAMS

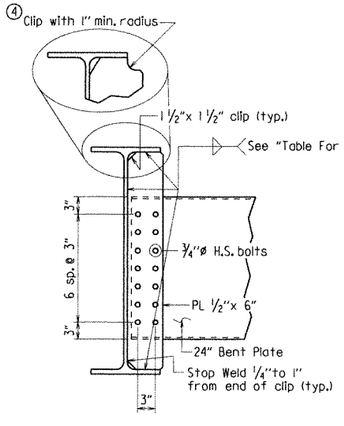
Dimensions are out to out of bars.

(5) 1/2" Overtolerance No Undertolerance



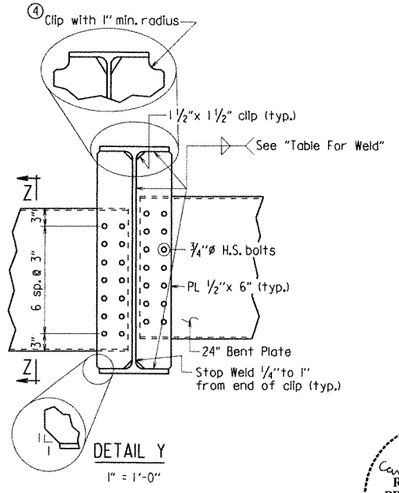
Bars designated with an "E" suffix are epoxy coated.

(4) If permanent steel bridge deck forms are used, the Fabricator shall clip plates as necessary to accomodate the deck form supports.



DETAIL X

1" = 1'-0"



DETAIL Y

1" = 1'-0"

TABLE FOR WELD

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To 3/4" Inclusive	1/4"	
Over 3/4"	5/16"	

NOTE: When a fillet weld size, as shown on the plans, is larger than the minimum, the first pass shall be that specified for minimum size of fillet weld.

STATE OF ARKANSAS
Carl L. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/20/12
CARL L. FUSELIER

BRIDGE ENGINEER

SHEET 1 OF 5

DETAILS OF 80'-0" INTEGRAL COMPOSITE W-BEAM SPAN

LICK CREEK

ROUTE SEC.

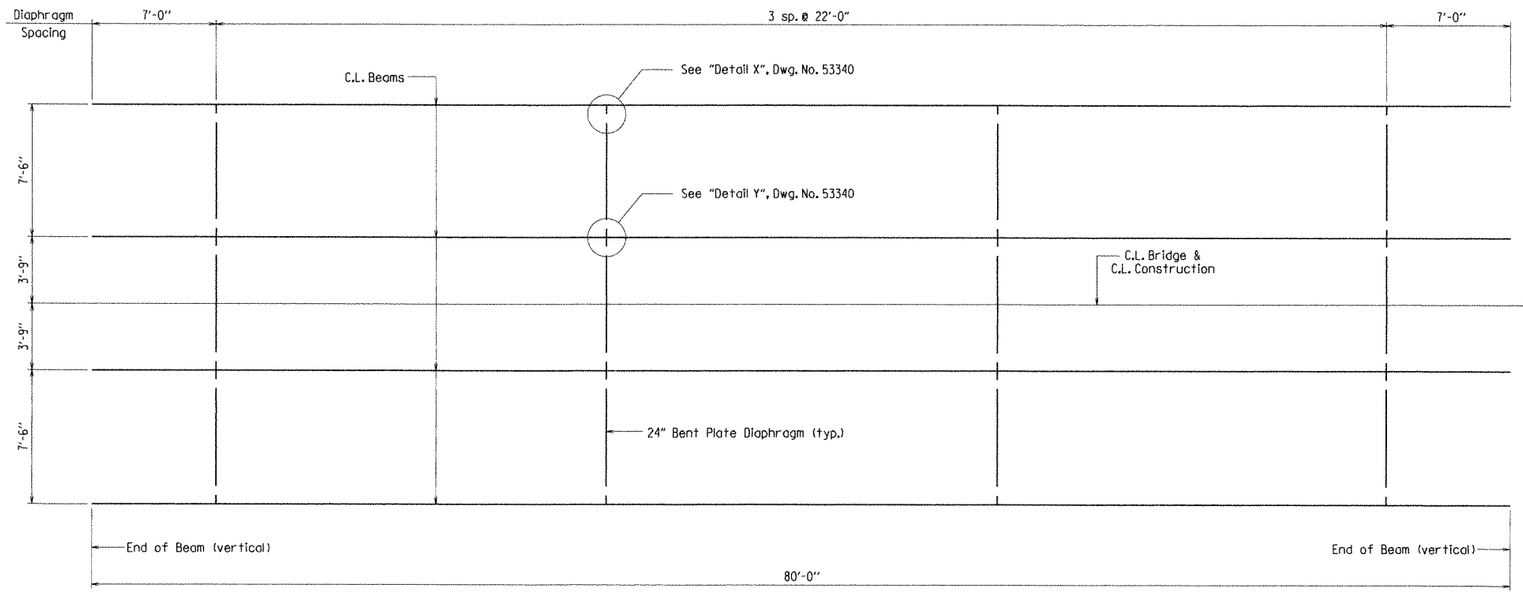
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 8-28-12 FILENAME: bbr5405x2_sl.dgn
CHECKED BY: ACP DATE: 12-20-12 SCALE: as noted
DESIGNED BY: KWY DATE: 8/12

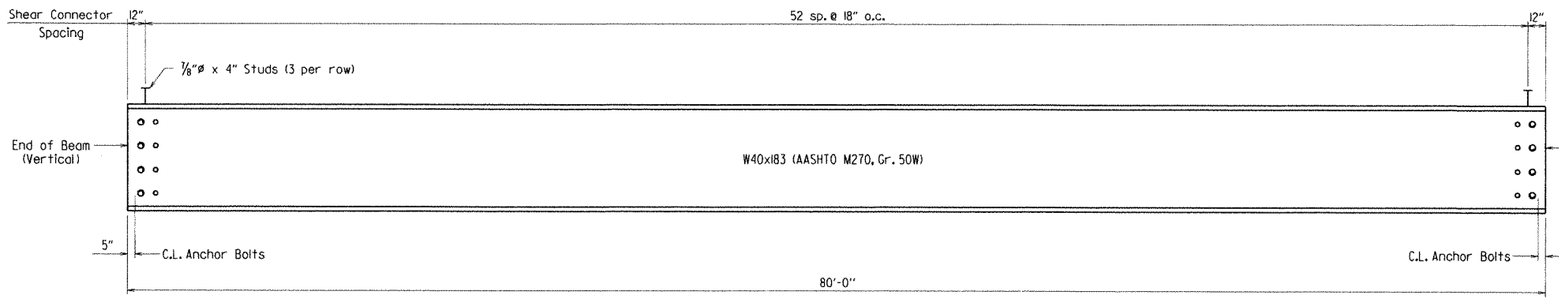
BRIDGE NO. 04922 DRAWING NO. 53340

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	30	76
				(1) 04922		SPAN DETAILS		53341



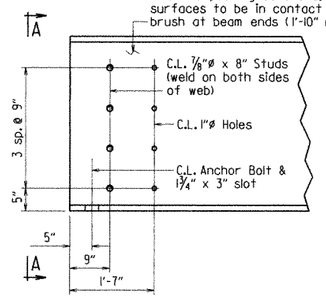
FRAMING PLAN

1/4" = 1'-0"



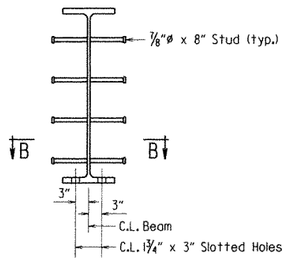
TYPICAL BEAM ELEVATION

No Scale



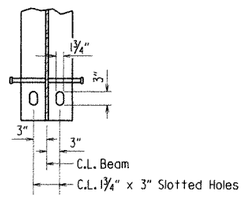
DETAIL OF BEAM END (TYP.)

3/4" = 1'-0"



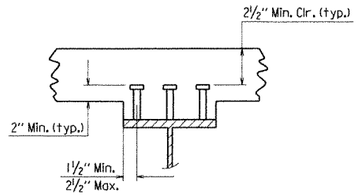
VIEW A-A

3/4" = 1'-0"



SECTION B-B

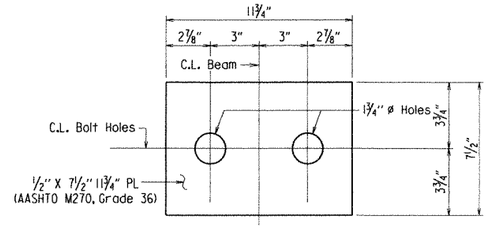
3/4" = 1'-0"



Stud Shear Connectors shown shall be 7/8"ø x 4" automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. 3/4"ø studs may be used in place of the 7/8"ø studs shown at the ratio of 1.361-3/4"ø studs in place on one 7/8"ø stud. 7/8"ø studs will be used as the basis for measurement of structural steel in shear connectors.

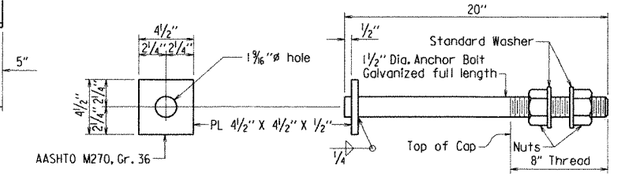
SHEAR CONNECTOR DETAIL

No Scale



ANCHOR BOLT PLATE DETAIL

No Scale



Anchor bolts shall comply with AASHTO M314, Grade 55, with Supplementary Requirement S1, and galvanized according to Section 807.07. Nuts and washers for bolts shall be as specified in Section 807.07. Use lower nut and washer to adjust grade. Snug tight top nut and washer after grade is adjusted. Bolts, nuts and washers shall be paid for at the unit price bid for "Structural Steel In Beam Spans".

ANCHOR BOLT DETAIL

No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/20/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 2 OF 5

DETAILS OF 80'-0" INTEGRAL COMPOSITE W-BEAM SPAN

LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 8-28-12 FILENAME: bbr5405x2_sl.dgn

CHECKED BY: ACP DATE: 12-20-12 SCALE: as noted

DESIGNED BY: KWY DATE: 8/12

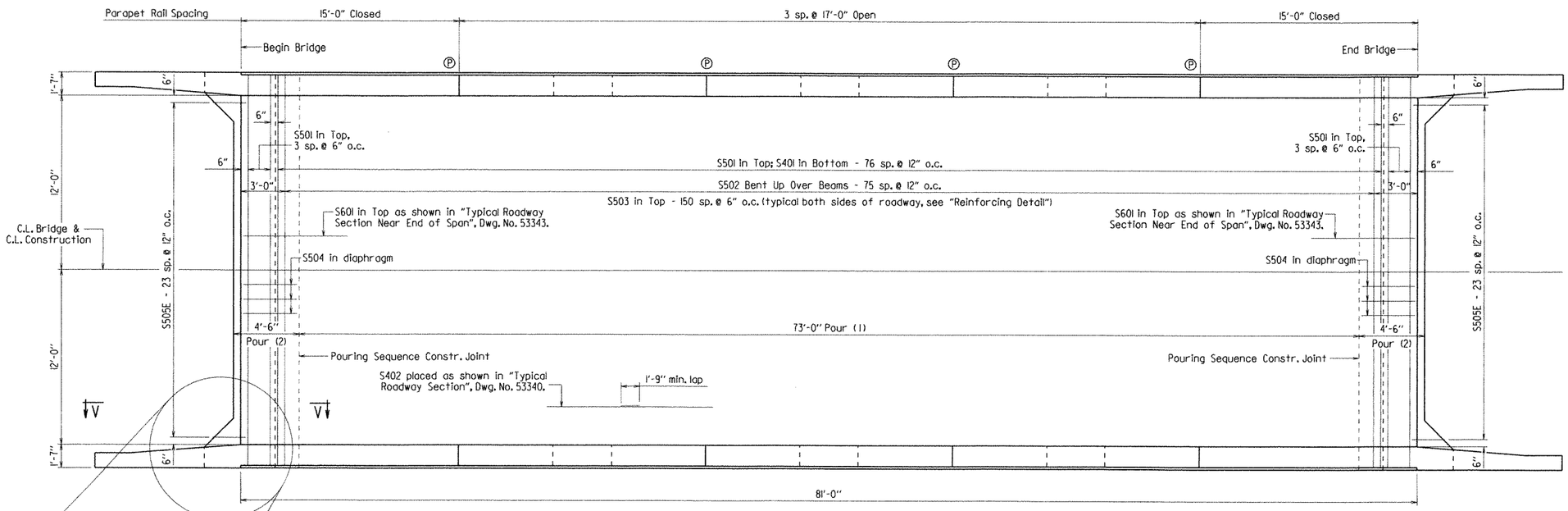
BRIDGE NO. 04922 DRAWING NO. 53341

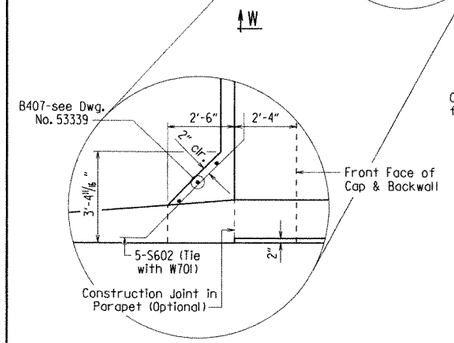
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

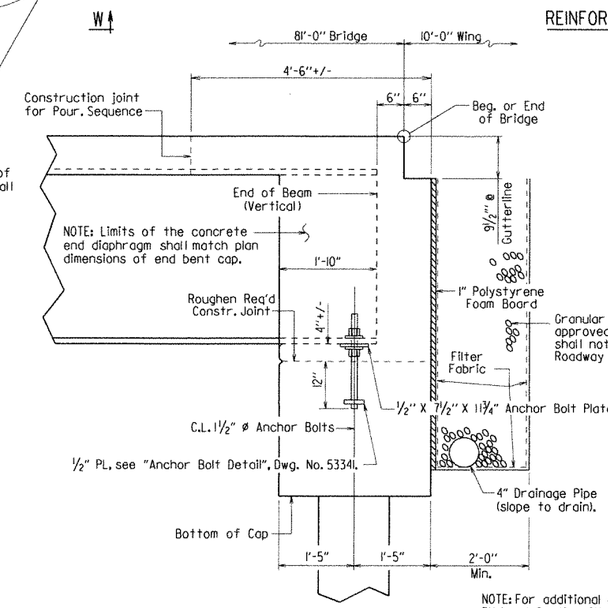
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BR5405	31	70
(1) 04922		SPAN DETAILS		53342

Ⓟ Partial depth parapet joint at this location.

NOTE: Pours with the same number may be placed simultaneously or separately. Pour (1) must be placed before Pours (2) can be placed. 72 hours shall elapse between adjacent pours. Concrete diaphragms at ends of span shall be poured monolithically with Pours (2). Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. Concrete in bridge superstructure shall be consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.







REINFORCING PLAN & POURING SEQUENCE

¼" = 1'-0"

NOTES:
Parapet rail spacing and joint depth shown are typical for both sides of roadway. For reinforcing details, see Dwg. No. 53340.

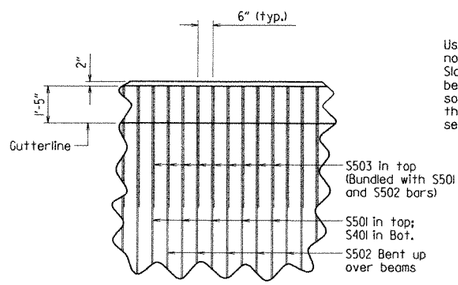
Rails and wings are included in span construction and are included in span quantities.

For "View V-V" and "View W-W", see Dwg. No. 53344.

SECTION AT END BENT

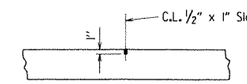
No Scale

NOTE: For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611 of the Standard Specifications. Pipe underdrains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation".



REINFORCING DETAIL

No Scale



Use Type 3, 4, or 6 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints. The joint sealer shall extend across the deck from gutterline to gutterline.

SLAB JOINT DETAIL

No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/20/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 3 OF 5

DETAILS OF 80'-0" INTEGRAL COMPOSITE W-BEAM SPAN

LICK CREEK

ROUTE SEC.

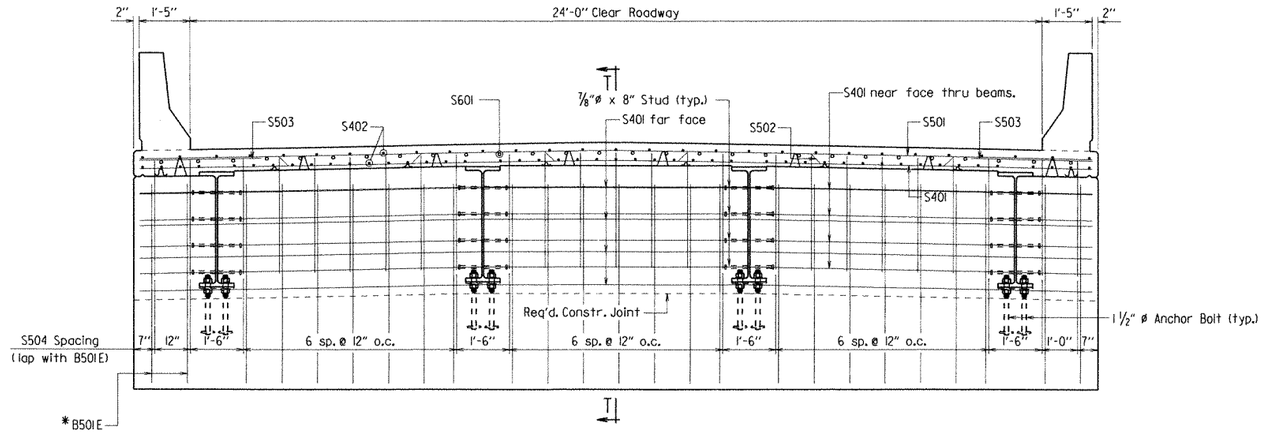
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 8-28-12 FILENAME: bbr5405x2_sl.dgn
CHECKED BY: ACP DATE: 12-20-12 SCALE: as noted
DESIGNED BY: KWY DATE: 8/12

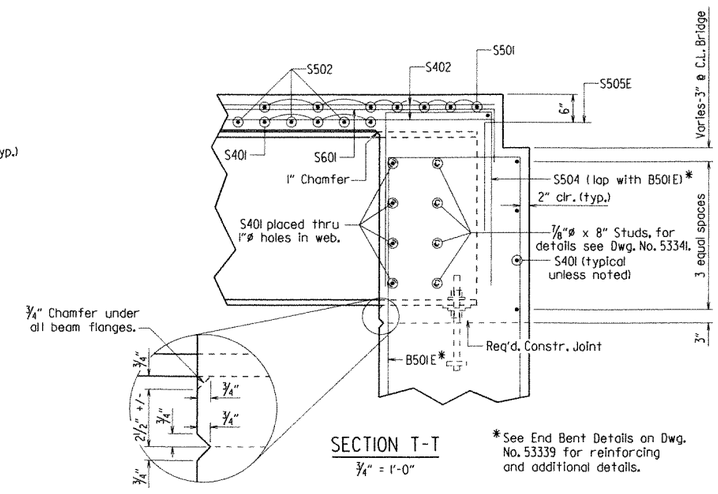
BRIDGE NO. 04922 DRAWING NO. 53342

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	32	70
				(1) 04922		SPAN DETAILS		53343



TYPICAL ROADWAY SECTION NEAR END OF SPAN

Looking Back Bent 1, Looking Ahead Bent 2
1/2" = 1'-0"



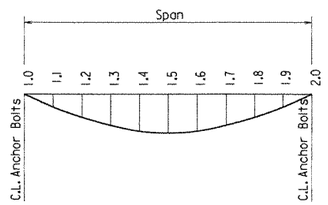
SECTION T-T

3/4" = 1'-0"

*See End Bent Details on Dwg. No. 53339 for reinforcing and additional details.

TABLE OF DEAD LOAD DEFLECTIONS - INCHES

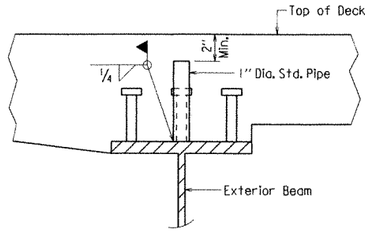
POINT OF DEFLECTION	STRUCTURAL STEEL		STRUCTURAL STEEL + SLAB		STRUCTURAL STEEL + SLAB + PARAPET	
	INT. BEAM	EXT. BEAM	INT. BEAM	EXT. BEAM	INT. BEAM	EXT. BEAM
1.0	0.000	0.000	0.000	0.000	0.000	0.000
1.1	0.143	0.138	0.736	0.620	0.818	0.707
1.2	0.271	0.261	1.392	1.173	1.546	1.337
1.3	0.371	0.357	1.906	1.606	2.117	1.830
1.4	0.434	0.418	2.232	1.881	2.480	2.144
1.5	0.456	0.439	2.344	1.975	2.604	2.251
1.6	0.434	0.418	2.232	1.881	2.480	2.144
1.7	0.371	0.357	1.906	1.606	2.117	1.830
1.8	0.271	0.261	1.392	1.173	1.546	1.337
1.9	0.143	0.138	0.736	0.620	0.818	0.707
2.0	0.000	0.000	0.000	0.000	0.000	0.000



DEAD LOAD DEFLECTION DIAGRAM

No Scale

NOTE: Camber for Dead Load Deflection plus Vertical curve +/- 1/4" tolerance. Deflections shown are from a chord from C.L. Anchor Bolts to C.L. Anchor Bolts. Vertical curve corrections not included.



SCREED RAIL SUPPORT DETAIL

No Scale

NOTES: The screed rail supports shall be centered over the beam web and centered between adjacent rows of shear connectors.

The pipe shall not interfere with the proper vertical position of the deck reinforcing steel.

The pipe shall be free of dirt, grease, rust, or other foreign substance before the deck is poured.

Care shall be exercised so as air voids do not exist in the pipe after placement of the deck concrete.

Welding shall be done by a certified welder.

If a transverse finishing machine is used, the screed rail shall be supported directly over the exterior beams, see "SCREED RAIL SUPPORT DETAIL".

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/20/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 4 OF 5

DETAILS OF 80'-0" INTEGRAL COMPOSITE W-BEAM SPAN

LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

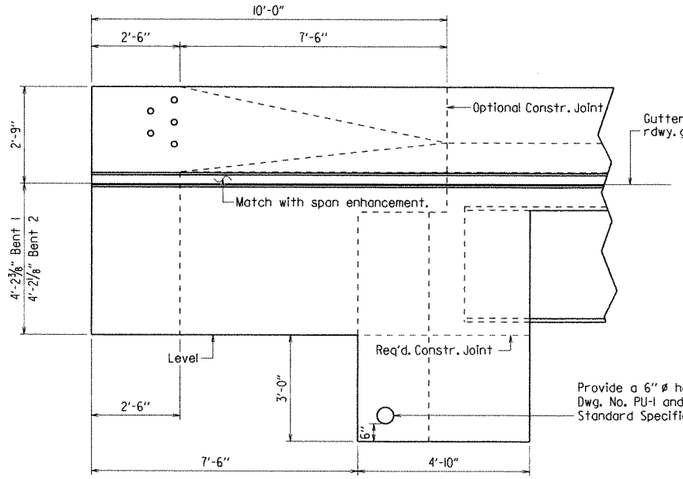
DRAWN BY: KWY DATE: 8-28-12 FILENAME: bbr5405x2_si.dgn

CHECKED BY: ACP DATE: 12-20-12 SCALE: as noted

DESIGNED BY: KWY DATE: 8/12

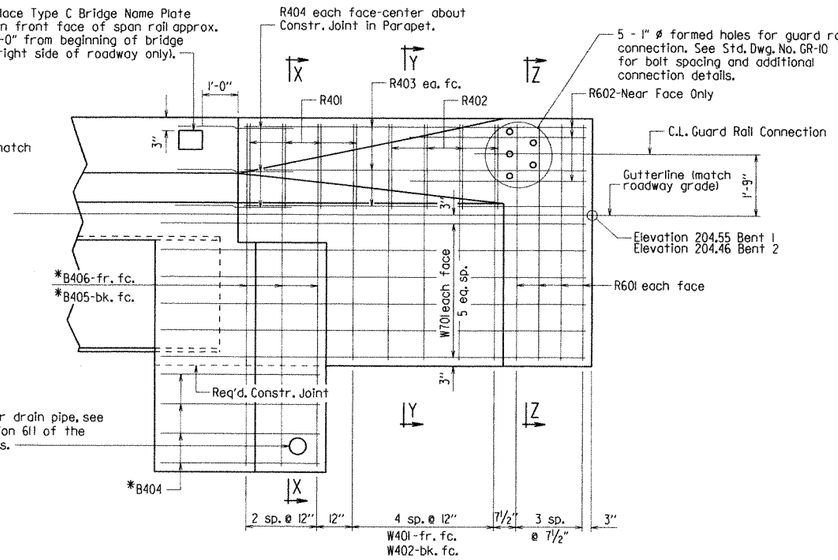
BRIDGE NO. 04922 DRAWING NO. 53343

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	33	70
				(1) 04922		SPAN DETAILS		53344



VIEW W-W

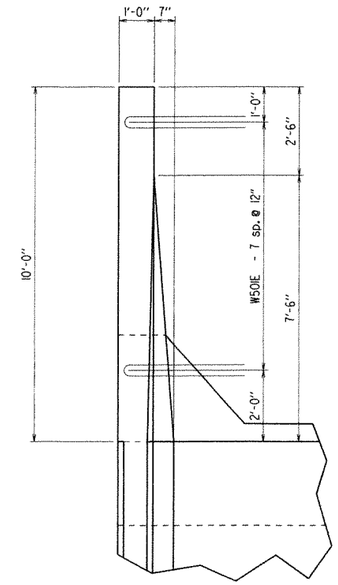
No Scale



VIEW V-V

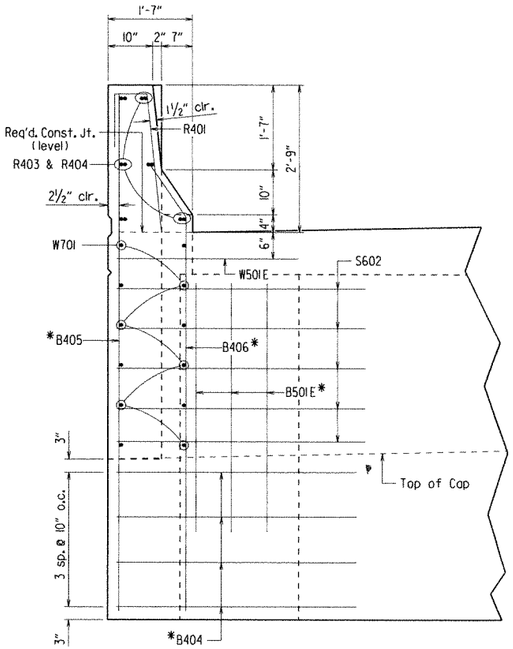
No Scale

*See End Bent Details on Dwg. No. 53339 for reinforcing and additional details.



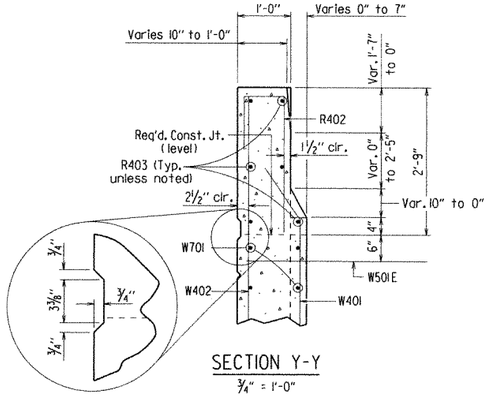
PLAN OF RAIL

½" = 1'-0"



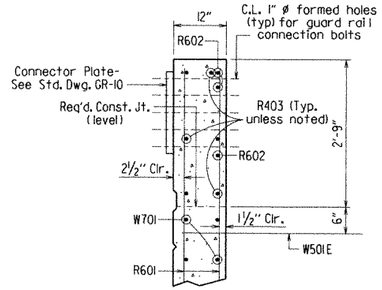
SECTION X-X

¾" = 1'-0"



SECTION Y-Y

¾" = 1'-0"



SECTION Z-Z

¾" = 1'-0"

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/20/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 5 OF 5
DETAILS OF 80'-0" INTEGRAL COMPOSITE W-BEAM SPAN
LICK CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 8-28-12 FILENAME: bbr5405x2_sl.dgn

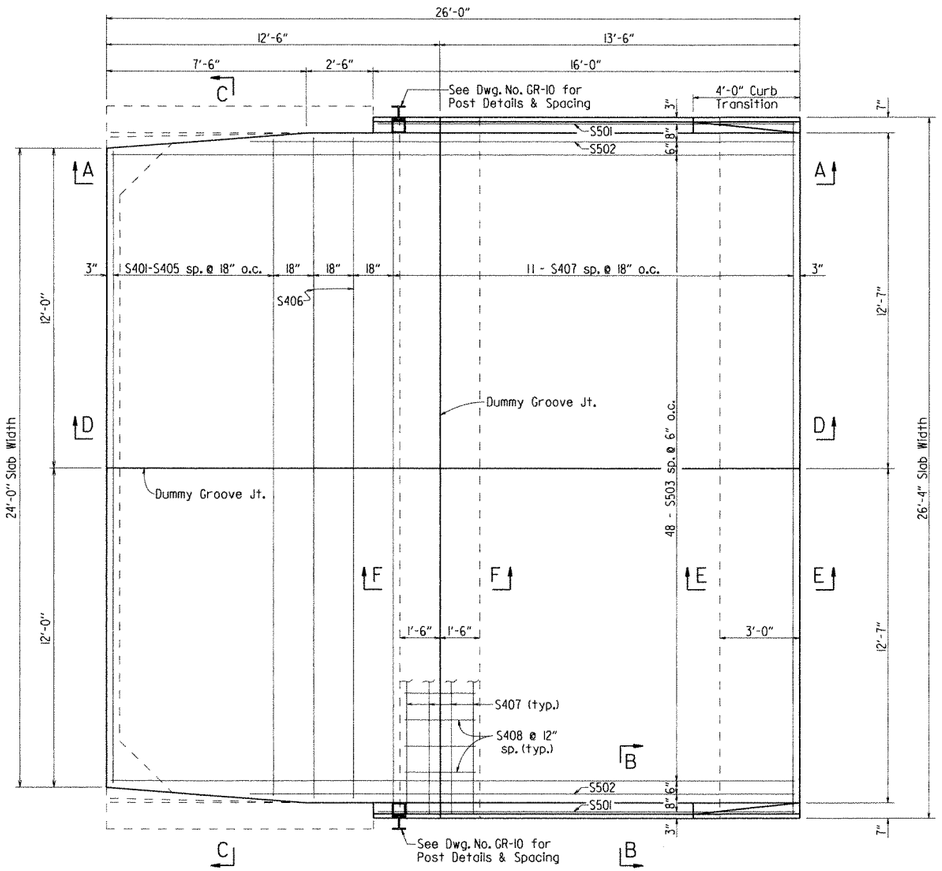
CHECKED BY: ACP DATE: 12-20-12 SCALE: as noted

DESIGNED BY: KWY DATE: 9/12

BRIDGE NO. 04922 DRAWING NO. 53344

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR5405	24	70

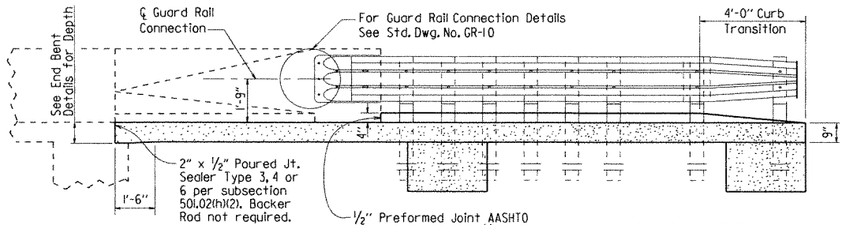
① 04921 & 04922 TYPE SPECIAL APPR. SLAB 53345



Note: Surface finish for Approach Slabs shall match that used on the bridge deck.

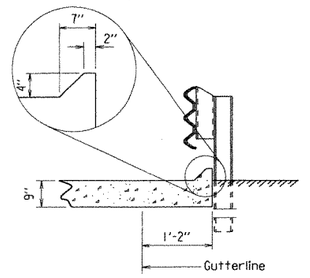
PLAN OF TYPE SPECIAL APPROACH SLAB

3/8" = 1'-0"



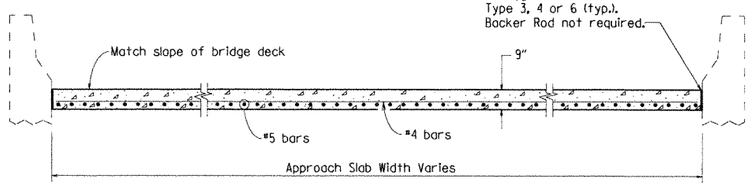
SECTION A-A

3/8" = 1'-0"



SECTION B-B

No Scale



SECTION C-C

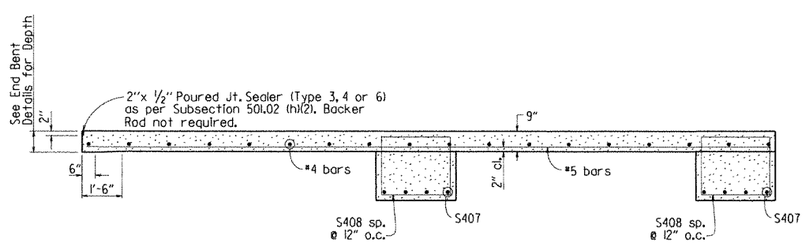
No Scale

BAR LIST
TYPE SPECIAL APPROACH SLAB

Mark	No. Req'd.	Length	Pin Dia.	Bending Diagram
S401 to S405	1 each	23'-8" to 24'-8"	Str.	
S406	2	24'-10"	Str.	
S407	19	26'-0"	Str.	
S408	52	9'-10"	2"	2'-7", S408, 2'-2", 4½" Min. (typ.)
S501	2	15'-8"	Str.	
S502	2	20'-5"	Str.	
S503	48	25'-8"	Str.	Dimensions are out to out of bars

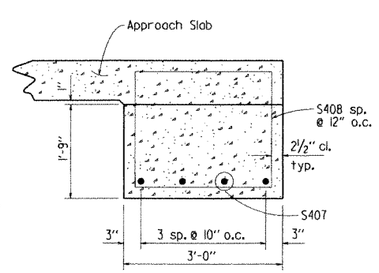
TABLE OF QUANTITIES FOR ONE TYPE SPECIAL APPROACH SLAB

Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
2,146	29.59



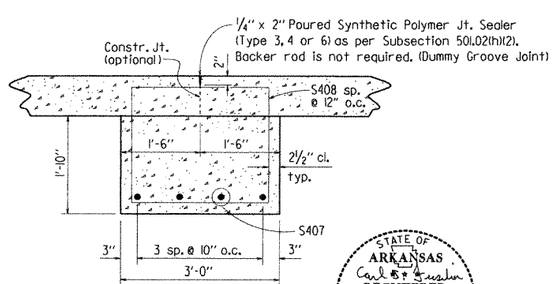
SECTION D-D

3/8" = 1'-0"



SECTION E-E

¾" = 1'-0"



SECTION F-F

¾" = 1'-0"

STATE OF ARKANSAS
Carl L. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7310
12/20/12
CARL L. FUSELIER

BRIDGE ENGINEER

GENERAL NOTES

Concrete shall be Class S(AE) (f'c = 4,000 psi).

Reinforcement Steel shall conform to AASHTO M31 or M53, Grade 60 (fy = 60,000 psi).

Approach Slab will be measured and paid for in accordance with Section 504 of the Standard Specifications.

DETAILS OF TYPE SPECIAL APPROACH SLAB

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 8-20-12 FILENAME: bbr5405_as.dgn

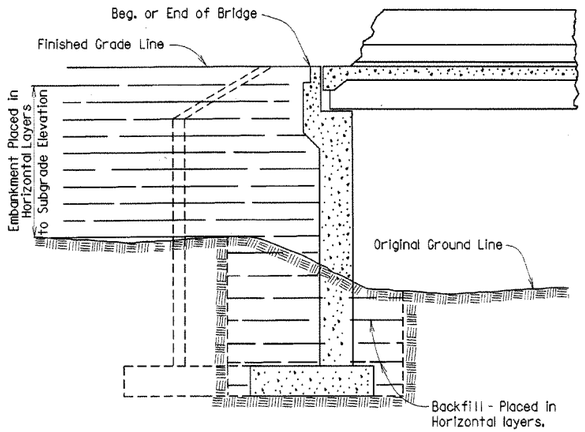
CHECKED BY: ACP DATE: 12-20-12 SCALE: AS NOTED

DESIGNED BY: STD. DATE: —

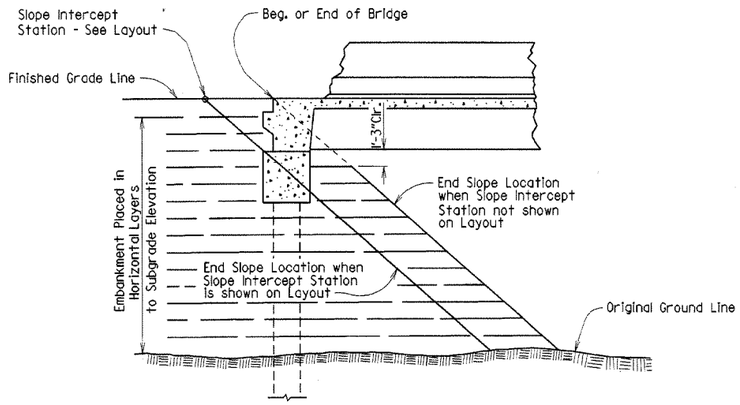
BRIDGE NO. 04921 & 04922 DRAWING NO. 53345

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		35	
				JOB NO.				

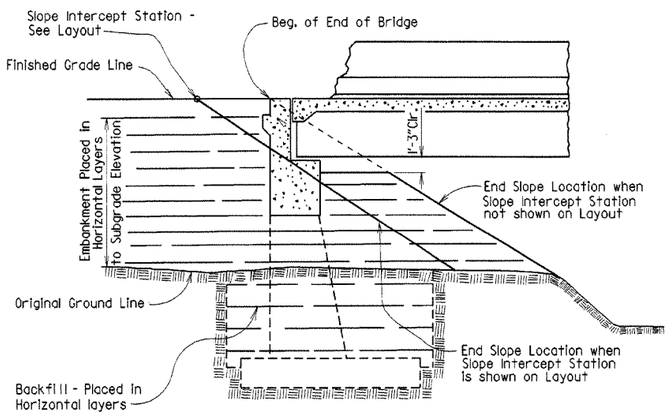
(1) EMBANKMENT & BACKFILL I888A



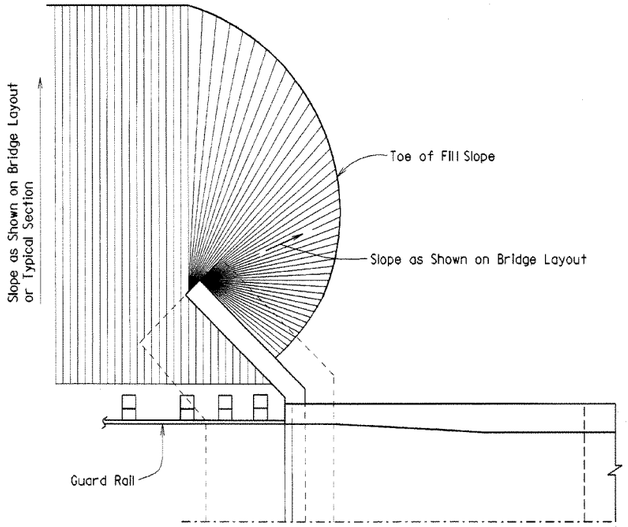
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



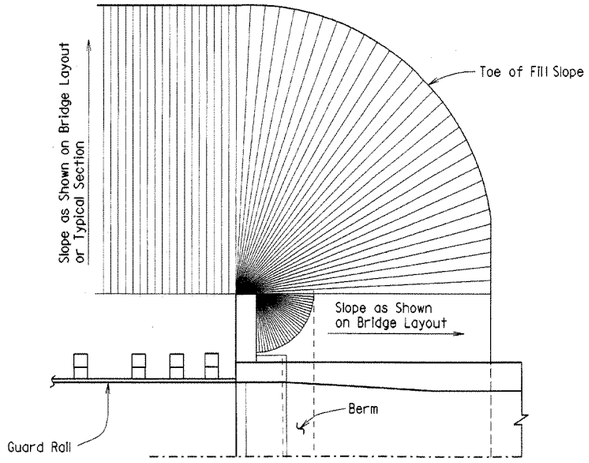
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



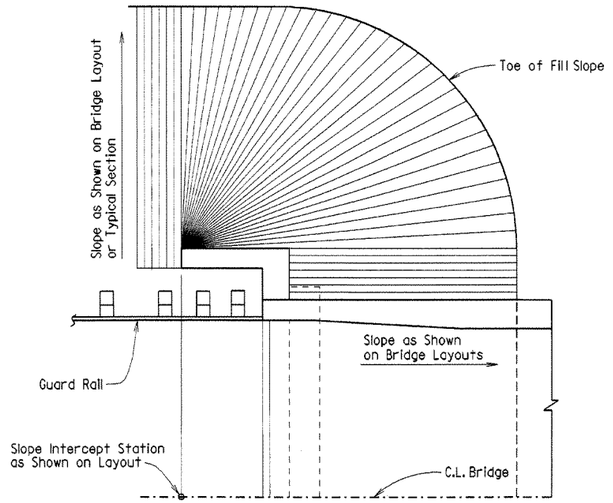
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING

SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge end including around the end of wingwalls. Embankment adjacent to structures shall be constructed in 4 inch horizontal layers (loose measure) and compacted by the use of mechanical equipment to the satisfaction of the Engineer. Refer to subsections 210.09, 210.10 and 801.08 of the Specifications for construction requirements.

⚠ Revised and redrawn MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND

BRIDGE ENGINEER

EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

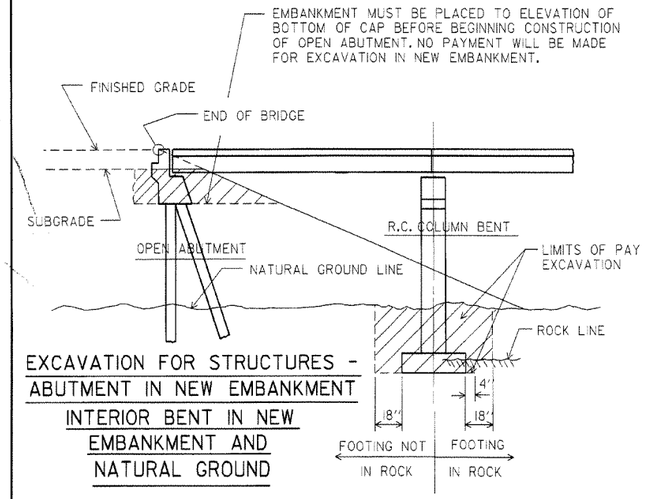
DRAWN BY: MJT DATE: 04-10-2003 FILENAME: BI888A.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: ——

BRIDGE NO. DRAWING NO. I888A

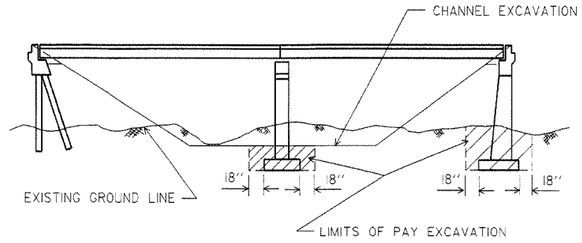
BI888A.STD

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		36	
				JOB NO.				

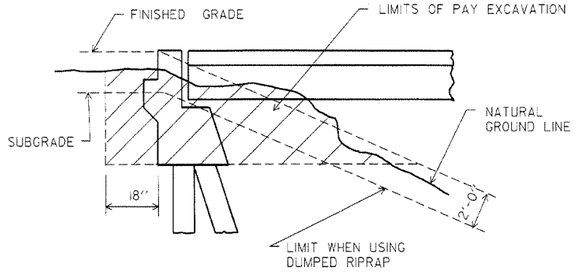
1 RIP. & EXCAV. 1891F



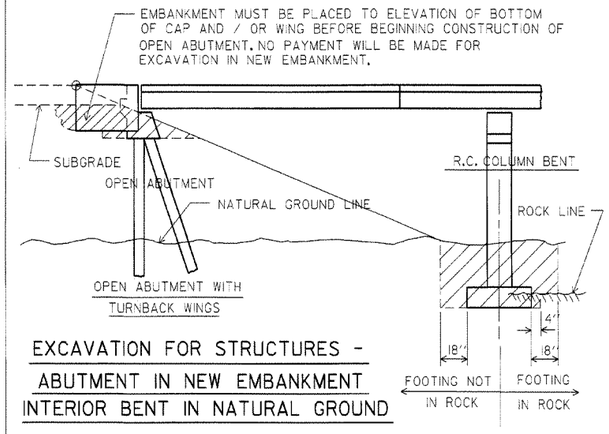
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



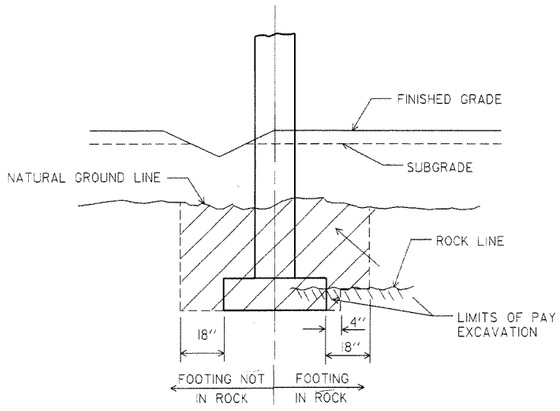
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



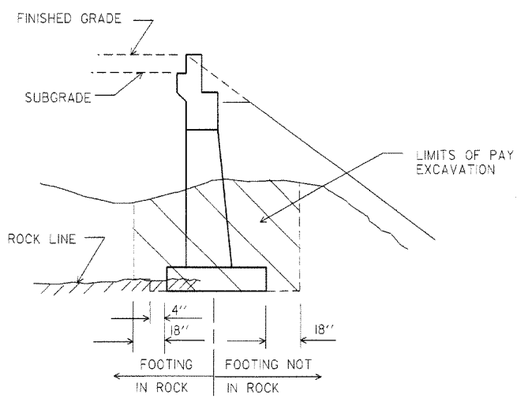
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



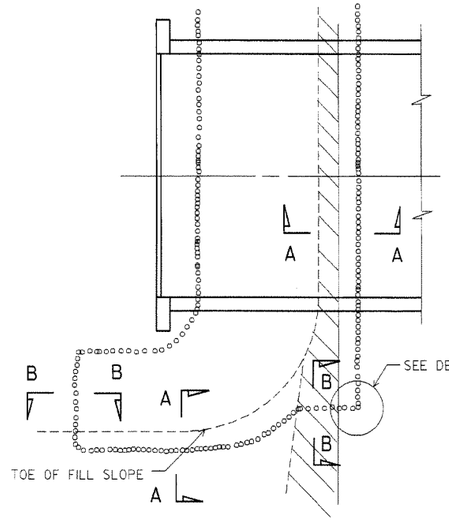
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



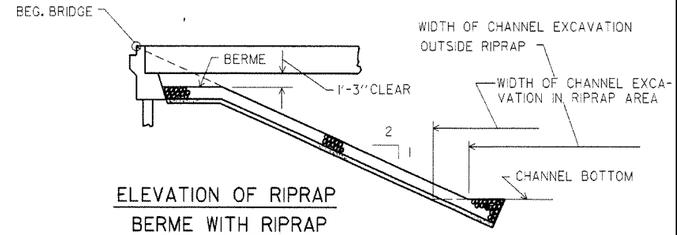
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



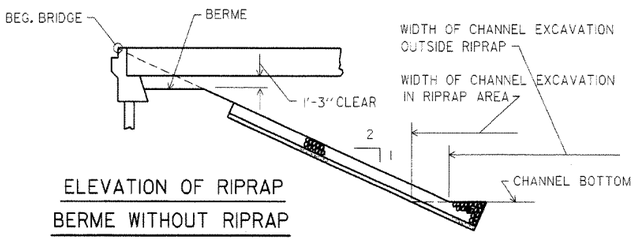
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



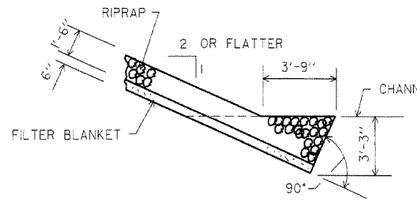
PLAN OF DUMPED RIPRAP



ELEVATION OF RIPRAP BERME WITH RIPRAP



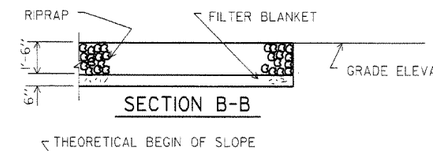
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



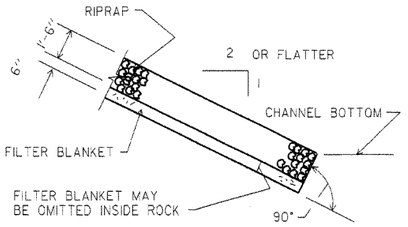
SECTION A-A

(TOE EXCAVATION IN SOIL)

EXCAVATION FOR TOES IS NOT A PAY ITEM



SECTION B-B



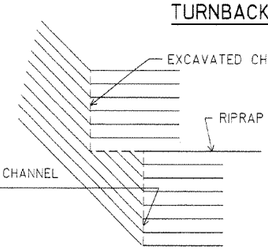
SECTION A-A

(TOE EXCAVATION IN ROCK)

NOTE : USE THIS TYPE OF TOE WHEN ROCK IS ENCOUNTERED WHICH IS IN A STABLE CONDITION.

NOTE : IN LIEU OF AN AGGREGATE FILTER BLANKET, A SYNTHETIC FIBER GEOTEXTILE FABRIC COMPLYING WITH THE REQUIREMENTS OF SUBSECTION 816.02(a) MAY BE USED.

NOTE : DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES ARE INCLUDED FOR INFORMATION AS TO HOW PLAN QUANTITIES WERE CALCULATED AND FOR USE WHEN ADJUSTING QUANTITIES WHEN CHANGING FOOTING ELEVATION.



DETAIL C

OPEN ABUTMENT WITH TURNBACK WINGS

⚠ Revised and redrawn MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND
BRIDGE ENGINEER

DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

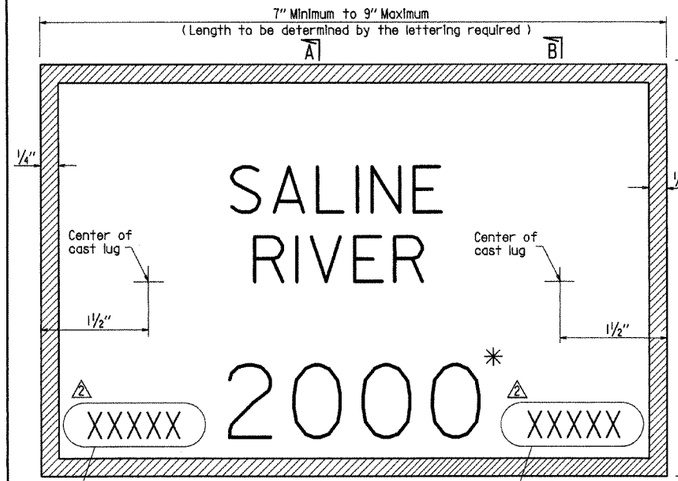
DRAWN BY: MJT DATE: 04-10-2003 FILENAME: B1891F.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

BRIDGE NO. DRAWING NO. 1891F

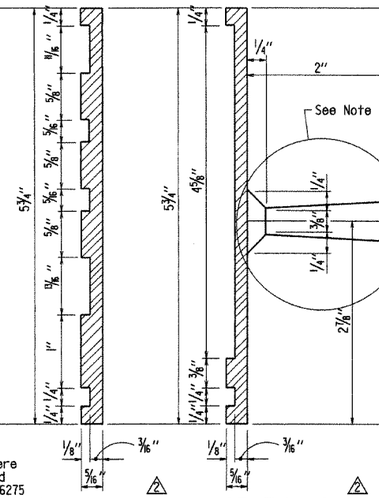
B1891F.STD

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
09-20-2007				6	ARK.		37	
10-15-2009				JOB NO.				

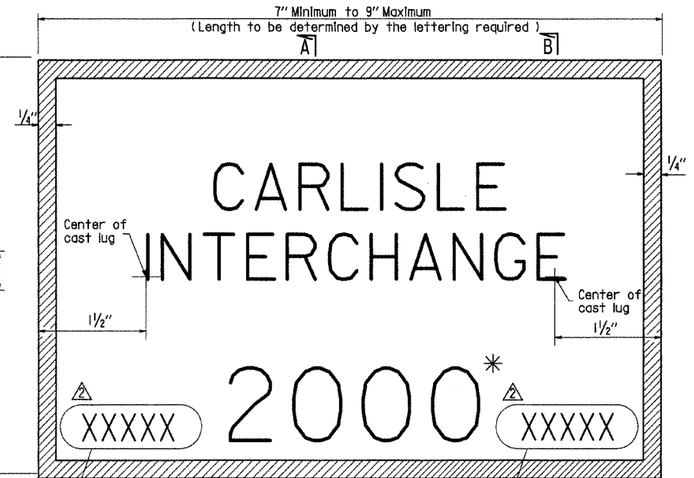
① NAME PLATES 2389A



TYPICAL BRIDGE NAME PLATE-STYLE 1 - FULL SIZE
STREAM CROSSINGS

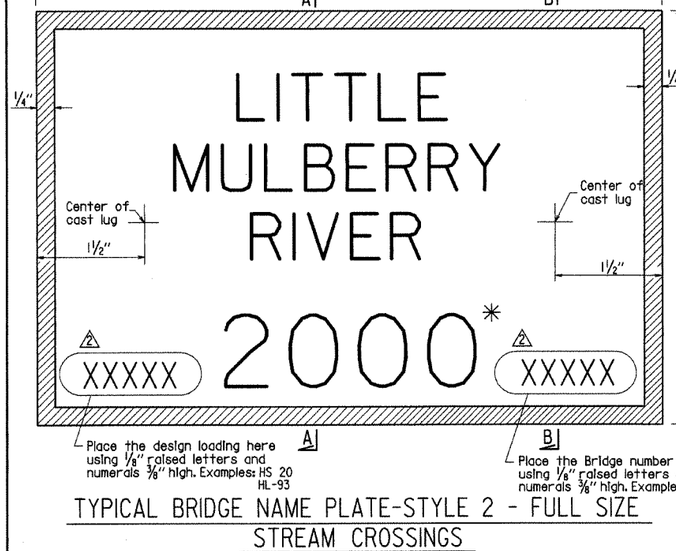


SECTION A-A SECTION B-B

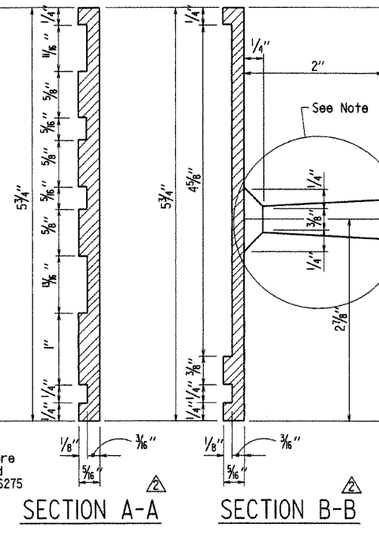


TYPICAL BRIDGE NAME PLATE-STYLE 3 - FULL SIZE
GRADE SEPARATION STRUCTURES

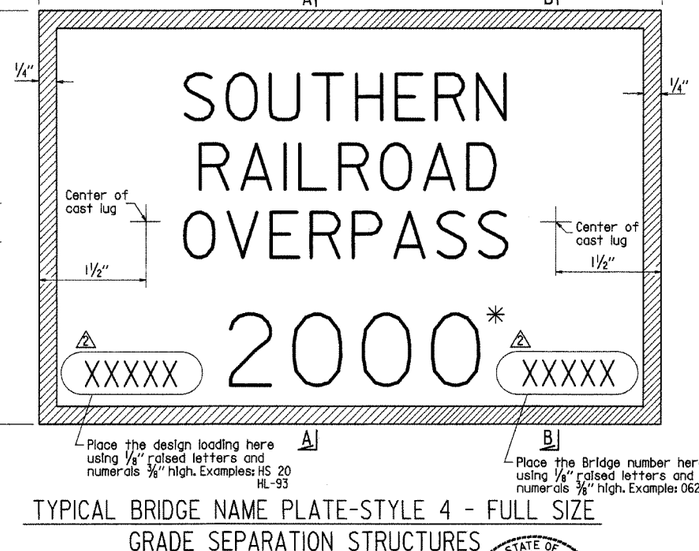
Note: Alternate attachments may be used provided such attachments are submitted and approval secured before fabrication is begun.



TYPICAL BRIDGE NAME PLATE-STYLE 2 - FULL SIZE
STREAM CROSSINGS



SECTION A-A SECTION B-B



TYPICAL BRIDGE NAME PLATE-STYLE 4 - FULL SIZE
GRADE SEPARATION STRUCTURES

GENERAL NOTES

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2003 Edition) with applicable Supplemental Specifications and Special Provisions.

Name plates shall be cast bronze and shall meet the material requirements as specified in Section 812 of the Standard Specifications.

Body of plate shall be ⅜" thick and shall include two tapering cone lugs ⅞" to 9/16"x 2" long. The border and all lettering shall be raised ⅛" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered.

The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

✳ Year in which contract is awarded.

⚠2 Revised Design Loading and Bridge Number to Raised Letters and Numerals MJT 10-15-2009
Chk'd. By: CJF 10-15-2009

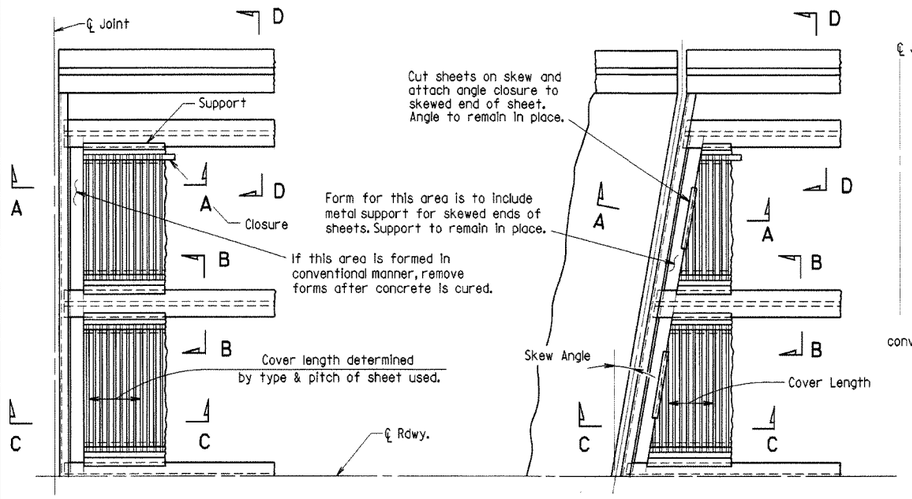
⚠1 Revised and redrawn MJT 09-20-2007
Chk'd. By: CJF 09-20-2007

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4537
CHARLES P. BRAND
BRIDGE ENGINEER

DETAILS OF STANDARD
TYPE C BRIDGE NAME PLATES
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 09-20-2007 FILENAME: B2389A.STD
CHECKED BY: CJF DATE: 09-20-2007 SCALE: NOT TO SCALE
DESIGNED BY: STD. DATE: —
BRIDGE NO. DRAWING NO. 2389A

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11-27-96						6	ARK.		38	
04-10-2003						JOB NO.				
						①	BR. DECK FORMS		14991	

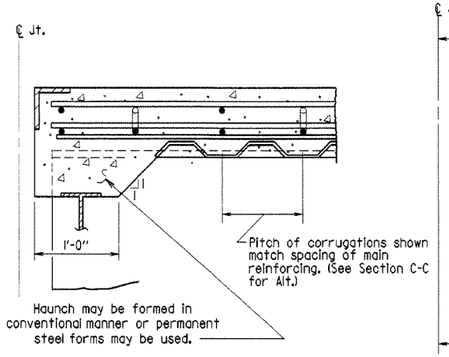


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

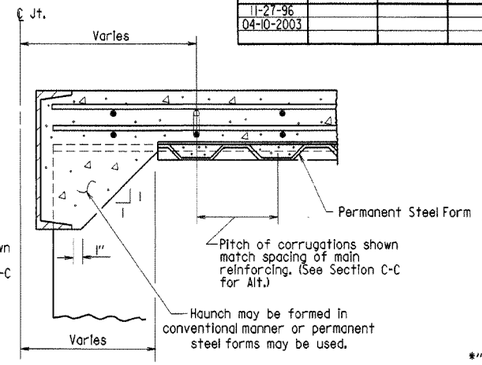
3/8" = 1'-0"



SECTION A-A

N.T.S.

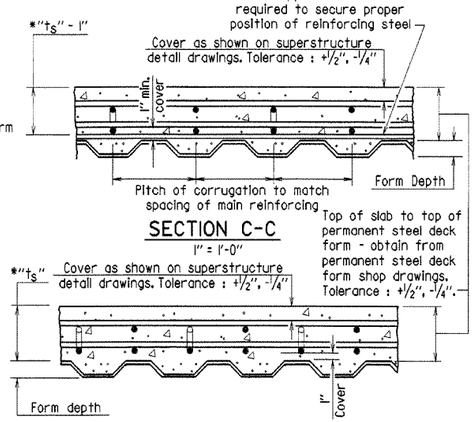
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



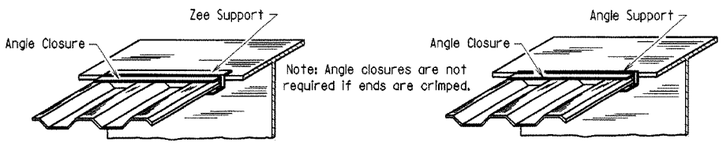
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

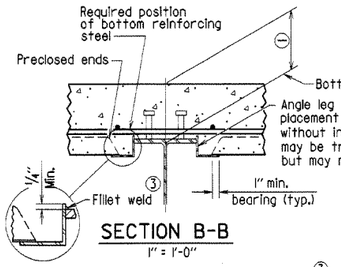
1" = 1'-0"

(Applicable when corrugations do not match spacing of main reinforcement)



SKETCH OF PERMISSIBLE SUPPORTS

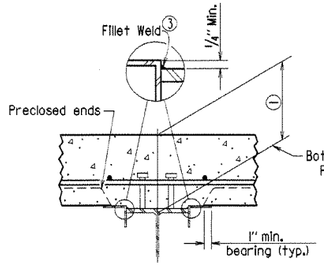
N.T.S.



SECTION B-B

1" = 1'-0"

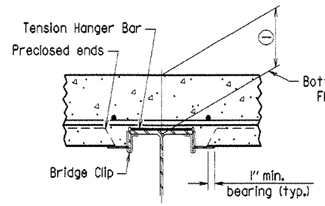
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)



SECTION B-B

1" = 1'-0"

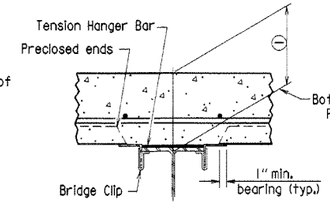
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

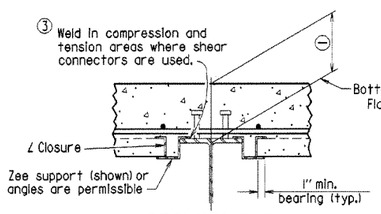
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

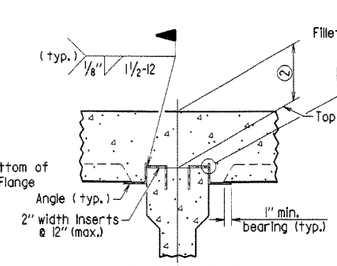
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

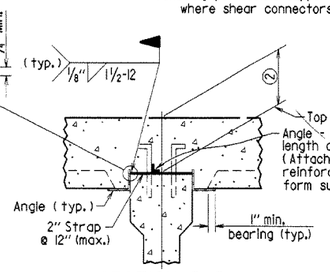
(Showing ∠ Closure)



SECTION B-B (FOR CONCRETE GIRDERS)

1" = 1'-0"

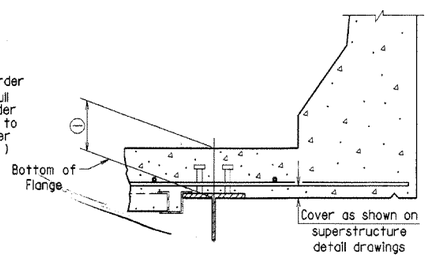
(Showing support by Insert cast in girder)



SECTION B-B (FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

*t_s = slab thickness as shown on superstructure detail drawings.

GENERAL NOTES

Permanent steel deck forms may be used at the Contractor's option and shall be at no additional cost to the Department. Such use may result in changes to the dead load deflection of the girder. Any cost for adjustments due to a change in the dead load deflection will be borne by the Contractor. Payment for deck concrete and structural steel will not be increased due to use of permanent steel deck forms.

Permanent steel deck forms shall conform to subsection 802.14(b) of the Standard Specifications. Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Bridge Engineer before work of forming the bridge deck is started.

Welding of form supports to the tension flange of steel girders will be permitted only in areas where shear connectors are used. When welding is not allowed, the method of fastening Z or ∠ supports to the flange must be approved by the Bridge Engineer.

Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Bridge Engineer.

When the pitch of form corrugations match the reinforcing spacing, transversely align form sheets across the bridge to maintain the correct orientation of continuous reinforcing bars in the corrugations.

Bar support rods, when used, shall be sized and spaced to adequately support the bottom reinforcing mat at the required position.

High chairs shall be sized to support the top mat of reinforcing at the proper position. High chairs shall be placed at locations shown on the detail drawings.

⚠2 Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition), with applicable supplemental specifications and special provisions.

③ Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)

① Distance from top of slab to bottom of top flange as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top flange or the support angle leg contacts the bottom reinforcing steel; Maximum = t_s + 1 3/4" + flange thickness. See Section C-C for slab thickness tolerance between adjacent girder flanges.

② Distance from top of slab to top of girder as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top of girder or the support angle leg contacts the bottom reinforcing steel; Maximum - value shown on the superstructure detail drawings when removable forms are used. See Section C-C for slab thickness tolerance between adjacent girder flanges.

⚠1 Redrawn and revised 11/27/96; MJT

⚠2 Revised for 2003 AHTD Construction Specifications and CPB Seal. MJT 04-10-2003
Chk'd. By: CPB 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4537
CHARLES P. BRAND
BRIDGE ENGINEER

DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ROUTE SEC.

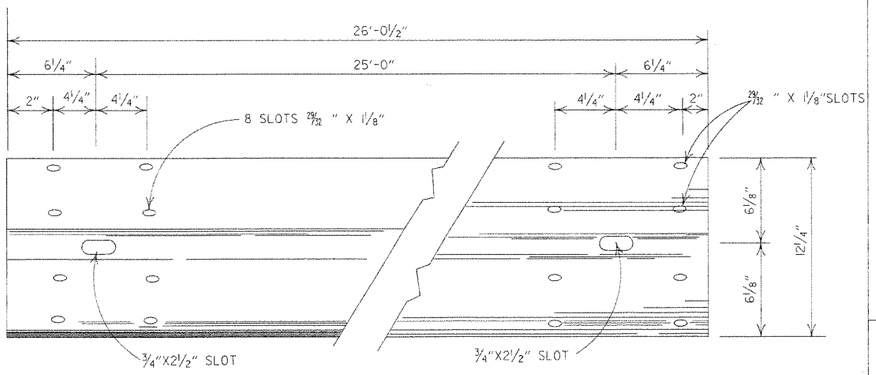
ARKANSAS STATE HIGHWAY COMMISSION

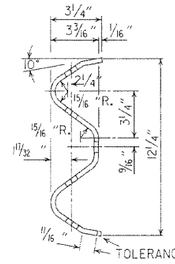
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 10-17-96
CHECKED BY: CPB DATE: 10-17-96
DESIGNED BY: STD. DATE: —
SCALE: as noted

BRIDGE NO. DRAWING NO. 14991

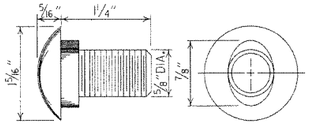
B14991.STD



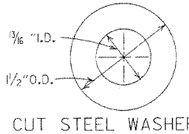


DETAILS OF
W-BEAM GUARD RAIL

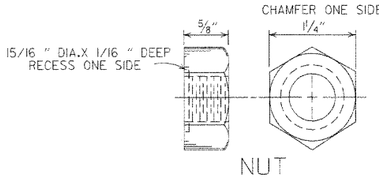
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



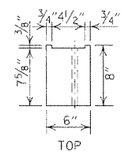
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

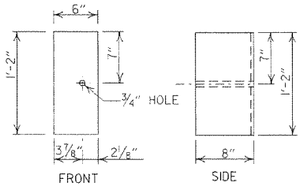


NUT

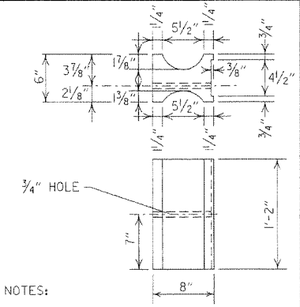


WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

TOP



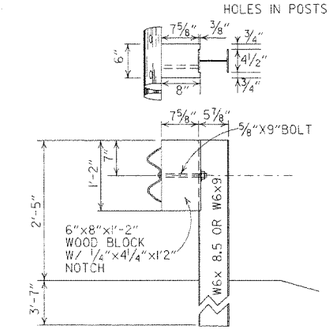
WOOD BLOCKOUT
(W-BEAM)



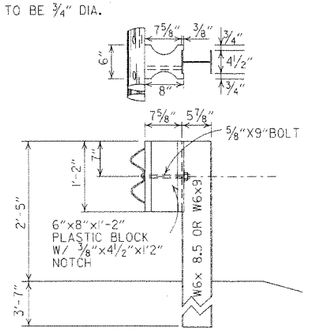
NOTES:
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT
(W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.

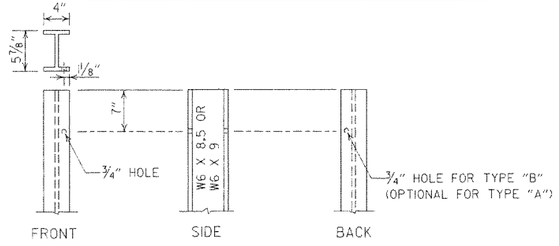


WOOD BLOCKOUT CONNECTIONS

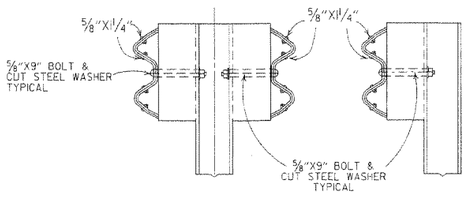


PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS
(W-BEAM)



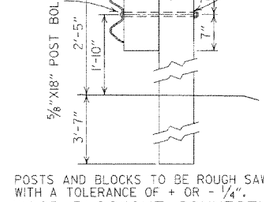
STEEL POST



TYPE "B" TYPE "A"

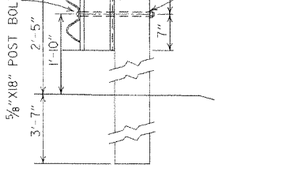
DETAILS OF STEEL LINE POST CONNECTIONS
(W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.



POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - 1/4".

WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF WOOD LINE POST CONNECTIONS
(W-BEAM)

-GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.

WHERE W-BEAM GUARD RAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.

W-BEAM GUARD RAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.

USE W-BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARD RAIL, W-BEAM GUARD RAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7# (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

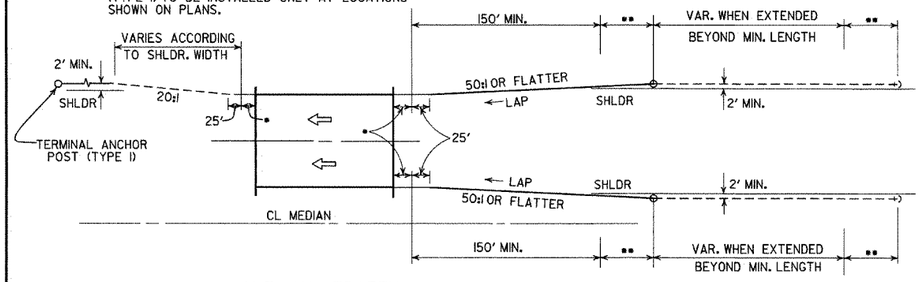
DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
10-15-09	ADDED REFERENCE TO MASH	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
3-30-00	REMOVED GUARD RAIL AT BRIDGE ENDS	
1-12-00	ADDED PLASTIC BLOCKOUT	
8-12-98	REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARD RAIL REPLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK, & ADDED DETAILS OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES	
4-3-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
6-2-94	ADDED ALT. STEEL POST SIZE	
8-5-93	REVISED STEEL POST SIZE	8-5-93
10-1-92	REDRAWN & REVISED	10-1-92
8-15-91	REVISED WASHER NOTE	8-5-91
8-2-90	REV. GEN. NOTE & DEPHT OF ANC. POST IN ROCK	8-2-90
7-15-88	REVISED SECTION 3 & GENERAL NOTES	
3-4-88	REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-9-87	REDRAWN & REVISED	802-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

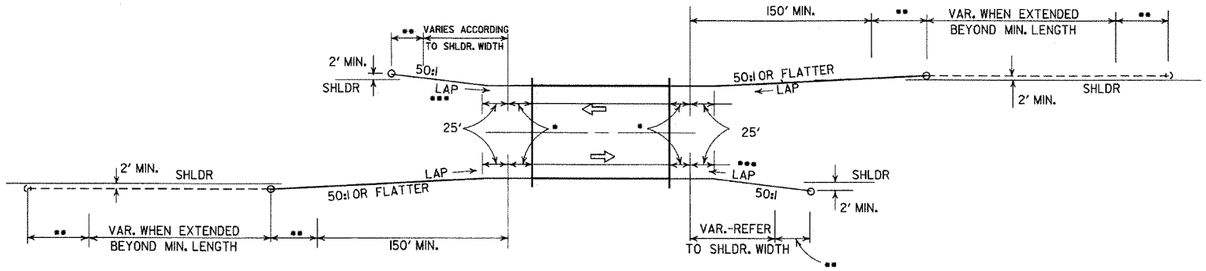
STANDARD DRAWING GR-8

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

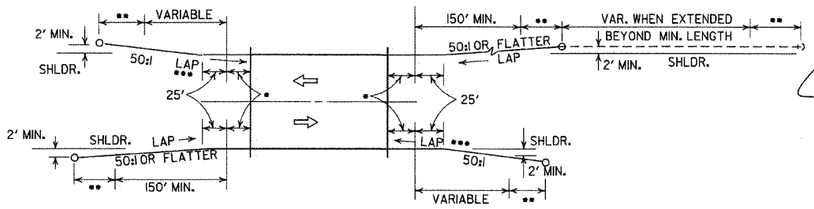
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

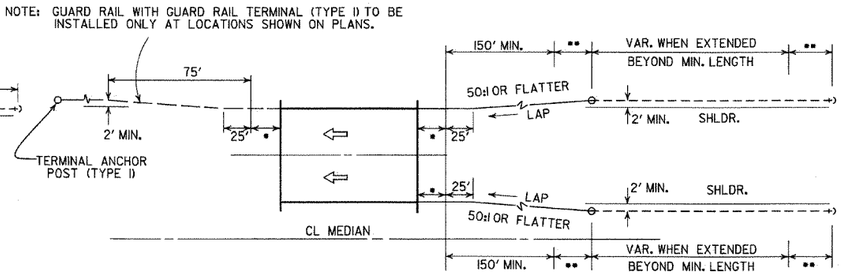
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

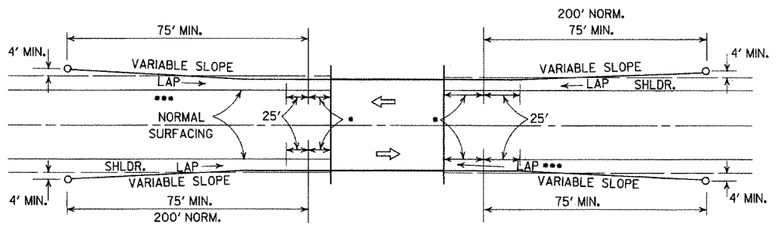
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

METHOD OF INSTALLATION OF GUARD RAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

LEGEND

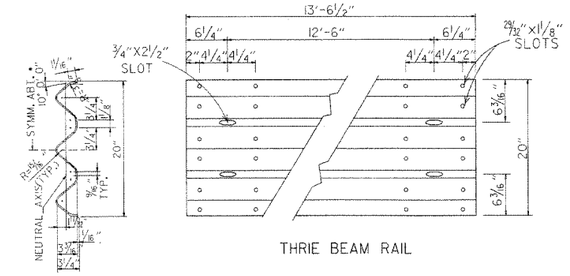
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87	REDRAWN & REVISED	

ARKANSAS STATE HIGHWAY COMMISSION

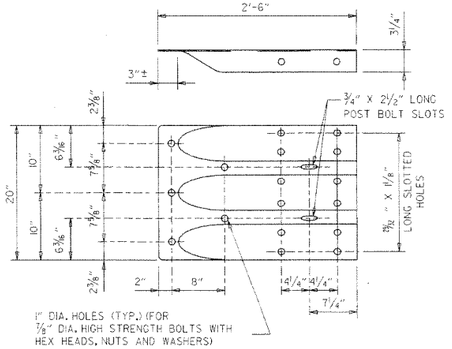
GUARD RAIL DETAILS

STANDARD DRAWING GR-9



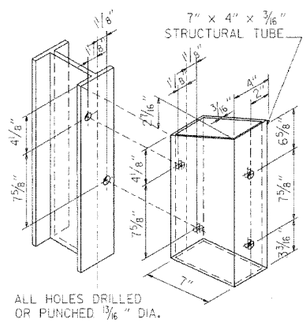
THRIE BEAM RAIL

SECTION THRU
THRIE BEAM RAIL



1" DIA. HOLES (TYP.) (FOR ⅞" DIA. HIGH STRENGTH BOLTS WITH HEX HEADS, NUTS AND WASHERS)

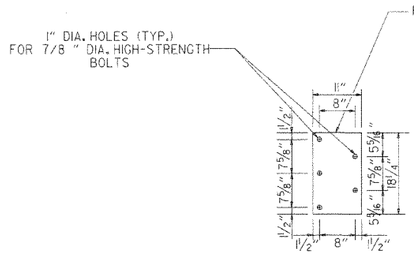
SPECIAL END SHOE



ALL HOLES DRILLED OR PUNCHED 13/16" DIA.

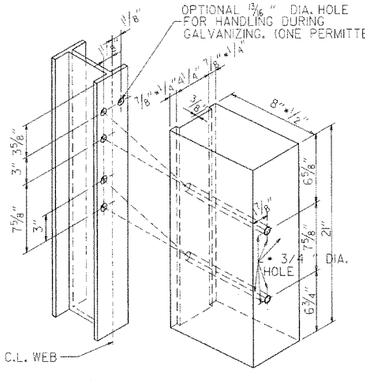
ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.

STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



CONNECTOR PLATE

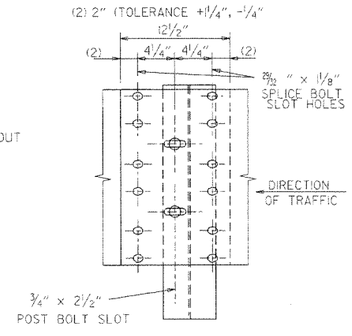
CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.



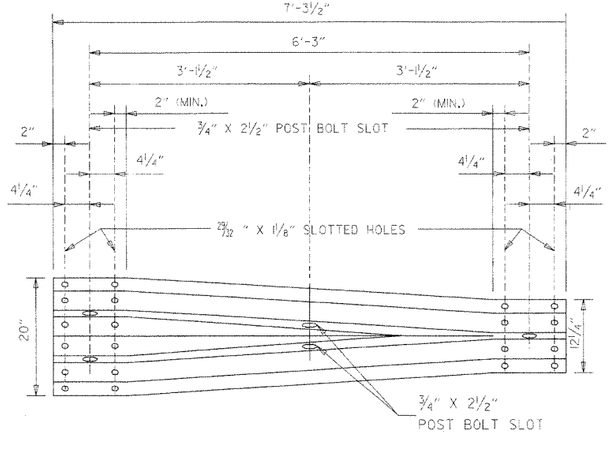
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.

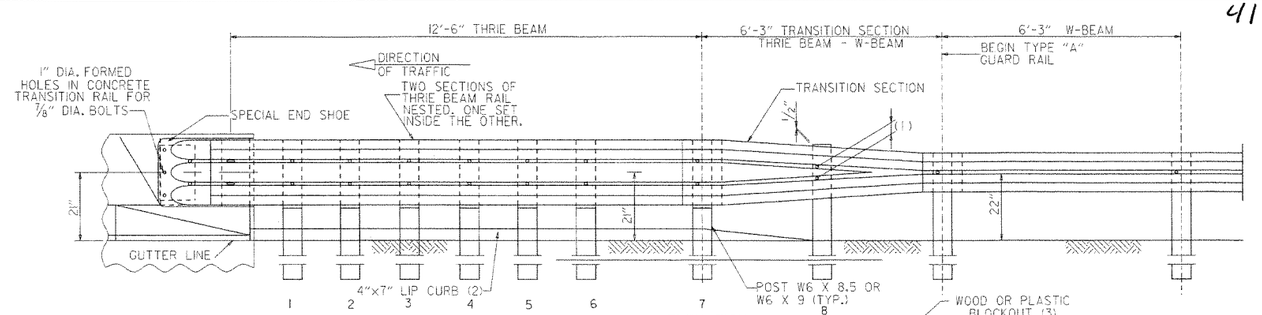


THRIE BEAM RAIL
SPLICE AT POST

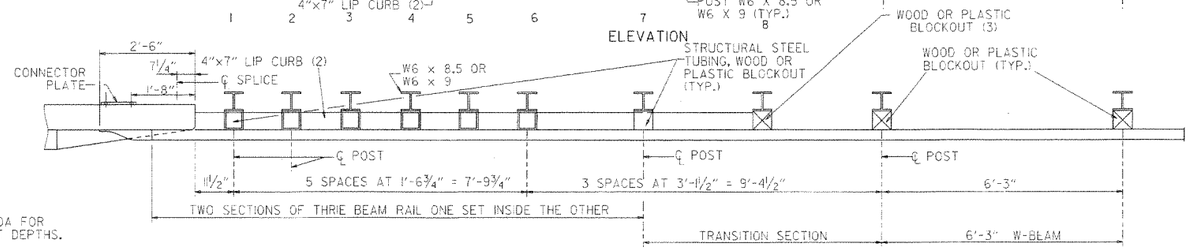


TRANSITION SECTION

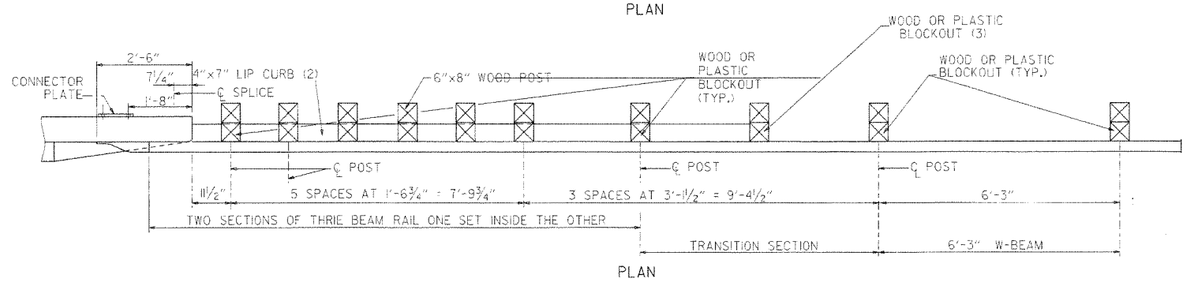
NOTE:
SEE STANDARD DRAWING GR-10A FOR GUARD RAIL POST EMBEDMENT DEPTHS.



ELEVATION



PLAN



PLAN

(1) VERIFY BOLT SPACING FROM RAIL TRANSITION PRODUCER.
(2) REFER TO APPROACH GUTTER DETAILS.
(3) LENGTH OF BLOCKOUT ON POST 8 TO BE MODIFIED TO FIT RAIL WIDTH.

THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE I.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-9 & GR-11.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7# (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

REFER TO STD. DRWG. GR-10A FOR POST DETAILS.

USE THRIE BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

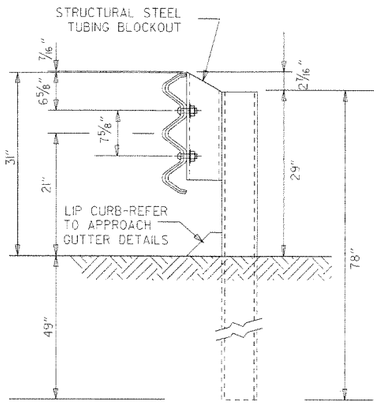
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF W-BEAM 1"	
11-29-07	ADDED PLASTIC BLOCKOUTS	
11-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT	
11-18-04	REVISED GENERAL NOTES	
10-9-03	REVISED GENERAL NOTES	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED NOTE (2)	
6-29-00	MOVED DIMENSION LINES	
5-18-00	ADDED NOTE	
3-30-00	DRAWN & ISSUED	

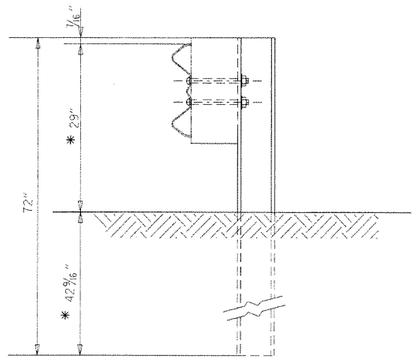
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

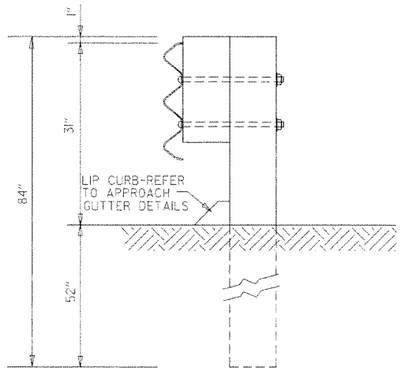


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

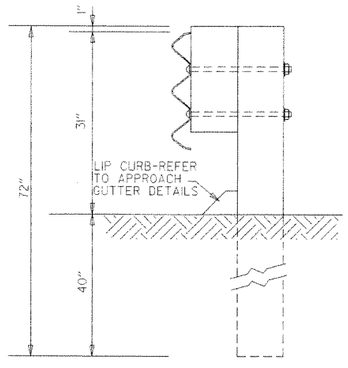


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

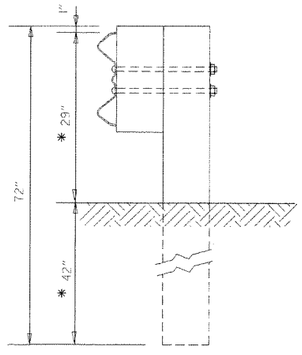
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7



W-BEAM TO THRIE BEAM
TRANSITION RAIL WITH WOOD OR
PLASTIC BLOCKOUT & WOOD POST
POST 8

GENERAL NOTES:

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

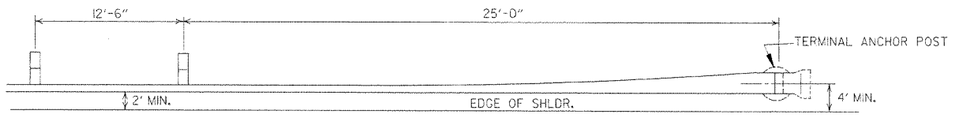
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	DATE FILM
7-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
8-22-02	REVISED LIP CURB NOTE	
3-30-00	DRAWN & ISSUED	

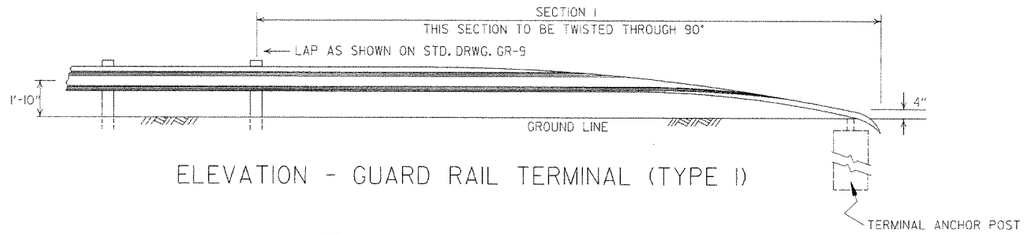
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

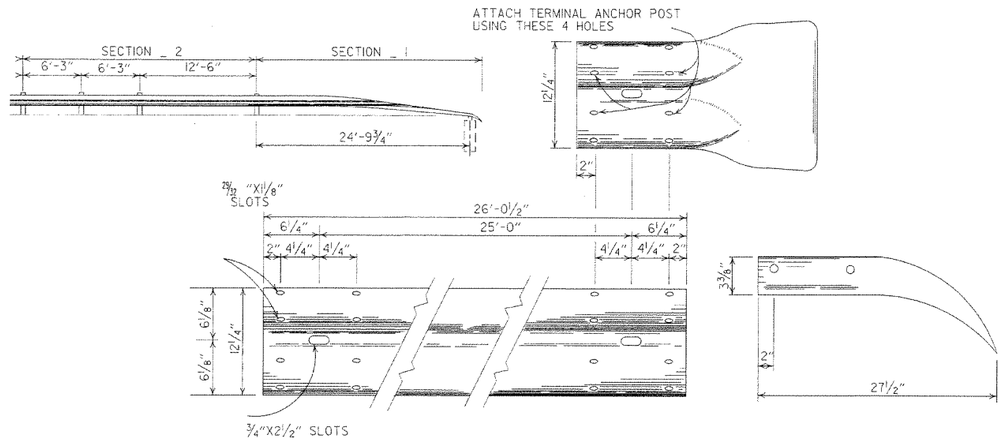


PLAN - GUARD RAIL TERMINAL (TYPE I)



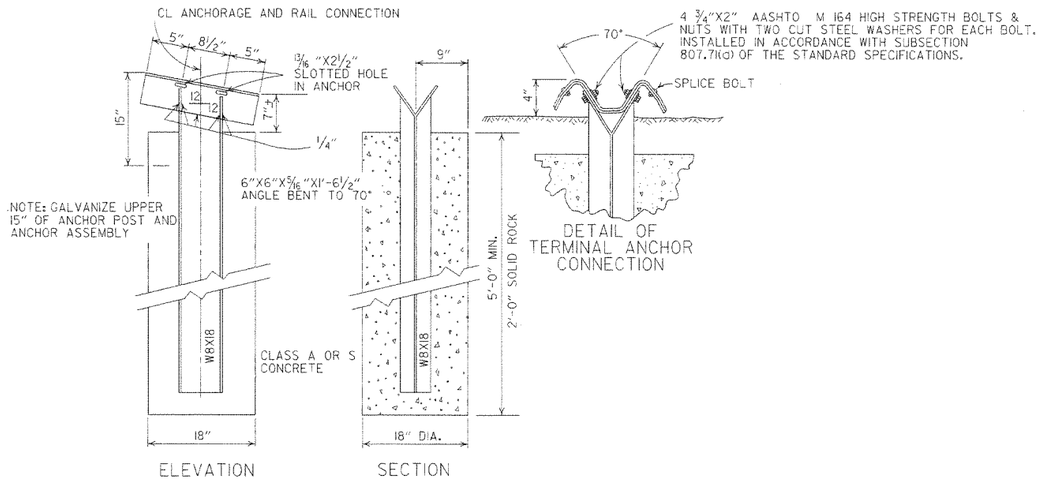
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

NOTE:
SECTIONS I AND 2 OF GUARD RAIL TERMINAL SHALL BE PAID FOR AT THE PRICE BID PER LINEAR FOOT OF THE TYPE OF GUARD RAIL SPECIFIED.



SECTION I

TERMINAL SECTION



NOTE: RAIL MEMBERS MAY BE BOLTED TO ANGLE AT TERMINAL ANCHOR AND THE TWO ASSEMBLIES POSITIONED TO PROPER ALIGNMENT PRIOR TO PLACING CONCRETE AROUND 8 WF 17 POST IF CONTRACTOR SO DESIRES.

DETAIL OF TERMINAL ANCHOR POST (TYPE I)

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
6-26-97	REVISED LAP NOTE	
10-18-96	REVISED ASTM REF. TO AASHTO	
11-3-94	DIMENSION TERMINAL DETAIL	
11-11-92	ADDED NOTE FOR PAYMENT	11-11-92
10-1-92	DRAWN & ISSUED	10-1-92

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	31⅝	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M206.

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

EQUIV. DIA.	AASHTO M 207	
	SPAN	RISE
INCHES	INCHES	
18	23	14
24	30	19
27	34	22
30	38	24
33	42	27
36	45	29
39	49	32
42	53	34
48	60	38
54	68	43
60	76	48
66	83	53
72	91	58
78	98	63
84	106	68

THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M207.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE MIDDLE OF THE PIPE.
5. COMPLETE BACKFILL ACCORDING TO SUBSECTION 606.03.(f)(1).

NOTE: HAUNCH AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF CONCRETE PIPE.

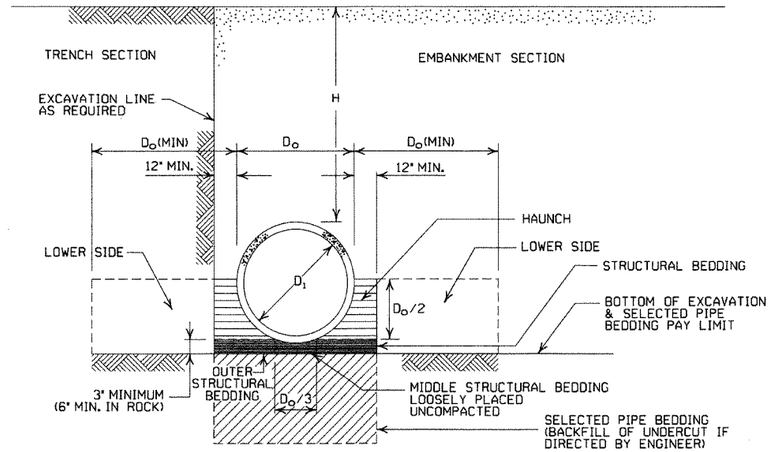
- LEGEND -

D_1 = NORMAL INSIDE DIAMETER OF PIPE
D_o = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
▨ = UNDISTURBED SOIL

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR HAUNCH AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 5 OR CLASS 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL*
TYPE 3**	AASHTO CLASSIFICATION A-1 THRU A-6 SOIL OR TYPE 1 OR 2 INSTALLATION MATERIAL

*SM-3 WILL NOT BE ALLOWED.

**MATERIALS SHALL NOT INCLUDE ORGANIC MATERIALS OR STONES LARGER THAN 3 INCHES.



EMBANKMENT AND TRENCH INSTALLATIONS

1. MATERIAL IN THE HAUNCH AND OUTER STRUCTURAL BEDDING SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. FOR TRENCHES WITH WALLS OF NATURAL SOIL, THE DENSITY OF THE SOIL IN THE LOWER SIDE ZONE SHALL BE AS FIRM AS THE 95% DENSITY REQUIRED FOR THE HAUNCH. IF THE EXISTING SOIL DOES NOT MEET THIS CRITERIA, IT SHALL BE REMOVED AND RECOMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OF MATERIAL USED.
3. FOR EMBANKMENTS, THE MATERIAL IN THE LOWER SIDE ZONE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2003 EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. ALL PIPE SHALL CONFORM TO SECTION 606. CIRCULAR R.C. PIPE CULVERTS SHALL CONFORM TO AASHTO M170, R.C. ARCH PIPE CULVERTS SHALL CONFORM TO AASHTO M206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS SHALL CONFORM TO AASHTO M207.
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. NOT MORE THAN ONE LIFTING HOLE MAY BE PROVIDED IN CONCRETE PIPE TO FACILITATE HANDLING. HOLE MAY BE CAST IN PLACE, CUT INTO THE FRESH CONCRETE AFTER FORMS ARE REMOVED, OR DRILLED. THE HOLE SHALL NOT BE MORE THAN TWO INCHES IN DIAMETER OR TWO INCHES SQUARE. CUTTING OR DISPLACEMENT OF REINFORCEMENT WILL NOT BE PERMITTED. SPALLED AREAS AROUND THE HOLE SHALL BE REPAIRED IN A WORKMANLIKE MANNER. LIFTING HOLE SHALL BE FILLED WITH MORTAR, CONCRETE, OR OTHER METHOD AS APPROVED BY THE ENGINEER.
9. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
10. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS THE HAUNCH), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

MINIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

	CLASS OF PIPE			
	CLASS III		CLASS IV	CLASS V
INSTALLATION TYPE	TYPE 1 OR 2	TYPE 3	ALL	ALL
PIPE ID (IN.)	FEET			
12-15	2	2.5	2	1
18-24	2.5	3	2	1
27-33	3	4	2	1
36-42	3.5	5	2	1
48	4.5	5.5	2	1
54-60	5	7	2	1
66-78	6	8	2	1
84-108	7.5	8	2	1

NOTE: FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM OF 12" OF PAVEMENT AND/OR BASE.

MAXIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE		
	CLASS III	CLASS IV	CLASS V
	FEET		
TYPE 1	21	32	50
TYPE 2	16	25	39
TYPE 3	12	20	30

NOTE: IF FILL HEIGHT EXCEEDS 50 FEET, A SPECIAL DESIGN CONCRETE PIPE WILL BE REQUIRED USING TYPE 1 INSTALLATION.

MINIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2 OR TYPE 3	2.5	1.5

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

NOTE: FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM OF 12" OF PAVEMENT AND/OR BASE.

MAXIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2	13	21
TYPE 3	10	16

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

DATE	REVISION	DATE FILMED
12-15-11	REVISED FOR LRFD DESIGN SPECIFICATIONS	
5-18-00	REVISED TYPE 3 BEDDING & ADDED NOTE	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS (INCHES)				
		0.064	0.079	0.109	0.138	0.168
2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	34	36	47		
36	2		30	39	41	
42	2		43	67	70	73
48	2		37	58	61	64
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM						
36	1	48	60	88	111	118
42	1	41	51	72	90	102
48	1	36	45	64	77	85
54	2	32	40	59	71	79
60	2	29	36	53	64	71
66	2	26	33	47	58	64
72	2	24	30	44	53	59
78	2		28	41	49	54
84	2		26	38	45	51
90	2		24	35	43	45
96	2		22	33	40	44
102	2			31	38	42
108	2			30	35	39
114	2			28	34	37
120	2			27	32	35

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
		2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. COMPLETE STRUCTURAL BACKFILL OPERATION BY WORKING FROM SIDE TO SIDE OF THE PIPE. THE SIDE TO SIDE STRUCTURAL BACKFILL DIFFERENTIAL SHALL NOT EXCEED 24 INCHES OR 1/3 THE SIZE OF THE PIPE, WHICHEVER IS LESS.

NOTE: STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF METAL PIPE.

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL ③

③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8

CORRUGATED METAL PIPE ARCHES

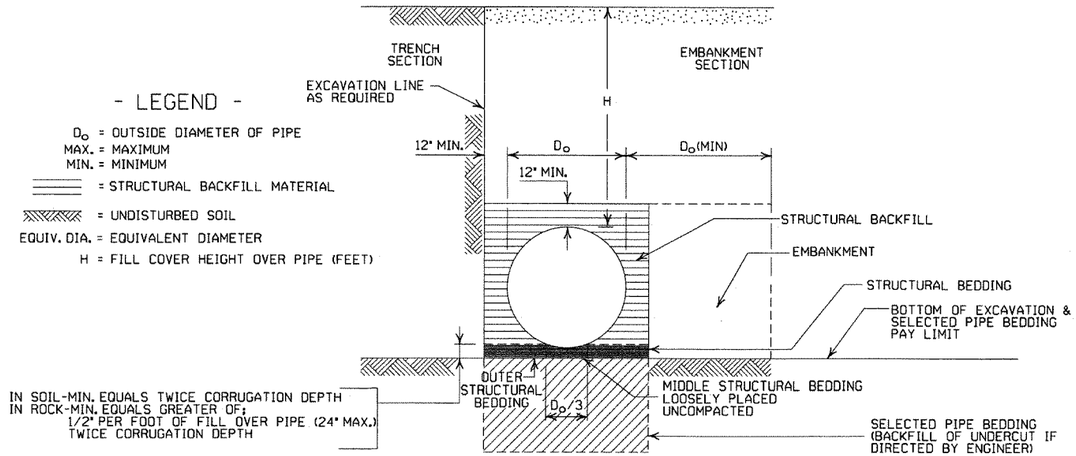
EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL			ALUMINUM		
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)
				INSTALLATION	INSTALLATION		INSTALLATION	INSTALLATION
				TYPE 1	TYPE 1		TYPE 1	TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM		
15	17x13	3	0.064	2	15	0.060	2	15
18	21x15	3	0.064	2	15	0.060	2	15
21	24x18	3	0.064	2.25	15	0.060	2.25	15
24	28x20	3	0.064	2.5	15	0.075	2.5	15
30	35x24	3	0.079	3	12	0.075	3	12
36	42x29	3½	0.079	3	12	0.105	3	12
42	49x33	4	0.079	3	12	0.105	3	12
48	57x38	5	0.109	3	13	0.135	3	13
54	64x43	6	0.109	3	14	0.135	3	14
60	71x47	7	0.138	3	15	0.164	3	15
66	77x52	8	0.168	3	15			
72	83x57	9	0.168	3	15			
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM					
				INSTALLATION	INSTALLATION			
				TYPE 2 TYPE 1	TYPE 2 TYPE 1			
36	40x31	5	0.079	3 2	12 15			
42	46x36	6	0.079	3 2	13 15			
48	53x41	7	0.079	3 2	13 15			
54	60x46	8	0.079	3 2	13 15			
60	66x51	9	0.079	3 2	13 15			
66	73x55	12	0.079	3 2	15 15			
72	81x59	14	0.079	3 2	15 15			
78	87x63	14	0.079	3 2	15 15			
84	95x67	16	0.109	3 2	15 15			
90	103x71	16	0.109	3 2	15 15			
96	112x75	18	0.109	3 2	15 15			
102	117x79	18	0.109	3 2	15 15			
108	128x83	18	0.138	3 2	15 15			

① FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

② WHERE THE STANDARD 2 2/3"x ½" CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A PIPE OF THE SAME DIAMETER WITH A 3" x 1" OR 5" x 1" CORRUGATION MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAUGE AND CORRUGATION.

- LEGEND -

D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)



EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE (ROUND).
3. INSTALALTION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2⅔" X ½" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

GENERAL NOTES

1. METAL PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2003 EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. METAL PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. METAL PIPE CULVERT MATERIALS AND INSTALLATIONS SHALL CONFORM TO SECTION 606 AND JOB SPECIAL PROVISION "METAL PIPE".
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
9. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

DATE	REVISION	DATE FILMED
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4)

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"

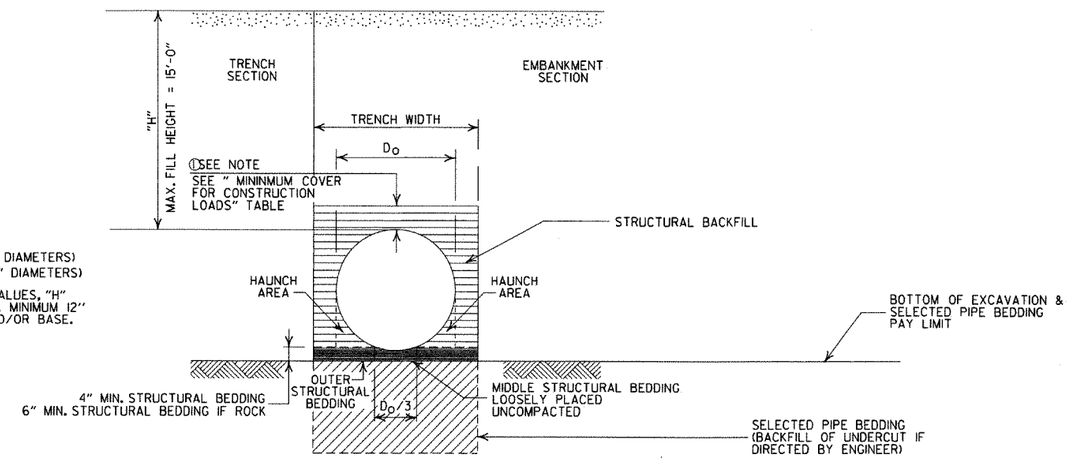
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
Ø = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
12-15-11	REVISED GENERAL NOTES & MINIMUM COVER NOTE	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4)

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF PVC PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"

MULTIPLE INSTALLATION OF PVC PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

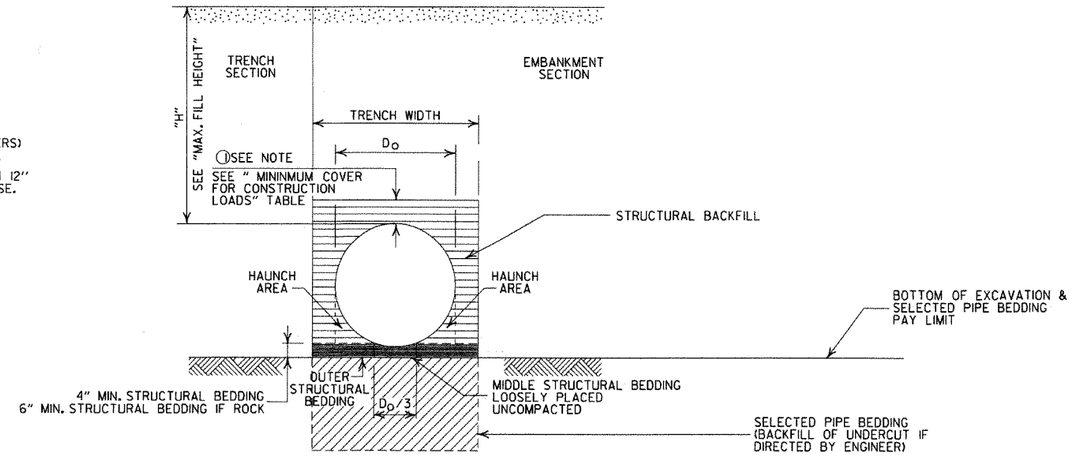
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

① NOTE:
12" MIN. (18" - 36" DIAMETERS)
MINIMUM COVER VALUE, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

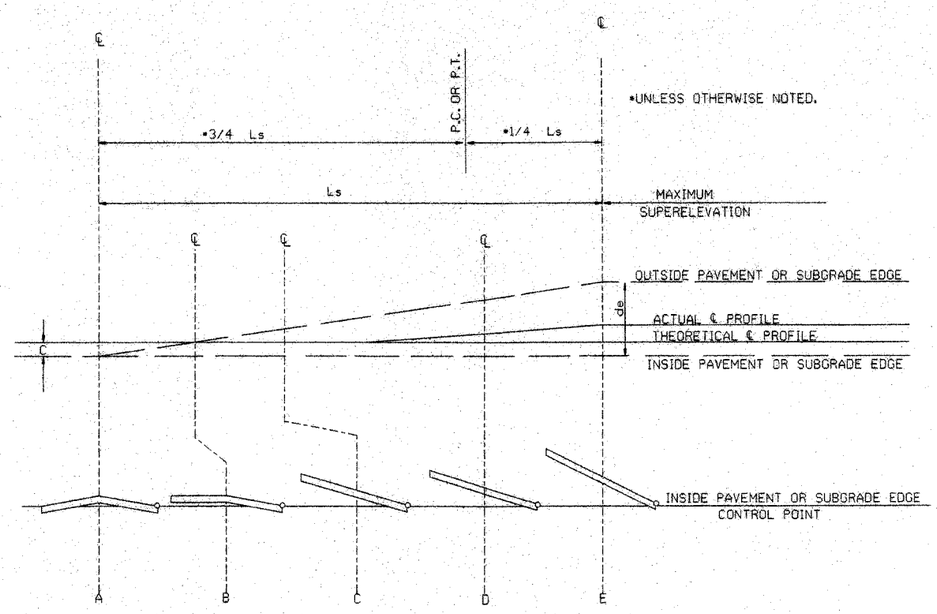
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) DESIRABLE
0° 15′	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 30′	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 45′	N.C.			N.C.			R.C.			0.022			0.023			0.028		
1° 00′	N.C.			N.C.			0.021			0.026			0.030			0.037	275	300
1° 15′	N.C.			R.C.			0.026			0.032			0.037			0.046		
1° 30′	N.C.			0.021			0.031	200		0.037	225		0.043	250		0.054		
1° 45′	N.C.			0.025	175		0.036			0.043		300	0.049		300	0.062		
2° 00′	R.C.			0.028			0.040			0.048			0.055			0.070		
2° 15′	R.C.			0.031			0.045		250	0.053			0.061			0.078	300	350
2° 30′	0.021			0.034			0.049			0.058			0.067			0.085	315	
2° 45′	0.023			0.037		200	0.053			0.063			0.072			0.091	335	
3° 00′	0.025			0.040			0.057			0.067	230		0.077	260		0.096	350	400
3° 15′	0.027	150		0.043			0.061			0.072	245		0.082	275		0.098	360	
3° 30′	0.029			0.046			0.065	205		0.076	255		0.086	285		0.100	360	
3° 45′	0.031		200	0.049			0.069	215		0.080	265		0.090	295	350			
4° 00′	0.033			0.051			0.072	225		0.083	270		0.093	305				
4° 30′	0.037			0.056			0.078	240		0.087	280		0.096	315				
5° 00′	0.040			0.061			0.083	250		0.091	295		0.098	320				
5° 30′	0.043			0.066	185		0.088	260		0.094	300	350						
6° 00′	0.046			0.070	190		0.092	270		0.096	305							
6° 30′	0.050			0.074	200		0.095	280	300	0.100	315							
7° 00′	0.053			0.078	210		0.098	285										
7° 30′	0.055			0.081	215		0.099	290										
8° 00′	0.058			0.084	220		0.100	290										
8° 30′	0.061			0.087	225	250												
9° 00′	0.063			0.089	230													
10° 00′	0.068	160		0.094	235													
11° 00′	0.072	170		0.097	250													
12° 00′	0.076	175		0.099	250													
13° 00′	0.080	180		0.100	250													
14° 00′	0.083	190																
15° 00′	0.086	195																
16° 00′	0.089	200																
17° 00′	0.091	200																
18° 00′	0.093	205																
19° 00′	0.095	210																
20° 00′	0.097	215	250															
21° 00′	0.098	215																
22° 00′	0.099	215																
23° 00′	0.099	215																
24° 00′	0.100	220																

D MAX = 24° 45′ | D MAX = 13° 15′ | D MAX = 8° 15′ | D MAX = 6° 30′ | D MAX = 5° 15′ | D MAX = 3° 30′

ABBREVIATIONS

NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
e - RATE OF SUPERELEVATION (FT. PER FT.)
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)
C - NORMAL CROWN (FT.)



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

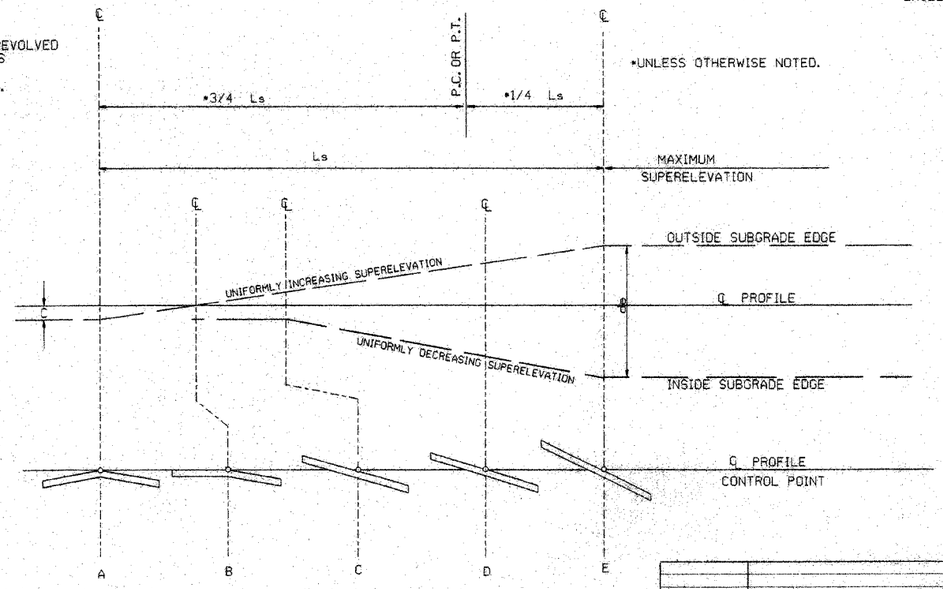
GENERAL NOTES

1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLLOWS:

3 LANE UNDIVIDED - - - - - +20%
4 LANE UNDIVIDED - - - - - +50%
5 LANE UNDIVIDED - - - - - +80%
6 LANE UNDIVIDED - - - - - +100%

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$

DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

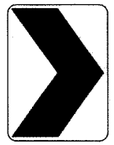
FILE STDSE2.DGN

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.		49	
JOB NO.				

(4) STD. HWY. SIGNS & SUP ASSEMB

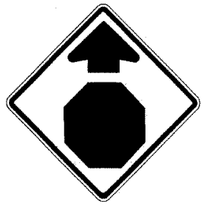
R1-1
30"X30"

W1-3
30"X30"
(LT. OR RT.)



W1-8
18"X24"

W2-5
30"X30"



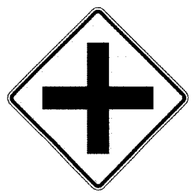
W3-1
36"X36"

W5-1
36"X36"

M6-3
21"X15"

R1-2
36"X36"X36"

W1-4
30"X30"
(LT. or RT.)



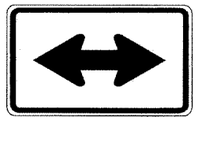
W2-1
30"X30"

S1-1
36"X36"

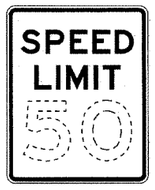
W3-2
36"X36"

County
Route Marker
M1-5
24"X24"

NOTE: REFLECTORIZED YELLOW LEGEND (COUNTY NAME, ROUTE LETTER & NUMBER) & BORDER ON A BLUE BACKGROUND.

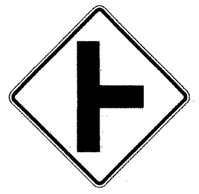


M6-4
21"X15"



R2-1
24"X30"

W1-5
30"X30"
(LT. or RT.)

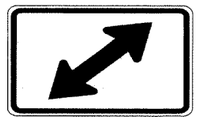


W2-2
30"X30"

W5-2
36"X36"

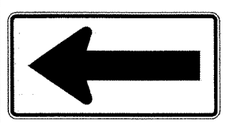
W8-3
36"X36"

R1-3
12"X6"

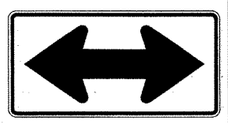


M6-5
21"X15"

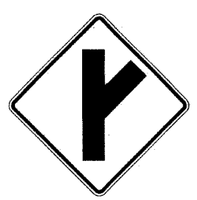
W1-1
30"X30"
(LT. or RT.)



W1-6
48"X24"

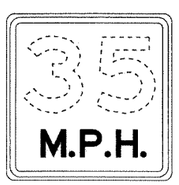


W1-7
48"X24"

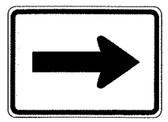


W2-3
30"X30"
(LT. or RT.)

W5-3
36"X36"

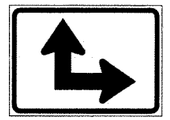


W13-1
18"X18"



M6-1
21"X15"

NOTE: ALL M6 SIGNS TO BE MADE WITH REFLECTORIZED YELLOW ARROW & BORDER WITH BLUE BACKGROUND.

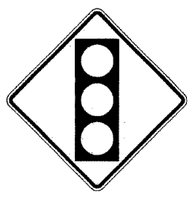


M6-6
21"X15"

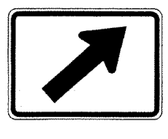
W1-2
30"X30"
(LT. or RT.)

W2-4
30"X30"

W10-1
36" DIAMETER



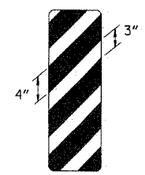
W3-3
36"X36"



M6-2
21"X15"

S4-3
24"X8"

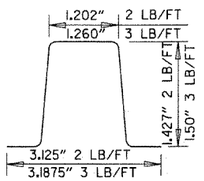
S4-2
24"X10"



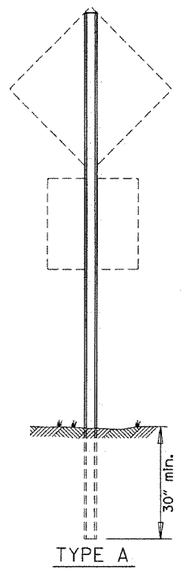
OM-3
12"X36"
(LT. or RT.)

MINIMUM DIMENSIONS SHOWN

SUPPORT SECTION

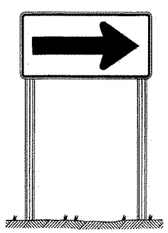


(U-CHANNEL)
STANDARD SUPPORT
ASSEMBLIES



TYPE A

NOTE: LENGTH OF SIGN POSTS SHALL BE DETERMINED SO AS TO PROVIDE FOR MINIMUM VERTICAL CLEARANCES AS CALLED FOR IN THE SPECIFICATIONS PLUS A MINIMUM VERTICAL PENETRATION OF 30" IN THE SOIL.



TYPE B

TYPE C

MINIMUM WEIGHT

TYPE A & B = 3 LBS./FT.
TYPE C = 2 LBS./FT.

STANDARD HIGHWAY SIGNS

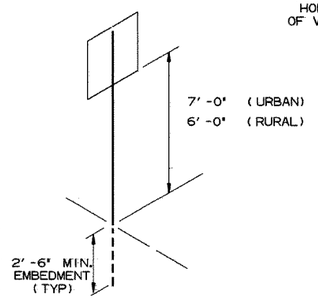
DATE	REVISION	DATE FILMED
4-17-08	REVISED SIGN DESIGNATION - W3-1& W3-2	
4-10-03	REVISED W5-2, W8-3, OM-3; ADDED W1-8	
1-5-81	REDRAWN	960-1-15-81
9-15-78	ADDED W14-3	877-9-15-78
9-2-76	POST WT.	623-9-3-76
5-3-76	STEEL POST WT. FROM 2# - 3# ADDED S4-2 & S4-3	504-5-3-76
8-12-74	REV. HT. TYPE "C" ASSEMBLY	500-8-2-74
12-21-72	ADDED M6-2,3,4,5,6	500-12-21-72
12-1-72	ISSUED	562-12-1-72

SUPPORT ASSEMBLIES

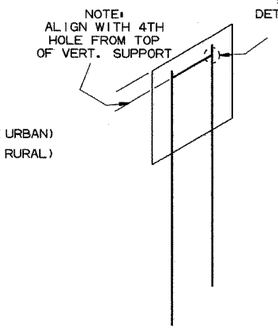
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD HIGHWAY SIGNS
AND SUPPORT ASSEMBLIES

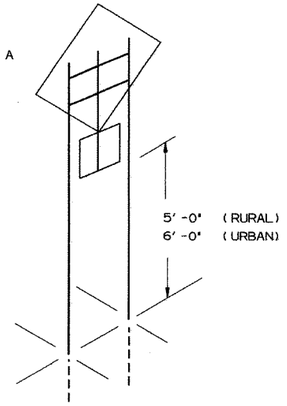
STANDARD DRAWING SHS-1



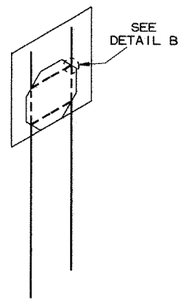
U-1



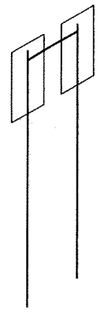
U-2



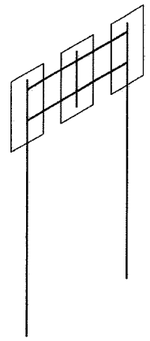
U-2 (A)



U-2 (B)



U-2 (1)



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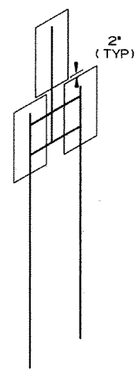
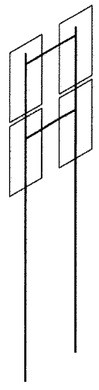
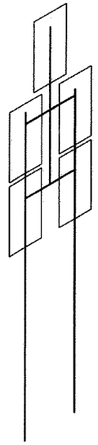


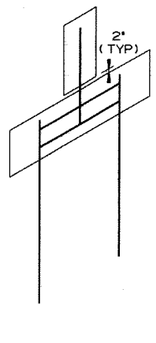
U-2 (3)



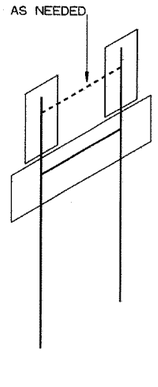
U-2 (4)



U-2 (5)



U-2 (6)



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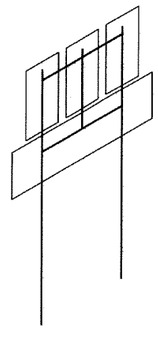

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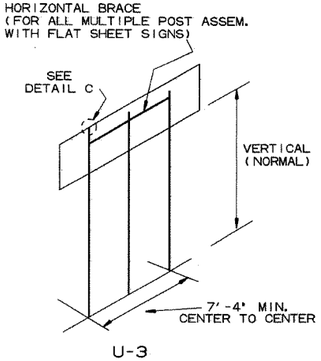
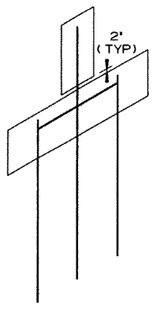
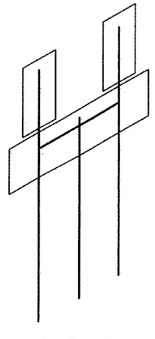


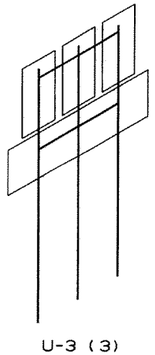
U-3



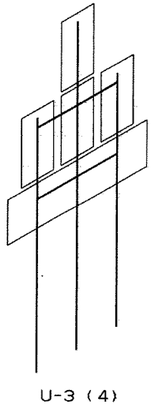
U-3 (1)



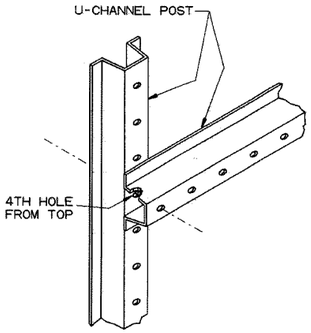
U-3 (2)



U-3 (3)

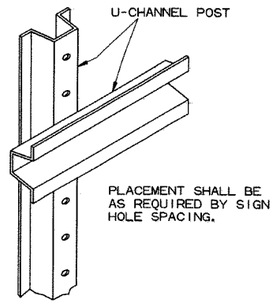


U-3 (4)



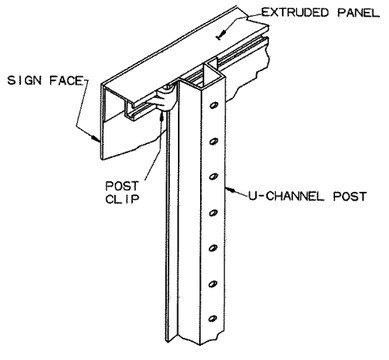
DETAIL A

SHOWING HORIZONTAL BRACE



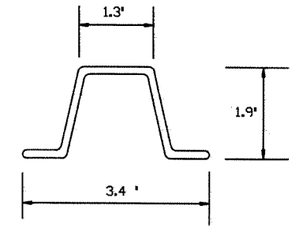
DETAIL B

SHOWING BACK-TO-BACK INSTALLATION



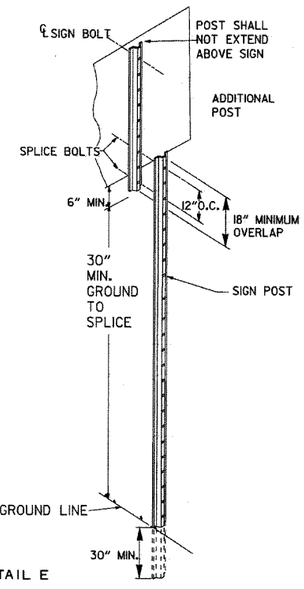
DETAIL C

SHOWING GUIDE SIGN MOUNTING WITH EXTRUDED PANELS



DETAIL D

(3 LB. U-CHANNEL POST)



DETAIL E

NOTES:

SIGNS AT LEAST 8' IN LENGTH MAY BE INSTALLED ON THREE 3 LB. POST. IN NO CASE SHALL THERE BE MORE THAN TWO 3 LB. POSTS WITHIN A 7' PATH.

SPLICES NECESSARY TO ATTAIN PROPER MOUNTING HEIGHT SHALL BE AS SHOWN IN DETAIL (E).

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. CARRIAGE BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. CARRIAGE BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS.

ALL SIGN POSTS SHALL BE PLUMB.

DATE	REVISION	FILMED
10-9-03	REMOVED ROUND POST & REVISED SPACING	10-9-03
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL	6-8-95
2-2-95	REDRAWN	2-2-95

ARKANSAS STATE HIGHWAY COMMISSION

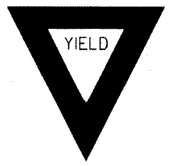
U-CHANNEL POST ASSEMBLIES

STANDARD DRAWING SHS-2

R1-1

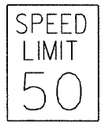
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R2-5A

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R2-5C

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-1

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

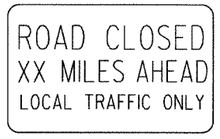
R5-1

STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

R11-2

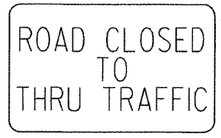
48"X30"

R11-3A



60"X30"

R11-4

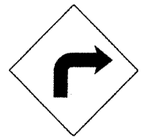


60"X30"

RSP-1

48"X30"

W1-1



STD. 36"X36"
FWY. 48"X48"

W1-2

STD. 36"X36"
FWY. 48"X48"

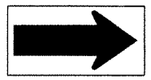
W1-3

STD. 48"X48"

W1-4

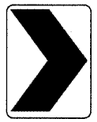
STD. 48"X48"

W1-6



STD. 48"X24"
SPECIAL 60"X30"

W1-8



STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

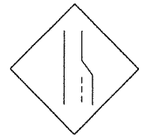
W3-1

STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



STD. 36"X36"
FWY. 48"X48"

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

EXPWY. 36"X36"
FWY. 48"X48"

W9-2

STD. 36"X36"
FWY. 48"X48"

W13-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

STD. 36"X36"
FWY. 48"X48"

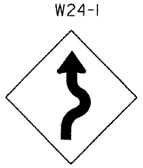
W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

W1-4b

STD. 48"X48"

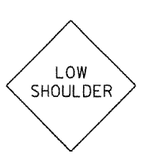
R56-1

STD. 18"X18"

W8-11

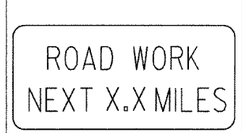
STD. 36"X36"
FWY. 48"X48"

W8-9



STD. 36"X36"
FWY. 48"X48"

G20-1



60"X24"

G20-2

48"X24"

OM-3L OM-3R

12"X36"

M4-9

STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1

36"X60"

* USE 6" C LETTERS
** USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE
	AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.
3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.
- 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
- 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.
6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.
7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.
8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

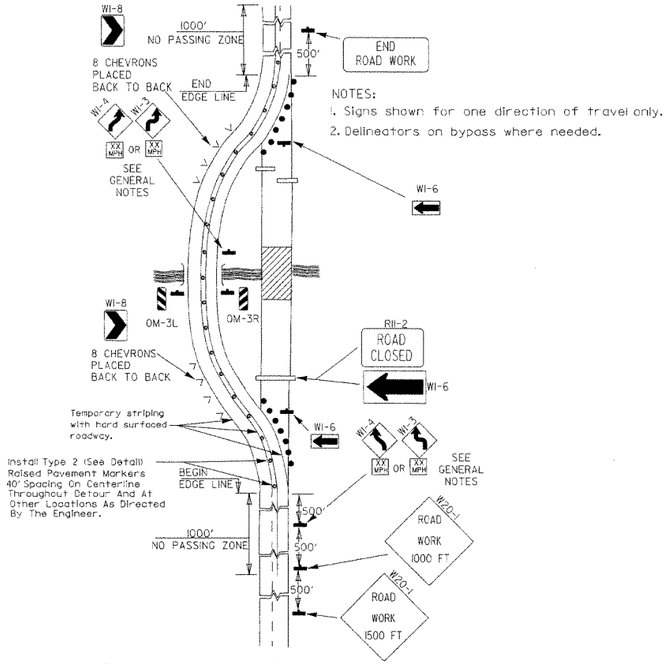
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

DATE	REVISION	FILMED
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

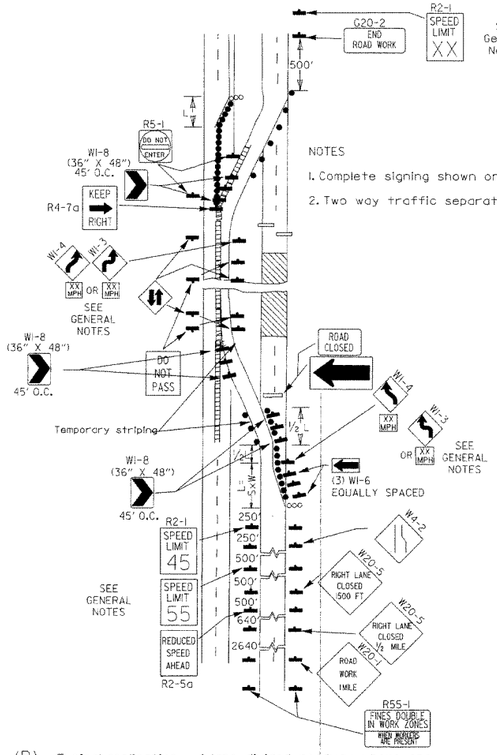
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



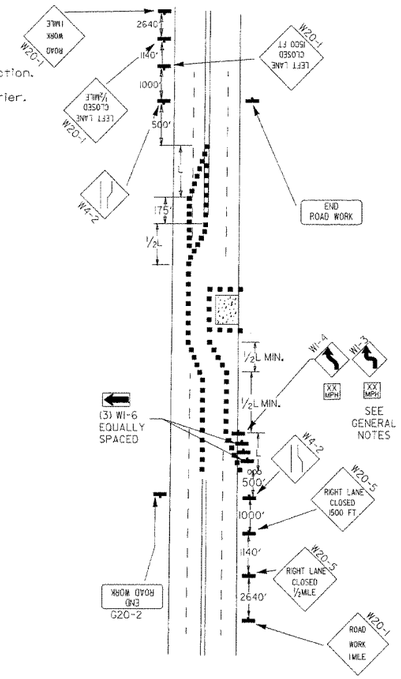
NOTES:
1. Signs shown for one direction of travel only.
2. Delineators on bypass where needed.

(A) Typical application of traffic control devices on a 2-lane highway where the entire roadway is closed and a bypass detour is provided.

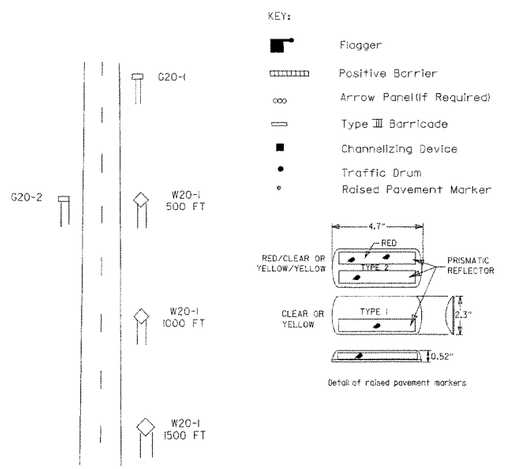


NOTES
1. Complete signing shown only in crossover direction.
2. Two way traffic separated with positive barrier.

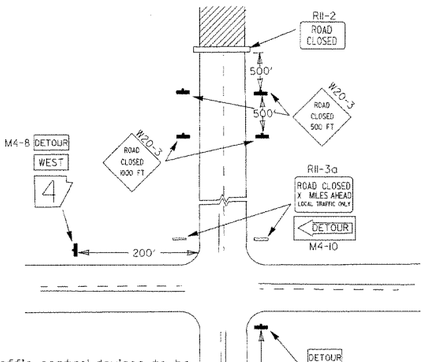
(B) Typical application - 4-lane divided roadway where one roadway is closed.



(C) Typical application - 4-lane undivided roadway where half of the roadway is closed.

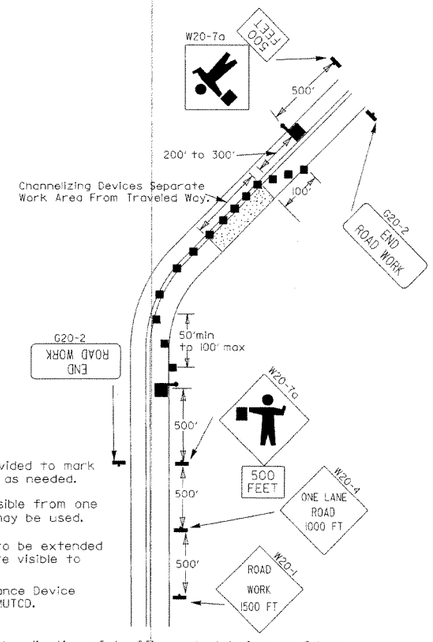


Typical advance warning sign placement



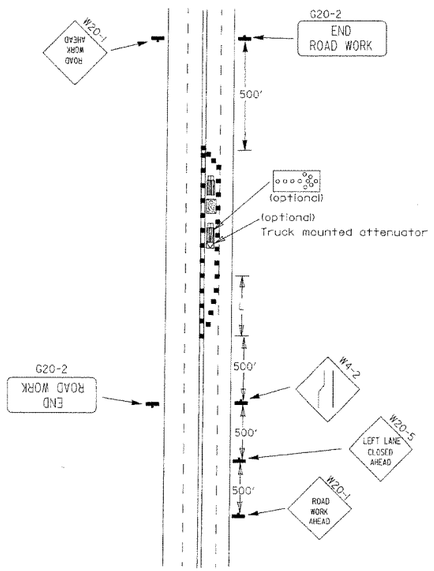
NOTES:
1. Regulatory traffic control devices to be modified as needed for the duration of the detour.
2. Street names may be used when desirable for directing detoured traffic.

(D) Typical application - roadway closed beyond detour point.



NOTES:
1. Flood lights should be provided to mark flagger stations at night as needed.
2. If entire work area is visible from one station, a single flagger may be used.
3. Channelizing devices are to be extended to a point where they are visible to approaching traffic.
4. Automated Flagger Assistance Device (AFAD) optional. Refer to MUTCD.

(E) Typical application of traffic control devices on 2-lane highway where one lane is closed and flagging is provided.



(F) Typical application - 4-lane undivided roadway with inside lane closed.

Taper formulae:

$L = S \times W$ for speeds of 45mph or more.

$L = \frac{WS^2}{60}$ for speeds of 40mph or less.

Where:
L= Minimum length of taper.
S= Numerical value of posted speed limit prior to work or 85th percentile speed.
W= Width of offset.

GENERAL NOTES:

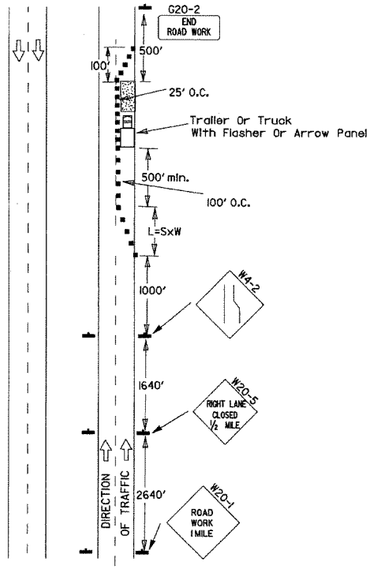
1. Advisory speed posted on WI-3 or WI-4 curve warning signs to be determined at site. Use WI-4 when speed is greater than 30mph and WI-3 when 30mph or less.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(xx) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(xx) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit, or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

DATE	REVISION	FILMED
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON WI-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

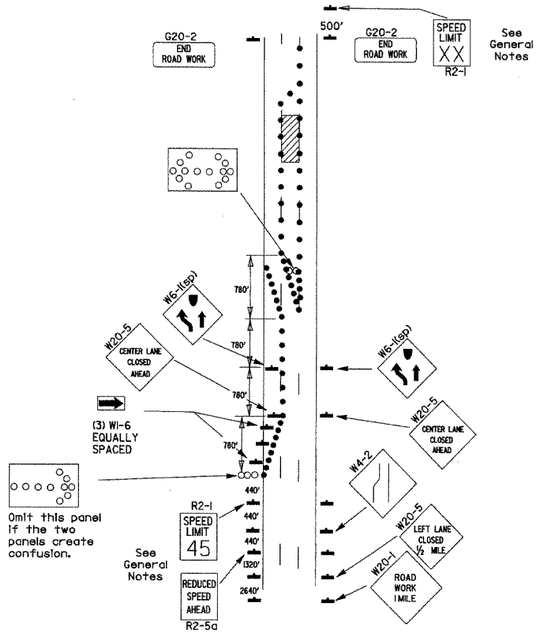
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

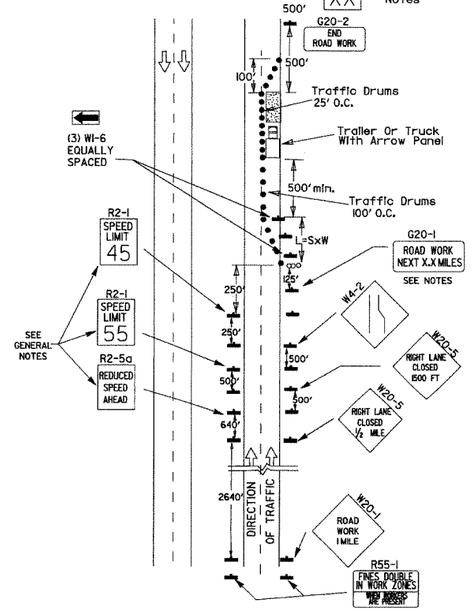
STANDARD DRAWING TC-2



(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



(B) Typical application - 3-lane oneway roadway where center lane is closed.



(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

KEY:

○○○ Arrow Panel (If Required)

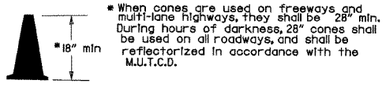
■ Channelizing Device

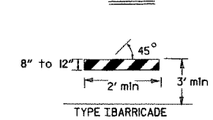
● Traffic drum

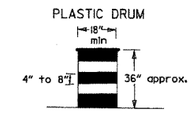
GENERAL NOTES:

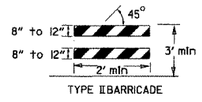
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

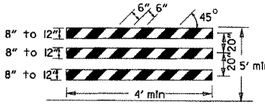
Channelizing devices



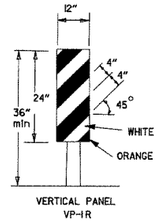




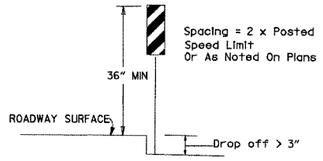




NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.



VERTICAL PANEL PLACEMENT

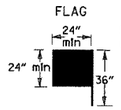


TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	W8-11
1" to 3"	Edge of shoulder	W8-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP-1 and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical panels, drums or concrete barrier

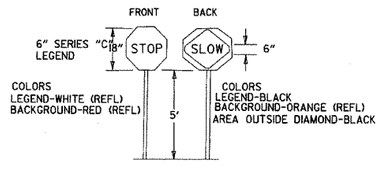
* When shown on the plans concrete barrier will be used.

When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

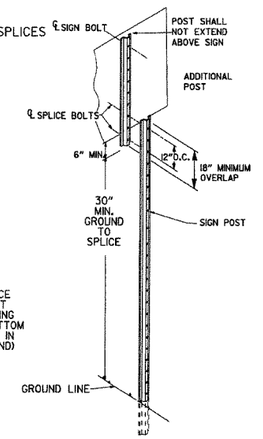


Flag shall be of good grade red material

STOP SLOW PADDLE



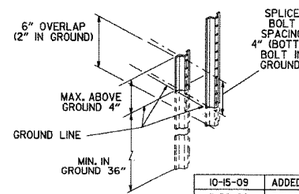
DETAIL OF SPLICES

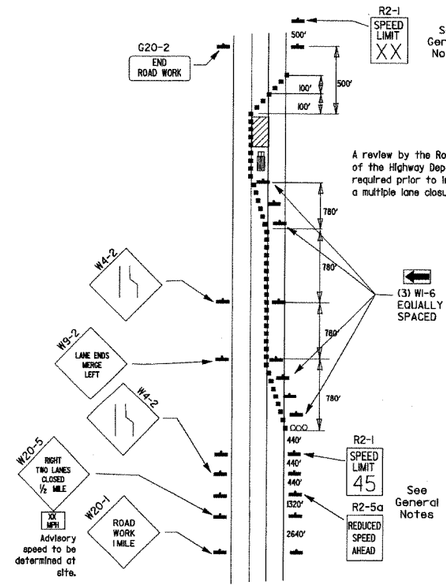


NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.





(D) Typical application - closing multiple lanes of a multilane highway.

10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	
DATE	REVISION	FILMED

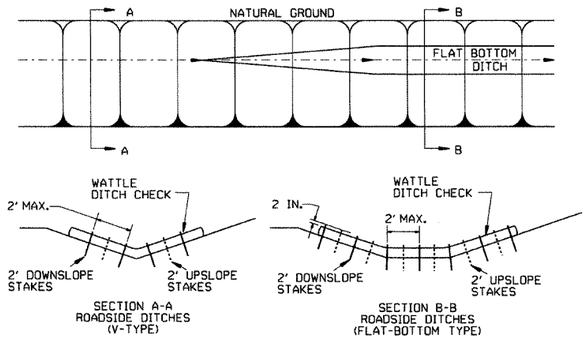
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

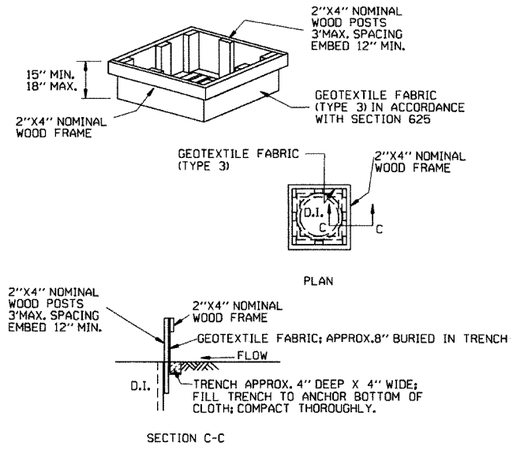
STANDARD DRAWING TC-3

GENERAL NOTES

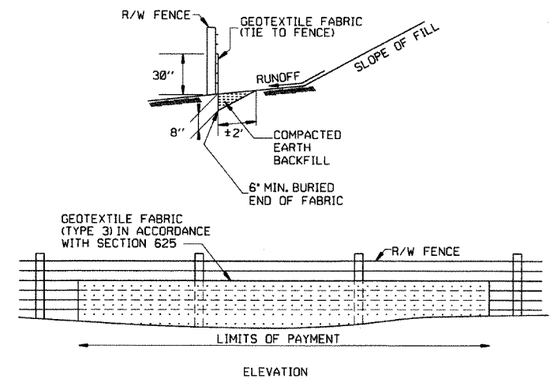
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

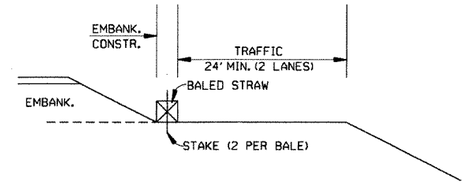
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

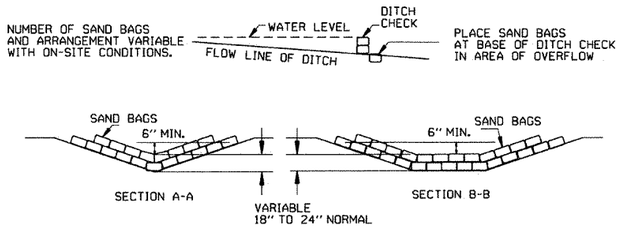
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

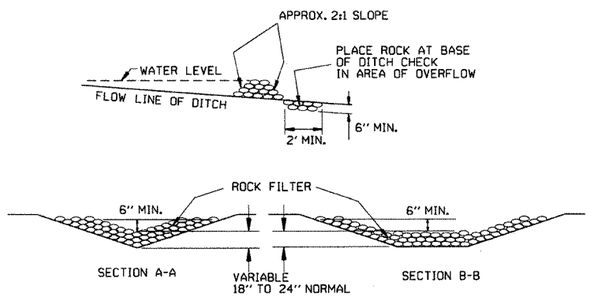
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



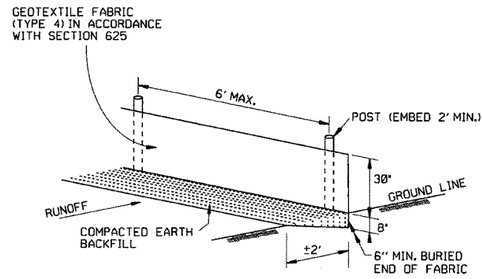
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

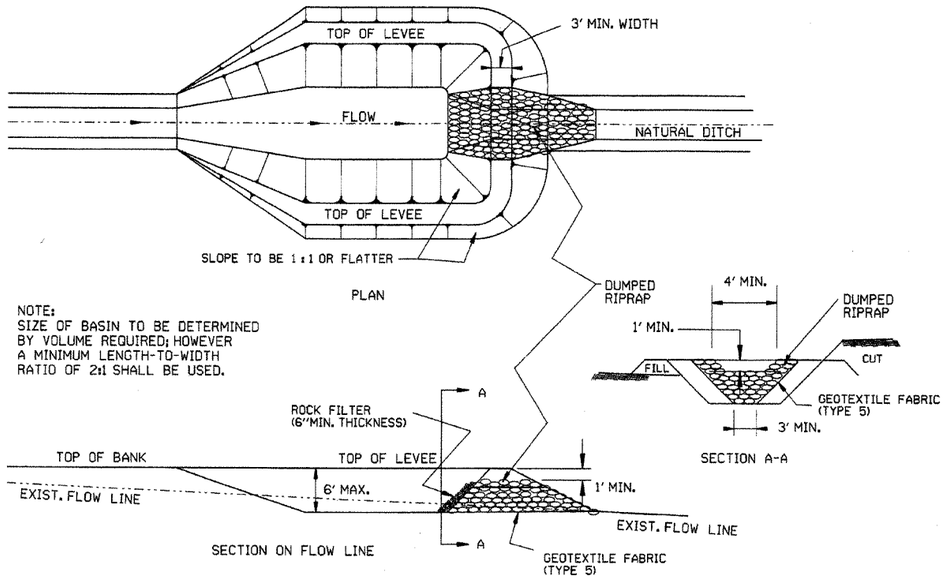
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

DATE	REVISION	FILMED
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
7-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
6-2-94	REVISED E-1,4,7 & 11; DELETED E-2 & 3	6-2-94
4-1-93	REDRAWN	
10-1-92	REDRAWN	
8-2-76	ISSUED R.D.M.	298-7-28-76

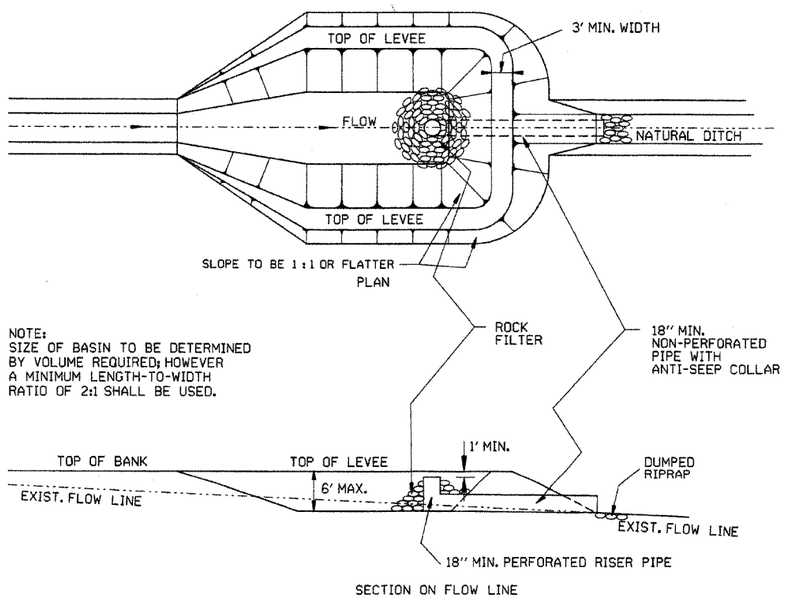
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

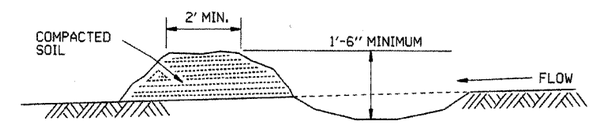
STANDARD DRAWING TEC-1



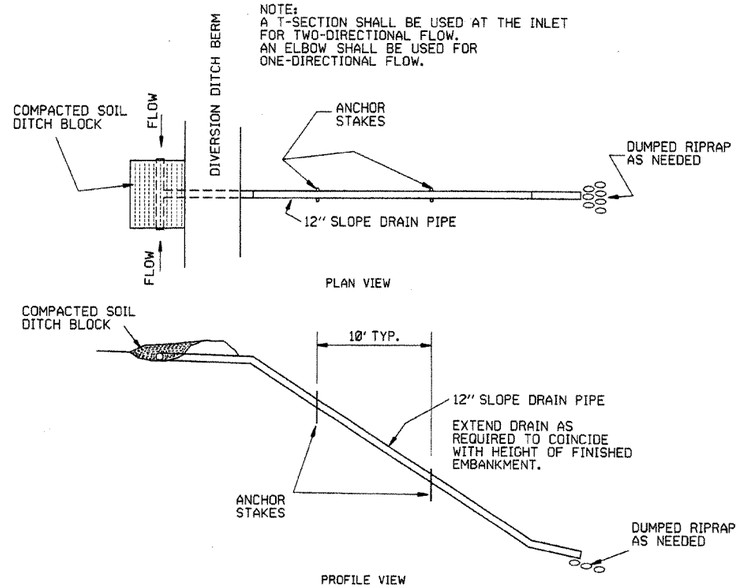
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



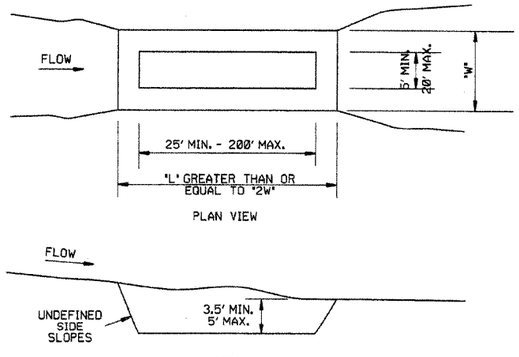
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

DATE	REVISION	FILMED
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13	
4-1-93	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

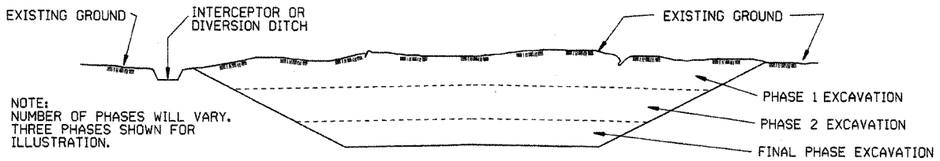
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

1. PLACE PERIMETER CONTROLS (I.E. SILT FENCES , DIVERSION DITCHES, SEDIMENT BASINS, ETC.)
2. PERFORM CLEARING AND GRUBBING OPERATION.

EXCAVATION



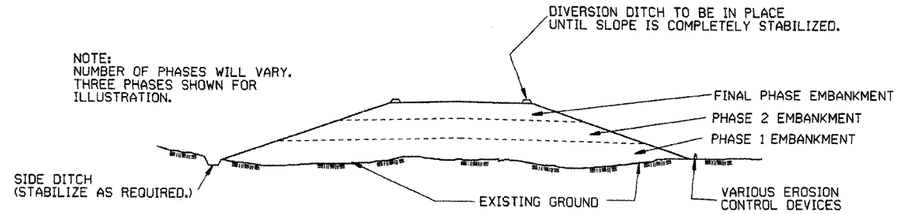
GENERAL NOTE

ALL CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

1. EXCAVATE AND STABILIZE INTERCEPTOR AND/OR DIVERSION DITCHES.
2. PERFORM PHASE 1 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
3. PERFORM PHASE 2 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
4. PERFORM FINAL PHASE OF EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING. STABILIZE DITCHES. CONSTRUCT DITCH CHECKS, DIVERSION DITCHES, SEDIMENT BASINS, OR OTHER EROSION CONTROL DEVICES AS REQUIRED.

EMBANKMENT



GENERAL NOTE

ALL EMBANKMENT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

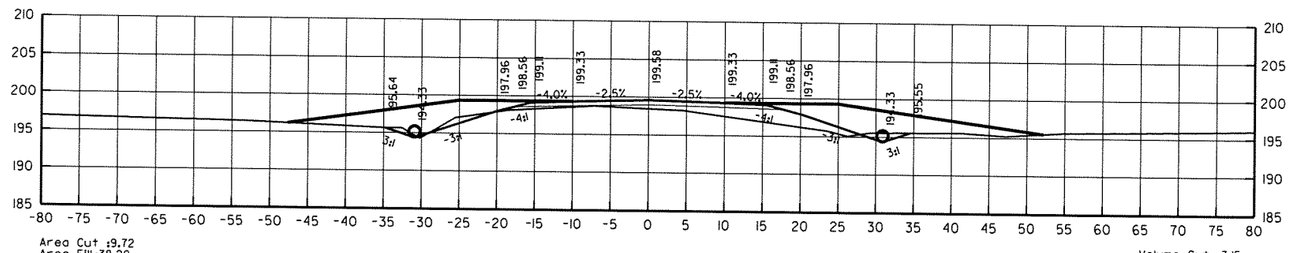
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
3. PLACE PHASE 2 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
4. PLACE FINAL PHASE OF EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PLACE DIVERSION DITCHES AND SLOPE DRAINS AND MAINTAIN UNTIL ENTIRE SLOPE IS STABILIZED.

DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

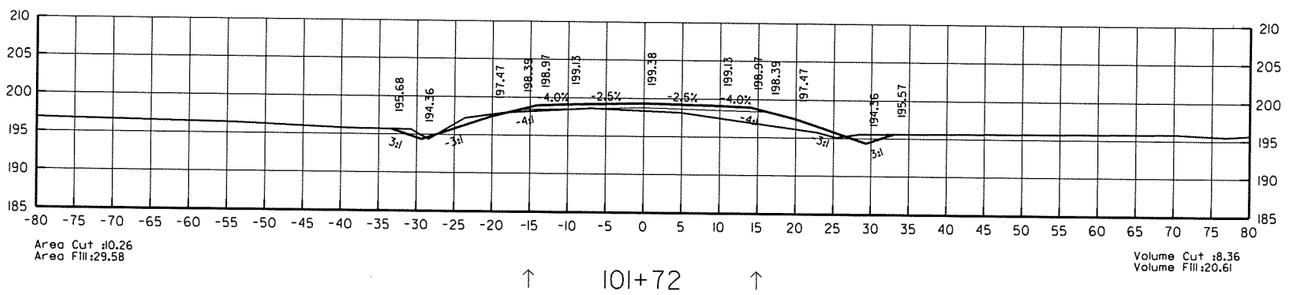
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3



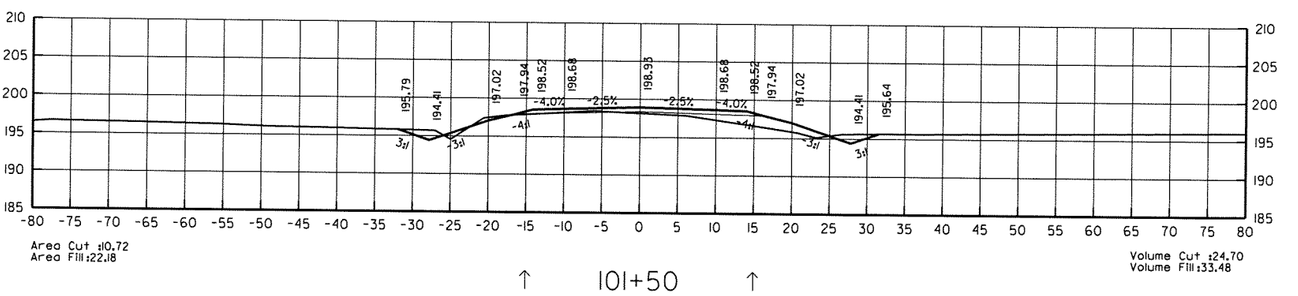
↑ 101+80 ↑

INSTALL
18" X 35' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 50 CU. YDS.
18" X 35' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 55 CU. YDS.

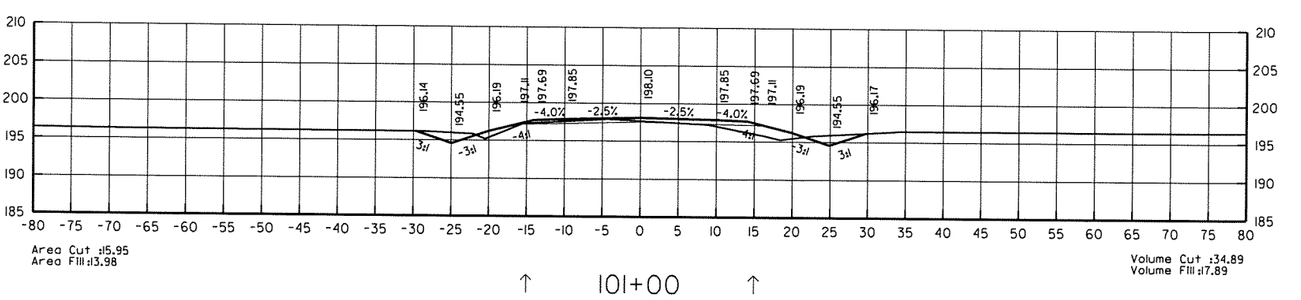


↑ 101+72 ↑

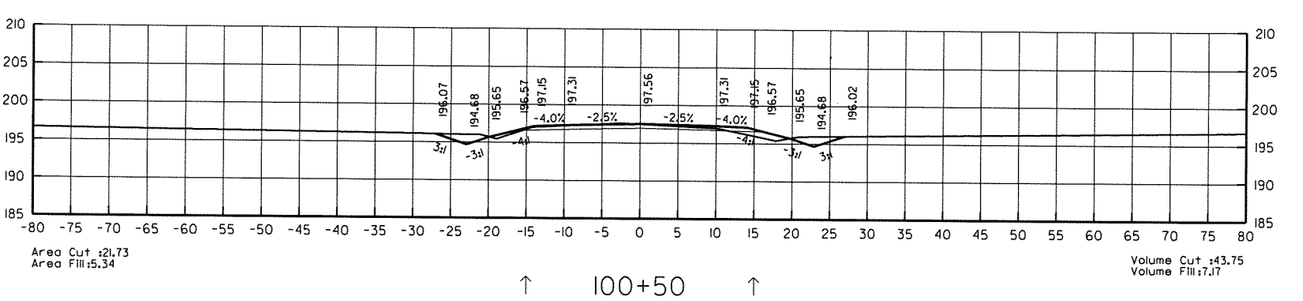
TRANSITION FROM NORMAL SECTION
TO 5'-6" GUARDRAIL WIDENING



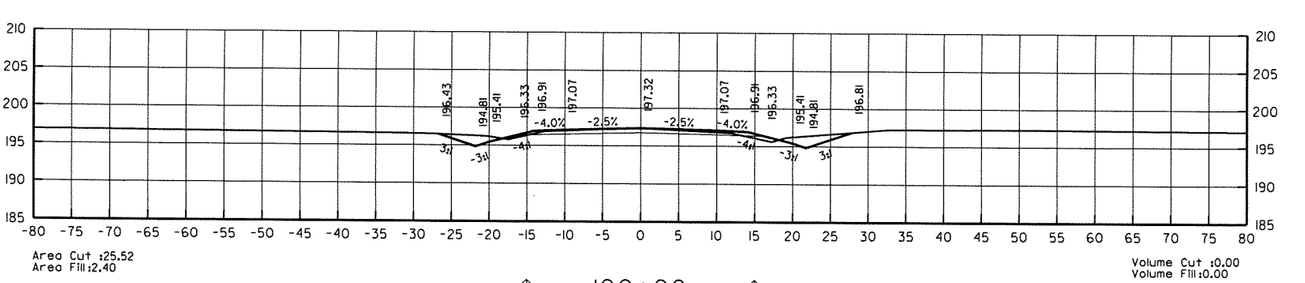
↑ 101+50 ↑



↑ 101+00 ↑



↑ 100+50 ↑



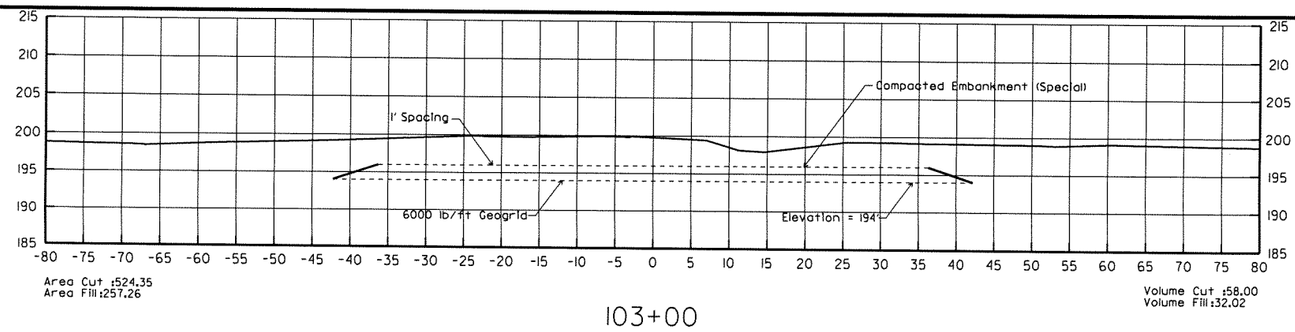
↑ 100+00 ↑

BEGIN JOB BR5405

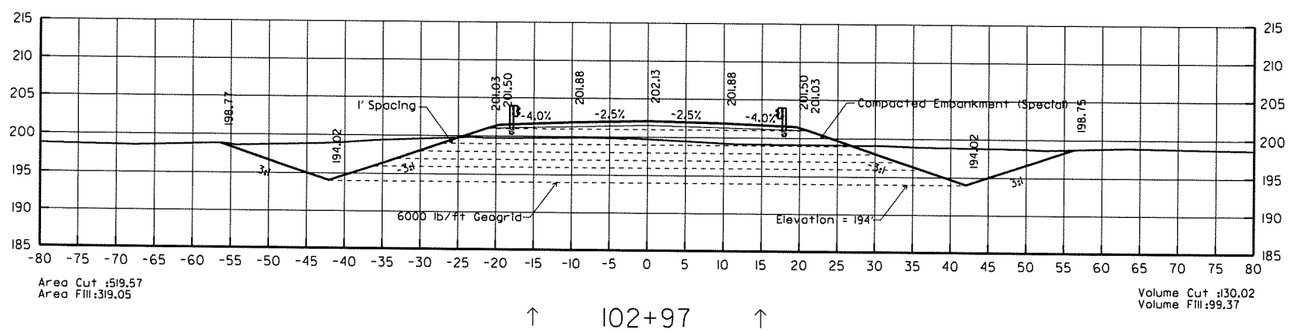
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRD-0054(18)	57	70

4 CROSS SECTIONS

JOB NO. BR5405

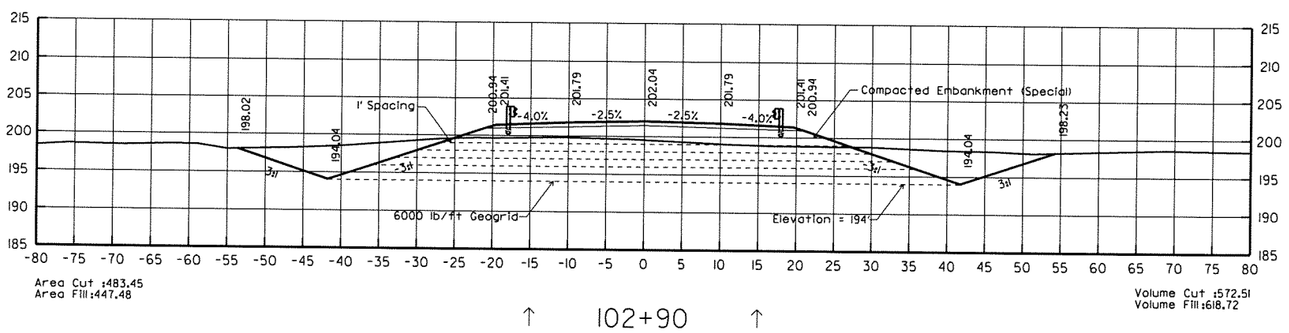


103+00



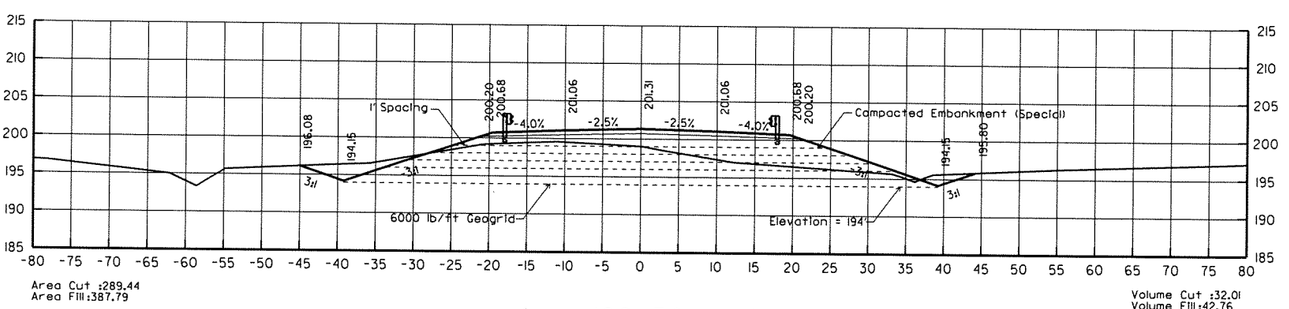
↑ 102+97 ↑

BRIDGE END



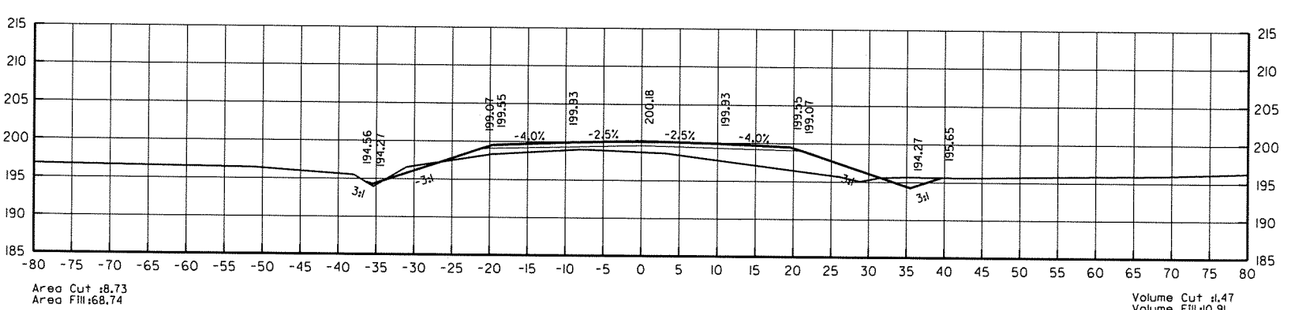
↑ 102+90 ↑

SLOPE INTERCEPT



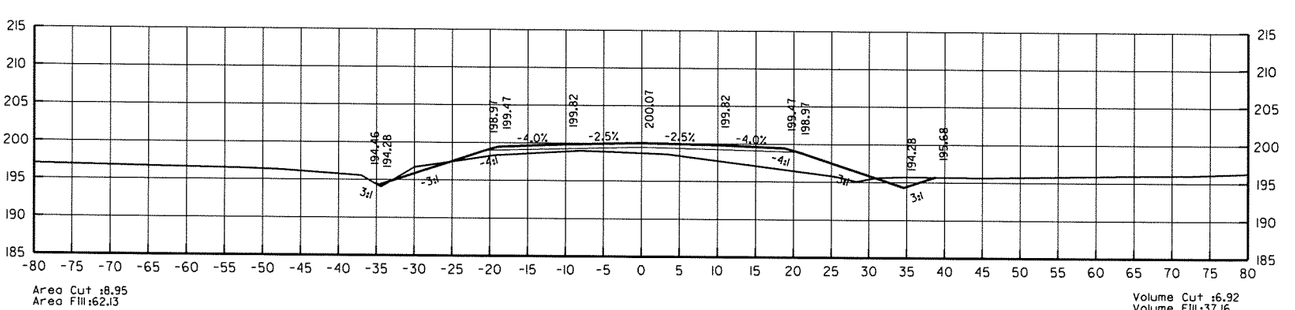
↑ 102+50 ↑

102+47
START COMPACTED EMBANKMENT (SPECIAL)



↑ 102+05 ↑

5'-6" WIDENING FOR GUARDRAIL

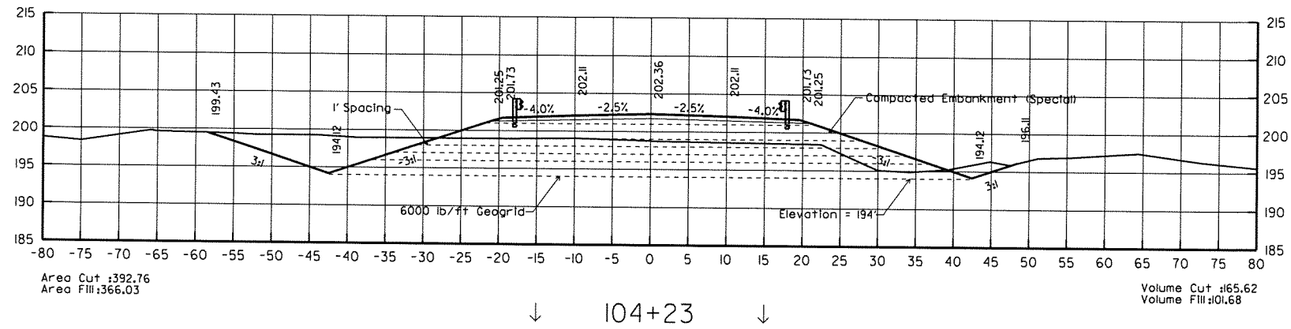


↑ 102+00 ↑

4 CROSS SECTIONS

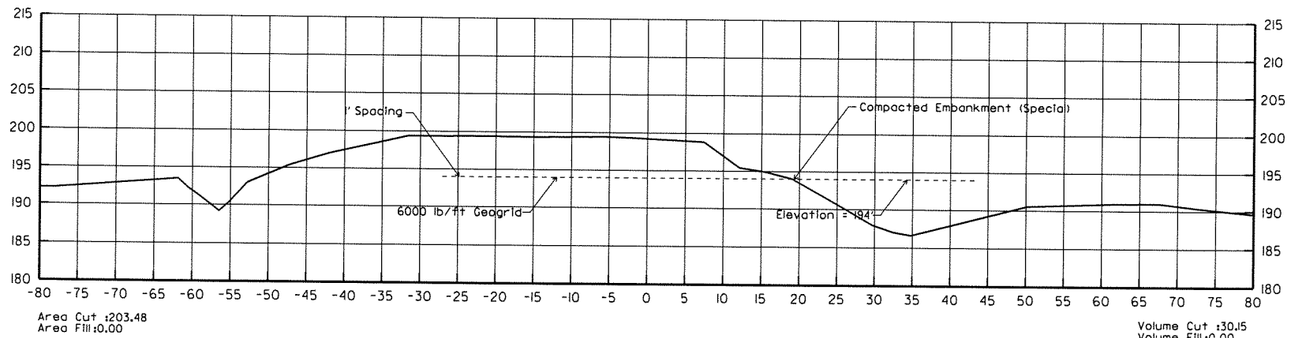
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DESIGN NO.	STATE
				6	ARK.

JOB NO.	FED-AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
BR5405	BRD-0054(18)	58	70



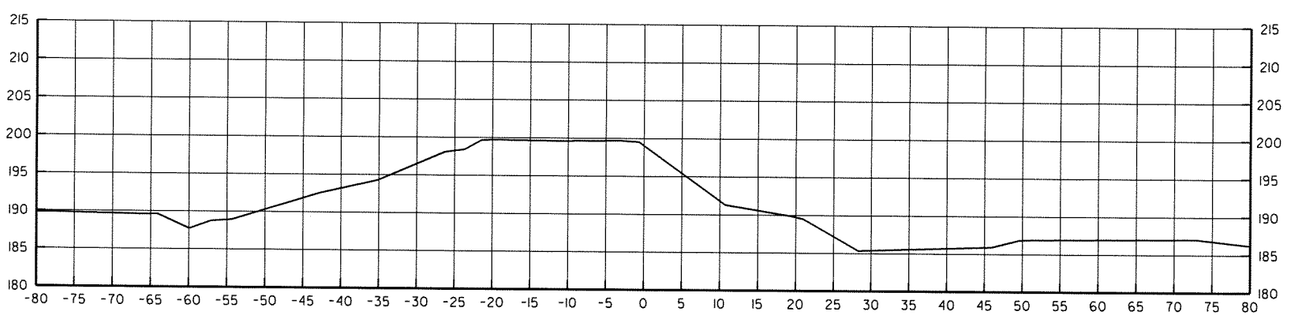
↓ 104+23 ↓

BRIDGE END

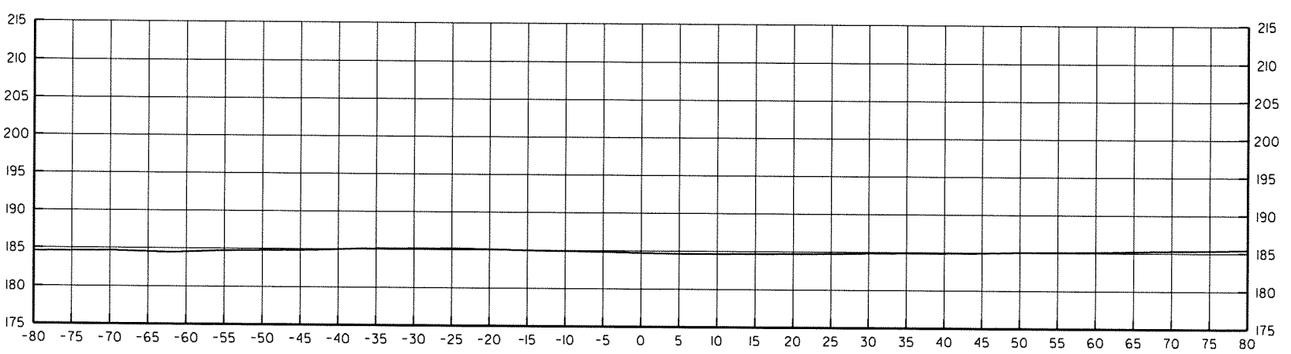


104+08

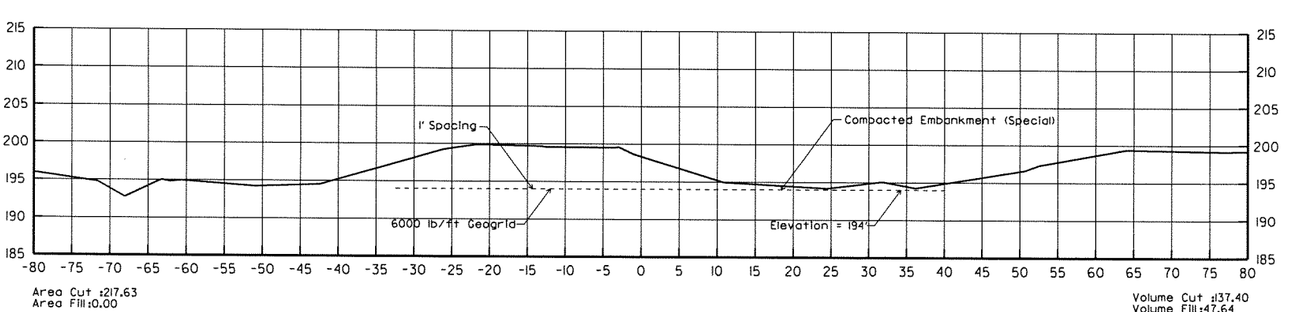
TOE OF FILL SLOPE



104+00



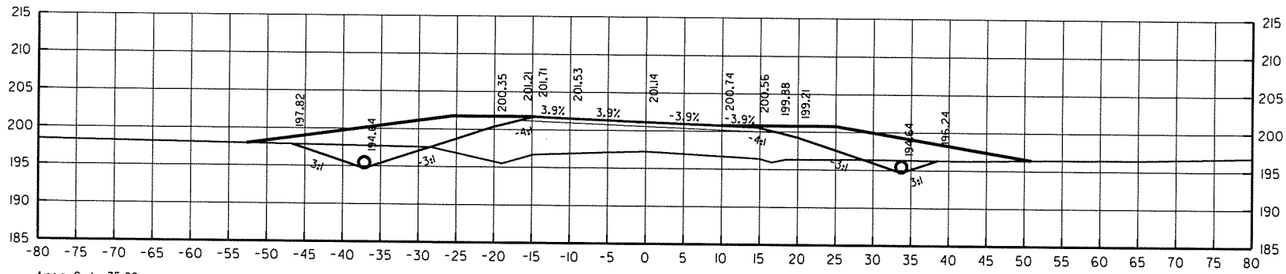
103+50



103+10

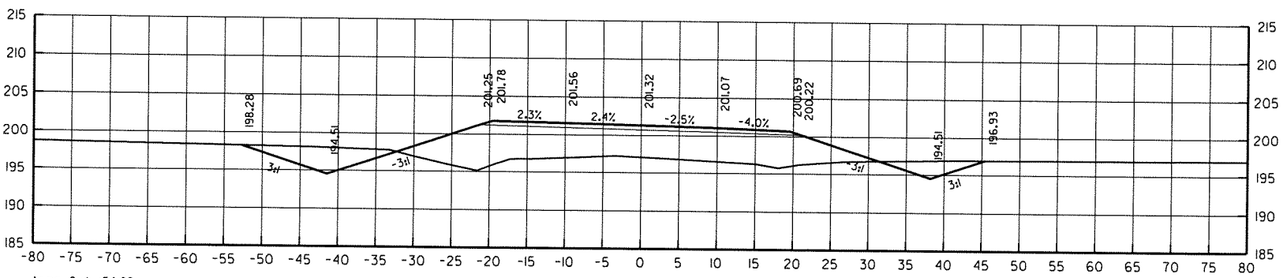
TOE OF FILL SLOPE

			DATE REVISED	DATE FILMED
			DATE REVISED	DATE FILMED
4 CROSS SECTIONS	JOB NO.	6	FED.RD. DIST.NO.	
		ARK.	STATE	
	BR5405	BRO-0054(18)	FED.AID PROJ.NO.	
	59		SHEET NO.	
	70		TOTAL SHEETS	



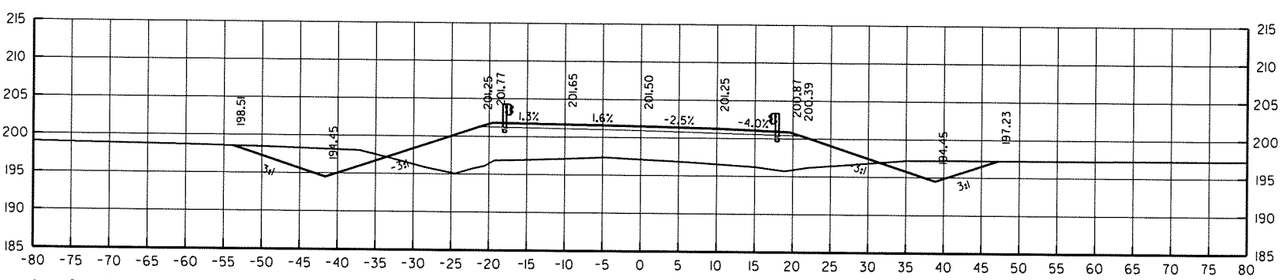
↓ 105+45 ↓

INSTALL
18" X 38' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 75 CU. YDS.
18" X 35' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 65 CU. YDS.



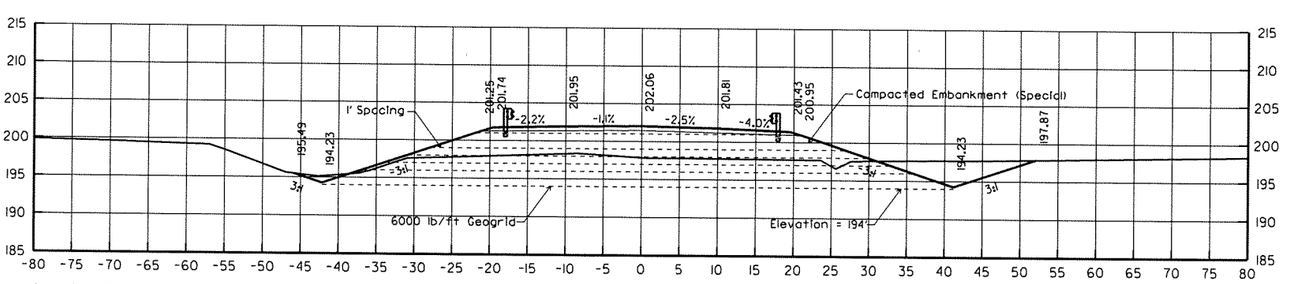
↓ 105+16 ↓

5'-6" WIDENING FOR GUARDRAIL

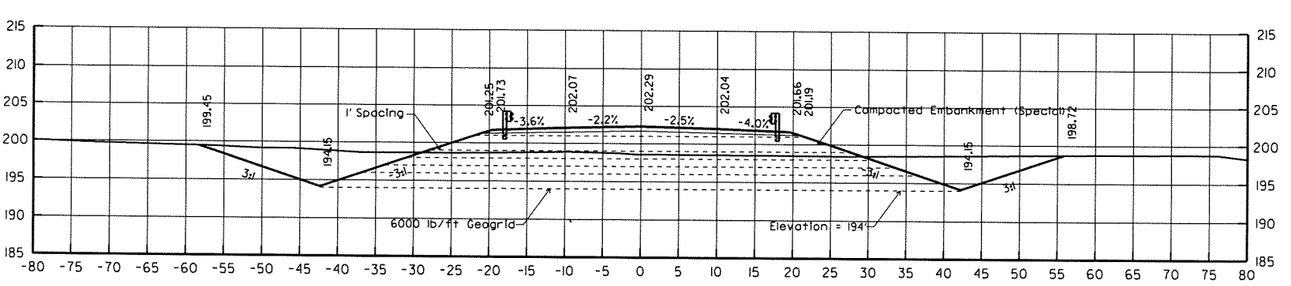


↓ 105+00 ↓

104+73
END COMPACTED EMBANKMENT (SPECIAL)



↓ 104+50 ↓



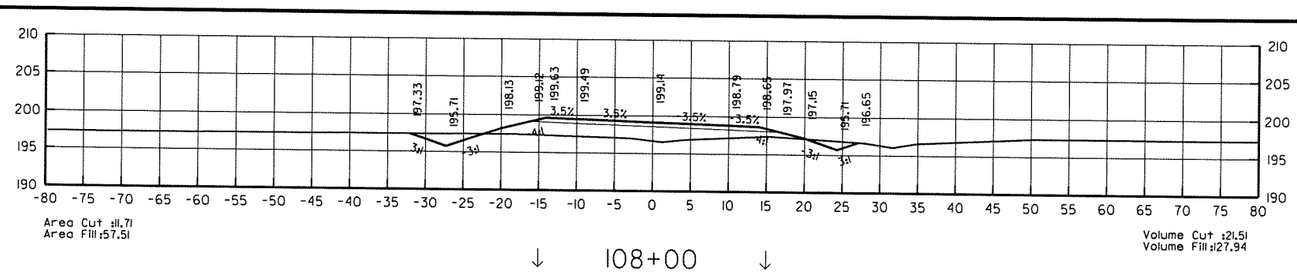
↓ 104+29 ↓

SLOPE INTERCEPT

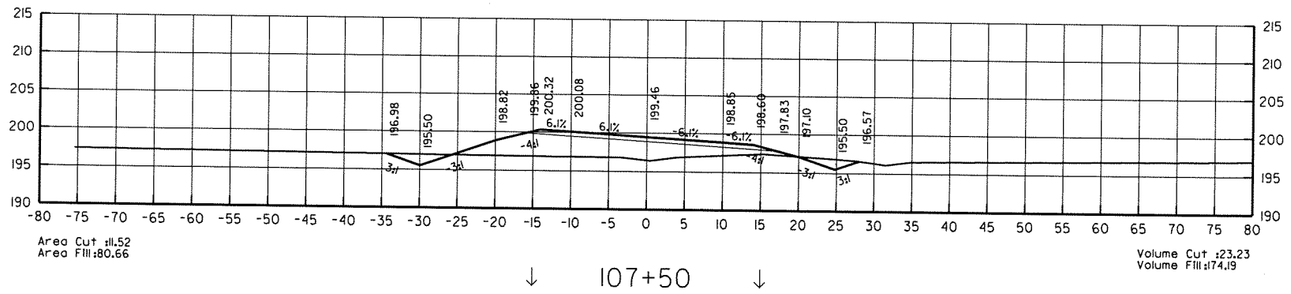
4 CROSS SECTIONS

JOB NO.	6
STATE	ARK.
FED.AID PROJ.NO.	BRD-0054(18)
SHEET NO.	BR5405
TOTAL SHEETS	60
FED.ROAD DIST.NO.	70

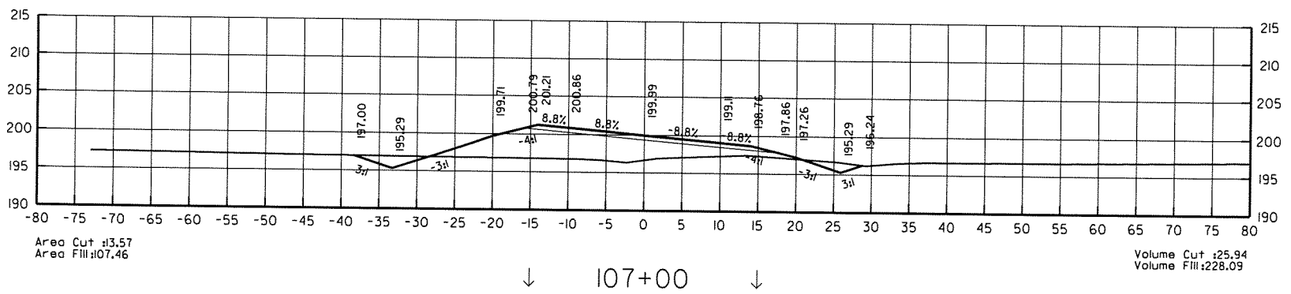
DATE REVISED
DATE FILMED
DATE REVISED
DATE FILMED



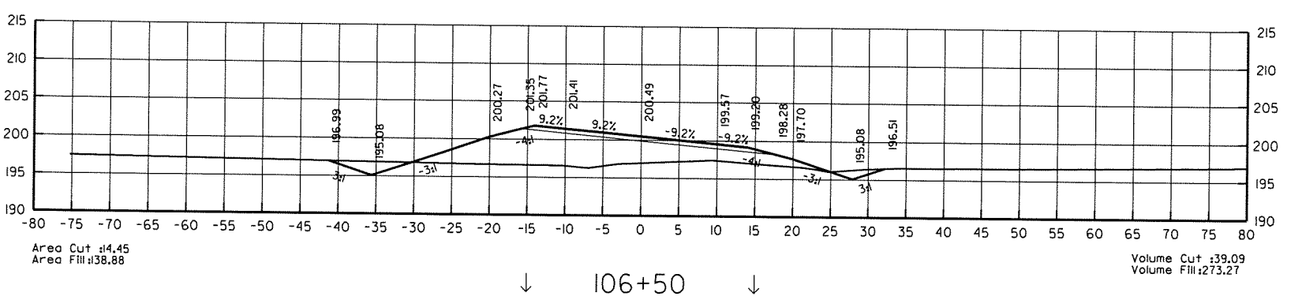
↓ 108+00 ↓



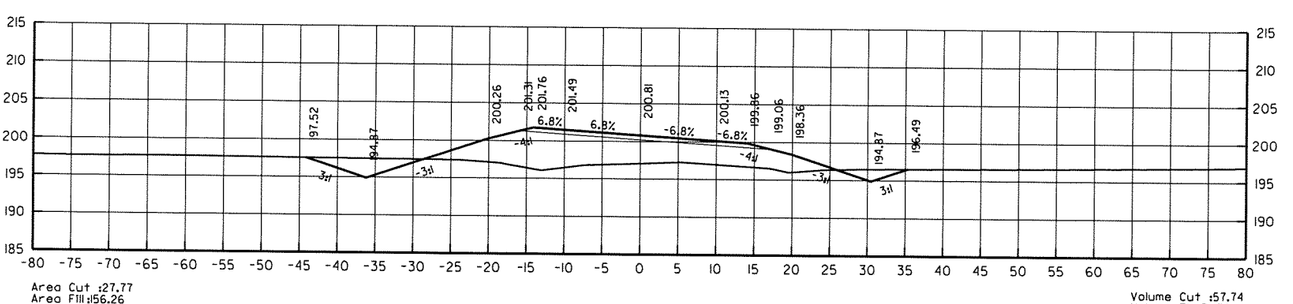
↓ 107+50 ↓



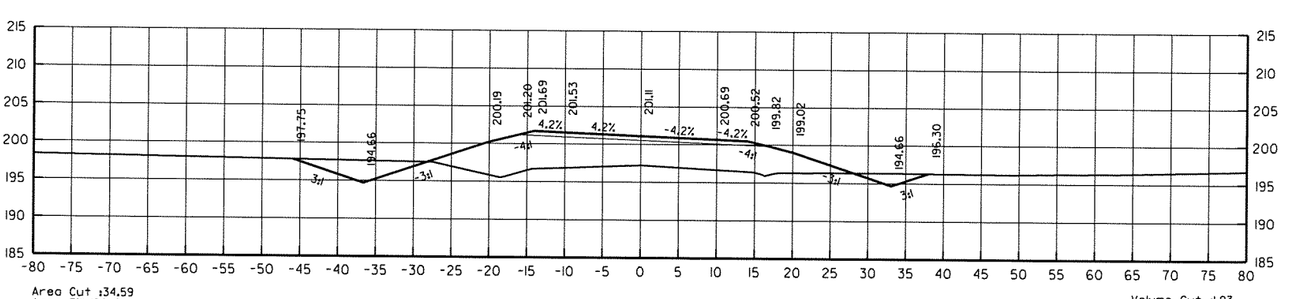
↓ 107+00 ↓



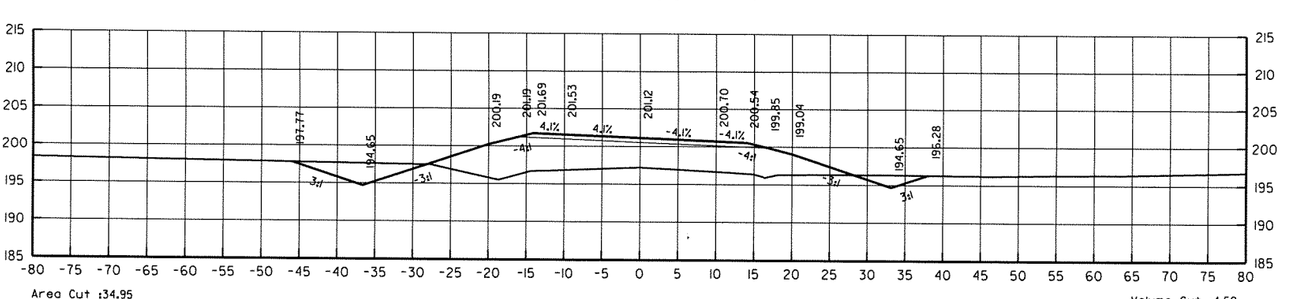
↓ 106+50 ↓



↓ 106+00 ↓



↓ 105+50 ↓

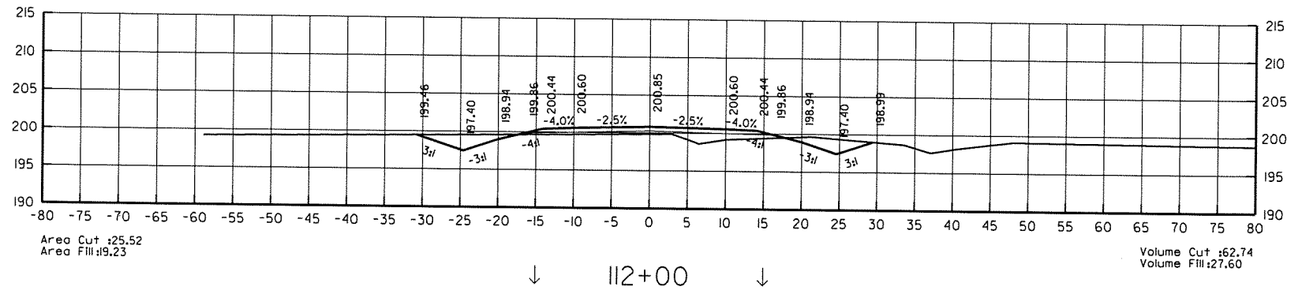


↓ 105+49 ↓

TRANSITION FROM NORMAL SECTION
TO 5'-6" GUARDRAIL WIDENING

4 CROSS SECTIONS

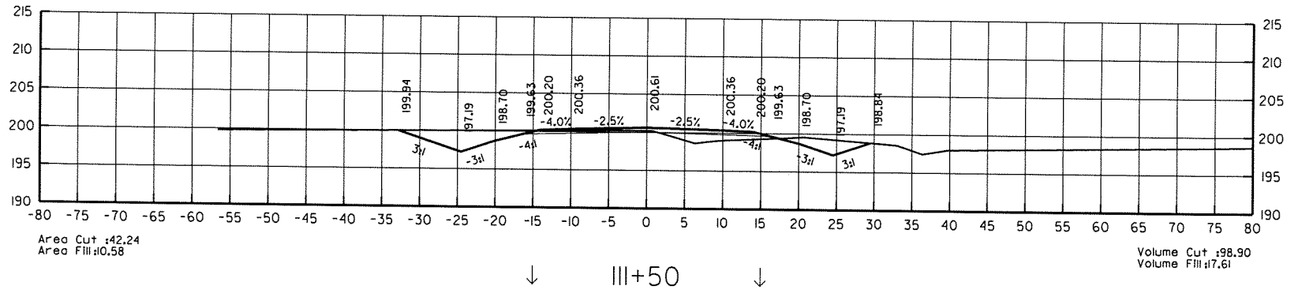
DATE REVISED	
DATE FILMED	
DATE REVISED	
DATE FILMED	
FED.RD. DIST. NO.	6
STATE	ARK.
FED.AID PROJ. NO.	BRD-0054(18)
SHEET NO.	61
TOTAL SHEETS	70
JOB NO.	BR5405



Area Cut :25.52
Area Fill :19.23

Volume Cut :62.74
Volume Fill :27.60

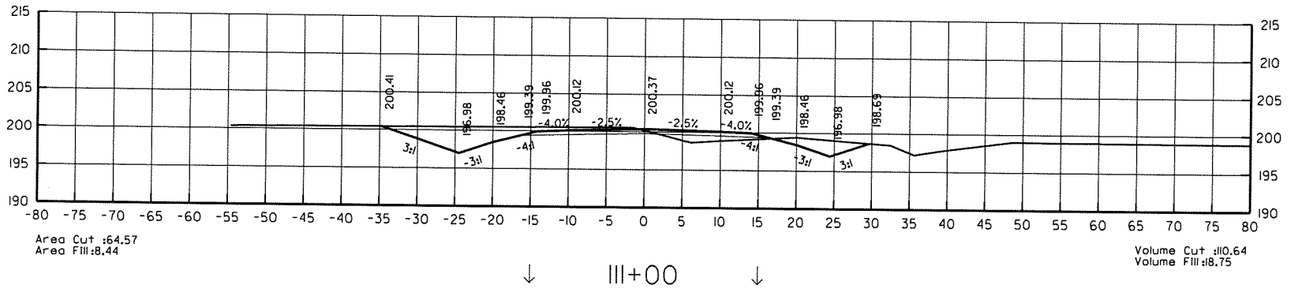
↓ 112+00 ↓



Area Cut :42.24
Area Fill :10.58

Volume Cut :98.90
Volume Fill :7.61

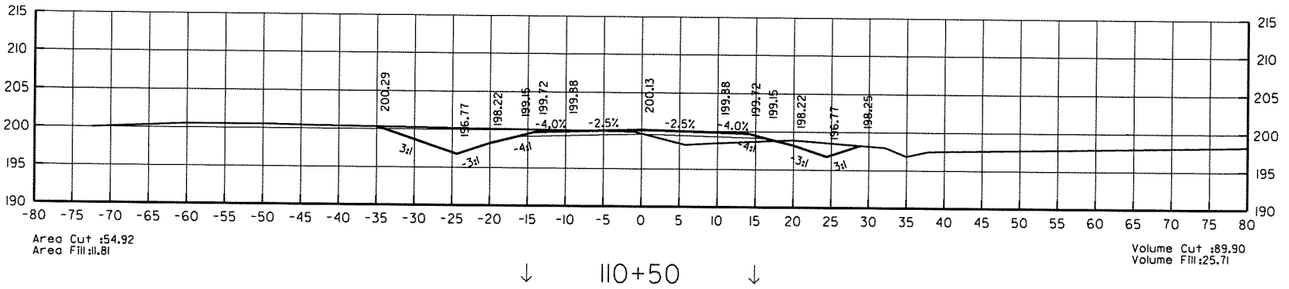
↓ 111+50 ↓



Area Cut :64.57
Area Fill :8.44

Volume Cut :110.64
Volume Fill :8.75

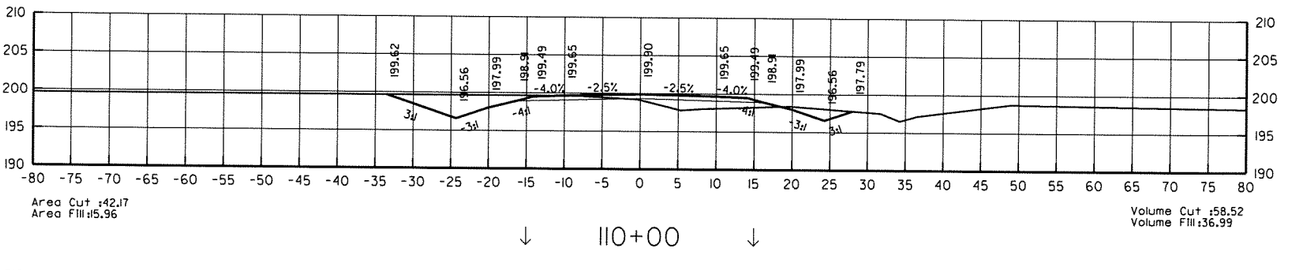
↓ 111+00 ↓



Area Cut :54.92
Area Fill :11.81

Volume Cut :89.90
Volume Fill :25.71

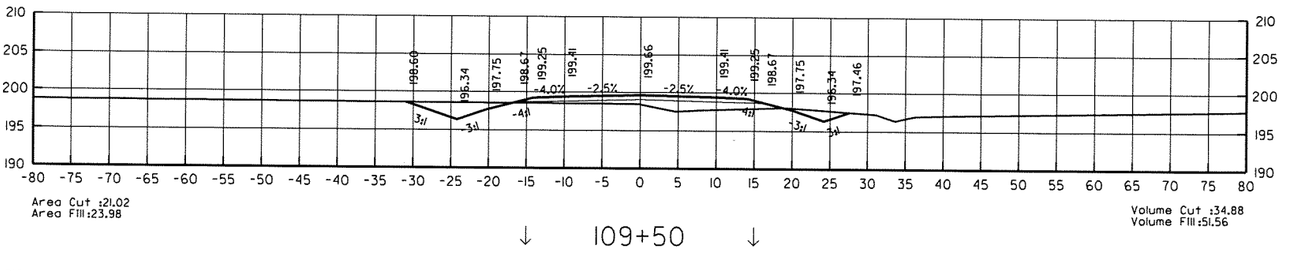
↓ 110+50 ↓



Area Cut :42.17
Area Fill :5.96

Volume Cut :58.52
Volume Fill :36.99

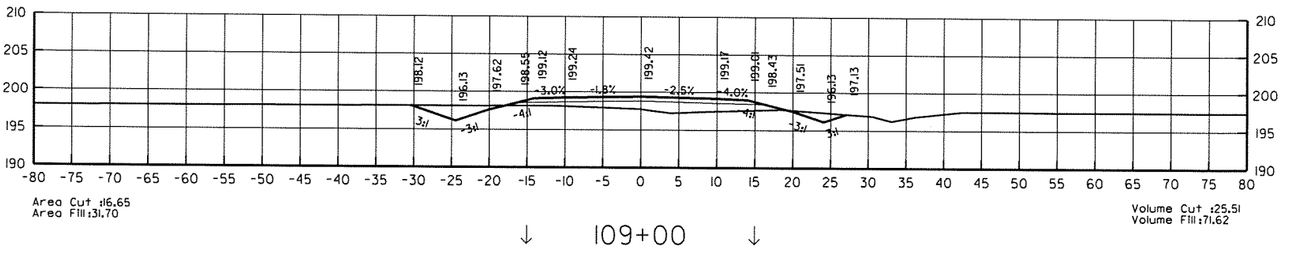
↓ 110+00 ↓



Area Cut :21.02
Area Fill :23.98

Volume Cut :34.88
Volume Fill :51.56

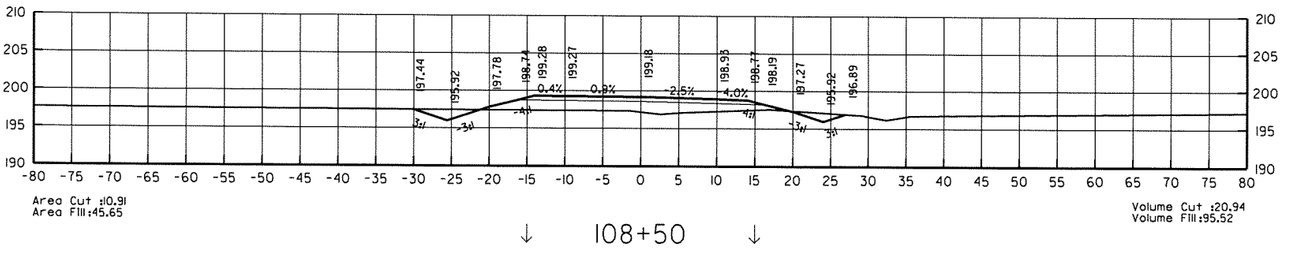
↓ 109+50 ↓



Area Cut :16.65
Area Fill :31.70

Volume Cut :25.51
Volume Fill :71.62

↓ 109+00 ↓



Area Cut :10.91
Area Fill :45.65

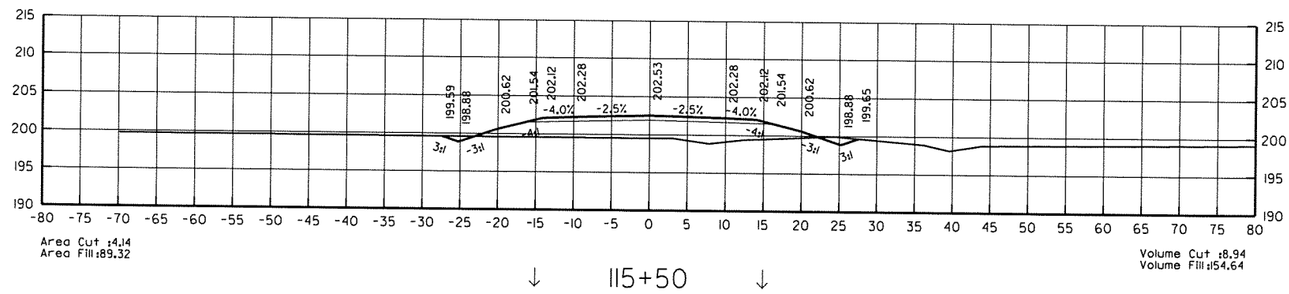
Volume Cut :20.94
Volume Fill :95.52

↓ 108+50 ↓

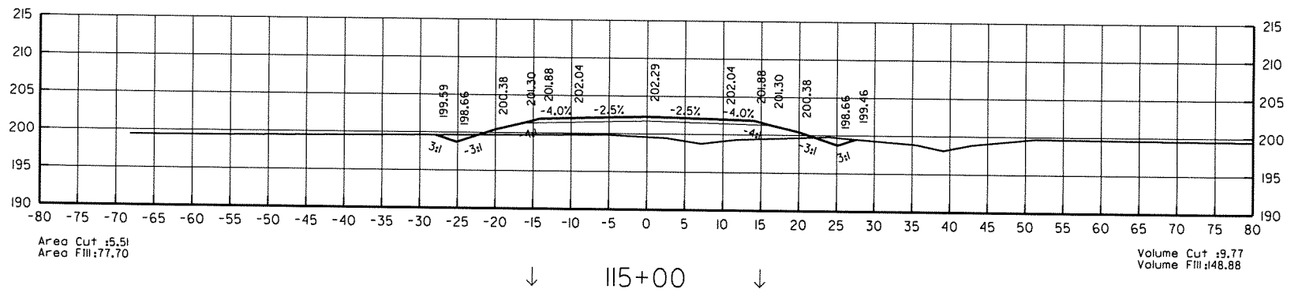
4 CROSS SECTIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIV. NO.	STATE
				6	ARK.

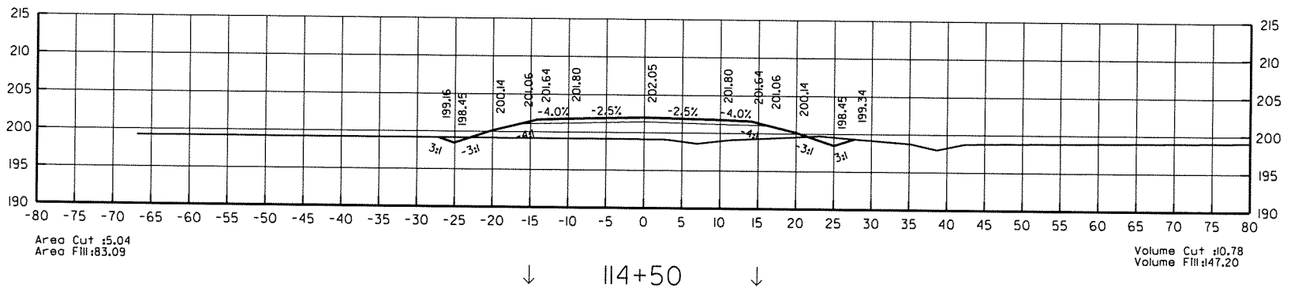
JOB NO.	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
BR5405	BRO-0054(18)	62	70



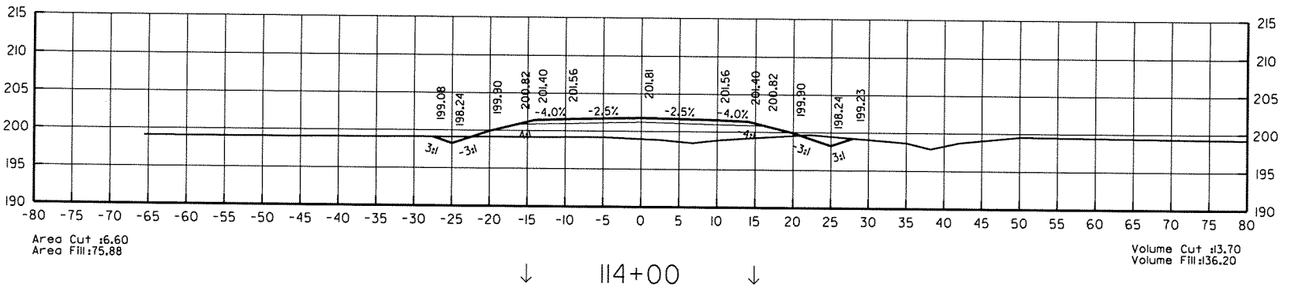
115+50



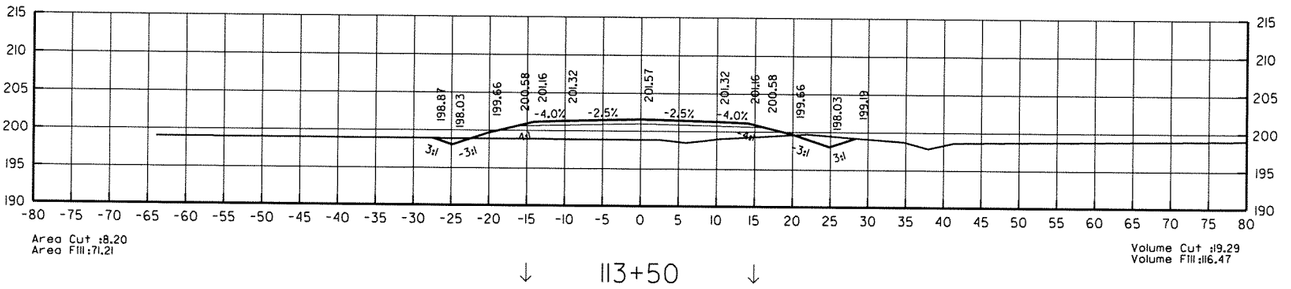
115+00



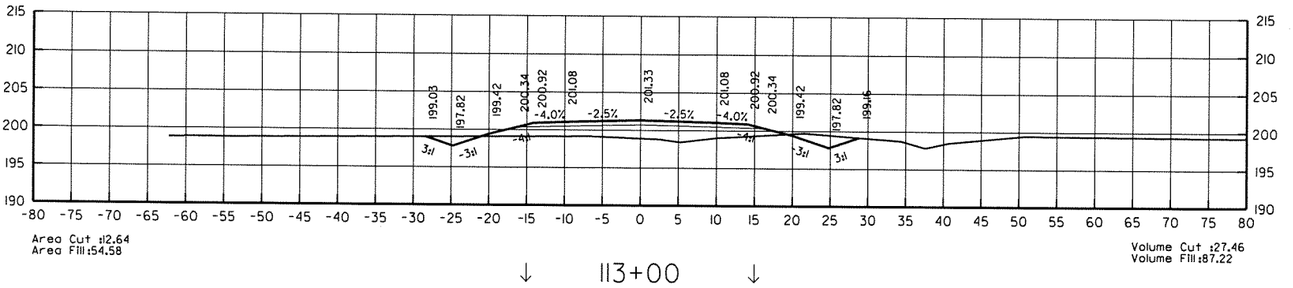
114+50



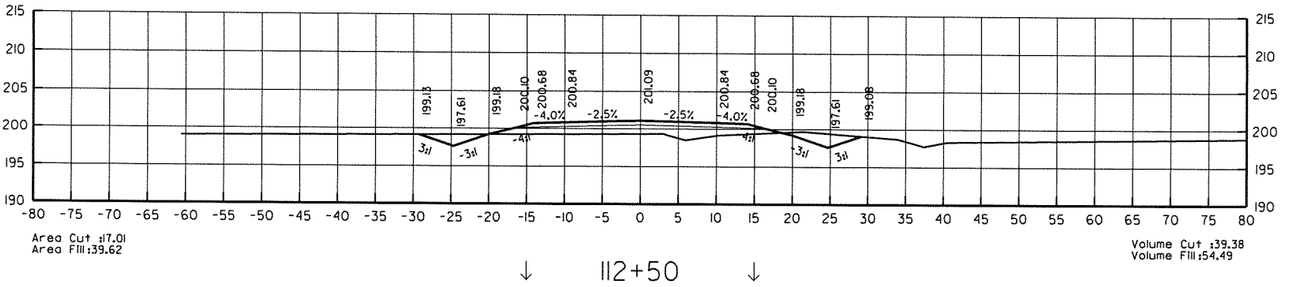
114+00



113+50



113+00

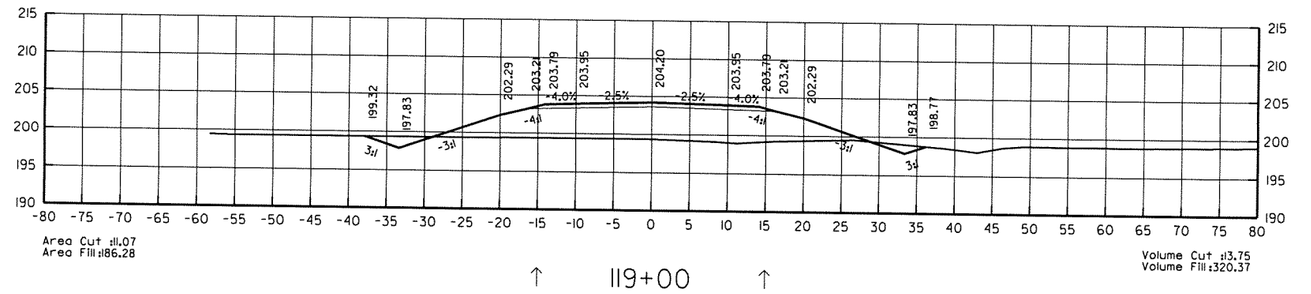


112+50

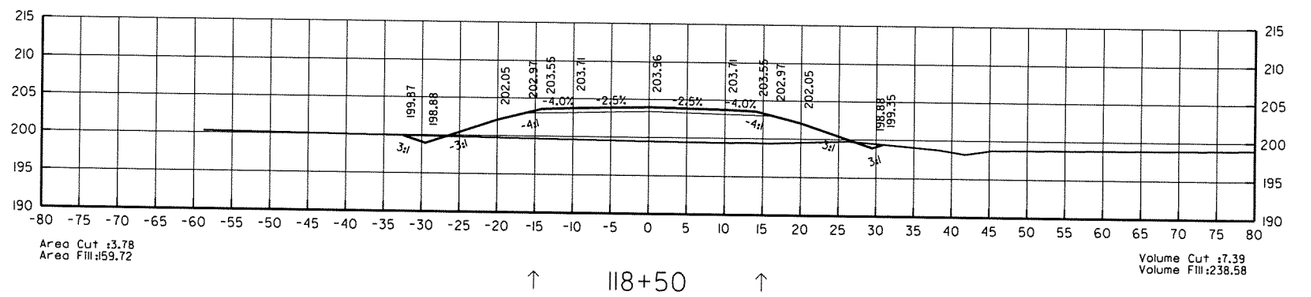
CROSS SECTIONS

JOB NO.	BR5405
FED.AID PROJ.NO.	BRD-0054(15)
STATE	ARK.
FED.AID DIST.NO.	6
SHEET NO.	63
TOTAL SHEETS	70

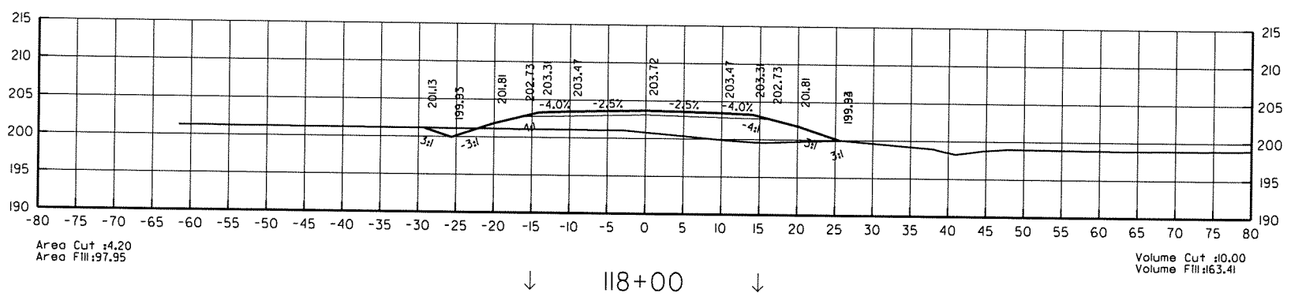
DATE REVISED
DATE FILMED
DATE REVISED
DATE FILMED



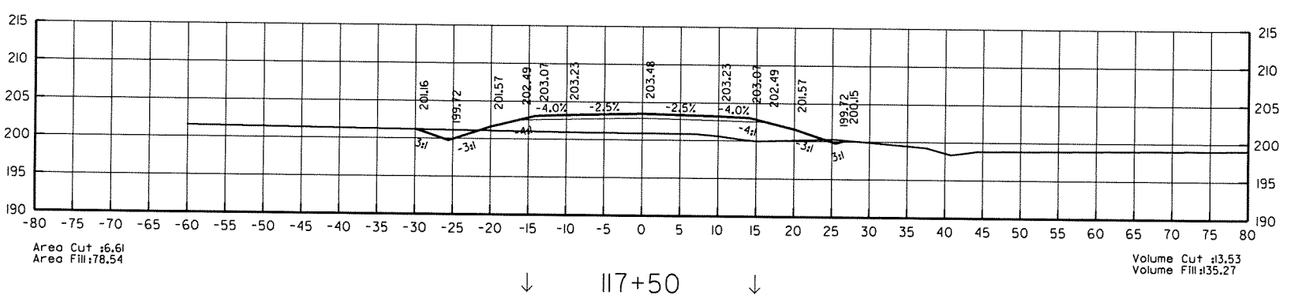
↑ 119+00 ↑



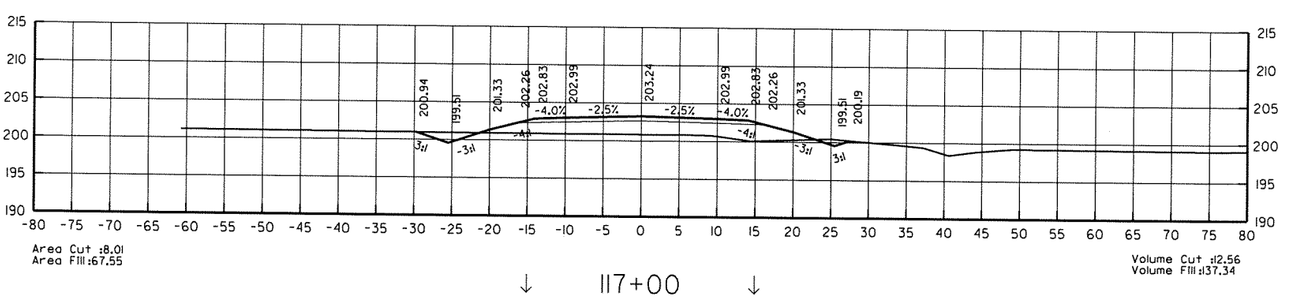
↑ 118+50 ↑



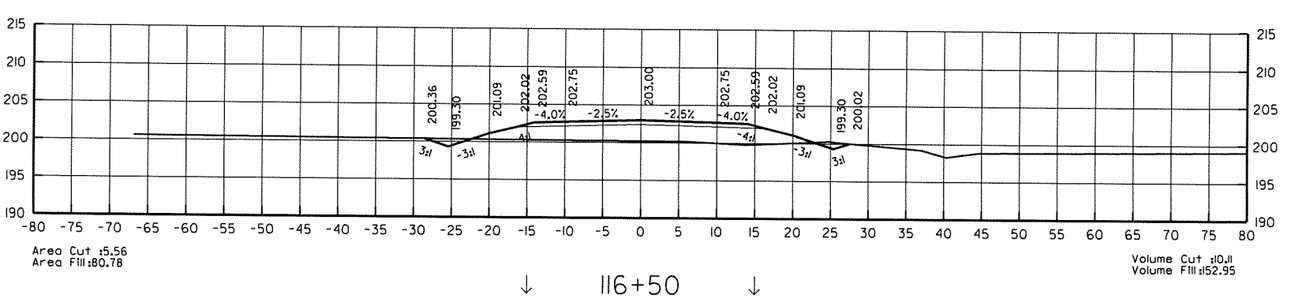
↓ 118+00 ↓



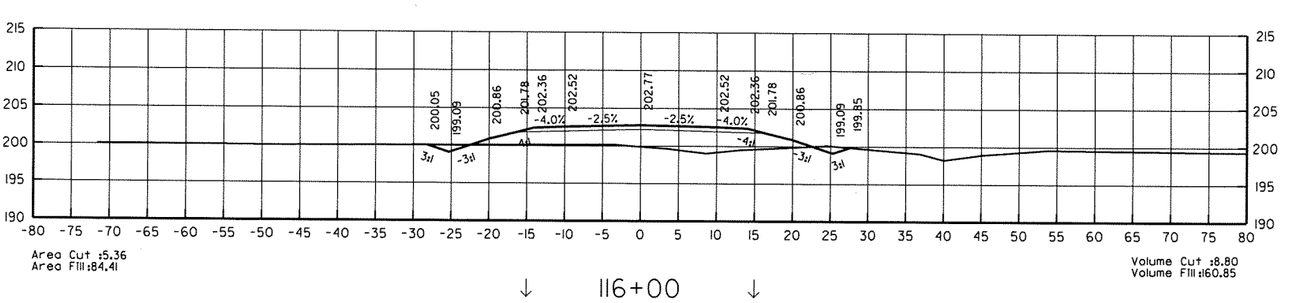
↓ 117+50 ↓



↓ 117+00 ↓

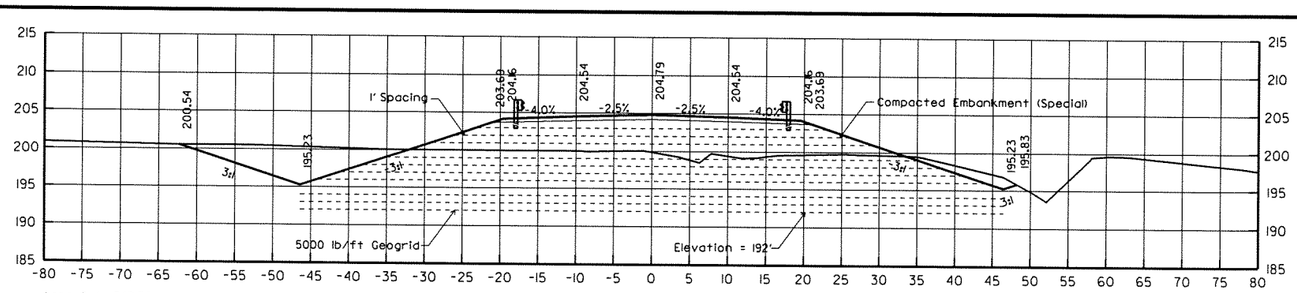


↓ 116+50 ↓



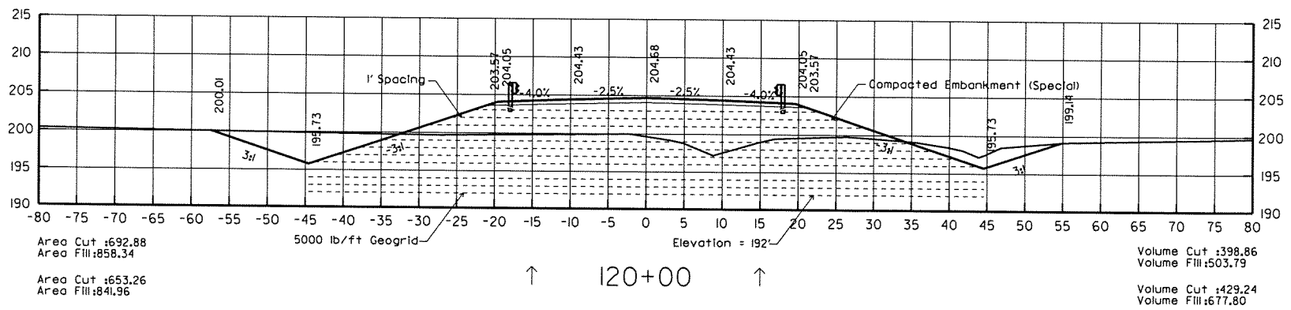
↓ 116+00 ↓

					DATE REVISED	
					DATE FILED	
					DATE REVISED	
					DATE FILED	
4	CROSS SECTIONS	JOB NO.	BR5405	64	70	FED ROAD DIST NO. 6
						STATE ARK.
						FED AID PROJ NO. BRO-0054(18)
						SHEET NO.
						TOTAL SHEETS



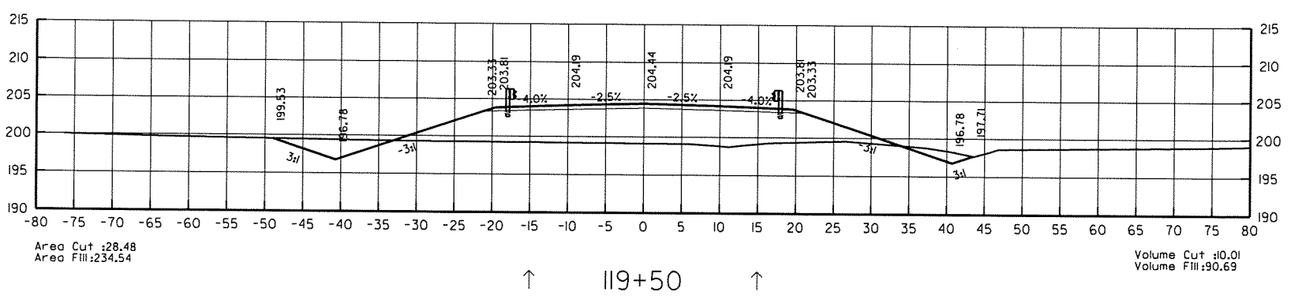
↑ 120+24 ↑

SLOPE INTERCEPT

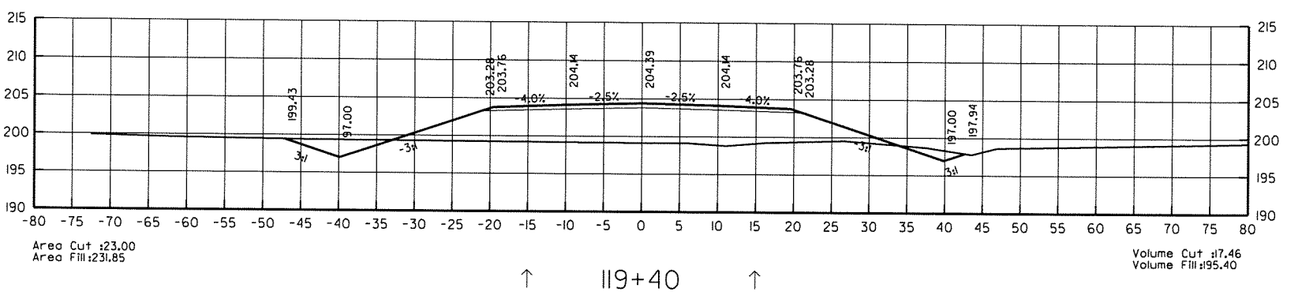


↑ 120+00 ↑

119+84
START COMPACTED EMBANKMENT (SPECIAL)

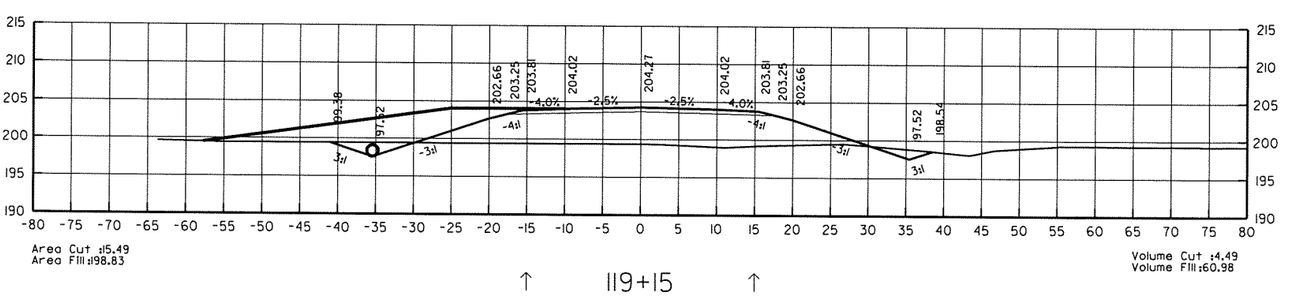


↑ 119+50 ↑



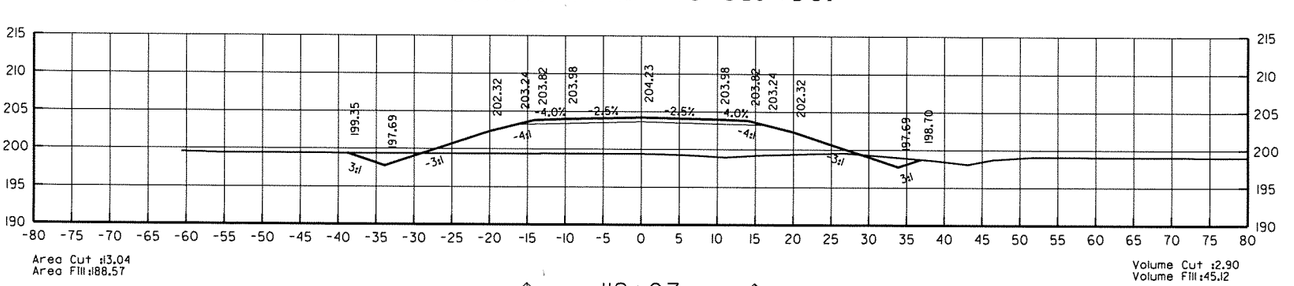
↑ 119+40 ↑

5'-6" WIDENING FOR GUARDRAIL



↑ 119+15 ↑

INSTALL
18" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 75 CU. YDS.



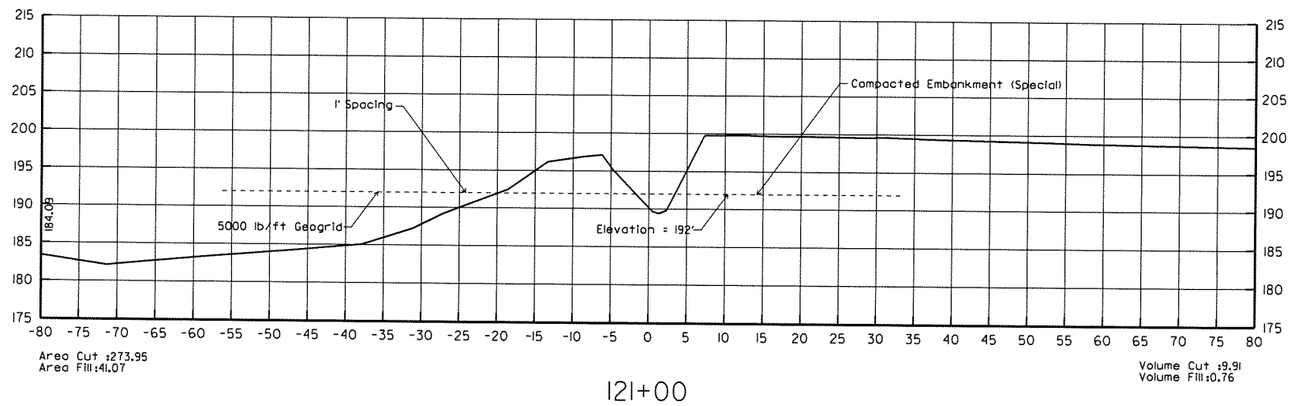
↑ 119+07 ↑

TRANSITION FROM NORMAL SECTION
TO 5'-6" GUARDRAIL WIDENING

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRD-0054(18)	65	70

JOB NO. BR5405

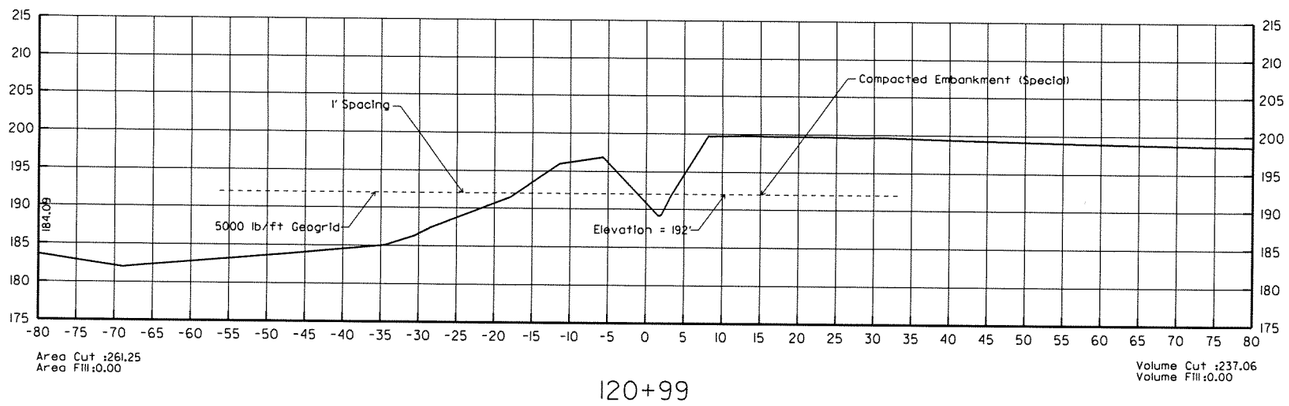
CROSS SECTIONS



Area Cut :273.95
Area Fill :41.07

Volume Cut :9.91
Volume Fill :0.76

121+00

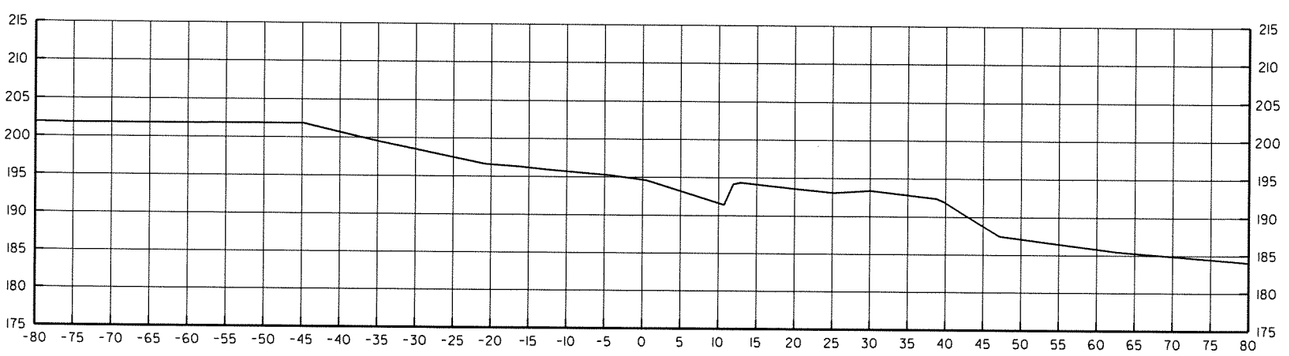


Area Cut :261.25
Area Fill :0.00

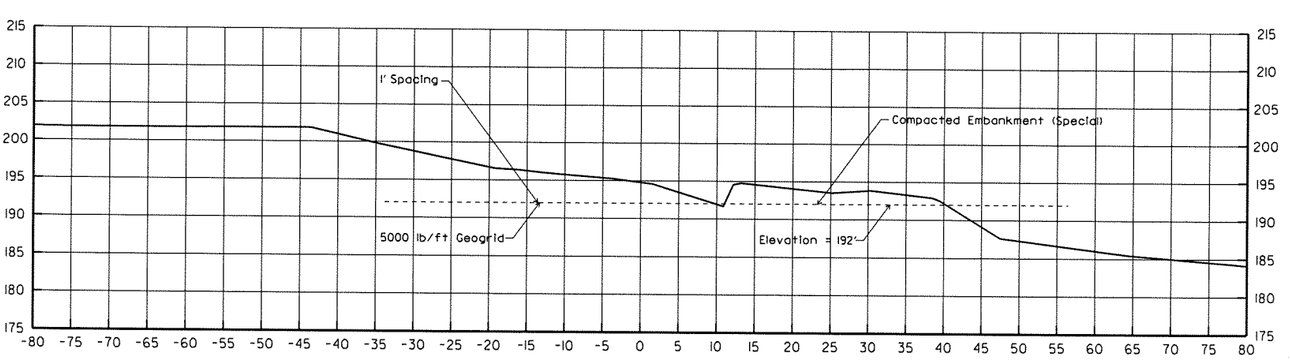
Volume Cut :237.06
Volume Fill :0.00

120+99

TOE OF FILL SLOPE



120+50

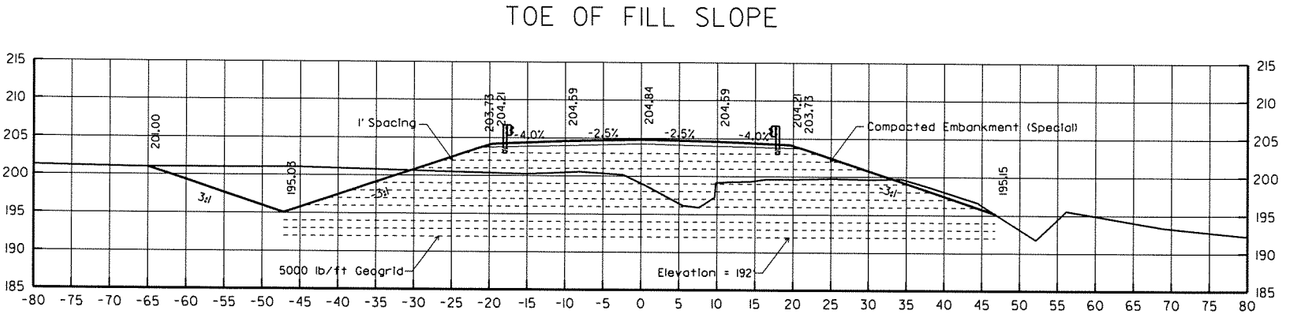


Area Cut :225.35
Area Fill :0.00

Volume Cut :290.53
Volume Fill :173.77

120+50

TOE OF FILL SLOPE



Area Cut :755.18
Area Fill :586.46

Volume Cut :278.69
Volume Fill :271.88

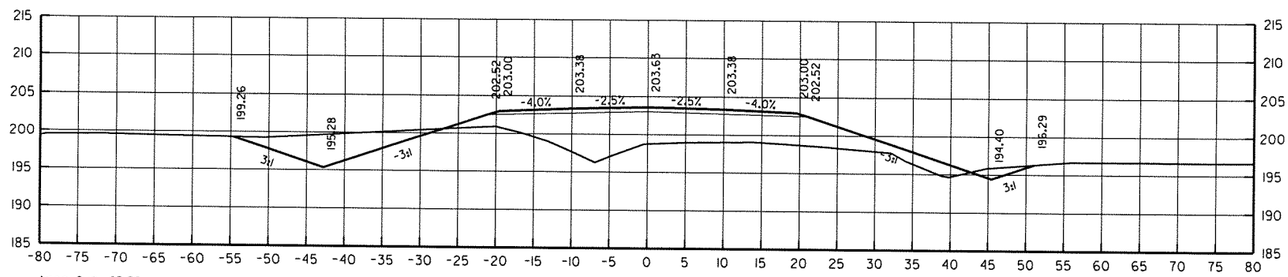
↑ 120+34 ↑

BRIDGE END

4 CROSS SECTIONS

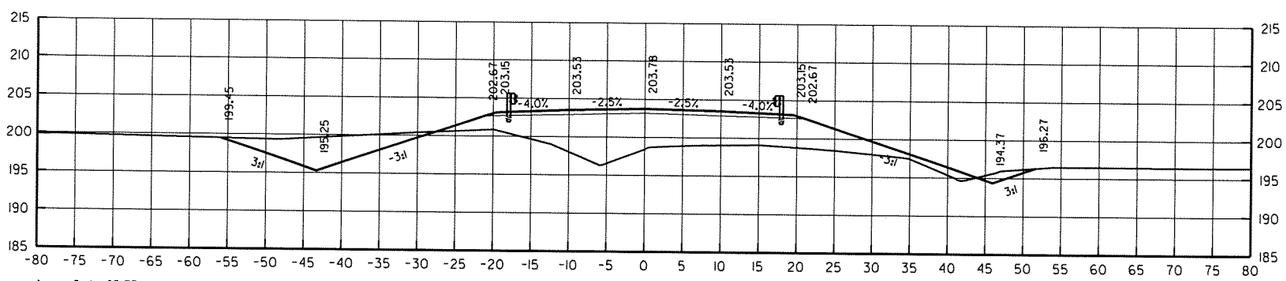
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRD-0054(18)	66	70

JOB NO. BR5405



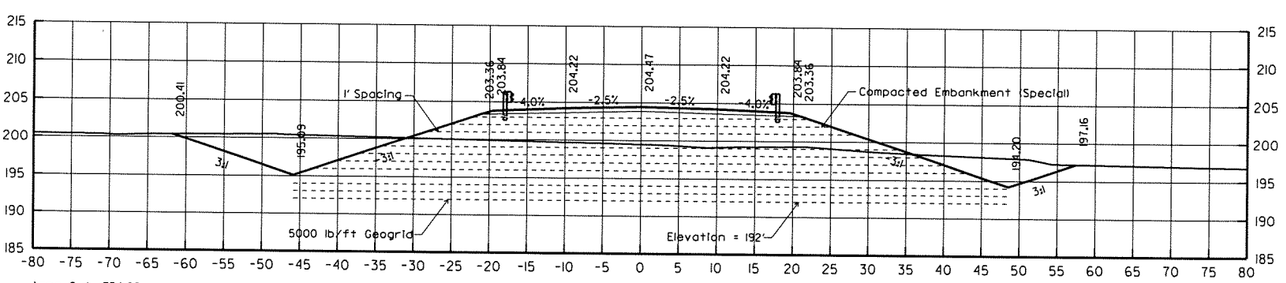
↓ 122+09 ↓

5'-6" WIDENING FOR GUARDRAIL

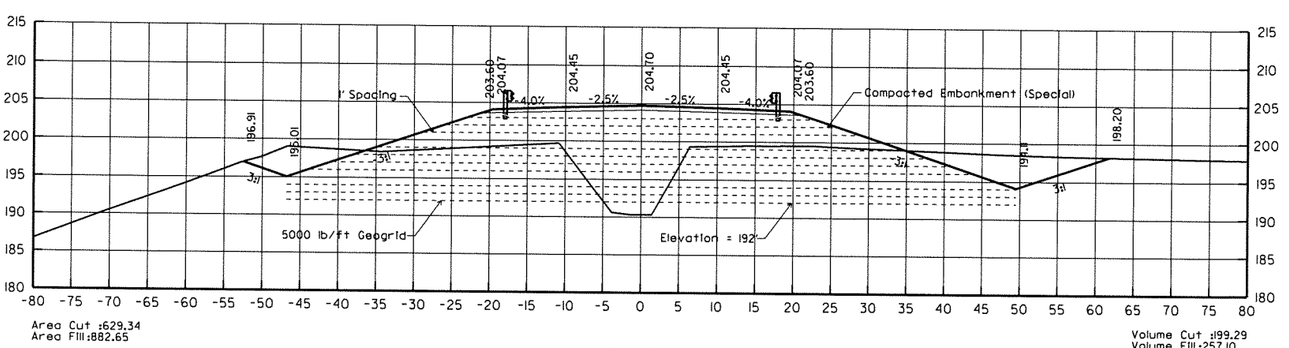


↓ 122+00 ↓

121+65
END COMPACTED EMBANKMENT (SPECIAL)

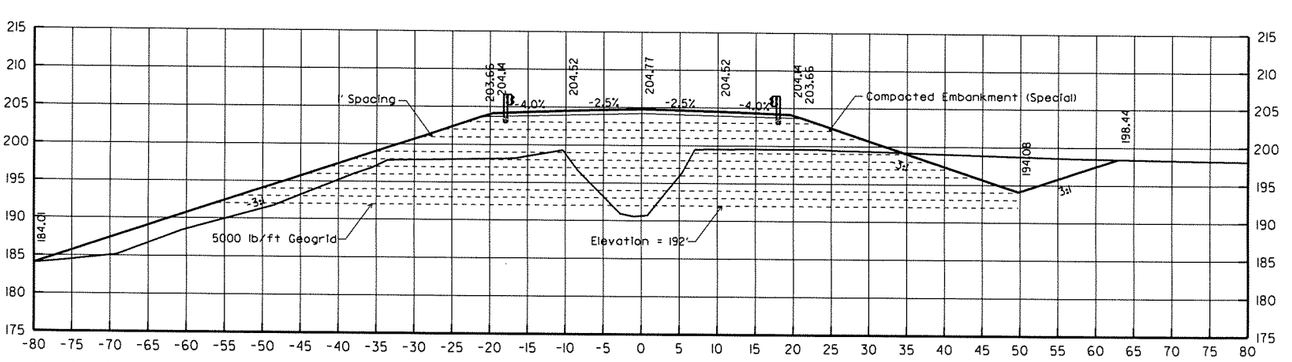


↓ 121+50 ↓



↓ 121+24 ↓

SLOPE INTERCEPT



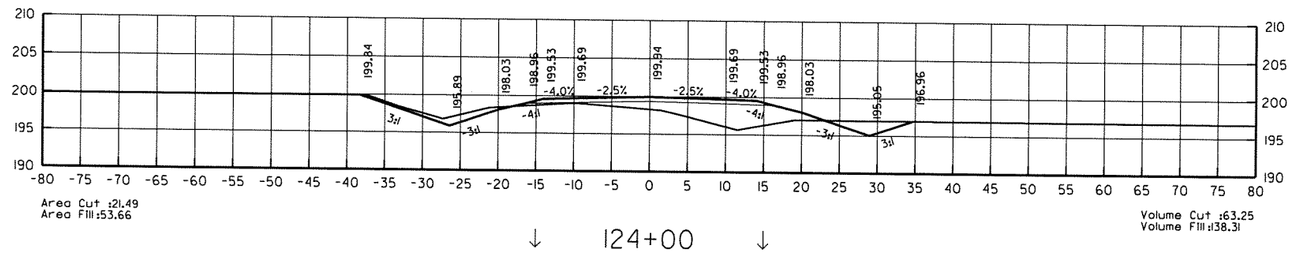
↓ 121+15 ↓

BRIDGE END

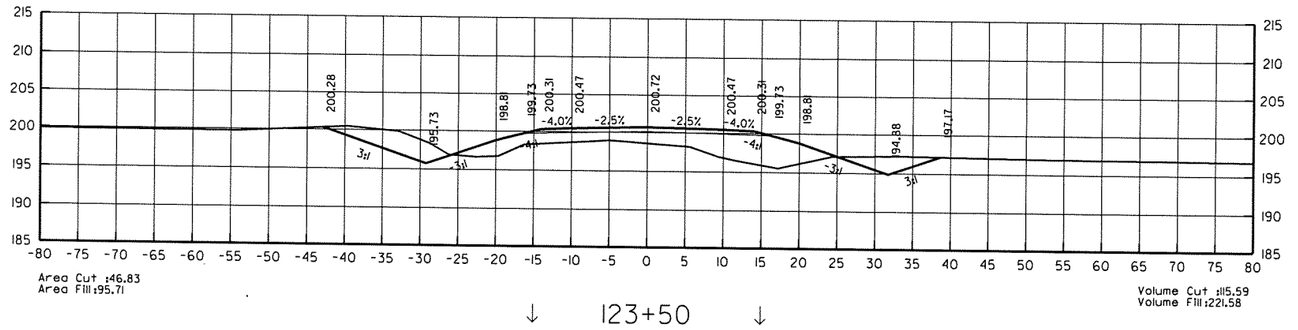
4 CROSS SECTIONS

JOB NO.	DIST	COUNTY	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
BR5405	6	ARK.	BRO-0054(18)		67	70

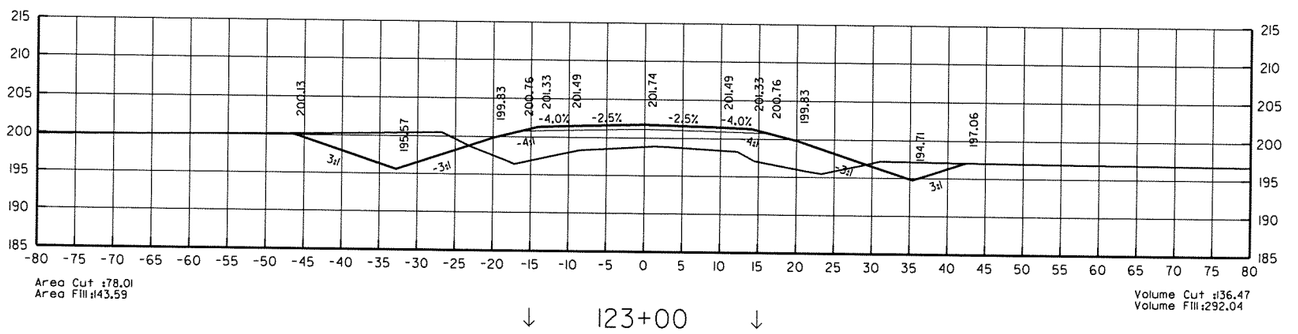
DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED



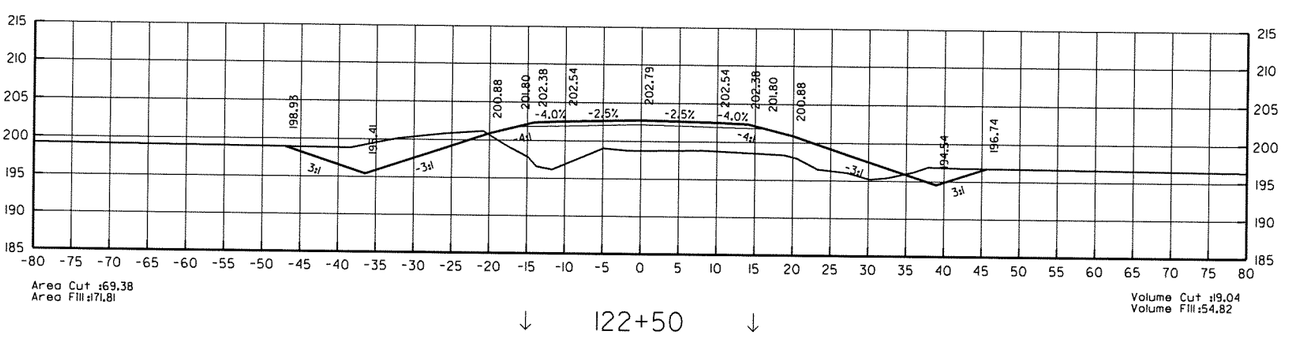
↓ 124+00 ↓



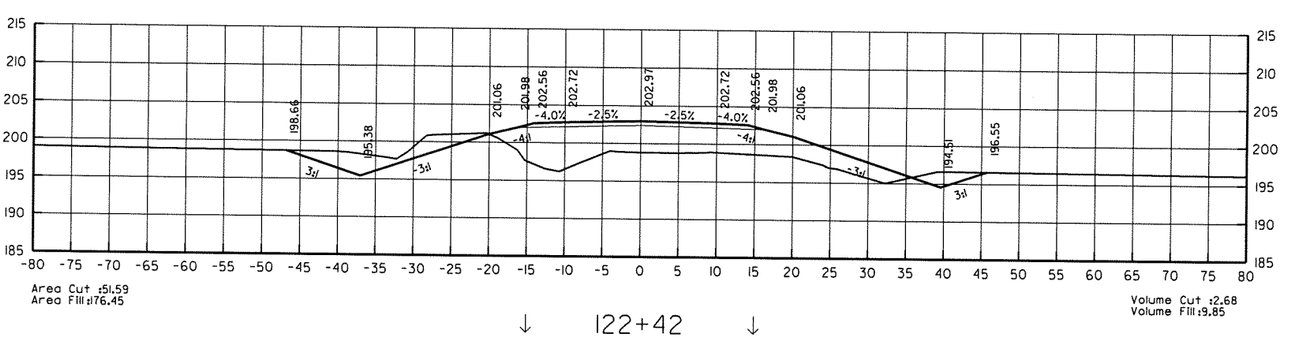
↓ 123+50 ↓



↓ 123+00 ↓

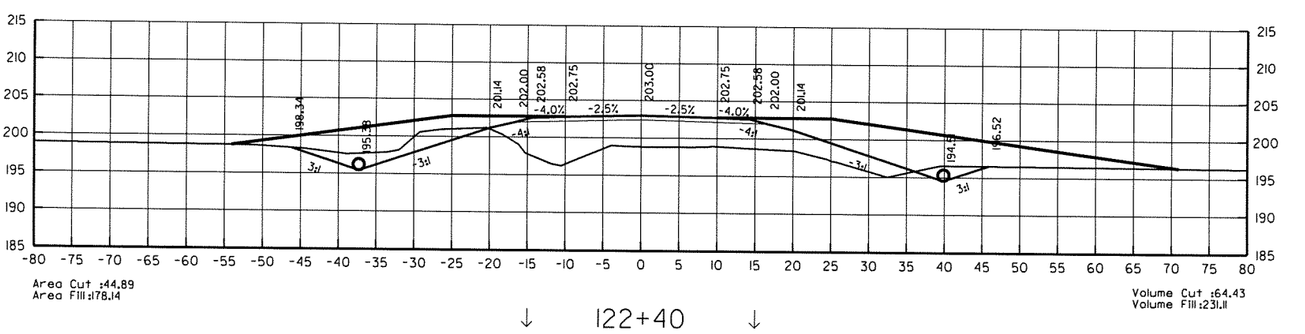


↓ 122+50 ↓



↓ 122+42 ↓

TRANSITION FROM NORMAL SECTION
TO 5'-6" GUARDRAIL WIDENING



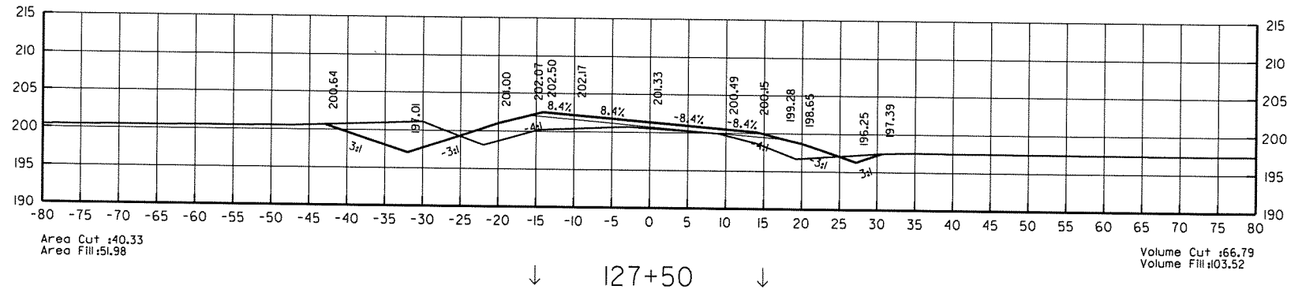
↓ 122+40 ↓

INSTALL
18" X 46' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 80 CU. YDS.
18" X 47' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 110 CU. YDS.

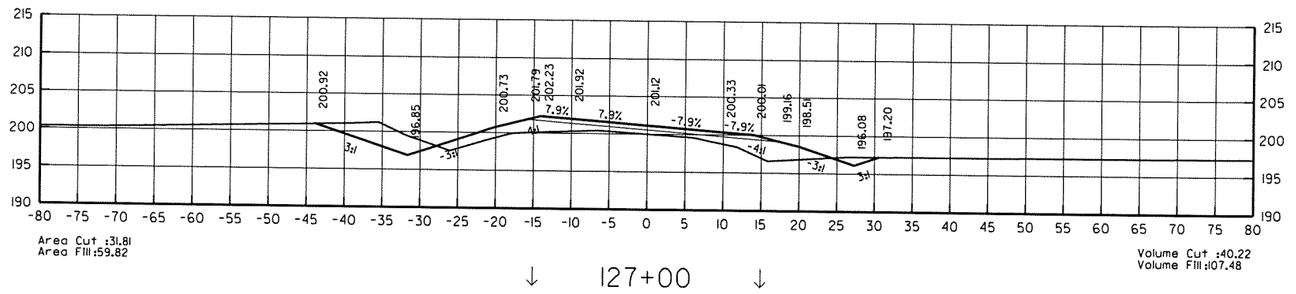
4 CROSS SECTIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

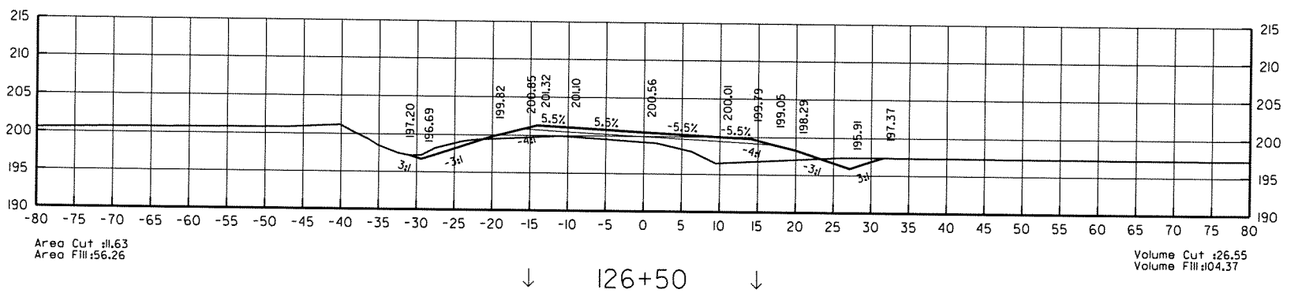
JOB NO.	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
BR5405	6	ARK.	BRO-0054(18)	68	70



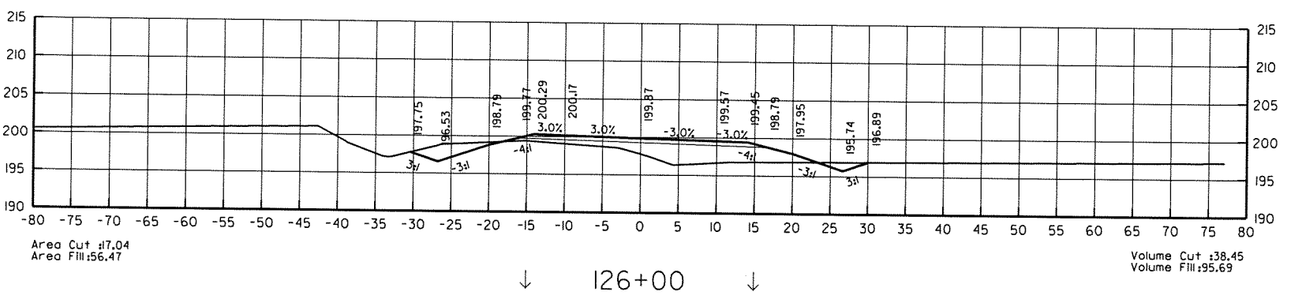
↓ 127+50 ↓



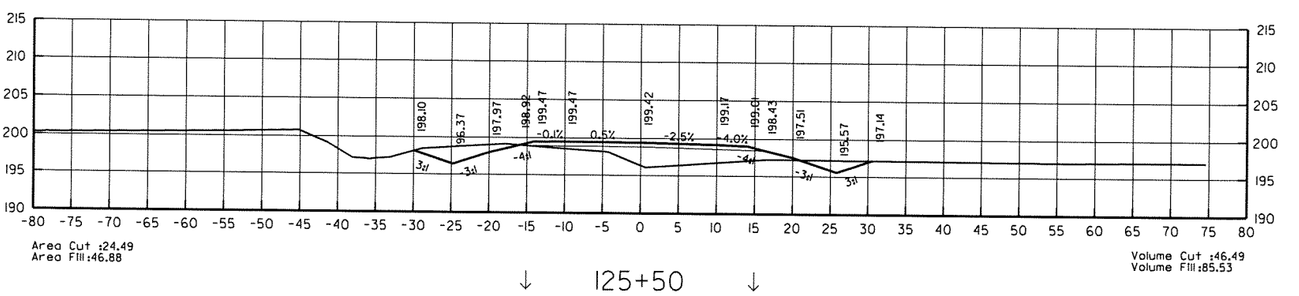
↓ 127+00 ↓



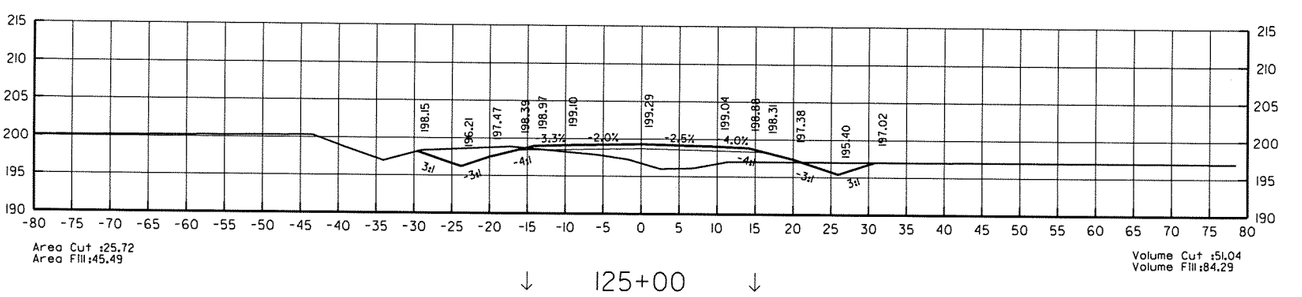
↓ 126+50 ↓



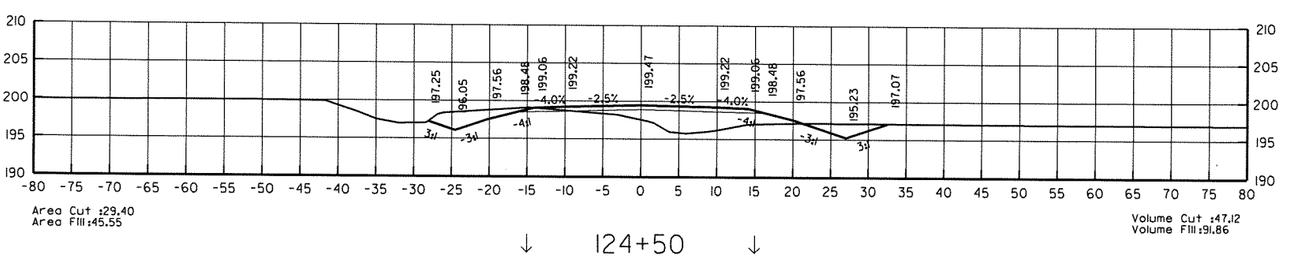
↓ 126+00 ↓



↓ 125+50 ↓



↓ 125+00 ↓



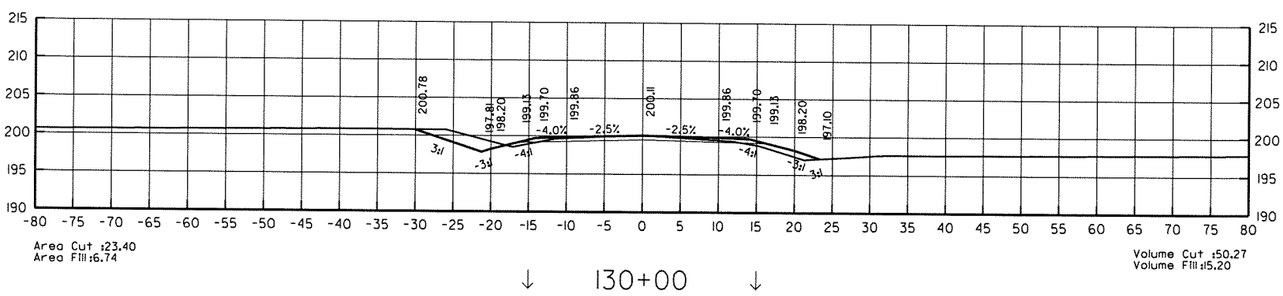
↓ 124+50 ↓

4 CROSS SECTIONS

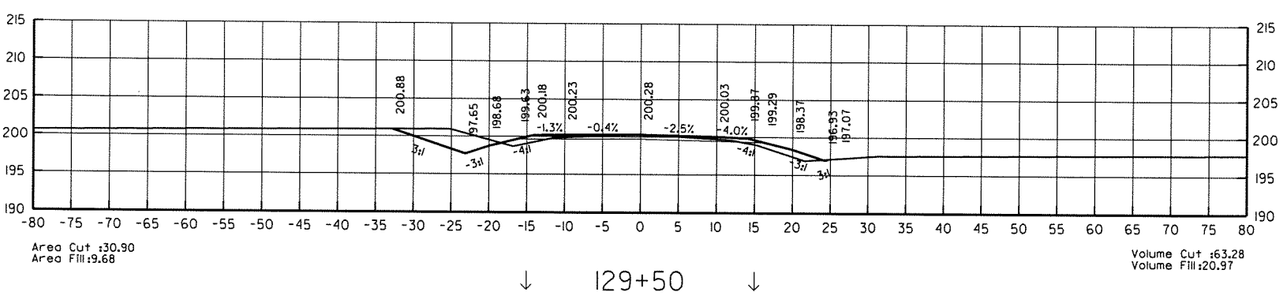
JOB NO.	6
STATE	ARK.
FED.AID PROJ.NO.	BRO-0054(18)
SHEET NO.	69
TOTAL SHEETS	70

DATE REVISED
DATE FILMED
DATE REVISED
DATE FILMED
FED.AID DIST.NO.

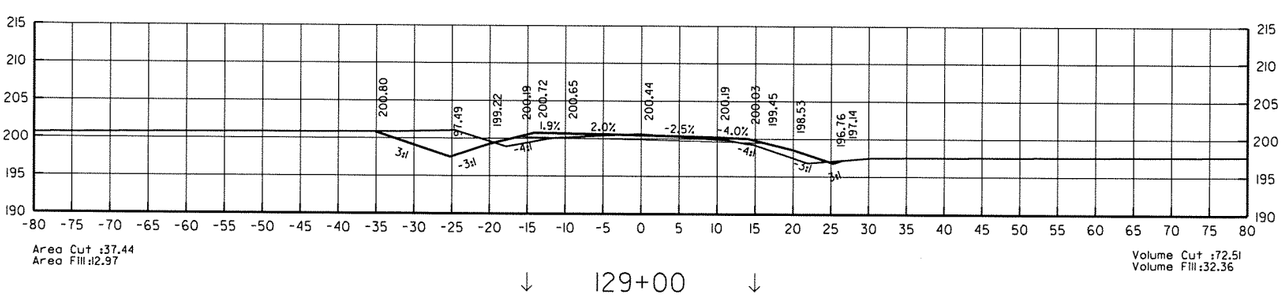
END JOB BR5405



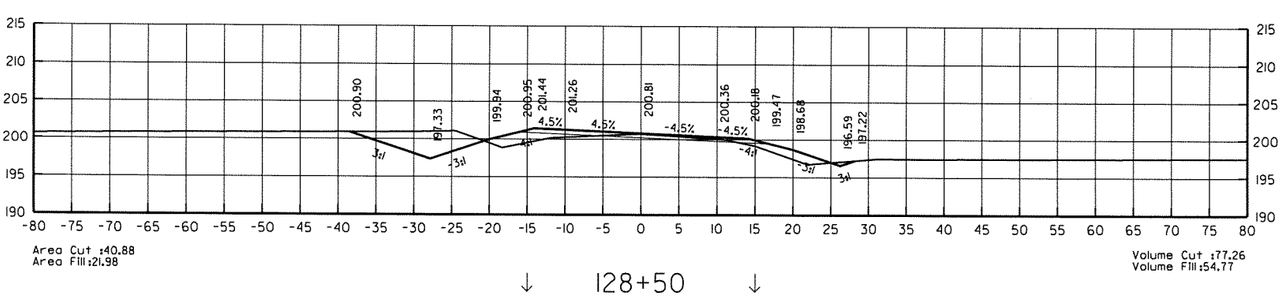
↓ 130+00 ↓



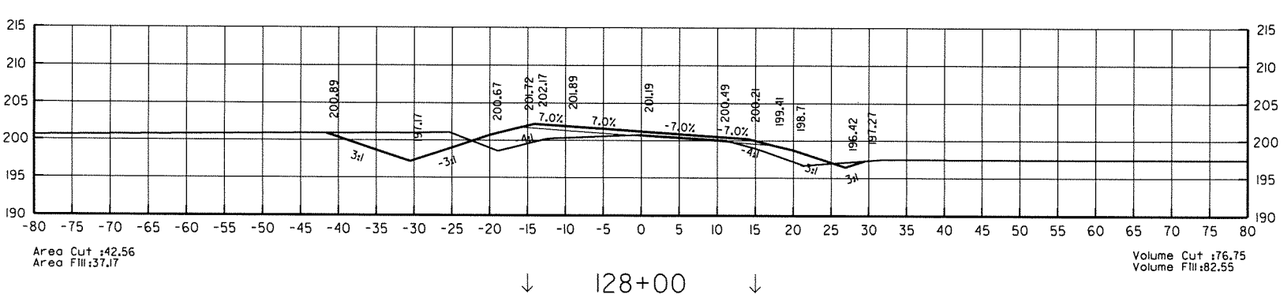
↓ 129+50 ↓



↓ 129+00 ↓



↓ 128+50 ↓



↓ 128+00 ↓

				DATE REVISED	DATE FILED
				DATE REVISED	DATE FILED
4	CROSS SECTIONS			FED.RD DIST.NO.	6
		JOB NO.	BR5405	STATE	ARK.
				FED.AID PROJ.NO.	BRO-0054(18)
			70	SHEET NO.	
			70	TOTAL SHEETS	