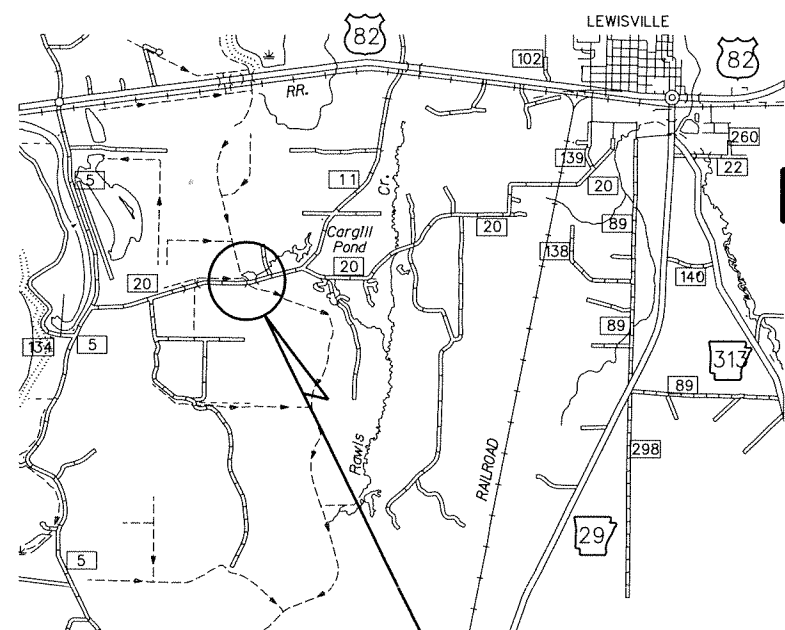


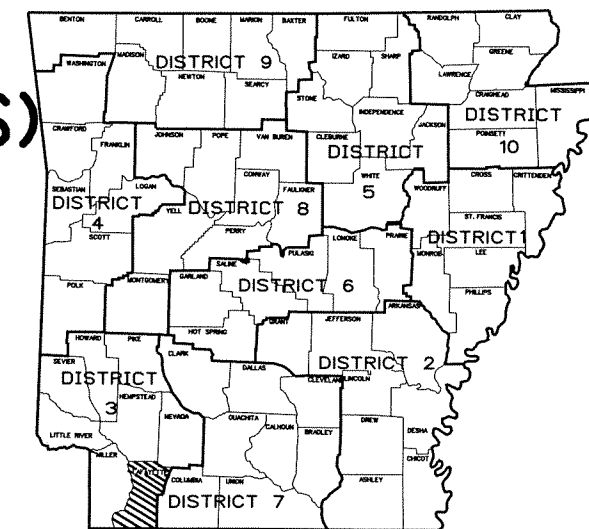
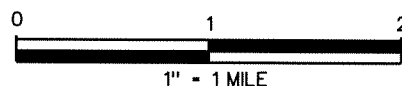
ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR PROPOSED COUNTY ROAD

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	BRO-0037(29)		
							JOB NO.	61
							④ FIELD BAYOU DITCH STR. & APPRS. (S)	

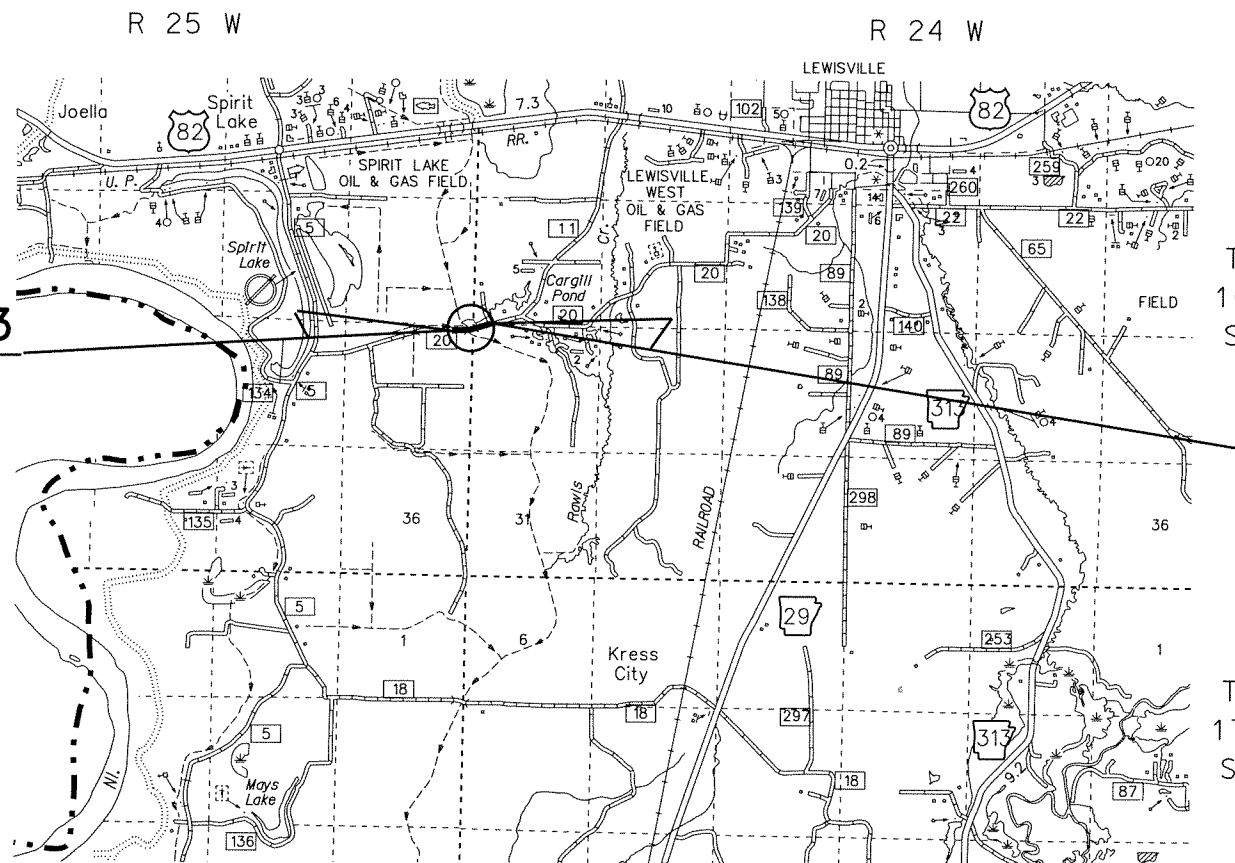


VICINITY MAP
PROJECT LOCATION

FIELD BAYOU DITCH STR. & APPRS. (S)
COUNTY ROAD 20
LAFAYETTE COUNTY
FED. AID PROJ. BRO-0037(29)
JOB BR3713



ARK. HWY. DIST. NO. 3



STA. 102+00.00 - BEGIN JOB BR3713
FED. AID PROJ. BRO-0037(29)

STA. 116+50.00 - END JOB BR3713
FED. AID PROJ. BRO-0037(29)

DESIGN TRAFFIC DATA

DESIGN YEAR	2031
2011 ADT	100
2031 ADT	130
2031 DHV	20
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	3%
DESIGN SPEED	40 MPH

STRUCTURES OVER 20'-0" SPAN

- ① BR. END STA. 109+46.87
BRIDGE NO. 04918
CONT. COMP W-BEAM UNIT
24'-0" CLEAR ROADWAY
122'-3 1/8" TOTAL LENGTH
BR. END STA. 110+69.13

PROJECT COORDINATES

	BEGIN	MID-POINT	END
LAT.	N 33° 20' 08.0"	N 33° 20' 07.9"	N 33° 20' 10.8"
LONG.	W 93° 38' 14.0"	W 93° 38' 01.6"	W 93° 37' 47.8"

GROSS LENGTH OF PROJECT	1450.00	FEET	OR	0.275	MILES
NET ROADWAY	1327.74			0.252	
NET BRIDGES	122.26			0.023	
NET PROJECT	1450.00			0.275	

APPROVED



12/12/11
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
2/14/2012				6	ARK.			
				JOB NO.	BR3713	2	61	
4 INDEX OF SHEETS, GOV. SPECS. & GEN. NOTES								

INDEX OF SHEETS

SHEET NO.	TITLE	BRIDGE NO.	DRWG. NO.	DATE
1.	TITLE SHEET			
2.	INDEX OF SHEETS, GOVERNING SPECIFICATIONS AND GENERAL NOTES			
3-4.	TYPICAL SECTION OF IMPROVEMENT AND SPECIAL DETAILS			
5.	GUARDRAIL WIDENING DETAILS			
6.	SURVEY CONTROL DETAILS			
7.	TEMPORARY EROSION CONTROL DETAILS			
8-10.	QUANTITY SHEETS			
11.	SCHEDULE OF BRIDGE QUANTITIES	04918	52168	
12.	SUMMARY OF QUANTITIES AND REVISIONS			
13-14.	PLAN AND PROFILE SHEET			
15.	LAYOUT OF BRIDGE OVER FIELD BAYOU DITCH (SHEET 1 OF 2)	04918	52169	
16.	LAYOUT OF BRIDGE OVER FIELD BAYOU DITCH (SHEET 2 OF 2)	04918	52170	
17.	DETAILS OF BENT 1	04918	52171	
18.	COMMON DETAILS OF END BENTS	04918	52172	
19.	DETAILS OF BENT 2	04918	52173	
20.	DETAILS OF BENT 3	04918	52174	
21.	DETAILS OF BENT 4	04918	52175	
22.	DETAILS OF ELASTOMERIC BEARINGS	04918	52176	
23.	DETAILS OF 120'-0" CONTINUOUS W-BEAM UNIT (SHEET 1 OF 6)	04918	52177	
24.	DETAILS OF 120'-0" CONTINUOUS W-BEAM UNIT (SHEET 2 OF 6)	04918	52178	
25.	DETAILS OF 120'-0" CONTINUOUS W-BEAM UNIT (SHEET 3 OF 6)	04918	52179	
26.	DETAILS OF 120'-0" CONTINUOUS W-BEAM UNIT (SHEET 4 OF 6)	04918	52180	
27.	DETAILS OF 120'-0" CONTINUOUS W-BEAM UNIT (SHEET 5 OF 6)	04918	52181	
28.	DETAILS OF 120'-0" CONTINUOUS W-BEAM UNIT (SHEET 6 OF 6)	04918	52182	
29.	EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS	1888A		04-10-03
30.	DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES	1891F		04-10-03
31.	DETAILS OF STANDARD TYPE B APPROACH GUTTERS	2016B		07-14-10
32.	DETAILS OF STANDARD TYPE C BRIDGE NAME PLATES	2389A		10-15-09
33.	DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS	14991		04-10-03
34.	STD. DETAILS OF CONCRETE PILES IN SEISMIC PERFORMANCE ZONES 1 & 2	14964		12-10-09
35.	GUARD RAIL DETAILS	GR-8		07-14-10
36.	GUARD RAIL DETAILS	GR-8A		07-14-10
37.	GUARD RAIL DETAILS	GR-9		04-17-08
38.	GUARD RAIL DETAILS	GR-10		07-14-10
39.	GUARD RAIL DETAILS	GR-10A		07-14-10
40.	GUARD RAIL DETAILS	GRT-1		07-14-10
41.	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	PCC-1		12-15-11
42.	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	PCM-1		12-15-11
43.	PAVEMENT MARKING DETAILS	PM-1		11-17-10
44.	DETAILS OF PIPE UNDERDRAIN	PU-1		04-10-03
45.	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	SE-2		10-18-96
46.	STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES	SHS-1		04-17-08
47.	U-CHANNEL POST ASSEMBLIES	SHS-2		10-09-03
48.	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-1		12-15-11
49.	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-2		03-11-10
50.	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-3		10-15-09
51.	TEMPORARY EROSION CONTROL DEVICES	TEC-1		12-15-11
52.	TEMPORARY EROSION CONTROL DEVICES	TEC-2		06-02-94
53.	TEMPORARY EROSION CONTROL DEVICES	TEC-3		11-03-94
54.	WIRE FENCE TYPE C AND D	WF-4		08-22-02
55-61.	CROSS SECTIONS			

GOVERNING SPECIFICATIONS

ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2003, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS:

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	FHWA-1273 - REVISIONS
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
107-1	WORKER VISIBILITY
108-1	LIQUIDATED DAMAGES
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
303-1	AGGREGATE BASE COURSE
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
606-1	PIPE CULVERTS FOR SIDE DRAINS
606-2	PIPE CULVERTS
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
723-1	GENERAL REQUIREMENTS FOR SIGNS
804-1	INSTALLATION OF DOWEL BARS AND TIE BARS
JOB BR3713	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB BR3713	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB BR3713	INTERNET BIDDING
JOB BR3713	NESTING SITES OF MIGRATORY BIRDS
JOB BR3713	SECTION 404 NATIONWIDE PERMIT 14 REQUIREMENTS
JOB BR3713	SILICONE JOINT SEALANT
JOB BR3713	SOIL STABILIZATION
JOB BR3713	STORM WATER POLLUTION PREVENTION PLAN
JOB BR3713	UTILITY ADJUSTMENT

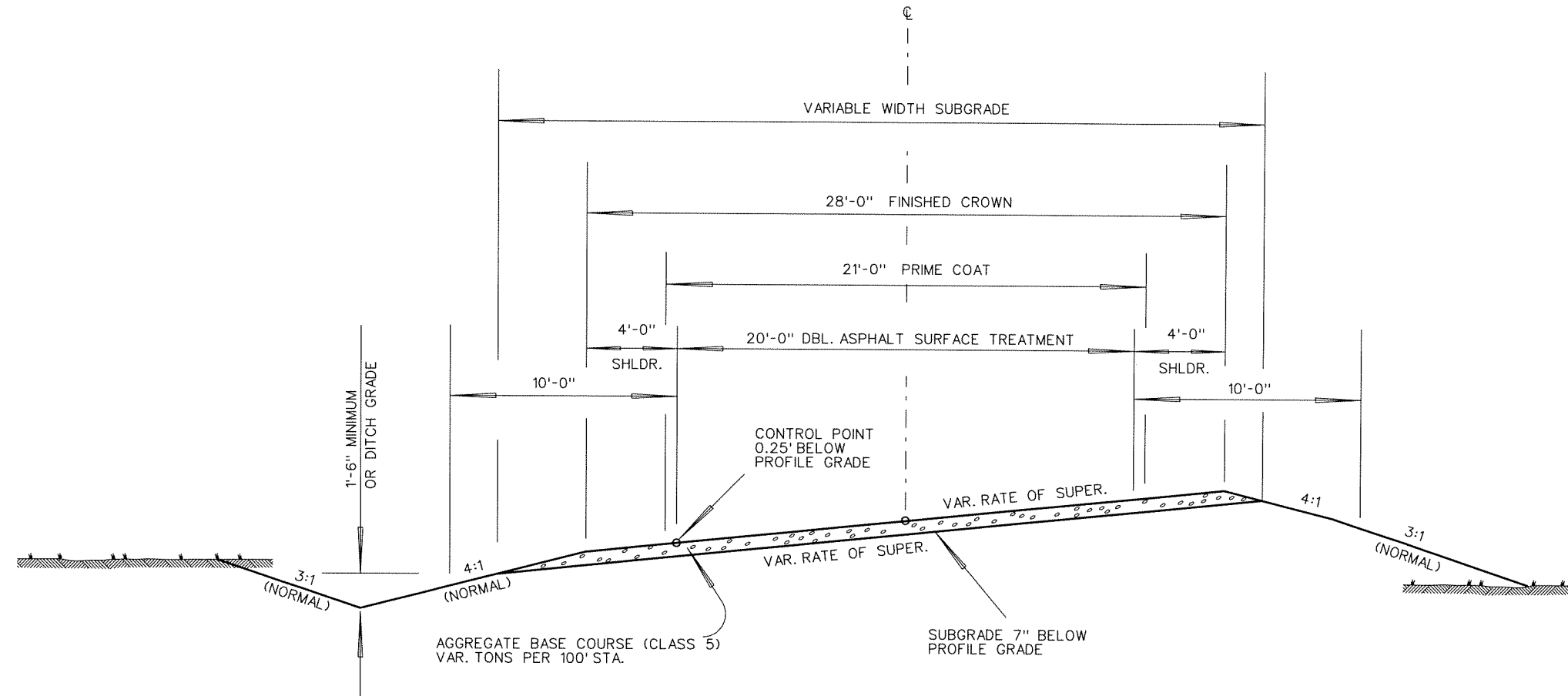
GENERAL NOTES

- GRADE LINE DENOTES FINISH GRADE WHERE SHOWN ON PLANS.
- UTILITIES INTERFERING WITH CONSTRUCTION SHALL BE MOVED BY THE OWNERS.
- ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
- 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.
- 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.
- ALL SALVAGEABLE PIPE CULVERTS SHALL BE STORED ON THE RIGHT-OF-WAY AND REMAIN THE PROPERTY OF LAFAYETTE COUNTY.
- 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.
- THE ROAD WILL BE CLOSED TO TRAFFIC DURING CONSTRUCTION OF THE BRIDGE. THE BRIDGE SHALL BE OPEN TO TRAFFIC AS SOON AS PRACTICAL. ASPHALT SURFACE TREATMENT SHALL BE DONE UNDER TRAFFIC.
- THE CONTRACTOR WILL BE REQUIRED TO PROTECT THE BRIDGE DECK DURING PRIME AND SEALING OPERATIONS.



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
2/14/2012				6	ARK.			
						JOB NO. BR3713	4	61

4 TYPICAL SECTION OF IMPROVEMENT



SUPERELEVATION SECTION

NOTE: THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS 1" OF PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

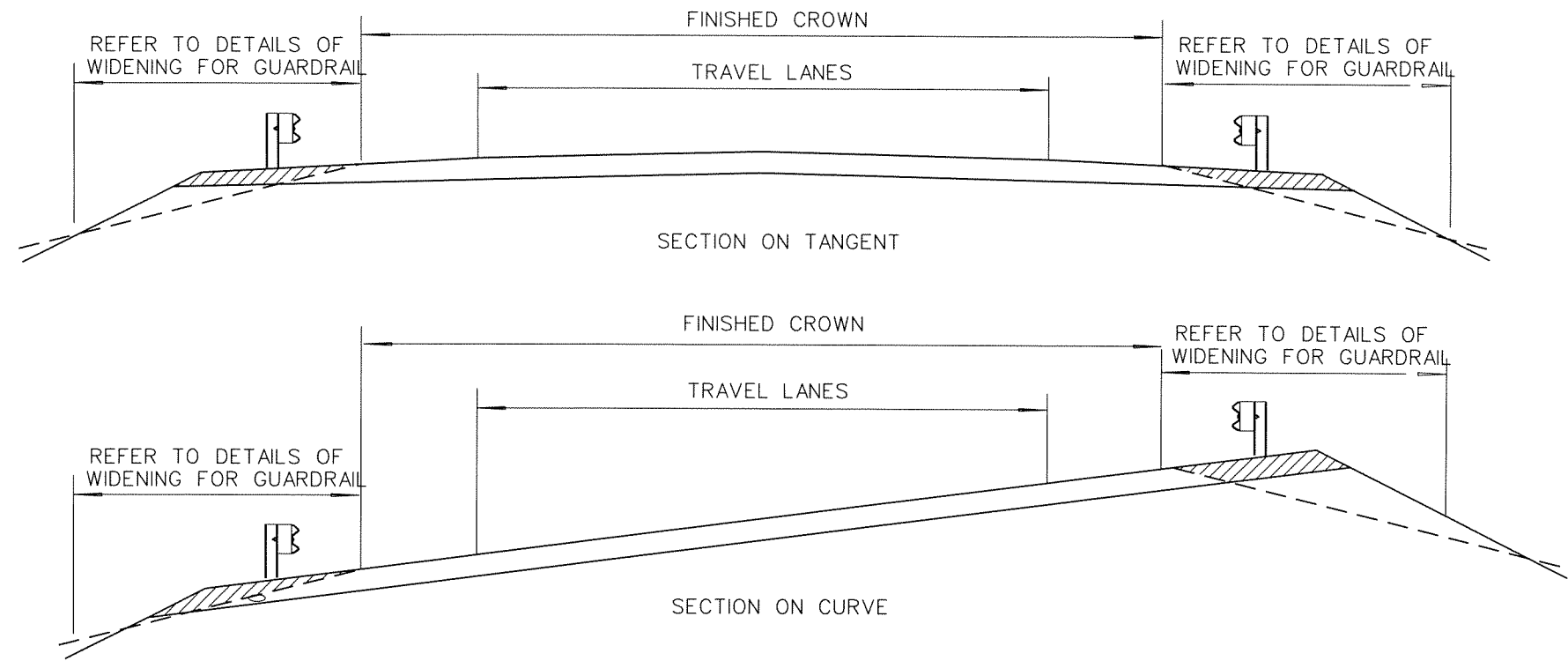
NOTE: REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

TYPICAL SECTION OF IMPROVEMENT

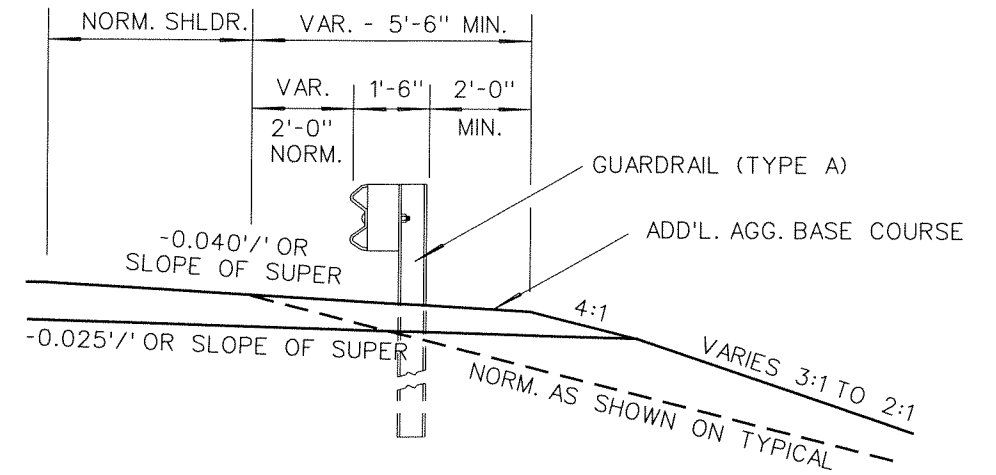


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	BR3713		5	61

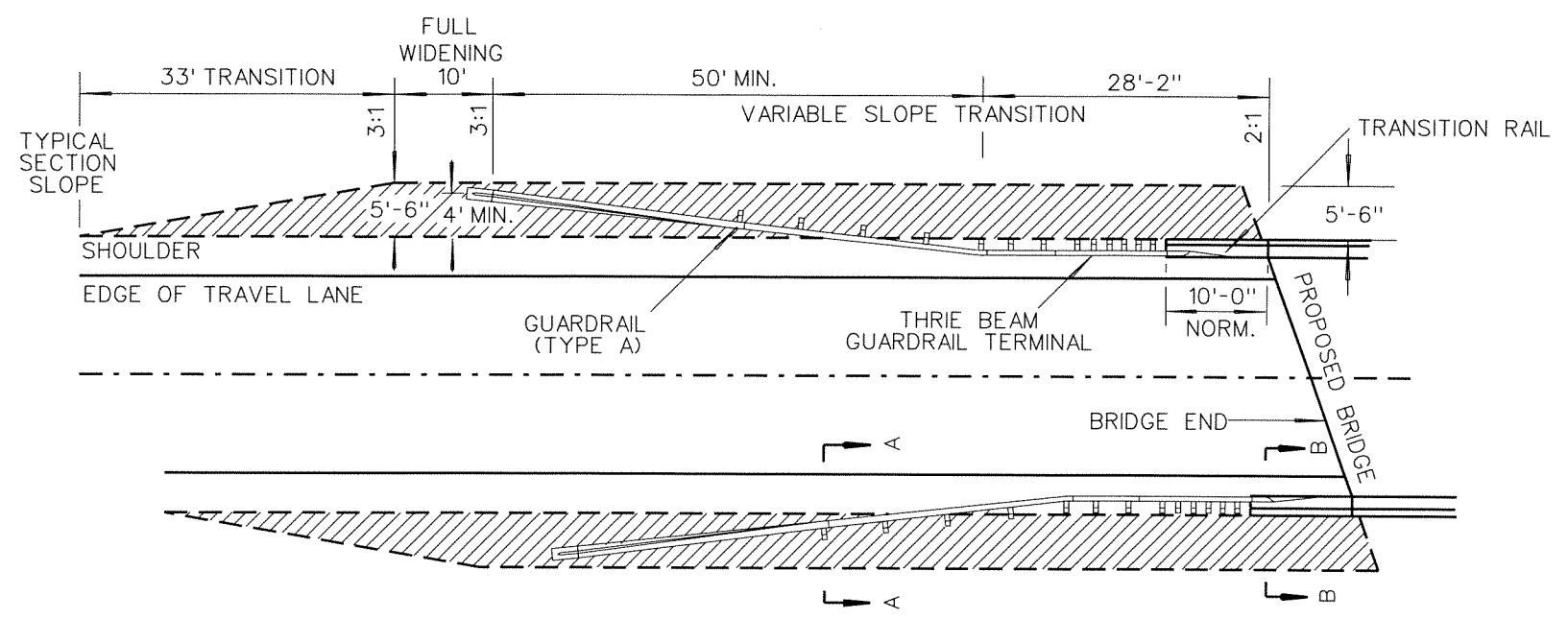
4 GUARDRAIL WIDENING DETAILS



DETAILS SHOWING POSITION OF GUARDRAIL ON ROADWAY

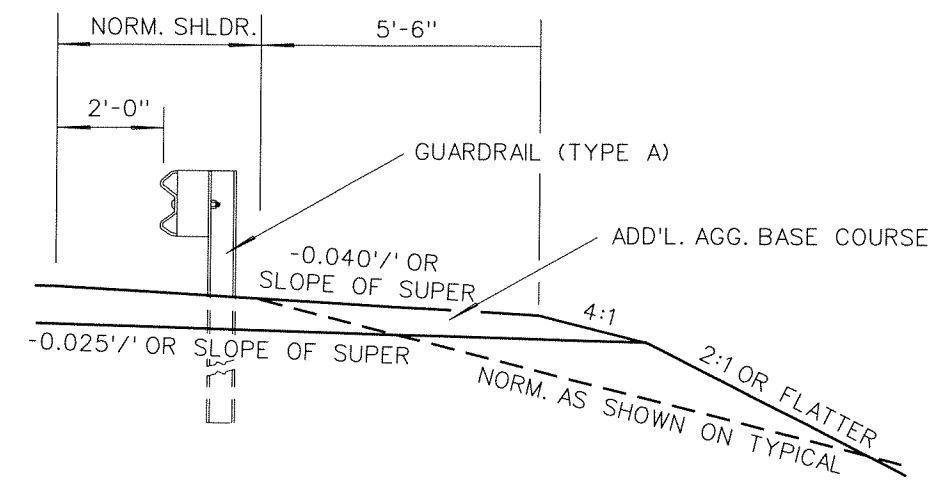


SECTION A-A

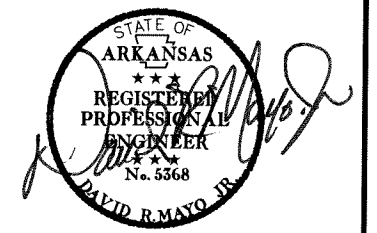


DETAILS OF WIDENING FOR GUARDRAIL (24'-0" CLEAR ROADWAY CAST IN PLACE BRIDGE)

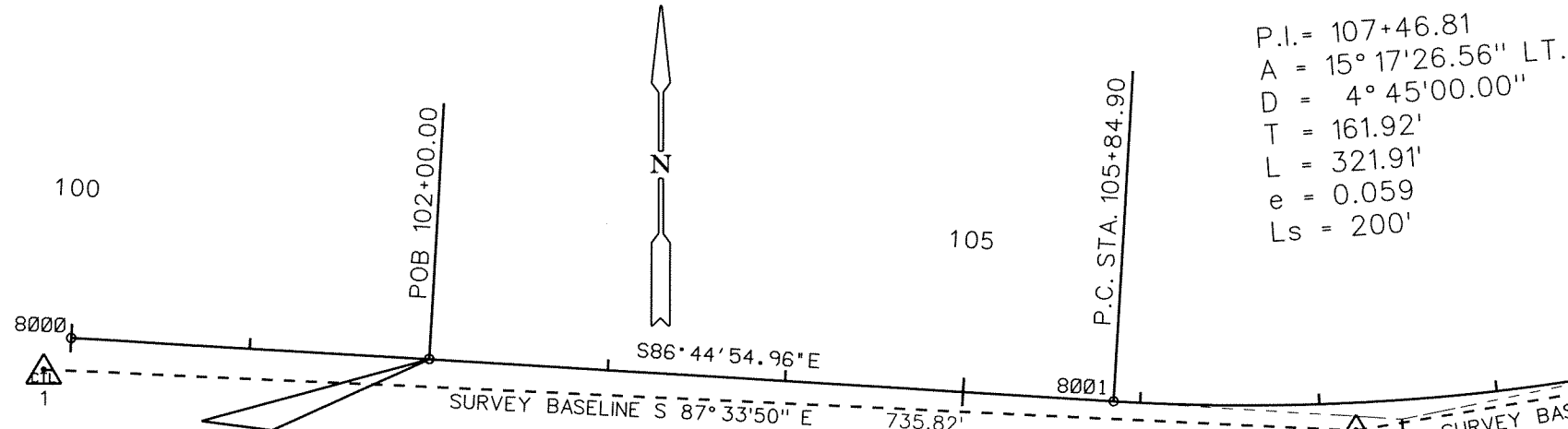
ADDITIONAL AGGREGATE BASE COURSE (TWO SIDES) = 127.9 SQ. YDS.



GUARDRAIL WIDENING DETAILS



4 SURVEY CONTROL DETAILS



P.I. = 107+46.81
 A = 15° 17' 26.56" LT.
 D = 4° 45' 00.00"
 T = 161.92'
 L = 321.91'
 e = 0.059
 Ls = 200'

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	100+00.00	1559732.8460	812349.9130
8001	PC	105+84.90	1559699.6724	812933.8669
8003	PT	109+06.81	1559724.2620	813253.8788
8004	PC	116+92.32	1559888.1070	814022.1168
8006	PT	119+36.46	1559944.1012	814259.7295
8807	PDE	122+50.40	1560022.6033	814563.6969

STA. 102+00.00 - BEGIN JOB BR3713
FED. AID PROJ. BRO-0073(29)

APPROX. MID-POINT
 LT: 33-20-07.9
 LG: 93-38-01.0

SURVEY CONTROL COORDINATES

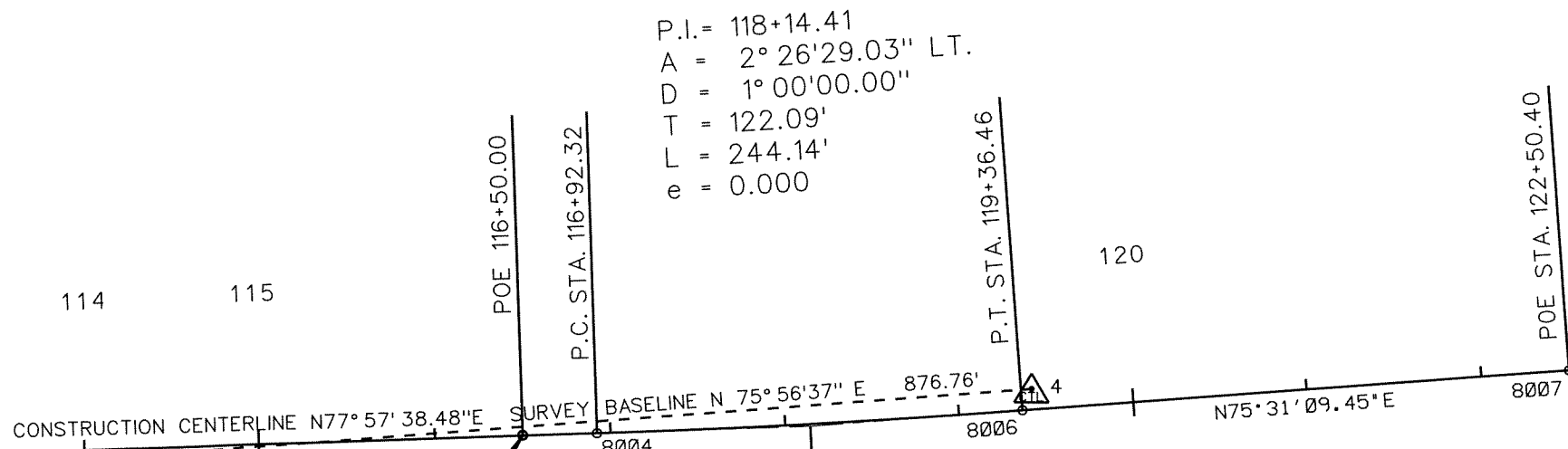
Project Name: sbr3713
 Date: 10/17/2011
 Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
 Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	1559715.3566	812334.5597	226.921	CTL	5/8" REBAR W/2" CAP
2	1559684.0790	813069.7124	226.974	CTL	5/8" REBAR W/2" CAP
3	1559744.0208	813411.9857	227.299	CTL	5/8" REBAR W/2" CAP
4	1559956.9667	814262.4910	234.248	CTL	5/8" REBAR W/2" CAP
100	1567886.0420	812503.4218	231.594	GPS	AHTD GPS 370002.RTK ELEV
101	1568022.7050	813889.4497	231.860	GPS	AHTD GPS 370002A.RTK ELEV
900	1568095.5735	816255.9863	258.230	BM	RV 518 MONEL RIVET
901	1568187.2215	816851.2712	247.450	BM	A 119 BRASE DISK IN HDWL
902	1568180.0624	819862.7194	268.024	TBM	AHTD CAP
903	1564983.0161	818743.3432	270.610	TBM	CPS IN ROOT OF 30" OAK
904	1562469.1697	816616.3781	271.619	TBM	CPS IN ROOT OF 24" PINE
905	1560137.5032	815119.9007	269.373	TBM	CPS IN ROOT OF 36" OAK
906	1559741.0046	813357.0755	228.963	TBM	SQ CUT IN CENTER OF BR

*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).
 USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
 A PROJECT CAF OF 0.9999783434 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: sBR3713gi.cti
 HORIZONTAL DATUM: NAD 83 (1997)
 VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

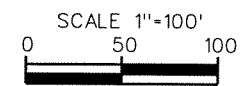
REFERENCE POINTS (1500 SERIES) ARE TO BE USED TO ESTABLISH CONTROL IF THE PRIMARY CONTROL POINTS LISTED ABOVE HAVE BEEN DESTROYED. REFERENCE POINTS ARE NOT TO BE USED FOR VERTICAL CONTROL

BASIS OF BEARING:
 ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
 DETERMINED FROM GPS CONTROL POINTS: 370002-370002A CONVERGENCE ANGLE: 00-54-51.51 LEFT AT LT:33-20-07.94 LG:093-38-00.95 GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.



P.I. = 118+14.41
 A = 2° 26' 29.03" LT.
 D = 1° 00' 00.00"
 T = 122.09'
 L = 244.14'
 e = 0.000

STA. 116+50.00 - END JOB BR3713
FED. AID PROJ. BRO-0037(29)



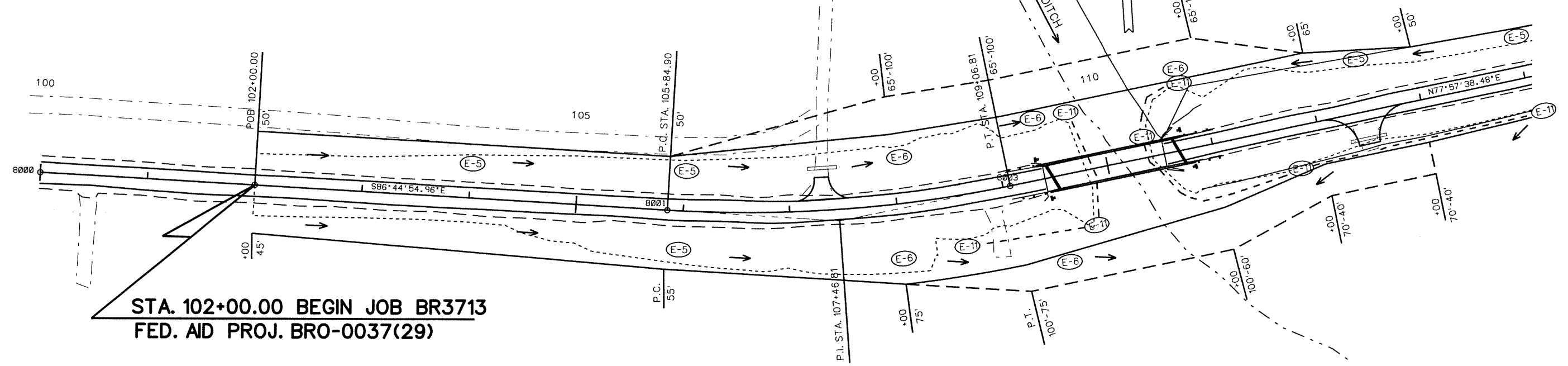
SURVEY CONTROL DETAILS



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	BR3713		7	61
(4) TEMPORARY EROSION CONTROL DETAILS								

SAND BAG DITCH CHECKS (E-5)		SEDIMENT REMOVAL & DISPOSAL	
STA. 104+00 - LT.	= 12 BAGS		1 CU. YD.
STA. 106+00 - LT. & RT.	= 24 BAGS		2 CU. YDS.
STA. 112+50 - LT.	= 12 BAGS		1 CU. YD.
STA. 114+00 - LT.	= 12 BAGS		1 CU. YD.
*ENTIRE PROJECT	= 60 BAGS		5 CU. YDS.

*ESTIMATED QUANTITY. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.



**STA. 102+00.00 BEGIN JOB BR3713
FED. AID PROJ. BRO-0037(29)**

ROCK DITCH CHECKS (E-6)		SEDIMENT REMOVAL & DISPOSAL	
STA. 108+00 - LT. & RT.	= 6 CU. YDS.		2 CU. YDS.
STA. 109+50 - LT. & RT.	= 6 CU. YDS.		2 CU. YDS.
STA. 110+70 - LT.	= 3 CU. YDS.		1 CU. YDS.
*ENTIRE PROJECT	= 6 CU. YDS.		2 CU. YDS.

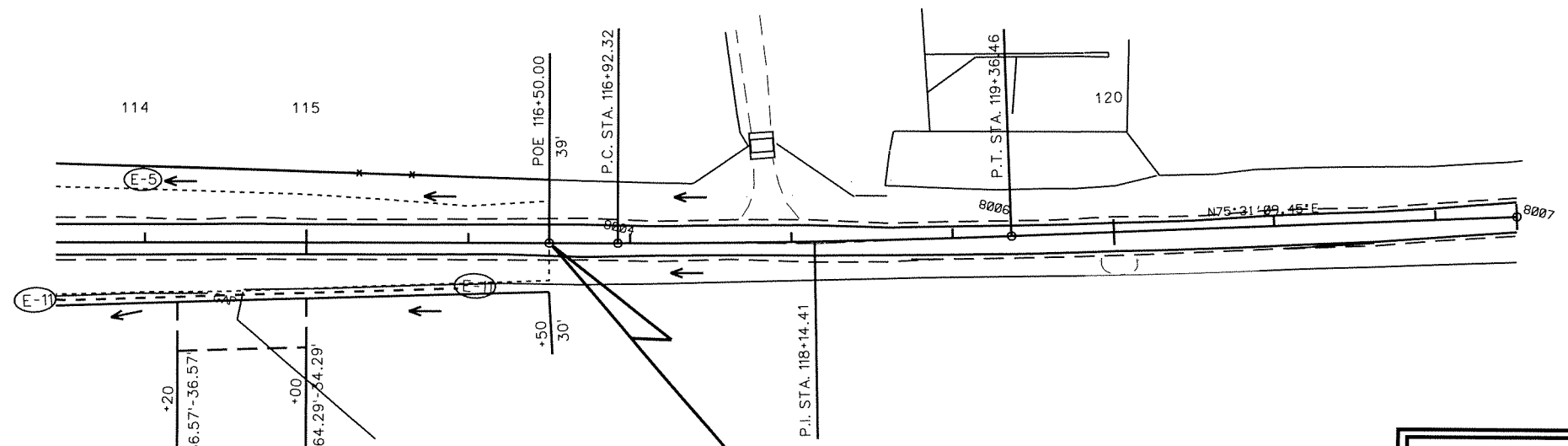
SILT FENCE		SEDIMENT REMOVAL & DISPOSAL	
STA. 108+50 TO STA. 109+90 - LT. & RT.	= 250 LIN FT.		8 CU. YDS.
STA. 110+40 TO STA. 116+00 - LT. & RT.	= 670 LIN FT.		20 CU. YDS.
*ENTIRE PROJECT	- LT. & RT. = 200 LIN FT.		6 CU. YDS.

*ESTIMATED QUANTITY. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

NOTE: EROSION CONTROL ITEMS ARE SUBJECT TO IMMEDIATE PLACEMENT AS DIRECTED BY THE ENGINEER. EXACT LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

NOTE: TEMPORARY EROSION CONTROL DEVICES SHOWN 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.

TEMPORARY SEEDING *ENTIRE PROJECT = 2.21 ACRES
MULCH COVER 2.21 ACRES
WATER 45.1 M. GAL

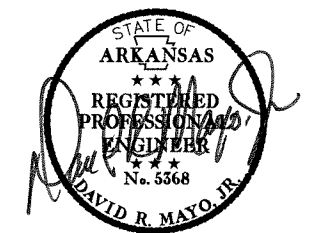


**STA. 116+50.00 END JOB BR3713
FED. AID PROJ. BRO-0037(29)**

TEMPORARY EROSION CONTROL REVISIONS

DATE OF REVISIONS	REVISIONS

TEMPORARY EROSION CONTROL DETAILS



EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL			
			SEEDING	LIME	MULCH COVER	WATER
			ACRES	TONS	ACRES	M. GALS.
102+00	116+50	CONSTRUCTION LIMITS	2.21	5	2.21	225.4
TOTALS			2.21	5	2.21	225.4

BASIS OF ESTIMATE:

LIME.....2 TONS / ACRE OF SEEDING

WATER.....102.0 M.G. / ACRE OF SEEDING, PERMANENT SEEDING

STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES

STATION	SIDE	STANDARD SIGN NUMBER				SUPPORT ASSEMBLIES	SUPPORT ASSEMBLIES	STANDARD DRAWING NUMBER
		W1-2L	W1-2R	OM-3L	OM-3R	TYPE A	TYPE C	
		SQ. FT.				EACH	EACH	
104+10	RT.	6.25				1		SHS 1&2
109+33	LT.			3.00			1	SHS 1&2
109+42	RT.				3.00		1	SHS 1&2
110+75	LT.				3.00		1	SHS 1&2
110+82	RT.			3.00			1	SHS 1&2
111+50	LT.		6.25				1	SHS 1&2
TOTALS:		6.25	6.25	6.00	6.00	2	4	

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION			COMPACTED EMBANKMENT			SOIL STABILIZATION
			NORMAL	ADD'L	TOTAL	NORMAL	ADD'L	TOTAL	
			CUBIC YARDS						
102+00	107+47	MAIN LANES	769		769	3705		3705	
110+69	116+50	MAIN LANES	90		90	2570		2570	
EXCAVATION AT BENT 4				150	150				
FIELD ENTRANCES						75		75	
* ENTIRE PROJECT									200
TOTALS			859	150	1009	6275	75	6350	200

NOTE: EARTHWORK QUANTITIES SHOWN ABOVE SHALL BE PAID AS PLAN QUANTITY.

* NOTE: QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

CLEARING AND GRUBBING

STATION	STATION	SIDE	CLEARING	GRUBBING
			STATION	
102+00	116+50	LT.	15	15
TOTALS:			15	15

REMOVAL AND DISPOSAL OF PIPE CULVERTS

STATION	DESCRIPTION	PIPE CULVERT
		EACH
107+31	30" X 35' CM SIDE DRAIN ON LT.	1
112+45	18" X 28' CM SIDE DRAIN ON RT.	1
TOTAL		2

NOTE: ALL SALVAGEABLE PIPE CULVERTS SHALL BECOME THE PROPERTY OF LAFAYETTE COUNTY.

TEMPORARY EROSION CONTROL

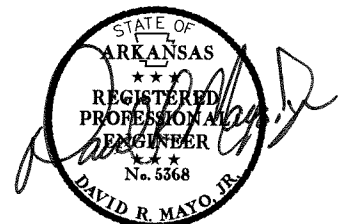
STATION	STATION	LOCATION	TEMPORARY SEEDING	MULCH COVER	WATER	SILT FENCE (E-11)	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	*SEDIMENT REMOVAL AND DISPOSAL
			ACRES	ACRES	M. GALS	LIN. FT.	BAG	CU. YDS	CU. YDS
102+00	116+50	MAIN LANES	2.21	2.21	45.1	920	60	15	38
ENTIRE PROJECT AS DIRECTED BY ENGINEER						200	60	6	13
TOTALS			2.21	2.21	45.1	1120	120	21	51

BASIS OF ESTIMATE

WATER.....20.4 M.G. / ACRE OF SEEDING TEMPORARY SEEDING

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.

* NOTE: QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.



TRAFFIC CONTROL DEVICES

DESCRIPTION	W20-3												R11-3A	BARRICADES (TYPE III)	TRAFFIC DRUMS	STANDARD DRAWING NUMBER	
	1500		1000		500		G20-1		G20-2		R11-2						
	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.					NO.
BEGIN PROJECT	1	16.00	1	16.00	1	16.00	1	10.00	1	8.00	1	10.00			24.00		TC-1,2&3
END PROJECT	1	16.00	1	16.00	1	16.00	1	10.00	1	8.00	1	10.00			24.00		TC-1,2&3
INTERSECTION @ CO. RDS 5 & 20													1	12.50	12.00		TC-1,2&3
INTERSECTION @ CO. RDS 11 & 20													1	12.50	12.00		TC-1,2&3
ENTIRE PROJECT																24	
TOTALS:	2	32.00	2	32.00	2	32.00	2	20.00	2	16.00	2	20.00	2	25.00	72.00	24	

NOTE: LOCATION OF THE TRAFFIC CONTROL DEVICES TO BE AS DIRECTED BY THE ENGINEER; SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

GUARDRAIL

STATION	STATION	SIDE	GUARDRAIL (TYPE A)	THREE BEAM GUARDRAIL TERMINAL	TERMINAL ANCHOR POST (TYPE 1)
			LIN. FT.	EACH	EACH
108+84	109+34	LT.	50	1	1
108+93	109+43	RT.	50	1	1
110+74	111+23	LT.	50	1	1
110+82	111+32	RT.	50	1	1
TOTALS:			200	4	4

APPROACH GUTTERS (TYPE B)

STATION	STATION	SIDE	APPROACH GUTTERS (TYPE B)	REINFORCING STEEL ROADWAY (GRADE 60)
			CU. YDS.	LBS.
109+17	109+44	LT.	3.00	252
109+26	109+53	RT.	3.00	252
110+63	110+90	LT.	3.00	252
110+71	110+98	RT.	3.00	252
TOTALS:			12.00	1008

NOTE: W = 3'-0"

4" PIPE UNDERDRAINS

LOCATION	4" PIPE UNDERDRAIN	UNDERDRAIN OUTLET PROTECTORS
	LIN. FT.	EACH
ENTIRE PROJECT	300	2
TOTALS:		
	300	2

NOTE: ESTIMATED QUANTITIES. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

STRUCTURES

STATION	DESCRIPTION	SIDE DRAINS		STANDARD DRAWING NUMBERS
		36"	18"	
		LINEAR FT.		
107+31	INSTALL SIDE DRAIN ON LT.	50		PCM-1,PCC-1
112+45	INSTALL SIDE DRAIN ON RT.		36	PCM-1,PCC-1
TOTALS		50	36	

NOTE: FOR R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.
NOTE: FOR C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

REFLECTORIZED PAINT PAVEMENT MARKING

STATION		YELLOW MARKING	WHITE MARKING
		4" CONTINUOUS	4" EDGE LINE
FROM	TO	LINEAR FEET	LINEAR FEET
102+00	116+50	2900	2900
TOTALS:		2900	2900

NOTE: THIS IS A LOW VOLUME ROAD AS DEFINED IN SECTION 604.03 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2003.



FILTER BLANKET AND DUMPED RIPRAP

STATION	STATION	SIDE	DUMPED RIPRAP	FILTER BLANKET
			CU. YDS.	SQ. YDS.
107+45	109+45	LT.	200	400
105+28	10540	LT.	10	20
TOTALS:			210	420

NOTE: ESTIMATED QUANTITY. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

FENCING

STATION	STATION	SIDE	REMOVAL AND DISPOSAL OF FENCE	WIRE FENCE (TYPE C)	16'-0" GATES
			LIN. FT.	LIN. FT.	EACH
110+33	113+00	LT.	375	270	
110+82	112+38	RT.	155	158	
112+54	116+50	RT.	396	400	
* ENTIRE PROJECT					1
TOTALS:			926	828	1

* NOTE: ESTIMATED QUANTITY. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

SURFACING QUANTITIES

STATION	STATION	LOCATION / DESCRIPTION	LENGTH	AGGREGATE BASE COURSE (CLASS 5)	PRIME COAT		ASPHALT SURFACE TREATMENT				
					WIDTH	SQ. YD.	GALLONS	WIDTH	SQ. YD.	MINERAL AGGREGATE (CLASS1)	ASPHALT (CRS-2P)
										FEET	TONS
102+00	109+47	MAIN LANES	747	1030.9	21	1743.00	697.2	20	1660.00	62.3	1411.0
108+26	109+34	GUARDRAIL WIDENING		52.2		127.90	51.2		127.90	4.8	108.7
109+47	110+69	BRIDGE	122								
110+69	111+90	GUARDRAIL WIDENING		52.2		127.90	51.2		127.90	4.8	108.7
110+69	116+50	MAIN LANES	581	801.8	21	1355.67	542.3	20	1291.11	48.4	1097.4
	107+31	FIELD ENTRANCE ON LT.		47.0		136.00	54.0		136.00	5.1	115.6
	112+45	FIELD ENTRANCE ON RT.		46.0		131.00	52.0		131.00	4.9	111.4
		MAINTENANCE		100.0							
TOTALS				2130.10		3621.47	1447.9		3473.91	130.3	2952.8
USE				2130			1448			130	2953

BASIS OF ESTIMATE:
 AGGREGATE BASE COURSE _____ 138 TONS / STA.
 PRIME COAT _____ 0.40 GAL / SQ. YD.
 MINERAL AGGREGATE IN ASPHALT SURFACE TREATMENT (1ST APPLICATION) _____ 40 LBS/ SQ. YD.
 POLYMER MODIFIED CATIONIC EMULSIFIED ASPHALT (CRS-2P)(1ST APPLICATION) _____ 0.45 GAL / SQ. YD.
 MINERAL AGGREGATE IN ASPHALT SURFACE TREATMENT (2ND APPLICATION) _____ 35 LBS/ SQ. YD.
 POLYMER MODIFIED CATIONIC EMULSIFIED ASPHALT (CRS-2P)(2ND APPLICATION) _____ 0.40 GAL / SQ. YD.

* NOTE: QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.



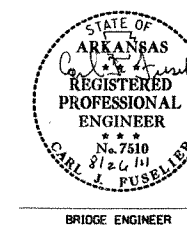
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	BR3713		11	61
				① 04918	QUANTITIES			52168

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. BR3713

BRIDGE NO.	CODE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	802	802	803	804	805	805	807	808	812	816	816	SP JOB BR3713		
				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)	① CONCRETE PILING (18" SQUARE)	① TEST PILE (18" SQUARE)	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	ELASTOMERIC BEARINGS	BRIDGE NAME PLATE (TYPE C)	DUMPED RIPRAP	FILTER BLANKET	SILICONE JOINT SEALANT		
				UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LIN. FT.	LIN. FT.	LB.	CU. IN.	EACH	CU. YD.	SQ. YD.	LIN. FT.		
04918	X071	FIELD BAYOU DITCH	BENT NO. 1		6	20.19		0.2	2,212	165	60		482	841.0		130	231			
			BENT NO. 2			9.92			968	240				942.5						
			BENT NO. 3			9.70				968	165	60			942.5					
			BENT NO. 4		15	20.09		0.2	2,212	180				482	841.0		112	196		
			120' CONT. COMP. W-BEAM UNIT					100.00	8.3	26,440					45,786		1			57
			SITE NO. 1 (STA. 110+00)		1															
TOTALS FOR JOB NO. BR3713					21	59.90	100.00	8.7	32,800	750	120		46,750	3,567.0	1	242	427	57		

① ALL CONCRETE PILING SHALL BE PRESTRESSED.

AILEEN SCHUBEL
DESIGN SECTION SUPERVISOR



SCHEDULE OF BRIDGE QUANTITIES
FIELD BAYOU DITCH STR. & APPRS. (S)
LAFAYETTE COUNTY
COUNTY ROAD 20
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACW DATE: 05/26/11 FILENAME: bbr3713-ql.dgn
CHECKED BY: JYP DATE: 8-26-11 SCALE: None
DESIGNED BY: ACW DATE: 5-11
BRIDGE NO. 04918 DRAWING NO. 52168

SUMMARY OF QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
2/14/2012				6	ARK.			
				JOB NO.		BR3713	12	61
④ SUMMARY OF QUANTITIES & REVISIONS								

ITEM NO.	ITEM	QUANTITY	UNIT
201	CLEARING	15	STATION
201	GRUBBING	15	STATION
202	REMOVAL AND DISPOSAL OF FENCE	926	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	2	EACH
210	UNCLASSIFIED EXCAVATION	1009	CU. YD.
210	COMPACTED EMBANKMENT	6350	CU. YD.
SP&210	SOIL STABILIZATION	200	TON
SS&303	AGGREGATE BASE COURSE (CLASS 5)	2130	TON
401	PRIME COAT	1448	GAL
402	MINERAL AGGREGATE IN ASPHALT SURFACE TREATMENT (CLASS 1)	130	TON
402	POLYMER MODIFIED CATIONIC EMULSIFIED ASPHALT (CRS-2P)	2953	GAL
504	APPROACH GUTTERS (TYPE B)	12.00	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	177	SQ. FT.
SS&604	TRAFFIC DRUMS	24	EACH
SS&604	BARRICADES	72	LIN. FT.
SS&606	18" SIDE DRAIN	36	LIN. FT.
SS&606	36" SIDE DRAIN	50	LIN. FT.
611	4" PIPE UNDERDRAINS	300	LIN. FT.
611	UNDERDRAIN OUTLET PROTECTORS	2	EACH
SS&617	GUARDRAIL (TYPE A)	200	LIN. FT.
SS&617	TERMINAL ANCHOR POSTS (TYPE 1)	4	EACH
SS&617	THRIE BEAM GUARDRAIL TERMINAL	4	EACH
619	WIRE FENCE (TYPE C)	828	LIN. FT.
* 619	16' STEEL GATES (ALTERNATE NO. 1)	1	EACH
* 619	16' ALUMINUM GATES (ALTERNATE NO. 2)	1	EACH
620	LIME	5	TON
620	SEEDING	2.21	ACRE
620	MULCH COVER	4.42	ACRE
SS&620	WATER	270.5	M. GAL.
621	TEMPORARY SEEDING	2.21	ACRE
621	SILT FENCE	1120	LIN. FT.
621	SAND BAG DITCH CHECKS	120	BAG
621	SEDIMENT REMOVAL AND DISPOSAL	51	CU. YD.
621	ROCK DITCH CHECKS	21	CU. YD.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
SS&718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")	2900	LIN. FT.
SS&718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")	2900	LIN. FT.
SS&726	STANDARD SIGN	24.50	SQ. FT.
729	CHANNEL POST SIGN SUPPORT (TYPE A)	2	EACH
729	CHANNEL POST SIGN SUPPORT (TYPE C)	4	EACH
SS&804	REINFORCING STEEL-ROADWAY (GRADE 60)	1008	LB
816	FILTER BLANKET	420	SQ. YD.
816	DUMPED RIPRAP	210	CU. YD.
STRUCTURES OVER 20'-0" SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES - BRIDGE	21	CU. YD.
802	CLASS S CONCRETE - BRIDGE	59.90	CU. YD.
802	CLASS S(AE) CONCRETE - BRIDGE	100.00	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	8.7	GAL
SS&804	REINFORCING STEEL-BRIDGE (GRADE 60)	32800	LB
805	CONCRETE PILING (18" SQUARE)	750	LIN. FT.
805	TEST PILING (18" SQUARE)	120	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)	46750	LB
808	ELASTOMERIC BEARINGS	3567	CU. IN
SP	SILICONE JOINT SEALANT	57	LIN. FT.
812	BRIDGE NAME PLATE (TYPE C)	1	EACH
816	FILTER BLANKET	427	SQ. YD.
816	DUMPED RIPRAP	242	CU. YD.

* ALTERNATE BID ITEM

REVISIONS

DATE	REVISION	SHEET NUMBER
2/14/2012	CHANGED AGGREGATE BASE COURSE TO CLASS 5	3,4,10 & 12
2/14/2012	ADDED SS-102-1 BIDDING REQUIREMENTS AND CONDITIONS	2 & 12



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	BR3713	13	61	

4 PLAN AND PROFILE STA. 102+00 TO 114+00

LEGEND

- --- POWER POLE
- --- TELEPHONE RISER
- △ --- UNDERGROUND WATER MKR.
- --- WATER METER

- APPROACH GUTTER (TYPE B)**
- STA. 109+17 TO STA. 109+44 - LT. = 3.00 CU. YDS. 252 LBS. CONCRETE REINF. STEEL
 - STA. 109+26 TO STA. 109+53 - RT. = 3.00 CU. YDS. 252 LBS.
 - STA. 110+63 TO STA. 110+90 - LT. = 3.00 CU. YDS. 252 LBS.
 - STA. 110+71 TO STA. 110+98 - RT. = 3.00 CU. YDS. 252 LBS.

- THRIE BEAM TERMINAL ANCHOR GUARDRAIL (TYPE B)**
- STA. 108+84 TO STA. 109+34 - LT. = 50 LIN FT. 1 EACH
 - STA. 108+93 TO STA. 109+43 - RT. = 50 LIN FT. 1 EACH
 - STA. 110+74 TO STA. 111+23 - LT. = 50 LIN FT. 1 EACH
 - STA. 110+82 TO STA. 111+32 - RT. = 50 LIN FT. 1 EACH

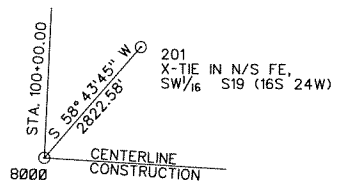
- REMOVAL AND DISPOSAL OF FENCE**
- STA. 110+33 TO STA. 113+00 - LT. = 375 LIN FT.
 - STA. 110+82 TO STA. 112+38 - RT. = 155 LIN FT.
 - STA. 112+54 TO STA. 116+50 - RT. = 396 LIN FT.

- STA. 107+31 IN PLACE**
- 30" X 35' LT. SIDE DRAIN REMOVE AND INSTALL
 - 36" X 50' PIPE CULVERT CONSTRUCT APPROACH
 - 62 CU. YDS. COMP. EMB.

- Begin Super. 104+35**
- Begin Max. Super. 106+35
 - End Max. Super. 108+57
 - End Super. 110+57

- STA. 110+75 CONSTRUCT**
- STD. HWY. SIGN
 - OM-3R ON LT.

- STA. 111+50 CONSTRUCT**
- STD. HWY. SIGN
 - W1-2R ON LT.



- CLEARING AND GRUBBING**
- STA. 102+00 TO STA. 116+50 = 15 STA

- STA. 105+34 IN PLACE**
- 15" X 24' PVC PIPE CULVERT
 - RETAIN AND INSTALL RIPRAP FROM OUTLET INTO BOTTOM OF LEFT SIDE DITCH

- FILTER BLANKET AND DUMPED RIPRAP**
- STA. 105+28 TO STA. 105+40 - LT. = 20 SQ. YDS. 10 CU. YDS.
 - STA. 107+45 TO STA. 109+45 - LT. = 400 SQ. YDS. 200 CU. YDS.

- STA. 109+33 CONSTRUCT**
- STD. HWY. SIGN
 - OM-3R ON LT.

- STA. 112+45 IN PLACE**
- 18" X 28' RT. SIDE DRAIN REMOVE AND INSTALL
 - 18" X 36' PIPE CULVERT
 - CONST. APPROACH = 13 CU. YDS. COMP. EMB.

STA. 102+00.00 BEGIN JOB BR3713
FED. AID PROJ. BRO-0037(29)

THE GREG BENNETT CO.

- STA. 104+10 CONSTRUCT**
- STD. HWY. SIGN
 - W1-2L ON RT.

- STA. 109+42 CONSTRUCT**
- STD. HWY. SIGN
 - OM-3R ON RT.

- STA. 110+33 TO STA. 113+00 - LT. = 270 LIN FT.**
- STA. 110+82 TO STA. 112+38 - RT. = 158 LIN FT.
 - STA. 112+54 TO STA. 116+50 - RT. = 400 LIN FT.

STA. 109+40.40 - STA. 110+49.60 IN PLACE

25.2' X 114' PRE-CAST CONCRETE CHANNEL BEAMS SUPPORTED BY TIMBER BULKHEADS AND PILING.

BR. NO. 15936

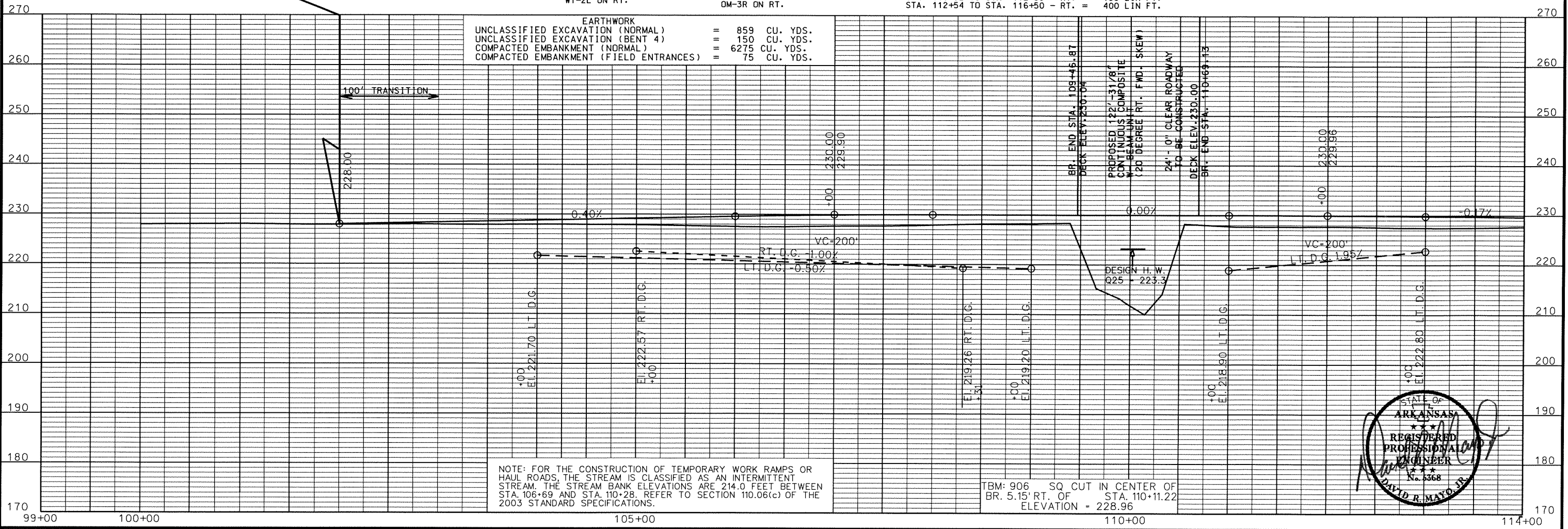
REMOVE AS EXISTING BRIDGE STRUCTURE

- 1.00 LUMP SUM

THE EXISTING BRIDGE SHALL BE REMOVED IN ACCORDANCE WITH SECTION 205 OF THE STANDARD SPECIFICATIONS. SEE GENERAL NOTES ON SHEET 15 FOR ADDITIONAL REMOVAL AND SALVAGE REQUIREMENTS.

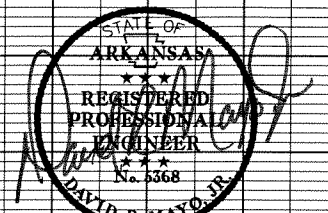
EARTHWORK

UNCLASSIFIED EXCAVATION (NORMAL)	=	859 CU. YDS.
UNCLASSIFIED EXCAVATION (BENT 4)	=	150 CU. YDS.
COMPACTED EMBANKMENT (NORMAL)	=	6275 CU. YDS.
COMPACTED EMBANKMENT (FIELD ENTRANCES)	=	75 CU. YDS.



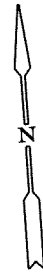
NOTE: FOR THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THE STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 214.0 FEET BETWEEN STA. 106+69 AND STA. 110+28. REFER TO SECTION 110.06(c) OF THE 2003 STANDARD SPECIFICATIONS.

TBM: 906 SQ CUT IN CENTER OF BR. 5.15' RT. OF STA. 110+11.22 ELEVATION = 228.96

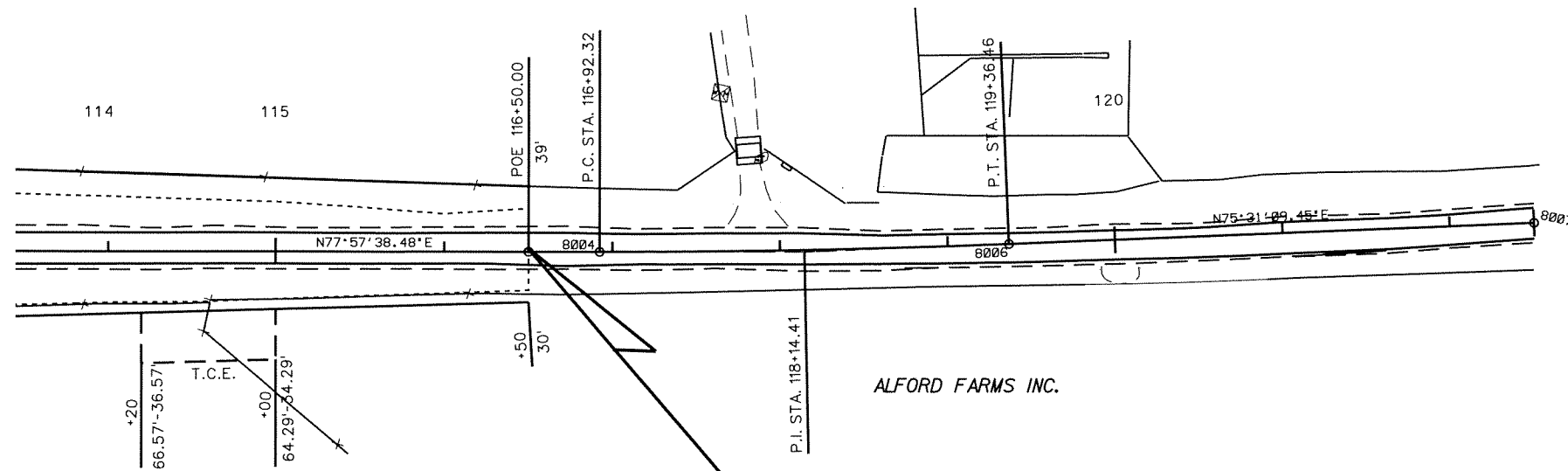


16' GATE
LOCATION TO BE DETERMINED = 1 EACH
GATE TO BE INSTALLED IF AND WHERE
DIRECTED BY THE ENGINEER.

ALFORD, WALTER BRUCE & LINDA

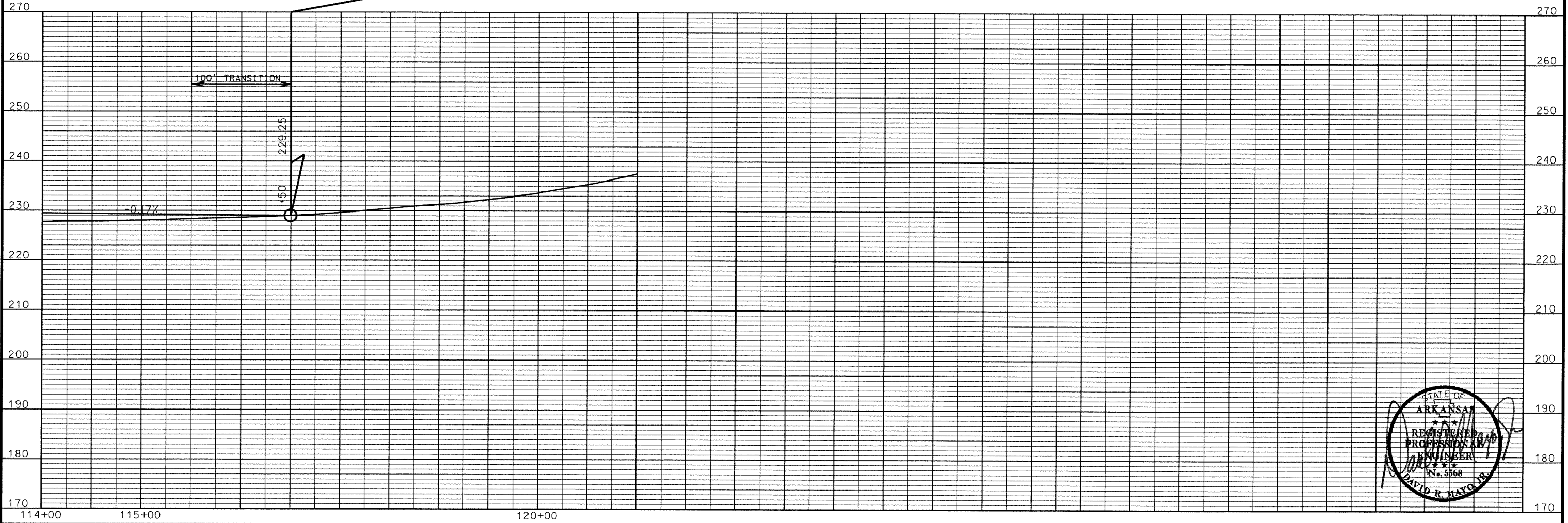


P.I. = 118+14.41
A = 2° 26' 29.03" LT.
D = 1° 00' 00.00"
T = 122.09'
L = 244.14'
e = 0.000



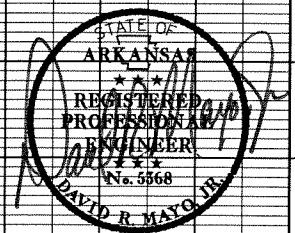
NOTE:
STA. 114+60 ON RIGHT IRON GATE
TO BE REMOVED BY OTHERS.

**STA. 116+50.00 END JOB BR3713
FED. AID PROJ. BRO-0037(29)**

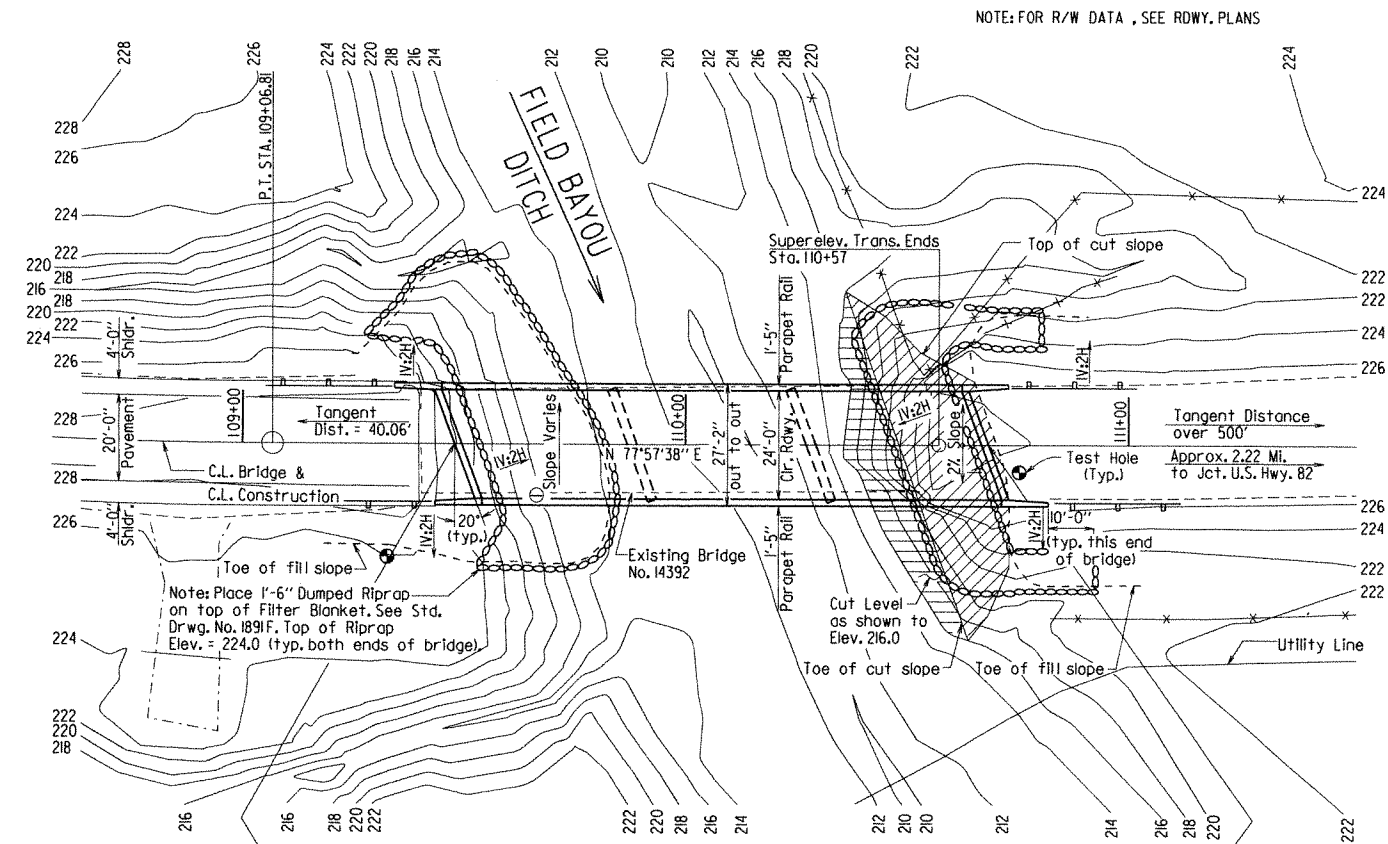


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR3713	14	61
④ PLAN AND PROFILE STA. 114+00 TO 116+50								

- TRAFFIC CONTROL DEVICES**
- R11-3A
 - INT. @ CO. RDS. 11 & 20 1 SIGN 12.50 SQ. FT.
 - INT. @ CO. RDS. 5 & 20 1 SIGN 12.50 SQ. FT.
 - G20-1
 - BEGIN PROJECT 1 SIGN 10.00 SQ. FT.
 - END PROJECT 1 SIGN 10.00 SQ. FT.
 - G20-2
 - BEGIN PROJECT 1 SIGN 10.00 SQ. FT.
 - END PROJECT 1 SIGN 10.00 SQ. FT.
 - W20-3
 - BEGIN PROJECT 3 SIGNS 48.00 SQ. FT.
 - END PROJECT 3 SIGNS 48.00 SQ. FT.
 - R11-2
 - BEGIN PROJECT 1 SIGN* 10.00 SQ. FT.
 - END PROJECT 1 SIGN* 10.00 SQ. FT.
- BARRICADES (TYPE III)**
- BEGIN PROJECT 24 LIN. FT.
 - END PROJECT 24 LIN. FT.
 - ENTIRE PROJECT (TRAFFIC DRUMS) 24 EACH
- NOTE:
EXACT LOCATION OF TRAFFIC CONTROL DEVICES
TO BE DETERMINED BY THE ENGINEER



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.		BR3713	15	61
				04918	LAYOUT		5269	



NOTE: FOR R/W DATA, SEE RDWY. PLANS

Notes:
 Use Type B Approach Gutters ("W"-3'-0") at both ends of bridge, see Std. Dwg. No. 2016B.
 The Contractor shall remove a portion of the existing approach embankment at Bent 4 as shown using a 1V:2H cut slope. Approximately 150 cubic yards of excavation.
 For soil boring information, see Dwg. No. 52170.

GENERAL NOTES

BENCHMARK: BM #906, square cut in center of Bridge No. 14392, 5J5' Rt. of Sta. 110+11.22, Elev. 228.96.
 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, Fifth Edition, 2010.
 LIVE LOADING: HL93
 SEISMIC PERFORMANCE ZONE: I
 MATERIALS AND STRENGTHS
 Class 5(AE) Concrete (superstructure) f'c = 4,000 psi
 Class 5 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.

CONCRETE PILING: Piling in all bents shall be 18" square prestressed concrete and shall be driven with an approved air, steam, or diesel hammer. Piling at Bents 1 and 4 shall be driven to an ultimate bearing capacity of 180 tons per pile. Piling at Bents 2 and 3 shall be driven to an ultimate bearing capacity of 205 tons per pile. Piling in end bents shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. Drive one 60' test pile in Bent No. 1 and one 60' test pile in Bent No. 3.

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 40,000 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 60,000 foot pounds per blow.

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

DETAIL DRAWINGS:	DRAWING NO.
End Bents	52171, 52172, 52175
Int. Bents	52173, 52174
Elastomeric Bearings	52176
120'-0" Cont. W-Beam Unit	52177 - 52182
Concrete Piling	14964
Type B Approach Gutters	2016B

EXISTING BRIDGE: The existing six-span bridge, no. 14392, (L.M. 3.94) is 25.2' wide and 114' long, and consists of precast concrete channel beams supported by timber bulkheads and piling.

REMOVAL AND SALVAGE: Existing Bridge No. 14392 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor except the following which shall remain the property of the County:

- Precast Concrete Bridge Deck Units
- Bridge Guardrail

Salvaged items shall be delivered to the Lafayette County Maintenance Yard on Highway 29, south of Lewisville. Payment for this work shall be considered incidental to "Removal of Existing Bridge Structure (Site No. II)".

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

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
			FEET	FEET
Design	25	2,600	223.3	223.3
Base	100	3,700	225.2	225.3
Extreme	500	4,400	226.3	226.3
Overtopping	7500	-	-	-

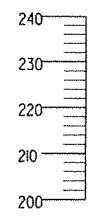
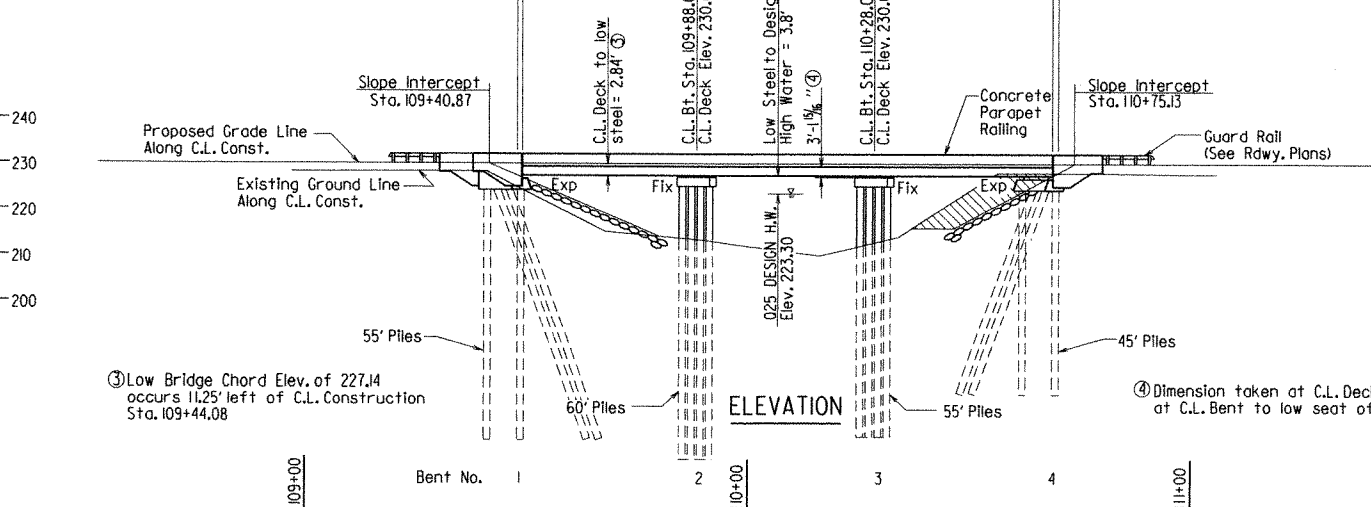
Unconstricted water surface without structure or roadway approaches.
 0100 backwater elevation for existing structure = 225.3
 Proposed Low Bridge Chord Elev. = 227.14
 Drainage area = 35.1 square miles.
 Historical H.W. Elev = 224.6

For details of super-elevation transition, see Dwg. No. 52170.

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.

Level Grade
 Theoretical C.L. Deck Elev. 230.0

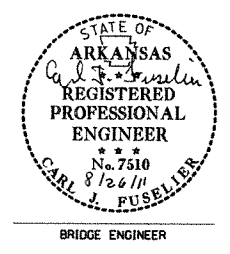
Note:
 All Stations and elevations are taken along C.L. Construction & C.L. Bridge.



Low Bridge Chord Elev. of 227.14 occurs 11.25' left of C.L. Construction Sta. 109+44.08

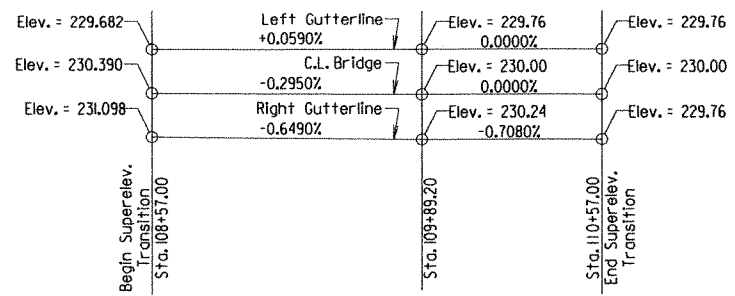
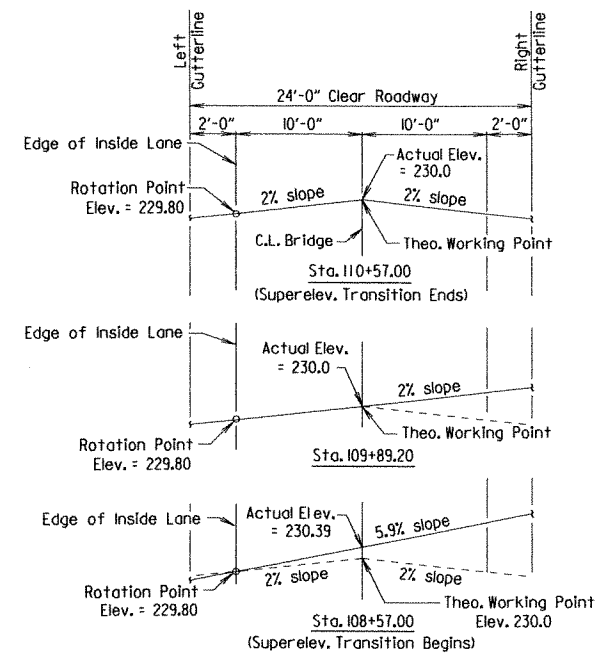
Dimension taken at C.L. Deck at C.L. Bent to low seat of cap

Measured at Working Point, See Dwg. No. 52177.



SHEET 1 OF 2
 LAYOUT OF BRIDGE OVER
 FIELD BAYOU DITCH
 FIELD BAYOU DITCH STR. & APPRS. (S)
 LAFAYETTE COUNTY
 CO. ROAD 20
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: ACW DATE: 04/19/11 FILENAME: bbr3713_ll.dgn
 CHECKED BY: JYP DATE: 9-25-11 SCALE: 1"=20'
 DESIGNED BY: ACW DATE: 4-11
 BRIDGE NO. 04918 DRAWING NO. 52169

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.		BR3713	16	61
				04918	LAYOUT			5210



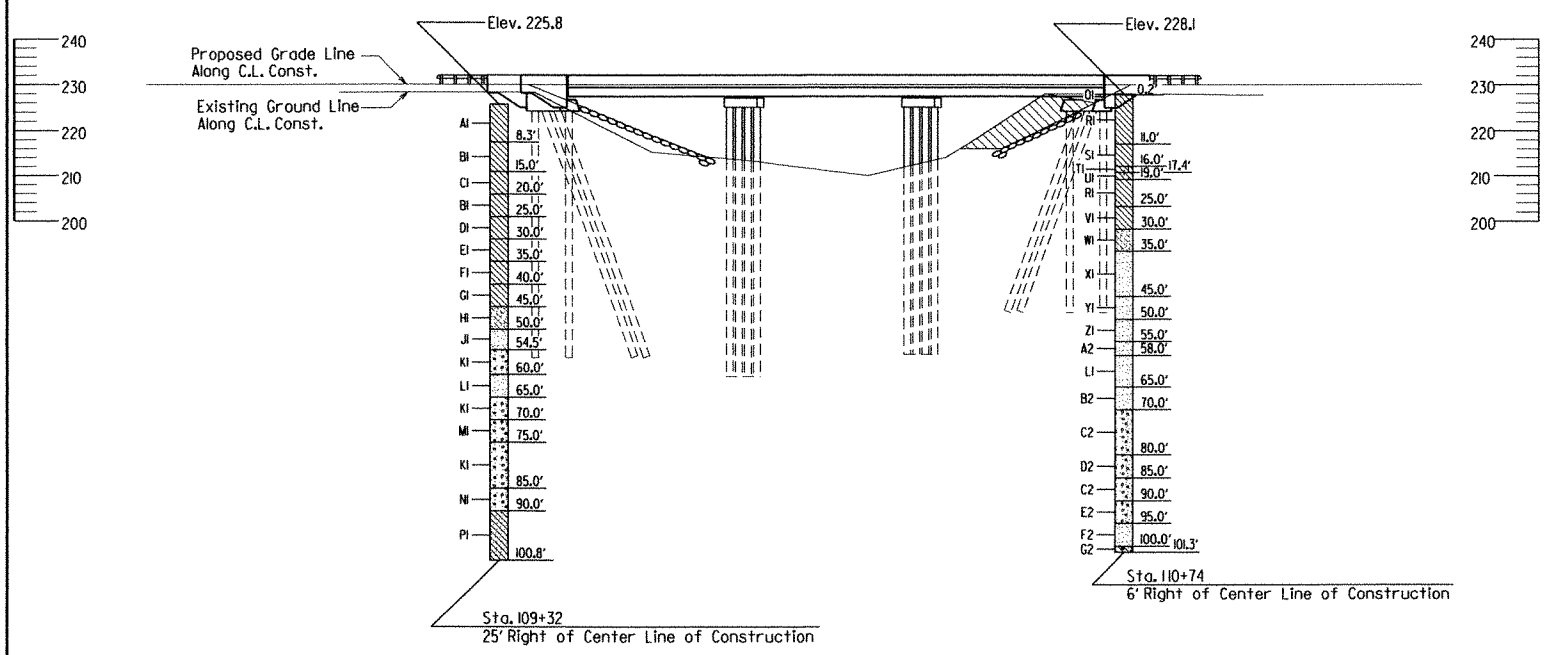
SUPERELEVATION TRANSITION
Looking Forward
No Scale

BORING LEGEND

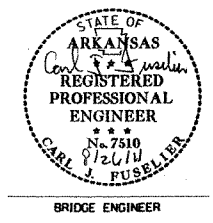
- AI-Moist, Stiff, Brown Clay with some Organic Matter
- BI-Moist, Stiff, Reddish Brown Clay with some Organic Matter
- CI-Wet, Soft, Reddish Brown Clay with some Organic Matter
- DI-Moist, Stiff, Brown and Gray Clay
- EI-Moist, Medium Stiff, Reddish Brown and Gray Clay with Shells
- FI-Wet, Soft, Dark Brown Clay
- GI-Wet, Very Soft, Reddish Brown Clay
- HI-Wet, Medium Dense, Gray and Brown Sand with Clay
- JI-Moist, Dense, Reddish Brown Sand
- KI-Wet, Medium Dense, Brown Sand with Gravel
- LI-Wet, Medium Dense, Brown Sand with some Gravel
- MI-Wet, Medium Dense, Reddish Brown Sand with Gravel
- NI-Wet, Dense, Brown Sand with Gravel
- PI-Moist, Very Hard, Dark Brown Sandy Clay
- QI-Asphalt Pavement (0-0.2")
- RI-Moist, Medium Stiff, Brown Clay
- SI-Moist, Medium Stiff, Brown and Gray Clay with some Sand
- TI-Moist, Soft, Dark Gray Silty Clay
- UI-Wet, Soft, Gray Silty Clay
- VI-Moist, Soft, Brown Clay
- WI-Moist, Medium Dense, Brown Sand with Clay
- XI-Moist, Medium Dense, Reddish Brown Sand
- YI-Wet, Medium Dense, Reddish Brown Sand
- ZI-Wet, Medium Dense, Brown Sand
- A2-Wet, Dense, Brown Sand
- B2-Wet, Medium Dense, Brown Sand with Trace of Gravel
- C2-Wet, Loose, Brown Gravel with Sand
- D2-Wet, Medium Dense, Brown Gravel with Sand
- E2-Wet, Very Dense, Brown Gravel with Sand
- F2-Wet, Very Dense, Dark Brown Sand
- G2-Moist, Very Hard, Dark Gray and Brown Clay with Sand Seams and Organic Matter

"N" VALUES

- Sta. 109+32 - 25' Right of Center Line of Construction
 - 3.8 - 4.8, N=9
 - 8.8 - 9.8, N=13
 - 15.5 - 16.5, N=4
 - 20.5 - 21.5, N=9
 - 25.5 - 26.5, N=9
 - 30.5 - 31.5, N=7
 - 35.5 - 36.5, N=2
 - 40.5 - 41.5, N=1
 - 45.5 - 46.5, N=12
 - 50.5 - 51.5, N=48
 - 55.5 - 56.5, N=25
 - 60.5 - 61.5, N=16
 - 65.5 - 66.5, N=11
 - 70.5 - 71.5, N=15
 - 75.5 - 76.5, N=25
 - 80.5 - 81.5, N=19
 - 85.5 - 86.5, N=33
 - 90.5 - 90.8, N=60(3')
 - 95.5 - 95.8, N=60(3')
 - 100.5 - 100.8, N=60(4')
- Sta. 110+74 - 6' Right of Center Line of Construction
 - 4.5 - 5.5, N=5
 - 11.5 - 12.5, N=6
 - 16.5 - 17.5, N=3
 - 21.5 - 22.5, N=5
 - 25.5 - 26.5, N=4
 - 30.5 - 31.5, N=16
 - 35.5 - 36.5, N=11
 - 40.5 - 41.5, N=11
 - 45.5 - 46.5, N=18
 - 50.5 - 51.5, N=18
 - 55.5 - 56.5, N=43
 - 60.5 - 61.5, N=19
 - 65.5 - 66.5, N=24
 - 70.5 - 71.5, N=10
 - 75.5 - 76.5, N=15
 - 80.5 - 81.5, N=12
 - 85.5 - 86.5, N=8
 - 90.5 - 91.5, N=57
 - 95.0 - 95.4, N=60(5')
 - 100.5 - 101.3, N=110(10')



ELEVATION OF SOIL BORINGS



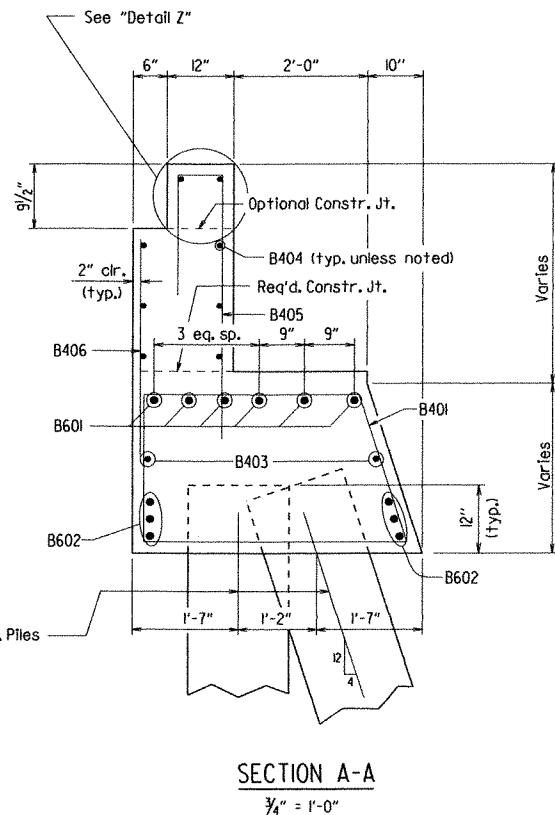
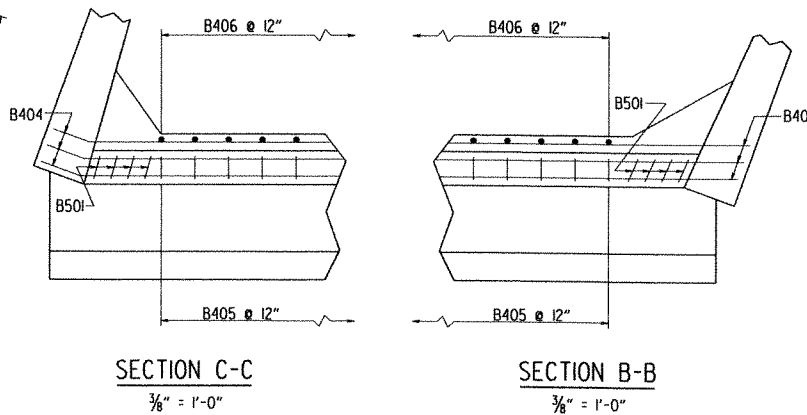
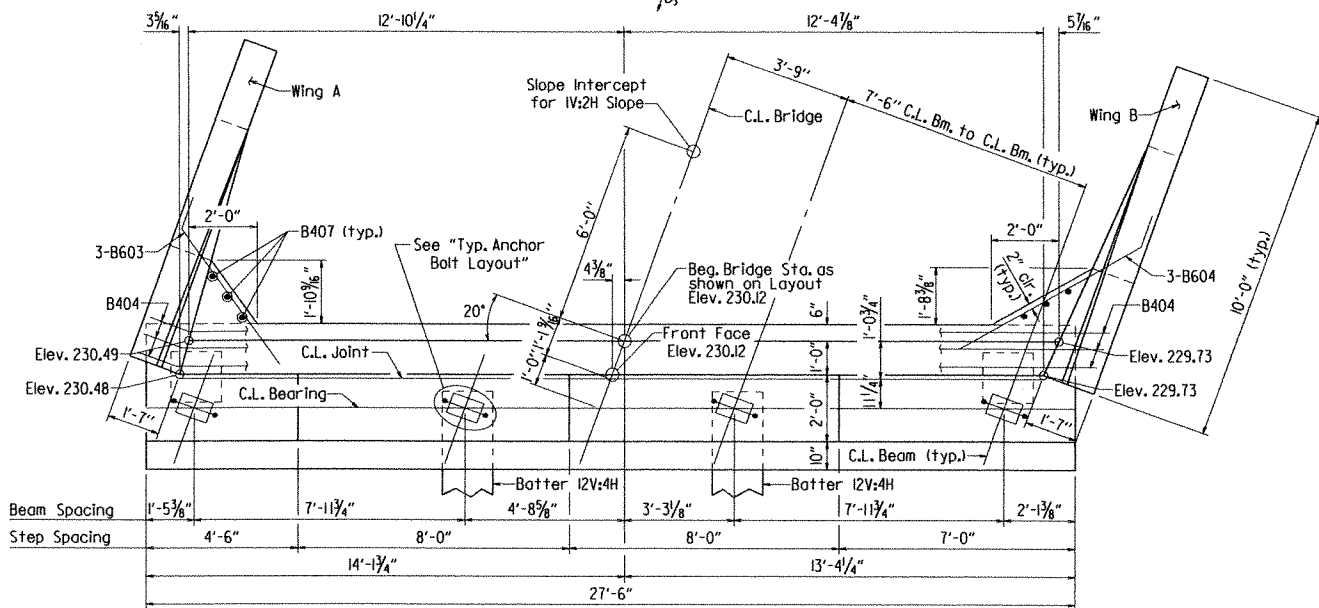
SHEET 2 OF 2
LAYOUT OF BRIDGE OVER
FIELD BAYOU DITCH
FIELD BAYOU DITCH STR. & APPRS. (S)
LAFAYETTE COUNTY
CO. ROAD 20
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: ACW DATE: 04/18/11 FILENAME: bbr3713.ll.dgn
CHECKED BY: JJP DATE: 8-26-11 SCALE: 1"=20'
DESIGNED BY: ACW DATE: 4-11
BRIDGE NO. 04918 DRAWING NO. 5210

Note: Class I Protective Surface Treatment shall be applied to the top of the backwall and to the roadway face and top of the wing rails.

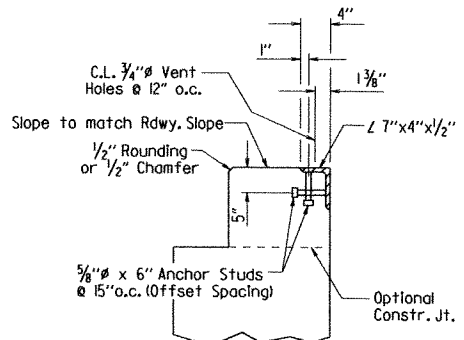
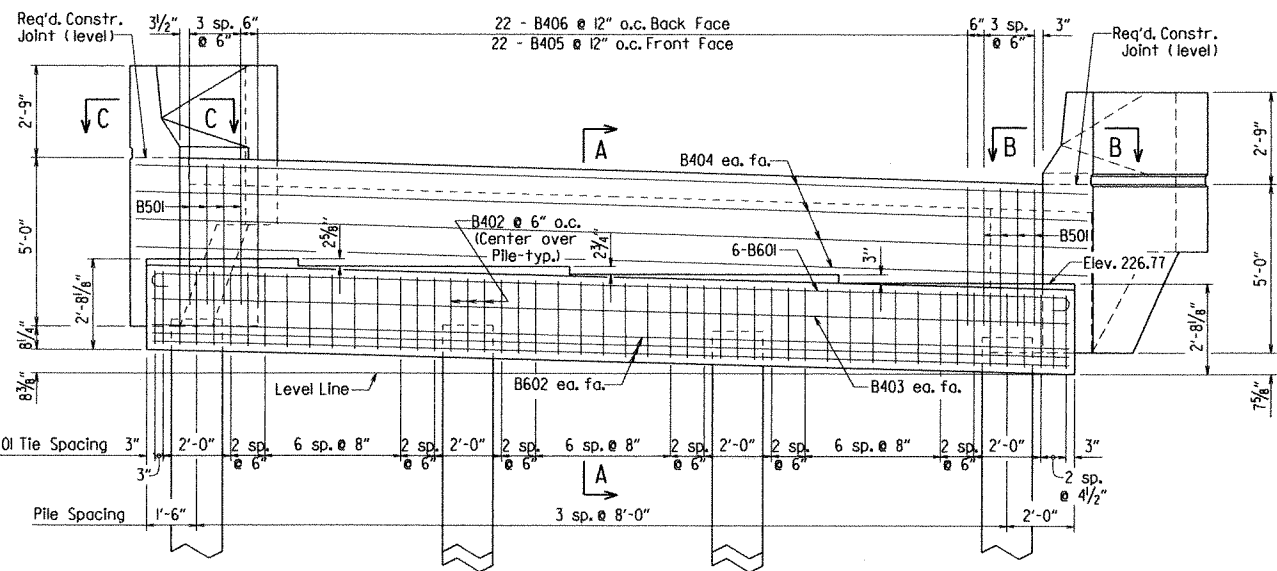
For details of wing and rail, see Dwg. No. 52172

Note: For Bar List, see Dwg. No. 52172.

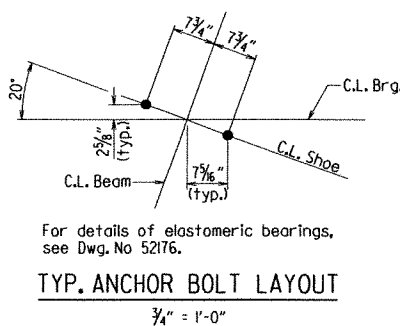
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		17	61
				JOB NO.	BR3713		17	61
				①	04918	END BENT	52171	



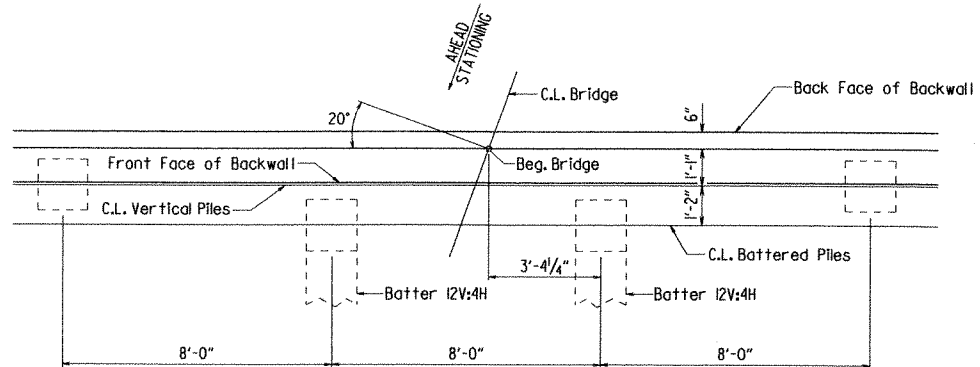
NOTE: The Backwall above the required construction joint shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Dwg. No. 52181, "Expansion Device Installation at End Bents", for additional information.



NOTES: For additional Joint details, see Dwg. No. 52181.
Concrete shall be hand packed under the joint armor in the backwall.



For details of elastomeric bearings, see Dwg. No. 52176.



GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength $f'_c = 3,500$ 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 (yield strength = 60,000 psi.).

Structural steel in end bents shall be M270, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)".

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

For additional information, see Layout.



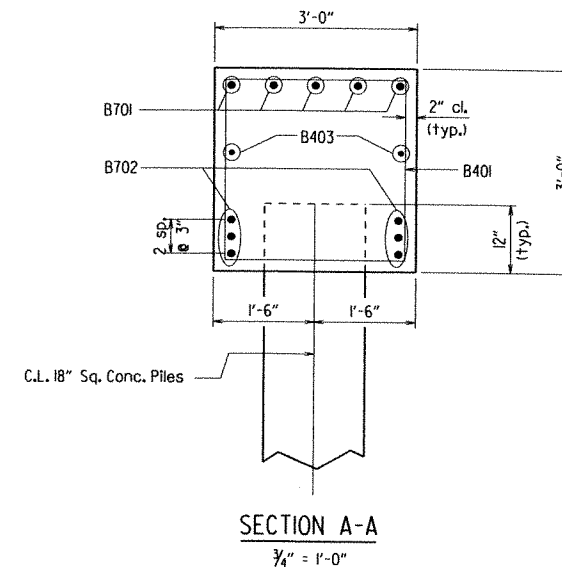
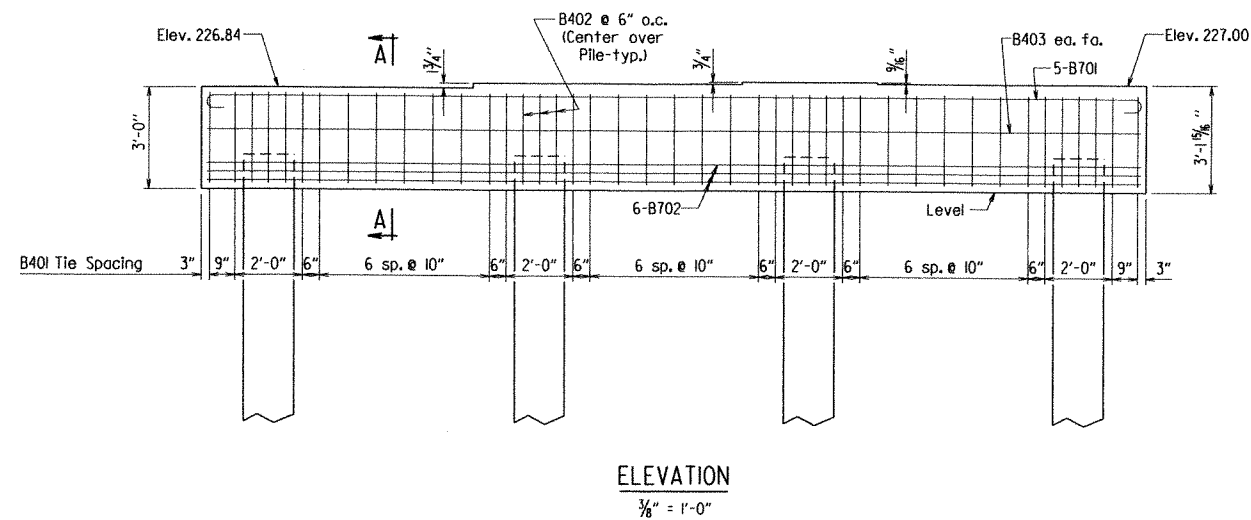
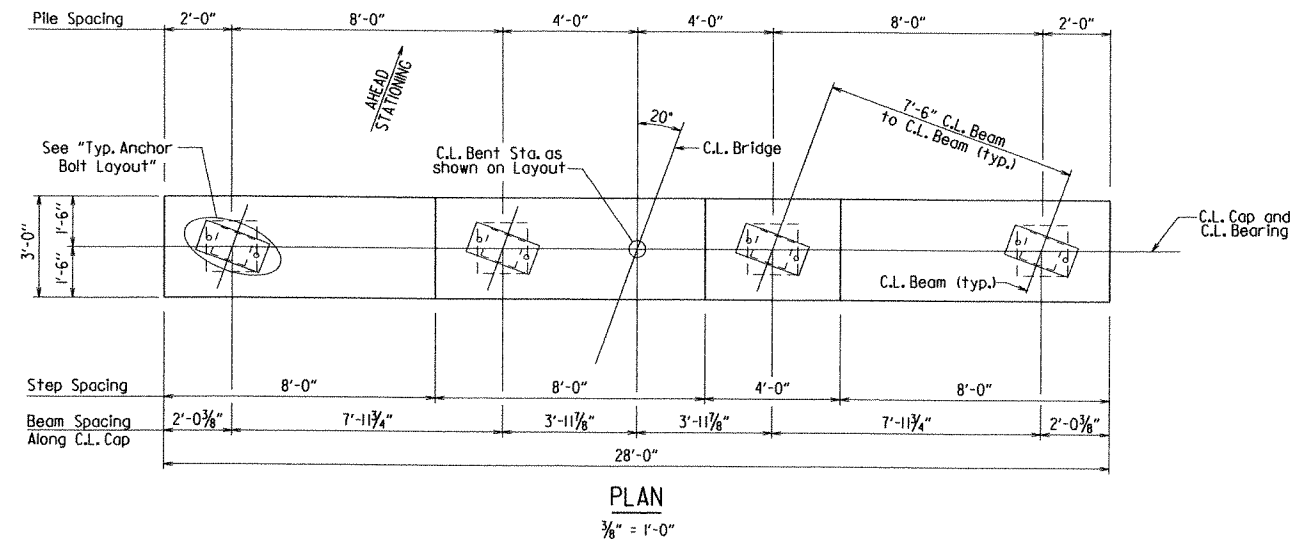
DETAILS OF BENT I
FIELD BAYOU

COUNTY ROAD 20
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 4-22-11 FILENAME: bbr3713.bl.dgn
CHECKED BY: ACW DATE: 8-25-11 SCALE: As Noted
DESIGNED BY: JYP DATE: 4-11

BRIDGE NO. 04918 DRAWING NO. 52171

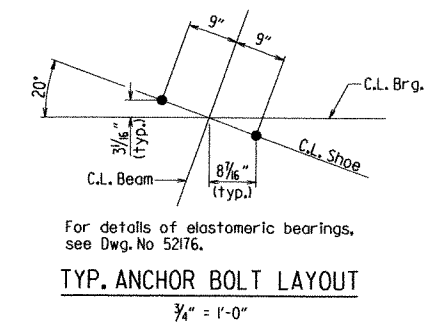
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR3713	20	61
				04918	BENT 3		52174	



BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	31	11'-0"	2"	
B402	12	7'-10"	2"	
B403	2	27'-8"	Str.	
B701	5	29'-4"	2"	
B702	6	27'-8"	Str.	

Dimensions are out to out of bars.



GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength $f'_c = 3,500$ psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 1/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (yield strength = 60,000 psi.).

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

For additional information, see Layout.

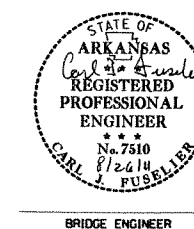
**DETAILS OF BENT 3
FIELD BAYOU**

COUNTY ROAD 20
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 4-20-11 FILENAME: bbr3713.b3.dgn
CHECKED BY: ACW DATE: 8-25-11 SCALE: As Noted
DESIGNED BY: JYP DATE: 4-11

BRIDGE NO. 04918

DRAWING NO. 52174



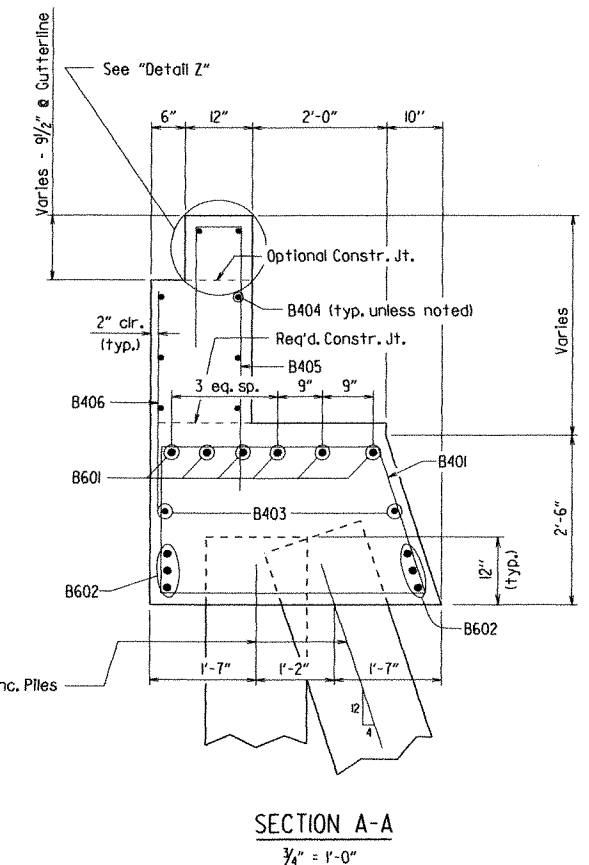
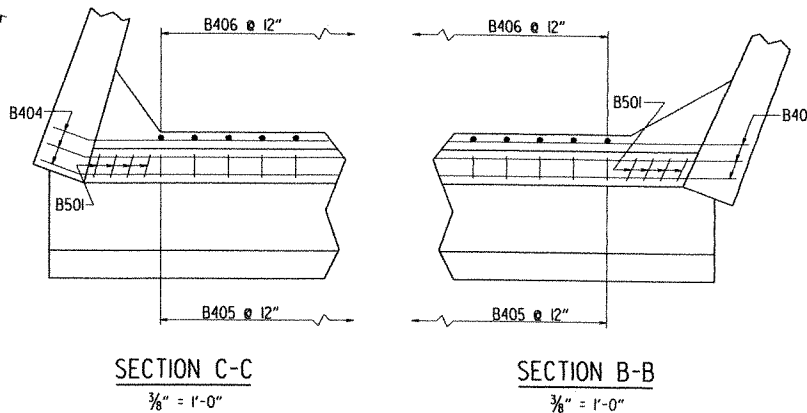
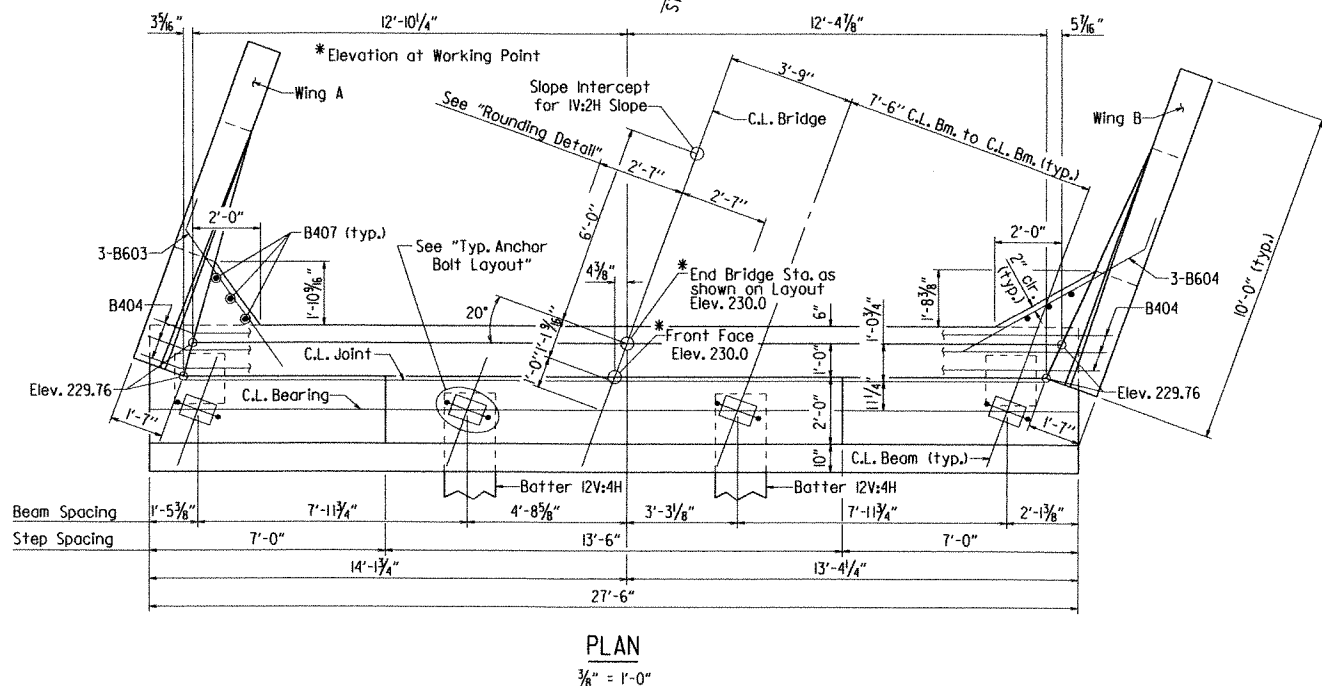
BRIDGE ENGINEER

Note: Class I Protective Surface Treatment shall be applied to the top of the backwall and to the roadway face and top of the wing rails.

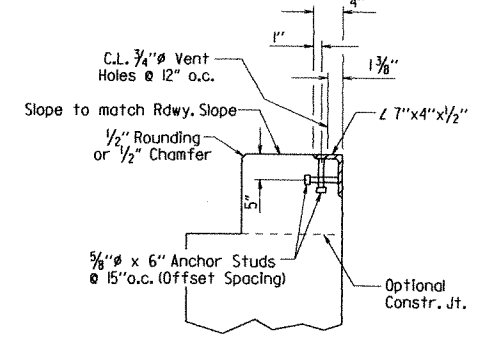
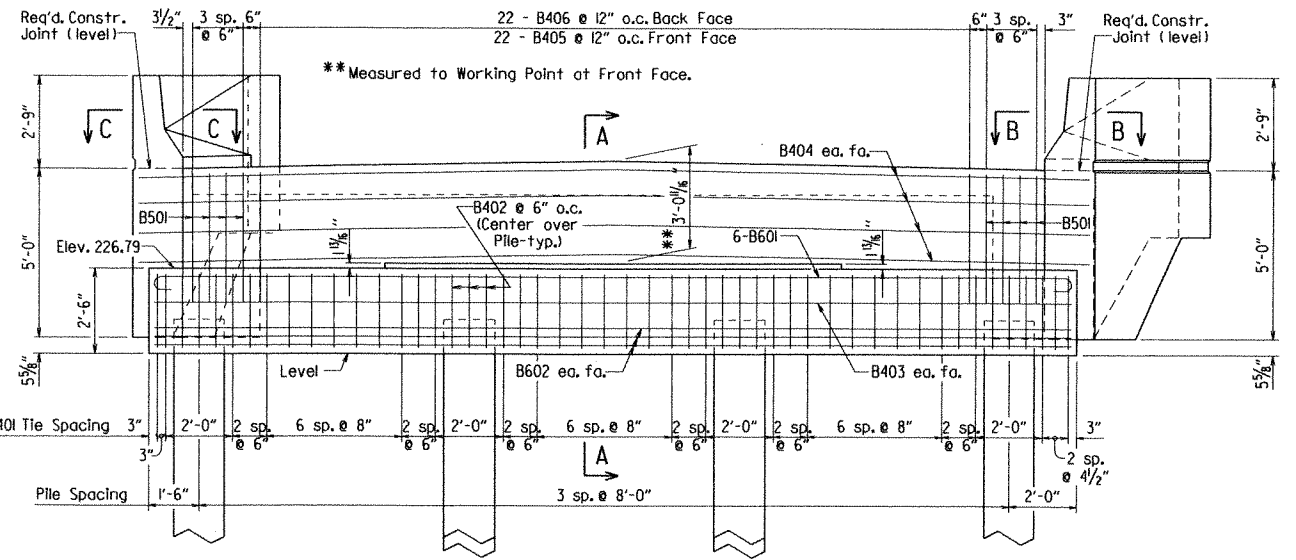
For details of wing and rail, see Dwg. No. 52172

Note: For Bar List, see Dwg. No. 52172.

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.	BR3713		21	61
				① 0498	END BENT		52175	



NOTE: The Backwall above the required construction joint shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Dwg. No. 52181, "Expansion Device Installation at End Bents", for additional information.



NOTES: For additional joint details, see Dwg. No. 52181.
Concrete shall be hand packed under the joint armor in the backwall.

GENERAL NOTES

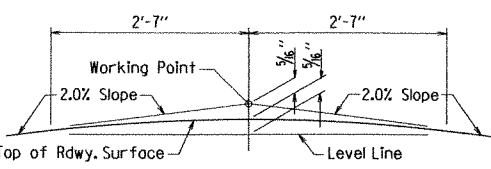
All concrete shall be Class "S" with a minimum 28 day compressive strength $f'_c = 3,500$ psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (yield strength = 60,000 psi.).

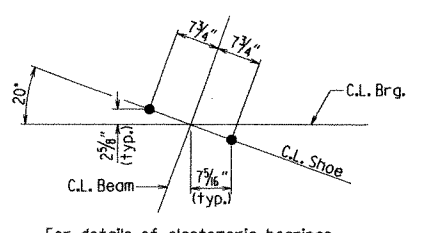
Structural steel in end bents shall be M270, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)".

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

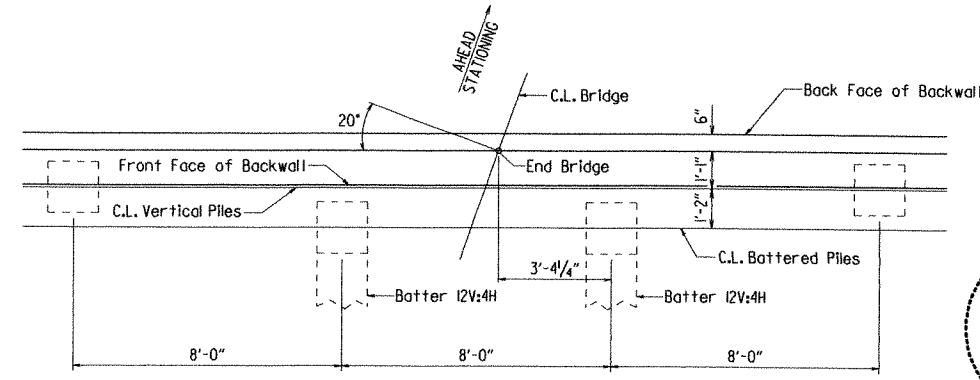
For additional information, see Layout.



NOTE: Working Point matches Theoretical Roadway Grade.



For details of elastomeric bearings, see Dwg. No. 52176.



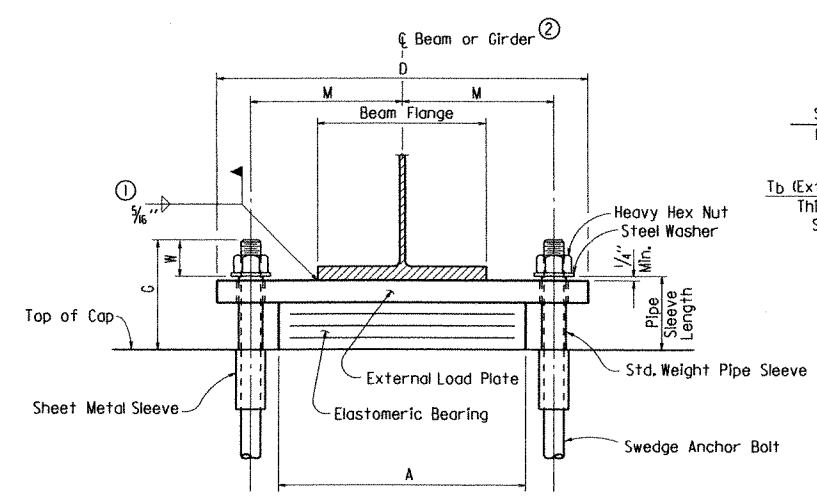
**DETAILS OF BENT 4
FIELD BAYOU**

COUNTY ROAD 20
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 4-22-11 FILENAME: bbr3713_bldgn
CHECKED BY: ACW DATE: 8-25-11 SCALE: As Noted
DESIGNED BY: JYP DATE: 4-11

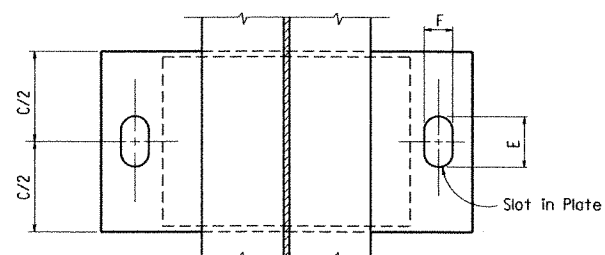
BRIDGE NO. 04918 DRAWING NO. 52175

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.	BR3713		22	61
				①	04918	Cont. Unit		52176

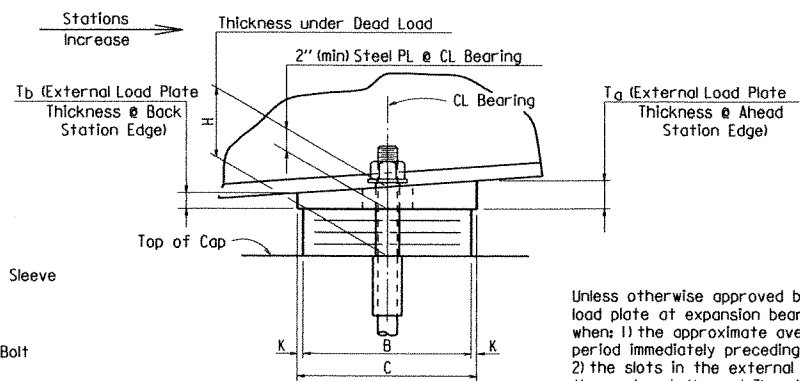


FRONT VIEW

- ① Care shall be taken to ensure that the external load plate is in full and complete contact with the beam or girder flange before welding begins.
- ② C.L. Elastomeric pad shall be aligned with C.L. Beam.



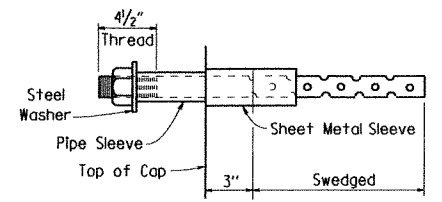
PLAN VIEW



SIDE VIEW

Note: The direction of bevel of the external load plate may not be accurately depicted with respect to T_a and T_b values shown in Table of Fabricator Variables.

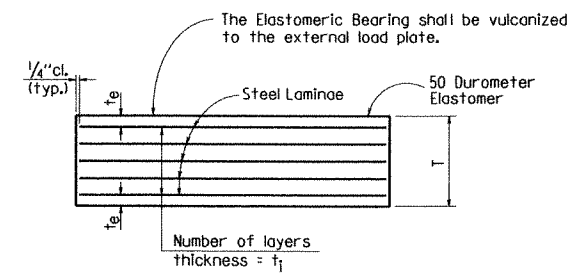
Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the girder will be allowed only when: 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40° F and 80° F; and 2) the slots in the external load plate are positioned to center on the anchor bolts; and 3) no horizontal deformation of the elastomeric pad is evident. If welding at other temperatures is required, the Engineer will provide adjustment data.



ANCHOR BOLT DETAIL

NOTE: Anchor Bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required.

If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a OPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "Structural Steel in Beam Spans (M 270, Gr. 50W)."



ELASTOMERIC BEARING

t_e = thickness of elastomer cover on top and bottom of pad
t₁ = thickness of elastomer between steel laminae
N = number of elastomer layers of thickness t₁

GENERAL NOTES

Elastomeric Bearings shall conform to Section 808 of the Standard Specifications and shall be paid for at the unit price bid for "Elastomeric Bearings".

External load plates shall conform to AASHTO M 270, Grade 50W. Pipe sleeves shall be ASTM A53, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or AASHTO M 298, Class 50.

External load plates shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with subsection 808.03. Other surfaces shall be blast cleaned in accordance with subsection 807.84(b) for painted steel and 807.84(e) for unpainted Grade 50W steel.

Anchor Bolts, Washers and Nuts shall conform to subsection 807.07 of the Standard Specifications. The anchor bolt grade of steel shall be as specified in the "Table of Fabricator Variables". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

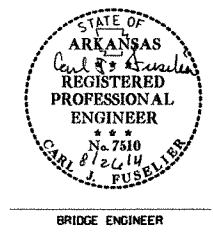
Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)."

Bearings shall be seated in accordance with subsection 808.08. This work and materials are considered as subsidiary to the item "Elastomeric Bearings" and will not be paid for directly.

TABLE OF FABRICATOR VARIABLES

BRIDGE NO.	LOCATION		BEARING TYPE	NO. OF BEARINGS EACH BENT	*MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD					EXTERNAL LOAD PLATE								ANCHOR BOLT							
	BENT NOS.	BEAM OR GIRDER NO.						A	B	N	t ₁	t _e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	K	M	T _a	T _b	ANCHOR BOLT (Ø x L)	PIPE SLEEVE SIZE (Ø x L)	SHEET METAL SLEEVE SIZE (Ø x L)	STEEL WASHER SIZE (O.D.)		
04918	1 & 4	All	Exp.	4	74	6 7/8"	4 3/8"	11 1/2"	7 1/2"	3	1/2"	1/4"	4 @ 12 Ga.	2 1/8"	8 1/2"	20 1/2"	3 1/8"	2"	1/2"	7 3/4"	2.00"	2.00"	1 1/4" Ø x 21"	55	1 1/4" x 4 5/8"	3" x 6"	2 1/2"	
	2 & 3	All	Fix	4	130	6 7/8"	3 3/8"	13"	10"	2	1/2"	1/4"	3 @ 12 Ga.	1 3/8"	11"	24"	2 5/8"	2 5/8"	1/2"	9"	1.98"	2.02"	1 3/4" Ø x 28"	55	2" x 4 1/8"	4" x 9"	3 3/8"	

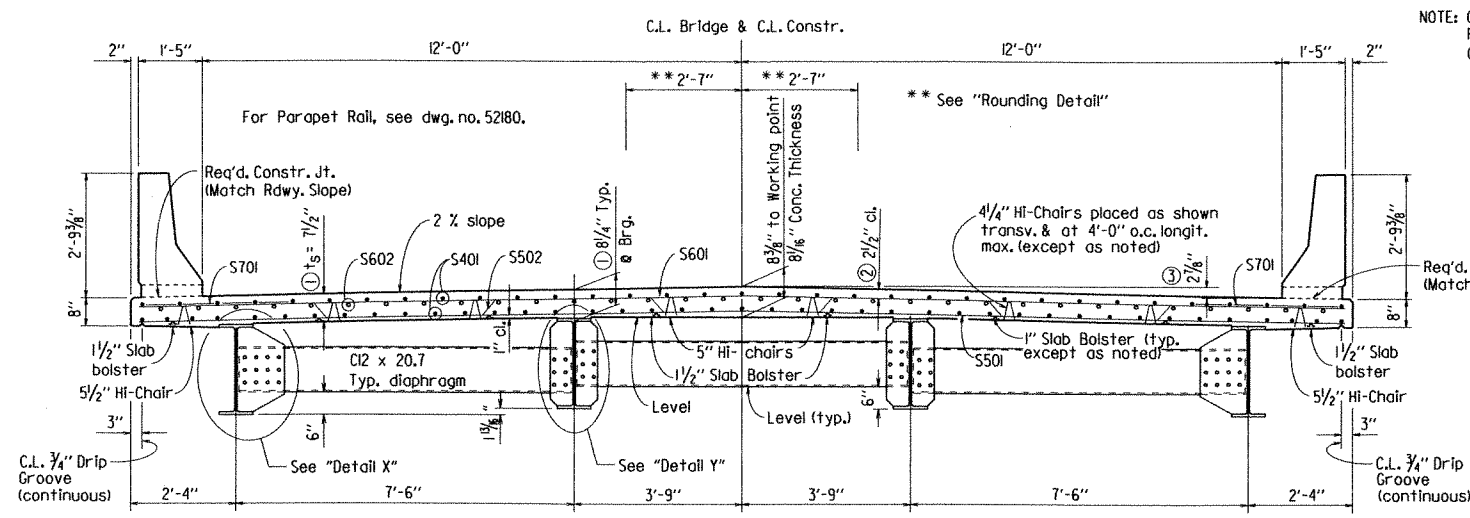
* Maximum Design Load = Service I Limit State



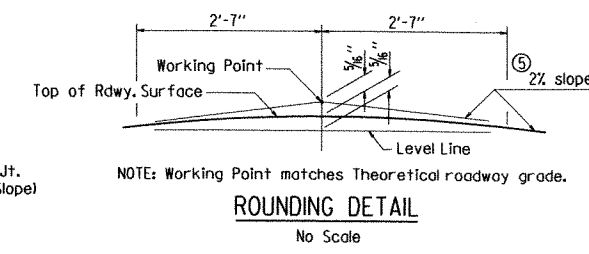
DETAILS OF ELASTOMERIC BEARINGS
COUNTY ROAD 20
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: ACW DATE: 05-11 FILENAME: bbr3713_el.dgn
CHECKED BY: JYP DATE: 8-25-11 SCALE: NONE
DESIGNED BY: ACW DATE: 5-11
BRIDGE NO. 04918 DRAWING NO. 52176

BRIDGE ENGINEER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						BR3713	23	61
				04918		CONT. UNIT		52177



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



⑤ Values shown are for 2% Peaked Crown. Dimension for Working Point to Top of Roadway Surface Varies from 0" at Sta. 109+89.20 to 3/8" at Sta. 110+57.00

Slab Reinforcing:

Longitudinal: S401 Top & Bottom (Place as shown)
S602 placed as shown over interior supports (See Reinf. Plan)
Transverse: S502 @ 15" o.c. bent up over beams
S601 @ 15" o.c. in top, S501 @ 15" o.c. in bott. Alternate S701 @ 15" o.c. (Top of Slab at Gutter)

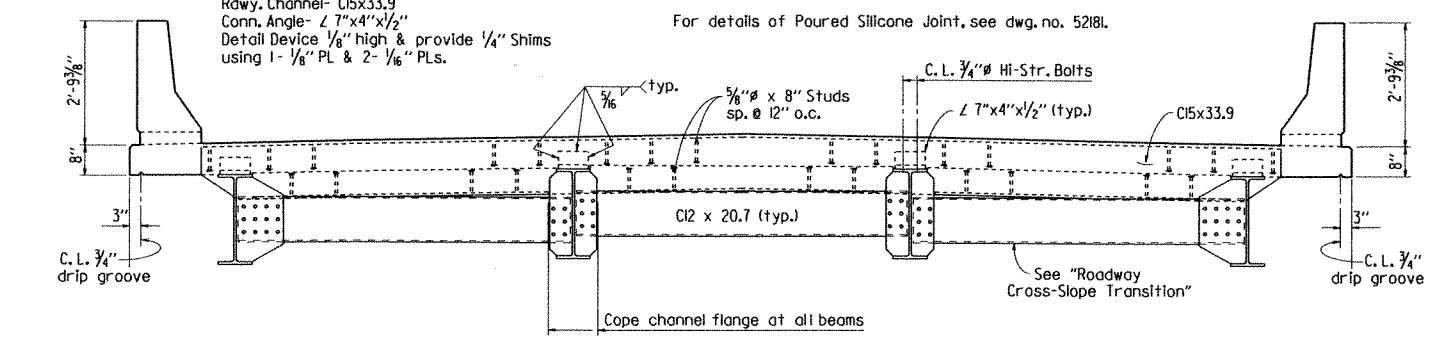
**TYPICAL ROADWAY SECTION
STA. 110+57.00 TO END OF UNIT**

Looking Ahead
1/2" = 1'-0"

- ① See "Adjustment for Slab Thickness Tolerance".
- ② Tolerance: Minus = 1/4"
Plus: Equal to amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".
- ③ Working point to gutterline

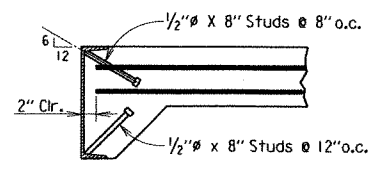
Expansion Device:

Rdwy. Channel- C15x33.9
Conn. Angle- L 7"x4"x1/2"
Detail Device 1/8" high & provide 1/4" Shims using 1- 1/8" PL & 2- 1/8" PLS.



ROADWAY SECTION NEAR JOINT

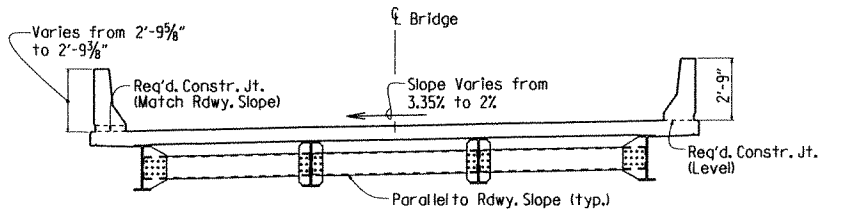
BENT 4 SHOWN, BENT 1 SIMILAR
Looking Ahead
1/2" = 1'-0"



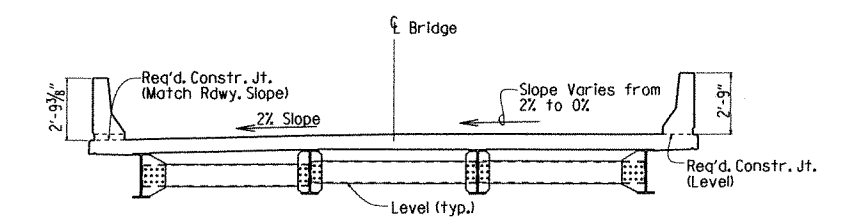
**DETAILS OF ALTERNATE ANCHORS
AND PLACEMENT OF
LONGITUDINAL REINFORCEMENT**

No Scale

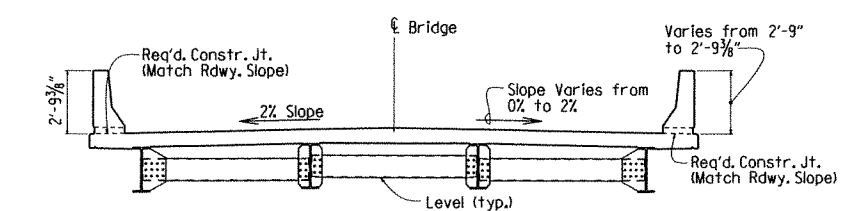
Note: As an alternate to 5/8" studs, 1/2" x 8" studs spaced as shown may be used. Use weight of 5/8" stud as basis of measurement of structural steel in anchors.



STA. 109+43.60 TO STA. 109+89.20



STA. 109+89.20 TO STA. 110+23.10



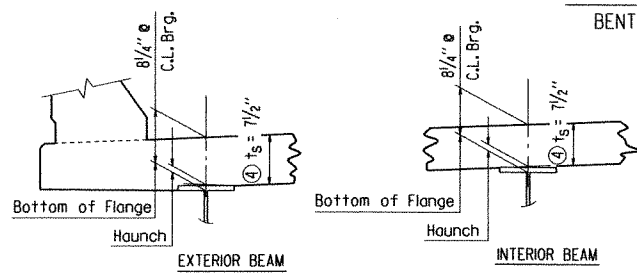
STA. 110+23.10 TO STA. 110+57.00

Notes: See Layout for Method of Superelevation Transition.

For details not otherwise shown, see "Typical Roadway Section" and "Roadway Section Near Joint" as applicable. Slab bolsters and Hi-Chairs in center bay will vary in height with roadway slope.

ROADWAY CROSS-SLOPE TRANSITION (LOOKING AHEAD)

No Scale



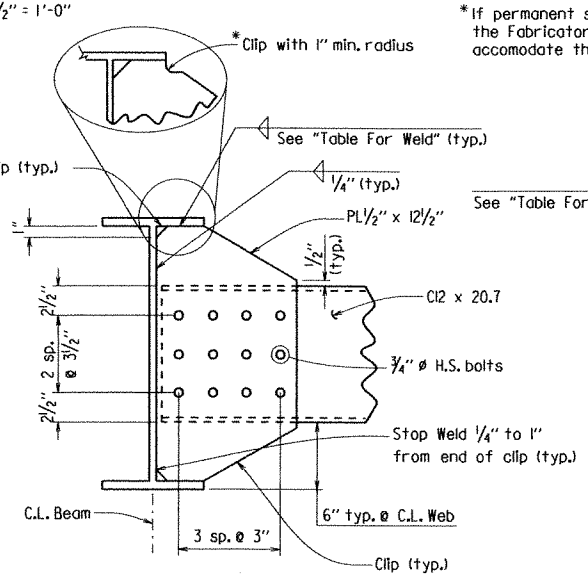
④ Tolerance when removable deck forming is used is + 1/2", - 1/4". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

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.

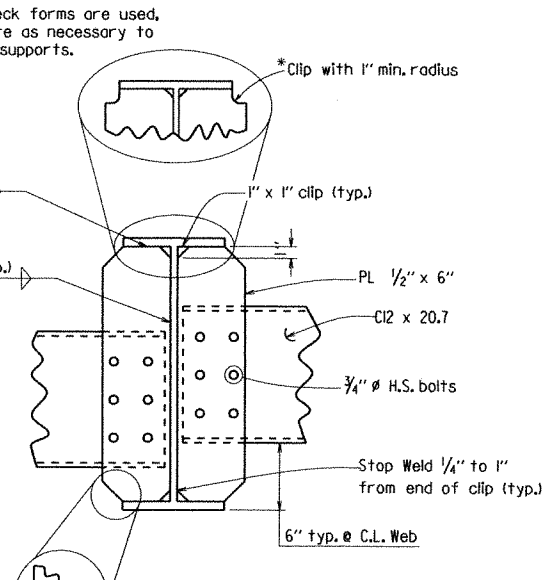
ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale



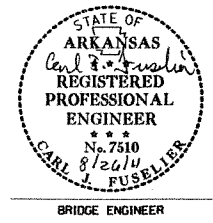
DETAIL X

No Scale



DETAIL Y

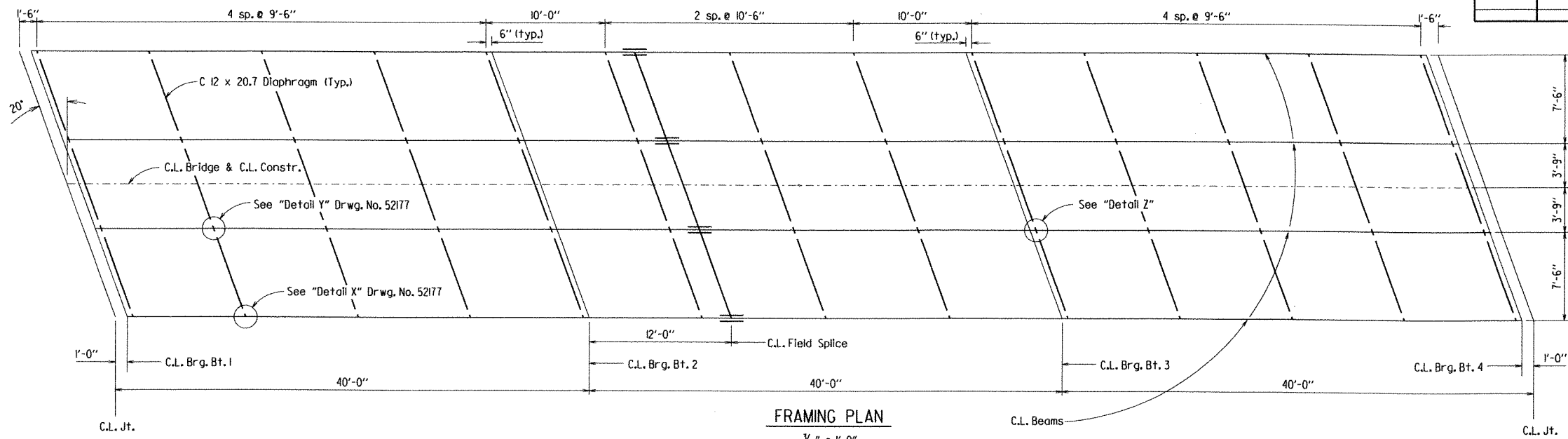
No Scale



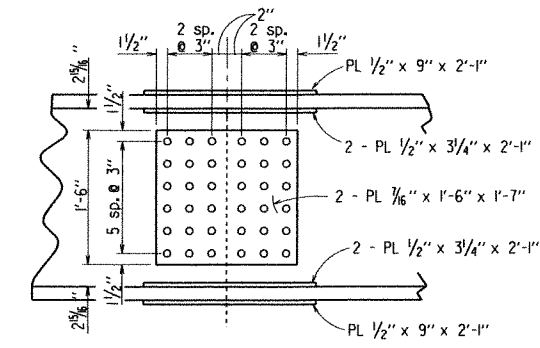
SHEET 1 OF 6
DETAILS OF
120'-0" CONTINUOUS W-BEAM UNIT
FIELD BAYOU
COUNTY ROAD 20
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACW DATE: 05-24-11 FILENAME: bbr3713.sldgn
CHECKED BY: JYP DATE: 8-25-11 SCALE: As Noted
DESIGNED BY: ACW DATE: 5-11
BRIDGE NO. 04918 DRAWING NO. 52177

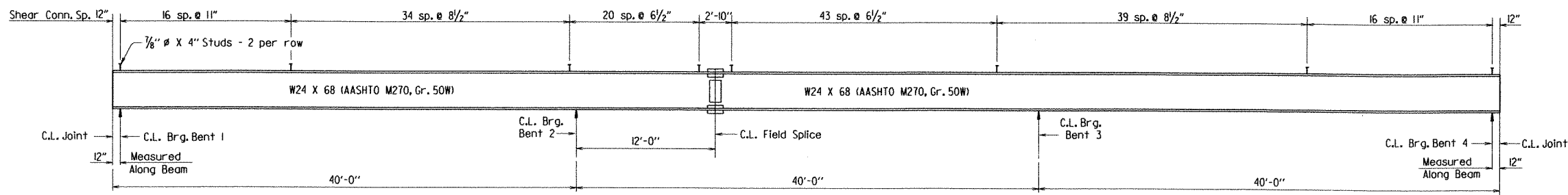
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		24	61
				JOB NO.	BR3713		24 61	
				04918	CONT. UNIT		52178	



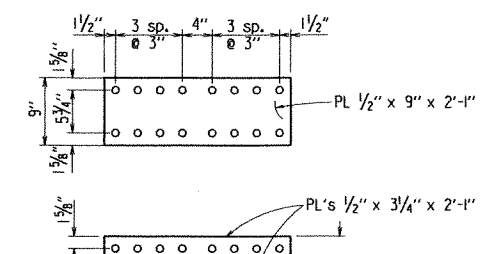
FRAMING PLAN
1/8" = 1'-0"



DETAIL OF FIELD SPICE
1" = 1'-0"



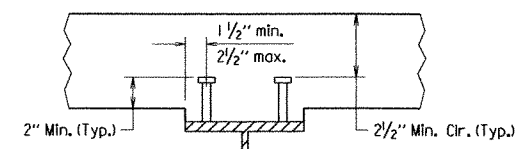
TYPICAL BEAM ELEVATION
NTS



FLANGE SPICE PLATES
1" = 1'-0"

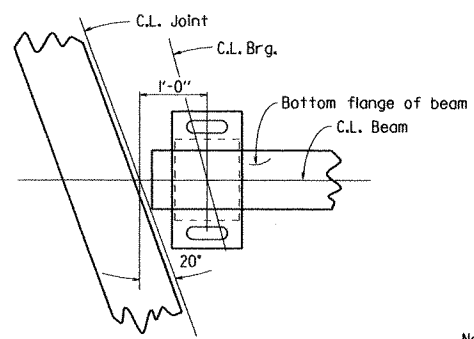
Notes: Bolted field splices shown may be eliminated or shop welded splices may be substituted with approval of the Engineer. Payment will be made on the basis of the plan quantities.

All field splice bolts shall be 7/8" HI-str. bolts
All holes for splice bolts shall be 9/16"
All field splice plates shall be AASHTO M270 Gr. 50W steel.



Stud Shear Connectors shown shall be 7/8" x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. 3/4" studs may be used in place of the 7/8" studs shown, at the ratio of 1.361 - 3/4" studs in place of one 7/8" stud. 7/8" studs will be used as basis for measurement of structural steel in shear connectors.

SHEAR CONNECTOR DETAIL
NTS

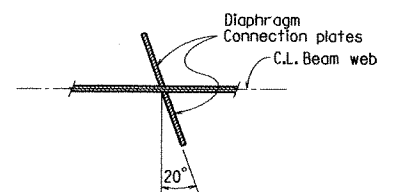


PLAN OF BEARING AT END BENTS
NTS

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"	Must Be Used
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.



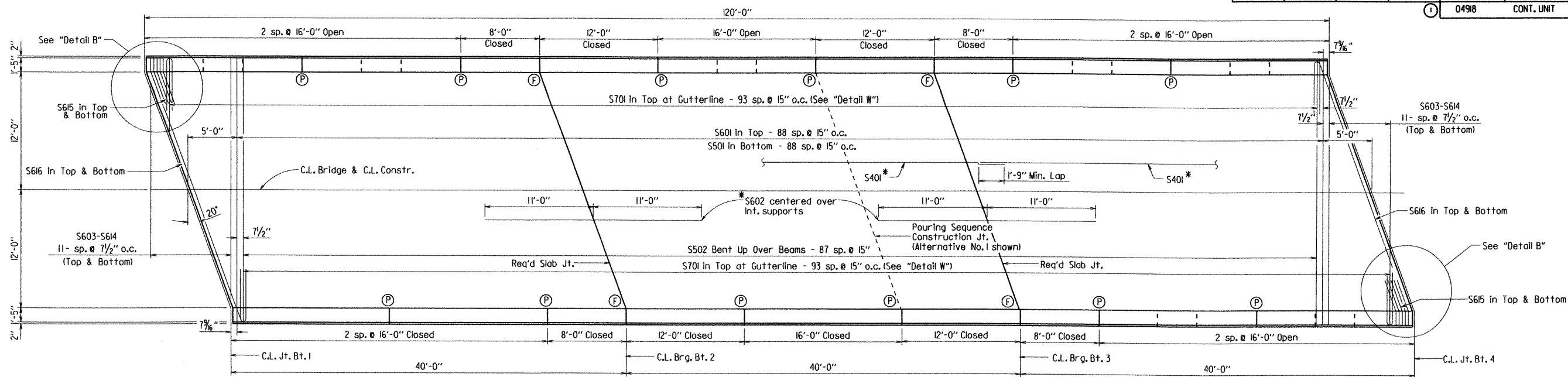
Note: For details not shown, see "Detail X" & "Detail Y", Dwg. No. 52177.

DETAIL Z
NTS



SHEET 2 OF 6
DETAILS OF
120'-0" CONTINUOUS W-BEAM UNIT
FIELD BAYOU
COUNTY ROAD 20
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: ACW DATE: 04-13-11 FILENAME: bbr3713.sldgn
CHECKED BY: JYP DATE: 8-25-11 SCALE: As Noted
DESIGNED BY: ACW DATE: 4-11
BRIDGE NO. 04918 DRAWING NO. 52178

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.	BR3713		25	61
				04918	CONT. UNIT		5279	



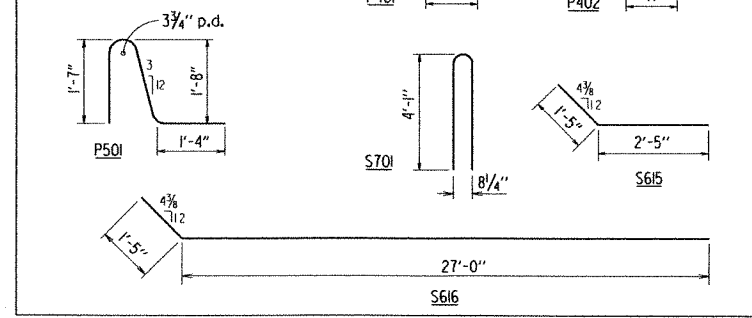
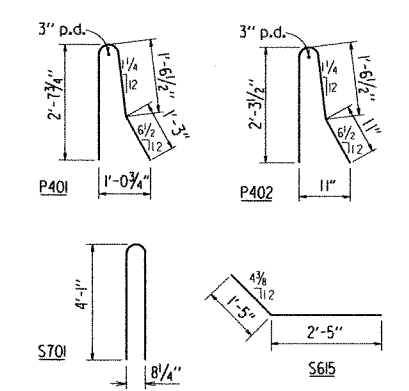
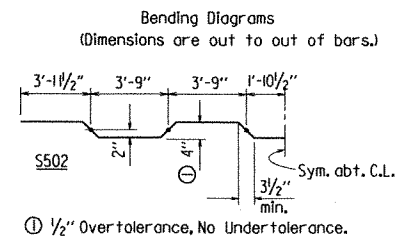
*Placed as shown in "Typical Roadway Section," see Dwg. No. 52177.

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

Note: Req'd slab joints and pouring sequence joints shall align with open joints in parapet roll at the gutterline.

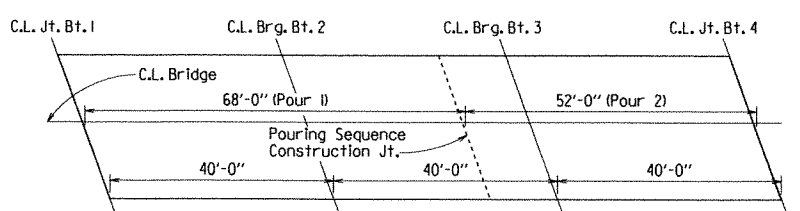
BAR LIST

Mark	No. Req'd.	Length	Pin Dia.
S401	296	3'-3"	Str.
S501	89	26'-10"	Str.
S502	88	27'-3"	3"
S601	89	26'-10"	Str.
S602	64	22'-0"	Str.
S603-S614	4 ea.	5'-10" - 24'-9"	Str.
S615	16	3'-10"	4 1/2"
S616	4	28'-5"	4 1/2"
S701	188	8'-7"	6 1/2"
P401	424	5'-6"	2"
P402	56	4'-10"	2"
P403	12	7'-8"	Str.
P404	30	15'-8"	Str.
P405	24	39'-8"	Str.
P406	12	11'-8"	Str.
P501	424	4'-8"	3 3/4"



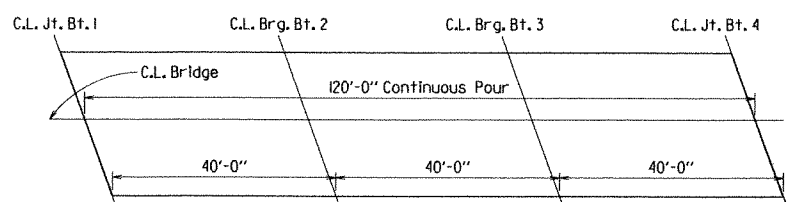
Note: At the Contractor's option, two straight #5 bars may be substituted for bar S502. Payment for reinforcing will be based on the weight of bar S502.

REINFORCING PLAN
3/8" = 1'-0"



Note: Pour (1) must be placed before Pour (2) can be placed. 72 hours shall elapse between the end of a pour and the start of the next pour. 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.

ALTERNATE 1

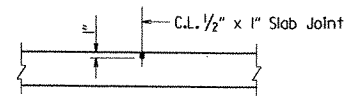


Note: Concrete in bridge superstructure must not take its initial set in the span that is being screeded and the span immediately preceding it. Any previously screeded span may attain its initial set. The pour rate shall be capable of maintaining initial set requirements without excessive use of retarding agents. Retarding agent dosage shall not exceed Manufacturer's recommended rate for general concrete applications. The Contractor should consult with the concrete additive manufacturer to determine acceptable dosage rates for this application that will allow final curing of the bridge deck to begin as soon as possible.

ALTERNATE 2

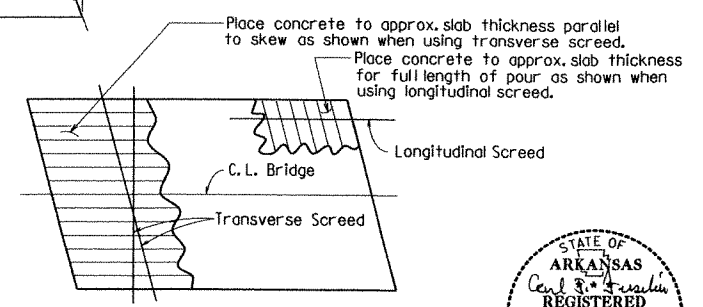
ALTERNATES FOR SLAB POURING SEQUENCE
N.T.S.

Any ralling pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.



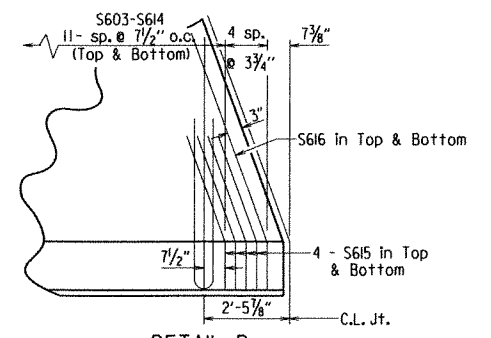
Use Type 3, 4 or 6 Joint Sealer. See subsections 50L02(h) and 50L05(j). Backer rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face 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 damaging 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

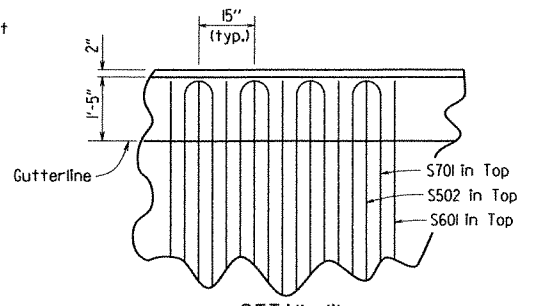


Note: At the Contractor's option, the transverse screed may be placed parallel to the skew or perpendicular to C.L. Bridge.

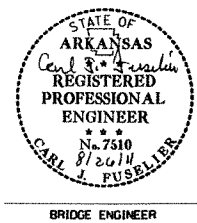
CONCRETE PLACEMENT PROCEDURE
N.T.S.



DETAIL B
3/8" = 1'-0"

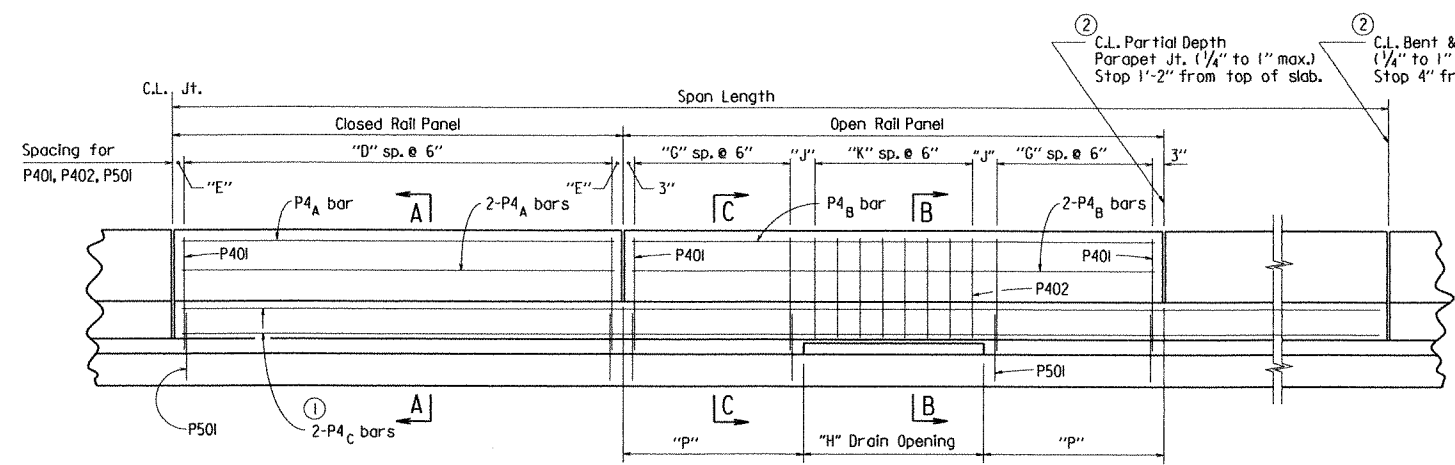


DETAIL W
1/2" = 1'-0"



SHEET 3 OF 6
DETAILS OF
120'-0" CONTINUOUS W-BEAM UNIT
FIELD BAYOU
COUNTY ROAD 20
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: ACW DATE: 04-13-11 FILENAME: bbr3713-sl.dgn
CHECKED BY: JYP DATE: 3-25-11 SCALE: As Noted
DESIGNED BY: ACW DATE: 4-11
BRIDGE NO. 04918 DRAWING NO. 52179

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.	BR3713		26	61
				①	04918	CONT. UNIT		52180

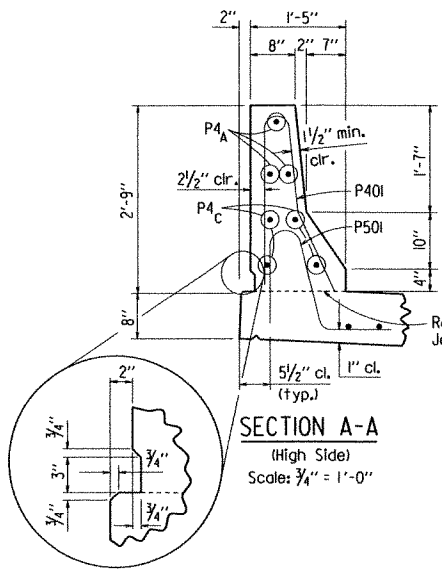


ELEVATION - CONCRETE PARAPET RAIL
1/2" = 1'-0"

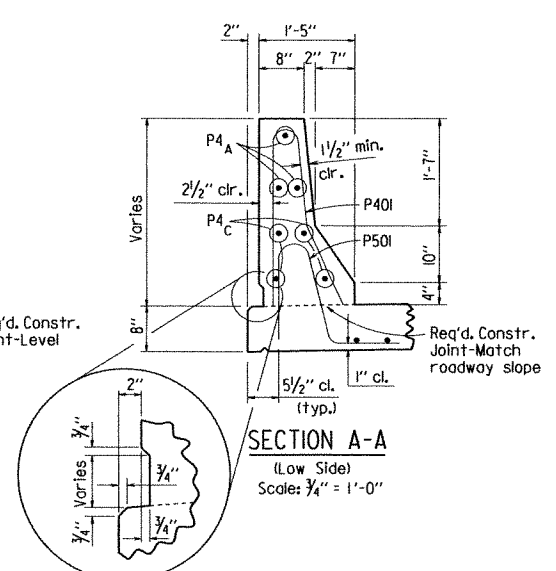
- ① Bar to be continuous between full depth parapet joints.
- ② For location of full and partial depth parapet joints, see Dwg. No. 52179.

TABLE OF VARIABLES

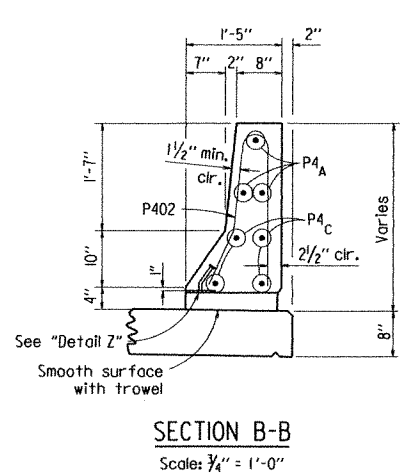
Span Length	P4 _C bar	Closed Rail Panel	"D"	"E"	P4 _A bar	Open Rail Panel	"G"	"H"	"J"	"K"	"P"	P4 _B bar
40'-0"	P405	8'-0"	15	3"	P403	16'-0"	11	4'-0"	6"	7	6'-0"	P404
		12'-0"	23	3"	P406							
		16'-0"	31	3"	P404							



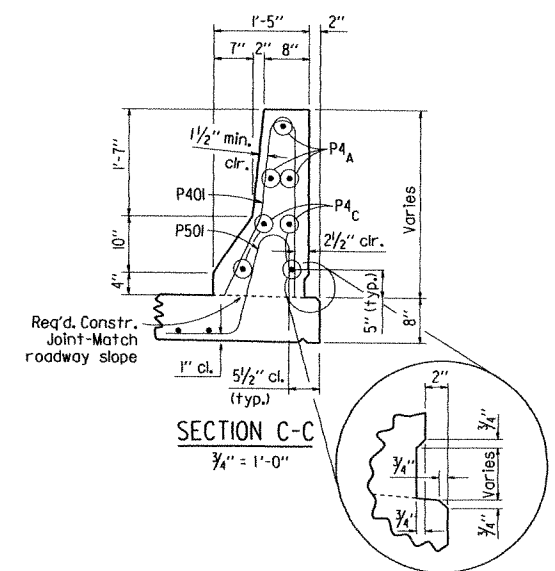
SECTION A-A
(High Side)
Scale: 3/4" = 1'-0"



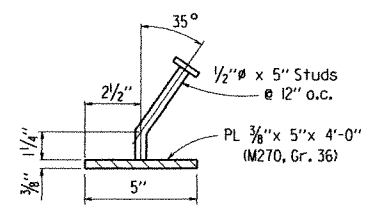
SECTION A-A
(Low Side)
Scale: 3/4" = 1'-0"



SECTION B-B
Scale: 3/4" = 1'-0"

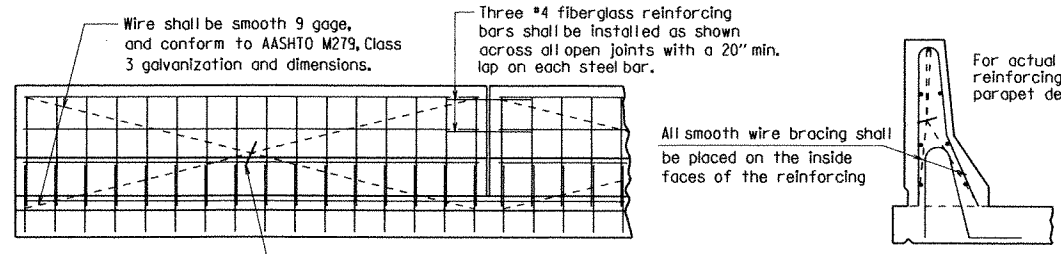


SECTION C-C
Scale: 3/4" = 1'-0"



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 3/8" 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).

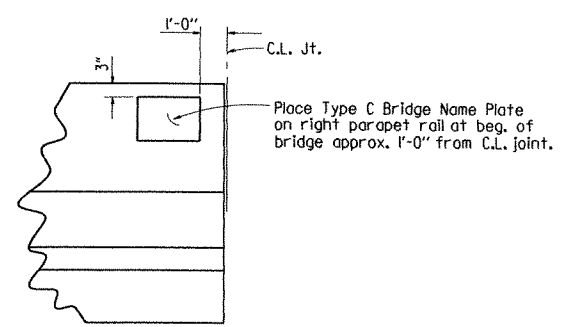
DETAIL Z
NTS



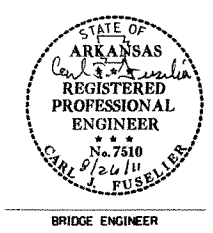
Wire shall be smooth 9 gage, and conform to AASHTO M279, Class 3 galvanization and dimensions.
Three #4 fiberglass reinforcing bars shall be installed as shown across all open joints with a 20" min. lap on each steel bar.
All smooth wire bracing shall be placed on the inside faces of the reinforcing
Bar to tighten smooth wire shall be fiberglass or epoxy coated.
All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". 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.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL
NTS

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.

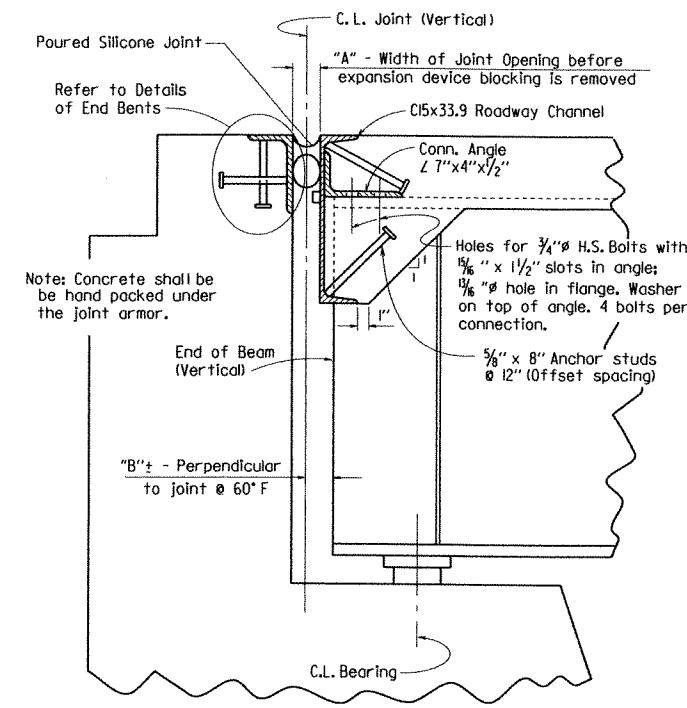


VIEW SHOWING LOCATION OF NAME PLATE
NTS



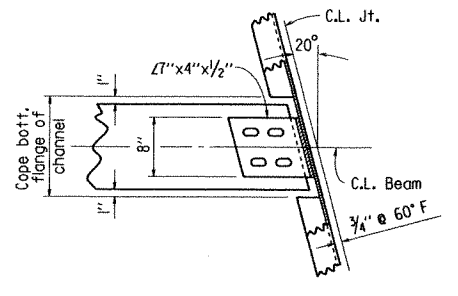
SHEET 4 OF 6
DETAILS OF
120'-0" CONTINUOUS W-BEAM UNIT
FIELD BAYOU
COUNTY ROAD 20
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: ACW DATE: 04-13-11 FILENAME: bbr3713.sl.dgn
CHECKED BY: JYP DATE: 8-25-11 SCALE: As Noted
DESIGNED BY: ACW DATE: 4-11
BRIDGE NO. 04918 DRAWING NO. 52180

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.		BR3713	27	61
				04918		CONT. UNIT		52181

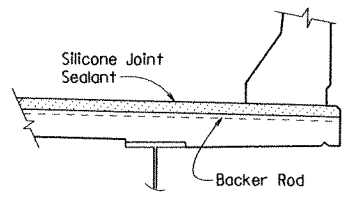


Note: Section taken perpendicular to C.L. Joint

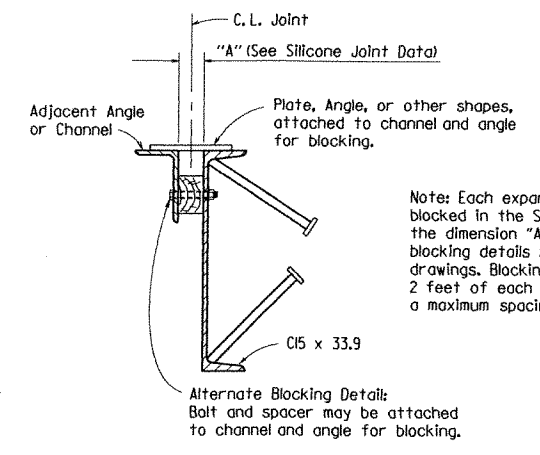
SECTION THRU JOINT AT END BENT



CHANNEL CONNECTION DETAIL
NTS



JOINT SEAL PLACEMENT AT CURB
NTS



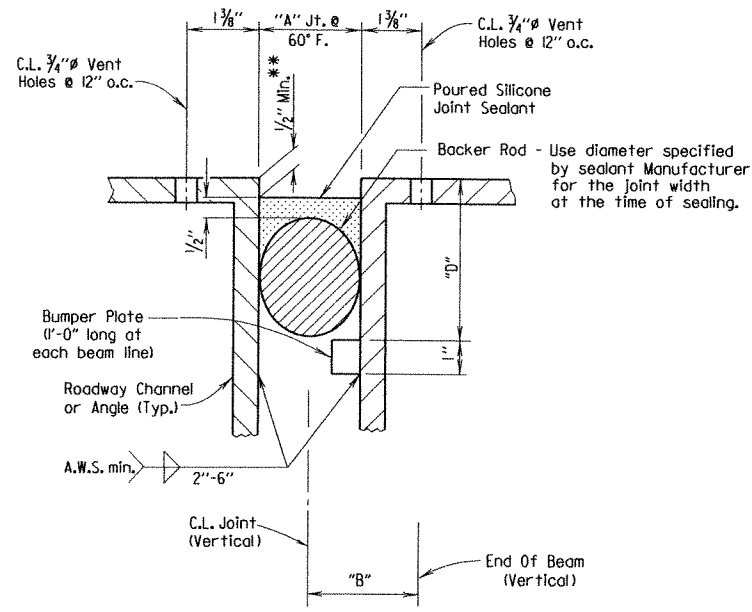
DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

EXPANSION DEVICE INSTALLATION AT END BENTS:

The Contractor may elect to install the expansion device using one of the following two alternatives:

- 1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, and the opening adjusted for temperature and grade.
- 2) The backwall shall be poured to the optional construction joint after beams are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature and grade.

** Recess depth as recommended by the sealant Manufacturer



DETAIL OF POURED SILICONE JOINT

SILICONE JOINT DATA

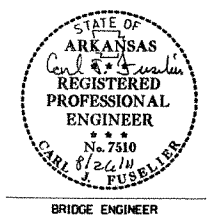
"A" Width Perpendicular to Joint at 24 Hour Average Temperature* Of:			"B" Perpendicular to Joint at 60°F	"D"	Bumper Plate Size
40°F	60°F	80°F			
1 3/8"	1 1/2"	1 1/8"	2" ±	4"	1" x 3/4"

* The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary.

Notes:
The temperature limitations recommended by the sealant Manufacturer shall be observed. The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80° F.

Use an appropriately sized backer rod at the depth shown in the Manufacturer's literature based on the joint width at the time of sealing. Unless otherwise noted, do not install more backer rod than can be sealed in the same day.

The Contractor shall verify separation of the backer rod from the joint material after the joint material has set.



SHEET 5 OF 6
DETAILS OF
120'-0" CONTINUOUS W-BEAM UNIT
FIELD BAYOU
COUNTY ROAD 20
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACW DATE: 04-14-11 FILENAME: bbr3713.sl.dgn
CHECKED BY: JYP DATE: 8-25-11 SCALE: No Scale
DESIGNED BY: ACW DATE: 4-11
BRIDGE NO. 04918 DRAWING NO. 52181

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.		BR3713	28	61
				04918		CONT. UNIT	52182	

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, Fifth Edition (2010).

MATERIALS AND STRENGTHS:

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

CONCRETE :

Concrete shall be poured in the dry and all exposed corners to be chamfered $\frac{3}{4}$ " 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, except as noted for a continuous pour. This may require the use of a retarding agent.

The concrete deck shall be given a fine 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 girder. 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 ralling. 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.

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-Bridge (Grade 60)."

STRUCTURAL STEEL :

All 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, Grade 36 unless otherwise noted.

Drawings show general features of design only. Shop drawings shall be made in accordance with subsection 807.04, 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 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 in their true position in the shop with the webs horizontal in groups as specified in Section 807.54(b)(2). The camber, length of sections, distance between bearings and openings of joints shall be measured with the beams in their true position and this information shall become part of the permanent records for this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of $\frac{1}{4}$ " +/- 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 $\frac{3}{4}$ " # 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 $\frac{3}{4}$ " # high-strength bolts may be $\frac{3}{8}$ " # diameter if a washer is supplied for use under both the nut and head of the bolt.

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.

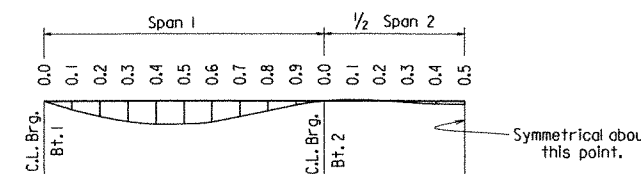
All shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with recommendations of the manufacturer.

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

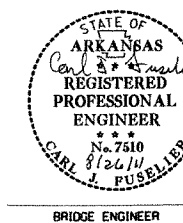
Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Rail	
		Ext. Beam	Int. Beam	Ext. Beam	Int. Beam	Ext. Beam	Int. Beam
1	0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.015	0.017	0.128	0.164	0.142	0.178
	0.2	0.028	0.031	0.238	0.305	0.264	0.331
	0.3	0.037	0.041	0.317	0.406	0.352	0.440
	0.4	0.041	0.046	0.356	0.457	0.397	0.495
	0.5	0.041	0.046	0.354	0.454	0.394	0.492
	0.6	0.036	0.040	0.312	0.401	0.348	0.435
	0.7	0.028	0.031	0.240	0.308	0.266	0.334
	0.8	0.018	0.019	0.151	0.193	0.168	0.209
	0.9	0.007	0.008	0.062	0.080	0.069	0.087
2	0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	-0.002	-0.002	-0.017	-0.022	-0.019	-0.024
	0.2	0.000	0.000	-0.003	-0.004	-0.003	-0.004
	0.3	0.003	0.003	0.022	0.028	0.024	0.030
	0.4	0.005	0.005	0.042	0.054	0.047	0.059
	0.5	0.006	0.006	0.050	0.065	0.056	0.070

Symmetrical about Half-point of Unit.

Note: Camber for Dead Load Deflection $\pm \frac{1}{4}$ " tolerance.
 Deflections shown are along C.L. Beam from a chord from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates point above chord.

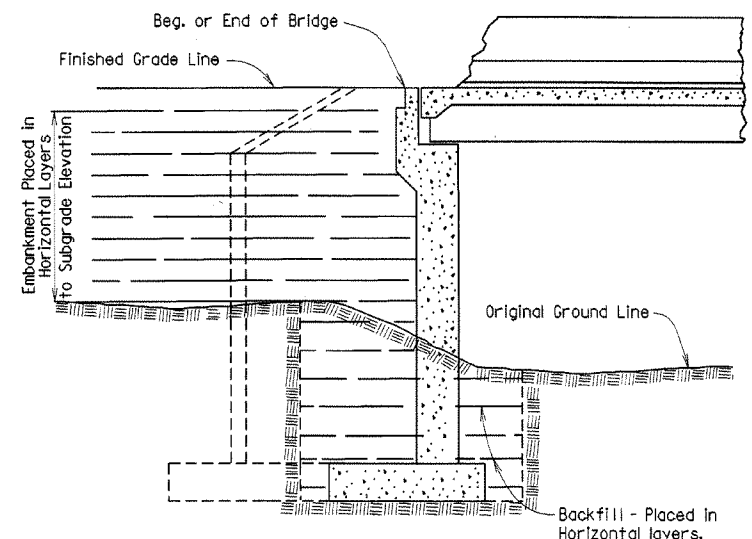


DEAD LOAD DEFLECTION DIAGRAM
 N.T.S.

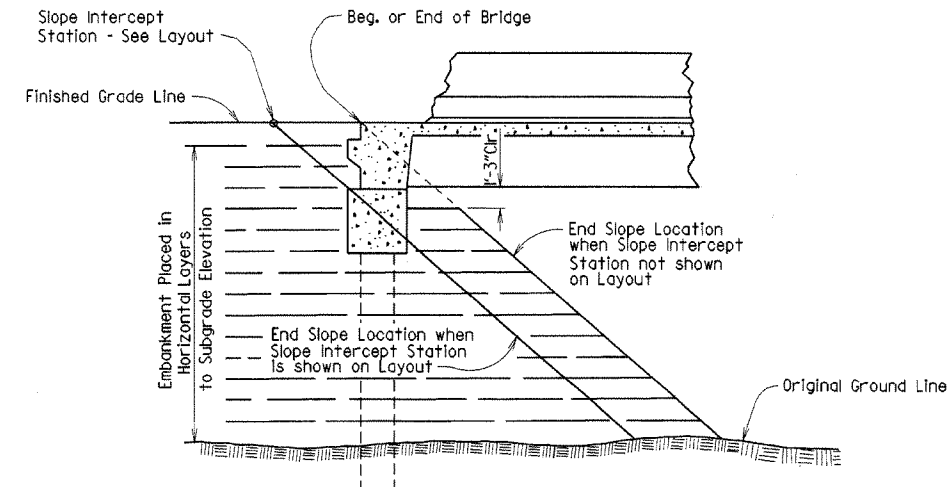


SHEET 6 OF 6
 DETAILS OF
 120'-0" CONTINUOUS W-BEAM UNIT
 FIELD BAYOU
 COUNTY ROAD 20
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: ACW DATE: 04-14-11 FILENAME: bbr3713.sldgn
 CHECKED BY: JYP DATE: 8-25-11 SCALE: As Noted
 DESIGNED BY: ACW DATE: 4-11
 BRIDGE NO. 04918 DRAWING NO. 52182

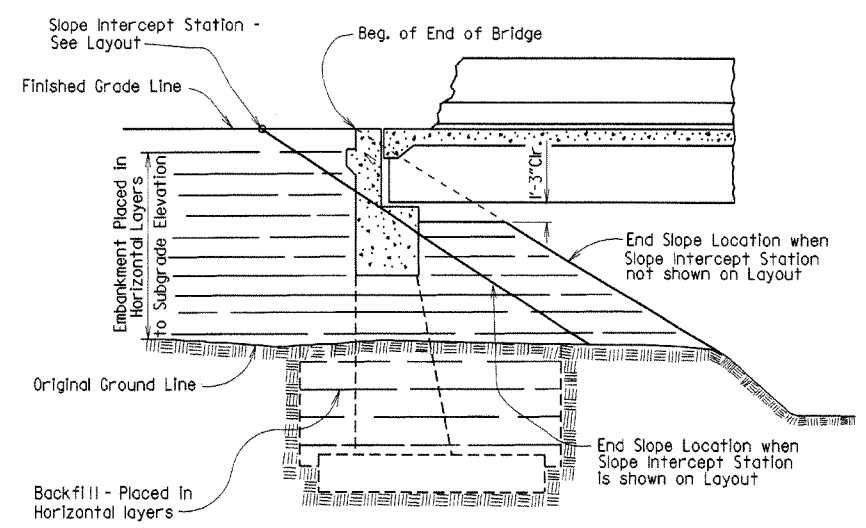
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		29	41
							JOB NO.	
							EMBANKMENT & BACKFILL	1888A



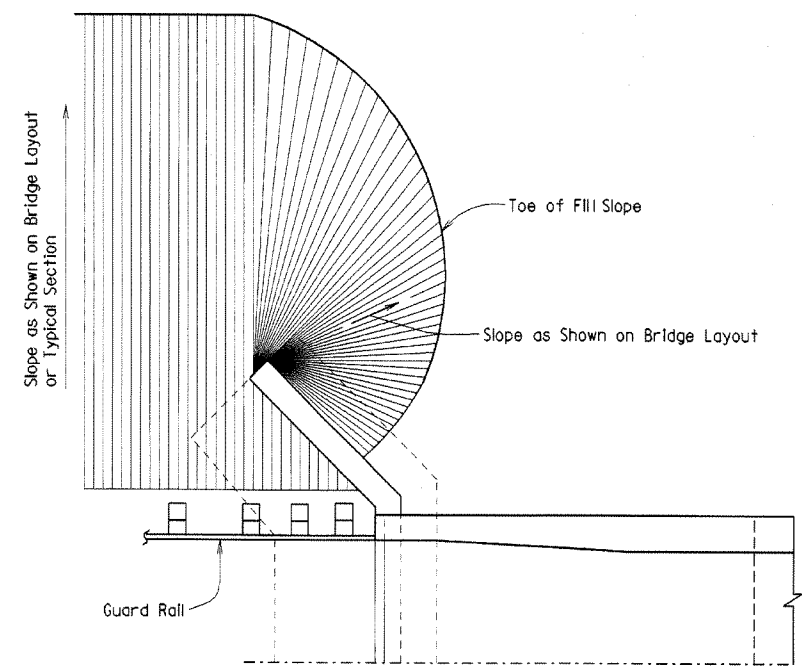
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



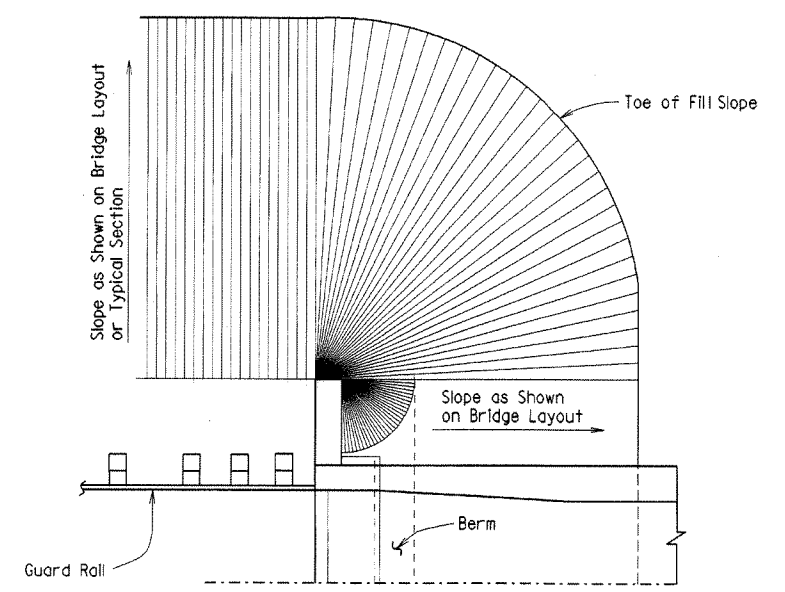
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



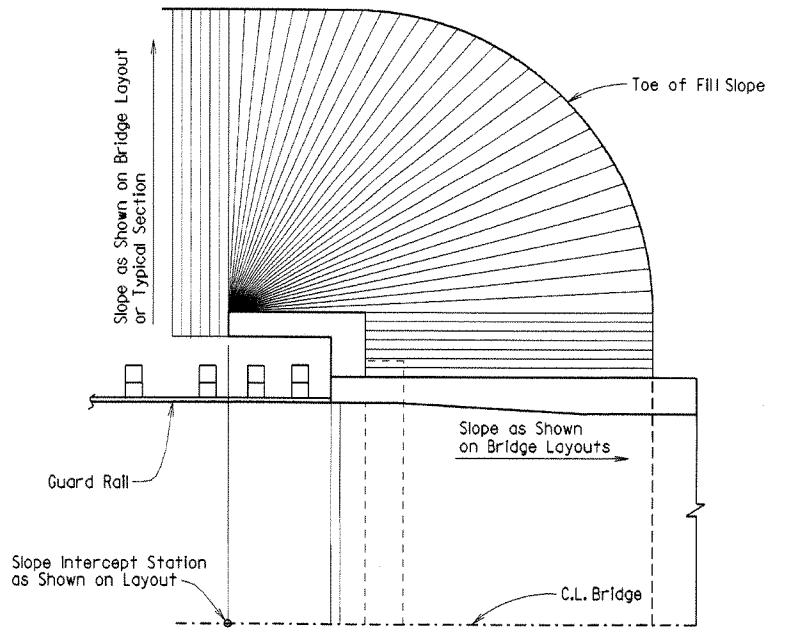
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



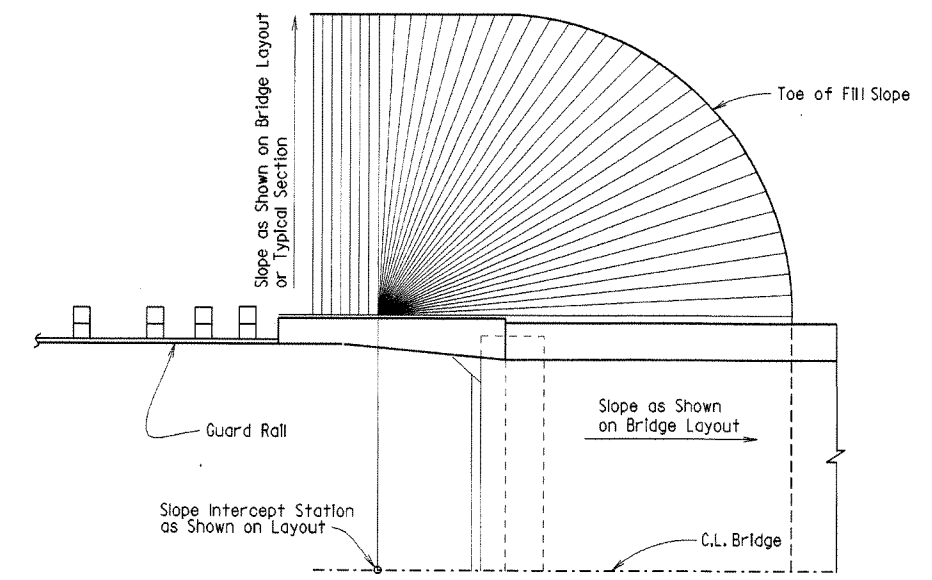
VERTICAL WALL ABUTMENTS



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: CSF 04-10-2003



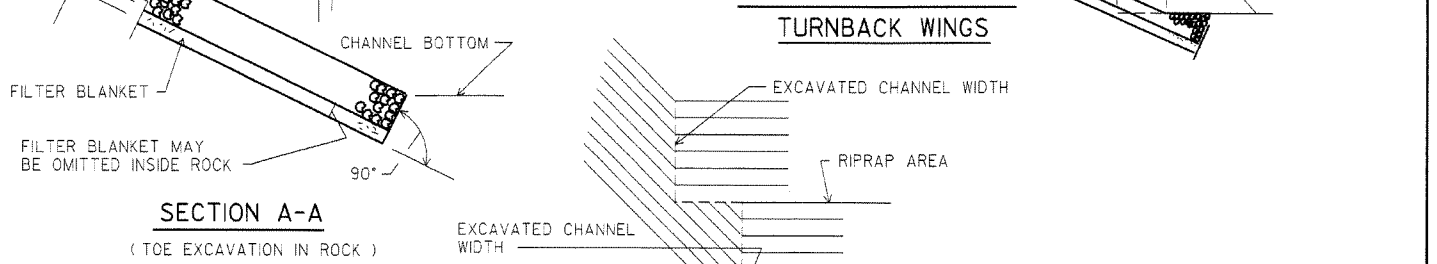
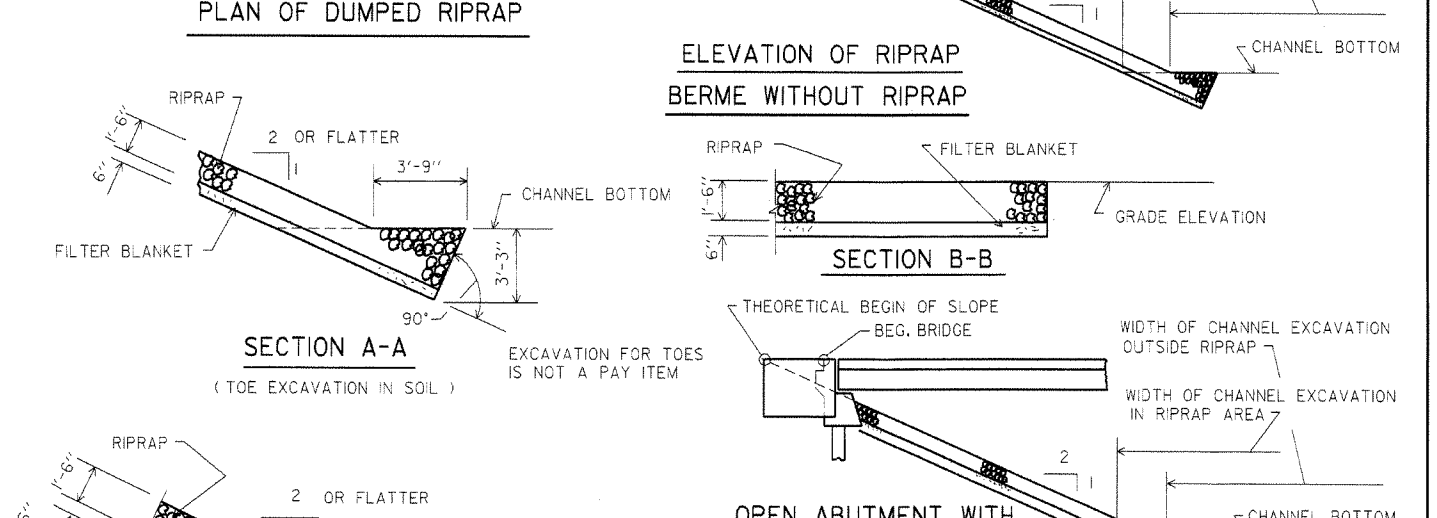
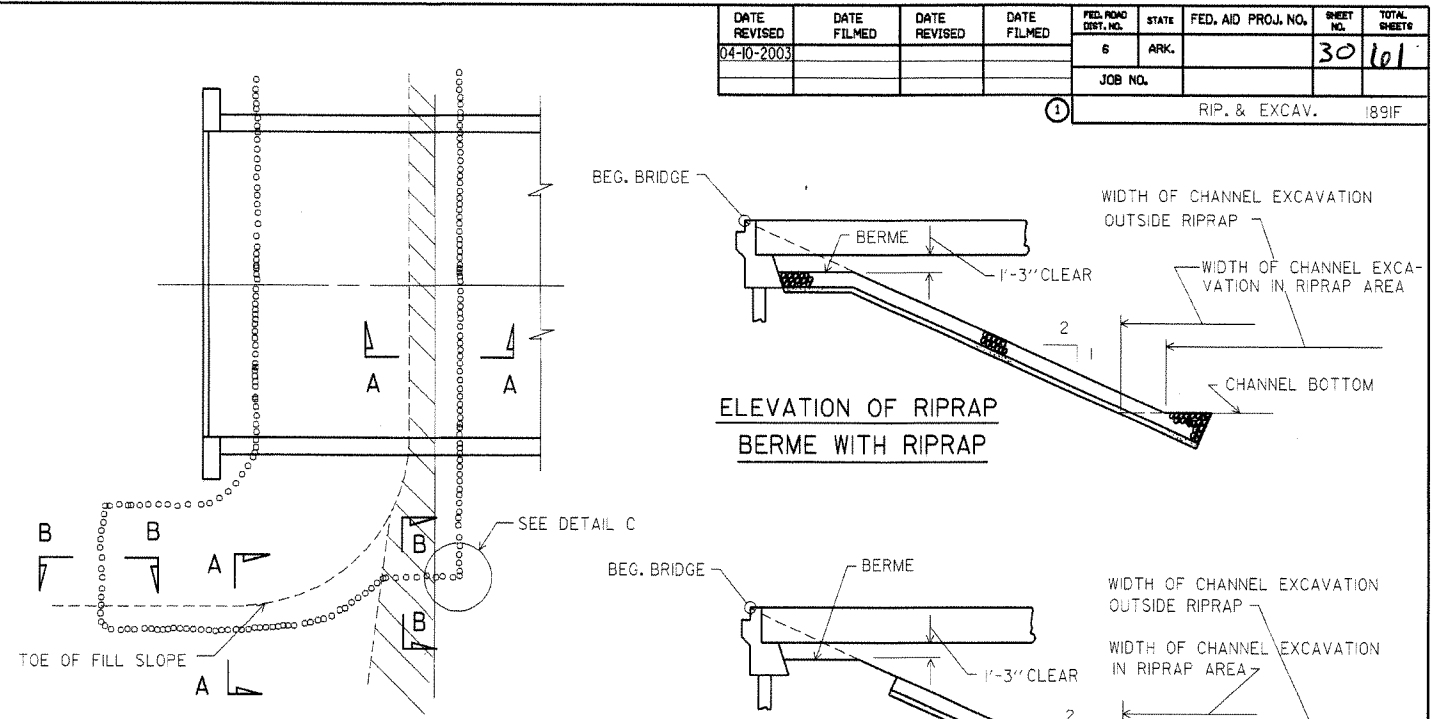
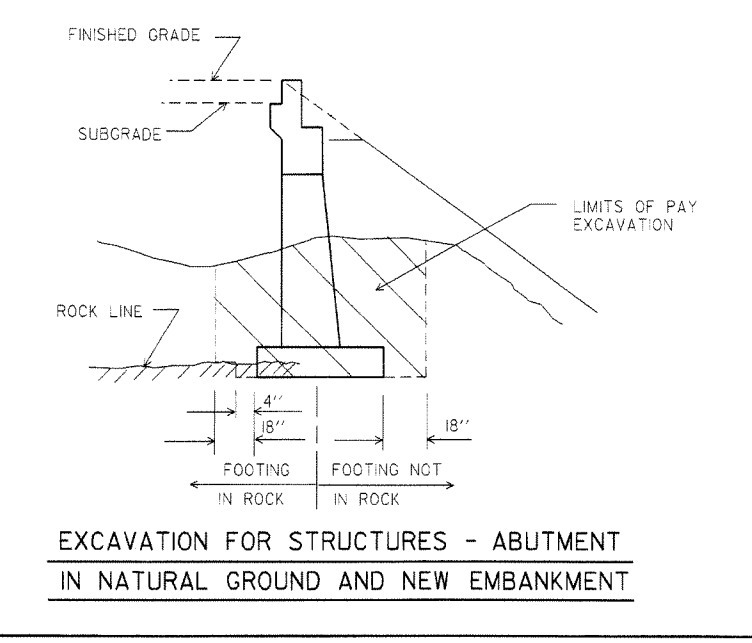
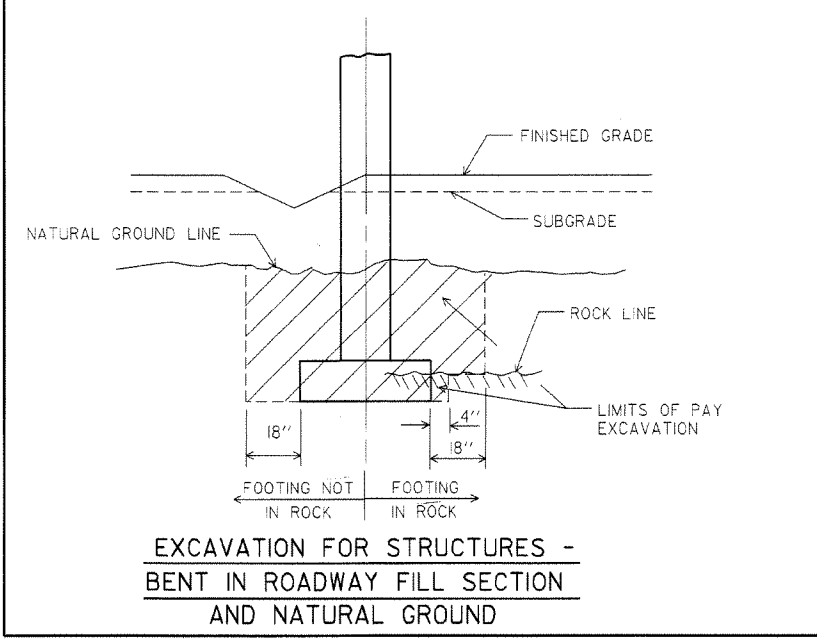
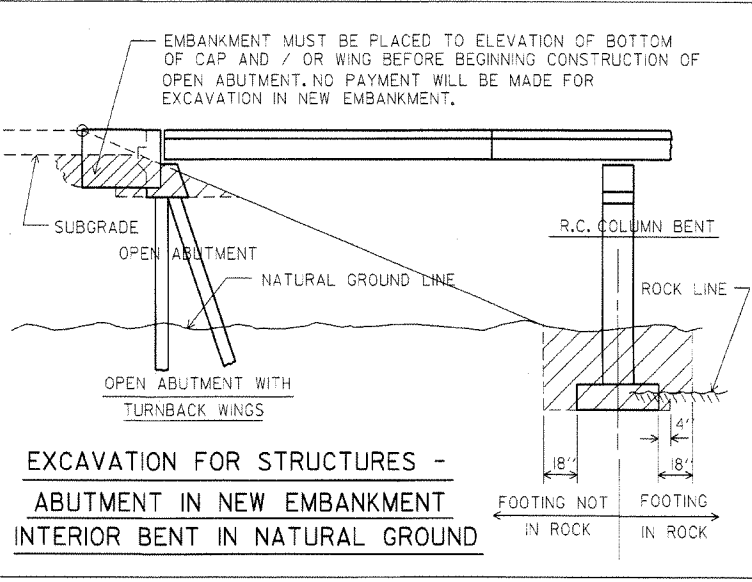
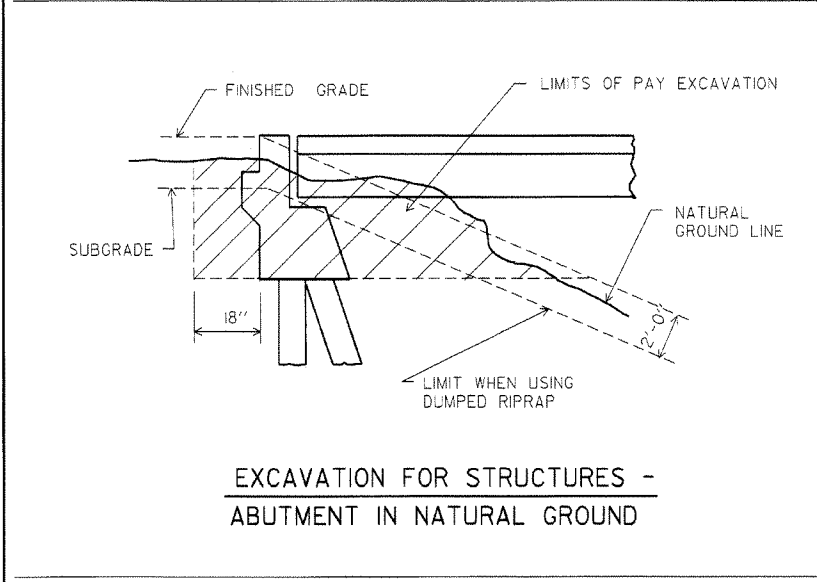
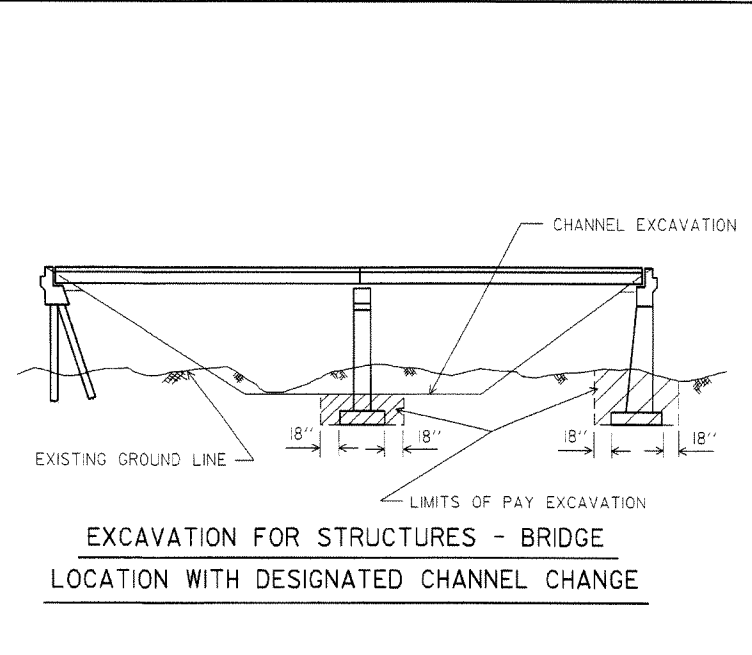
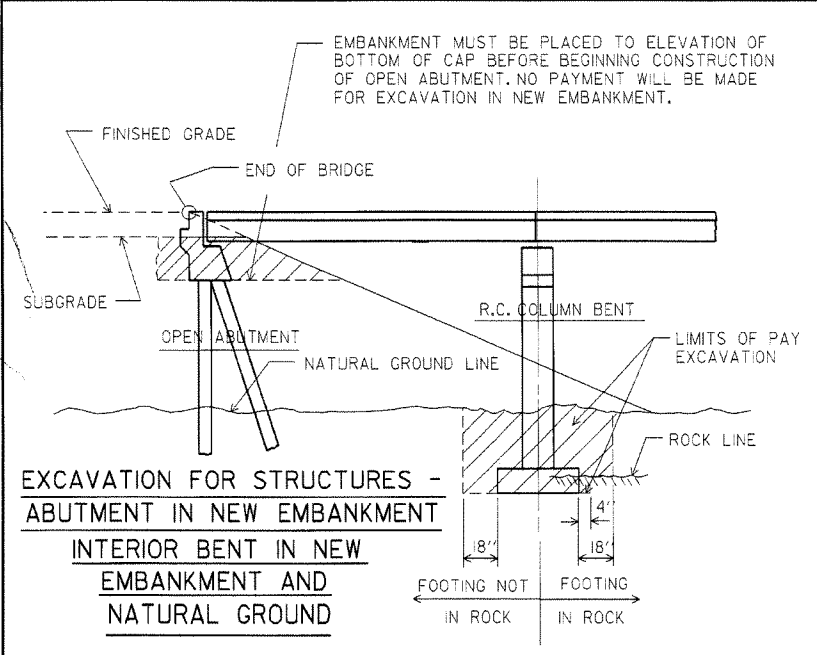
BRIDGE ENGINEER

EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: B1888A.STD
 CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
 DESIGNED BY: STD DATE: _____
 BRIDGE NO. DRAWING NO. 1888A

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.		30	101
JOB NO.							RIP. & EXCAV. 1891F	



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(e) 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.

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

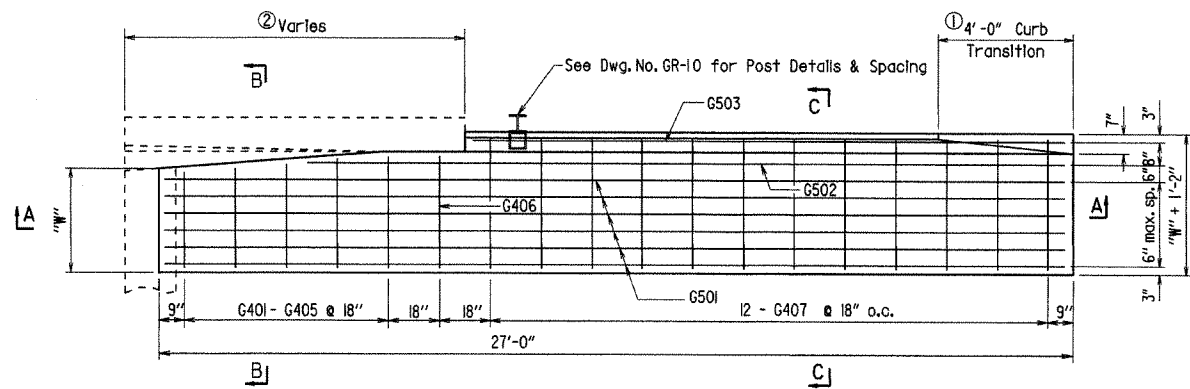
DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

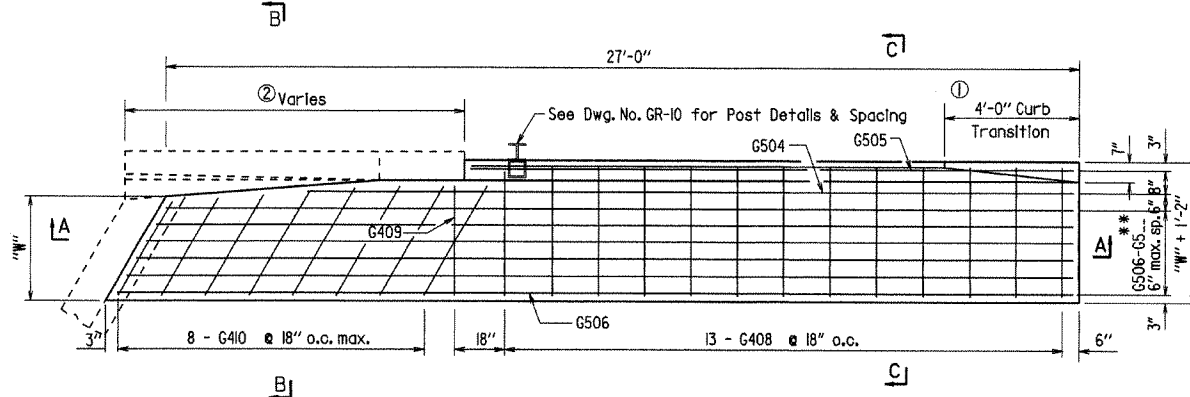
DRAWN BY: MJT DATE: 04-10-2003 FILENAME: B1891F.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: _____
BRIDGE NO. _____ DRAWING NO. 1891F

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-10-2003				6	ARK.		31	61
07-14-2010								
JOB NO.							TYPE B GUTTERS 2016B	

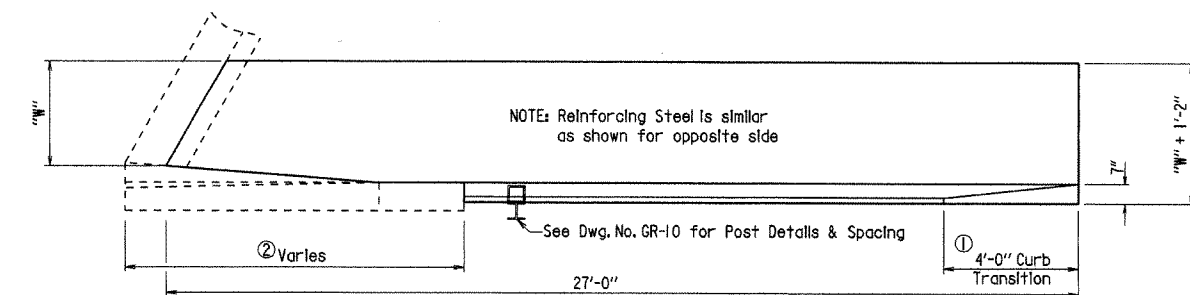


HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE

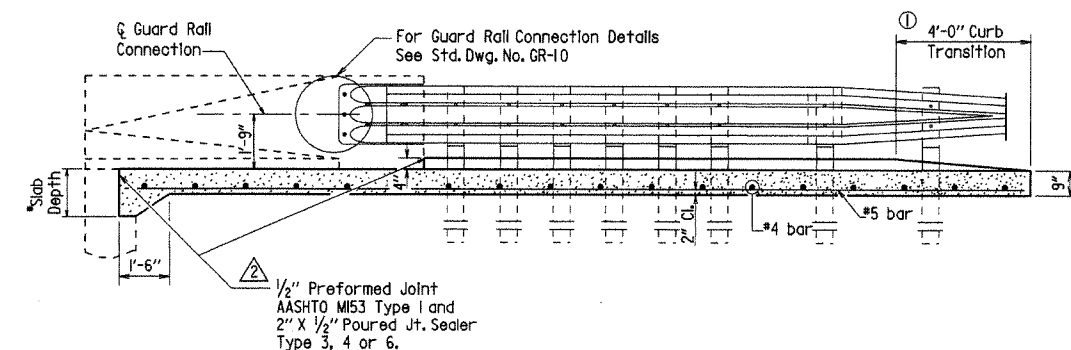
② Length varies. See End Bent details for actual length. Quantities shown are for 10'-0" Transition Rail.



Bj



PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE

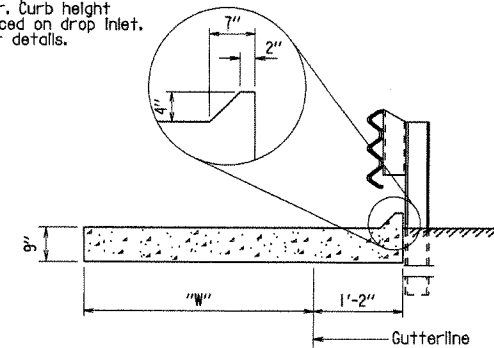


SECTION A - A

Slab Depth Varies - See Span and Bent Details

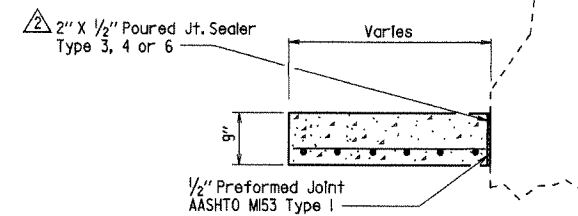
① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.



SECTION C - C

N.T.S.



SECTION B - B

N.T.S.

*** BAR LIST ②
TYPE B GUTTER

Mark	No. Required for Width "W"				Length	Square or Skewed
	3'-0"	4'-0"	6'-0"	8'-0"		
G401 - G405	1 each	1 each	1 each	1 each	"W" - 3" to "W" + 3"	Square
G406	1	1	1	1	"W" + 3"	Square
G407	12	12	12	12	"W" + 10"	Square
G408	13	13	13	13	"W" + 10"	Skewed
G409	1	1	1	1	"W" + 3"	Skewed
G410	8	8	8	8	*	Skewed
G501	6	8	12	16	26'-8"	Square
G502	1	1	1	1	22'-2"	Square
G503	1	1	1	1	17'-8"	Square
G504	1	1	1	1	*	Skewed
G505	1	1	1	1	*	Skewed
G506 - G5... G5...*	1 each	1 each	1 each	1 each	*	Skewed

* Bar Lengths vary with Skew.

** G512 for "W" = 3'
G514 for "W" = 4'
G518 for "W" = 6'
G522 for "W" = 8'

*** Special bar list required when skew angle exceeds 40° for W = 8'; 50° for W = 6'; or 60° for W = 4'.

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

"W" Width (ft.)	Reinforcing Steel (lbs.)	Concrete (cubic yards)
3	252	3.00
4	319	3.75
6	459	5.25
8	590	6.75

GENERAL NOTES

Concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement.

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

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

Revised and redrawn 4-10-2003. By KDH Ck. By: CJF 4-10-2003

Added joint sealer type & revised transition rail length 07-14-2010 by MJT Checked by: CJF 07-14-2010

DETAILS OF STANDARD TYPE B APPROACH GUTTERS

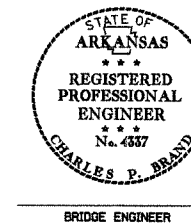
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 4-10-2003 FILENAME: B2016B.STD
CHECKED BY: CJF DATE: 4-10-2003 SCALE: 3/8" = 1'-0"

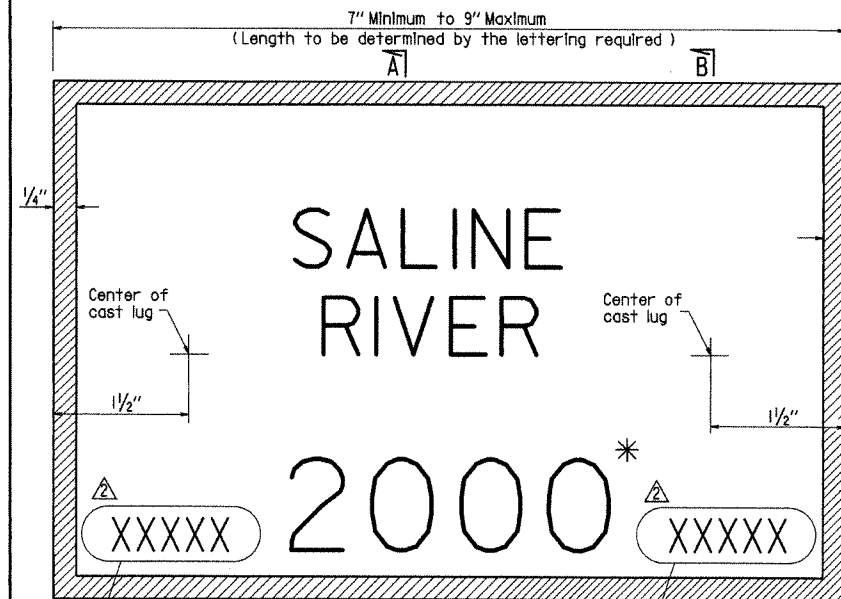
DESIGNED BY: STD DATE: _____

BRIDGE NO. DRAWING NO. 2016B



BRIDGE ENGINEER

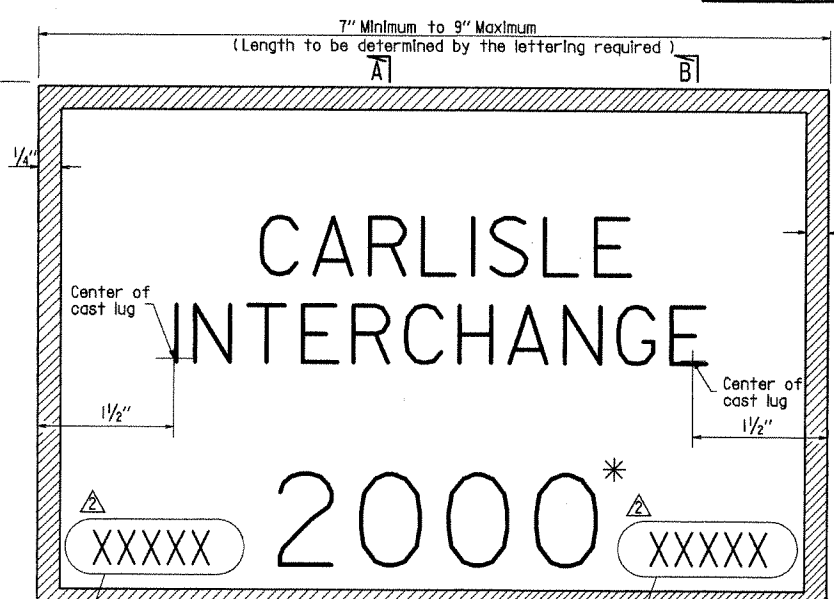
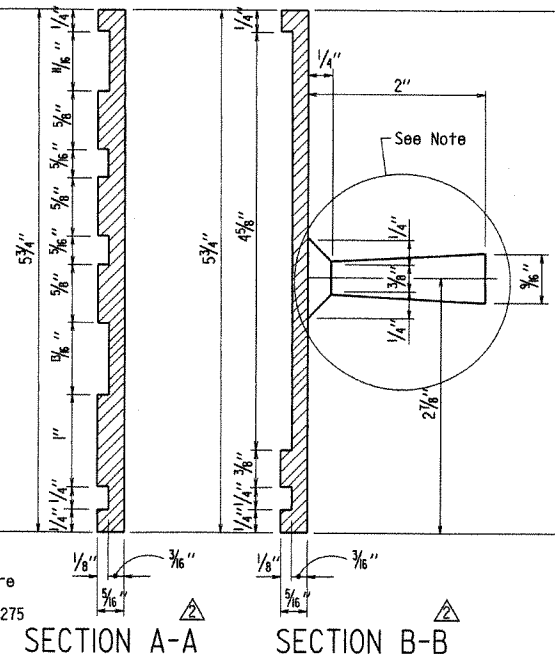
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
09-20-2007 10-15-2009				6	ARK.		32	101
JOB NO.							NAME PLATES 2389A	



Place the design loading here using 1/8" raised letters and numerals 3/8" high. Examples: HS 20 HL-93

Place the Bridge number here using 1/8" raised letters and numerals 3/8" high. Example: 06275

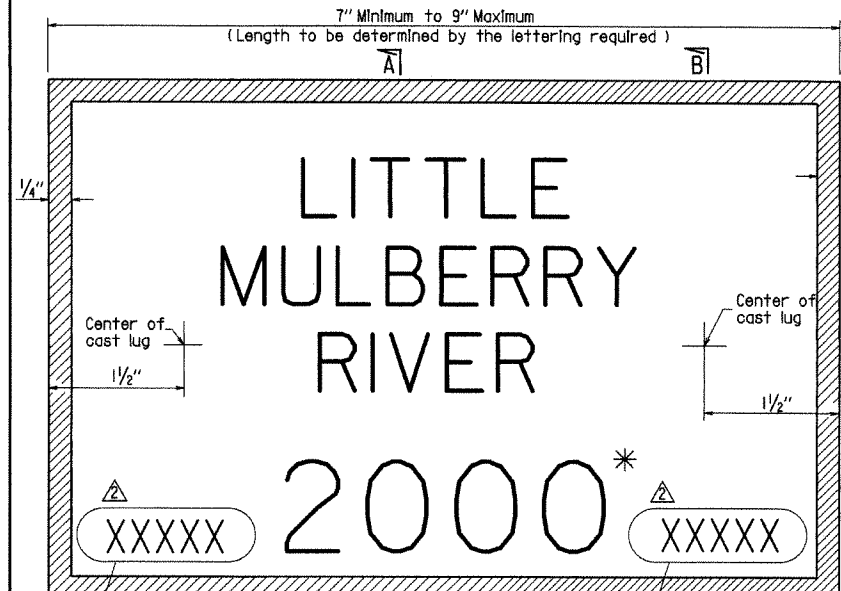
TYPICAL BRIDGE NAME PLATE-STYLE 1 - FULL SIZE
STREAM CROSSINGS



Place the design loading here using 1/8" raised letters and numerals 3/8" high. Examples: HS 20 HL-93

Place the Bridge number here using 1/8" raised letters and numerals 3/8" high. Example: 06275

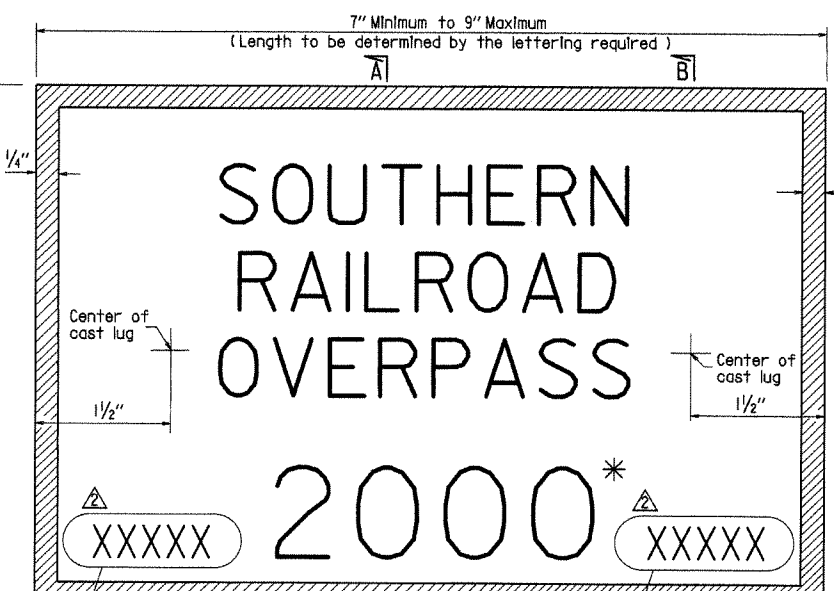
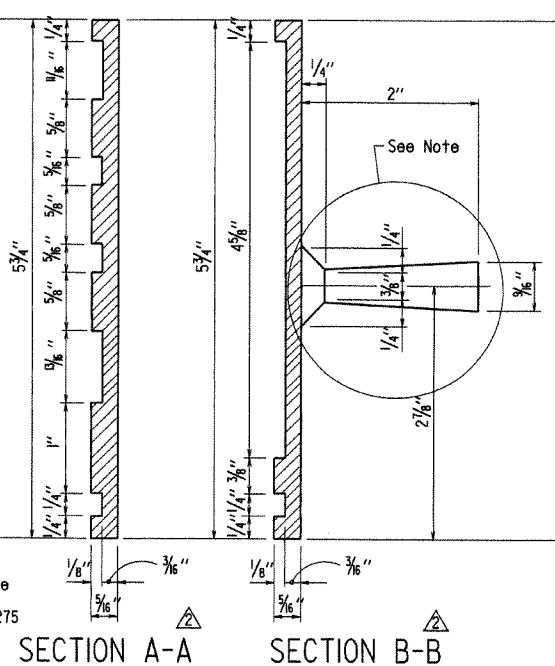
TYPICAL BRIDGE NAME PLATE-STYLE 3 - FULL SIZE
GRADE SEPARATION STRUCTURES



Place the design loading here using 1/8" raised letters and numerals 3/8" high. Examples: HS 20 HL-93

Place the Bridge number here using 1/8" raised letters and numerals 3/8" high. Example: 06275

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



Place the design loading here using 1/8" raised letters and numerals 3/8" high. Examples: HS 20 HL-93

Place the Bridge number here using 1/8" raised letters and numerals 3/8" high. Example: 06275

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

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

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 3/16" thick and shall include two tapering cone lugs 3/8" to 3/16" x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

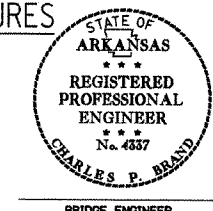
All lettering shall be plain gothic, square cut and not tapered.

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.

Revised Design Loading and Bridge Number to Raised Letters and Numerals MJT 10-15-2009
Chk'd. By: C.J.F.

Revised and redrawn MJT 09-20-2007
Chk'd. By: C.J.F.



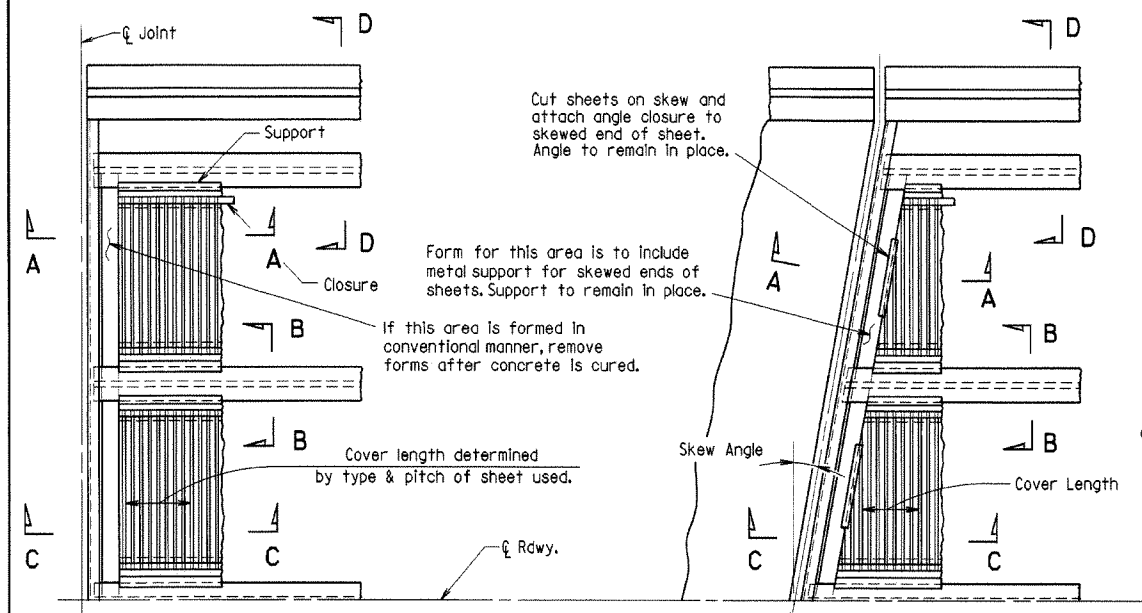
DETAILS OF STANDARD
TYPE C BRIDGE NAME PLATES
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 09-20-2007 FILENAME: B2389A.STD
CHECKED BY: C.J.F. DATE: 09-20-2007 SCALE: NOT TO SCALE
DESIGNED BY: STD. DATE: —

BRIDGE NO. DRAWING NO. 2389A

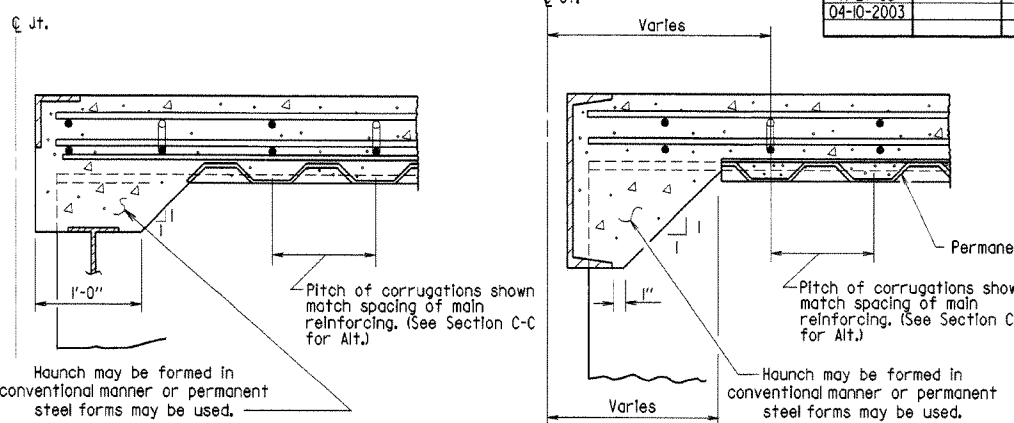
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11-27-96						6	ARK.		33	121
04-10-2003										

BR. DECK FORMS 14991



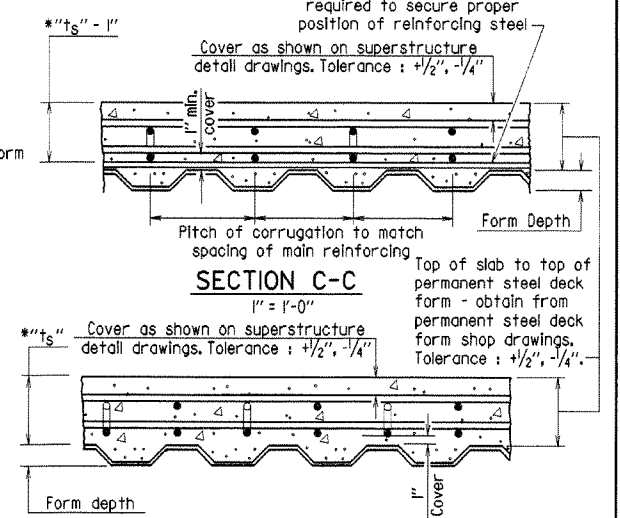
PART PLAN - SQUARE SPAN
3/8" = 1'-0"

PART PLAN - SKEWED SPAN
3/8" = 1'-0"



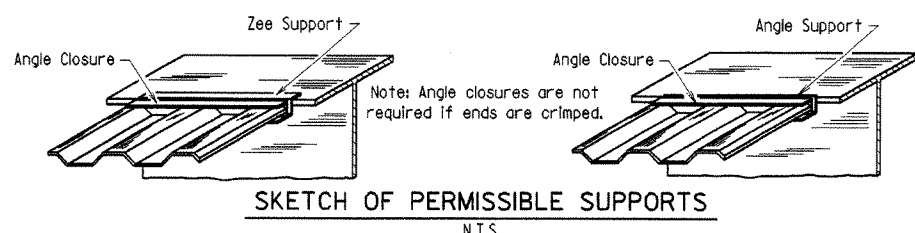
SECTION A-A
N.T.S.
(Angle at end of span)

SECTION A-A
N.T.S.
(Channel at end of span)

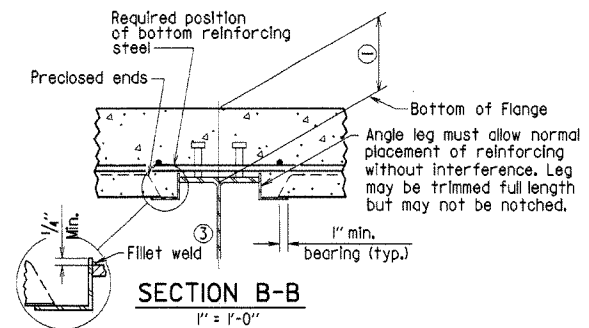


SECTION C-C
1" = 1'-0"

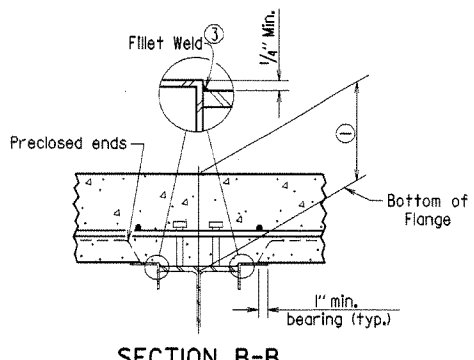
SECTION C-C - ALTERNATE
1" = 1'-0"



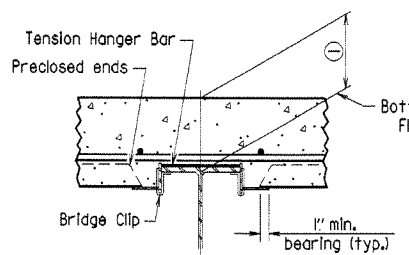
SKETCH OF PERMISSIBLE SUPPORTS
N.T.S.



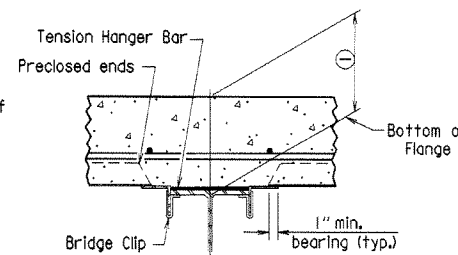
SECTION B-B
1" = 1'-0"



SECTION B-B
1" = 1'-0"



SECTION B-B
1" = 1'-0"



SECTION B-B
1" = 1'-0"

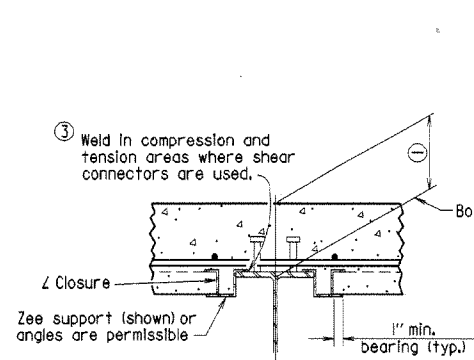
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

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

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

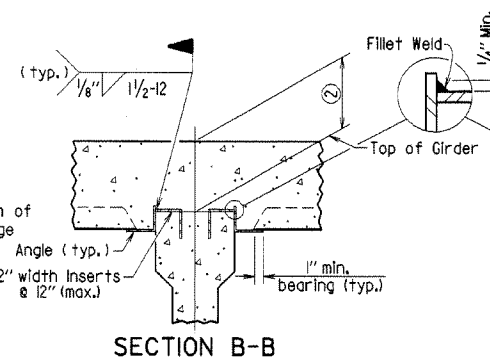
(Showing permissible support for tension flange where shear connectors are not used)

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



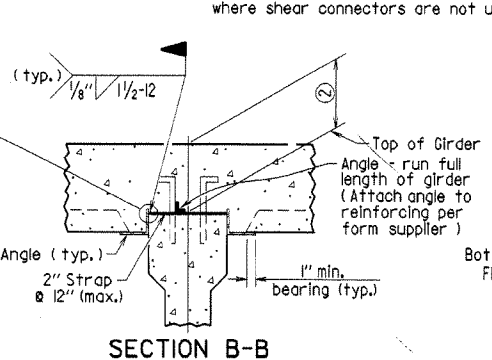
SECTION B-B
1" = 1'-0"

(Showing Z Closure)



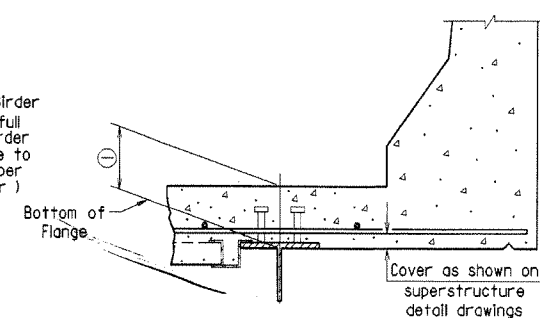
SECTION B-B (FOR CONCRETE GIRDERS)
1" = 1'-0"

(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.

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 L 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.

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

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 = $t_s + 1/4"$ + 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.

Revised for 2003 AHTD Construction Specifications and CPB Sed. MJT 04-10-2003
Chk'd. By: cΔF 04-10-2003



DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

BRIDGE NO. _____ DRAWING NO. 14991
DRAWN BY: MJT DATE: 10-17-96
CHECKED BY: CPB DATE: 10-17-96 SCALE: as noted
DESIGNED BY: STD DATE: _____

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-10-2009				6	ARK.		34	101
							CONCRETE PILES	14964

MAXIMUM PICKUP LENGTHS "L"

Type of Pick-Up	Prestressed		Non-Prestressed		Prestressed		Non-Prestressed		
	16" Oct.	18" Oct.	16" or 18" Oct.	④ 14" Sq.	16" Sq.	18" Sq.	④ 14" Sq.	16" Sq.	18" Sq.
One Point	52'	55'	46'	55'	59'	63'	52'	51'	55'
Two Point	75'	80'	67'	79'	84'	90'	75'	74'	79'
Three Point	105'	112'	93'	110'	117'	126'	104'	103'	111'

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, Fourth Edition.

SEISMIC PERFORMANCE ZONES: 1 & 2

The Contractor may use prestressed piles or non-prestressed piles. Either type will be measured and paid for at the contract unit price bid for "Concrete Piling".

SPIRAL REINFORCING: Spiral reinforcing shall be steel wire meeting the requirements of AASHTO M 32 or M 225 or shall be plain round steel bars meeting the requirements of AASHTO M 31 or M 53, Gr. 60.

MANUFACTURE, TRANSPORTATION AND STORAGE: Shipment of piles from the plant site or pile driving will not be permitted until the required minimum compressive strength is reached, and in no case less than 10 days after pouring the concrete. Prestressed piles may be removed from the casting bed to nearby storage any time after transfer of stress. See Section 802 "Concrete for Structures" of the Standard Specifications for additional information.

Unless otherwise approved by the Engineer, all protruding or exposed pile lifting or transporting devices above the finished ground shall be removed after pile driving is complete. Removal shall be a minimum of 1" below the surface of the pile and the cavity shall be filled with a non-shrink grout listed on the Department's QPL.

FORMS: For forming exterior of piles, the use of steel forms on concrete-founded casting beds is required unless otherwise approved by the Engineer. Side forms may have a maximum drift on each side not exceeding 1/4" per foot.

TOLERANCES: Pile ends shall be plane surfaces perpendicular to the longitudinal axis of pile with a maximum tolerance of 1/8" per foot transversely.

The maximum sweep (deviation from straightness measured from end to end of the pile, while not subject to bending forces) shall not exceed 1/8" in 10 feet.

BUILD-UPS: To provide for build-ups of piles where authorized by the Engineer, concrete shall be cut back to expose the reinforcing steel for a distance sufficient to provide a lap of 60 diameters of the reinforcing bars required for build-up. Reinforcing for build-ups shall be the reinforcing shown for non-prestressed piles.

INSTALLATION, MEASUREMENT AND PAYMENT: See Section 805 "Piling" of the Standard Specifications.

ADDITIONAL NOTES FOR PRESTRESSED PILES ONLY:

CONCRETE: Concrete in prestressed piles shall be Class S(AE) and shall have a minimum compressive strength (f'c) of 5,000 psi at 28 days. Compressive strength at transfer of the prestressing force shall be not less than 4,000 psi. Concrete in build-ups shall have a minimum compressive strength of 4,000 psi and shall be cured for a minimum of 10 days.

PRESTRESSING REINFORCING: Seven-wire stress-relieved or low relaxation strands shall conform to the general requirements of AASHTO M 203. Broken wires within individual strands will be permitted up to 2% of the total number of wires in each pile, providing that there is not more than one broken wire per strand. Two or more broken wires per strand will be cause for replacement of the strand, even though the two broken wires are within the 2% limitation.

ADDITIONAL NOTES FOR NON-PRESTRESSED PILES ONLY:

All concrete shall be Class S(AE) and shall have a minimum compressive strength (f'c) of 4,000 psi at 28 days.

All longitudinal reinforcing bars shall be deformed bars and shall conform to the requirements of AASHTO M 31 or M 53, GR. 60.

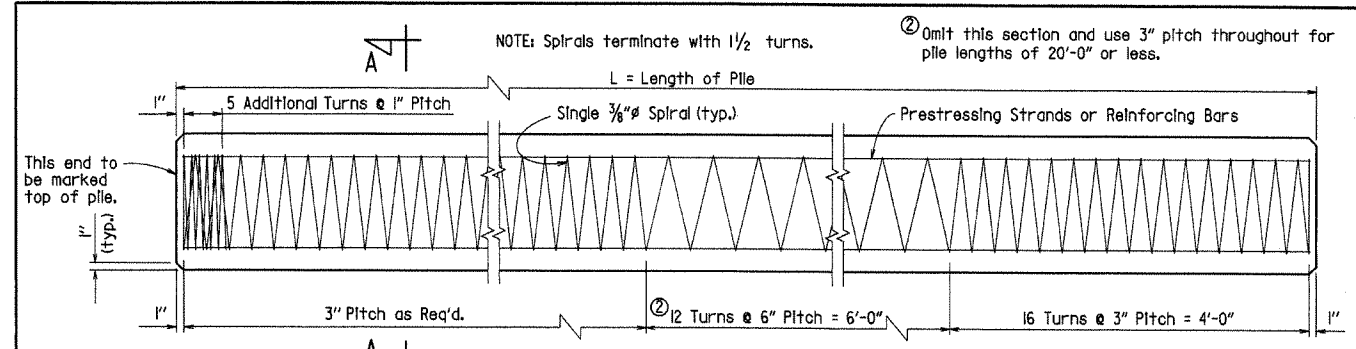
Added paragraph to General Notes KDH 12-10-2009
Checked by: cdf Date: 12-10-2009



**STANDARD DETAILS OF CONCRETE PILES
IN SEISMIC PERFORMANCE
ZONES 1 & 2**

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

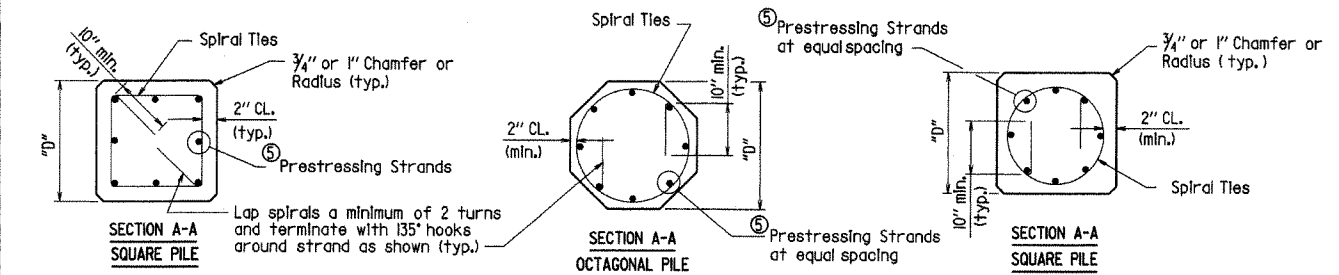
DRAWN BY: KKY DATE: 1-17-08 FILENAME: bl4964_std.dgn
CHECKED BY: JAC DATE: 1-17-08 SCALE: no scale
DESIGNED BY: Std DATE: _____
BRIDGE NO. DRAWING NO. 14964



PLAN OF PILE SHOWING SPIRAL TIE SPACING

For anchorage of pile to bent, see Bent Details.

NOTE: Strand location shall be symmetrical about the axis of the pile with no more than one strand difference between any two adjacent sides. Circular spiral ties are required for odd number of strands.



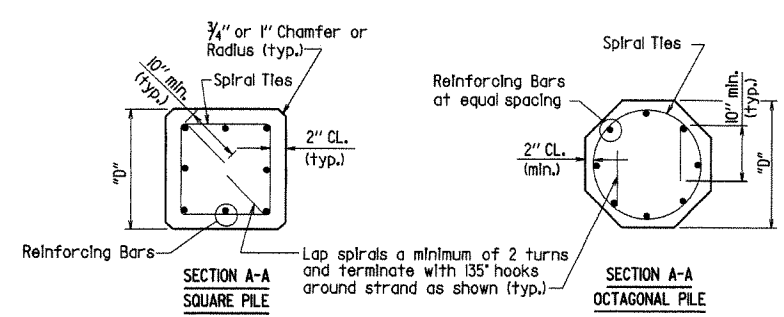
PRESTRESSED CONCRETE PILES

"B" 0.75 Low Relaxation
0.70 Stress-Relieved

See table "Prestressed Concrete Pile Properties" for actual number of strands per pile size.

PRESTRESSED CONCRETE PILE PROPERTIES

	Grade	Strand Diameter	① Number of Strands per Size "D"					Minimum Ultimate Tensile Strength Per Strand (Lbs.)	Initial Prestressing Force Per Strand (Lbs.)
			16" Oct.	18" Oct.	④ 14" Sq.	16" Sq.	18" Sq.		
Stress-Relieved	250	3/16"	11	13	10	13	16	27,000	18,900
		1/2"	8	10	8	10	12	36,000	25,200
	270	3/16"	9	11	8	12	14	31,000	21,700
		1/2"	7	9	6	8	10	41,300	28,900
Low Relaxation	250	3/16"	9	11	8	11	14	27,000	20,200
		1/2"	7	9	6	8	10	36,000	27,000
	270	3/16"	8	10	7	9	12	31,000	23,300
		1/2"	6	8	6	7	9	41,300	31,000

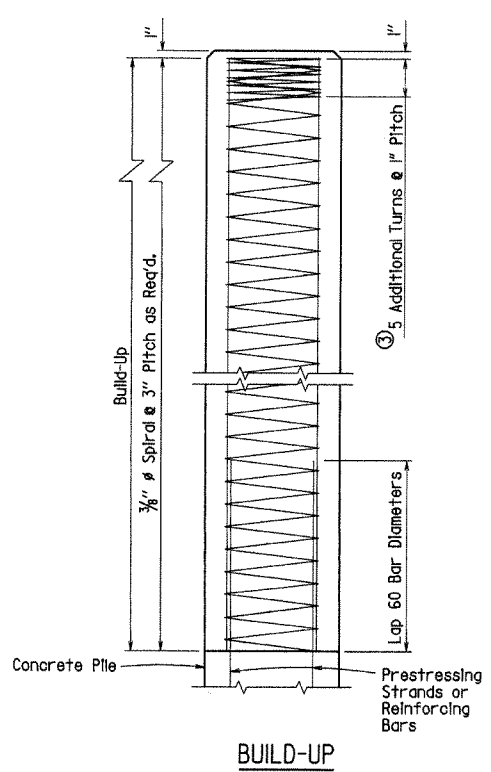


NON-PRESTRESSED CONCRETE PILES

NON-PRESTRESSED PILE REINFORCING

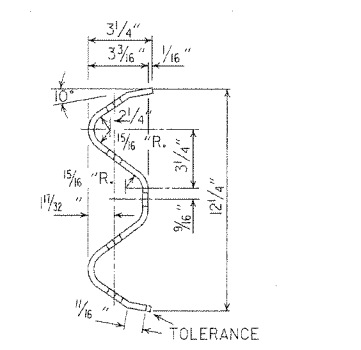
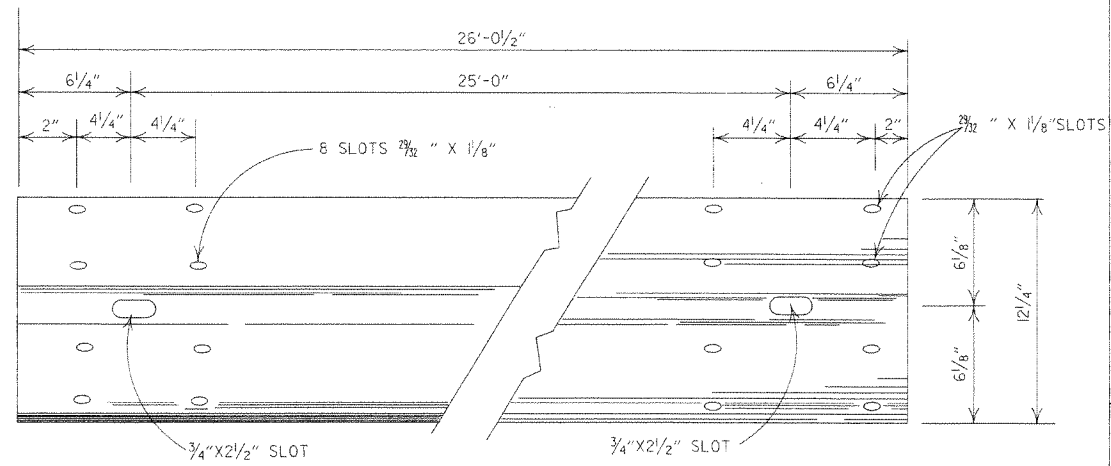
Pile Size	No. Req'd.	Bar Size
16" Oct.	8	# 7
18" Oct.	8	# 7
④ 14" Sq.	8	# 7
16" Sq.	8	# 7
18" Sq.	8	# 8

④ 14" sq. piles to be used in Seismic Performance Zone 1 only.

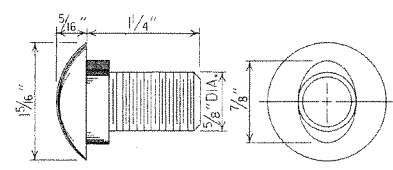


BUILD-UP

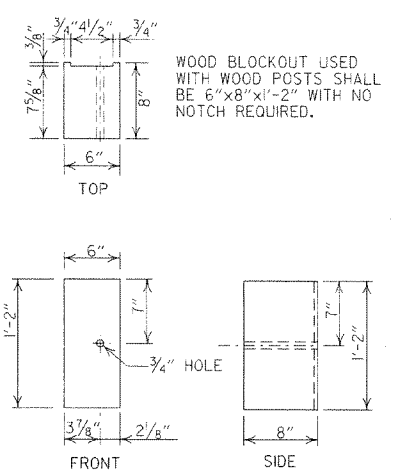
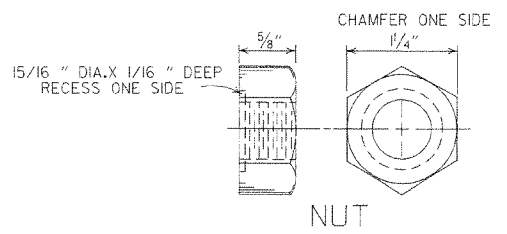
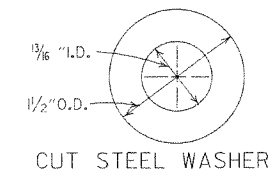
③ The five additional turns of spiral reinforcing may be omitted for build-up without additional driving.



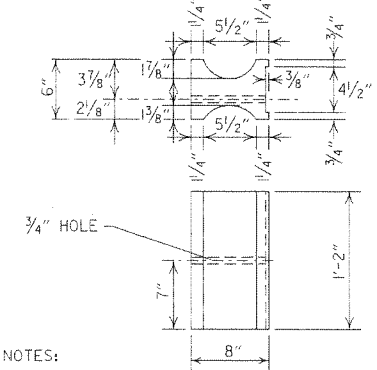
DETAILS OF W-BEAM GUARD RAIL
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



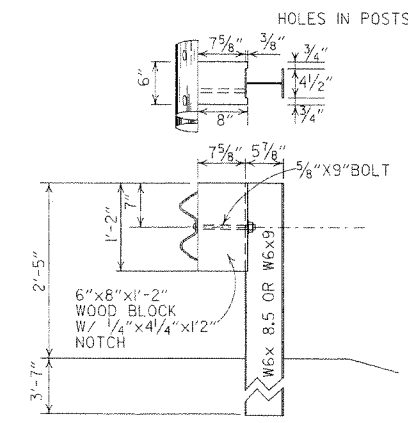
SPLICE BOLT POST BOLT - SAME EXCEPT LENGTH



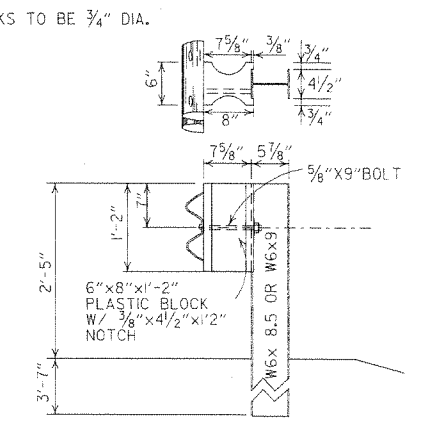
WOOD BLOCKOUT (W-BEAM)



PLASTIC BLOCKOUT (W-BEAM)

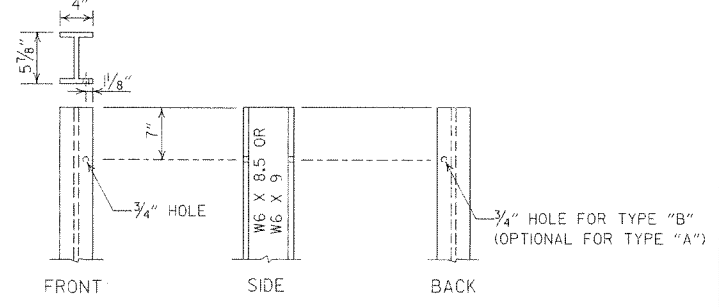


WOOD BLOCKOUT CONNECTIONS

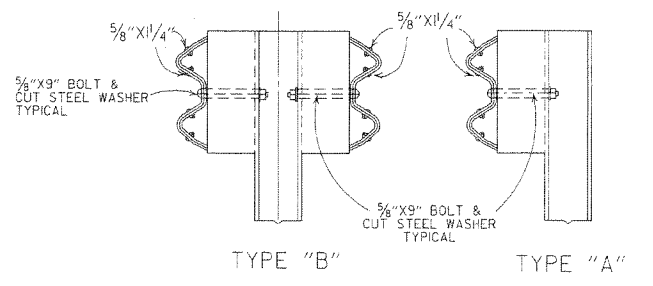


PLASTIC BLOCKOUT CONNECTIONS

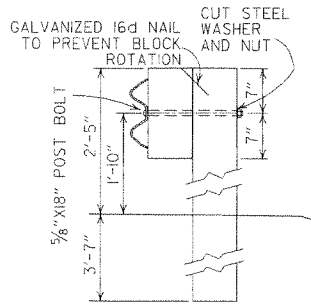
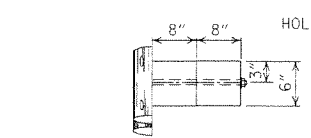
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



STEEL POST



DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



POSTS AND BLOCKS TO BE ROUGH SAWN 6" X 8" WITH A TOLERANCE OF + OR - 1/4".

WOOD BLOCKOUT CONNECTIONS
PLASTIC BLOCKOUT CONNECTIONS
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

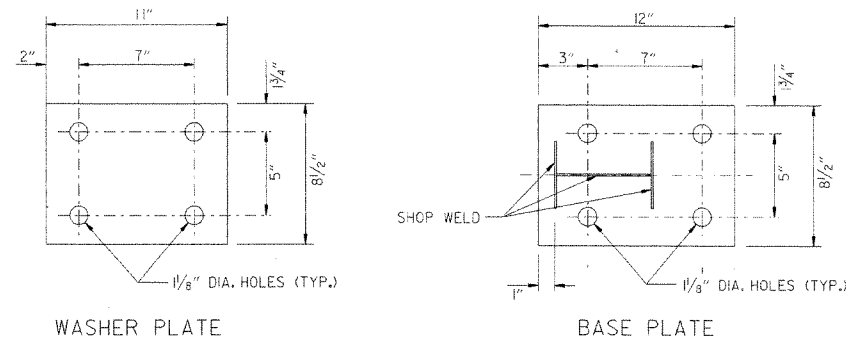
ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.
WHERE W-BEAM GUARD RAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.
W-BEAM GUARD RAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED 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 9.7f (400 f) OR NO. 1 350 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.

7-4-80	RAISED HEIGHT OF GUARD RAIL 1"	
0-15-09	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	
11-2-00	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	8-15-91
8-2-90	REV. GEN. NOTE & DEPTH 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
DATE	REVISION	DATE FILM

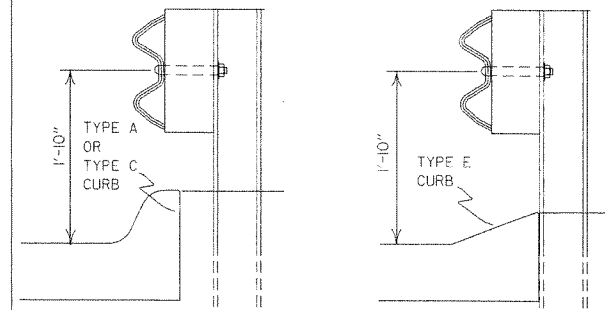
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8



Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 807 of the Standard Specifications.

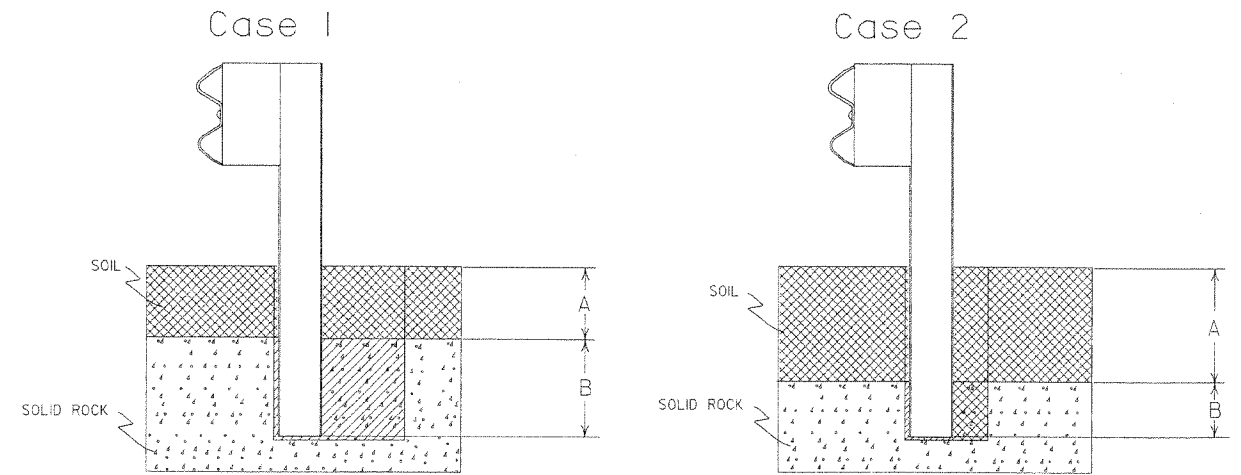


FOR DESIGN SPEEDS OF 50 MPH OR LESS
ALIGN FACE OF GUARD RAIL WITH FACE OF CURB.

FOR DESIGN SPEEDS OF 55 MPH OR MORE
PLACE GUARD RAIL POSTS AGAINST BACK OF CURB.

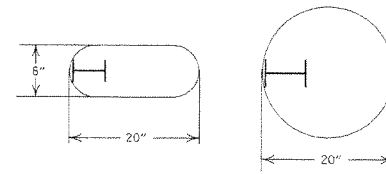
DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



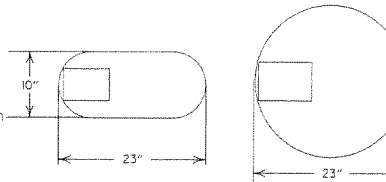
Plan View Steel Posts

Either hole configuration acceptable



Plan View Wood Posts

Either hole configuration acceptable



Notes: For overlying soil depths (A) ranging from 0 to 18", the depth of required drilling (B) is equal to 24".

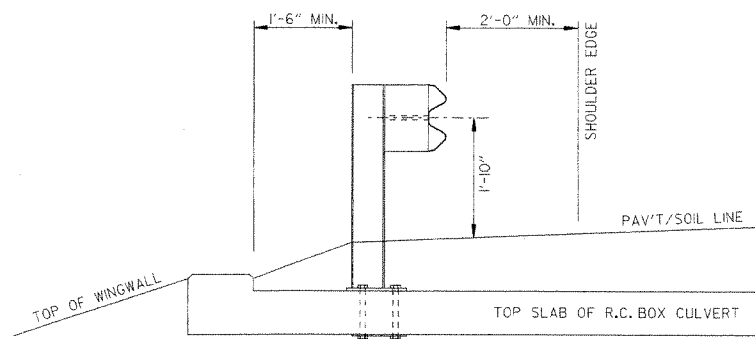
Zone A: Backfill according to Section 617.03(a).

Zone B: Backfill hole in 6" lifts with material meeting the requirements of Section 602.02(c) - Alternate gradation. Compact to 95% maximum dry density per ASTM D-698.

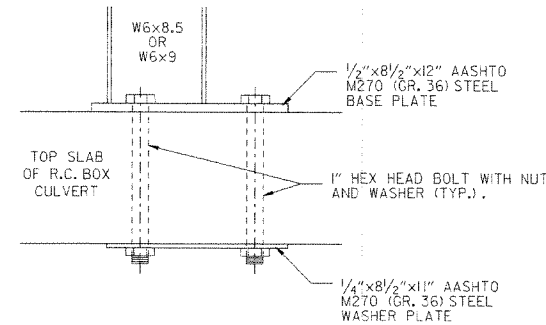
Notes: For overlying soil depths (A) ranging from 18" to 44", the depth of required drilling (B) is equal to either 12" or 44" minus the depth of soil whichever is less.

Zone A & B: Backfill according to Section 617.03(a).

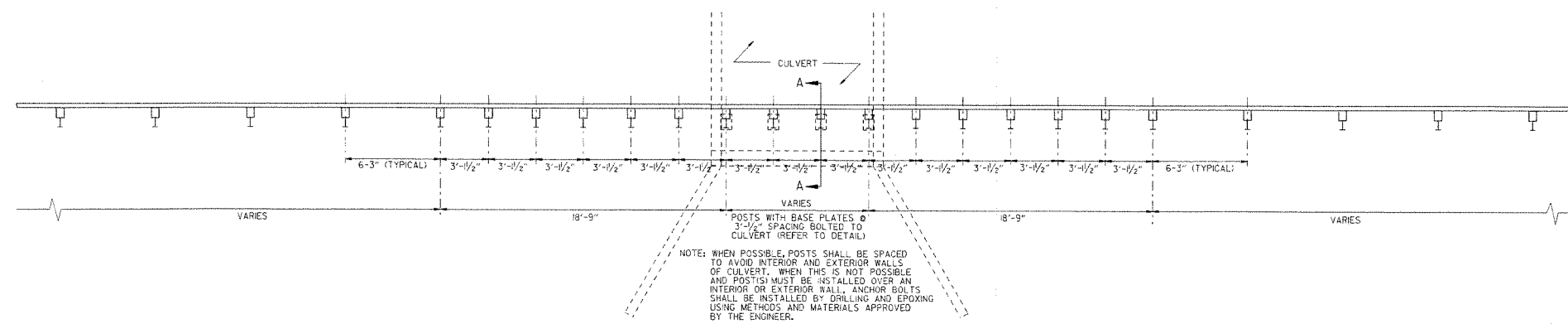
DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)



SECTION A-A



DETAIL OF CONNECTION



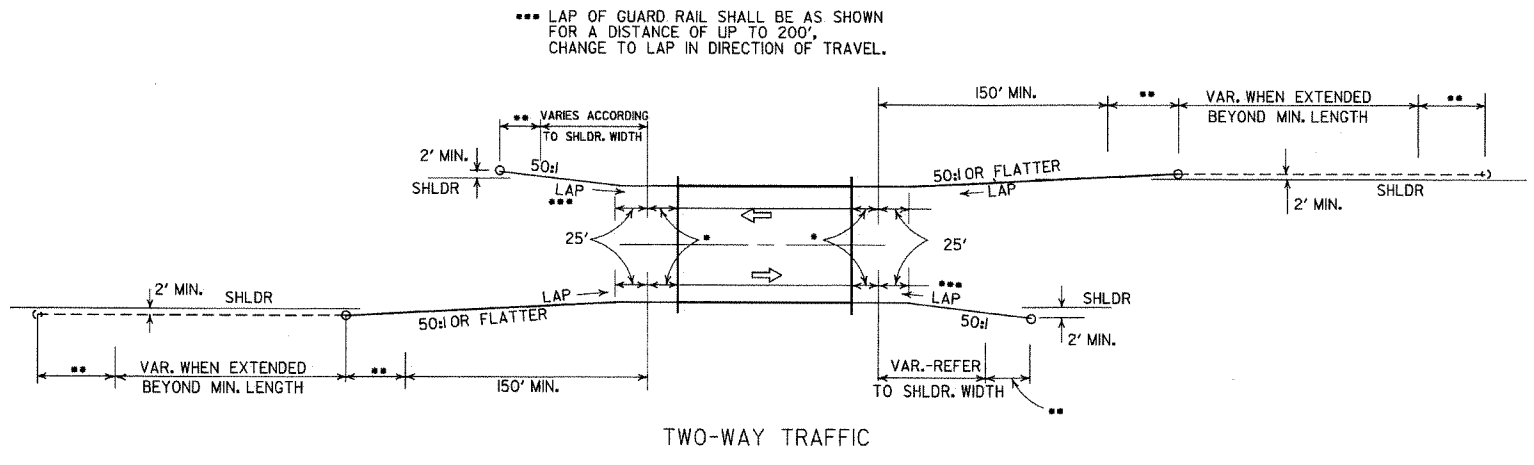
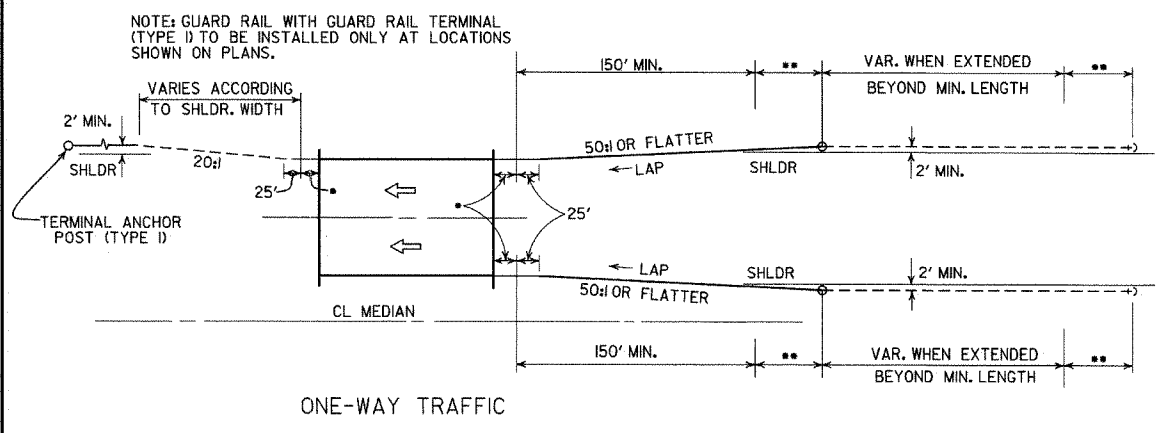
PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS
NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARD RAIL POSTS AS SHOWN ON STD. DRWG. GR-8.

7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
4-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL PLACEMENT AT LOW-FILL CULVERTS	
3-30-00	REMOVED CONCRETE INSERT ANCHOR	
8-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADD. DET. OF GUARD RAIL CONNECTION TO R.C. BOX CULV.T. DELETED DET. OF STEEL LINE POST CONN. & ADDED DET. OF GUARD RAIL PLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK	
4-3-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
11-22-95	ADDED OPTIONAL HOLES	
6-2-94	REVISED ALTERNATE POST SIZE	
8-5-93	REVISED STEEL POST SIZE	
10-1-92	REDRAWN & REVISED	10-1-92
8-2-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
7-15-88	CONFORMED TO 1988 SPECS	
3-4-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	7-2-10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	5-17-10-30-87
10-9-87	REDRAWN & REVISED	8-03-10-9-87
DATE	REVISION	DATE FILM

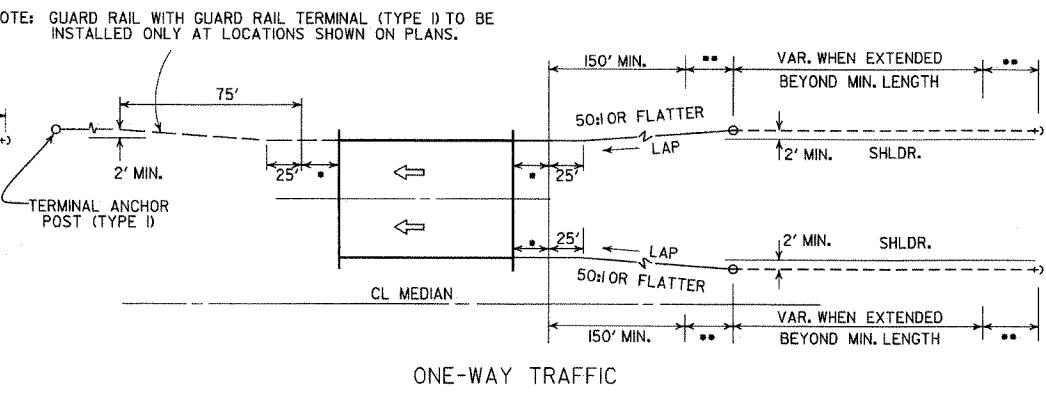
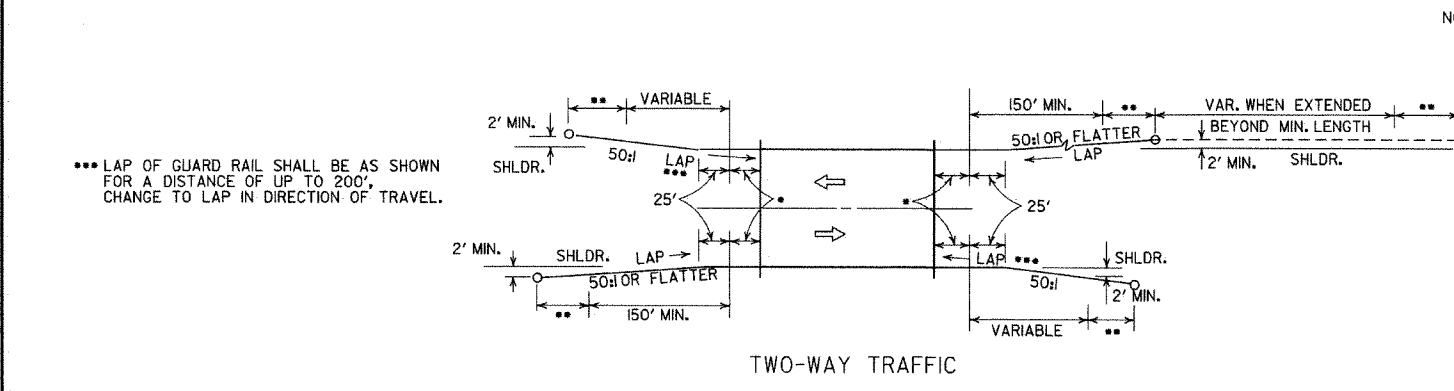
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

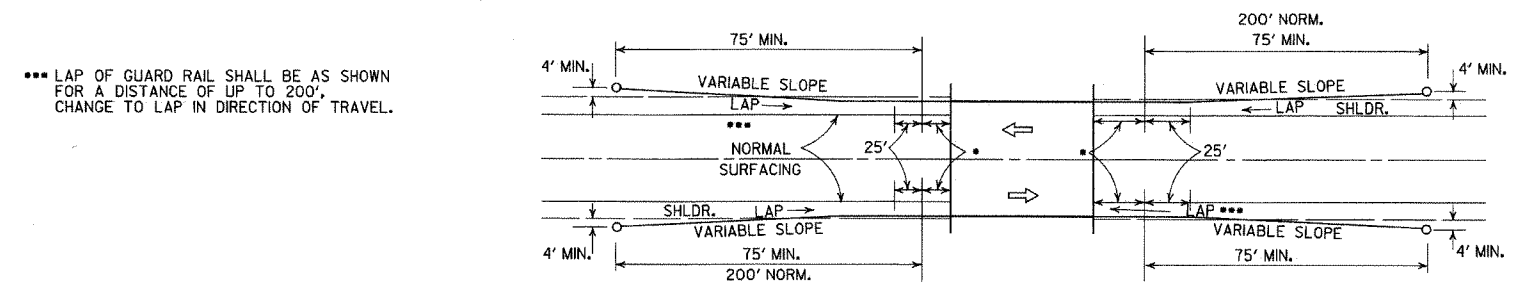
STANDARD DRAWING GR-8A



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



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

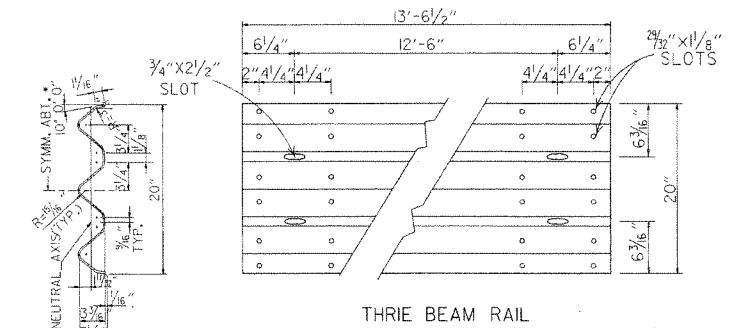


LEGEND

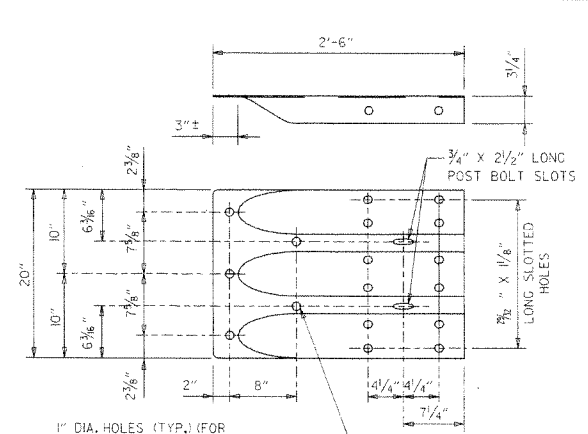
- THREE BEAM GUARD RAIL TERMINAL
- GUARD RAIL TERMINAL (TYPE 2)

METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE 1) (FULL SHOULDER WIDTH OR LESS BRIDGES)

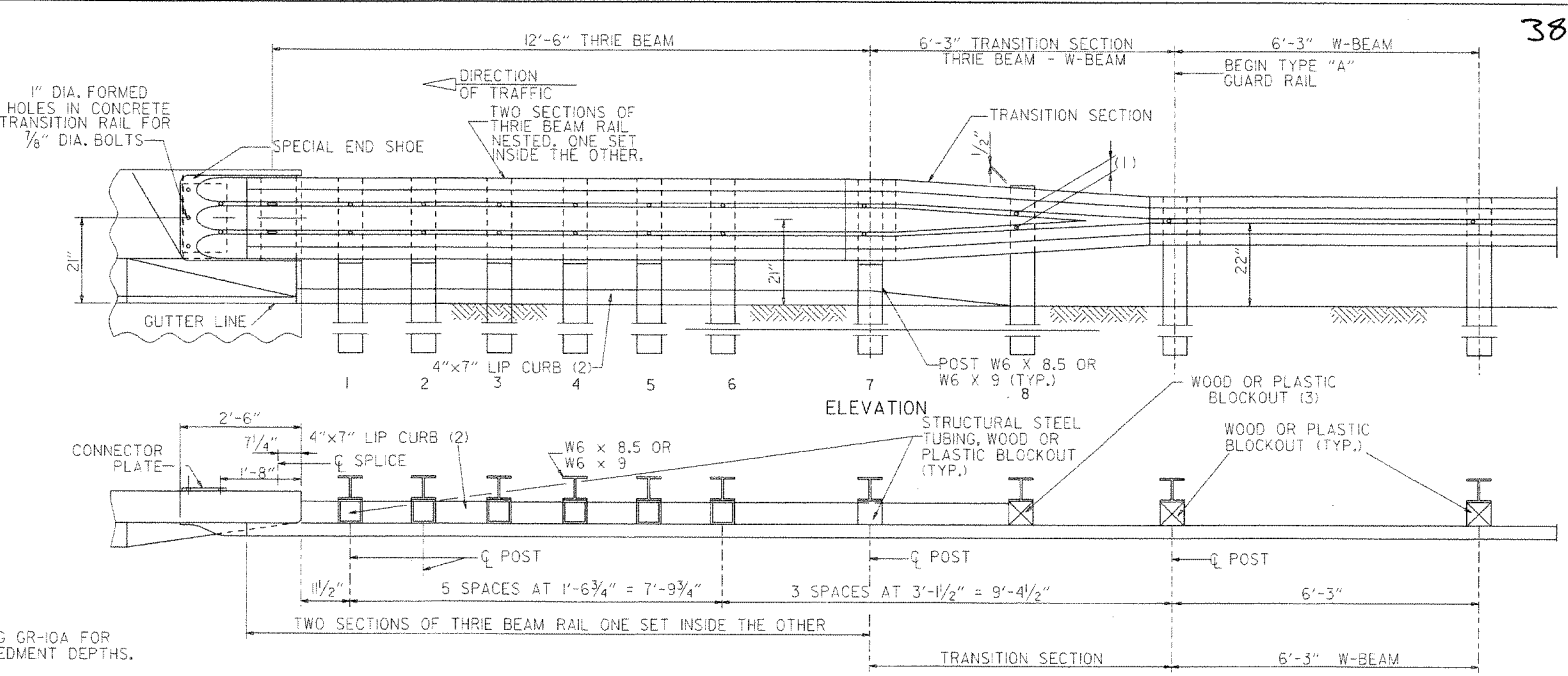
			ARKANSAS STATE HIGHWAY COMMISSION
			GUARD RAIL DETAILS
			STANDARD DRAWING GR-9
4-17-08	REVISED LAYOUTS		
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS		
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. 1)		
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00	
6-26-97	REVISED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



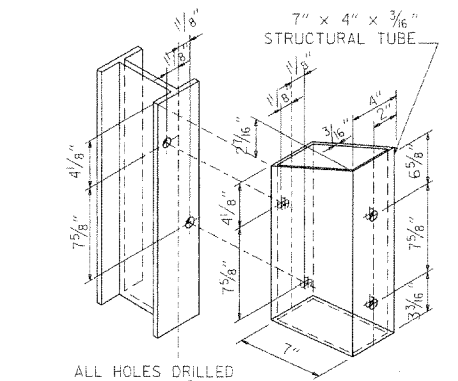
SECTION THRU THRIE BEAM RAIL



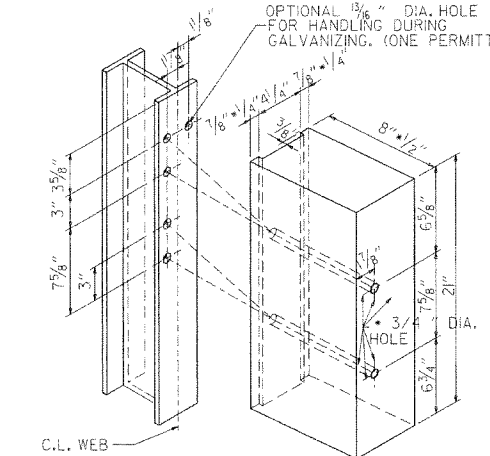
SPECIAL END SHOE



ELEVATION



STRUCTURAL STEEL TUBING BLOCKOUT DETAIL

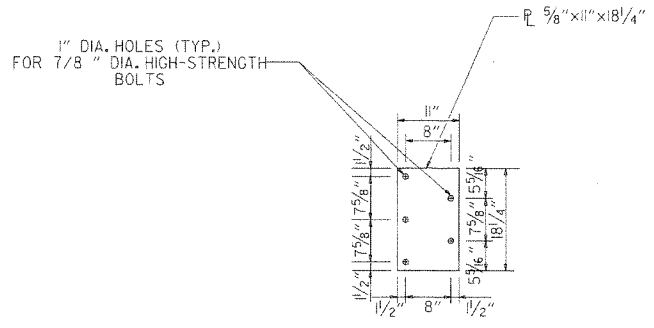


HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

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

ATTACH BLOCKOUT TO POST USING 5/8" DIA. HEX HEAD BOLTS WITH 1/2" O.D. CUT STEEL WASHERS AND NUT.

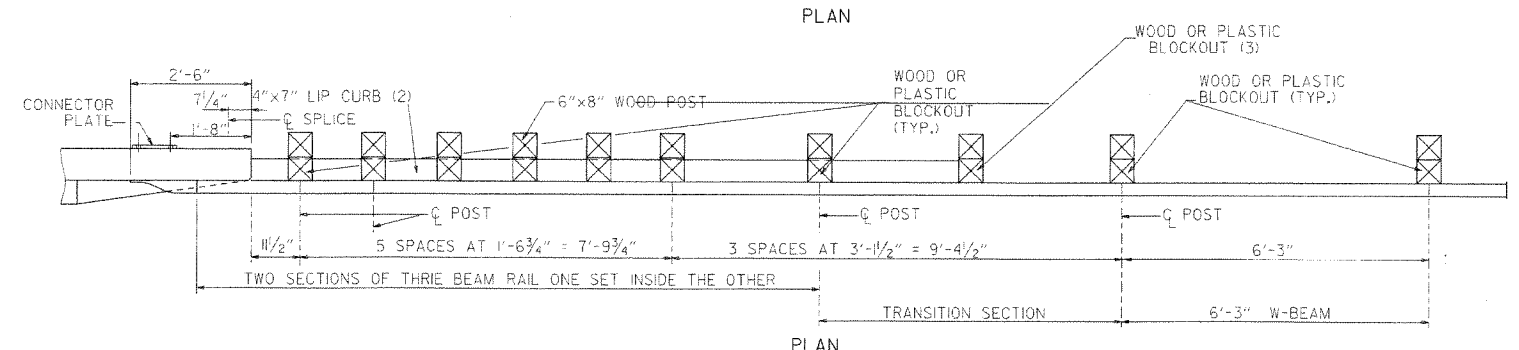
1" DIA. HOLES (TYP.) FOR 7/8" DIA. HIGH-STRENGTH BOLTS



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 7/8" 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.

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



PLAN

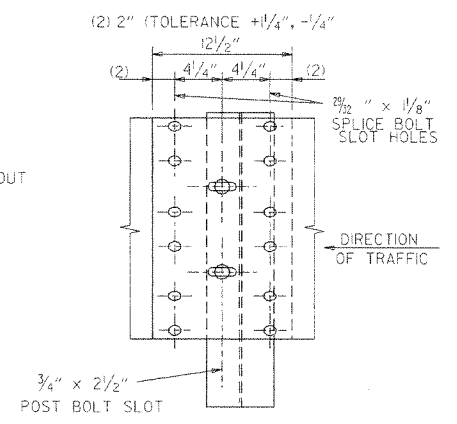
PLAN

- (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.

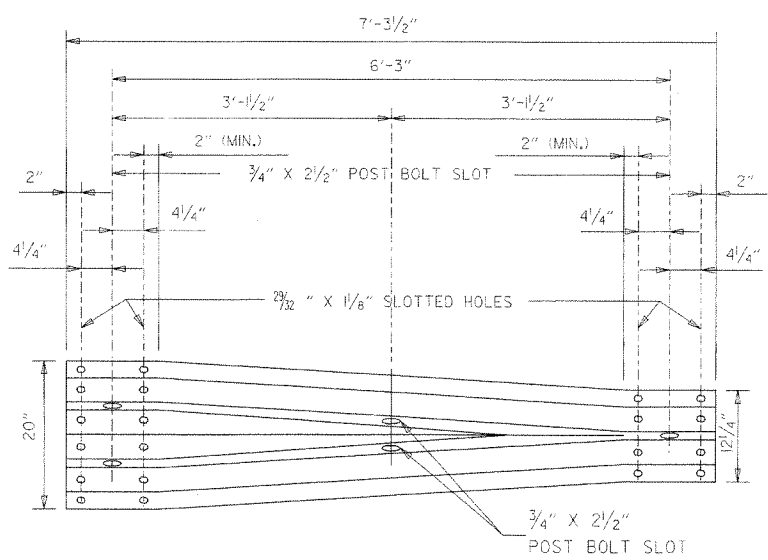
THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

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 3/4" 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 9.7f (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.



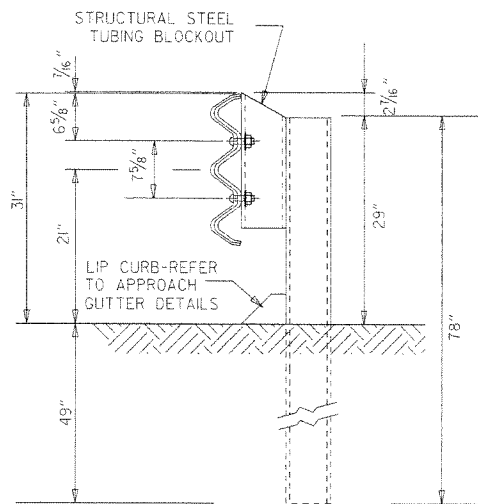
THRIE BEAM RAIL SPLICE AT POST



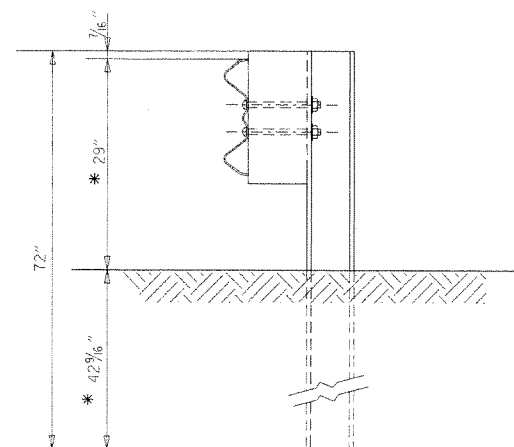
TRANSITION SECTION

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

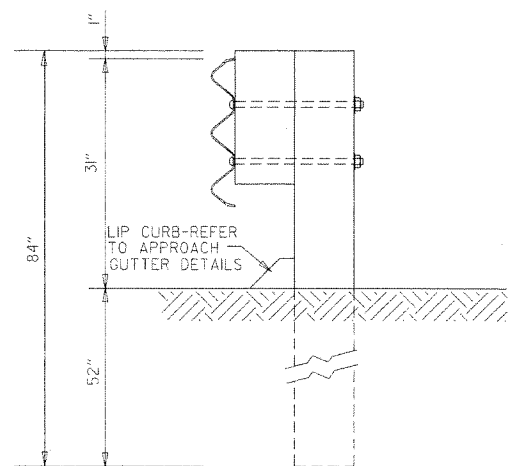


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT AND STEEL POST
POSTS 1-7

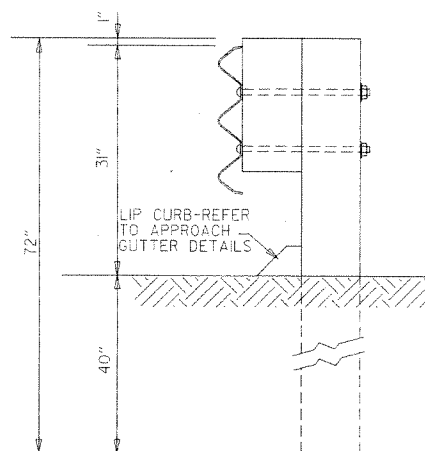


W-BEAM TO THRIE BEAM TRANSITION RAIL WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

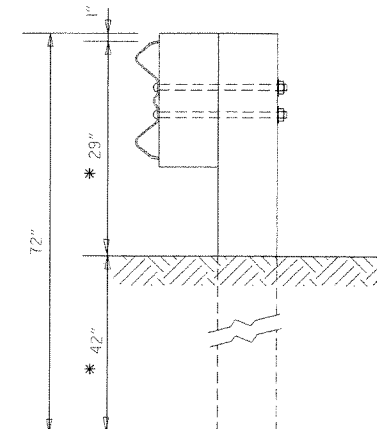
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21\"/>



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

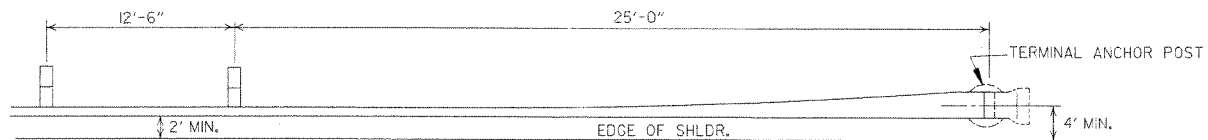


W-BEAM TO THRIE BEAM TRANSITION RAIL WITH WOOD OR PLASTIC BLOCKOUT & WOOD POST
POST 8

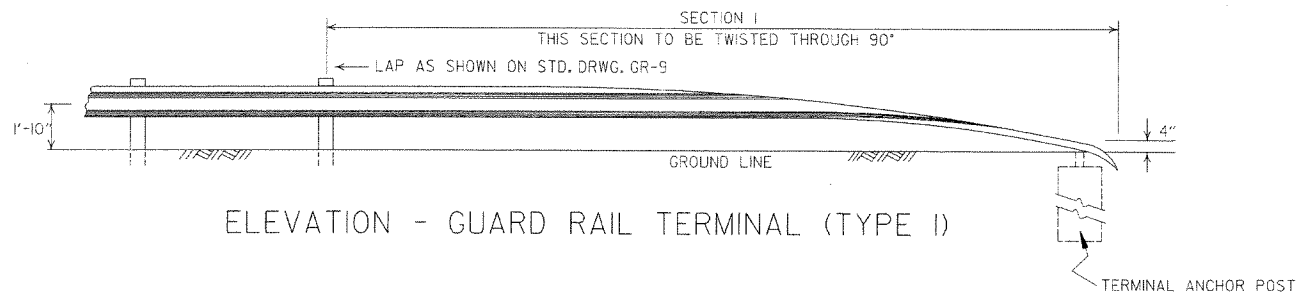
GENERAL NOTES:
RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (400 f) OR NO. 1 350 f SOUTHERN PINE.

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

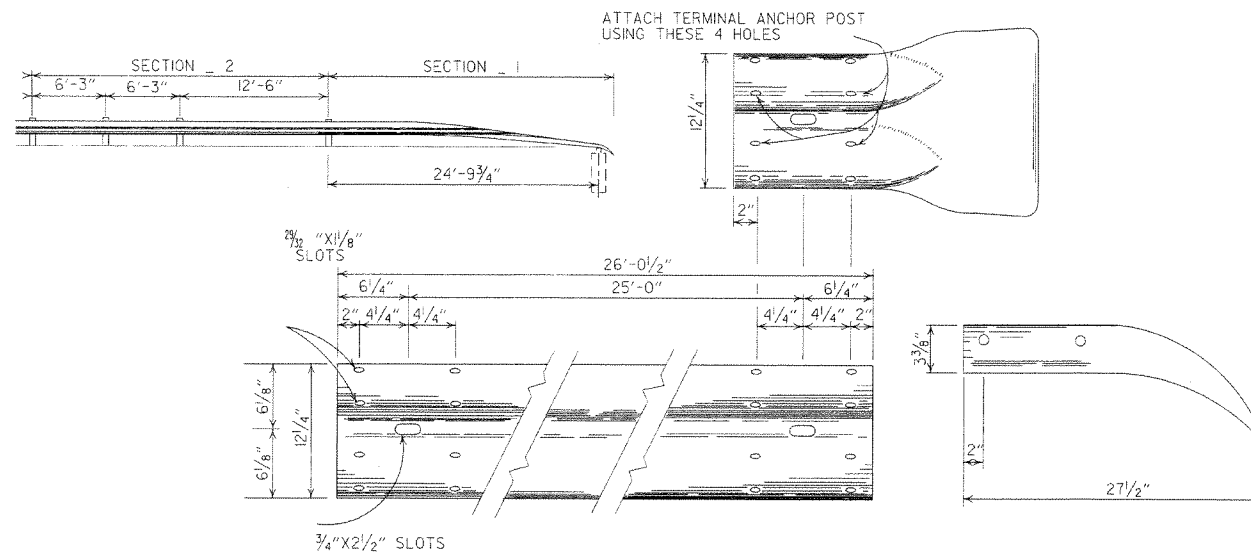


PLAN - GUARD RAIL TERMINAL (TYPE I)



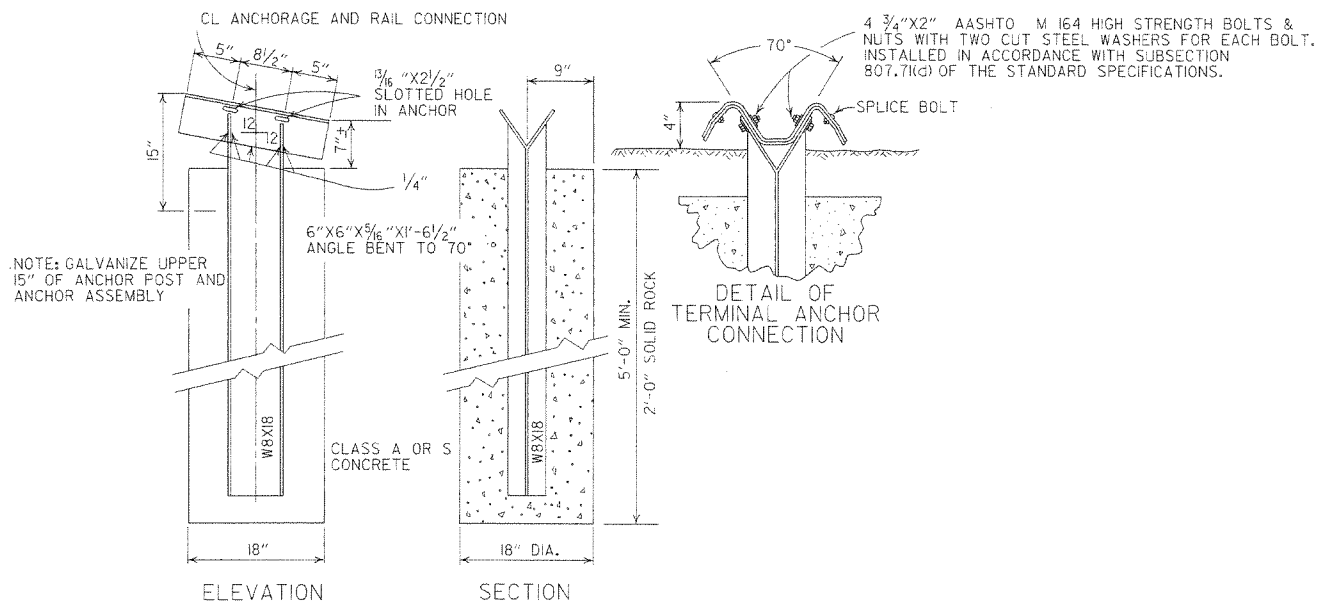
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

NOTE:
SECTIONS 1 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



DETAIL OF TERMINAL ANCHOR POST (TYPE I)

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 W 17 POST IF CONTRACTOR SO DESIRES.

			ARKANSAS STATE HIGHWAY COMMISSION
			GUARD RAIL DETAILS
			STANDARD DRAWING GRT-I
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	
DATE	REVISION	DATE	FILM

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA. INCHES	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
15	18	18	11	11
18	22	22	13 1/2	14
21	26	26	15 1/2	16
24	28 1/2	29	18	18
30	36 1/4	36	22 1/2	23
36	43 3/8	44	26 3/8	27
42	51 1/8	51	31 1/8	31
48	58 1/2	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	77 1/2	77
108	138	138	87 1/8	87
120	154	154	96 1/8	97
132	168 3/4	169	106 1/2	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. INCHES	AASHTO M 207	
	SPAN	RISE
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)(ii).

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.

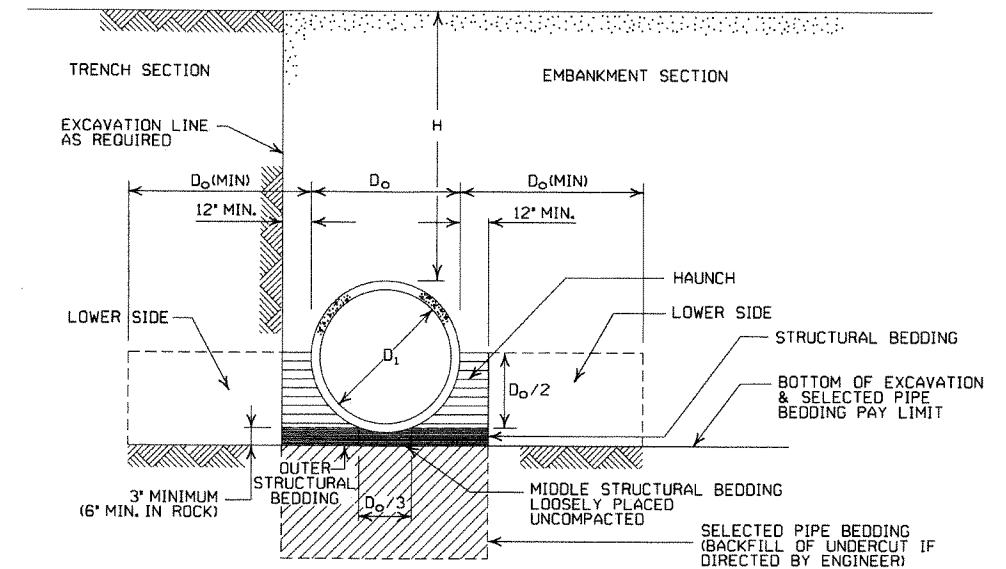
- LEGEND -

- D_i = 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

INSTALLATION TYPE	CLASS OF PIPE			
	CLASS III	CLASS IV	CLASS V	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
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
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
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 MINIMUM 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
2 3/8 INCH BY 1/2 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	36	36	47		
36	2	34	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

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.

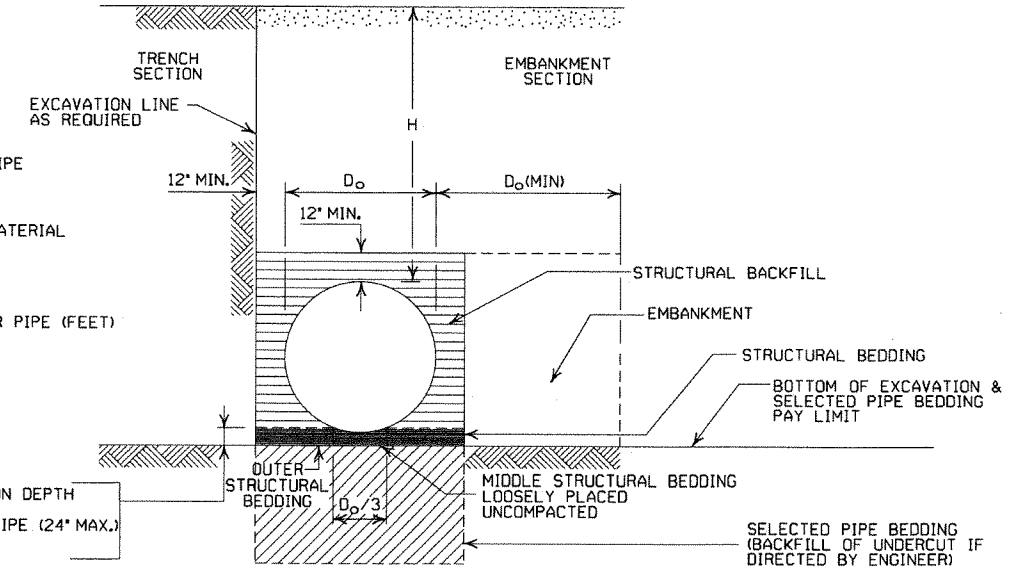
NOTE: STRUCTURAL BACKFILL AND STRUCTURAL BEDDING WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF METAL PIPE.

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.

- LEGEND -

- D_o = OUTSIDE DIAMETER OF PIPE
- MAX. = MAXIMUM
- MIN. = MINIMUM
- [Hatched Pattern] = STRUCTURAL BACKFILL MATERIAL
- [Dotted Pattern] = UNDISTURBED SOIL
- [Diagonal Lines] = EQUIV. DIA. = EQUIVALENT DIAMETER
- H = FILL COVER HEIGHT OVER PIPE (FEET)



EMBRANKMENT 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. INSTALLATION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2 3/8" x 1/2" 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."

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINIMUM 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 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM						
12	1	45	45	52		
18	2	30	30	31	32	34
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

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)	MINIMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM			
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)			
				INSTALLATION			INSTALLATION			
				TYPE 1	TYPE 1		TYPE 1	TYPE 1		
2 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, 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	3 1/2	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 1/2" 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.

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

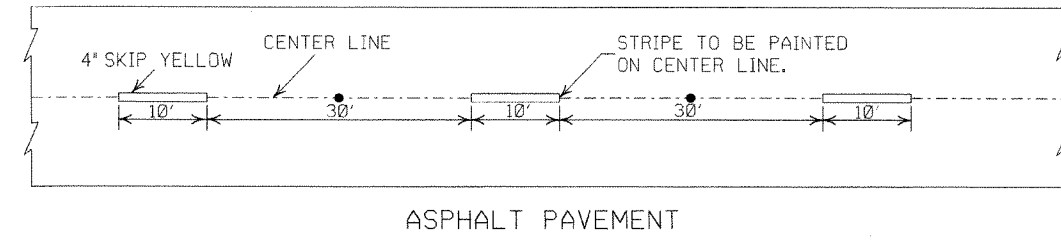
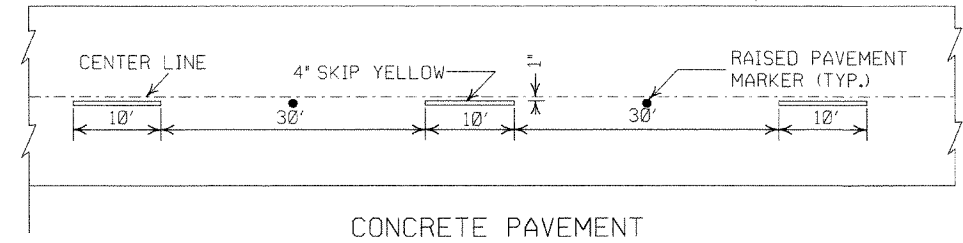
ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT
FILL HEIGHTS & BEDDING

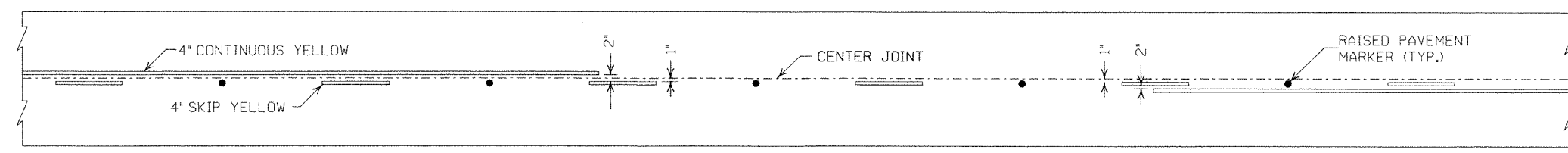
STANDARD DRAWING PCM-1

NOTES:

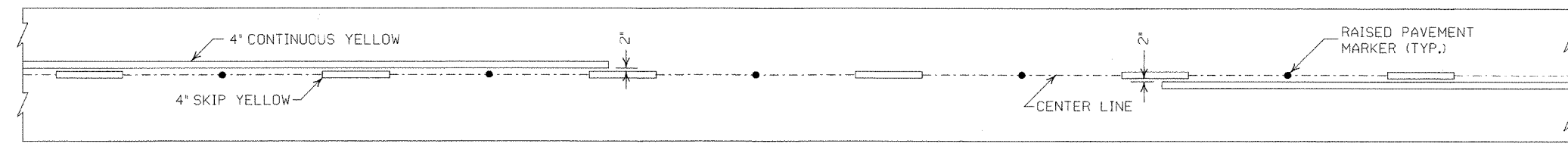
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED PAVEMENT MARKERS SHALL BE CENTERED BETWEEN SKIP LINES ON 40 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.



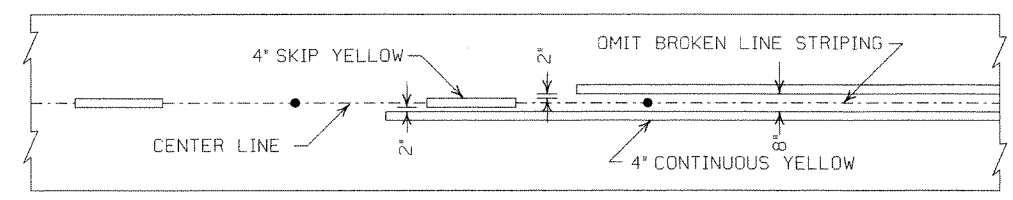
BROKEN LINE STRIPING



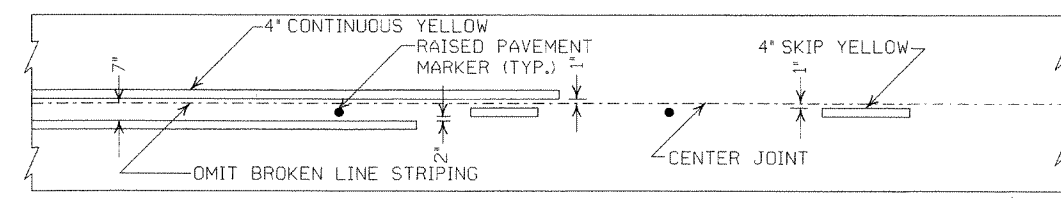
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

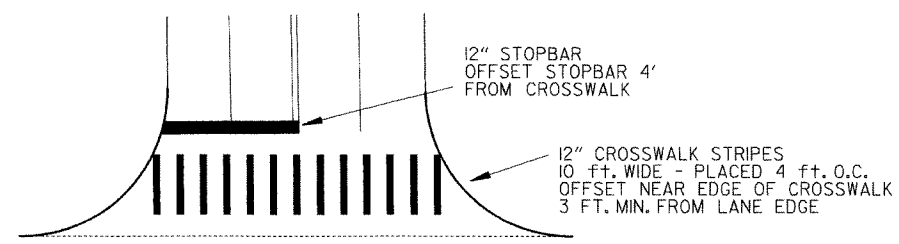


ASPHALT PAVEMENT



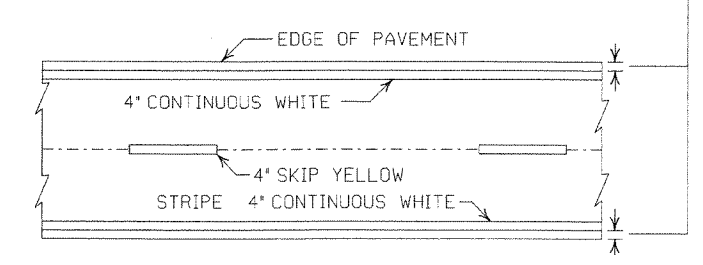
CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

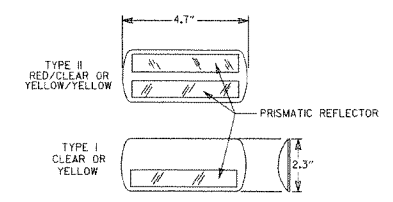


CROSSWALK AND STOPBAR DETAILS

2" FOR ASPHALT OR CONCRETE PAVEMENT
6" FOR BITUMINOUS SURFACE TREATMENT



PAVEMENT EDGE LINE MARKING



NOTE: THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

GENERAL NOTES:
THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

NOTE:
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

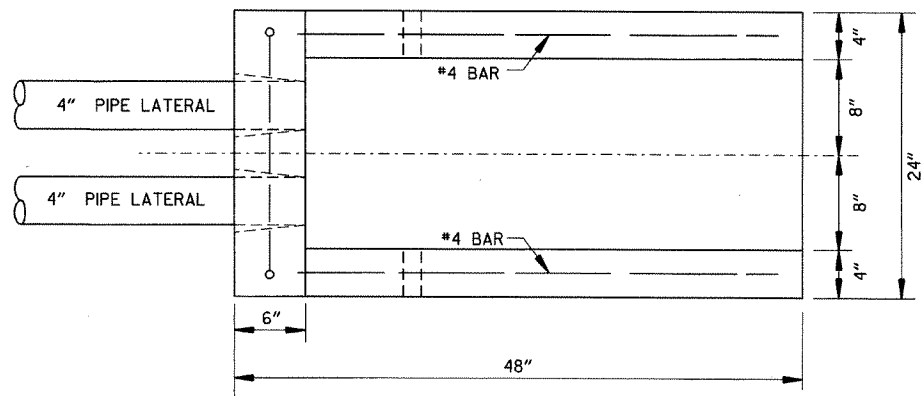
DATE	REVISION	FILMED
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

ARKANSAS STATE HIGHWAY COMMISSION

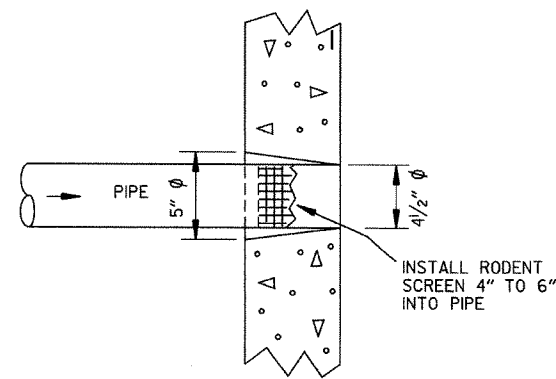
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

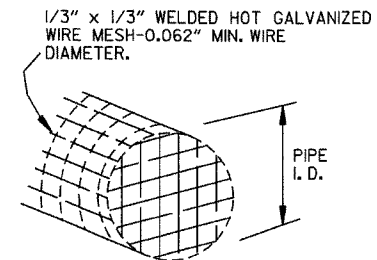
NOTE:
 1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.
 2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
 3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC, LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



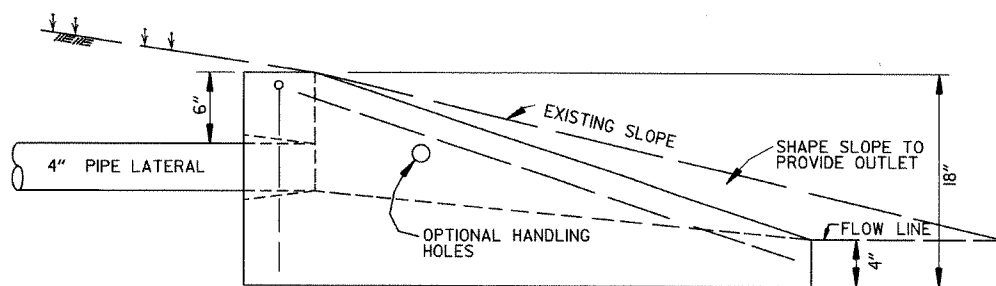
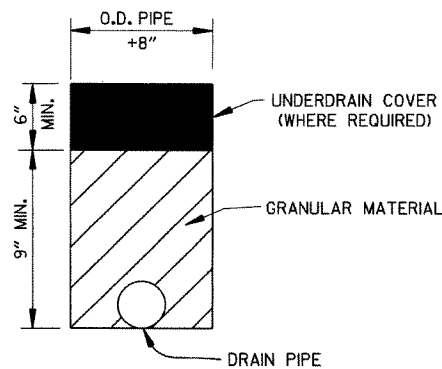
PLAN VIEW



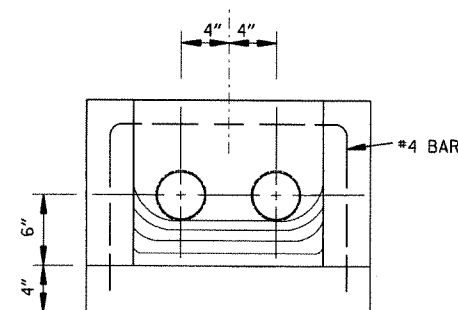
DETAIL OF HOLE FOR 4" PIPE



DETAIL OF RODENT SCREEN



SIDE VIEW

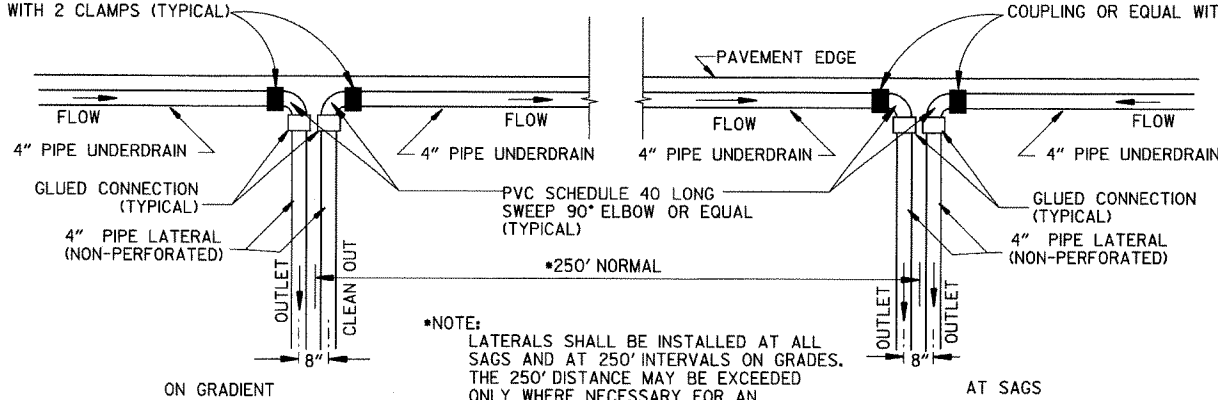


FRONT VIEW

FERNCO 1056-44 (4" CI/PLASTIC) OR FERNCO 1051-44 (4" AC/DI OR 4" CI/PLASTIC) COUPLING OR EQUAL WITH 2 CLAMPS (TYPICAL)

UNDERDRAIN OUTLET PROTECTORS

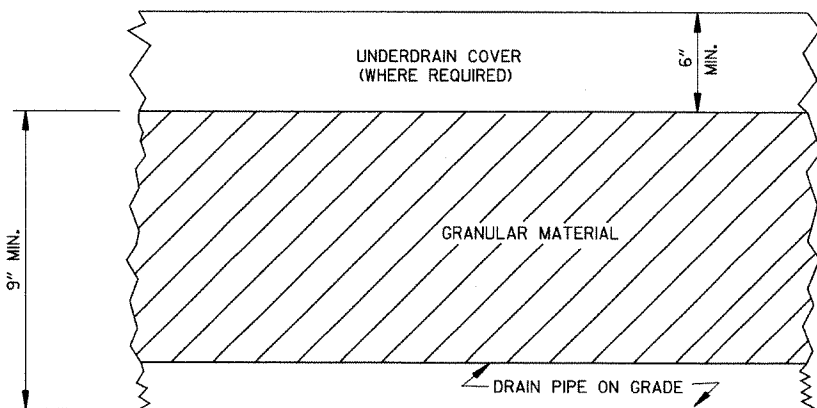
FERNCO 1056-44 (4" CI/PLASTIC) OR FERNCO 1051-44 (4" AC/DI OR 4" CI/PLASTIC) COUPLING OR EQUAL WITH 2 CLAMPS (TYPICAL)



*NOTE:
 LATERALS SHALL BE INSTALLED AT ALL SAGS AND AT 250' INTERVALS ON GRADES. THE 250' DISTANCE MAY BE EXCEEDED ONLY WHERE NECESSARY FOR AN ACCEPTABLE OUTLET.

DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

NOTE: PVC PIPE FOR LATERALS SHALL MEET THE REQUIREMENTS OF ASTM D 1785 (LATEST REVISION) FOR SCHEDULE 40 PIPE.



DETAILS OF PIPE UNDERDRAIN

4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE: 5 1/2" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11-3-94	REVISED FOR DUAL LATERALS	11-3-94
10-1-92	SUBSTITUTED GEOTEXTILE	10-1-92
8-15-91	ADDED POLYETHYLENE PIPE	8-15-91
11-8-90	DELETED ALTERNATE NOTE	11-8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

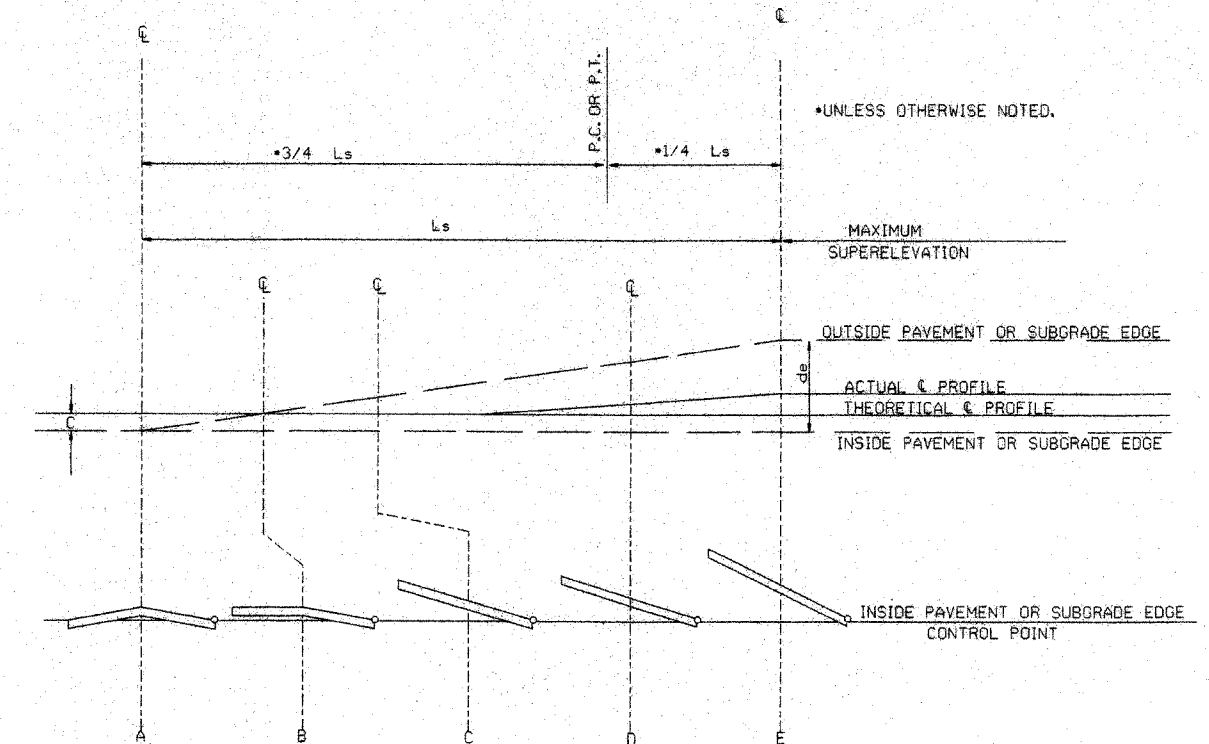
STANDARD DRAWING PU-1

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH		40 MPH		50 MPH		55 MPH		60 MPH		70 MPH	
	Ls (FT)		Ls (FT)		Ls (FT)		Ls (FT)		Ls (FT)		Ls (FT)	
	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	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.		N.C.		0.026		0.030		0.037	
1° 15'	N.C.		N.C.		R.C.		0.026		0.037		0.046	
1° 30'	N.C.		0.021		0.031		0.037		0.043		0.054	
1° 45'	N.C.		0.025		0.036		0.043		0.049		0.062	
2° 00'	R.C.		0.028		0.040		0.048		0.055		0.070	
2° 15'	R.C.		0.031		0.045		0.053		0.061		0.078	
2° 30'	N.C.		0.034		0.049		0.058		0.067		0.085	
2° 45'	0.021		0.037		0.053		0.063		0.072		0.091	
3° 00'	0.023		0.043		0.057		0.067		0.077		0.096	
3° 15'	0.024		0.043		0.061		0.072		0.082		0.098	
3° 30'	0.025		0.043		0.065		0.076		0.086		0.098	
3° 45'	0.026		0.049		0.069		0.080		0.090		0.098	
4° 00'	0.027		0.051		0.072		0.083		0.093		0.098	
4° 30'	0.028		0.056		0.078		0.087		0.098		0.098	
5° 00'	0.029		0.061		0.083		0.091		0.098		0.098	
5° 30'	0.030		0.066		0.088		0.094		0.098		0.098	
6° 00'	0.031		0.070		0.092		0.096		0.098		0.098	
6° 30'	0.032		0.074		0.095		0.096		0.098		0.098	
7° 00'	0.033		0.078		0.098		0.098		0.098		0.098	
7° 30'	0.034		0.081		0.099		0.099		0.098		0.098	
8° 00'	0.035		0.084		0.087		0.087		0.087		0.087	
8° 30'	0.036		0.087		0.089		0.089		0.089		0.089	
9° 00'	0.037		0.089		0.091		0.091		0.091		0.091	
10° 00'	0.038		0.094		0.094		0.094		0.094		0.094	
11° 00'	0.039		0.097		0.097		0.097		0.097		0.097	
12° 00'	0.040		0.099		0.099		0.099		0.099		0.099	
13° 00'	0.041		0.100		0.100		0.100		0.100		0.100	
14° 00'	0.042		0.083		0.083		0.083		0.083		0.083	
15° 00'	0.043		0.086		0.086		0.086		0.086		0.086	
16° 00'	0.044		0.089		0.089		0.089		0.089		0.089	
17° 00'	0.045		0.091		0.091		0.091		0.091		0.091	
18° 00'	0.046		0.093		0.093		0.093		0.093		0.093	
19° 00'	0.047		0.095		0.095		0.095		0.095		0.095	
20° 00'	0.048		0.097		0.097		0.097		0.097		0.097	
21° 00'	0.049		0.098		0.098		0.098		0.098		0.098	
22° 00'	0.050		0.099		0.099		0.099		0.099		0.099	
23° 00'	0.051		0.099		0.099		0.099		0.099		0.099	
24° 00'	0.052		0.100		0.100		0.100		0.100		0.100	

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

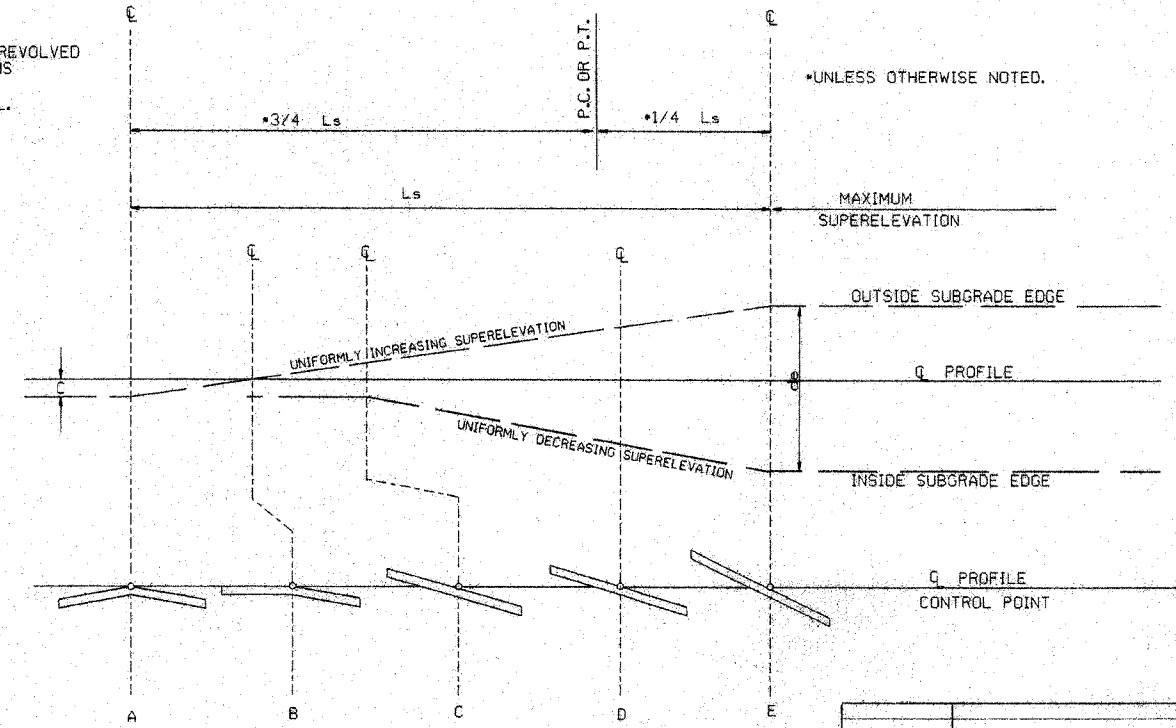
NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

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

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.




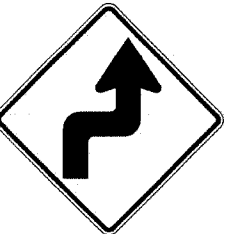
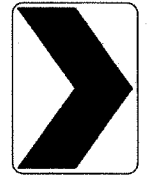



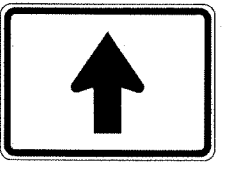
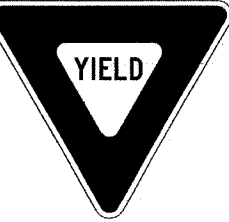

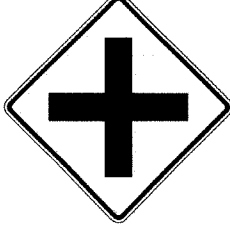

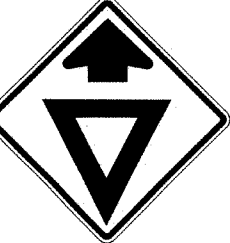

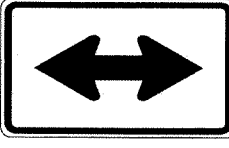
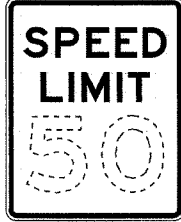

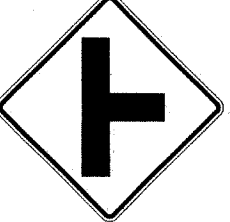





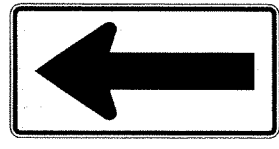
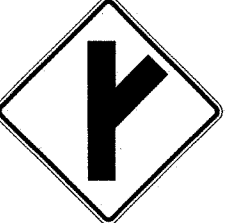

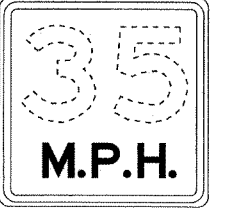
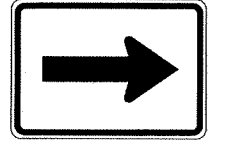
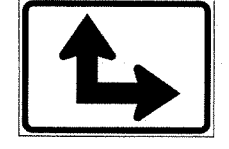

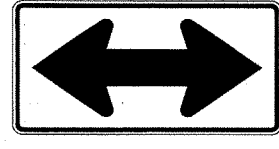
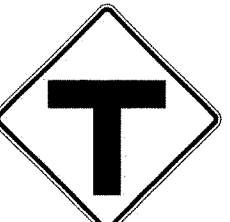

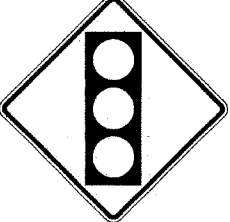
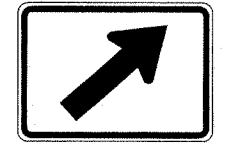


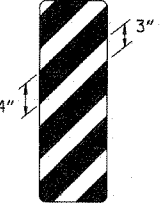
STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

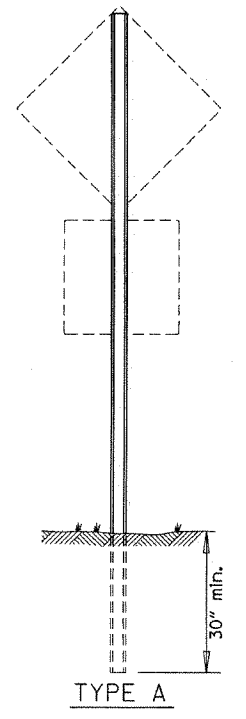
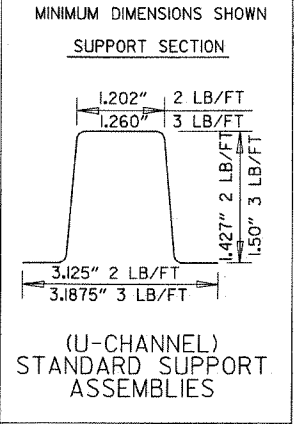
STANDARD DRAWING SE-2

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

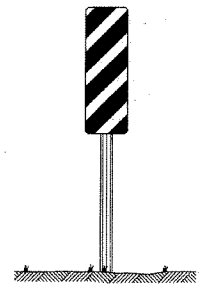
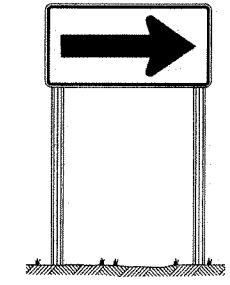
 RI-1 30"X30"	 WI-3 30"X30" (LT. OR RT.)	 WI-8 18"X24"	 W2-5 30"X30"	 W3-1 36"X36"	 W5-1 36"X36"	 M6-3 21"X15"
 RI-2 36"X36"X36"	 WI-4 30"X30" (LT. OR RT.)	 W2-1 30"X30"	 SI-1 36"X36"	 W3-2 36"X36"	 County Route Marker MI-5 24"X24"	 M6-4 21"X15"
 R2-1 24"X30"	 WI-5 30"X30" (LT. OR RT.)	 W2-2 30"X30"	 W5-2 36"X36"	 W8-3 36"X36"	 RI-3 12"X6"	 M6-5 21"X15"
 WI-1 30"X30" (LT. OR RT.)	 WI-6 48"X24"	 W2-3 30"X30" (LT. OR RT.)	 W5-3 36"X36"	 W13-1 18"X18"	 M6-1 21"X15"	 M6-6 21"X15"
 WI-2 30"X30" (LT. OR RT.)	 WI-7 48"X24"	 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.)

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

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



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.

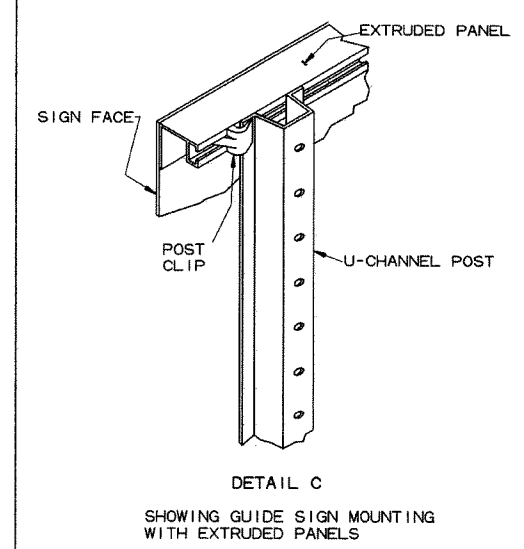
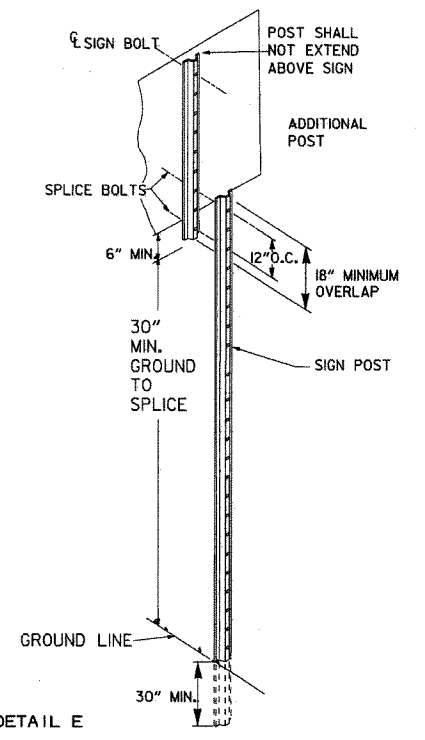
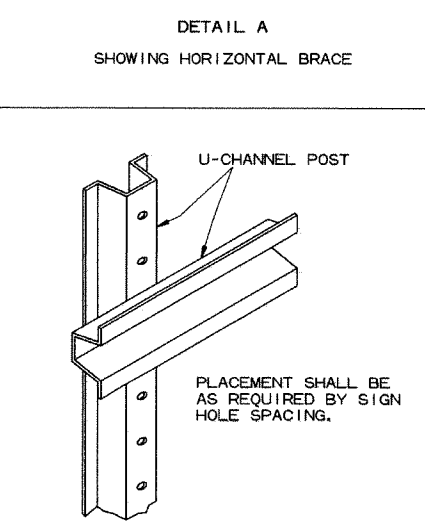
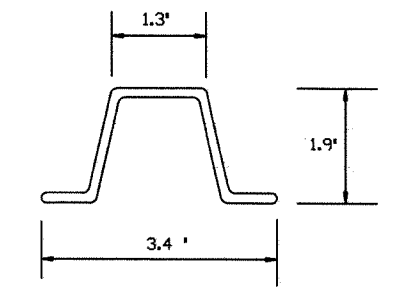
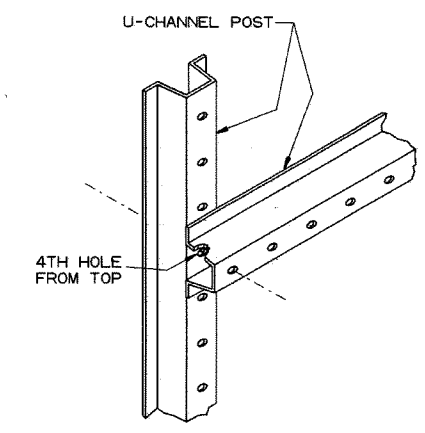
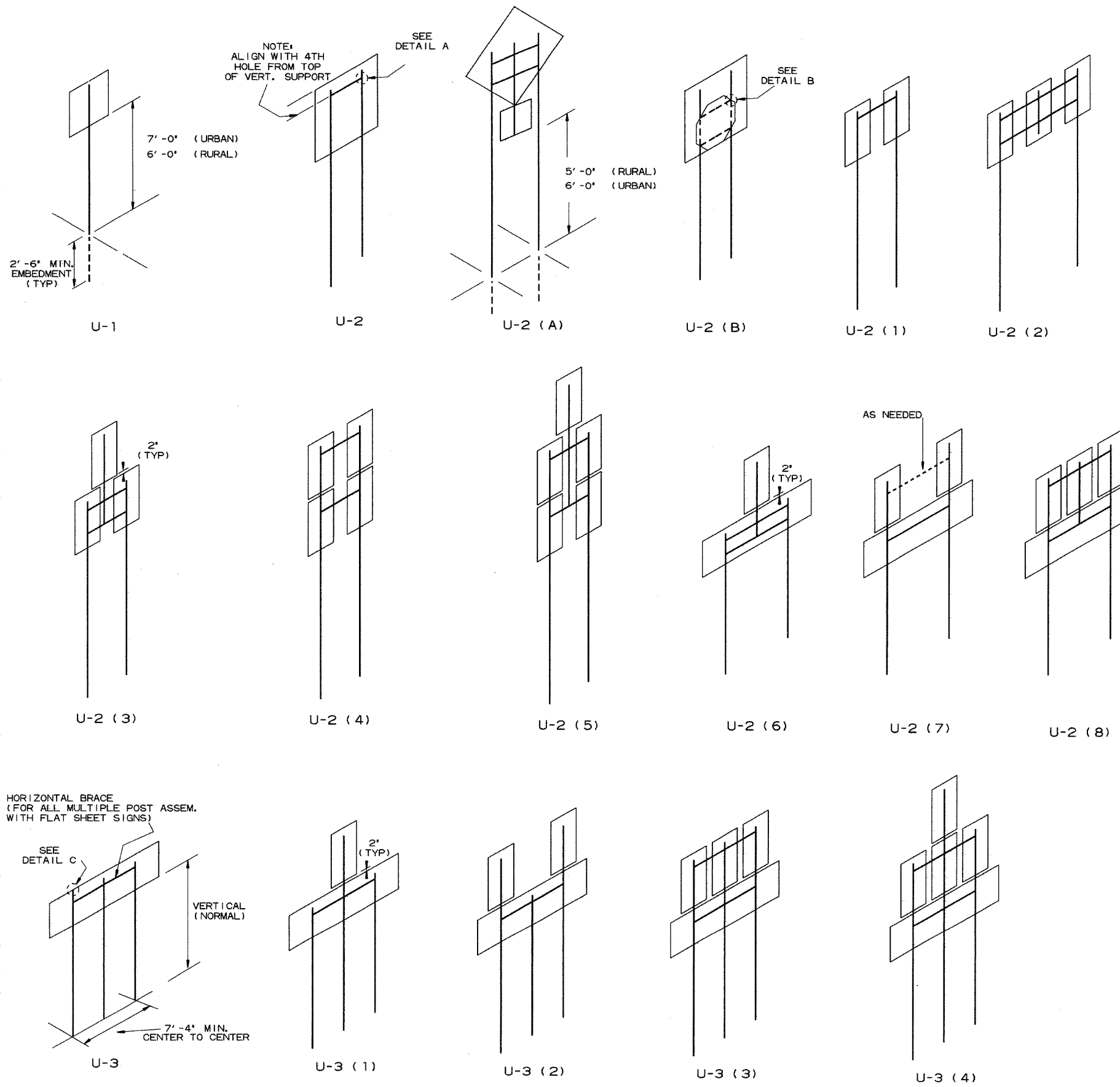


MINIMUM WEIGHT
TYPE A & B = 3 LBS./FT.
TYPE C = 2 LBS./FT.

STANDARD HIGHWAY SIGNS

4-17-08	REVISED SIGN DESIGNATION - W3-1 & W3-2	
4-10-03	REVISED W5-2, W8-3, OM-3; ADDED WI-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	ADDED S4-2 & S4-3	504-5-3-76
8-12-74	REV. HT. TYPE "C" ASSEMBLY	500-8-21-74
12-21-72	ADDED M6-2,3,4,5,6	500-12-21-72
12-1-72	ISSUED	562-12-1-72
DATE	REVISION	DATE FILMED

SUPPORT ASSEMBLIES
ARKANSAS STATE HIGHWAY COMMISSION
STANDARD HIGHWAY SIGNS
AND SUPPORT ASSEMBLIES
STANDARD DRAWING SHS-1



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 3/16" DIA. CARRIAGE BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS.

ALL SIGN POSTS SHALL BE PLUMB.

DATE	REVISION	
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
		FILMED

ARKANSAS STATE HIGHWAY COMMISSION

U-CHANNEL POST ASSEMBLIES

STANDARD DRAWING SHS-2

ADVANCE DISTANCES
(XXXX)

500 FT	1/2 MILE
1000 FT	3/4 MILE
1500 FT	1 MILE AHEAD

GENERAL NOTES:


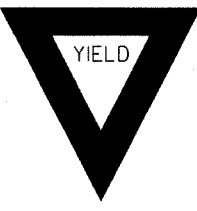
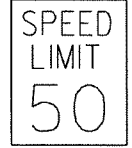
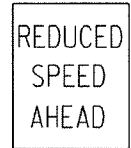





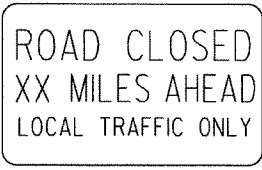
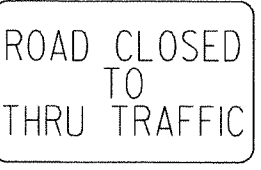

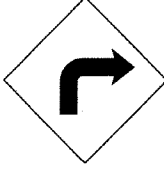
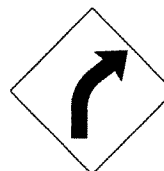




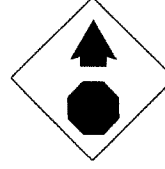
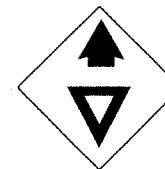
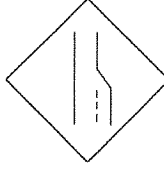



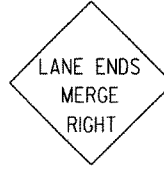


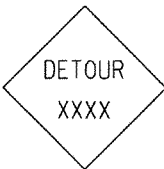



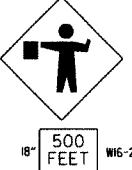


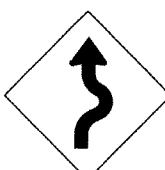



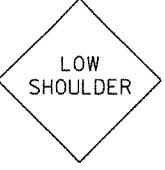
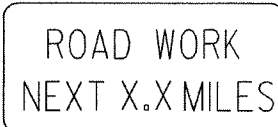
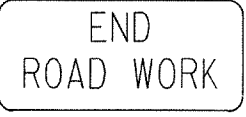
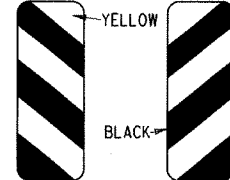


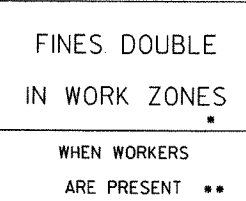
- ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
- TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START 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.
- 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.
- 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.
- 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.
- 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.
- 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.

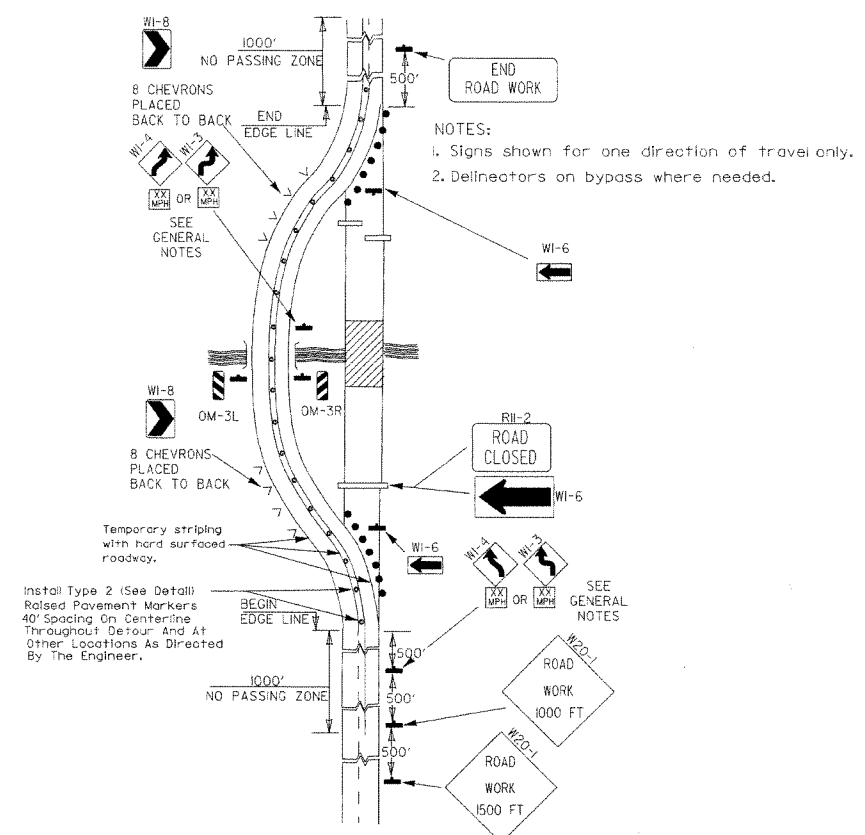
- FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
- MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
- 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.

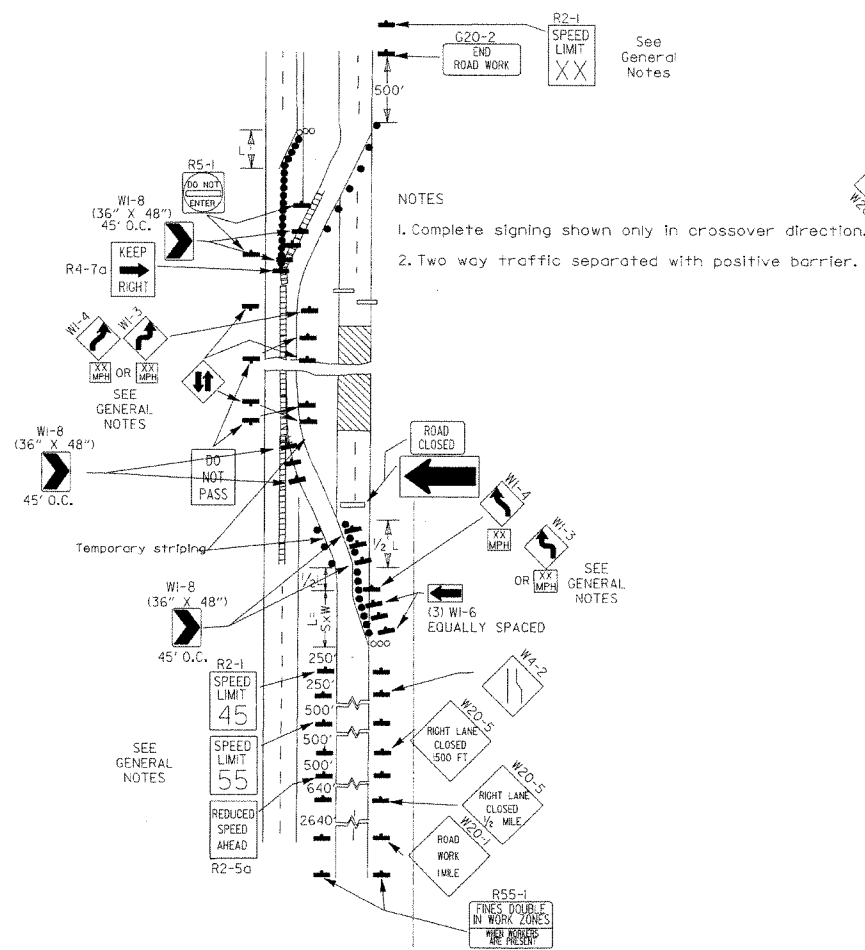
12-15-11	REVISED W24-1	
8-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED 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	
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION
STANDARD DRAWING TC-1

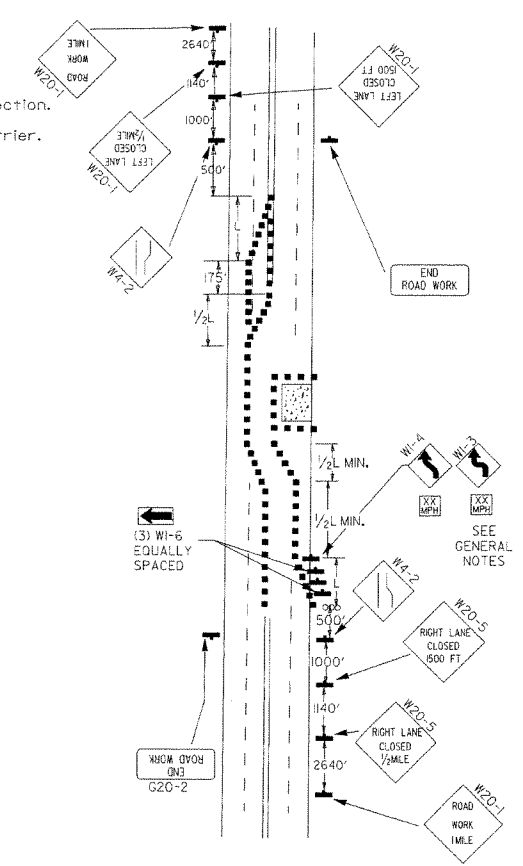
<p>RI-1</p>  <p>STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"</p>	<p>RI-2</p>  <p>STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"</p>	<p>R2-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R2-5A</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R2-5C</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-2</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	
<p>R5-1</p>  <p>STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>R11-2</p>  <p>48"x30"</p>	<p>R11-3A</p>  <p>60"x30"</p>	<p>R11-4</p>  <p>60"x30"</p>	<p>RSP-1</p>  <p>48"x30"</p>	<p>WI-1</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>WI-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	
<p>WI-3</p>  <p>STD. 48"x48"</p>	<p>WI-4</p>  <p>STD. 48"x48"</p>	<p>WI-6</p>  <p>STD. 48"x24" SPECIAL 60"x30"</p>	<p>WI-8</p>  <p>STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"</p>	<p>W3-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W3-2</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W4-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	
<p>W5-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W6-3</p>  <p>EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>W8-7</p>  <p>EXPWY. 36"x36" FWY. 48"x48"</p>	<p>W9-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W13-1</p>  <p>STD. 24"x24"</p>	<p>W20-1</p>  <p>STD. 48"x48"</p>	<p>W20-2</p>  <p>STD. 48"x48"</p>	<p>W20-3</p>  <p>STD. 48"x48"</p>
<p>W20-4</p>  <p>STD. 48"x48"</p>	<p>W20-5</p>  <p>STD. 48"x48"</p>	<p>W20-7a</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W21-2</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W21-5</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W24-1</p>  <p>STD. 36"x36"</p>	<p>WI-4b</p>  <p>STD. 48"x48"</p>	<p>R56-1</p>  <p>STD. 18"x18"</p>
<p>W8-11</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W8-9</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>G20-1</p>  <p>60"x24"</p>	<p>G20-2</p>  <p>48"x24"</p>	<p>OM-3L OM-3R</p>  <p>12"x36"</p>	<p>M4-9</p>  <p>STD. 30"x24" SPECIAL 48"x36" SPECIAL 60"x48"</p>	<p>M4-10</p>  <p>48"x18"</p>	<p>R55-1</p>  <p>36"x60"</p> <p>WHEN WORKERS ARE PRESENT **</p> <p>* USE 6" C LETTERS ** USE 4" D LETTERS</p>



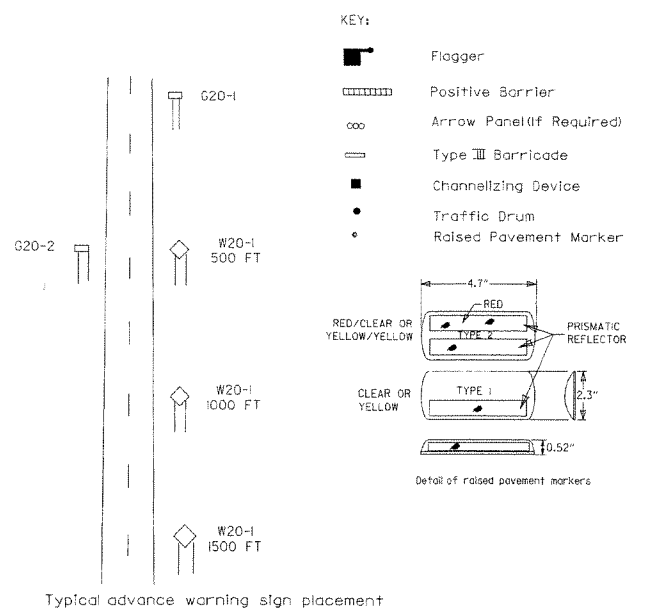
(A) Typical application of traffic control devices on a 2-lane highway where the entire roadway is closed and a bypass detour is provided.



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



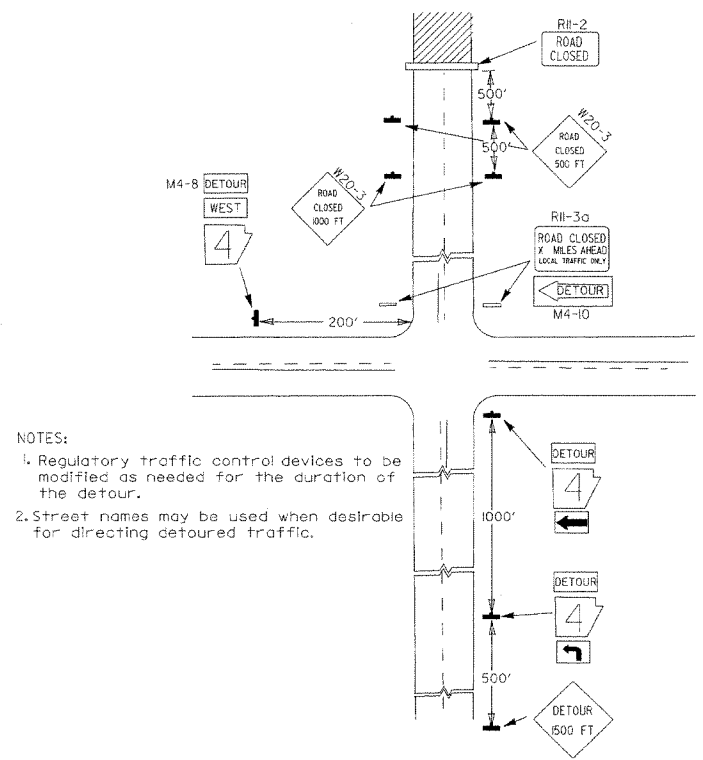
(C) Typical application - 4-lane undivided roadway where half of the roadway is closed.



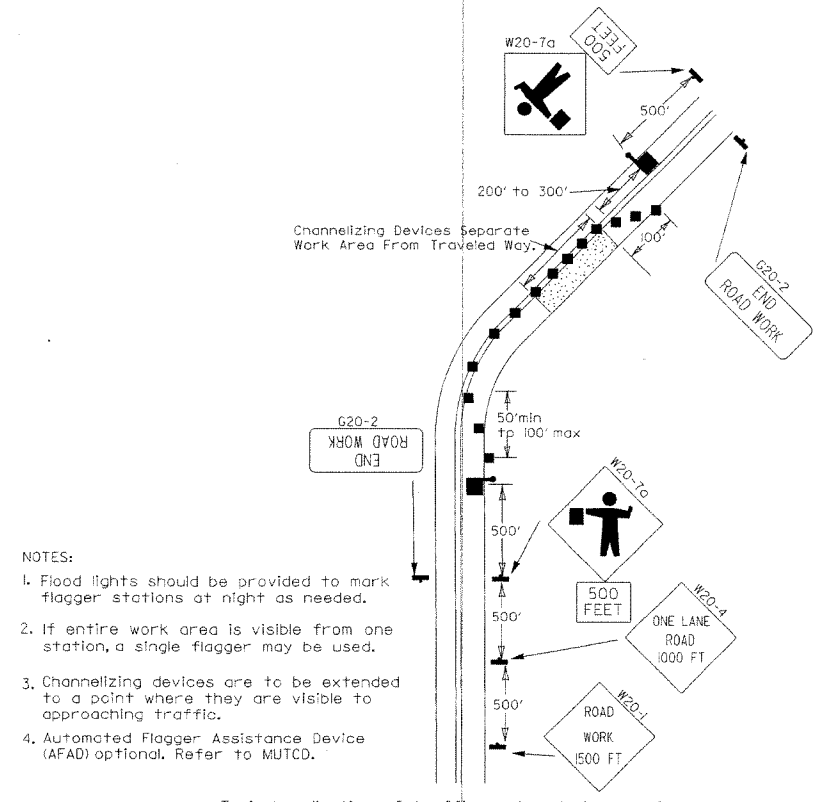
Typical advance warning sign placement

Taper formulae:
 $L = SxW$ 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.

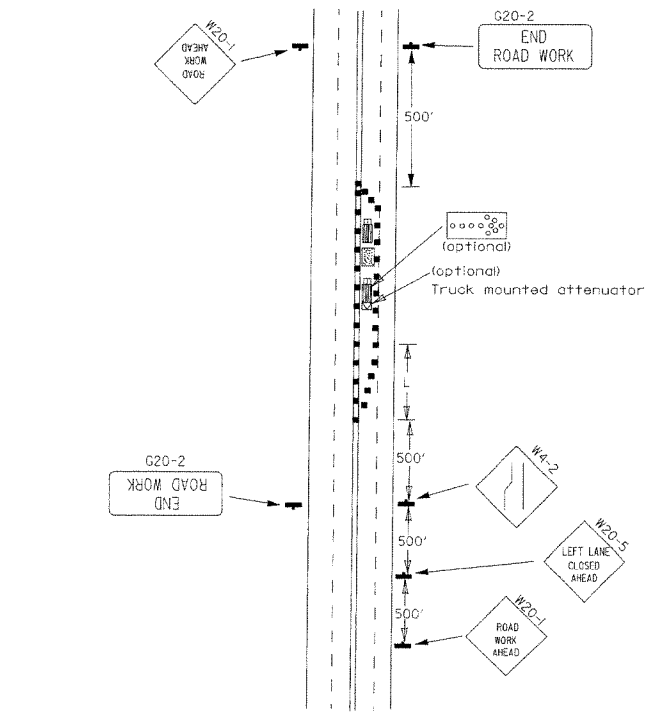
- GENERAL NOTES:
- Advisory speed posted on W1-3 or W1-4 curve warning signs to be determined at site. Use W1-4 when speed is greater than 30mph and W1-3 when 30mph or less.
 - When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(45) shall be omitted and the R2-5A shall be installed at that location. Additional R2-145mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(45) shall be installed to match original speed limit.
 - When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-155mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(45) shall be installed to match original speed limit.
 - 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.
 - Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
 - Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
 - 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.



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



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

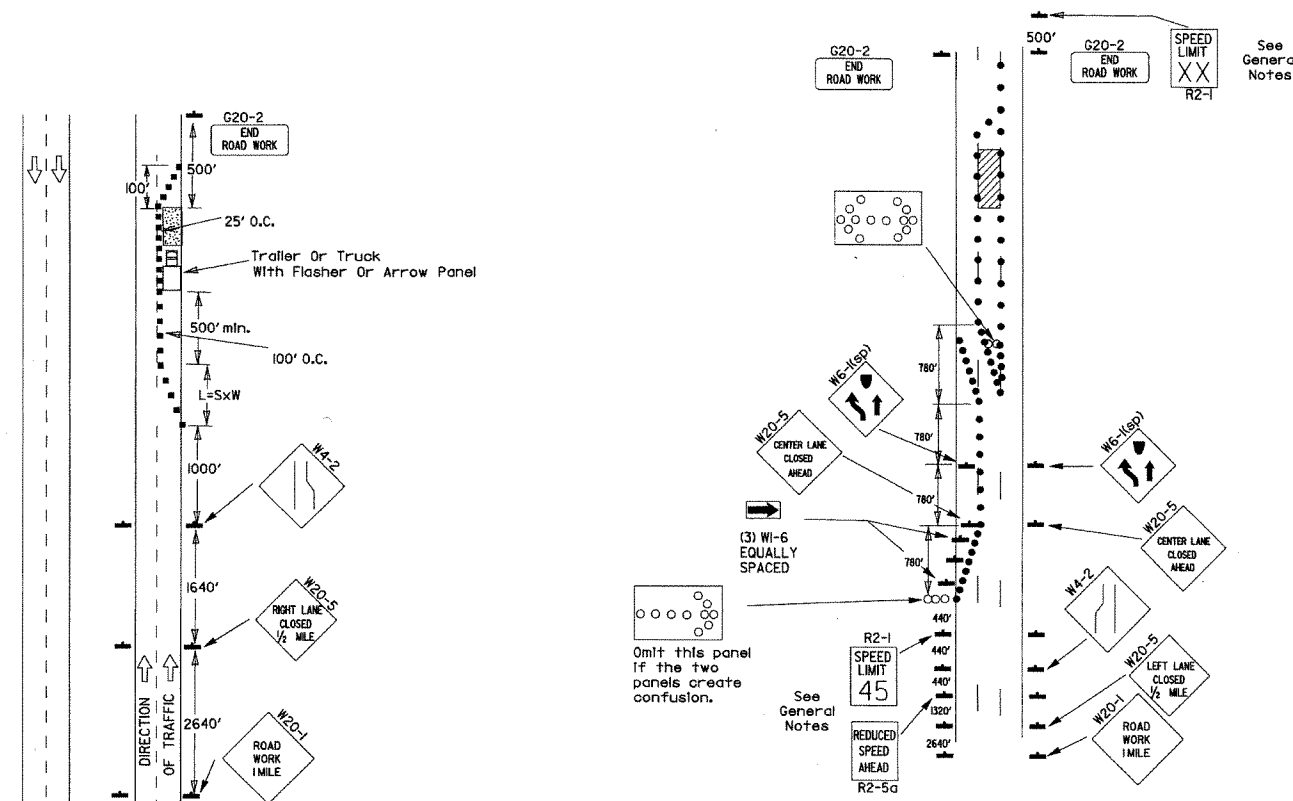


(F) Typical application - 4-lane undivided roadway with inside lane closed.

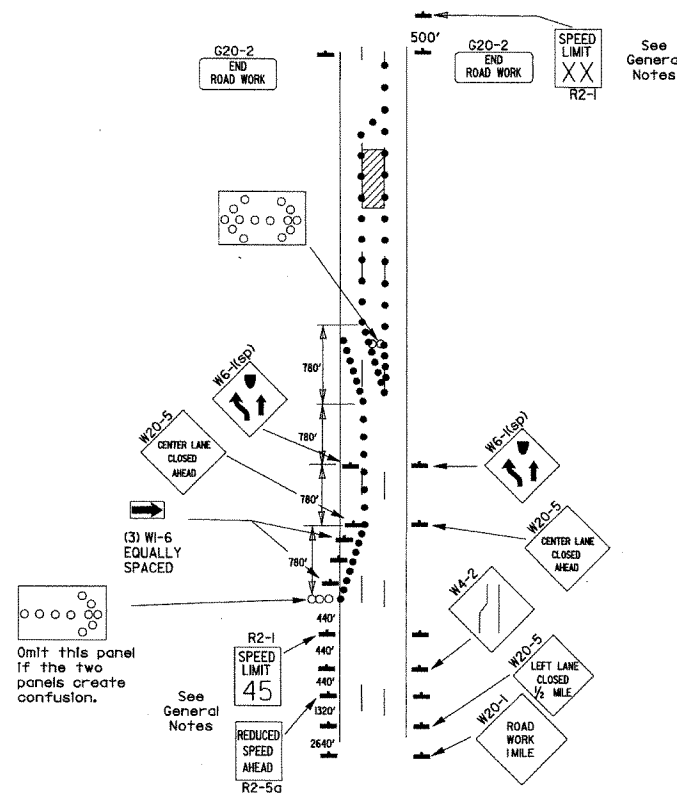
DATE	REVISION	FILMED
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION
 STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION
 STANDARD DRAWING TC-2

Channelizing devices

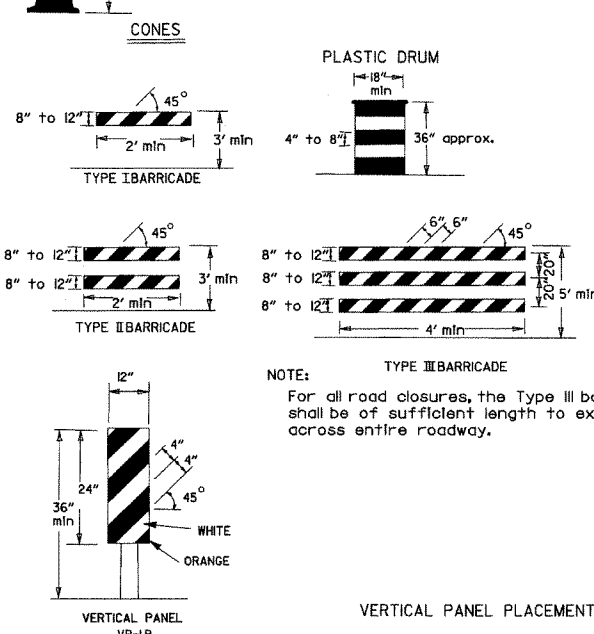


(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



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

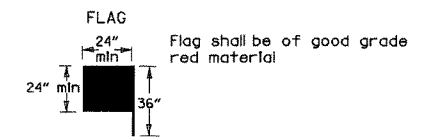
When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.



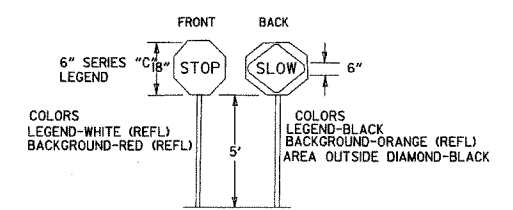
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

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

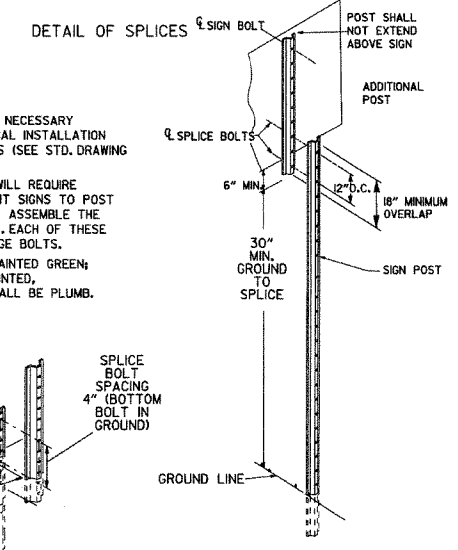
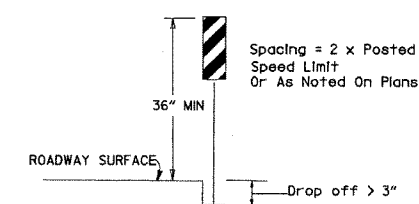
When shown on the plans concrete barrier will be used. When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.



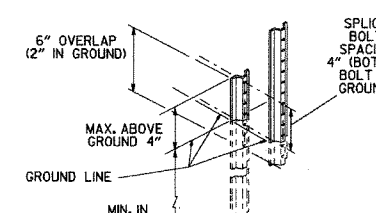
STOP SLOW PADDLE



VERTICAL PANEL PLACEMENT



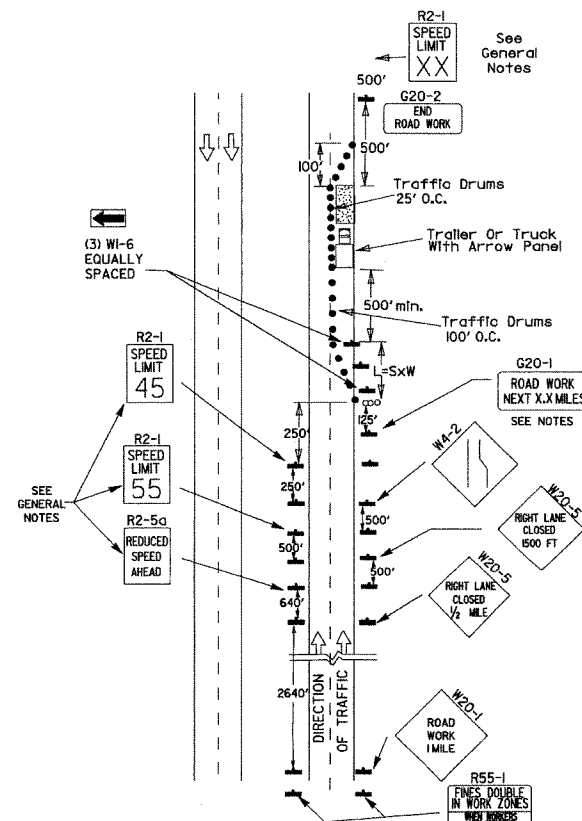
NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2). NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS, EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS. SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED; AND ALL SIGN POSTS SHALL BE PLUMB.



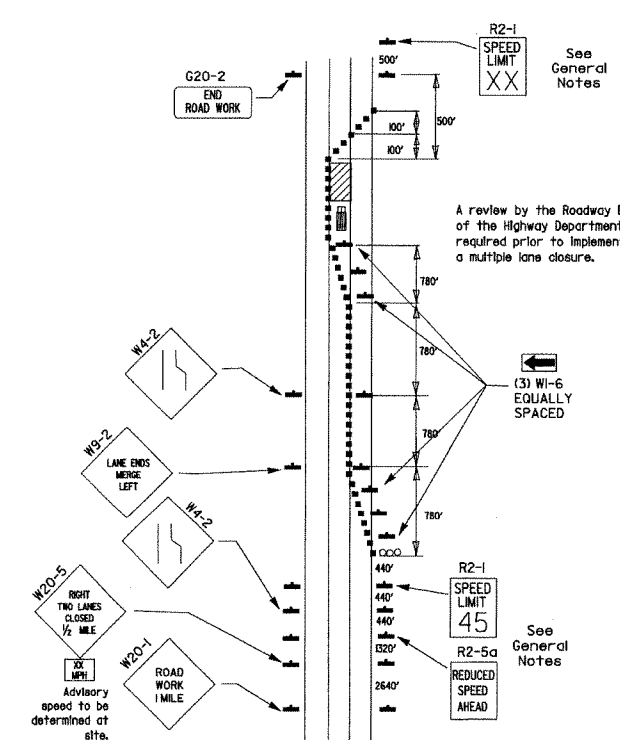
- KEY:
- Arrow Panel (if Required)
 - Channelizing Device
 - Traffic drum

GENERAL NOTES:

- A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
- 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(45) speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
- When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(65) shall be omitted. Additional R2-1(55) speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
- 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.
- Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
- Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
- 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.
- Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
- All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual for Assessing Safety Hardware (MASH).
- 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.



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

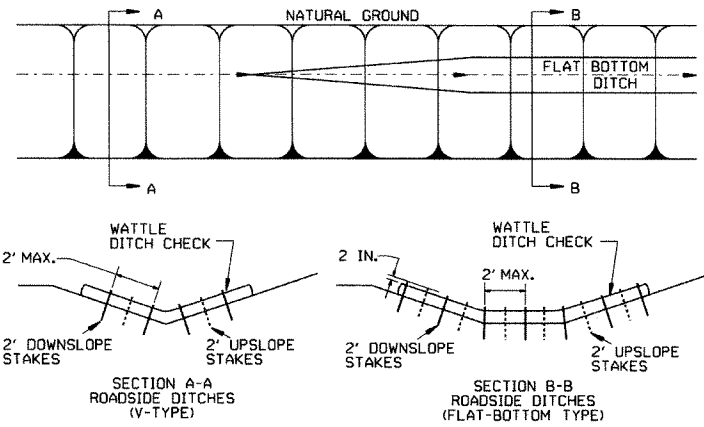


(D) Typical application - closing multiple lanes of a multi-lane highway.

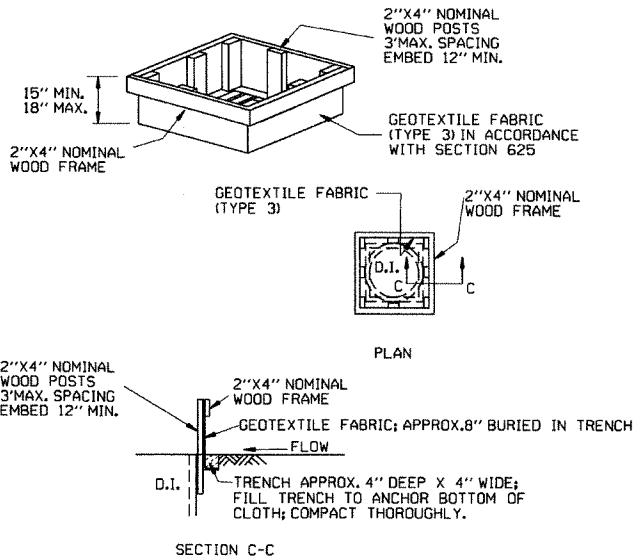
DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED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

ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION
STANDARD DRAWING TC-3

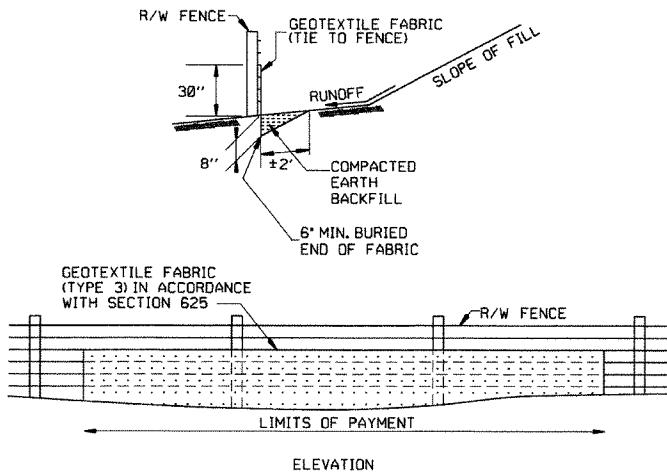
GENERAL NOTES
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



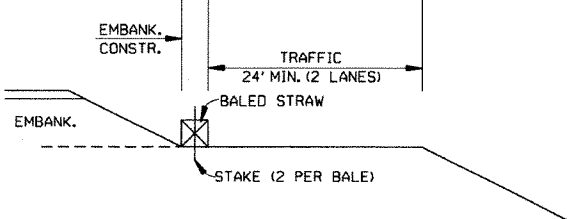
DROP INLET SILT FENCE (E-7)



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

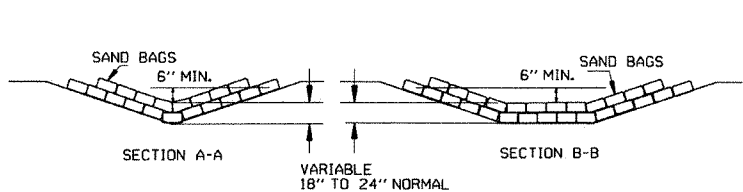
GENERAL NOTES
GEOTEXTILE FABRIC SHALL BE SPliced TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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.

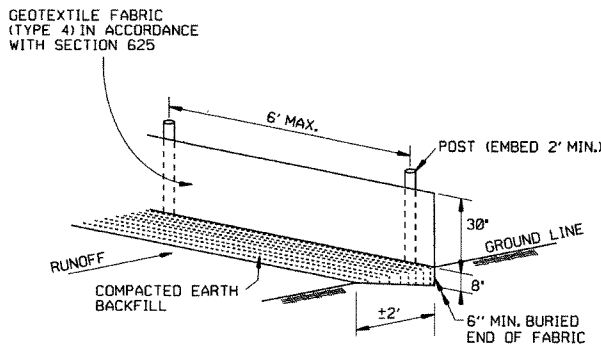


BALED STRAW FILTER BARRIER (E-2)

NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS. PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW.

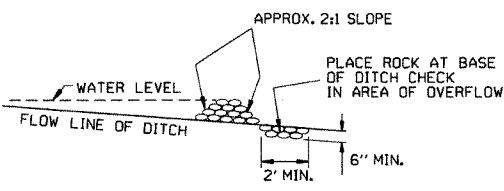


SAND BAG DITCH CHECK (E-5)



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.



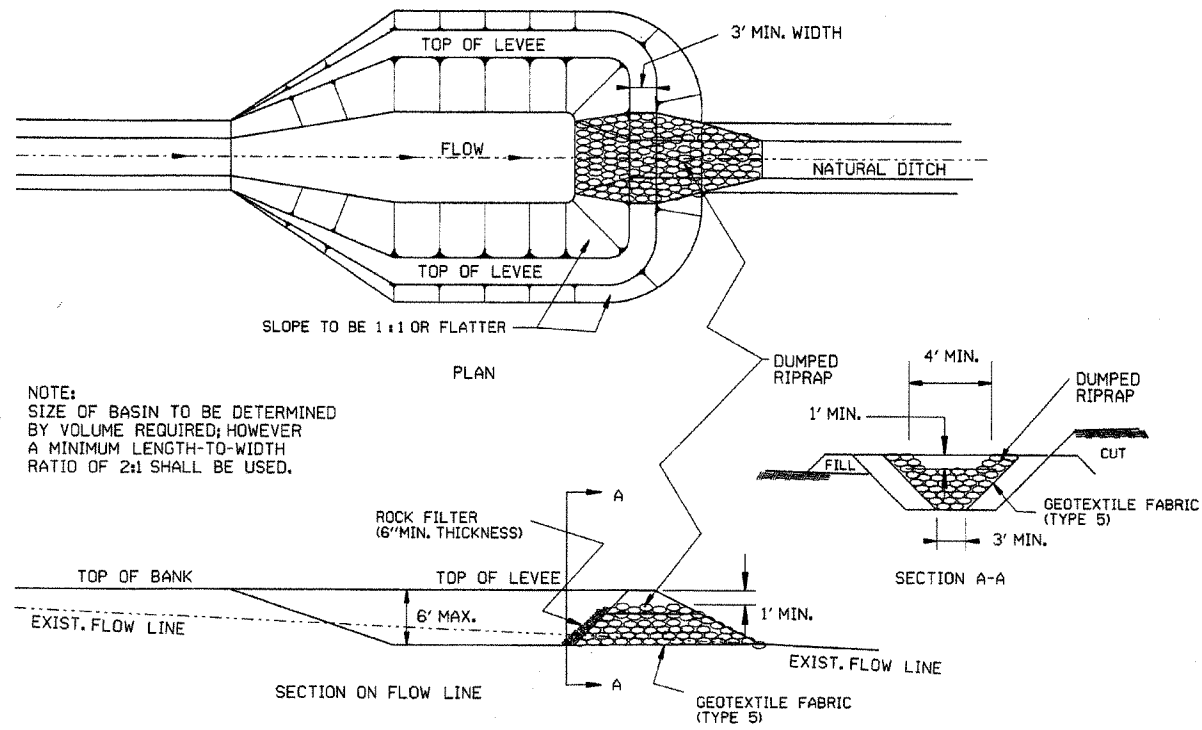
ROCK DITCH CHECK (E-6)

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
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

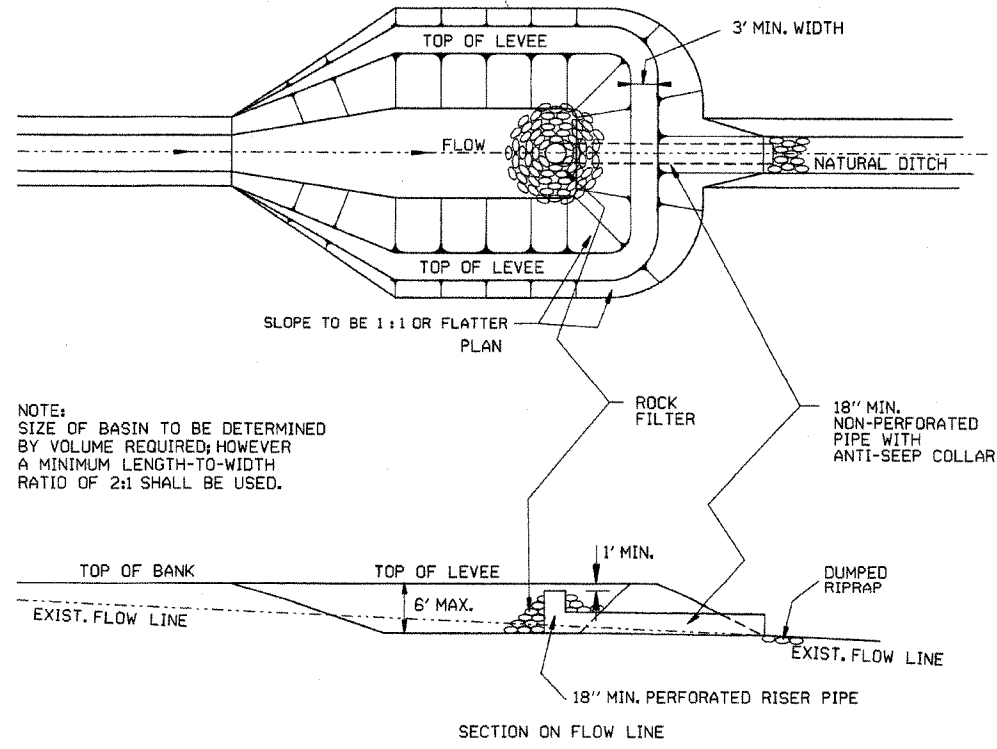
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-1



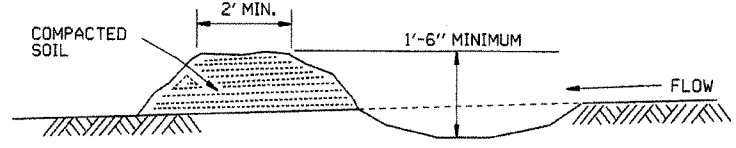
NOTE:
SIZE OF BASIN TO BE DETERMINED
BY VOLUME REQUIRED; HOWEVER
A MINIMUM LENGTH-TO-WIDTH
RATIO OF 2:1 SHALL BE USED.

SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)

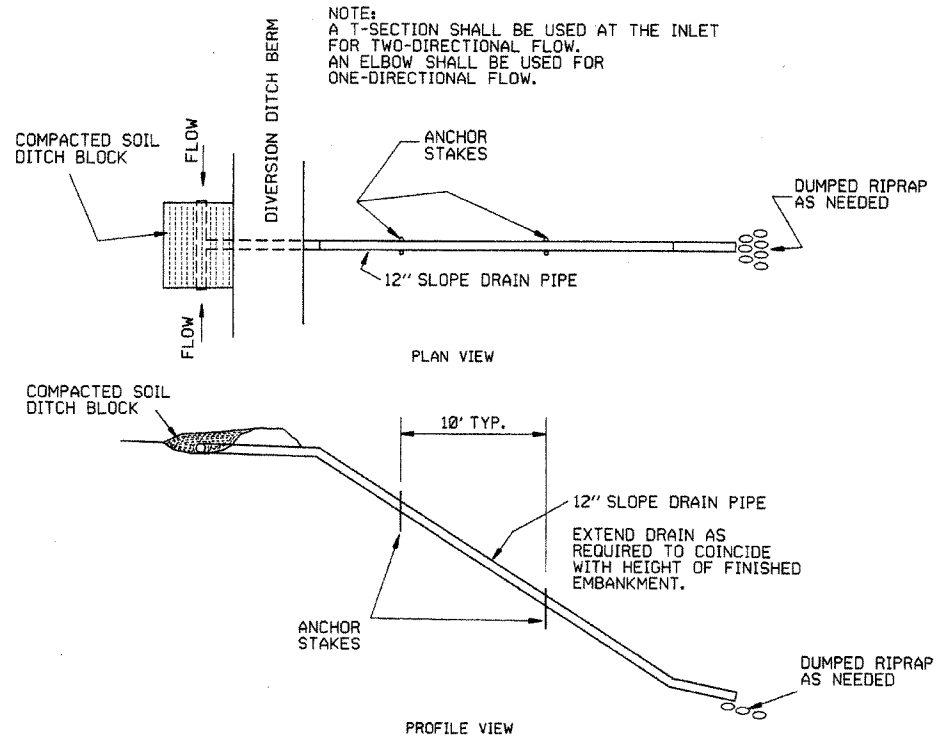


NOTE:
SIZE OF BASIN TO BE DETERMINED
BY VOLUME REQUIRED; HOWEVER
A MINIMUM LENGTH-TO-WIDTH
RATIO OF 2:1 SHALL BE USED.

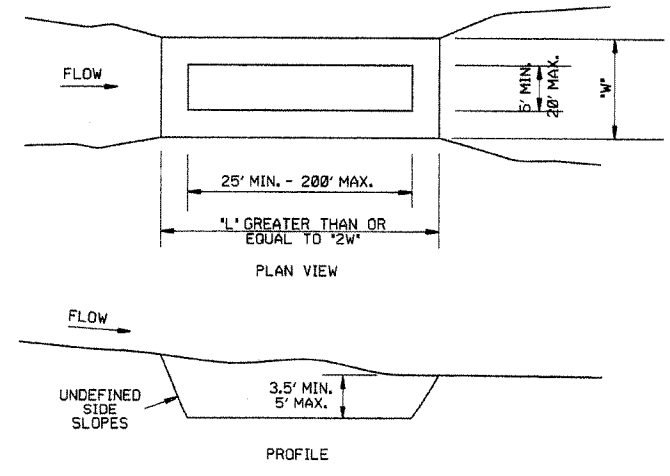
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

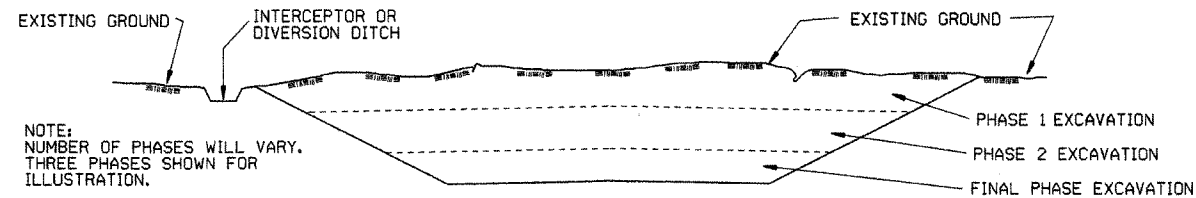
		ARKANSAS STATE HIGHWAY COMMISSION	
		TEMPORARY EROSION CONTROL DEVICES	
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13		
4-1-93	ISSUED		
DATE	REVISION		FILMED
		STANDARD DRAWING TEC-2	

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



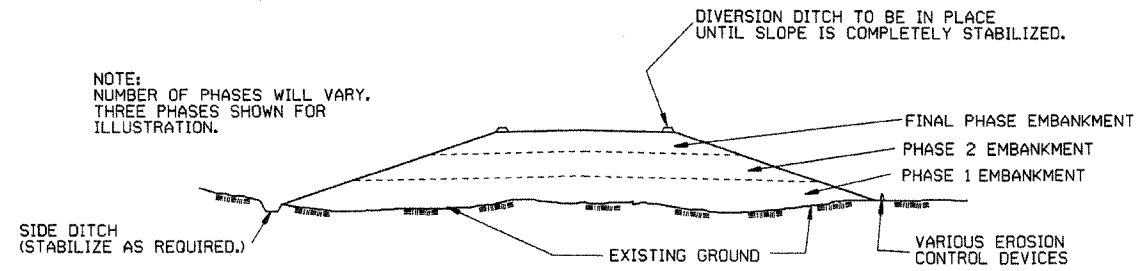
GENERAL NOTE

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



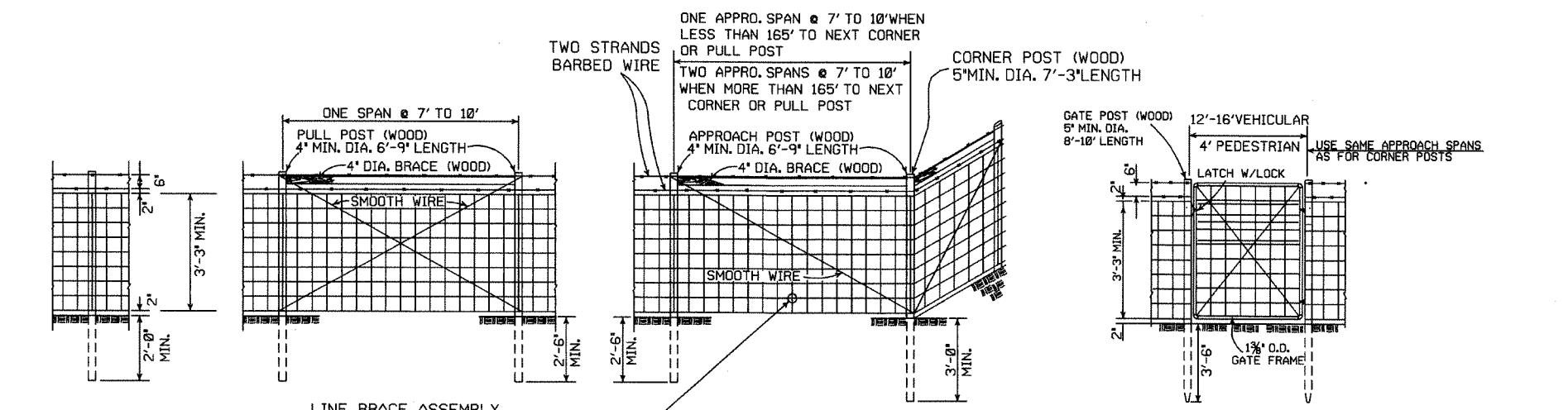
GENERAL NOTE

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.

ARKANSAS STATE HIGHWAY COMMISSION			
TEMPORARY EROSION CONTROL DEVICES			
STANDARD DRAWING TEC-3			
11-03-94	CORRECTED SPELLING		
6-2-94	Drawn & Issued		6-2-94
DATE	REVISION		FILMED

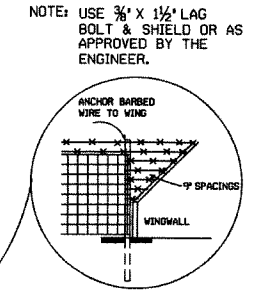
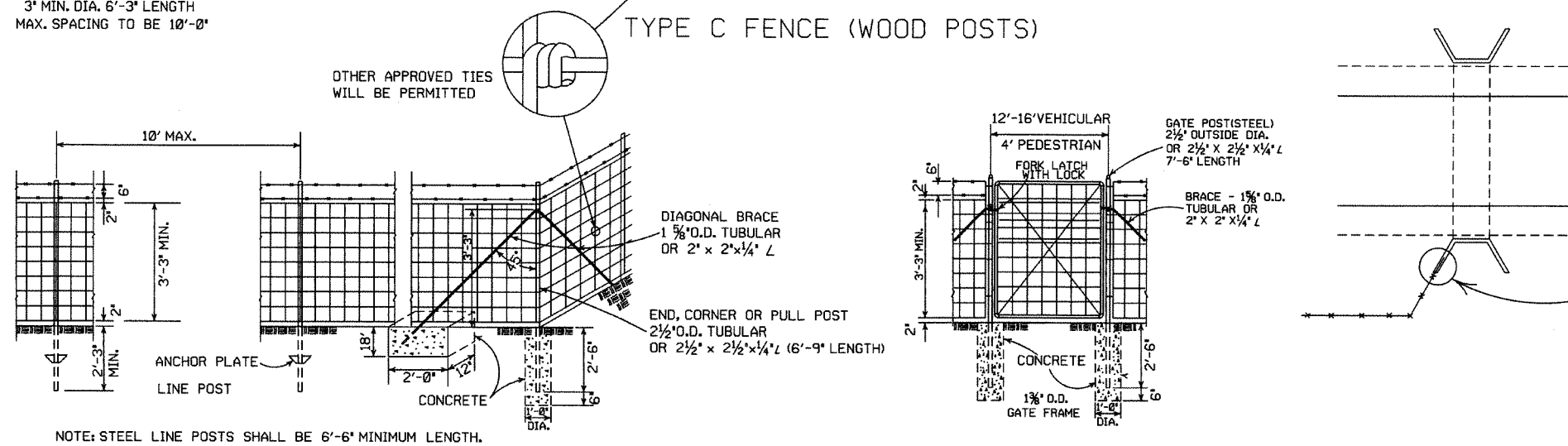


GENERAL NOTES:
 STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED. TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
 AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE - 1" TO +2". TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF TIMBER LINE POSTS OF 7 FOOT LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED BY THE ENGINEER.

AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO BRIDGE ABUTMENTS OR CULVERT WINGWALLS.



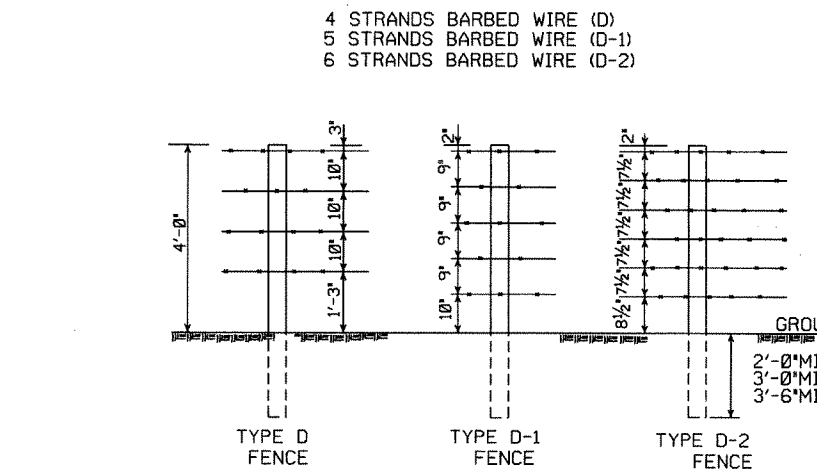
DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE 'EYE METHOD' AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

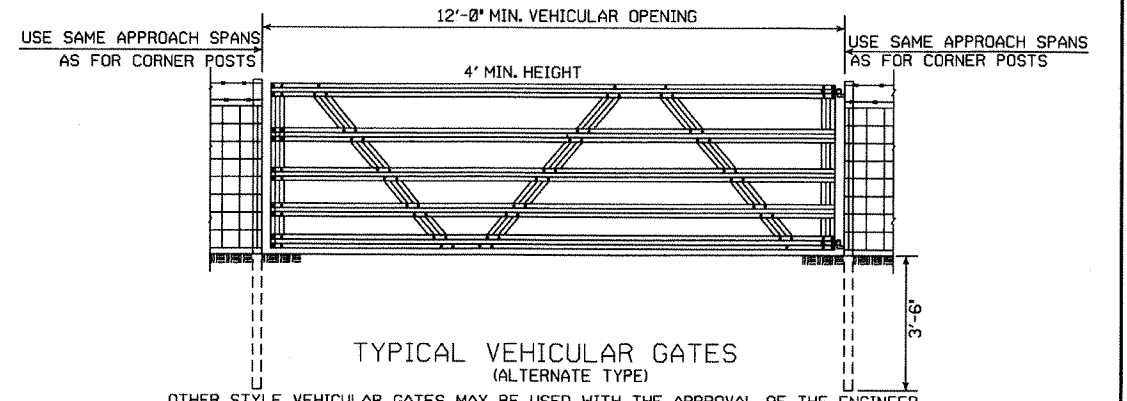
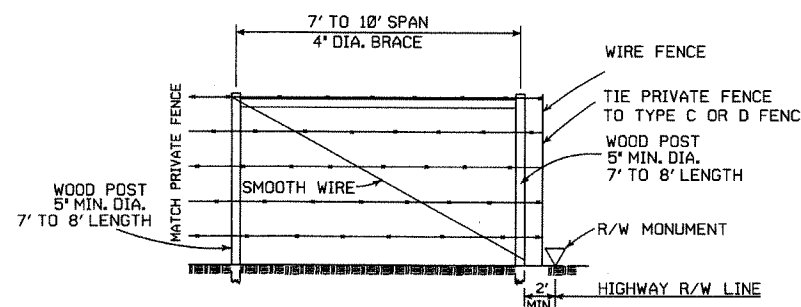
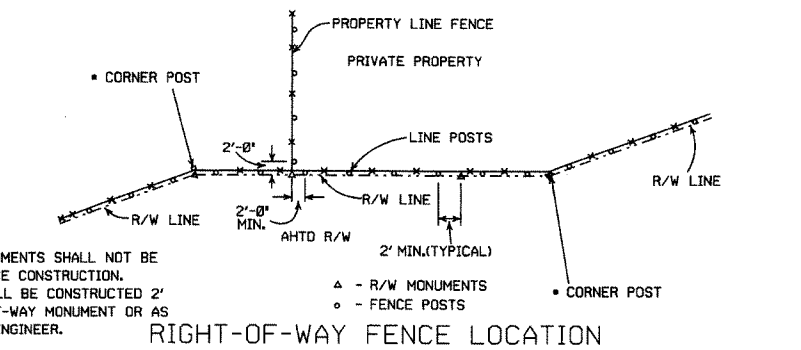
SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE 'WESTERN UNION METHOD' AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE C FENCE (STEEL POSTS)



NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



8-22-82	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	700-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72
DATE	REVISION	FILMED

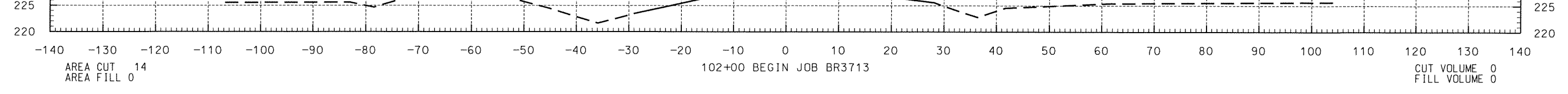
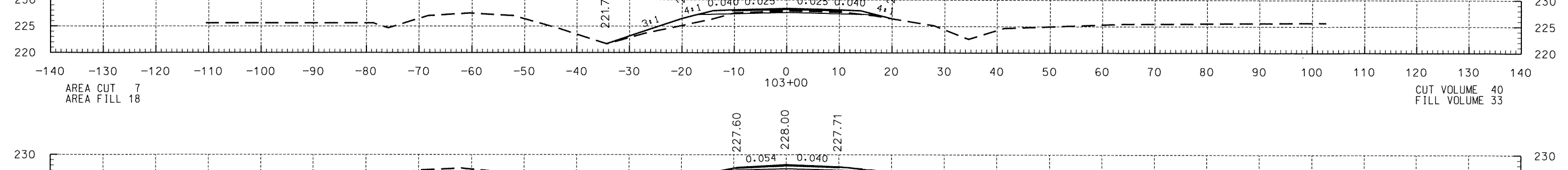
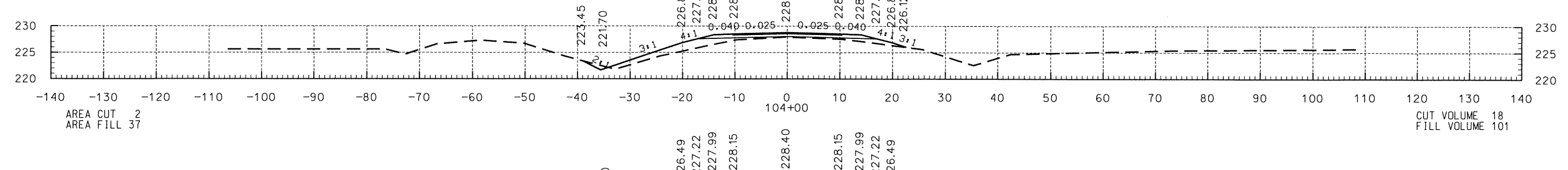
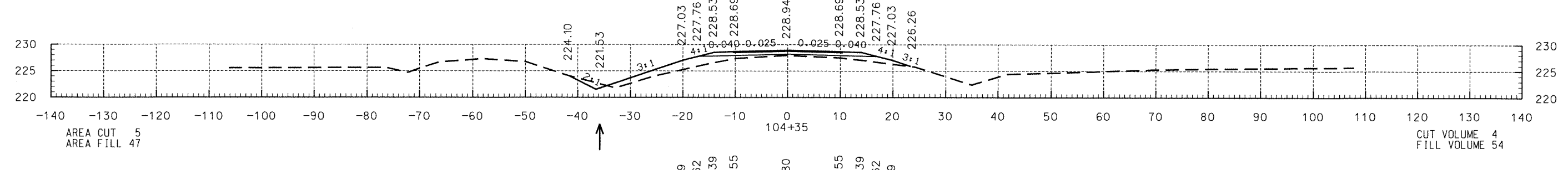
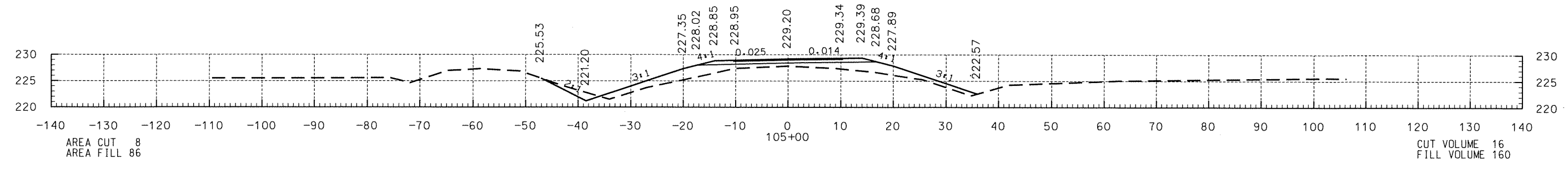
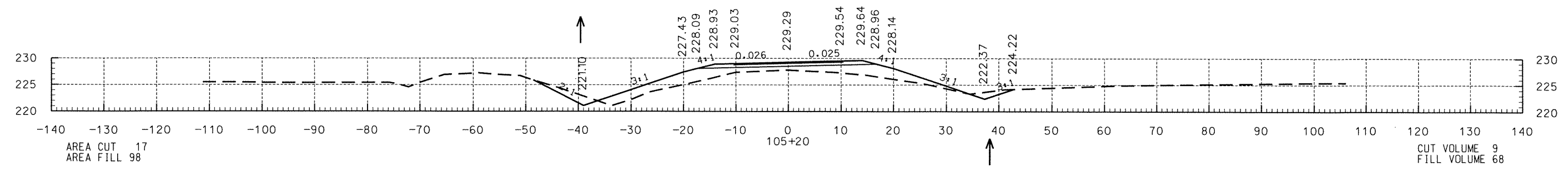
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
 TYPE C AND D

STANDARD DRAWING WF-4

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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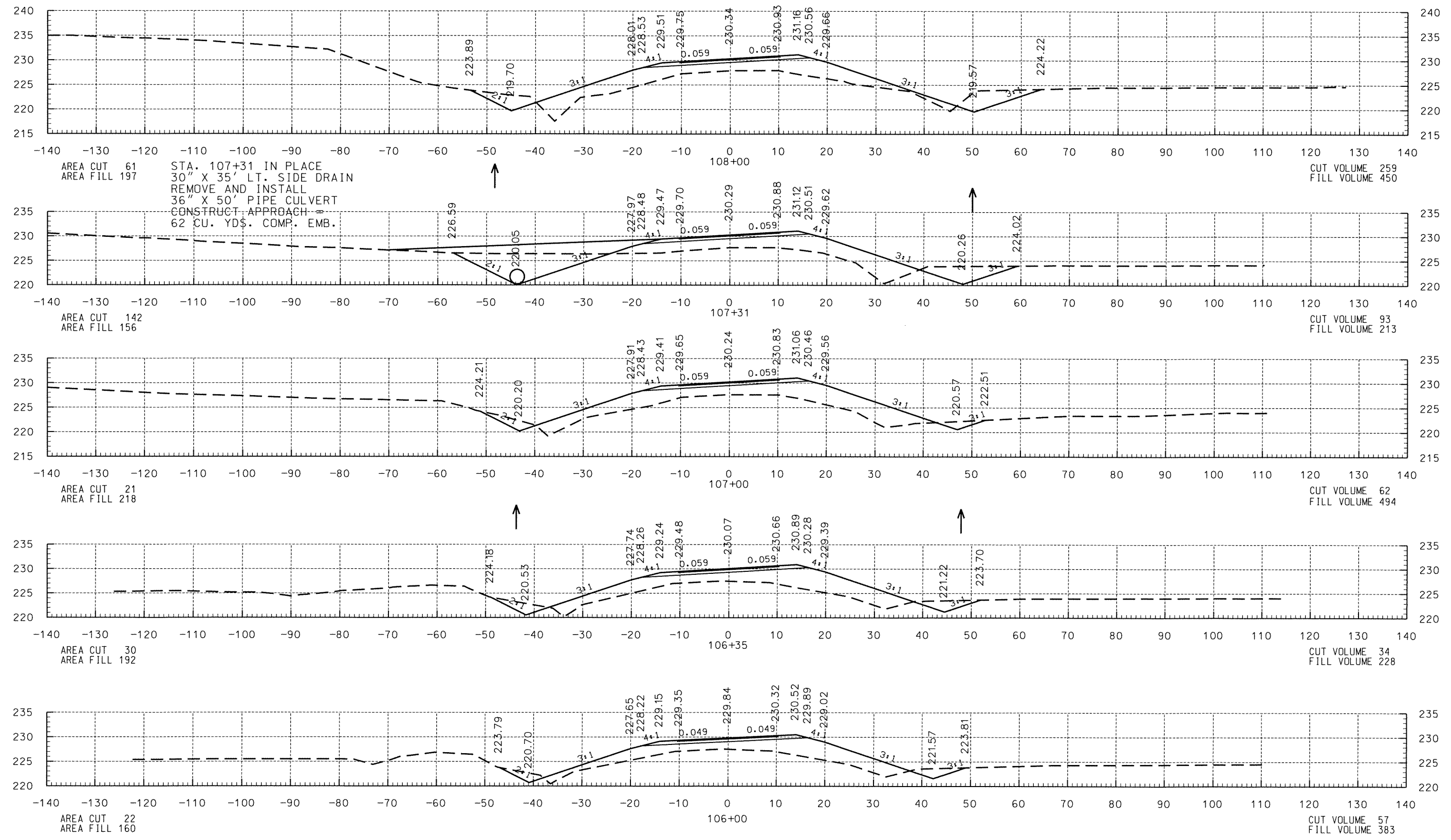
④ STA. 102+00 TO STA. 105+20



CROSS SECTION STA. 102+00 TO STA. 105+20

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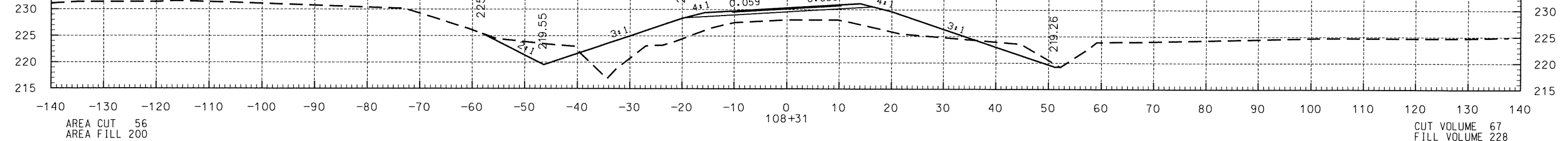
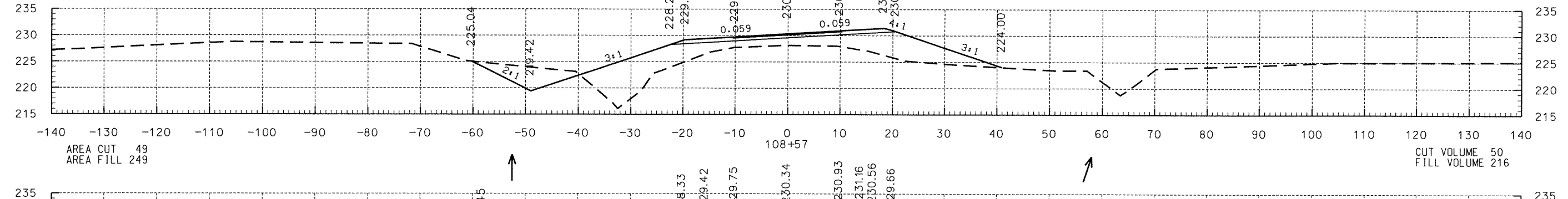
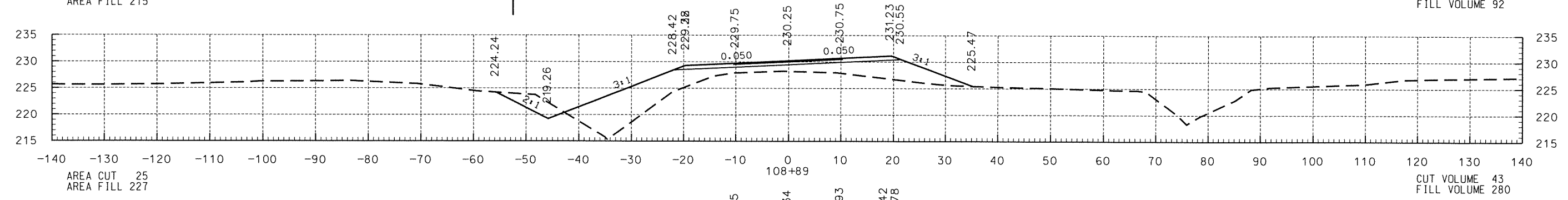
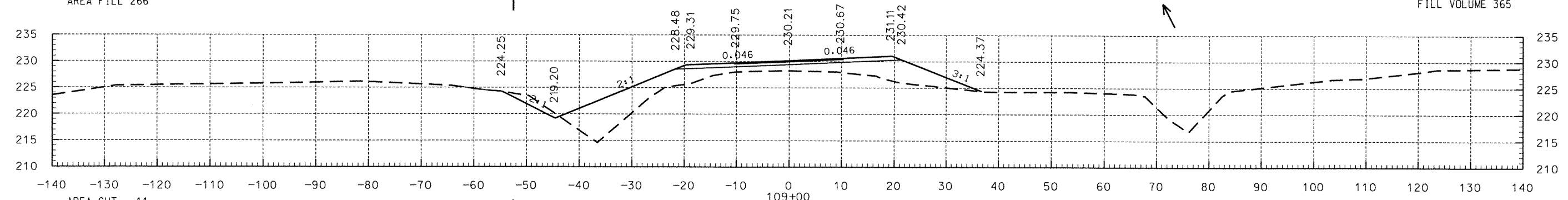
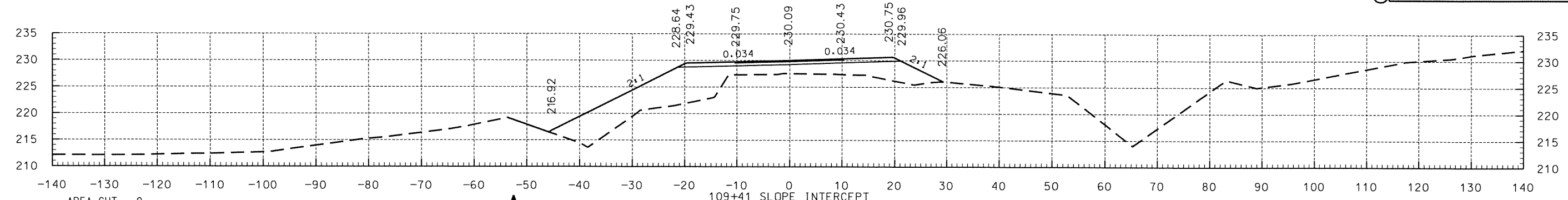
④ STA. 106+00 TO STA. 108+00



CROSS SECTION STA. 106+00 TO STA. 108+00

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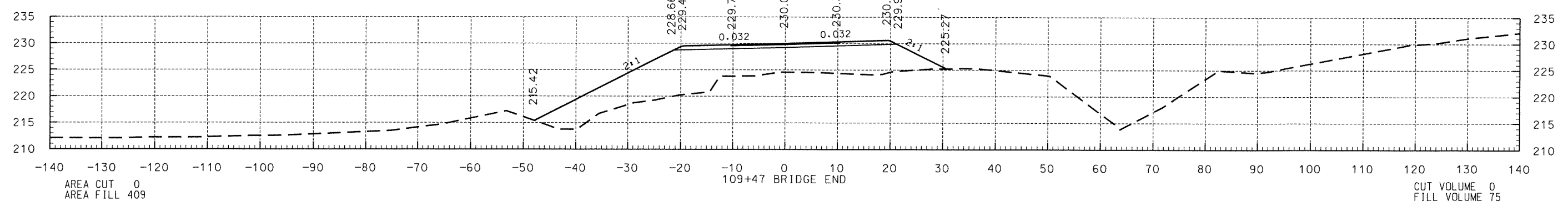
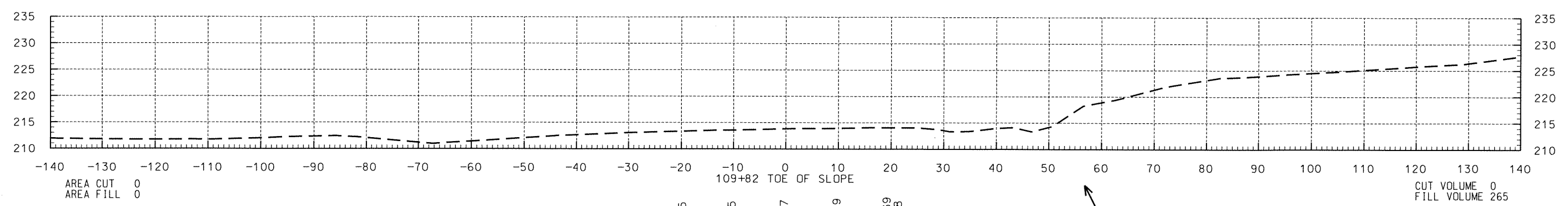
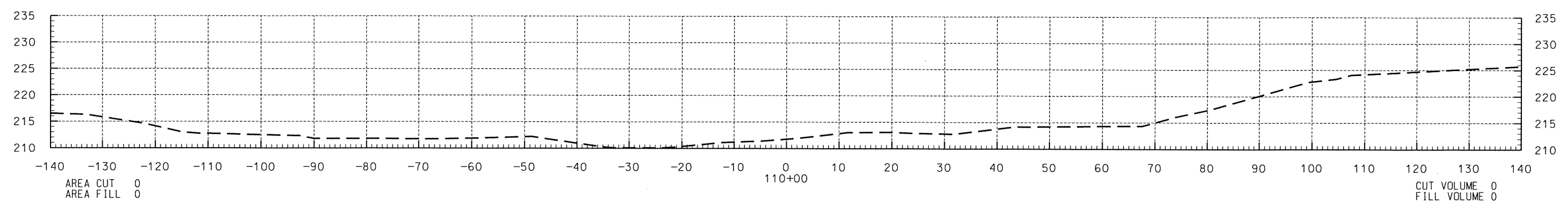
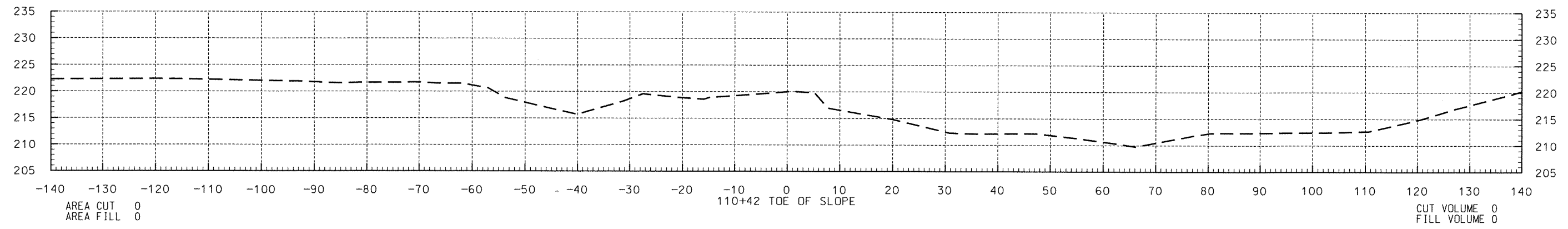
4 STA. 108+31 TO STA. 109+41



CROSS SECTION STA. 108+31 TO STA. 109+41

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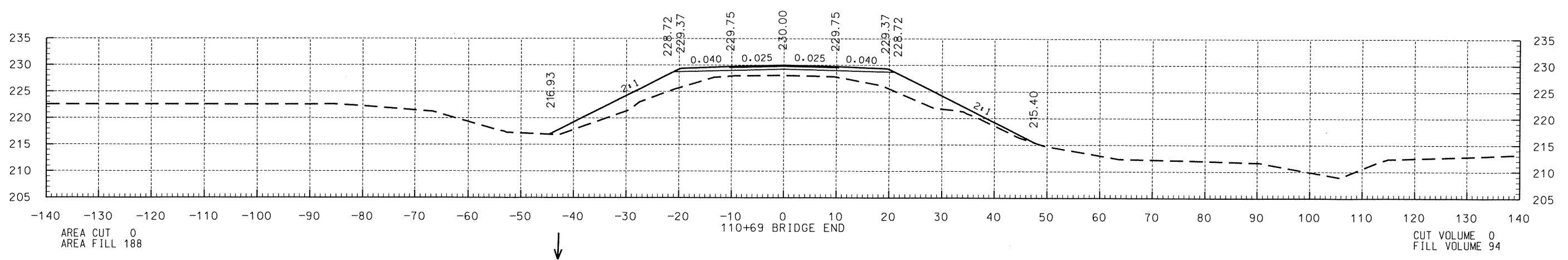
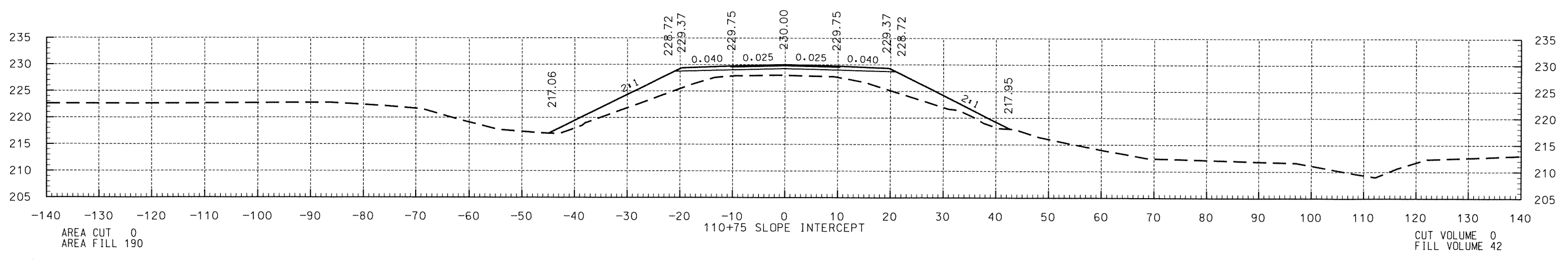
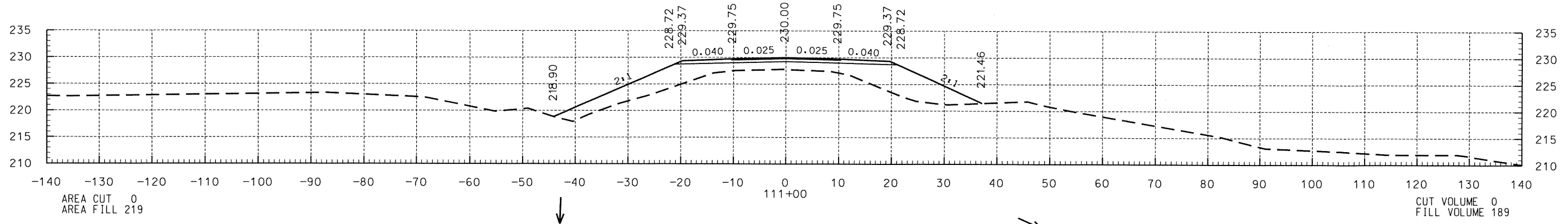
4 STA. 109+47 TO STA. 110+42



CROSS SECTION STA. 109+47 TO STA. 110+42

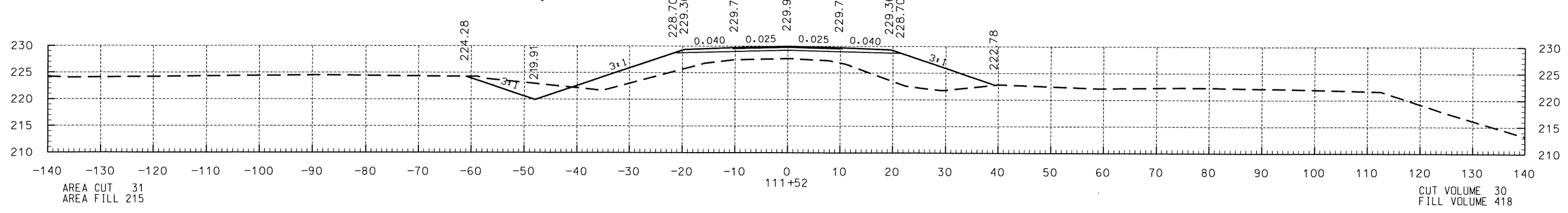
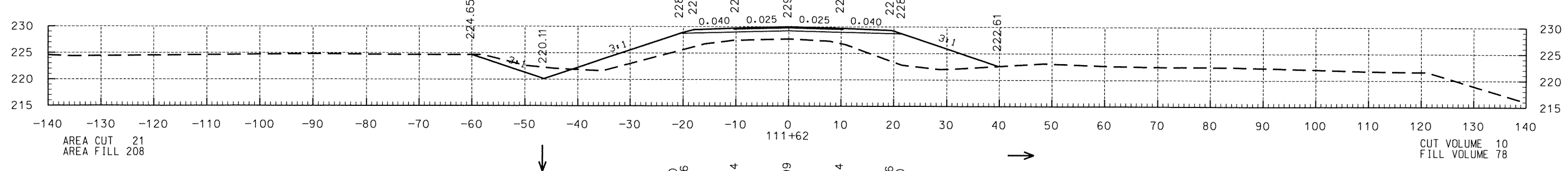
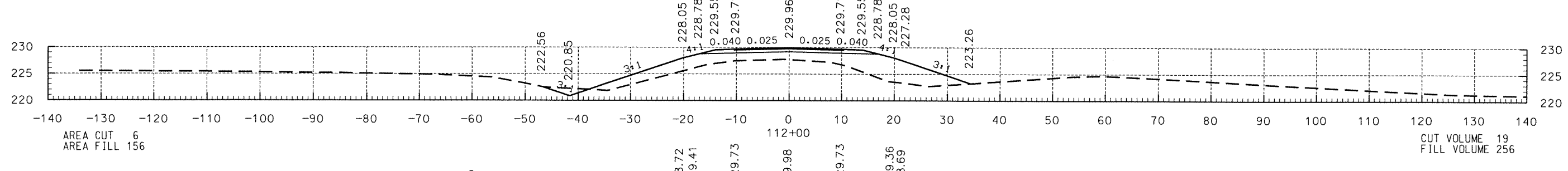
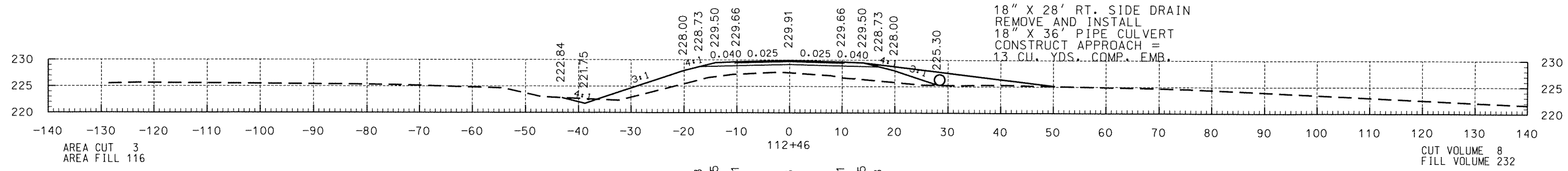
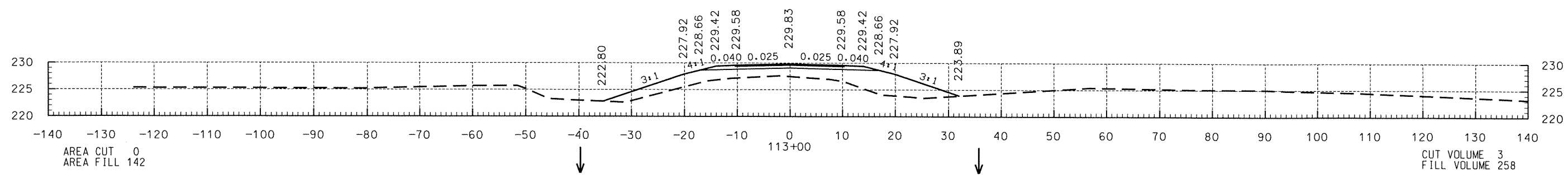
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4 STA. 110+69 TO STA. 111+00



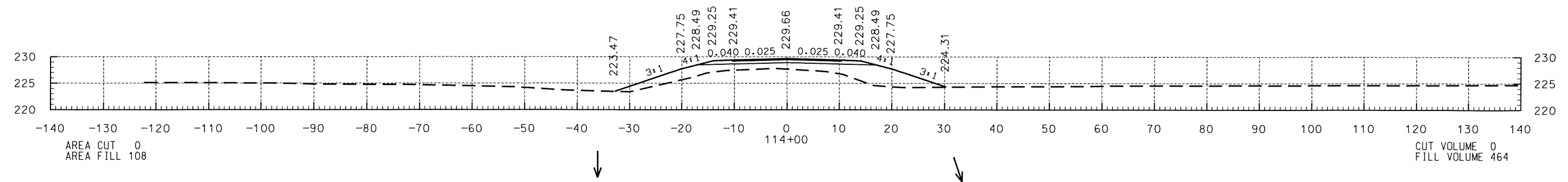
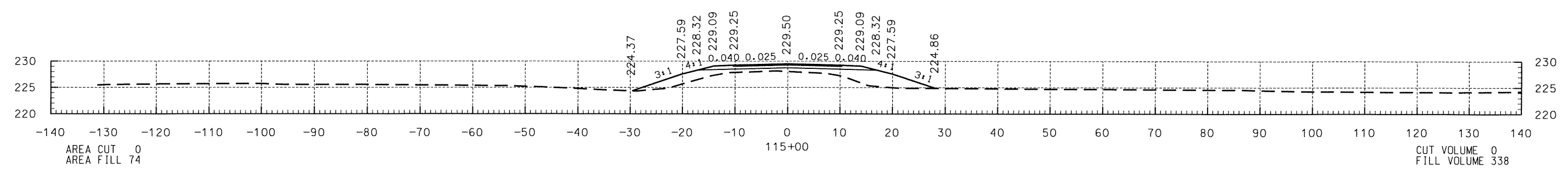
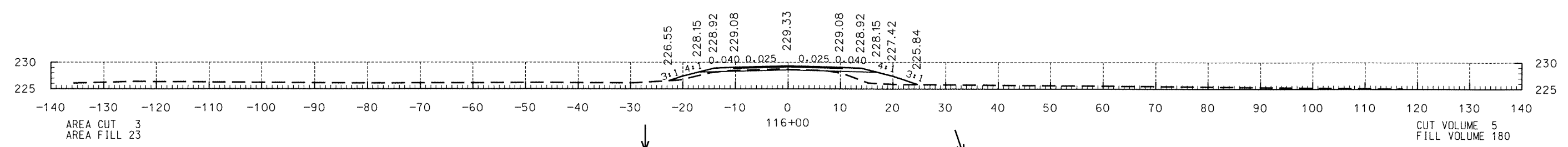
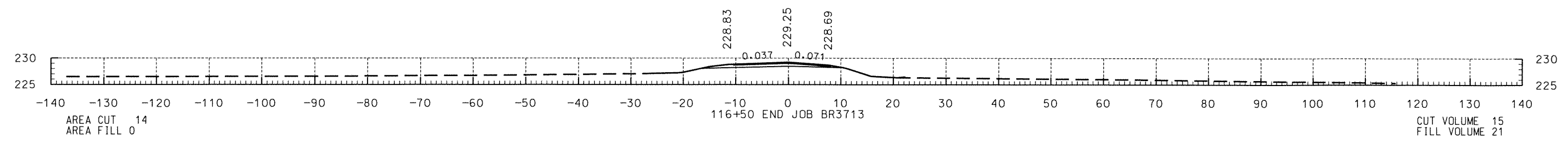
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4 STA. 111+52 TO STA. 113+00



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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4 STA. 114+00 TO STA. 116+50



CROSS SECTION STA. 114+00 TO STA. 116+50