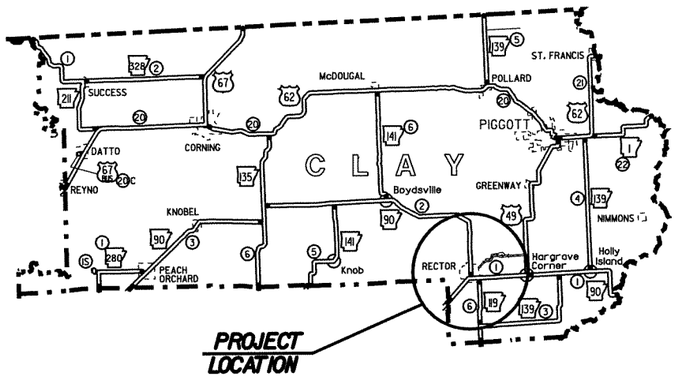
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BRI112	1	60
				(4)	WHITE WALNUT CREEK STR. & APPRS. (S)			



ARKANSAS HIGHWAY AND TRANSPORTATION DEPARTMENT

CONSTRUCTION PLANS FOR PROPOSED COUNTY ROAD

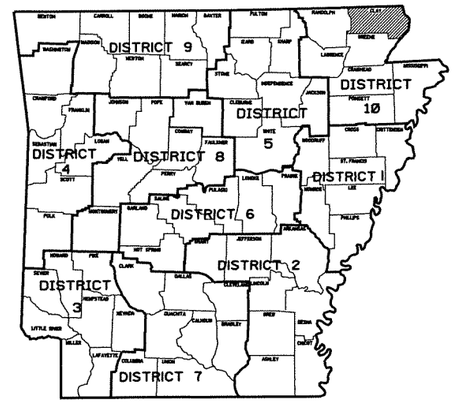
WHITE WALNUT CREEK STR. & APPRS. (S)

CO. RD. NO. 72

CLAY COUNTY

JOB BRI112

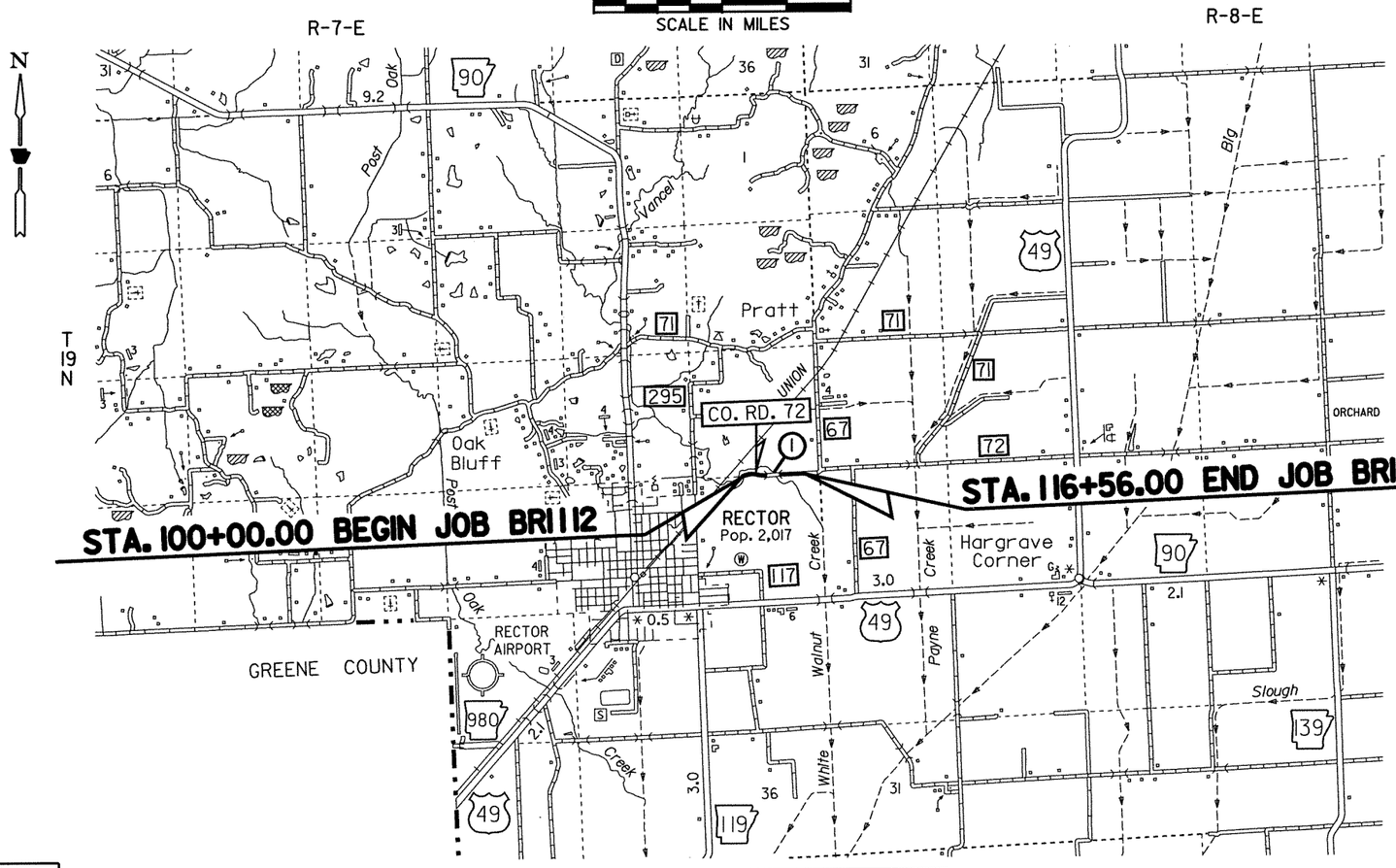
FED. AID PROJ. BRO-0011(38)



ARK. HWY. DIST. NO. 10

0 1 2

SCALE IN MILES



DESIGN TRAFFIC DATA

DESIGN YEAR.....2033
2013 ADT 50
2033 ADT 60
2033 DHV 09
DIRECTIONAL DISTRIBUTION....0.60
TRUCKS..... 3%
DESIGN SPEED.....40 MPH

STRUCTURES OVER 20 - 0" SPAN

(1) STA. 107+55.50 BRIDGE END
PROPOSED 133.00'
CONT. COMP. W-BEAM SPANS
(SPANS = 40', 50', 40')
BRIDGE NO. 04923
24'-0" CLEAR ROADWAY
(45° RT. FWD. SKEW)
STA. 108+88.50 BRIDGE END

PROJECT COORDINATES

	BEGIN	MID-POINT	END
LAT.	N36°16'25"	N36°16'25"	N36°16'24"
LONG.	W90°16'31"	W90°16'22"	W90°16'17"

LENGTH OF PROJECT CALCULATED ALONG CL CONSTRUCTION						
GROSS LENGTH OF PROJECT	1656.00	FEET OR	0.313	MILES
NET " " ROADWAY	1523.00	" "	0.288	"
NET " " BRIDGE	133.00	" "	0.025	"
NET " " PROJECT	1656.00	" "	0.313	"

APPROVED

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 3911 FRANK VOZEL

5/7/13

DEPUTY DIRECTOR AND CHIEF ENGINEER

THIS PROJECT IS SET-ASIDE FOR SMALL BUSINESS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BR1112	2	60

(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.	TYPICAL SECTION OF IMPROVEMENT AND SPECIAL DETAILS			
4-5.	TEMPORARY EROSION CONTROL DETAILS			
6-7.	QUANTITIES			
8.	SCHEDULE OF BRIDGE QUANTITIES	04923	53368	
9.	SUMMARY OF QUANTITIES AND REVISIONS			
10-11.	SURVEY CONTROL DETAILS			
12-13.	PLAN AND PROFILE SHEETS			
14.	LAYOUT OF BRIDGE OVER WHITE WALNUT CREEK (SHEET 1 OF 2)	04923	53369	
15.	LAYOUT OF BRIDGE OVER WHITE WALNUT CREEK (SHEET 2 OF 2)	04923	53370	
16.	DETAILS OF END BENTS (SHEET 1 OF 2)	04923	53371	
17.	DETAILS OF END BENTS (SHEET 2 OF 2)	04923	53372	
18.	DETAILS OF INTERMEDIATE BENTS	04923	53373	
19.	DETAILS OF CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS	04923	53374	
20.	DETAILS OF 130'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 1 OF 7)	04923	53375	
21.	DETAILS OF 130'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 2 OF 7)	04923	53376	
22.	DETAILS OF 130'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 3 OF 7)	04923	53377	
23.	DETAILS OF 130'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 4 OF 7)	04923	53378	
24.	DETAILS OF 130'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 5 OF 7)	04923	53379	
25.	DETAILS OF 130'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 6 OF 7)	04923	53380	
26.	DETAILS OF 130'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 7 OF 7)	04923	53381	
27.	DETAILS OF JOINTS	04923	53382	
28.	DETAILS OF ELASTOMERIC BEARINGS	04923	53383	
29.	DETAILS OF TYPE SPECIAL APPROACH GUTTERS	04923	53384	
30.	DETAILS OF TYPE SPECIAL APPROACH SLAB	04923	53385	
31.	EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS	1888A		4-10-03
32.	DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES	1891F		4-10-03
33.	DETAILS OF STANDARD TYPE C BRIDGE NAME PLATES	2389A		10-15-09
34.	DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONC. GIRDER SPANS	14991		4-10-03
35.	GUARD RAIL DETAILS		GR-8	7-14-10
36.	GUARD RAIL DETAILS		GR-8A	7-14-10
37.	GUARD RAIL DETAILS		GR-9	4-17-08
38.	GUARD RAIL DETAILS		GR-10	7-14-10
39.	GUARD RAIL DETAILS		GR-10A	7-14-10
40.	GUARD RAIL DETAILS		GRT-1	7-14-10
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.	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)		PCP-1	12-15-11
44.	PLASTIC PIPE CULVERT (PVC F949)		PCP-2	12-15-11
45.	PAVEMENT MARKING DETAILS		PM-1	11-17-10
46.	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC		SE-2	10-18-96
47.	STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES		SHS-1	4-17-08
48.	U-CHANNEL POST ASSEMBLIES		SHS-2	10- 9-03
49.	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-1	12-15-11
50.	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-2	3-11-10
51.	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-3	10-15-09
52.	TEMPORARY EROSION CONTROL DEVICES		TEC-1	12-15-11
53.	TEMPORARY EROSION CONTROL DEVICES		TEC-2	6- 2-94
54.	TEMPORARY EROSION CONTROL DEVICES		TEC-3	11- 3-94
55-60.	CROSS SECTIONS			

GENERAL NOTES

GRADE LINE DENOTES FINISHED 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.

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.

SUPERELEVATION SHALL BE COMPUTED IN ACCORDANCE WITH STD. DRWG. SE-2 USING 40 M.P.H. DESIGN VALUES AND REVOLVE ABOUT THE INNER TRAVEL LANE EDGE UNLESS OTHERWISE SHOWN.

ALL SALVAGE PIPE CULVERTS SHALL BE STORED ON THE RIGHT-OF-WAY AND REMAIN THE PROPERTY OF CLAY COUNTY.

THE ROAD WILL BE CLOSED TO THRU TRAFFIC DURING CONSTRUCTION OF THE NEW BRIDGE.

GOVERNING SPECIFICATIONS

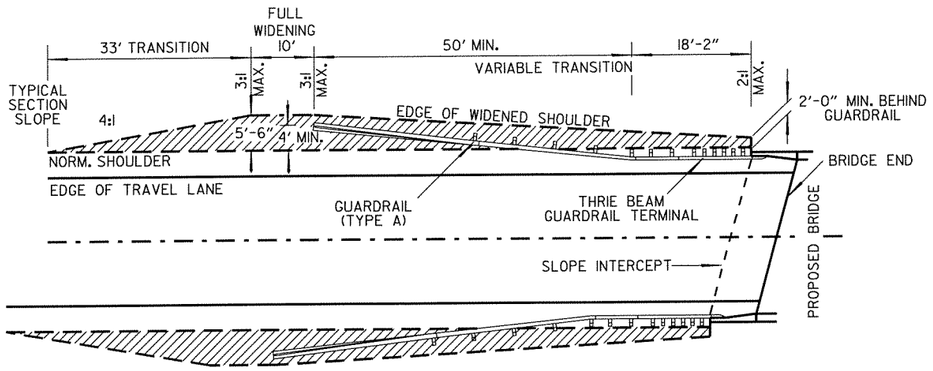
THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS FOR THIS PROJECT SUPPLEMENT THE STANDARD SPECIFICATIONS, EDITION OF 2003. IN CASE OF CONFLICT, THE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL GOVERN.

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - REVISIONS OF FHWA-1273 FOR OFF-SYSTEM PROJECTS
100-2	MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
102-1	BIDDING REQUIREMENTS AND CONDITIONS
105-1	CONSTRUCTION CONTROL MARKINGS
105-2	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
105-3	CONTROL OF WORK
107-1	WORKER VISIBILITY
108-1	LIQUIDATED DAMAGES
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
303-1	AGGREGATE BASE COURSE
403-1	POLYMER/LATEX MODIFIED CATIONIC EMULSIFIED ASPHALT FOR ASPHALT SURFACE TREATMENTS
409-1	MINERAL AGGREGATES
600-1	WATER FOR VEGETATION
603-1	MAINTENANCE OF TRAFFIC
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-2	INSPECTION OF TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
723-1	GENERAL REQUIREMENTS FOR SIGNS
804-1	INSTALLATION OF DOWEL BARS AND TIE BARS
JOB BR1112	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB BR1112	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB BR1112	DOCUMENTATION OF PAYMENTS MADE TO DISADVANTAGED BUSINESS ENTERPRISES
JOB BR1112	DRIVEN STEEL PILING BY METHOD B
JOB BR1112	INTERNET BIDDING
JOB BR1112	NESTING SITES OF MIGRATORY BIRDS
JOB BR1112	PLASTIC PIPE
JOB BR1112	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB BR1112	SILICONE JOINT SEALANT
JOB BR1112	STEEL SHELL PILES
JOB BR1112	STORM WATER POLLUTION PREVENTION PLAN
JOB BR1112	UTILITY ADJUSTMENTS

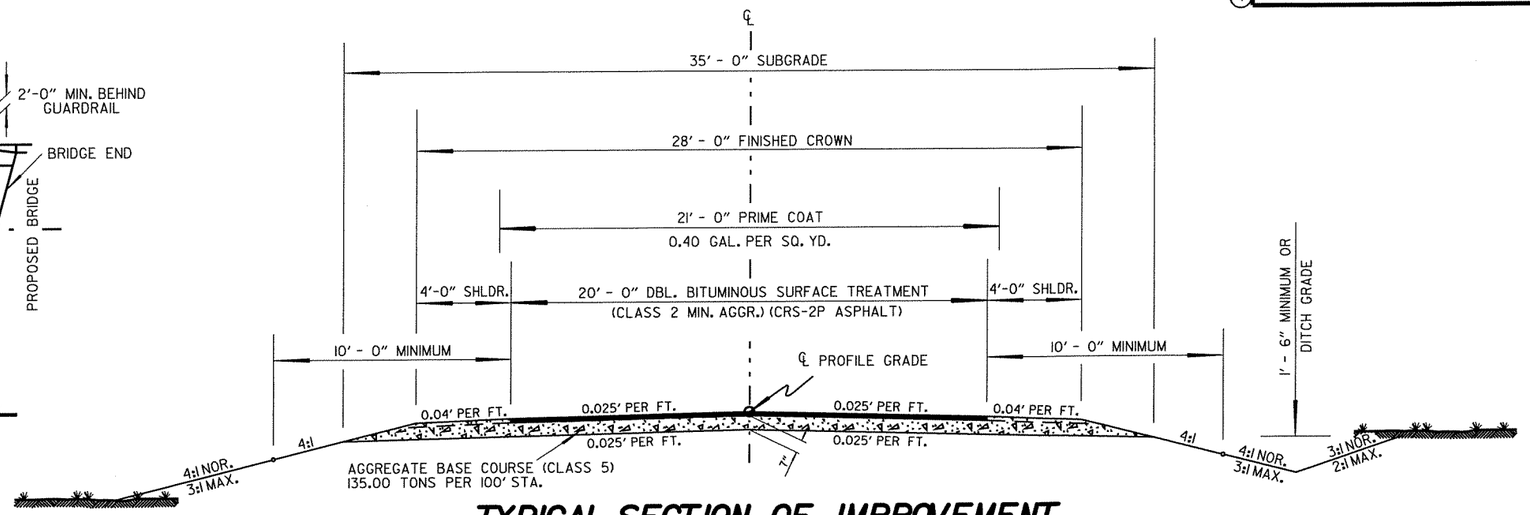
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
DAVID R. MAYO, JR.
5/3/2013

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.		BRI112	3	60

(4) TYP. SECT. OF IMPRV. AND SPECIAL DETAILS



DETAILS OF ROADWAY WIDENING FOR GUARDRAIL

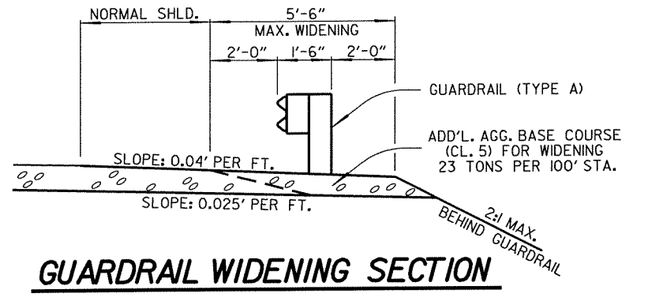


TYPICAL SECTION OF IMPROVEMENT

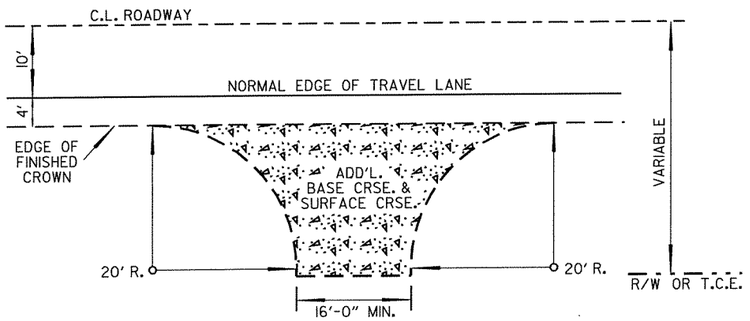
NOTE: THE THICKNESS OF BASE COURSE SHALL BE PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET THE TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

NOTE: NOT TO SCALE

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



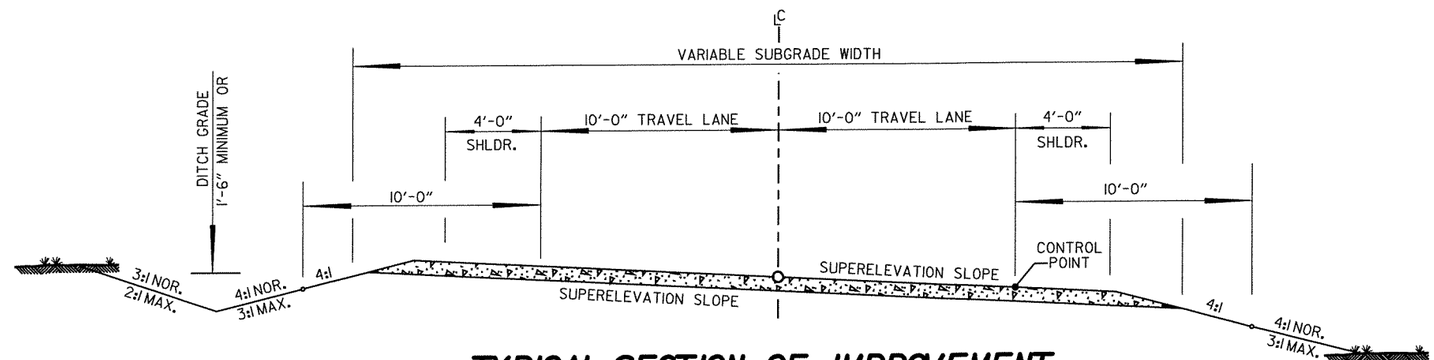
GUARDRAIL WIDENING SECTION



TYPICAL DETAIL OF PRIVATE ENTRANCES

ADDITIONAL BASE COURSE (w/35' R/W OR T.C.E.) = 13 TONS
ADDITIONAL SURFACE COURSE (w/35' R/W OR T.C.E.) = 54.6 SQ. YDS.

NOTE: NOT TO SCALE



TYPICAL SECTION OF IMPROVEMENT

SUPERELEVATION SECTION

NOTE: NOT TO SCALE

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

4/25/2013

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.		BRI112	4	60

(4) TEMPORARY EROSION CONTROL DETAILS

NOTE: EXACT LOCATIONS OF TEMPORARY EROSION CONTROL DEVICES TO BE DETERMINED IN THE FIELD BY THE ENGINEER AS WORK PROGRESSES.

TEMPORARY EROSION CONTROL DEVICES

ROCK DITCH CHECKS (E-6)	SED. REM. & DISP.
STA. 103+00 LT. = 1.2 CU. YDS.	1.0 CU. YD.
STA. 103+00 RT. = 1.2 CU. YDS.	1.0 CU. YD.
STA. 106+00 LT. = 1.2 CU. YDS.	1.0 CU. YD.
STA. 106+00 RT. = 1.2 CU. YDS.	1.0 CU. YD.

STA. 107+70 - STA. 108+75-IN PLACE
16' X 105' 3-SPAN TIMBER DECK BRIDGE
W/STEEL I-BEAMS
BRIDGE STRUCTURE NO. 21870
REMOVE AS EXISTING BRIDGE
STRUCTURE (SITE NO. 1)

N

100 YEAR FLOOD BOUNDARY ELEVATION = 281.6'

WOODS

℄ CONST.
PI = 103+39.91
Δ = 10°52'55"LT.
D = 08°00'00"
T = 68.22'
L = 136.04'
PC = 102+71.69
PT = 104+07.73

SUPER TRANS.
STA. 101+06.69 (BEGIN SUPER)
STA. 103+26.69 (MAX SUPER)
STA. 103+52.73 (MAX SUPER)
STA. 105+72.73 (END SUPER)

P.C. STA.102+71.69
P.T. STA.104+07.73
P.I. STA.103+39.91
STA.100+00.00
8003
EXPOSED GAS LINE
WHITE WALNUT CREEK
CONST. LIMITS
T.C.E.
FIELD ENT.
FIELD ROAD
GAS SIGN
Top of Cut
Existing Bridge

STA. 100+00.00 BEGIN JOB BRI112

LEGEND
- POWER POLE
- POLE W/GUY
- GAS SIGN

TEMPORARY EROSION CONTROL DEVICES

SAND BAG DITCH CHECKS (E-5)	SED. REM. & DISP.
STA. 100+00 LT. = 6 BAGS	1.0 CU. YD.
STA. 100+00 RT. = 6 BAGS	1.0 CU. YD.
STA. 101+00 LT. = 8 BAGS	2.0 CU. YD.
STA. 101+00 RT. = 8 BAGS	2.0 CU. YD.
STA. 102+00 LT. = 6 BAGS	1.0 CU. YD.
STA. 102+00 RT. = 4 BAGS	1.0 CU. YD.
STA. 103+00 LT. = 4 BAGS	1.0 CU. YD.
STA. 103+00 RT. = 2 BAGS	1.0 CU. YD.
STA. 104+00 LT. = 4 BAGS	1.0 CU. YD.
STA. 104+00 RT. = 4 BAGS	1.0 CU. YD.
STA. 105+00 LT. = 2 BAGS	1.0 CU. YD.
STA. 105+00 RT. = 4 BAGS	1.0 CU. YD.
STA. 106+00 RT. = 4 BAGS	1.0 CU. YD.
STA. 106+00 LT. = 4 BAGS	1.0 CU. YD.

TEMPORARY EROSION CONTROL DEVICES

SAND BAG DITCH CHECKS (E-5)	SED. REM. & DISP.
STA. 114+00 LT. = 8 BAGS	2.0 CU. YD.
STA. 114+00 RT. = 8 BAGS	2.0 CU. YD.
STA. 115+00 LT. = 10 BAGS	3.0 CU. YD.
STA. 115+00 RT. = 10 BAGS	3.0 CU. YD.

STA. 110+20-CONST. APPROACH ON RT. = 20 CU. YDS. (COMP. EMBK.)

TEMPORARY EROSION CONTROL DEVICES

ROCK DITCH CHECKS (E-6)	SED. REM. & DISP.
STA. 113+00 LT. = 1.2 CU. YDS.	1.0 CU. YD.
STA. 113+00 RT. = 1.2 CU. YDS.	1.0 CU. YD.

NOTE: EXACT LOCATIONS OF TEMPORARY EROSION CONTROL DEVICES TO BE DETERMINED IN THE FIELD BY THE ENGINEER AS WORK PROGRESSES.

TEMPORARY EROSION CONTROL DEVICES

SILT FENCE (E-11)	SEDIMENT REMOVAL AND DISPOSAL
STA. 106+50 TO STA. 108+00 - RT. = 175 LIN. FT.	4.0 CU. YDS.
STA. 106+50 TO STA. 108+00 - LT. = 175 LIN. FT.	4.0 CU. YDS.
STA. 108+45 TO STA. 112+50 - RT. = 425 LIN. FT.	6.0 CU. YDS.
STA. 108+45 TO STA. 112+50 - LT. = 425 LIN. FT.	6.0 CU. YDS.

50 0 50 100
SCALE IN FEET

STA. 107+55.50 BRIDGE END

PROPOSED 133.00'
CONT. COMP. W-BEAM UNIT
(SPANS = 40', 50', 40')
BRIDGE NO. 04923
24'-0" CLEAR ROADWAY
(45° RT. FWD. SKEW)
DECK ELEV. = 285.30'

STA. 108+88.50 BRIDGE END

NOTE:
FOR THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, WHITE WALNUT CREEK IS CLASSIFIED AS A 5 C.F.S. STREAM. THE STREAM BANK ELEVATIONS ARE 278.0 FEET M.S.L. BETWEEN STATIONS 107+80 AND 108+70. REFER TO SECTION 110.06 (c) OF THE 2003 STANDARD SPECIFICATIONS.

DATE	REVISION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5363
DAVID R. MEEKS
4/15/2013

100+00 101+00 102+00 103+00 104+00 105+00 106+00 107+00 108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00

310 300 290 280 270 260 250 240 230 220

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.		BRI112	5	60

(4) TEMPORARY EROSION CONTROL DETAILS

TEMPORARY EROSION CONTROL DEVICES

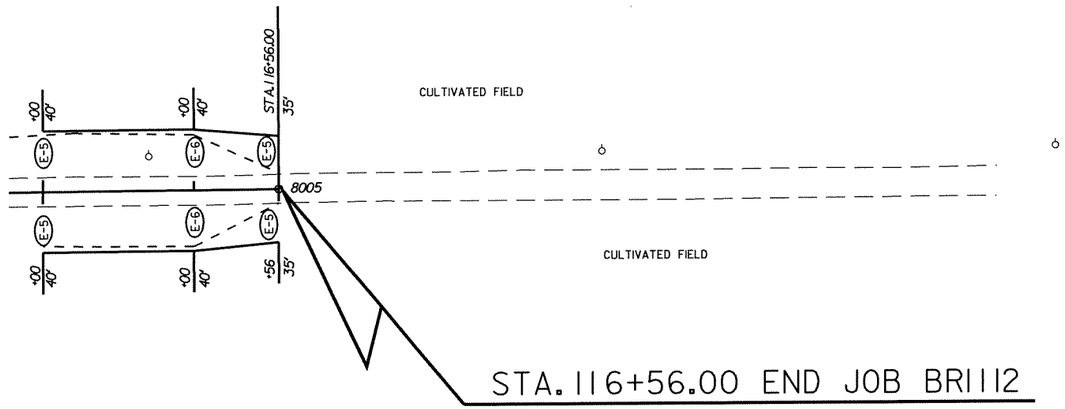
SAND BAG DITCH CHECKS (E-5)	SED. REM. & DISP.
STA. 116+50 LT. = 2 BAGS	1.0 CU. YD.
STA. 116+50 RT. = 2 BAGS	1.0 CU. YD.

TEMPORARY EROSION CONTROL DEVICES

ROCK DITCH CHECKS (E-6)	SED. REM. & DISP.
STA. 116+00 LT. = 1.2 CU. YDS.	1.0 CU. YD.
STA. 116+00 RT. = 1.2 CU. YDS.	1.0 CU. YD.

N

NOTE: EXACT LOCATIONS OF TEMPORARY EROSION CONTROL DEVICES TO BE DETERMINED IN THE FIELD BY THE ENGINEER AS WORK PROGRESSES.



50 0 50 100
SCALE IN FEET

DATE	REVISION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
4/25/2013

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.		BRI112	6	60

(4) QUANTITIES

STRUCTURES

STATION	DESCRIPTION	SIDE DRAINS 18" LIN. FT.	STD. DRWG. NO.
101+25	INSTALL PIPE CULVERT - RT. SIDE DRAIN	36	PCC-1, PCM-1, PCP-1, PCP-2
101+50	INSTALL PIPE CULVERT - LT. SIDE DRAIN	30	PCC-1, PCM-1, PCP-1, PCP-2
TOTAL:		66	

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

PERMANENT SEEDING

STATION	STATION	LIME TON	SEEDING A C R E	MULCH COVER A C R E	WATER M. GAL.
ENTIRE PROJECT		3.62	1.81	1.81	184.6
TOTALS:		3.62	1.81	1.81	184.6
USE:		4			

BASIS OF ESTIMATE:
LIME.....2 TONS PER ACRE
WATER.....102.0 M. GALS. PER ACRE PERMANENT SEEDING

CLEARING AND GRUBBING

STATION	STATION	CLEARING STATION	GRUBBING STATION
100+00	101+00	1	1
107+00	109+60	3	3
TOTALS:		4	4

APPROACH GUTTERS (TYPE SPECIAL)

STATION	STATION	SIDE	CONC. CU. YD.	REINF. STEEL-RDWY. (GR. 60) LB.
107+14.88	107+41.88	LT.	4.68	248
107+42.05	107+69.05	RT.	5.13	275
108+74.88	109+01.88	LT.	5.13	275
109+02.05	109+29.05	RT.	4.68	248
TOTALS:			19.62	1046

STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES

STATION	SIDE	STANDARD SIGN NO. OM-3R SQUARE FEET	OM-3L SQUARE FEET	WI-2L SQUARE FEET	WI-2R SQUARE FEET	WI3-1 SQUARE FEET	SUPPORT ASSEMBLY TYPE A EACH	TYPE C EACH	STANDARD DRAWING NUMBER
100+46	RT.			6.25		2.25	1		SHS-1 & 2
106+32	LT.				6.25	2.25	1		SHS-1 & 2
107+41	LT.		3.00					1	SHS-1 & 2
107+69	RT.	3.00						1	SHS-1 & 2
108+74	LT.	3.00						1	SHS-1 & 2
109+02	RT.		3.00					1	SHS-1 & 2
TOTALS:		6.00	6.00	6.25	6.25	4.50	2	4	

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

BASE AND SURFACING

STATION	STATION	LENGTH LIN. FT.	AGGREGATE BASE COURSE (CLASS 5) NORMAL TON	ADD'L. TON	TOTAL TON	21'-0" PRIME COAT SQ. YDS.	GAL.	20'-0" DOUBLE BITUMINOUS SURFACE TREATMENT SQ. YDS.	MIN. AGGR. (CLASS 2) TON	ASPHALT (CRS-2P) GAL.
100+00.00	107+16.50	716.50	967.3		967.3	1671.8	668.7	1592.2	51.7	1194.2
109+27.50	116+56.00	728.50	983.5		983.5	1699.8	679.9	1618.9	52.6	1214.2
PRIVATE ENTRANCES:										
101+25 RT.				28.1	28.1					
101+50 LT.				22.3	22.3					
109+53 LT.				25.6	25.6					
110+20 RT.				22.3	22.3					
WIDEN. FOR GUARDRAIL				55.7	55.7					
BASE FOR APPR. SLABS				53.2	53.2					
TOTALS:		1445.00	1950.8	207.2	2158.0		1348.6		104.3	2408.4
USE:					2158		1349		104	2408

BASIS OF ESTIMATE:
AGG. BASE COURSE. (CL. 5)_____135 TONS PER 100' STA.
AGG. BASE COURSE. (CL. 5) FOR APPR. SLABS_____6" MIN. COMPACTED DEPTH
PRIME COAT_____0.40 GAL. PER SQ. YD.
MINERAL AGGREGATE IN DBL. BITUMINOUS SURF. TREATMENT (IST APPLICATION)_____35 LBS. PER SQ. YD.
MINERAL AGGREGATE IN DBL. BITUMINOUS SURF. TREATMENT (2ND APPLICATION)____30 LBS. PER SQ. YD.
ASPHALT IN DBL. BITUMINOUS SURF. TREATMENT (IST APPLICATION_____0.40 GALS. PER SQ. YD.
ASPHALT IN DBL. BITUMINOUS SURF. TREATMENT (2ND APPLICATION_____0.35 GALS. PER SQ. YD.

GUARDRAIL

STATION	STATION	SIDE	THRIE BEAM GUARDRAIL TERMINAL EACH	GUARDRAIL (TYPE A) LIN. FT.	TERMINAL ANCHOR POST (TYPE I) EACH
106+65	107+36	LT.	1	50	1
106+92	107+63	RT.	1	50	1
109+08	109+79	RT.	1	50	1
TOTALS:			3	150	3

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
DAVID R. MAYO, JR.
4/25/2013

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.		BRI112	7	60

(4) QUANTITIES

TEMPORARY EROSION CONTROL

STATION	STATION	SIDE	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	SILT FENCE (E-11)	SEDIMENT REMOVAL AND DISPOSAL	STANDARD DRAWING NUMBER
			ACRE		M. GAL.	BAG	CU. YD.	LIN. FT.	CU. YD.	
ENTIRE PROJECT			1.81	1.81	36.9					TEC-1, 2, 3
100+00		LT. & RT.				12			2	TEC-1, 2, 3
101+00		LT. & RT.				16			4	TEC-1, 2, 3
102+00		LT. & RT.				10			2	TEC-1, 2, 3
103+00		LT. & RT.					2.4		2	TEC-1, 2, 3
104+00		LT. & RT.				8			2	TEC-1, 2, 3
105+00		LT. & RT.				6			2	TEC-1, 2, 3
106+00		LT. & RT.					2.4		2	TEC-1, 2, 3
106+50	108+00	LT. & RT.						350	8	TEC-1, 2, 3
108+45	112+50	LT. & RT.						850	12	TEC-1, 2, 3
113+00		LT. & RT.					2.4		2	TEC-1, 2, 3
114+00		LT. & RT.				16			4	TEC-1, 2, 3
115+00		LT. & RT.				20			6	TEC-1, 2, 3
116+00		LT. & RT.					2.4		2	TEC-1, 2, 3
116+50		LT. & RT.				4			2	TEC-1, 2, 3
TOTALS:			1.81	1.81	36.9	92	9.6	1200	52	

USE: 10

BASIS OF ESTIMATE:
WATER.....20.4 M. GALS. PER ACRE TEMPORARY SEEDING

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

EARTHWORK

STATION	STATION	UNCLASSIFIED EXCAVATION			COMPACTED EMBANKMENT		
		NORMAL	ADD'L.	TOTAL	NORMAL	ADD'L.	TOTAL
		CUBIC YARD					
100+00	107+68	1776	30	1806	1848		1848
108+76	116+56	1422		1422	3582	40	3622
BRIDGE			120	120			
TOTALS:		3198	150	3348	5430	40	5470

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

APPROACH SLABS (TYPE SPECIAL)

STATION	STATION	CONC.	REINF. STEEL-RDWY. (GR. 60)
		CU. YD.	LB.
107+16.50	107+55.50	42.44	4805
108+88.50	109+27.50	42.44	4805
TOTALS:		84.88	9610

PAVEMENT MARKINGS

LOCATION	YELLOW MARKINGS 4" CONTINUOUS
	LINEAR FEET
ENTIRE PROJECT	3312
TOTAL:	3312

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

TRAFFIC CONTROL DEVICES

STATION OR LOCATION	W20-1 500 FT.		W20-1 1000 FT.		W20-1 1500 FT.		G20-1		G20-2		R11-2		R11-4		BARRICADES	STANDARD DRAWING NUMBER
	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	NO.	SQ. FT.	LIN. FT.	
STA. 85+00					1	16.0										TC-1, 2&3
STA. 90+00			1	16.0												TC-1, 2&3
STA. 95+00	1	16.0														TC-1, 2&3
STA. 100+00							1	10.0	1	8.0	1	10.0			24	TC-1, 2&3
STA. 116+56							1	10.0	1	8.0	1	10.0			24	TC-1, 2&3
STA. 121+56	1	16.0														TC-1, 2&3
STA. 126+56			1	16.0												TC-1, 2&3
STA. 131+56					1	16.0										TC-1, 2&3
RECTOR CITY LIMITS													1	12.5		TC-1, 2&3
CO. RD. 72 & HWY. 49													1	12.5		TC-1, 2&3
TOTALS:	2	32.0	2	32.0	2	32.0	2	20.0	2	16.0	2	20.0	2	25.0	48	

BRIDGE END TERMINAL

STATION	STATION	SIDE	EACH
108+85	109+05	LT.	1
TOTAL:			1

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

4/25/2014

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.		BRI112	8	60
				① 04923 - QUANTITIES - 53368				

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. BRI112

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	802	802	803	SS & 804	SS & 804	SP & 805	SP & 805	805	807	808	812	816	816	SP JOB BR1112
		ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	① STEEL SHELL PILING (18'' DIA.)	① STEEL SHELL PILING (24'' DIA.)	① PILE ENCASEMENT	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	ELASTOMERIC BEARINGS	BRIDGE NAME PLATE (TYPE C)	FILTER BLANKET	DUMPED RIPRAP	SILICONE JOINT SEALANT
		UNIT	LUMP SUM	CU. YD	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	CU. IN.	EACH	SQ. YD.	CU. YD.	LIN. FT.
04923 / X071 / WHITE WALNUT CREEK	BENTS 1 & 4			53	53.05		0.5	6150	454	500			3360	1414.0		118	72	
	BENTS 2 & 3				37.65			2760	216		500	70						
	130' CONT. COMP. W-BEAM UNIT					125.10	8.9	29400					62030		1			75
EXIST. BR. NO. 21870 (SITE NO. 1)			1															
TOTALS FOR JOB NO. BRI112				53	90.70	125.10	9.4	38310	670	500	500	70	65390	1414.0	1	118	72	75

① PILES AND PILE ENCASEMENT SHALL CONFORM TO DWG. NO. 53374.

BRYAN FREELING
DESIGN SECTION SUPERVISOR

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

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
WHITE WALNUT CREEK STR. & APPRS. (S)
CLAY COUNTY

COUNTY ROUTE 72
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 10/23/12 FILENAME: bbr1112_ql.dgn
CHECKED BY: RCB DATE: 11/6/12 SCALE: NONE
DESIGNED BY: -- DATE: --

BRIDGE NO. 04923 DRAWING NO. 53368

PRINT DATE: 1/24/2013

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.		BRI112	9	60

(4) SUMMARY OF QUANTITIES & REVISIONS

SUMMARY OF QUANTITIES

ITEM NO.	I T E M	QUANTITY	UNIT
201	CLEARING	4	STA.
201	GRUBBING	4	STA.
210	UNCLASSIFIED EXCAVATION	3348	CU. YD.
210	COMPACTED EMBANKMENT	5470	CU. YD.
SS & 303	AGGREGATE BASE COURSE (CLASS 5)	2158	TON
401	PRIME COAT	1349	GAL.
402	MINERAL AGGREGATE IN ASPHALT SURFACE TREATMENT (CLASS 2)	104	TON
SS & 402	POLYMER MODIFIED CATIONIC EMULSIFIED ASPHALT (CRS-2P)	2408	GAL.
504	APPROACH GUTTERS (TYPE SPECIAL)	19.62	CU. YD.
504	APPROACH SLABS (TYPE SPECIAL)	84.88	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	BARRICADES	48	LIN. FT.
SP, SS&606	18" SIDE DRAIN	66	LIN. FT.
SS & 617	GUARDRAIL (TYPE A)	150	LIN. FT.
SS & 617	TERMINAL ANCHOR POSTS (TYPE 1)	3	EACH
SS & 617	THRIE BEAM GUARDRAIL TERMINAL	3	EACH
620	LIME	4	TON
620	SEEDING	1.81	ACRE
620	MULCH COVER	3.62	ACRE
SS & 620	WATER	221.5	M.G.
621	TEMPORARY SEEDING	1.81	ACRE
621	SAND BAG DITCH CHECKS	92	BAG
621	ROCK DITCH CHECKS	10	CU. YD.
621	SILT FENCE	1200	LIN. FT.
621	SEDIMENT REMOVAL AND DISPOSAL	52	CU. YD.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
SS & 718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")	3312	LIN. FT.
SS & 726	STANDARD SIGN	29.00	SQ. FT.
729	CHANNEL POST SIGN SUPPORT (TYPE A)	2	EACH
729	CHANNEL POST SIGN SUPPORT (TYPE C)	4	EACH
SS & 734	BRIDGE END TERMINAL	1	EACH
SS & 804	REINFORCING STEEL - ROADWAY (GRADE 60)	10656	LB.

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	53	CU. YD.
802	CLASS S CONCRETE - BRIDGE	90.70	CU. YD.
802	CLASS S (AE) CONCRETE - BRIDGE	125.10	CU. YD.
803	CLASS I PROTECTIVE SURFACE TREATMENT	9.4	GAL.
SS & 804	REINFORCING STEEL - BRIDGE (GRADE 60)	38310	LB.
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	670	LB.
SP & 805	STEEL SHELL PILING (18" DIAMETER)	500	LIN. FT.
SP & 805	STEEL SHELL PILING (24" DIAMETER)	500	LIN. FT.
805	PILE ENCASEMENT	70	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)	65390	LB.
808	ELASTOMERIC BEARINGS	1414.0	CU. IN.
812	BRIDGE NAME PLATE (TYPE C)	1	EACH
816	FILTER BLANKET	118	SQ. YD.
816	DUMPED RIPRAP	72	CU. YD.
SP	SILICONE JOINT SEALANT	75	LIN. FT.

REVISIONS

DATE	R E V I S I O N	SHEET NO.

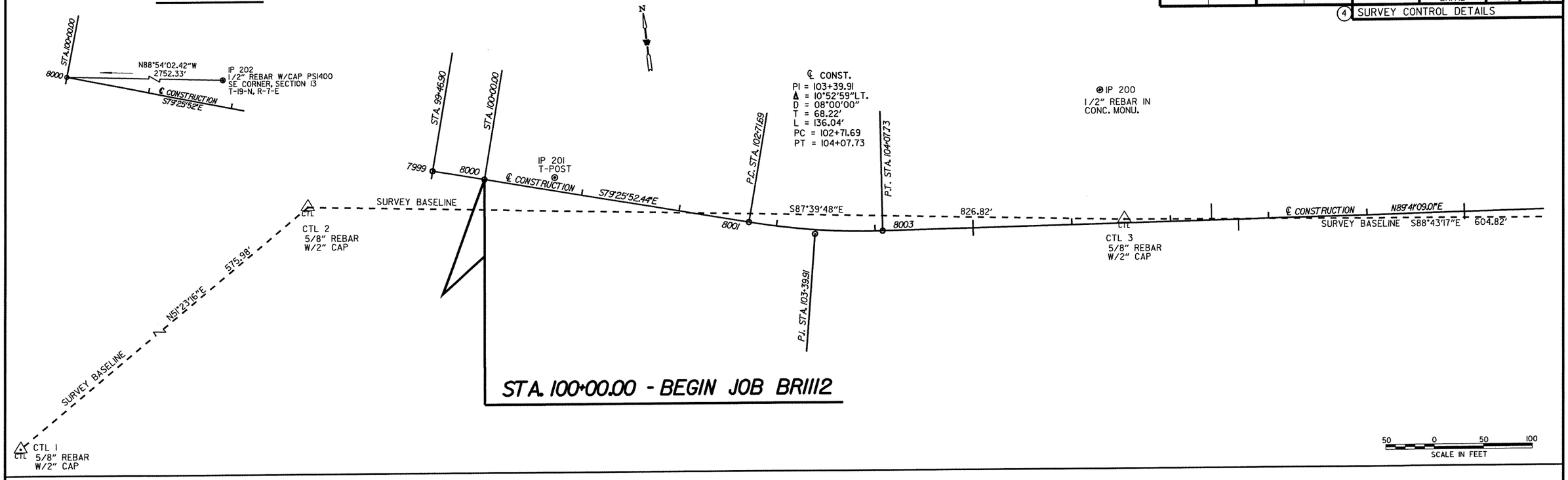
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9568
DAVID R. MAYO, P.E.

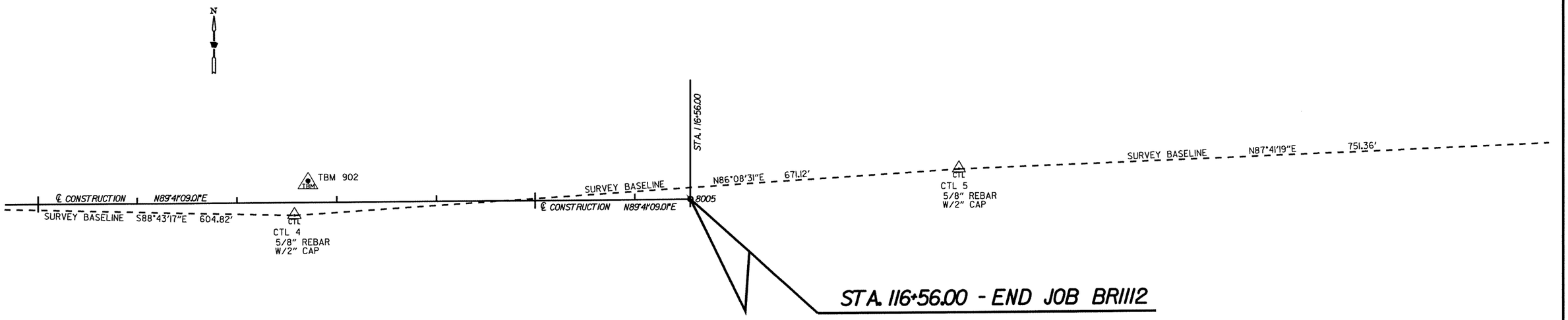
4/25/2013

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.		BRI112	10	60

(4) SURVEY CONTROL DETAILS

LAND TIE





SURVEY CONTROL DETAILS

50 0 50 100
SCALE IN FEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
DAVID R. MAYO, JR.
4/25/2013

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.		BRI112	11	60

(4) SURVEY CONTROL DETAILS

SURVEY CONTROL COORDINATES

Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	710355.9516	1820128.0743	284.593	CTL	*5/8" Rebar with 2" Aluminum Cap
2	710715.3914	1820578.1398	285.325	CTL	*5/8" Rebar with 2" Aluminum Cap
3	710681.6817	1821404.2739	281.173	CTL	*5/8" Rebar with 2" Aluminum Cap
4	710668.1864	1822008.9477	276.218	CTL	*5/8" Rebar with 2" Aluminum Cap
5	710713.3413	1822678.5509	276.385	CTL	*5/8" Rebar with 2" Aluminum Cap
6	710743.6451	1823429.2979	273.955	CTL	*5/8" Rebar with 2" Aluminum Cap
7	711462.1814	1823470.9627	273.703	CTL	*5/8" Rebar with 2" Aluminum Cap
100	706344.3356	1815673.3421	284.253	GPS	*AHTD GPS 110006
900	708066.7411	1817147.6513	294.950	BM	*BRASS CAP Z187 IN CONC
901	710282.1892	1819286.2131	293.762	TBM	*CHSLD SQR IN HW ON RR
902	710702.7553	1822022.3039	279.031	TBM	*CPS IN PP #56, 21.5 N OF CL OF CR 481
903	712013.6406	1823474.8300	273.182	TBM	*903 CPS IN CP
904	714760.9608	1823413.6331	277.248	BM	*E32 BRASS CAP IN HW

Note - Rebar and Cap - Standard -" 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 1.000007357 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 sbr1112gi.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 110006
CONVERGENCE ANGLE: 1-00-22.14 RIGHT AT LT: 36-16-24.49 LG: 090-16-15.31
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

SURVEY BASELINE

Point Name	Northing	Easting	Elev	Type	Station
1	710355.9516	1820128.0743	284.59	POB	0+00.00
2	710715.3914	1820578.1398	285.33	PI	5+75.98
3	710681.6817	1821404.2739	281.17	PI	14+38.80
4	710668.1864	1822008.9477	276.22	PI	20+43.62
5	710713.3413	1822678.5509	276.39	PI	27+14.74
6	710743.6451	1823429.2979	273.96	PI	34+66.10
7	711462.1814	7823470.9627	273.70	POE	41+85.84

CONSTRUCTION CENTERLINE

Point Name	Northing	Easting	Elev	Type	Station
8000	710738.4649	1820756.5620	000.00	POB	100+00.00
8001	710688.6325	1821023.6443	000.00	PC	102+71.69
8003	710676.4934	1821158.9329	000.00	PT	104+07.73
8005	710683.3398	1822207.5514	000.00	POE	116+56.00

STATE OF ARKANSAS
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SURVEY CONTROL DETAILS

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				6	ARK.			
				JOB NO.		BRI112	12	60

4 PLAN & PROFILE STA. 100+00-STA. 115+00.00

LAND TIE

WILLIAM C. (BILL) MEREDITH

STA. 100+00.00

N88°54'02.42"W 2752.33'

IP 202 1/2" REBAR W/CAP PSI400 SE CORNER, SECTION 13 T-19-N, R-7-E

℄ CONSTRUCTION S79°25'52"E

TRAFFIC CONTROL DEVICES

G20 - 1
STA. 100+00 -RT. = 10.0 SQ. FT.
G20 - 2
STA. 100+00 -LT. = 8.0 SQ. FT.
W20-1
STA. 85+00 (1500) -RT. = 16.0 SQ. FT.
STA. 90+00 (1000) -RT. = 16.0 SQ. FT.
STA. 95+00 (500) -RT. = 16.0 SQ. FT.
R11-2
STA. 100+00 -CL (1 SIGN) = 10.0 SQ. FT.

BARRICADE 24.0 LIN. FT.

STA. 107+41 -CONST. STD. HWY. SIGN OM-3L ON LT.

STA. 107+70 - STA. 108+75-IN PLACE 16' X 105' 3-SPAN TIMBER DECK BRIDGE W/STEEL I-BEAMS
BRIDGE STRUCTURE NO. 21870
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1)

DANNY E.& LURA HOUFIELD REV.TRUST

IP 200 1/2" REBAR IN CONC. MON.

WHITE WALNUT CREEK

CLEARING AND GRUBBING

STA. 107+00 TO STA. 109+60 = 3 STAS.

STA. 108+74 -CONST. STD. HWY. SIGN OM-3R ON LT.

100 YEAR FLOOD BOUNDARY ELEVATION = 281.6'

BRIDGE END TERMINAL

STA. 108+85 - STA. 109+05 LT. = 1 EACH

STA. 109+53-CONST. APPROACH ON LT. = 20 CU. YDS. (COMP. EMBK.)

STA. 101+50-INSTALL 18"X30' PIPE CULV'T. LT. SIDE DRAIN CONST. APPROACH = 10 CU. YDS. (EXCAV.)

IP 201 T-POST

WOODS

CULTIVATED FIELD

℄ CONST.
PI = 103+39.91
Δ = 10°52'55"LT.
D = 08°00'00"
T = 68.22'
L = 136.04'
PC = 102+71.69
PT = 104+07.73

SUPER TRANS.

STA. 101+06.69 (BEGIN SUPER)
STA. 103+26.69 (MAX SUPER)
STA. 103+52.73 (MAX SUPER)
STA. 105+72.73 (END SUPER)
e = 0.084
Ls = 220'

P.C. STA.102+71.69
P.T. STA.104+07.73
P.I. STA.103+39.91

EXPOSED GAS LINE

STA. 106+32 WI-2R & WI3-1(40 MPH) ON LT.

CONST. LIMITS

CTL 3

3.2'X2.3' FOC VAULT (CATV) SHOT ON FOC IN VAULT

TBM 902

℄ CONSTRUCTION N88°40'09.01"E 1048.64'

CTL 4

LOWEST UTILITY LINE ELEV. = 304.81'

T.C.E.

54" WHITE OAK

GUY WIRE PP W/TRANSFORM

SCOTT & LADONNA C. KIRKLIN

FIELD ROAD

COTTON FIELD

STA. 100+46 WI-2L & WI3-1(40 MPH) ON RT.

STA. 110+20-CONST. APPROACH ON RT. = 20 CU. YDS. (COMP. EMBK.)

HENRY & RUBY SEAY

PER TWO LOCAL LAND OWNERS, WITHIN THE LAST 30 YRS, WATER HAS BEEN AT BOTTOM OF BRIDGE AT HIGHEST POINT

ACCORDING TO ARKANSAS WESTERN GAS REP GAS LINE EXTENDS APPROX. 3' INTO COUNTY RD THEN RUNS EASTERLY APPROX. 3' NORTH OF SOUTH EDGE OF GRAVEL

STA. 100+00.00 BEGIN JOB BRI112

LEGEND
- POWER POLE
- POLE W/GUY
- GAS SIGN

STA. 101+25-INSTALL 18"X36' PIPE CULV'T. RT. SIDE DRAIN CONST. APPROACH = 20 CU. YDS. (EXCAV.)

CLEARING AND GRUBBING

STA. 100+00 TO STA. 101+00 = 1 STA.

GUARDRAIL	TYPE A	THRIE BEAM TERMINAL	TERM. ANCH. POSTS (TY. I)
STA. 106+65 - STA. 107+36 LT.	50 LIN. FT.	1 EACH	1 EACH
STA. 106+92 - STA. 107+63 RT.	50 LIN. FT.	1 EACH	1 EACH
STA. 109+08 - STA. 109+79 RT.	50 LIN. FT.	1 EACH	1 EACH

STA. 107+69 -CONST. STD. HWY. SIGN OM-3R ON RT.

STA. 109+02 -CONST. STD. HWY. SIGN OM-3L ON RT.

APPROACH SLABS (TYPE SPECIAL)	CONC.	REIN. STEEL
STA. 107+16.50 - STA. 107+55.50	42.44 CU. YDS.	4805 LBS.
STA. 108+88.50 - STA. 109+27.50	42.44 CU. YDS.	4805 LBS.

APPROACH GUTTERS (TYPE SPECIAL)	CONC.	REIN. STEEL
STA. 107+14.88 - STA. 107+41.88 LT.	4.68 CU. YDS.	248 LBS.
STA. 107+42.05 - STA. 107+69.05 RT.	5.13 CU. YDS.	275 LBS.
STA. 108+74.88 - STA. 109+01.88 LT.	5.13 CU. YDS.	275 LBS.
STA. 109+02.05 - STA. 109+29.05 RT.	4.68 CU. YDS.	248 LBS.

SCALE IN FEET: 50 0 50 100

EARTHWORK
STA. 100+00 - STA. 107+68

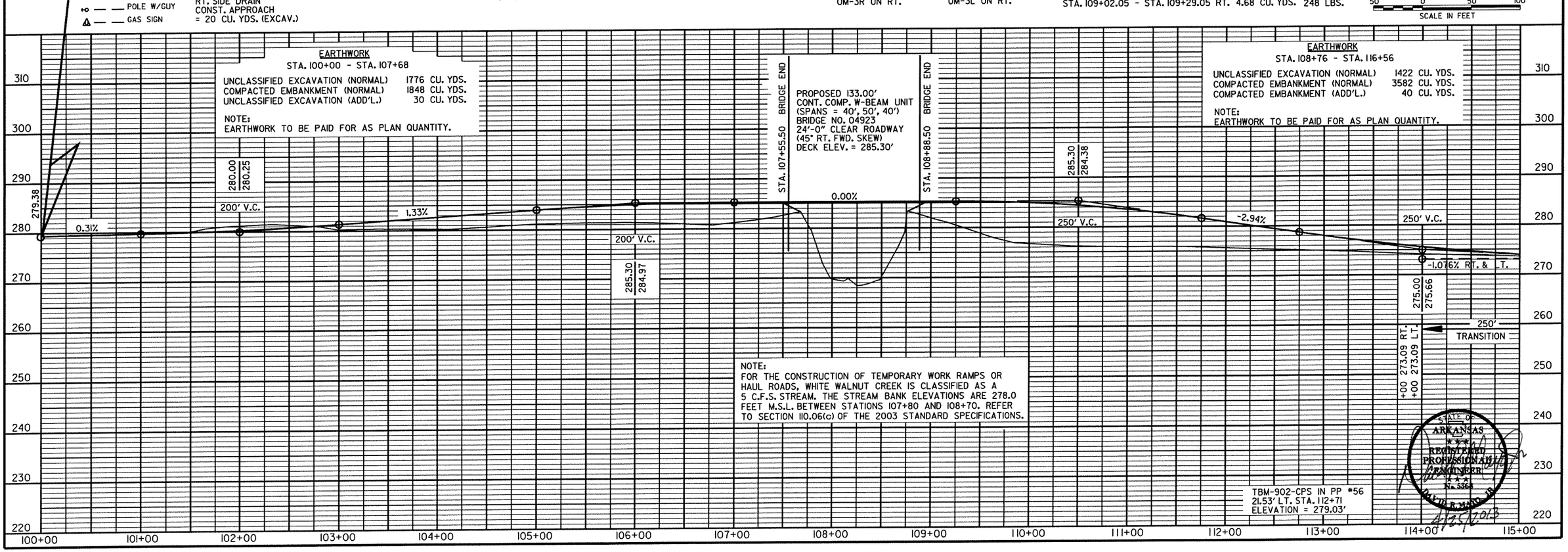
UNCLASSIFIED EXCAVATION (NORMAL)	1776 CU. YDS.
COMPACTED EMBANKMENT (NORMAL)	1848 CU. YDS.
UNCLASSIFIED EXCAVATION (ADD'L.)	30 CU. YDS.

NOTE:
EARTHWORK TO BE PAID FOR AS PLAN QUANTITY.

EARTHWORK
STA. 108+76 - STA. 116+56

UNCLASSIFIED EXCAVATION (NORMAL)	1422 CU. YDS.
COMPACTED EMBANKMENT (NORMAL)	3582 CU. YDS.
COMPACTED EMBANKMENT (ADD'L.)	40 CU. YDS.

NOTE:
EARTHWORK TO BE PAID FOR AS PLAN QUANTITY.



NOTE:
FOR THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, WHITE WALNUT CREEK IS CLASSIFIED AS A 5 C.F.S. STREAM. THE STREAM BANK ELEVATIONS ARE 278.0 FEET M.S.L. BETWEEN STATIONS 107+80 AND 108+70. REFER TO SECTION 110.06(c) OF THE 2003 STANDARD SPECIFICATIONS.

TBM-902-CPS IN PP #56
21.53' LT. STA. 112+71
ELEVATION = 279.03'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5368
WILLIAM R. MAY
4/25/2013

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.		BRI112	13	60

(4) PLAN & PROFILE STA. 115+00-STA. 116+56.00

TRAFFIC CONTROL DEVICES

G20 - 1
STA. 116+56 - LT. = 10.0 SQ. FT.

G20 - 2
STA. 116+56 - RT. = 8.0 SQ. FT.

W20-1
STA. 121+56 (500) - LT. = 16.0 SQ. FT.
STA. 126+56 (1000) - LT. = 16.0 SQ. FT.
STA. 131+56 (1500) - LT. = 16.0 SQ. FT.

R11-21
STA. 116+56 - CL = (1 SIGN) =10.0 SQ. FT.

BARRICADE
24.0 LIN FT.

N

115 116

STA. 116+56.00

+00 40' | -00 40' | 35'

CULTIVATED FIELD

CTL 5
CTL

8005

CULTIVATED FIELD

+00 40' | -00 40' | +56 35'

CTL 6
CTL

STA. 116+56.00 END JOB BRI112

50 0 50 100
SCALE IN FEET

310
300
290
280
270
260
250
240
230
220

116+56.00 272.90

-0.82%

4.076% RT. & LT.

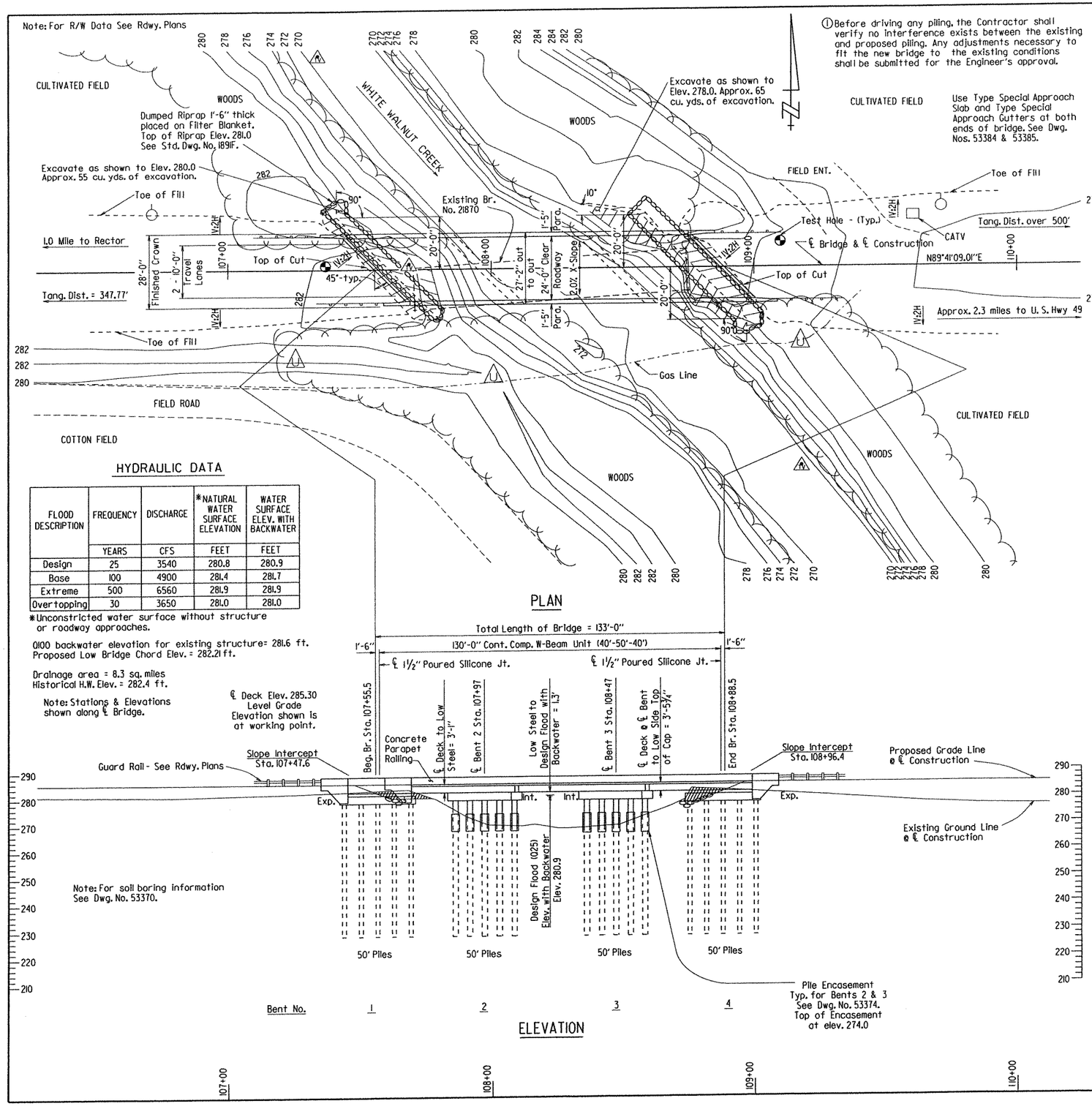
+56 272.90 LT.
+56 272.90 RT.

115+00 116+00 +56.37

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5360
DAVID R. MASON

4/25/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BRI112	14	60
				(1)	04923 - LAYOUT - 53369			



HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	*NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	25	3540	280.8	280.9
Base	100	4900	281.4	281.7
Extreme	500	6560	281.9	281.9
Overtopping	30	3650	281.0	281.0

*Unconstricted water surface without structure or roadway approaches.

0100 backwater elevation for existing structure= 281.6 ft.
Proposed Low Bridge Chord Elev. = 282.21 ft.

Drainage area = 8.3 sq. miles
Historical H.W. Elev. = 282.4 ft.

GENERAL NOTES

BENCH MARK: 902. CPS in Power Pole #56, 21.53' Left of Station 112+71, Elevation 279.03.

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 Specification unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (Fifth Edition, 2010 with 2010 Interims).

LIVE LOADING: HL-93 SEISMIC ZONE: 3

MATERIALS AND STRENGTHS:

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

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

(1) STEEL SHELL PILING: Piling for Bents 1 & 4 shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 130 tons per pile and to a tip elevation of 232.0 or lower. Piling for Bents 2 and 3 shall be 24" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 230 tons per pile and to a tip elevation of 229.0 or lower. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place.

Length of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. No payment will be made for cut-off or build-up. Test piles are not required but may be driven for the Contractor's information in accordance with Subsection 805.08(g). No piles will be paid for as test piles.

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 a minimum rated hammer energy of 27,000 ft. lbs. per blow will be required to obtain the ultimate bearing capacity at Bent Nos. 1 & 4. It is estimated that a minimum rated hammer energy of 43,200 ft. lbs. per blow will be required to obtain the ultimate bearing capacity at Bent Nos. 2 & 3.

PILE ENCASEMENTS: Pile encasements are required for Bents 2 & 3. See Dwg. No. 53374.

PREBORING: Water jetting, preboring, or other methods as approved by the Engineer may be needed to achieve the minimum tip elevation. Any cost associated with achieving the minimum tip elevation shall be included in the item "Steel Shell Piling (18" dia.)" or "Steel Shell Piling (24" dia.)".

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

DETAIL DRAWINGS:	DRAWING NO.
End Bents	53371 - 53372
Int. Bents	53373
Concrete Filled Steel Shell Piles and Pile Encasements	53374
130' Cont. Comp. W-Beam Unit	53375 - 53382
Elastomeric Bearings	53383
Type Special Approach Gutters	53384
Type Special Approach Slab	53385

EXISTING BRIDGE: Existing Bridge No. 21870 (log mile 0.89) is 16.2' wide and 105' long and consists of three steel beam spans with a timber deck supported by timber trestle pile bents. The existing bridge occupies the same location as the proposed new bridge.

REMOVAL AND SALVAGE: The Existing Bridge No. 21870 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: The existing road will be closed to traffic during construction of the proposed bridge.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/29/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER WHITE WALNUT CREEK
WHITE WALNUT CREEK STR. & APPRS. (S)
CLAY COUNTY

COUNTY ROUTE 72

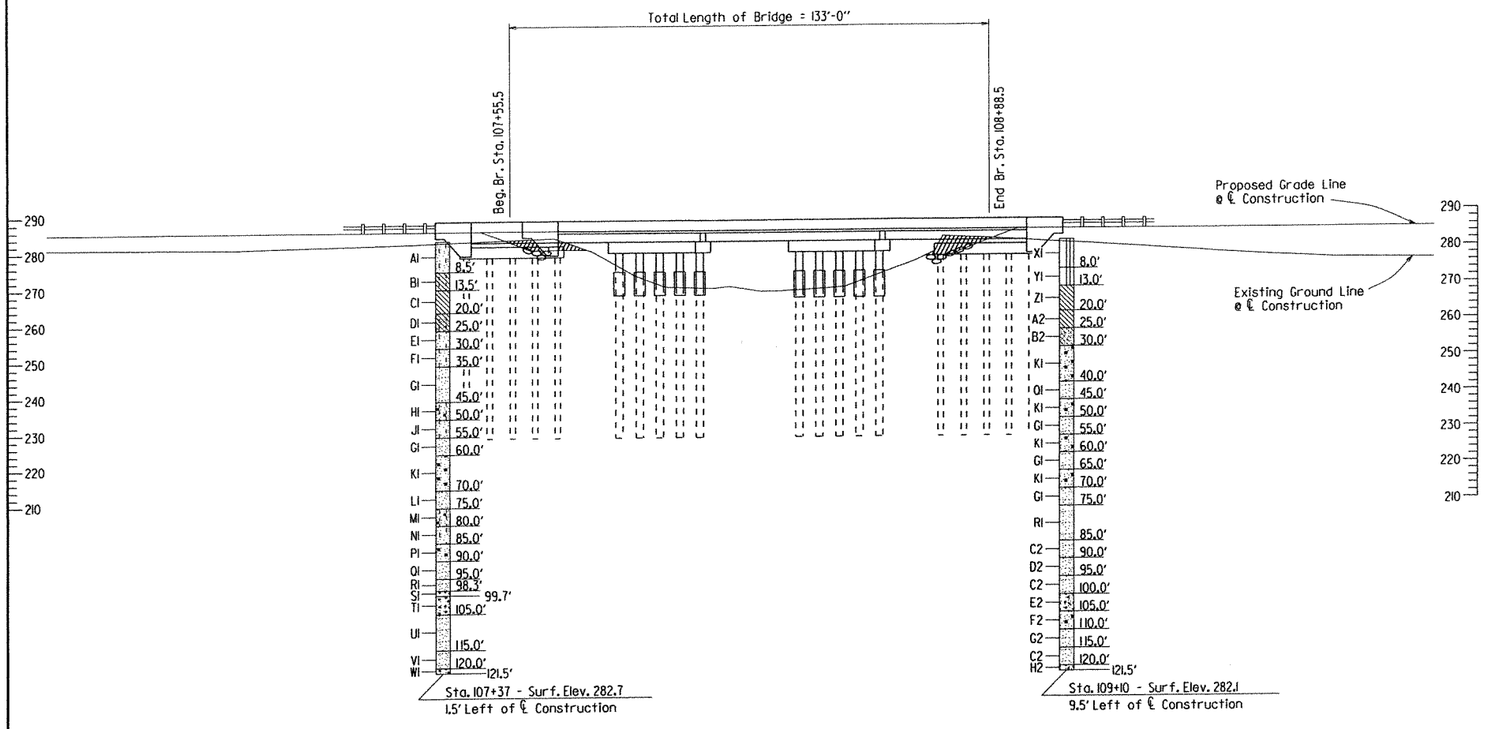
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CJR DATE: 8/10/11 FILENAME: bbr112_ll.dgn
CHECKED BY: MVB DATE: 9/15/11 SCALE: 1" = 20'
DESIGNED BY: CJR DATE: 7/11

BRIDGE NO. 04923 DRAWING NO. 53369

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.		BRI112	15	60
				(1)	04923 - LAYOUT - 53370			



ELEVATION

"N" VALUES

Sta. 107+37 - 1.5' Left of ℄ Construction

4.0- 5.0, N=6
9.0- 10.0, N=10
14.0- 15.0, N=13
20.5- 21.5, N=7
25.5- 26.5, N=17
30.5- 31.5, N=18
35.5- 36.5, N=15
40.5- 41.5, N=20
45.5- 46.5, N=19
50.5- 51.5, N=27
55.5- 56.5, N=17
60.5- 61.5, N=22
65.5- 66.5, N=22
70.5- 71.5, N=19
75.5- 76.5, N=32
80.5- 81.5, N=38
85.5- 86.5, N=20
90.5- 91.5, N=45
95.5- 96.5, N=22
100.5-101.5, N=21
105.5-106.5, N=18
110.5-111.5, N=18
115.5-116.5, N=38
120.5-121.5, N=18

Sta. 109+10 - 9.5' Left of ℄ Construction

3.5- 4.5, N=10
8.5- 9.5, N=27
13.5- 14.5, N=21
20.5- 21.5, N=11
25.5- 26.5, N=20
30.5- 31.5, N=18
35.5- 36.5, N=19
40.5- 41.5, N=32
45.5- 46.5, N=23
50.5- 51.5, N=24
55.5- 56.5, N=19
60.5- 61.5, N=30
65.5- 66.5, N=19
70.5- 71.5, N=22
75.5- 76.5, N=23
80.5- 81.5, N=25
85.5- 86.5, N=22
90.5- 91.5, N=27
95.5- 96.5, N=21
100.5-101.5, N=19
105.5-106.5, N=26
110.5-111.5, N=22
115.5-116.5, N=37
120.5-121.5, N=16

BORING LEGEND

A1-Moist, Loose, Brown Silty Sand
B1-Moist, Stiff, Gray Silty Clay
C1-Moist, Stiff, Brown and Gray Clay
D1-Wet, Medium Stiff, Brown Sandy, Silty Clay
E1-Wet, Medium Dense, Brown Silty Sand
F1-Wet, Medium Dense, Brown Sand with Silt and Trace of Organic Matter
G1-Wet, Medium Dense, Gray Sand
H1-Wet, Medium Dense, Gray Sand with Silt and Organic Matter
J1-Wet, Medium Dense, Gray Sand with Silt
K1-Wet, Medium Dense, Gray Sand with Organic Matter
L1-Wet, Medium Dense, Gray Sand
M1-Wet, Dense, Gray Sand with Silt and Organic Matter
N1-Wet, Dense, Gray Sand with Silt and Trace of Gravel
P1-Wet, Medium Dense, Gray Sand with Organic Matter
Q1-Wet, Dense, Gray Sand with Trace of Organic Matter
R1-Wet, Medium Dense, Gray Sand with Trace of Organic Matter
S1-Gravel
T1-Wet, Medium Dense, Gray Sand with Gravel
U1-Wet, Medium Dense, Gray Sand with some Pea Gravel
V1-Wet, Dense, Gray Sand with some Pea Gravel
W1-Wet, Medium Dense, Gray Sand with Pea Gravel and some Organic Matter
X1-Moist, Loose, Brown Silt
Y1-Moist, Medium Dense, Light Brown Silt
Z1-Moist, Very Stiff, Brown Clay with some Organic Matter
A2-Moist, Stiff, Brown and Gray Clay with some Organic Matter
B2-Moist, Medium Dense, Brown and Gray Sand with Clay
C2-Wet, Medium Dense, Gray Sand with Trace of Gravel and Organic Matter
D2-Wet, Medium Dense, Gray Sand with Trace of Gravel
E2-Wet, Medium Dense, Gray Sand with Pea Gravel
F2-Wet, Medium Dense, Gray Sand with Organic Matter and Trace of Gravel
G2-Wet, Medium Dense, Gray Sand with Trace of Pea Gravel
H2-Wet, Medium Dense, Gray Sand with Pea Gravel

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
11-28-13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE OVER
WHITE WALNUT CREEK
WHITE WALNUT CREEK STR. & APPRS. (S)
CLAY COUNTY

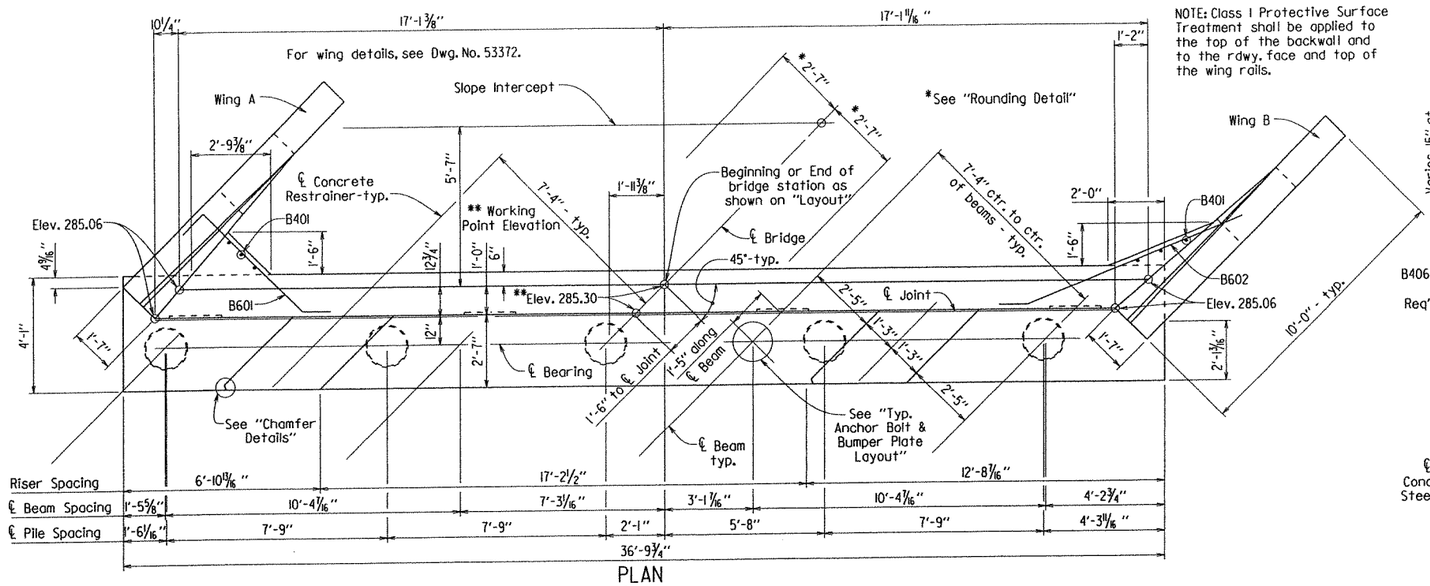
COUNTY ROUTE 72
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CJR DATE: 4/19/12 FILENAME: bbr1112_11.dgn
CHECKED BY: MCB DATE: 5/15/12 SCALE: 1" = 20'
DESIGNED BY: CJR DATE: 5/11

BRIDGE NO. 04923 DRAWING NO. 53370

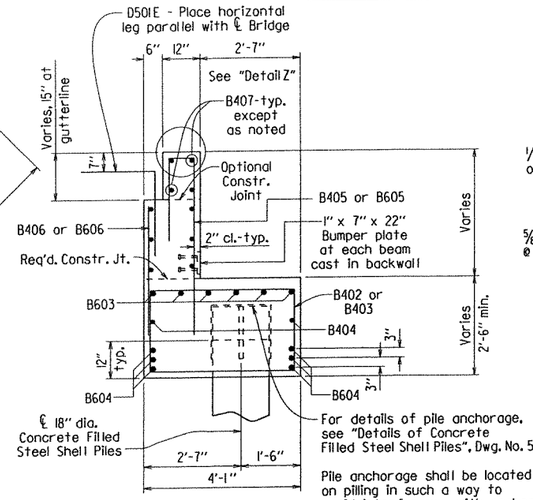
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BRI112	16	60
				①	04923 -	END BENTS	- 53371	

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



PLAN

Scale: ⅜" = 1'-0"

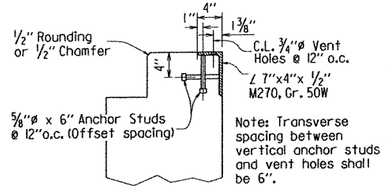


SECTION A-A

Scale: ½"= 1'-0"

For details of pile anchorage, see "Details of Concrete Filled Steel Shell Piles", Dwg. No. 53374.

Pile anchorage shall be located on pilling in such a way to avoid interference with anchor bolts.



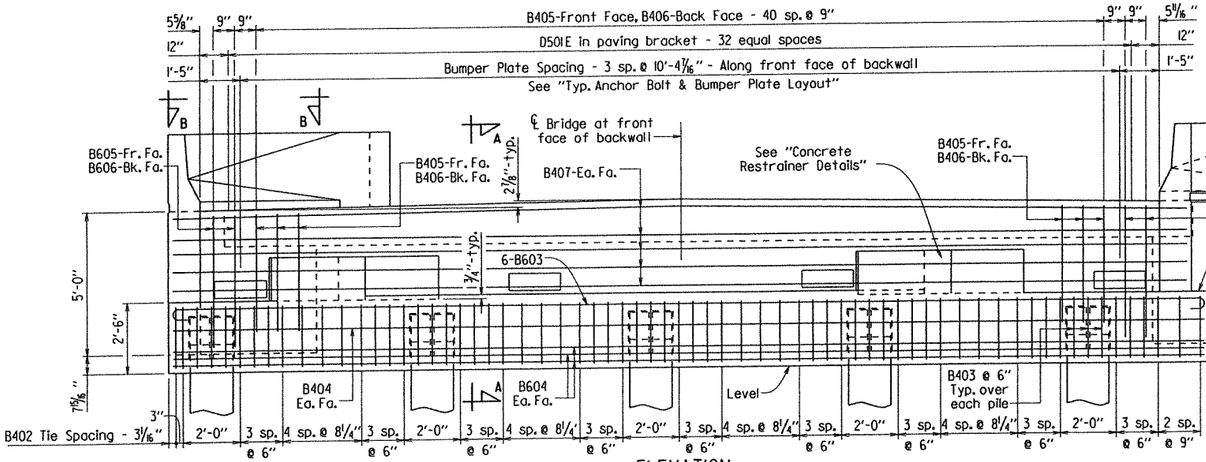
Note: Transverse spacing between vertical anchor studs and vent holes shall be 6".

Note: For additional joint details, see Dwg. No. 53382.

Note: Concrete shall be hand packed under the joint armor.

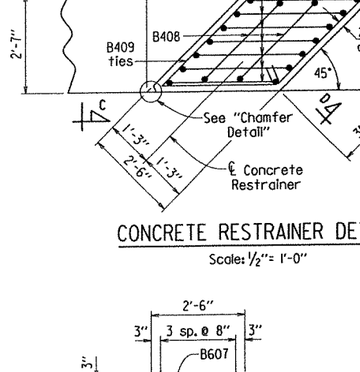
DETAIL Z

No Scale



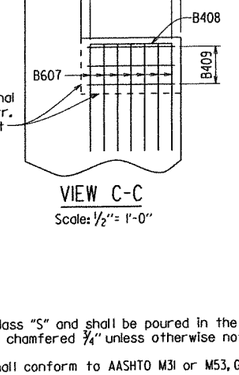
ELEVATION

Looking Back - Bent 1
Looking Ahead - Bent 4
Scale: ⅜" = 1'-0"



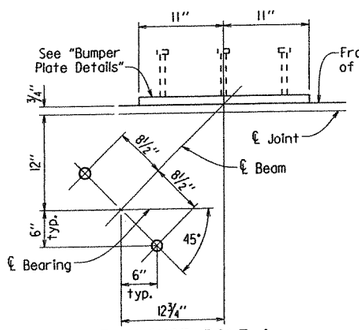
CONCRETE RESTRAINER DETAILS

Scale: ½"= 1'-0"



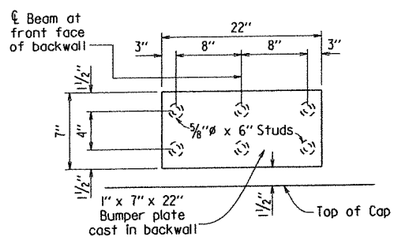
VIEW C-C

Scale: ½"= 1'-0"



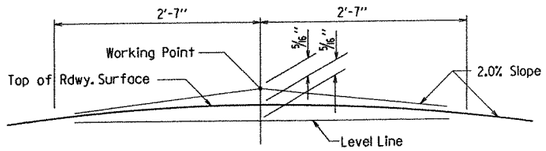
TYP. ANCHOR BOLT & BUMPER PLATE LAYOUT

No Scale



BUMPER PLATE DETAILS

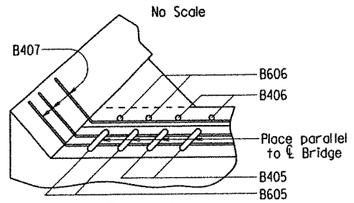
No Scale



NOTE: Working Point matches Theoretical Roadway Grade.

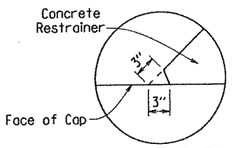
ROUNDING DETAIL

No Scale



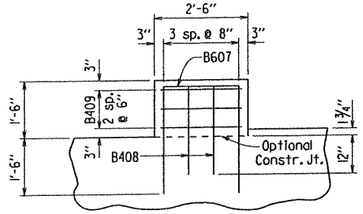
VIEW B-B

No Scale



CHAMFER DETAIL

No Scale



SECTION D-D

Scale: ½"=1'-0"

GENERAL NOTES

All concrete shall be Class "S" and shall be poured in the dry. All exposed corners to be chamfered ¾" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60.

No portion of the backwall shall be poured until the beams are in place. Refer to "Expansion Device Installation at End Bents" notes, Dwg. No. 53382.

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

If anchor bolts are drilled into cap, top reinforcing bars shall be placed to avoid damage.

For additional information, see layout.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
11/2 8/13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF END BENTS
WHITE WALNUT CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

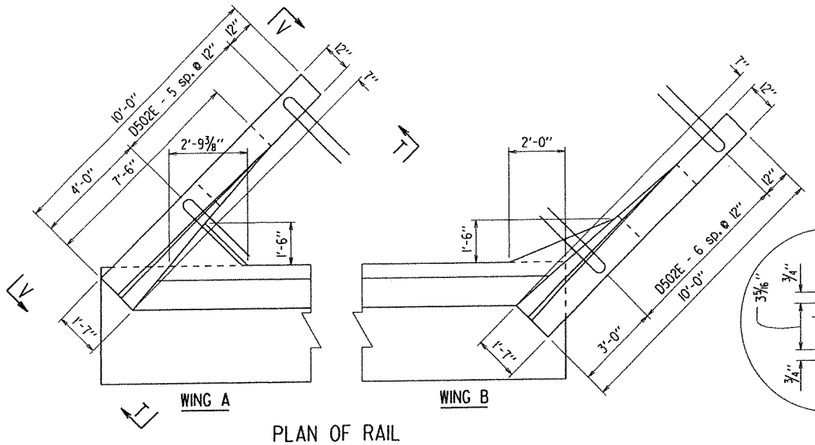
DRAWN BY: KDH DATE: 3-2-12
CHECKED BY: ADH DATE: 11-6-12
DESIGNED BY: DGM DATE: 11/13

FILENAME: bbrIII2_bl.dgn
SCALE: AS NOTED

BRIDGE NO. 04923 DRAWING NO. 53371

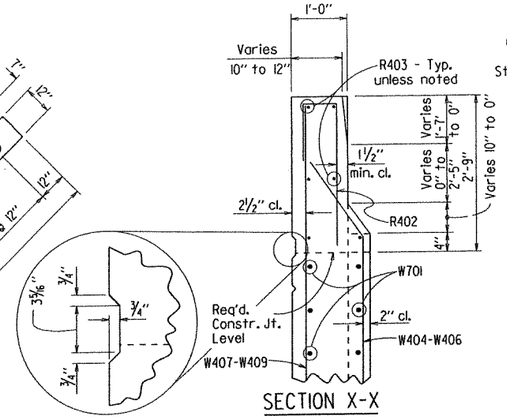
PRINT DATE: 24-JAN-2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BRI112	17	60
				①	04923 -	END BENTS	- 53372	



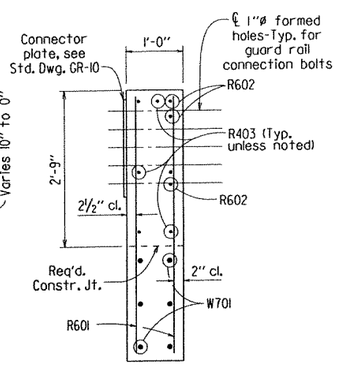
PLAN OF RAIL

Scale: 1/4" = 1'-0"



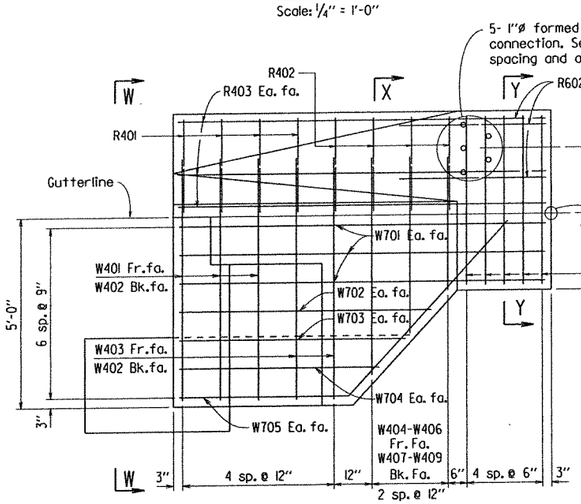
SECTION X-X

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



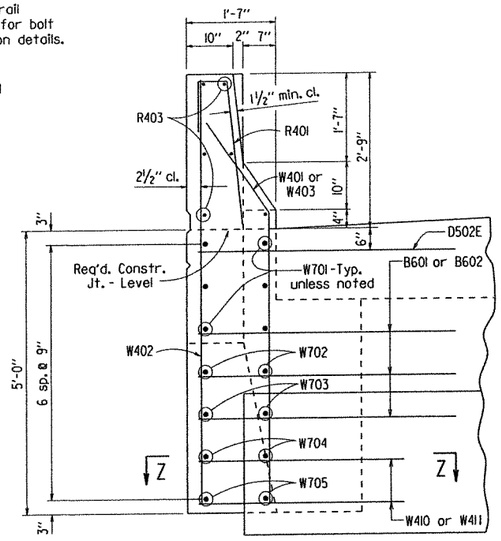
SECTION Y-Y

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



VIEW T-T

Scale: 1/2"= 1'-0"



VIEW W-W

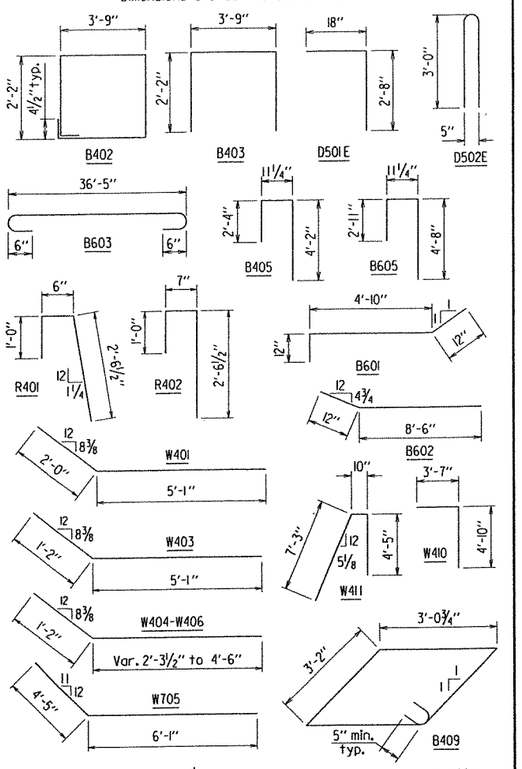
Scale: 3/4" = 1'-0"

BAR LIST - PER BENT

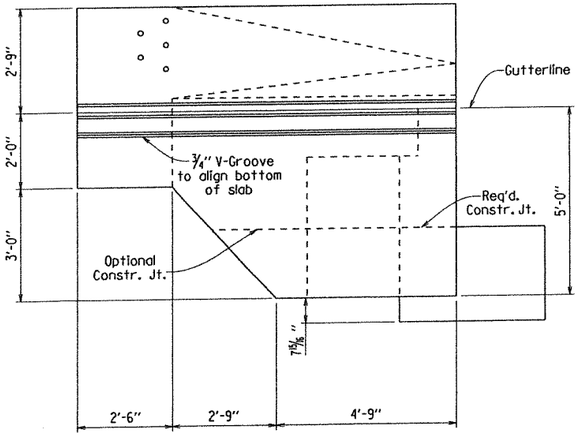
MARK	NO. REQ'D.	LENGTH	P.D.
B401	6	3'-5"	Str.
B402	52	12'-2"	2"
B403	15	7'-11"	2"
B404	2	36'-5"	Str.
B405	41	7'-4"	2"
B406	41	2'-11"	Str.
B407	10	36'-8"	2"
B408	4	7'-7"	2"
B409	6	13'-0"	2"
R401	8	3'-11"	2"
R402	8	4'-0"	2"
R403	12	9'-8"	Str.
W401	6	7'-1"	2"
W402	10	7'-5"	Str.
W403	4	6'-3"	2"
W404-W406	2 each	Var. 3'-6" to 5'-8"	2"
W407-W409	2 each	Var. 4'-7" to 6'-10"	Str.
W410	2	8'-4"	2"
W411	2	12'-4"	2"
B601	3	6'-7"	4 1/2"
B602	3	9'-6"	4 1/2"
B603	6	37'-9"	4 1/2"
B604	6	36'-5"	Str.
B605	4	8'-3"	4 1/2"
B606	4	3'-5"	Str.
B607	14	8'-4"	4 1/2"
R601	20	4'-5"	Str.
R602	6	5'-0"	Str.
W701	12	9'-8"	Str.
W702	4	6'-6"	Str.
W703	4	5'-11"	Str.
W704	4	5'-3"	Str.
W705	4	10'-4"	5 1/4"
D501E	33	4'-1"	3 3/4"
D502E	13	6'-3"	3 3/4"

BENDING DIAGRAMS

Dimensions are out to out of bars.

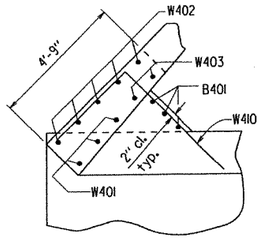


Note: Bars designated with an 'E' suffix shall be epoxy coated.

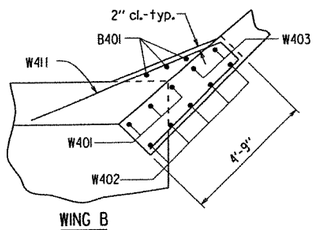


VIEW V-V

Scale: 1/2"= 1'-0"



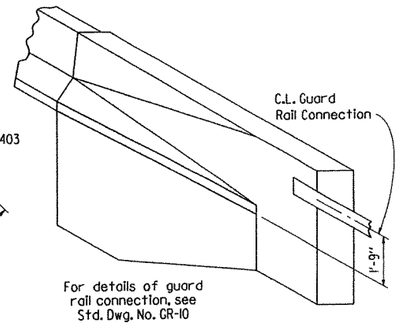
WING A



WING B

SECTION Z-Z

Scale : 3/8" = 1'-0"



For details of guard rail connection, see Std. Dwg. No. GR-10

THREE DIMENSIONAL VIEW OF RAIL

No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
11/2/12
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF END BENTS
WHITE WALNUT CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

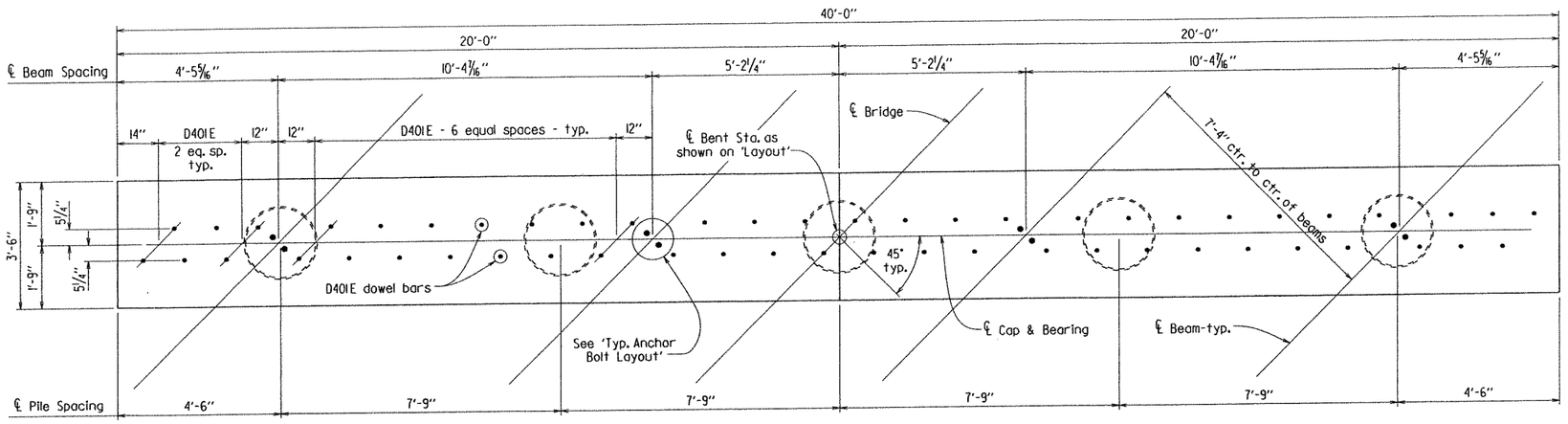
DRAWN BY: KDH DATE: 3-6-12 FILENAME: bbr1112_bl.dgn
CHECKED BY: ADH DATE: 11-7-12 SCALE: AS NOTED
DESIGNED BY: DGM DATE: 11/11

BRIDGE NO. 04923 DRAWING NO. 53372

PRINT DATE: 24-JAN-2013

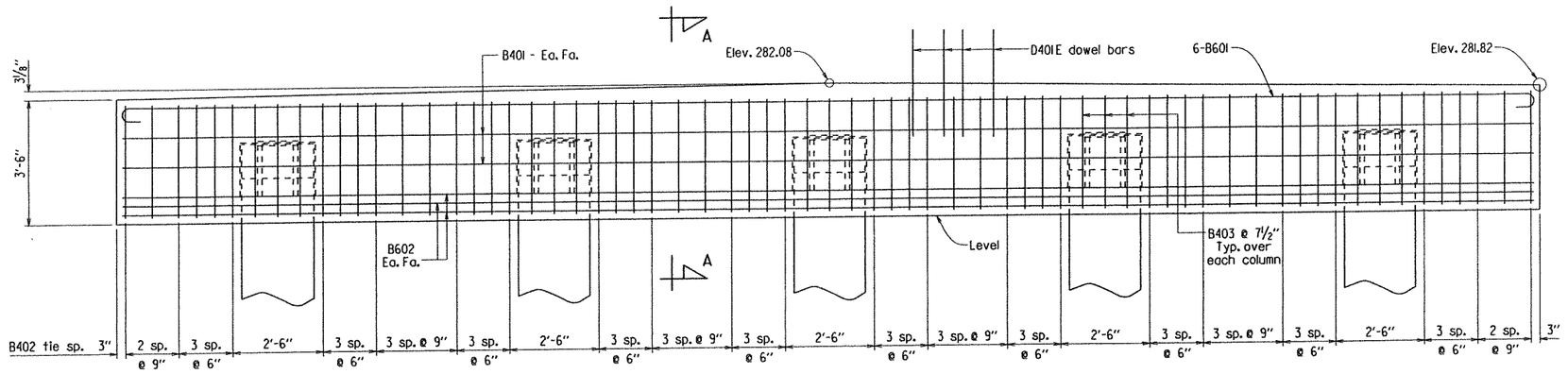
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BRI112	18	60
(1) 04923 -		INT. BENTS	- 53373	



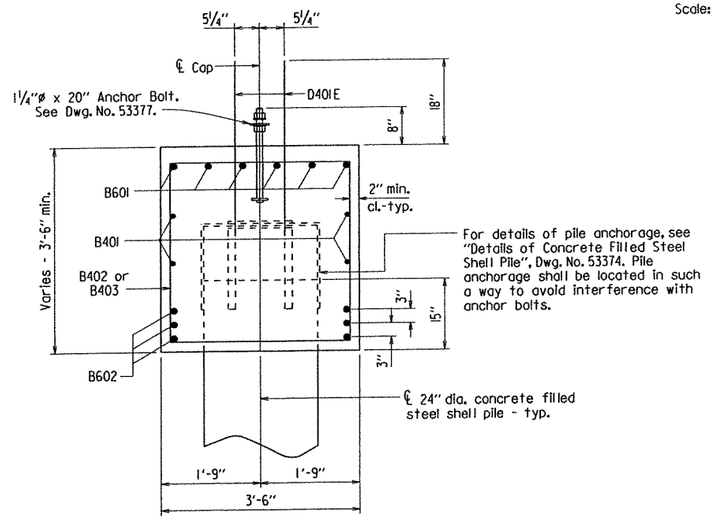
PLAN

Scale: ½" = 1'-0"



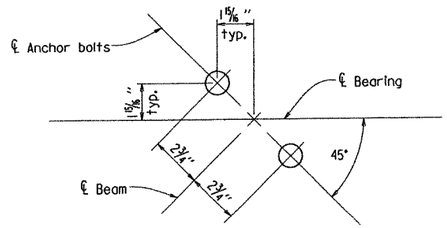
ELEVATION

Scale: ½" = 1'-0"



SECTION A-A

Scale: ¾" = 1'-0"



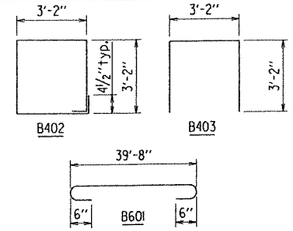
TYP. ANCHOR BOLT LAYOUT

No Scale

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	4	39'-8"	Str.
B402	52	13'-0"	2"
B403	15	9'-4"	2"
D401E	54	3'-0"	Str.
B601	6	41'-0"	4½"
B602	6	39'-8"	Str.

BENDING DIAGRAMS



Dimensions are out to out of bars.

Note: Bars designated with an 'E' suffix shall be epoxy coated.

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 ¾" unless otherwise noted.

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

If anchor bolts are drilled into cap, top reinforcing bars shall be properly placed to avoid damage.

For additional information, See Layout.

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

BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENTS WHITE WALNUT CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-24-12 FILENAME: bbri112_b2.dgn

CHECKED BY: ADN DATE: 11-7-12 SCALE: AS NOTED

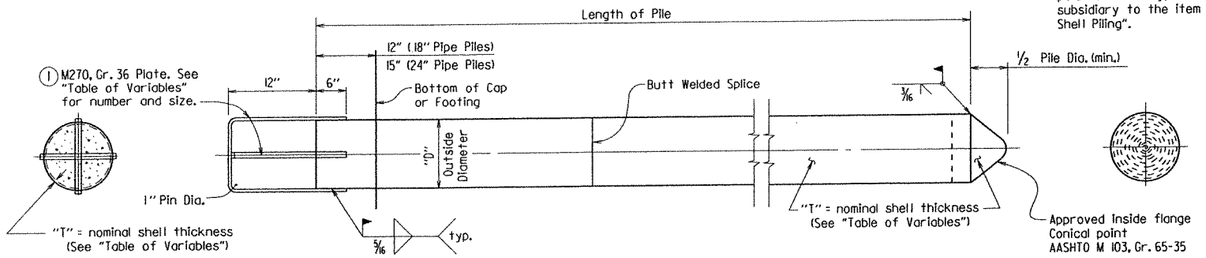
DESIGNED BY: DGM DATE: 11/11

BRIDGE NO. 04923 DRAWING NO. 53373

PRINT DATE: 24-JAN-2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BRI112	19	60

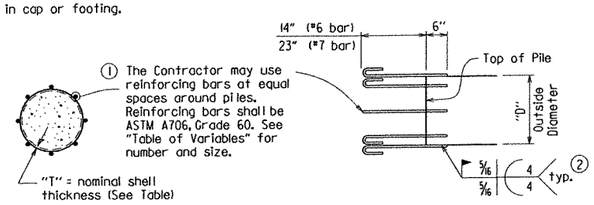
(1) 04923 - STEEL SHELL PILES - 53374



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

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

CONCRETE FILLED STEEL SHELL PILE



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

GENERAL NOTES FOR CONCRETE FILLED STEEL SHEEL PILES:

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

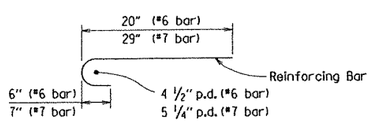
Concrete used for filling of steel shell shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. and shall be poured in the dry.

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

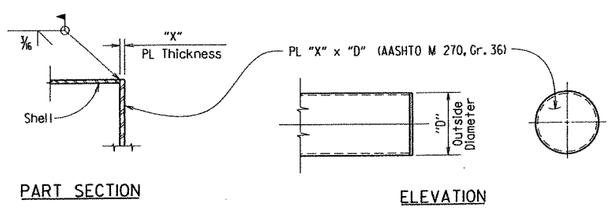
See Bridge Layout for size and estimated length of steel shell piles and for additional driving information.

Concrete, structural steel, reinforcing steel (including welding), and painting will not be paid for separately, but will be considered subsidiary to the item "Steel Shell Piling".

ALTERNATE PILE ANCHORAGE DETAIL

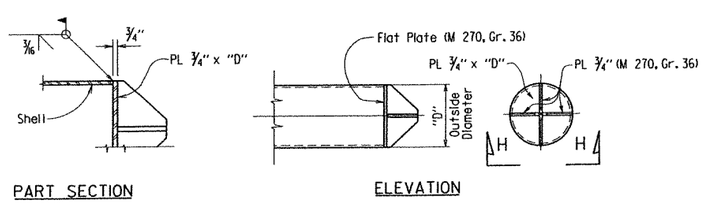


HOOKED BAR DETAIL



PART SECTION ELEVATION

ALTERNATE FLAT TIP DETAIL

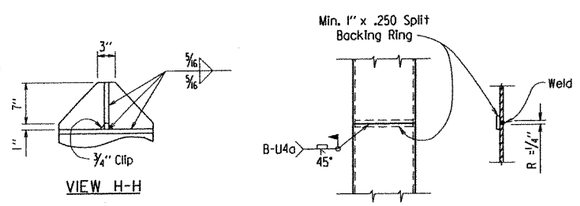


PART SECTION ELEVATION

ALTERNATE VANED TIP DETAIL

TABLE OF VARIABLES

BRIDGE NUMBER	OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	PLATE THICKNESS "X"	PILE STRAPS	
				PLATE	REINFORCING
04923	18"	0.50"	1 1/4"	2 @ 1 1/2" x 1 3/8"	8 - #6
	24"	0.50"	1 3/4"	3 @ 1 1/2" x 1 3/4"	8 - #7



TYPICAL SPLICE DETAILS

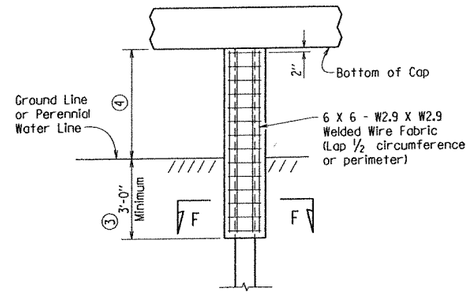
GENERAL NOTES FOR PILE ENCASEMENTS:

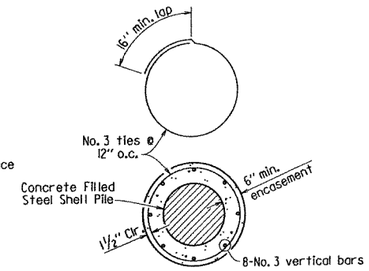
See Bridge Layout for required location of pile encasements. Only interior trestle pile bents shall have pile encasements.

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

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

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





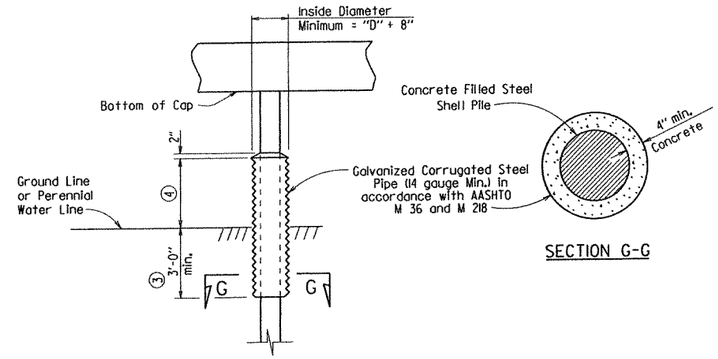
SECTION F-F (REINF. ALTERNATE)

PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES (Shown with Encasement to Bottom of Cap) (5)

(3) Unless otherwise noted on Bridge Layout.

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

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



SECTION G-G

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES (Shown with Partial Height Encasement)

DETAILS OF CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS WHITE WALNUT CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

STATE OF ARKANSAS Carl T. Fuselier REGISTERED PROFESSIONAL ENGINEER No. 7510 CARL T. FUSELIER

BRIDGE ENGINEER

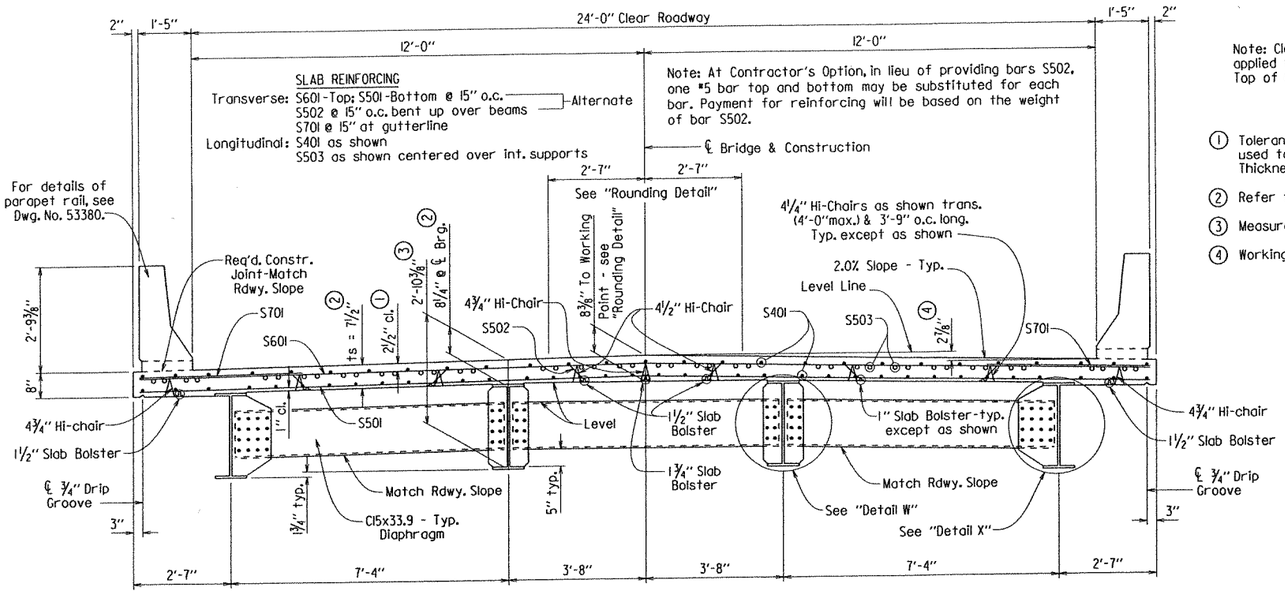
DRAWN BY: ADN DATE: 10/26/12 FILENAME: bbr112_ssp.dgn

CHECKED BY: MCB DATE: 11/6/12 SCALE: AS NOTED

DESIGNED BY: OGM DATE: 11/11

BRIDGE NO. 04923 DRAWING NO. 53374

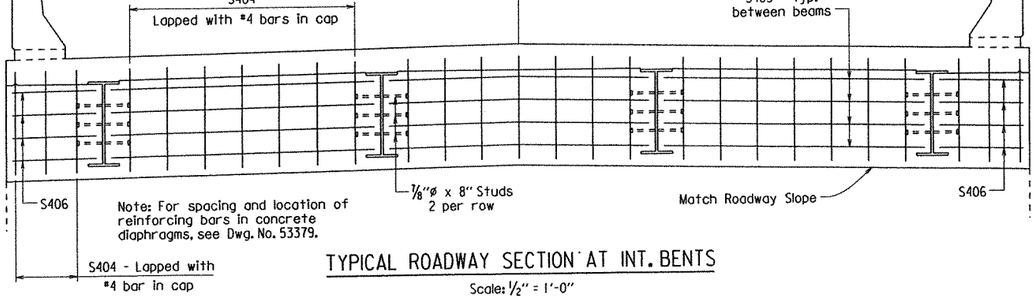
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BRI112	20	60
				(1) 04923 - 130 FT. UNIT			- 53375	



TYPICAL ROADWAY SECTION

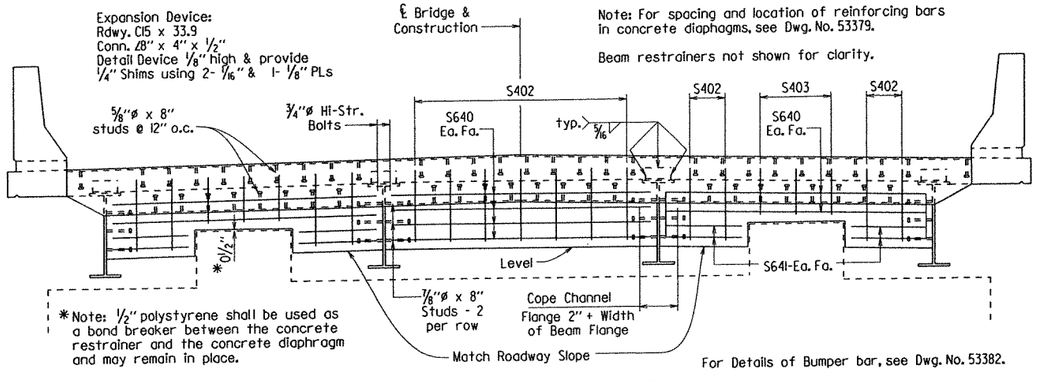
Scale: ½" = 1'-0"

Note: Reinforcing steel, details and dimensions shown in "Typical Roadway Section" are similar to "Typical Roadway Section at Int. Bents" except as noted.



TYPICAL ROADWAY SECTION AT INT. BENTS

Scale: ½" = 1'-0"



TYPICAL SECTION THRU JOINT

Scale: ½" = 1'-0"

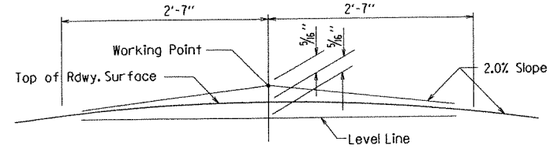
Note: Class I Protective Surface Treatment shall be applied to the Roadway Surface and the Face and Top of Concrete Parapet Rail.

(1) Tolerance : Minus = ¼", Plus equal to amount of Slab Thickening used to meet Slab Thickness Tolerance - see "Adjustment for Slab Thickness Tolerance".

(2) Refer to "Adjustment for Slab Thickness Tolerance".

(3) Measured at ℄ Bearing & ℄ Beam

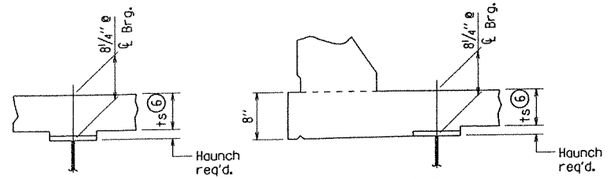
(4) Working Point to gutterline - See "Rounding Detail"



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

No Scale



(6) Tolerance when removable deck forming is used is +½", -¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

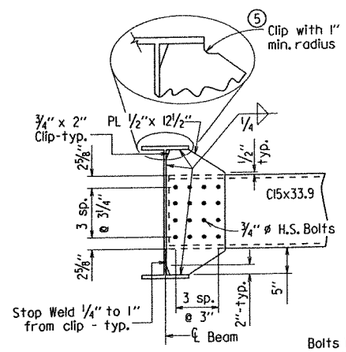
Note : ts = slab thickness as shown in "Typical Roadway Section".

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 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

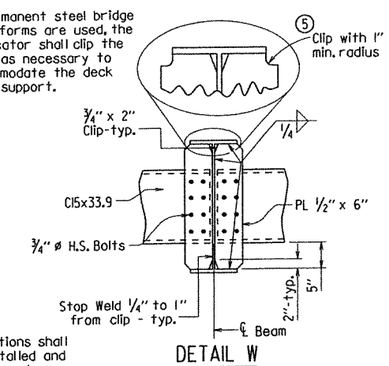
Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 14991 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale



(5) If permanent steel bridge deck forms are used, the fabricator shall clip the plate as necessary to accommodate the deck form support.



Bolts in connections shall be properly installed and tightened in accordance with Subsection 807.71.

STATE OF ARKANSAS
Carl L. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
1/29/13
CARL L. FUSSELIER

BRIDGE ENGINEER

SHEET 1 OF 7
DETAILS OF 130' CONTINUOUS COMPOSITE W-BEAM UNIT WHITE WALNUT CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

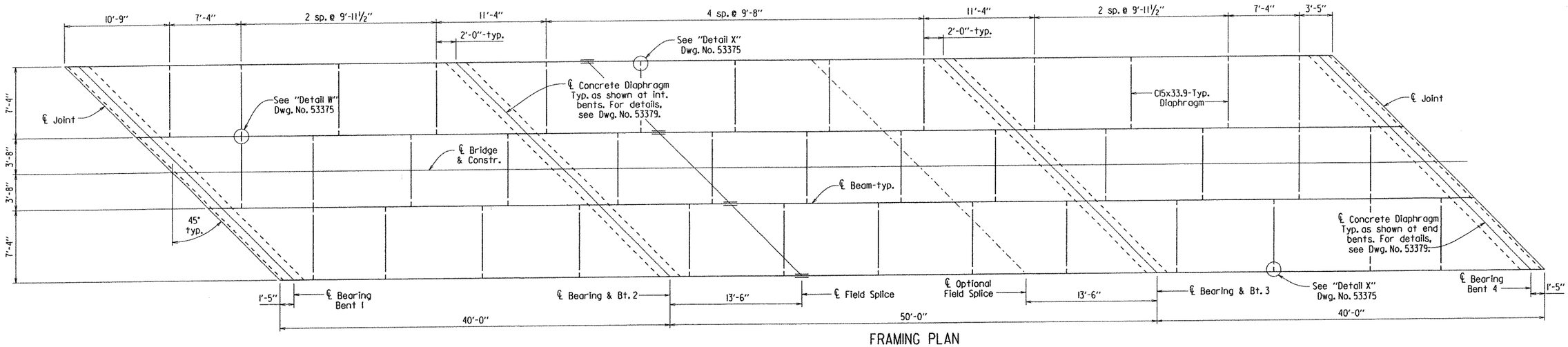
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 11-7-11 FILENAME: bbrl12_sl.dgn
CHECKED BY: BEF DATE: 11/12 SCALE: AS NOTED
DESIGNED BY: DCM DATE: 10/11

BRIDGE NO. 04923 DRAWING NO. 53375

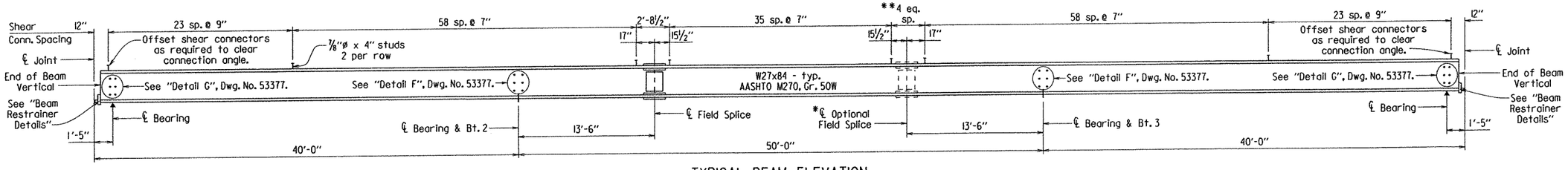
PRINT DATE: 1/24/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BRI112	2	60
				(1) 04923 -	130 FT. UNIT	- 53376		



FRAMING PLAN

Scale: 3/16" = 1'-0"



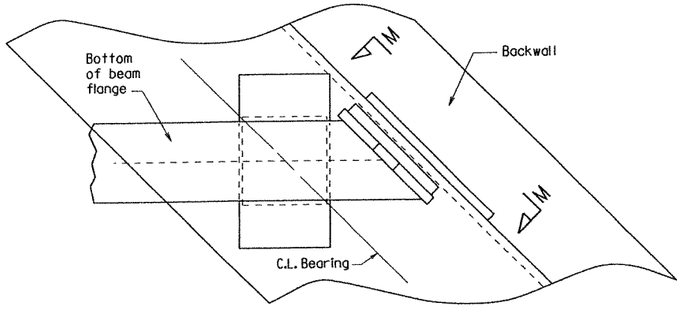
TYPICAL BEAM ELEVATION

No Scale

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

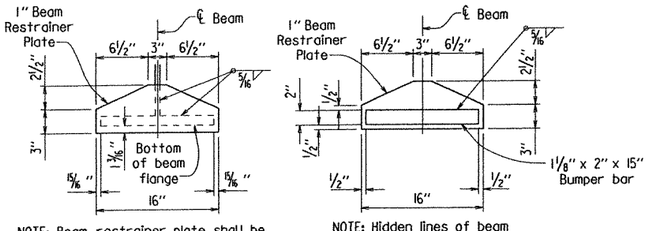
* At the contractor's option, a field splice may be provided at this location. Payment will be at the contractor's expense.

** If the optional field splice is used, eliminate the shear connectors in this region.



BEAM RESTRAINER DETAILS

No Scale



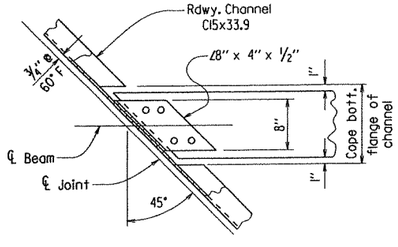
NOTE: Beam restrainer plate shall be centered on each beam line.

Bumper bar not shown in this view.

VIEW M-M

No Scale

NOTE: Hidden lines of beam are not shown in this view.



CHANNEL CONNECTION DETAIL

No Scale

For "Details of Anchor Bolts at Bents 2 & 3", see Dwg. No. 53377.

For details of elastomeric bearings at Bents 1 & 4, see Dwg. No. 53383.

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
11/2/13

BRIDGE ENGINEER

SHEET 2 OF 7
DETAILS OF 130' CONTINUOUS COMPOSITE W-BEAM UNIT
WHITE WALNUT CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

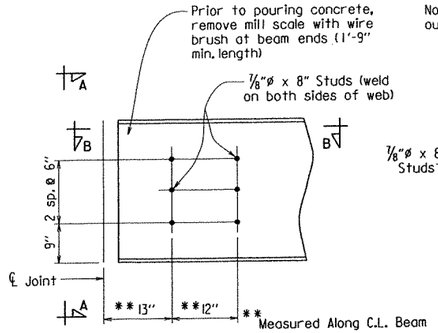
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 11-8-11 FILENAME: bbr112_sl.dgn
CHECKED BY: BEF DATE: 11/12 SCALE: AS NOTED
DESIGNED BY: DGM DATE: 10/11

BRIDGE NO. 04923 DRAWING NO. 53376

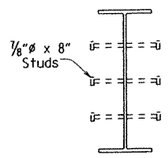
PRINT DATE: 1/24/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BRI112	22	60
				(1) 04923 -		130 FT. UNIT	- 53377	

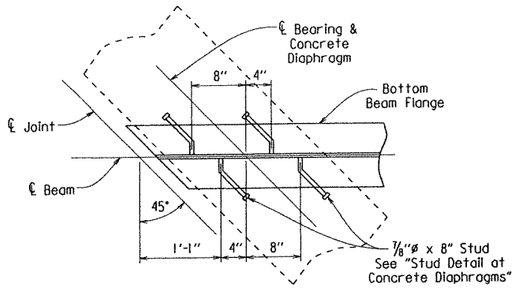


DETAIL G
No Scale

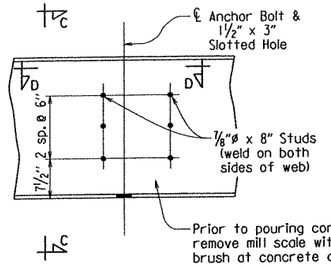
Note: Studs shall not be placed on the outside face of the exterior beam web.



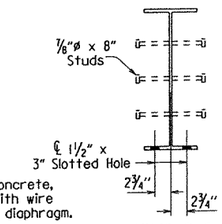
VIEW A-A
No Scale



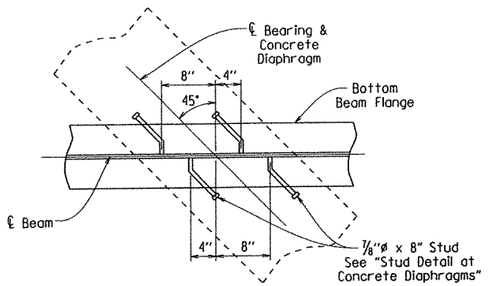
SECTION B-B
No Scale



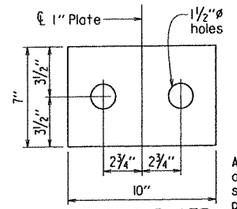
DETAIL F
No Scale



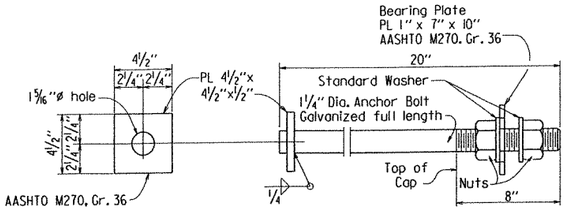
VIEW C-C
No Scale



SECTION D-D
No Scale



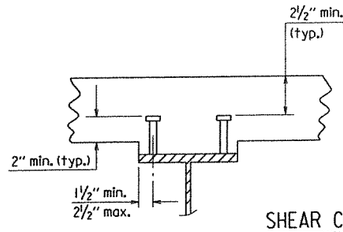
BEARING PLATE
No Scale



Anchor bolts shall comply with AASHTO M314, Grade 55, with Supplementary Requirement S1, and galvanized according to subsection 807.07. Nuts for bolts shall be as specified in subsection 807.07. Plates, anchor bolts, nuts and washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)"

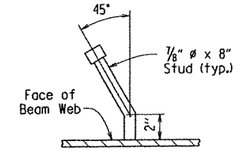
Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.

DETAILS OF ANCHOR BOLTS AT BENTS 2 & 3
No Scale

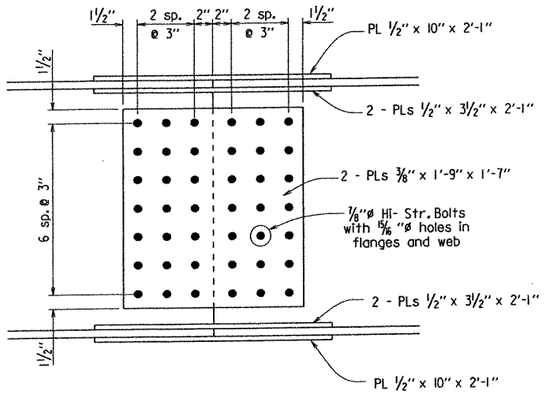


SHEAR CONNECTOR DETAIL
No Scale

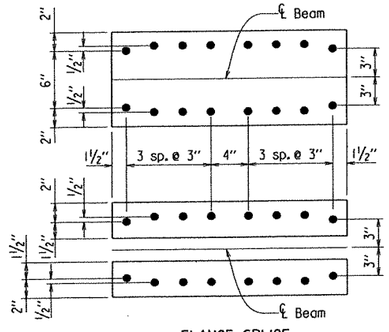
Stud Shear Connectors shown shall be 7/8"ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. ¾"ø studs may be used in place of the 7/8"ø studs shown, at the ratio of 1.361 -¾"ø studs in place of one 7/8"ø stud. 7/8"ø studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24".



STUD DETAIL AT CONCRETE DIAPHRAGMS
No Scale



WEB SPLICE



FLANGE SPLICE

Note: All splice plates shall be AASHTO M270, Gr. 50W

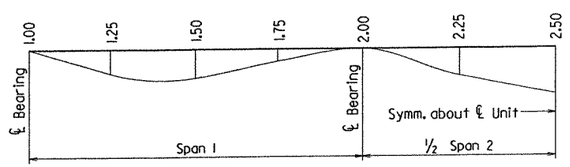
FIELD SPLICE DETAIL
Scale: 1½" = 1'-0"

TABLE OF DEAD LOAD DEFLECTIONS-INCHES

Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Rail	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
Span 1	1.00	0	0	0	0	0	0
	1.25	0.021	0.018	0.150	0.130	0.165	0.146
	1.50	0.024	0.022	0.175	0.151	0.193	0.170
	1.75	0.011	0.009	0.073	0.064	0.081	0.071
	2.00	0	0	0	0	0	0
Sp. 2	2.25	0.026	0.023	0.186	0.161	0.205	0.181
½	2.50	0.045	0.040	0.319	0.276	0.352	0.310

℄ Unit

Note: Table is symmetrical about ℄ Unit.



Camber for Dead Load Deflection +/- ¼" tolerance. Deflections shown are from a chord from ℄ Bearing to ℄ Bearing.

DEAD LOAD DEFLECTION DIAGRAM
No Scale

TABLE FOR WELD

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	5/16"	

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

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
11/29/12

BRIDGE ENGINEER

SHEET 3 OF 7
DETAILS OF 130' CONTINUOUS COMPOSITE W-BEAM UNIT
WHITE WALNUT CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 11-9-11 FILENAME: bbrl112_sl.dgn
CHECKED BY: REF DATE: 11/12 SCALE: AS NOTED
DESIGNED BY: DGM DATE: 10/11

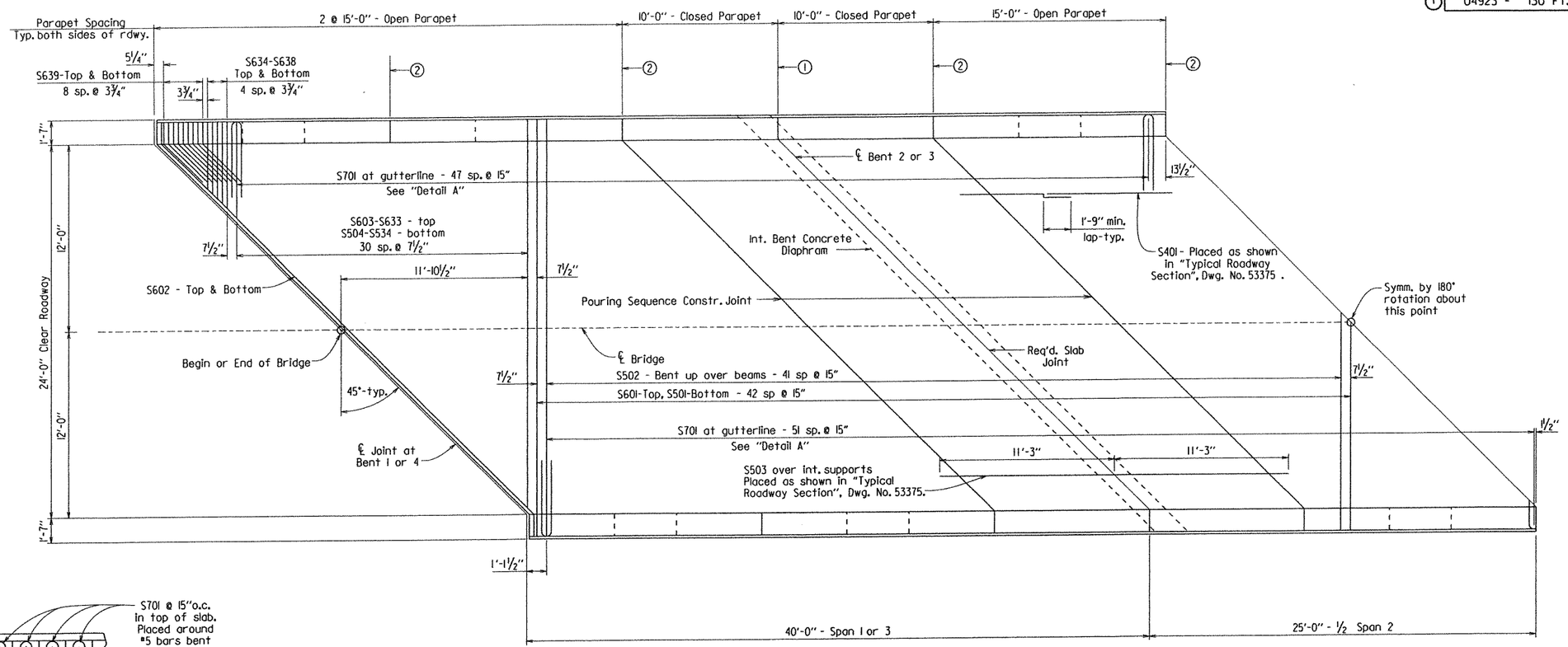
BRIDGE NO. 04923 DRAWING NO. 53377

PRINT DATE: 1/24/2013

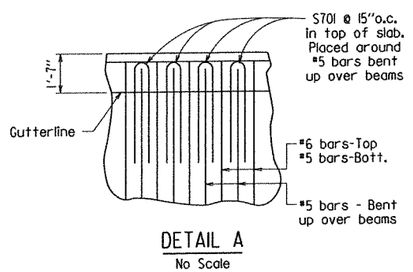
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BRI112	23	60
				①	04923 -	130 FT. UNIT	- 53378	

① ℄ Full-Depth Parapet Joint
(1/4" to 1" max.)
Stop 4" from top of slab.
Typ. both sides of Rdwy.

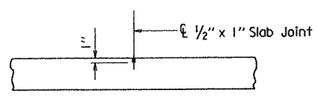
② ℄ Partial-Depth Parapet Joint
(1/4" to 1" max.)
Stop 1'-2" from top of slab.
Typ. both sides of Rdwy.



HALF-REINFORCING PLAN
Scale: 1/4" = 1'-0"



DETAIL A
No Scale



SLAB JOINT DETAIL
No Scale

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

Notes:

Unless otherwise noted, required slab joints and pouring sequence contruction joints shall align with parapet joints at the gutterline.

Construction joints shown are based on Alternate No. 1 Pouring Sequence, see Dwg. No. 53381.

STATE OF ARKANSAS
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1/27/13
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BRIDGE ENGINEER

SHEET 4 OF 7
DETAILS OF 130' CONTINUOUS
COMPOSITE W-BEAM UNIT
WHITE WALNUT CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 11-9-11 FILENAME: bbri112_sl.dgn
CHECKED BY: BEF DATE: 11/12 SCALE: AS NOTED
DESIGNED BY: DEM DATE: 10/11

BRIDGE NO. 04923 DRAWING NO. 53378

PRINT DATE: 1/24/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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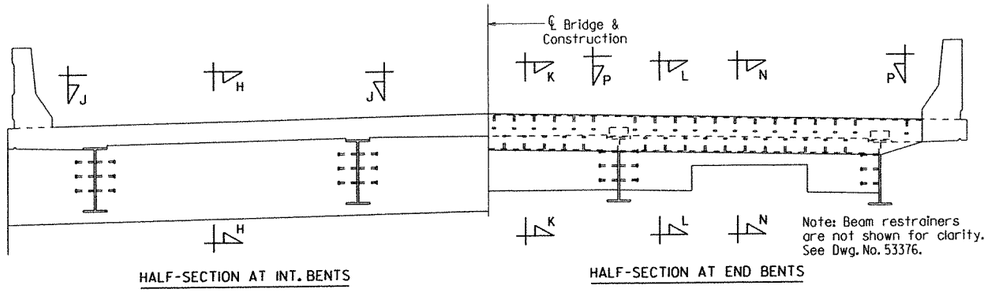
				JOB NO.		BRI112	24	60
				① 04923 -		130 FT. UNIT	- 53379	

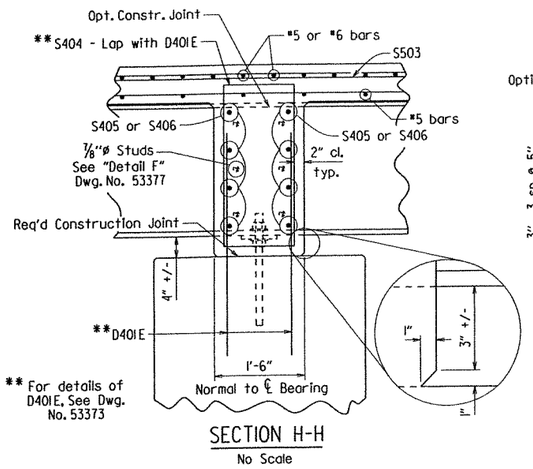


HALF-SECTION AT INT. BENTS

HALF-SECTION AT END BENTS

ROADWAY SECTION AT BENTS SHOWING CONCRETE DIAPHRAGMS

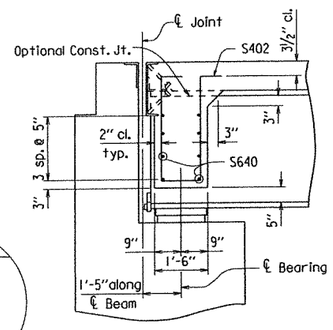
No Scale



** For details of D401E, See Dwg. No. 53373

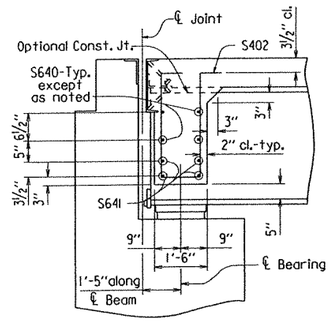
SECTION H-H

No Scale



SECTION K-K

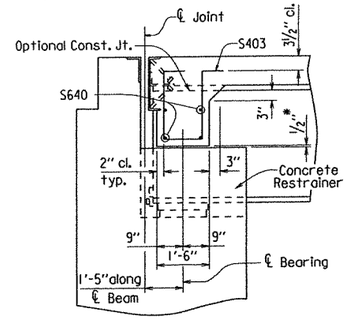
No Scale



SECTION L-L

No Scale

*Note: ½" polystyrene shall be used as a bond breaker between the concrete restrainer and the concrete diaphragm and may remain in place.



SECTION N-N

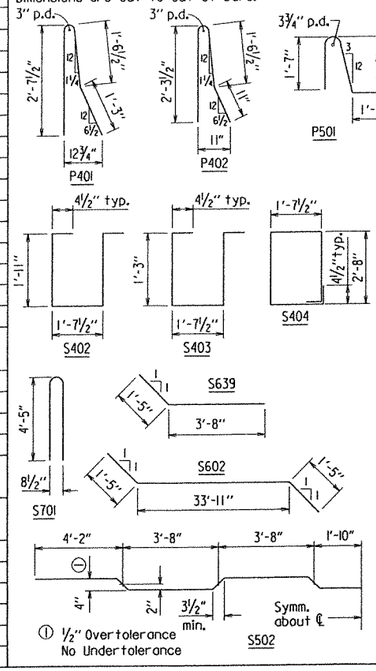
No Scale

BAR LIST

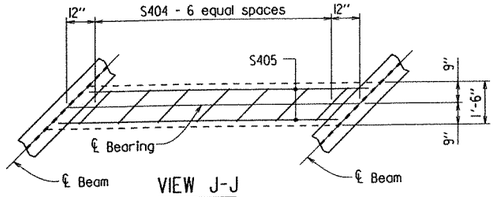
MARK	NO. REQ'D.	LENGTH	P.D.
S401	252	33'-9"	Str.
S402	30	5'-11"	2"
S403	12	4'-7"	2"
S404	54	8'-11"	2"
S405	48	9'-10"	Str.
S406	32	3'-2"	Str.
P401	424	5'-6"	3"
P402	96	4'-10"	3"
P403	56	3'-10"	Str.
P404	56	9'-8"	Str.
P405	84	14'-8"	Str.
S501	85	26'-10"	Str.
S502	84	27'-4"	3"
S503	88	22'-6"	Str.
S504-S534	2 Each	Var. 6'-2" to 24'-11"	Str.
P501	424	4'-8"	3¾"
S601	85	26'-10"	Str.
S602	4	36'-9"	4½"
S603-S633	2 Each	Var. 6'-2" to 24'-11"	Str.
S634-S638	4 Each	Var. 4'-4" to 5'-7"	Str.
S639	36	5'-1"	4½"
S640	24	9'-10"	Str.
S641	32	2'-10"	Str.
S701	200	9'-2"	6¾"

BENDING DIAGRAMS

Dimensions are out to out of bars.



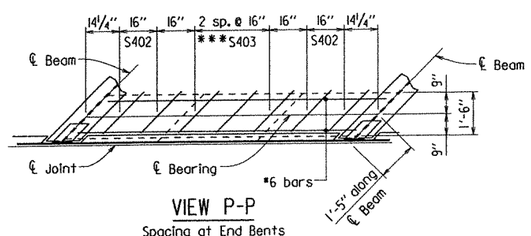
① ½" Overtolerance
No Undertolerance



VIEW J-J

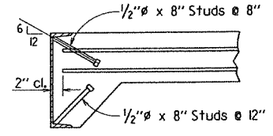
Spacing at Int. Bents
Scale: ⅜" = 1'-0"

***Bars S402 shall be placed here when concrete restrainer is not present.



VIEW P-P

Spacing at End Bents
Scale: ⅜" = 1'-0"



Note: As an alternate to ⅝"ø studs, ½"ø x 8" studs spaced as shown may be used. Use weight of ⅝"ø stud as basis of measurement of structural steel in anchors.

DETAILS OF ALTERNATE ANCHORS

No Scale

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11/20/12
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BRIDGE ENGINEER

SHEET 5 OF 7
DETAILS OF 130' CONTINUOUS COMPOSITE W-BEAM UNIT
WHITE WALNUT CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 11-10-11 FILENAME: bbr112_s1.dgn
CHECKED BY: BEF DATE: 11/12 SCALE: AS NOTED
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BRIDGE NO. 04923 DRAWING NO. 53379

PRINT DATE: 1/24/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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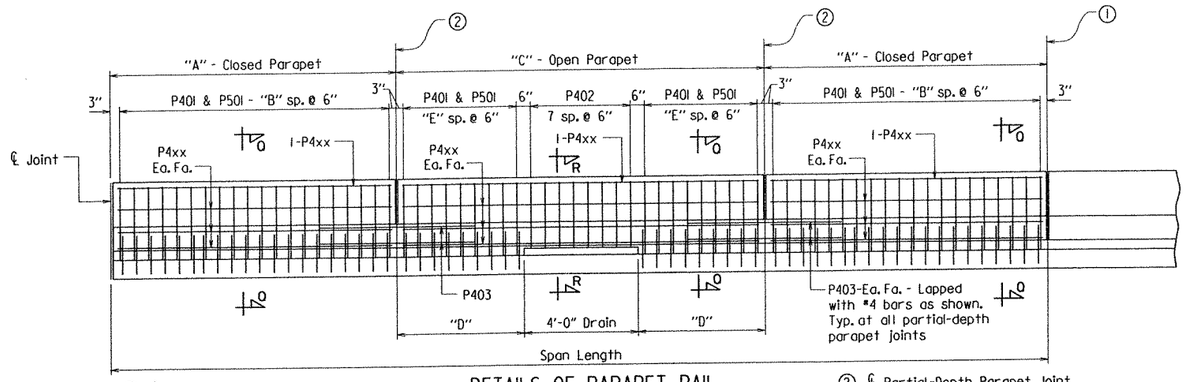
				JOB NO.		BRI112	25	60
				①	04923 - 130 FT. UNIT - 53380				

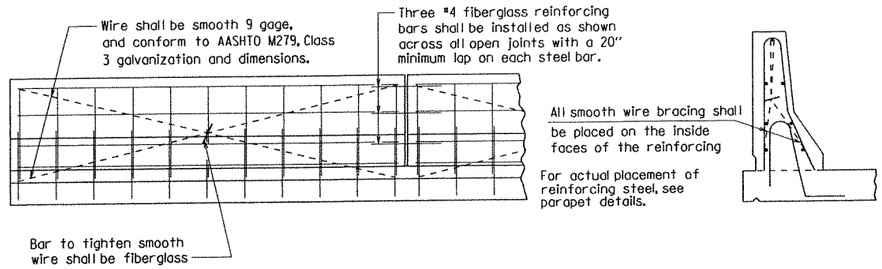


① ℄ Full-Depth Parapet Joint
(1/4" to 1" max.) as shown in
"Half - Reinforcing Plan", Dwg. No. 53378.
Stop 4" from top of slab.

DETAILS OF PARAPET RAIL

Scale: 3/8" = 1'-0"

② ℄ Partial-Depth Parapet Joint
(1/4" to 1" max.) as shown in
"Half - Reinforcing Plan", Dwg. No. 53378.
Stop 1'-2" from top of slab.



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.

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 the Class 2, Rubbed Finish.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale

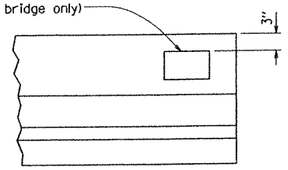
TABLE OF PARAPET RAIL VARIABLES

"A" Closed Parapet	"B"	P4xx Bar
10'-0"	19	P404

"C" Open Parapet	"D"	"E"	P4xx Bar
15'-0"	5'-6"	10	P405

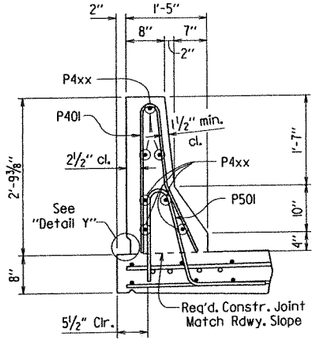
Note: For location of Open and Closed Parapet panels, see "Half - Reinforcing Plan", Dwg. No. 53378.

Place Type C Bridge Name Plate on right parapet rail approx. 2'-0" from front face of backwall. (Beg. of bridge only)



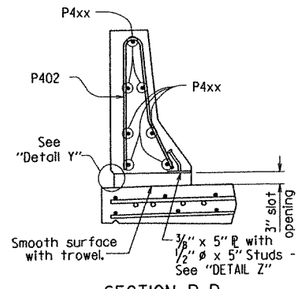
NAME PLATE DETAIL

No Scale



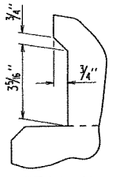
SECTION O-O

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



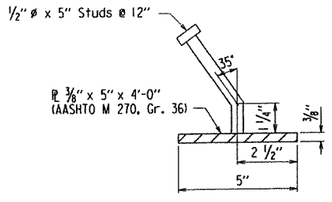
SECTION R-R

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



DETAIL Y

No Scale



DETAIL Z

No Scale

Note:
The surfaces of the 3/8" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint 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)."

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

STATE OF ARKANSAS
Carl J. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7310
CARL J. FUSSELIER

BRIDGE ENGINEER

SHEET 6 OF 7
DETAILS OF 130' CONTINUOUS
COMPOSITE W-BEAM UNIT
WHITE WALNUT CREEK
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 11-10-11 FILENAME: bbri112_sl.dgn
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				6	ARK.			
				JOB NO.		BRI112	26	60
				(1) 04923 -		130 FT. UNIT	- 53381	

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 SPECIFICATION: AASHTO LRFD Bridge Design Specifications (Fifth Edition, 2010 with 2010 interims).

MATERIAL AND STRENGTHS:

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

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

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 14991 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used. Concrete in bridge superstructure shall be placed, consolidated and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

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

Removable forms shall be used for concrete diaphragms.

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)" or "Epoxy Coated Reinforcing Steel (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) unless otherwise noted. Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36 or Gr. 50 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 and materials shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

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

All beams shall be blocked in their true position in the shop with the webs horizontal in groups as specified in subsection 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 ¼" +/- is allowed for camber.

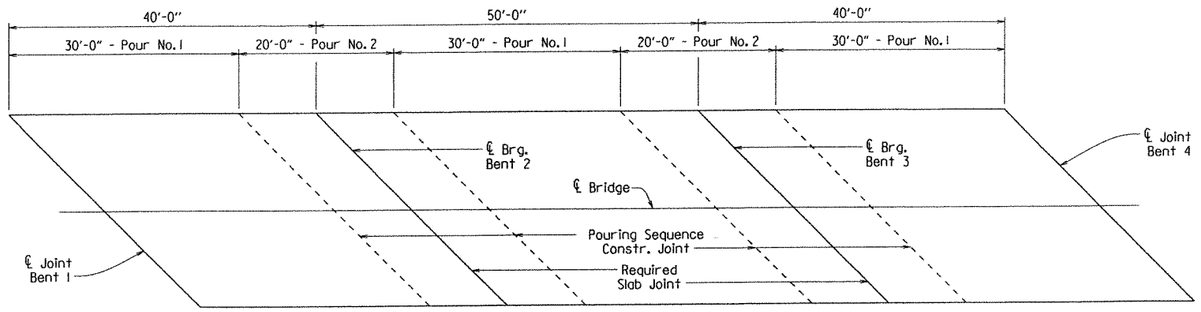
Flange field splice plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

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 false work support devices or screed rail supports to the structural steel that do not exceed the limitations of subsection 802.13 will not require approval prior to construction. All welding shall conform to subsection 807.26.

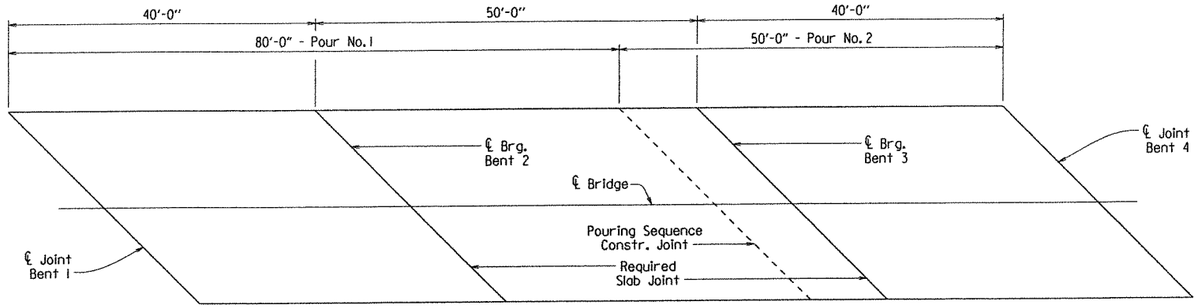
Field connections shall be bolted with high-strength bolts and shall be ¾" ø bolts unless otherwise noted. Open Holes shall be 11/16" ø unless otherwise noted. Holes for ¾" ø high-strength bolts may be 15/16" ø if a washer is supplied for use under both the nut and head of the bolt. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges.

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

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



ALTERNATE NO. 1



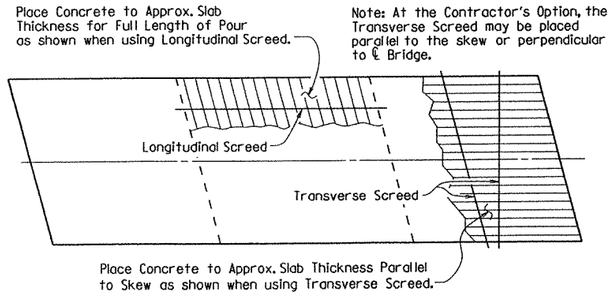
ALTERNATE NO. 2

CONCRETE POURING SEQUENCE

No Scale

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour. Any railing 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 deviation from the pouring sequences shown.

If concrete diaphragms are poured separately, a minimum of 48 hours shall elapse between the diaphragm pour and the slab pour.



CONCRETE PLACEMENT PROCEDURE

No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
11/28/13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 7 OF 7
DETAILS OF 130' CONTINUOUS COMPOSITE W-BEAM UNIT
WHITE WALNUT CREEK

ROUTE SEC.

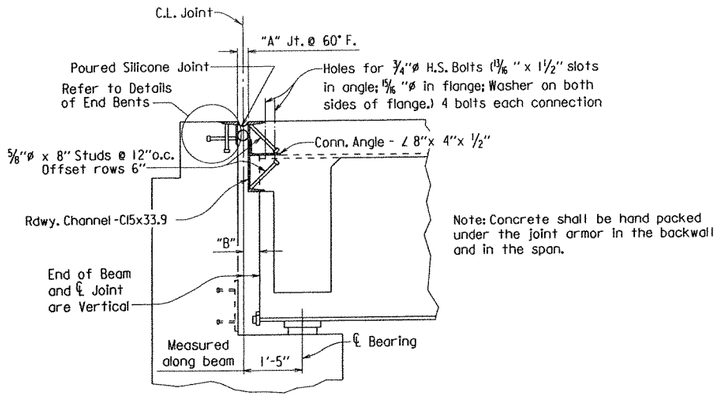
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 11-10-11 FILENAME: bbrii2_sl.dgn
CHECKED BY: BEF DATE: 11/21 SCALE: NO SCALE
DESIGNED BY: DEM DATE: 10/11

BRIDGE NO. 04923 DRAWING NO. 53381

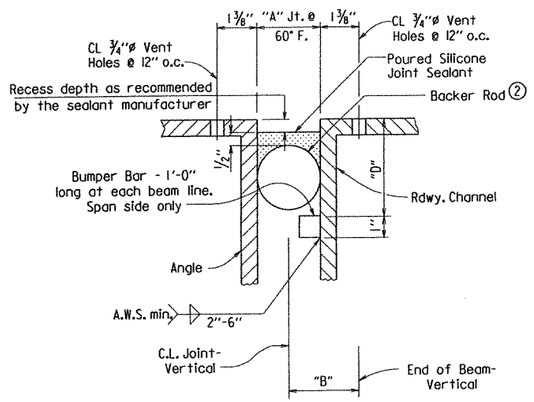
PRINT DATE: 1/24/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BRI112	27	60
				(1) 04923 -		JOINTS	- 53382	



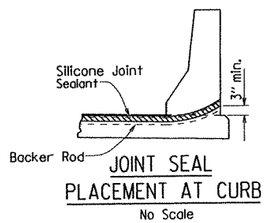
SECTION THRU JOINT AT BENTS 1 & 4

No Scale



DETAIL OF POURED SILICONE JOINT SEAL

No Scale



JOINT SEAL PLACEMENT AT CURB

No Scale

SILICONE JOINT DATA

Bent Number	"A" Width Perpendicular to Joint at 24 Hour Average Temperature (1) Of:			"B" Perpendicular to Joint at 60°F	Bumper Bar Size	"D"
	40°F	60°F	80°F			
1 & 4	1 9/16"	1½"	1 7/16"	2" ±	1" x ¾"	4"

(1) 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.

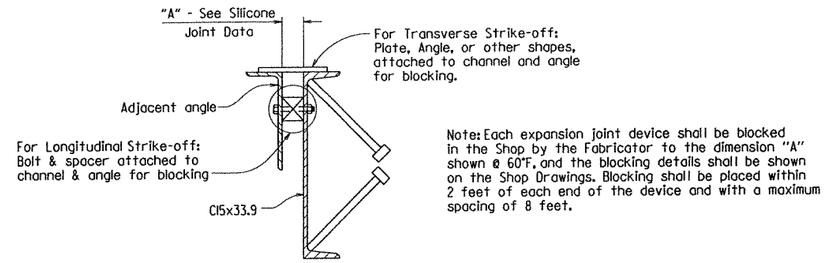
The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80°F.

(2) BACKER ROD NOTE:

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.

Except as noted, do not install more backer rod that 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.



DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

No Scale

EXPANSION DEVICE INSTALLATION AT END BENTS

The Contractor may elect to install the expansion device for the end bents 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, the opening adjusted for temperature, and the backwall constructed.

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. **Backfill shall not be placed behind the backwall until the deck concrete on the adjacent span has been placed.**

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
11/29/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF JOINTS WHITE WALNUT CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-14-12 FILENAME: bbr1112_jt1.dgn

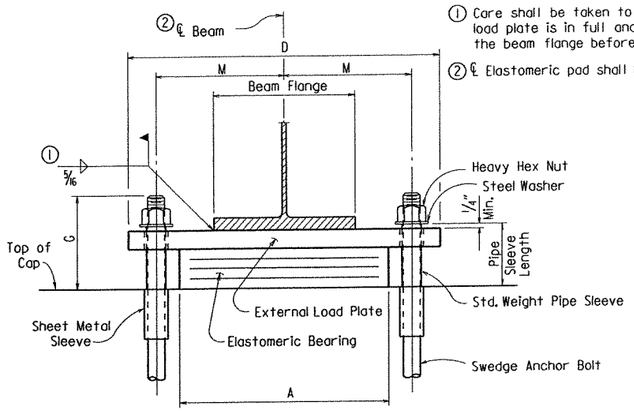
CHECKED BY: BEF DATE: 11/12 SCALE: AS NOTED

DESIGNED BY: DGM DATE: 10/11

BRIDGE NO. 04923 DRAWING NO. 53382

PRINT DATE: 1/24/2013

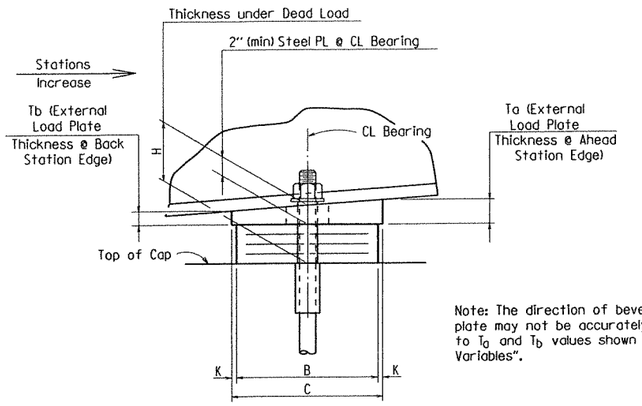
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BRI112	28	60
				①	04923 - ELASTO. BRGS. - 53383			



FRONT VIEW

① Care shall be taken to ensure that the external load plate is in full and complete contact with the beam flange before welding begins.

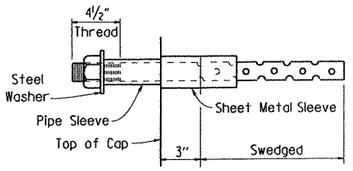
② ℄ Elastomeric pad shall be aligned with ℄ Beam



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".

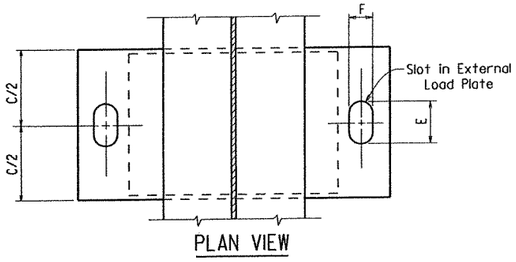
Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the Beam will be allowed only when: 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40° F and 80° F; and 2) the slots in the external load 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.



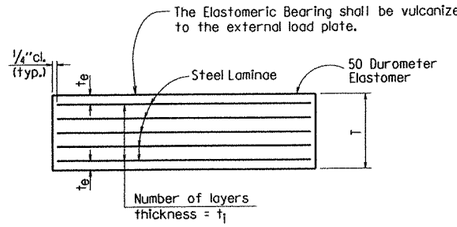
ANCHOR BOLT DETAIL

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 (M270, Gr. 50W)"



PLAN VIEW



t_e = thickness of elastomer cover on top and bottom of pad

t_1 = thickness of elastomer between steel laminae

N = number of elastomer layers of thickness t_1

ELASTOMERIC BEARING

GENERAL NOTES

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

External load plates shall conform to AASHTO M270, 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(e) for unpainted Grade 50W steel.

Anchor Bolts, washers and nuts shall conform to subsection 807.07. 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)". External load plates will not be measured or paid for separately but will be considered included in the unit bid price for "Elastomeric Bearings".

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

TABLE OF FABRICATOR VARIABLES

BRIDGE NO.	LOCATION: BENT NO(S).	LOCATION: UNIT	LOCATION: BEAM NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	*MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD: A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	EXTERNAL LOAD PLATE: C	D	E	F	K	M	T_a	T_b	ANCHOR BOLT: ANCHOR BOLT (ø x L)	GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
04923	1 & 4	130'	All	Exp.	4	83	6⅜"	3 15/16"	13"	7½"	2	½"	¼"	3 @ 12 Gauge	1 11/16"	8½"	22"	3⅛"	2"	½"	8½"	2.00"	2.00"	1¼"ø x 20"	55	1¼"ø x 4⅛"	3"ø x 6"	2½" ø

*Maximum Design Load = Service I Limit State

Tabular Data by : KDH Date: 2-14-12

Checked by : BEF Date: 11/12

Designed by : DCM Date: 10/11

STATE OF ARKANSAS
Carl D. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
11/20/13
CARL D. FUSSELIER

BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS WHITE WALNUT CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: Nov. 12.96 FILENAME: bbr1112_el.dgn

CHECKED BY: AMS DATE: Nov. 15.96 SCALE: NONE

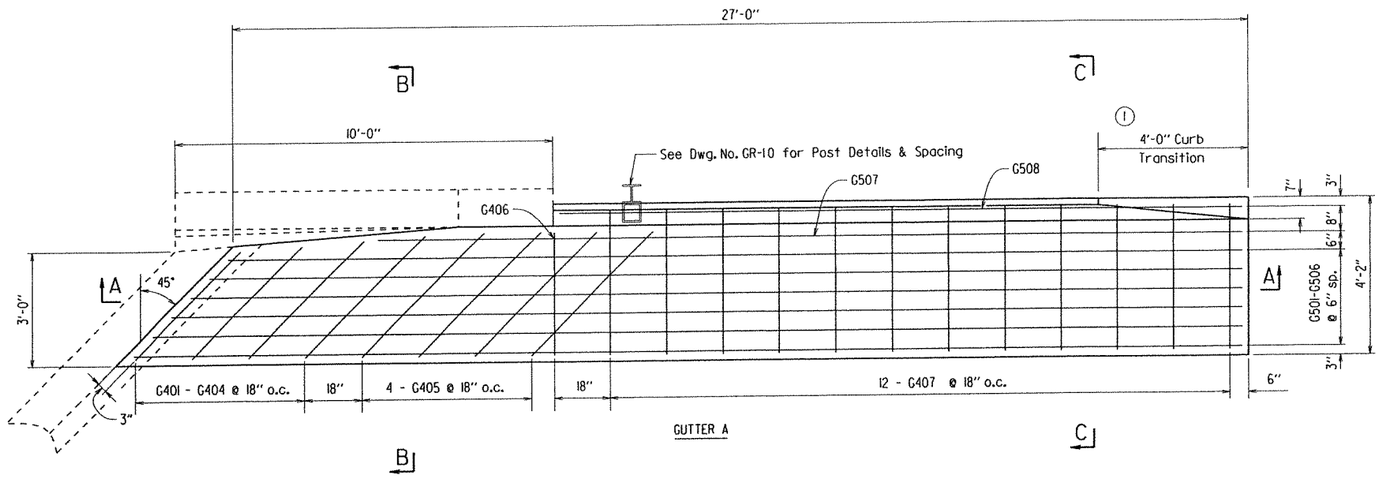
DESIGNED BY: Std. DATE:

BRIDGE NO. 04923 DRAWING NO. 53383

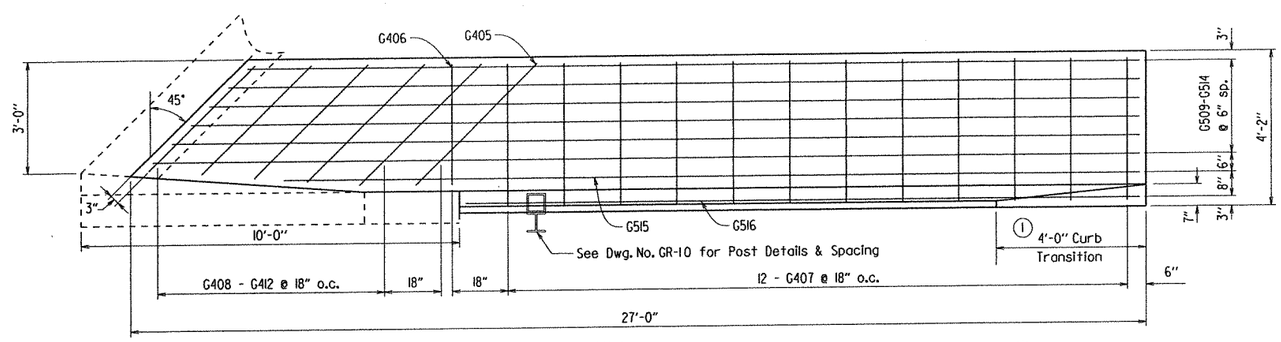
PRINT DATE: 1/24/2013

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BRIII2	29	60
① 04923 - APPR. GUTTERS			- 53384	



GUTTER A



GUTTER B

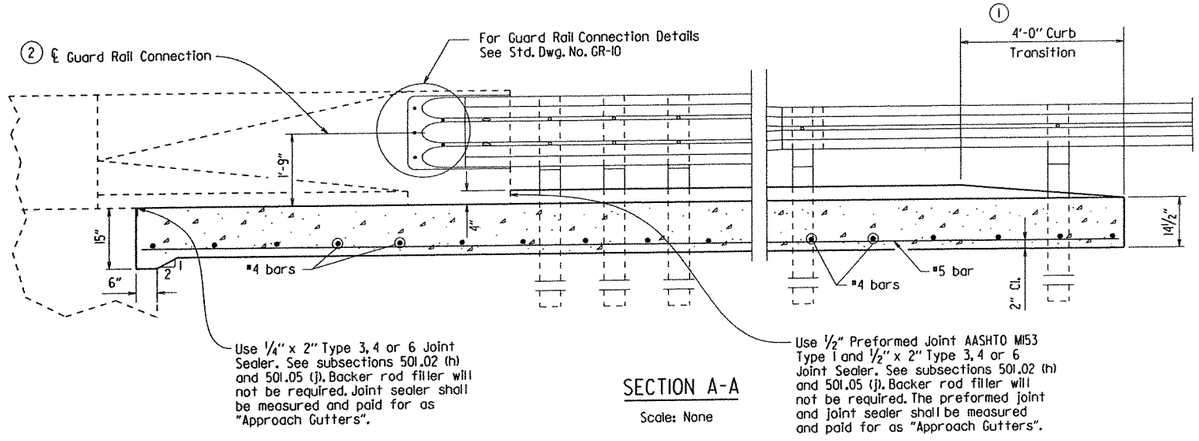
PLAN OF APPROACH GUTTERS

Scale: ½" = 1'-0"

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

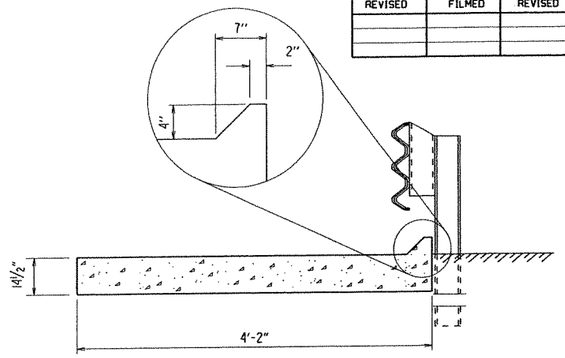
Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.

② See Roadway Plans for Guardrail Locations



SECTION A-A

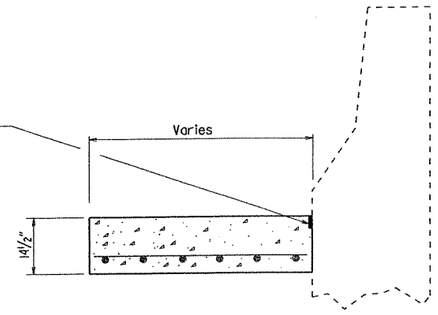
Scale: None



SECTION C - C

Scale: None

Use ¼" x 2" Type 3, 4 or 6 Joint Sealer. See subsections 501.02 (h) and 501.05 (j). Backer rod filler will not be required. Joint sealer shall be measured and paid for as "Approach Gutters".



SECTION B-B

Scale: None

BAR LIST

Gutter A			Gutter B		
Mark	No. Req'd	Length	Mark	No. Req'd	Length
G401 - G404	1 each	3'-11" to 4'-6"	G408 - G412	1 each	3'-11" to 4'-6"
G405	4	4'-7"	G405	1	4'-7"
G406	1	3'-3"	G406	1	3'-3"
G407	12	3'-10"	G407	12	3'-10"
G501 - G506	1 each	29'-4" to 26'-10"	G509 - G514	1 each	23'-8" to 26'-2"
G507	1	23'-0"	G515	1	22'-9"
G508	1	18'-2"	G516	1	17'-11"

QUANTITIES FOR TYPE SPECIAL APPROACH GUTTERS

Gutter	Reinforcing Steel (lbs.)	Concrete (cubic yards)
Gutter A	275	5.13
Gutter B	248	4.68

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.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
11/20/13
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF TYPE SPECIAL APPROACH GUTTERS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

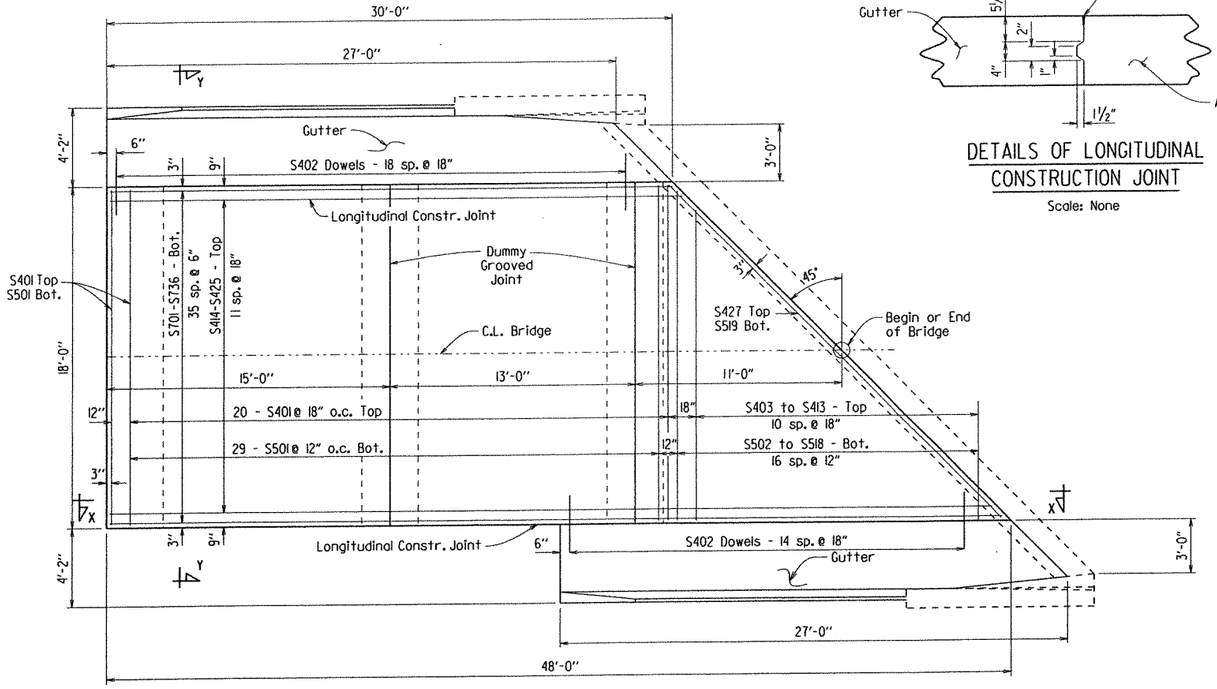
DRAWN BY: ADN DATE: 04/25/12 FILENAME: bbrIII2_ag.dgn
CHECKED BY: BEF DATE: 11/23/13 SCALE: AS NOTED
DESIGNED BY: STD DATE:

BRIDGE NO. 04923 DRAWING NO. 53384

PRINT DATE: 1/28/2013

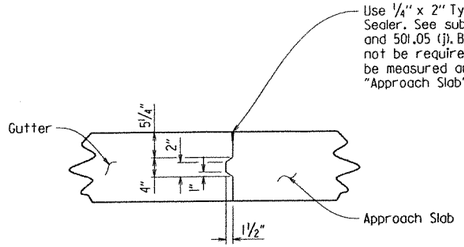
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BRI112	30	60
(1) 04923 -		APPR. SLAB	- 53385	



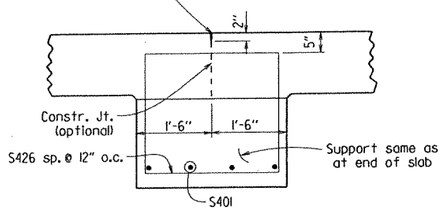
PLAN APPROACH SLAB

Scale: ¼" = 1'-0"



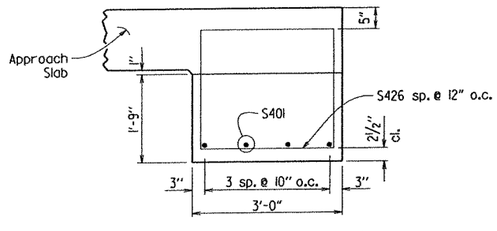
DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

Scale: None



DETAILS OF DUMMY GROOVED JOINT

Scale: None



DETAILS OF SUPPORT AT END OF SLAB

Scale: None

BAR LIST - PER SLAB

Mark	No. Req'd	Length	Bending Diagrams
S401	33	17'-8"	2'-7"
S402	34	3'-0"	2'-5"
S403 to S413	1 ea.	16'-4" to 1'-4"	4½" Typ.
S414 to S425	1 ea.	46'-10" to 30'-4"	S426 2" Pin. Dia.
S426	54	10'-4"	Dimensions are out to out of bar.
S427	1	24'-11"	
S501	30	17'-8"	
S502 to S518	1 ea.	17'-4" to 1'-4"	
S519	1	24'-11"	
S701 to S736	1 ea.	47'-4" to 29'-10"	

QUANTITIES FOR ONE APPROACH SLAB

Slab Width (ft.)	Reinforcing Steel (lbs.)	Concrete (cubic yards)
18.0	4805	42.44

GENERAL NOTES

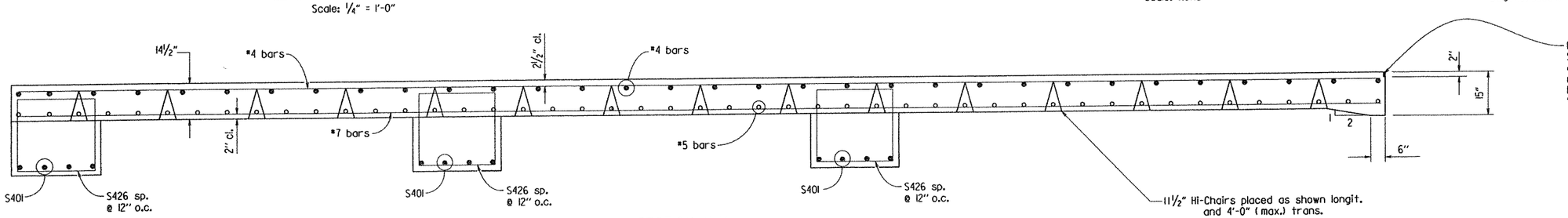
Concrete shall be Class S(AE) (f'c = 4,000 psi).

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

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

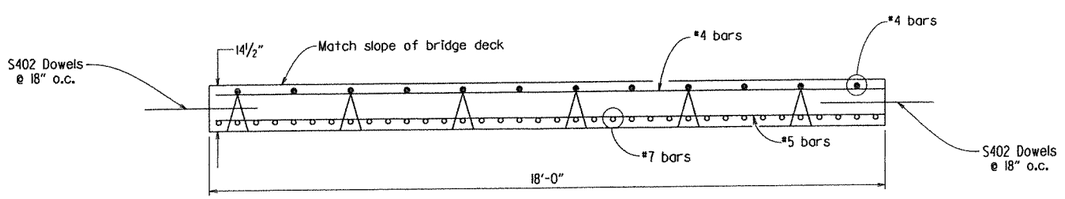
Joint sealer included in the pay item "Approach Slab".

For details of Type Special Approach Gutters, see Dwg. No. 53384.



SECTION X-X

Scale: None



SECTION Y-Y

Scale: None

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
11/28/12
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF TYPE SPECIAL APPROACH SLAB

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ADN DATE: 04/25/12 FILENAME: bbr1112_as.dgn

CHECKED BY: BEF DATE: 11/7/12 SCALE: AS NOTED

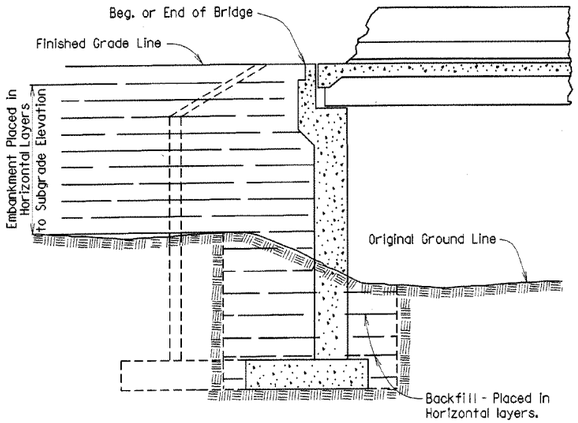
DESIGNED BY: STD DATE:

BRIDGE NO. 04923 DRAWING NO. 53385

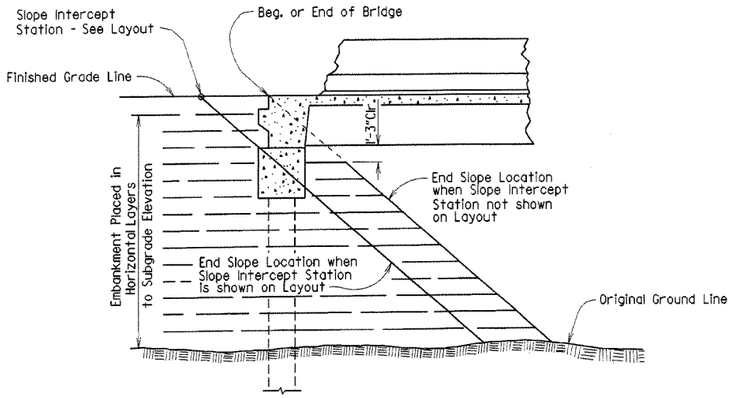
PRINT DATE: 1/24/2013

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.		31	
				JOB NO.				

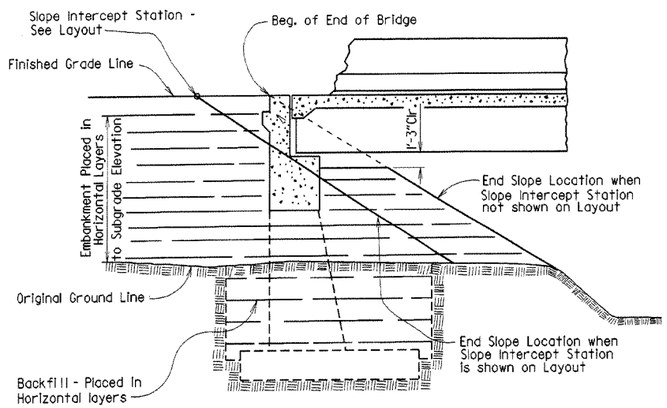
① EMBANKMENT & BACKFILL 1888A



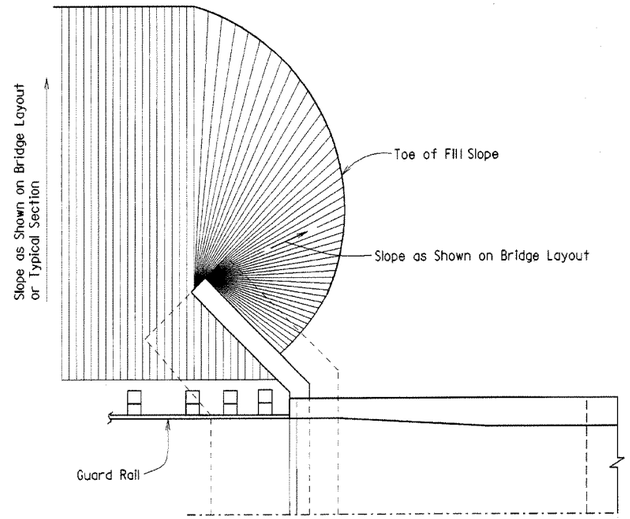
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



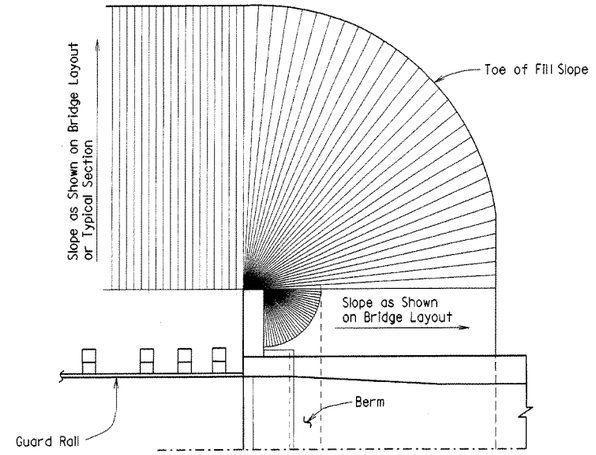
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



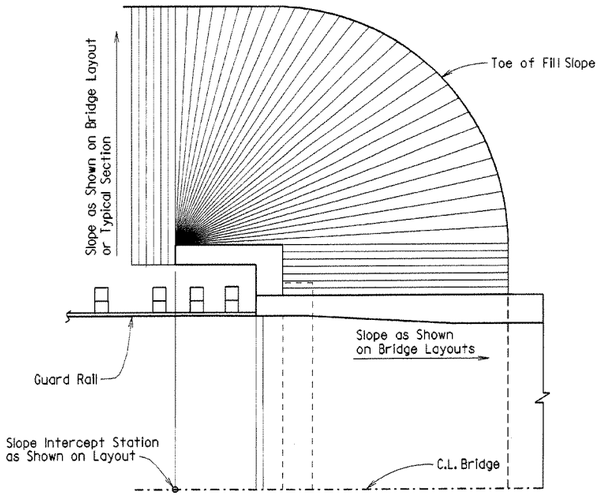
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



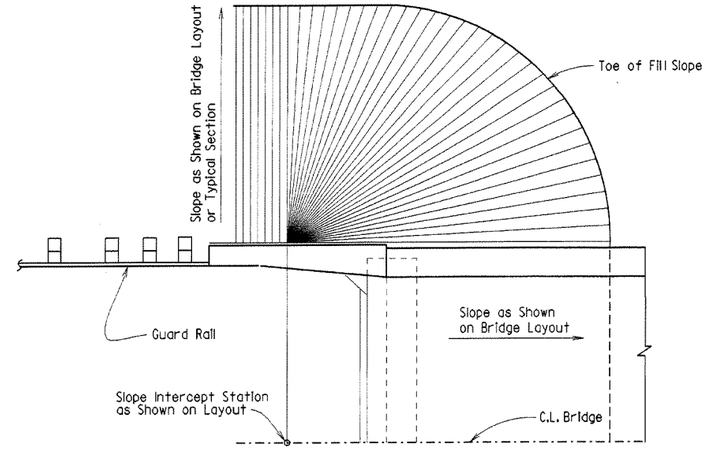
VERTICAL WALL ABUTMENTS



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: CJF 04-10-2003

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

BRIDGE ENGINEER

EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

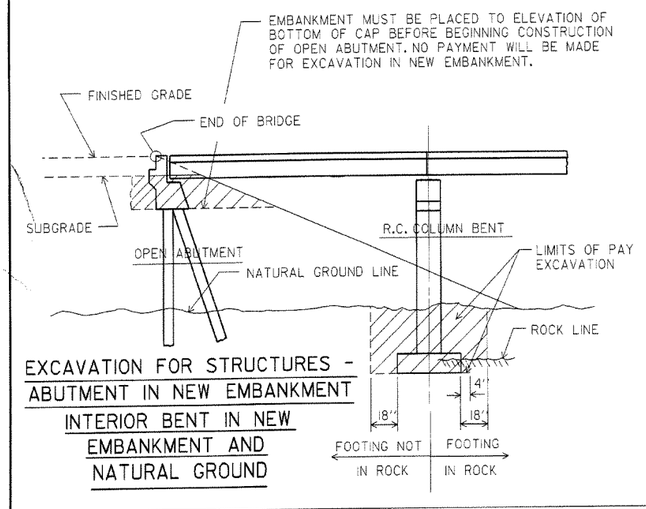
DRAWN BY: MJT DATE: 04-10-2003 FILENAME: BI888A.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: ——

BRIDGE NO. DRAWING NO. 1888A

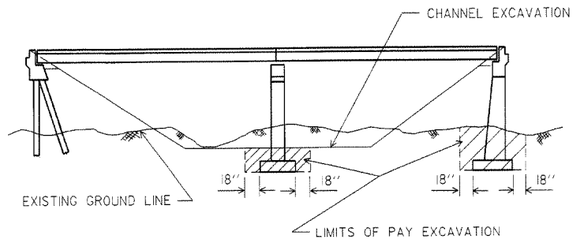
BI888A.STD

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		32	
				JOB NO.				

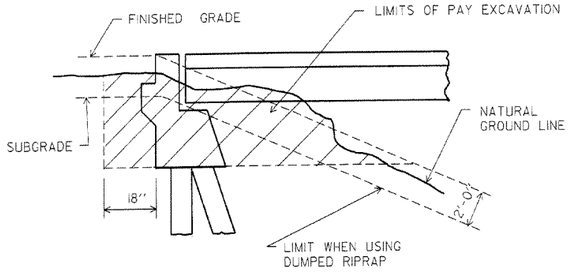
1 RIP. & EXCAV. 1891F



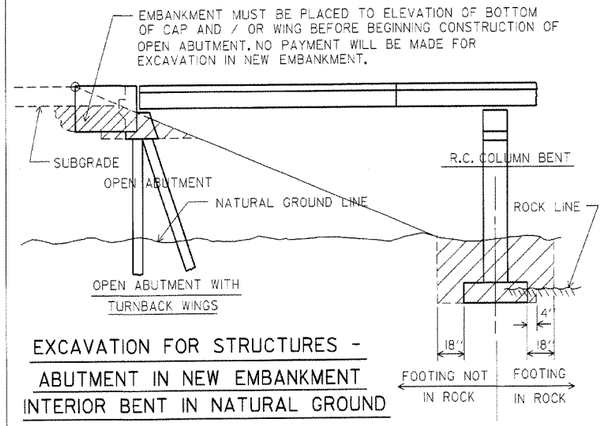
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



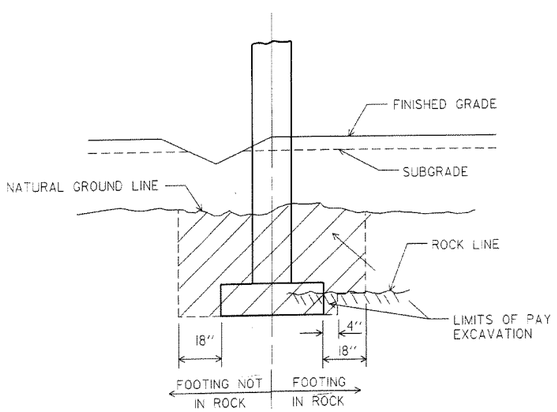
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



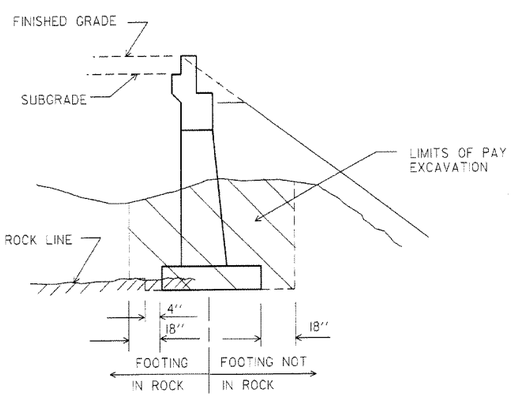
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



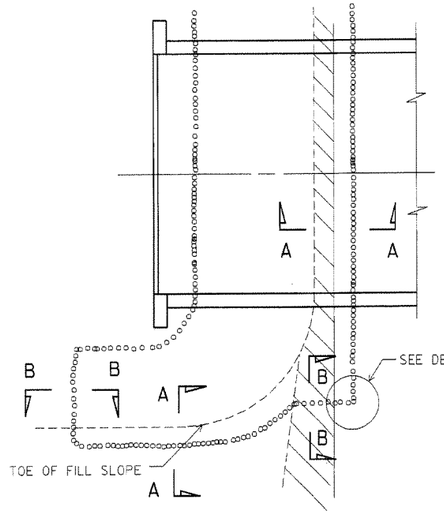
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



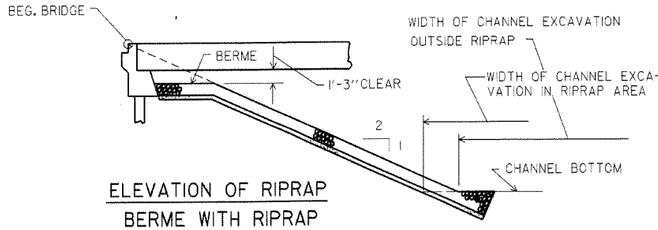
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



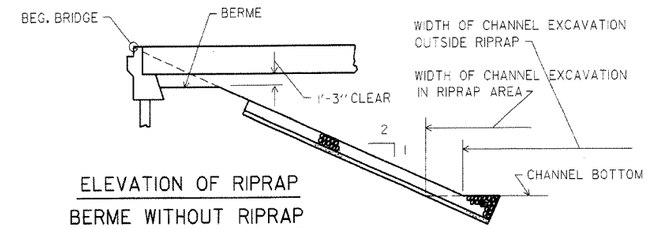
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



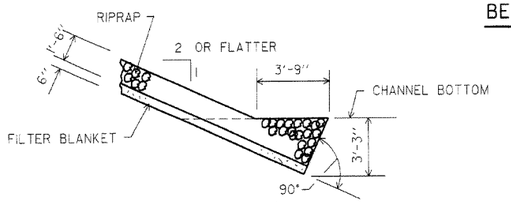
PLAN OF DUMPED RIPRAP



ELEVATION OF RIPRAP BERME WITH RIPRAP



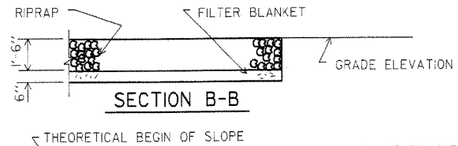
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



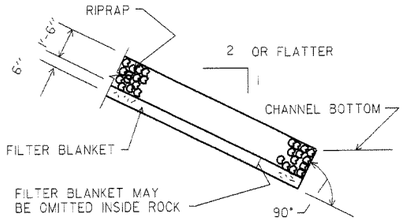
SECTION A-A

(TOE EXCAVATION IN SOIL)

EXCAVATION FOR TOES IS NOT A PAY ITEM



SECTION B-B



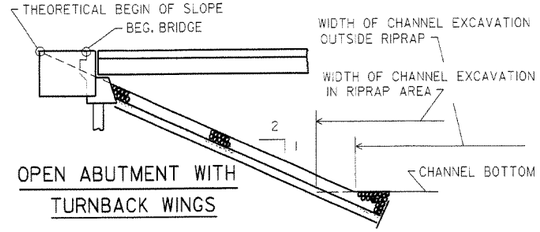
SECTION A-A

(TOE EXCAVATION IN ROCK)

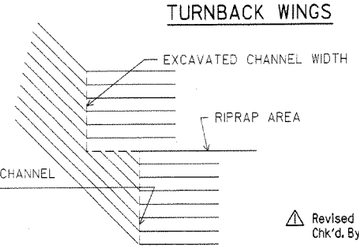
NOTE : USE THIS TYPE OF TOE WHEN ROCK IS ENCOUNTERED WHICH IS IN A STABLE CONDITION.

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



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

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

BRIDGE ENGINEER

⚠ 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.

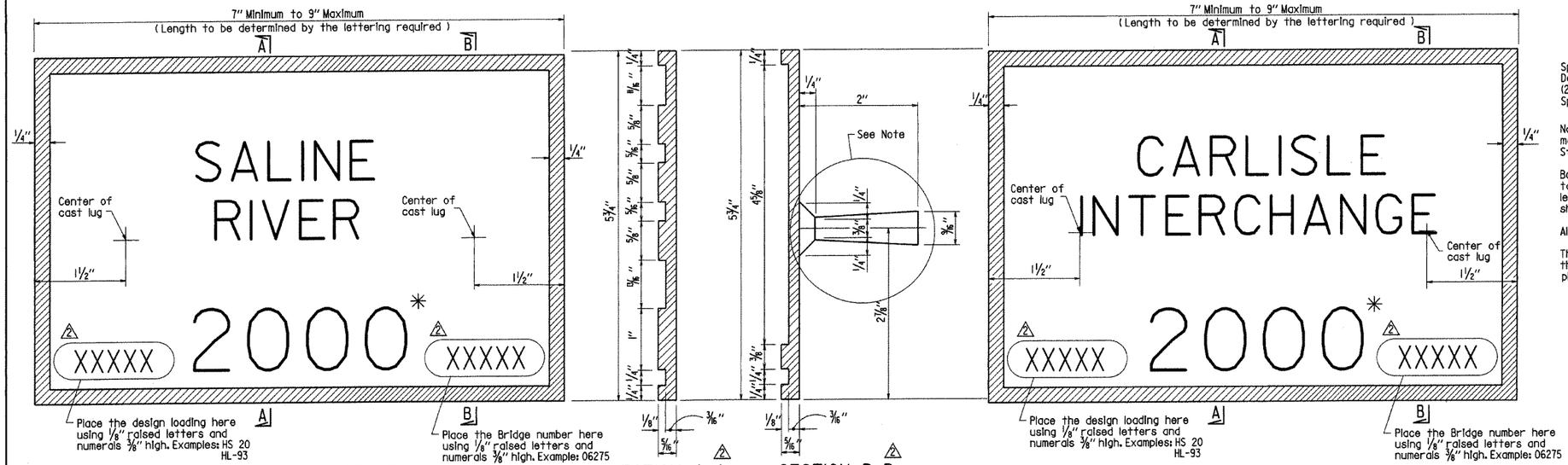
DRAWN BY:	MJT	DATE:	04-10-2003	FILENAME:	B1891F.STD
CHECKED BY:	CJF	DATE:	04-10-2003	SCALE:	NO SCALE
DESIGNED BY:	STD.	DATE:	—		

BRIDGE NO. DRAWING NO. 1891F

B1891F.STD

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
09-20-2007				6	ARK.		33	
10-15-2009				JOB NO.				

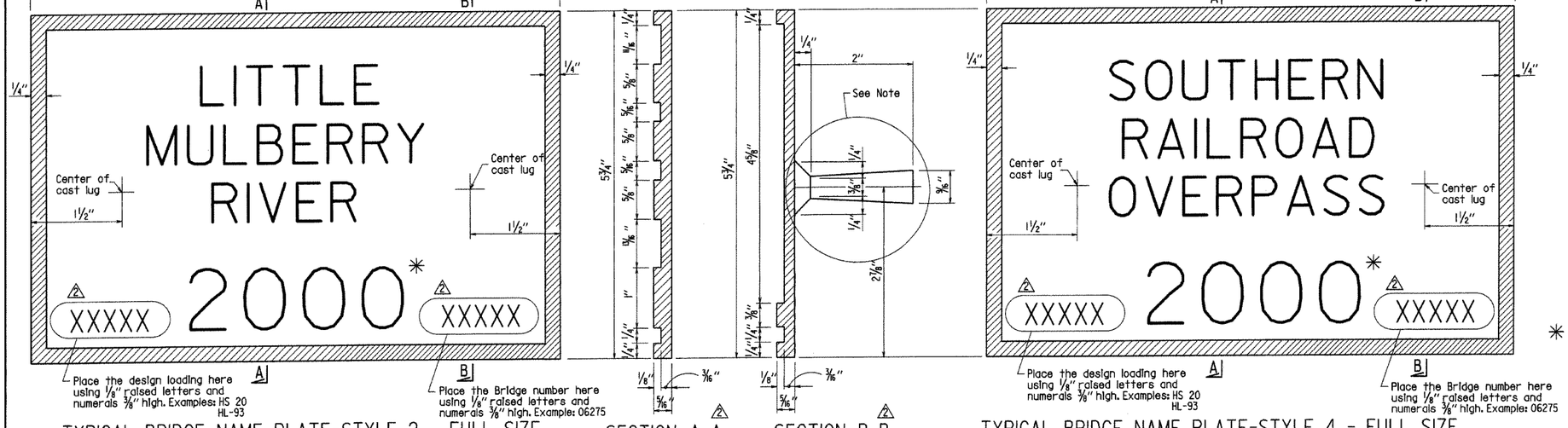
(1) NAME PLATES 2389A



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

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

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



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

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

GENERAL NOTES

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

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

Body of plate shall be ⅜" thick and shall include two tapering cone lugs ⅝" to ⅜"x 2" long. The border and all lettering shall be raised ⅛" above the face of plate and shall be polished.

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

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

* Year in which contract is awarded.

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

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

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

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

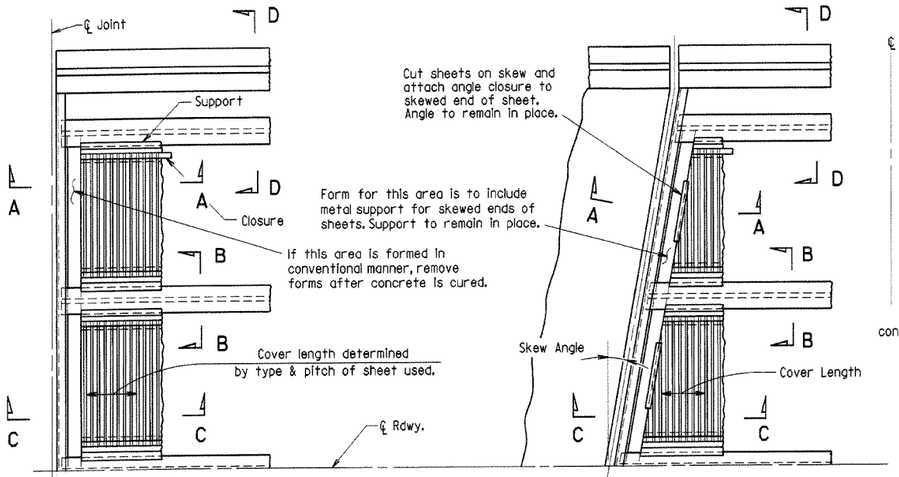
DRAWN BY: MJT DATE: 09-20-2007 FILENAME: B2389A.STD
CHECKED BY: CJF DATE: 09-20-2007 SCALE: NOT TO SCALE
DESIGNED BY: STD. DATE: —

BRIDGE NO. DRAWING NO. 2389A

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
11-27-96					
04-10-2003					

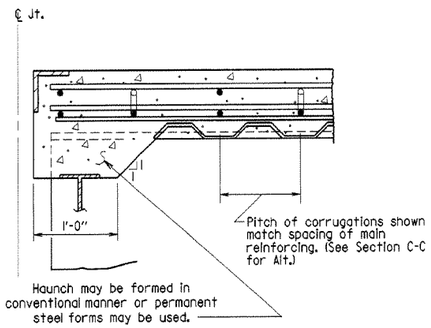
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.		34	
JOB NO.				

BR. DECK FORMS 14991

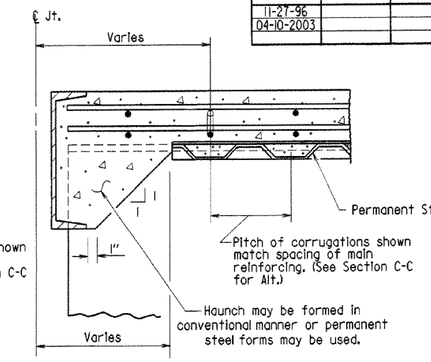


PART PLAN - SQUARE SPAN
3/8" = 1'-0"

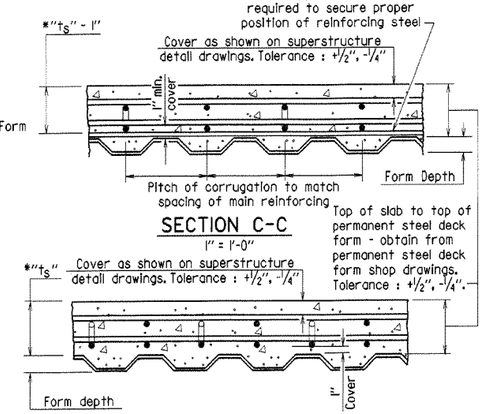
PART PLAN - SKEWED SPAN
3/8" = 1'-0"



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

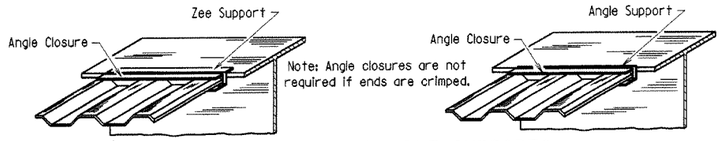


SECTION A-A
N.T.S.
(Channel at end of span)



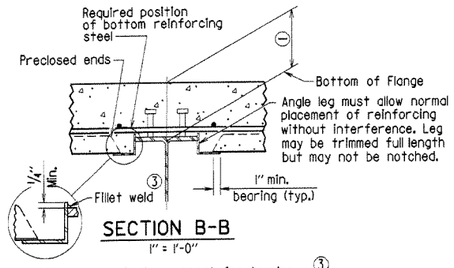
SECTION C-C
1" = 1'-0"

SECTION C-C - ALTERNATE
1" = 1'-0"
(Applicable when corrugations do not match spacing of main reinforcement)



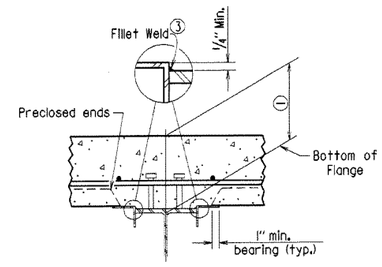
SKETCH OF PERMISSIBLE SUPPORTS
N.T.S.

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

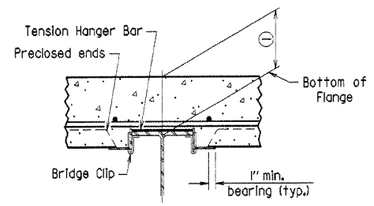


SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

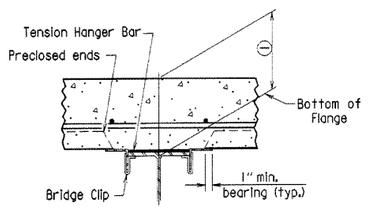
③ Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



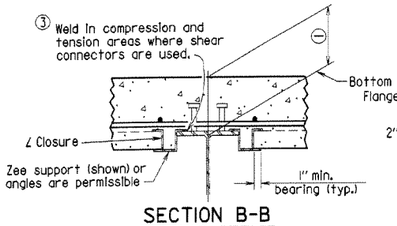
SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



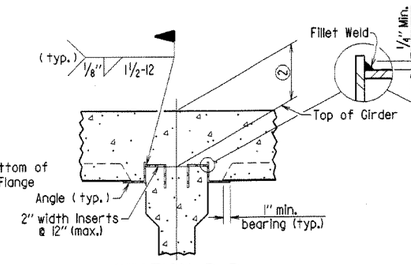
SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are not used)



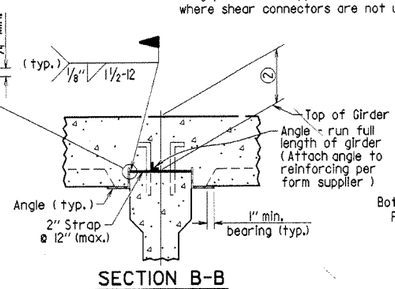
SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are not used)



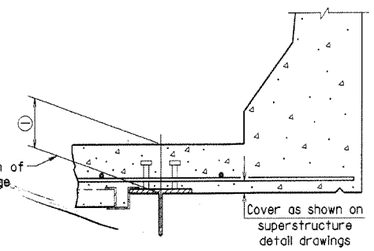
SECTION B-B
1" = 1'-0"
(Showing ∠ Closure)



SECTION B-B
(FOR CONCRETE GIRDERS)
1" = 1'-0"
(Showing support by Insert cast in girder)



SECTION B-B
(FOR CONCRETE GIRDERS)
1" = 1'-0"
(Showing support by Strap)



SECTION D-D
1" = 1'-0"
Note: Only Bottom Reinforcing is shown.

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

⚠1 Redrawn and revised 11/27/96; MJT

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

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

ROUTE SEC.

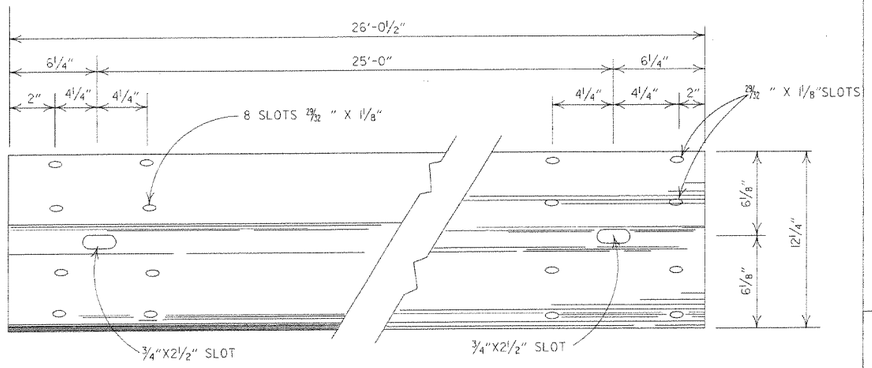
ARKANSAS STATE HIGHWAY COMMISSION

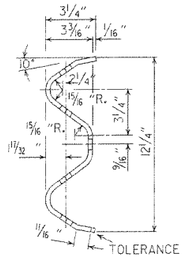
LITTLE ROCK, ARK.

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

BRIDGE NO. DRAWING NO. 14991

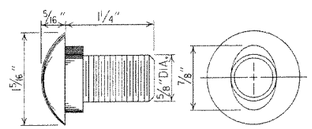
BI4991.STD



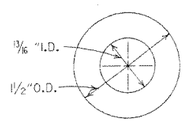


DETAILS OF W-BEAM GUARD RAIL

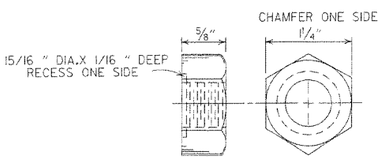
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



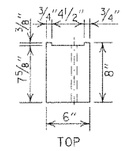
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

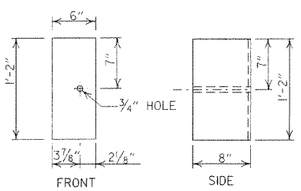


NUT

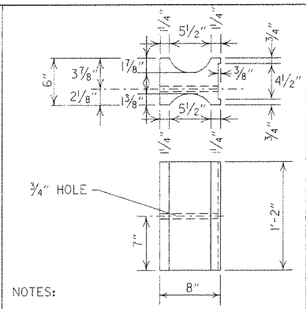


WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

TOP



WOOD BLOCKOUT (W-BEAM)

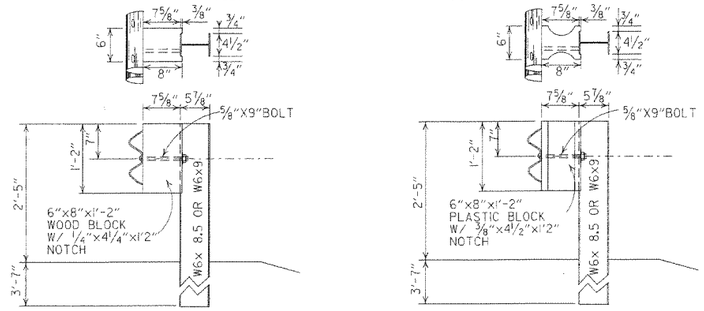


NOTES:

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

PLASTIC BLOCKOUT (W-BEAM)

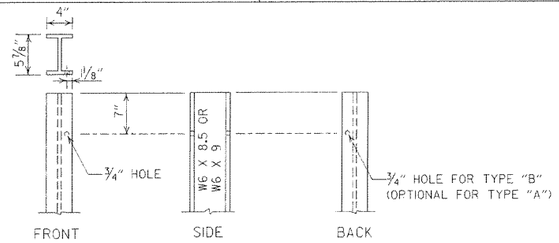
HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.



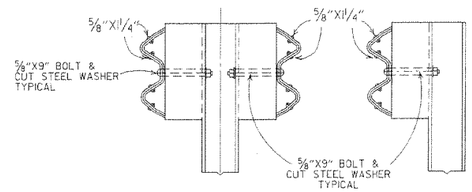
WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



STEEL POST



TYPE "B" TYPE "A"

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

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

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

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

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

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

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

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

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.

POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - ¼".

WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

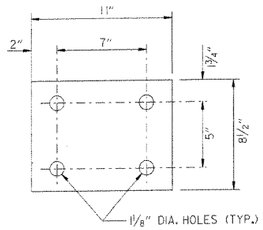
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

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

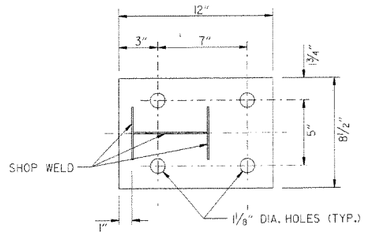
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8

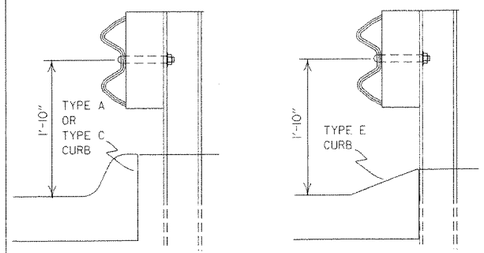


WASHER PLATE



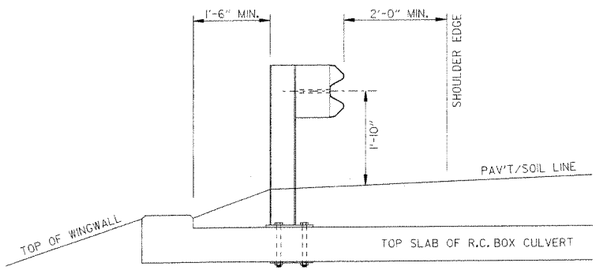
BASE PLATE

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

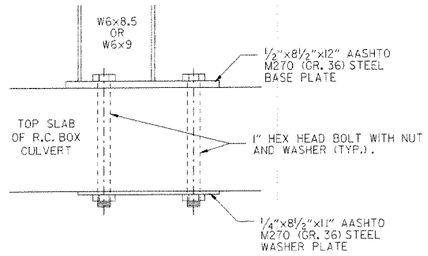


DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

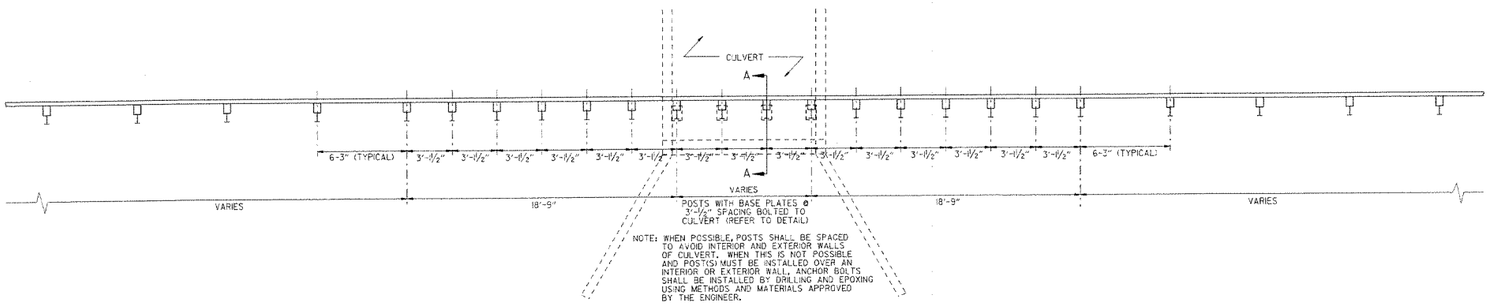
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A



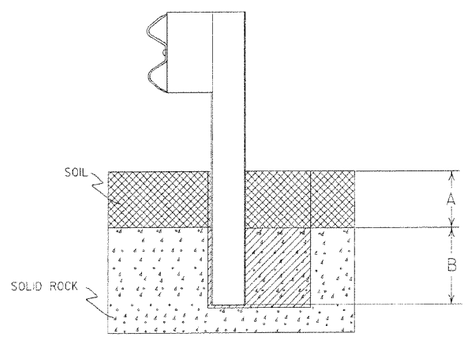
DETAIL OF CONNECTION



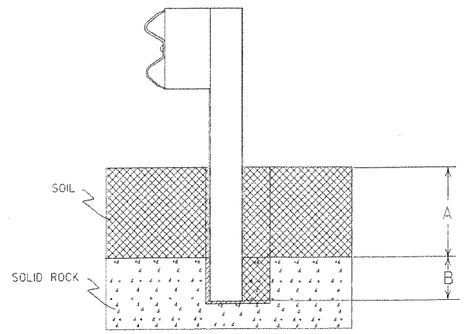
PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS

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. DRG. GR-8.

Case 1

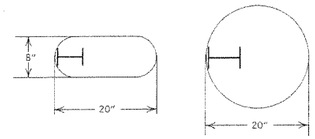


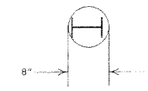
Case 2



Plan View Steel Posts

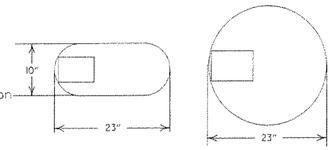
Either hole configuration acceptable

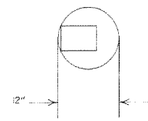




Plan View Wood Posts

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 802.02(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).

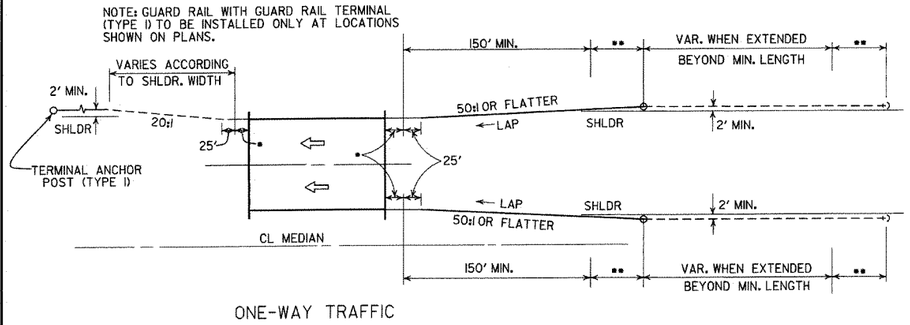
DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)

DATE	REVISION	DATE FILM
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	712-10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-9-87	REDRAWN & REVISED	803-10-9-87

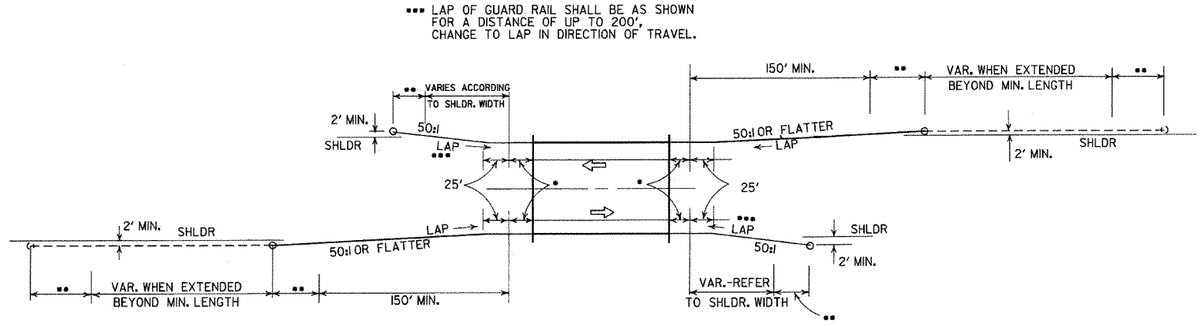
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8A



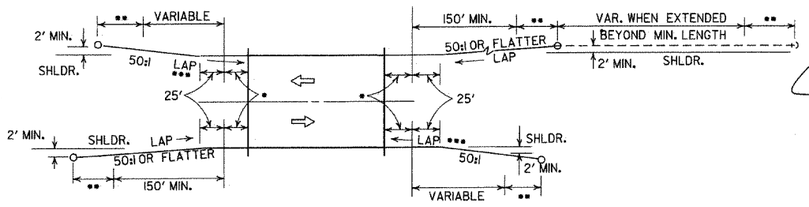
ONE-WAY TRAFFIC



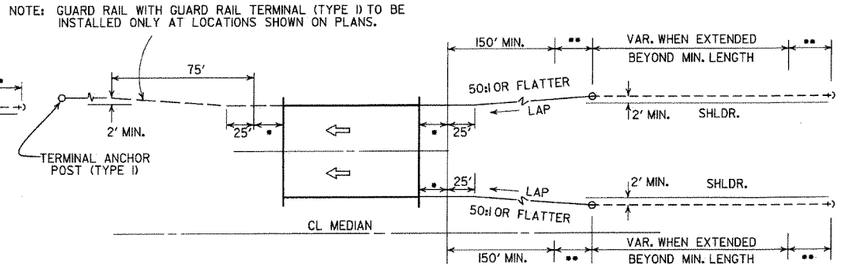
TWO-WAY TRAFFIC

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

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



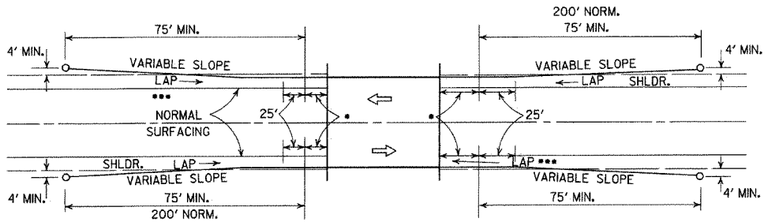
TWO-WAY TRAFFIC



ONE-WAY TRAFFIC

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

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



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

LEGEND

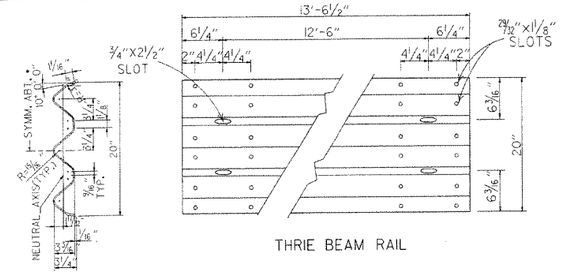
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

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

ARKANSAS STATE HIGHWAY COMMISSION

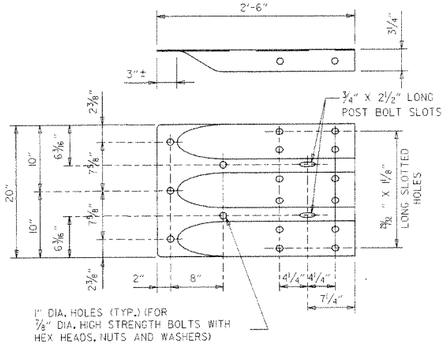
GUARD RAIL DETAILS

STANDARD DRAWING GR-9



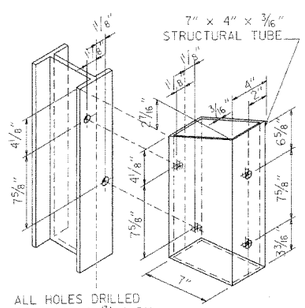
THRIE BEAM RAIL

SECTION THRU
THRIE BEAM RAIL



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

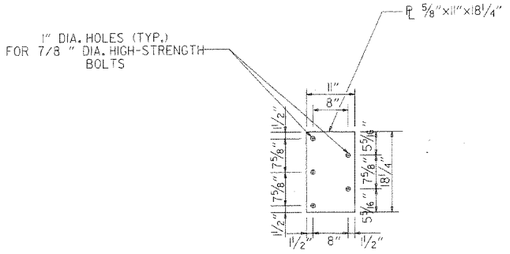
SPECIAL END SHOE



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

ALL HOLES DRILLED
OR PUNCHED ⅜" DIA.

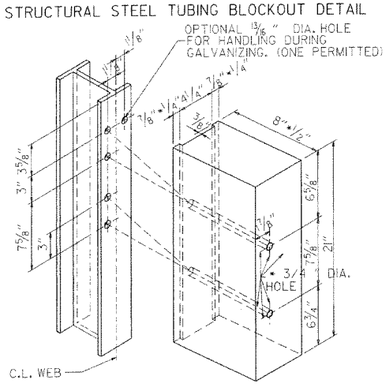
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



CONNECTOR PLATE

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

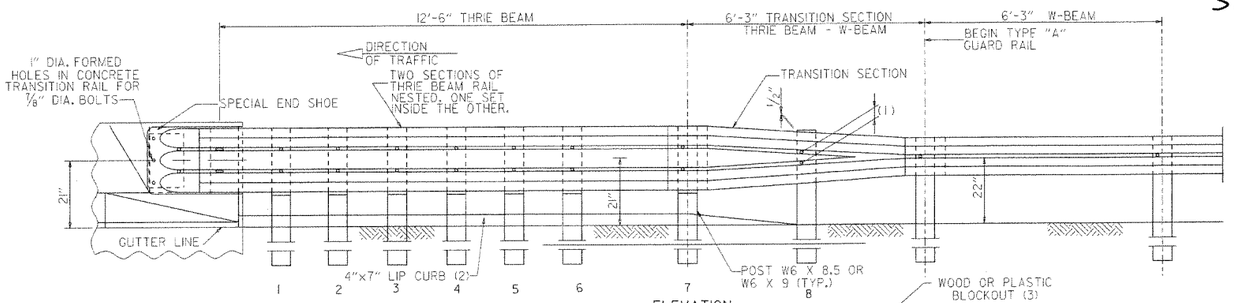
CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS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



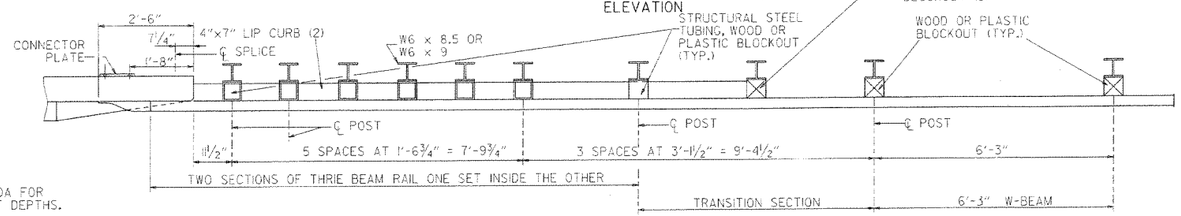
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

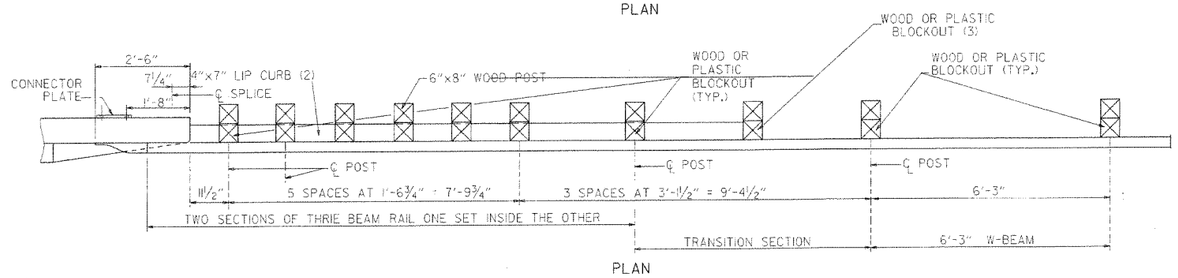
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



ELEVATION



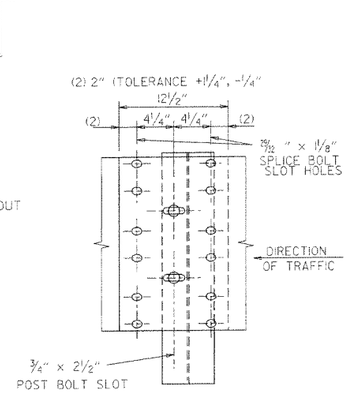
PLAN



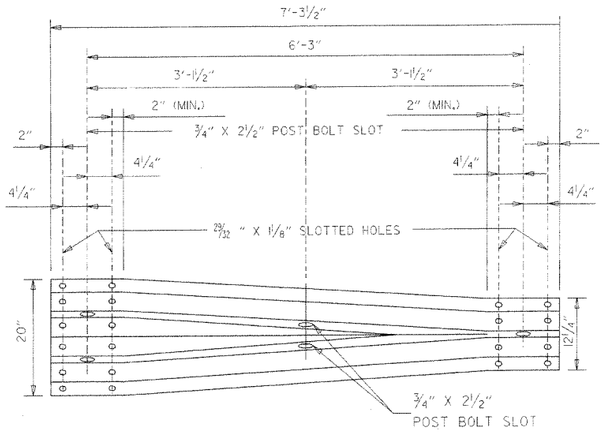
PLAN

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

THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS



THRIE BEAM RAIL
SPLICE AT POST



TRANSITION SECTION

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 4.

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

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

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

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

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

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

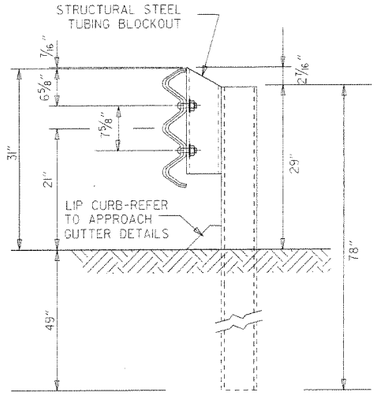
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

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

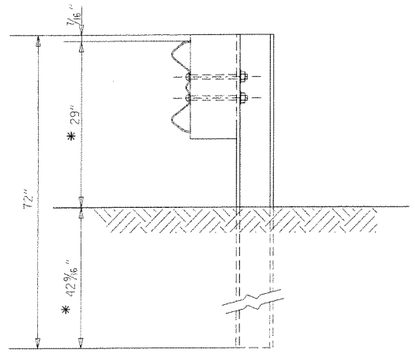
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

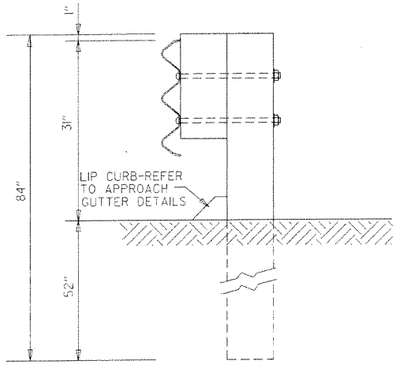


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

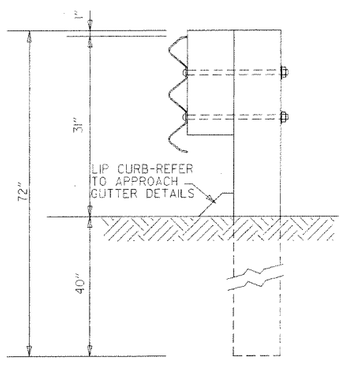


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

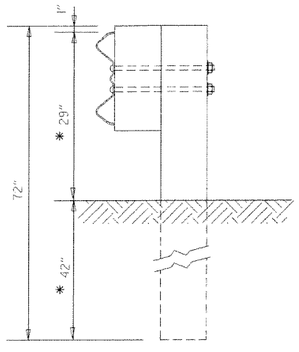
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



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



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



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

GENERAL NOTES:

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

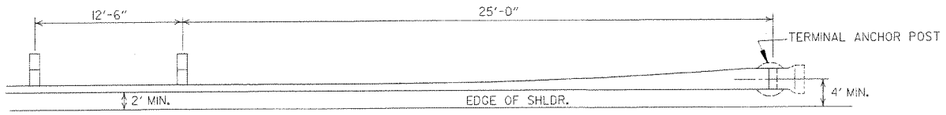
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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

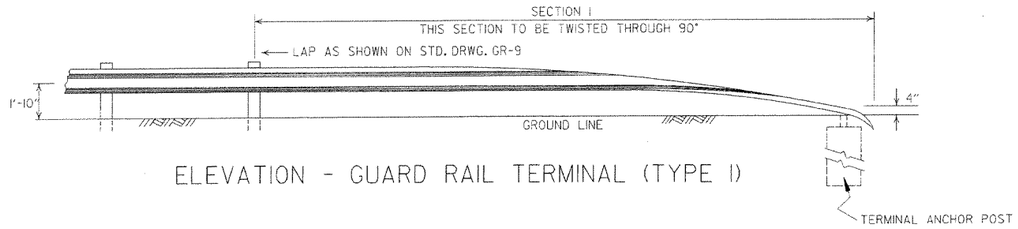
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

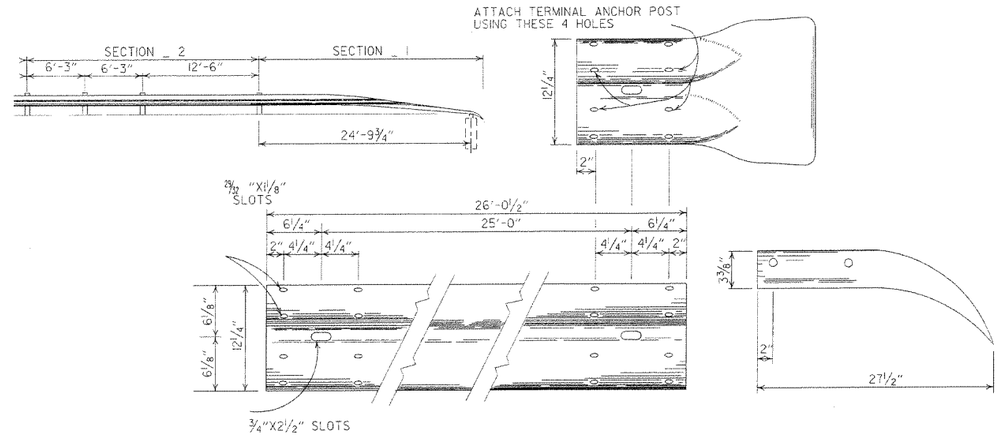


PLAN - GUARD RAIL TERMINAL (TYPE I)



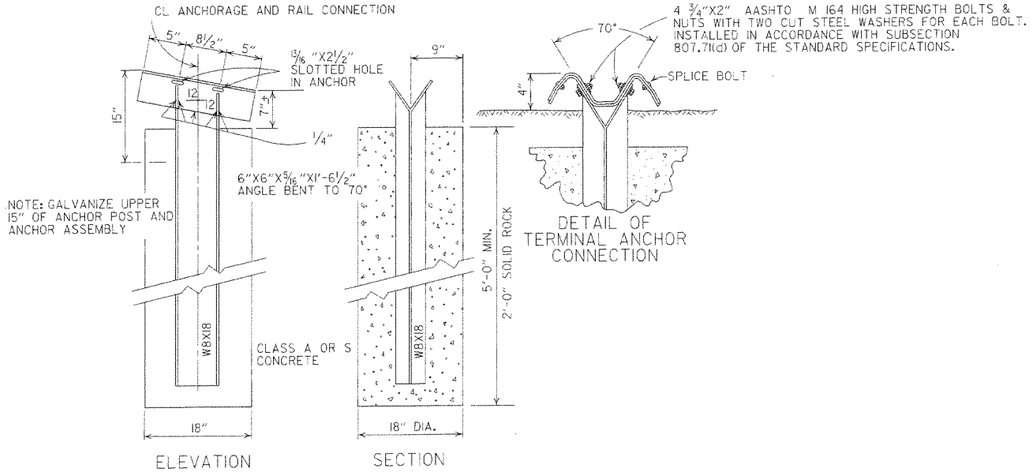
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

NOTE:
SECTIONS 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 1

TERMINAL SECTION



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

DETAIL OF TERMINAL ANCHOR POST (TYPE I)

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

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	31 5/16	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

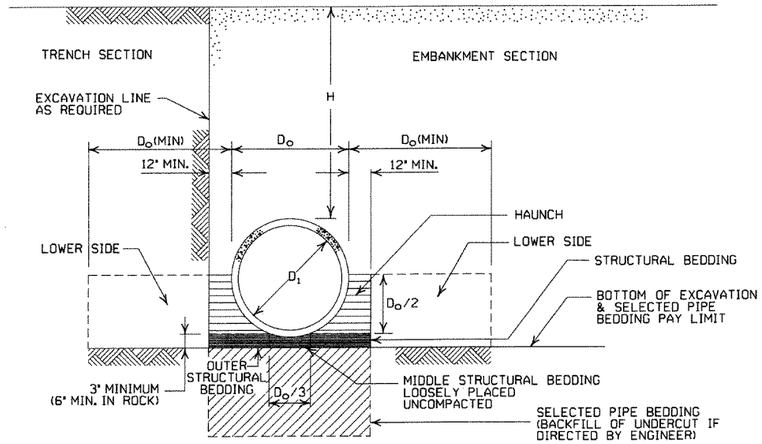
- LEGEND -

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

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

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

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

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

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

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

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

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

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

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

CORRUGATED ALUMINUM PIPE (ROUND)

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

CORRUGATED METAL PIPE ARCHES

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

CONSTRUCTION SEQUENCE

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

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

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

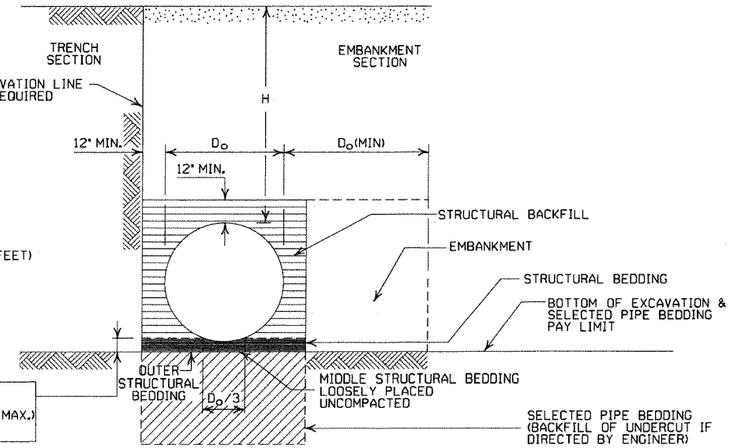
③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

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

- LEGEND -

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

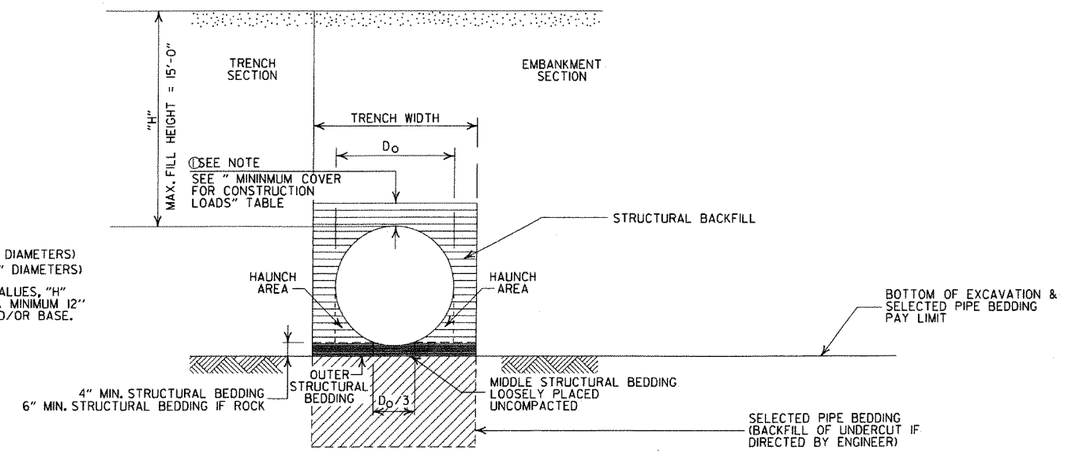
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

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

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

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

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

MULTIPLE INSTALLATION OF PVC PIPES

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

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

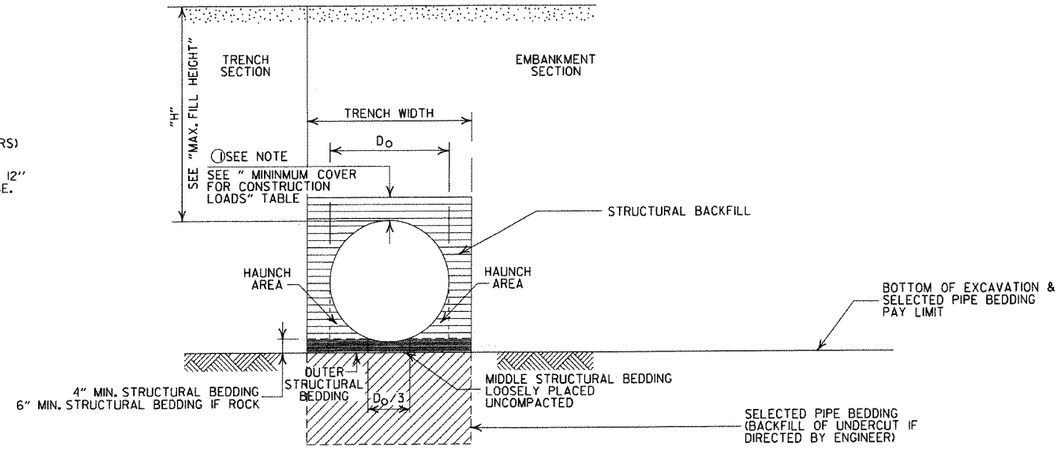
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

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

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL

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

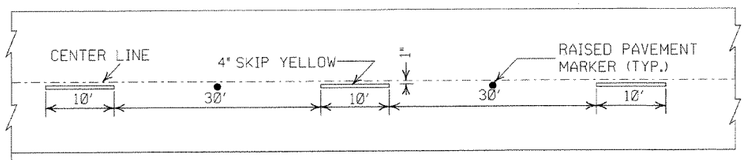
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

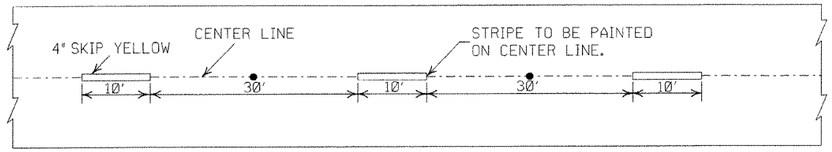
STANDARD DRAWING PCP-2

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.

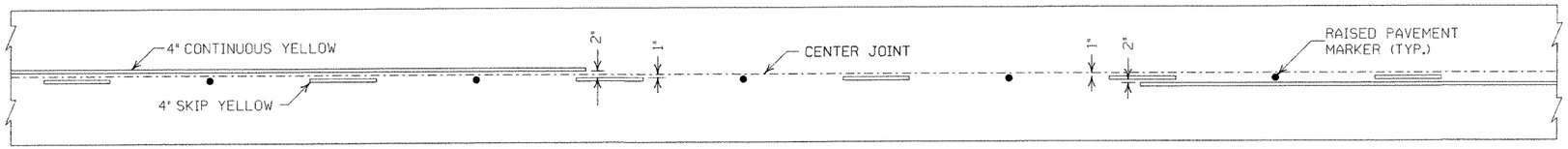


CONCRETE PAVEMENT

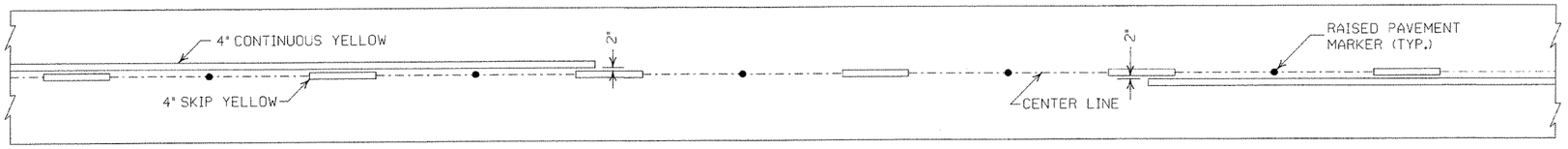


ASPHALT PAVEMENT

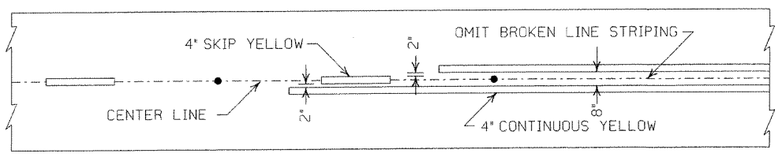
BROKEN LINE STRIPING



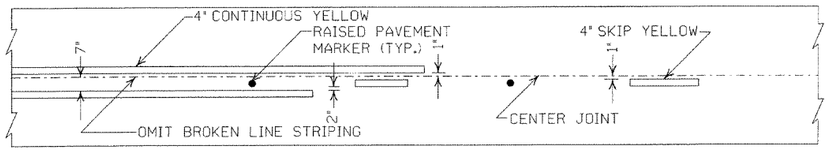
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

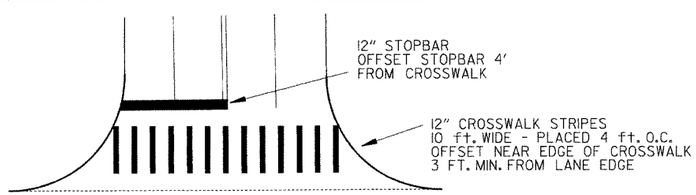


ASPHALT PAVEMENT



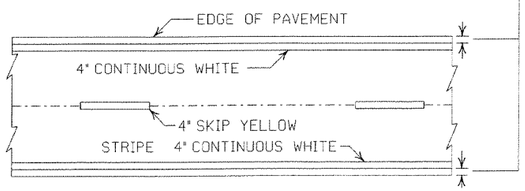
CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

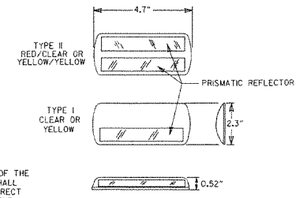


CROSSWALK AND STOPBAR DETAILS

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

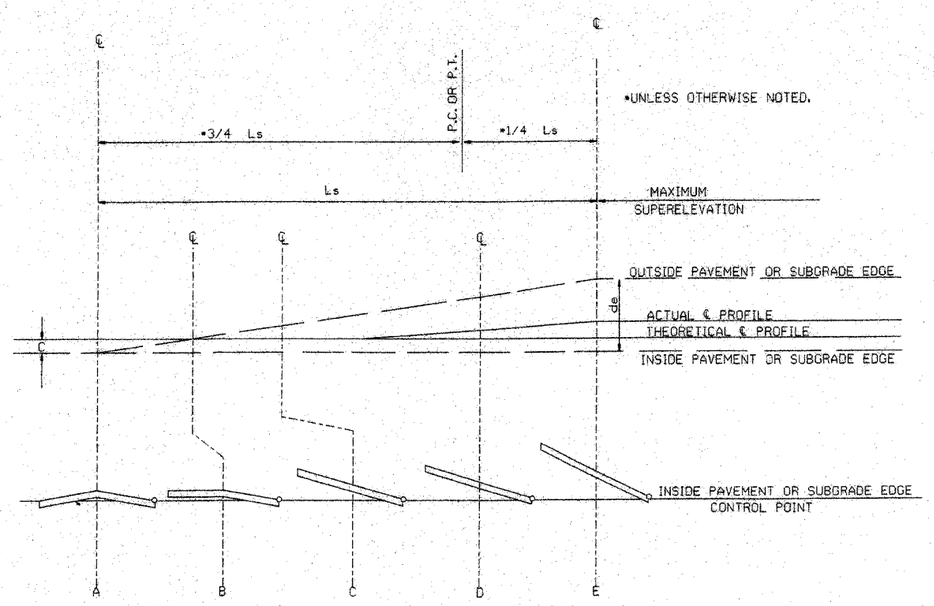
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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

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

ABBREVIATIONS

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



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

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

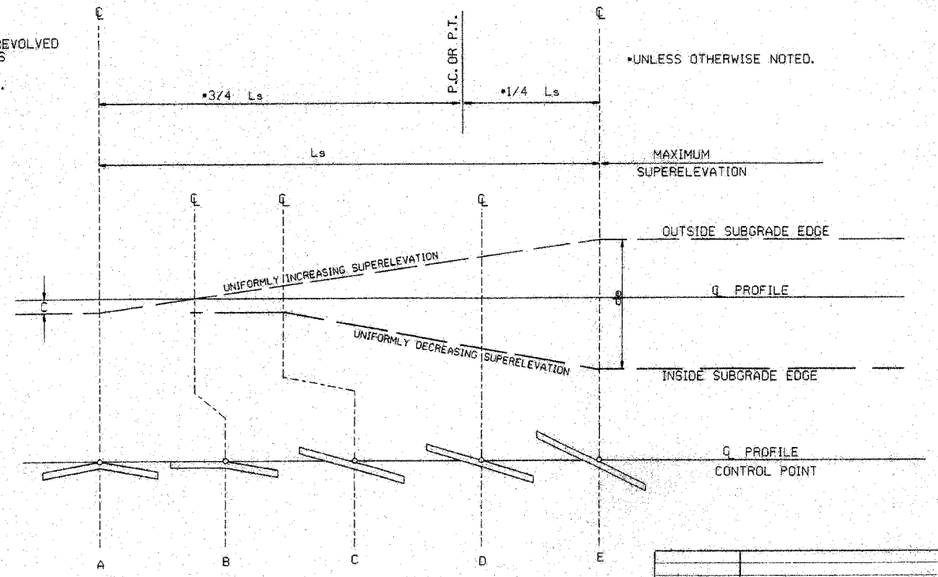
GENERAL NOTES

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

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

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

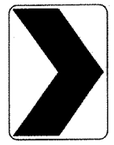
STANDARD DRAWING SE-2

FILE STDSE2.DGN

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.		47	
JOB NO.				
(4) STD. HWY. SIGNS & SUP ASSEMB				

R1-1
30"X30"

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

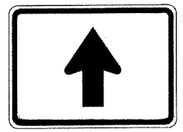


W1-8
18"X24"

W2-5
30"X30"

W3-1
36"X36"

W5-1
36"X36"



M6-3
21"X15"

R1-2
36"X36"X36"

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

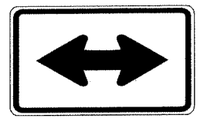
W2-1
30"X30"

S1-1
36"X36"

W3-2
36"X36"

County
Route Marker
M1-5
24"X24"

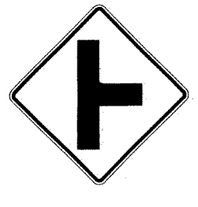
NOTE: REFLECTORIZED YELLOW LEGEND (COUNTY NAME, ROUTE LETTER & NUMBER) & BORDER ON A BLUE BACKGROUND.



M6-4
21"X15"

R2-1
24"X30"

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

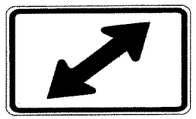


W2-2
30"X30"

W5-2
36"X36"

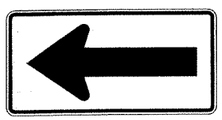
W8-3
36"X36"

R1-3
12"X6"

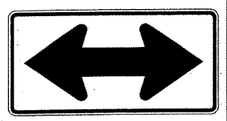


M6-5
21"X15"

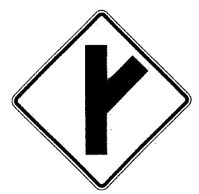
W1-1
30"X30"
(LT. or RT.)



W1-6
48"X24"

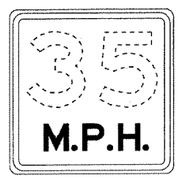


W1-7
48"X24"

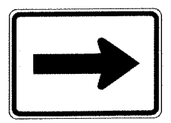


W2-3
30"X30"
(LT. or RT.)

W5-3
36"X36"

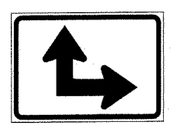


W13-1
18"X18"

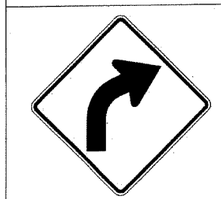


M6-1
21"X15"

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



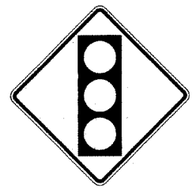
M6-6
21"X15"



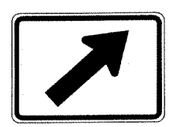
W1-2
30"X30"
(LT. or RT.)

W2-4
30"X30"

W10-1
36" DIAMETER



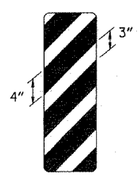
W3-3
36"X36"



M6-2
21"X15"

S4-3
24"X8"

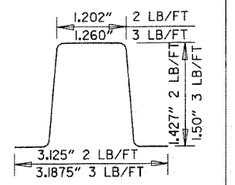
S4-2
24"X10"



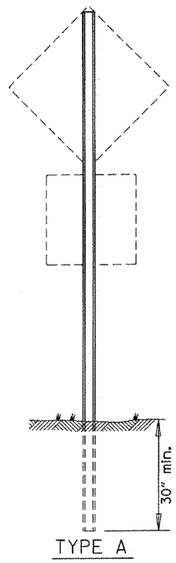
OM-3
12"X36"
(LT. or RT.)

MINIMUM DIMENSIONS SHOWN

SUPPORT SECTION

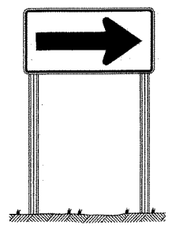


(U-CHANNEL)
STANDARD SUPPORT
ASSEMBLIES



TYPE A

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



TYPE B

TYPE C

MINIMUM WEIGHT

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

SUPPORT ASSEMBLIES

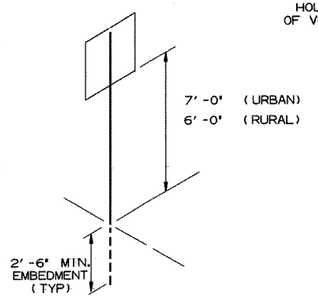
STANDARD HIGHWAY SIGNS

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

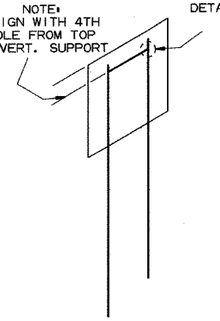
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD HIGHWAY SIGNS
AND SUPPORT ASSEMBLIES

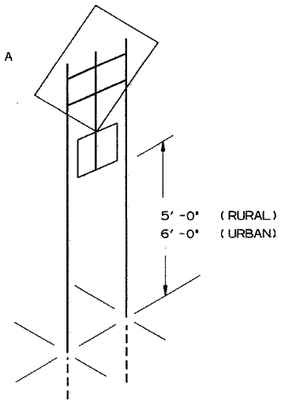
STANDARD DRAWING SHS-1



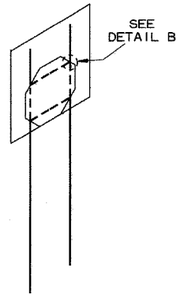
U-1



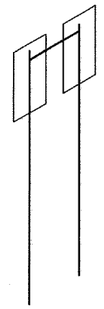
U-2



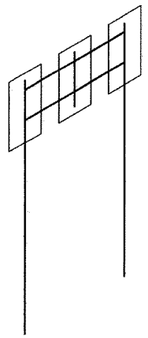
U-2 (A)



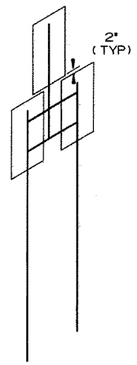
U-2 (B)



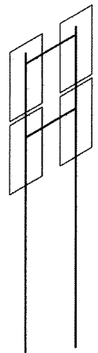
U-2 (1)



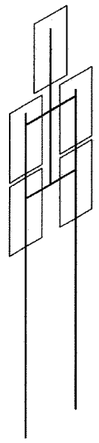
U-2 (2)



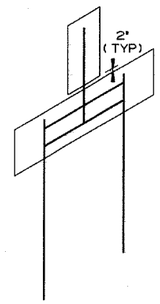
U-2 (3)



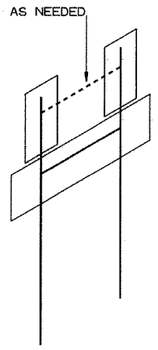
U-2 (4)



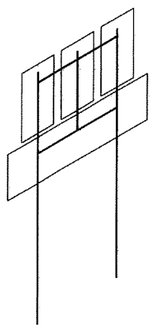
U-2 (5)



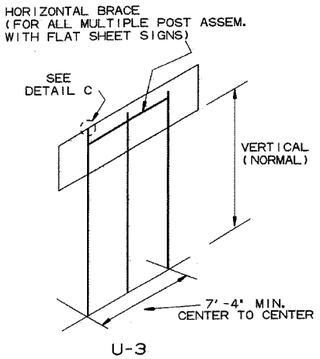
U-2 (6)



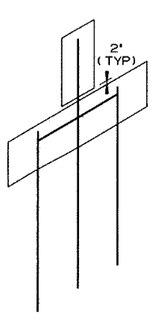
U-2 (7)



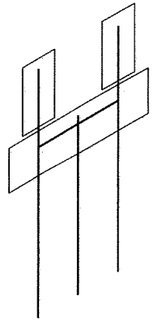
U-2 (8)



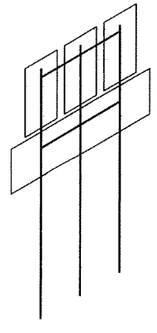
U-3



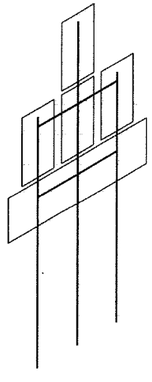
U-3 (1)



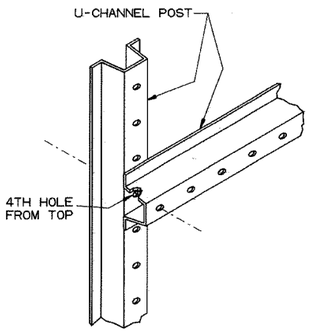
U-3 (2)



U-3 (3)

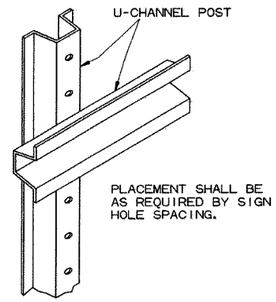


U-3 (4)



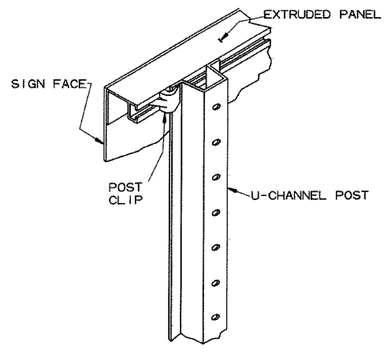
DETAIL A

SHOWING HORIZONTAL BRACE



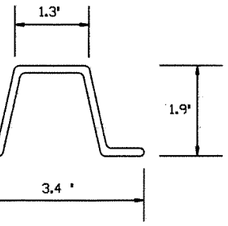
DETAIL B

SHOWING BACK-TO-BACK INSTALLATION



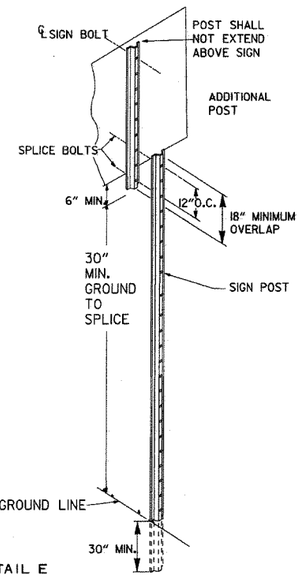
DETAIL C

SHOWING GUIDE SIGN MOUNTING WITH EXTRUDED PANELS



DETAIL D

(3 LB. U-CHANNEL POST)



DETAIL E

NOTES:

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

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

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

ALL SIGN POSTS SHALL BE PLUMB.

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

ARKANSAS STATE HIGHWAY COMMISSION

U-CHANNEL POST ASSEMBLIES

STANDARD DRAWING SHS-2

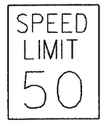
R1-1

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

R1-2

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

R2-1



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

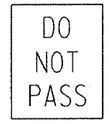
R2-5A

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

R2-5C

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

R4-1



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

R4-2

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

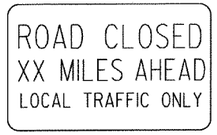
R5-1

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

R11-2

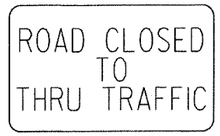
48"X30"

R11-3A



60"X30"

R11-4

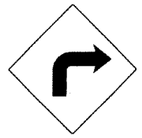


60"X30"

RSP-1

48"X30"

W1-1



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

W1-2

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

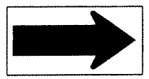
W1-3

STD. 48"X48"

W1-4

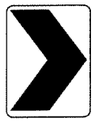
STD. 48"X48"

W1-6



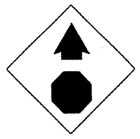
STD. 48"X24"
SPECIAL 60"X30"

W1-8



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

W3-1

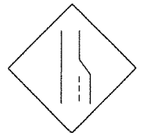


STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

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

W9-2

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

W13-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

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

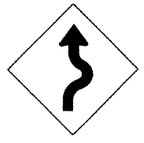
W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

W1-4b

STD. 48"X48"

R56-1

STD. 18"X18"

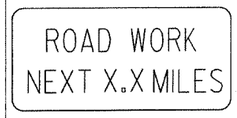
W8-11

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

W8-9

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

G20-1



60"X24"

G20-2

48"X24"

OM-3L OM-3R

12"X36"

M4-9

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

M4-10

48"X18"

R55-1

FINES DOUBLE
IN WORK ZONES *

WHEN WORKERS
ARE PRESENT **

36"X60"

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

ADVANCE DISTANCES
(XXXX)

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

GENERAL NOTES:

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

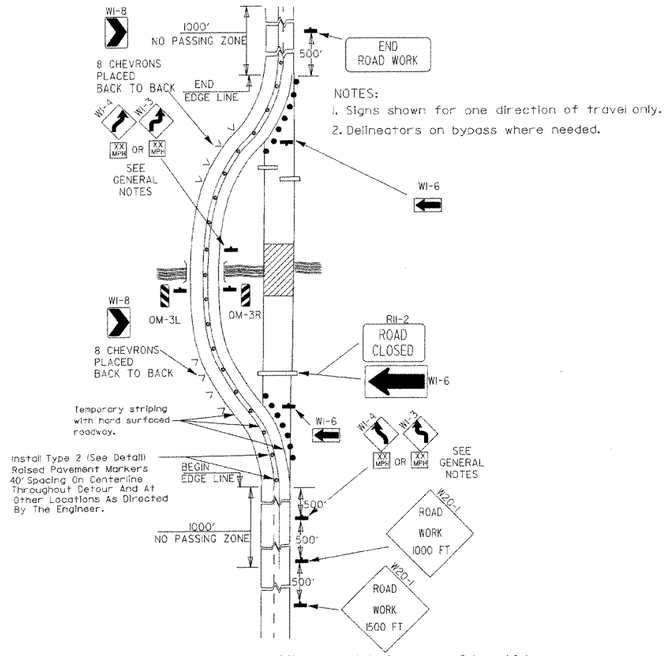
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

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

ARKANSAS STATE HIGHWAY COMMISSION

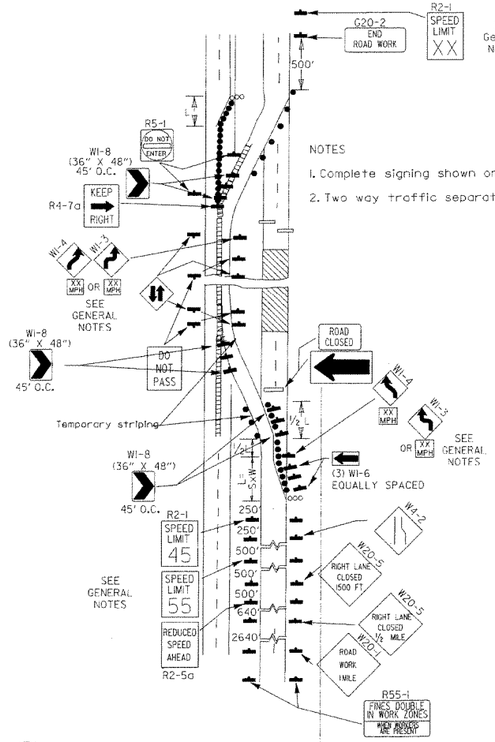
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



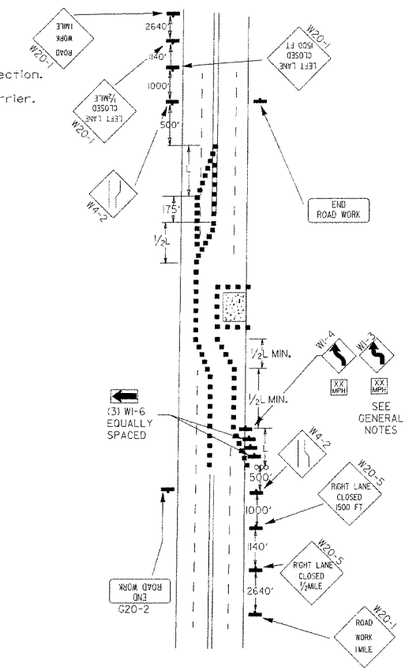
NOTES:
1. Signs shown for one direction of travel only.
2. Delineators on bypass where needed.

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

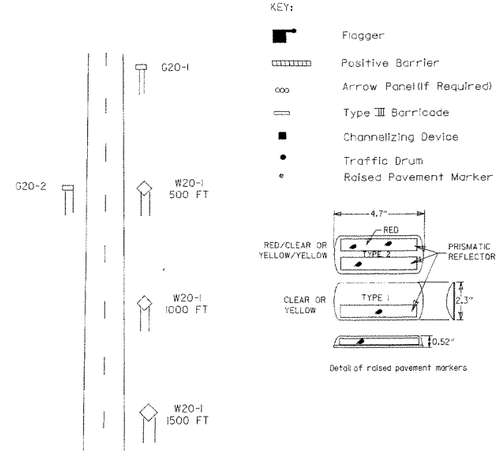


NOTES
1. Complete signing shown only in crossover direction.
2. Two way traffic separated with positive barrier.

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



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



Typical advance warning sign placement

Taper formulae:

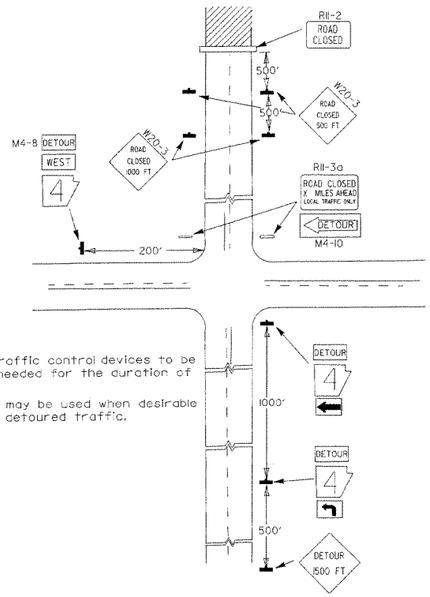
L=SxW for speeds of 45mph or more.

$L=\frac{WS^2}{60}$ 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.

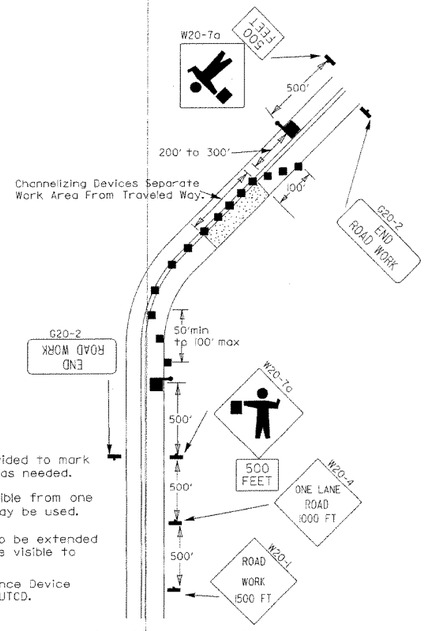
GENERAL NOTES:

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



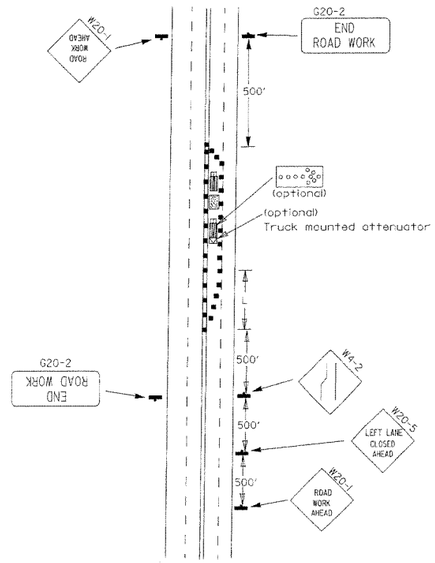
NOTES:
1. Regulatory traffic control devices to be modified as needed for the duration of the detour.
2. Street names may be used when desirable for directing detoured traffic.

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



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

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



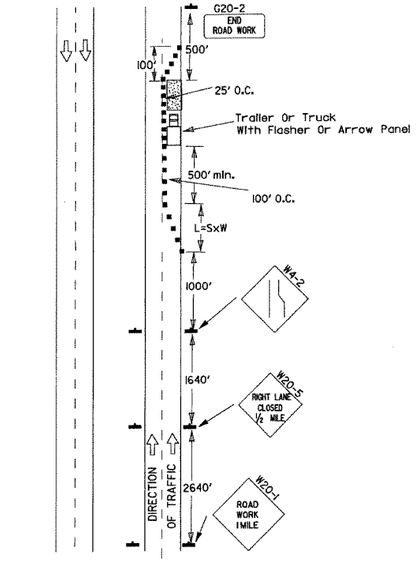
(F) Typical application - 4-lane undivided roadway with inside lane closed.

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	

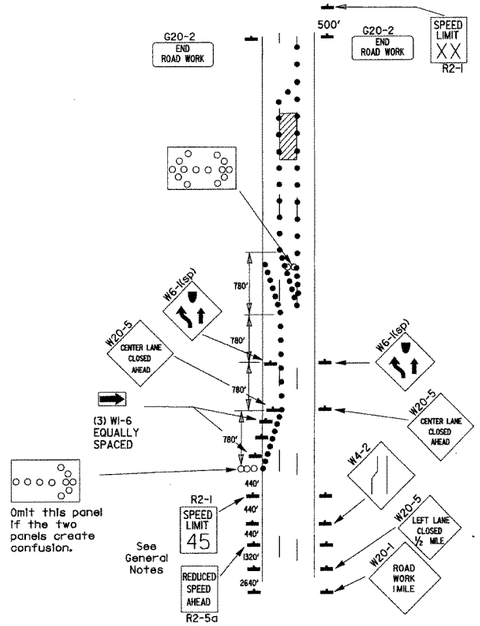
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

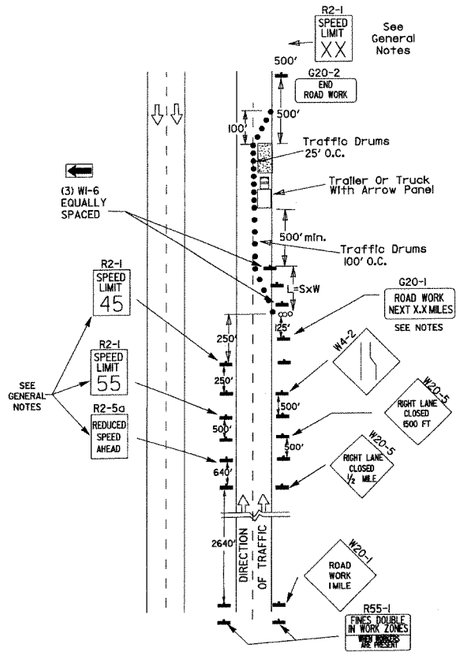
STANDARD DRAWING TC-2



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



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



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

KEY:

○○○ Arrow Panel (If Required)

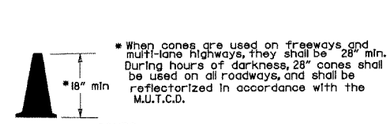
■ Channelizing Device

● Traffic drum

GENERAL NOTES:

1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-145mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-155mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

Channelizing devices



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

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

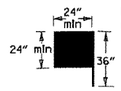
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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

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

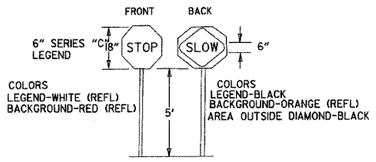
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

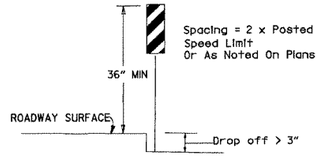


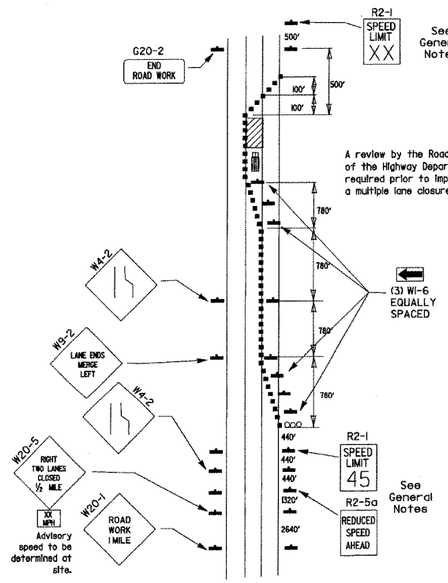
Flag shall be of good grade red material

STOP SLOW PADDLE



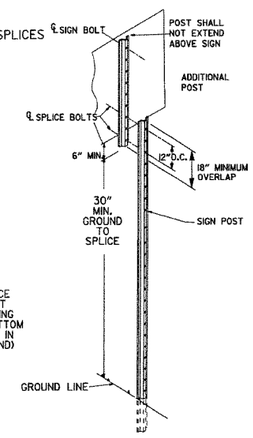
VERTICAL PANEL PLACEMENT





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

DETAIL OF SPLICES



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

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

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

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	

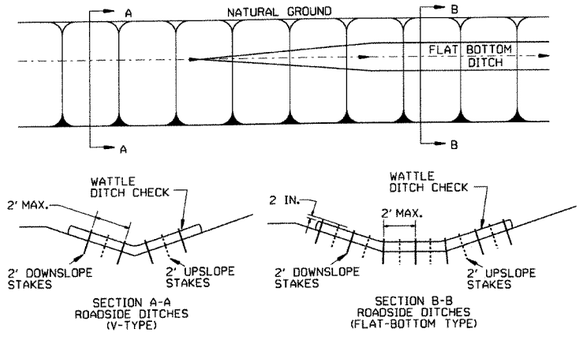
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

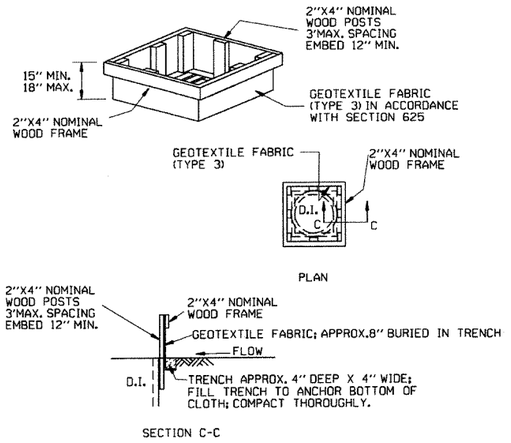
STANDARD DRAWING TC-3

GENERAL NOTES

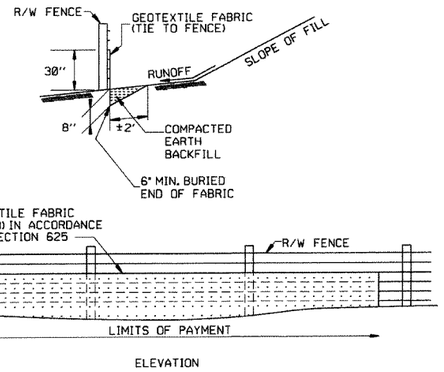
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

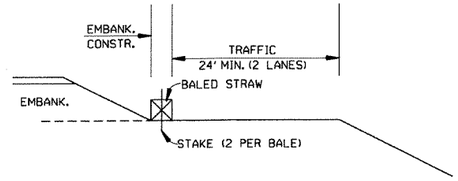
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

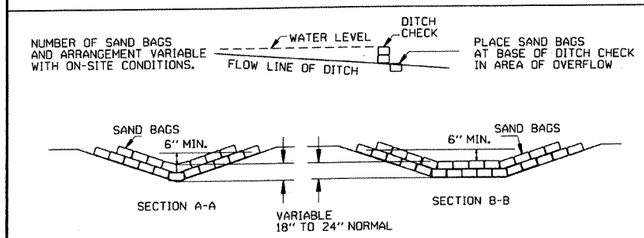
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

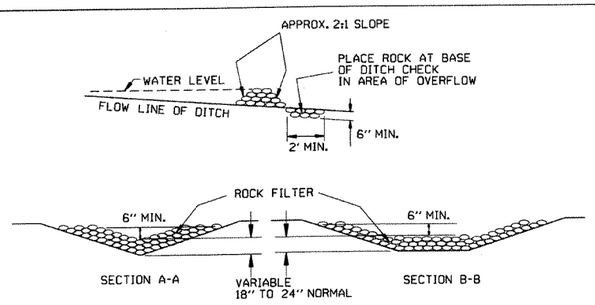
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



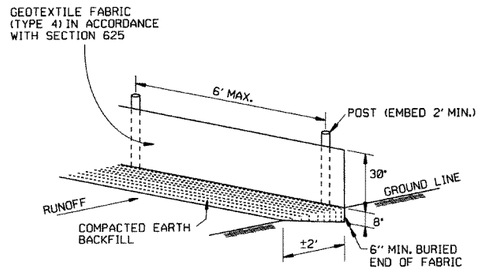
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

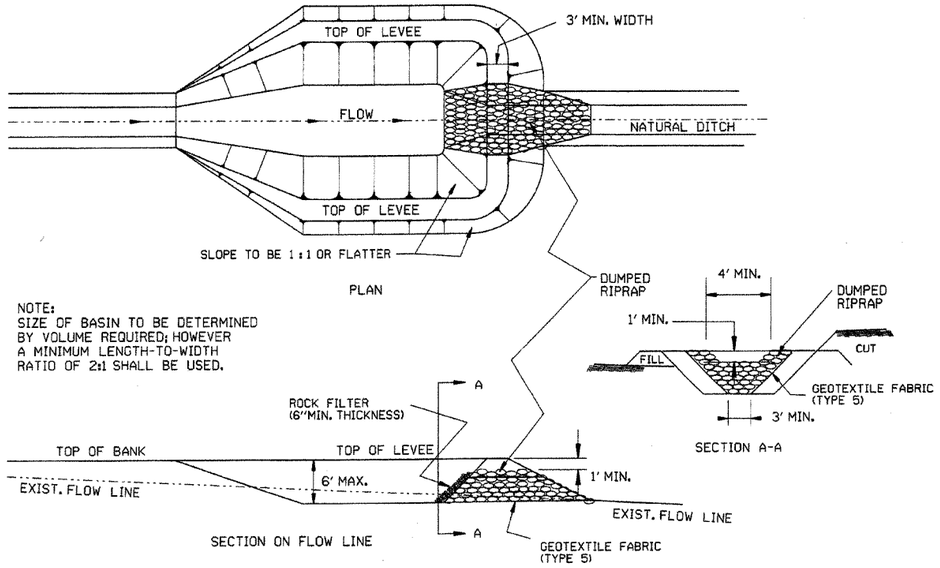
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

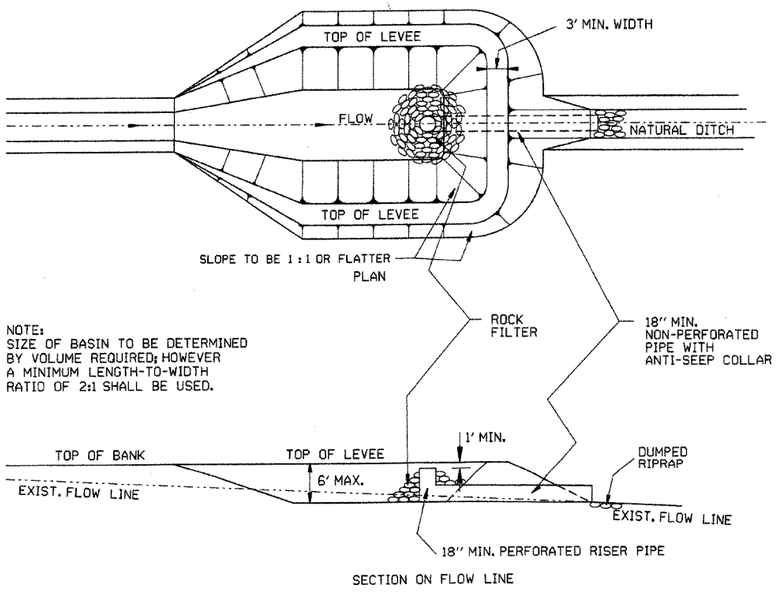
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

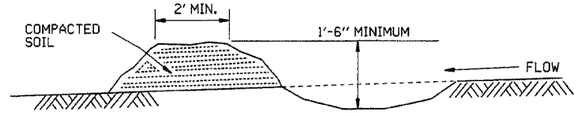
STANDARD DRAWING TEC-1



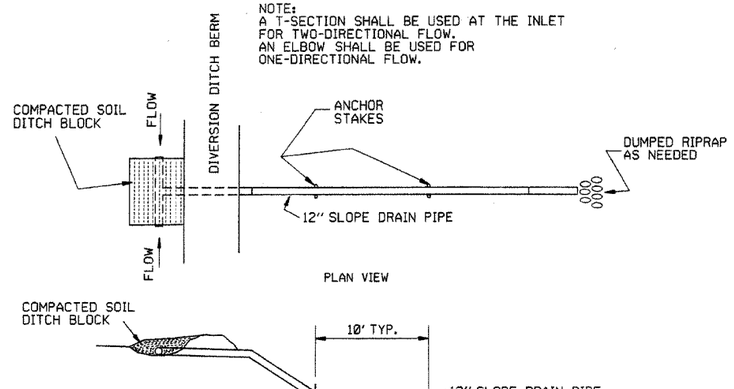
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



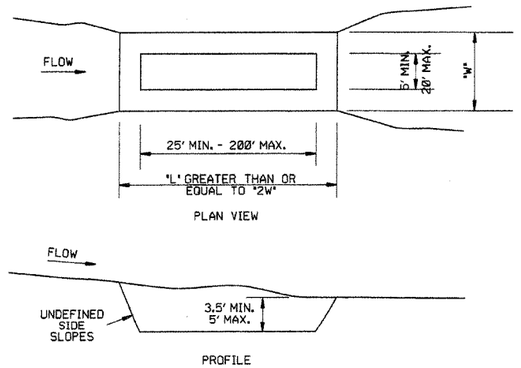
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

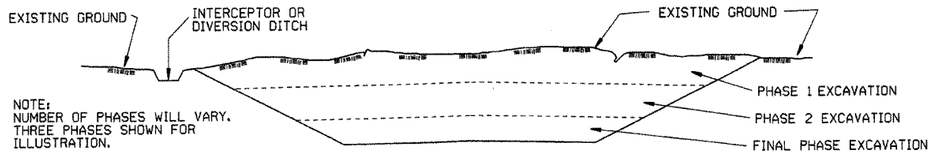
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



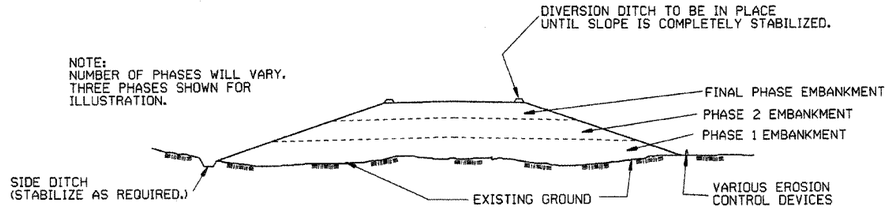
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

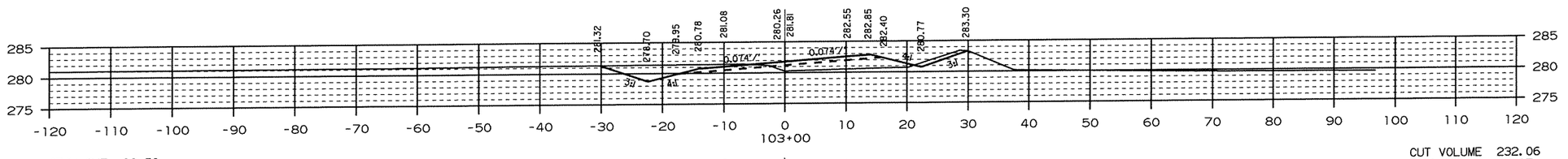
STANDARD DRAWING TEC-3

stdtec3.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

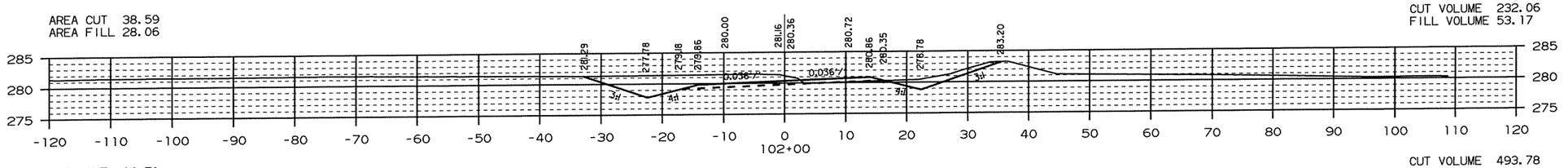
FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BRI112	55	60

4 X-SECTS. STA. 99+00-STA. 103+00



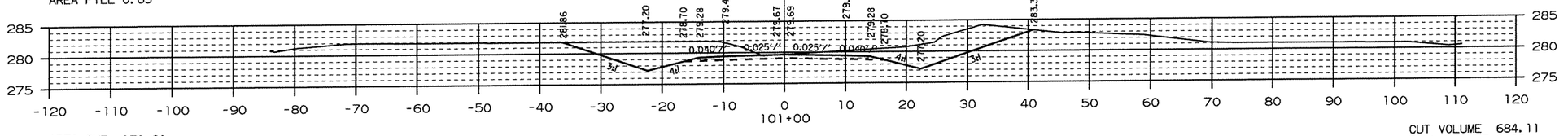
AREA CUT 38.59
AREA FILL 28.06

CUT VOLUME 232.06
FILL VOLUME 53.17



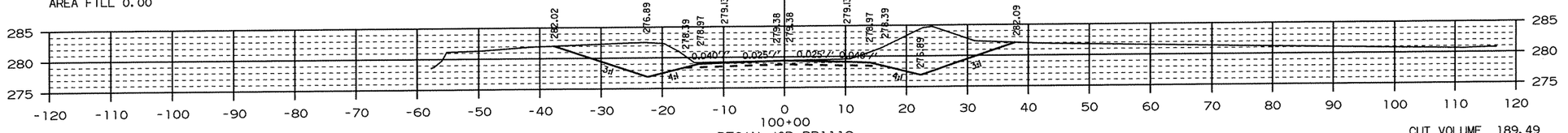
AREA CUT 86.71
AREA FILL 0.65

CUT VOLUME 493.78
FILL VOLUME 1.20



AREA CUT 179.91
AREA FILL 0.00

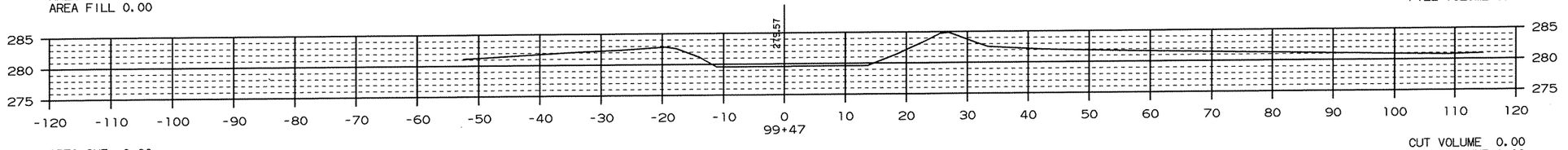
CUT VOLUME 684.11
FILL VOLUME 0.00



BEGIN JOB BR1112

AREA CUT 189.48
AREA FILL 0.00

CUT VOLUME 189.49
FILL VOLUME 0.00

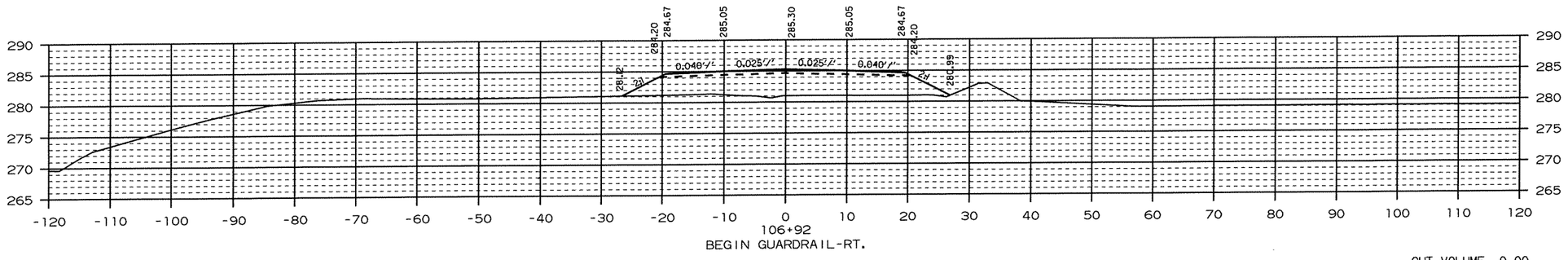


AREA CUT 0.00
AREA FILL 0.00

CUT VOLUME 0.00
FILL VOLUME 0.00

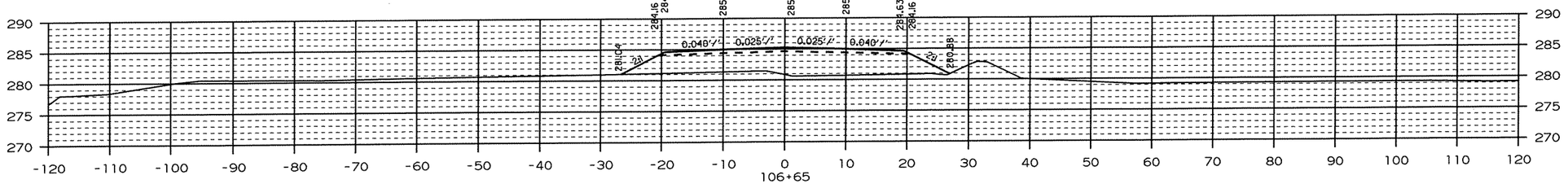
CROSS SECTION STA. 99+47 TO STA. 103+00

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.		BRI112	56	60
				(4)	X-SECTS. STA. 104+00-STA. 106+92			



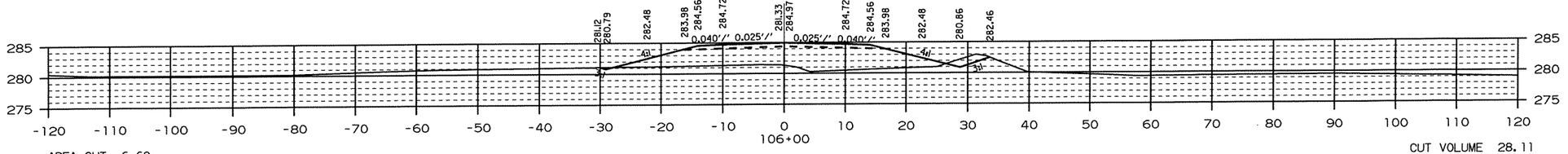
AREA CUT 0.00
AREA FILL 157.86

CUT VOLUME 0.00
FILL VOLUME 159.25



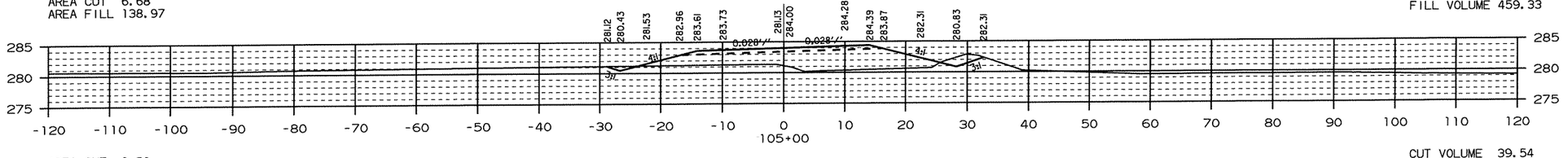
AREA CUT 0.00
AREA FILL 160.61

CUT VOLUME 0.00
FILL VOLUME 360.63



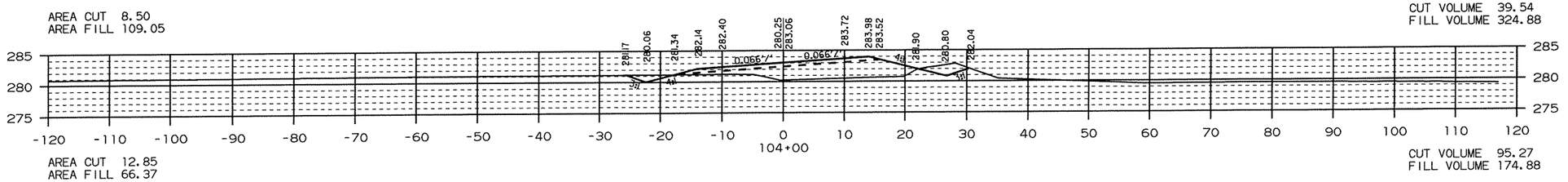
AREA CUT 6.68
AREA FILL 138.97

CUT VOLUME 28.11
FILL VOLUME 459.33



AREA CUT 8.50
AREA FILL 109.05

CUT VOLUME 39.54
FILL VOLUME 324.88



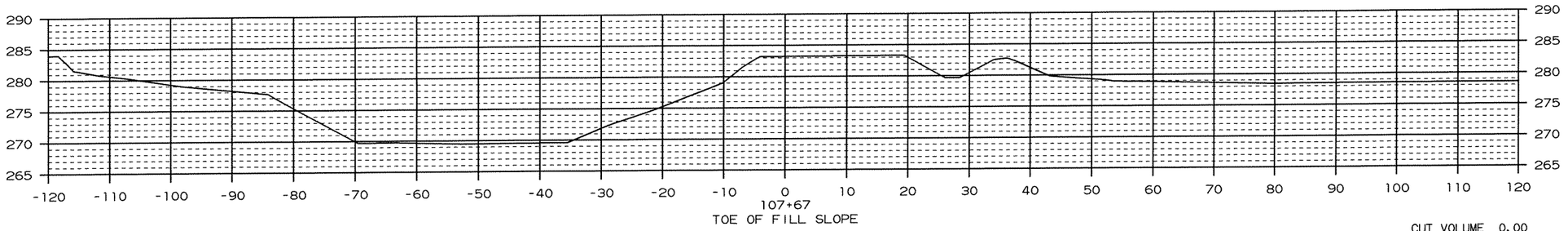
AREA CUT 12.85
AREA FILL 66.37

CUT VOLUME 95.27
FILL VOLUME 174.88

CROSS SECTION STA. 104+00 TO STA. 106+92

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.		BRI112	57	60

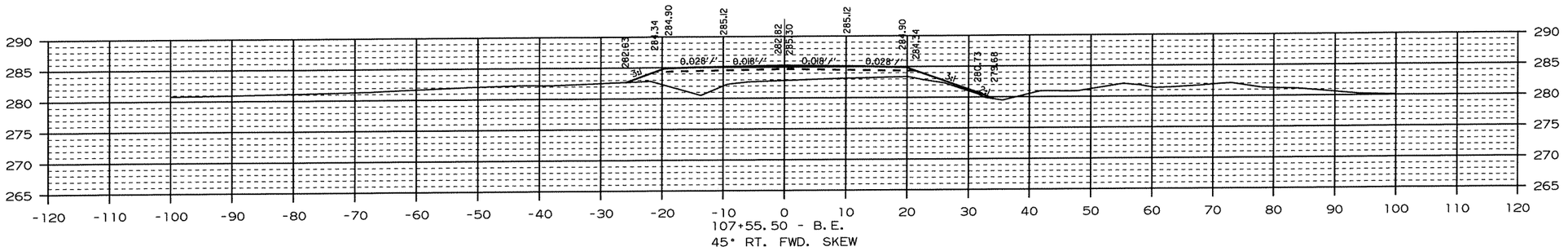
(4) X-SECTS. STA. 107+00-STA. 107+67



107+67
TOE OF FILL SLOPE

AREA CUT 0.00
AREA FILL 0.00

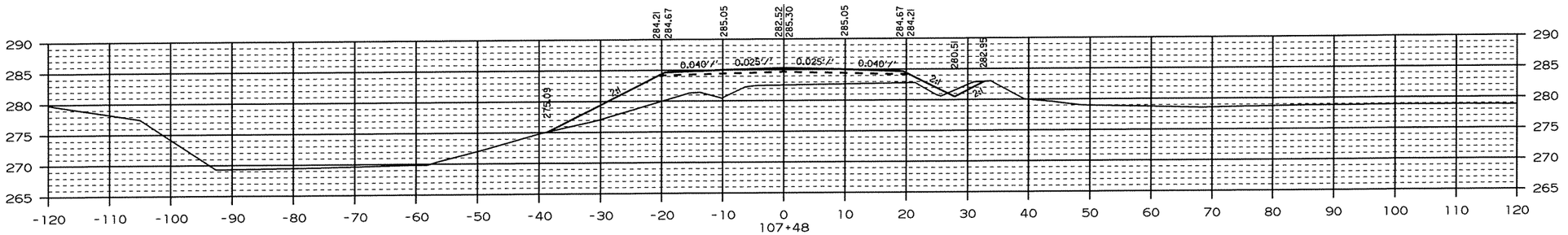
CUT VOLUME 0.00
FILL VOLUME 23.72



107+55.50 - B.E.
45° RT. FWD. SKEW

AREA CUT 0.00
AREA FILL 106.74

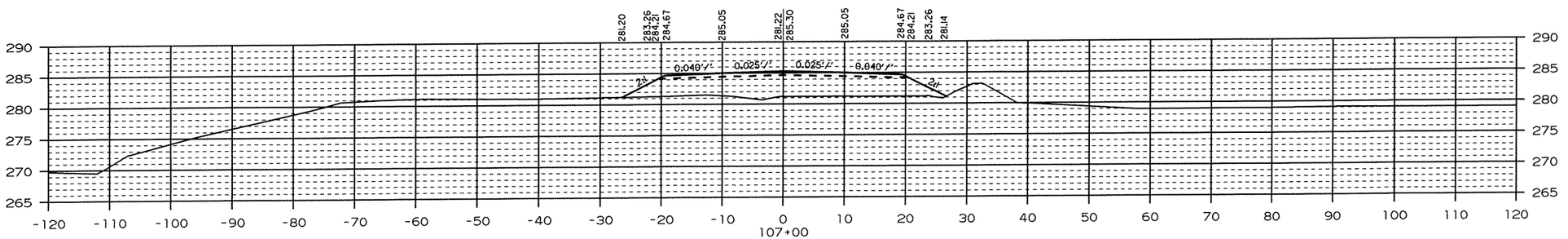
CUT VOLUME 0.66
FILL VOLUME 26.12



107+48
SLOPE INTERCEPT

AREA CUT 5.10
AREA FILL 94.72

CUT VOLUME 4.53
FILL VOLUME 218.66



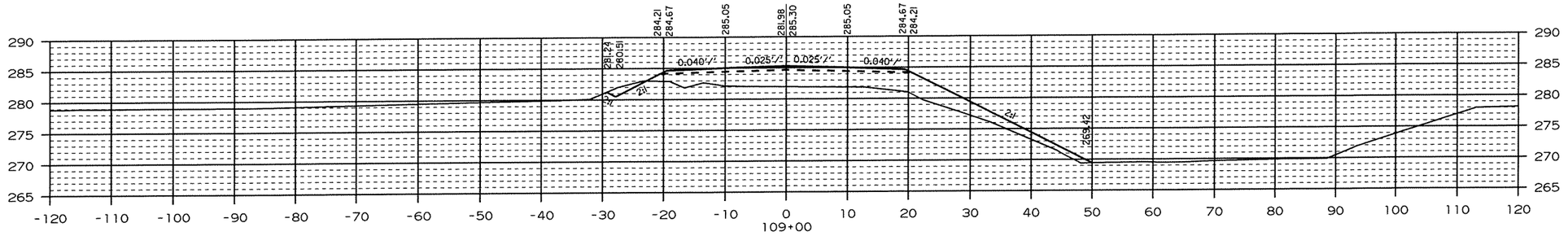
107+00

AREA CUT 0.00
AREA FILL 151.25

CUT VOLUME 0.00
FILL VOLUME 45.80

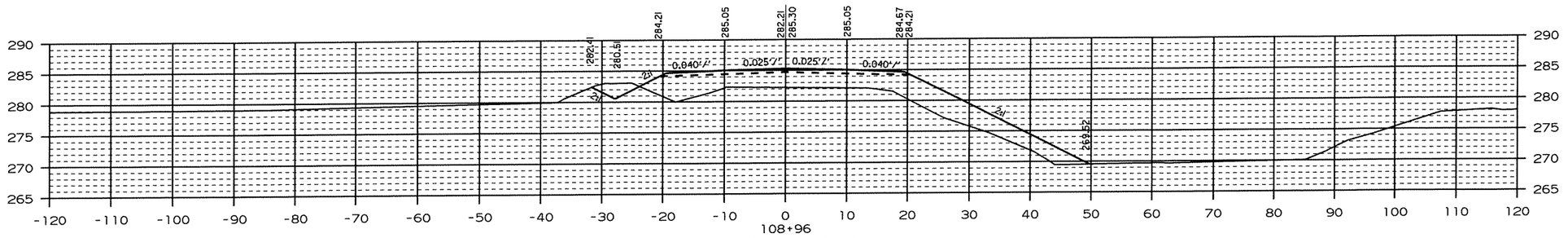
CROSS SECTION STA. 107+00 TO STA. 107+67

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.		BRI112	58	60
				(4)	X-SECTS. STA. 108+76-STA. 109+00			



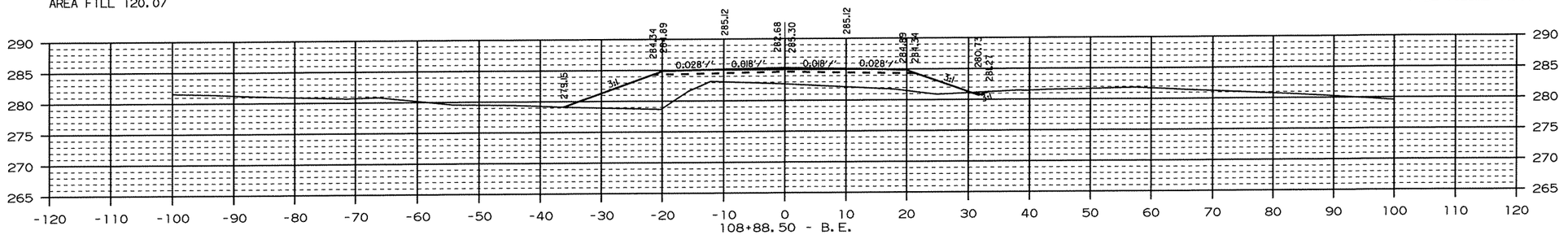
AREA CUT 8.89
AREA FILL 93.68

CUT VOLUME 0.99
FILL VOLUME 15.82



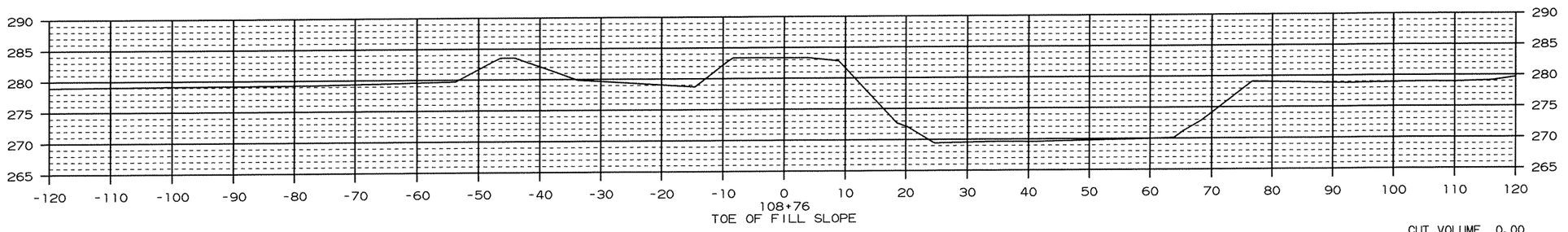
AREA CUT 4.48
AREA FILL 120.07

CUT VOLUME 0.77
FILL VOLUME 41.85



AREA CUT 0.69
AREA FILL 162.37

CUT VOLUME 0.15
FILL VOLUME 36.09

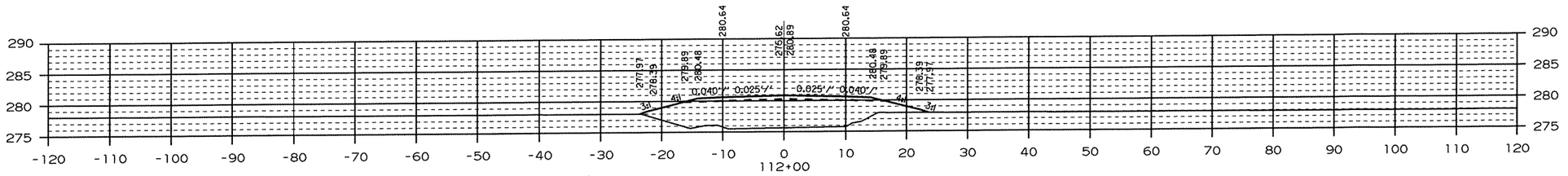


AREA CUT 0.00
AREA FILL 0.00

CUT VOLUME 0.00
FILL VOLUME 0.00

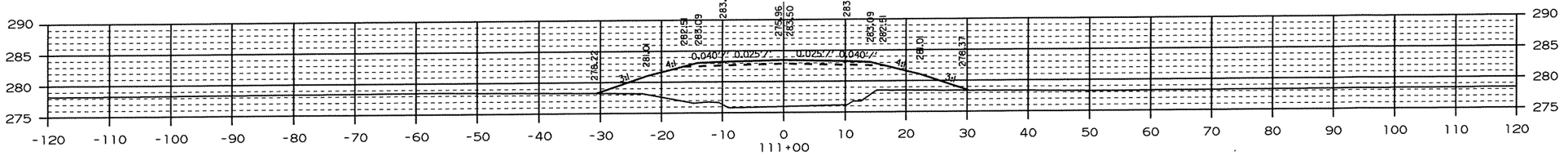
CROSS SECTION STA. 108+76 TO STA. 109+00

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.		BRI112	59	60
				(4)	X-SECTS. STA. 109+79-STA. 112+00			



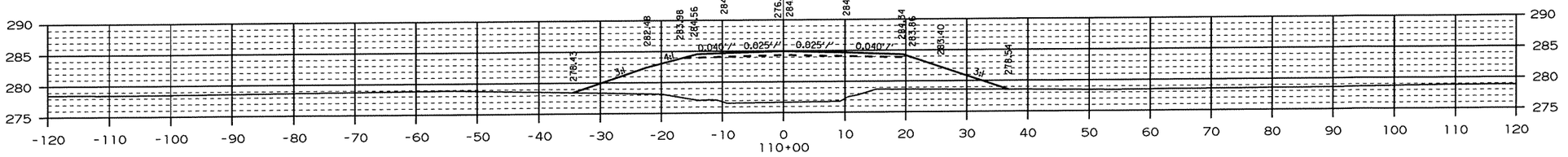
AREA CUT 0.00
AREA FILL 157.17

CUT VOLUME 0.00
FILL VOLUME 799.49



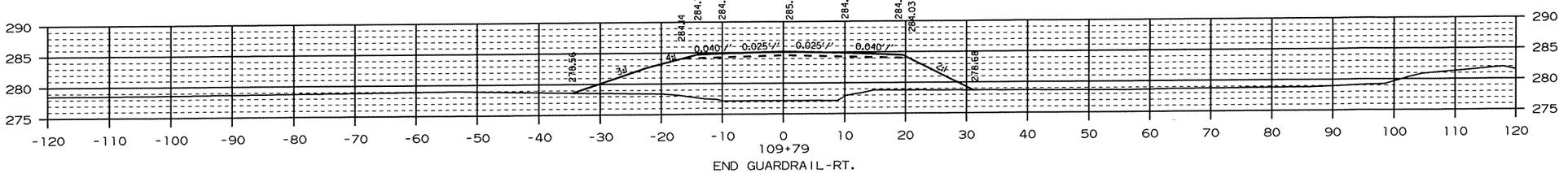
AREA CUT 0.00
AREA FILL 274.52

CUT VOLUME 0.00
FILL VOLUME 1198.04



AREA CUT 0.00
AREA FILL 372.37

CUT VOLUME 0.00
FILL VOLUME 272.88



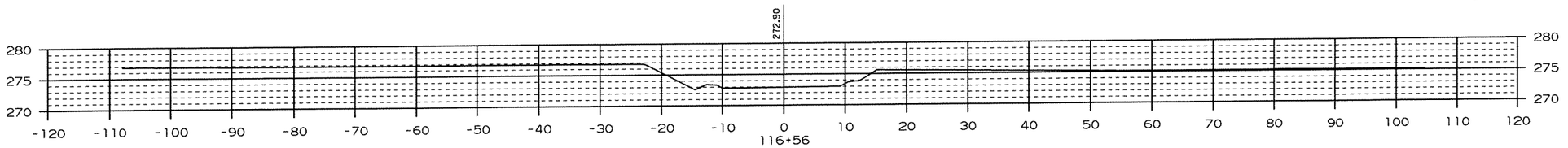
AREA CUT 0.00
AREA FILL 329.27

CUT VOLUME 13.00
FILL VOLUME 618.81

CROSS SECTION STA. 109+79 TO STA. 112+00

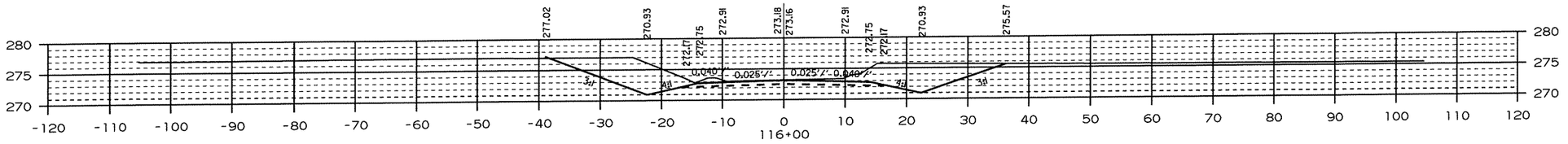
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BRI112	60	60

4 X-SECTS. STA. 113+00-STA. 116+56



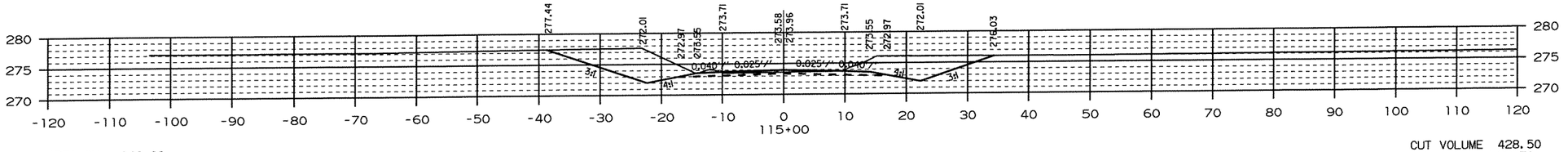
AREA CUT 0.00
AREA FILL 0.00

CUT VOLUME 160.14
FILL VOLUME 0.00



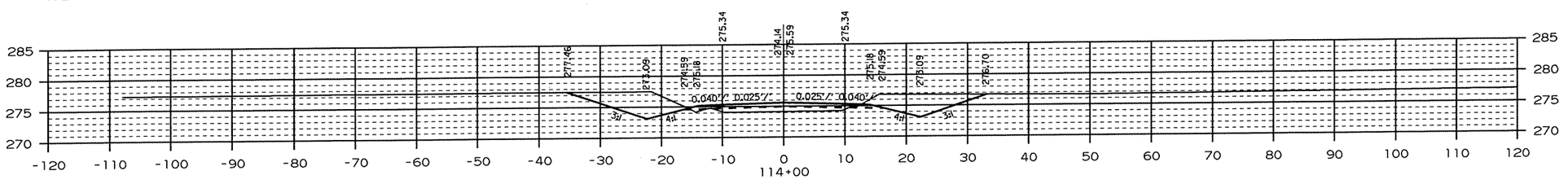
AREA CUT 154.41
AREA FILL 0.00

CUT VOLUME 551.53
FILL VOLUME 0.00



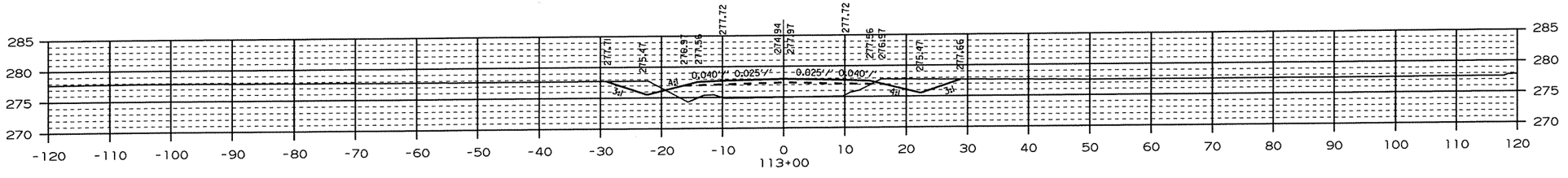
AREA CUT 143.39
AREA FILL 0.00

CUT VOLUME 428.50
FILL VOLUME 29.72



AREA CUT 87.98
AREA FILL 16.05

CUT VOLUME 215.05
FILL VOLUME 153.86



AREA CUT 28.14
AREA FILL 67.03

CUT VOLUME 52.12
FILL VOLUME 415.22

CROSS SECTION STA. 113+00 TO STA. 116+56