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.		070345	1	63
				(2)	DITCH AT L.M. 1.8 STR. & APPRS. (S)			

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

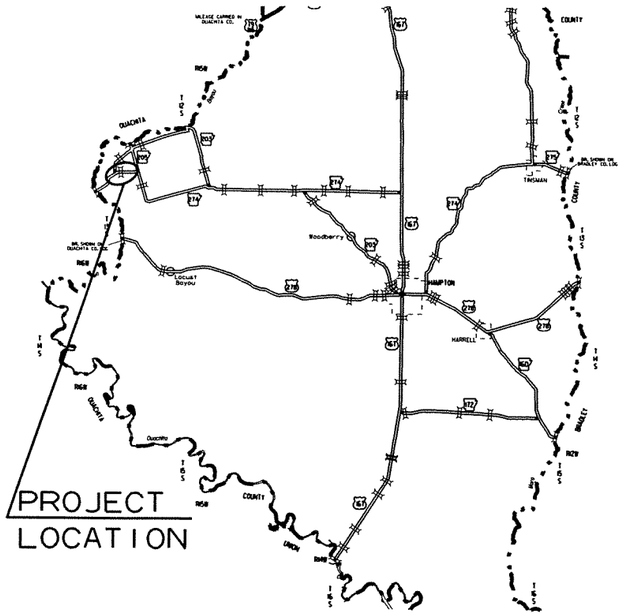
DITCH AT L.M. 1.8
STR. & APPRS. (S)

CALHOUN COUNTY

ROUTE 274 SECTION 2

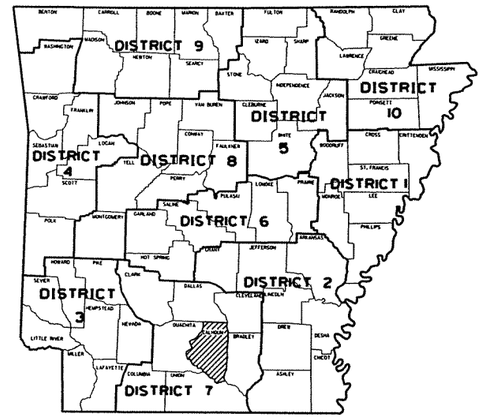
JOB 070345

FED. AID PROJ. BRN-0007(17)



VICINITY MAP

0 1 2 MILE
BAR SCALE



ARK. HWY. DIST. NO. 7

• DESIGN TRAFFIC DATA •

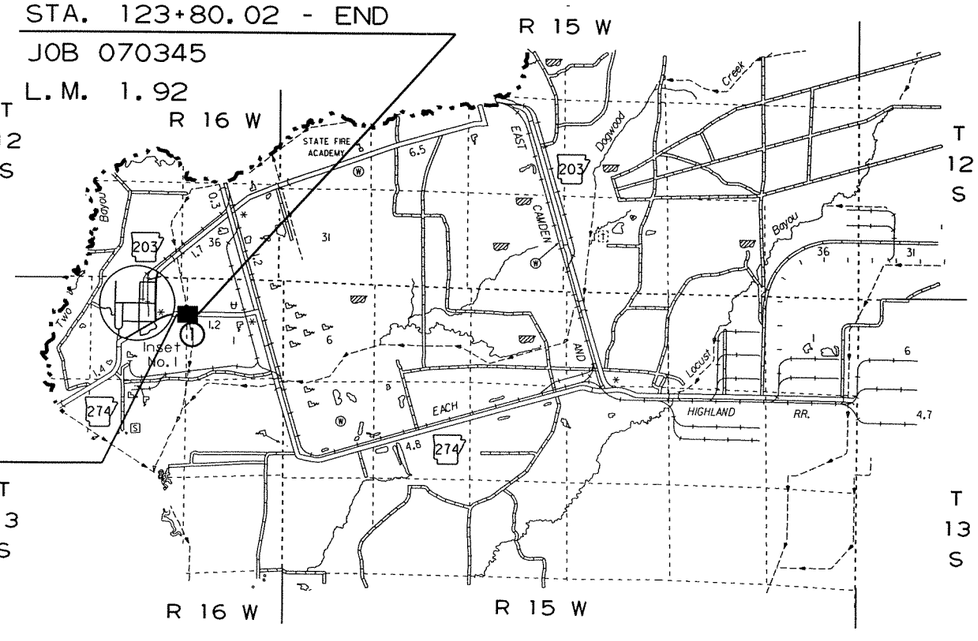
DESIGN YEAR	2031
2011 ADT	3700
2031 ADT	4200
2031 DHV	462
DIRECTIONAL DISTRIBUTION	60 %
TRUCKS	9 %
DESIGN SPEED	55 MPH

STRUCTURES OVER 20'-0" SPAN

(1) BR. END STA. 118+15.00
BRIDGE NO. 07209
40'-00" CLEAR ROADWAY
125'-00" TOTAL LENGTH
INTEGRAL W-BEAM UNIT
(39', 46', 39')
BR. END STA. 119+40.00

STA. 123+80.02 - END
JOB 070345
L.M. 1.92

STA. 114+38.46 - BEGIN
JOB 070345
LOG MILE 1.74



BEGIN PROJECT:
LAT. = N 33°37'47"
LONG. = W 92°42'36"

MID-POINT OF PROJECT
LAT. = N 33°37'47"
LONG. = W 92°42'34"

END PROJECT
LAT. = N 33°37'47"
LONG. = W 92°42'26"

GROSS LENGTH OF PROJECT	941.56	FEET	OR	0.178	MILES
NET " " ROADWAY	816.56	"	"	0.154	"
NET " " BRIDGES	125.00	"	"	0.024	"
NET " " PROJECT	941.56	"	"	0.178	"

P.E. 070345
NON-PART.

N

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 3917
FRANK VOZEL

7/22/11
DEPUTY DIRECTOR
AND CHIEF ENGINEER

r:070345.dgn, TITLE SHEET
8-29-2010

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.		070345	2	63

(2) INDEX OF SHEETS, GOVERNING SPECIFICATIONS AND GENERAL NOTES

INDEX OF SHEETS

SHEET NO.	TITLE	BRIDGE NO.	DRWG.NO.	DATE
1	TITLE SHEET			
2	INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES			
3-4	TYPICAL SECTIONS OF IMPROVEMENT			
5	SPECIAL DETAILS			
6-7	TEMPORARY EROSION CONTROL DETAILS			
8-11	MAINTENANCE OF TRAFFIC DETAILS			
12-14	QUANTITY SHEETS			
15	SCHEDULE OF BRIDGE QUANTITIES	07209	51902	
16	SUMMARY OF QUANTITIES AND REVISIONS			
17-19	SURVEY CONTROL DETAILS			
20-21	PLAN AND PROFILE SHEETS			
22	LAYOUT OF BRIDGE OVER DITCH AT L.M. 1.8 - SHEET 1 OF 2	07209	51903	
23	LAYOUT OF BRIDGE OVER DITCH AT L.M. 1.8 - SHEET 2 OF 2	07209	51904	
24	DETAILS OF END BENTS	07209	51905	
25	DETAILS OF INTERMEDIATE BENTS	07209	51906	
26	DETAILS OF CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS	07209	51907	
27	DETAILS OF 124' INTEGRAL W-BEAM UNIT - SHEET 1 OF 7	07209	51908	
28	DETAILS OF 124' INTEGRAL W-BEAM UNIT - SHEET 2 OF 7	07209	51909	
29	DETAILS OF 124' INTEGRAL W-BEAM UNIT - SHEET 3 OF 7	07209	51910	
30	DETAILS OF 124' INTEGRAL W-BEAM UNIT - SHEET 4 OF 7	07209	51911	
31	DETAILS OF 124' INTEGRAL W-BEAM UNIT - SHEET 5 OF 7	07209	51912	
32	DETAILS OF 124' INTEGRAL W-BEAM UNIT - SHEET 6 OF 7	07209	51913	
33	DETAILS OF 124' INTEGRAL W-BEAM UNIT - SHEET 7 OF 7	07209	51914	
34	EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS		1888A	4-10-03
35	DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES		1891F	4-10-03
36	DETAILS OF STANDARD TYPE B APPROACH GUTTERS		2016B	7-14-10
37	DETAILS OF STANDARD TYPE D BRIDGE NAME PLATES		2387	1-25-11
38	DETAILS OF STANDARD TEMPORARY BRIDGE STRUCTURE END PROTECTION SYSTEM		2465	4-10-03
39	DETAILS OF STANDARD TEMPORARY BRIDGE STRUCTURE PRECAST CONCRETE SPANS 24' ROADWAY SHEET 1 OF 2		2466	4-10-03
40	DETAILS OF STANDARD TEMPORARY BRIDGE STRUCTURE PRECAST CONCRETE SPANS 24' ROADWAY SHEET 2 OF 2		2467	4-10-03
41	DETAILS OF PERMISSABLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS		14991	4-10-03
42	CONCRETE DITCH PAVING		CDP-1	11-17-10
43	GUARD RAIL DETAILS		GR-8	7-14-10
44	GUARD RAIL DETAILS		GR-9	4-17-08
45	GUARD RAIL DETAILS		GR-9A	4-17-08
46	GUARD RAIL DETAILS		GR-10	7-14-10
47	GUARD RAIL DETAILS		GR-10A	7-14-10
48	GUARD RAIL DETAILS		GRT-1	7-14-10
49	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING		PCC-1	5-18-00
50	METAL PIPE CULVERT FILL HEIGHTS & BEDDING		PCM-1	3-30-00
51	PAVEMENT MARKING DETAILS		PM-1	11-17-10
52	DETAILS OF PIPE UNDERDRAINS		PU-1	4-10-03
53	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC		SE-2	10-18-96
54	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-1	11-17-10
55	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-2	3-11-10
56	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-3	10-15-09
57	TEMPORARY EROSION CONTROL DEVICES		TEC-1	11-18-98
58	TEMPORARY EROSION CONTROL DEVICES		TEC-2	6-02-94
59	TEMPORARY EROSION CONTROL DEVICES		TEC-3	11-03-94
60-63	CROSS SECTIONS			

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	FHWA-1273 - REVISIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-2	MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
103-1	DETERMINATION OF DBE PARTICIPATION
105-1	CONSTRUCTION CONTROL MARKINGS
105-2	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
107-1	WORKER VISIBILITY
108-1	LIQUIDATED DAMAGES
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
303-1	AGGREGATE BASE COURSE
404-1	PRODUCTION VERIFICATION OF ASPHALT CONCRETE HOT MIX
409-1	MINERAL AGGREGATES
410-3	DENSITY TESTING FOR ACHM LEVELING COURSES AND BOND BREAKERS
600-1	WATER FOR VEGETATION
603-1	MAINTENANCE OF TRAFFIC
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
719-2	THERMOPLASTIC PAVEMENT MARKING MATERIAL
JOB 070345	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 070345	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 070345	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 070345	DRIVEN STEEL PILING BY METHOD B
JOB 070345	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 070345	HIGH PERFORMANCE PAVEMENT MARKING
JOB 070345	INTERNET BIDDING
JOB 070345	SHORING
JOB 070345	SOIL STABILIZATION
JOB 070345	STEEL SHELL PILES
JOB 070345	STORM WATER POLLUTION PREVENTION PLAN
JOB 070345	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 070345	UTILITY ADJUSTMENTS
JOB 070345	WARM MIX ASPHALT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT

7-22-11

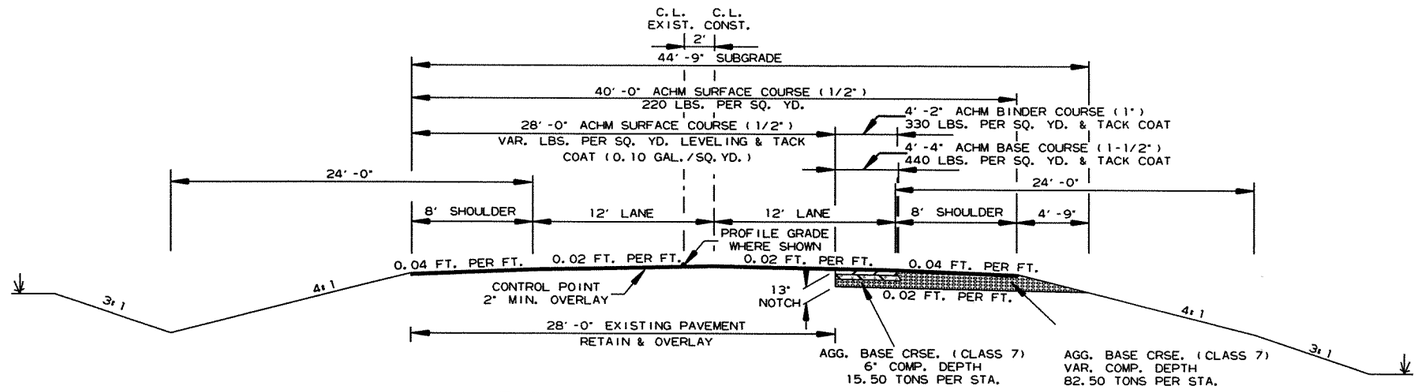
GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
5. 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
6. THIS PROJECT IS COVERED UNDER A NATIONWIDE 14 SECTION 404 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003, FOR PERMIT REQUIREMENTS.
7. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE . AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNERTHAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
8. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 UNCLASSIFIED EXCAVATION.

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.		070345	3	63

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11



TYPICAL SECTION OF IMPROVEMENT

NOTCH & WIDENING

STA. 114+38.46 - STA. 118+15.00
STA. 119+40.00 - STA. 123+80.02

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

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

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING.

THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

AFTER PLACING FINAL 2" OF SURFACE COURSE, THE EXISTING SLOPE SHALL BE REDRESSED AS DIRECTED BY THE ENGINEER PRIOR TO SEEDING IN ORDER TO MAINTAIN A UNIFORM SLOPE. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR VARIOUS CONTRACT ITEMS.

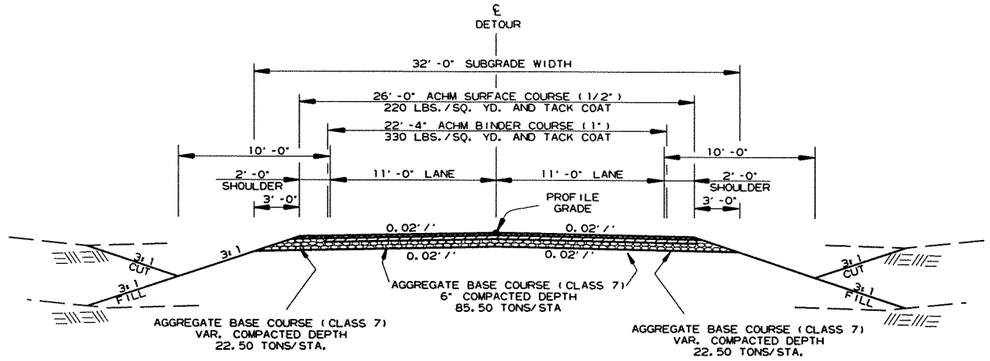
r070345.dgn 7-19-2011

TYPICAL SECTIONS OF IMPROVEMENT

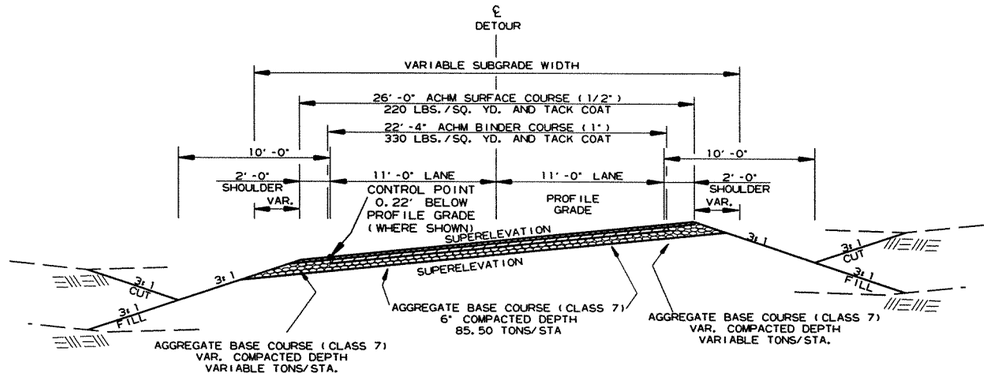
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070345	4	63

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11



DETOUR
TANGENT SECTION
TYPICAL SECTION OF IMPROVEMENT



DETOUR
SUPERELEVATION SECTION
TYPICAL SECTION OF IMPROVEMENT

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

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

THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

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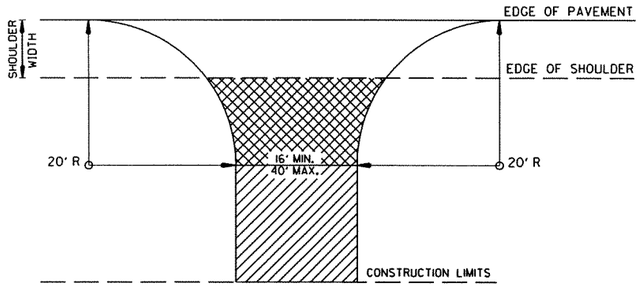
AFTER PLACING FINAL 2" OF SURFACE COURSE, THE EXISTING SLOPE SHALL BE REDRESSED AS DIRECTED BY THE ENGINEER PRIOR TO SEEDING IN ORDER TO MAINTAIN A UNIFORM SLOPE. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR VARIOUS CONTRACT ITEMS.

r070345.dgn 7-19-2011

TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070345	5	63

(2) SPECIAL DETAILS

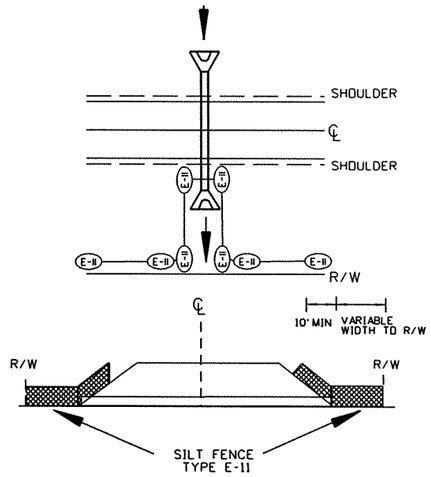


A.C.H.M. SURFACE COURSE (1/2")
(220 LBS./SQ. YD.) & AGGREGATE BASE
COURSE (CLASS 7) (7" COMPACTED DEPTH)

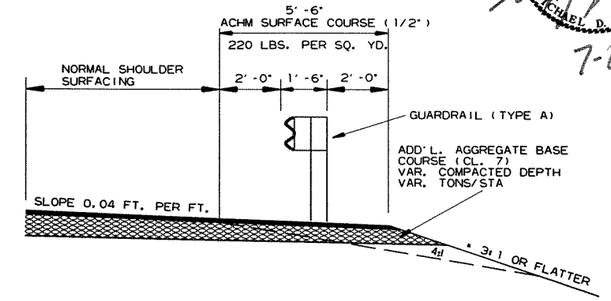
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH OR CONFORM TO
EXISTING DRIVEWAY

TURNOUTS SHALL BE MODIFIED AS NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

DETAIL FOR DRIVEWAY TURNOUTS

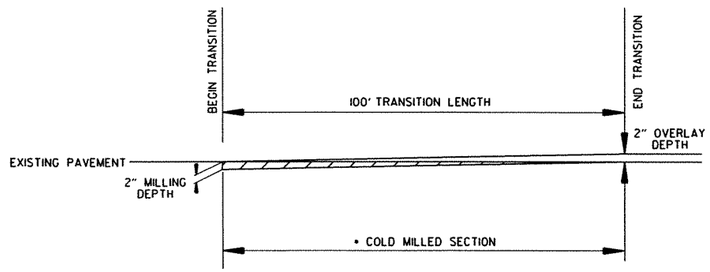


DETAIL OF SILT FENCE AT CROSS DRAINS



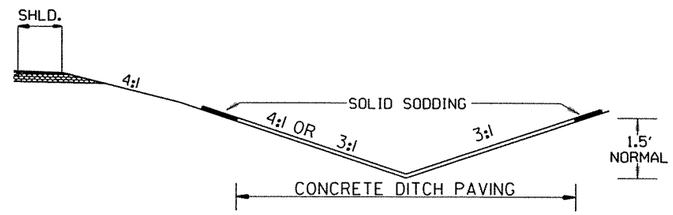
DETAIL OF WIDENING FOR GUARDRAIL

• REFER TO STD. DWG. GR-9A FOR SLOPE REQUIREMENTS BEHIND GUARDRAIL.



DETAIL SHOWING TAPER TO EXISTING PAVEMENT

* TO BE USED AS DIRECTED BY THE ENGINEER



DITCH LINING DETAIL

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7805
MICHAEL D. FUGETT
7-22-11

r070345.dgn 7-19-2011

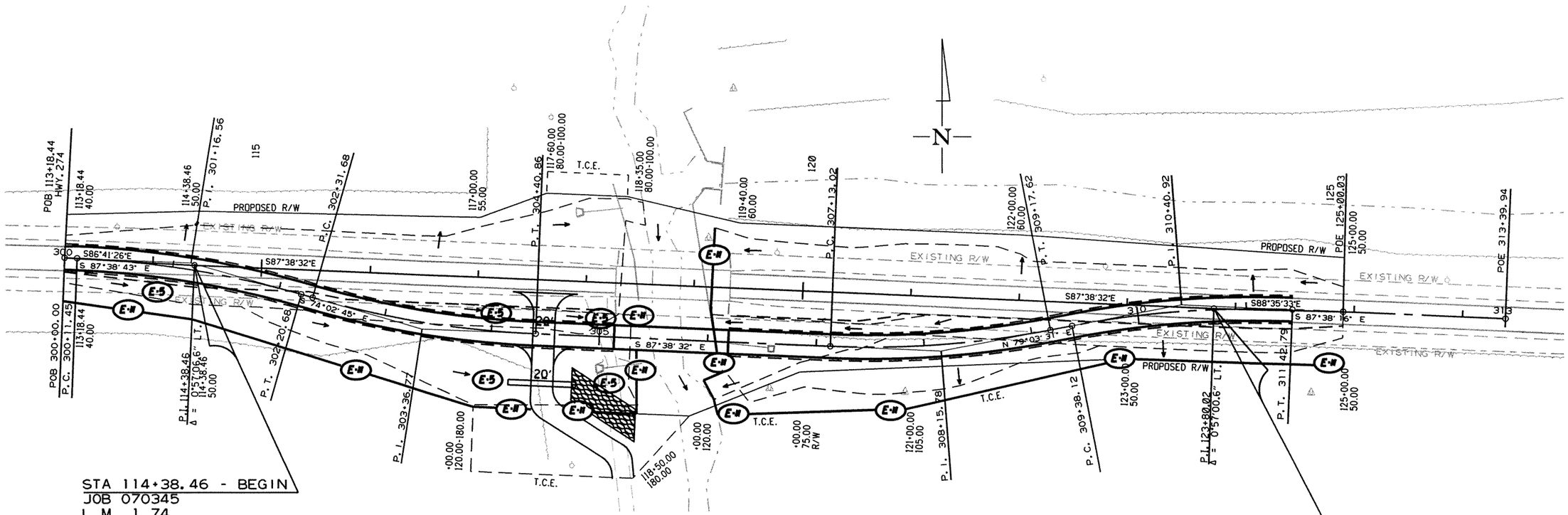
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070345	6	63

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11

CLEARING AND GRUBBING

STA. 113+18.44 - STA. 125+00.03 12 STA.



STA 114+38.46 - BEGIN
JOB 070345
L.M. 1.74

STA 123+80.02 - END
JOB 070345
LOG MILE 1.92

SAND BAG DITCH CHECKS (E-5)

STA. 114+00	RT.	1 INSTALLATION	20 BAGS
STA. 117+00	RT.	2 INSTALLATIONS	40 BAGS
STA. 118+00	RT.	2 INSTALLATIONS	40 BAGS
			100 BAGS

SILT FENCE (E-11)

STA. 113+18 - STA. 117+55	RT.	445 LIN. FT.
STA. 118+00 - STA. 118+49	RT.	100 LIN. FT.
STA. 119+16 - STA. 125+00	RT.	784 LIN. FT.
		1329 LIN. FT.

REVISION BOX

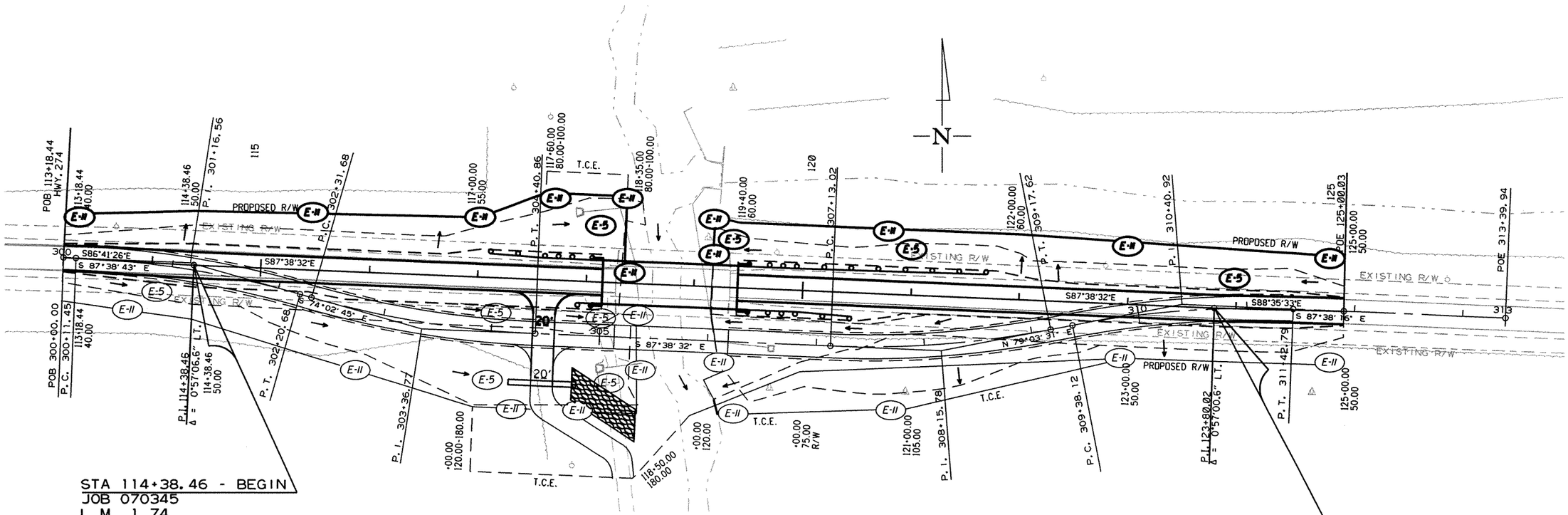
DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS
STAGE I

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.		070345	7	63

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11



STA 114+38.46 - BEGIN
JOB 070345
L.M. 1.74

STA 123+80.02 - END
JOB 070345
LOG MILE 1.92

SAND BAG DITCH CHECKS (E-5)

STA. 114+00	RT.	1 INSTALLATION	RETAIN
STA. 117+00	RT.	2 INSTALLATIONS	RETAIN
STA. 118+00	RT.	2 INSTALLATIONS	RETAIN
STA. 118+00	LT.	1 INSTALLATION	20 BAGS
STA. 119+35	LT.	1 INSTALLATION	20 BAGS
STA. 121+00	LT.	1 INSTALLATION	20 BAGS
STA. 124+00	LT.	1 INSTALLATION	20 BAGS
			80 BAGS

SILT FENCE (E-11)

STA. 113+18 - STA. 117+55	RT.	RETAIN	
STA. 118+00 - STA. 118+49	RT.	RETAIN	
STA. 119+16 - STA. 125+00	RT.	RETAIN	
STA. 113+18 - STA. 118+35	LT.	600 LIN. FT.	
STA. 119+16 - STA. 125+00	LT.	620 LIN. FT.	
		1220 LIN. FT.	

REVISION BOX

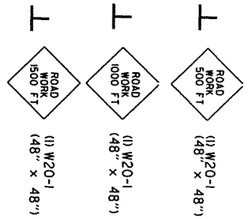
DATE	REVISION

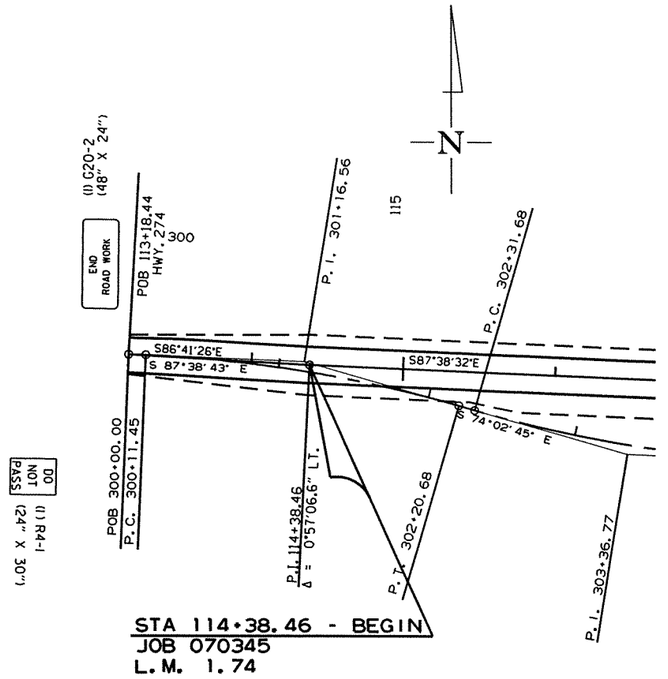
TEMPORARY EROSION CONTROL DETAILS
STAGE 2

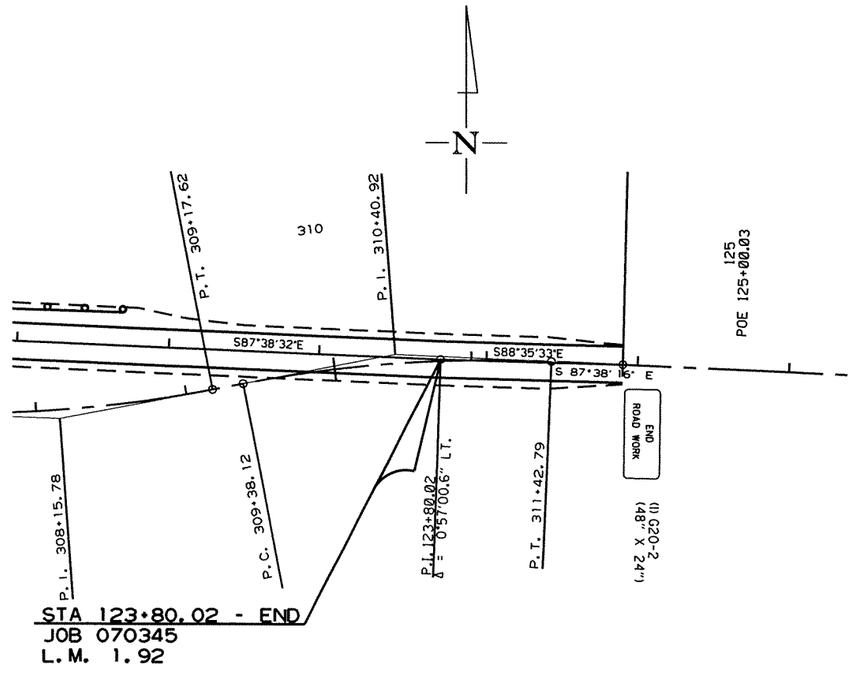
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070345	8	63

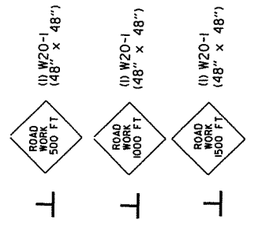
(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
7-22-11







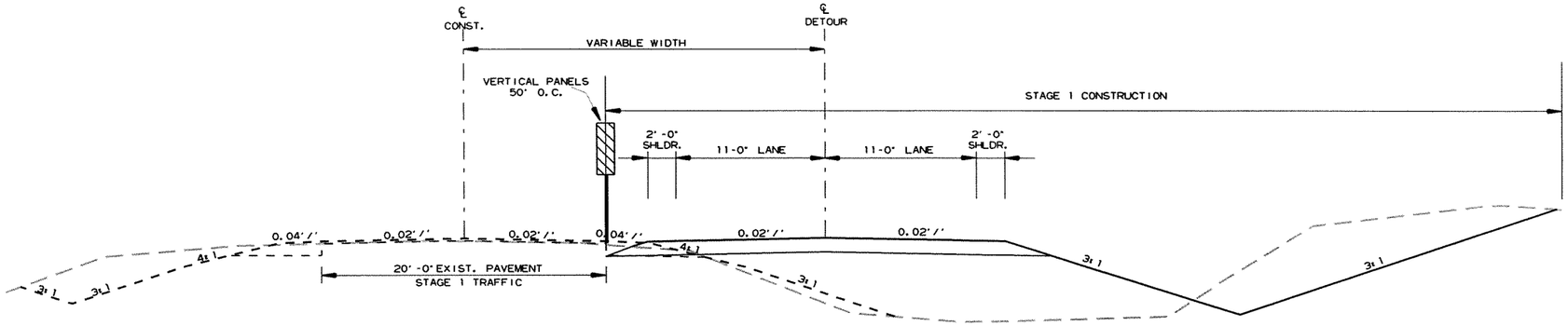


MAINTENANCE OF TRAFFIC DETAILS
ADVANCE WARNING SIGNS

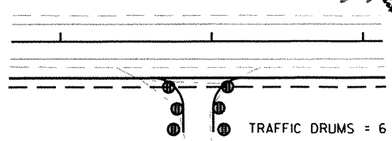
r070345.dgn 7-19-2011

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.		070345	9	63

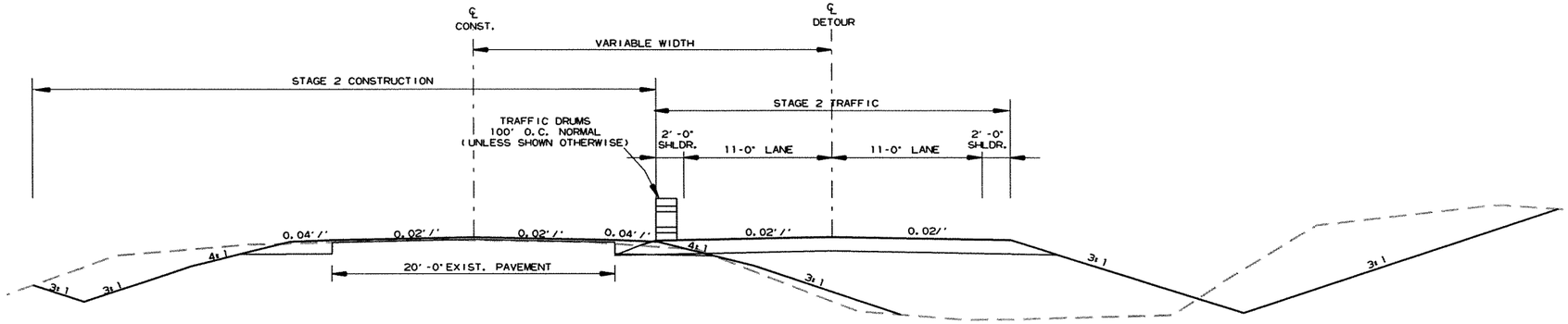
(2) MAINTENANCE OF TRAFFIC DETAILS



TYPICAL PLACEMENT OF VERTICAL PANELS



TYPICAL PLACEMENT OF TRAFFIC DRUMS AT DRIVEWAY DETAIL



TYPICAL PLACEMENT OF TRAFFIC DRUMS

SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. NOTCH AND WIDEN AND CONSTRUCT EMBANKMENT/PAVEMENT FOR DETOUR ON RT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING. PLACE CONSTRUCTION PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS (TYPE II).

STAGE 2: SHIFT TRAFFIC ONTO DETOUR. REMOVE EXISTING BRIDGE STRUCTURE AND CONSTRUCT NEW BRIDGE. NOTCH AND WIDEN ON LT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING ON LT. AND TRAFFIC DRUMS AT 100' O.C. SPACING AT LANE EDGE ON RT. PERFORM LEVELING OPERATIONS.

STAGE 3: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE DETOUR.

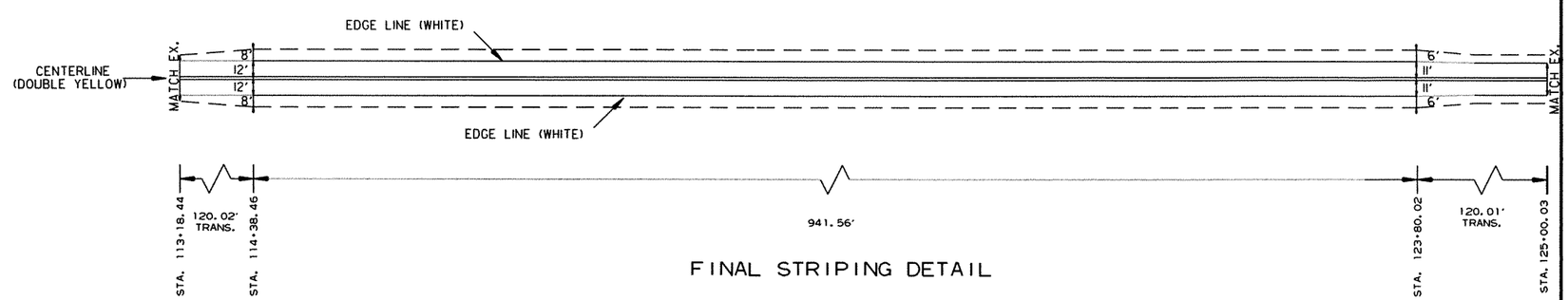
CONSTRUCTION PAVEMENT MARKINGS:

DETOUR:
AS DIRECTED BY THE ENGINEER:
RT. AND LT. EDGE LINES = 2286 LIN. FT.
DBL. CENTERLINE = 2286 LIN. FT.
RAISED PAVEMENT MARKERS:
TYPE II (YEL./YEL.) 40' O.C. ON CENTERLINE = 30 EACH
MAIN LANES:
RT. AND LT. EDGE LINES = 2363 LIN. FT.
DBL. CENTERLINE = 2363 LIN. FT.
RAISED PAVEMENT MARKERS:
TYPE II (YEL./YEL.) 40' O.C. ON CENTERLINE = 30 EACH
REMOVAL OF CONSTRUCTION PAVEMENT MARKERS = 2363 LIN. FT.

FINAL STRIPING:

THERMOPLASTIC PAVEMENT MARKINGS:
RT. AND LT. EDGE LINES = 2363 LIN. FT. WHITE
DBL. CENTERLINE = 2113 LIN. FT. YELLOW

FOR CONCRETE BRIDGE:
HIGH PERFORMANCE CONTRAST MARKING TAPE = 250 LIN. FT. YELLOW



FINAL STRIPING DETAIL

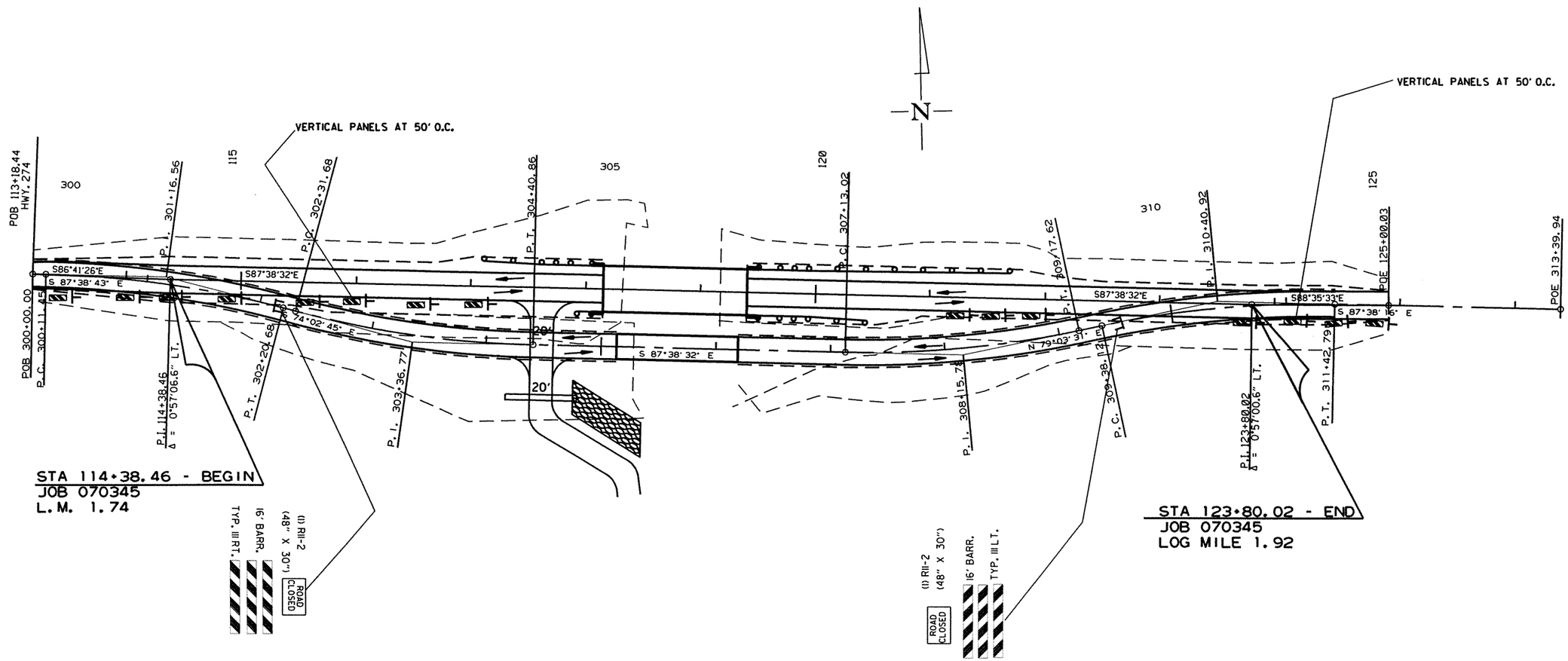
MAINTENANCE OF TRAFFIC DETAILS

r070345.dgn 7-19-2011

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.		070345	10	63

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11



SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT DETOUR BRIDGE. NOTCH AND WIDEN AND CONSTRUCT EMBANKMENT/PAVEMENT FOR DETOUR ON RT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING. PLACE CONSTRUCTION PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS (TYPE II).

STAGE 2: SHIFT TRAFFIC ONTO DETOUR. REMOVE EXISTING BRIDGE STRUCTURE AND CONSTRUCT NEW BRIDGE. NOTCH AND WIDEN ON RT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING ON LT. AND TRAFFIC DRUMS AT 100' O.C. SPACING AT LANE EDGE ON RT. PERFORM LEVELING OPERATIONS.

STAGE 3: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE DETOUR.

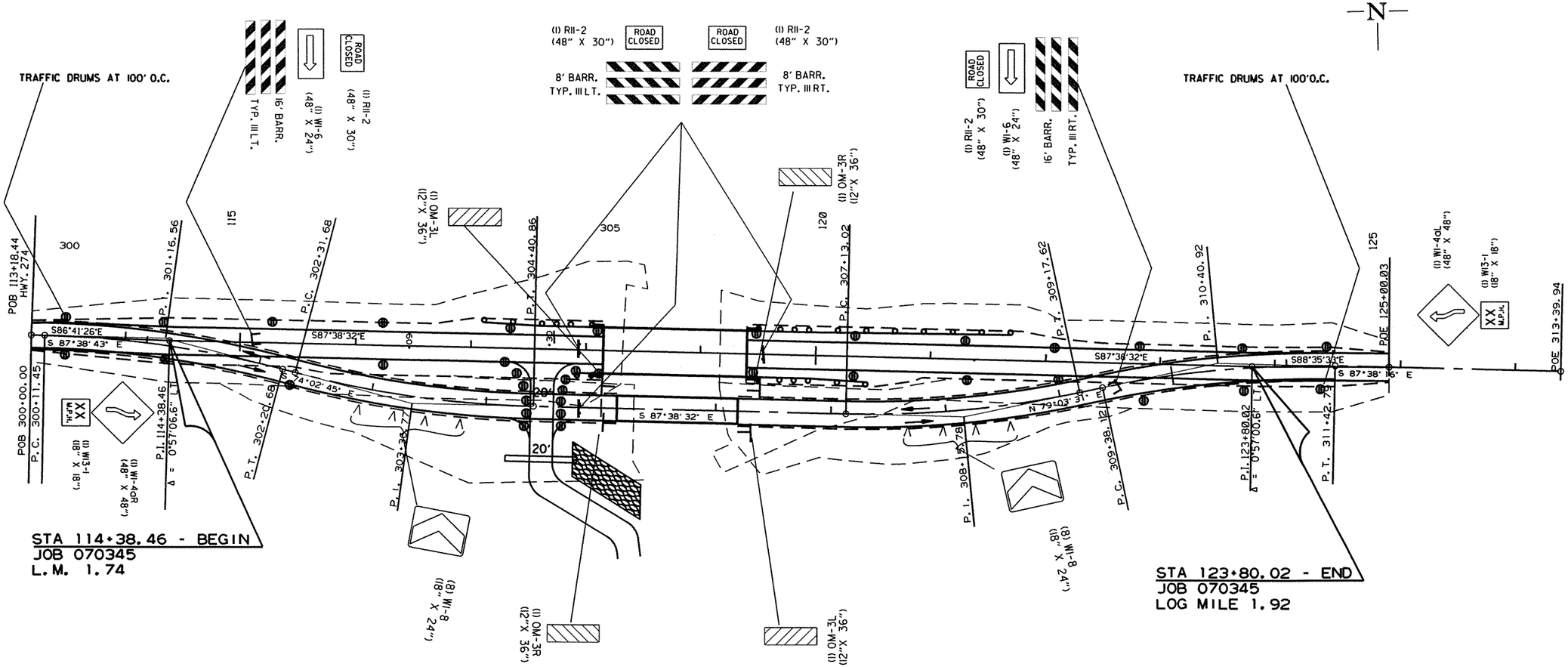
MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

r070345.dgn 4-07-2011

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.		070345	11	63

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11



STA 114+38.46 - BEGIN
JOB 070345
L.M. 1.74

STA 123+80.02 - END
JOB 070345
LOG MILE 1.92

SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT DETOUR BRIDGE. NOTCH AND WIDEN AND CONSTRUCT EMBANKMENT/PAVEMENT FOR DETOUR ON RT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING. PLACE CONSTRUCTION PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS (TYPE II).

STAGE 2: SHIFT TRAFFIC ONTO DETOUR. REMOVE EXISTING BRIDGE STRUCTURE AND CONSTRUCT NEW BRIDGE. NOTCH AND WIDEN ON RT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING ON LT. AND TRAFFIC DRUMS AT 100' O.C. SPACING AT LANE EDGE ON RT. PERFORM LEVELING OPERATIONS.

STAGE 3: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE DETOUR.

MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

r070345.DGN 04-07-2011

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.		070345	12	63
				(2) QUANTITIES				

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11

ADVANCE WARNING SIGNS AND DEVICES, CONSTRUCTION PAVEMENT MARKINGS, AND PERMANENT PAVEMENT MARKINGS

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	END OF JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		TRAFFIC DRUMS	VERTICAL PANELS	BARRICADES (TYPE III)		RAISED PAVEMENT MARKER	CONSTRUCTION PAVEMENT MARKINGS	THERMOPLASTIC PAVEMENT MARKINGS		HIGH PERFORMANCE PAVEMENT MARKING
											LT.	RT.	TYPE II (YEL/YEL)		4"		4"
															WHITE	YELLOW	YELLOW
			SQ.FT. - LIN.FT. - EACH				NO.	SQ. FT.	EACH		LIN. FT.		EACH		LIN.FT.		
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	32.0									
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0									
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0									
G20-2	END ROAD WORK	48"x24"	2	2	2	2	2	16.0									
R4-1	DO NOT PASS	24"x30"	2	2	2	2	2	10.0									
R11-2	ROAD CLOSED	48x30"	2	4	4	4	4	40.0									
W1-6	ARROW	48"x24"		2	2	2	2	16.0									
W1-4aL	REVERSE CURVE	48"x48"		1		1	1	16.0									
W1-4aR	REVERSE CURVE	48"x48"		1		1	1	16.0									
W13-1	SPEED ADVISORY	18"x18'		2		2	2	4.5									
W1-8	CHEVRON	18"x24"		16		16	16	48.0									
OM-3L	OBJECT MARKER	12"x36"		2		2	2	6.0									
OM-3R	OBJECT MARKER	12"x36"		2		2	2	6.0									
	TRAFFIC DRUMS			38		38			38								
	VERTICAL PANELS		16			16				16							
	TYPE III BARRICADE - LT. (8')		8	8		8					8						
	TYPE III BARRICADE - RT. (8')		8	8		8						8					
	TYPE III BARRICADE - LT. (16')		16	16		16					16						
	TYPE III BARRICADE - RT. (16')		16	16		16						16					
	CONSTRUCTION PAVEMENT MARKINGS		4572	4726		9298								9298			
	RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)		30			30							30				
	THERMOPLASTIC PAVEMENT MARKINGS-WHITE (4")				2363	2363									2363		
	THERMOPLASTIC PAVEMENT MARKINGS-YELLOW (4")				2113	2113										2113	
	HIGH PERFORMANCE PAVEMENT MARKING - YELLOW (4")				250	250											250
TOTALS:							**274.5**		**38**	**16**	**24**	**24**	**30**	**9298**	**2363**	**2113**	**250**

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

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.		070345	13	63

(2) QUANTITIES

CLEARING AND GRUBBING

STATION	STATION	CLEARING	GRUBBING
		STATION	
113+18.44	125+00.03	12	12
TOTALS:		12	12

SOIL STABILIZATION

STATION	LOCATION	SOIL STABILIZATION
		TONS
ENTIRE PROJECT	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.	200
TOTAL:		**200**

NOTE: QUANTITY ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
7-22-11

SOIL LOG

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO SOIL CLASS	COLOR
114+00	6' RT	0-5	18	5	A-4(0)	BR/GR
114+00	16' RT	0-5	18	4	A-4(0)	BR/GR
123+00	5'LT	0-5	28	13	A-6(4)	RD/BR
123+00	14' LT	0-5	29	14	A-6(4)	RD/BR
123+00	29' LT	0-5	ND	NP	A-4(0)	RD/BR
123+00	29' LT	0-5	ND	NP	A-4(0)	GRAY

NOTE: SOIL CHARACTERISTICS TABULATED ABOVE ARE REPRESENTATIVE AT THE LOCATION OF THE SAMPLE, AND FROM SURFACE INDICATIONS ARE TYPICAL OF THE LIMITS SHOWN. THESE DATA ARE SHOWN FOR INFORMATION ONLY. THE STATE WILL NOT BE RESPONSIBLE FOR VARIATIONS IN THE SOIL CHARACTERISITCS AND/OR EXTENT OF SAME DIFFERING FROM ABOVE TABULATIONS.

DRIVEWAYS & TURNOUTS - BASE & SURFACING

STATION	SIDE	DESCRIPTION	WIDTH	ADD'L. LENGTH	ACHM		AGGREGATE BASE CRS. (CLASS 7)	SIDE DRAINS
					SQ.YD.	ACHM SURFACE COURSE (1/2") PG 64-22		60"
			FEET			TON		LIN. FT.
117+63	RT.	INSTALL 60"x62' PIPE CULVERT RT. SIDE DRAIN	20	190	422	46	172	62
117+63	RT.	TEMPORARY DRIVE					100	
TOTALS:						**46**	**272**	**62**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.6% MIN. AGGR.....5.4% ASPHALT BINDER (PG 64-22)
MAXIMUM NUMBER OF GYRATIONS = 115
FOR C.M. PIPE CULVERT INSTALLATIONS, USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

EARTHWORK

STATION	STATION	LOCATION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU. YD.	
114+38.45	119+00.00	MAIN LANES	475	857
119+20	123+80.02	MAIN LANES	345	1266
114+38.45	119+00.00	DETOUR	477	2685
119+20	123+80.02	DETOUR	54	2447
114+38.45	119+00.00	DETOUR OBLITERATION	2883	479
119+20	123+80.02	DETOUR OBLITERATION	3749	
118+75		CHANNEL EXCAVATION	760	
117+63		CONSTRUCT APPROACH ON RT.		430
TOTALS:			**8743**	**8164**

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

REMOVAL AND DISPOSAL OF STRUCTURES

STATION	STATION	DESCRIPTION	REMOVAL AND DISPOSAL OF RETAINING WALLS	REMOVAL AND DISPOSAL OF FENCE	REMOVAL AND DISPOSAL OF PIPE CULVERTS	REMOVAL AND DISPOSAL OF CATCH BASINS	REMOVAL AND DISPOSAL OF GATES
			LIN. FT.			EACH	
117+92		6'x5' CONCRETE CATCH BASIN LT. OF C.L. CONST.				1	
118+15		SWING ARM GATE					1
118+16		42"x37' C.M. PIPE CULVERT LT. OF C.L. CONST.			1		
118+16		6'x5' CONCRETE CATCH BASIN RT. OF C.L. CONST.				1	
118+18		STEEL POST 1 PIPE FENCE RT. OF C.L. CONST.		36			
118+38		STEEL POST 1 PIPE FENCE RT. OF C.L. CONST.		10			
118+38		48"x37' C.M. PIPE CULVERT RT. OF C.L. CONST.			1		
118+47		METAL RETAINING WAL UNDER BRIDGE LT. AND RT. OF CONST.	111				
119+11		CONCRETE RETAINING WALL UNDER BRIDGE LT. AND RT. OF C.L. CONST.	210				
119+42		24"x61' C.M. PIPE CULVERT RT OF C.L. CONST.			1		
119+72		6'x5' CONCRETE CATCH BASIN RT. OF C.L. CONST.				1	
TOTALS:			**321**	**46**	**3**	**3**	**1**

MAIN LANE BASE AND SURFACING

10581.91	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT						ACHM BASE COURSE (1-1/2") (PG 64-22)				ACHM BINDER COURSE (1") (PG 64-22)				ACHM SURFACE COURSE (1/2") (PG 64-22)							
						LEVELING			BETWEEN COURSES			GALLON	COURSES			TON	COURSES			TON	LEVELING							TON
			FEET	TON / STATION	TON	TOTAL WID. FEET	SQ.YD.	GAL / SQ.YD.	TOTAL WID. FEET	SQ.YD.	GAL / SQ.YD.		AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.		AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.		AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	
113+18.44	114+38.46	MAIN LANE TRANSITION	120.02	49.00	59				4.30	57.3	0.03	2	2.17	28.9	440	6	2.08	27.7	330	5					38.00	506.8	220	56
114+38.46	118+15.00	MAIN LANES NOTCH AND WIDEN	376.54	98.00	369	28.00	1171.5	0.10	8.59	359.4	0.03	11	4.33	181.2	440	40	4.17	174.5	330	29	28.00	1171.5	220	129	40.00	1673.5	220	184
119+40.00	123+80.02	MAIN LANE NOTCH AND WIDEN	440.02	98.00	431	28.00	1369.0	0.10	8.59	420.0	0.03	137	4.33	211.7	440	47	4.17	203.9	330	34	28.00	1369.0	220	151	40.00	1955.6	220	215
123+80.02	125+00.03	MAIN LANE TRANSITION	120.01	49.00	59				4.30	57.3	0.03	2	2.17	28.9	440	6	2.08	27.7	330	5					38.00	506.7	220	56
117+52.00	118+05.00	ADDITIONAL FOR GUARDRAIL WIDENING	53.00	23.80	13																				5.50	32.4	220	4
116+68.85	118+05.60	ADDITIONAL FOR GUARDRAIL WIDENING	136.75	23.80	33																				5.50	83.6	220	9
119+49.40	120+86.15	ADDITIONAL FOR GUARDRAIL WIDENING	136.75	23.80	33																				5.50	83.6	220	9
119+49.40	122+11.15	ADDITIONAL FOR GUARDRAIL WIDENING	261.75	23.80	62																				5.50	160.0	220	18
301+67.30	305+14.00	DETOUR FULL DEPTH	346.70	130.50	452				22.00	847.5	0.03	25					22.33	860.2	330	142					26.00	1001.6	220	110
306+19.00	309+86.00	DETOUR FULL DEPTH	367.00	130.50	479				22.00	897.1	0.03	27					22.33	910.6	330	150					26.00	1060.2	220	117
TOTALS:					**1990**							**204**				**99**				**365**				**280**				**778**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.6% MIN. AGGR.....5.4% ASPHALT BINDER (PG 64-22)
ACHM BINDER COURSE (1").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER (PG 64-22)
ACHM BASE COURSE (1-1/2").....96.0% MIN. AGGR.....4.0% ASPHALT BINDER (PG 64-22)

MAXIMUM NUMBER OF GYRATIONS = 115

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.		070345	14	63

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	CONCRETE DITCH PAVING (TYPE B) (W=6'-0")	SOLID SODDING	WATER
			SQ.YD.		M.GAL.
117+50	118+15	LT. C.L. CONST.	43	29	0.4
119+40	120+00	RT. C.L. CONST.	40	27	0.3
* ENTIRE	PROJECT	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	250	175	2.2
TOTALS:			**333**	**231**	**2.9**

* QUANTITIES ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.
BASIS OF ESTIMATE:
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.
NOTE: EXPANSION JOINTS TO BE PLACED 45' ON CENTERS.

COLD MILLING

STATION	STATION	LOCATION	COLD MILLING ASPHALT PAVEMENT
			SQ. YD.
113+18.44	114+38.46	BEGIN TRANSITION	294
123+80.02	125+00.03	END TRANSITION	294
TOTAL:			**588**

AVG. 1" DEPTH

BENCH MARKS

STATION	DESCRIPTION	BENCH MARK
		EACH
118+15	LT. OF C.L. CONST. ON BRIDGE	1
TOTAL:		**1**

NOTE: SHOWN FOR INFORMATION PURPOSES ONLY. BENCH MARKS TO BE FURNISHED, PLACED, AND RECORDED BY STATE FORCES.

GUARDRAIL

STATION	STATION	SIDE	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	TERMINAL ANCHOR POST (TYPE 1)	BRIDGE END TERMINAL
			LIN.FT.	EACH		
117+95.00	118+05.00	RT.				1
117+20.60	118+05.60	LT.	75	1	1	
119+49.40	120+43.15	RT.	75	1	1	
119+49.40	121+68.15	LT.	200	1	1	
TOTALS:			350	3	3	1

APPROACH GUTTERS

STATION	STATION	APPROACH GUTTER (TYPE B) (W=8')	REINFORCING STEEL-ROADWAY (GRADE 60)
		CU.YD.	POUND
118+15	119+40	27.00	2360
TOTALS:		27.00	2360

DUMPED RIPRAP

STATION	STATION	SIDE	DUMPED RIPRAP	FILTER BLANKET
			CU.YD.	SQ.YD.
117+90	118+50	RT.	106	213
118+11	118+53	LT.	42	84
119+11	119+35	RT.	28	56
TOTALS:			176	353

SELECTED PIPE BEDDING & BACKFILL

LOCATION	SELECTED PIPE BEDDING	SELECTED PIPE BACKFILL
	CU.YDS.	
ENTIRE PROJECT IF AND WHERE DIRECTED BY THE	25	50
TOTALS:	**25**	**50**

NOTE: QUANTITIES ARE ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL					
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	SILT FENCE (E-11)	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	BAG	LIN.FT.	CU. YD.
113+18.44	125+00.00	MAIN LANES (STAGE 1)						1.04	1.04	21.2	100	1329	150
116+00	127+40	MAIN LANES (STAGE 2)	2.36	5	2.36	240.7	2.36	0.62	0.62	12.6	80	1220	140
TOTALS:			**2.36**	**5**	**2.36**	**240.7**	**2.36**	**1.66**	**1.66**	**33.8**	**180**	**2549**	**290**

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING.
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING.
SAND BAG DITCH CHECKS.....20 BAGS / LOCATION

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

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

4" PIPE UNDERDRAIN

LOCATIONS	4" PIPE UNDERDRAIN	UNDERDRAIN OUTLET PROTECTORS
	LIN.FT.	EACH
ENTIRE PROJECT	1000	8
IF AND WHERE DIRECTED BY THE ENGINEER		
TOTALS:	**1000**	**8**

NOTE: QUANTITIES ARE ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		070345	15	63
① 07209	-	QUANTITIES	-	51902

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 070345

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	603	801	802	802	803	804	804
		ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	TEMPORARY BRIDGE STRUCTURE (24' ROADWAY WIDTH)	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)
		UNIT	LUMP SUM	LIN. FT.	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.
07209 X071 CHANNEL D-1	BENTS 1 & 4				23	33.02			2574	657
	BENTS 2 & 3					41.58			3016	407
	124' INTEGRAL W-BEAM UNIT						204.00	13.3		43776
EXIST. BR. NO. M2642 (SITE NO. 1)			1							
SITE NO. 1 (STA. 305+13)				100						
TOTALS FOR JOB NO. 070345				100	23	74.60	204.00	13.3	5590	44840

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	SP & 805	SP & 805	805	805	807	812	816	816
		ITEM	① STEEL SHELL PILING (16'' DIA.)	① STEEL SHELL PILING (24'' DIA.)	① PILE ENCASEMENT	PREBORING	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP
		UNIT	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	EACH	SQ. YD.	CU. YD.
07209 X071 CHANNEL D-1	BENTS 1 & 4		600			100			435	239
	BENTS 2 & 3			720	132					
	124' INTEGRAL W-BEAM UNIT						76160	1		
EXIST. BR. NO. M2642 (SITE NO. 1)										
SITE NO. 1 (STA. 305+13)										
TOTALS FOR JOB NO. 070345			600	720	132	100	76160	1	435	239

① PILES AND PILE ENCASEMENT SHALL CONFORM TO DWG. NO. 51907.

RICK ELLIS
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
01/14/11
BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
DITCH AT L.M. 1.8 STR. & APPRS. (S)
CALHOUN COUNTY

ROUTE 131 SEC. 3
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MCB DATE: 01/14/11 FILENAME: b070345_ql.dgn
CHECKED BY: CJR DATE: 2/2/11 SCALE: NONE
DESIGNED BY: -- DATE:

BRIDGE NO. 07209 DRAWING NO. 51902

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.		070345	16	63

(2) SUMMARY OF QUANTITIES & REVISIONS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	12	STATION
201	GRUBBING	12	STATION
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	3	EACH
202	REMOVAL AND DISPOSAL OF FENCE	46	LIN. FT.
202	REMOVAL AND DISPOSAL OF CATCH BASINS	3	EACH
202	REMOVAL AND DISPOSAL OF GATES	1	EACH
202	REMOVAL AND DISPOSAL OF RETAINING WALLS	321	LIN. FT.
210	UNCLASSIFIED EXCAVATION	8743	CU.YD.
210	COMPACTED EMBANKMENT	8164	CU.YD.
SP & 210	SOIL STABILIZATION	200	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)	2262	TON
401	TACK COAT	204	GALLON
SP,SS & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1-1/2")	95	TON
SP,SS & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1-1/2")	4	TON
SP,SS & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	349	TON
SP,SS & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	16	TON
SP,SS & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	1044	TON
SP,SS & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	60	TON
412	COLD MILLING ASPHALT PAVEMENT	588	SQ.YD.
504	APPROACH GUTTERS (TYPE B)	27.00	CU.YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
SS & 603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
SS & 604	SIGNS	275	SQ.FT.
SS & 604	BARRICADES	48	LIN. FT.
SS & 604	TRAFFIC DRUMS	38	EACH
SS & 604	VERTICAL PANELS	16	EACH
SS & 604	CONSTRUCTION PAVEMENT MARKINGS	9298	LIN. FT.
605	CONCRETE DITCH PAVING (TYPE B)	333	SQ.YD.
606	SELECTED PIPE BEDDING	25	CU.YD.
606	SELECTED PIPE BACKFILL	50	CU.YD.
SS & 606	60" SIDE DRAIN	62	LIN. FT.
611	4" PIPE UNDERDRAIN	1000	LIN. FT.
611	UNDERDRAIN OUTLET PROTECTORS	8	EACH
SS & 617	GUARDRAIL (TYPE A)	350	LIN. FT.
SS & 617	THRIE BEAM GUARDRAIL TERMINAL	3	EACH
SS & 617	TERMINAL ANCHOR POST (TYPE 1)	3	EACH
620	LIME	5	TON
620	SEEDING	2.36	ACRE
620	MULCH COVER	4.02	ACRE
SS & 620	WATER	277.4	M.GAL.
621	TEMPORARY SEEDING	1.66	ACRE
621	SILT FENCE	2549	LIN.FT.
621	SAND BAG DITCH CHECKS	180	BAG
621	SEDIMENT REMOVAL AND DISPOSAL	290	CU.YD.
623	SECOND SEEDING APPLICATION	2.36	ACRE
624	SOLID SODDING	231	SQ.YD.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	2363	LIN.FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	2113	LIN.FT.
* SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4") (ALTERNATE NO. 1)	250	LIN.FT.
* SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4") (ALTERNATE NO. 2)	250	LIN.FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	30	EACH
SS & 734	BRIDGE END TERMINAL	1	EACH
804	REINFORCING STEEL - ROADWAY (GRADE 60)	2360	POUND
816	DUMPED RIPRAP	176	CU.YD.
816	FILTER BLANKET	353	SQ.YD.
	STRUCTURES OVER 20'-0" SPAN		
205	REMOVAL OF EXISITING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
603	TEMPORARY BRIDGE STRUCTURE (24' ROADWAY WIDTH)	100	LIN. FT.
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	23	CU.YD.
802	CLASS S CONCRETE-BRIDGE	74.60	CU.YD.
802	CLASS S(AE) CONCRETE-BRIDGE	204.00	CU.YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	13.3	GAL.
804	REINFORCING STEEL-BRIDGE (GRADE 60)	5590	POUND
804	EPOXY COATED REINFORCIING STEEL (GRADE 60)	44840	POUND
SP & 805	STEEL SHELL PILING (16" DIAMETER)	600	LIN. FT.
SP & 805	STEEL SHELL PILING (24" DIAMETER)	720	LIN. FT.
805	PILE ENCASEMENT	132	LIN. FT.
805	PREBORING	100	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270, GRADE 50W)	76160	POUND
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	FILTER BLANKET	435	SQ. YD.
816	DUMPED RIPRAP	239	CU.YD.

* DENOTES ALTERNATE BID ITEM.

REVISIONS

DATE	REVISION	SHEET NUMBER(S)

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.		070345	17	63

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11

SURVEY CONTROL COORDINATES

Project Name: s070345
Date: 4/8/2010
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	1663535.9187	1095129.0876	134.01	CTL	*5/8" REBAR W/ 2" CAP
2	1663684.7270	1095704.9487	135.13	CTL	*5/8" REBAR W/ 2" CAP
3	1663670.0359	1096493.0139	135.48	CTL	*5/8" REBAR W/ 2" CAP
4	1663642.8401	1097190.0137	137.19	CTL	*5/8" REBAR W/ 2" CAP
5	1663619.8490	1097790.7160	137.58	CTL	*5/8" REBAR W/ 2" CAP
6	1663591.7642	1098528.2862	138.09	CTL	*5/8" REBAR W/ 2" CAP
100	1662237.5807	1092686.4181	135.36	GPS	*AHTD GPS 070014
101	1663184.0586	1094553.8834	134.17	GPS	*AHTD GPS 070014A
900	1657490.8201	1078313.0611	126.48	TBM	*FAIRGROUNDS
901	1657375.1909	1080257.4831	117.77	TBM	*AT AREA SHOP
902	1656961.4472	1081523.0860	117.77	TBM	*HWY.274 AND 278
903	1657225.6726	1086853.4629	127.74	TBM	*HANDY FOODS
904	1658623.7467	1089231.6559	124.04	TBM	*BRIDGE AT CO.LINE
905	1663634.6667	1096520.3608	136.66	BM	*CHSL SQ CON HUB RAIL
990	1658395.4645	1078996.4566	124.23	BM	*NGS MARK S 197 1960
991	1658600.7943	1078575.1214	125.32	BM	*NGS MARK R 197 1960
1501	1663847.0976	1096457.9323	129.80	CTL	*REBAR/CAP
1502	1663372.8615	1096544.6923	128.85	CTL	*REBAR/CAP
1503	1663091.9232	1096545.0453	128.94	CTL	*REBAR/CAP
1504	1663587.0065	1099286.7406	140.13	CTL	*REBAR/CAP
1505	1663576.8279	1099853.2338	140.11	CTL	*REBAR/CAP
1506	1663655.1526	1100390.8166	139.19	CTL	*REBAR/CAP

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).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.9999377323 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. s070345gi.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 - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 070014 - 070014A
CONVERGENCE ANGLE: 00 23 44.58657 LEFT AT LT: 33-37-47.2 LG: 092-42-25.3
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

CONST

POINT NO.	TYPE	STATION	NORTHING	EASTING
8002	POB	113+18.44	1663671.05	1096006.83
8020	PI	114+38.46	1663664.12	1096126.64
8021	PI	123+80.02	1663625.38	1097067.40
8022	POE	125+00.03	1663622.44	1097187.38

DETOUR RT

POINT NO.	TYPE	STATION	NORTHING	EASTING
8002	POB	300+00.00	1663671.05	1096006.83
8018	PC	300+11.45	1663670.57	1096018.27
8019	PT	302+20.68	1663637.37	1096224.34
8023	PC	302+31.68	1663634.34	1096234.93
8024	PT	304+40.86	1663601.13	1096440.96
8025	PC	307+13.02	1663589.94	1096712.88
8026	PT	309+17.62	1663605.22	1096916.45
8027	PC	309+38.12	1663609.11	1096936.58
8028	PT	311+42.79	1663624.38	1097140.22
8004	POE	313+39.94	1663616.26	1097337.20

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SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070345	18	63

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11

N

SURVEY BASELINE N 58°32'43" E 674.29'

SURVEY BASELINE N 75°30'40" E 594.78'

101
PN: 101
PD: AHTD GPS 070014A

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

PN: 1105
PD: 8" NAIL

PN: 1106
PD: 8" NAIL

2
PN: 2
PD: 5/8" REBAR W/ 2" CAP

PN: 1107
PD: 8" NAIL

N

PN: 1103
PD: 8" NAIL

PN: 1501
PD: REBAR/CAP

P.C. 307+13.02
P.I. 308+15.78
P.T. 309+17.62
Delta: 13°17'56.1" LT.
Degree: 6°30'00.0"
Tangent: 102.76
Length: 204.60
e=0.100 '/'
Ls=350

P.C. 302+31.68
P.I. 303+36.77
P.T. 304+40.86
Delta: 13°35'47.7" LT.
Degree: 6°30'00.0"
Tangent: 105.08
Length: 209.18
e=0.100 '/'
Ls=350

PN: 1107
PD: 8" NAIL

POB 300+00.00
8008 113+18.44

8012 S 86°41'25" E
8018 S 87°38'43" E

8020

P.I. 114+38.46
P.I. 301+16.56

115

P.C. 300+11.45

PN: 1108
PD: 8" NAIL

P.C. 302+31.68

SURVEY BASELINE S 88°55'55" E 788.20'

C.L. CONST.

8019

8023

S 74°02'45" E C.L. DETOUR

P.T. 302+20.68

P.I. 303+36.77

P.T. 304+40.86

PN: 3
PD: 5/8" REBAR W/ 2" CAP

305
BM
PN: 905
PD: CHSL SQ CON HUB RAIL

8024

S 87°38'32" E C.L. DETOUR

PN: 1102
PD: 8" NAIL

P.C. 307+13.02

120

SURVEY BASELINE S 87°45'56" E 697.53'

S 87°38'32" E

8025

P.I. 308+15.78

PN: 1109
PD: NBC LT SH,HWY.274

PN: 1110
PD: NBC LT SH,HWY.274

P.C. 309+38.12

8026

N 79°03'31" E

8027

P.T. 309+17.62

PN: 1111
PD: NBC LT SH,HWY.274

310

P.I. 310+40.92

PN: 1112
PD: NBC LT SH,HWY.274

P.I. 129+80.02

8021

S 88°35'33" E

8028

P.T. 311+42.79

PN: 1113
PD: NBC LT SH,HWY.274

125

POE 125+00.03

8022

S 87°38'16" E

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

PN: 1114
PD: NBC LT SH,HWY.274

PN: 1115
PD: NBC LT SH,HWY.274

POE 313+35.94

8004

SURVEY BASELINE
PN: 1116
PD: NBC LT SH,HWY.

P.C. 300+11.45
P.I. 301+16.56
P.T. 302+20.68
Delta: 13°35'58.6" RT.
Degree: 6°30'00.0"
Tangent: 105.11
Length: 209.22
NO SUPER

P.C. 309+38.12
P.I. 310+40.92
P.T. 311+42.79
Delta: 13°18'12.9" RT.
Degree: 6°30'00.0"
Tangent: 102.80
Length: 204.67
NO SUPER

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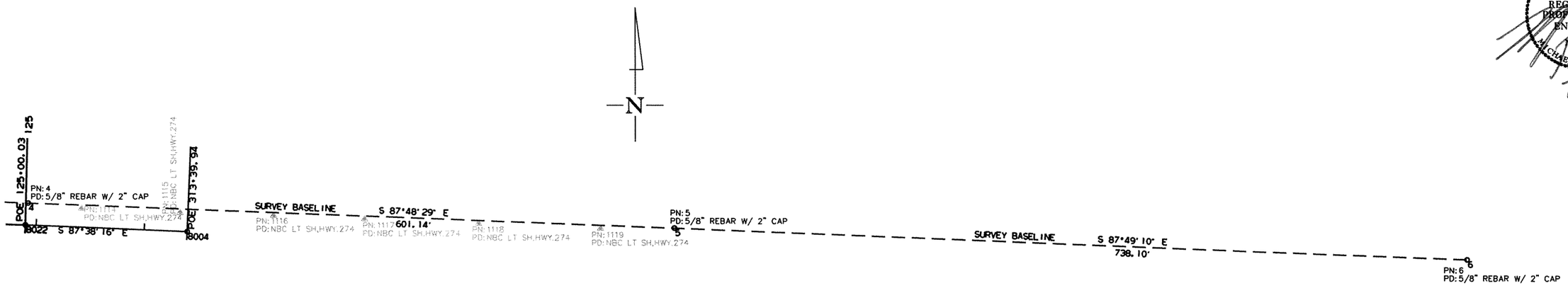
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070345	19	63

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11



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SURVEY CONTROL DETAILS

STATION	STATION	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EACH	TERMINAL ANCHOR POSTS (TYPE 1) EACH	BRIDGE END TERMINAL EACH
117+95.00 -	118+05.00	RT.				1
117+20.60 -	118+05.60	LT.	75	1	1	
119+49.40 -	120+43.15	RT.	75	1	1	
119+49.40 -	121+68.15	LT.	200	1	1	

STATION	STATION	SIDE	CONCRETE DITCH PAVING (TYPE B) (W=6') SQ. YDS.
117+50.00 -	118+15.00	LT.	44
119+40.00 -	120+00.00	RT.	40

STA. 118+27.54 TO STA. 119+33.08 - IN PLACE
105' X 28' CLEAR ROADWAY BRIDGE NO. M2642 CONSISTING OF
A 7 SPAN CONCRETE DECK WITH TIMBER PILINGS

REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1) - 1.00 LUMP SUM

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.		070345	20	63

(2) PLAN & PROFILE STA. 113+18.44-STA. 125+00.03

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
7-22-11

ENTIRE PROJECT IN SFHA

SFHA LIMITS

STA. 118+28 - STA. 118+50 STA. 118+97 - STA. 119+35
IN PLACE IN PLACE
METAL RETAINING WALL CONCRETE RETAINING WALL
REMOVE REMOVE

N

POB 113+18.44 HWY. 274
113+18.44 28.76-40.00
114+38.46 50.00 P.I. 301+16.56
117+00.00 55.00
117+60.00 80.00-100.00
118+35.00 80.00-100.00
119+40.00 60.00
122+00.00 60.00
P.I. 310+40.92
125 POE 125+00.03
125+00.00 29.96-50.00

PROPOSED R/W
EXISTING R/W
T.C.E.
6'x68' C.D.P.
6'x62' C.D.P.

S 86°41'26" E
S 87°38'43" E
S 87°38'32" E
S 74°02'45" E
S 87°38'32" E
S 88°35'33" E
S 87°38'16" E
N 79°03'31" E

300
305
310
20'

113+18.44 31.26-40.00
P.I. 114+38.46 Δ = 05°06.6" LT.
114+38.46 50.00
P.I. 303+36.77
118+50.00 180.00
P.I. 308+15.78
123+00.00 50.00
P.I. 123+80.02 Δ = 05°00.6" LT.
125+00.00 30.75-50.00

STA. 117+63 INSTALL
60" X 62' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 430 CU. YDS.
DUMPED RIPRAP = 100 CU. YDS.

BR. END STA. 118+15.00
BRIDGE NO. 07209
40'-00" CLEAR ROADWAY
125'-00" TOTAL LENGTH
INTEGRAL W-BEAM UNIT
(39', 46', 39')
BR. END STA. 119+40.00

STA 114+38.46 - BEGIN
JOB 070345
L.M. 1.74

STA 123+80.02 - END
JOB 070345
L.M. 1.92

STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL ELEVATION
UNNAMED TRIBUTARY TO TWO BAYOU CREEK	118+70 - 119+80	INTERMITTENT	128.0 FT. MSL

113+50.00 136.20
VC=200' e=0.11' K=467.09
-0.02%
114+75.00 136.18
116+75.00 137.00
VC=200' e=-0.10' K=486.18
0.00%
RT. D.G. -0.81%
117+31.50 125.00
118+00.00 124.45
R=14.90'
118+50.00 117.00
DESIGN H.W. Q_{50}=126.2
VC=165' e=0.17' K=196.18
120+32.50 137.00
0.84%
121+16.00 137.70

BM: 905 STA. 118+33.06 13.23 RT.
CHSL SQ CON HUB RAIL
ELEVATION = 136.66

180 170 160 150 140 130 120 110 100 90

111+00 112+00 113+00 114+00 115+00 116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00

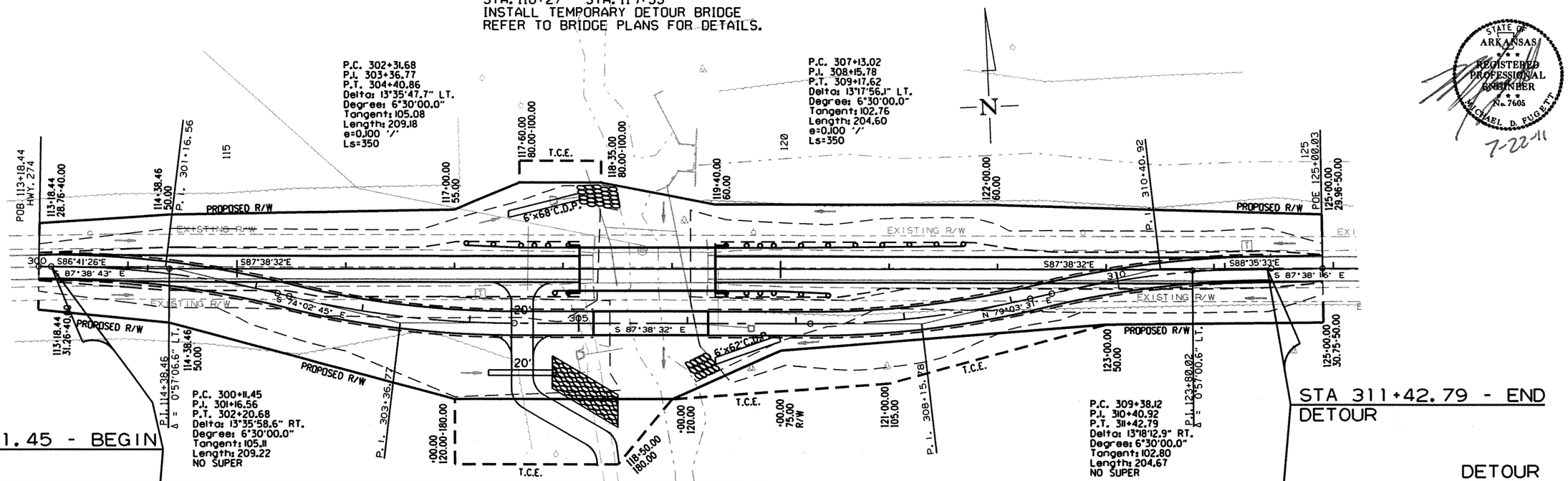
r070345.dgn 7-19-2011

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.		070345	21	63

(2) PLAN & PROFILE DETOUR STA. 300+00-STA. 311+42.79

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
7-22-11

STA. 118+27 - STA. 119+33
INSTALL TEMPORARY DETOUR BRIDGE
REFER TO BRIDGE PLANS FOR DETAILS.



STA 300+11.45 - BEGIN DETOUR

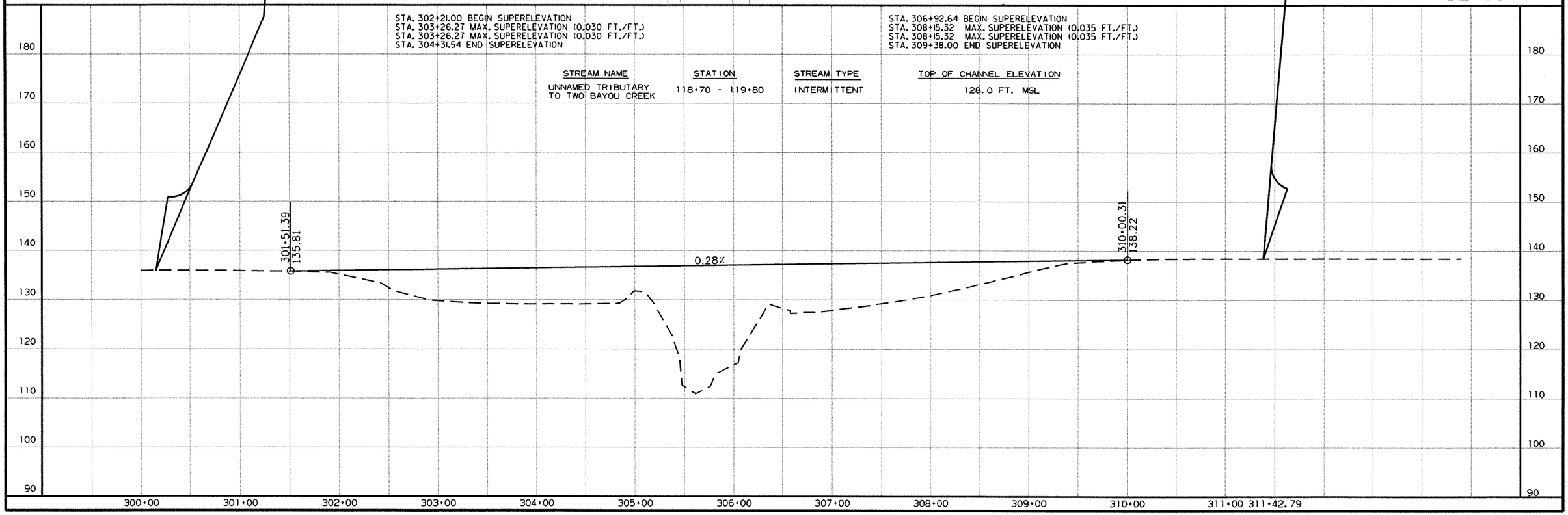
STA 311+42.79 - END DETOUR

DETOUR

STA. 302+21.00 BEGIN SUPERELEVATION
STA. 303+26.27 MAX. SUPERELEVATION (0.030 FT./FT.)
STA. 303+26.27 MAX. SUPERELEVATION (0.030 FT./FT.)
STA. 304+31.54 END SUPERELEVATION

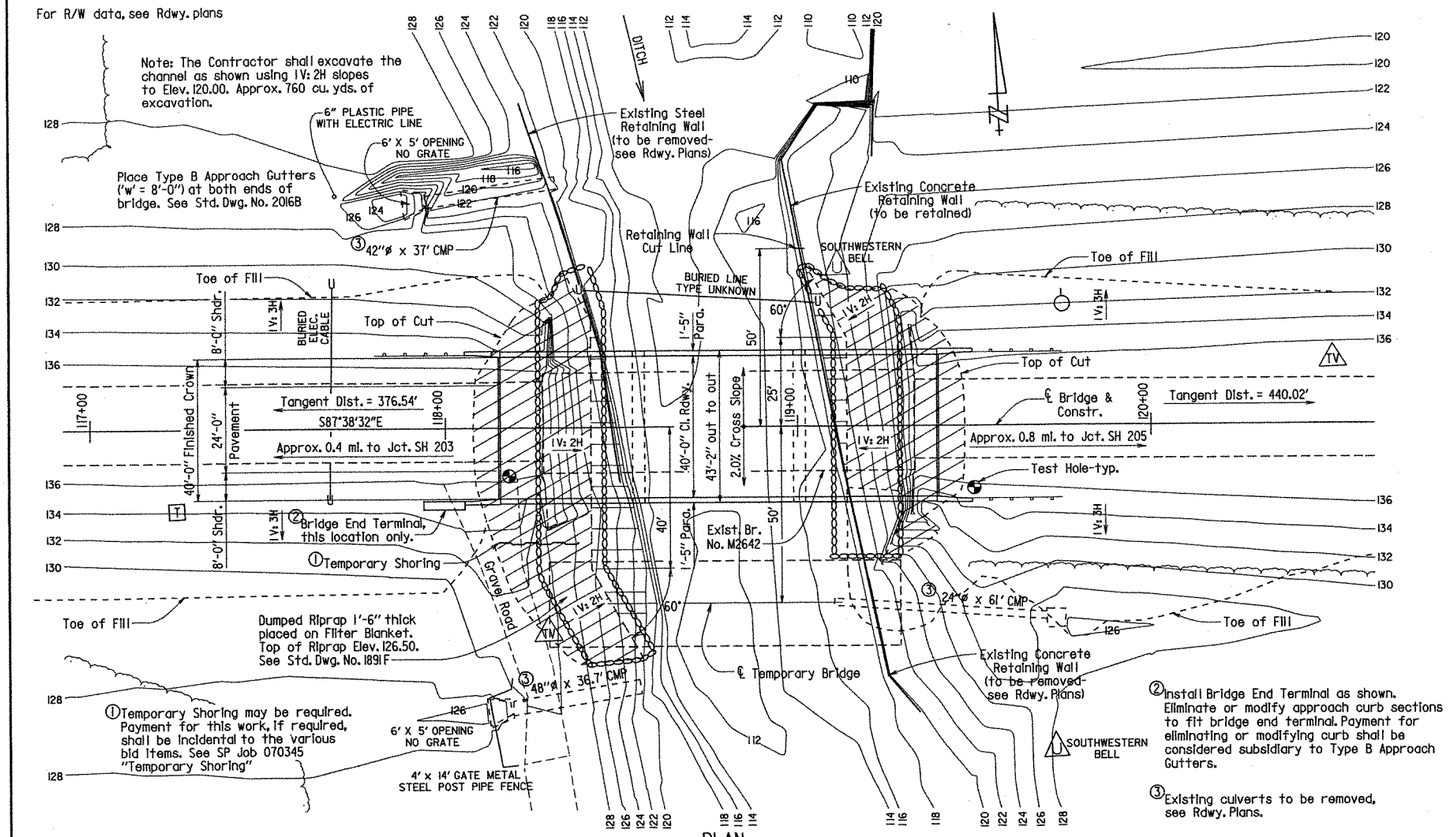
STA. 306+92.64 BEGIN SUPERELEVATION
STA. 308+15.32 MAX. SUPERELEVATION (0.035 FT./FT.)
STA. 308+15.32 MAX. SUPERELEVATION (0.035 FT./FT.)
STA. 309+38.00 END SUPERELEVATION

STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL ELEVATION
UNNAMED TRIBUTARY TO TWO BAYOU CREEK	118+70 - 119+80	INTERMITTENT	128.0 FT. MSL



r070345.dgn 7-19-2011

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.		070345	22	63
				① 07209 -		LAYOUT	- 51903	



HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	*NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	4023	126.2	126.2
Base	100	4646	127.1	127.1
Extreme	500	6067	128.9	128.8
Overtopping	>500	N/A	N/A	N/A

*Unconstricted water surface without structure or roadway approaches.

Q100 backwater elevation for existing structure = 127.1 ft.
Proposed Low Bridge Chord elevation = 133.7 ft.
Drainage area = 31.7 square miles.
Historical H.W. Elev. = 126.2 ft.

GENERAL NOTES

BENCH MARK: Chiseled Square Concrete Hub Rail 13.23' Rt. of C.L. Constr. Sta. 118+33.06, Elev. 136.66.

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 (5th Edition, 2010).

LIVE LOADING: HL-93 SEISMIC ZONE: 1

MATERIALS AND STRENGTHS:

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

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

STEEL SHELL PILING: Piling for Bents 1 & 4 shall be 16" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 213 tons per pile. Piling for Bents 2 & 3 shall be 24" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 320 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Drive all piles to a minimum penetration of 30 ft. below natural ground. 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 33,300 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 59,700 ft. lbs. per blow will be required to obtain the ultimate bearing capacity at Bent Nos. 2 & 3.

PREBORING: Preboring is required for Bents 1 & 4 to a depth of 10' below bottom of cap. Prebored holes shall be 6" greater than the diameter of the pile cross-section and shall be backfilled with sand or pea gravel after piles are in place. The Contractor shall be responsible for keeping holes free of debris prior to backfilling, which may require the use of temporary casings or other methods. Any related cost for backfill and temporary casing will be considered subsidiary to the item "Preboring".

PILE ENCASEMENTS: Pile encasements are required for Bents 2 & 3. See Dwg. No. 51907.

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

PIPE UNDERDRAIN: One pipe underdrain with outlet protectors shall be installed behind each bridge end in accordance with Section 611. Pipe underdrains and outlet protectors will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:

	DRAWING NO.
End Bents	51905
Int. Bents	51906
124' Integral W-Beam Unit	51908- 51914
Concrete Filled Steel Shell Piles	51907
Type B Approach Gutters	2016B

EXISTING BRIDGE: Existing Bridge No. M2642 (log mile 1.80) is 31' wide and 105' long and consists of seven 15' spans consisting of timber stringers and concrete deck with asphalt overlay, supported by timber trestle pile bents. Some timber piles have been encased in concrete near the ground line. The existing bridge is located at the site of the proposed new bridge.

REMOVAL AND SALVAGE: After the temporary bridge is open to traffic, existing bridge No. M2642 shall be removed in accordance with Section 205. This removal shall include any remnant of past bridge members. All material from the existing bridge shall become the property of the Contractor.

TEMPORARY BRIDGE: Construct a temporary bridge approximately 50' downstream from centerline of the proposed bridge with a minimum deck elevation of 126.2. See Roadway Plans for actual detour grade and alignment. The temporary bridge shall be a minimum of 100' long with a minimum roadway width of 24' and a minimum live load capacity of HS. See Section 603 and Std. Dwg. Nos. 2465 - 2467 for standard temporary bridge details. If timber piling and pine timber are used on this temporary bridge structure, the materials shall be treated with a preservative according to the Standard Specifications. A timber deck is not allowed.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

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

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER DITCH AT L.M. 1.8 STR. & APPRS. (S) CALHOUN COUNTY

ROUTE 274 SEC. 2

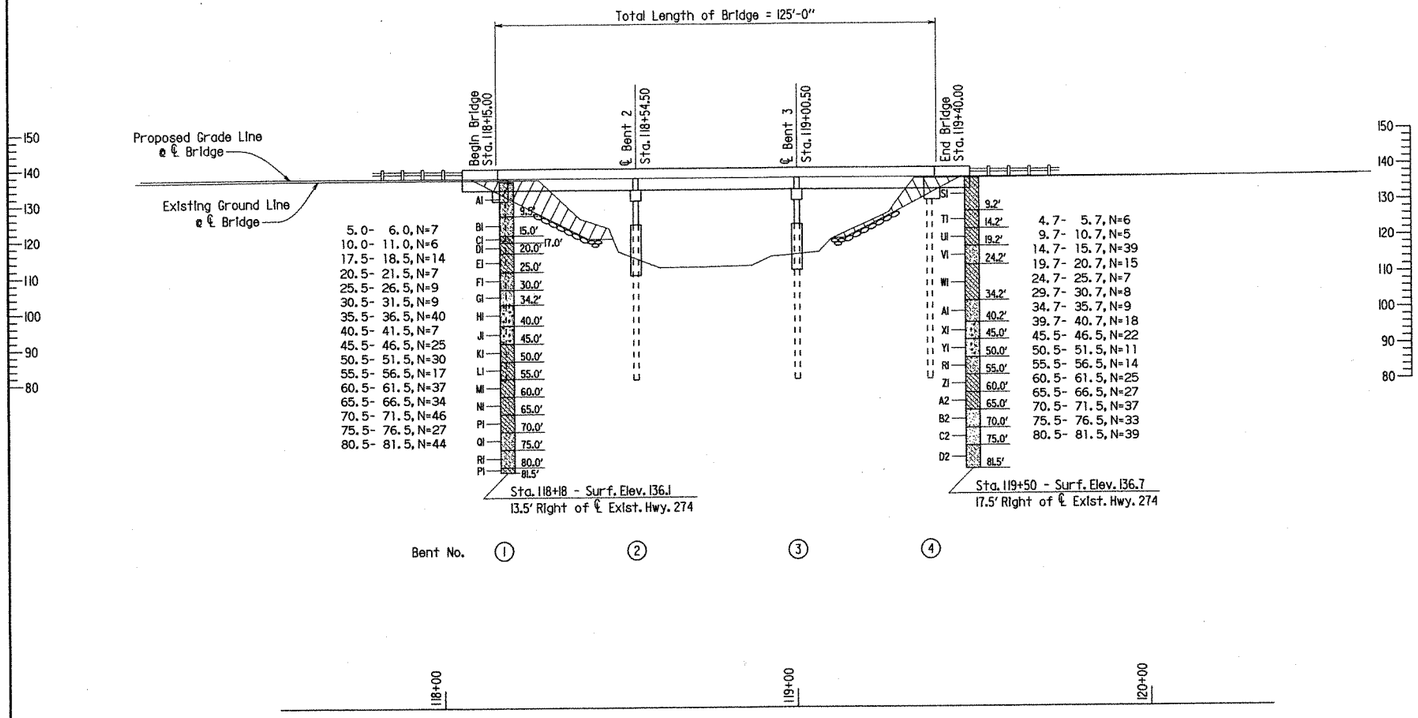
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 6-30-10 FILENAME: b070345_ll.dgn
CHECKED BY: [illegible] DATE: 7/7/10 SCALE: 1" = 20'
DESIGNED BY: [illegible] DATE: 06-10

BRIDGE NO. 07209 DRAWING NO. 51903

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.		070345	22	63
				(1) 07209 -		LAYOUT		- 51904



SOIL BORING ELEVATION

BORING LEGEND

A1-Moist, Loose, Gray and Brown Clayey Sand
B1-Wet, Loose, Gray and Brown Clayey Sand
C1-Wet, Stiff, Gray Sandy Clay with Gravel
D1-Wet, Stiff, Gray Sandy Clay
E1-Wet, Medium Stiff, Gray Sandy Clay
F1-Wet, Loose, Gray Sand with Clay
G1-Wet, Loose, Gray Sand
H1-Wet, Dense, Brown Gravel with Sand
J1-Wet, Loose, Brown Gravel with Sand
K1-Wet, Very Stiff, Brown and Gray Sandy Clay with Trace of Gravel
L1-Moist, Very Stiff, Gray Sandy Clay
M1-Moist, Very Stiff, Gray Sandy Clay with some Concretions
N1-Moist, Hard, Brown and Gray Sandy Clay
P1-Moist, Hard, Gray Sandy Clay
Q1-Moist, Dense, Gray Clayey Sand
R1-Moist, Medium Dense, Gray Sand with Clay
S1-Moist, Medium Stiff, Reddish Brown Clay with Sand
T1-Moist, Medium Stiff, Brown Clay with Sand
U1-Moist, Hard, Gray and Brown Sandy Clay
V1-Moist, Medium Dense, Gray and Brown Clayey Sand
W1-Moist, Medium Stiff, Gray and Brown to Gray Sandy Clay
X1-Wet, Medium Dense, Brown Gravel with Sand
Y1-Wet, Medium Dense, Gray Sand with Gravel and Trace of Organic Matter
Z1-Moist, Stiff, Gray Sandy Clay
A2-Moist, Very Stiff, Gray Clay with Sand
B2-Wet, Medium Dense, Gray Sand
C2-Wet, Dense, Gray Sand with Trace of Clay
D2-Moist, Dense, Gray Sand with Clay

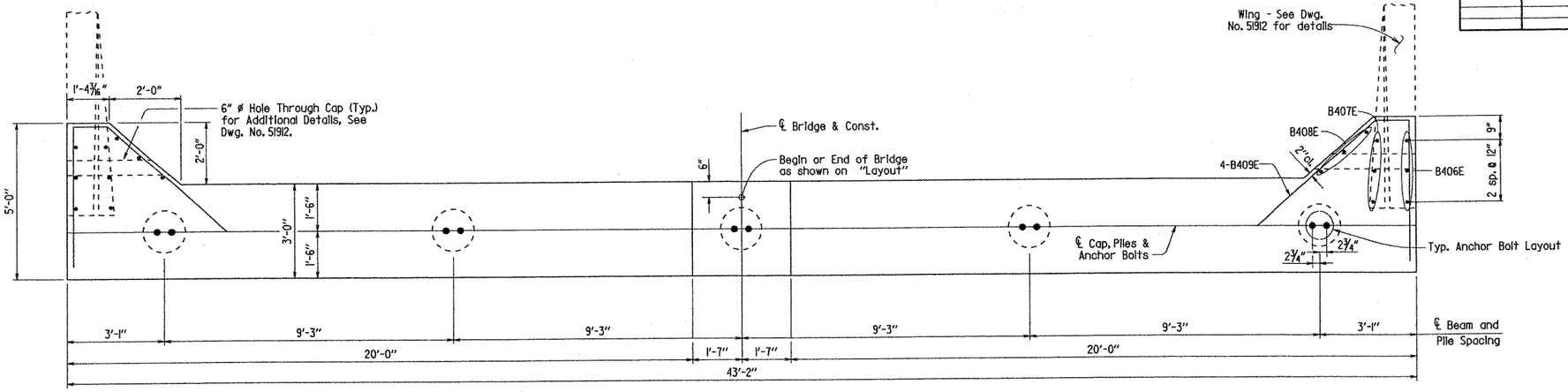
STATE OF ARKANSAS
Carl S. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7310
6/16/11
CARL S. FUSELIER
BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE OVER DITCH
DITCH AT L.M. 1.8 STR. & APPRS. (S)
CALHOUN COUNTY

ROUTE 274 SEC. 2
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

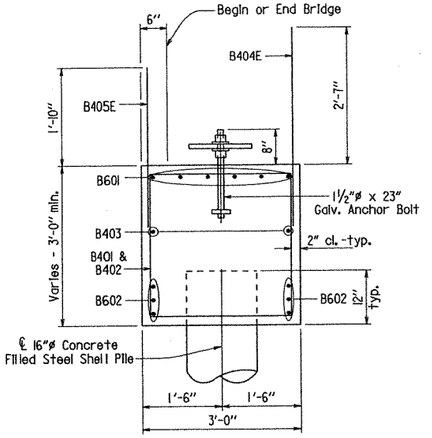
DRAWN BY: KDH DATE: 6-30-10 FILENAME: b070345_ll.dgn
CHECKED BY: MCB DATE: 7/7/10 SCALE: 1" = 20'
DESIGNED BY: KDH DATE: 06-10
BRIDGE NO. 07209 DRAWING NO. 51904

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.		070345	24	63
				(1) 07209 -		END BENTS	- 51905	



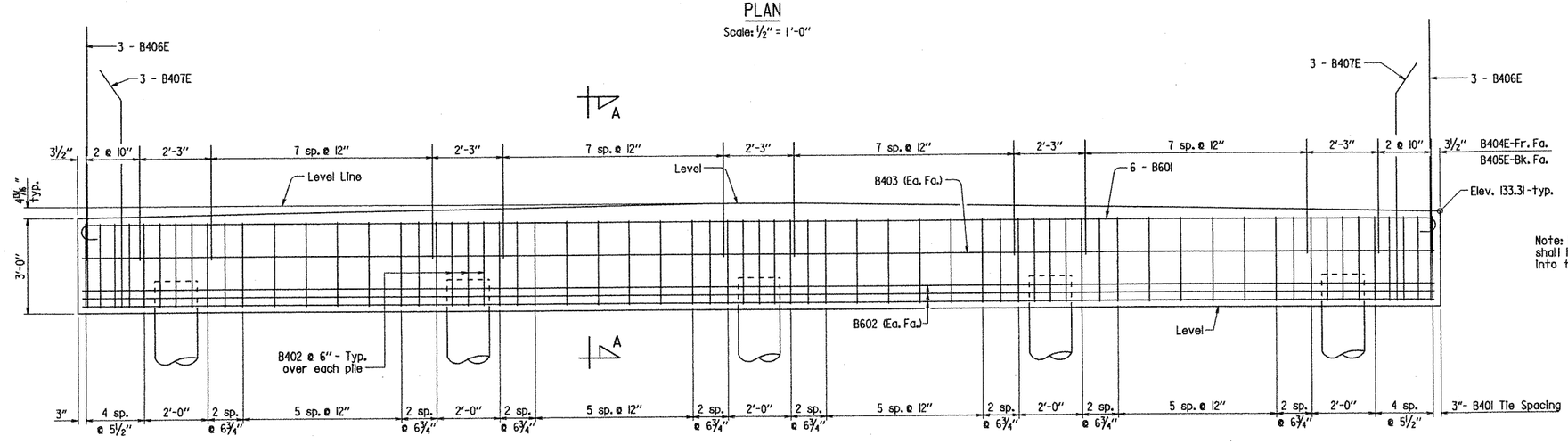
PLAN

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



SECTION A-A

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



Note: Bars B406E, B407E & B408E shall have a 2'-10" embedment into the end bent cap.

ELEVATION

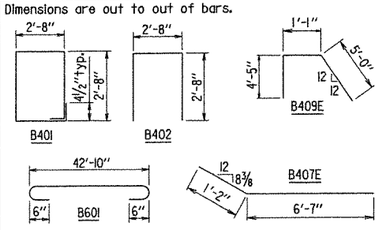
Bent 1 - Looking Back
Bent 4 - Looking Ahead
Scale: 1/2" = 1'-0"

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	50	11'-0"	2"
B402	15	7'-10"	2"
B403	2	42'-10"	Str.
B404E	38	4'-1"	Str.
B405E	38	3'-4"	Str.
B406E	6	8'-8"	Str.
B407E	6	7'-9"	2"
B408E	6	4'-8"	Str.
B409E	8	10'-5"	2"
B601	6	44'-2"	4 1/2"
B602	6	42'-10"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



Note: Bars With an "E" Suffix to 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 3/4" unless otherwise noted.

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

Granular backfill and pipe underdrain required behind cap. See Dwg. No. 51910.

For details of steel shell piles, see Dwg. No. 51907.

For details of anchor bolts, see Dwg. No. 51909.

For additional information, see Layout.

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

BRIDGE ENGINEER

DETAILS OF END BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

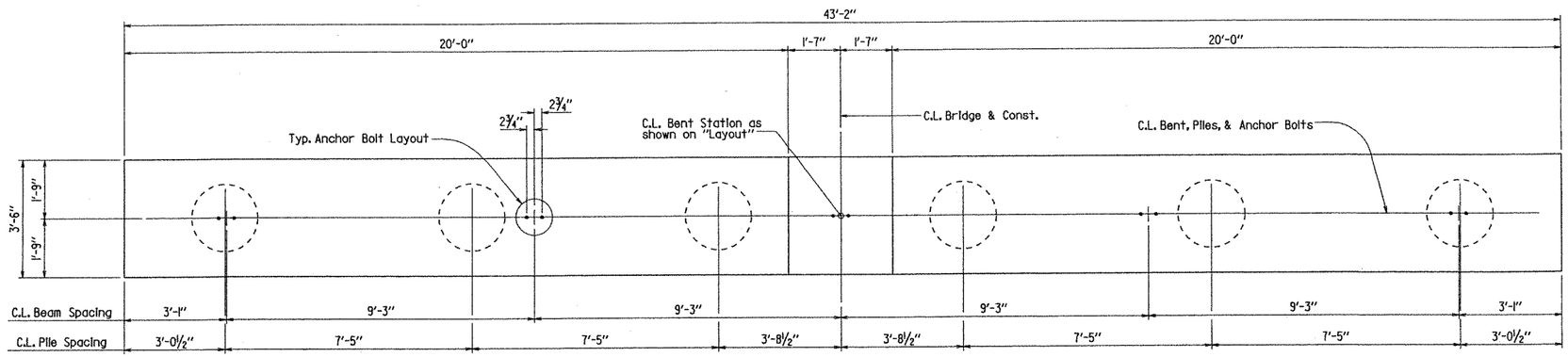
DRAWN BY: KDH DATE: 10-28-10 FILENAME: b070345_bl.dgn

CHECKED BY: MCB DATE: 11/24/10 SCALE: AS NOTED

DESIGNED BY: MCB DATE: 9/10

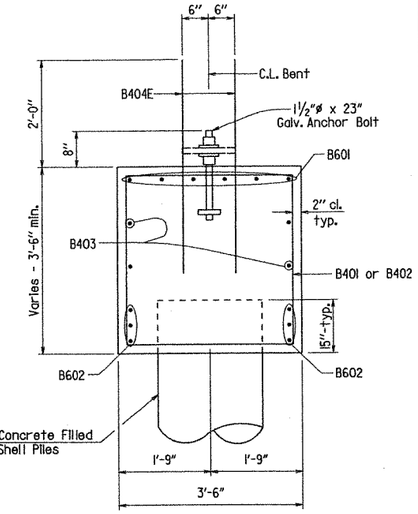
BRIDGE NO. 07209 DRAWING NO. 51905

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.		070345	25	63
				(1) 07209 -		INT. BENTS	- 51906	



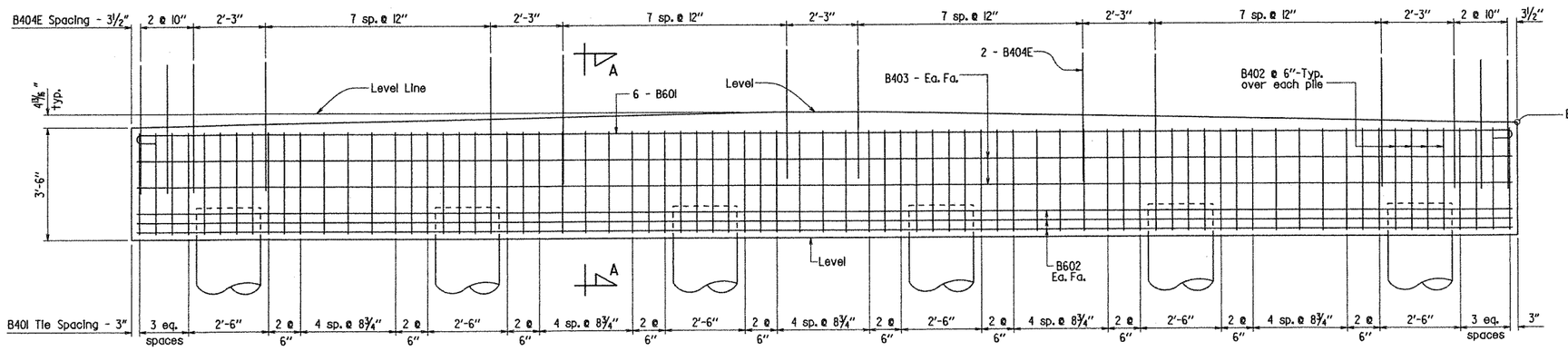
PLAN

Scale: ½" = 1'-0"



SECTION A-A

Scale: ¾" = 1'-0"

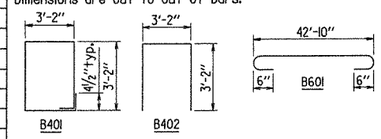


ELEVATION

Scale: ½" = 1'-0"

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	53	13'-0"	2"	Dimensions are out to out of bars.
B402	24	9'-4"	2"	
B403	4	42'-10"	Str.	
B404E	76	4'-0"	Str.	
B601	6	44'-2"	4½"	
B602	6	42'-10"	Str.	



Note: Bars with an "E" Suffix to 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.).

For details of steel shell piles, & pile encasement, see Dwg. No. 51907.

For details of anchor bolt, see Dwg. No. 51909.

For additional information, see layout.

STATE OF ARKANSAS
Carl J. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSSELIER

BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

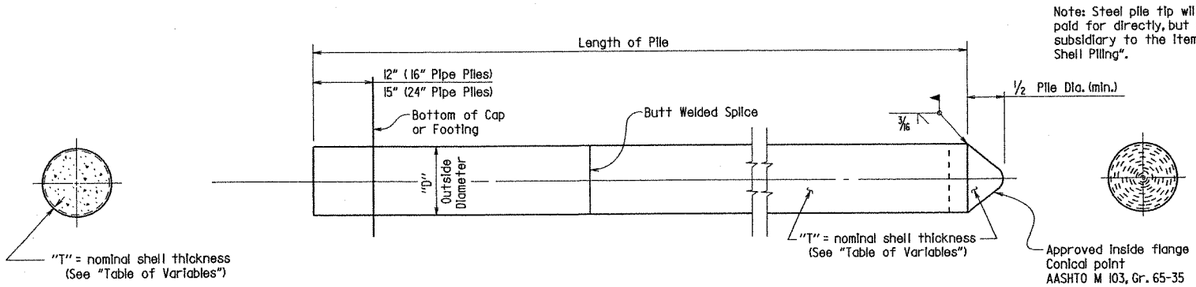
DRAWN BY: KDH DATE: 11-1-10 FILENAME: b070345_b2.dgn

CHECKED BY: MCB DATE: 11/24/10 SCALE: AS NOTED

DESIGNED BY: MCB DATE: 9/10

BRIDGE NO. 07209 DRAWING NO. 51906

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.		070345	26	63
				① 07209		STEEL SHELL PILES		51907



CONCRETE FILLED STEEL SHELL PILE

TABLE OF VARIABLES

BRIDGE NUMBER	OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	PLATE THICKNESS "X"
07209	16"	0.50"	1"
	24"	0.50"	1 3/4"

GENERAL NOTES FOR CONCRETE FILLED STEEL SHEEL PILES:

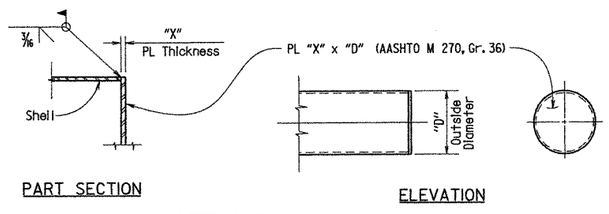
Steel shells shall conform ASTM A252, Grade 3 (Fy = 45,000 psi.).

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.

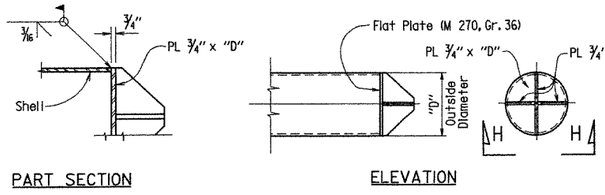
Steel shell piling that extends above the ground and is not protected by pile encasement shall be painted in accordance with subsection 805.02.

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

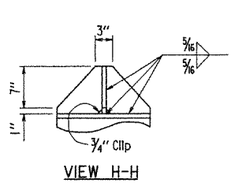
Concrete, structural steel (including welding), and painting will not be paid for separately, but will be considered subsidiary to the item "Steel Shell Piling".

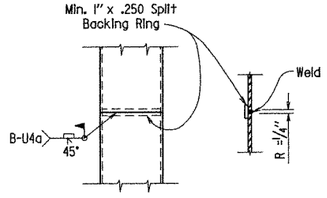


ALTERNATE FLAT TIP DETAIL



ALTERNATE VANED TIP DETAIL





TYPICAL SPLICE DETAILS

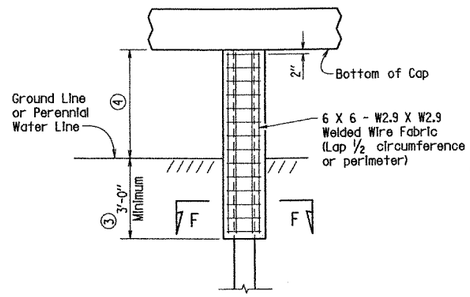
GENERAL NOTES FOR PILE ENCASEMENTS:

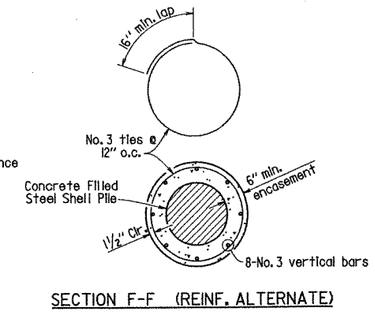
See Bridge Layout for required location of pile encasements. Only interior trestle pile bents shall have pile encasements.

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".





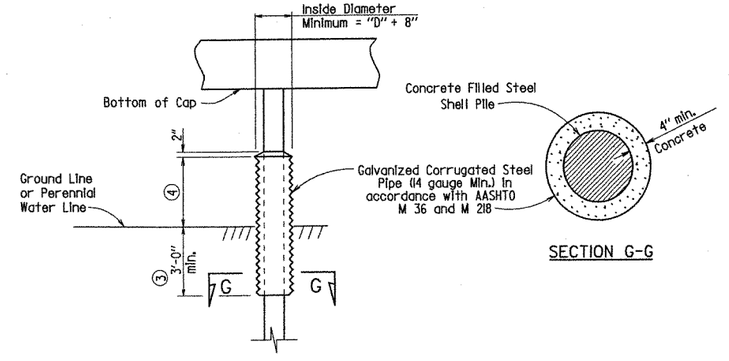
SECTION F-F (REINF. ALTERNATE)

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)

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
6/16/11

BRIDGE ENGINEER

DETAILS OF CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

ROUTE SECTION

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MCB DATE: 01/18/11 · FILENAME: b070345_ssp.dgn

CHECKED BY: DJ DATE: 01-18-11 SCALE: NONE

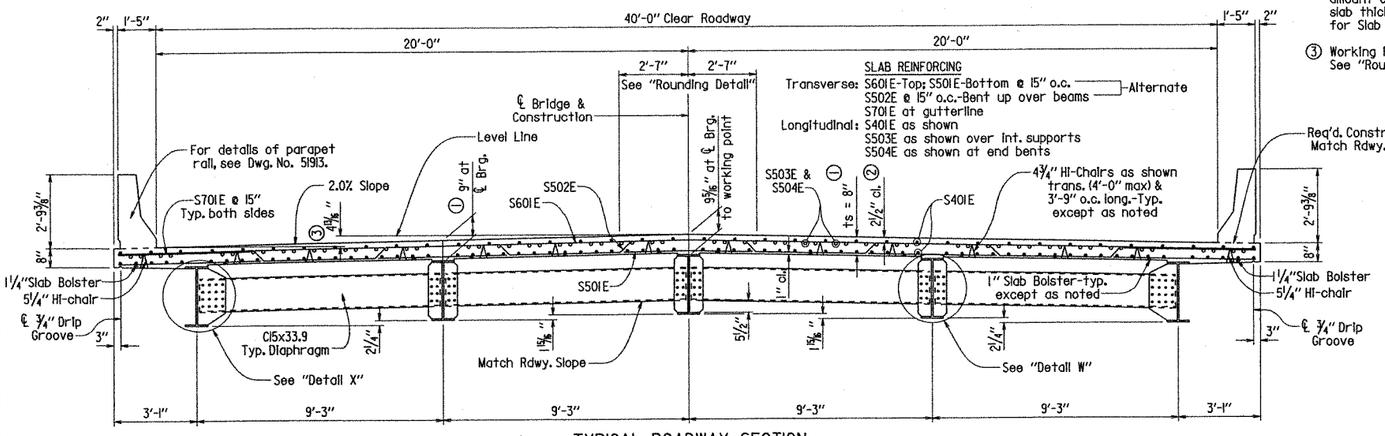
DESIGNED BY: STD. DATE: —

BRIDGE NO. 07209 DRAWING NO. 51907

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.		070345	2	63
				(1)	07209 - 124 FT. UNIT - 51908			

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

NOTE: At the Contractor's option, two straight epoxy coated #5 bars may be substituted for bar S502E. Payment for reinforcing will be based on the weight of bar S502E.



SLAB REINFORCING

Transverse: S601E-Top; S501E-Bottom @ 15" o.c. — Alternate
S502E @ 15" o.c.-Bent up over beams
S701E at gutterline

Longitudinal: S401E as shown
S503E as shown over Int. supports
S504E as shown at end bents

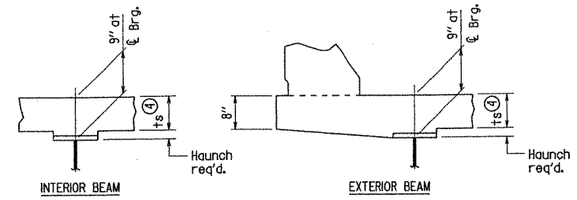
TYPICAL ROADWAY SECTION

Scale: ⅜" = 1'-0"

① See "Adjustment for Slab Thickness Tolerance".

② Tolerance: Minus = ¼"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".

③ Working Point to Gutterline See "Rounding Detail".



④ 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".

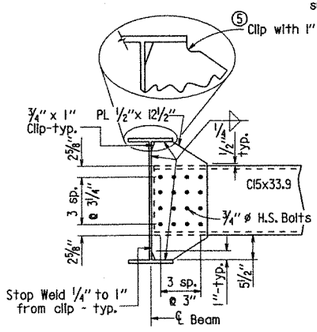
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

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

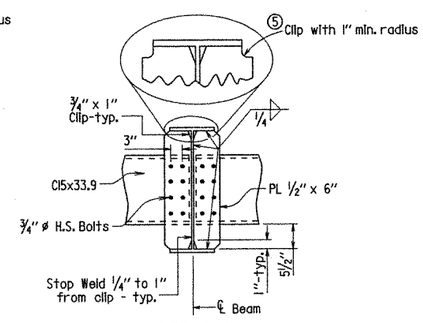
No Scale

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



DETAIL X

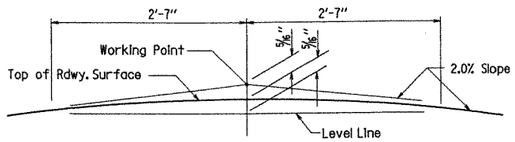
No Scale



DETAIL W

No Scale

Note: Bolts in connections shall be properly installed and tightened in accordance with subsection 807.11.



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

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.

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SHEET 1 OF 7
DETAILS OF 124' INTEGRAL W-BEAM UNIT

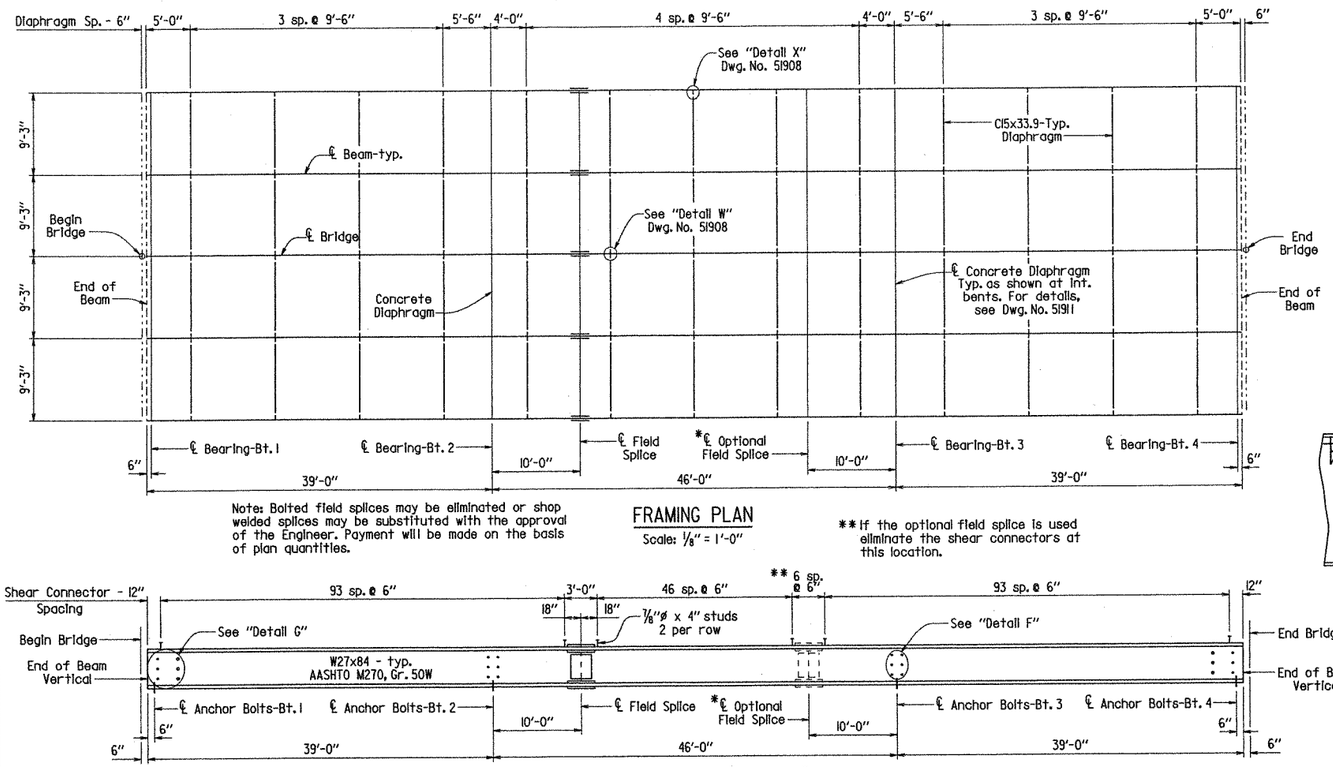
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 10-13-10 FILENAME: b070345_sl.dgn
CHECKED BY: KJH DATE: 11-04-10 SCALE: AS NOTED
DESIGNED BY: MCB DATE: 7/10

BRIDGE NO. 07209 DRAWING NO. 51908

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.		070345	28	63
				(1) 07209 - 124 FT. UNIT - 51909				



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.

FRAMING PLAN

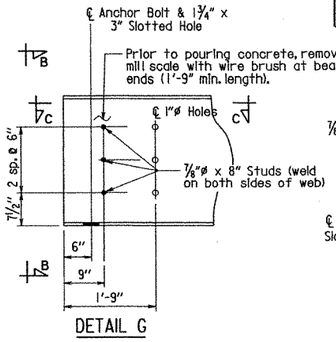
Scale: 1/8" = 1'-0"

**If the optional field splice is used eliminate the shear connectors at this location.

TYP. BEAM ELEVATION

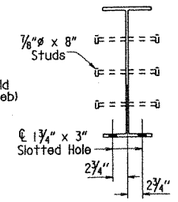
Scale: 1/8" = 1'-0"

*At the Contractor's option, a field splice may be provided at this location. No additional payment will be made for the optional field splice.



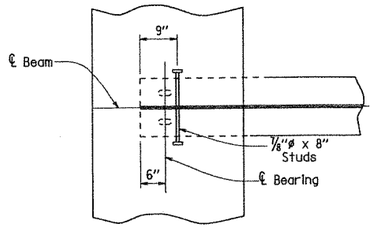
DETAIL G

No Scale



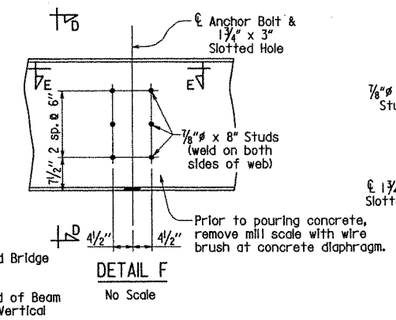
VIEW B-B

No Scale



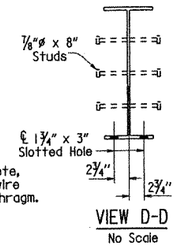
SECTION C-C

No Scale



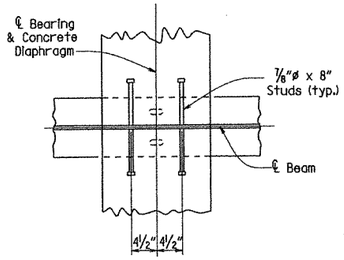
DETAIL F

No Scale



VIEW D-D

No Scale



SECTION E-E

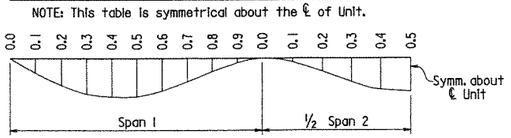
No Scale

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel	Structural Steel + Slab	Str. Steel + Slab + Parapet
1	0	0	0	0
	0.1	0.012	0.104	0.110
	0.2	0.022	0.191	0.202
	0.3	0.029	0.251	0.265
	0.4	0.032	0.272	0.287
	0.5	0.031	0.270	0.285
	0.6	0.026	0.230	0.243
	0.7	0.019	0.167	0.176
	0.8	0.011	0.095	0.100
	0.9	0.004	0.032	0.034
2	0	0	0	0
	0.1	0.003	0.027	0.029
	0.2	0.011	0.095	0.100
	0.3	0.019	0.168	0.177
	0.4	0.025	0.223	0.235
	0.5	0.027	0.242	0.250

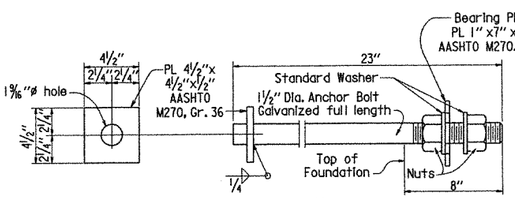
℄ Unit

NOTE: This table is symmetrical about the ℄ of Unit.



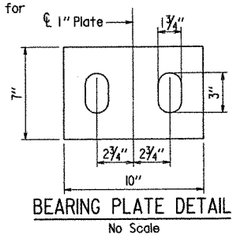
DEAD LOAD DEFLECTION DIAGRAM

NOTE: Camber for Dead Load Deflection plus Vertical curve ± 1/4" tolerance. Deflections shown are from a chord from ℄ Bearing to ℄ Bearing.



ANCHOR BOLT DETAIL

No Scale

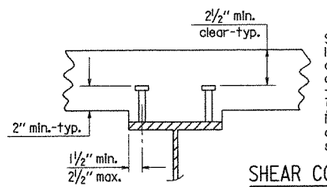


BEARING PLATE DETAIL

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)"

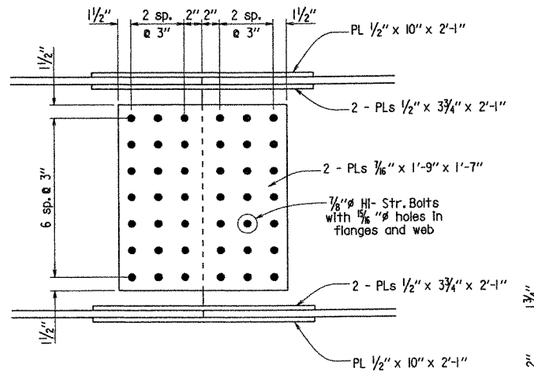
Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.



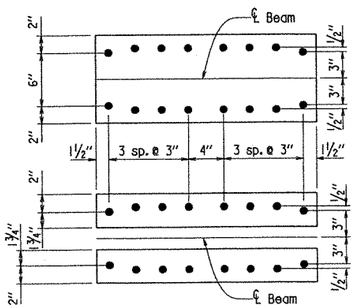
SHEAR CONNECTOR DETAIL

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. 3/4"ø studs may be used in place of the 7/8"ø studs shown, at the ratio of 1.361 - 3/4"ø studs in place 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".



WEB SPLICE



FLANGE SPLICE

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

FIELD SPLICE DETAIL

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

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SHEET 2 OF 7
DETAILS OF 124' INTEGRAL W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

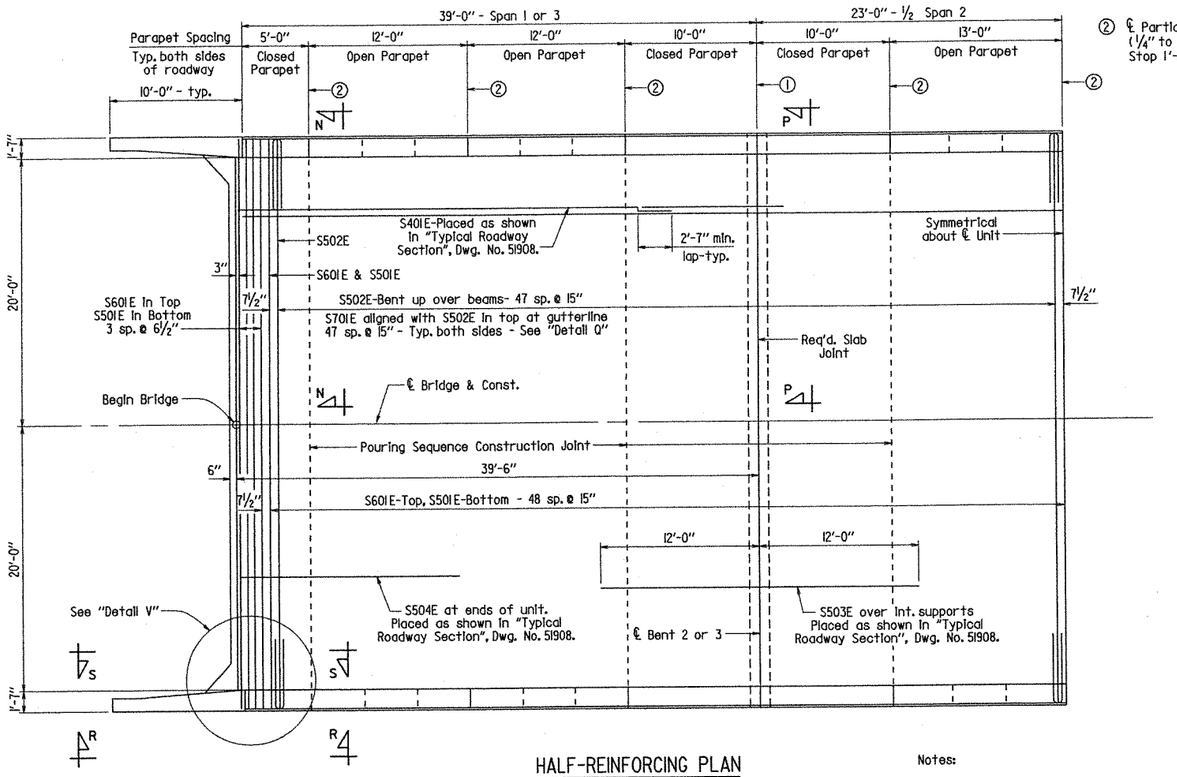
DRAWN BY: KDH DATE: 10-13-10 FILENAME: b070345_s2.dgn
CHECKED BY: CFF DATE: 11-04-10 SCALE: AS NOTED
DESIGNED BY: MCS DATE: 7/10

BRIDGE NO. 07209 DRAWING NO. 51909

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. HOMO DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070345	29	63
				① 07209 -		124 FT. UNIT	- 51910	

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

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



HALF-REINFORCING PLAN

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

Notes:

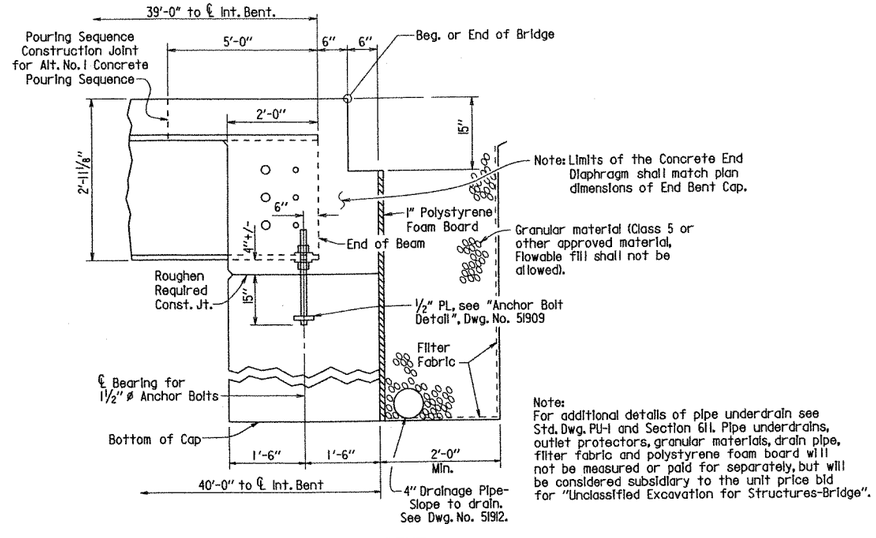
Rails and wings above required construction joint are included in span construction and are included in span quantities.

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

For "VIEW N-N" and "VIEW P-P", see Dwg. No. 51911.

For "VIEW R-R" and "SECTION S-S", see Dwg. No. 51912.

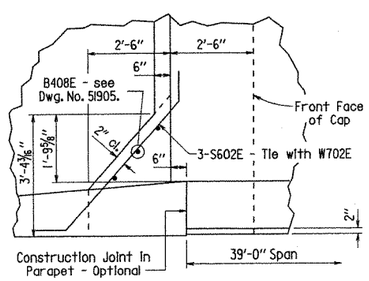
Construction joints shown are based on Alternate No. 1 Pouring Sequence, see Dwg. No. 51914.



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

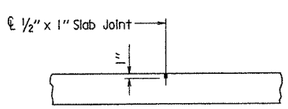
SECTION AT END BENT

No Scale



DETAIL V

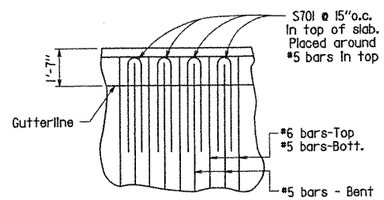
No Scale



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 SAE) 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).



DETAIL Q

No Scale

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SHEET 3 OF 7
DETAILS OF 124' INTEGRAL W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 10-19-10 FILENAME: b070345_s3.dgn
CHECKED BY: CJF DATE: 11-04-10 SCALE: AS NOTED
DESIGNED BY: MCB DATE: 7/10

BRIDGE NO. 07209 DRAWING NO. 51910

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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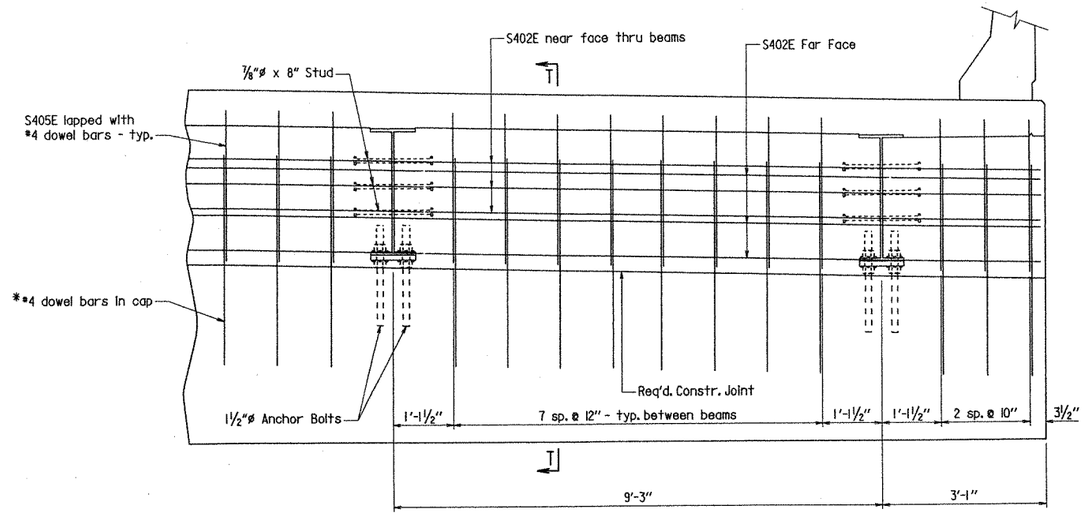
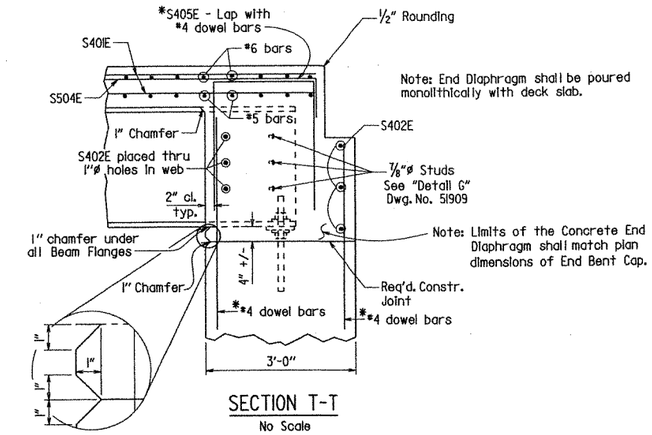
				JOB NO.		070345	30	63
				①	07209 -	124 FT. UNIT	- 51911	

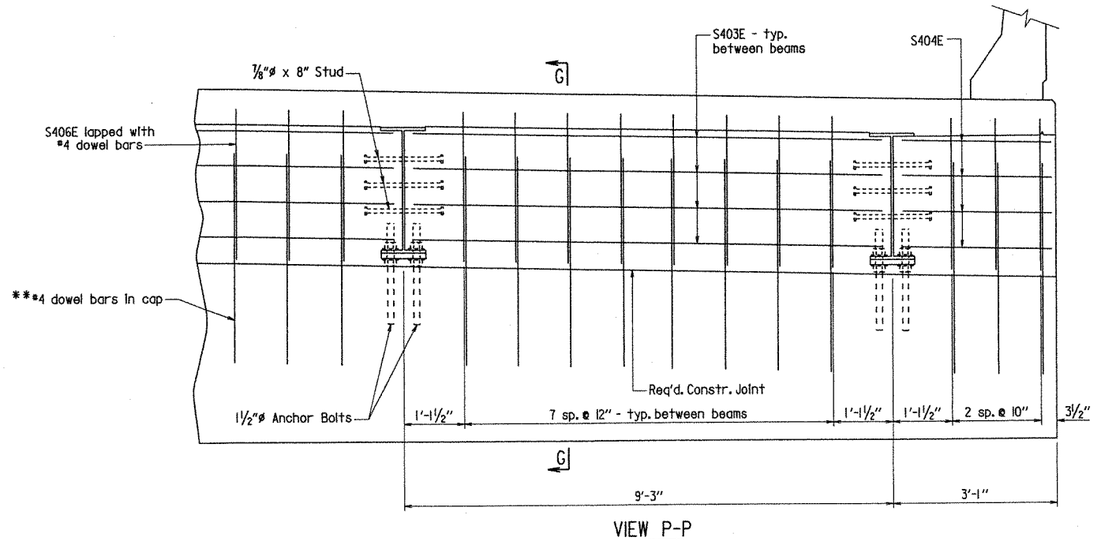


VIEW N-N
At End Bents
No Scale

*See Dwg. No. 51905 for reinforcing details and placement.

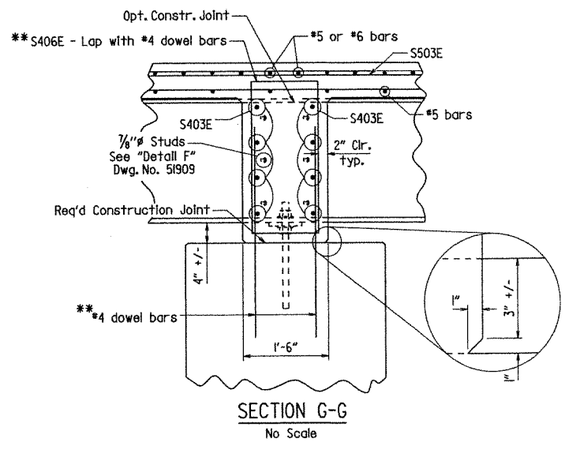


SECTION T-T
No Scale



VIEW P-P
At Int. Bents
No Scale

**See Dwg. No. 51906 for reinforcing details and placement.



SECTION G-G
No Scale

STATE OF ARKANSAS
Carl J. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSSELIER

BRIDGE ENGINEER

SHEET 4 OF 7
DETAILS OF 124' INTEGRAL W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 10-19-10 FILENAME: b070345_s4.dgn
CHECKED BY: JF DATE: 11-04-10 SCALE: AS NOTED
DESIGNED BY: MCB DATE: 7/10

BRIDGE NO. 07209 DRAWING NO. 51911

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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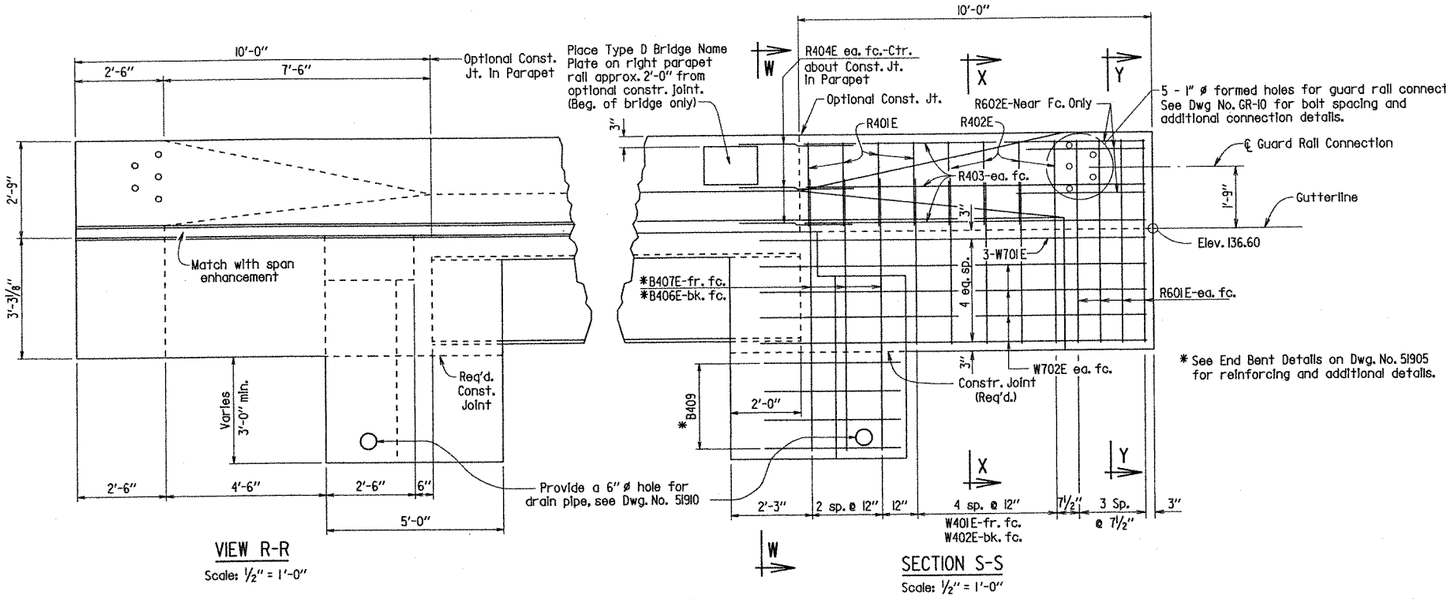
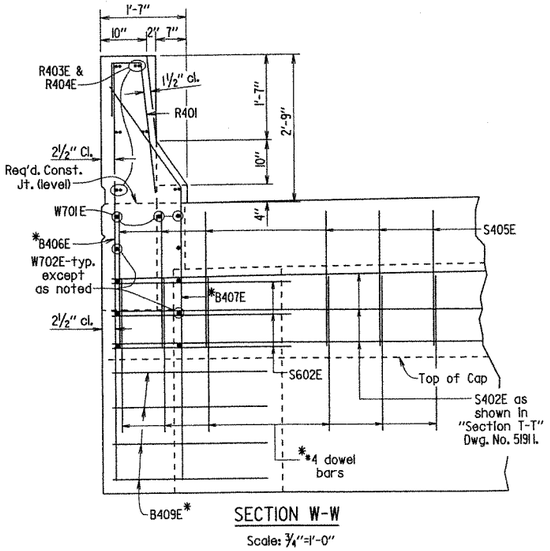
				JOB NO.		070345	31	63
				07209 - 124 FT. UNIT - 51912				



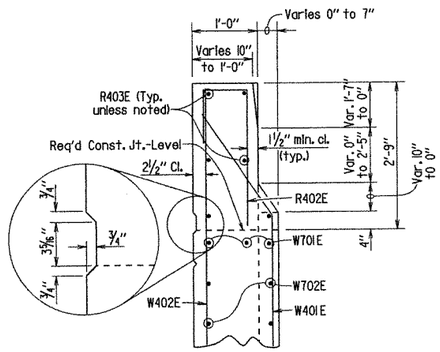
VIEW R-R
Scale: ½" = 1'-0"

SECTION S-S
Scale: ½" = 1'-0"

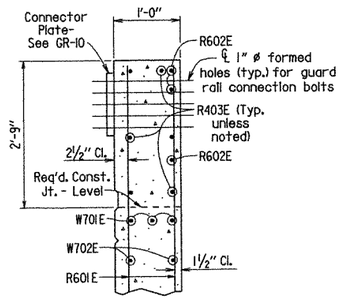
Note: Modify the bridge rail and connection detail above the gutterline as required by the manufacturer of the bridge end terminal. Reinforcing bars that are relocated or bent to fit the modified bridge rail shall have minimum plan concrete cover. See Layout for location of bridge end terminal.



SECTION W-W
Scale: ¾"=1'-0"



SECTION X-X
¾"=1'-0"



SECTION Y-Y
¾"=1'-0"

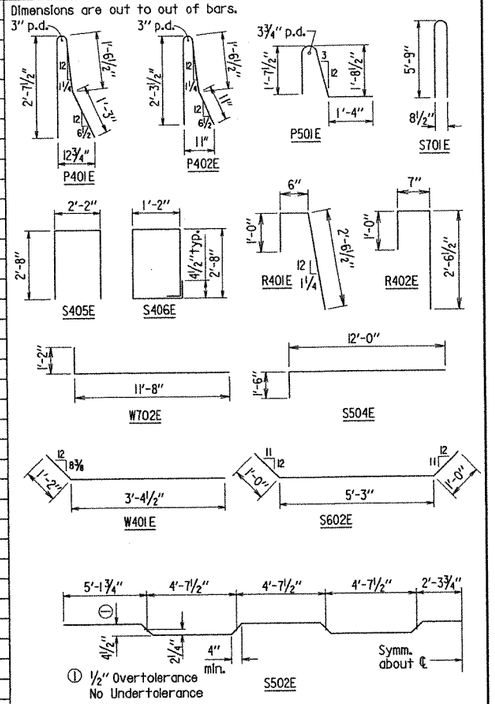
Note: Bars with an "E" suffix are to be epoxy coated.

BAR LIST ①

MARK	NO. REQ'D.	LENGTH	P.D.
S401E	432	33'-2"	Str.
S402E	12	42'-10"	Str.
S403E	64	9'-0"	Str.
S404E	32	2'-9"	Str.
S405E	76	7'-4"	2"
S406E	76	8'-0"	2"
P401E	400	5'-6"	3"
P402E	96	4'-10"	3"
P403E	72	4'-5"	Str.
P404E	28	4'-8"	Str.
P405E	56	9'-8"	Str.
P406E	56	11'-8"	Str.
P407E	28	12'-8"	Str.
R401E	16	3'-11"	2"
R402E	16	4'-0"	2"
R403E	24	9'-8"	Str.
R404E	24	4'-5"	Str.
W401E	20	4'-7"	2"
W402E	20	5'-8"	Str.
S501E	105	42'-10"	Str.
S502E	96	43'-6"	3"
S503E	128	24'-0"	Str.
S504E	128	13'-5"	Str.
P501E	400	4'-10"	3¾"
S601E	105	42'-10"	Str.
S602E	12	7'-3"	4½"
R601E	32	5'-8"	Str.
R602E	12	5'-0"	Str.
S701E	192	11'-10"	6¾"
W701E	12	12'-1"	Str.
W702E	32	12'-8"	5¼"

BENDING DIAGRAMS

Dimensions are out to out of bars.



① ½" Overtolerance
No Undertolerance

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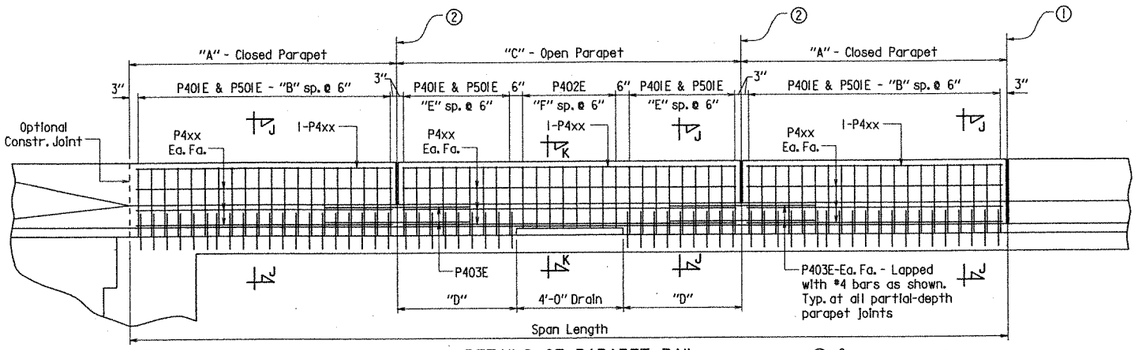
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. PUSELLER
BRIDGE ENGINEER

SHEET 5 OF 7
DETAILS OF 124' INTEGRAL W-BEAM UNIT
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 10-21-10
CHECKED BY: [illegible] DATE: 11-04-10
DESIGNED BY: MCB DATE: 7/10
FILENAME: b070345_s5.dgn
SCALE: AS NOTED

BRIDGE NO. 07209 DRAWING NO. 51912

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.		070345	32	63
				①		07209 - 124 FT. UNIT - 51913		

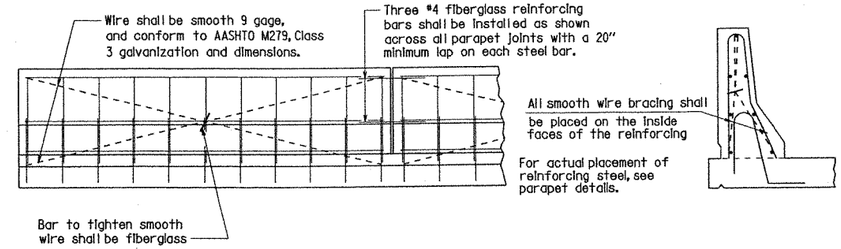


① ℄ Full-Depth Parapet Joint (¼" to 1" max.) as shown in "Half-Reinforcing Plan", Dwg. No. 51910. Stop 4" from top of slab.

DETAILS OF PARAPET RAIL

Scale: ⅜" = 1'-0"

② ℄ Partial-Depth Parapet Joint (¼" to 1" max.) as shown in "Half-Reinforcing Plan", Dwg. No. 51910. Stop 1'-2" from top of slab.



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

The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture. Exposed surface 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

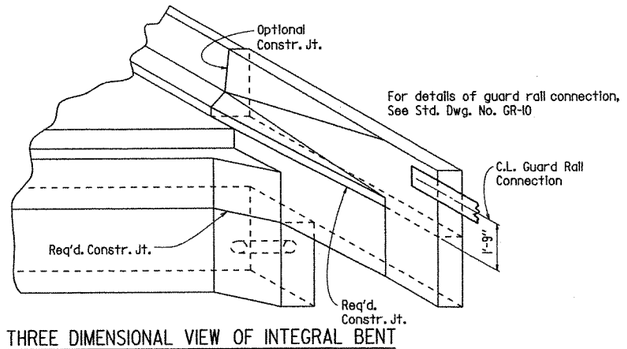
No Scale

TABLE OF PARAPET RAIL VARIABLES

"A" Closed Parapet	"B"	P4xx Bar
5'-0"	9	P404E
10'-0"	19	P405E

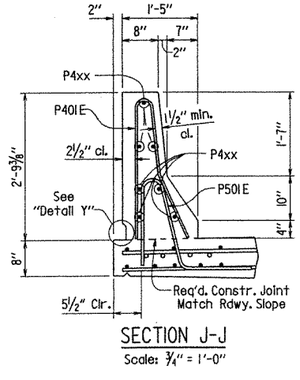
"C" Open Parapet	"D"	"E"	"F"	P4xx Bar
12'-0"	4'-0"	7	7	P406E
13'-0"	4'-6"	8	7	P407E

Note: For location of Open and Closed Parapet panels, see "Half-Reinforcing Plan", Dwg. No. 51910.



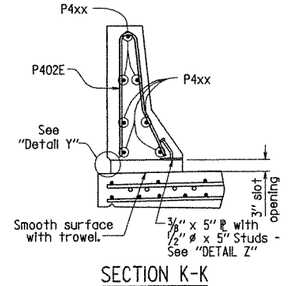
THREE DIMENSIONAL VIEW OF INTEGRAL BENT

No Scale



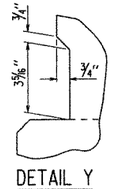
SECTION J-J

Scale: ¾" = 1'-0"



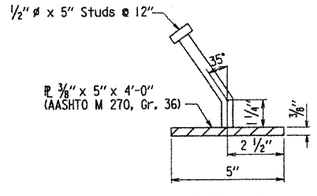
SECTION K-K

Scale: ¾" = 1'-0"



DETAIL Y

No Scale



DETAIL Z

No Scale

Note:
The surfaces of the ⅜" 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. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER 4/14/11

BRIDGE ENGINEER

SHEET 6 OF 7
DETAILS OF 124' INTEGRAL W-BEAM UNIT
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 10-21-10 FILENAME: b070345_s6.dgn
CHECKED BY: [illegible] DATE: 11-04-10 SCALE: AS NOTED
DESIGNED BY: [illegible] DATE: 7/10

BRIDGE NO. 07209 DRAWING NO. 51913

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.		070345	33	63
				(1)	07209 -	124 FT. UNIT	- 51914	

GENERAL NOTES

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (5th Edition, 2010).

MATERIALS AND STRENGTHS

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

CONCRETE: Concrete shall be poured in the dry and all exposed corners to be chamfered $\frac{3}{4}$" unless otherwise noted. All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

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

Concrete in bridge superstructure shall be placed, consolidated and screeded off for the entire pour before any concrete has taken its initial set. 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.

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 "Epoxy Coated Reinforcing Steel (Grade 60)".

STRUCTURAL STEEL: Structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M270, 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 M270, Gr. 36 unless otherwise noted.

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

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

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

All beams shall be blocked in their true position in the shop with webs horizontal in groups as specified in subsection 807.54(b)(2). The camber, length of sections, and distance between bearings shall be measured with the beams in their true position and this information shall become part of the permanent records for this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of $\frac{1}{4}$" +/- is allowed for camber.

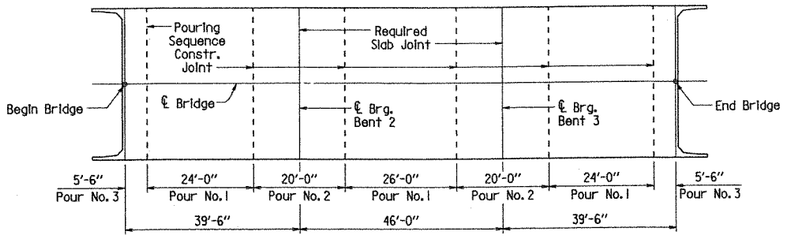
Flange field splice plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

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

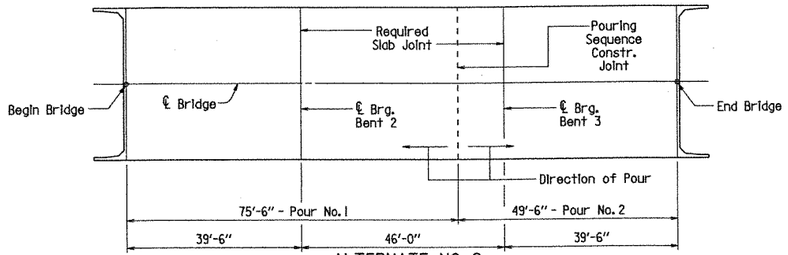
Field connections shall be bolted with high-strength bolts and shall be $\frac{3}{4}$" ø bolts unless otherwise noted. Open holes shall be $\frac{15}{16}$ "ø unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges. Holes for $\frac{3}{4}$" ø high-strength bolts may be $\frac{15}{16}$ " ø diameter if a washer is supplied for use under both the nut and head of the bolt.

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

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



ALTERNATE NO. 1



ALTERNATE NO. 2

CONCRETE POURING SEQUENCE

No Scale

Note: Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. All Pours (2) must be placed before Pours (3) 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 at intermediate bents are poured separately, a minimum of 48 hours shall elapse between the diaphragm pour and the slab pour. Concrete diaphragms at end bents shall be poured monolithically with the slab.

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

BRIDGE ENGINEER

SHEET 7 OF 7
DETAILS OF 124' INTEGRAL W-BEAM UNIT

ROUTE SEC.

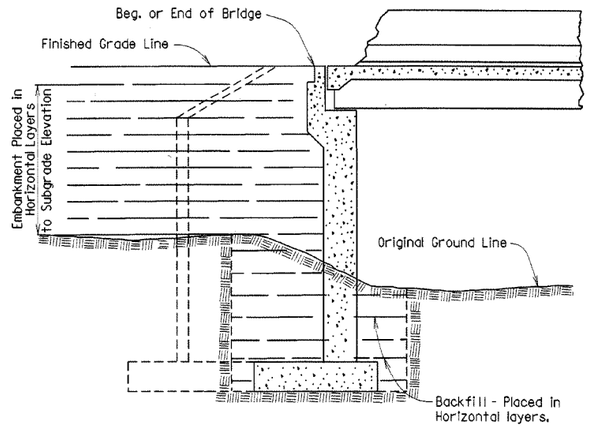
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 10-21-10 FILENAME: b070345_s7.dgn
CHECKED BY: DJL DATE: 11-04-10 SCALE: AS NOTED
DESIGNED BY: MCB DATE: 7/10

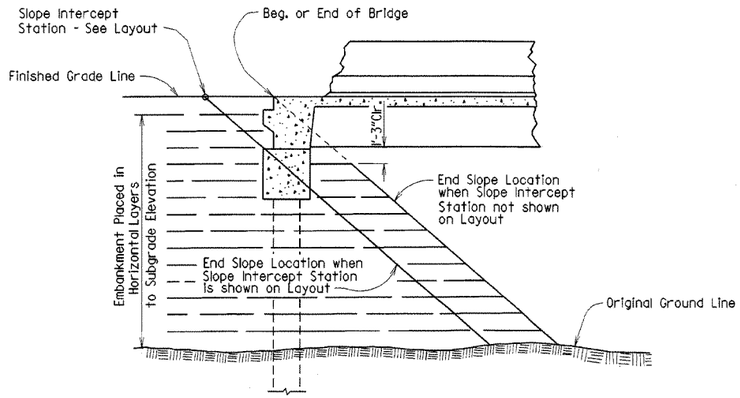
BRIDGE NO. 07209 DRAWING NO. 51914

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.		34	
				JOB NO.				

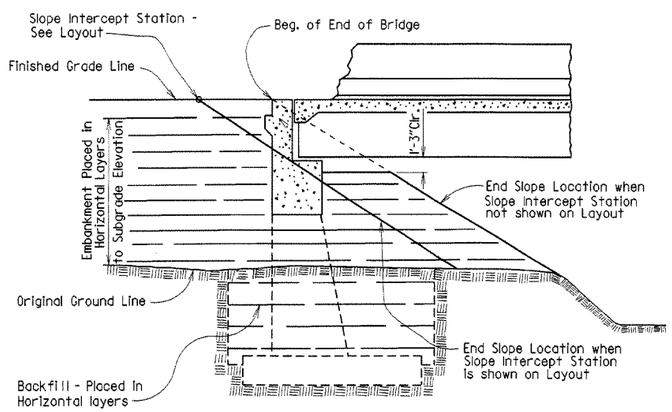
① EMBANKMENT & BACKFILL 1888A



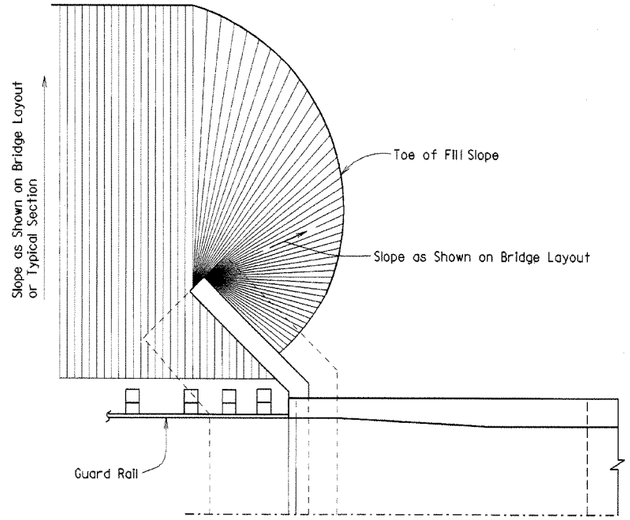
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



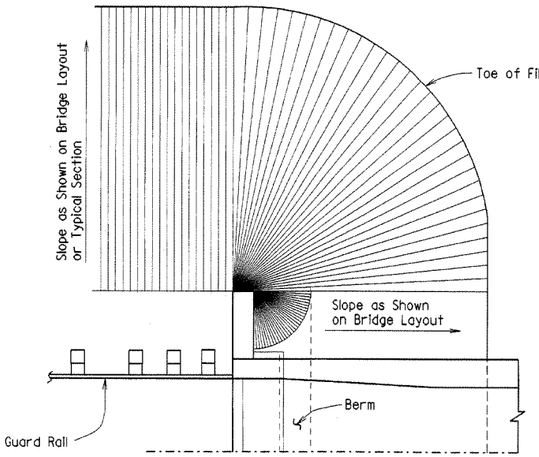
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



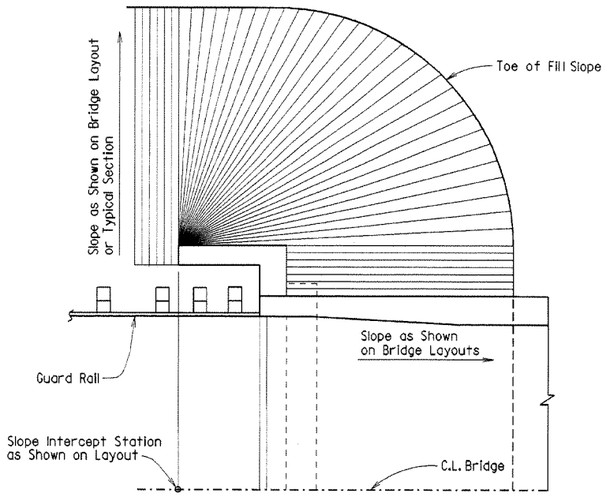
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



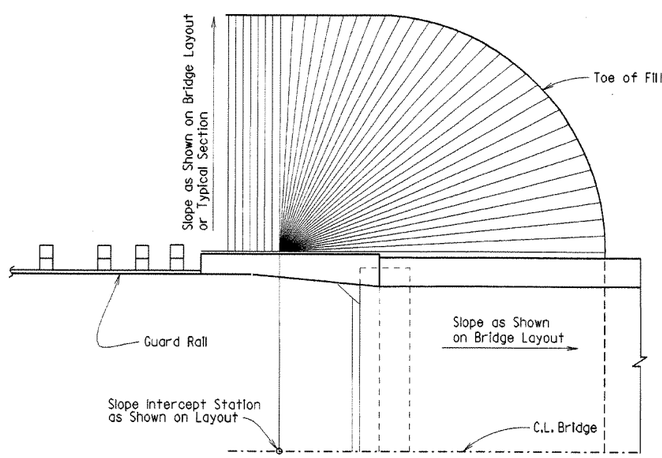
VERTICAL WALL ABUTMENTS



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. 4537
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
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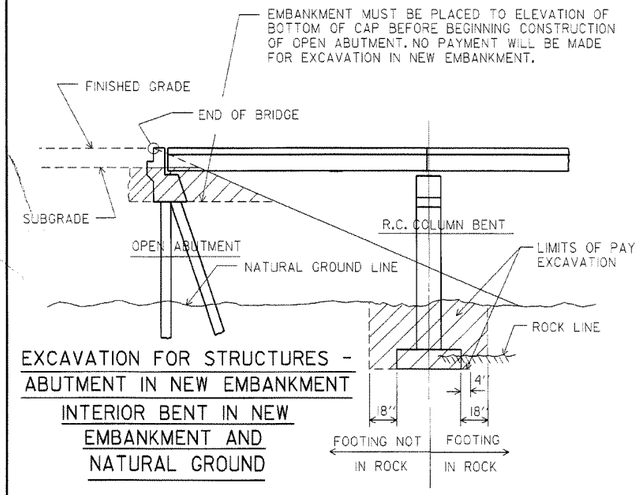
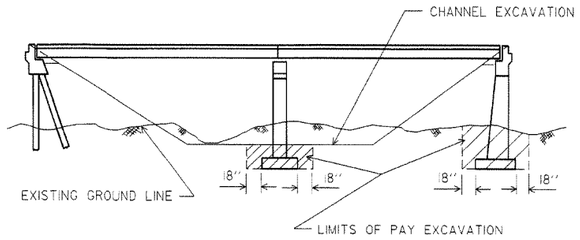
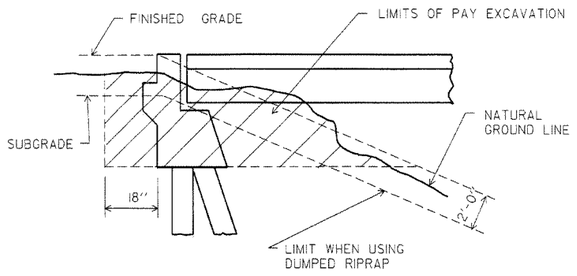
				JOB NO.				
①				RIP. & EXCAV.		1891F		



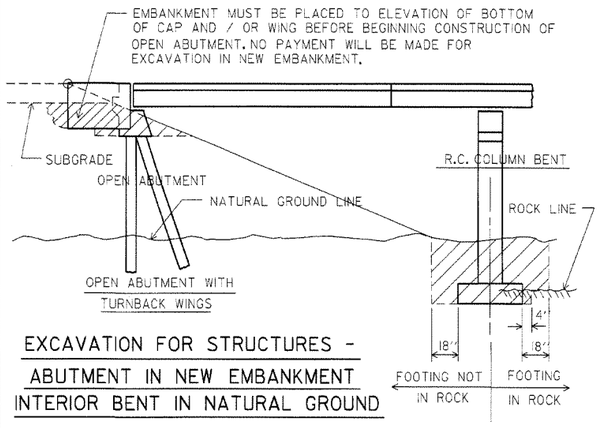
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



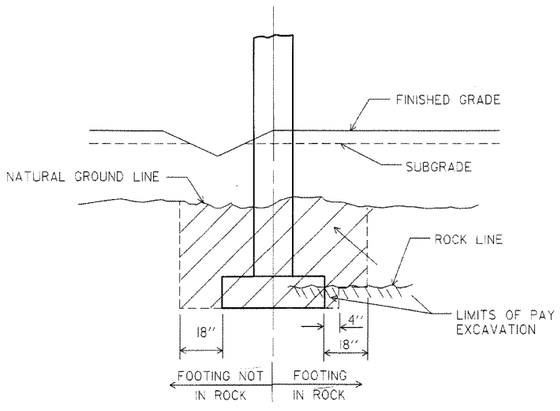
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



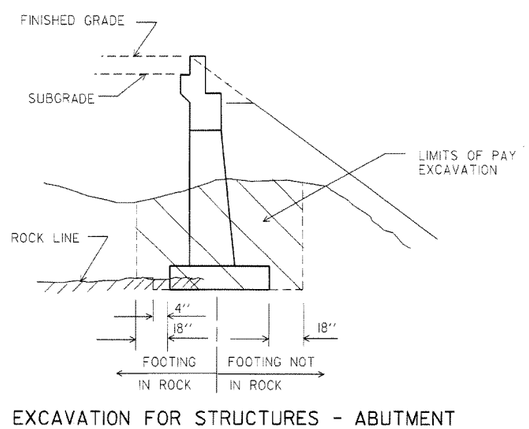
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



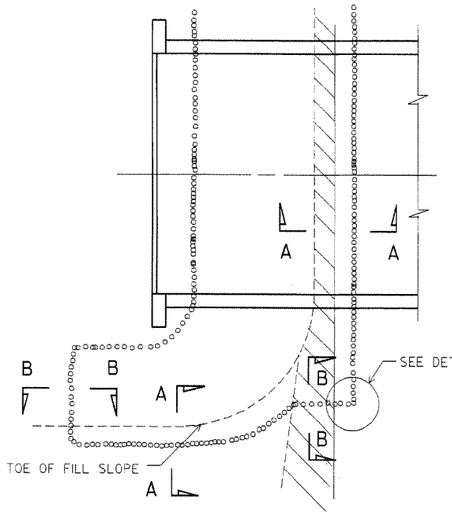
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



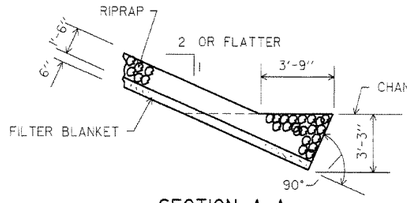
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



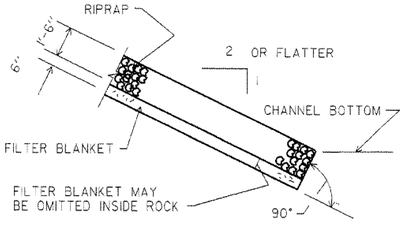
PLAN OF DUMPED RIPRAP



SECTION A-A

(TOE EXCAVATION IN SOIL)

EXCAVATION FOR TOES IS NOT A PAY ITEM



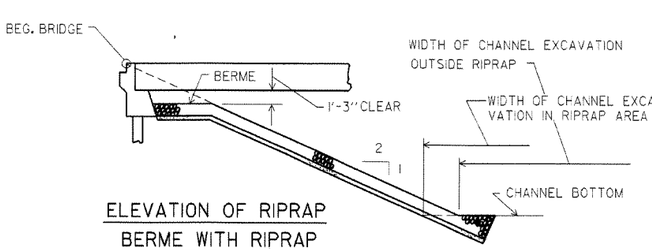
SECTION A-A

(TOE EXCAVATION IN ROCK)

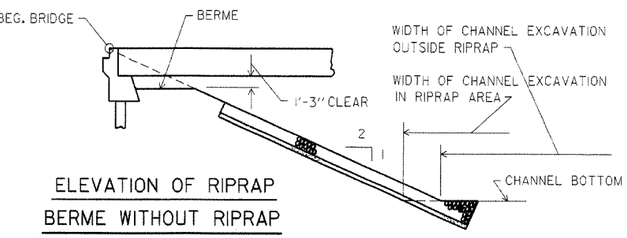
NOTE : USE THIS TYPE OF TOE WHEN ROCK IS ENCOUNTERED WHICH IS IN A STABLE CONDITION.

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.

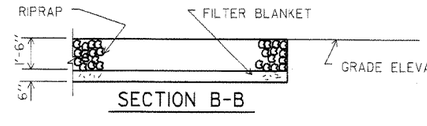
NOTE : DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES ARE INCLUDED FOR INFORMATION AS TO HOW PLAN QUANTITIES WERE CALCULATED AND FOR USE WHEN ADJUSTING QUANTITIES WHEN CHANGING FOOTING ELEVATION.



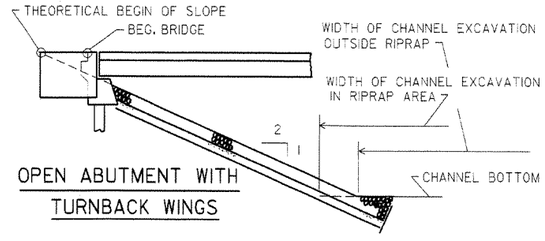
ELEVATION OF RIPRAP BERME WITH RIPRAP



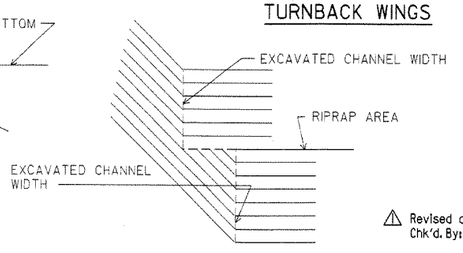
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

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

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

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

ROUTE SEC.

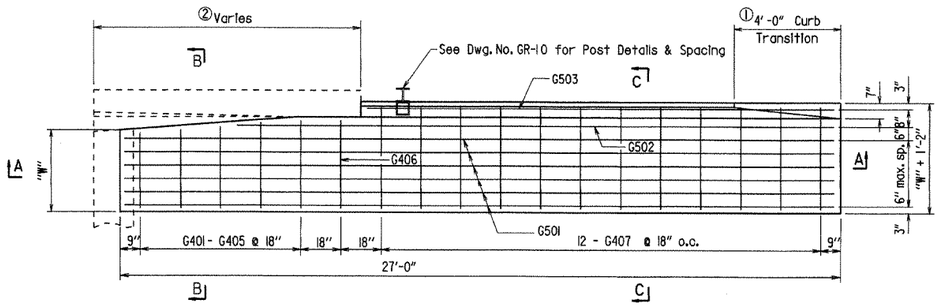
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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

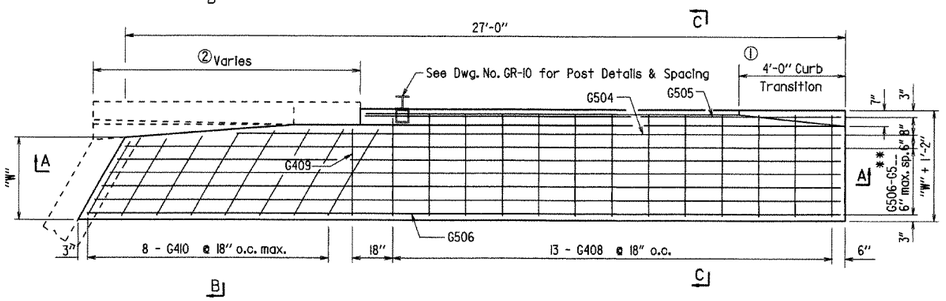
BRIDGE NO. DRAWING NO. 1891F

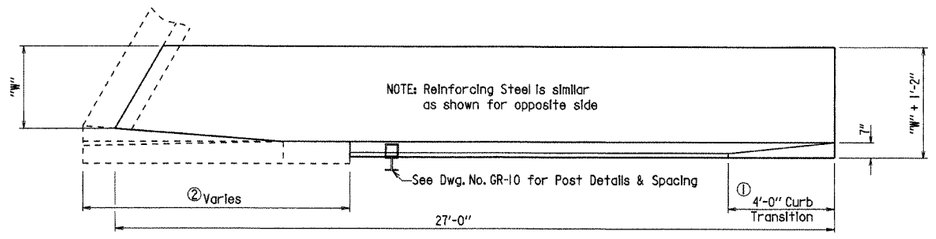
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-10-2003				6	ARK.		36	
07-14-2010				JOB NO.				
①				TYPE B GUTTERS			2016B	



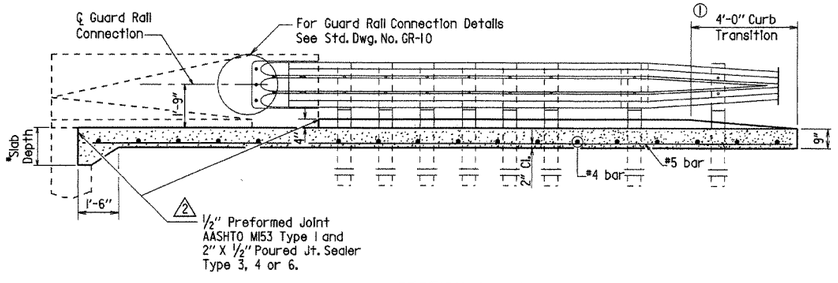
HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE

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





PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE

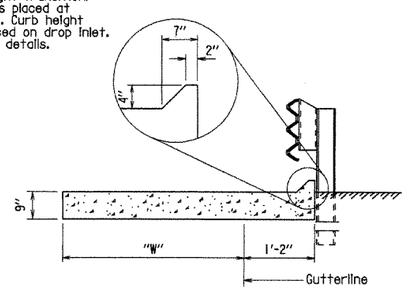


SECTION A - A

*Slab Depth Varies - See Span and Bent Details

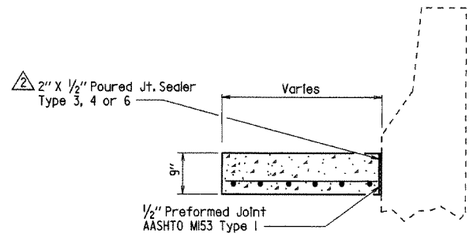
① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

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



SECTION C - C

N.T.S.



SECTION B - B

N.T.S.

***BAR LIST ②
TYPE B GUTTER

Mark	No. Required for Width "W"				Length	Square or Skewed
	3'-0"	4'-0"	6'-0"	8'-0"		
G401 - G405	1 each	1 each	1 each	1 each	"W" - 3" to "W" + 3"	Square
G406	1	1	1	1	"W" + 3"	Square
G407	12	12	12	12	"W" + 10"	Square
G408	13	13	13	13	"W" + 10"	Skewed
G409	1	1	1	1	"W" + 3"	Skewed
G410	8	8	8	8	*	Skewed
G501	6	8	12	16	26'-8"	Square
G502	1	1	1	1	22'-2"	Square
G503	1	1	1	1	17'-8"	Square
G504	1	1	1	1	*	Skewed
G505	1	1	1	1	*	Skewed
G506-G5__**	1 each	1 each	1 each	1 each	*	Skewed

*Bar Lengths vary with Skew.

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

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

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

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

GENERAL NOTES

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

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

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

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

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

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

BRIDGE ENGINEER

DETAILS OF STANDARD TYPE B APPROACH GUTTERS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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

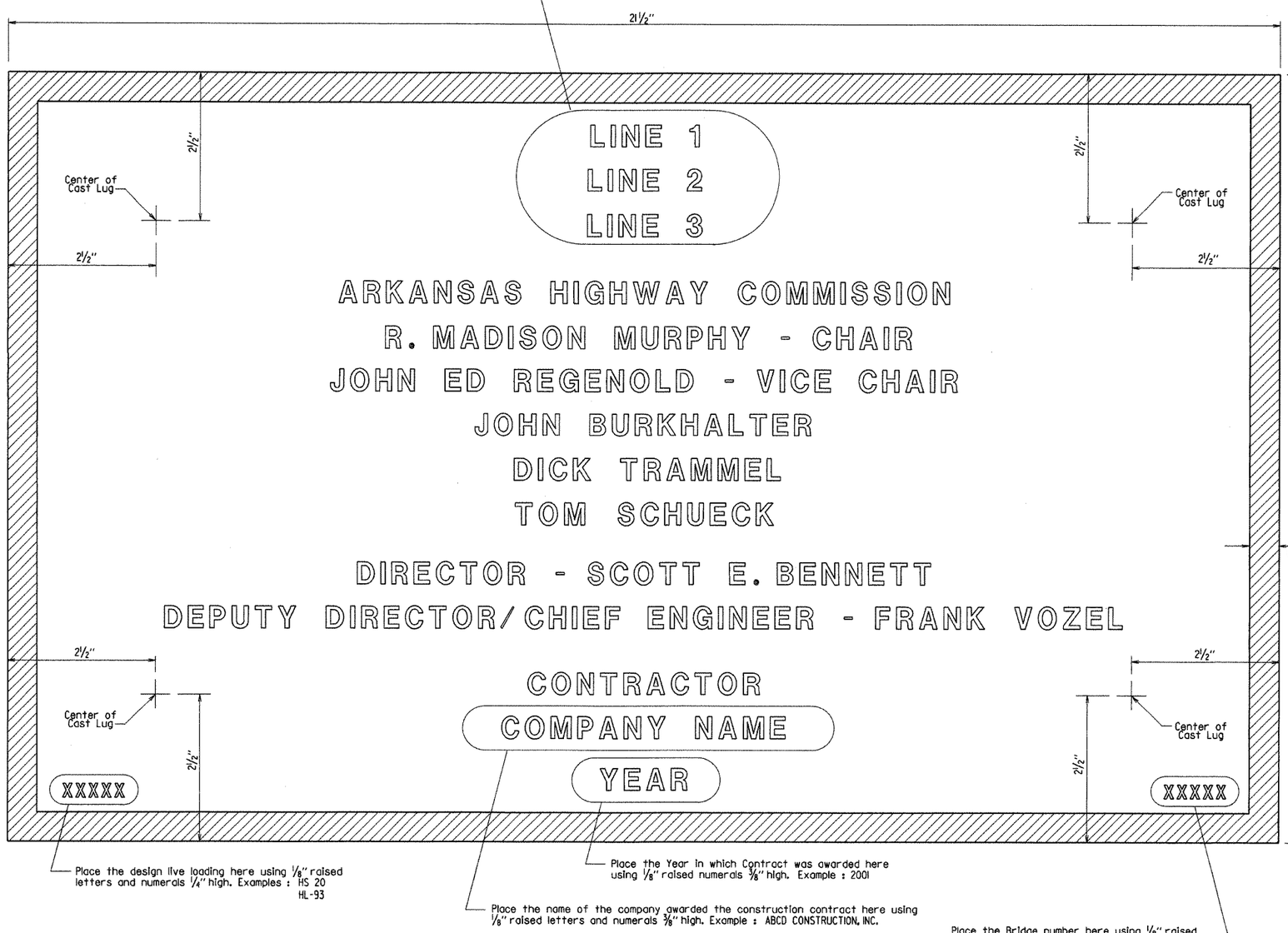
BRIDGE NO. DRAWING NO. 2016B

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
9-8-11				6	ARK.		37	
				JOB NO.				

(1) NAME PLATE 2387

The name of the bridge as shown on the plans shall be placed on Lines 1 - 3 using 1/8" raised letters and numerals 3/8" high.

	Example 1	Example 2	Example 3	Example 4
Line 1	Red River	Southern	Saline	
Line 2	Relief	Railroad	River	Highway 5
Line 3		Overpass	Relief	



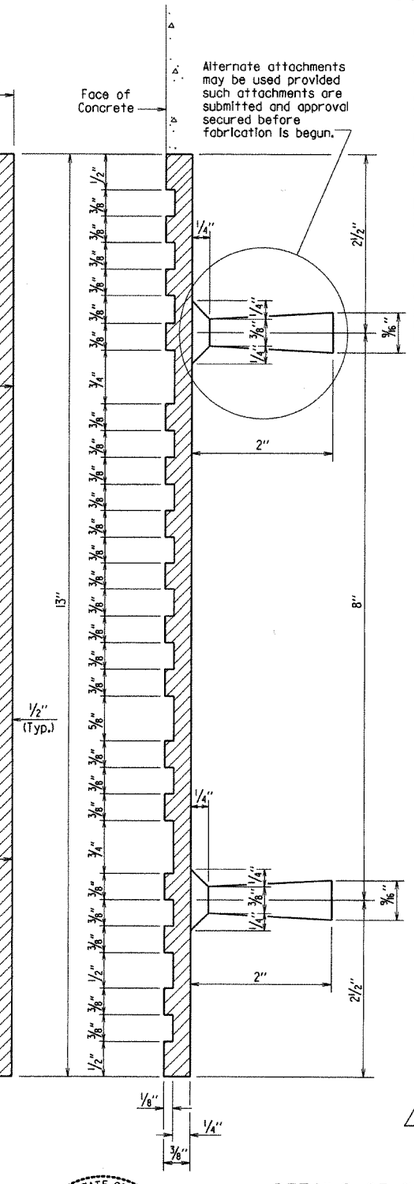
Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20
HL-93

Place the Year in which Contract was awarded here using 1/8" raised numerals 3/8" high. Example : 2001

Place the name of the company awarded the construction contract here using 1/8" raised letters and numerals 3/8" high. Example : ABCD CONSTRUCTION, INC.

Place the Bridge number here using 1/8" raised letters and numerals 1/4" high. Examples : A1234
05432

TYPICAL BRIDGE NAME PLATE



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 1/4" thick and shall include four tapering cone lugs 3/8" to 9/16"x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered. The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

1 Revised and Redrawn 9-8-11 KDH Checked By: CRE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. PUSELLER
BRIDGE ENGINEER

DETAILS OF STANDARD TYPE D BRIDGE NAME PLATE

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

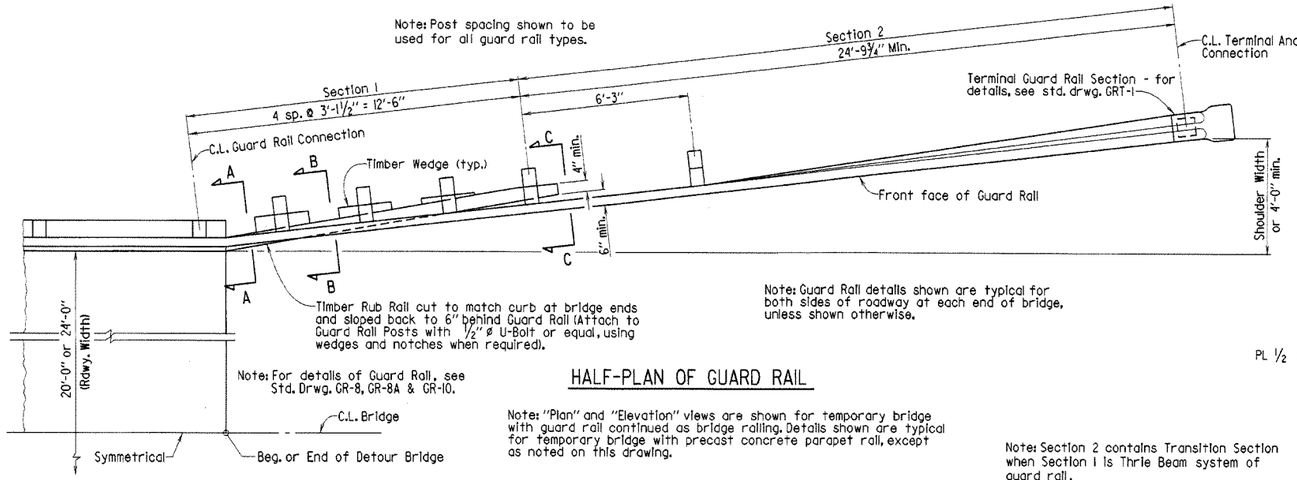
DRAWN BY: KDH DATE: 9-8-11 FILENAME: B2387.STD
CHECKED BY: CRE DATE: 9-8-11 SCALE: 1'-0" = 1'-0" OR AS NOTED
DESIGNED BY: STD. DATE: —

BRIDGE NO.

DRAWING NO. 2387

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-05-01				6	ARK.		38	
04-10-03				JOB NO.				
						TEMP. BRIDGE		2465

Note: Post spacing shown to be used for all guard rail types.



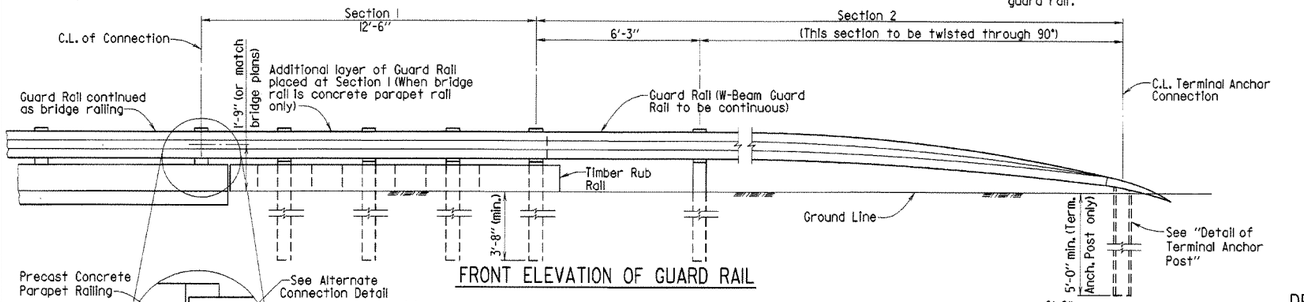
Note: For details of Guard Rail, see Std. Drwg. GR-8, GR-8A & GR-10.

Note: Guard Rail details shown are typical for both sides of roadway at each end of bridge, unless shown otherwise.

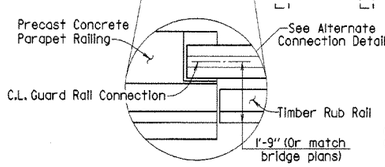
HALF-PLAN OF GUARD RAIL

Note: "Plan" and "Elevation" views are shown for temporary bridge with guard rail continued as bridge railing. Details shown are typical for temporary bridge with precast concrete parapet rail, except as noted on this drawing.

Note: Section 2 contains Transition Section when Section 1 is Thrie Beam system of guard rail.

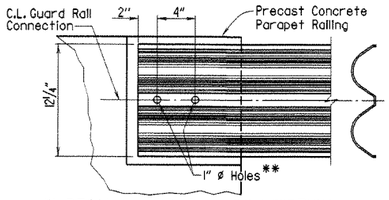


FRONT ELEVATION OF GUARD RAIL



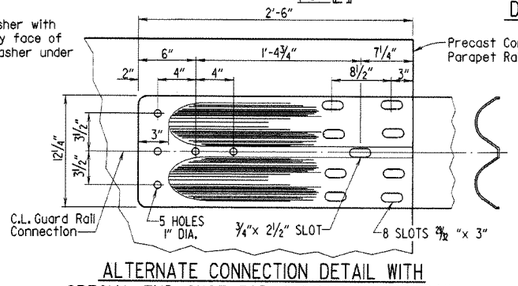
Note: For details of Thrie Beam system of guard rail, see std. drwg. GR-10 & GR-10A. Thrie Beam rail and five bolt connection as shown on GR-10 are required when precast rail has five cast holes for guard rail connection.

** Two ¾" ø H.S. Bolts are required. Use 7" x 2½" x 3/16" washer with two ⅞" ø holes against back of parapet and on roadway face of guard rail (Bend to fit guard rail) with 1½" o.d. steel washer under heads and nuts (Clipped to 1⅝" x 1½" at nuts).



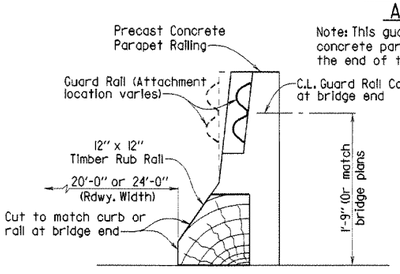
W-BEAM GUARD RAIL CONNECTION AT CONCRETE PARAPET RAIL

Note: This guard rail connection will only be allowed on precast concrete parapet rail units with a 12½" x 14" x 3⅜" notch at the end of the unit for connection of guard rails.

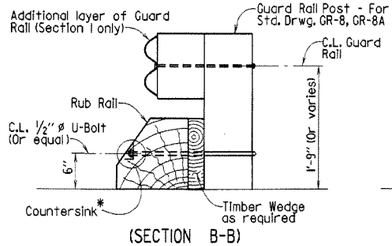


ALTERNATE CONNECTION DETAIL WITH SPECIAL END SHOE FOR W-BEAM GUARD RAIL CONNECTION AT CONCRETE PARAPET RAIL

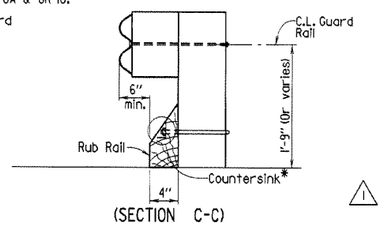
Note: Special End Shoe and four ⅞" ø x 2½" H.S. Bolts are required when concrete insert anchor assembly is present in precast rail unit.



(SECTION A-A)



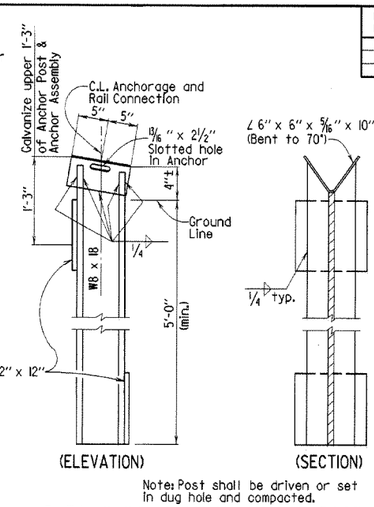
(SECTION B-B)



(SECTION C-C)

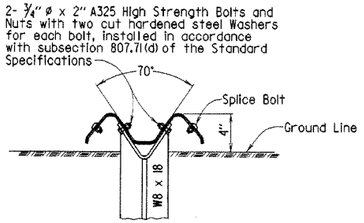
DETAILS OF RUB RAIL (CONC. PARAPET BRIDGE RAIL)

* U-Bolt Assembly, or equal, shall not project beyond rdwy. face of Rub Rail at any location.



Note: Post shall be driven or set in dug hole and compacted.

DETAILS OF TERMINAL ANCHOR POST



DETAILS OF TERMINAL ANCHOR CONNECTION

GENERAL NOTES

Bridge End Protection is required on both sides of roadway at both ends of temporary bridge. The end protection system shall consist of a minimum of two end sections (Section 1 and Section 2). If additional guard rail is used, it shall be placed in Section 2 and shall have a maximum post spacing of 6'-3".

If W-Beam Guard Rail is also used as Bridge Rail, it shall be continuous from terminal anchor post to terminal anchor post with splices as shown on Std. Drwg. GR-8 & GR-10.

A doubled guard rail beam section (One W-Beam Rail section or one Thrie Beam Rail section nested inside the other) shall be required for Section 1 if the guard rail is not continued as bridge rail, but connects directly to a precast concrete parapet bridge rail end.

Rub rails shown in Section 1 are representative of members required to transition the curb or wheel guard section to a minimum distance behind the face of guard rail.

Timber rub rail, regardless of species, must be of equal or better strength than no. 2 southern pine or douglas fir, graded by the standard grading rules. All timber widths and thicknesses are shown as nominal.

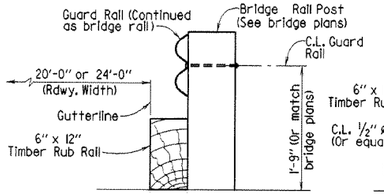
Except as noted, bolts shall conform to the requirements of ASTM A 307 and minimum dimensions as shown. Malleable or cast iron washers to be used under all bolt heads and nuts bearing on timber. High strength bolts shall conform to Section 807.

Guard rail as described in subsection 617.01 of the Standard Specifications and these plans shall be constructed in accordance with subsection 617.03. Subsection 617.02 is modified to allow the use of materials consistent with the requirements of Section 603.

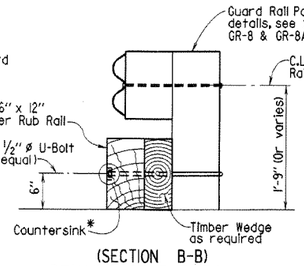
Payment: The bridge end protection system completed and accepted will not be paid for directly, but shall be included in the contract unit price bid per linear foot for temporary bridge structure, which price shall be full compensation for furnishing materials and erecting guard rail, line posts, blockouts, rub rails, terminal anchor posts, etc.; and for all labor, tools, equipment and incidentals necessary to complete the work.

GUARD RAIL CONNECTION COMBINATIONS

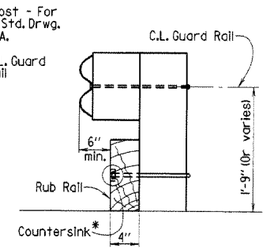
BRIDGE RAIL TYPE	GUARD RAIL AND CONNECTION TYPE
Guard Rail continued as bridge railing	W-Beam Guard Rail. See Standard Drawing GR-8 for splice details.
Concrete Parapet with 12½" x 14" x 3⅜" notch and two cast in holes	W-Beam Guard Rail fastened with two high-strength bolts as shown; blunt end on guard rail. Guard Rail doubled at Section 1.
Concrete Parapet with Concrete Insert Anchor assembly (4-Bolt embedded Anchor) flush with rail face	W-Beam Guard Rail fastened with four high-strength bolts; Special End Shoe. Guard Rail doubled at Section 1.
Concrete Parapet with 5 cast in holes	Thrie Beam Guard Rail; five high-strength through bolts with back-up plate; special end shoe as shown on std. drwg. GR-10. Guard Rail doubled at Section 1. Section 2 contains transitional rail and W-Beam Guard Rail.



(SECTION A-A)



(SECTION B-B)



(SECTION C-C)

DETAILS OF RUB RAIL (CONTINUOUS W-BEAM RAIL)

1 REDRAWN AND REVISED 04-05-2001 CHECKED BY: MEC

2 Revised for CPB Seal, CRE 04-10-2003 Chk'd By: CJF

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

BRIDGE ENGINEER

DETAILS OF STANDARD TEMPORARY BRIDGE STRUCTURE BRIDGE END PROTECTION SYSTEM

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

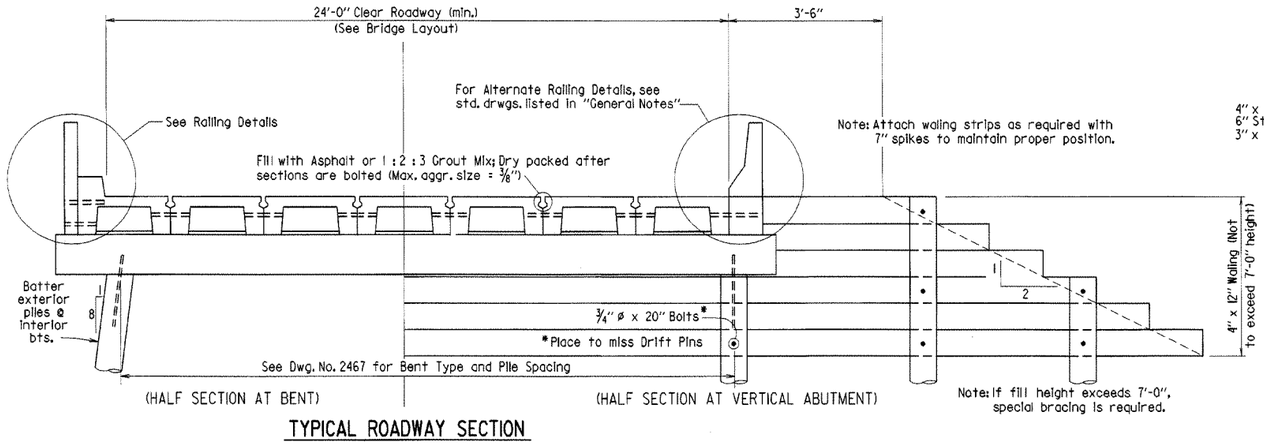
DRAWN BY: KMG DATE: 04-05-01 FILENAME: B2465.STD

CHECKED BY: MEC DATE: 04-05-01 SCALE: No Scale

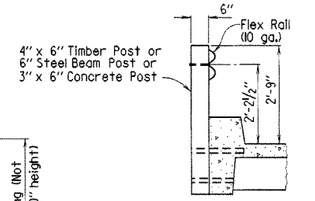
DESIGNED BY: Std. DATE: ——

BRIDGE NO. DRAWING NO. 2465

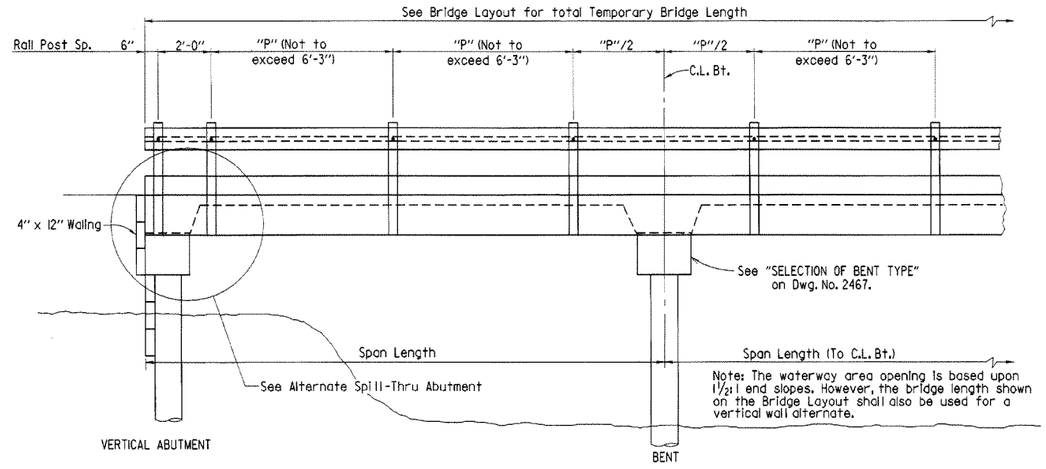
DATE ISSUED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/18/96	———	10/18/96			6	ARK.		39	
	10/24/02				JOB NO.				
	04/10/03								
					①		TEMP. BRIDGE	2466	



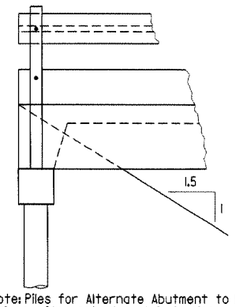
TYPICAL ROADWAY SECTION



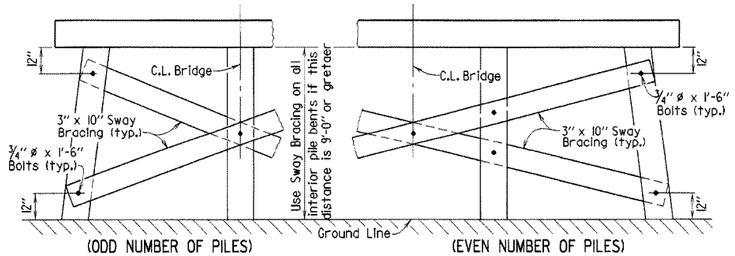
RAILING DETAILS



LONGITUDINAL SECTION

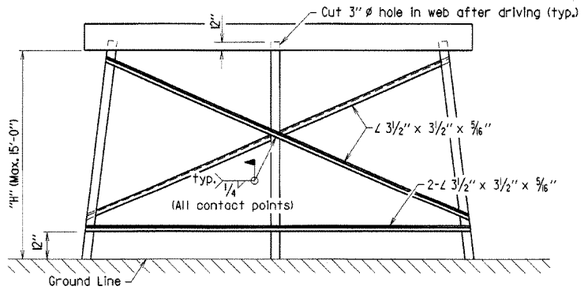


ALTERNATE SPILL-THRU ABUTMENT



DETAILS OF SWAY BRACING FOR TIMBER PILES

Note: Sway Bracing, if required, shall be used on both lines of piles for Tower Bents.



Note:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment for any bracing required shall be considered incidental to item 603 "Temporary Bridge Structure".

Omit bottom bracing where "H" is less than 10'. Omit all bracing where "H" is less than 5'.

DETAILS OF BRACING FOR STEEL PILES

GENERAL NOTES

2 DESIGN SPECIFICATIONS: AASHTO Standard Specifications for Highway Bridges, 2002 Edition, with current interim specifications.

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

SEISMIC PERFORMANCE CATEGORY: A

DESIGN LIVE LOADS: HS15-44 (No Overload).

DESIGN DEAD LOADS: 50 lbs. per cu. ft. for lumber
150 lbs. per cu. ft. for concrete

Precast Concrete Units shall comply with the requirements of AHTD standard drawings and special provisions. Drawings for old style units are within the drawing series 5291 thru 5307 and 14800 thru 14899. New style units (Current Design) are within the drawing series 15190 thru 15400.

Load Factor Design is used for the new style precast concrete units. Allowable Stress Design is used for the old style precast concrete units and timber components. The allowable unit stresses used assume normal duration of loading for stress grades of sawn lumber and are as follows:
fb=1200 psi
fv=85 psi

Concrete shall be Class S with a minimum 28 day compressive strength f'c = 3500 psi unless otherwise noted.

1 Reinforcing Steel shall conform to AASHTO M 31 or M 53, Grade 60 unless otherwise noted.

Structural Steel shall be AASHTO M 270, Grade 36 unless otherwise noted.

Timber piling shall comply with Section 818 of the Standard Specifications and shall be driven to a minimum bearing capacity of 20 tons per pile. Steel piling shall be HP12X53 and shall be driven to a minimum bearing capacity of 44 tons per pile.

Malleable or cast iron washers shall be used under all bolt heads and nuts bearing on timber. Standard washers shall be provided under all bolt heads and nuts in connection with concrete.

Bolts shall conform to the requirements of ASTM A 307. Minimum dimensions are shown for bolts, dowels, and drift pins.

Grout placed around Drift Pins in piles shall be allowed to cure for 72 hours before caps are used to support the superstructure. Grout to consist of one part portland cement to two parts sand.

Melted sulfur may be used in lieu of grout placed around drift pins. The superstructure may be placed as soon as the sulfur has hardened.

Bent caps to be handled from points approximately 5' from the ends.

Timber material, regardless of species, must be of equal or better strength than no. 2 southern pine or douglas fir, graded by the standard grading rules. All timber widths and thicknesses are shown as nominal.

For additional notes concerning "Bridge End Protection System", see Dwg. No. 2465.

Unless otherwise noted, the Temporary Bridge Structure shall comply with and be paid for in accordance with Section 603.

1 Revised Reinf. Stl. to Grade 60, Updated the SEAL jxj 10-24-02 Ck'd by: MEC 10-24-02

2 Revised for 2002 AASHTO Design Specifications and 2003 AHTD Construction Specifications. CRE 04-10-03 Chk'd by:

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

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF STANDARD TEMPORARY BRIDGE STRUCTURE PRECAST CONCRETE SPANS 24'-0" ROADWAY WIDTH

ROUTE SEC.

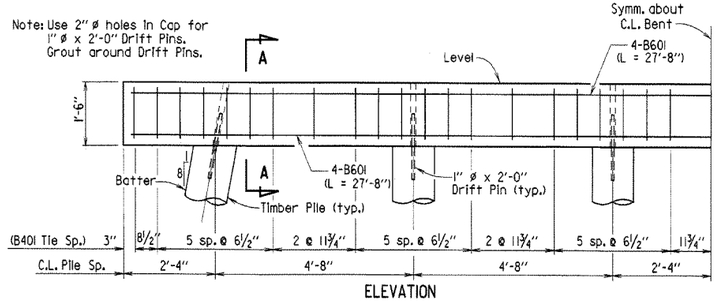
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 10-18-96
CHECKED BY: GEC DATE: 10-18-96 SCALE: NO SCALE
DESIGNED BY: Std. DATE: ———
BRIDGE NO. DRAWING NO. 2466

B2466.STD

DATE ISSUED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/18/96	——	10/18/96			6	ARK.		40	
	04/10/03				JOB NO.				
					①		TEMP. BRIDGE 2467		

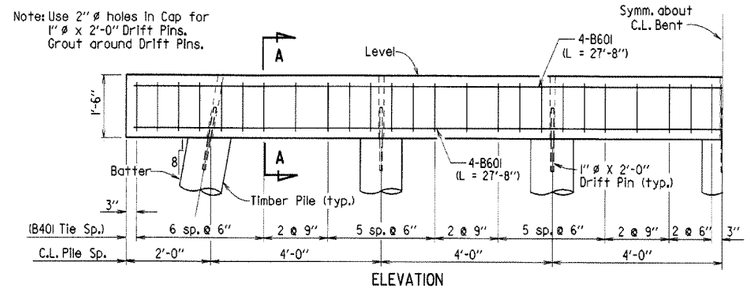
Note: Use 2" ø holes in Cap for 1" ø x 2'-0" Drift Pins. Grout around Drift Pins.



ELEVATION

PRECAST CAP & TIMBER PILES
(SI + S2 ≤ 38')

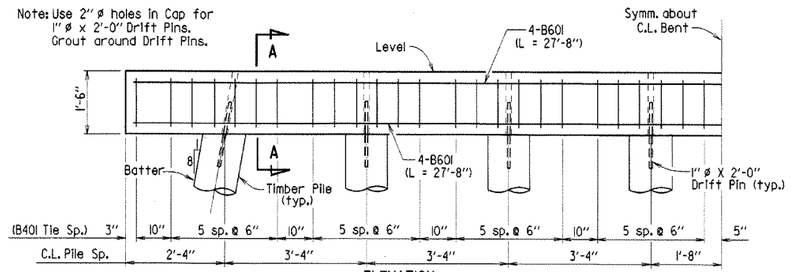
Note: Use 2" ø holes in Cap for 1" ø x 2'-0" Drift Pins. Grout around Drift Pins.



ELEVATION

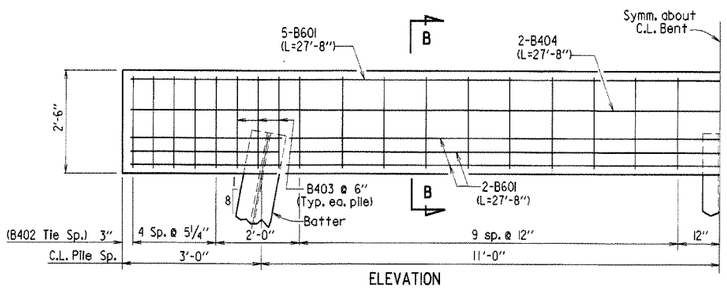
PRECAST CAP & TIMBER PILES
(38' < SI + S2 ≤ 50')

Note: Use 2" ø holes in Cap for 1" ø x 2'-0" Drift Pins. Grout around Drift Pins.



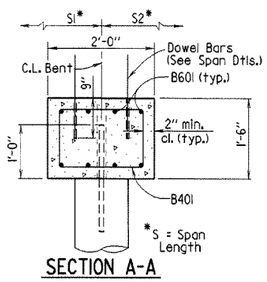
ELEVATION

PRECAST CAP & TIMBER PILES
(50' < SI + S2 ≤ 62')

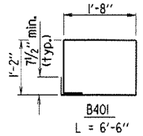


ELEVATION

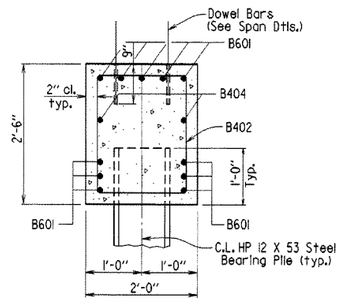
CAST IN PLACE CAP & HP 12X53 PILES



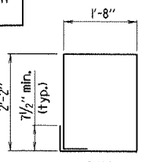
SECTION A-A

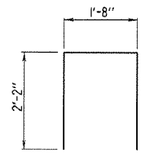


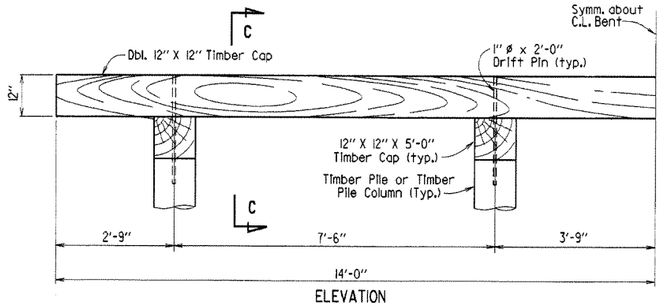
NOTE : ALL PRECAST SPANS SHALL BE FIXED TO THE CAP WITH A MINIMUM OF 2 DOWELS AT EACH END OF SPAN.



SECTION B-B

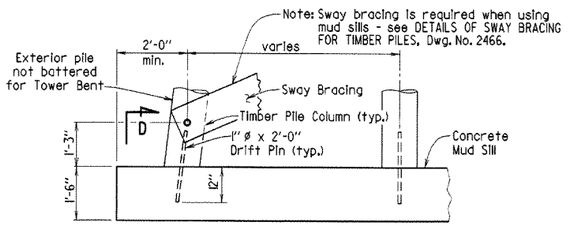






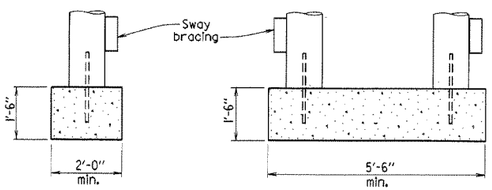
ELEVATION

TOWER BENT - TIMBER CAP & PILES



PART ELEVATION

MUD SILL DETAILS



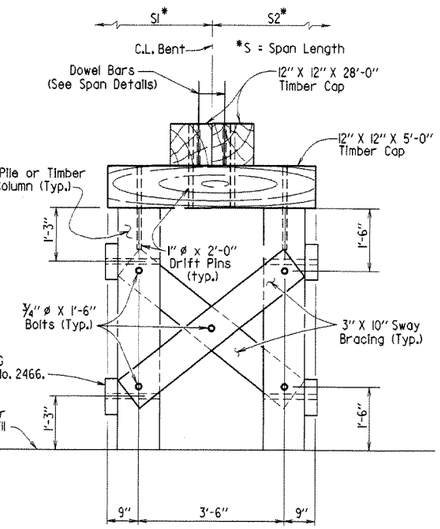
SECTION D-D
(When bottom of cap to top of mud sill is 10' or less)

SECTION D-D
(When bottom of cap to top of mud sill is greater than 10')

SELECTION OF BENT TYPES

These temporary bridge drawings provide the following bent types:
- Driven timber piles with precast concrete cap.
- Driven steel HP 12X53 piles with cast in place concrete cap.
- Tower bent with driven timber piles and timber cap.
- Mud sill with timber pile columns and precast concrete cap.
- Tower bent with mud sill and timber pile columns and timber cap.

Guidelines to be used in determining the appropriate bent type are:
1) Driven piles may be used at intermediate bents if a pile penetration of at least 15' below the ground line can be obtained. At end bents, a pile penetration of at least 5' below the bottom of cap is required. Pile penetration measurements at end bents can include embankment, but fill material may not be placed around intermediate bent piles in order to meet the 15' requirement.
2) If driven piles are used at intermediate bents and the distance from the bottom of cap to ground line exceeds 15' at any intermediate bent, tower bents must be used at the minimum rate of one tower bent for every 160' of total bridge length. Tower bent(s,) when required, shall be placed at the bent location(s) having the greatest distance from bottom of cap to ground line.
3) If piles cannot be practically driven at a bent, mud sills shall be used. All soft and yielding material shall be removed from the bearing area before placing the sill concrete.
4) Timber piles shall be used as columns in mud sills. The column spacing shall be the same as that used for driven timber pile bents for the appropriate span lengths involved.
5) If a mud sill is to be used and the distance from the bottom of cap to ground line is more than 10', a tower bent with mud sill must be used at that location.
6) A timber cap may be used only if tower bents are used.



SECTION C-C

⚠1 Revised for CPB Seal, CRE 04-10-2003
Chk'd By: CSF

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

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF STANDARD TEMPORARY BRIDGE STRUCTURE PRECAST CONCRETE SPANS 24'-0" ROADWAY WIDTH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 10-18-96
CHECKED BY: GEC DATE: 10-18-96 SCALE: NO SCALE
DESIGNED BY: Std. DATE: ——

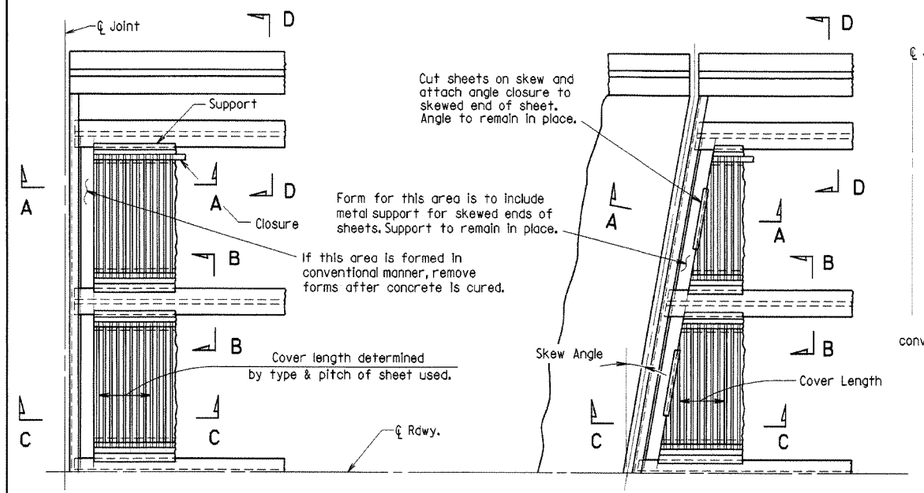
BRIDGE NO.

DRAWING NO. 2467

B2467.STD

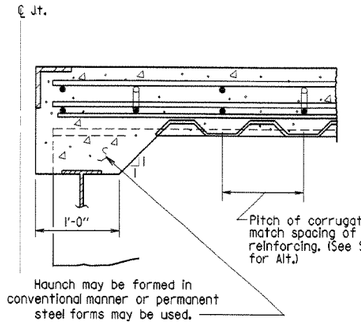
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11-27-96						6	ARK.		41	
04-10-2003						JOB NO.				

① BR. DECK FORMS 14991

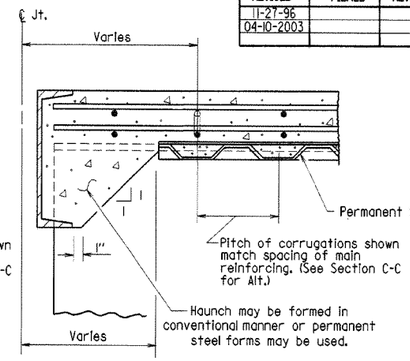


PART PLAN - SQUARE SPAN
3/8" = 1'-0"

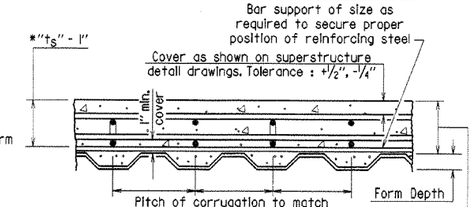
PART PLAN - SKEWED SPAN
3/8" = 1'-0"



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

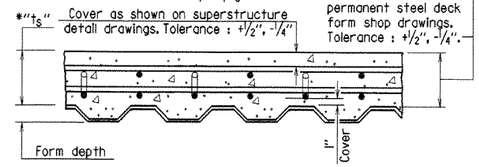


SECTION A-A
N.T.S.
(Channel at end of span)

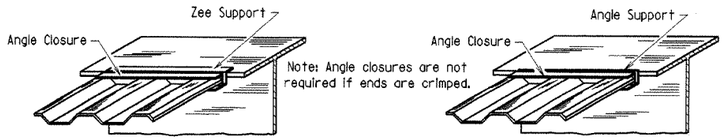


SECTION C-C
1" = 1'-0"

Top of slab to top of permanent steel deck form - obtain from permanent steel deck form shop drawings. Tolerance : +1/2", -1/4".



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.

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.

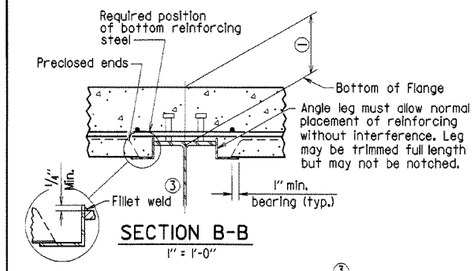
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Bridge Engineer.

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.

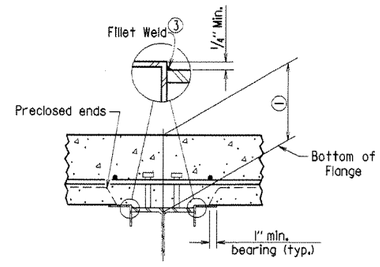
High chairs shall be sized to support the top mat of reinforcing at the proper position. High chairs shall be placed at locations shown on the detail drawings.

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

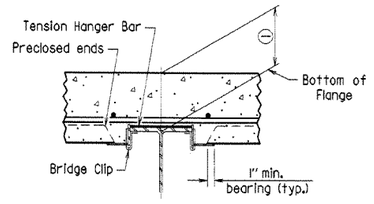


SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

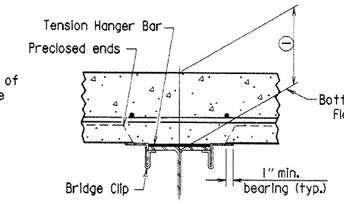
③ Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



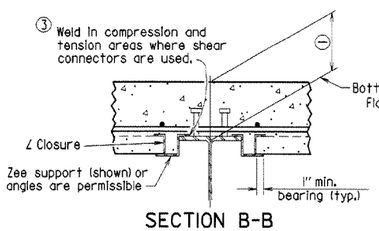
SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



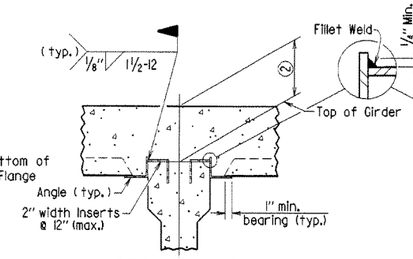
SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are not used)



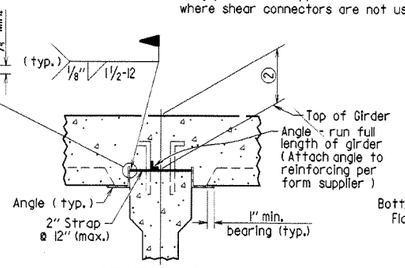
SECTION B-B
1" = 1'-0"
(Showing permissible support for tension flange where shear connectors are not used)



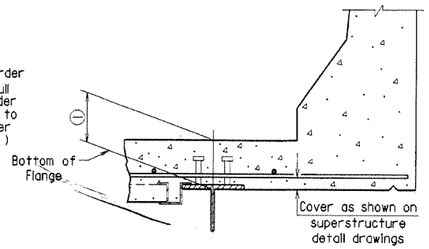
SECTION B-B
1" = 1'-0"
(Showing ∠ Closure)



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.

⚠1 Redrawn and revised 11/27/96; MJT

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

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

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

ROUTE SEC.

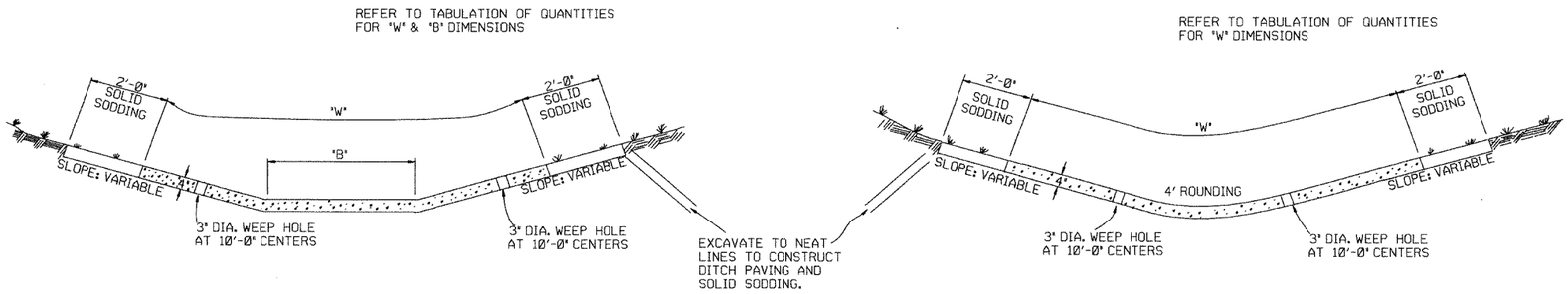
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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

BRIDGE NO. DRAWING NO. 14991

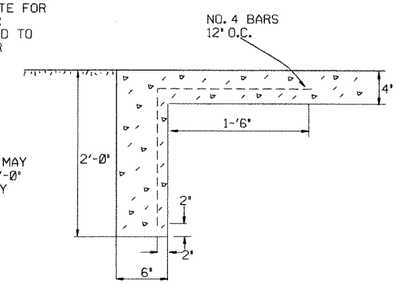
BI4991.STD



TYPE A

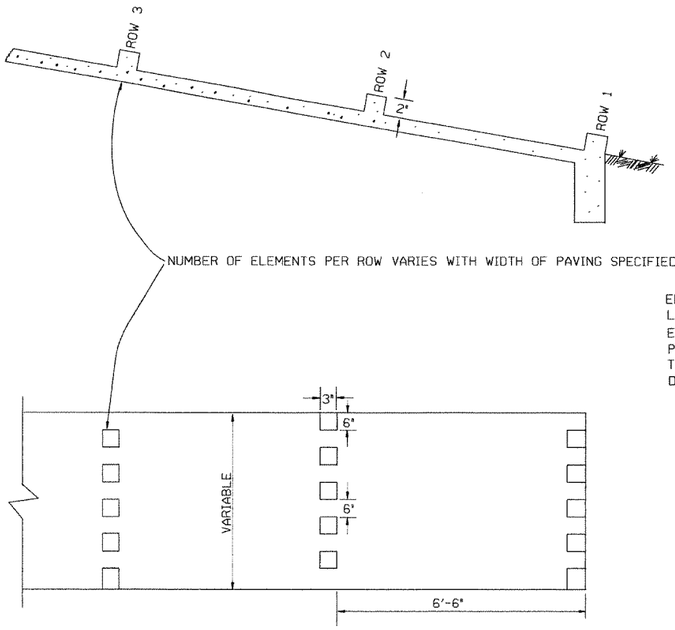
TYPE B

THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR "CONCRETE DITCH PAVING."



TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

TOE WALL DETAIL FOR CONCRETE DITCH PAVING



ENERGY DISSIPATORS
(NO SCALE)

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE UNCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

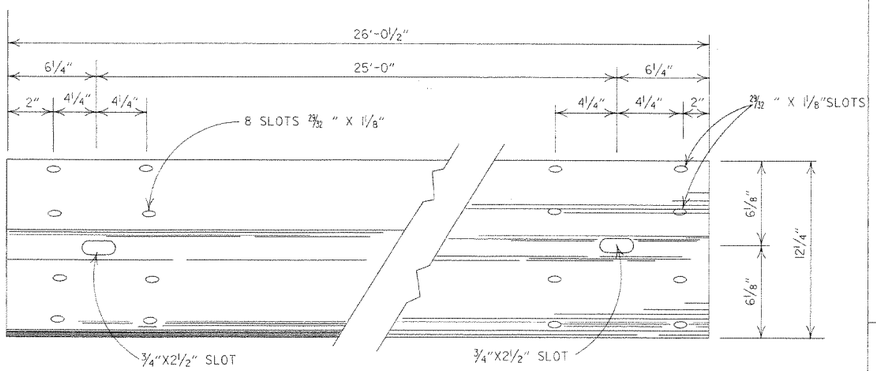
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

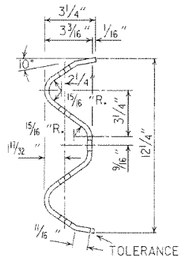
DATE	REVISION	DATE FILM'D
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	592-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

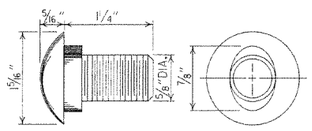
STANDARD DRAWING CDP-1



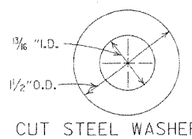


DETAILS OF W-BEAM GUARD RAIL

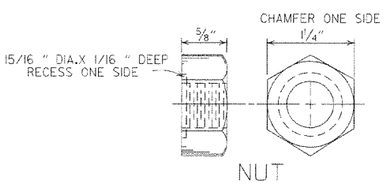
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



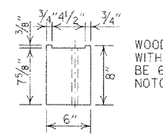
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

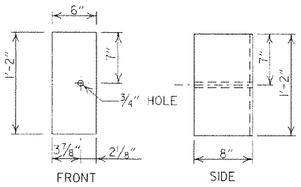


NUT

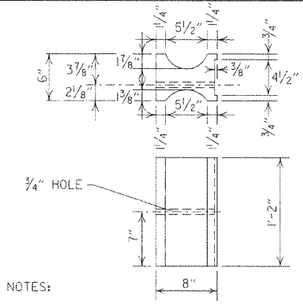


WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

TOP



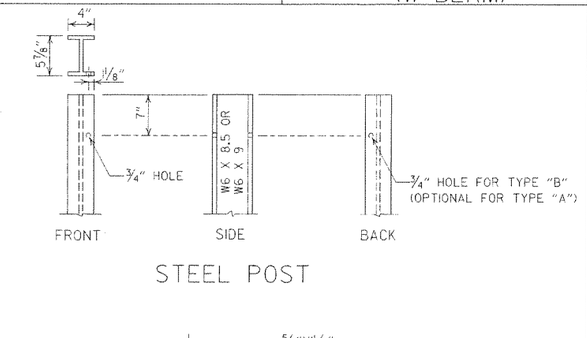
WOOD BLOCKOUT (W-BEAM)



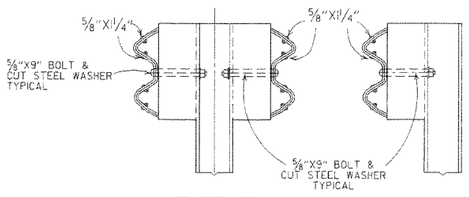
NOTES:

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)

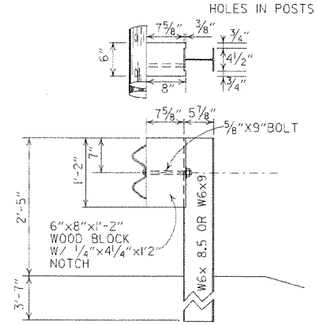


STEEL POST

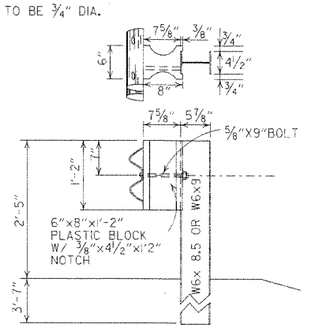


DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

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



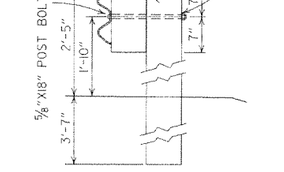
WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

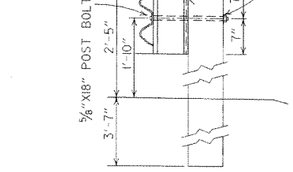
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

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



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

WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

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

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

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

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

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

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

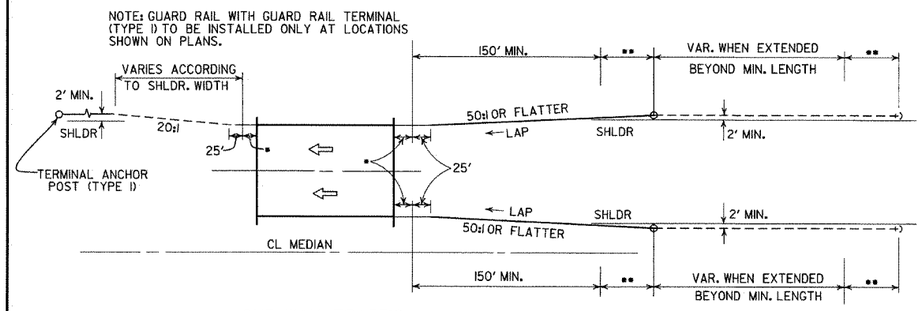
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

DATE	REVISION	DATE FILM
7-4-10	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	8-15-91
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

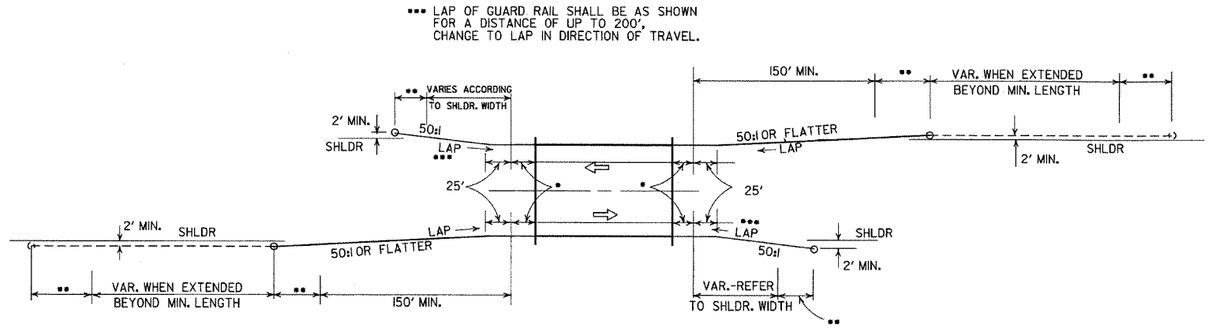
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8



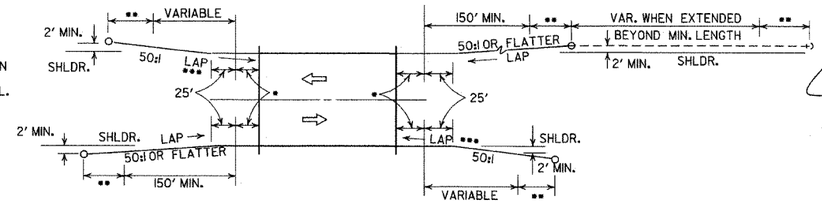
ONE-WAY TRAFFIC



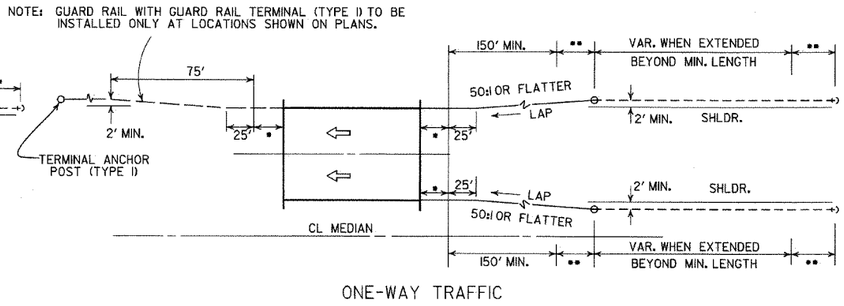
TWO-WAY TRAFFIC

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.



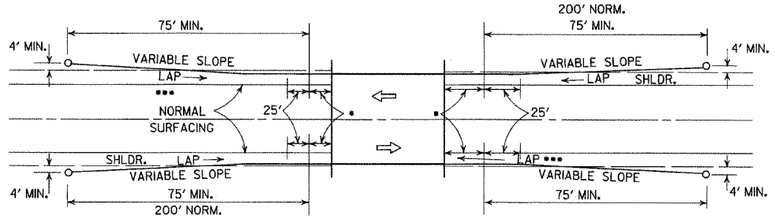
TWO-WAY TRAFFIC



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.



LEGEND

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

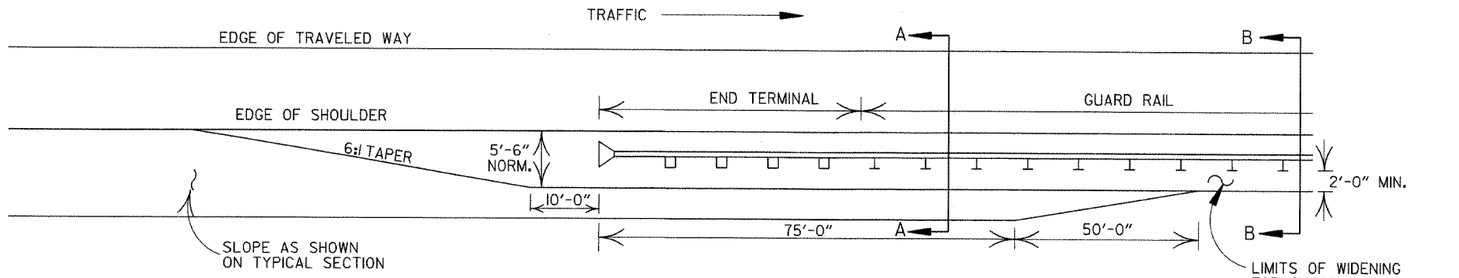
METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

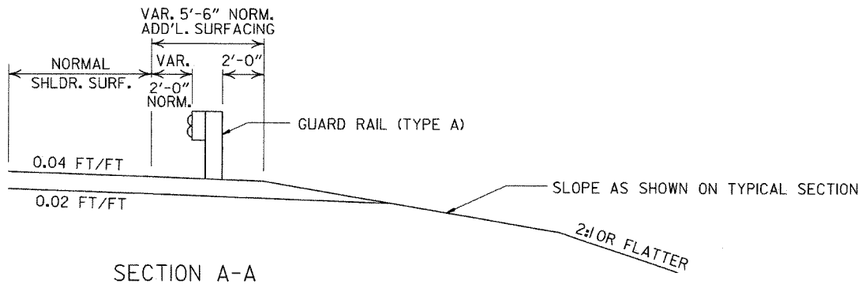
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87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

ARKANSAS STATE HIGHWAY COMMISSION

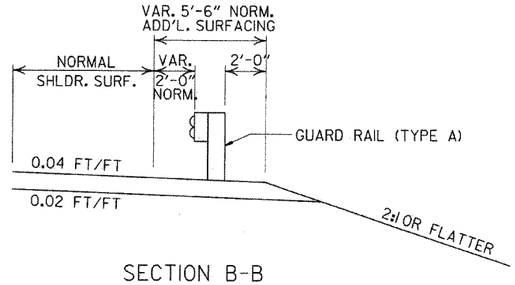
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





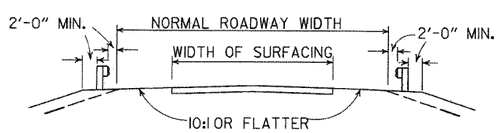
SECTION A-A



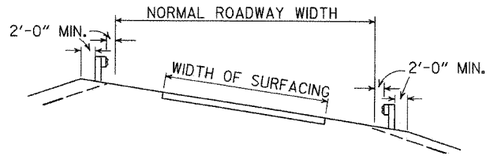
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARD RAIL.

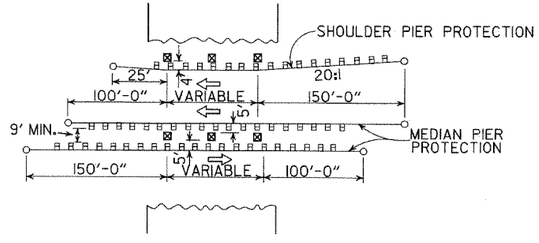


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



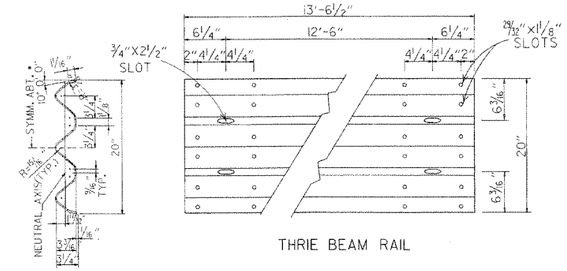
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

DATE	REVISION	DATE FILM
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

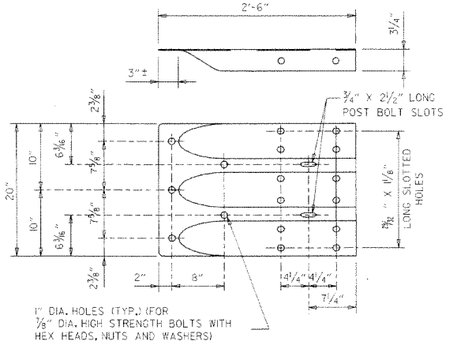
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A



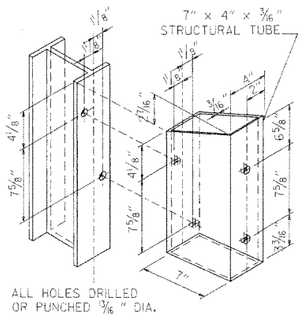
THRIE BEAM RAIL

SECTION THRU THRIE BEAM RAIL



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

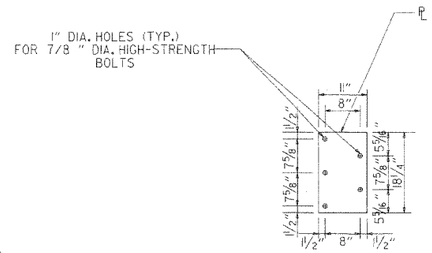
SPECIAL END SHOE



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

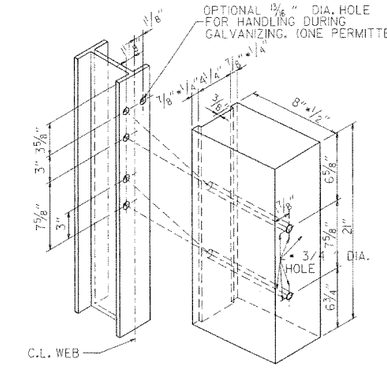
ALL HOLES DRILLED OR PUNCHED ⅜" DIA.

STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



CONNECTOR PLATE

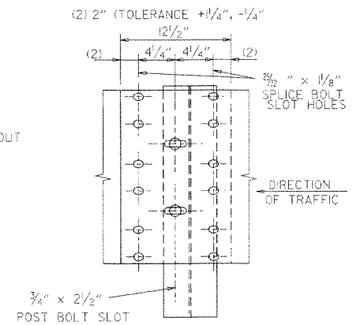
CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS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



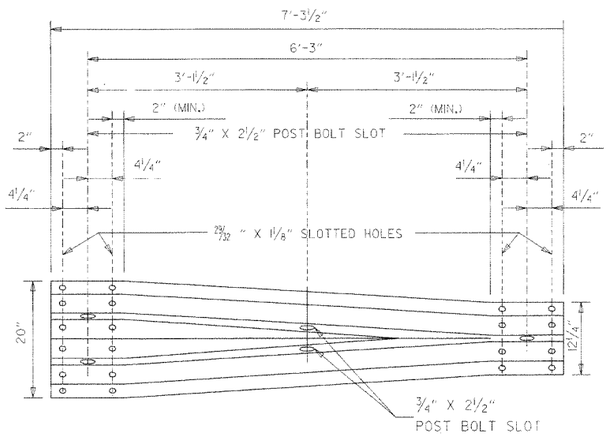
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

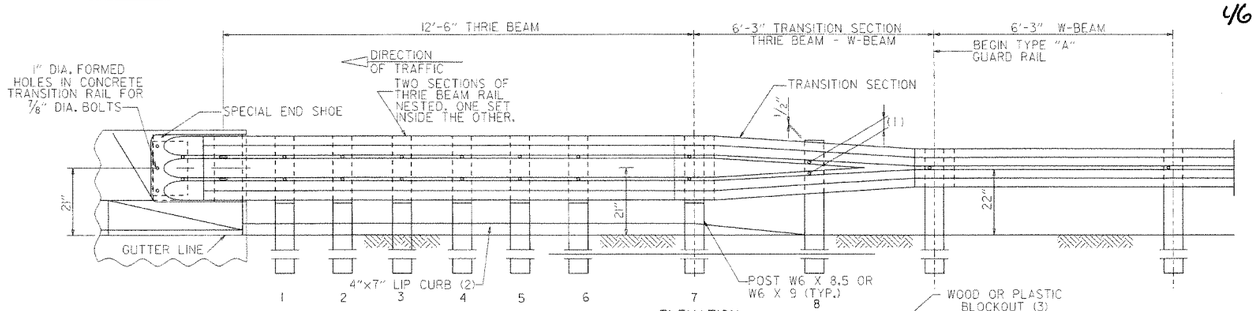
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



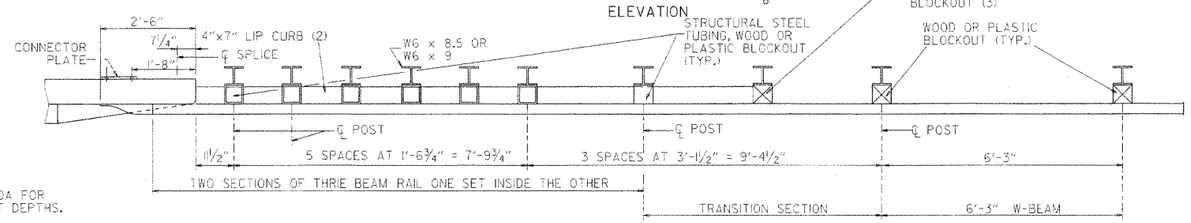
THRIE BEAM RAIL SPLICE AT POST



TRANSITION SECTION

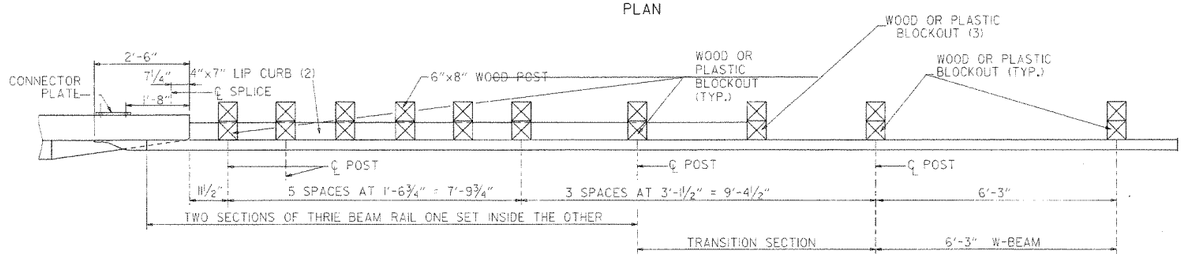


ELEVATION



PLAN

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



PLAN

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

THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

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

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

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

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

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

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

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

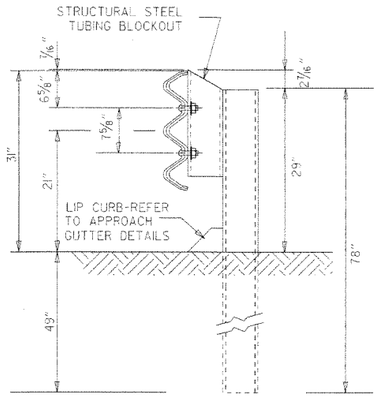
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

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

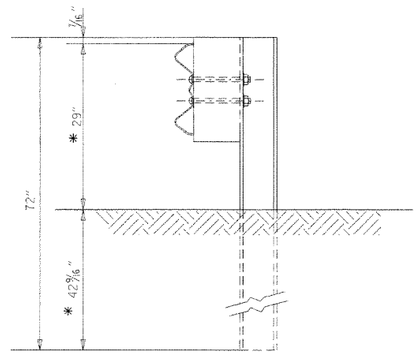
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

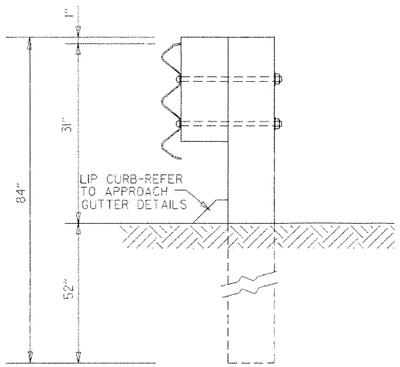


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

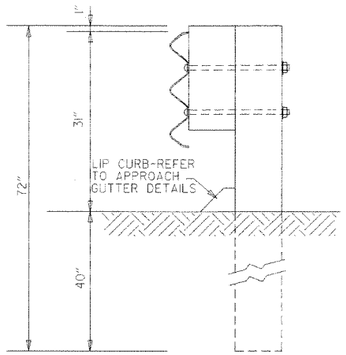


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

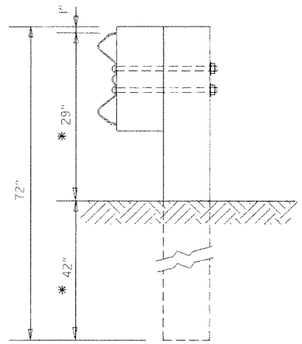
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



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



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



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

GENERAL NOTES:

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

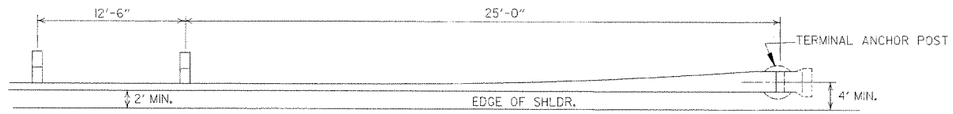
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 (1350 f SOUTHERN PINE.

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

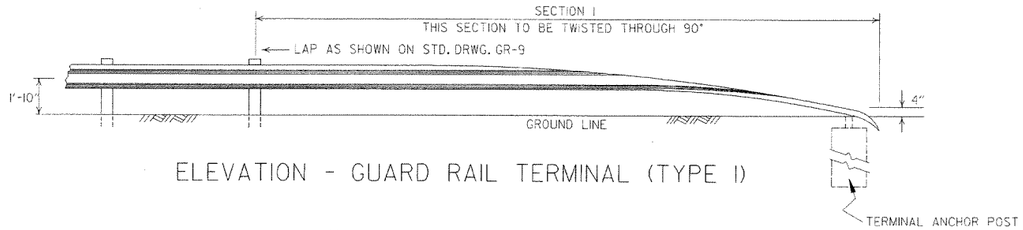
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

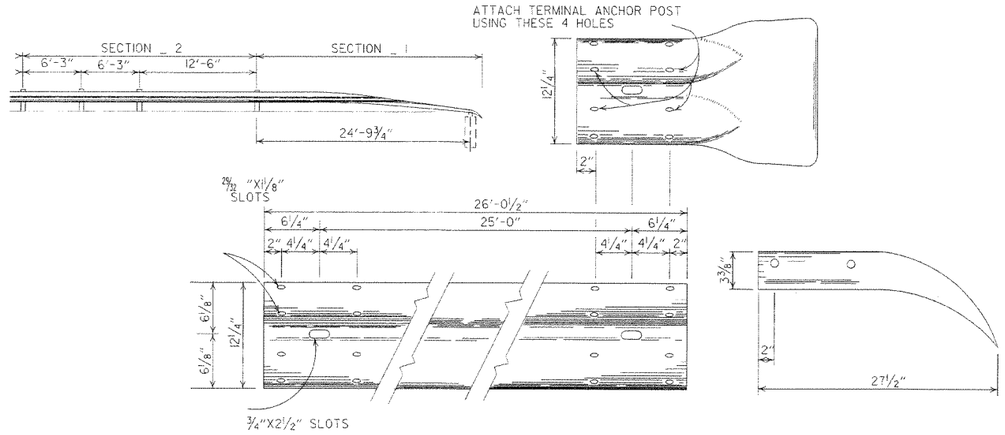


PLAN - GUARD RAIL TERMINAL (TYPE I)



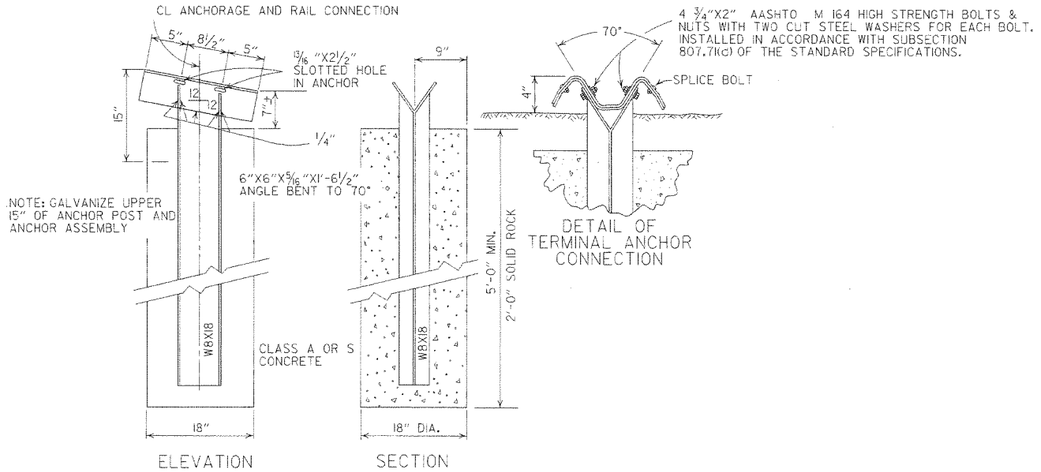
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

NOTE:
SECTIONS 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



ELEVATION 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

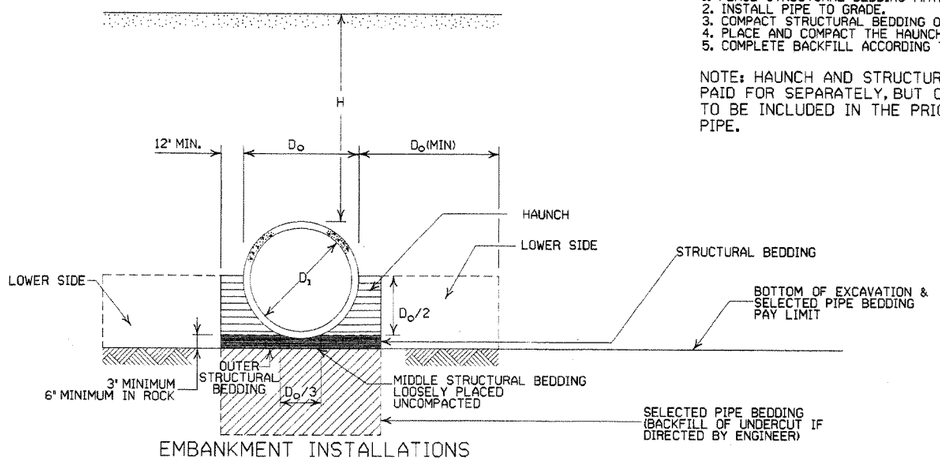
GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

CONSTRUCTION SEQUENCE

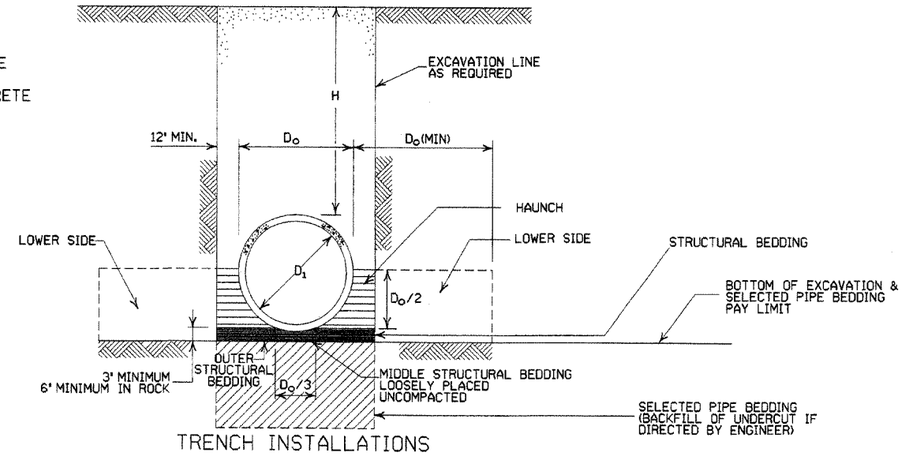
1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE MIDDLE OF THE PIPE.
5. COMPLETE BACKFILL ACCORDING TO SPECIFICATIONS.

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.



EMBANKMENT INSTALLATIONS

1. MATERIAL IN THE LOWER SIDE, HAUNCH, AND OUTER STRUCTURAL BEDDING SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.



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.

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	*SPAN		* RISE	
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD 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	43¾	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	77¼	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 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.

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-3) OR TYPE 1 INSTALLATION MATERIAL
TYPE 3	AASHTO CLASSIFICATION A-1 THRU A-6 SOIL OR TYPE 1 OR 2 INSTALLATION MATERIAL

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

MAXIMUM HEIGHT OF FILL OVER R.C. PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE		
	CLASS III	CLASS IV	CLASS V
	FEET		
TYPE 1	21	32	50
TYPE 2	17	27	41
TYPE 3	13	20	32

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

GENERAL NOTES

1. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
2. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
4. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE.
5. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
6. 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.
7. 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.
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 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.'

- LEGEND -

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

DATE	REVISION	DATE FILMED
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) H-20 LOADING

PIPE DIAMETER (INCHES)	MINUMUM COVER TOP OF PIPE TO TOP OF SUBGRADE (INCHES)	MAX. FILL HEIGHT ABOVE TOP OF PIPE (FEET)							
		METAL THICKNESS IN INCHES							
		0.064	0.079	0.109		0.138		0.168	
				ROUND	ELONG.	ROUND	ELONG.	ROUND	ELONG.
		2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL							
12	12	84	91						
15	12	67	73						
18	12	56	61						
24	12	42	46	59					
30	12	34	36	47					
36•	12		30	39		41			
42•	12		43	46	67	48	70	50	73
48•	12		37	45	58	46	61	47	64
		3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION•• RIVETED, WELDED, HELICAL, OR BOLTED							
36	12	48	60	78	88	89	111	101	131
42	12	41	51	64	72	71	90	79	102
48	12	36	45	57	64	61	77	66	85
54	12	32	40	52	59	55	71	59	79
60•	12	29	36	49	53	51	64	54	71
66	12	26	33	47		49	58	51	64
72•	12	24	30	44		47	53	49	59
78	12		28	41		46	49	47	54
84•	12		26	38		45		46	51
90	12		24	35		43		45	
96•	12		22	33		40		44	
102	24			31		38		42	
108•	24			30		35		39	
114	24			28		34		37	
120•	24			27		32		35	

• MAX. FILL CAN BE INCREASED IN THESE DIAMETER PIPES BY USING THE NEXT LARGER CORRUGATION. REFER TO 'CORRUGATED METAL PIPE', REVISED 1970, PUBLISHED BY U.S. DEPARTMENT OF TRANSPORTATION, F.H.W.A., B.P.R.

•• WHERE THE STANDARD 2 ⅔ × ½' CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER A 3" × 1' OR 5' × 1' CORRUGATION PIPE OF THE SAME DIAMETER 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 GAGE AND CORRUGATION

CORRUGATED ALUMINUM PIPE (ROUND) H-20 LOADING

PIPE DIAMETER (INCHES)	MINUMUM COVER TOP OF PIPE TO TOP OF SUBGRADE (INCHES)	MAX. FILL HEIGHT 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				
12	12	45	45			
18	12	30	30	52		
24	12	22	22	39	41	
30	12	18	18	31	32	34
36	12		15	26	27	28
42	12		26	43	43	44
48	12			40	41	43
54	12			35	37	38
60	12				33	34
66	12				30	31
72	12					29

EQUIVALENT METAL THICKNESSES AND GAUGES

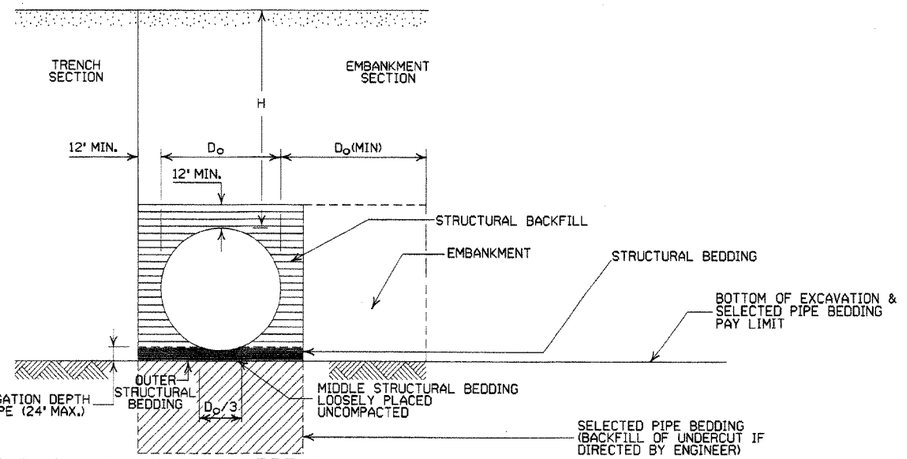
METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8
0.188	0.1838		7
0.218	0.2145		5
0.249	0.2451		3
0.280	0.2758		1

CORRUGATED METAL PIPE ARCHES (H - 20 LOADING)

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	MIN. COVER TOP OF PIPE TO TOP OF SUBGRADE FOR 2 TONS PER SQ. FT. (INCHES)	STEEL			ALUMINUM		
				MINIMUM THICKNESS REQUIRED INCHES	MAX. FILL HEIGHT ABOVE TOP OF PIPE(IN FT.) FOR THE FOLLOWING CORNER BEARING PRESSURE IN TONS PER SQ. FT.		MINIMUM THICKNESS REQUIRED INCHES	MAX. FILL HEIGHTS ABOVE TOP OF PIPE(IN FT.) FOR THE FOLLOWING CORNER BEARING PRESSURE IN TONS PER SQ. FT.	
					2 TONS	3 TONS[1]		2 TONS	3 TONS[1]
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL				2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL		
15	17×13	3	12	0.064	13	15+	0.060	15	
18	21×15	3	12	0.064	12	15+	0.060	14	
21	24×18	3	12	0.064	10	15+	0.060	12	15+
24	28×20	3	12	0.064	10	15	0.060	10	15+
30	35×24	3	12	0.079	9	14	0.075	9	14
36	42×29	3½	12	0.079	9	13	0.075	9	13
42	49×33	4	12	0.079	8	12	0.105	8	12
48	57×38	5	12	0.109	8	12	0.135	8	12
54	64×43	6	12	0.109	8	12	0.135	8	12
60	71×47	7	12	0.138	8	12	0.164	8	12
66	77×52	8	12	0.168	8	12	0.164	8	12
72	83×57	9	12	0.168	9	13			
			3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION•• RIVETED, WELDED, OR HELICAL						
36	40×31	5	12	0.079	15	15+			
42	46×36	6	12	0.079	15	15+			
48	53×41	7	12	0.079	15	15+			
54	60×46	8	12	0.079	15	15+			
60	66×51	9	12	0.079	15	15+			
66	73×55	12	12	0.079	15	15+			
72	81×59	14	18	0.079	15	15+			
78	87×63	14	18	0.079	14	15+			
84	95×67	16	18	0.109	13	15+			
90	103×71	16	24	0.109	12	15+			
96	112×75	18	24	0.109	11	15+			
102	117×79	18	24	0.109	10	15			
108	128×83	18	24	0.138	9	14			

1 WHERE BEARING PRESSURE EXCEEDING 2 TONS PER SQUARE FOOT IS REQUIRED FOR GIVEN FILL HEIGHTS, THE FOUNDATION MATERIAL SHALL BE INVESTIGATED TO DETERMINE THE BEARING CAPACITY.

•• WHERE THE STANDARD 2 ⅔ × ½' CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A 3' × 1' OR 5' × 1' CORRUGATION PIPE OF THE SAME DIAMETER 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.



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. 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.

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-3)

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

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.

GENERAL NOTES

1. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
2. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
4. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE.
5. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
6. 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.
7. 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.'
8. 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.'

- LEGEND -

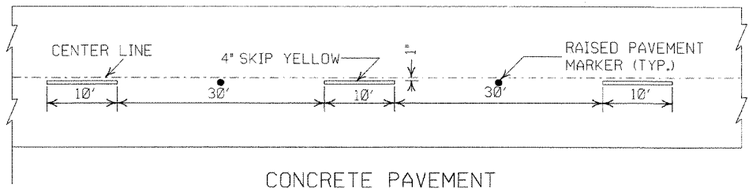
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL
ELONG. = ELONGATED
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)

DATE	REVISION	DATE FILMED
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

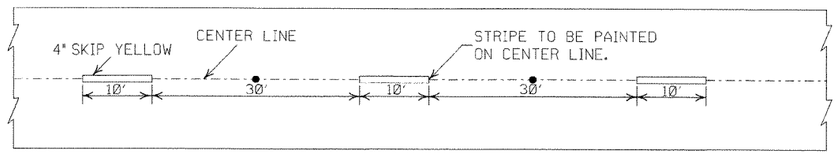
ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

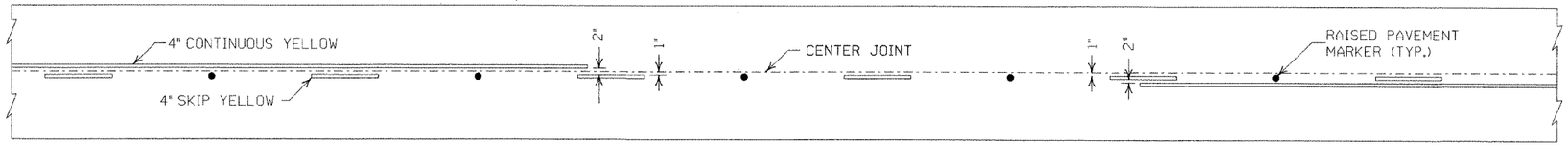


CONCRETE PAVEMENT

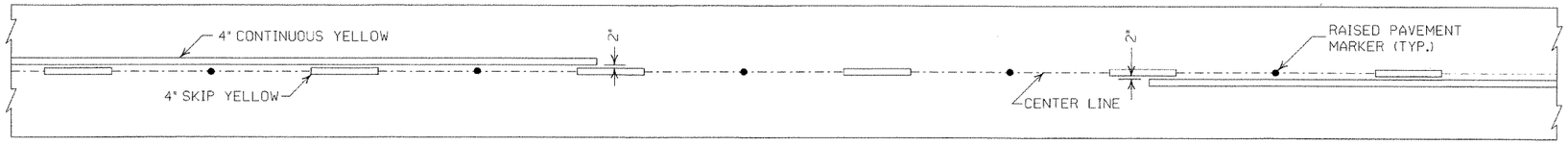


ASPHALT PAVEMENT

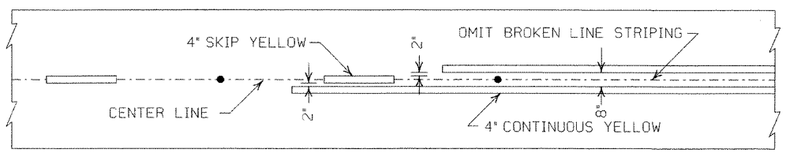
BROKEN LINE STRIPING



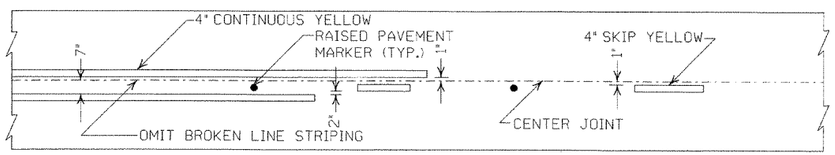
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

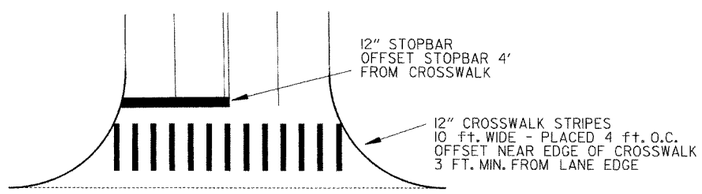


ASPHALT PAVEMENT



CONCRETE PAVEMENT

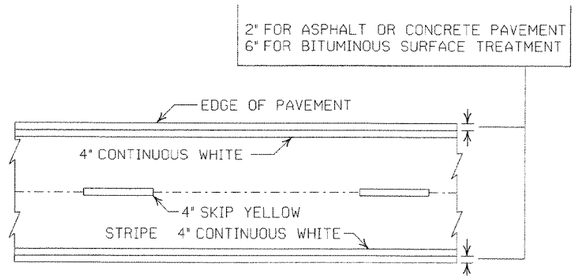
STRIPING AT ADJACENT NO PASSING LANES



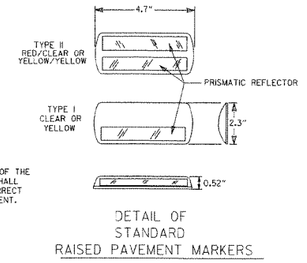
CROSSWALK AND STOPBAR DETAILS

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.



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

ARKANSAS STATE HIGHWAY COMMISSION

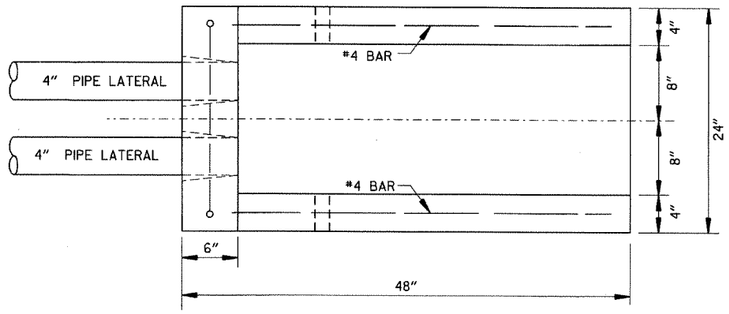
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

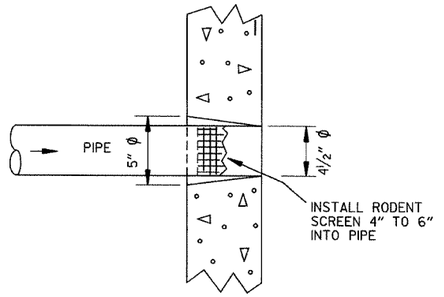
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

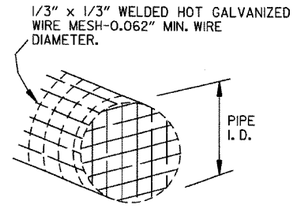
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



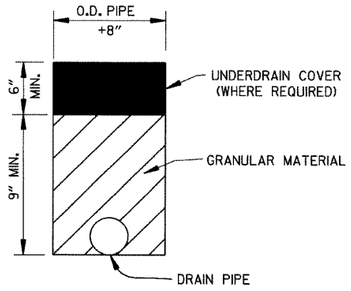
PLAN VIEW

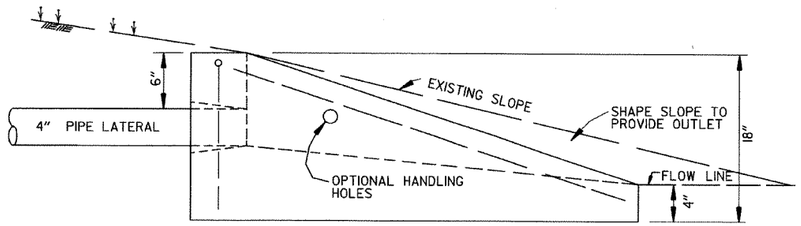


DETAIL OF HOLE FOR 4" PIPE

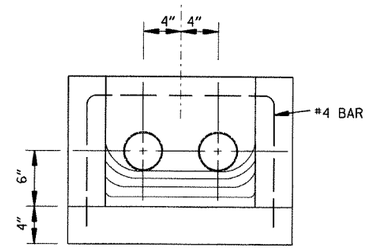


DETAIL OF RODENT SCREEN

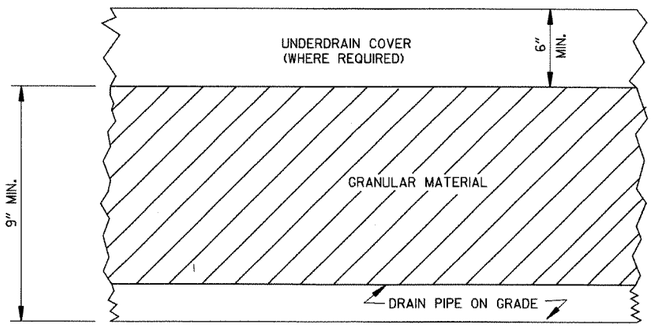




SIDE VIEW

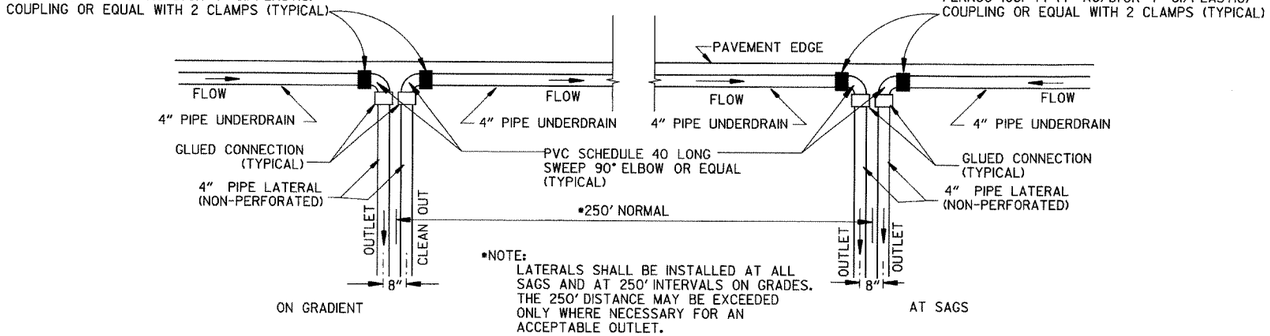


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

DATE	REVISION	DATE FILMED
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE; 5½" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11- 3-94	REVISED FOR DUAL LATERALS	11- 3-94
10- 1-92	SUBSTITUTED GEOTEXTILE	10- 1-92
8-15-91	ADDED POLYEDTHYLENE PIPE	8-15-91
11- 8-90	DELETED ALTERNATE NOTE	11- 8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

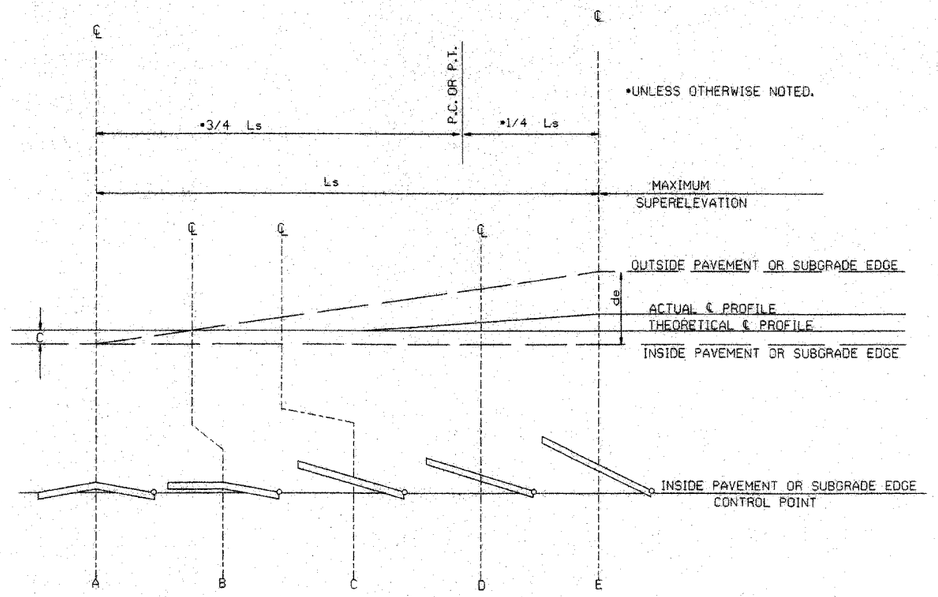
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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

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

ABBREVIATIONS

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



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

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

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

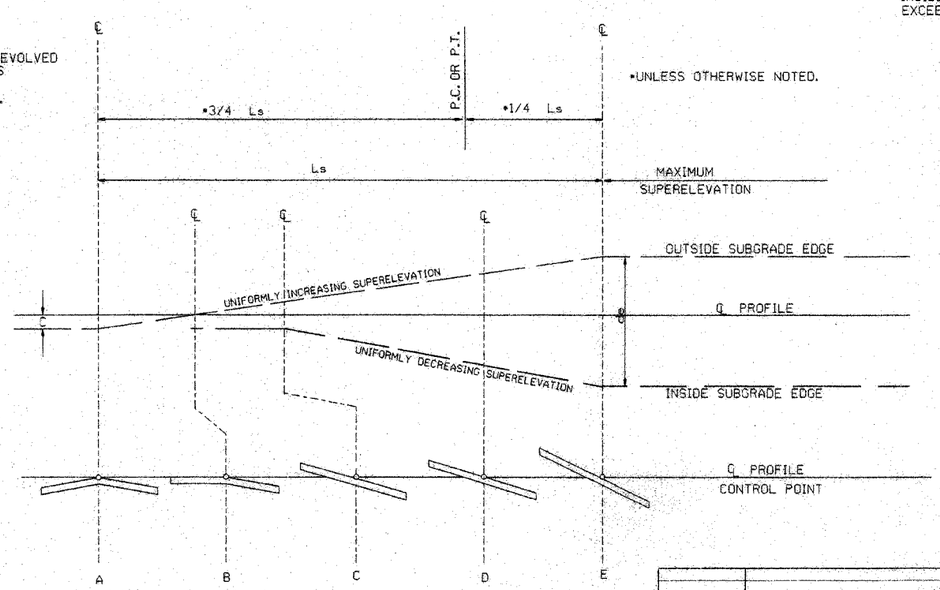
GENERAL NOTES

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

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

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

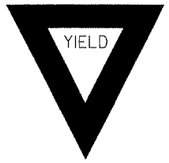
STANDARD DRAWING SE-2

FILE STDSE2.DGN

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"

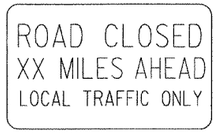
R5-1

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

R11-2

48"X30"

R11-3A



60"X30"

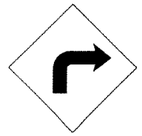
R11-4

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"

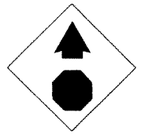
W1-6

STD. 48"X24"
SPECIAL 60"X30"

W1-8

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

W3-1

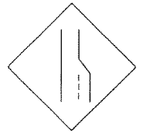


STD. 36"X36"
SPECIAL 48"X48"

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"

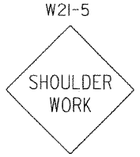
W20-7a

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

W21-2

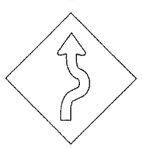
STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

W1-4b

STD. 48"X48"

R56-1

STD. 18"X18"

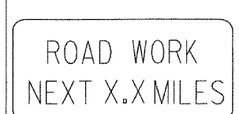
W8-11

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.

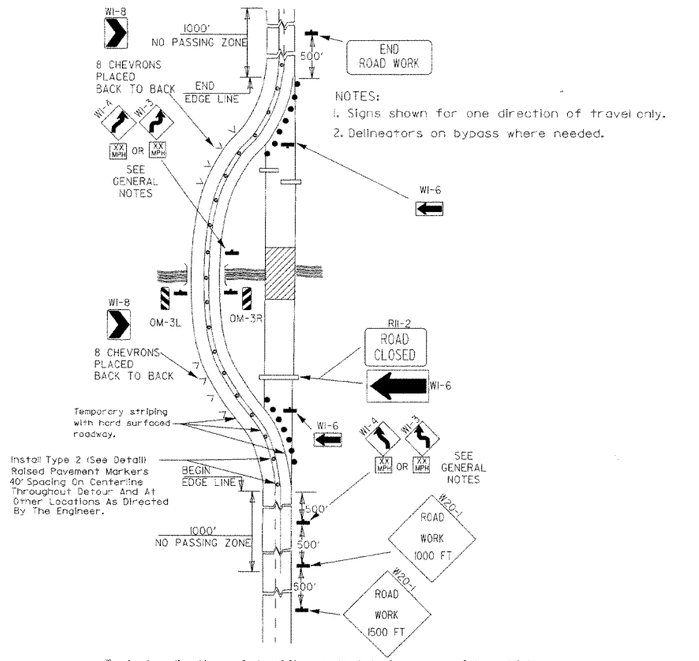
* NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

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

ARKANSAS STATE HIGHWAY COMMISSION

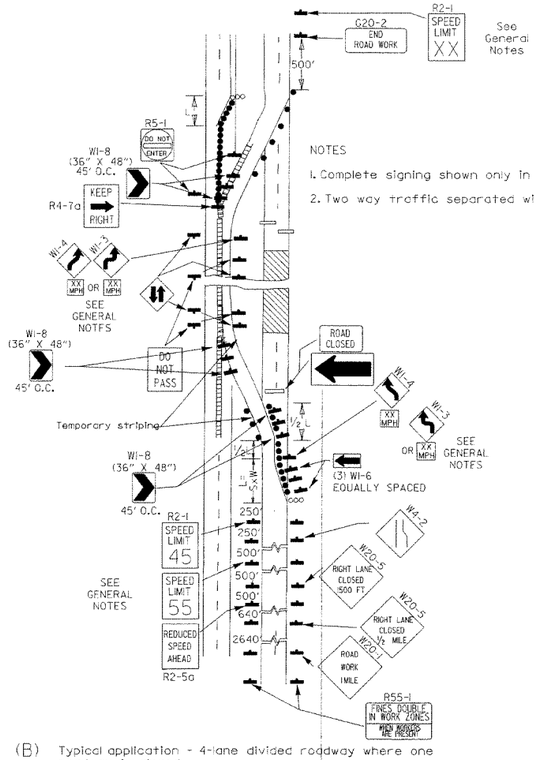
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



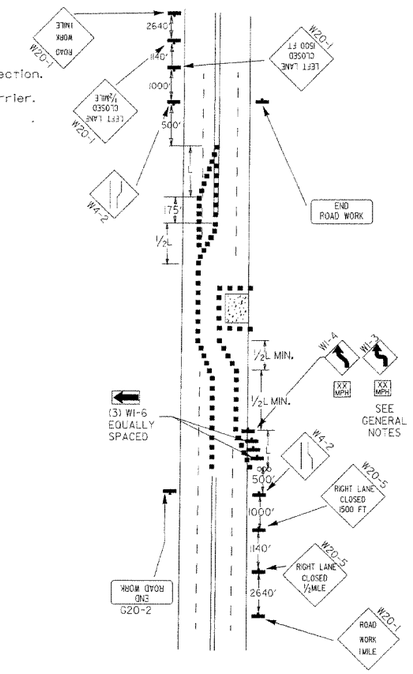
NOTES:
1. Signs shown for one direction of travel only.
2. Delineators on bypass where needed.

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

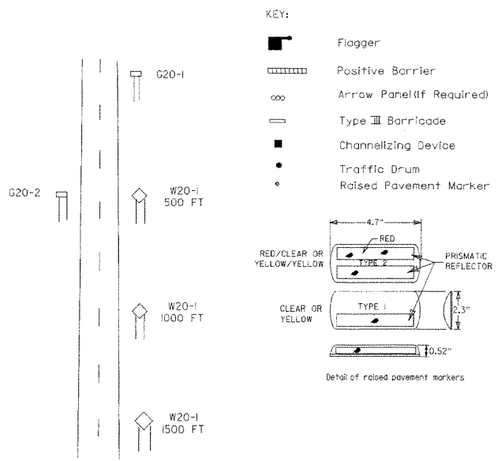


NOTES
1. Complete signing shown only in crossover direction.
2. Two way traffic separated with positive barrier.

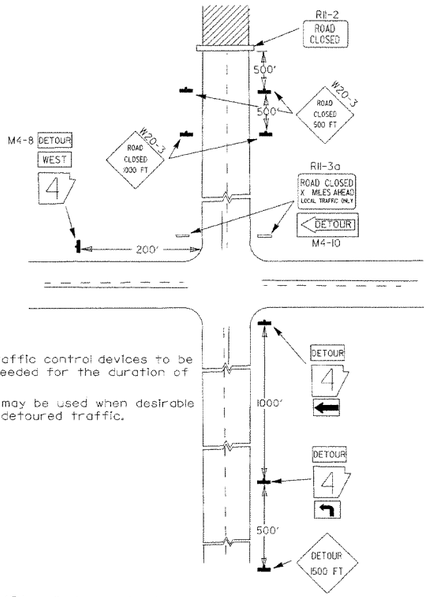
(B) Typical application - 4-lane divided roadway where one roadway is closed.



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

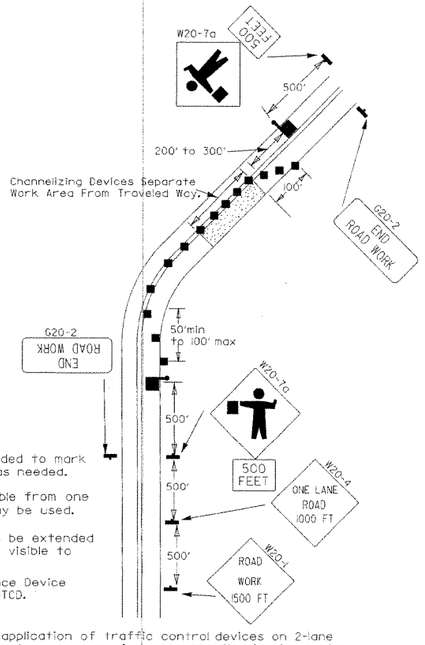


Typical advance warning sign placement



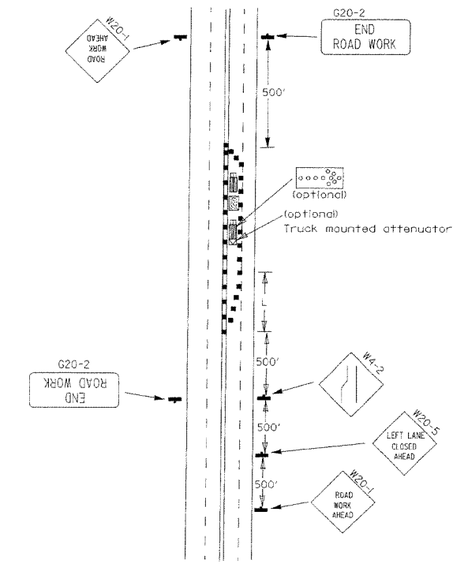
NOTES:
1. Regulatory traffic control devices to be modified as needed for the duration of the detour.
2. Street names may be used when desirable for directing detoured traffic.

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



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

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



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

Taper formulae:

L=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:

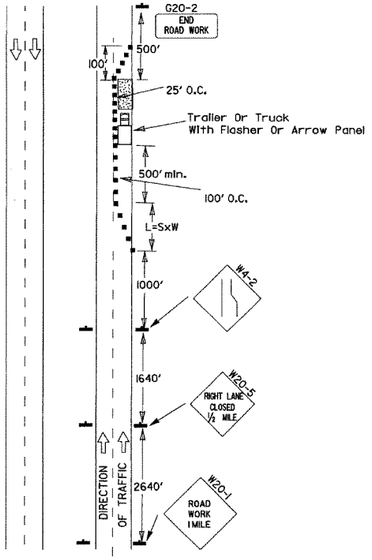
1. Advisory speed posted on W1-3 or W1-4 curve warning signs to be determined at site. Use W1-4 when speed is greater than 30mph and W1-3 when 30mph or less.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed 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.

DATE	REVISION	FILMED
3-11-10	ADDED (AFAD)	
1-20-08	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	

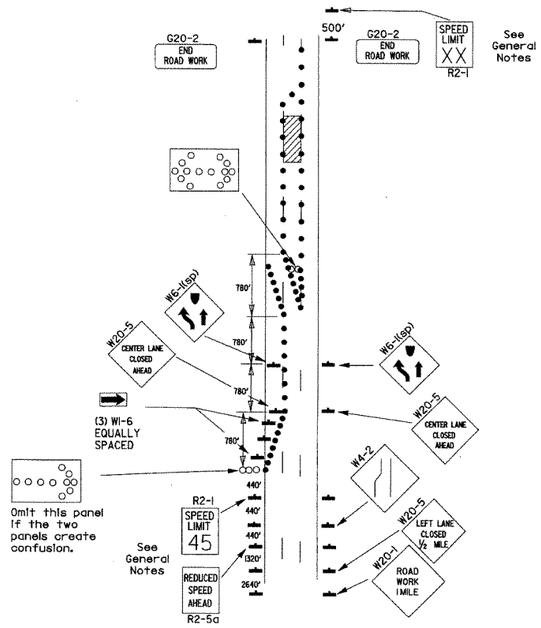
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

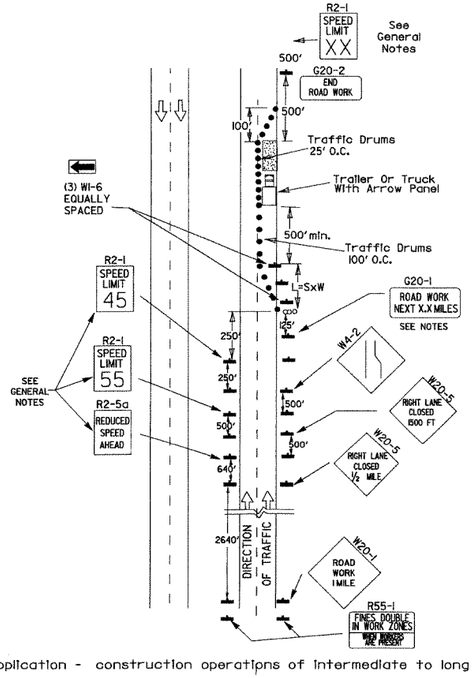
STANDARD DRAWING TC-2



(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 operatipns of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

KEY:

○○○ Arrow Panel (if Required)

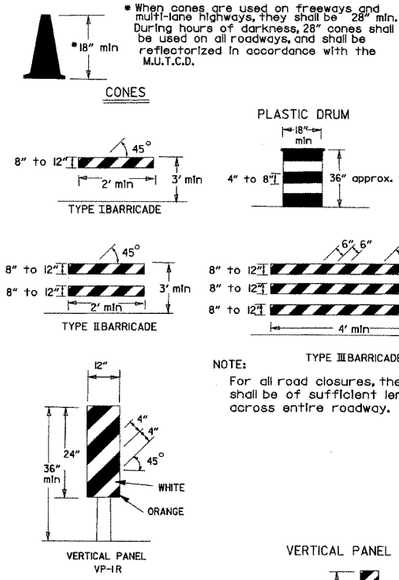
■ Channelizing Device

● Traffic drum

GENERAL NOTES:

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

Channelizing devices



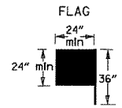
NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

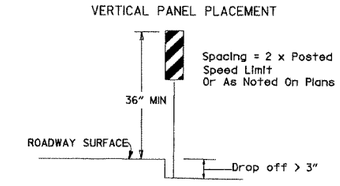
VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	W8-11
1" to 3"	Edge of shoulder	W8-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP-1 and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical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

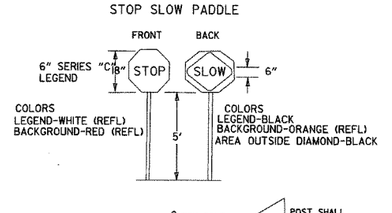
* When shown on the plans concrete barrier will be used.

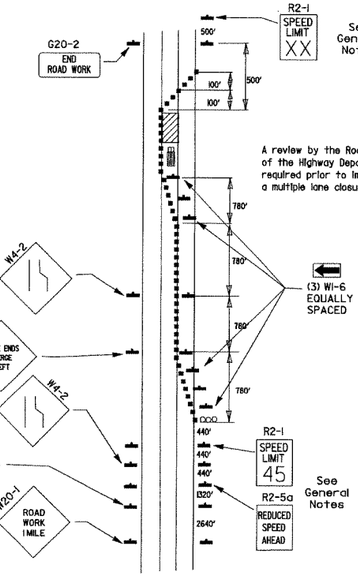
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.



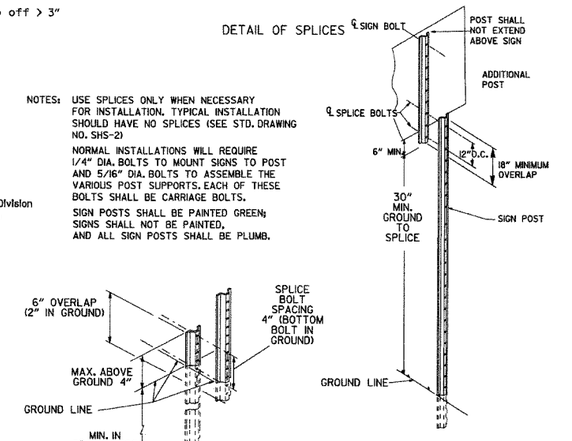
Flag shall be of good grade red material







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



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	

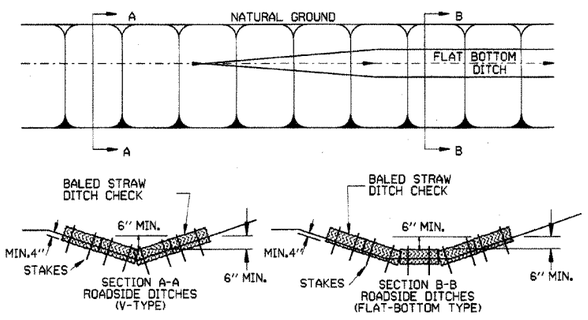
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

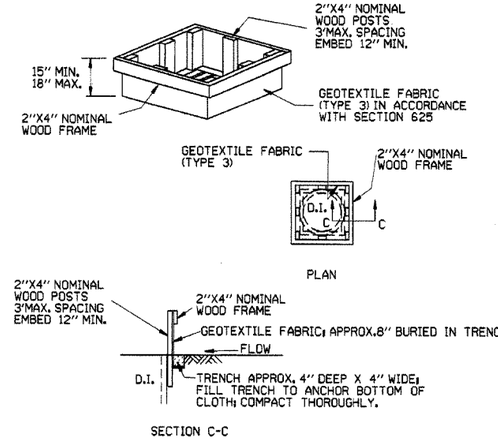
STANDARD DRAWING TC-3

GENERAL NOTES

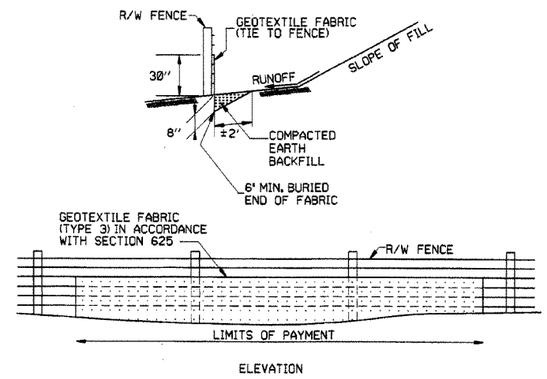
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.
2. STRAW BALES SHALL BE KEYED INTO SOIL A MINIMUM OF 4" AND NO GAPS SHALL BE LEFT BETWEEN BALES.



BALED STRAW DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



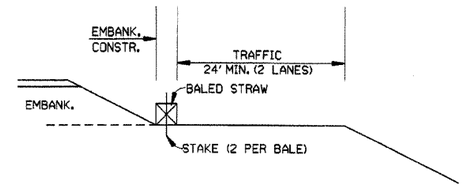
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

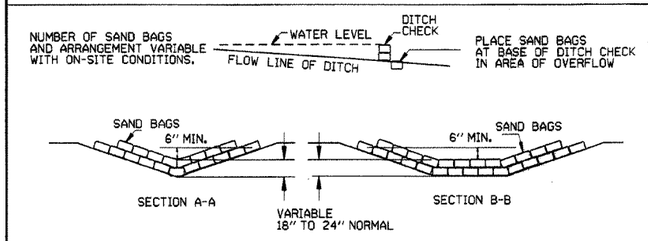
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

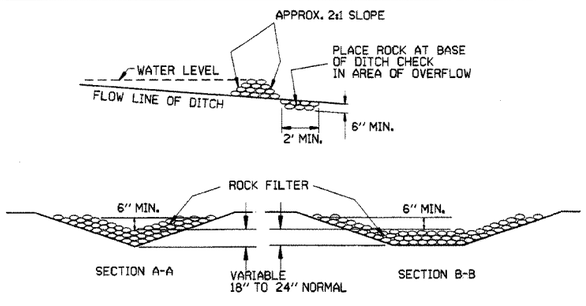
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.
2. NO GAPS SHALL BE LEFT BETWEEN BALES.
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED 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.



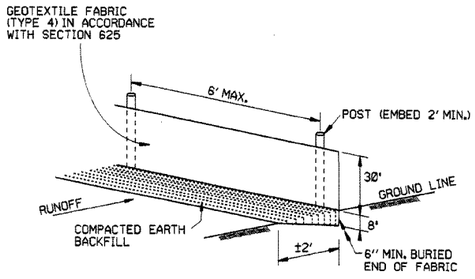
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

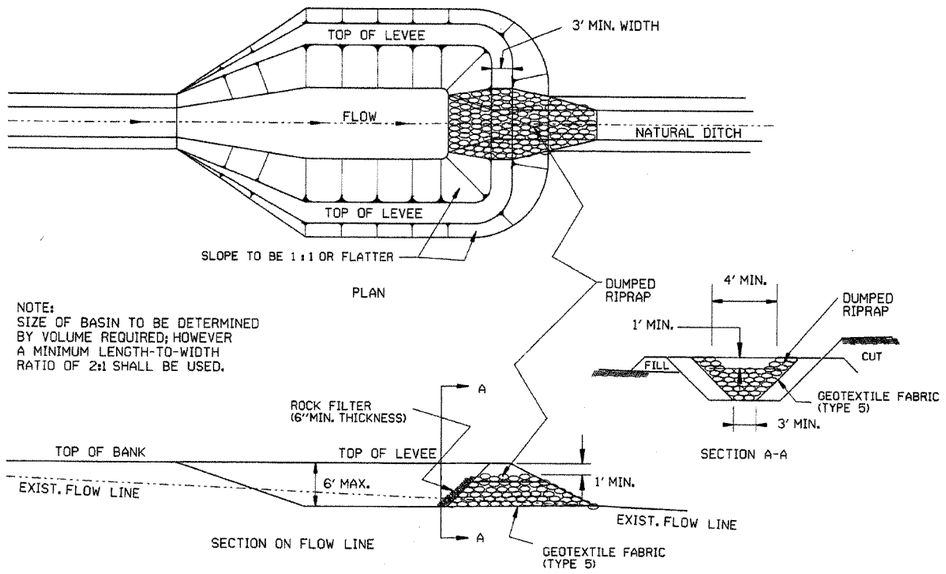
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

DATE	REVISION	FILMED
11-18-98	ADDED NOTES	11-18-98
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

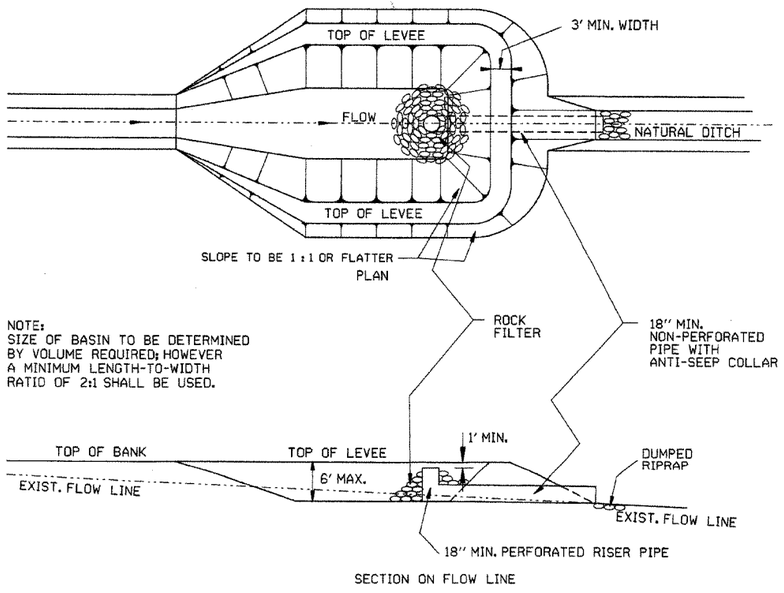
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

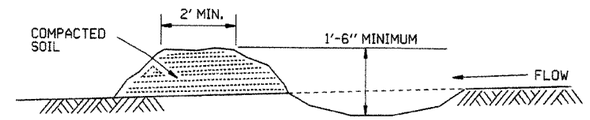
STANDARD DRAWING TEC-1



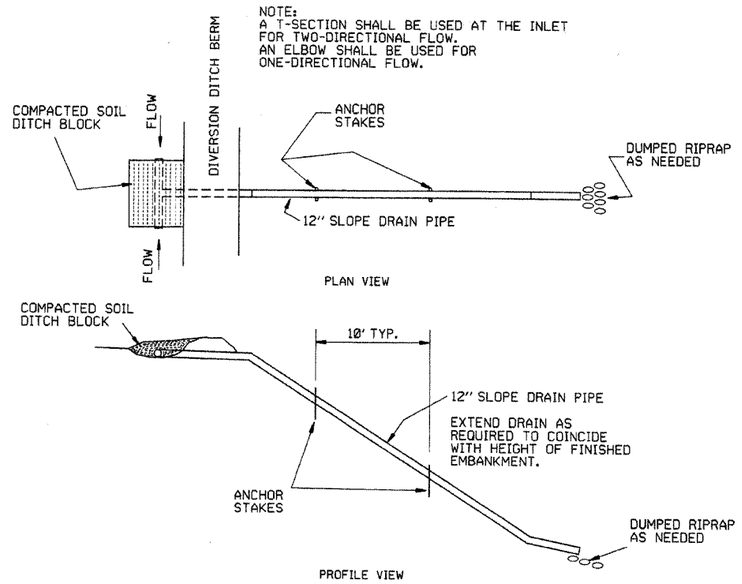
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



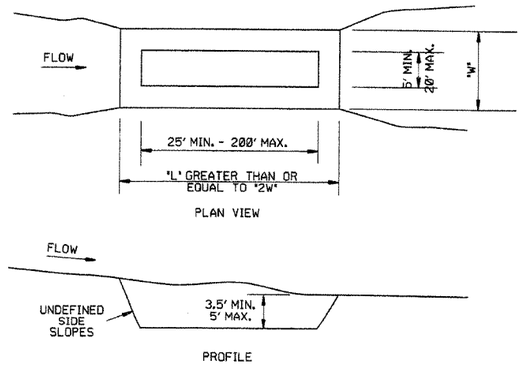
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



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

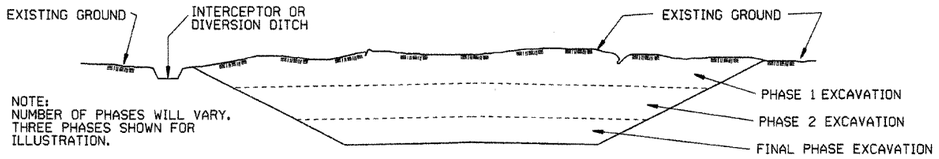
STANDARD DRAWING TEC-2

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



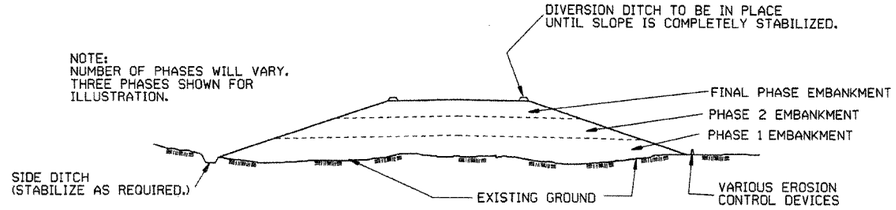
GENERAL NOTE

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

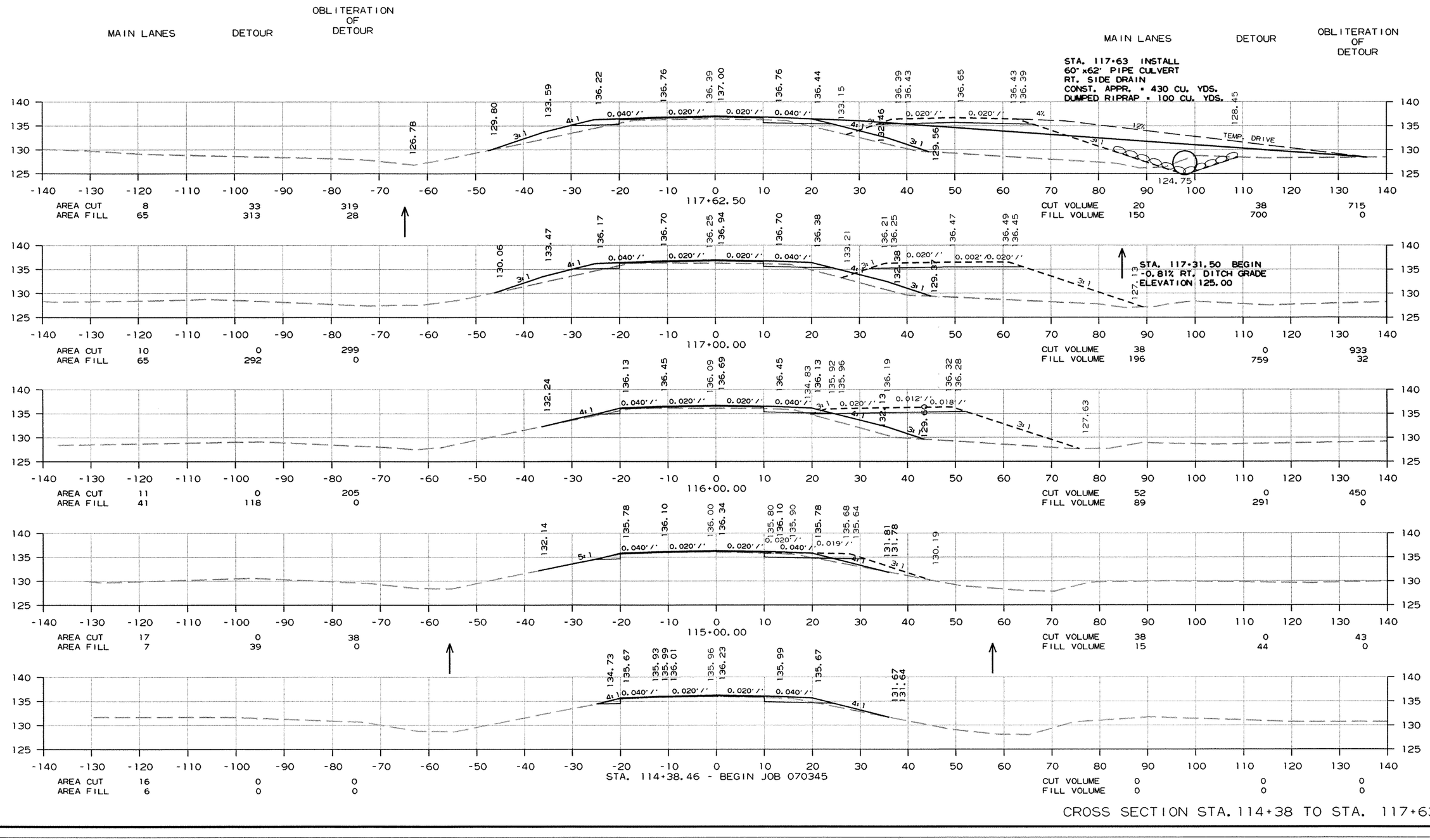
STANDARD DRAWING TEC-3

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.		070345	60	63

(2) CROSS SECTIONS

GUARDRAIL (TYPE A)

STATION	STATION	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EACH	TERMINAL ANCHOR POSTS (TYPE 1) EACH	BRIDGE END TERMINAL EACH
117+95.00	118+05.00	RT.				1
117+20.60	118+05.60	LT.	75	1	1	
119+49.40	120+43.15	RT.	75	1	1	
119+49.40	121+68.15	LT.	200	1	1	

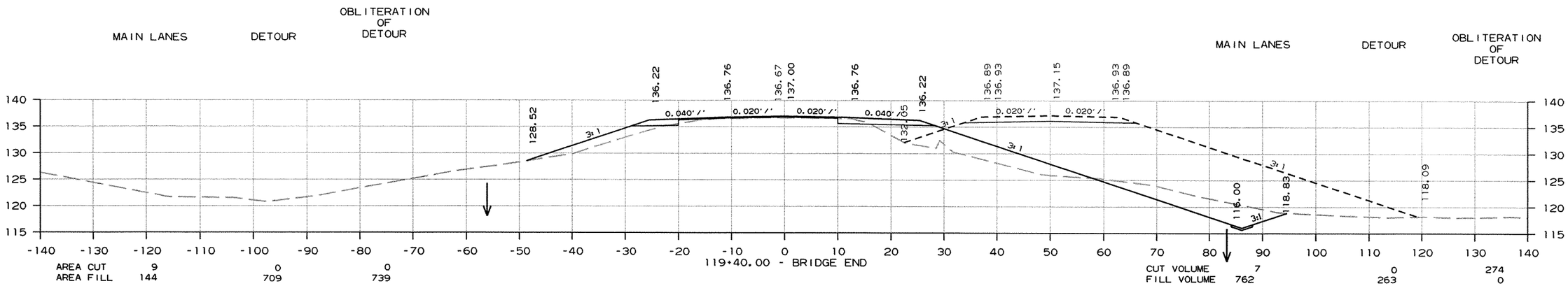


CROSS SECTION STA. 114+38 TO STA. 117+63

r070345.dgn 7-19-2011

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.		070345	61	63

(2) CROSS SECTIONS



119+20-TOE OF SLOPE

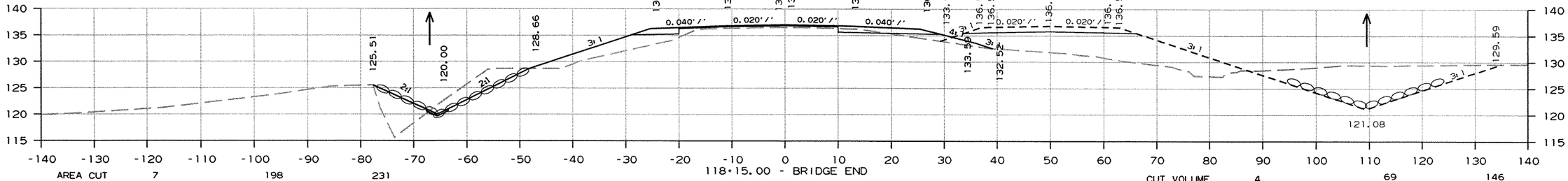
BR. END STA. 118+15.00
BRIDGE NO. 07209
40'-00" CLEAR ROADWAY
125'-00" TOTAL LENGTH
INTEGRAL W-BEAM UNIT
(39', 46', 39')
BR. END STA. 119+40.00

119+00-TOE OF SLOPE

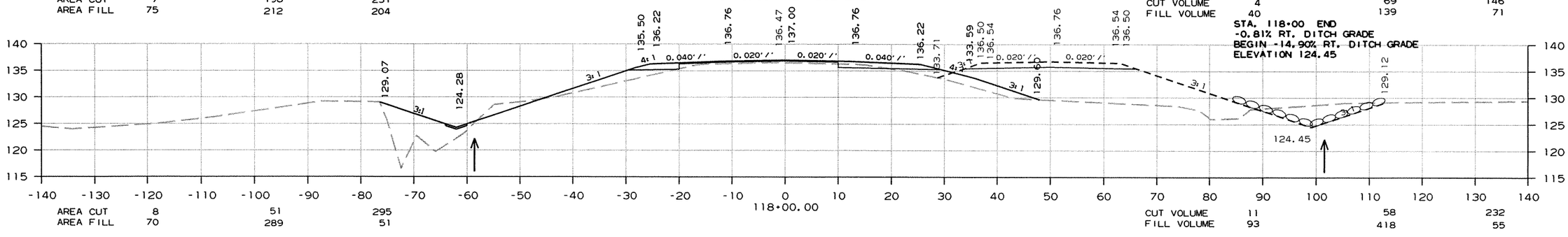
CUT VOLUME 312 364
FILL VOLUME 334 321

STA. 118+27 - STA. 119+33
INSTALL TEMPORARY DETOUR BRIDGE
REFER TO BRIDGE PLANS FOR DETAILS.

STA. 118+50 END
-14.90% RT. DITCH GRADE
ELEVATION 117.00



STA. 118+00 END
-0.81% RT. DITCH GRADE
BEGIN -14.90% RT. DITCH GRADE
ELEVATION 124.45

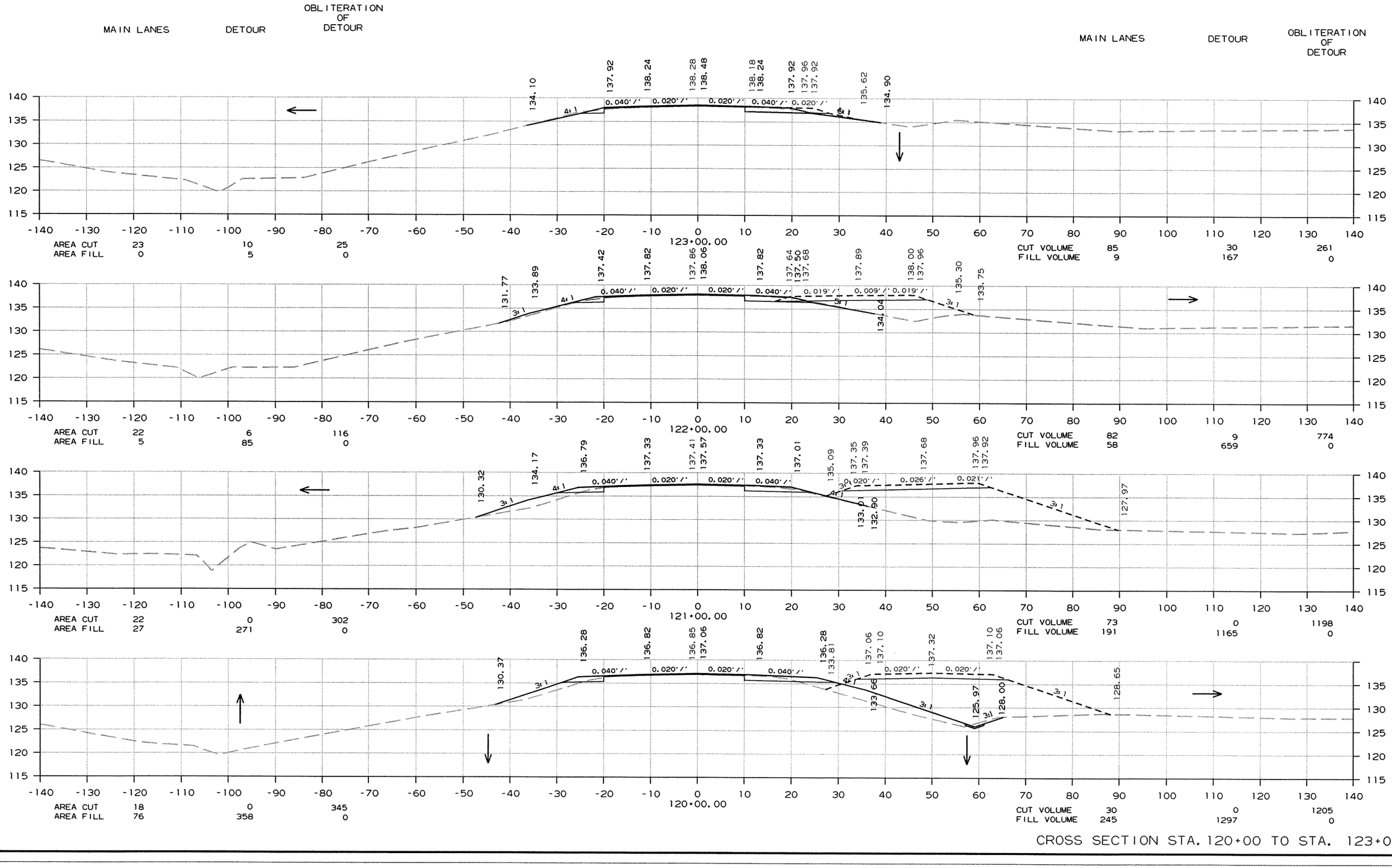


CROSS SECTION STA. 118+00 TO STA. 119+40

r070345.dgn 7-19-2011

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.		070345	62	63

(2) CROSS SECTIONS

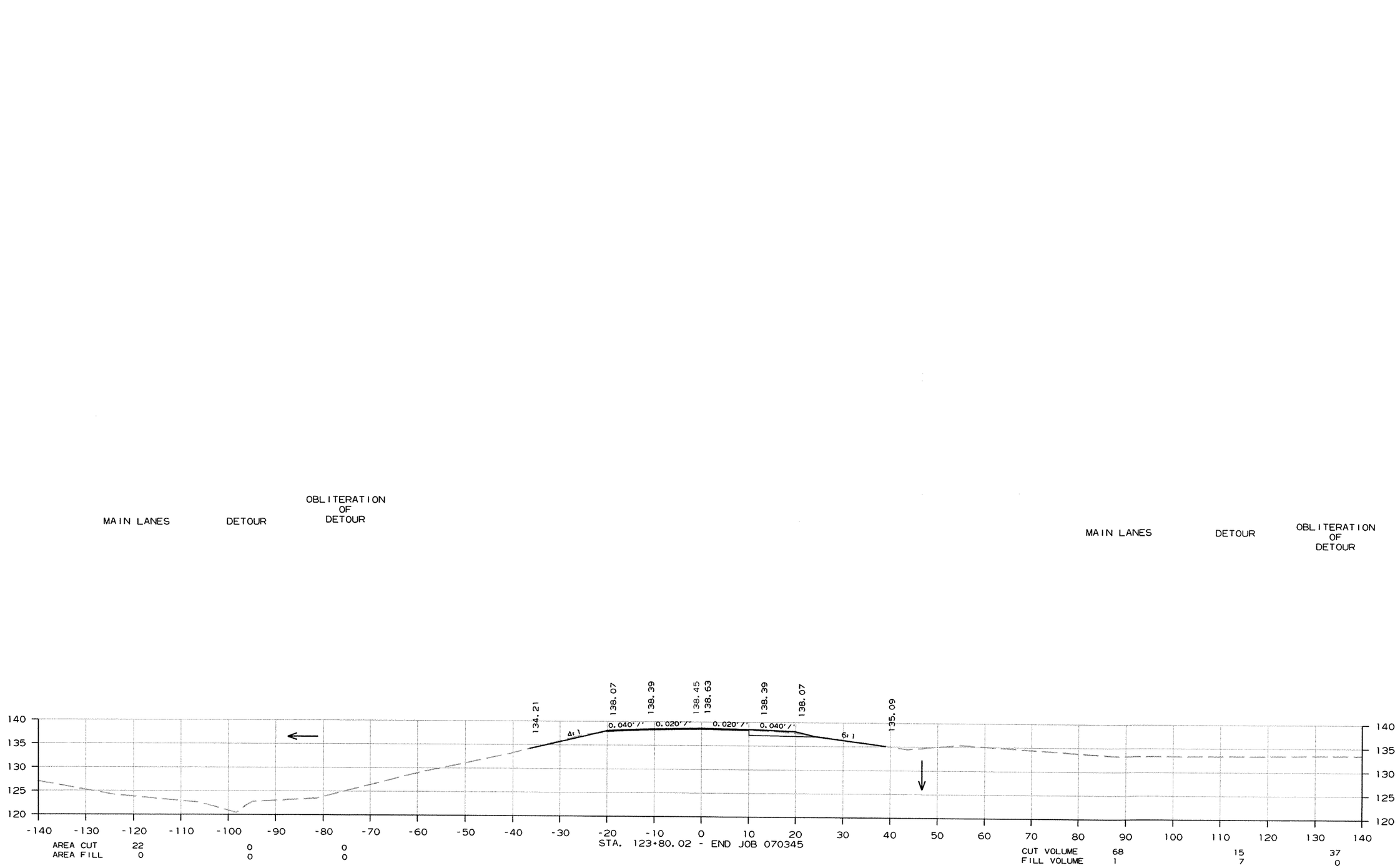


CROSS SECTION STA. 120+00 TO STA. 123+00

r070345.dgn 7-19-2011

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.		070345	63	63

(2) CROSS SECTIONS



CROSS SECTION STA. 123+80 TO STA. 123+80

r070345.dgn 7-19-2011