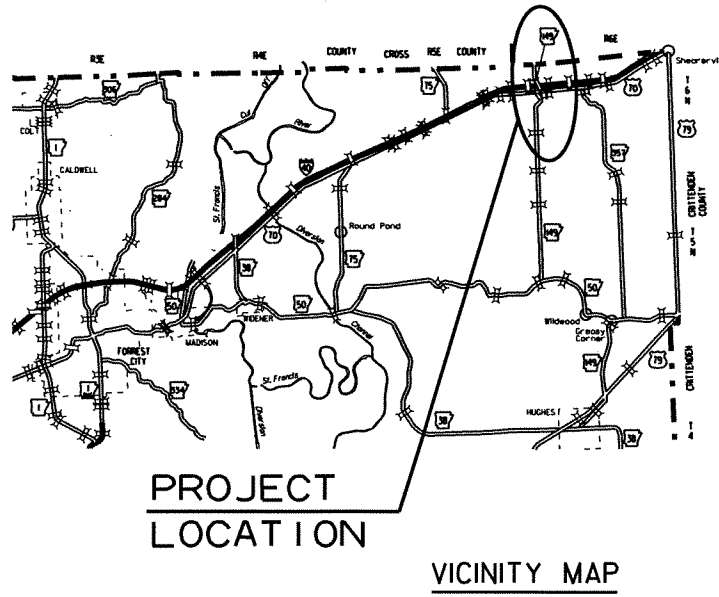


"THIS IS A FULLY CONTROLLED ACCESS FACILITY"
 ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
 CONSTRUCTION PLANS FOR STATE HIGHWAY

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
				JOB NO.		110543	1	134
				2 HWY. 149 STR. & APPRS. (F)				



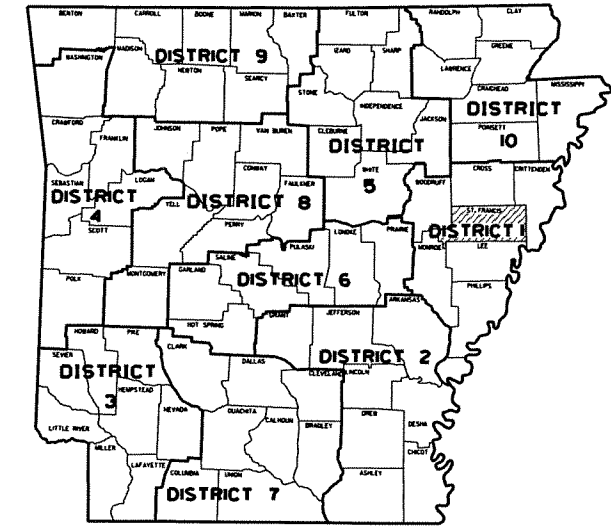
HWY. 149 STR. & APPRS. (F)

ST. FRANCIS COUNTY

ROUTE 40 SECTION 51

JOB 110543

FED. AID PROJ. BRN-0068(36)

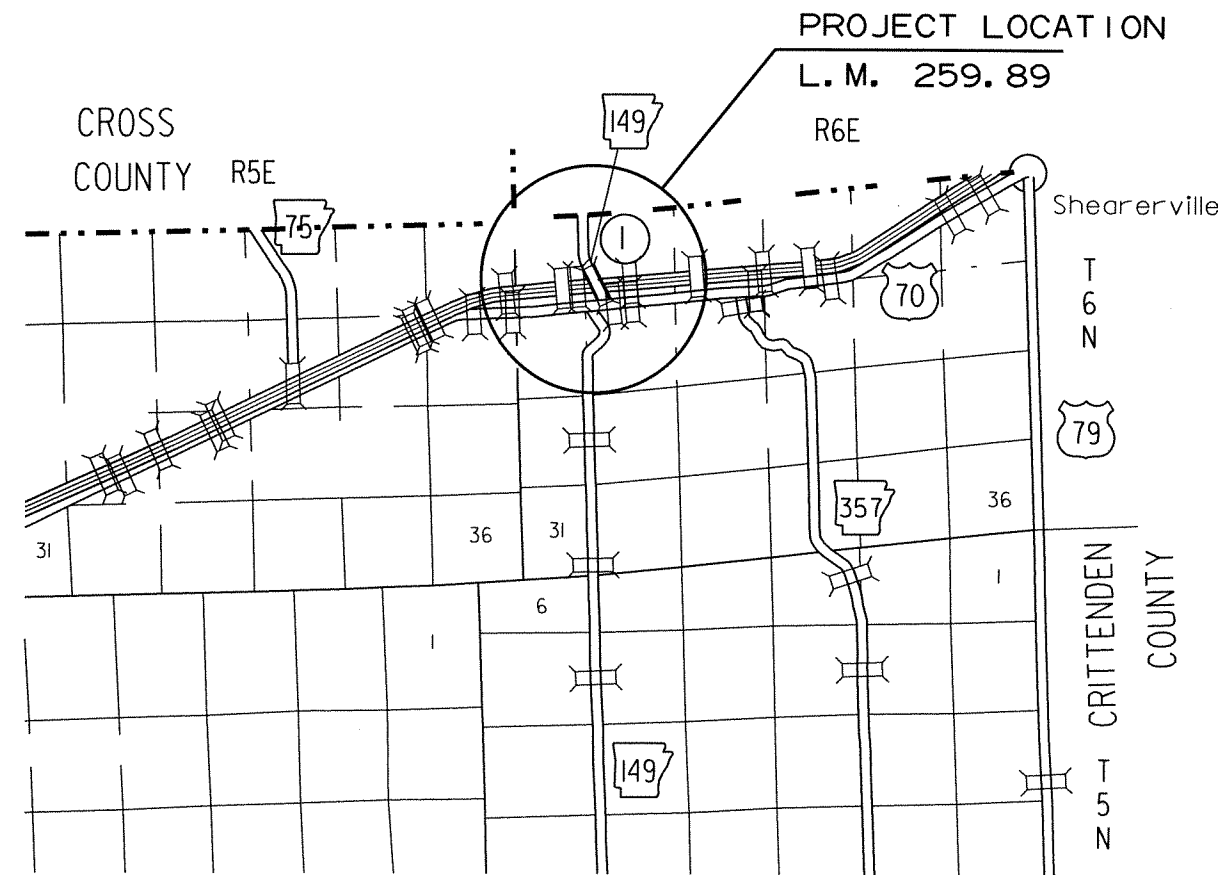


ARK. HWY. DIST. NO. 1



BRIDGE DATA

- ① BRIDGE END STA. 311+57.33
- 40' CL. RDWY.
- BR. NO. 07234
- 334'-4" TOTAL LENGTH
- 332'-0" CONT. COMP. W-BEAM UNIT
- BRIDGE END STA. 314+91.67



• DESIGN TRAFFIC DATA •

	HWY. 149
DESIGN YEAR -----	2032
2012 ADT -----	2000
2032 ADT -----	2400
2032 DHV -----	264
DIRECTIONAL DISTRIBUTION -----	60%
TRUCKS -----	43%
DESIGN SPEED -----	40 MPH

MID-POINT OF PROJECT	
LATITUDE	N 35°07' 57.9"
LONGITUDE	W 90°29' 12.3"

NO LENGTH INVOLVED					
GROSS LENGTH OF PROJECT	NET	NET	NET	NET	
0.00	0.00	0.00	0.00	0.00	FEET OR MILES
0.00	0.00	0.00	0.00	0.00	FEET OR MILES
0.00	0.00	0.00	0.00	0.00	FEET OR MILES
0.00	0.00	0.00	0.00	0.00	FEET OR MILES

P.E. 110543
 F.A.P. LICE-0068-036



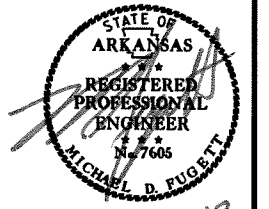
APPROVED



4/20/12
 DEPUTY DIRECTOR
 AND CHIEF ENGINEER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
							JOB NO. 110543	2 134

② INDEX OF SHEETS



INDEX OF SHEETS

SHEET NO.	TITLE	BRIDGE NO.	DRWG. NO.	DATE
1	TITLE SHEET			
2	INDEX OF SHEETS			
3	GOVERNING SPECIFICATIONS AND GENERAL NOTES			
4 - 5	TYPICAL SECTIONS OF IMPROVEMENT			
6 - 10	SPECIAL DETAILS			
11 - 18	TEMPORARY EROSION CONTROL DETAILS			
19 - 29	MAINTENANCE OF TRAFFIC			
30	PERMANENT PAVEMENT MARKING DETAILS			
31 - 35	QUANTITY SHEETS			
36	SCHEDULE OF BRIDGE QUANTITIES	07234	52601	
37	SUMMARY OF QUANTITIES AND REVISIONS			
38 - 41	SURVEY CONTROL DETAILS			
42 - 43	HWY. 149 PLAN AND PROFILE SHEETS			
44	HWY. 149 INTERCHANGE LAYOUT			
45 - 46	HWY. 149 RAMPS - PLAN AND PROFILE SHEETS			
47	LAYOUT OF BRIDGE HWY. 149 OVER INTERSTATE 40 (SHEET 1 OF 2)	07234	52602	
48	LAYOUT OF BRIDGE HWY. 149 OVER INTERSTATE 40 (SHEET 2 OF 2)	07234	52603	
49	DETAILS OF END BENTS (SHEET 1 OF 3)	07234	52604	
50	DETAILS OF END BENTS (SHEET 2 OF 3)	07234	52605	
51	DETAILS OF END BENTS (SHEET 3 OF 3)	07234	52606	
52	DETAILS OF STATE OF ARKANSAS FORM INSERT	07234	52607	
53	DETAILS OF BENT 2 (SHEET 1 OF 2)	07234	52608	
54	DETAILS OF BENT 2 (SHEET 2 OF 2)	07234	52609	
55	DETAILS OF BENT 3 (SHEET 1 OF 2)	07234	52610	
56	DETAILS OF BENT 3 (SHEET 2 OF 2)	07234	52611	
57	DETAILS OF BENT 4 (SHEET 1 OF 2)	07234	52612	
58	DETAILS OF BENT 4 (SHEET 2 OF 2)	07234	52613	
59	DETAILS OF CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS	07234	52614	
60	DETAILS OF ELASTOMERIC BEARINGS	07234	52615	
61	DETAILS OF 332'-0" CONTINUOUS W-BEAM UNIT (SHEET 1 OF 7)	07234	52616	
62	DETAILS OF 332'-0" CONTINUOUS W-BEAM UNIT (SHEET 2 OF 7)	07234	52617	
63	DETAILS OF 332'-0" CONTINUOUS W-BEAM UNIT (SHEET 3 OF 7)	07234	52618	
64	DETAILS OF 332'-0" CONTINUOUS W-BEAM UNIT (SHEET 4 OF 7)	07234	52619	
65	DETAILS OF 332'-0" CONTINUOUS W-BEAM UNIT (SHEET 5 OF 7)	07234	52620	
66	DETAILS OF 332'-0" CONTINUOUS W-BEAM UNIT (SHEET 6 OF 7)	07234	52621	
67	DETAILS OF 332'-0" CONTINUOUS W-BEAM UNIT (SHEET 7 OF 7)	07234	52622	
68	DETAILS OF PARAPET RAIL	07234	52623	
69	DETAILS OF TYPE SPECIAL APPROACH SLAB	07234	52624	
70	EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS		1888A	4-10-03
71	DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES		1891F	4-10-03
72	DETAILS OF STANDARD TYPE C APPROACH GUTTERS		2016C	7-14-10
73	DETAILS OF STANDARD TYPE D BRIDGE NAME PLATES		2387	9-08-11
74	DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS		14991	4-10-03
75	DETAILS OF CONCRETE RIPRAP AND MISCELLANEOUS DETAILS OF STEEL PILING		14995A	4-10-03
76	CONCRETE DITCH PAVING		CDP-1	11-17-10
77	CURBING DETAILS		CG-1	11-29-07
78	DETAILS OF DRIVEWAYS & ISLANDS		DR-1	11-29-07
79	FLARED END SECTION		FES-1	10-18-96
80	FLARED END SECTION		FES-2	10-18-96
81	DETAILS OF DROP INLETS AND SPILLWAY OUTLET		FPC-9N	7-02-98
82	GUARD RAIL DETAILS		GR-8	7-14-10
83	GUARD RAIL DETAILS		GR-9	4-17-08
84	GUARD RAIL DETAILS		GR-9A	4-17-08
85	GUARD RAIL DETAILS		GR-10	7-14-10
86	GUARD RAIL DETAILS		GR-10A	7-14-10
87	CONCRETE BARRIER WALL (PIER PROTECTION TYPE A)		GR-11	7-14-10
88	GUARD RAIL DETAILS		GRT-1	7-14-10
89	IMPACT ATTENUATION BARRIERS		IB-1	10-15-09
90	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING		PCC-1	12-15-11
91	METAL PIPE CULVERT FILL HEIGHTS & BEDDING		PCM-1	12-15-11
92	PAVEMENT MARKING DETAILS		PM-1	11-17-10
93	DETAILS OF PIPE UNDERDRAIN		PU-1	4-10-03
94	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-1	12-15-11
95	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-2	3-11-10
96	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-3	10-15-09
97	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER		TC-4	10-15-09
98	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER		TC-5	10-15-09
99	TEMPORARY EROSION CONTROL DEVICES		TEC-1	12-15-11
100	TEMPORARY EROSION CONTROL DEVICES		TEC-2	6-02-94
101	TEMPORARY EROSION CONTROL DEVICES		TEC-3	11-03-94
102	WIRE FENCE TYPE A AND B		WF-1	8-22-02
103 - 134	CROSS SECTIONS			

NOTE: CROSS SECTIONS NOT NORMALLY INCLUDED IN PLANS SOLD TO PROSPECTIVE BIDDERS, BUT MAY BE HAD UPON REQUEST.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
1/9/12				6	ARK.			
4/5/12								
				JOB NO.	110543		3	134

2 GOVERNING SPECS. AND GENERAL NOTES



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 - TRAINING PROGRAM - JOB 110543
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)
102-1	BIDDING REQUIREMENTS AND CONDITIONS
103-1	DETERMINATION OF DBE PARTICIPATION
105-1	CONSTRUCTION CONTROL MARKINGS
105-2	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
105-3	CONTROL OF WORK
107-1	WORKER VISIBILITY
108-1	LIQUIDATED DAMAGES
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
303-1	AGGREGATE BASE COURSE
404-1	PRODUCTION VERIFICATION OF ASPHALT CONCRETE HOT MIX
409-1	MINERAL AGGREGATES
410-3	DENSITY TESTING FOR ACHM LEVELING COURSES AND BOND BREAKERS
411-1	ASPHALT CONCRETE COLD PLANT MIX
600-1	WATER FOR VEGETATION
603-1	MAINTENANCE OF TRAFFIC
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-2	INSPECTION OF TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
606-2	PIPE CULVERTS
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
719-2	THERMOPLASTIC PAVEMENT MARKING MATERIAL
804-1	INSTALLATION OF DOWEL BARS AND TIE BARS
JOB 110543	ASPHALT CURB
JOB 110543	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 110543	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 110543	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 110543	DRIVEN STEEL PILING BY METHOD B
JOB 110543	EXTENSION FOR PIPE CULVERTS
JOB 110543	GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION
JOB 110543	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 110543	HIGH PERFORMANCE PAVEMENT MARKING
JOB 110543	INTERNET BIDDING
JOB 110543	MAINTENANCE OF TRAFFIC
JOB 110543	NESTING SITES OF MIGRATORY BIRDS
JOB 110543	PARTNERING REQUIREMENTS
JOB 110543	REMOVAL AND DISPOSAL OF GUARDRAIL
JOB 110543	SEQUENCE OF CONSTRUCTION
JOB 110543	SHORING
JOB 110543	SILICONE JOINT SEALANT
JOB 110543	SITE USE (A + C METHOD)
JOB 110543	SOIL STABILIZATION
JOB 110543	SPECIAL SAFETY REQUIREMENTS
JOB 110543	STEEL SHELL PILES
JOB 110543	STORM WATER POLLUTION PREVENTION PLAN
JOB 110543	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 110543	TEMPORARY IMPACT ATTENUATION BARRIER
JOB 110543	TEXTURED COATING FINISH
JOB 110543	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
JOB 110543	UTILITY ADJUSTMENTS
JOB 110543	VALUE ENGINEERING
JOB 110543	WARM MIX ASPHALT

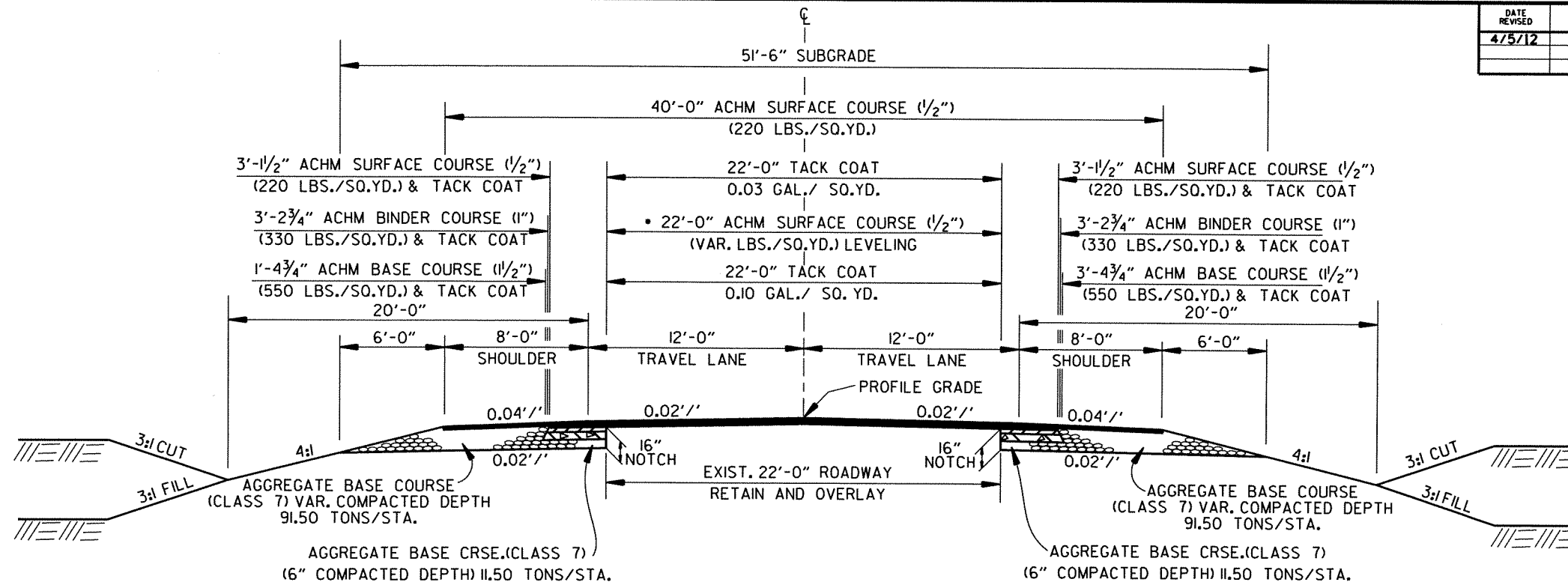
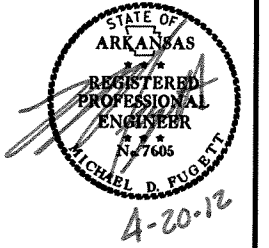
GENERAL NOTES

- GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
- ALL PIPE LINES, POWER, TELEPHONE AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
- 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.
- ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
- ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
- 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.
- ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
- 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 MANNER THAT 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.

GOVERNING SPECIFICATIONS & GENERAL NOTES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.		4	134
						JOB NO. 110543		

2 TYPICAL SECTIONS OF IMPROVEMENT



• TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

**NOTCH AND WIDEN TWO LANE SECTION
HWY. 149
STA. 301+07.89 TO STA. 307+50
STA. 320+00 TO STA. 326+00**

NOTES:

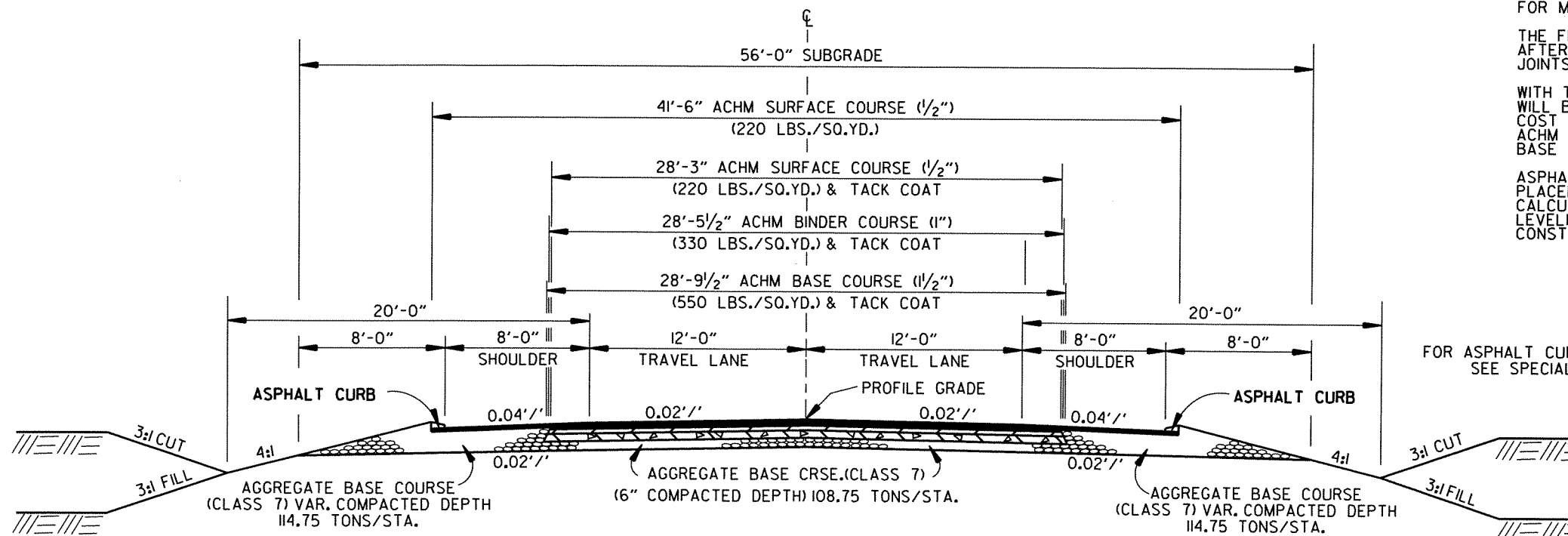
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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.

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 COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

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.



FOR ASPHALT CURB DIMENSIONS SEE SPECIAL DETAIL

**FULL DEPTH TWO LANE SECTION
HWY. 149
STA. 307+50 TO STA. 311+20.83
STA. 315+28.17 TO STA. 320+00**

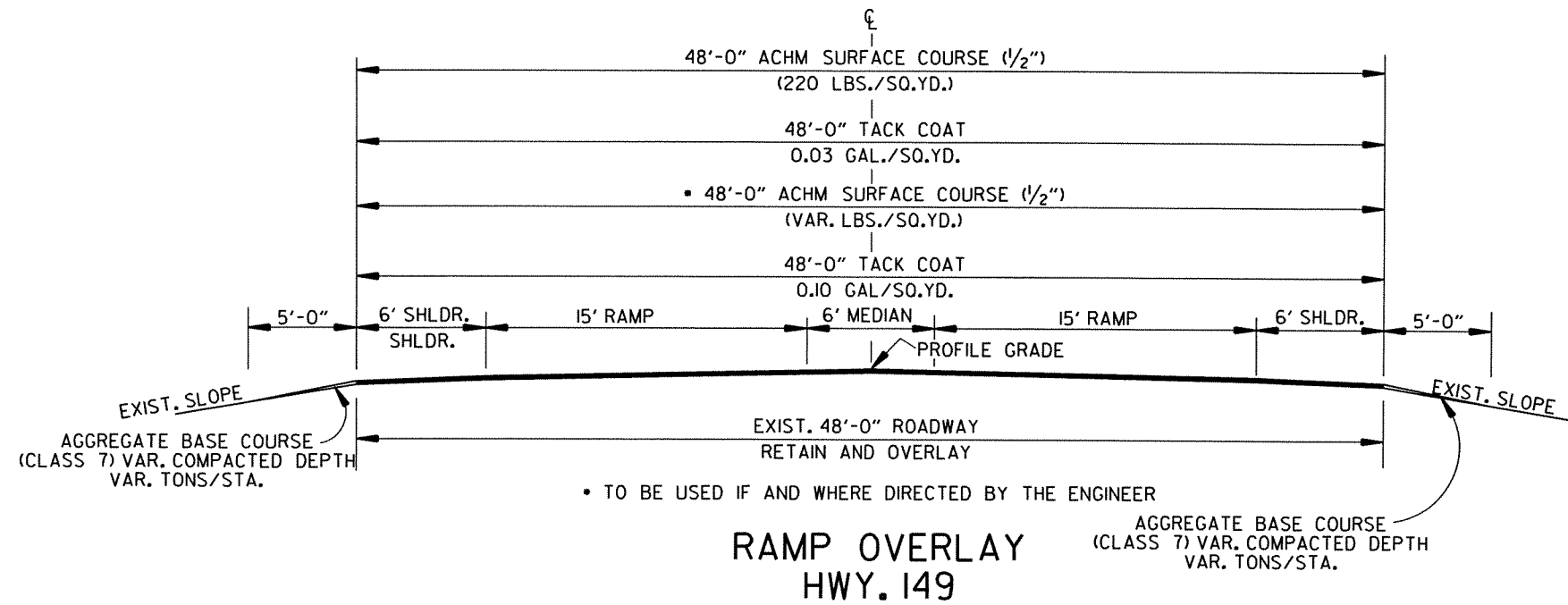
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	5	134

② TYPICAL SECTIONS OF IMPROVEMENT



FOR ASPHALT CURB DIMENSIONS
SEE SPECIAL DETAIL



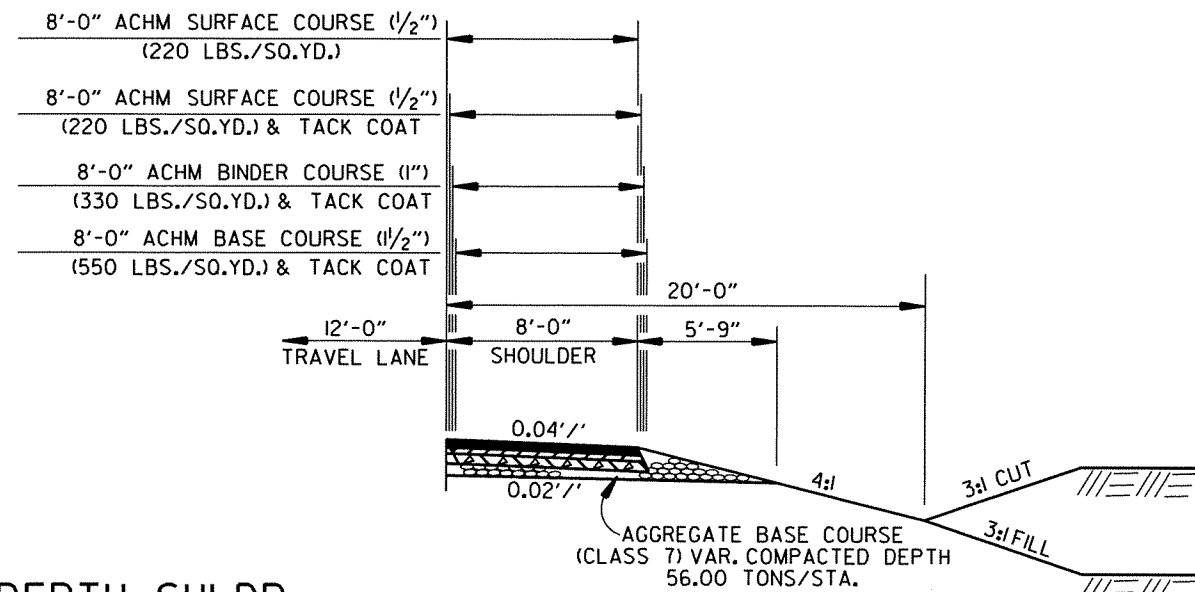
NOTES:

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.

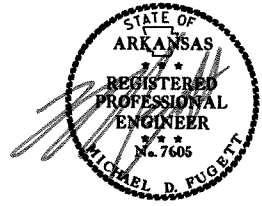
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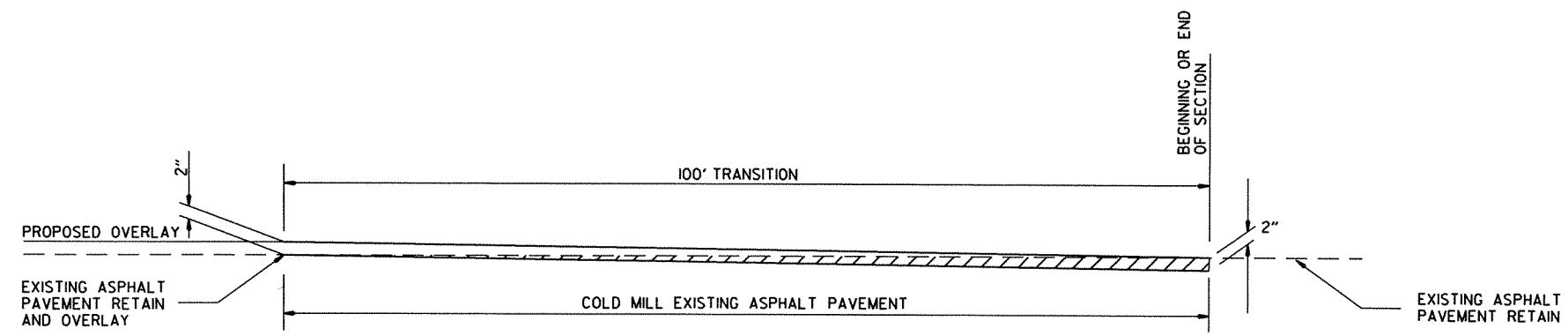


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4/5/12				6	ARK.			
JOB NO. 110543							6	134

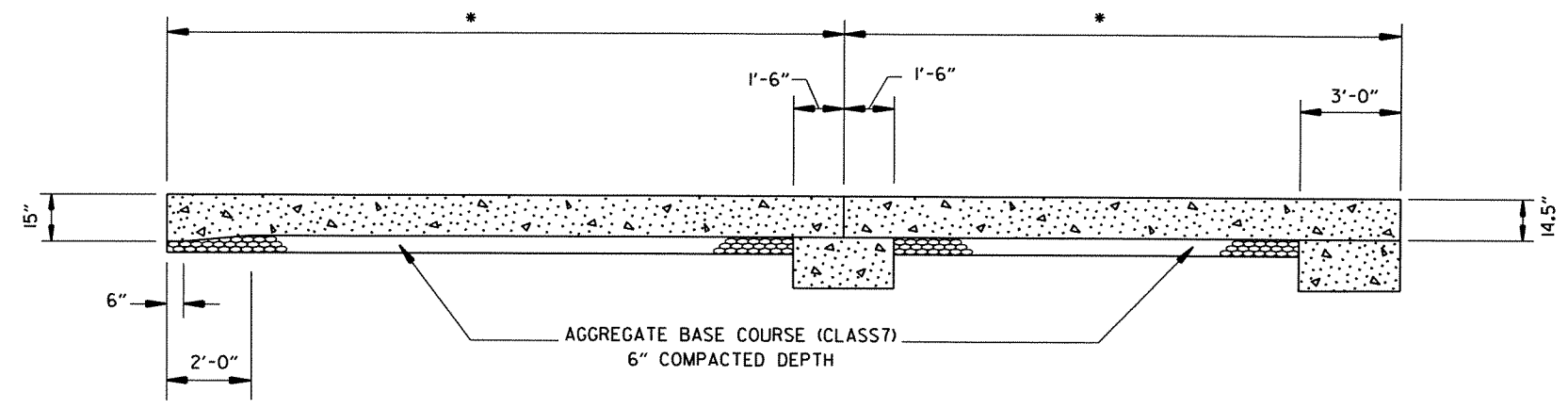
2 SPECIAL DETAILS



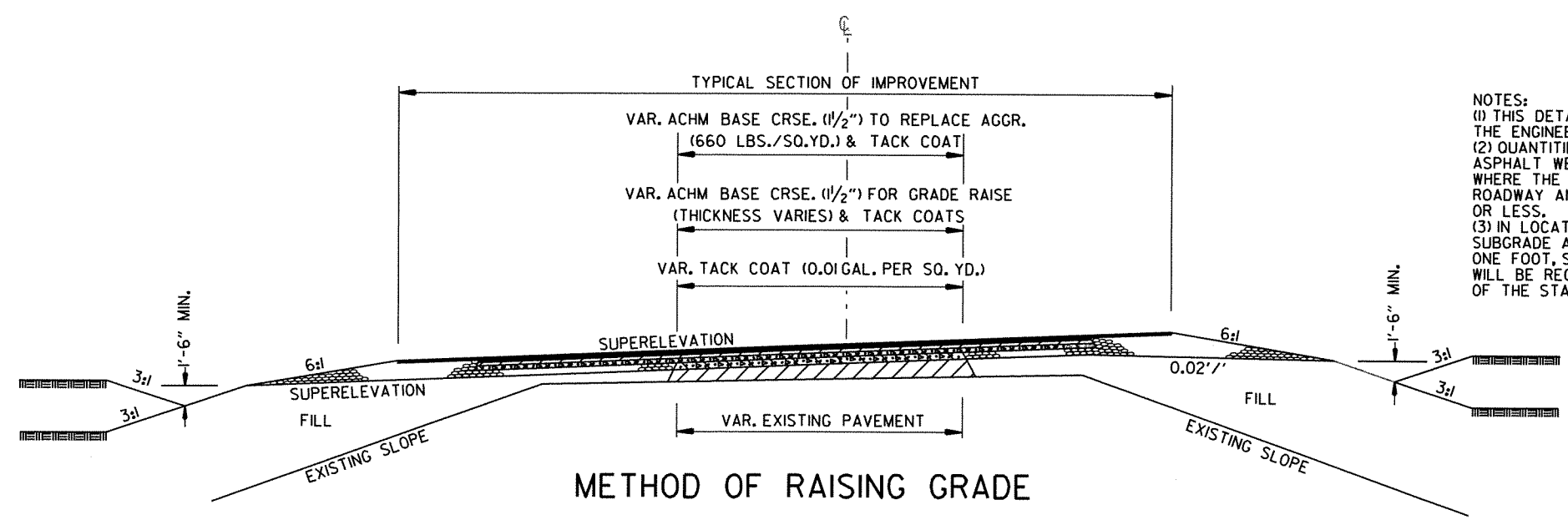
4-20-12



DETAIL FOR TRANSITIONS



SECTION OF APPROACH SLAB



NOTES:
 (1) THIS DETAIL TO BE USED ONLY IF AND WHERE DIRECTED BY THE ENGINEER.
 (2) QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.
 (3) IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003.

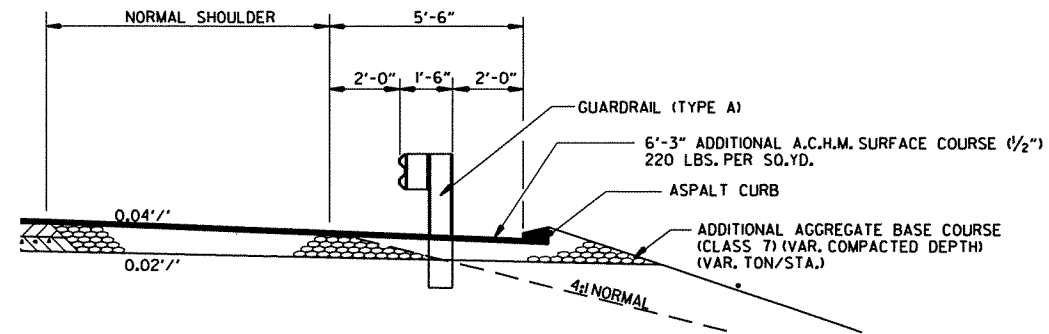
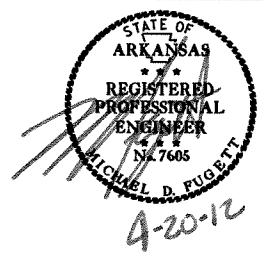
METHOD OF RAISING GRADE

SPECIAL DETAILS

RI10543.DGN 3/30/12

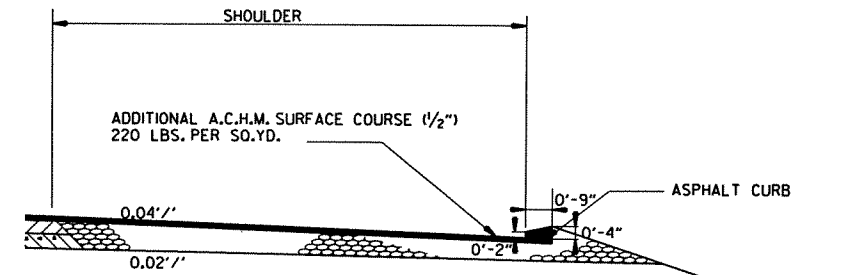
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4/5/12				6	ARK.			
						JOB NO. 110543	7	134

2 SPECIAL DETAILS

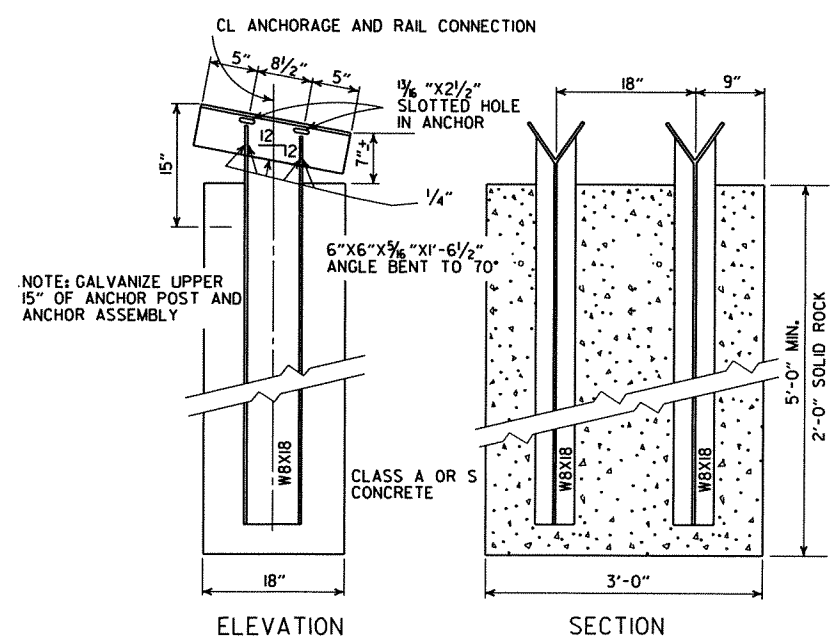


WIDENING FOR GUARDRAIL DETAIL

* NOTE: REFER TO STD. DWG GR-9A AND CROSS SECTIONS FOR SLOPE REQUIREMENTS BEHIND GUARDRAIL.



ASPHALT CURB DETAIL



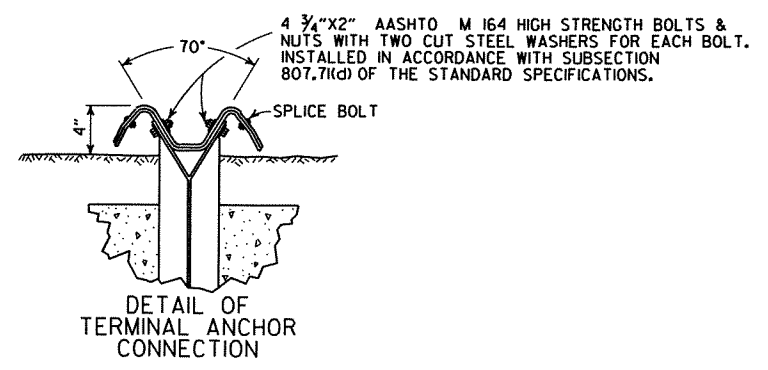
NOTE: GALVANIZE UPPER 15" OF ANCHOR POST AND ANCHOR ASSEMBLY

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 2)

FOR ADDITIONAL DETAILS REFER TO STD. DWG. GRT-1



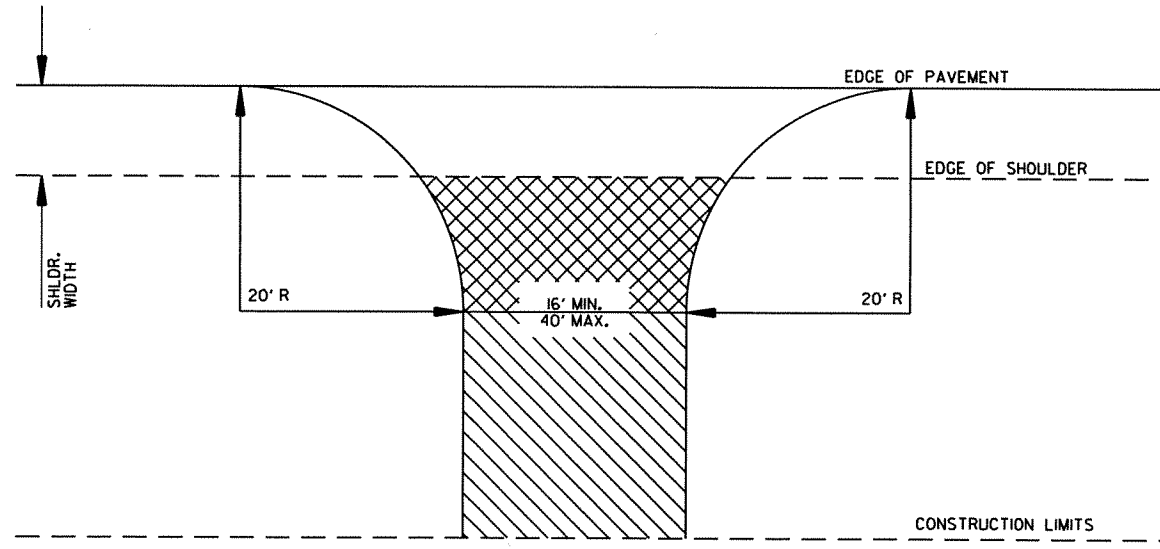
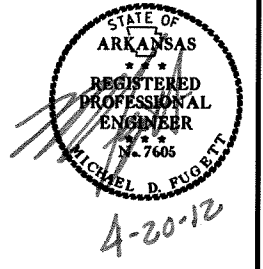
DETAIL OF TERMINAL ANCHOR CONNECTION

4 3/4" x 2" AASHTO M 164 HIGH STRENGTH BOLTS & NUTS WITH TWO CUT STEEL WASHERS FOR EACH BOLT. INSTALLED IN ACCORDANCE WITH SUBSECTION 807.7(k) OF THE STANDARD SPECIFICATIONS.

R110543.DGN 3/30/12

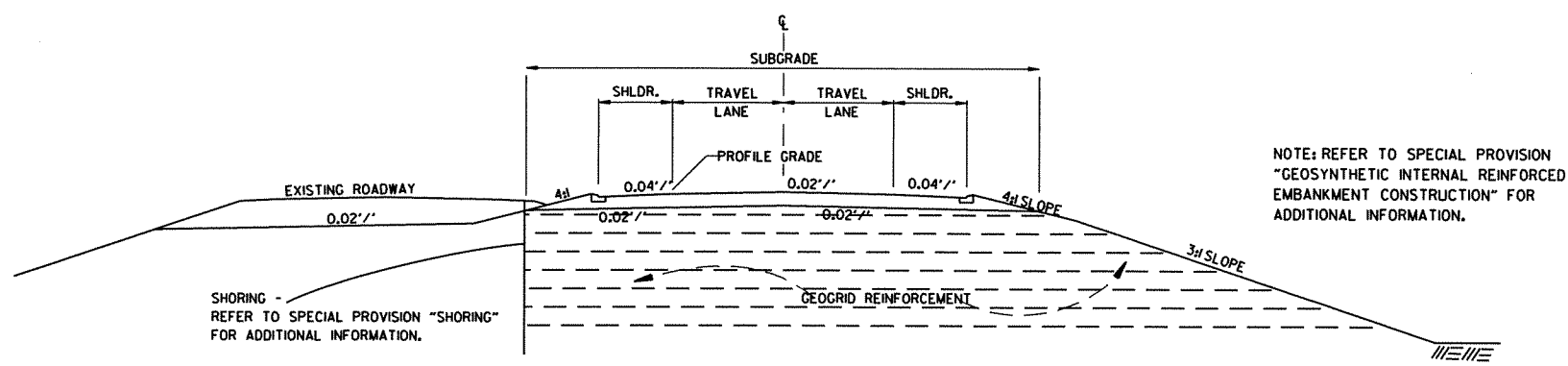
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
JOB NO. 110543							8	134

2 SPECIAL DETAILS



- ASPHALT CONCRETE HOT MIX SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.)
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH IF ASPHALT DRIVE EXISTS OR
6" CONCRETE IF CONCRETE DRIVE EXISTS.
- AGGREGATE BASE COURSE (CLASS 7)
9" COMP. DEPTH OR CONFORM TO
EXISTING DRIVEWAY.

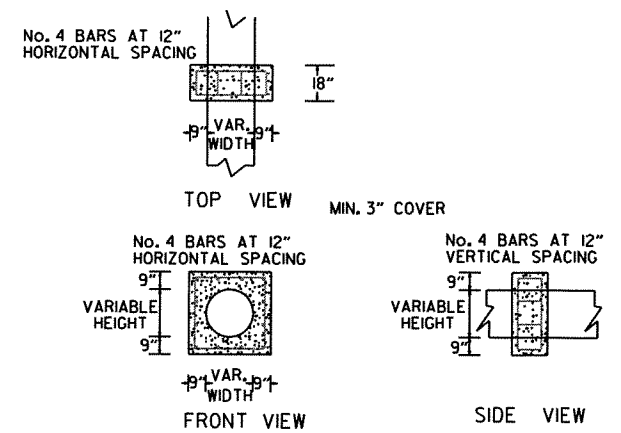
DETAIL FOR DRIVEWAY TURNOUTS



NOTE: REFER TO SPECIAL PROVISION "GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION" FOR ADDITIONAL INFORMATION.

GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION
HWY. 149

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.



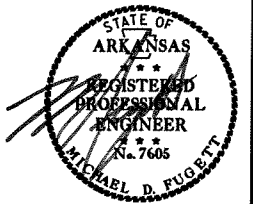
PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL

SPECIAL DETAILS

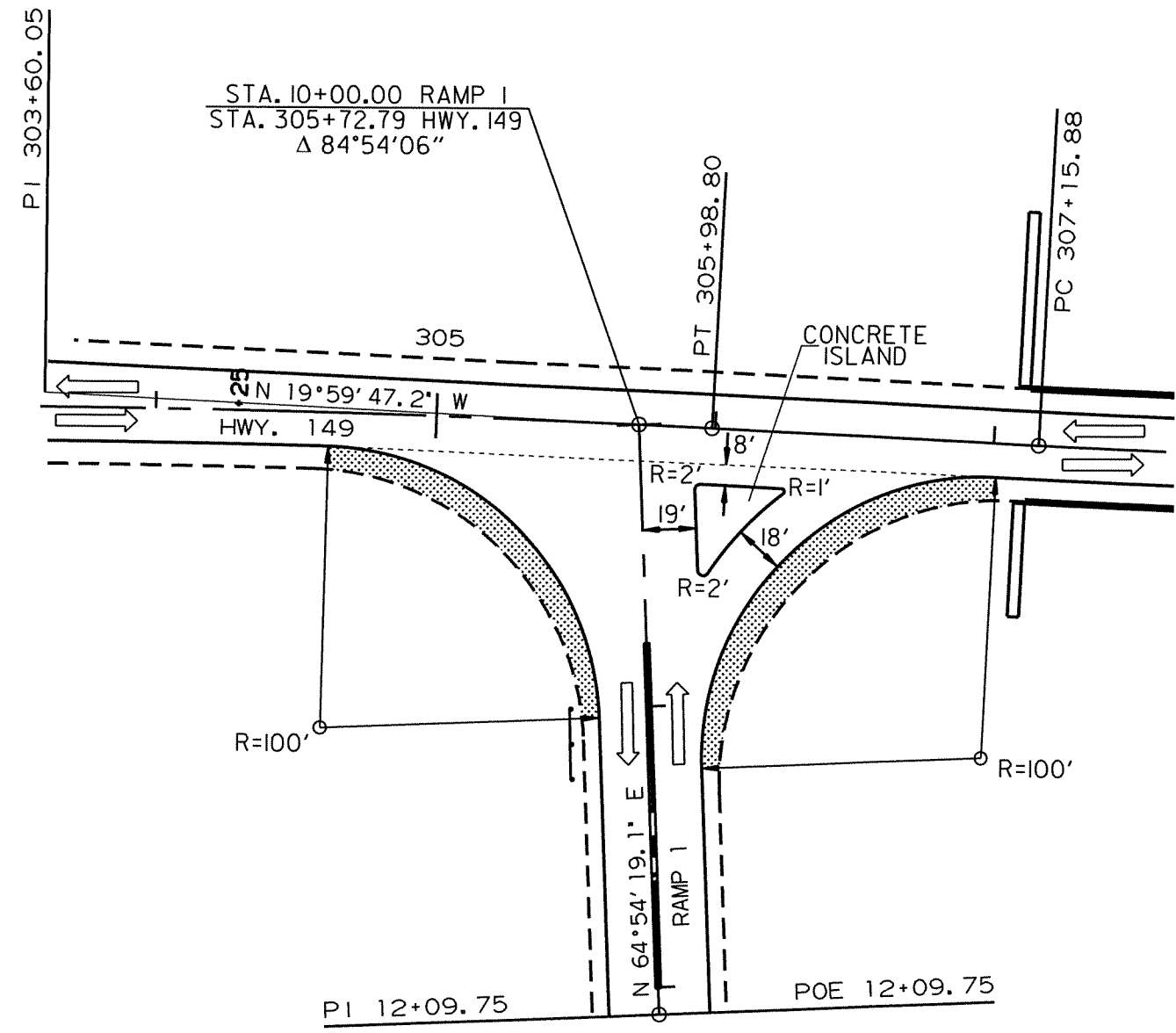
R110543.DGN 3/30/12

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
5/2/12						110543	9	134

② SPECIAL DETAILS



5-3-12

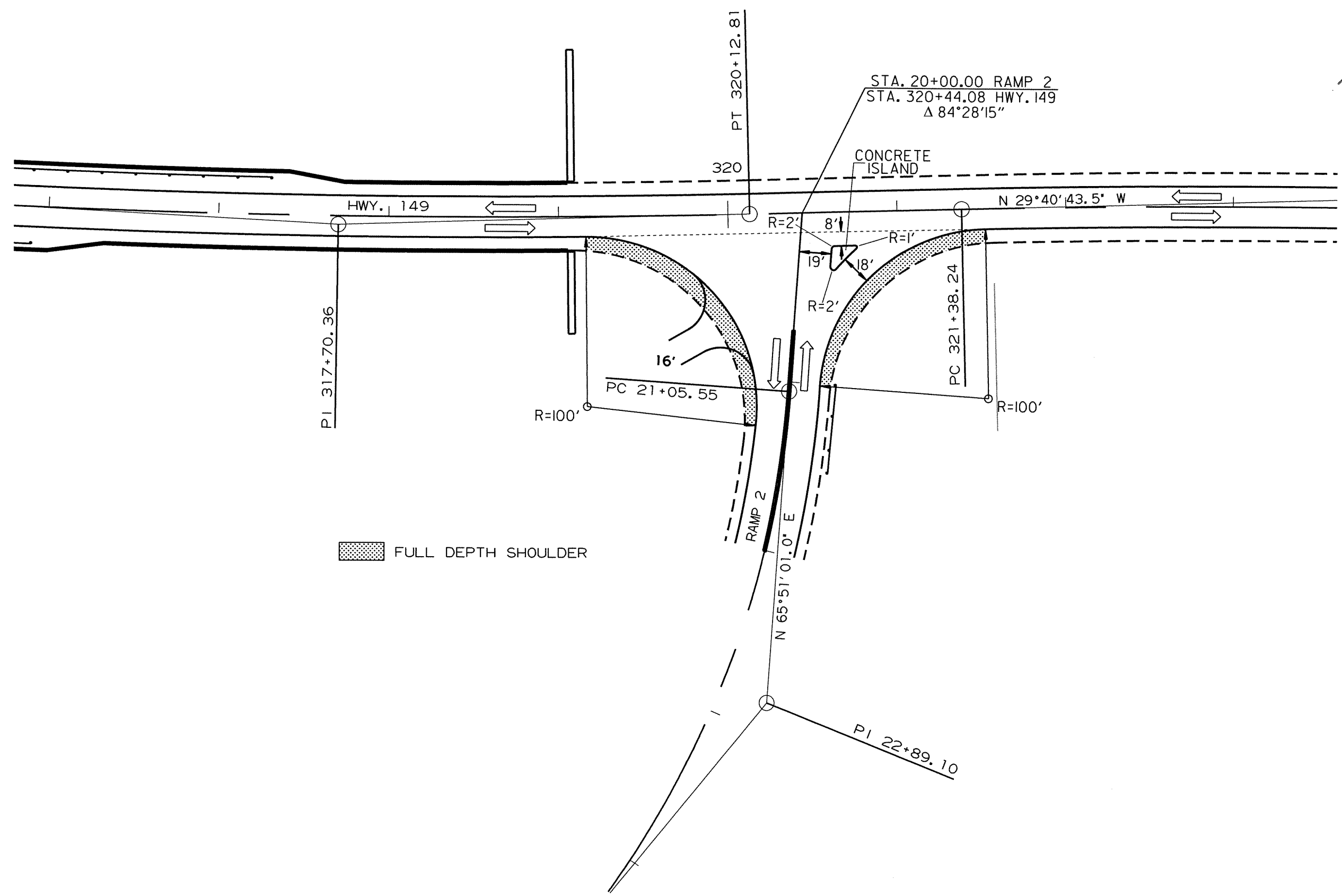
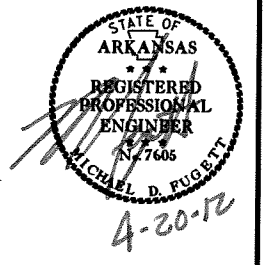


FULL DEPTH SHOULDER

HWY. 149
SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.		10	134
				JOB NO.		110543		

② SPECIAL DETAILS



RI10543.DGN 3/30/12

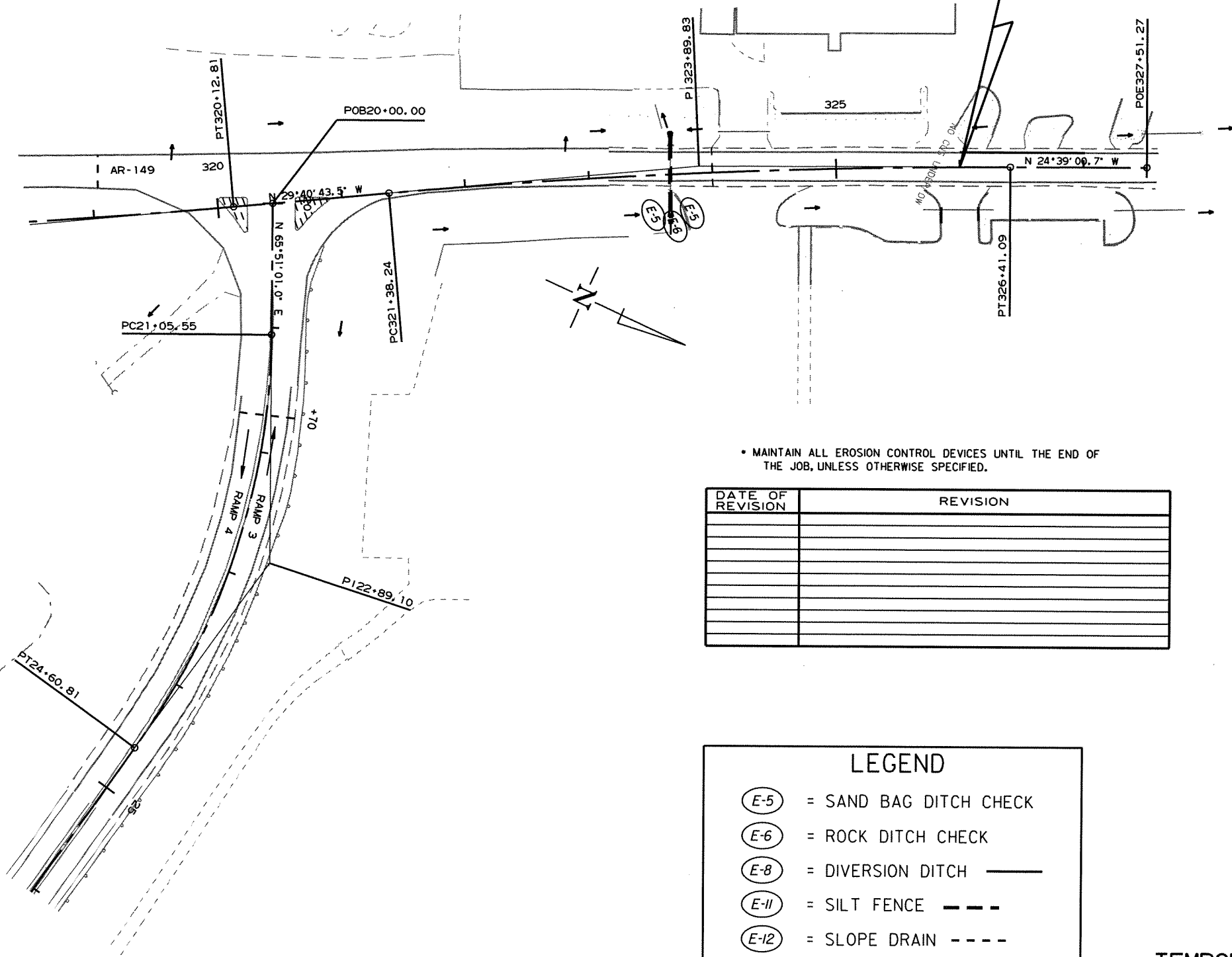
HWY. 149
SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
							JOB NO. 110543	11 134

2 TEMPORARY EROSION CONTROL DETAILS



STA. 326+00 END
JOB 110543 HWY. 149



DATE OF REVISION	REVISION

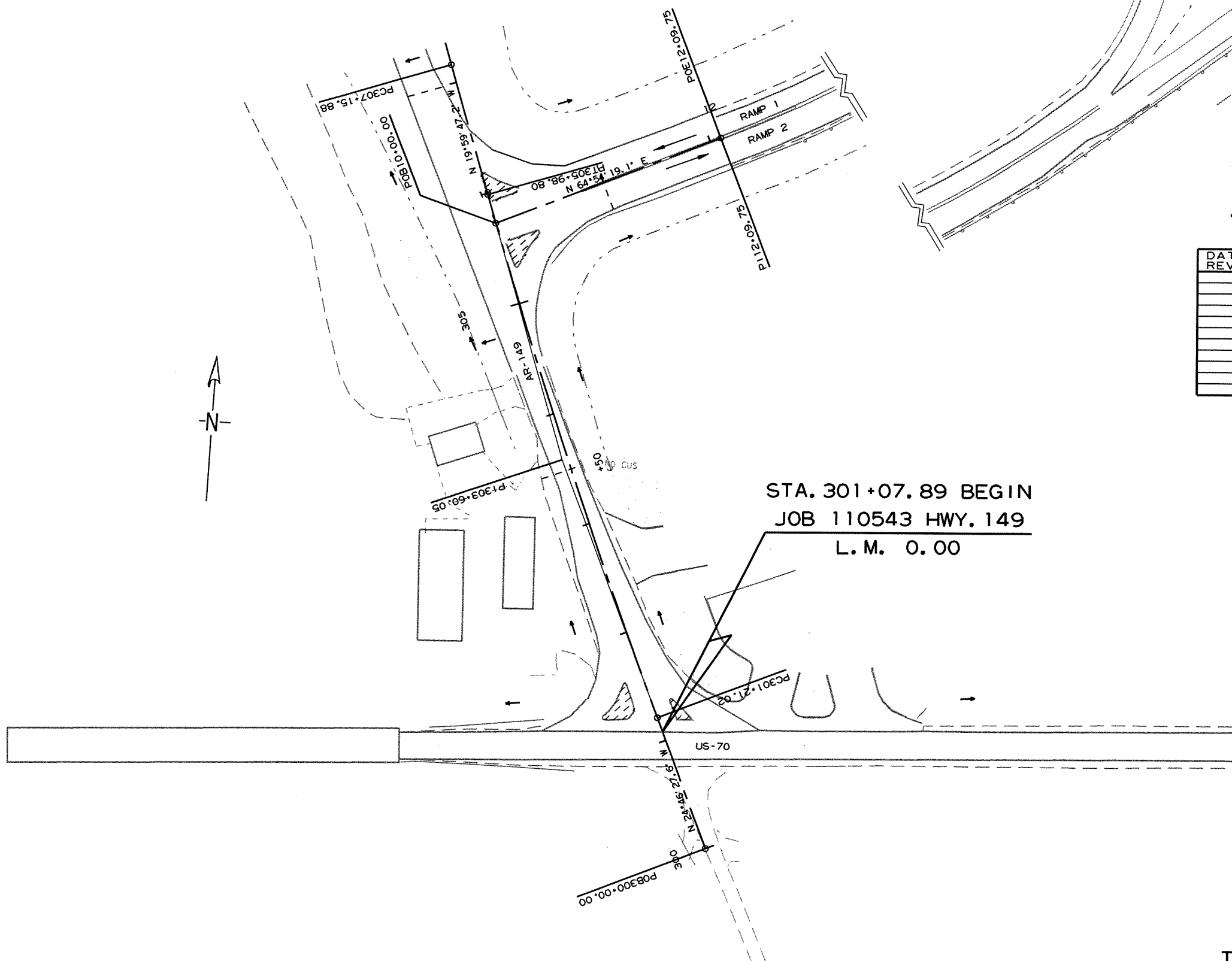
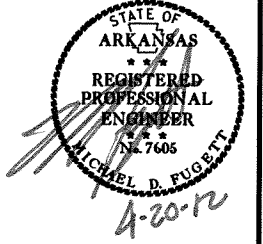
LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-8) = DIVERSION DITCH ———
- (E-11) = SILT FENCE - - - -
- (E-12) = SLOPE DRAIN - - - -

TEMPORARY EROSION CONTROL DETAILS
SHELL LAKE STAGE 1-A

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.		12	134
				JOB NO.		110543		

② TEMPORARY EROSION CONTROL DETAILS



• MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

DATE OF REVISION	REVISION

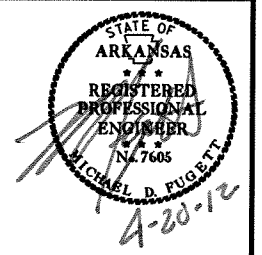
LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-8) = DIVERSION DITCH ———
- (E-11) = SILT FENCE - - - -
- (E-12) = SLOPE DRAIN - - - -

TEMPORARY EROSION CONTROL DETAILS
SHELL LAKE STAGE 1-A

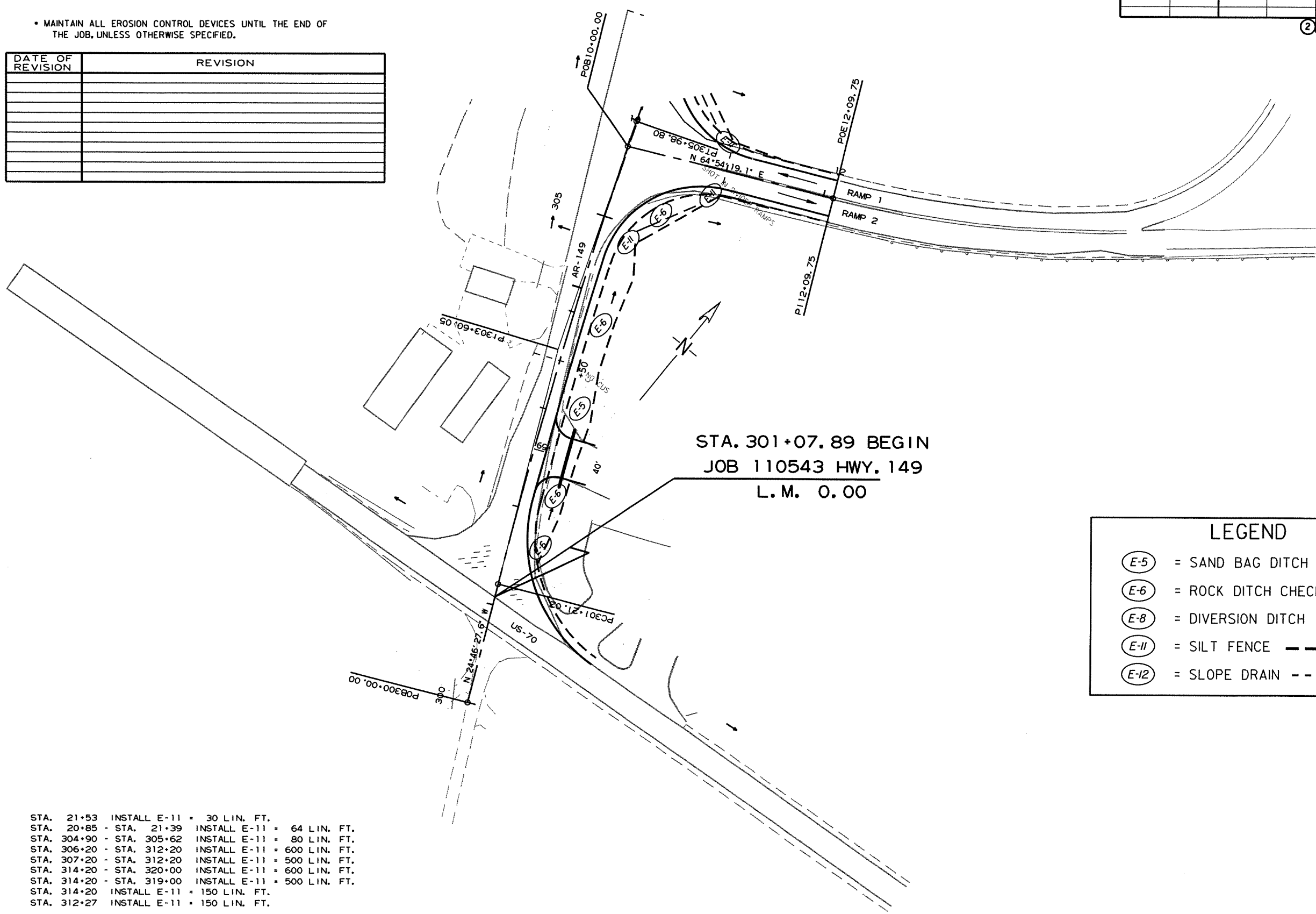
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4/75/12				6	ARK.			
						110543	13	134

② TEMPORARY EROSION CONTROL DETAILS



• MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

DATE OF REVISION	REVISION



LEGEND	
(E-5)	= SAND BAG DITCH CHECK
(E-6)	= ROCK DITCH CHECK
(E-8)	= DIVERSION DITCH ———
(E-11)	= SILT FENCE - - - -
(E-12)	= SLOPE DRAIN - - - -

- STA. 21+53 INSTALL E-11 = 30 LIN. FT.
- STA. 20+85 - STA. 21+39 INSTALL E-11 = 64 LIN. FT.
- STA. 304+90 - STA. 305+62 INSTALL E-11 = 80 LIN. FT.
- STA. 306+20 - STA. 312+20 INSTALL E-11 = 600 LIN. FT.
- STA. 307+20 - STA. 312+20 INSTALL E-11 = 500 LIN. FT.
- STA. 314+20 - STA. 320+00 INSTALL E-11 = 600 LIN. FT.
- STA. 314+20 - STA. 319+00 INSTALL E-11 = 500 LIN. FT.
- STA. 314+20 INSTALL E-11 = 150 LIN. FT.
- STA. 312+27 INSTALL E-11 = 150 LIN. FT.

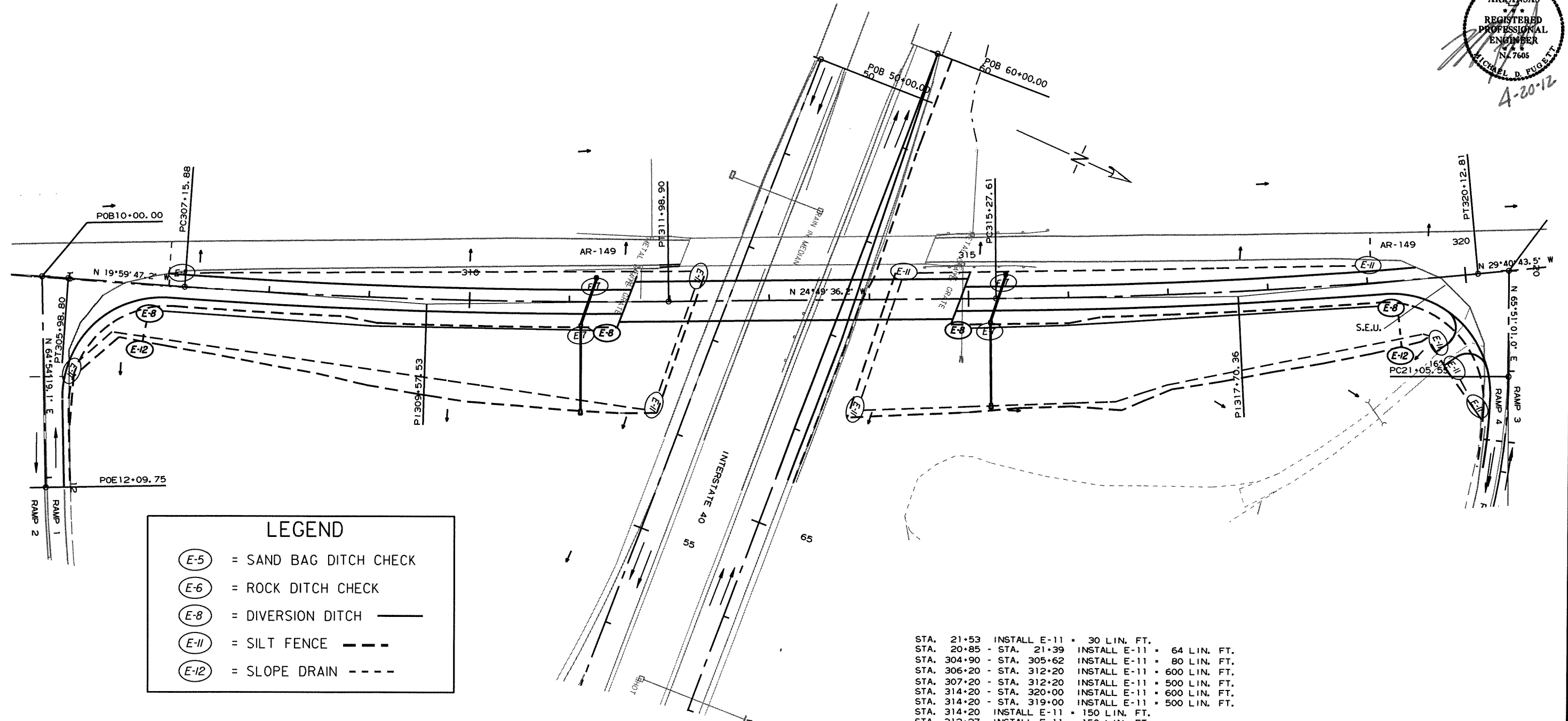
TEMPORARY EROSION CONTROL DETAILS
SHELL LAKE STAGE 1-B

09/12/2011

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	14	134

② TEMPORARY EROSION CONTROL DETAILS



LEGEND	
(E-5)	= SAND BAG DITCH CHECK
(E-6)	= ROCK DITCH CHECK
(E-8)	= DIVERSION DITCH ———
(E-11)	= SILT FENCE - - - -
(E-12)	= SLOPE DRAIN - - - -

* MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

DATE OF REVISION	REVISION

- STA. 21+53 INSTALL E-11 = 30 LIN. FT.
- STA. 20+85 - STA. 21+39 INSTALL E-11 = 64 LIN. FT.
- STA. 304+90 - STA. 305+62 INSTALL E-11 = 80 LIN. FT.
- STA. 306+20 - STA. 312+20 INSTALL E-11 = 600 LIN. FT.
- STA. 307+20 - STA. 312+20 INSTALL E-11 = 500 LIN. FT.
- STA. 314+20 - STA. 320+00 INSTALL E-11 = 600 LIN. FT.
- STA. 314+20 - STA. 319+00 INSTALL E-11 = 500 LIN. FT.
- STA. 314+20 INSTALL E-11 = 150 LIN. FT.
- STA. 312+27 INSTALL E-11 = 150 LIN. FT.
- STA. 309+50 - STA. 311+47 INSTALL E-8 = 224 LIN. FT.
- STA. 309+50 INSTALL E-12 = 34 LIN. FT.
- STA. 314+83 - STA. 319+33 INSTALL E-8 = 450 LIN. FT.
- STA. 319+33 INSTALL E-8 = 42 LIN. FT.

TEMPORARY EROSION CONTROL DETAILS
SHELL LAKE STAGE 1-B

09/12/2011

r110543.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
							JOB NO.	110543
								15
								134

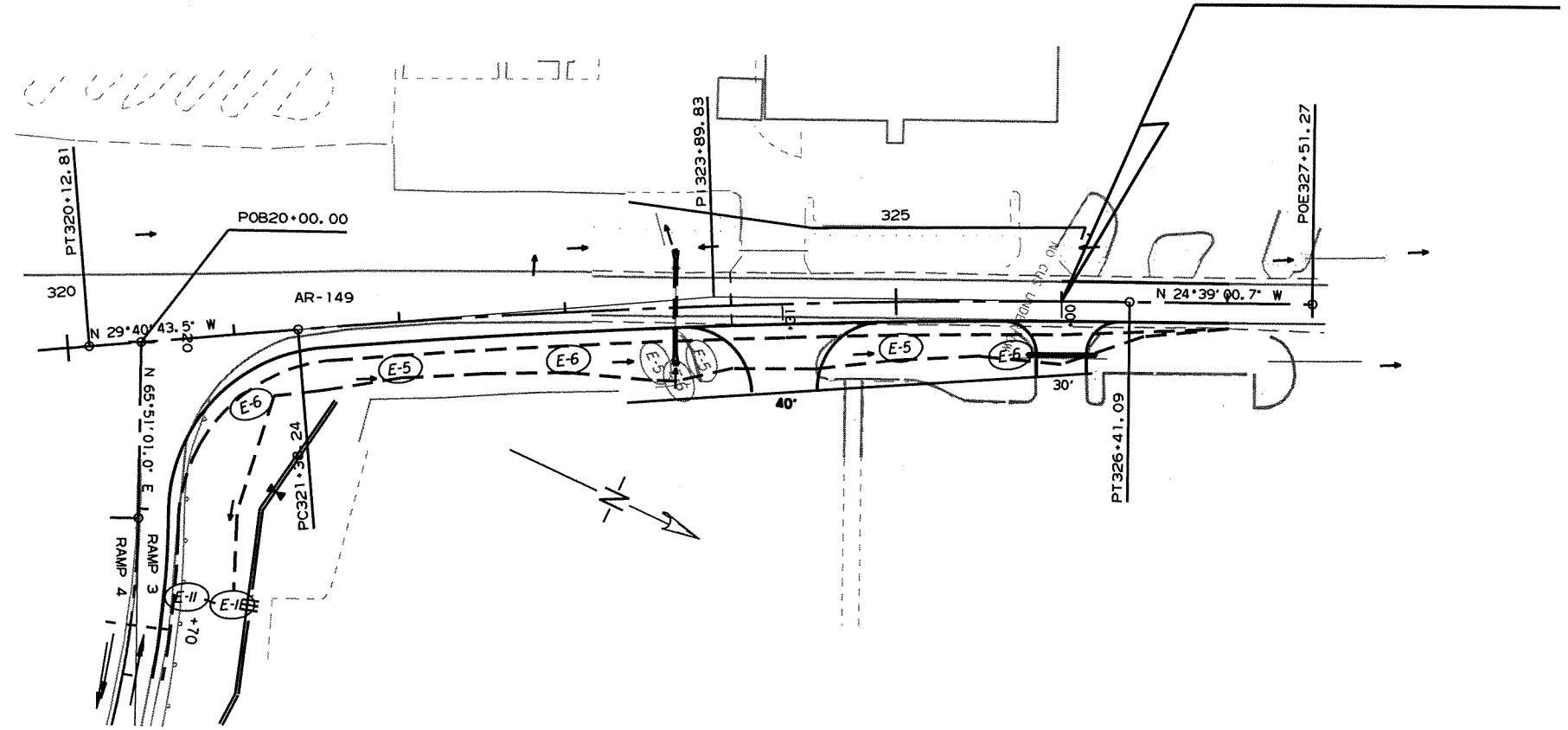
2 TEMPORARY EROSION CONTROL DETAILS



STA. 326+00 END
JOB 110543 HWY. 149

• MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

DATE OF REVISION	REVISION



LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-8) = DIVERSION DITCH ———
- (E-11) = SILT FENCE - - - -
- (E-12) = SLOPE DRAIN - - - -

- STA. 21+53 INSTALL E-11 = 30 LIN. FT.
- STA. 20+85 - STA. 21+39 INSTALL E-11 = 64 LIN. FT.
- STA. 304+90 - STA. 305+62 INSTALL E-11 = 80 LIN. FT.
- STA. 306+20 - STA. 312+20 INSTALL E-11 = 600 LIN. FT.
- STA. 307+20 - STA. 312+20 INSTALL E-11 = 500 LIN. FT.
- STA. 314+20 - STA. 320+00 INSTALL E-11 = 600 LIN. FT.
- STA. 314+20 - STA. 319+00 INSTALL E-11 = 500 LIN. FT.
- STA. 314+20 INSTALL E-11 = 150 LIN. FT.
- STA. 312+27 INSTALL E-11 = 150 LIN. FT.

TEMPORARY EROSION CONTROL DETAILS
SHELL LAKE STAGE 1-B

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS	
4/5/12				6	ARK.				
JOB NO.							110543	16	134

② TEMPORARY EROSION CONTROL DETAILS



STA. 304+90 - STA. 312+27 INSTALL E-11 = 800 LIN. FT.
 STA. 314+25 - STA. 323+62 INSTALL E-11 = 970 LIN. FT.

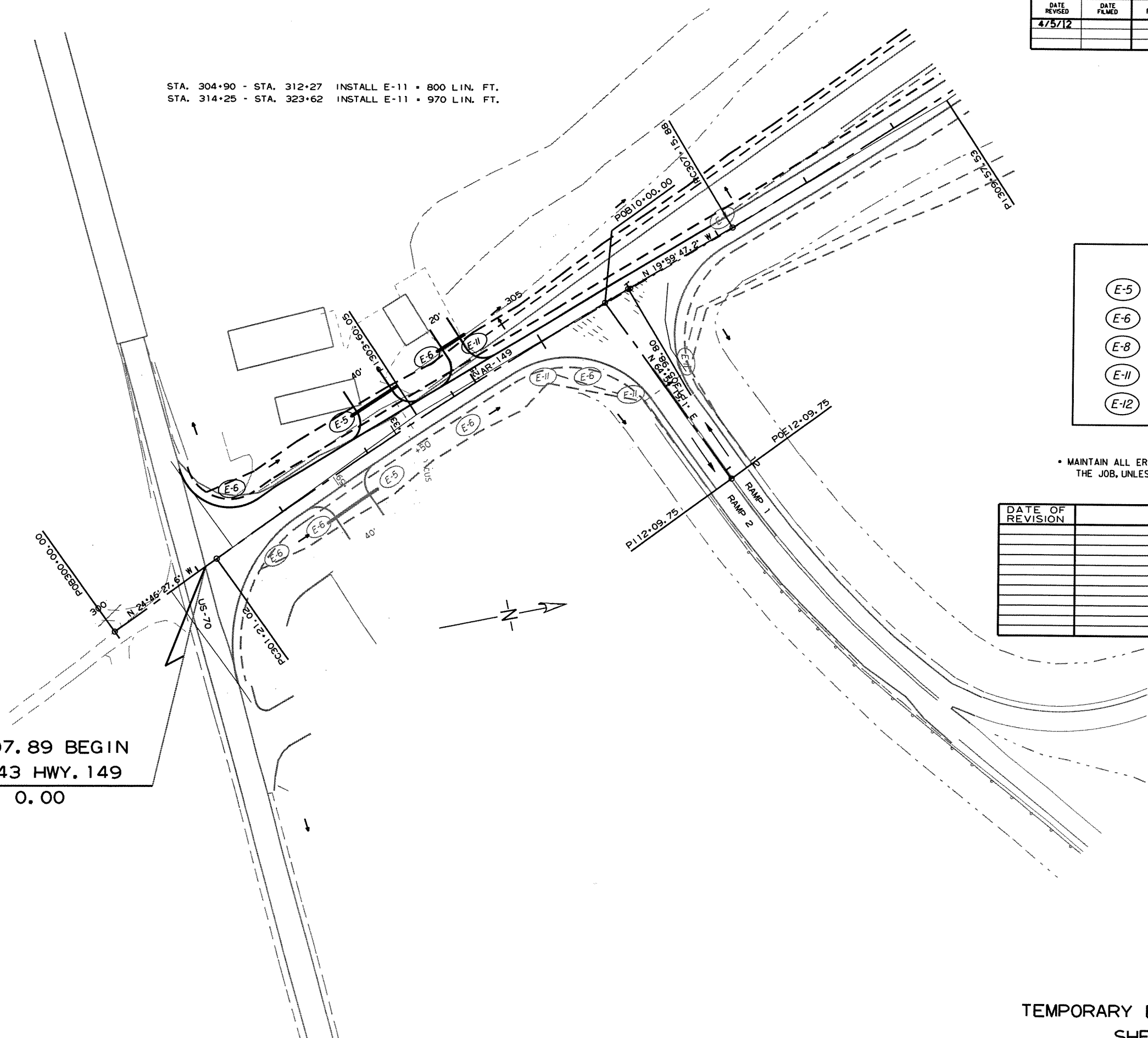
LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-8) = DIVERSION DITCH ———
- (E-11) = SILT FENCE - - - -
- (E-12) = SLOPE DRAIN - - - -

• MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

DATE OF REVISION	REVISION

STA. 301+07.89 BEGIN
 JOB 110543 HWY. 149
 L. M. 0.00



TEMPORARY EROSION CONTROL DETAILS
 SHELL LAKE STAGE 2

09/12/2011

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						110543	17	134

• MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

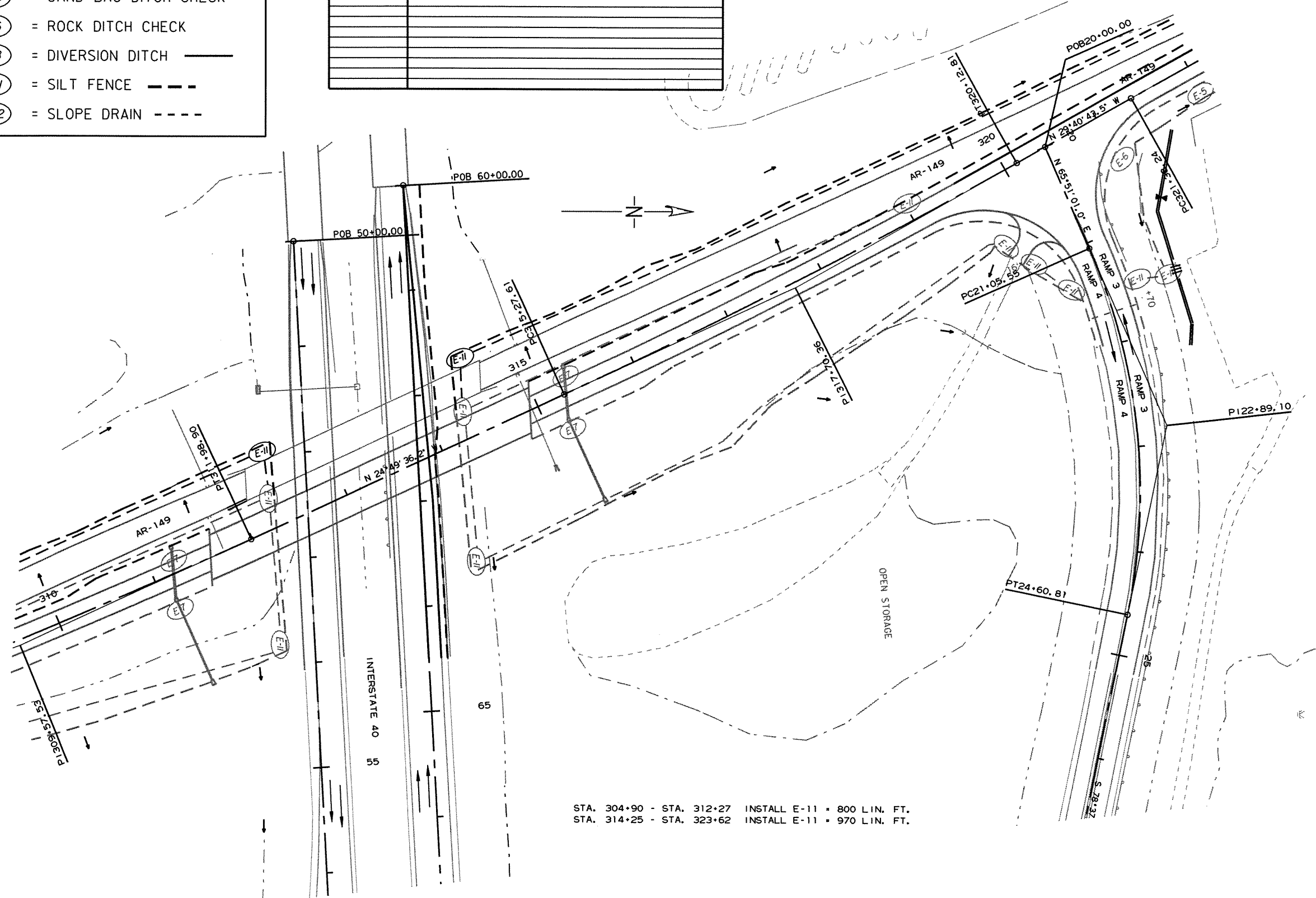
② TEMPORARY EROSION CONTROL DETAILS



LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-8) = DIVERSION DITCH ———
- (E-11) = SILT FENCE - - - -
- (E-12) = SLOPE DRAIN - - - -

DATE OF REVISION	REVISION



STA. 304+90 - STA. 312+27 INSTALL E-11 = 800 LIN. FT.
 STA. 314+25 - STA. 323+62 INSTALL E-11 = 970 LIN. FT.

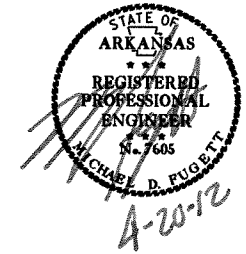
TEMPORARY EROSION CONTROL DETAILS
 SHELL LAKE STAGE 2

09/12/2011

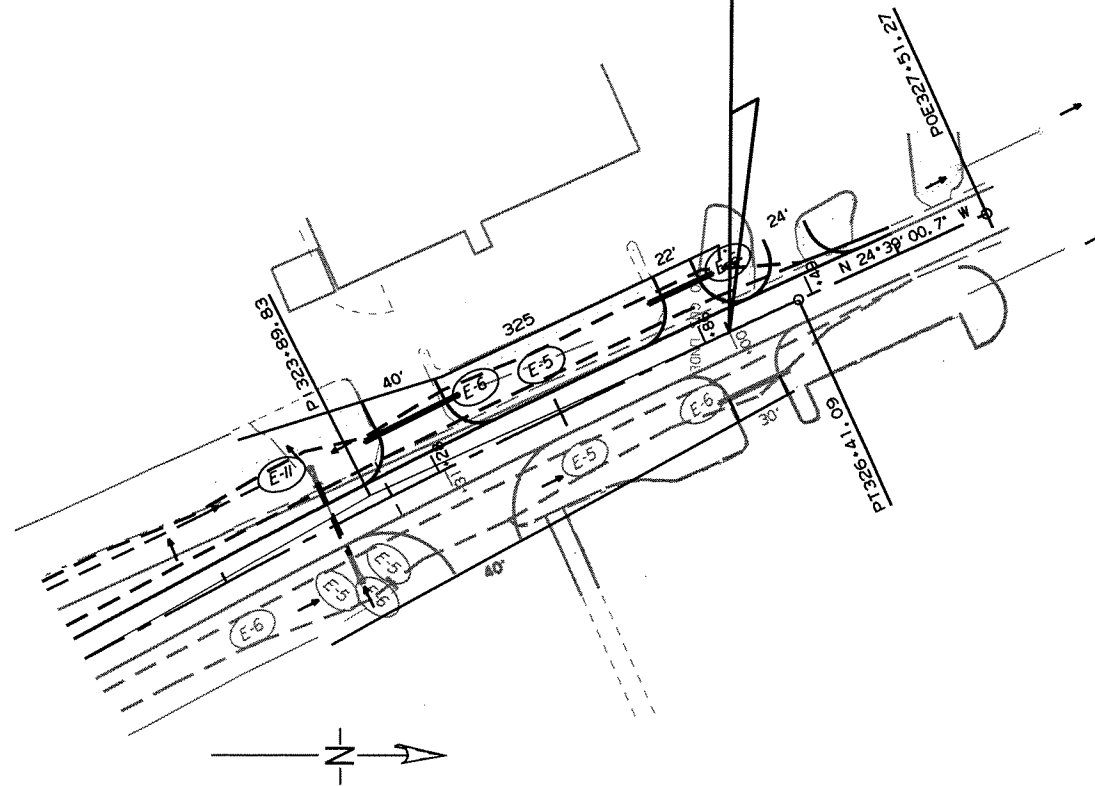
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
							JOB NO. 110543	18 134

② TEMPORARY EROSION CONTROL DETAILS



STA. 326+00 END
JOB 110543 HWY. 149



• MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

DATE OF REVISION	REVISION

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-8) = DIVERSION DITCH ———
- (E-11) = SILT FENCE - - - -
- (E-12) = SLOPE DRAIN - - - -

STA. 304+90 - STA. 312+27 INSTALL E-11 • 800 LIN. FT.
STA. 314+25 - STA. 323+62 INSTALL E-11 • 970 LIN. FT.

TEMPORARY EROSION CONTROL DETAILS
SHELL LAKE STAGE 2

09/12/2011

r110543.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.		19	134
				JOB NO.		110543		

② MAINTENANCE OF TRAFFIC

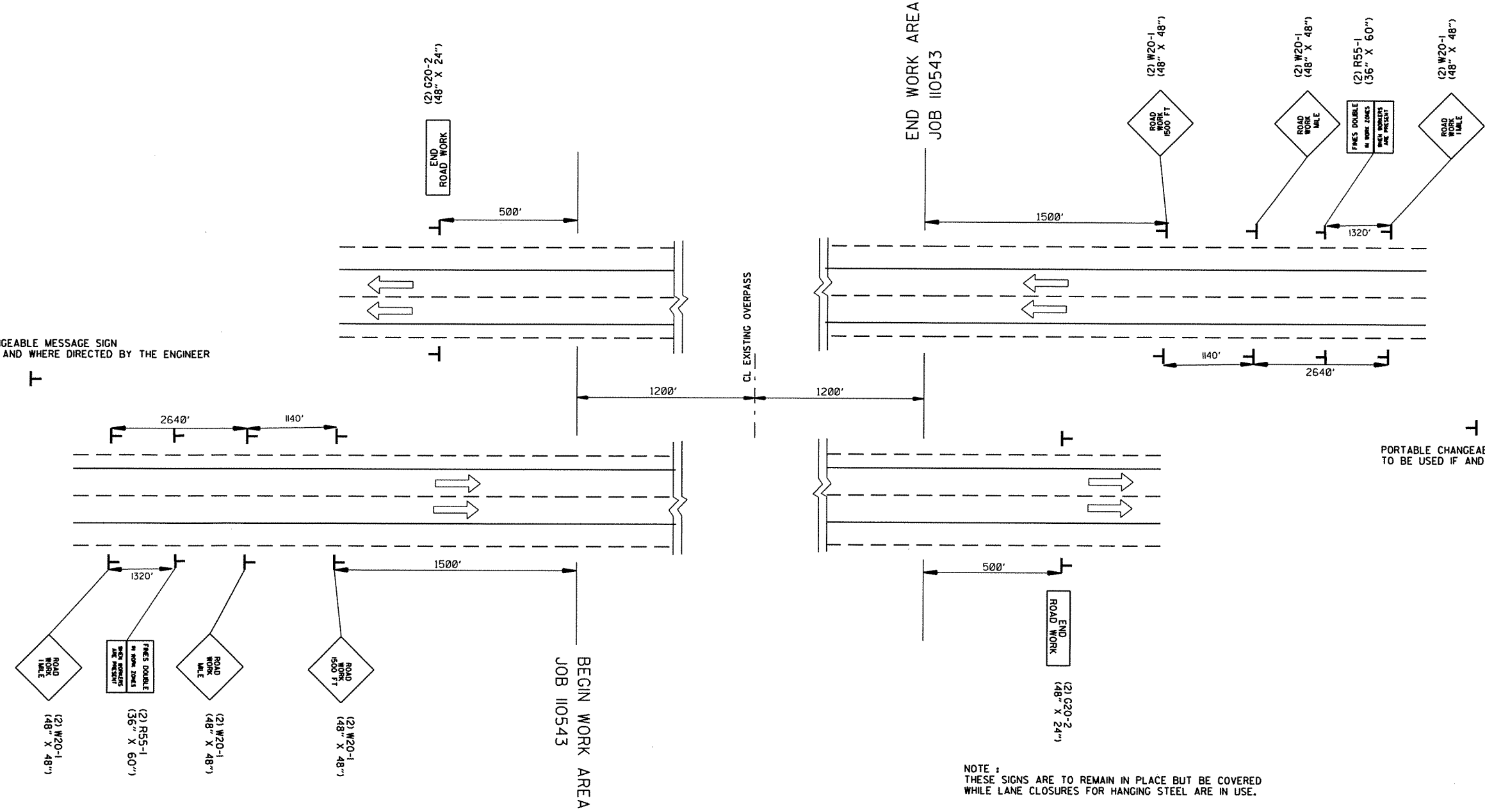


NOTE :
THESE SIGNS ARE TO REMAIN IN PLACE BUT BE COVERED WHILE LANE CLOSURES FOR HANGING STEEL ARE IN USE.

NOTE :
THESE SIGNS ARE TO REMAIN IN PLACE BUT BE COVERED WHILE LANE CLOSURES FOR HANGING STEEL ARE IN USE.

PORTABLE CHANGEABLE MESSAGE SIGN TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

PORTABLE CHANGEABLE MESSAGE SIGN TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER



NOTE :
THESE SIGNS ARE TO REMAIN IN PLACE BUT BE COVERED WHILE LANE CLOSURES FOR HANGING STEEL ARE IN USE.

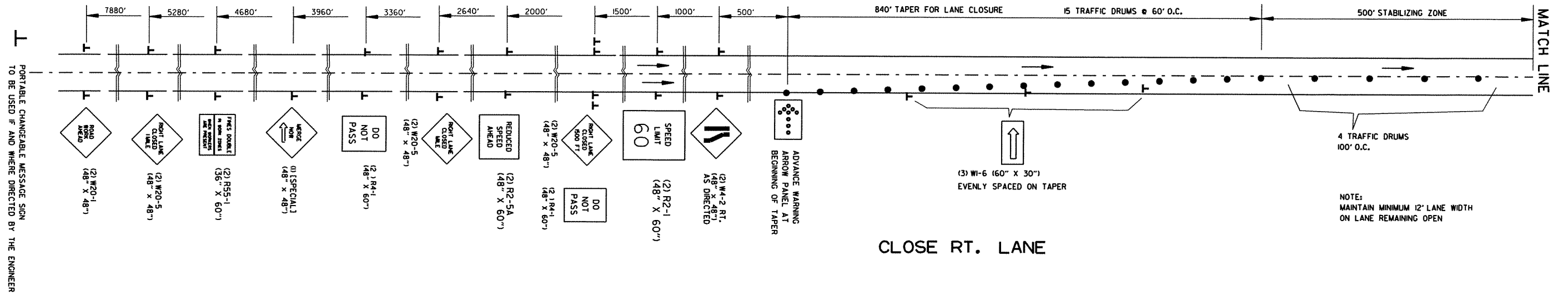
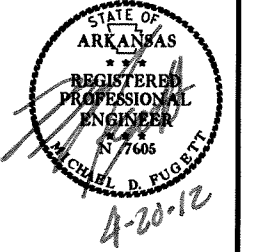
NOTE :
THESE SIGNS ARE TO REMAIN IN PLACE BUT BE COVERED WHILE LANE CLOSURES FOR HANGING STEEL ARE IN USE.

ADVANCE SIGNS AT BEGINNING AND END OF JOB
ALL STAGES

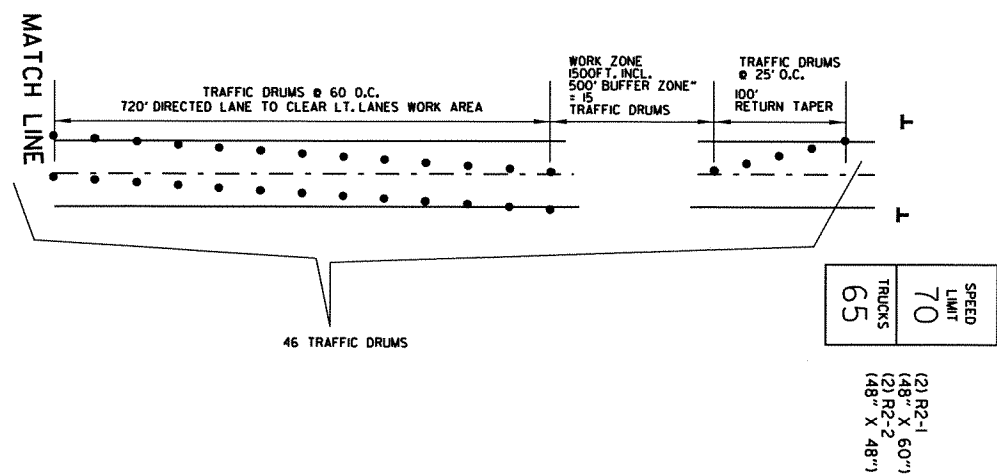
MAINTENANCE OF TRAFFIC
ADVANCE SIGNS ALL STAGES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.		20	134
				JOB NO. 110543				

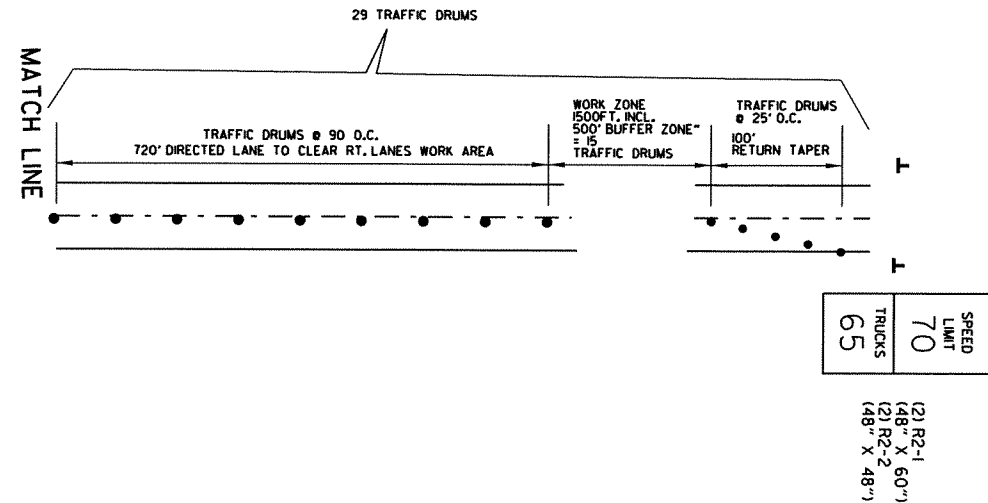
② MAINTENANCE OF TRAFFIC



CLOSE RT. LANE



DIVERSION FOR LT. LANE WORK ZONE



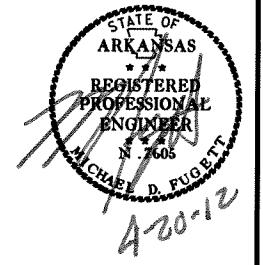
DIVERSION FOR RT. LANE WORK ZONE

NOTE:
QUANTITIES FOR TRAFFIC CONTROL SIGNS AND DEVICES ON THIS SHEET ARE GIVEN FOR WORK AT ONLY ONE LANE CLOSURE AT A TIME.

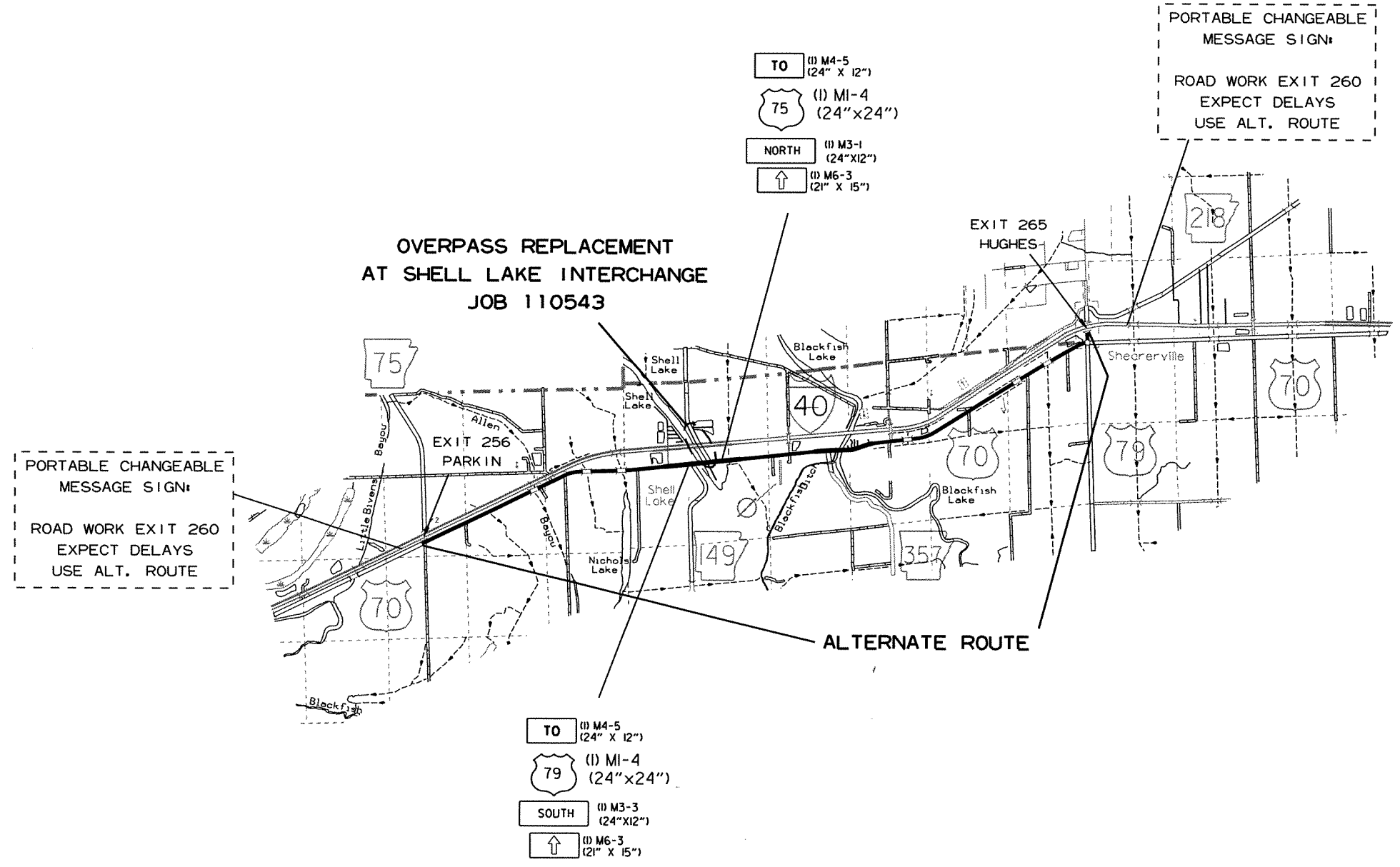
MAINTENANCE OF TRAFFIC
LANE CLOSURE FOR OPERATIONS
ON LEFT OR RIGHT SHOULDERS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.		21	134
				JOB NO.		110543		

② MAINTENANCE OF TRAFFIC



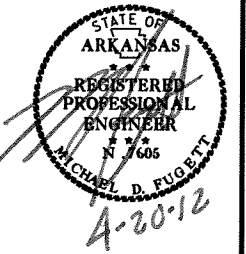
**OVERPASS REPLACEMENT
AT SHELL LAKE INTERCHANGE
JOB 110543**



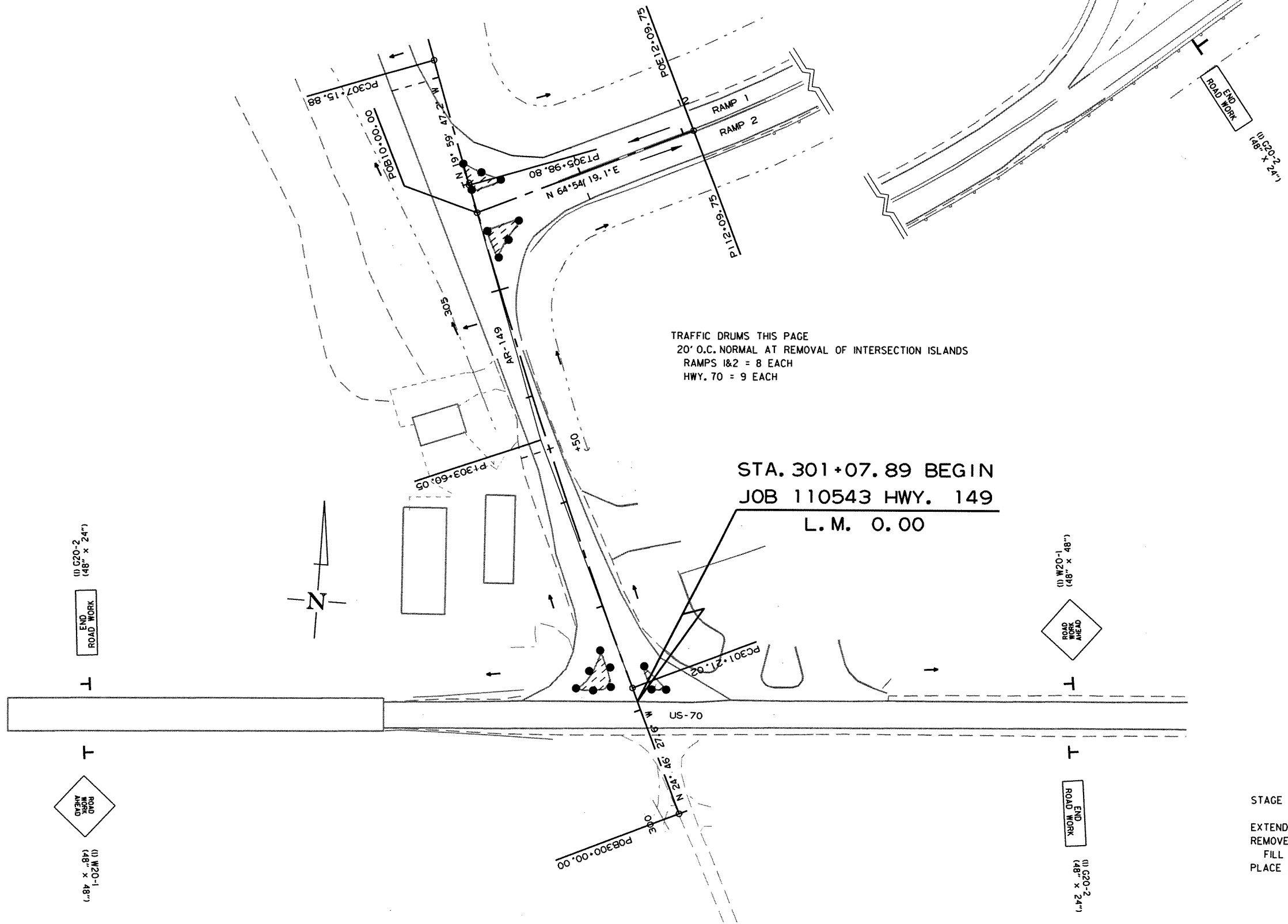
MAINTENANCE OF TRAFFIC
ALTERNATE ROUTE FOR TRAFFIC
DURING WORK AT
SHELL LAKE INTERCHANGE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.		22	134
JOB NO. 110543								

② MAINTENANCE OF TRAFFIC



CONSTRUCTION PAVEMENT MARKINGS
 REPLACE EDGE LINES & DBL CENTERLINE
 OVER ACHM FOR GRADE ADJUSTMENT AT
 JUNCTION OF RAMPS 1 & 2 = 2650 LIN.FT.



TRAFFIC DRUMS THIS PAGE
 20' O.C. NORMAL AT REMOVAL OF INTERSECTION ISLANDS
 RAMPS 1&2 = 8 EACH
 HWY. 70 = 9 EACH

STA. 301+07.89 BEGIN
 JOB 110543 HWY. 149
 L.M. 0.00



STAGE IA OPERATIONS
 EXTEND R.C. PIPE CROSS DRAIN STA. 323+66
 REMOVE INTERSECTION ISLANDS AT RAMPS & HWY. 70;
 FILL WITH PORTLAND CEMENT CONCRETE BASE
 PLACE ACHM FOR LEVELING AND CROSS-SLOPE ADJUSTMENTS

MAINTENANCE OF TRAFFIC
 SHELL LAKE STAGE 1-A

r110543.dgn MDT PAGES 04/18/2012

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
						110543	23	134

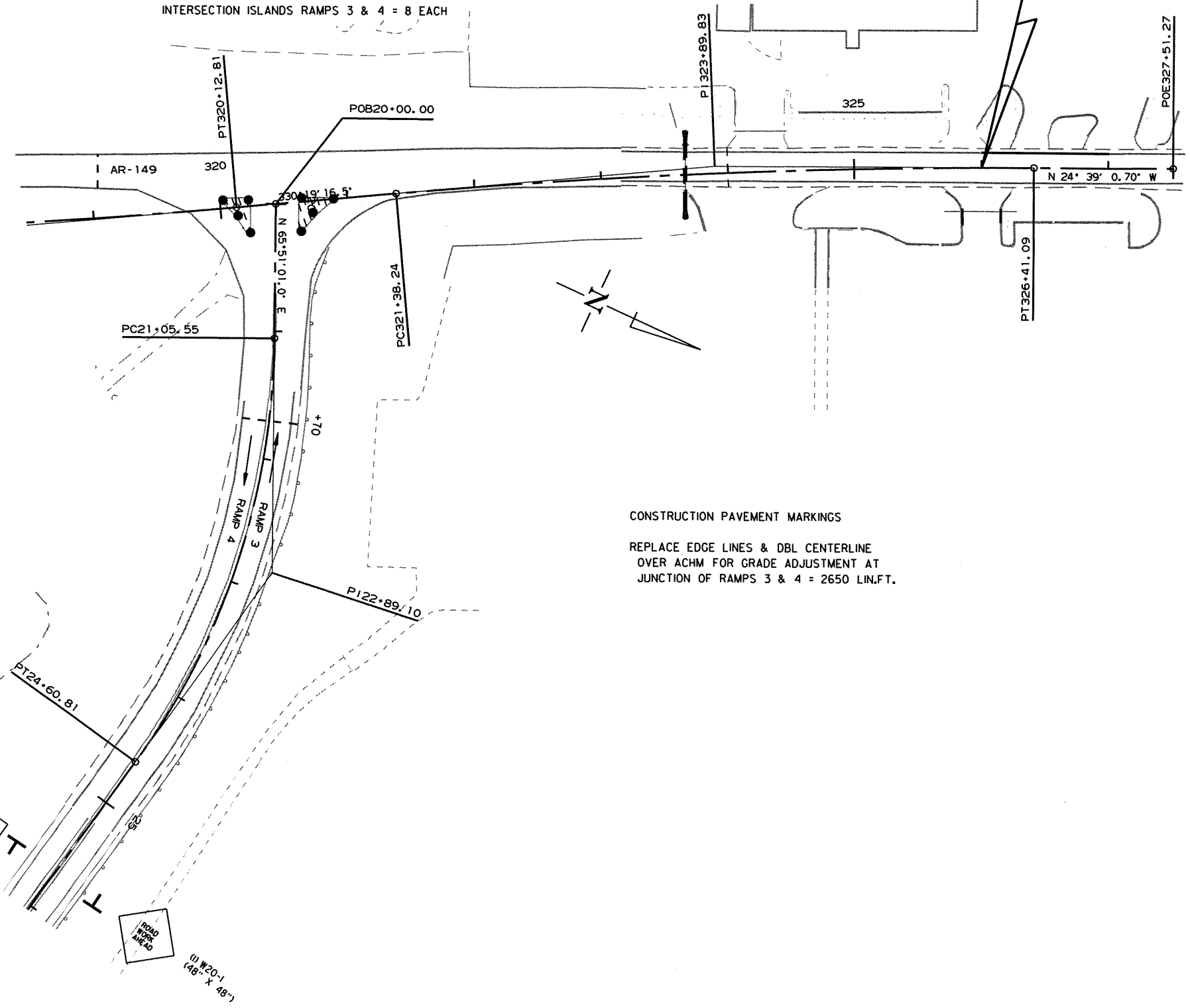
② MAINTENANCE OF TRAFFIC



4-20-12

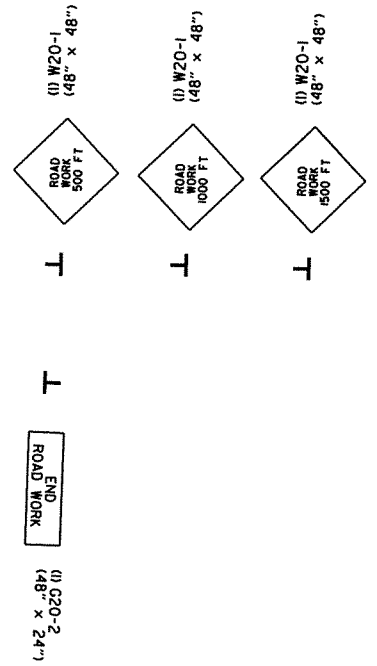
STA. 326+00 END
JOB 110543 HWY. 149

TRAFFIC DRUMS THIS PAGE
20' O.C. NORMAL AT REMOVAL OF
INTERSECTION ISLANDS RAMPS 3 & 4 = 8 EACH



CONSTRUCTION PAVEMENT MARKINGS

REPLACE EDGE LINES & DBL CENTERLINE
OVER ACHM FOR GRADE ADJUSTMENT AT
JUNCTION OF RAMPS 3 & 4 = 2650 LIN.FT.

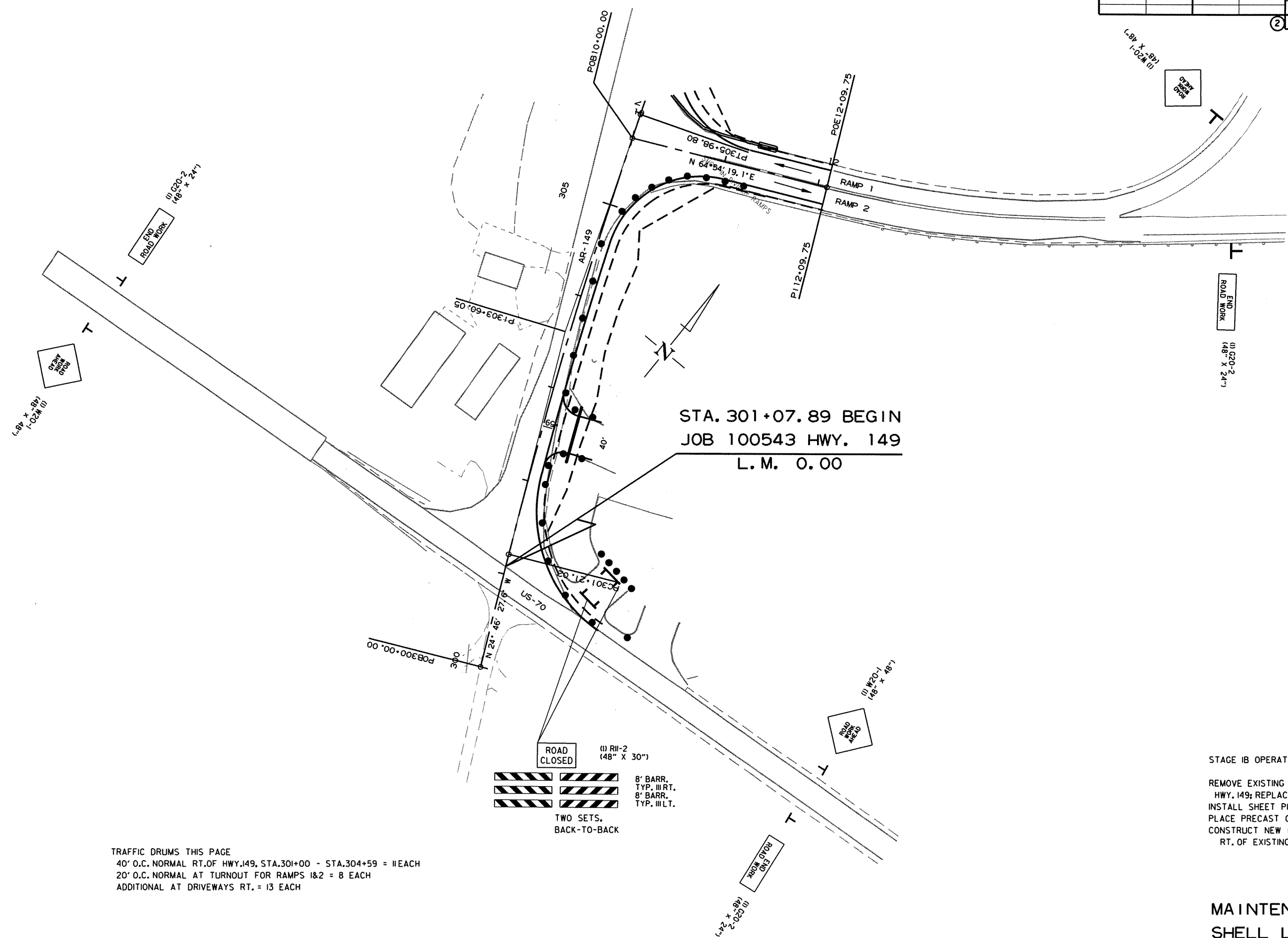
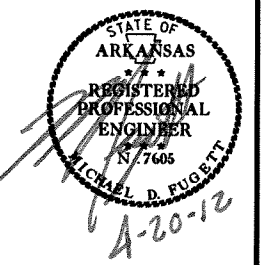


MAINTENANCE OF TRAFFIC
SHELL LAKE STAGE 1-A

r110543.dgn MDT PAGES 04/18/2012

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
JOB NO. 110543							24	134

② MAINTENANCE OF TRAFFIC



STA. 301+07.89 BEGIN
JOB 100543 HWY. 149
L. M. 0.00

- ROAD CLOSED
- (1) RII-2 (48" X 30")
- 8" BARR. TYP. III RT.
- 8" BARR. TYP. III LT.
- TWO SETS, BACK-TO-BACK

TRAFFIC DRUMS THIS PAGE
40' O.C. NORMAL RT. OF HWY. 149, STA. 301+00 - STA. 304+59 = 11 EACH
20' O.C. NORMAL AT TURNOUT FOR RAMP 1 & 2 = 8 EACH
ADDITIONAL AT DRIVEWAYS RT. = 13 EACH

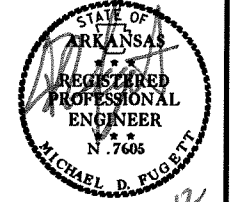
STAGE 1B OPERATIONS
REMOVE EXISTING GUARDRAIL RT. OF EXISTING HWY. 149; REPLACE WITH PRECAST CONC. BARRIER
INSTALL SHEET PILING
PLACE PRECAST CONC. BARRIER ON SHOULDERS OF I-40
CONSTRUCT NEW OVERPASS & APPROACHES RT. OF EXISTING

MAINTENANCE OF TRAFFIC
SHELL LAKE STAGE 1-B

r110543.dgn MDT PAGES 04/18/2012

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
						110543	25	134

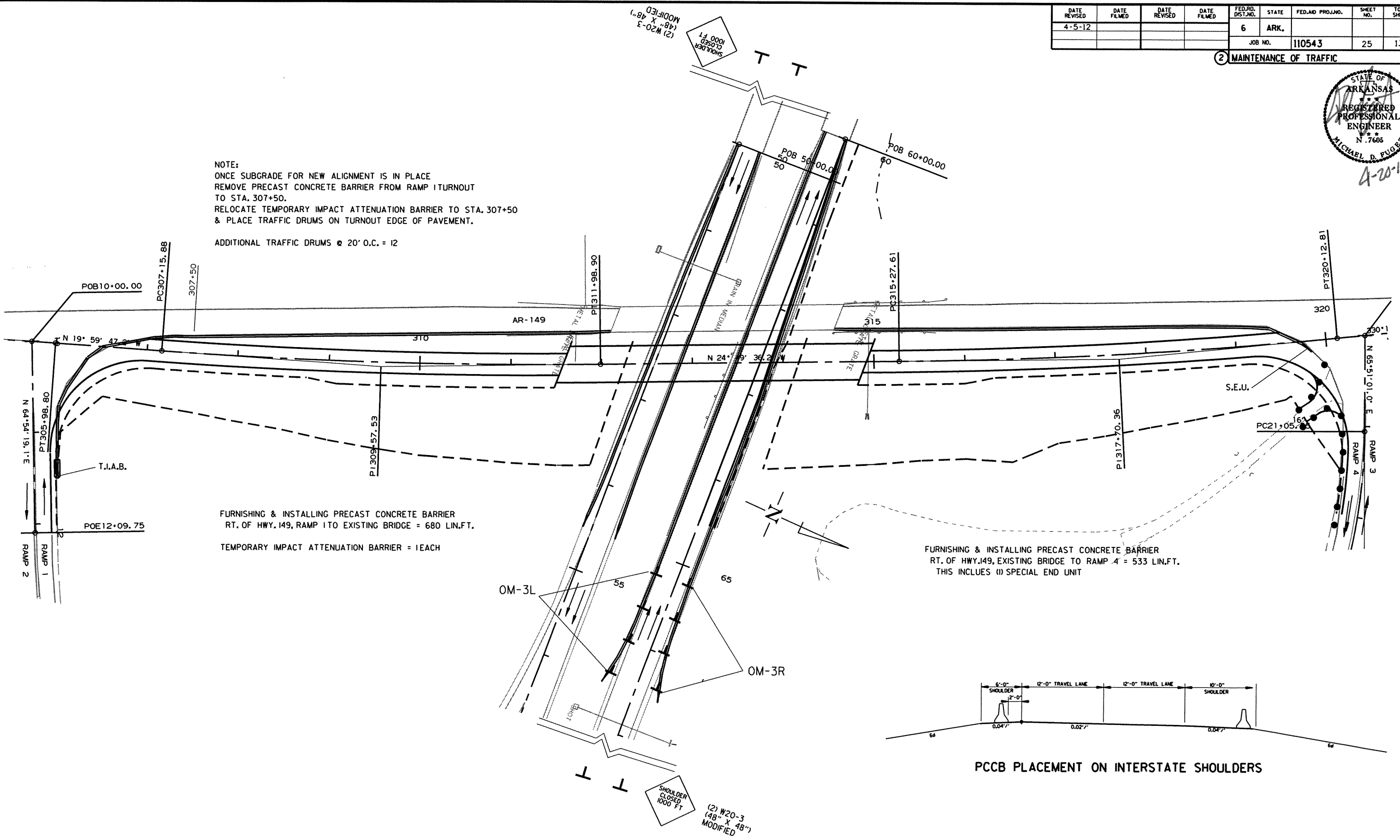
② MAINTENANCE OF TRAFFIC



4-20-12

NOTE:
 ONCE SUBGRADE FOR NEW ALIGNMENT IS IN PLACE
 REMOVE PRECAST CONCRETE BARRIER FROM RAMP 1 TURNOUT
 TO STA. 307+50.
 RELOCATE TEMPORARY IMPACT ATTENUATION BARRIER TO STA. 307+50
 & PLACE TRAFFIC DRUMS ON TURNOUT EDGE OF PAVEMENT.

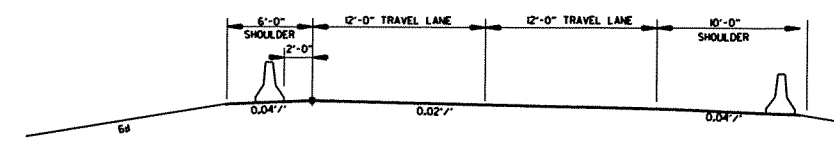
ADDITIONAL TRAFFIC DRUMS @ 20' O.C. = 12



FURNISHING & INSTALLING PRECAST CONCRETE BARRIER
 RT. OF HWY. 149, RAMP 1 TO EXISTING BRIDGE = 680 LIN.FT.

TEMPORARY IMPACT ATTENUATION BARRIER = 1 EACH

FURNISHING & INSTALLING PRECAST CONCRETE BARRIER
 RT. OF HWY. 149, EXISTING BRIDGE TO RAMP 4 = 533 LIN.FT.
 THIS INCLUDES (1) SPECIAL END UNIT



PCCB PLACEMENT ON INTERSTATE SHOULDERS

FURNISHING & INSTALLING PRECAST CONCRETE BARRIER
 LT. & RT. OF I-40 EASTBOUND LANES = 906 LIN.FT.
 THIS INCLUDES (2) SPECIAL END UNITS

FURNISHING & INSTALLING PRECAST CONCRETE BARRIER
 LT. & RT. OF I-40 WESTBOUND LANES = 1306 LIN.FT.
 THIS INCLUDES (2) SPECIAL END UNITS

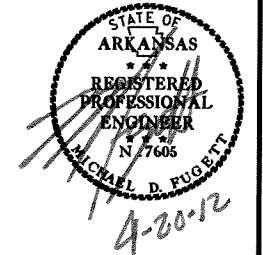
OM-3R = 4 EACH
 OM-3L = 4 EACH

TRAFFIC DRUMS THIS PAGE
 20' O.C. NORMAL RT OF RAMP 4 TURNOUT = 14 EACH

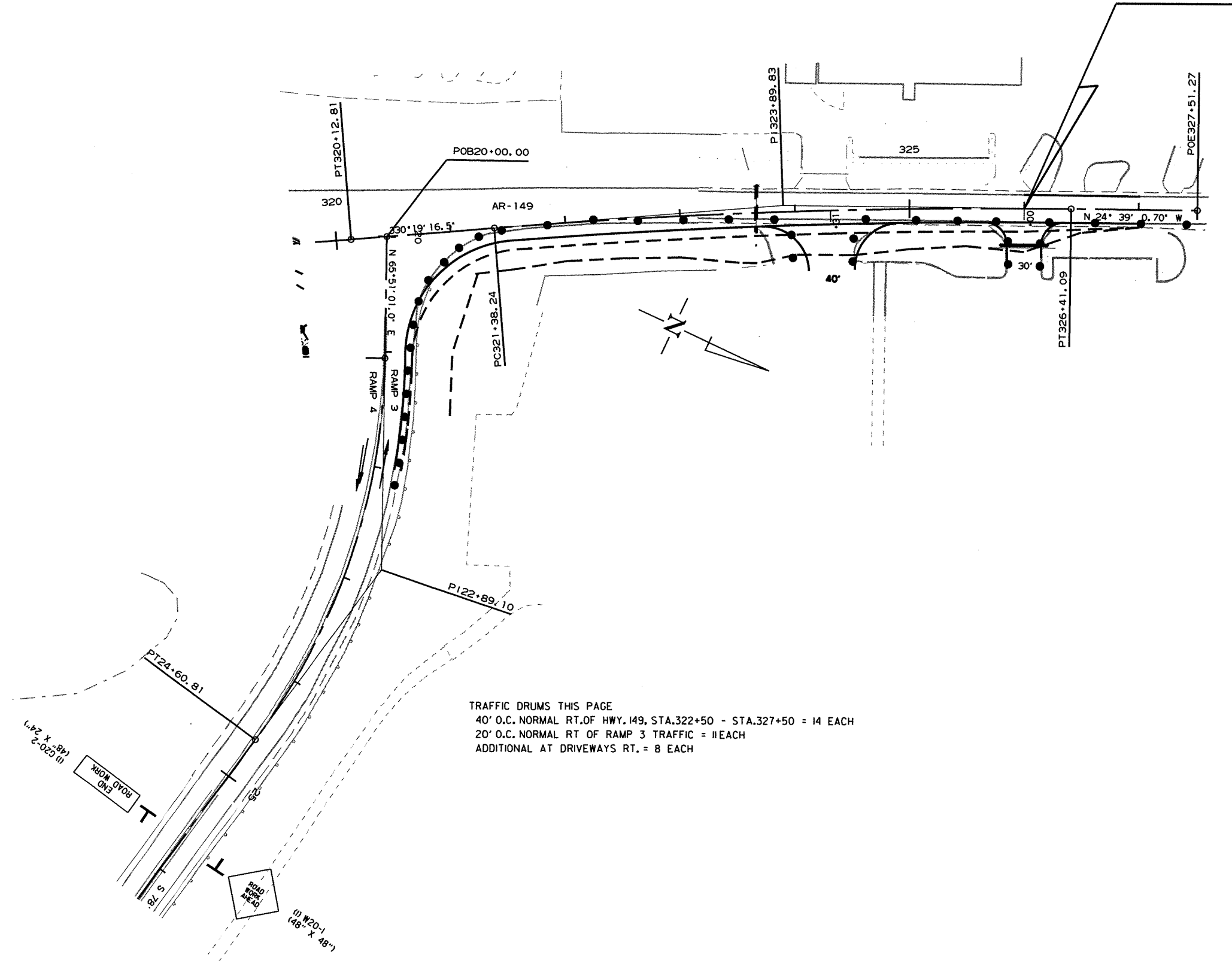
MAINTENANCE OF TRAFFIC
 SHELL LAKE STAGE 1-B

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS	
4-5-12				6	ARK.				
							JOB NO. 110543	26	134

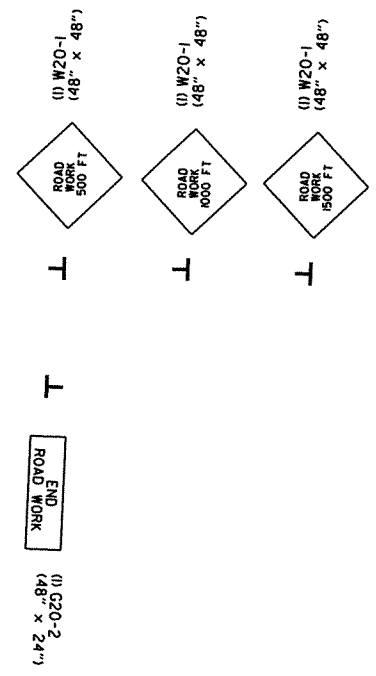
② MAINTENANCE OF TRAFFIC



STA. 326+00 END
JOB 100543 HWY. 149



TRAFFIC DRUMS THIS PAGE
 40' O.C. NORMAL RT. OF HWY. 149, STA. 322+50 - STA. 327+50 = 14 EACH
 20' O.C. NORMAL RT OF RAMP 3 TRAFFIC = 11 EACH
 ADDITIONAL AT DRIVEWAYS RT. = 8 EACH

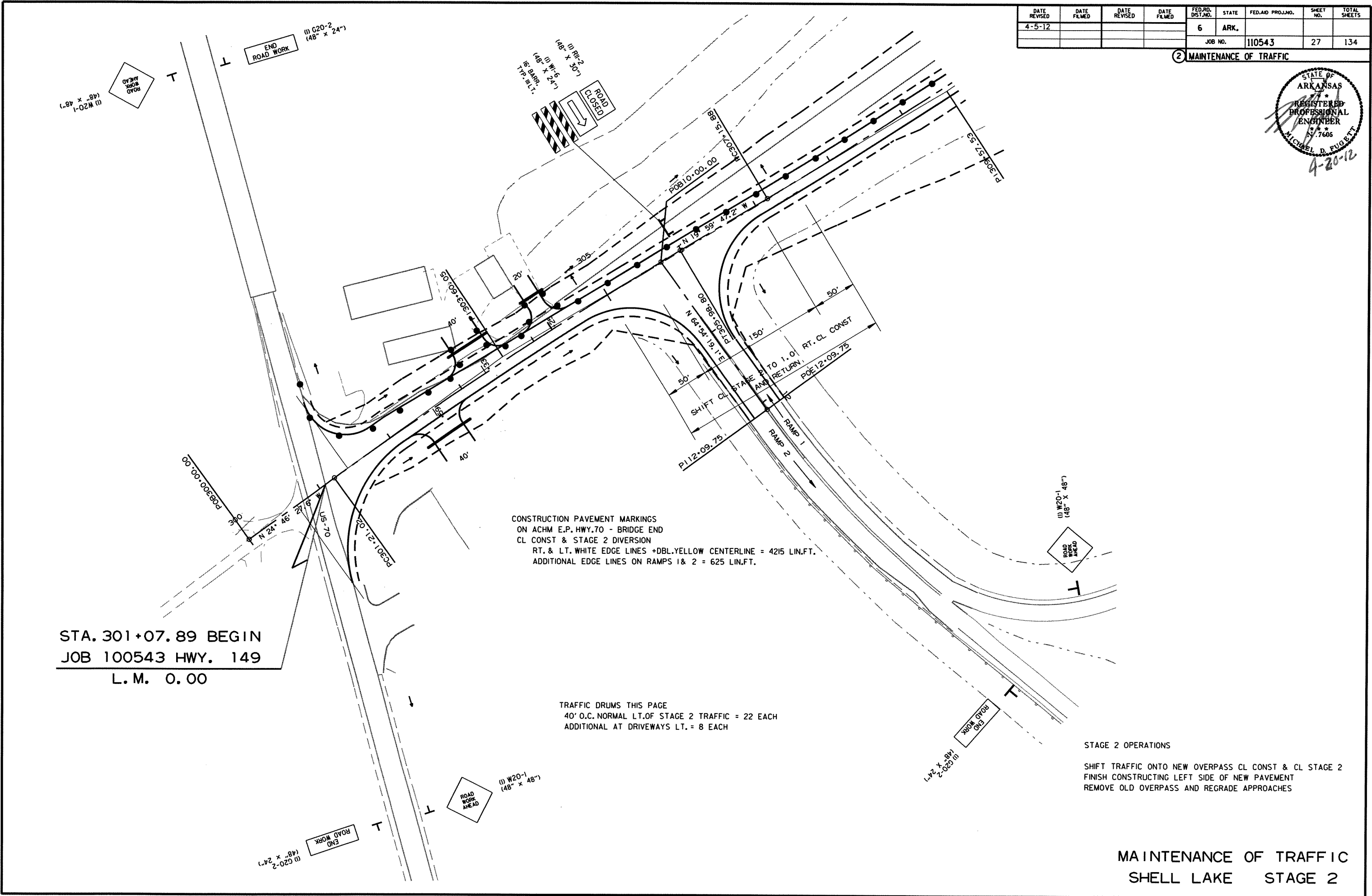
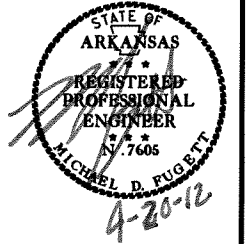


r110543.dgn MDT PAGES 04/18/2012

MAINTENANCE OF TRAFFIC
SHELL LAKE STAGE 1-B

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
JOB NO. 110543							27	134

② MAINTENANCE OF TRAFFIC



STA. 301+07.89 BEGIN
JOB 100543 HWY. 149
L.M. 0.00

CONSTRUCTION PAVEMENT MARKINGS
ON ACHM E.P. HWY. 70 - BRIDGE END
CL CONST & STAGE 2 DIVERSION
RT. & LT. WHITE EDGE LINES + DBL. YELLOW CENTERLINE = 4215 LIN. FT.
ADDITIONAL EDGE LINES ON RAMP 1 & 2 = 625 LIN. FT.

TRAFFIC DRUMS THIS PAGE
40' O.C. NORMAL LT. OF STAGE 2 TRAFFIC = 22 EACH
ADDITIONAL AT DRIVEWAYS LT. = 8 EACH

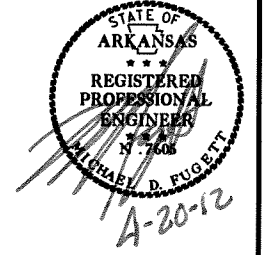
STAGE 2 OPERATIONS
SHIFT TRAFFIC ONTO NEW OVERPASS CL CONST & CL STAGE 2
FINISH CONSTRUCTING LEFT SIDE OF NEW PAVEMENT
REMOVE OLD OVERPASS AND REGRADE APPROACHES

MAINTENANCE OF TRAFFIC
SHELL LAKE STAGE 2

r110543.dgn MDT PAGES 04/12/2012

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. PROJ. NO.	STATE	FED. PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
						110543	28	134

② MAINTENANCE OF TRAFFIC

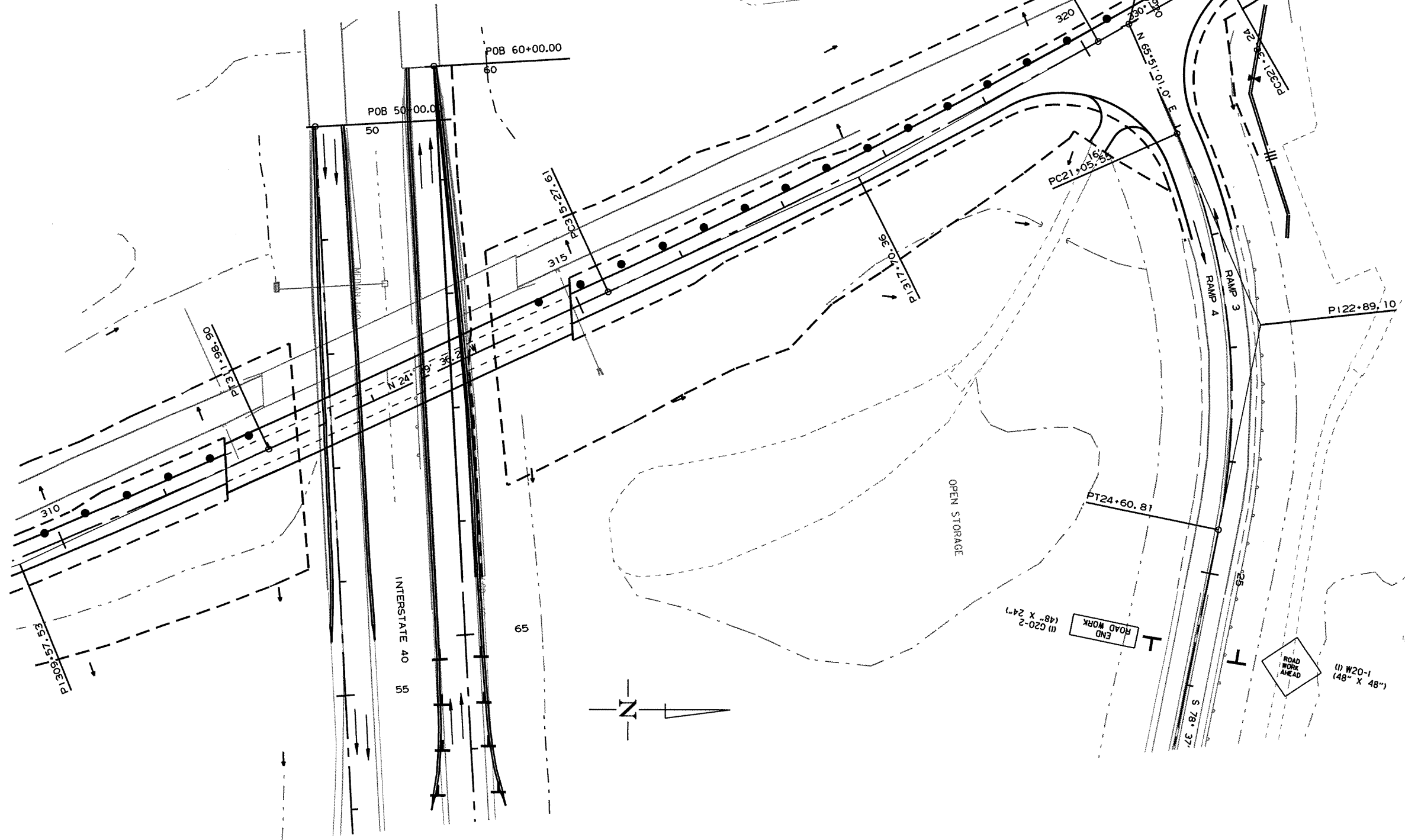


CONSTRUCTION PAVEMENT MARKINGS
ON BRIDGE DECK B.E. 311+57.33 - 314+91.67
RT. & LT. WHITE EDGE LINES = 670 LIN.FT.

HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS
ON BRIDGE DECK B.E. 311+57.33 - 314+91.67
DBL YELLOW CENTERLINE = 670 LIN.FT.

CONSTRUCTION PAVEMENT MARKINGS
ON ACHM B.E. 311+50 - STA. 326+00 CL CONST
RT. & LT. WHITE EDGE LINES+DBL.YELLOW CENTERLINE = 4433 LIN.FT.
ADDITIONAL EDGE LINES ON RAMPS 3 & 4 = 590 LIN.FT.

TRAFFIC DRUMS THIS PAGE
40' O.C. NORMAL LT.OF STAGE 2 TRAFFIC = 25 EACH

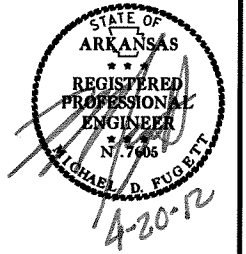


RETAIN PRECAST CONCRETE BARRIER
ALONG SHOULDERS OF I-40 FROM PREVIOUS STAGE.

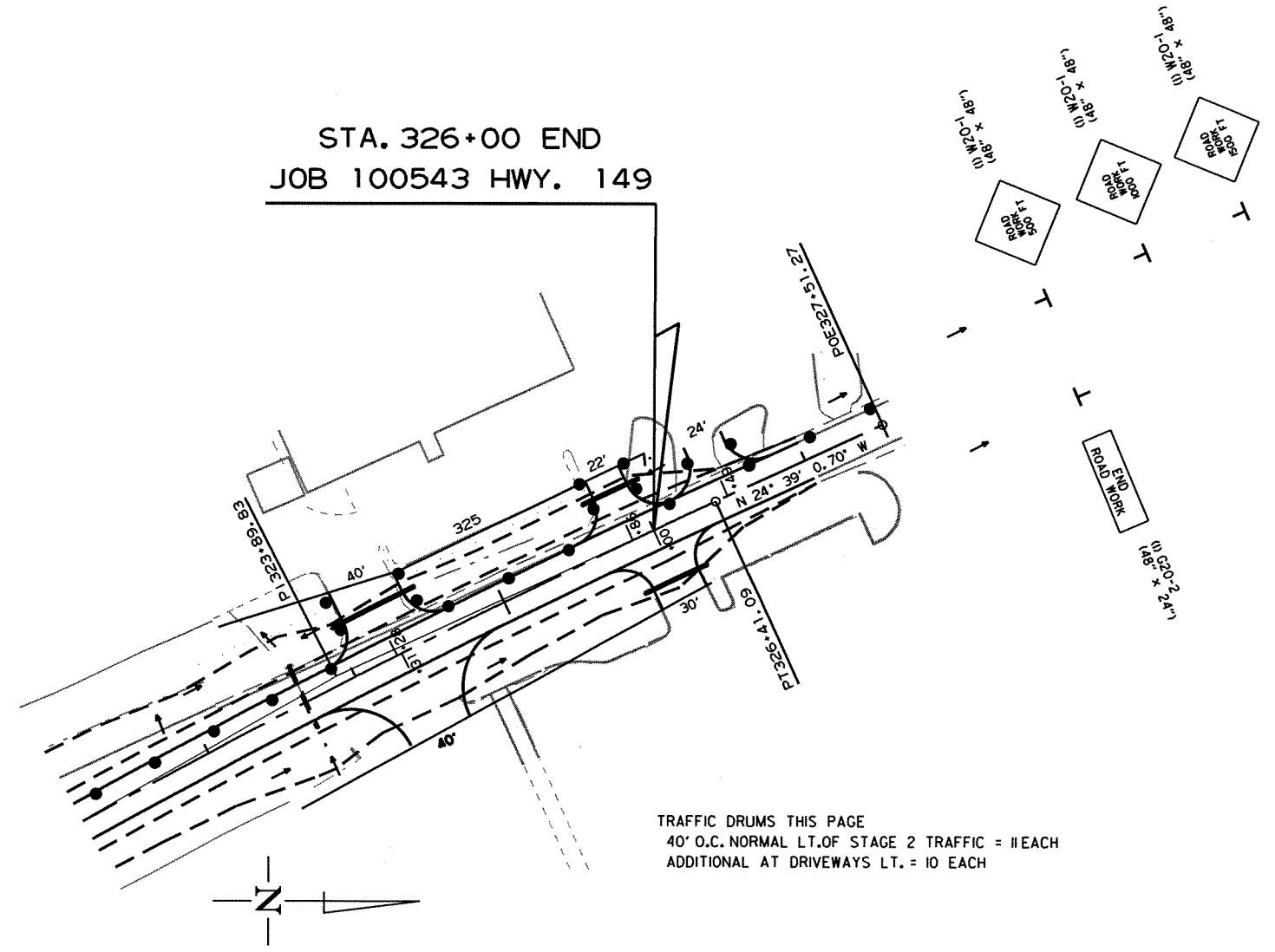
MAINTENANCE OF TRAFFIC
SHELL LAKE STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
						JOB NO. 110543	29	134

② MAINTENANCE OF TRAFFIC



STA. 326+00 END
JOB 100543 HWY. 149



TRAFFIC DRUMS THIS PAGE
40' O.C. NORMAL LT. OF STAGE 2 TRAFFIC = 11 EACH
ADDITIONAL AT DRIVEWAYS LT. = 10 EACH

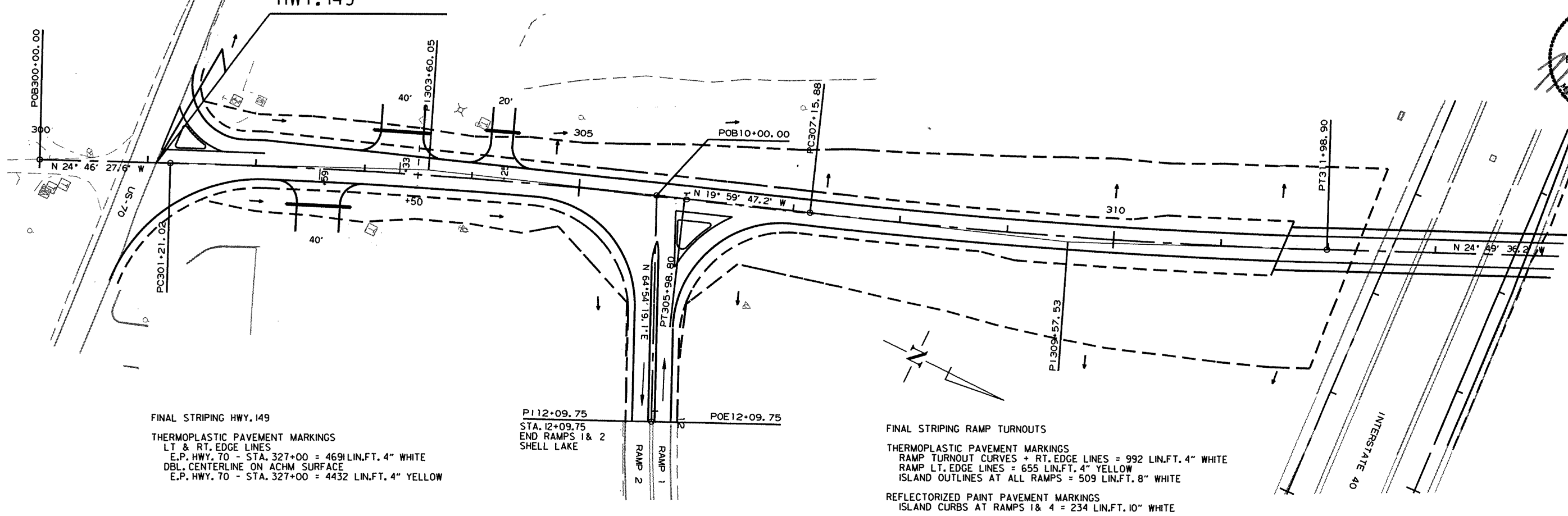
r110543.dgn MDT PAGES 04/12/2012

MAINTENANCE OF TRAFFIC
SHELL LAKE STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.		30	134
				JOB NO.		110543		

STA. 301+07.89
 BEGIN JOB 110543
 HWY. 149

2 PERMANENT PAVEMENT MARKING DETAILS

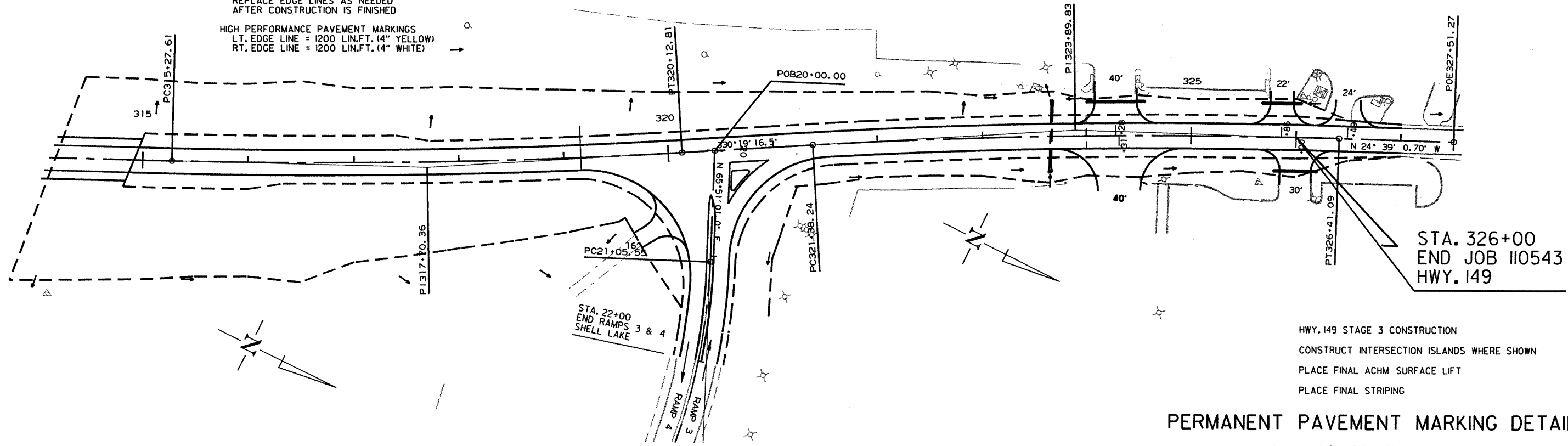


FINAL STRIPING HWY. 149
 THERMOPLASTIC PAVEMENT MARKINGS
 LT & RT. EDGE LINES
 E.P. HWY. 70 - STA. 327+00 = 4691 LIN.FT. 4" WHITE
 DBL. CENTERLINE ON ACHM SURFACE
 E.P. HWY. 70 - STA. 327+00 = 4432 LIN.FT. 4" YELLOW

P112+09.75
 STA. 12+09.75
 END RAMP 1 & 2
 SHELL LAKE

FINAL STRIPING RAMP TURNOUTS
 THERMOPLASTIC PAVEMENT MARKINGS
 RAMP TURNOUT CURVES + RT. EDGE LINES = 992 LIN.FT. 4" WHITE
 RAMP LT. EDGE LINES = 655 LIN.FT. 4" YELLOW
 ISLAND OUTLINES AT ALL RAMP = 509 LIN.FT. 8" WHITE
 REFLECTORIZED PAINT PAVEMENT MARKINGS
 ISLAND CURBS AT RAMP 1 & 4 = 234 LIN.FT. 10" WHITE

FINAL STRIPING 140 MAIN LANES
 REPLACE EDGE LINES AS NEEDED
 AFTER CONSTRUCTION IS FINISHED
 HIGH PERFORMANCE PAVEMENT MARKINGS
 LT. EDGE LINE = 1200 LIN.FT. (4" YELLOW)
 RT. EDGE LINE = 1200 LIN.FT. (4" WHITE)



STA. 326+00
 END JOB 110543
 HWY. 149

HWY. 149 STAGE 3 CONSTRUCTION
 CONSTRUCT INTERSECTION ISLANDS WHERE SHOWN
 PLACE FINAL ACHM SURFACE LIFT
 PLACE FINAL STRIPING

PERMANENT PAVEMENT MARKING DETAILS
 HWY. 149 [SHELL LAKE]

r110543.dgn PERM PAV MRKG DTLS 04/18/2012

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
				JOB NO.	110543		31	134

2 QUANTITIES



ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1-A	STAGE 1-B	STAGE 2	END OF JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMP. IMPACT ATTEN. BARR. (REPAIR)	ADVANCE WARNING ARROW PANEL	PORTABLE CHANGEABLE MESSAGE SIGN
								NO.	SQ. FT.		RIGHT	LEFT					
			LIN. FT. - EACH					NO.	SQ. FT.	EACH	LIN. FT.			EACH		DAY	WEEK
W20-1	ROAD WORK 1 MILE	48"x48"	4	4	4	4	4	4	64.0								
W20-1	ROAD WORK 1/2 MILE	48"x48"	4	4	4	4	4	4	64.0								
W20-1	ROAD WORK 1500 FT.	48"x48"	5	11	5	11	11	11	176.0								
W20-1	ROAD WORK 1000 FT.	48"x48"	1	1	1	1	1	1	16.0								
W20-1	ROAD WORK 500 FT.	48"x48"	1	1	1	1	1	1	16.0								
W20-1	ROAD WORK AHEAD	48"x48"	5	6	5	6	6	6	96.0								
G20-2	END ROAD WORK	48"x24"	9	9	9	9	9	9	72.0								
W20-3 MODIFIED	SHOULDER CLOSED 1000 FT	48"x48"		4	4		4	4	64.0								
R11-2	ROAD CLOSED	48"x30"		2	2		2	2	20.0								
OM-3L	OBJECT MARKER	12"x36"		4	4		4	4	12.0								
OM-3R	OBJECT MARKER	12"x36"		4	4		4	4	12.0								
W1-6	LARGE ARROW	48"x24"			2		2	2	16.0								
W1-6	LARGER ARROW	60"x30"		3		3	3	37.5									
R55-1	FINES DOUBLE IN WORK ZONES	36"x60"	4	6	4	6	6	6	90.0								
W20-5	RT. LANE CLOSED 1 MILE	48"x48"		2		2	2	2	32.0								
W20-5	RT. LANE CLOSED 1/2 MILE	48"x48"		2		2	2	2	32.0								
W20-5	RT. LANE CLOSED 1500 FT.	48"x48"		2		2	2	2	32.0								
W4-2 RT	RIGHT LANE CLOSED GRAPHIC	48"x48"		2		2	2	2	32.0								
SPECIAL 1	MERGE LEFT NOW	48"x48"		1		1	1	1	16.0								
R4-1	DO NOT PASS	48"x60"		4		4	4	4	80.0								
R2-5A	REDUCED SPEED AHEAD	48"x60"		2		2	2	2	40.0								
R2-1	SPEED LIMIT 60 MPH	48"x60"		2		2	2	2	40.0								
R2-1	SPEED LIMIT 70 MPH	48"x60"			2	2	2	2	40.0								
R2-2	TRUCK SPEED LIMIT 65 MPH	48"x48"			2	2	2	2	32.0								
M4-5	"TO"	24"x12"			2	2	2	2	4.0								
M5-1	U.S. 75 ROUTE PLATE	24"x24"			1	1	1	1	4.0								
M5-1	U.S. 79 ROUTE PLATE	24"x24"			1	1	1	1	4.0								
M3-1	"NORTH"	24"x12"			1	1	1	1	2.0								
M3-3	"SOUTH"	24"x12"			1	1	1	1	2.0								
M6-3	ARROW POINTING AHEAD	21"x15"			2	2	2	2	4.4								
	TRAFFIC DRUMS		25	123	76	65	123			123							
	TYPE III BARRICADE-RT. (8')			2			2				16						
	TYPE III BARRICADE-LT. (8')			2			2					16					
	TYPE III BARRICADE-RT. (16')				1		1				16						
	TYPE III BARRICADE-LT. (16')				1		1					16					
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER			3425			3425					3425					
	TEMPORARY IMPACT ATTENUATION BARRIER			1			1						1				
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)			1			1							1			
	ADVANCE WARNING ARROW PANEL			1		1	1								20		
	PORTABLE CHANGEABLE MESSAGE SIGN			3	5	5	2	5									252
TOTALS:								1151.9	123	32	32	3425	1	1	20		252

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1-A	STAGE 1-B	STAGE 2	END OF JOB	CONSTRUCTION PAVEMENT MARKINGS	THERMOPLASTIC PAVEMENT MARKINGS			REFLECTORIZED PAINT PAVEMENT MARKINGS	HIGH PERFORMANCE CONTRAST PAVEMENT MARKING	HIGH PERFORMANCE PAVEMENT MARKING			
						4"		8" WHITE	10"	4"	WHITE	YELLOW	WHITE	YELLOW
						WHITE	YELLOW							
CONSTRUCTION PAVEMENT MARKINGS	5300		10533		15833									
THERMOPLASTIC PAVEMENT MARKINGS WHITE (4")				5683		5683								
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4")				5087			5087							
THERMOPLASTIC PAVEMENT MARKINGS WHITE (8")				509				509						
REFLECTORIZED PAINT PAVEMENT MARKINGS WHITE (10")				234					234					
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")			670							670				
HIGH PERFORMANCE PAVEMENT MARKING WHITE (4")				1200							1200			
HIGH PERFORMANCE PAVEMENT MARKING YELLOW (4")				1200								1200		
TOTALS:					15833	5683	5087	509	234	670	1200	1200		

NOTE: I40, AND HWY. 149 ARE HIGH TRAFFIC VOLUME ROADS AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.

r110543.dgn 3/29/12

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
5/2/12								
				JOB NO.	110543		32	134

② QUANTITIES



CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
SHELL LAKE				
307+00	312+00	SHELL LAKE	5	5
320+00	322+00	SHELL LAKE	2	2
TOTALS:			7	7

REMOVAL AND DISPOSAL OF FENCE

STATION	LOCATION	FENCE
		LIN. FT.
SHELL LAKE		
312+44	HWY. 149 LT.	105
TOTAL:		105

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS
		EACH
SHELL LAKE		
323+59	18"X20' C.M. PIPE CULVERT ON LT.	1
324+26	18"X42' C.M. PIPE CULVERT ON LT.	1
325+99	18"X57' R.C. PIPE CULVERT ON RT.	1
TOTAL:		3

NOTE: QUANTITIES SHOWN ABOVE SHALL INCLUDE REMOVAL & DISPOSAL OF ALL HEADWALLS AND FLARED END SECTIONS IF APPLICABLE.

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	CURB	CONCRETE PIER PROTECTION	SIGN FOUNDATIONS	ORNAMENTAL FENCE	GUARDRAIL	LUMINAIRE POLE AND FOUNDATION	WALLS	SIGNS	PLANTERS
			LIN. FT.	LIN. FT.	EACH	LIN. FT.	EACH	LIN. FT.	EACH	EACH	
SHELL LAKE											
51+40	51+90	I40 EAST RT.					50				
52+10		I40 EAST RT.		31							
62+04		I40 WEST LT.		31							
62+19	64+49	I40 WEST LT.					230				
303+00		HWY. 149 RT.								1	
303+00		HWY. 149 RT.			1						
303+08		HWY. 149 RT.								1	
303+53		HWY. 149 LT.								1	
303+77		HWY. 149 LT.								1	
305+30	305+57	HWY. 149 RT.	92		2						
305+92	306+19	HWY. 149 RT.	93		2						
310+95	311+90	HWY. 149 LT.					100				
311+07	312+02	HWY. 149 LT.					100				
314+55	315+68	HWY. 149 LT.					115				
314+67	315+82	HWY. 149 LT.					115				
320+00	320+24	HWY. 149 RT.	90		2						
320+60	320+90	HWY. 149 RT.	92		2						
320+71		HWY. 149 LT.								1	
322+05	323+98	HWY. 149 LT.									
322+64		HWY. 149 LT.					195				
323+69	323+80	HWY. 149 RT.	30							1	
323+76		HWY. 149 LT.								1	
323+99		HWY. 149 LT.									1
324+48		HWY. 149 LT.									1
324+51	325+20	HWY. 149 RT.	109								
324+73		HWY. 149 RT.						1			
325+70	325+85	HWY. 149 RT.	32								
325+74		HWY. 149 LT.							4		
325+97	326+00	HWY. 149 LT.	6						12		
326+02	326+15	HWY. 149 LT.									
326+15	326+24	HWY. 149 RT.	26								
326+20		HWY. 149 LT.								1	
326+20		HWY. 149 RT.								1	
326+26	326+32	HWY. 149 LT.	25								
326+55	236+70	HWY. 149 LT.	16								
326+69		HWY. 149 LT.								1	
10+33	11+25	HWY. 149 RAMP 1 RT.					123				
10+78	12+00	HWY. 149 RAMP 1					244				
20+33	21+50	HWY. 149 RAMP 2 LT.					145				
20+70	22+00	HWY. 149 RAMP 2					260				
TOTALS:			611	62	9	195	1482	1	16	10	2

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
SHELL LAKE		
311+50	RIGHT CORNER OF BRIDGE END	1
TOTAL:		1

NOTE: SHOWN FOR INFORMATION ONLY. BENCH MARKS SHALL BE FURNISHED AND PLACED BY STATE FORCES.

CONCRETE COMBINATION CURB AND GUTTER

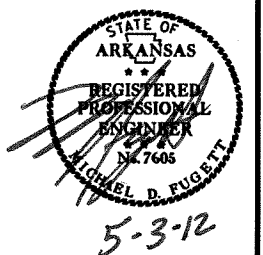
STATION	STATION	LOCATION	TYPE A (1' 6")
			LIN. FT.
SHELL LAKE			
326+33	326+37	HWY. 149 LT.	13
326+62	326+63	HWY. 149 LT.	4
TOTAL:			17

ASPHALT CURB

STATION	STATION	LOCATION	ASPHALT CURB
			LIN. FT.
SHELL LAKE			
307+12	311+25	HWY. 149 LT.	412
307+12	311+10	HWY. 149 RT.	400
315+23	319+05	HWY. 149 RT.	364
315+39	319+05	HWY. 149 LT.	365
TOTAL:			1561

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
5/2/12						JOB NO. 110543	33	134

2 QUANTITIES



EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	COMPACTED EMBANKMENT (SPECIAL)	** GEOGRID REINFORCEMENT	* SOIL STABILIZATION	
			CU. YD.				SQ. YD.	TON
SHELL LAKE								
301+08	327+00	STAGE 1-HWY. 149 RT.	35920	839	72490	149841		
301+08	327+00	STAGE 2-HWY. 149 LT.	4358	12				
51+50	54+00	I-40 EASTBOUND RT.	2075	8				
60+50	64+00	I-40 WESTBOUND LT.	2467	95				
10+12	12+00	STAGE 1-RAMP 1 RT.	19	46				
10+12	12+00	STAGE 2-RAMP 1 LT.	16	186				
20+12	22+00	STAGE 1-RAMP 2 RT.	22	492				
20+12	22+00	STAGE 2-RAMP 2 LT.	14	222				
301+08	327+00	APPROACHES		520				
ENTIRE PROJECT	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER						100	
TOTALS:			44891	2420	72490	149841	100	

* QUANTITY ESTIMATED.
 SEE SECTION 104.03 OF THE STD. SPECS.
 ** QUANTITY ESTIMATED FOR BIDDING PURPOSES ONLY, NOT FOR PAYMENT.
 SEE SPECIAL PROVISION "GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION".

CONCRETE DITCH PAVING

STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
		LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
SHELL LAKE						
307+10	HWY. 149 LT.	62.00	4	27.56	27.56	0.35
307+10	HWY. 149 RT.	41.00	4	18.22	18.22	0.23
319+07	HWY. 149 LT.	78.00	4	34.67	34.67	0.44
319+07	HWY. 149 RT.	49.00	4	21.78	21.78	0.27
TOTALS:				102.23	102.23	1.29

BASIS OF ESTIMATE:
 WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH FEET	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC						
SHELL LAKE												
303+00	35	7	48.50	90	29	7.50	35' RT.	0-5	ND	NP	A-2-4(0)	BR/GR
303+00	35	7	48.40	90	29	7.70	5' RT.	0-5	ND	NP	A-4(0)	BR/GR
303+00	35	7	48.50	90	29	7.50	35' RT.	0-5	ND	NP	A-4(0)	BR/GR
326+00	35	8	8.90	90	29	19.10	3' LT.	0-5	71	48	A-7-6(47)	BROWN

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

IMPACT ATTENUATION BARRIER

STATION	LOCATION	(TYPE A)
		EACH
SHELL LAKE		
52+15	I-40 EAST LT.	1
52+59	I-40 EAST LT.	1
TOTAL:		2

DUMPED RIPRAP AND FILTER BLANKET

STATION	LOCATION	DUMPED RIPRAP (GROUTED)	FILTER BLANKET
		CU. YDS.	SQ. YDS.
* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			
TOTALS:		20	40

*NOTE: QUANTITIES ARE ESTIMATED.
 SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS
 NOTE: FILTER BLANKET SHALL BE GEOTEXTILE FABRIC (TYPE 5).

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)	ROCK DITCH CHECKS (E-6)	DROP INLET SILT FENCE (E-7)	SILT FENCE (E-11)	DIVERSION DITCH (E-8)	SLOPE DRAIN (E-12)		SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL	
			ACRE	TON	ACRE	M.GAL.		ACRE		M.GAL.	BAG	CU.YD.			LINE FT.				CU.YD.		
SHELL LAKE																					
301+08	327+00	HWY. 149 STAGE 1-RT.	2.83	5.66	2.83	288.7	2.83						110	24	100	2674	674	76	4		116
301+08	327+00	HWY. 149 STAGE 2-LT.	1.42	2.84	1.42	144.8	1.42						44	12		1770					72
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.																					
TOTALS:			4.25	8.50	4.25	433.50	4.25	6.00	6.00	122.4	88	18	1000	674	76	4	222	222	269		

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.....22 BAGS / LOCATION
 ROCK DITCH CHECKS.....3 CU.YD. / 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.

*QUANTITIES ARE ESTIMATED.
 SEE SECTION 104.03 OF THE STD. SPECS.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
5/2/12						JOB NO. 110543	34	134

② QUANTITIES



5-3-12

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	GUARDRAIL (TYPE B)	THREE BEAM GUARDRAIL TERMINAL	TERMINAL ANCHOR POSTS		GUARDRAIL TERMINAL (TYPE 2)
			LIN. FT.			(TYPE 1)	(TYPE 2)	
SHELL LAKE								
310+58.94	311+52.69	HWY. 149 LT. SIDE	75		1			1
309+18.42	311+37.17	HWY. 149 RT. SIDE	150		1			1
315+11.83	317+30.58	HWY. 149 LT. SIDE	150		1			1
314+96.31	315+90.06	HWY. 149 RT. SIDE	75		1			1
51+40.00	51+65.00	I-40 EAST RT. SIDE	25			1		
61+90.00	62+40.00	I-40 WEST LT. SIDE						1
11+00.00	11+25.00	HWY. 149 RAMP 1 RT. SIDE	25			1		
10+78.00	12+00.00	HWY. 149 RAMP 1 MEDIAN		122			1	
21+00.00	21+50.00	HWY. 149 RAMP 2 LT. SIDE	50			1		
20+70.00	22+00.00	HWY. 149 RAMP 2 MEDIAN		130			1	
TOTALS:			550	252	4	3	2	5

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING CU.YD.
ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	25
TOTAL:	25

NOTE: QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

CONCRETE ISLAND

STATION	LOCATION	CURB FACE TYPE	CONCRETE ISLAND SQ.YD.
SHELL LAKE			
306+12	HWY. 149 RAMP 1	B	60
320+69	HWY. 149 RAMP 2	B	15
TOTAL:			75

APPROACH GUTTERS AND SLABS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE C)	APPROACH SLABS TYPE SPECIAL 3	REINFORCING STEEL RDWY. (GR 60)	AGGREGATE BASE CRS. (CLASS 7)	DROP INLETS (TYPE N2)	CONCRETE SPILLWAY (TYPE A)	12" ZINC COATED (GALVANIZED) CORR. STEEL PIPE CULVERTS (16 GAUGE)	REINFORCED CONCRETE PIPE CULVERT (CLASS III)
			CU.YD.		POUND	TON	EACH	LIN. FT.	18"	
SHELL LAKE										
311+13.07	311+49.57	LT. SIDE	14.79		807		1			48
311+20.83	311+57.33	LANES		61.21	7322	56.8				
311+28.59	311+65.09	RT. SIDE	14.79		807		1	1	86	
314+83.91	315+20.41	LT. SIDE	14.79		807		1			48
314+91.67	315+28.17	LANES		61.21	7322	56.8				
314+99.43	315+35.93	RT. SIDE	14.79		807		1	1	84	
TOTALS:			59.16	122.42	17872	113.6	4	2	170	96

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

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS LIN. FT.	UNDERDRAIN OUTLET PROTECTORS EACH
ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER				
TOTALS:			1000	6

* NOTE: QUANTITIES ARE ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

UNDERDRAINS SHALL BE STUBBED INTO THE PROPOSED DROP INLET IF AND WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR THIS TO BE INCLUDED IN THE UNIT PRICE BID FOR 4" PIPE UNDERDRAIN.

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE A) LIN. FT.
SHELL LAKE			
311+65	312+43	HWY. 149 LT.	169
320+73	321+57	HWY. 149 RT.	212
TOTAL:			381

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE (CLASS III)	FLARED END SECTIONS FOR R.C. PIPE	SOLID SODDING SQ.YD.	WATER M.GAL.	STD. DWG. NOS.
		18" LIN. FT.	18" EACH			
SHELL LAKE						
323+66	EXTEND R.C. PIPE CULVERT 4' LT. & 12' RT. W/FES LT. & RT.	24	2	10	0.13	FES-1, FES-2, PCC-1
TOTALS:		24	2	10	0.13	

BASIS OF ESTIMATE:
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.

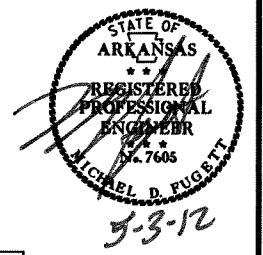
NOTE: FOR R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.

CONCRETE BARRIER WALL

STATION	LOCATION	(PIER PROTECTION TYPE A) LIN. FT.
SHELL LAKE		
52+36	I-40 EAST LT.	29
62+84	I-40 WEST RT.	29
TOTAL:		58

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
5/2/12						JOB NO. 110543	35	134

2 QUANTITIES



DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH FEET	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7) TON	SIDE DRAINS 18" LIN. FT.
				SQ. YD.	TON		
SHELL LAKE							
324+28	LT.	HWY. 149 / DRIVE	40	112.6	12.4	46.0	50
324+31	RT.	HWY. 149 / DRIVE	40	179.3	19.7	73.2	
325+86	LT.	HWY. 149 / DRIVE	22	45.6	5.0	18.6	32
326+00	RT.	HWY. 149 / DRIVE	30	84.0	9.2	34.3	40
326+49	LT.	HWY. 149 / DRIVE	24	58.7	6.5	24.0	
20+64	RT.	HWY. 149 / RAMP 2 ACCESS DRIVE	16	50.0	5.5	20.4	
ENTIRE PROJECT TEMPORARY DRIVES						200.0	
TOTALS:					58.3	416.5	122

BASIS OF ESTIMATE:
 ACHM SURFACE COURSE (1/2").....94.7% MIN. AGGR.....5.3% ASPHALT BINDER
 MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
 * QUANTITY ESTIMATED
 SEE SECTION 104.03 OF THE STD. SPECS.
 TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
 NOTE: FOR R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.
 NOTE: FOR C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

CONCRETE BASE

STATION	LOCATION	PORTLAND CEMENT CONCRETE BASE
		9" U.T. SQ. YD.
SHELL LAKE		
301+17	HWY. 149 RT.	17.0
301+38	HWY. 149 LT.	50.4
305+50	HWY. 149 RT.	49.3
306+00	HWY. 149 RT.	45.9
320+12	HWY. 149 RT.	40.4
320+70	HWY. 149 RT.	43.8
TOTAL:		246.8

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	15	30
TOTALS:	15	30

BASIS OF ESTIMATE:
 ASPHALT CONCRETE PATCHING FOR MAINT. OF TRAFFIC=25 TONS/MI
 TACK COAT = 50 GAL/MI

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	25
TOTAL:	25

NOTE: QUANTITY IS ESTIMATED
 SEE SECTION 104.03 OF THE STD. SPECS.

COLD MILLING PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
SHELL LAKE				
301+08	302+08	HWY. 149	24	266.67
326+00	327+00	HWY. 149	24	733.89
11+00	12+00	HWY. 149 RAMP 1	30	333.33
21+00	22+00	HWY. 149 RAMP 2	30	333.33
TOTAL:				1667.22

NOTE: AVERAGE MILLING DEPTH 1".

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH FEET	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")			
				TON / STATION	TON	TOTAL WID. FEET	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 76-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 76-22 TON	AVG. WID. FEET	SQ.YD.	POUND / SQ.YD.	PG 76-22 TON
HWY. 149 - SHELL LAKE																					
301+08	302+08	HWY. 149	100.0	216.00	216.0	VAR.	1009.8	0.10	101.0									VAR.	1009.8	220.0	111.1
301+08	307+50	HWY. 149 LEVELING	642.0			24.0	1712.0	0.10	171.2									VAR.		220.0	122.1
302+08	305+28	HWY. 149	320.0	247.25	791.2	47.5	1688.9	0.30	506.7	12.8	455.1	550.0	125.2	12.5	444.4	330.0	73.3	74.3	2641.8	220.0	290.6
305+28	307+11	HWY. 149	183.0	216.00	395.3	41.5	843.8	0.03	25.3	6.8	138.3	550.0	38.0	6.5	132.2	330.0	21.8	46.3	941.4	220.0	103.6
307+11	307+50	HWY. 149	39.0	273.50	106.7	41.5	179.8	0.03	5.4	6.8	29.5	550.0	8.1	6.5	28.2	330.0	4.7	47.8	207.1	220.0	22.8
307+50	311+21	HWY. 149	371.0	338.25	1254.9	85.5	3524.5	0.03	105.7	28.8	1187.2	550.0	326.5	28.5	1174.8	330.0	193.8	69.8	2877.3	220.0	316.5
315+28	319+05	HWY. 149	377.0	338.25	1275.2	85.5	3581.5	0.03	107.4	28.8	1206.4	550.0	331.8	28.5	1193.8	330.0	197.0	69.8	2923.8	220.0	321.6
319+05	320+00	HWY. 149	95.0	288.80	274.4	85.5	902.5	0.03	27.1	28.8	304.0	550.0	83.6	28.5	300.8	330.0	49.6	68.3	720.9	220.0	79.3
320+00	326+00	HWY. 149	600.0	206.00	1236.0	41.5	2766.7	0.03	83.0	6.8	453.3	550.0	124.7	6.5	433.3	330.0	71.5	46.3	3086.7	220.0	339.5
320+00	326+00	HWY. 149 LEVELING	600.0			24.0	1600.0	0.10	160.0									VAR.		220.0	174.5
326+00	327+00	HWY. 149 TRANSITION	100.0	194.50	194.5	36.0	400.0	0.10	40.0	6.8	75.6	550.0	20.8	6.5	72.2	330.0	11.9	42.3	470.0	220.0	51.7
10+12	11+00	RAMP 1	88.0	VAR.	111.0	VAR.	1104.0	0.03	33.1	VAR.	394.6	550.0	108.5	VAR.	394.6	330.0	65.1	VAR.	1104.0	220.0	121.4
10+12	11+00	RAMP 1 LEVELING	88.0			VAR.	1104.0	0.10	110.4									VAR.		220.0	50.3
11+00	12+00	RAMP 1 TRANSITION	100.0			48.0	533.3	0.10	53.3									48.0	533.3	220.0	58.7
20+12	21+00	RAMP 2	88.0			VAR.	1129.6	0.03	33.9	VAR.	442.7	550.0	121.7	VAR.	442.7	330.0	73.0	VAR.	1129.6	220.0	124.3
20+12	21+00	RAMP 2 LEVELING	88.0			VAR.	1129.6	0.10	113.0									VAR.		220.0	240.1
21+00	22+00	RAMP 2 TRANSITION	100.0			48.0	533.3	0.10	53.3									48.0	533.3	220.0	58.7
		ADDITIONAL FOR GUARDRAIL	624.0	57.00	355.7													5.5	381.3	220.0	41.9
TOTALS:					6210.9				1729.8				1288.9			761.7				2628.7	

BASIS OF ESTIMATE:
 ACHM SURFACE COURSE (1/2").....94.7% MIN. AGGR.....5.3% ASPHALT BINDER
 ACHM BINDER COURSE (1").....95.8% MIN. AGGR.....4.2% ASPHALT BINDER
 ACHM BASE COURSE (1 1/2").....96% MIN. AGGR.....4% ASPHALT BINDER
 MAXIMUM NUMBER OF GYRATIONS = 205 FOR PG 76-22

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.	110543		36	134
				① 07234	QUANTITIES		52601	

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 110543

BRIDGE NO. CODE NO. NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	SP & 802	802	803	SS & 804	SS & 804	SP & 805	807	807	808	812	816	SP JOB 110543	SP JOB 110543
		ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. .)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS I PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	① STEEL SHELL PILING (18" DIAMETER)	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50)	② PAINTING STRUCTURAL STEEL	ELASTOMERIC BEARINGS	BRIDGE NAME PLATE (TYPE D)	CONCRETE RIPRAP	SILICONE JOINT SEALANT	SHORING (SITE NO. .)
		UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LB.	TON	CU. IN.	EACH	CU. YD.	LIN. FT.	LUMP SUM
07234 X771 Highway 149	BENT NO. 1			6	36.44			0.3	5,005	519	450	813			1,920.0		135
	BENT NO. 2			192	118.43				16,645		900				1,993.8		
	BENT NO. 3			144	120.96				19,760		1,200				2,175.0		
	BENT NO. 4			192	119.40				16,645		900				2,681.2		
	BENT NO. 5			10	36.57			0.3	5,005	519	450	813			2,320.0		132
	332'-0" CONT. COMP. W-BEAM UNIT SITE NO. 1 (STA. 313+24.5)																
TOTALS FOR JOB NO. 110543				544	431.80	450.80	35.4	63,060	114,880	3,900	426,570	213	11,090.0	1	267	92	1

① STEEL SHELL PILES SHALL CONFORM TO ASTM A252, GRADE 3, F_y = 45 ksi.

ONLY CONICAL OR VANED PILE TIPS SHALL BE PERMITTED FOR STEEL SHELL PILES IN BENTS 1 AND 5 OF ALL BRIDGES. FLAT PILE TIPS MAY BE USED AT INTERIOR BENTS.

② PAINT SHALL CONFORM TO FEDERAL STANDARD 595B, COLOR CHIP NO. 36270, GRAY.

AILEEN SCHUBEL
DESIGN SECTION SUPERVISOR



BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
HWY. 149 STR. & APPRS. (F)
ST. FRANCIS COUNTY
ROUTE 40 SEC. 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 9-14-11 FILENAME: b110543.q1.dgn
CHECKED BY: Kwy DATE: 3-28-12 SCALE: NONE
DESIGNED BY: DATE:

BRIDGE NO. 07234 DRAWING NO. 52601

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
1/9/12				6	ARK.			
4/5/12								
5/2/12								
JOB NO.						110543	37	134

2 SUMMARY OF QUANTITIES & REVISIONS



SUMMARY OF QUANTITIES (BOX 1 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	7	STATION
201	GRUBBING	7	STATION
202	REMOVAL AND DISPOSAL OF CURB	611	LIN. FT.
202	REMOVAL AND DISPOSAL OF FENCE	105	LIN. FT.
202	REMOVAL AND DISPOSAL OF ORNAMENTAL FENCE	195	LIN. FT.
202	REMOVAL AND DISPOSAL OF WALLS	16	LIN. FT.
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS	9	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	3	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE PIER PROTECTION	62	LIN. FT.
202	REMOVAL AND DISPOSAL OF LUMINAIRE POLE AND FOUNDATION	1	EACH
202	REMOVAL AND DISPOSAL OF SIGNS	10	EACH
202	REMOVAL AND DISPOSAL OF PLANTERS	2	EACH
SP & 202	REMOVAL AND DISPOSAL OF GUARDRAIL	1482	LIN. FT.
210	UNCLASSIFIED EXCAVATION	44891	CU. YD.
210	COMPACTED EMBANKMENT	2420	CU. YD.
SP & 210	COMPACTED EMBANKMENT (SPECIAL)	72490	CU. YD.
SP & 210	SOIL STABILIZATION	100	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)	6741	TON
309	PORTLAND CEMENT CONCRETE BASE (9" UNIFORM THICKNESS)	247	SQ. YD.
401	TACK COAT	1760	GAL.
SP, SS, & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")	1237	TON
SP, SS, & 405	ASPHALT BINDER (PG 76-22) IN ACHM BASE COURSE (1 1/2")	52	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	730	TON
SP, SS, & 406	ASPHALT BINDER (PG 76-22) IN ACHM BINDER COURSE (1")	32	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	2545	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	3	TON
SP, SS, & 407	ASPHALT BINDER (PG 76-22) IN ACHM SURFACE COURSE (1/2")	139	TON
412	COLD MILLING ASPHALT PAVEMENT	1667	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	15	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY	25	TON
504	APPROACH SLABS	122.42	CU. YD.
504	APPROACH GUTTERS (TYPE C)	59.16	CU. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
SP, SS, & 603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
SS & 604	SIGNS	1152	SQ. FT.
SS & 604	BARRICADES	64	LIN. FT.
SS & 604	TRAFFIC DRUMS	123	EACH
SS & 604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	3425	LIN. FT.
SS & 604	CONSTRUCTION PAVEMENT MARKINGS	15833	LIN. FT.
SS & 604	ADVANCE WARNING ARROW PANEL	20	DAY
SP, SS, & 604	PORTABLE CHANGEABLE MESSAGE SIGN	252	WEEK
605	CONCRETE DITCH PAVING (TYPE B)	102	SQ. YD.
SP, SS, & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	120	LIN. FT.
606	12" ZINC COATED (GALVANIZED) CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	170	LIN. FT.
SS & 606	18" SIDE DRAIN	122	LIN. FT.
606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2	EACH
606	SELECTED PIPE BEDDING	25	CU. YD.
609	DROP INLETS (TYPE N2)	4	EACH
611	UNDERDRAIN OUTLET PROTECTORS	6	EACH
611	4" PIPE UNDERDRAINS	1000	LIN. FT.
614	CONCRETE SPILLWAY (TYPE A)	2	EACH
SS & 617	GUARDRAIL (TYPE A)	550	LIN. FT.
SS & 617	GUARDRAIL (TYPE B)	252	LIN. FT.
SS & 617	TERMINAL ANCHOR POSTS (TYPE 1)	3	EACH
SS & 617	TERMINAL ANCHOR POSTS (TYPE 2)	2	EACH
SS & 617	GUARDRAIL TERMINAL (TYPE 2)	5	EACH
SS & 617	THREE BEAM GUARDRAIL TERMINAL	4	EACH
619	WIRE FENCE (TYPE A)	381	LIN. FT.
620	LIME	9	TON
620	SEEDING	4.25	ACRE
620	MULCH COVER	10.25	ACRE
SS & 620	WATER	557.3	M.GAL.
621	TEMPORARY SEEDING	6.00	ACRE
621	SILT FENCE	5444	LIN. FT.
621	SAND BAG DITCH CHECKS	242	BAG
621	DIVERSION DITCH	674	LIN. FT.
621	DROP INLET SILT FENCE	100	LIN. FT.
621	SEDIMENT BASIN	222	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN	222	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	457	CU. YD.
621	PIPE FOR SLOPE DRAINS	76	LIN. FT.
621	ROCK DITCH CHECKS	54	CU. YD.
623	SECOND SEEDING APPLICATION	4.25	ACRE
624	SOLID SODDING	112	SQ. YD.
631	CONCRETE BARRIER WALL (PIER PROTECTION TYPE A)	58	LIN. FT.
632	CONCRETE ISLAND	75	SQ. YD.
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")	17	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM

SUMMARY OF QUANTITIES (BOX 2 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
SS & 718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")	234	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	5683	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")	509	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	5087	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC PAVEMENT MARKING WHITE (4") (ALTERNATE NO. 1)	1200	LIN. FT.
SP	HIGH PERFORMANCE MARKING TAPE WHITE (4") (ALTERNATE NO. 2)	1200	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC PAVEMENT MARKING YELLOW (4") (ALTERNATE NO. 1)	1200	LIN. FT.
SP	HIGH PERFORMANCE MARKING TAPE YELLOW (4") (ALTERNATE NO. 2)	1200	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4") (ALTERNATE NO. 1)	670	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4") (ALTERNATE NO. 2)	670	LIN. FT.
SS & 731	IMPACT ATTENUATION BARRIER (TYPE A)	2	EACH
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	17872	POUND
816	FILTER BLANKET	40	SQ. YD.
816	DUMPED RIPRAP	4	CU. YD.
816	DUMPED RIPRAP (GROUTED)	20	CU. YD.
SP	ASPHALT CURB	1561	LIN. FT.
SP	TEMPORARY IMPACT ATTENUATION BARRIER	1	EACH
SP	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	1	EACH
STRUCTURES OVER 20' SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	544	CU. YD.
SP & 802	CLASS S CONCRETE-BRIDGE	431.80	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE	450.80	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	35.4	GAL.
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	63060	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	114880	POUND
SP & 805	STEEL SHELL PILING (18" DIAMETER)	3900	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50)	426570	POUND
807	PAINTING STRUCTURAL STEEL	213	TON
808	ELASTOMERIC BEARINGS	11090.0	CU. IN.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	CONCRETE RIPRAP	267	CU. YD.
SP	SILICONE JOINT SEALANT	92	LIN. FT.
SP	SHORING (SITE NO. 1)	1.00	LUMP SUM

*ALTERNATE BID ITEMS

REVISION BOX

DATE	REVISION	SHEET NUMBER
1/9/2012	ADDED DELAY IN RIGHT-OF-WAY OCCUPANCY SP	3, 75
4/5/2012	REMOVED DELAY IN RIGHT-OF-WAY OCCUPANCY SP	3, 35
4/5/2012	REVISED JOB TO ONLY INCLUDE HWY. 149 STR. & APPRS.	1-136
4/5/2012	REVISED JOB TO ONLY INCLUDE HWY. 149 STR. & APPRS. - SHEETS 137 THRU 311 NOT USED	137-311
5/2/2012	REVISED HWY. 149 TO ONLY OVERLAY FROM STA. 301+07.89 TO STA. 304+00	
	DELETED DRIVES AT STA. 302+59 RT, STA. 303+33 LT, AND STA. 304+25 LT	9, 32-35, 37, 42-46, 103-105

SURVEY CONTROL COORDINATES

Project Name: s110543
 Date: 12/16/2011
 Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL,
 PROJECTED TO GROUND.
 Units: U.S. SURVEY FOOT

Point Name	Northing	Eastings	Elev	Feature	Description
4	238231.2161	1639829.6339	212.664	CTL	5/8"REBAR W/2"CAP
5	238597.2389	1640547.7864	211.791	CTL	5/8"REBAR W/2"CAP
6	238957.8585	1641239.5855	209.410	CTL	5/8"REBAR W/2"CAP
12	265160.5552	1703836.4102	208.009	CTL	5/8"REBAR W/2"CAP
13	265645.0565	1704480.0241	207.083	CTL	5/8"REBAR W/2"CAP
14	266104.1770	1705102.9702	207.138	CTL	5/8"REBAR W/2"CAP
20	294348.2562	1763656.1102	207.676	CTL	5/8"REBAR W/2"CAP
22	294455.3646	1765532.0169	205.430	CTL	5/8"REBAR W/2"CAP
67	265885.6765	1704585.7514	227.187	CTL	5/8"REBAR W/2"CAP
68	238432.7153	1640490.8480	232.317	CTL	5/8"REBAR W/2"CAP
69	238660.2608	1640388.9844	232.631	CTL	5/8"REBAR W/2"CAP
70	239233.2986	1640203.2305	207.445	CTL	5/8"REBAR W/2"CAP
71	264791.5352	1704533.6876	203.769	CTL	5/8"REBAR W/2"CAP
72	266626.9989	1704637.6605	201.162	CTL	5/8"REBAR W/2"CAP
73	265574.2778	1704583.9229	227.564	CTL	5/8"REBAR W/2"CAP
74	294411.9403	1764729.8846	206.794	CTL	5/8"REBAR W/2"CAP
75	293275.0525	1765290.9624	207.393	CTL	5/8"REBAR W/2"CAP
76	293830.4147	1765106.7189	210.334	CTL	5/8"REBAR W/2"CAP
77	294303.5324	1764885.1274	228.437	CTL	5/8"REBAR W/2"CAP
78	237986.1140	1640657.7507	212.975	GPS	AHTD GPS 680011A
79	294598.3792	1764745.3917	228.443	CTL	5/8"REBAR W/2"CAP
80	295183.9581	1764476.3857	204.677	CTL	5/8"REBAR W/2"CAP
81	263471.4275	1704586.0667	201.849	GPS	AHTD GPS 680012
82	293263.3347	17641325.2938	204.129	GPS	AHTD GPS 680013
100	236850.5490	1641325.2938	210.816	GPS	AHTD GPS 680011
103	261232.6802	1704582.3306	201.459	GPS	AHTD GPS 680012A
105	291327.2243	1765118.1705	202.568	GPS	AHTD GPS 680013A
900	233243.8110	1638622.0395	212.880	TBM	5/8" REBAR W/2"CAP
901	256195.6771	1704904.6868	205.657	TBM	5/8" REBAR W/2"CAP
902	258618.7036	1704622.9219	201.880	TBM	5/8" REBAR W/2"CAP
903	277874.2421	1764125.7242	202.302	TBM	AHTD ALUM CAP
904	280200.7005	1764173.1537	200.241	TBM	5/8" REBAR W/2"CAP
905	283536.8338	1764121.9791	200.786	TBM	5/8" REBAR W/2"CAP
906	288390.6659	1764130.6094	199.762	TBM	5/8" REBAR W/2"CAP
907	238683.4776	1640425.9604	233.803	TBM	5/8" REBAR W/2"CAP
908	239630.4005	1640107.5324	205.526	TBM	BRIDGE
909	264785.6711	1704540.8513	202.226	TBM	GAS FILLER ISLAND
910	265897.7472	1704526.0518	229.015	TBM	CH SQ IN IN CTR HEAD WALL
911	266607.6456	1704682.8918	201.657	TBM	CH SQ IN NE COR BR
912	293259.8115	1765135.8571	210.420	TBM	CH SQ IN CTR OF N HEADWAL
913	294266.9303	1764871.1567	230.168	TBM	CH SQ NE COR OF BR,16' N OF C/L US-70
990	234268.6493	1639859.1595	205.140	BM	NGS MARK S 169
991	232911.1765	1635962.2306	210.170	BM	NGS MARK R169
992	253679.3177	1705769.9961	205.502	BM	NGS MARK G 170
993	277274.0482	1764550.5216	199.209	BM	NGS MARK H 173

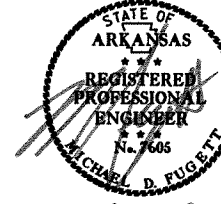
*Note - Rebar and Cap - Standard -1" Rebar with 2" Aluminum Cap stamped
 *(standard markings common to all caps), or as indicated
 (other markings indicated in the point description of the individual point).
 USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
 A PROJECT CAF OF 0.9999684494 HAS BEEN USED TO 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.s110543gi.ct1
 HORIZONTAL DATUM: NAD 83 (1997)
 VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE
 AT A SPECIFIC POINT.

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

BASIS OF BEARING:
 ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
 DETERMINED FROM GPS CONTROL POINTS: 680011 - 680011A 680012 - 680012A 680013 - 680013A
 CONVERGENCE ANGLE:00-45-45.9 RIGHT AT LT:35-03-20.8 IG:090-41-22.4
 GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

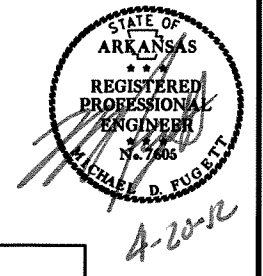
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
				JOB NO.	110543		38	134

2 SURVEY CONTROL DETAILS



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.		39	134
				JOB NO.		110543	39	134

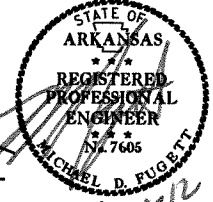
2 SURVEY CONTROL DETAILS



CONST	POINT NO.	TYPE	STATION	NORTHING	EASTING
CONST 149	8020	POB	300+00.00	293212.1238	1765362.5707
	8021	PC	301+21.02	293322.0031	1765311.8590
	8023	PT	305+98.80	293763.6582	1765129.9537
	8024	PC	307+15.88	293873.6722	1765089.9196
	8026	PT	311+98.90	294320.0844	1764905.8162
	8027	PC	315+27.61	294618.4101	1764767.8014
	8029	PT	320+12.81	295049.6245	1764545.6852
	8030	PC	321+38.24	295158.5965	1764483.5822
	8032	PT	326+41.09	295605.8431	1764254.0790
	8033	POE	327+51.27	295705.9826	1764208.1254
CONST 149 RAMP 1	POINT NO.	TYPE	STATION	NORTHING	EASTING
	8051	POB	10+00.00	293739.2288	1765138.9064
	8052	POE	12+09.75	293828.1886	1765328.8609
CONST 149 RAMP 2	POINT NO.	TYPE	STATION	NORTHING	EASTING
	8053	POB	20+00.00	295076.7925	1764530.2022
	8054	PC	21+05.55	295119.9750	1764626.5134
	8056	PT	24+60.81	295158.8633	1764973.9413
	8057	POE	28+56.12	295080.8864	1765361.4874
149 EAST	POINT NO.	TYPE	STATION	NORTHING	EASTING
149 EAST	8097	POB	50+00.00	294359.7645	1764623.1533
	8098	POE	60+00.00	294415.3239	1765621.6072
149 WEST	POINT NO.	TYPE	STATION	NORTHING	EASTING
149 WEST	8099	POB	60+00.00	294464.2579	1764569.7375
	8100	POE	69+99.54	294521.7975	1765567.6193

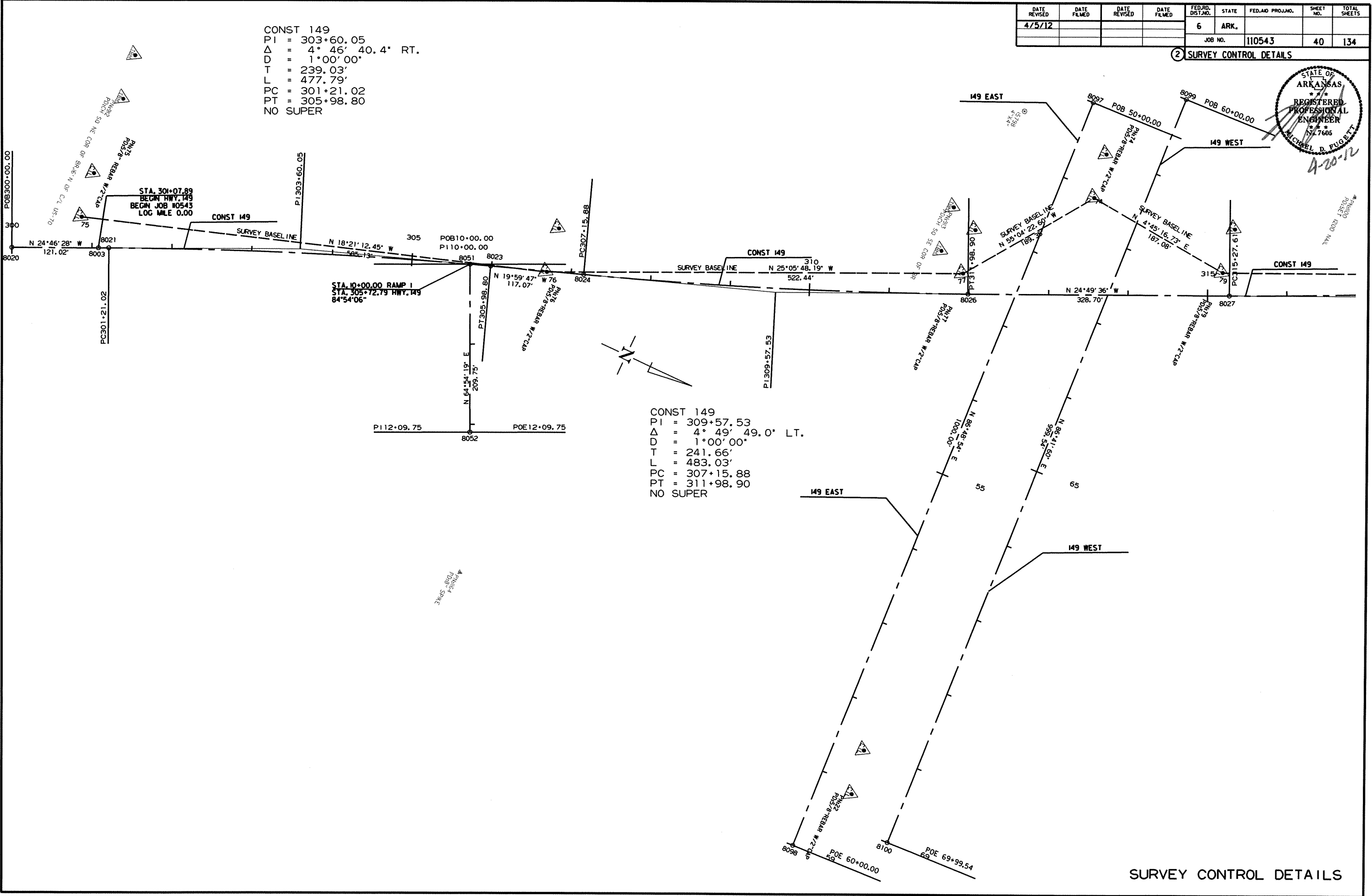
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	40	134

2 SURVEY CONTROL DETAILS



CONST 149
 PI = 303+60.05
 Δ = 4° 46' 40.4" RT.
 D = 1°00'00"
 T = 239.03'
 L = 477.79'
 PC = 301+21.02
 PT = 305+98.80
 NO SUPER

CONST 149
 PI = 309+57.53
 Δ = 4° 49' 49.0" LT.
 D = 1°00'00"
 T = 241.66'
 L = 483.03'
 PC = 307+15.88
 PT = 311+98.90
 NO SUPER



SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
							JOB NO. 110543	41 134

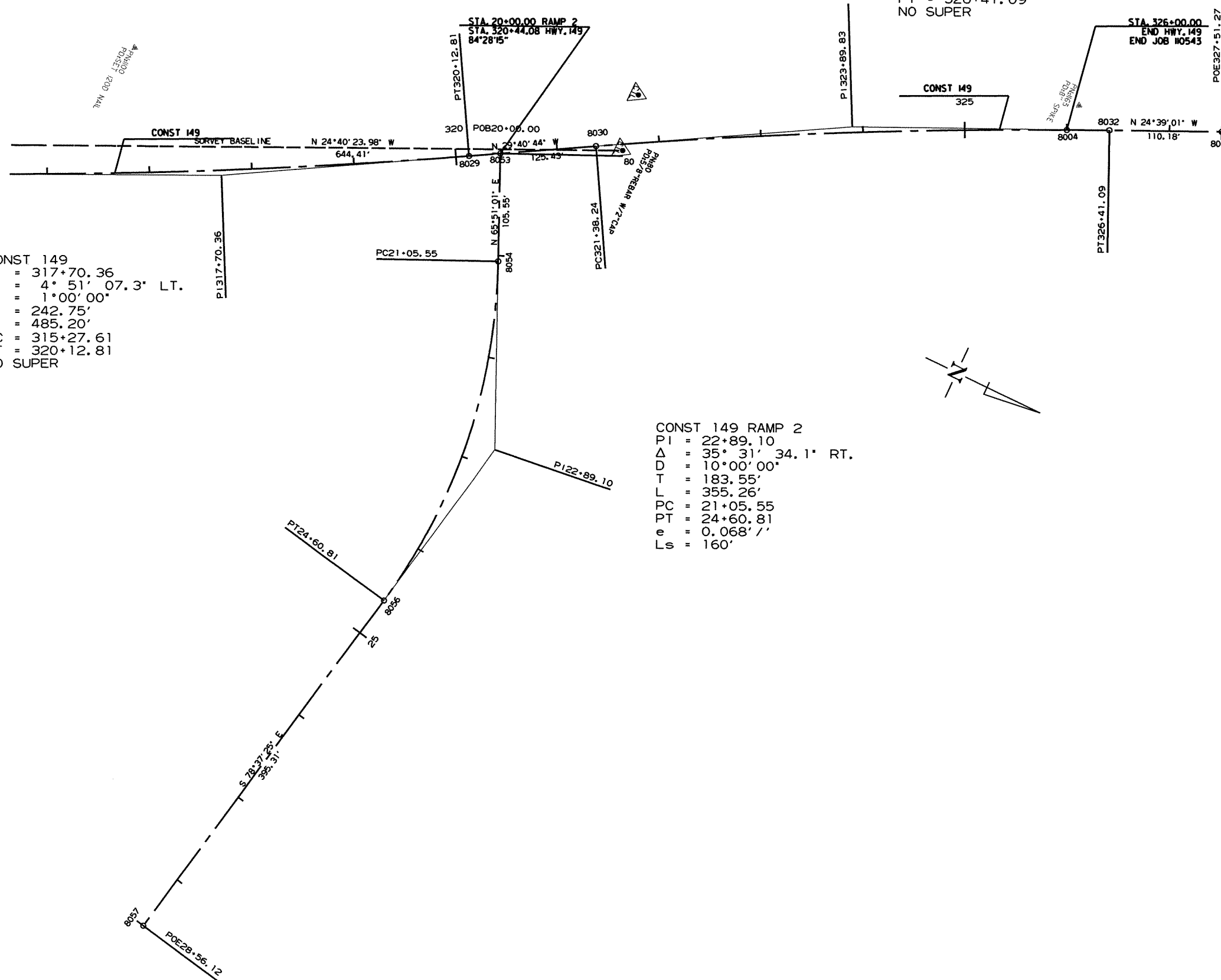
2 SURVEY CONTROL DETAILS



CONST 149
 PI = 323+89.83
 Δ = 5° 01' 42.8" RT.
 D = 1° 00' 00"
 T = 251.59'
 L = 502.86'
 PC = 321+38.24
 PT = 326+41.09
 NO SUPER

CONST 149
 PI = 317+70.36
 Δ = 4° 51' 07.3" LT.
 D = 1° 00' 00"
 T = 242.75'
 L = 485.20'
 PC = 315+27.61
 PT = 320+12.81
 NO SUPER

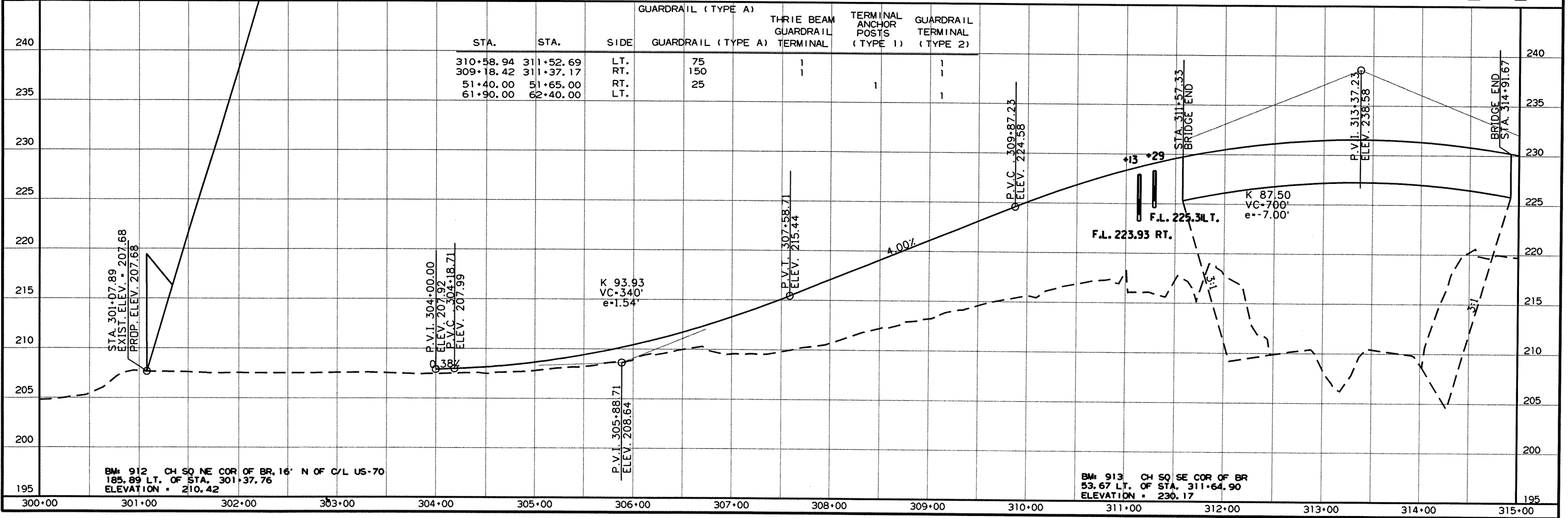
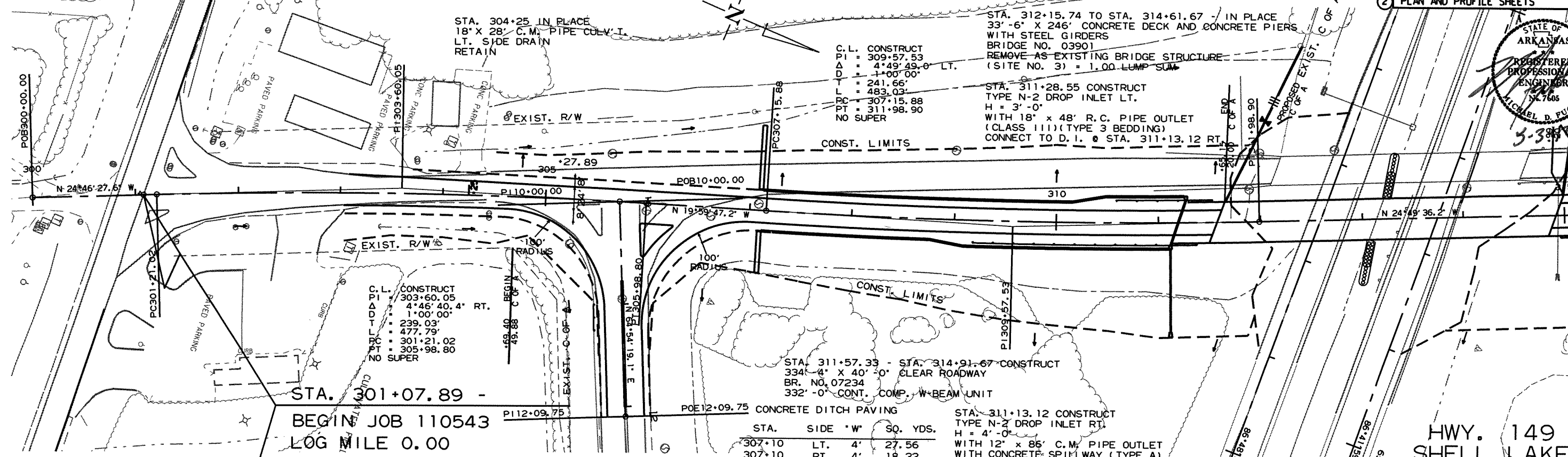
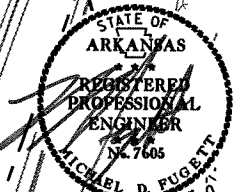
CONST 149 RAMP 2
 PI = 22+89.10
 Δ = 35° 31' 34.1" RT.
 D = 10° 00' 00"
 T = 183.55'
 L = 355.26'
 PC = 21+05.55
 PT = 24+60.81
 e = 0.068' /'
 Ls = 160'



SPECIAL FLOOD HAZARD AREA
 STA. 301+07.89 - STA. 326+00.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
5/2/12								
JOB NO. 110543						42	134	

PLAN AND PROFILE SHEETS



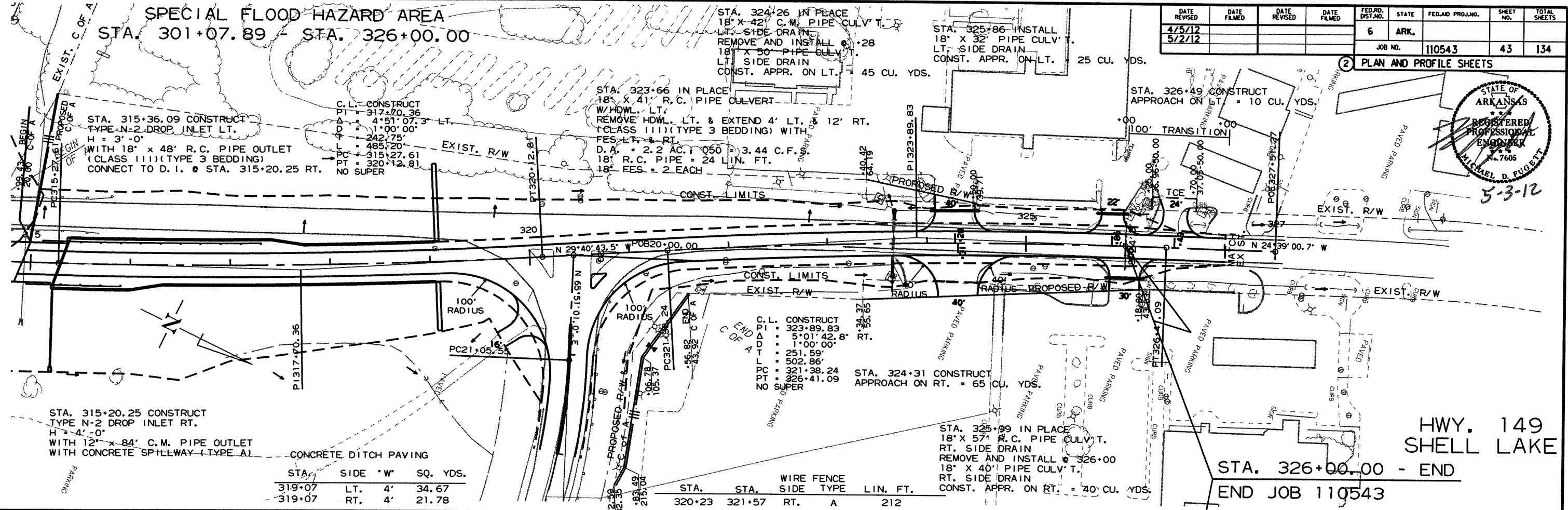
BM 912 CH SQ NE COR OF BR. 16' N OF C/L US-70
 185.89 LT. OF STA. 301+37.76
 ELEVATION = 210.42

BM 913 CH SQ SE COR OF BR
 53.67 LT. OF STA. 311+64.90
 ELEVATION = 230.17

SPECIAL FLOOD HAZARD AREA
 STA. 301+07.89 - STA. 326+00.00

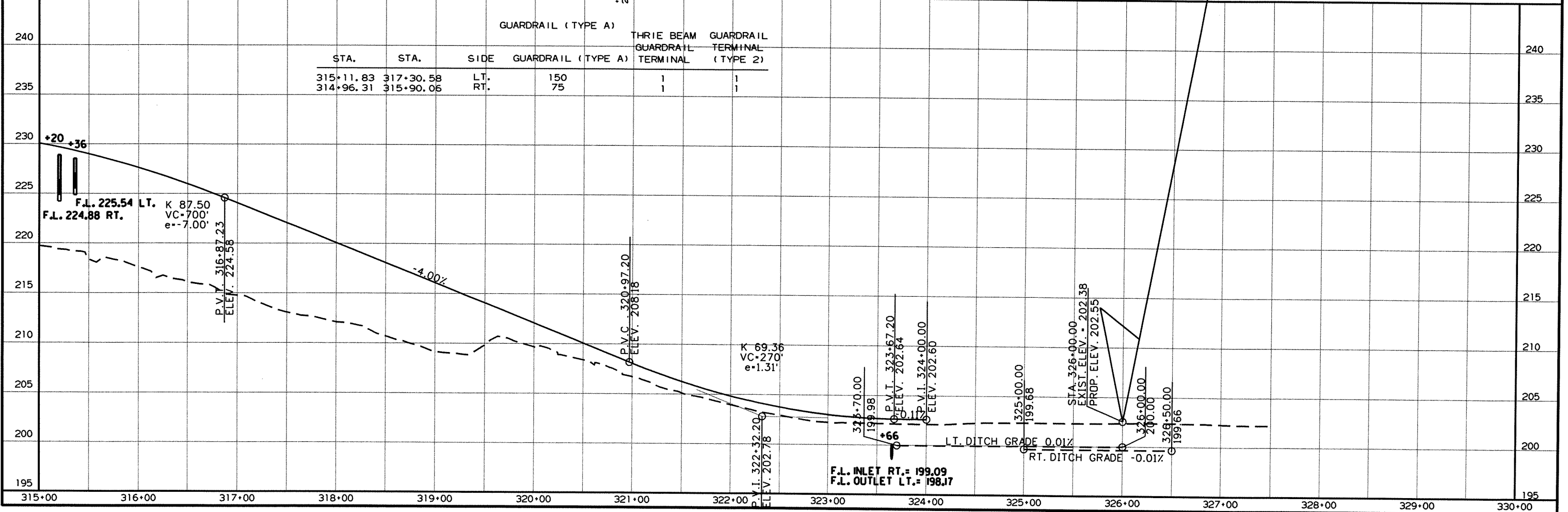
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
5/2/12						JOB NO. 110543	43	134

2 PLAN AND PROFILE SHEETS



STA.	SIDE	'W'	SQ. YDS.
319+07	LT.	4'	34.67
319+07	RT.	4'	21.78

STA.	STA.	WIRE FENCE	SIDE	TYPE	LIN. FT.
320+23	321+57	RT.	A		212

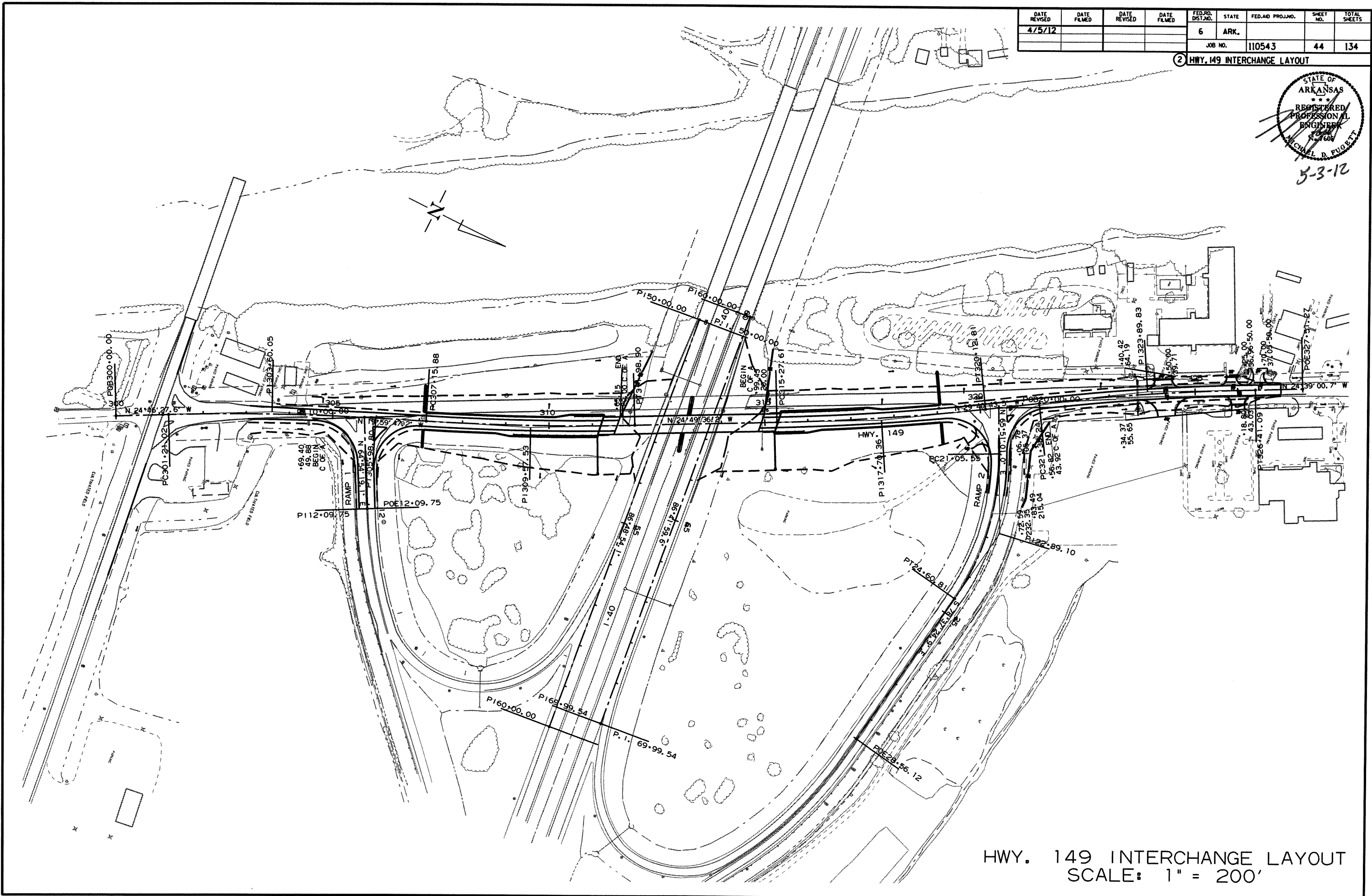


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.		44	134
				JOB NO.		110543		

2 HWY. 149 INTERCHANGE LAYOUT



5-3-12



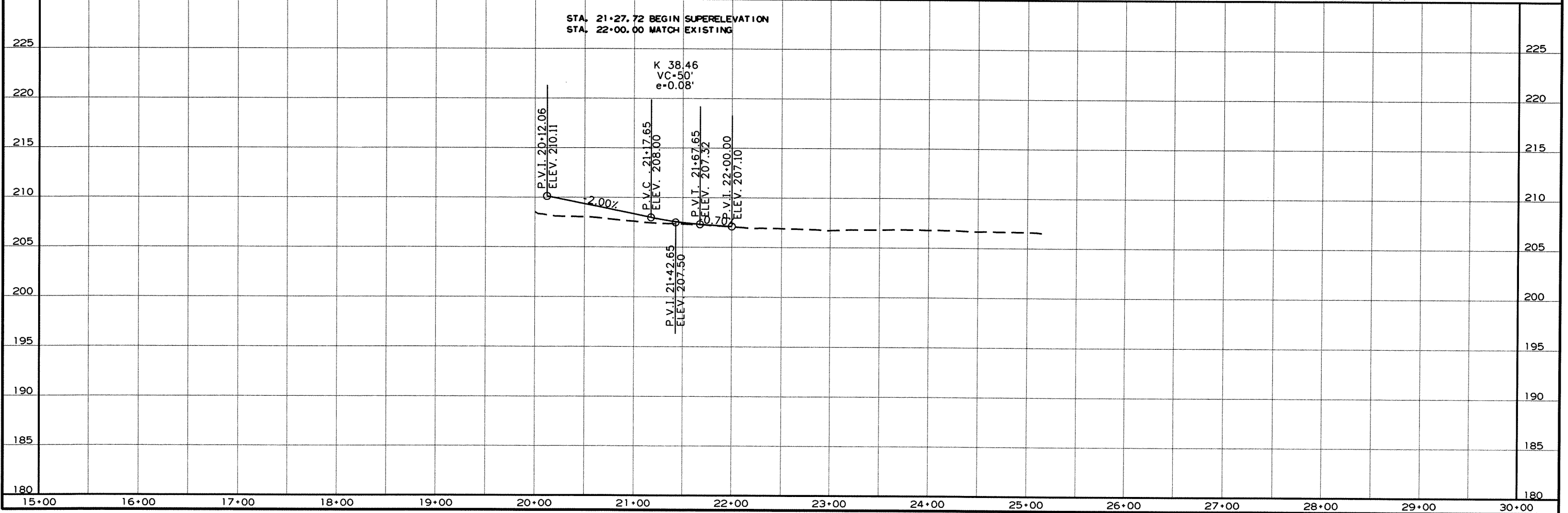
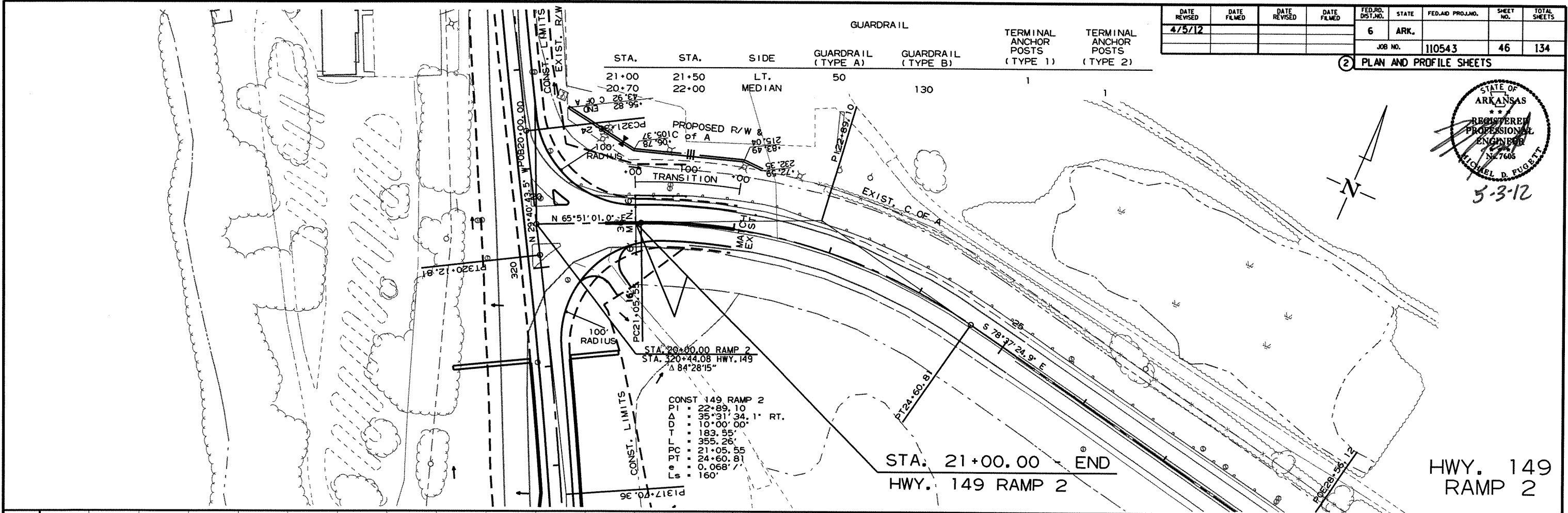
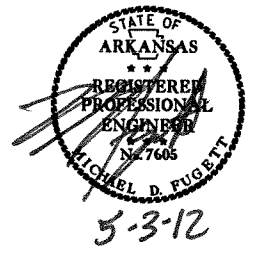
HWY. 149 INTERCHANGE LAYOUT
SCALE: 1" = 200'

5/2/12

ZBORNER.CEL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. DIST. NO.	STATE	FED. PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
JOB NO. 110543							46	134

2 PLAN AND PROFILE SHEETS

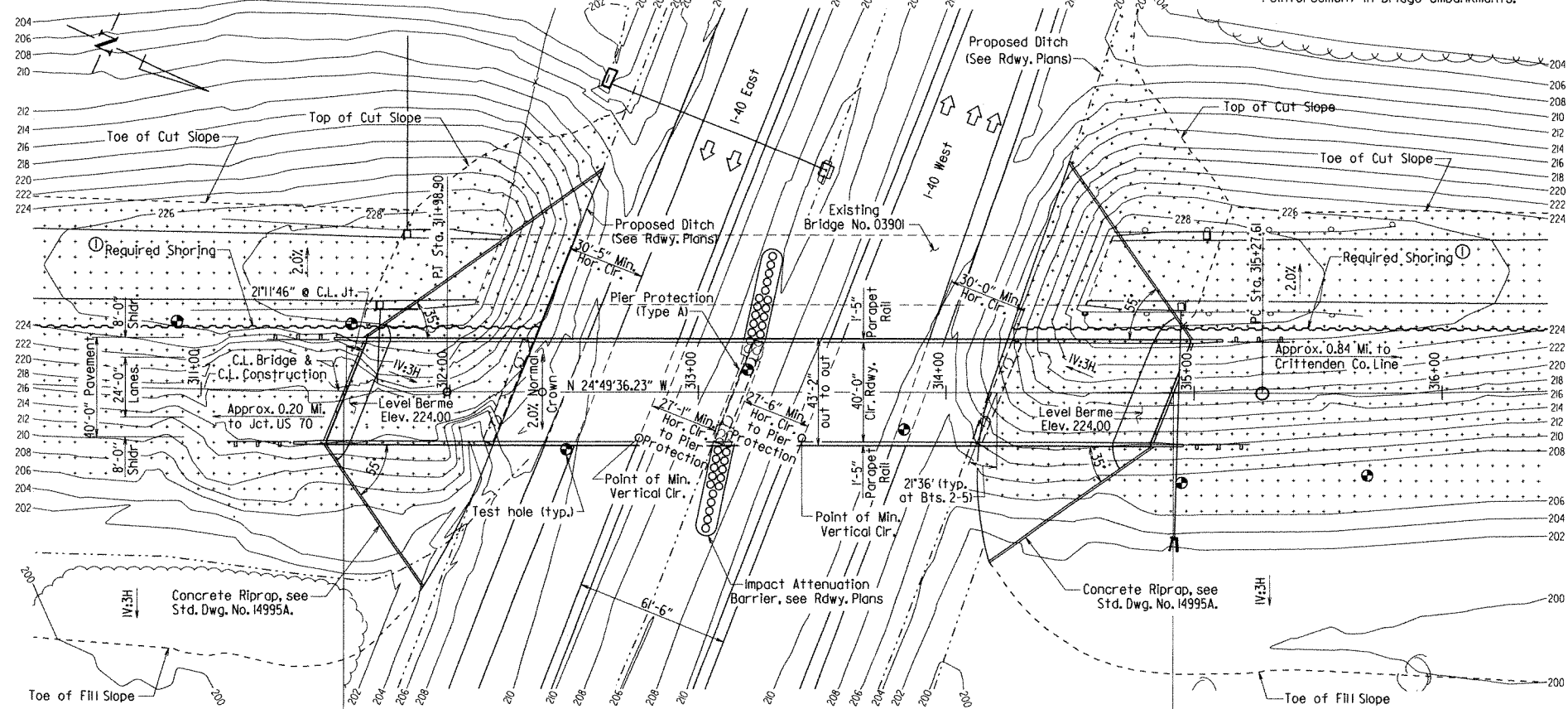


NOTE: Use Type C Approach Gutters ("W" = 8'-0") at both ends of bridge, see Standard Drawing No. 2016C. Use Type Special Approach Slab at both ends of bridge, see Dwg. No. 52624.

FOR R/W DATA, SEE RDWY. PLANS

NOTE: See Special Provision Job 110543 "Geosynthetic Internal Reinforced Embankment Construction" for details of geogrid reinforcement in bridge embankments.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.	110543		47	134
				07234	LAYOUT		52602	



PLAN

Notes: Skew angle at C. Jt. at Bent 1 is measured from a radial line.
All Longitudinal lines within the limits of the horizontal curve shall be on curves concentric to C. Bridge.

Note: State of Arkansas Form Inserts shall be placed on both sides of wingwalls at ends of bridge in accordance with Dwg. No. 52607. A textured coating finish shall be applied to form inserts in accordance with Special Provision Job 110543 "Textured Coating Finish".

Horizontal Curve Data - C.L. Bridge

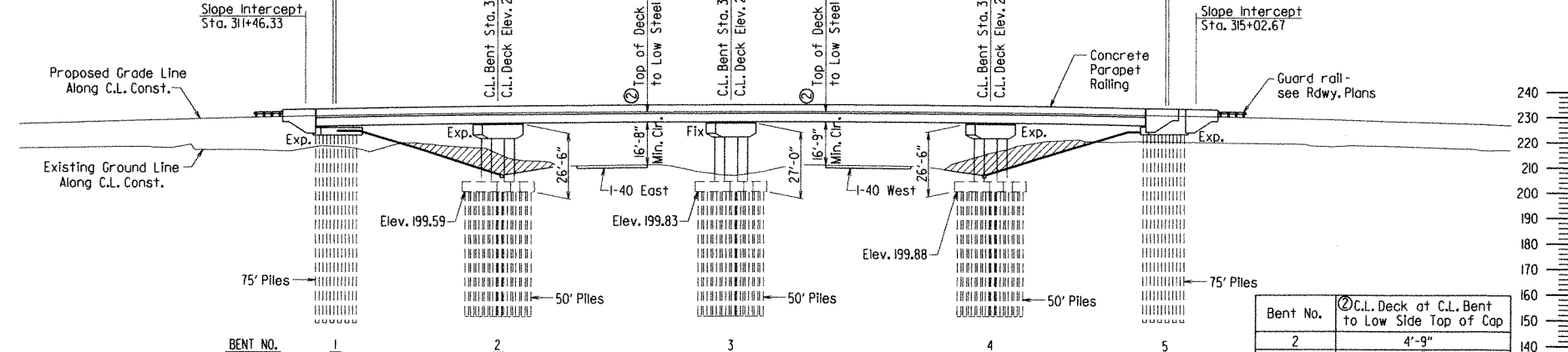
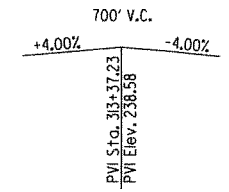
P.I. Sta. 309+57.53
Δ = 4°49'49.0" Left
D = 100'00"
T = 241.66'
L = 483.03'

Beg. Bridge Sta. 311+57.33
C.L. Deck Elev. 229.73

Total Length of Bridge = 334'-4"

332'-0" Continuous Composite W-Beam Unit (65'-93'-104'-70")

VERTICAL CURVE DATA
Along C.L. Construction



ELEVATION

Note: For Soil Borings, see Dwg. No. 52603.

Bent No.	C.L. Deck at C.L. Bent to Low Side Top of Cap
2	4'-9"
3	4'-8 3/4"
4	4'-9 3/4"

GENERAL NOTES

BENCH MARK: 3/8" rebar with 2" cap, 80.16' left of Station 312+07.52, elevation 228.44.
CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition) with applicable supplemental specifications and special provisions. Unless otherwise noted, Section and subsection refer to the Construction Specifications.
DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fifth Edition, with 2010 Interim Revisions.
LIVE LOADING: HL93
SEISMIC PERFORMANCE ZONE: 4
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 M 31 or M 53, Gr. 60) fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50) fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36) fy = 36,000 psi

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.
STEEL SHELL PILING: End bent piling shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 180 tons per pile. Piling in Bents 2 thru 4 shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 245 tons per pile. All piling shall be driven with an approved air, steam or diesel hammer to a minimum tip elevation of 152.0 or lower. Piling in end bents shall be driven after embankment to bottom of cap is in place.

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

Water jetting or other methods as approved by the Engineer may be required to achieve minimum penetration. This work shall not be paid for directly, but shall be considered incidental to the item "Steel Shell Piling (18" Dia.)."

DRIVING SYSTEM: The driving system approval and ultimate bearing capacity determination for piling shall be based on the requirements of subsection 805.09(b) "Method B-Wave Equation Analysis (WEAP)". It is estimated that a minimum rated hammer energy of 27,000 ft.-lbs. per blow will be required to obtain the ultimate bearing capacity at the end bents and 42,000 ft.-lbs. per blow will be required to obtain the ultimate bearing capacity at Bents 2, 3 and 4.

FOOTINGS: Footings at Bents 2 thru 4 shall be set a minimum of 2' below natural ground or at the elevations shown on the plans, whichever is lower. Foundations for footings shall be prepared in accordance with subsection 801.04.

PAINTING: All Grade 50 structural steel except galvanized members shall be painted as specified in subsection 807.75. The color of paint shall be Gray and shall match Federal Std. 595B, Color Chip 36270.

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

DETAIL DRAWINGS DRAWING NOS.

End Bents	52604-52606
Intermediate Bents	52608-52613
Steel Shell Piling	52614
Elastomeric Bearings	52615
332'-0" Cont. Comp. W-Beam Unit	52616-52623
Type Special Approach Slabs	52624

EXISTING BRIDGES: Existing Bridge No. 03901 (1-40 Logmile 259.89) is 33.5' wide and 246' long and consists of steel I-beam spans supported by concrete columns on concrete pile footings.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, existing bridge no. 03901 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans for maintenance of traffic.

SHEET 1 OF 2
LAYOUT OF BRIDGE
HWY. 149 OVER INTERSTATE 40
HWY. 149 STR. & APPRS. (F)
ST. FRANCIS COUNTY

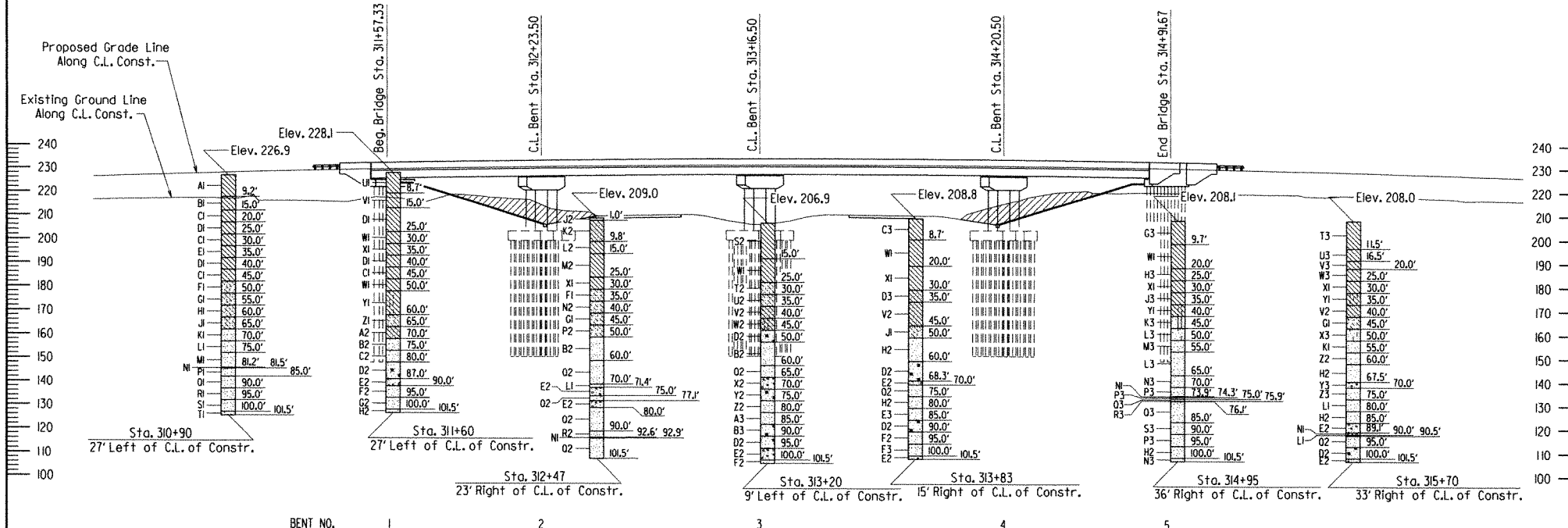


ROUTE 40 SEC. 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 6-1-11 FILENAME: b110543x3.11.dgn
CHECKED BY: kwy DATE: 3-28-12 SCALE: 1" = 30'
DESIGNED BY: AHS DATE: 5-11

BRIDGE NO. 07234 DRAWING NO. 52602

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.	110543	48	134	
				07234	LAYOUT	52603		



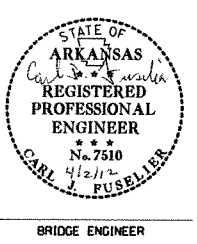
BORING LEGEND

- Al-Moist, Medium Stiff, Brown and Gray Clay with Trace of Organic Matter
- Bl-Moist, Stiff, Brown and Gray Clay with some Organic Matter
- Cl-Moist, Medium Stiff, Gray and Brown Clay
- Dl-Moist, Stiff, Gray and Brown Clay
- El-Wet, Medium Stiff, Gray and Brown Clay
- Fl-Moist, Loose, Gray Clayey Sand
- Gl-Wet, Loose, Gray Clayey Sand
- Hl-Wet, Loose, Gray Sand with Clay and Trace of Organic Matter
- Jl-Wet, Loose, Gray Sand with Clay
- Kl-Wet, Medium Dense, Gray Sand with Trace of Organic Matter
- Ll-Wet, Dense, Gray Sand with Trace of Gravel
- Ml-Wet, Dense, Gray Sand with Cemented Sand and Trace of Organic Matter
- Nl-Gravel
- Pl-Wet, Dense, Gray to Brown Sand with Cemented Sand and Trace of Gravel and Organic Matter
- Ql-Wet, Dense, Brown Sand with Cemented Sand, some Organic Matter and Trace of Gravel
- Rl-Wet, Dense, Brown Sand with Cemented Sand and some Gravel
- Sl-Wet, Very Dense, Brown Sand with Cemented Sand and Trace of Gravel and Organic Matter
- Tl-Wet, Dense, Brown Sand with Cemented Sand and Trace of Gravel
- Ul-Moist, Medium Stiff, Brown and Gray Clay with some Organic Matter
- Vl-Moist, Stiff, Gray and Brown Clay with some Organic Matter
- Wl-Moist, Stiff, Gray Clay
- Xl-Moist, Medium Stiff, Gray Clay
- Yl-Wet, Soft, Gray Silty Clay
- Zl-Wet, Medium Dense, Gray Clayey Silt
- A2-Wet, Hard, Gray Clay with Sand
- B2-Wet, Dense, Gray Sand
- C2-Wet, Medium Dense, Gray Sand
- D2-Wet, Dense, Gray Sand with Organic Matter
- E2-Wet, Dense, Gray Sand with Gravel
- F2-Wet, Dense, Gray Sand with some Gravel
- G2-Wet, Very Dense, Gray Sand with Trace of Organic Matter
- H2-Wet, Dense, Gray Sand with Trace of Organic Matter
- J2-Asphalt Pavement with Gravel
- K2-Moist, Medium Stiff, Brown and Gray Clay with Sand and some Organic Matter
- L2-Moist, Very Stiff, Gray Clay with some Organic Matter
- M2-Moist, Medium Stiff, Brown Clay with some Organic Matter
- N2-Moist, Loose, Gray Sand with Clay
- O2-Wet, Loose, Gray Clayey Sand with Trace of Organic Matter
- P2-Wet, Dense, Gray Sand with Trace of Gravel and Organic Matter
- R2-Wet, Very Dense, Gray Sand with Trace of Gravel and Organic Matter
- S2-Moist, Stiff, Gray Clay with some Organic Matter
- T2-Moist, Medium Dense, Gray Sand with Clay
- U2-Moist, Medium Dense, Gray Clayey Sand
- V2-Wet, Medium Stiff, Gray Clay with Sand
- W2-Wet, Medium Stiff, Gray Silty Clay with Sand
- X2-Wet, Medium Dense, Gray Sand with Gravel
- Y2-Wet, Dense, Gray Sand with Organic Matter and Trace of Gravel
- Z2-Wet, Very Dense, Gray Sand with Trace of Gravel
- A3-Wet, Medium Dense, Gray Sand with Trace of Gravel and Organic Matter
- B3-Wet, Very Dense, Gray Sand with Organic Matter
- C3-Moist, Medium Stiff, Brown and Gray Clay
- D3-Wet, Soft, Gray Clay with Sand
- E3-Wet, Very Dense, Gray Sand
- F3-Wet, Medium Dense, Gray Sand with some Gravel
- G3-Moist, Medium Stiff, Brown Clay
- H3-Moist, Medium Stiff, Gray Clay with some Calcareous Nodules
- J3-Wet, Soft, Gray Clay
- K3-Wet, Loose, Gray Silt with Sand
- L3-Wet, Dense, Gray Sand with Silt
- M3-Wet, Medium Dense, Gray Sand with Silt and some Organic Matter
- N3-Wet, Dense, Gray Sand with Silt and Trace of Organic Matter
- P3-Wet, Dense, Gray Sand with Silt and Trace of Gravel
- Q3-Wet, Very Dense, Gray Sand with Silt and Trace of Organic Matter
- R3-Organic Matter
- S3-Wet, Dense, Gray Sand with Silt and Trace of Organic Matter and Gravel
- T3-Moist, Medium Stiff, Gray Clay with some Organic Matter
- U3-Moist, Stiff, Brown and Gray Clay
- V3-Moist, Stiff, Brown and Gray Clay with some Calcareous Nodules
- W3-Moist, Medium Stiff, Dark Gray Clay
- X3-Wet, Medium Dense, Gray Silty Sand
- Y3-Wet, Dense, Gray Sand with Gravel and Trace of Organic Matter
- Z3-Wet, Dense, Gray Sand with Cemented Sand Seams and Trace of Gravel

ELEVATION OF SOIL BORINGS

BENT NO.	1	2	3	4	5		
	Sta. 310+90 - 27' Lt. of C.L. of Constr.	Sta. 311+60 - 27' Lt. of C.L. of Constr.	Sta. 312+47 - 23' Rt. of C.L. of Constr.	Sta. 313+83 - 15' Rt. of C.L. of Constr.	Sta. 314+95 - 36' Rt. of C.L. of Constr.		
	Sta. 313+20 - 9' Lt. of C.L. of Constr.	Sta. 313+83 - 15' Rt. of C.L. of Constr.	Sta. 314+95 - 36' Rt. of C.L. of Constr.	Sta. 315+70 - 33' Rt. of C.L. of Constr.			
	4.7- 5.6, N=6 9.7- 10.7, N=9 15.5- 16.5, N=8 20.5- 21.5, N=10 25.5- 26.5, N=6 30.5- 31.5, N=6 35.5- 36.5, N=10 40.5- 41.5, N=7 45.5- 46.5, N=9 50.5- 51.5, N=6 55.5- 56.5, N=5 60.5- 61.5, N=6 65.5- 66.5, N=26 70.5- 71.5, N=33 75.5- 76.5, N=44 80.5- 81.5, N=39 85.5- 86.5, N=40 90.5- 91.5, N=50 95.5- 96.5, N=51 100.5- 101.5, N=40	4.2- 5.2, N=7 9.2- 10.2, N=9 15.5- 16.5, N=9 20.5- 21.5, N=9 25.5- 26.5, N=9 30.5- 31.5, N=7 35.5- 36.5, N=10 40.5- 41.5, N=8 45.5- 46.5, N=9 50.5- 51.5, N=4 55.5- 56.5, N=5 60.5- 61.5, N=11 65.5- 66.5, N=37 70.5- 71.5, N=32 75.5- 76.5, N=27 80.5- 81.5, N=45 85.5- 86.5, N=39 90.5- 91.5, N=36 95.5- 96.5, N=54 100.5- 101.5, N=44	5.3- 6.3, N=7 10.3- 11.3, N=18 15.5- 16.5, N=7 20.5- 21.5, N=8 25.5- 26.5, N=6 30.5- 31.5, N=5 35.5- 36.5, N=8 40.5- 41.5, N=8 45.5- 46.5, N=7 50.5- 51.5, N=40 55.5- 56.5, N=51 60.5- 61.5, N=49 65.5- 66.5, N=34 70.5- 71.5, N=44 75.5- 76.5, N=41 80.5- 81.5, N=46 85.5- 86.5, N=41 90.5- 91.5, N=67 95.5- 96.5, N=33 100.5- 101.5, N=39	4.6- 5.6, N=15 9.6- 10.6, N=13 15.5- 16.5, N=14 20.5- 21.5, N=14 25.5- 26.5, N=14 30.5- 31.5, N=16 35.5- 36.5, N=7 40.5- 41.5, N=6 45.5- 46.5, N=43 50.5- 51.5, N=36 55.5- 56.5, N=48 60.5- 61.5, N=33 65.5- 66.5, N=28 70.5- 71.5, N=45 75.5- 76.5, N=54 80.5- 81.5, N=29 85.5- 86.5, N=63 90.5- 91.5, N=32 95.5- 96.5, N=47 100.5- 101.5, N=37	4.2- 5.2, N=6 9.2- 10.2, N=14 15.5- 16.5, N=10 20.5- 21.5, N=8 25.5- 26.5, N=7 30.5- 31.5, N=4 35.5- 36.5, N=7 40.5- 41.5, N=5 45.5- 46.5, N=10 50.5- 51.5, N=37 55.5- 56.5, N=39 60.5- 61.5, N=32 65.5- 66.5, N=37 70.5- 71.5, N=42 75.5- 76.5, N=45 80.5- 81.5, N=52 85.5- 86.5, N=32 90.5- 91.5, N=35 95.5- 96.5, N=28 100.5- 101.5, N=41	5.2- 6.2, N=7 10.2- 11.2, N=10 15.5- 16.5, N=9 20.5- 21.5, N=7 25.5- 26.5, N=7 30.5- 31.5, N=3 35.5- 36.5, N=4 40.5- 41.5, N=5 45.5- 46.5, N=40 50.5- 51.5, N=19 55.5- 56.5, N=38 60.5- 61.5, N=34 65.5- 66.5, N=40 70.5- 71.5, N=46 75.5- 76.5, N=64 80.5- 81.5, N=65 85.5- 86.5, N=34 90.5- 91.5, N=43 95.5- 96.5, N=32 100.5- 101.5, N=35	7.0- 8.0, N=8 12.0- 13.0, N=9 17.0- 18.0, N=13 20.5- 21.5, N=7 25.5- 26.5, N=5 30.5- 31.5, N=4 35.5- 36.5, N=5 40.5- 41.5, N=7 45.5- 46.5, N=18 50.5- 51.5, N=24 55.5- 56.5, N=53 60.5- 61.5, N=44 65.5- 66.5, N=33 70.5- 71.5, N=34 75.5- 76.5, N=45 80.5- 81.5, N=38 85.5- 86.5, N=34 90.5- 91.5, N=39 95.5- 96.5, N=34 100.5- 101.5, N=49

"N" VALUES



SHEET 2 OF 2
LAYOUT OF BRIDGE
HWY. 149 OVER INTERSTATE 40
HWY. 149 STR. & APPRS. (F)
ST. FRANCIS COUNTY

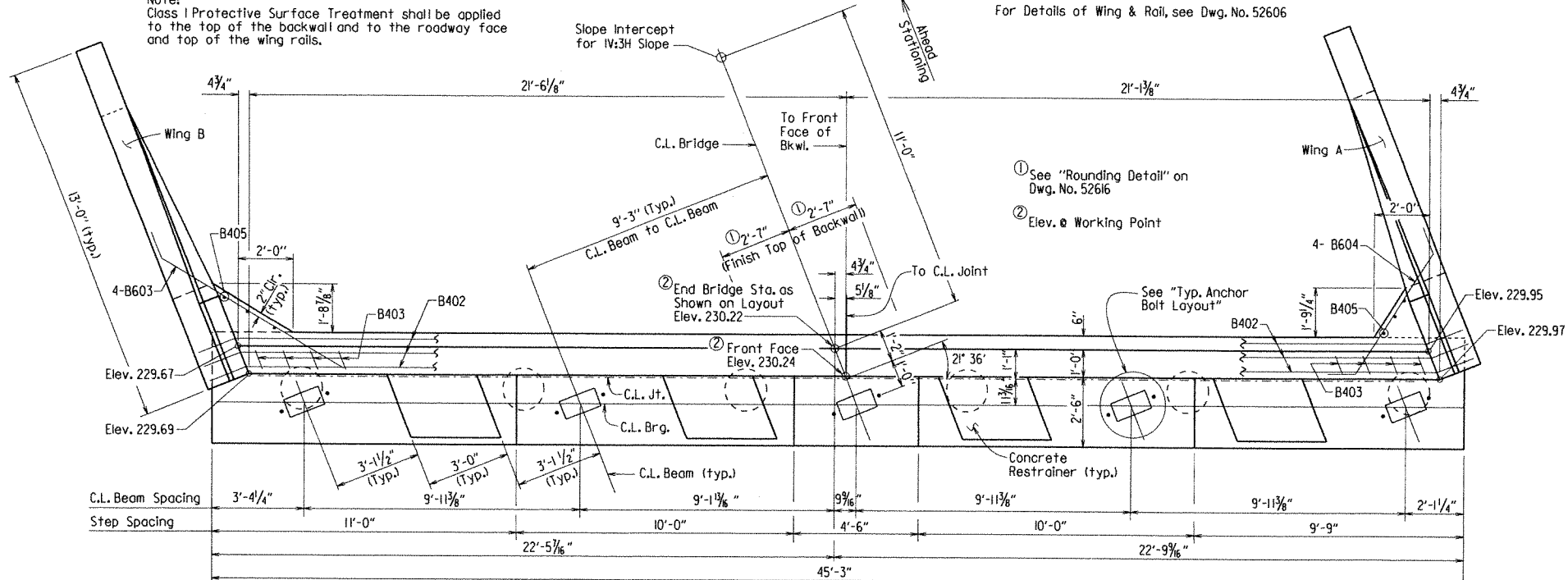
ROUTE 40 SEC. 51
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

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 CHECKED BY: E.W.Y. DATE: 3-28-12 SCALE: 1" = 30'
 DESIGNED BY: AMS DATE: 5-11
 BRIDGE NO. 07234 DRAWING NO. 52603

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

For Details of Wing & Rail, see Dwg. No. 52606

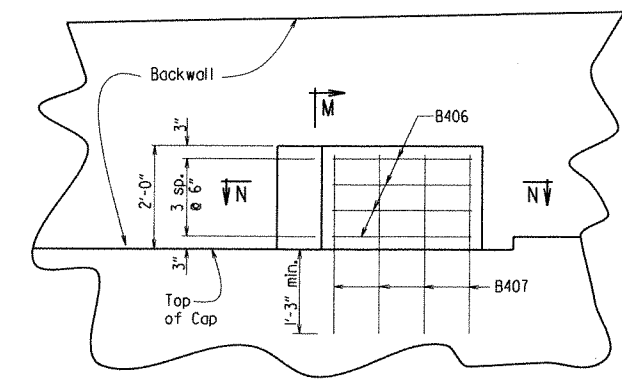
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-72				6	ARK.			
				JOB NO.	110543	50	134	
				07234	END BENT	52605		



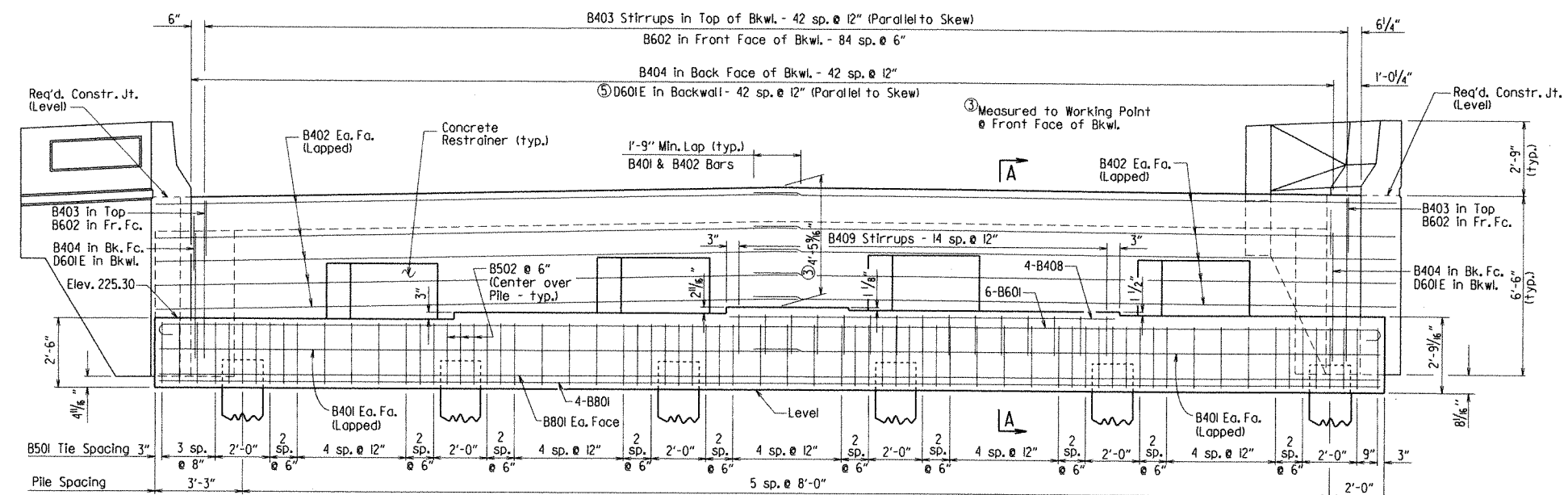
PLAN - BENT 5
3/8" = 1'-0"

⑤ Adjust spacing of D60E bars as necessary to provide 3" clear from the longitudinal construction joint between the approach slab and gutters.

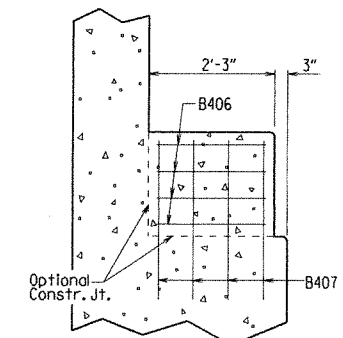
Notes:
For General Notes & Bar List, See Dwg. No. 52606
For "Section A-A" & "Typ. Anchor Bolt Layout", See Dwg. No. 52604



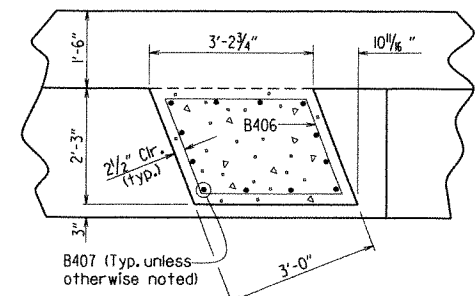
ELEVATION - CONCRETE RESTRAINER
Looking Back Bent 1; Looking Ahead Bent 5
No Scale



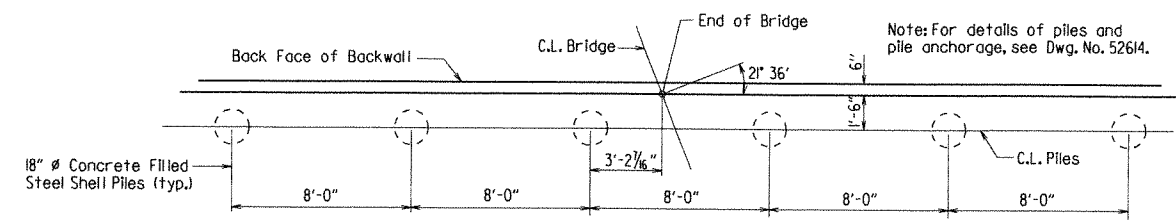
ELEVATION - BENT 5
Looking Ahead
3/8" = 1'-0"



SECTION M-M
No Scale



SECTION N-N
No Scale



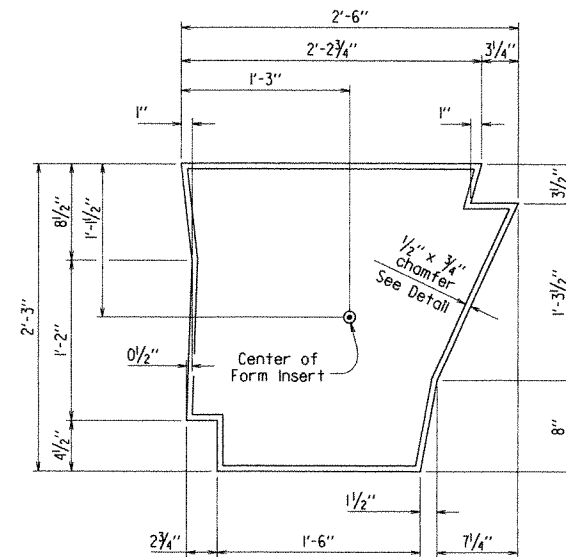
LAYOUT OF PILES
1/4" = 1'-0"

Note: For details of piles and pile anchorage, see Dwg. No. 52614.



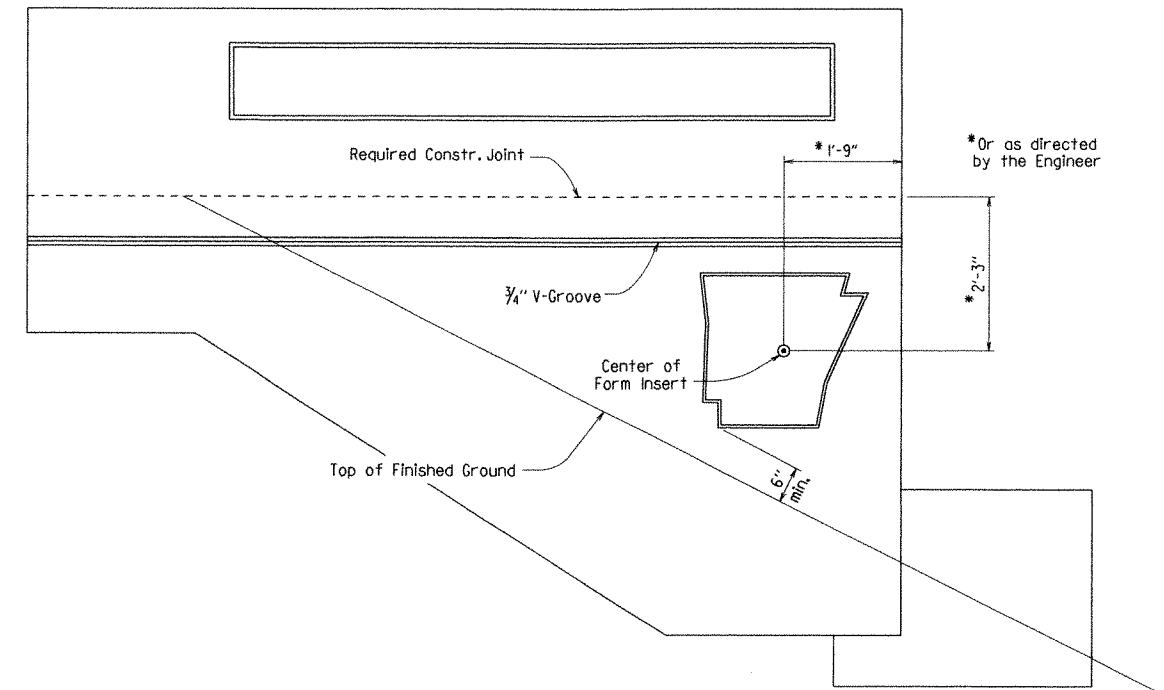
SHEET 2 OF 3
DETAILS OF END BENTS
HWY. 149 OVER INTERSTATE 40
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: AMS. DATE: 8/25/11. FILENAME: bl10543x3.bl.dgn
CHECKED BY: kwy. DATE: 3-28-12. SCALE: As Shown
DESIGNED BY: kwy. DATE: 8-11
BRIDGE NO. 07234 DRAWING NO. 52605

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
						JOB NO. 110543	52	134
				07234	ARK. FORM INSERT		52607	



FORM INSERT DETAILS

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



PLACEMENT AT WINGS

END BENT

No Scale

GENERAL NOTES:

Use form insert on designated bents as noted on layout or as shown on detail drawings.

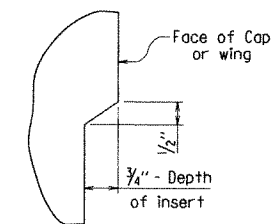
Fabricate form insert as a one piece unit, without the use of splices, joints or glue.

Wash and clean multi-use form inserts before each use.

All work and materials for form inserts shall be included in the unit price bid for Class 5 Concrete-Bridge.

Damaged or worn form inserts shall be replaced at the Contractor's expense.

The form insert shall be approved by the Engineer before its use.



CHAMFER DETAILS

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



BRIDGE ENGINEER

DETAILS OF STATE OF ARKANSAS FORM INSERT

ROUTE SEC. ARKANSAS STATE HIGHWAY COMMISSION

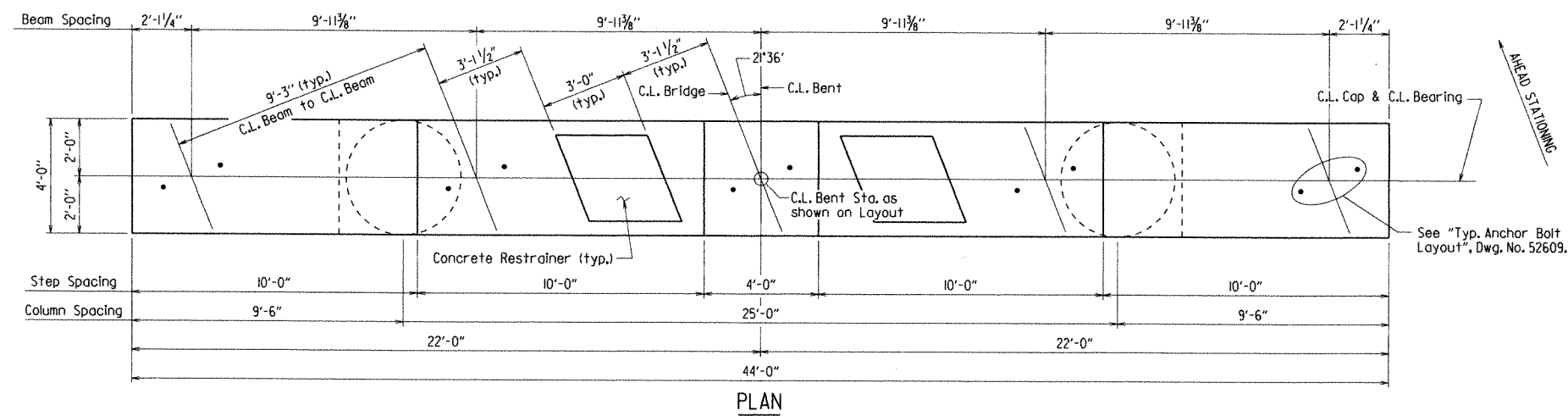
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 9-14-11 FILENAME: B110543.LOGO.DGN

CHECKED BY: AMS DATE: 9-19-11 SCALE: AS NOTED

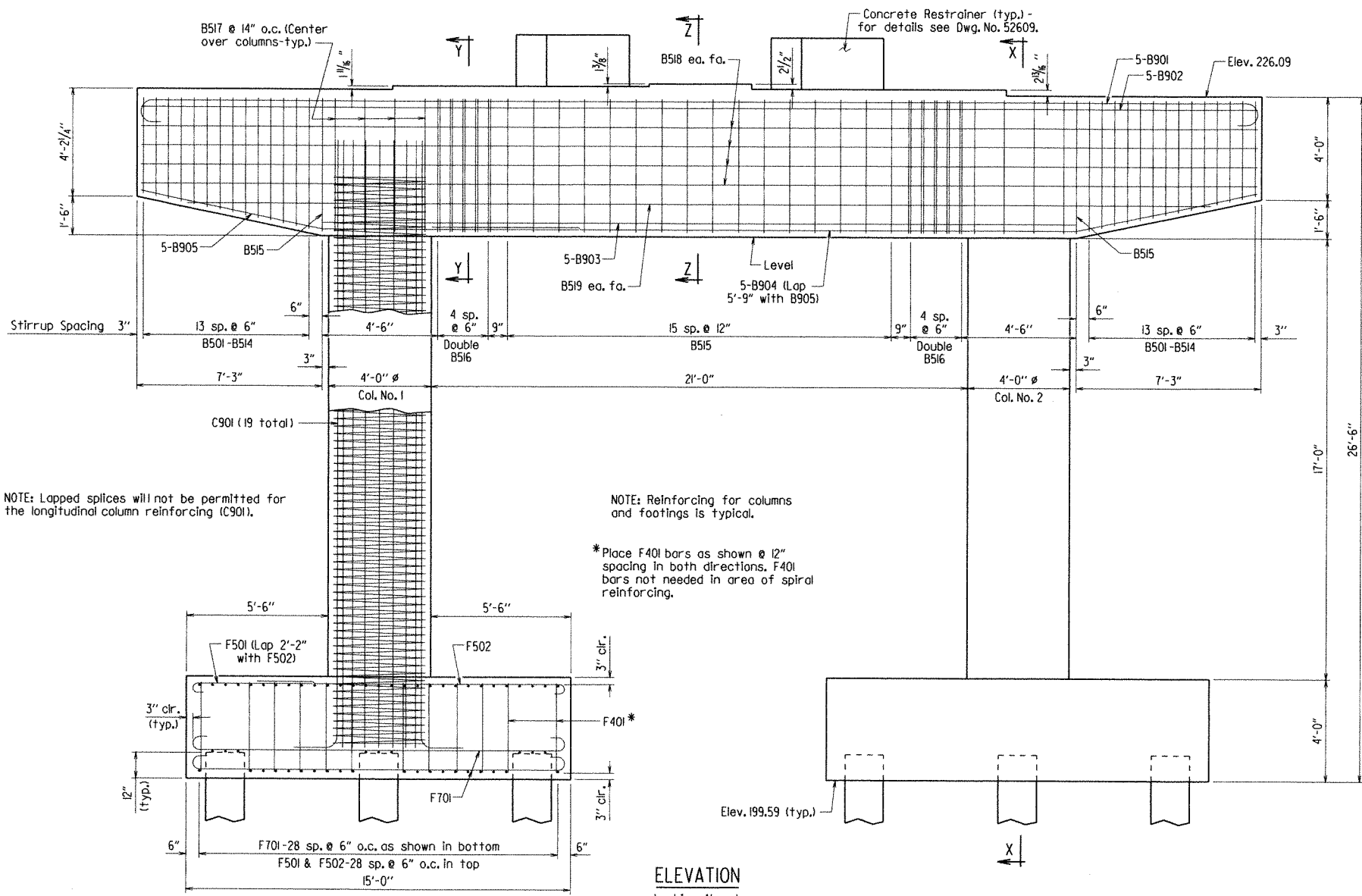
DESIGNED BY: STD DATE: BRIDGE NO. 07234 DRAWING NO. 52607

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.		110543	53	134
				07234		INT. BENTS		52608

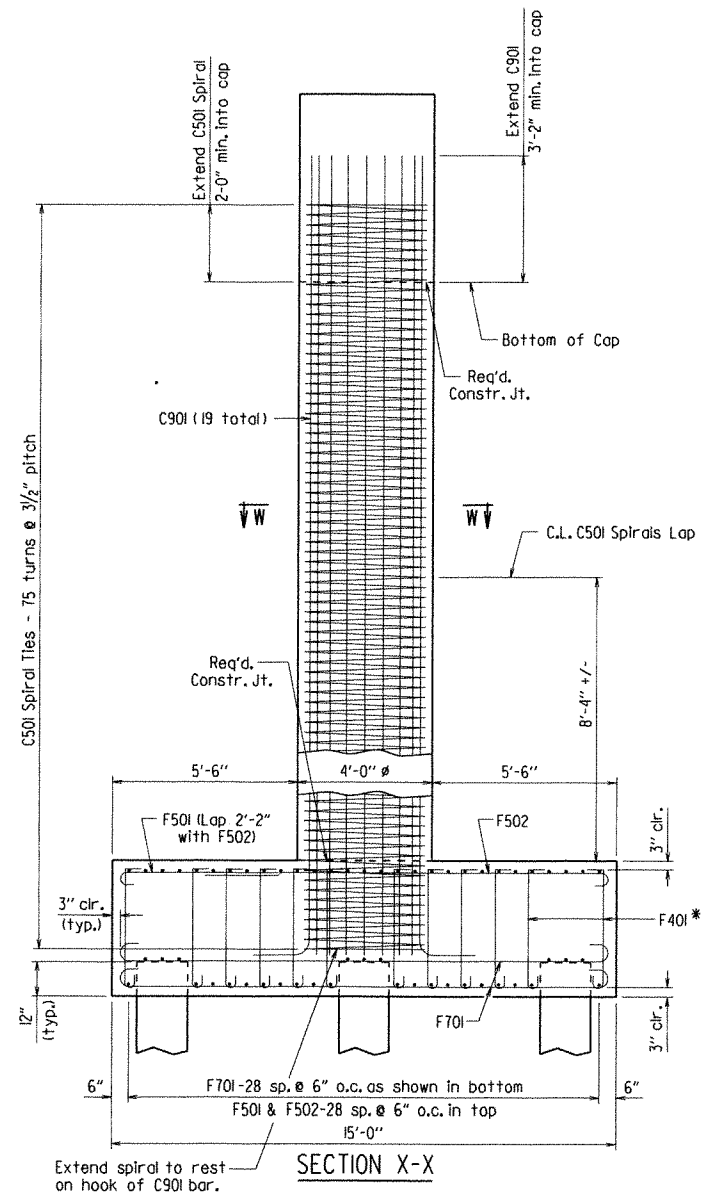


PLAN

NOTE: For "Section W-W", "Section Y-Y" & "Section Z-Z" see Dwg. No. 52609.



ELEVATION
Looking Ahead

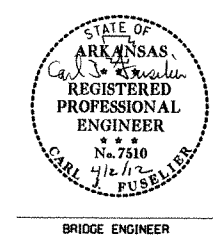


SECTION X-X

NOTE: Lapped splices will not be permitted for the longitudinal column reinforcing (C901).

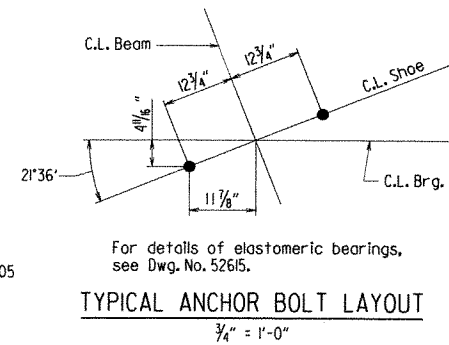
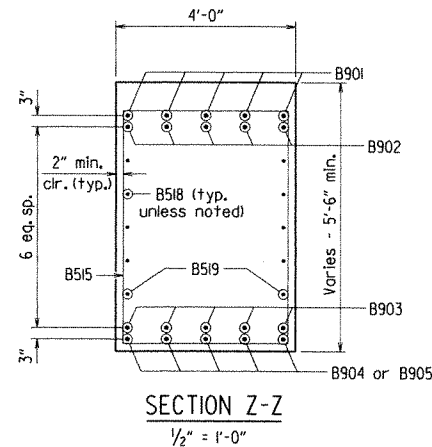
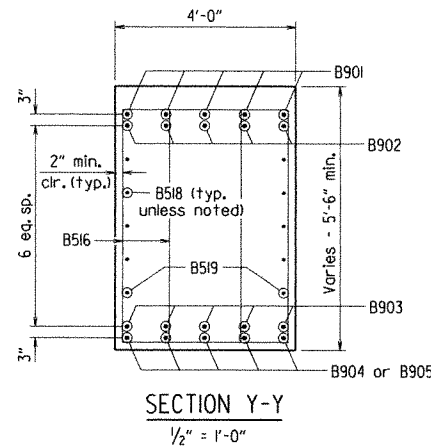
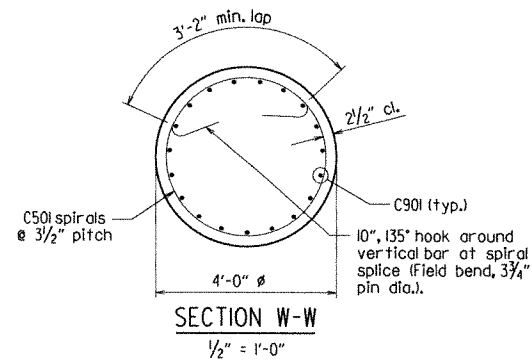
NOTE: Reinforcing for columns and footings is typical.

*Place F401 bars as shown @ 12" spacing in both directions. F401 bars not needed in area of spiral reinforcing.



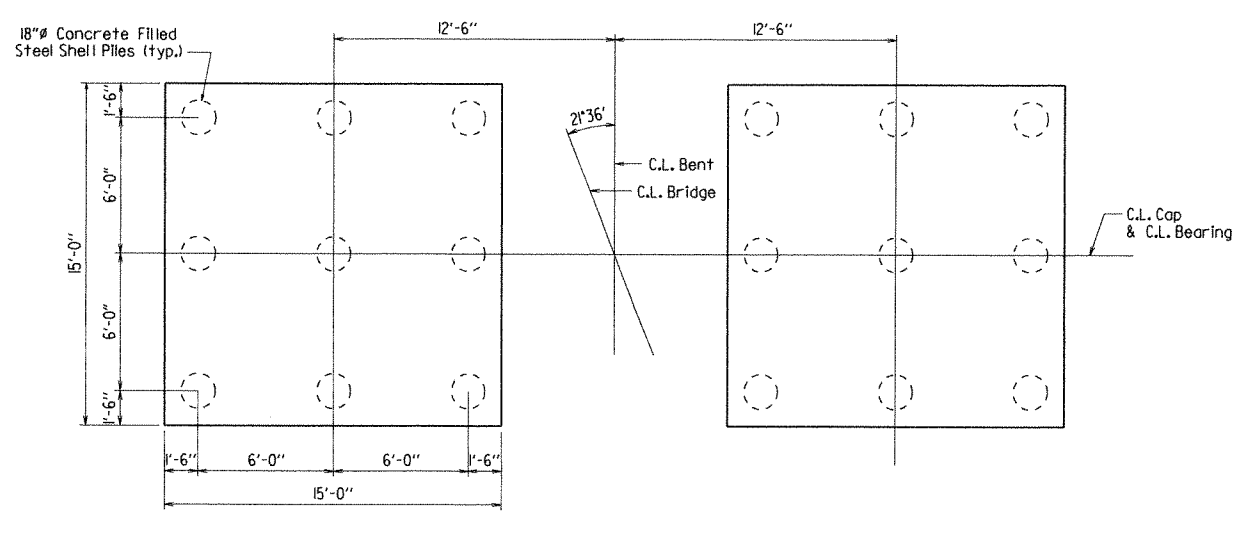
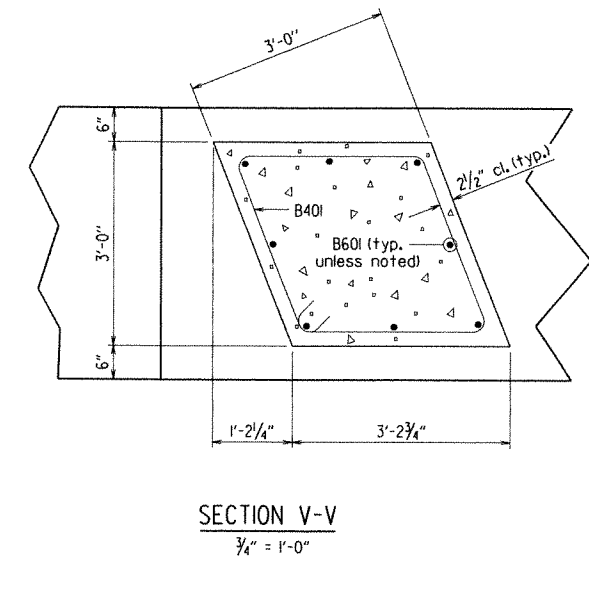
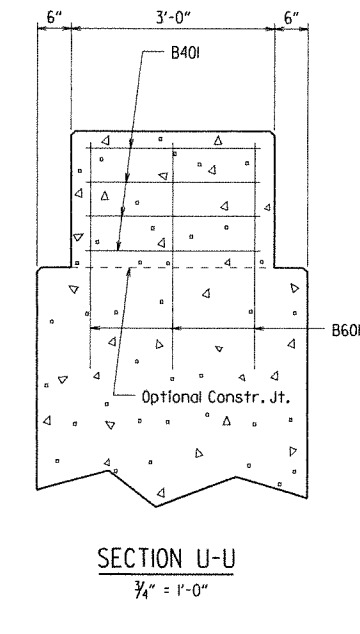
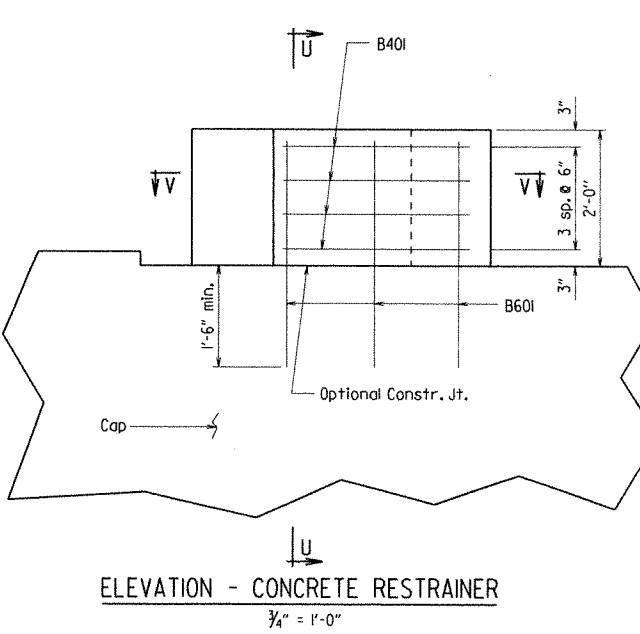
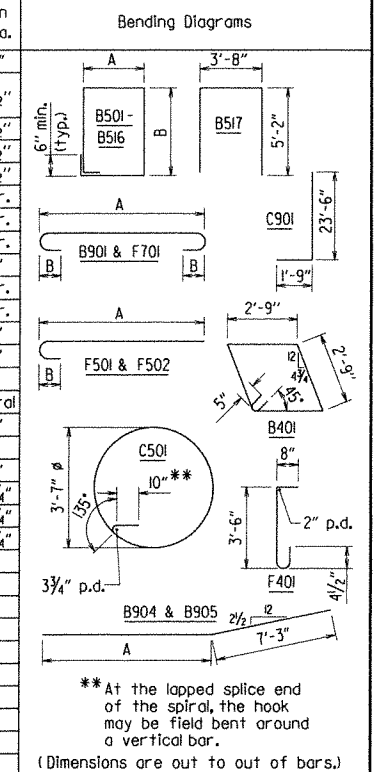
SHEET 1 OF 2
 DETAILS OF BENT 2
 HWY. 149 OVER INTERSTATE 40
 ROUTE SEC.
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: KWP DATE: 8-19-11 FILENAME: bh0543x3_b2.dgn
 CHECKED BY: JYP DATE: 3-28-12 SCALE: 3/8" = 1'-0"
 DESIGNED BY: KWP DATE: 8-11
 BRIDGE NO. 07234 DRAWING NO. 52608

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.	110543	54	134	
				07234	INT. BENTS	52609		



BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	8	11'-6"			3"
B501 - B514	2 ea.	15'-2" - 17'-10"	3'-8"	3'-8" - 5'-0"	2 1/2"
B515	18	18'-2"	3'-8"	5'-2"	2 1/2"
B516	20	16'-1"	2'-7 1/2"	5'-2"	2 1/2"
B517	8	13'-10"			2 1/2"
B518	8	43'-8"			Str.
B519	2	40'-0"			Str.
B601	16	3'-4"			Str.
B901	5	46'-2"	43'-8"	10"	9"
B902	5	43'-8"			Str.
B903	5	29'-6"			Str.
B904	5	32'-5"	25'-2"		9"
B905	5	17'-4"	10'-1"		9"
C501	4	438'-0"			Spiral
C901	38	25'-0"			9"
F401	280	4'-7"			3"
F501	116	5'-3"	4'-8"	5"	3 3/4"
F502	116	12'-7"	12'-0"	5"	3 3/4"
F701	116	16'-2"	14'-6"	7"	5 1/4"



NOTE: For details of piles and pile anchorage, see Dwg. No. 52614.

GENERAL NOTES

All concrete shall be Class "S" and shall be poured in the dry. All exposed corners to be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60. If anchor bolts are drilled into cap, top reinforcing bars shall be properly placed to avoid damage.

All piling shall be Grade 3, Fy = 45 ksi.

For additional information, see Layout.

NOTES FOR SPIRAL REINFORCING:

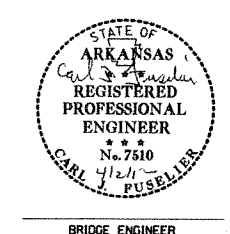
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M53 (Grade 60) or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625".

Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, additional splices or bracing needed for assembly, shipping, handling or erecting.

The Contractor may elect to use a different number of spiral lapped splices per column, in no case shall a spiral be lapped within 4'-0" of the top or bottom of the column.

Splices in spiral reinforcement shall be lapped a minimum of 60 bar diameters.

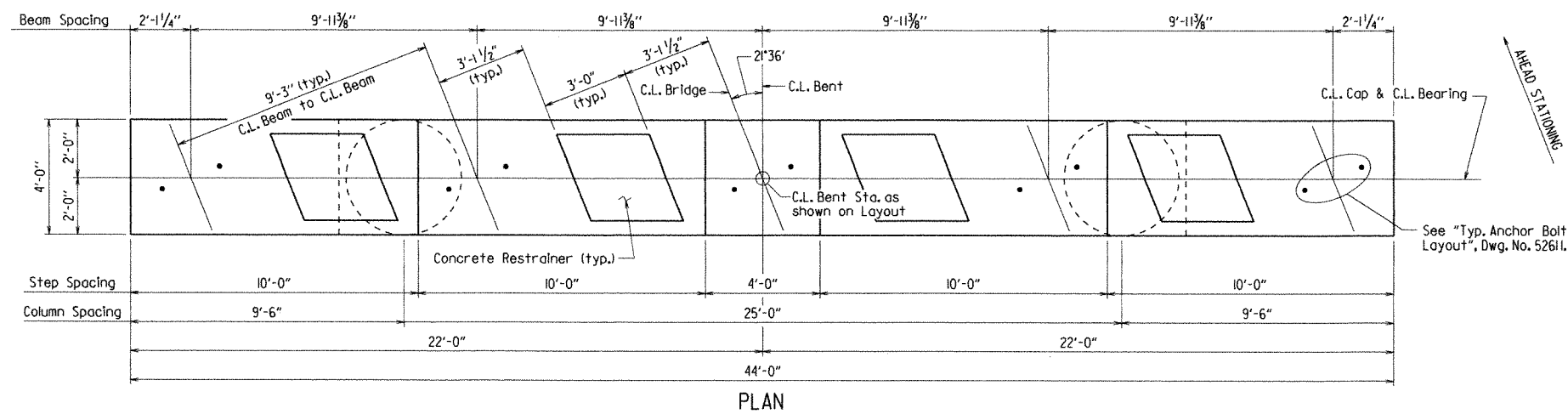
Spiral reinforcement at lapped splices shall be terminated by a 135° hook with a 10" tail around a vertical bar. Hook may be field bent. Ends of spirals not lapped shall be terminated with 1 1/2 turns and a 135° hook with a 10" tail around a vertical bar.



SHEET 2 OF 2
DETAILS OF BENT 2
HWY. 149 OVER INTERSTATE 40
 ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

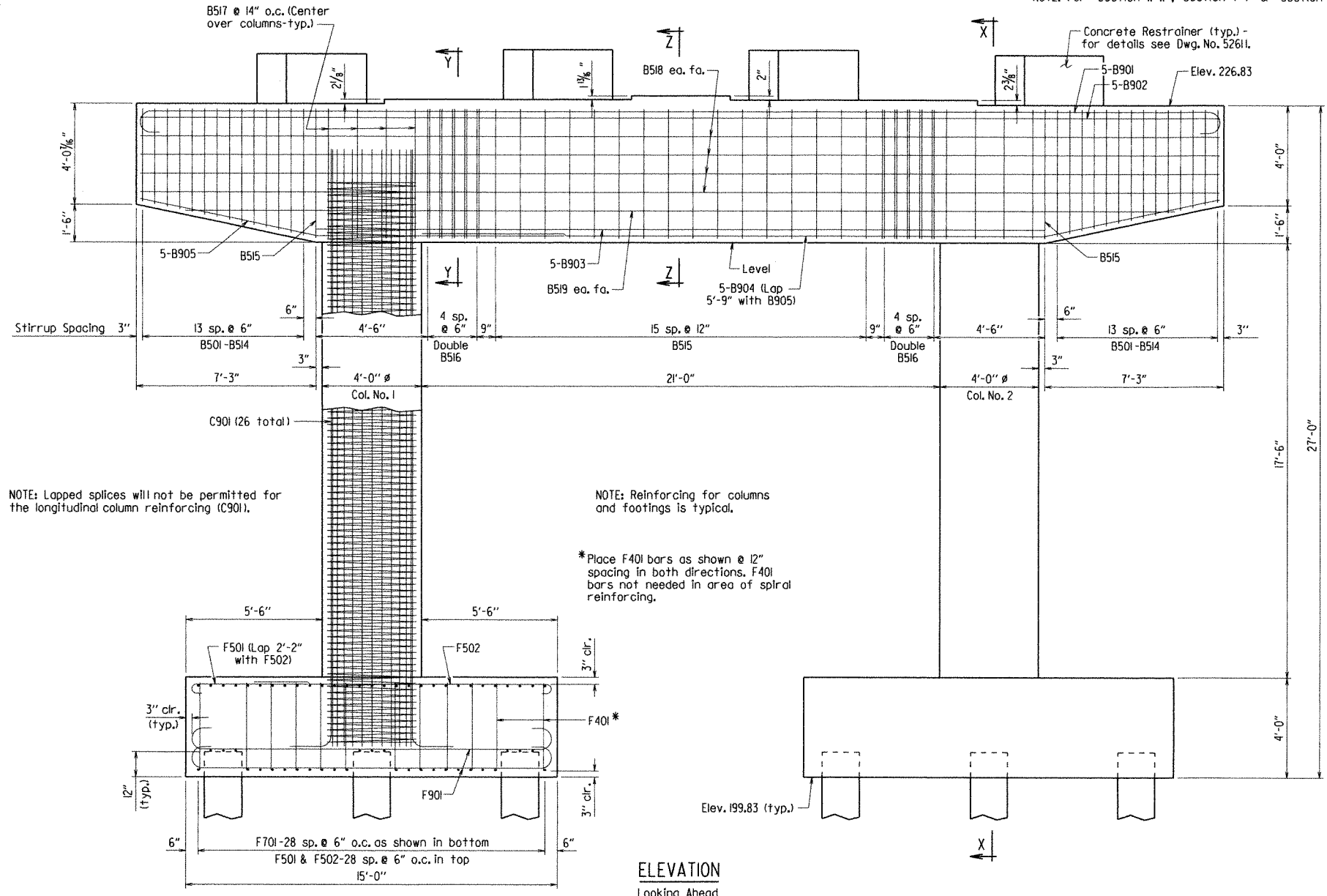
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 CHECKED BY: JYP DATE: 3-28-12 SCALE: as noted
 DESIGNED BY: Kwy DATE: 8-11
 BRIDGE NO. 07234 DRAWING NO. 52609

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.	110543	55	134	
				07234	INT. BENTS	52610		



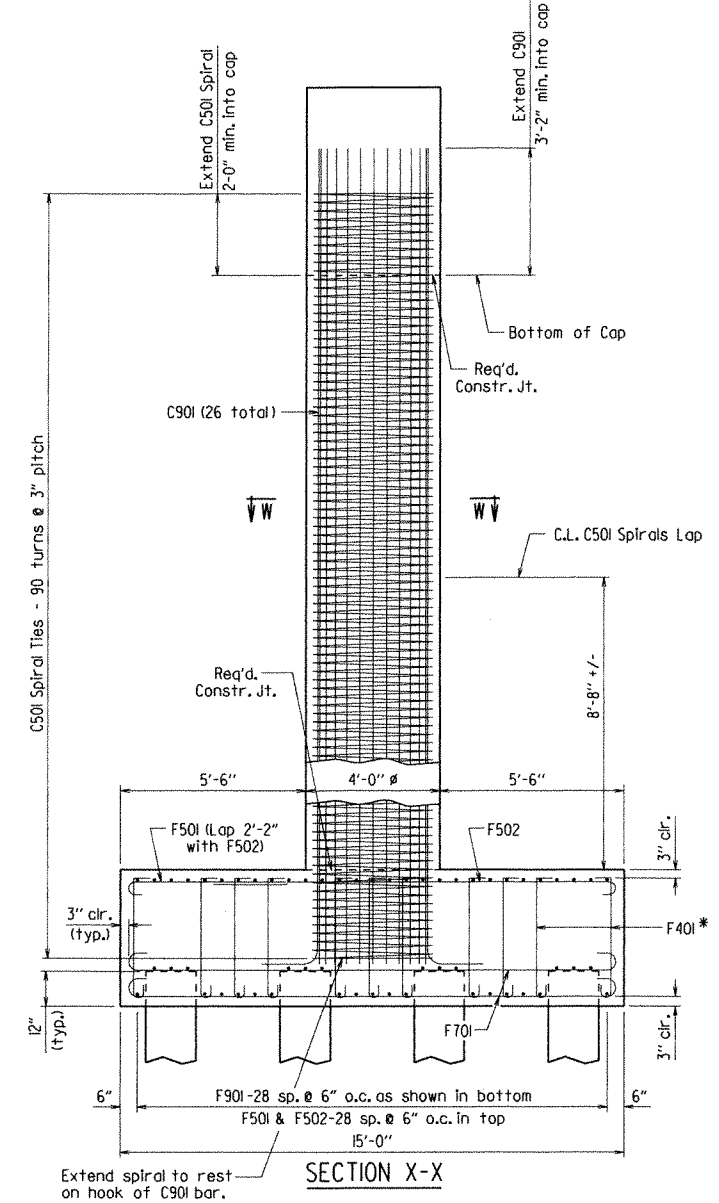
PLAN

NOTE: For "Section W-W", "Section Y-Y" & "Section Z-Z" see Dwg. No. 52611.



ELEVATION

Looking Ahead



SECTION X-X

NOTE: Lapped splices will not be permitted for the longitudinal column reinforcing (C901).

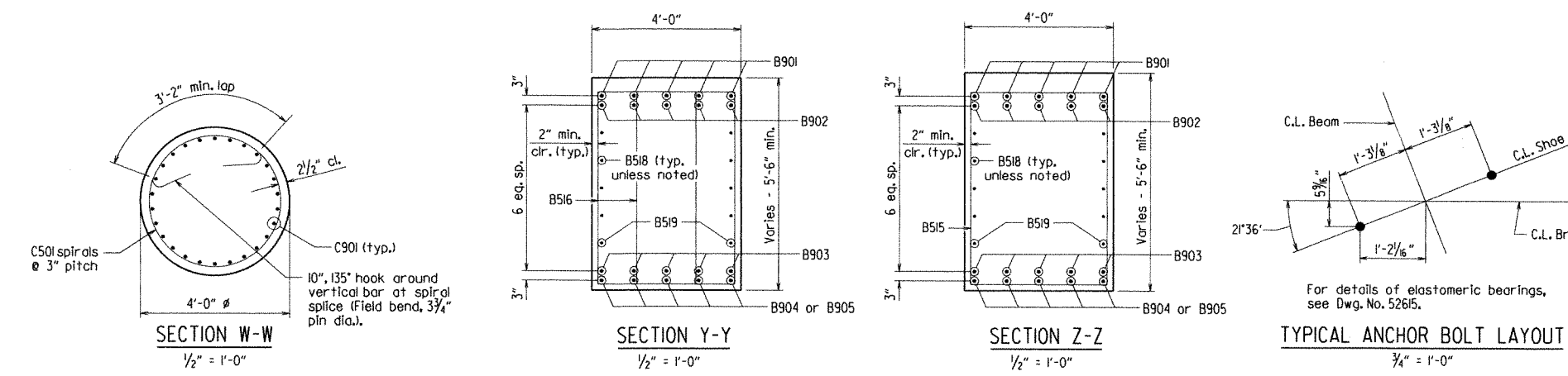
NOTE: Reinforcing for columns and footings is typical.

*Place F401 bars as shown @ 12" spacing in both directions. F401 bars not needed in area of spiral reinforcing.



SHEET 1 OF 2
 DETAILS OF BENT 3
 HWY. 149 OVER INTERSTATE 40
 ROUTE SEC.
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: Kwy DATE: 8-23-11 FILENAME: b10543x3_b2.dgn
 CHECKED BY: JYP DATE: 9-23-12 SCALE: 3/8" = 1'-0"
 DESIGNED BY: Kwy DATE: 8-11
 BRIDGE NO. 07234 DRAWING NO. 52610

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-72				6	ARK.			
				JOB NO.	110543	56	134	
				07234	INT. BENTS		52611	



BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.	Bending Diagrams
B401	16	11'-6"			3"	
B501 - B514	2 ea.	15'-2" - 17'-10"	3'-8"	3'-8" - 5'-0"	2 1/2"	
B515	18	18'-2"	3'-8"	5'-2"	2 1/2"	
B516	20	16'-4"	2'-7 1/2"	5'-2"	2 1/2"	
B517	8	13'-10"			2 1/2"	
B518	8	43'-8"			Str.	
B519	2	40'-0"			Str.	
B601	32	3'-4"			Str.	
B901	5	46'-2"	43'-8"	10"	9"	
B902	5	43'-8"			Str.	
B903	5	29'-6"			Str.	
B904	5	32'-5"	25'-2"		9"	
B905	5	17'-4"	10'-1"		9"	
C501	4	52'-3"			Spiral	
C901	52	25'-6"			9"	
F401	252	4'-7"			3"	
F501	116	5'-3"	4'-8"	5"	3 3/4"	
F502	116	12'-7"	12'-0"	5"	3 3/4"	
F701	58	16'-2"	14'-6"	7"	5 1/4"	
F901	58	17'-0"	14'-6"	10"	9"	

GENERAL NOTES

All concrete shall be Class "S" and shall be poured in the dry. All exposed corners to be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60. If anchor bolts are drilled into cap, top reinforcing bars shall be properly placed to avoid damage.

All piling shall be Grade 3, Fy = 45 ksi.

For additional information, see Layout.

NOTES FOR SPIRAL REINFORCING:

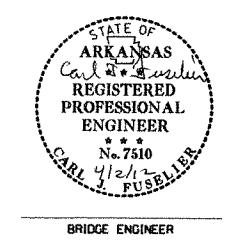
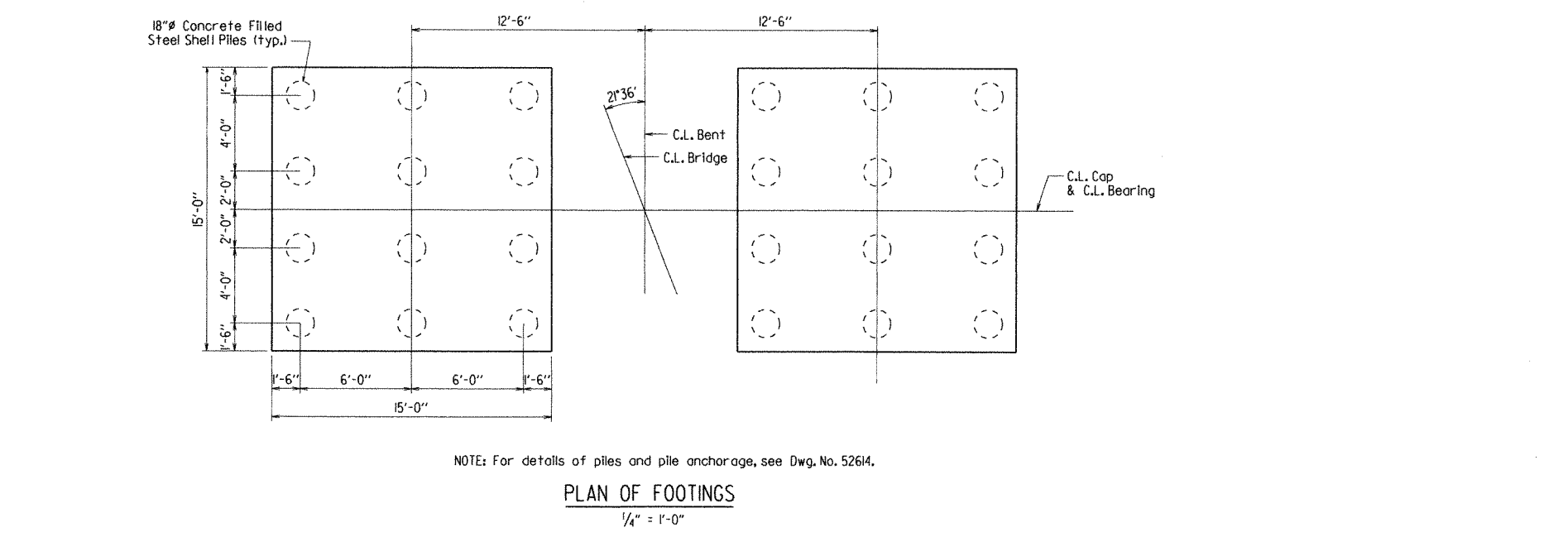
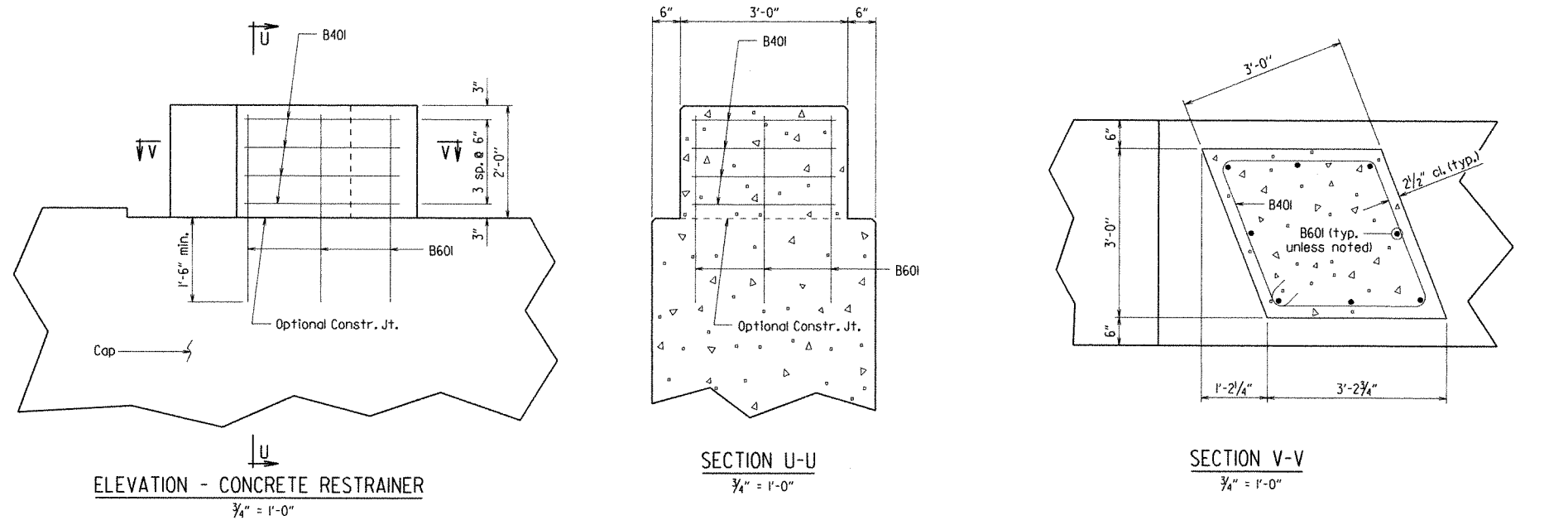
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M53 (Grade 60) or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625".

Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, additional splices or bracing needed for assembly, shipping, handling or erecting.

The Contractor may elect to use a different number of spiral lapped splices per column, in no case shall a spiral be lapped within 4'-0" of the top or bottom of the column.

Splices in spiral reinforcement shall be lapped a minimum of 60 bar diameters.

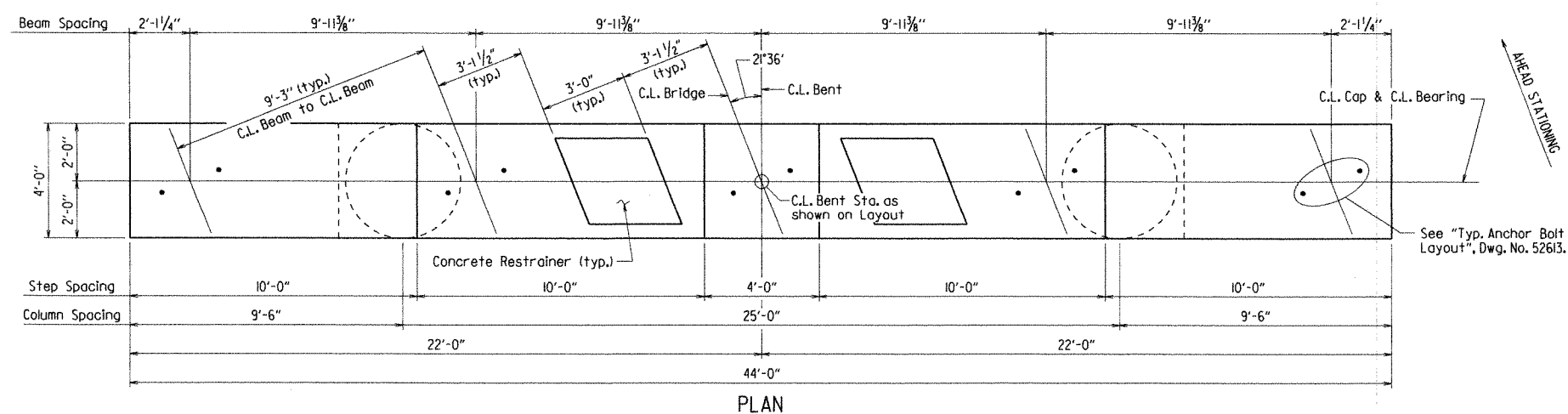
Spiral reinforcement at lapped splices shall be terminated by a 135° hook with a 10" tail around a vertical bar. Hook may be field bent. Ends of spirals not lapped shall be terminated with 1 1/2 turns and a 135° hook with a 10" tail around a vertical bar.



SHEET 2 OF 2
DETAILS OF BENT 3
 HWY. 149 OVER INTERSTATE 40
 ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

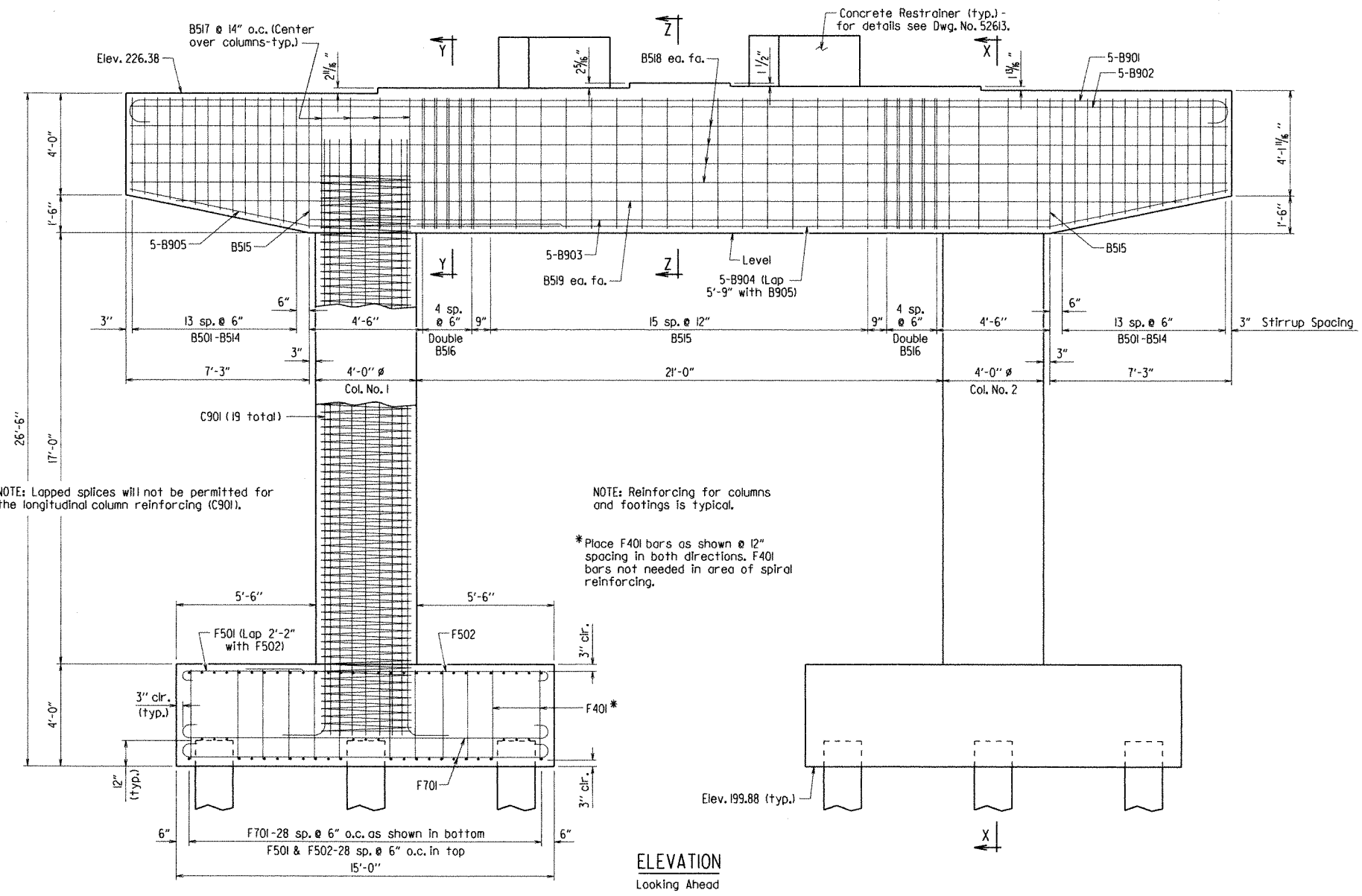
DRAWN BY: K W Y DATE: 8-23-11 FILENAME: b10543x3_b2.dgn
 CHECKED BY: J N P DATE: 3-28-12 SCALE: as noted
 DESIGNED BY: K W Y DATE: 8-11
 BRIDGE NO. 07234 DRAWING NO. 52611

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.	110543	57	134
				JOB NO.	07234 INT. BENTS		52612	

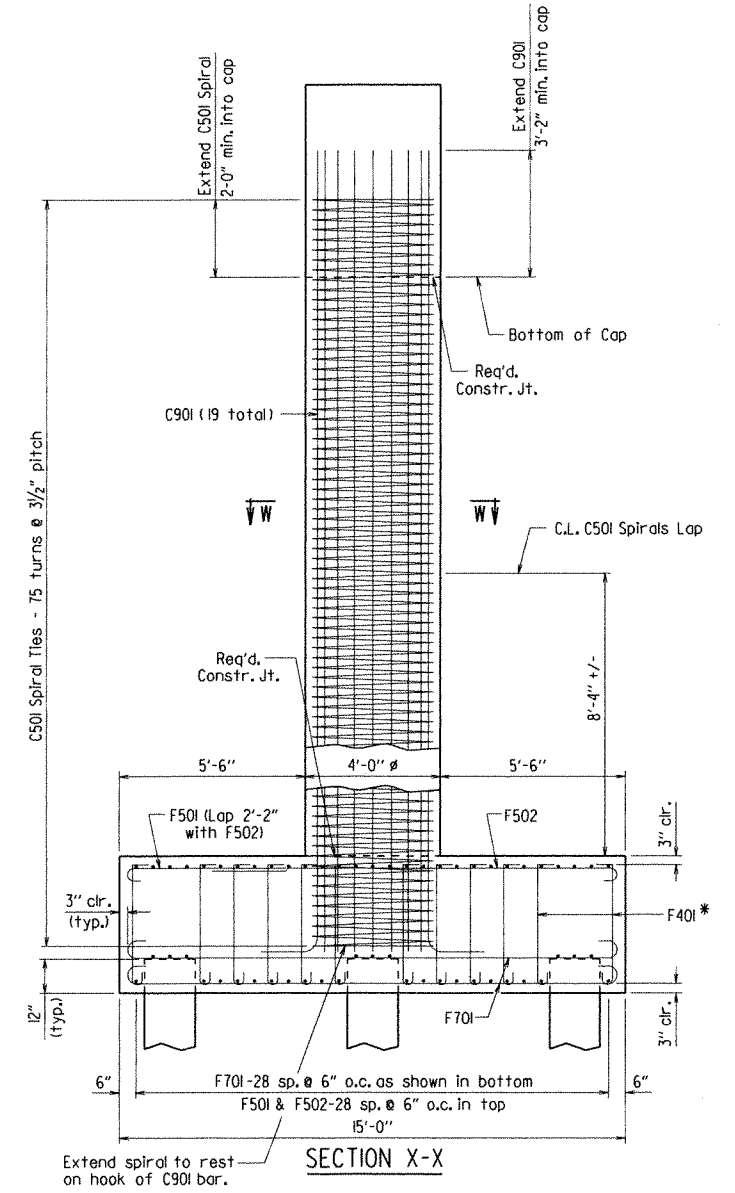


PLAN

NOTE: For "Section W-W", "Section Y-Y" & "Section Z-Z" see Dwg. No. 52613.



ELEVATION
Looking Ahead



SECTION X-X

NOTE: Lapped splices will not be permitted for the longitudinal column reinforcing (C901).

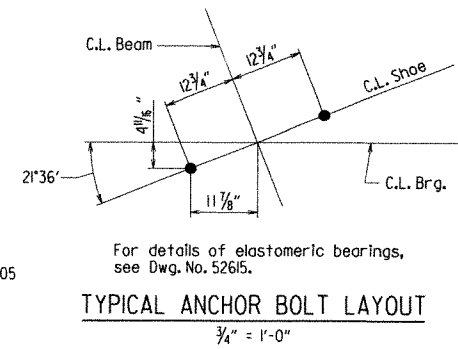
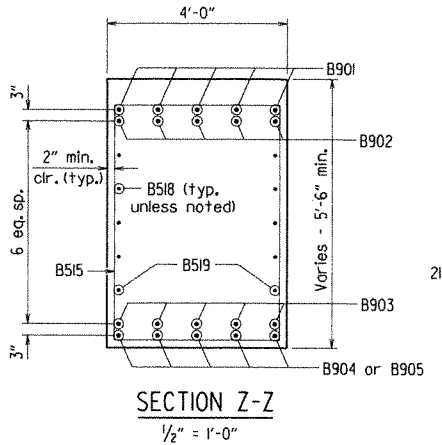
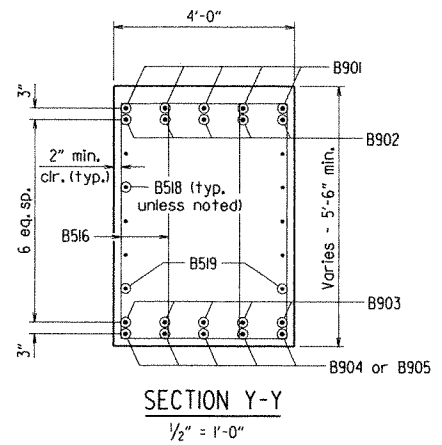
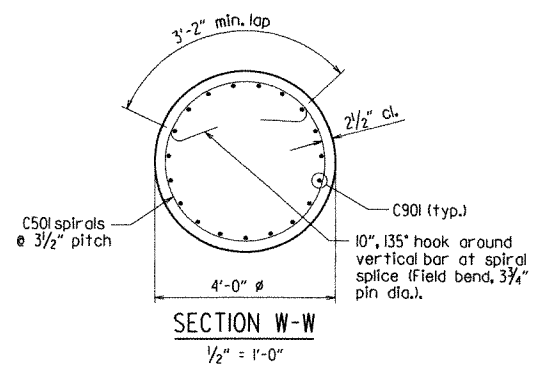
NOTE: Reinforcing for columns and footings is typical.

* Place F401 bars as shown @ 12" spacing in both directions. F401 bars not needed in area of spiral reinforcing.



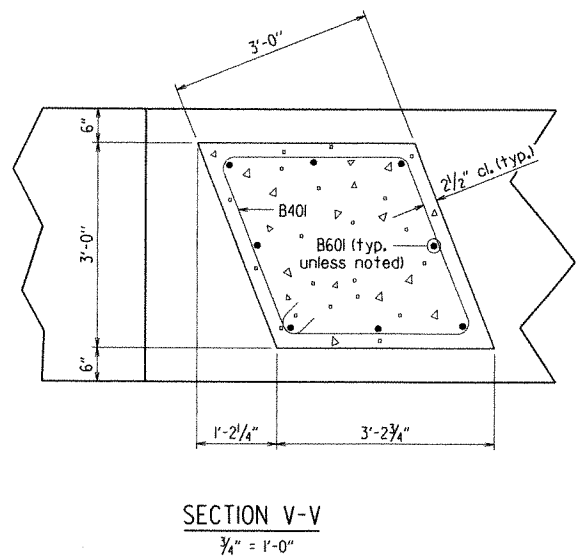
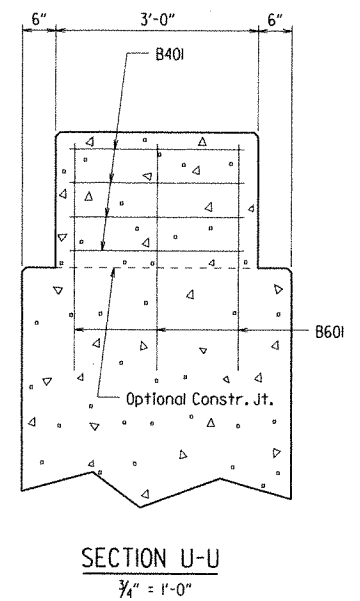
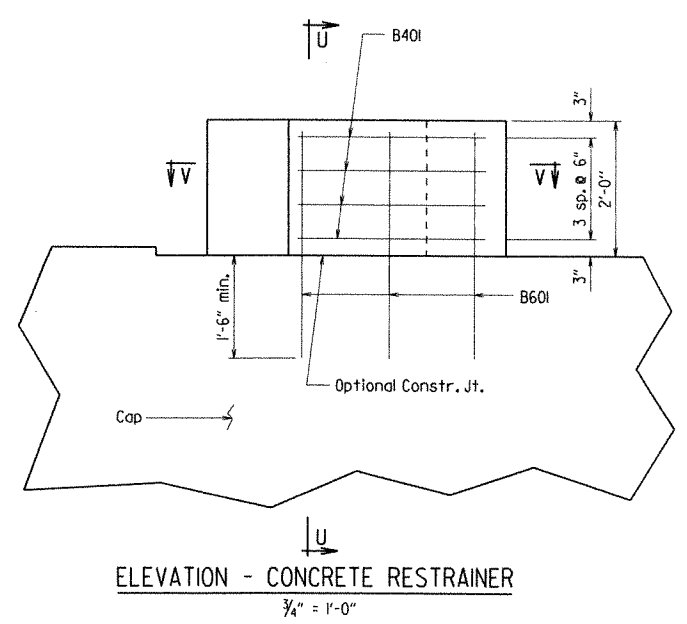
SHEET 1 OF 2
 DETAILS OF BENT 4
 HWY. 149 OVER INTERSTATE 40
 ROUTE SEC.
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: Kwy DATE: 8-22-11 FILENAME: bli0543x3.b2.dgn
 CHECKED BY: JSP DATE: 3-28-12 SCALE: 3/8" = 1'-0"
 DESIGNED BY: Kwy DATE: 8-11
 BRIDGE NO. 07234 DRAWING NO. 52612

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-72				6	ARK.			
				JOB NO.	110543		58	134
				07234	INT. BENTS		52613	



BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.	Bending Diagrams
B40I	8	11'-6"			3"	
B50I - B514	2 ea.	15'-2" - 17'-10"	3'-8"	3'-8" - 5'-0"	2 1/2"	
B515	18	18'-2"	3'-8"	5'-2"	2 1/2"	
B516	20	16'-1"	2'-7 1/2"	5'-2"	2 1/2"	
B517	8	13'-10"			2 1/2"	
B518	8	43'-8"			Str.	
B519	2	40'-0"			Str.	
B60I	16	3'-4"			Str.	
B90I	5	46'-2"	43'-8"	10"	9"	
B902	5	43'-8"			Str.	
B903	5	29'-6"			Str.	
B904	5	32'-5"	25'-2"		9"	
B905	5	17'-4"	10'-1"		9"	
C50I	4	438'-0"			Spiral	
C90I	38	25'-0"			9"	
F40I	280	4'-7"			3"	
F50I	116	5'-3"	4'-8"	5"	3 3/4"	
F502	116	12'-7"	12'-0"	5"	3 3/4"	
F70I	116	16'-2"	14'-6"	7"	5 1/4"	



GENERAL NOTES

All concrete shall be Class "S" and shall be poured in the dry. All exposed corners to be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60. If anchor bolts are drilled into cap, top reinforcing bars shall be properly placed to avoid damage.

All piling shall be Grade 3, Fy = 45 ksi.

For additional information, see Layout.

NOTES FOR SPIRAL REINFORCING:

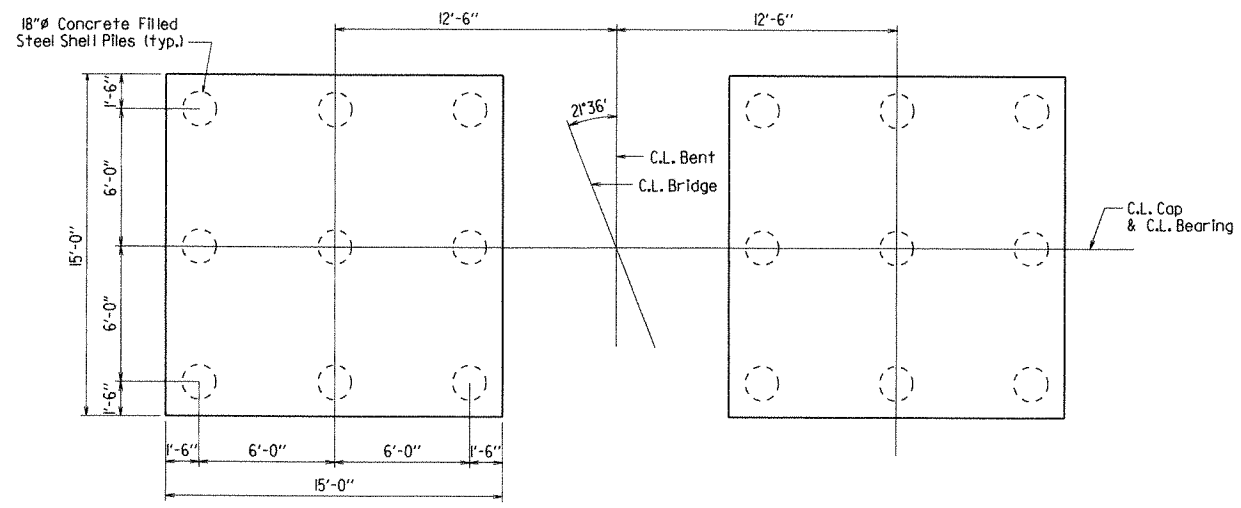
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M53 (Grade 60) or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625".

Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, additional splices or bracing needed for assembly, shipping, handling or erecting.

The Contractor may elect to use a different number of spiral lapped splices per column, in no case shall a spiral be lapped within 4'-0" of the top or bottom of the column.

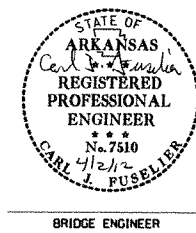
Splices in spiral reinforcement shall be lapped a minimum of 60 bar diameters.

Spiral reinforcement at lapped splices shall be terminated by a 135° hook with a 10" tail around a vertical bar. Hook may be field bent. Ends of spirals not lapped shall be terminated with 1 1/2 turns and a 135° hook with a 10" tail around a vertical bar.



NOTE: For details of piles and pile anchorage, see Dwg. No. 52614.

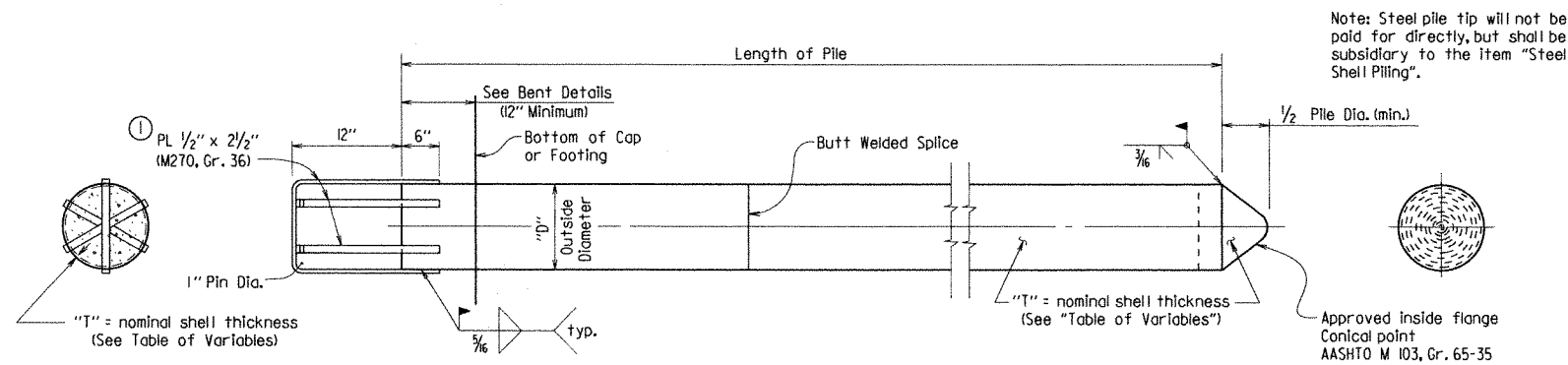
PLAN OF FOOTINGS
1/4" = 1'-0"



SHEET 2 OF 2
DETAILS OF BENT 4
HWY. 149 OVER INTERSTATE 40
 ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

DRAWN BY: Kwy DATE: 8-22-11 FILENAME: b10543x3_b2.dgn
 CHECKED BY: JJP DATE: 9-28-12 SCALE: as noted
 DESIGNED BY: Kwy DATE: 8-11
 BRIDGE NO. 07234 DRAWING NO. 52613

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.	110543		59134	
				07234	STEEL SHELL PILES		52614	



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

CONCRETE FILLED STEEL SHELL PILE

GENERAL NOTES FOR CONCRETE FILLED STEEL SHELL PILES:

Seismic Performance Zone: 4

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

Steel shell piles 50' in length or less shall be completely filled with Class S Concrete with a minimum 28-day compressive strength, f'c = 3,500 psi, and shall be poured in the dry. At the Contractor's option, pile lengths greater than 50' may be filled with sand up to 50' below the top plan elevation of the steel shell pile and the remaining 50' filled with Class S Concrete. Sand used for filling of steel shell piles shall be clean and free of any organic matter.

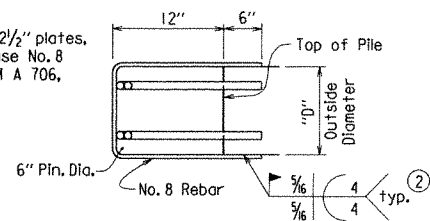
Steel shell piles that extend above the ground and are not protected by pile encasement shall be painted in accordance with subsection 805.02 of the Standard Specifications for Highway Construction.

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

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

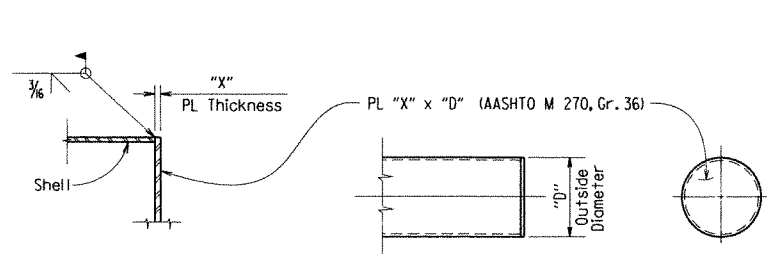
① Pile anchorage shall be placed to minimize interference with anchor bolts and reinforcing in cap or footing.

① In place of the 1/2" x 2 1/2" plates, the Contractor may use No. 8 reinforcing bars (ASTM A 706, Grade 60).



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

ALTERNATE FOR 1/2" x 2 1/2" PLATE

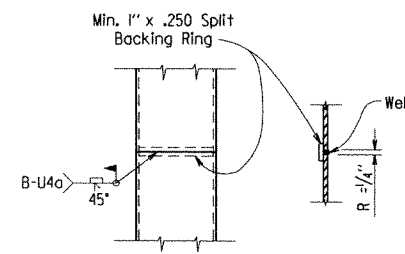


PART SECTION

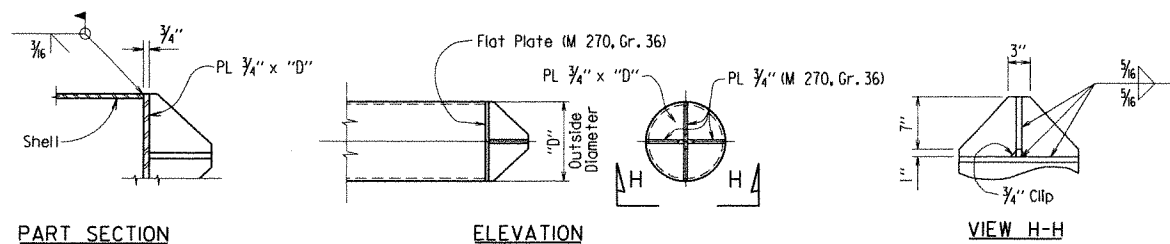
ELEVATION

ALTERNATE FLAT TIP DETAIL

(ALTERNATE FLAT PILE TIPS SHALL NOT BE USED ON PILES IN END BENTS)



TYPICAL SPLICE DETAILS



PART SECTION

ELEVATION

VIEW H-H

ALTERNATE VANED TIP DETAIL

TABLE OF VARIABLES

OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	PLATE THICKNESS "X"
18"	0.50"	1 1/4"

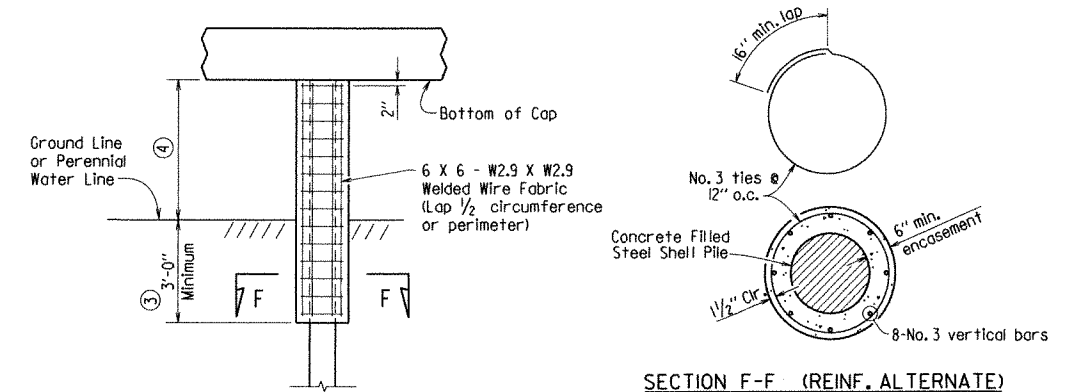
GENERAL NOTES FOR PILE ENCASEMENTS:

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".



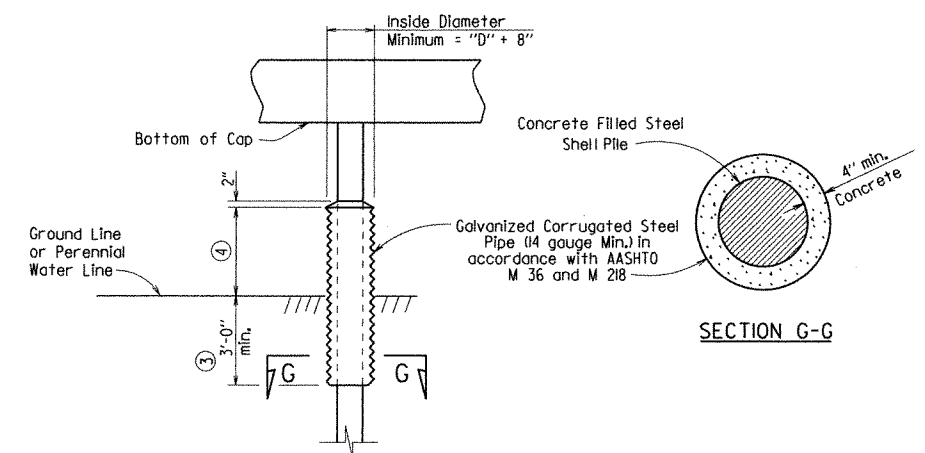
PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(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.



ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(Shown with Partial Height Encasement)

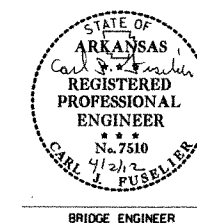
DETAILS OF CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

ROUTE SECTION
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

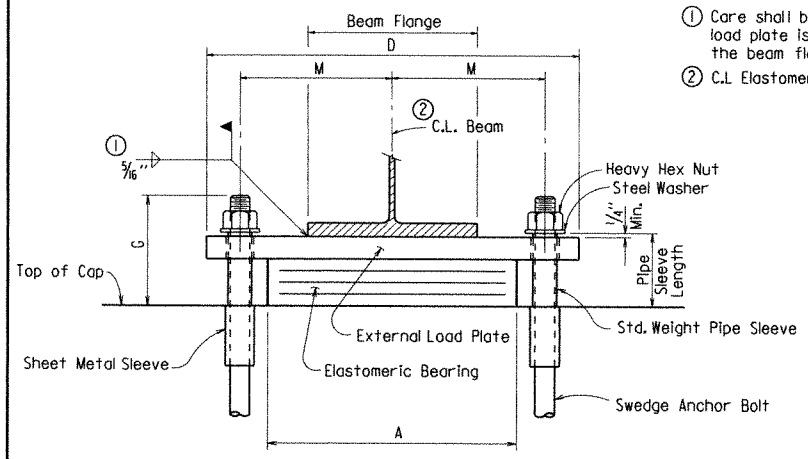
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CHECKED BY: Kwy DATE: 3-28-12 SCALE: NONE

DESIGNED BY: STD. DATE: BRIDGE NO. 07234 DRAWING NO. 52614

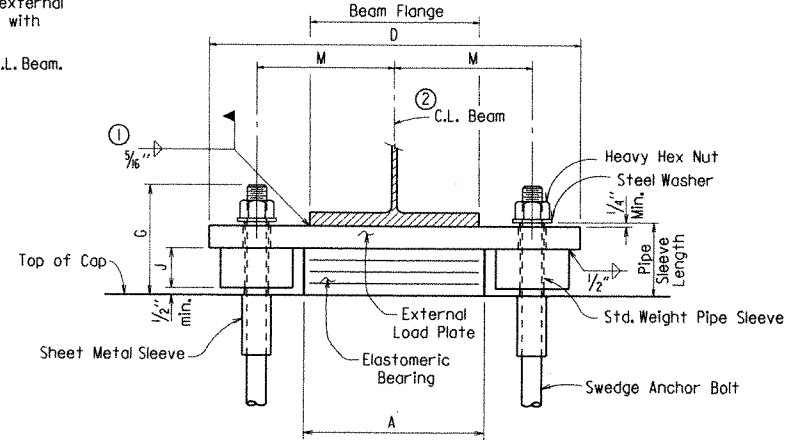


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.	110543		60134	
				07234	ELASTOMERIC BEARINGS		52615	

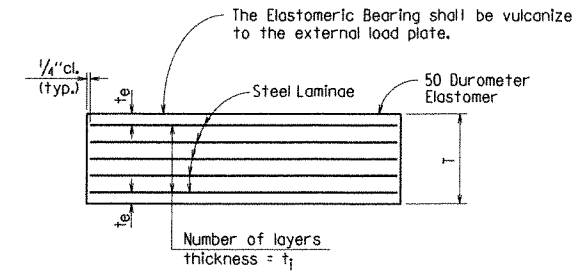


FRONT VIEW AT BENTS 1-2 & 4-5

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



FRONT VIEW AT BENT 3

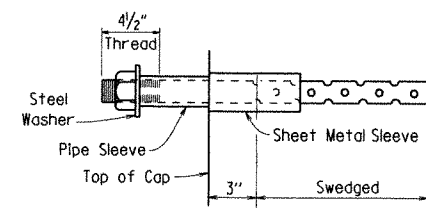


The Elastomeric Bearing shall be vulcanized to the external load plate.
 t_e = thickness of elastomer cover on top and bottom of pad
 t_1 = thickness of elastomer between steel laminae
 N = number of elastomer layers of thickness t_1

ELASTOMERIC BEARING

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

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



ANCHOR BOLT DETAIL

GENERAL NOTES

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

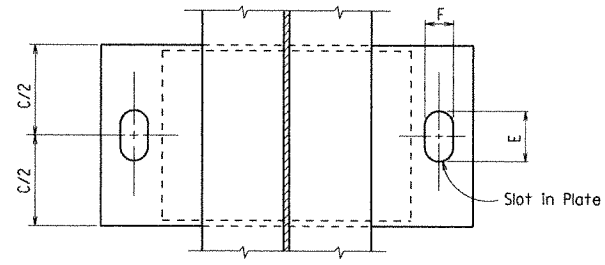
External load plates and shear blocks shall conform to AASHTO M 270, Grade 50. Pipe sleeves shall be ASTM A53, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or AASHTO M 298, Class 50.

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

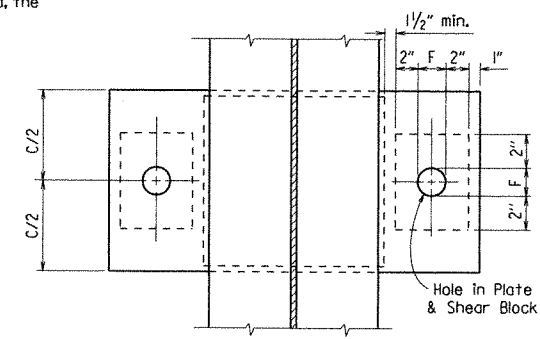
Anchor Bolts, Washers and Nuts shall conform to subsection 807.07 of the Standard Specifications. The anchor bolt grade of steel shall be as specified in the "Table of Fabricator Variables". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M 270, Gr. 50)". External load plates and shear blocks will not be measured or paid for separately but will be considered included in the unit bid price for "Elastomeric Bearings".

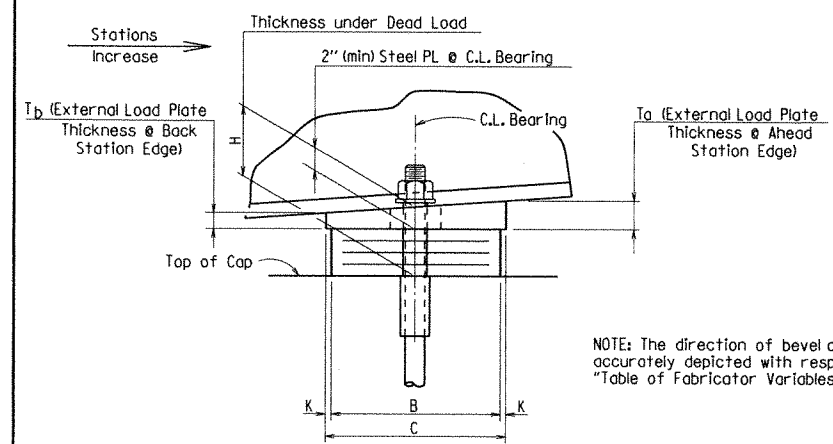
Bearings shall be seated in accordance with subsection 808.08. This work and materials are considered as subsidiary to the item "Elastomeric Bearings" and will not be paid for directly.



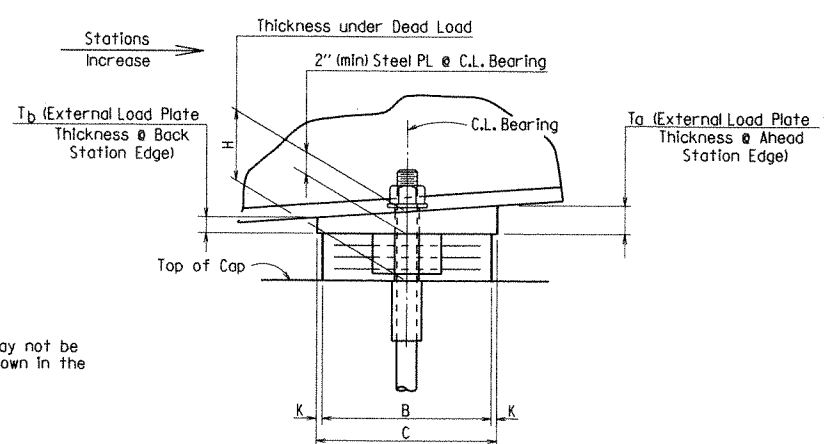
PLAN VIEW AT BENTS 1-2 & 4-5



PLAN VIEW AT BENT 3



SIDE VIEW AT BENTS 1-2 & 4-5



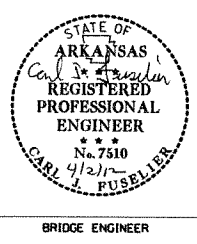
SIDE VIEW AT BENT 3

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

TABLE OF FABRICATOR VARIABLES

* Maximum Design Load = Service I Limit State

BRIDGE NO.	LOCATION BENT NO(S), BEAM OR GIRDER NO.	BEARING TYPE	NO. OF BEARINGS EACH BENT	* MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD					EXTERNAL LOAD PLATE										ANCHOR BOLT						
							A	B	N	t_1	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	J	K	M	T_a	T_b	ANCHOR BOLT ($\phi \times L$)	PIPE SLEEVE SIZE ($\phi \times L$)	SHEET METAL SLEEVE SIZE ($\phi \times L$)	STEEL WASHER SIZE (O.D.)		
							16"	8"	4	$1/2$ "	$1/4$ "	5 @ 12 ga.	3"	9"	26 3/4"	4 3/4"	2 1/4"	N/A	$1/2$ "	10 5/8"	2.09"	1.91"	1 1/2" x 25"	55	1 1/2" x 5 1/4"	3" x 9"	3"	
07234	1	All	Exp.	5	115	7 3/4"	5"	16"	8"	4	$1/2$ "	$1/4$ "	5 @ 12 ga.	3"	9"	26 3/4"	4 3/4"	2 1/4"	N/A	$1/2$ "	10 5/8"	2.09"	1.91"	1 1/2" x 25"	55	1 1/2" x 5 1/4"	3" x 9"	3"
	2	All	Exp.	5	266	7 1/8"	3 3/8"	20"	11"	2	$1/2$ "	$1/4$ "	3 @ 12 ga.	1 1/8"	12"	32"	4 1/4"	3 1/8"	N/A	$1/2$ "	12 3/4"	2.08"	1.92"	2" x 30"	55	2 1/2" x 4 1/8"	4" x 9"	3 3/4"
	3	All	Fix	5	322	7 1/8"	3 3/8"	20"	12"	2	$1/2$ "	$1/4$ "	3 @ 12 ga.	1 1/8"	13"	39 3/8"	N/A	3 1/8"	1 1/4"	$1/2$ "	15 1/8"	2.02"	1.98"	2" x 30"	55	2 1/2" x 4 1/8"	4" x 9"	3 3/4"
	4	All	Exp.	5	301	7 1/8"	4 3/8"	20"	11"	3	$1/2$ "	$1/4$ "	4 @ 12 ga.	2 1/8"	12"	32"	5"	3 1/8"	N/A	$1/2$ "	12 3/4"	1.94"	2.06"	2 1/4" x 33"	55	2 1/2" x 4 5/8"	4" x 9"	4"
	5	All	Exp.	5	123	8 5/8"	5 3/8"	16"	8"	5	$1/2$ "	$1/4$ "	6 @ 12 ga.	3 5/8"	9"	27 1/4"	5 1/2"	2 3/8"	N/A	$1/2$ "	10 3/8"	1.92"	2.08"	1 3/4" x 29"	55	2" x 5 1/8"	4" x 9"	3 3/4"



DETAILS OF ELASTOMERIC BEARINGS HWY. 149 OVER INTERSTATE 40

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

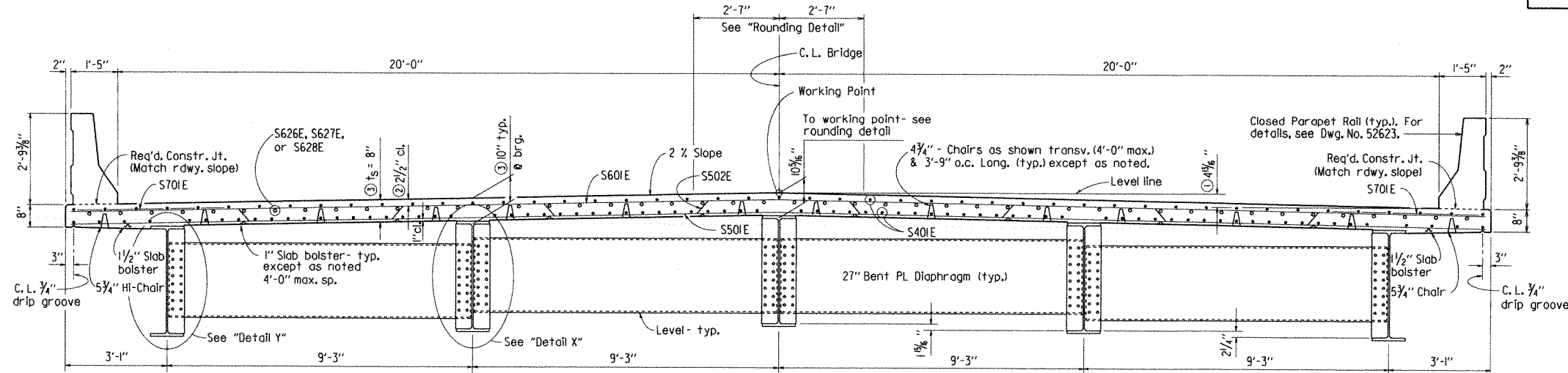
DRAWN BY: PGT DATE: 9-7-11 FILENAME: B110543x3.el.dgn
 CHECKED BY: AHS DATE: 9-17-11 SCALE: NONE
 DESIGNED BY: PGT DATE: 5-11
 BRIDGE NO. 07234 DRAWING NO. 52615

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

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

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.	110543	61	134
				07234	332' UNIT		52616	



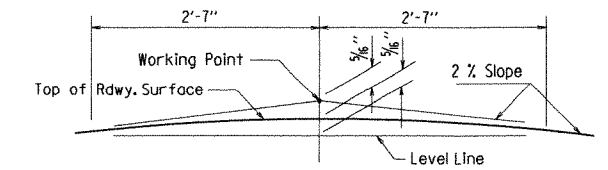
TYP. ROADWAY SECTION

1/2" = 1'-0"

Slab Reinforcing:

Longitudinal: S401E Top & Bottom
 S626E, S627E, or S628E placed as shown over interior supports (See "Reinf. Plan & Pouring Sequence", Dwg. No. 52619)
 Transverse: S502E @ 15" o.c. bent up over beams
 S601E @ 15" o.c. in top, S501E @ 15" o.c. in bottom, Alternate
 S701E @ 15" o.c. in top (See "Reinf. Detail" on dwg. no. 52619)

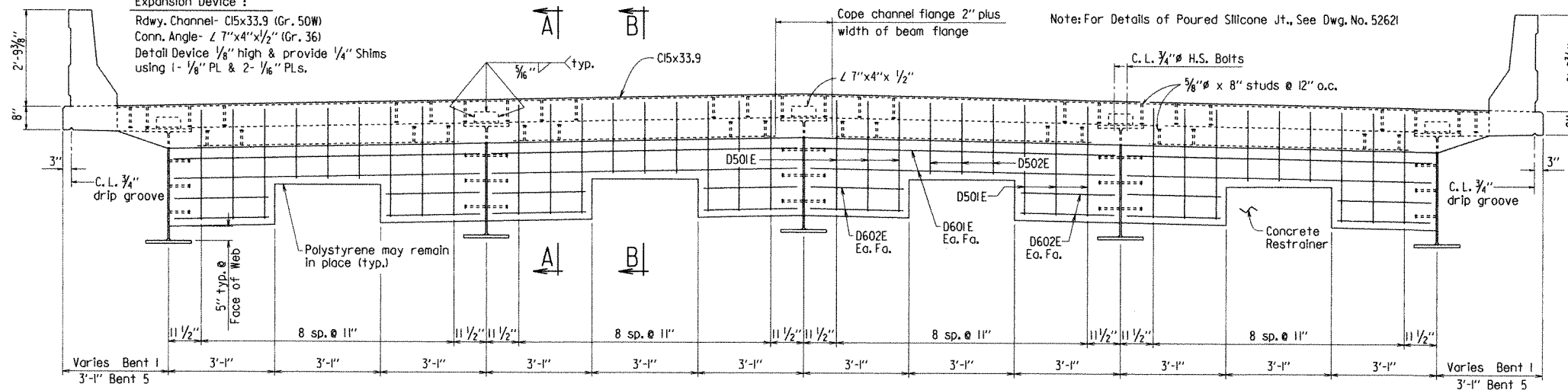
- ① Working point to gutterline
- ② Tolerance: Minus = 1/4"
 Plus = Equal to amount of slab thickening used to meet slab thickness tolerance
 See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE"
- ③ See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE"



ROUNDING DETAIL
N.T.S.

NOTE: Working Point matches Theoretical Roadway Grade.

Expansion Device:
 Rdwy. Channel- C15x33.9 (Gr. 50W)
 Conn. Angle- L 7"x4"x1/2" (Gr. 36)
 Detail Device 1/8" high & provide 1/4" Shims using 1-1/8" PL & 2-1/8" PLs.



TYPICAL ROADWAY SECTION NEAR JOINT

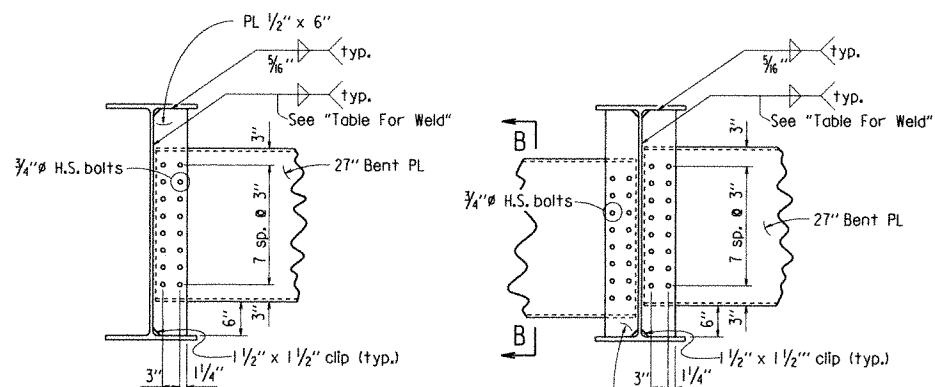
1/2" = 1'-0"

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

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

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

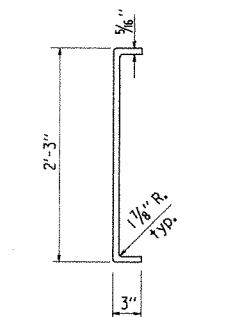
ADJUSTMENT FOR SLAB THICKNESS TOLERANCE
N.T.S.



DETAIL Y
N.T.S.

DETAIL X
N.T.S.

Notes: Stop welds 1/4" to 1" from end of clip (typ.)
 Bolts in connections shall be properly installed and tightened in accordance with subsection 807.71.



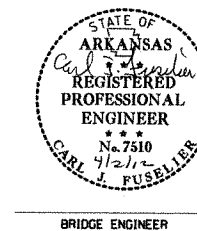
Typ. cross-section for all 27" bent plate diaphragms.

SECTION B-B
N.T.S.

TABLE FOR WELD

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

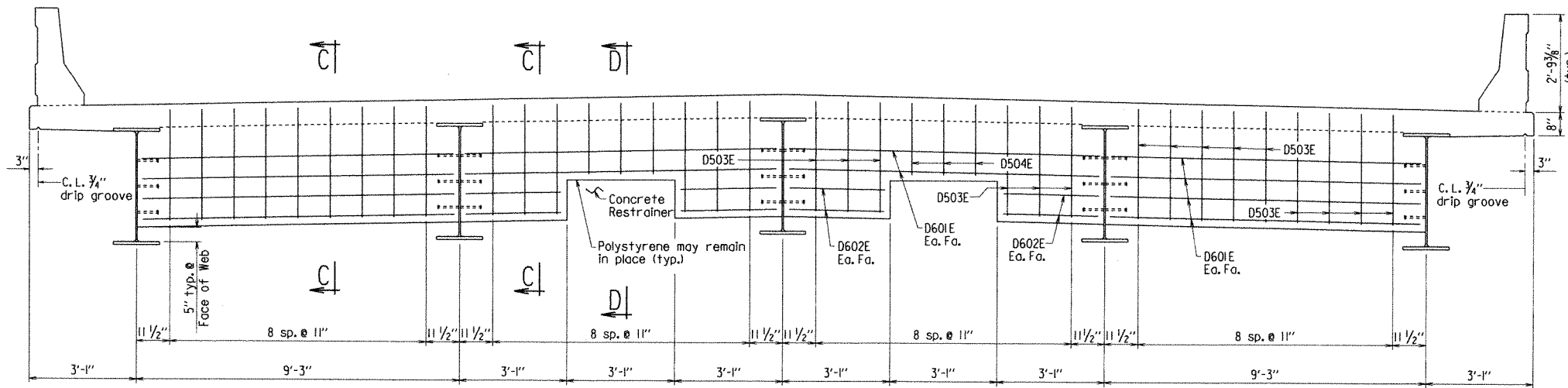
Note: When a fillet weld size, as shown on the plans, is larger than the minimum, the first pass shall be that specified for minimum size of fillet weld.



SHEET 1 OF 7
 DETAILS OF
 332'-0" CONTINUOUS W-BEAM UNIT
 HWY. 149 OVER INTERSTATE 40
 ROUTE SEC.
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6-11 FILENAME: bil0543x3_sl.dgn
 CHECKED BY: AHS DATE: 9-12-11 SCALE: As Noted
 DESIGNED BY: PGT DATE: 5-11
 BRIDGE NO. 07234 DRAWING NO. 52616

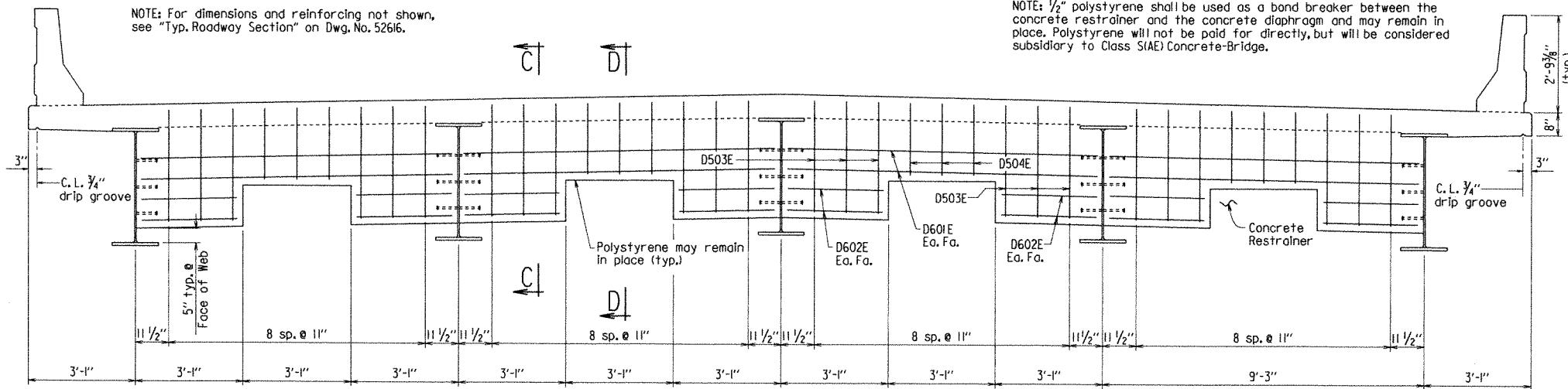
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-72				6	ARK.	110543	62	134
				07234	332' UNIT		52617	



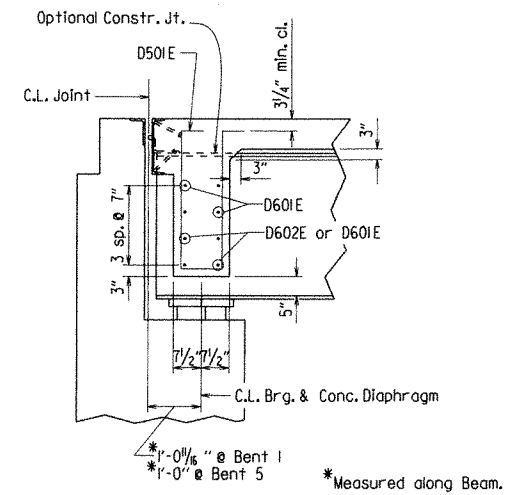
TYPICAL ROADWAY SECTION AT BENTS 2 AND 4
1/2" = 1'-0"

NOTE: For dimensions and reinforcing not shown, see "Typ. Roadway Section" on Dwg. No. 52616.

NOTE: 1/2" polystyrene shall be used as a bond breaker between the concrete restrainer and the concrete diaphragm and may remain in place. Polystyrene will not be paid for directly, but will be considered subsidiary to Class (S)AE Concrete-Bridge.

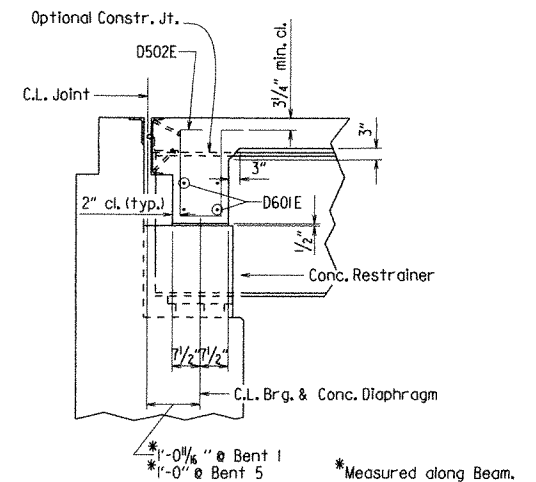


TYPICAL ROADWAY SECTION AT BENT 3
1/2" = 1'-0"



SECTION A-A

Section taken normal to conc. diaphragm.
1/2" = 1'-0"

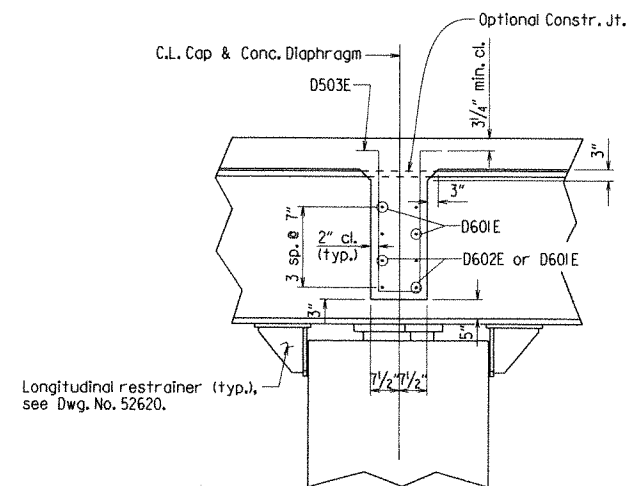


SECTION B-B

Section taken normal to conc. diaphragm.
1/2" = 1'-0"

NOTES: Forms for concrete diaphragms shall be removable.

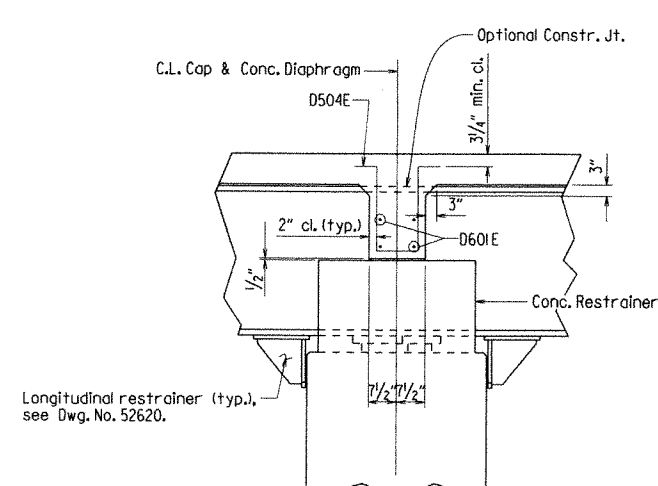
Concrete diaphragms shall be vertical.



SECTION C-C

Section taken normal to conc. diaphragm.
1/2" = 1'-0"

Longitudinal restrainer (typ.), see Dwg. No. 52620.



SECTION D-D

Section taken normal to conc. diaphragm.
1/2" = 1'-0"

Longitudinal restrainer (typ.), see Dwg. No. 52620.

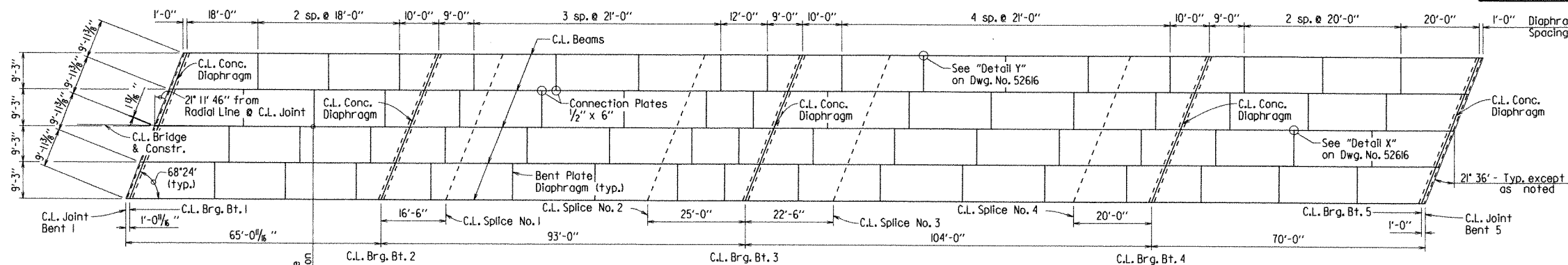


BRIDGE ENGINEER

SHEET 2 OF 7
DETAILS OF
332'-0" CONTINUOUS W-BEAM UNIT
HWY. 149 OVER INTERSTATE 40
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: PGT DATE: 6-11 FILENAME: b110543x3_sl.dgn
CHECKED BY: ARTS DATE: 7-19-11 SCALE: 1/2" = 1'-0"
DESIGNED BY: PGT DATE: 5-11
BRIDGE NO. 07234 DRAWING NO. 52617

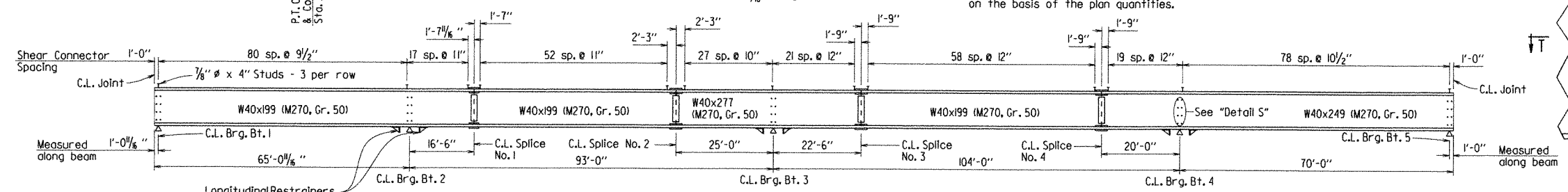
Note: All Beams are straight.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.	110543	63	134	
				07234	332' UNIT		52618	

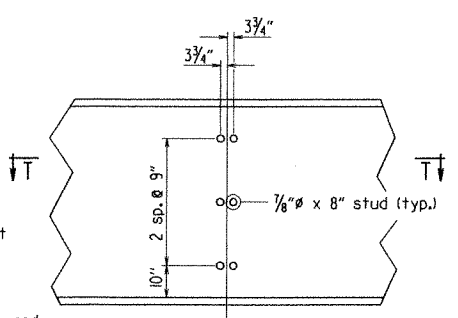


FRAMING PLAN
1/8" = 1'-0"

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

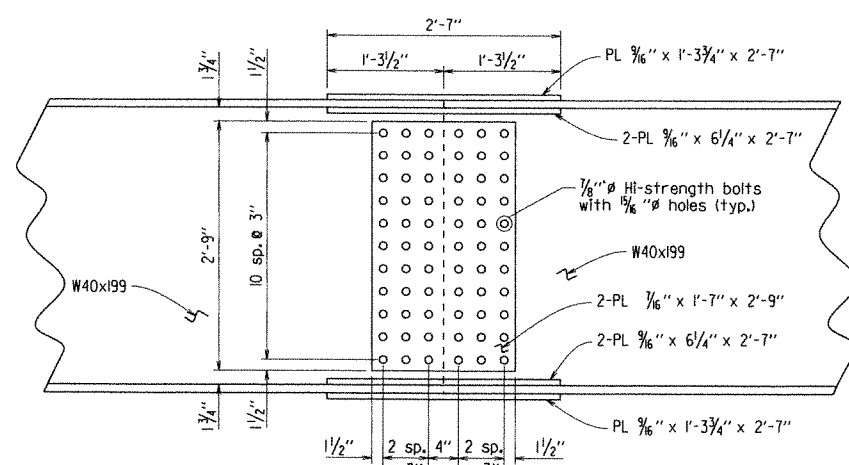


BEAM ELEVATION
NTS

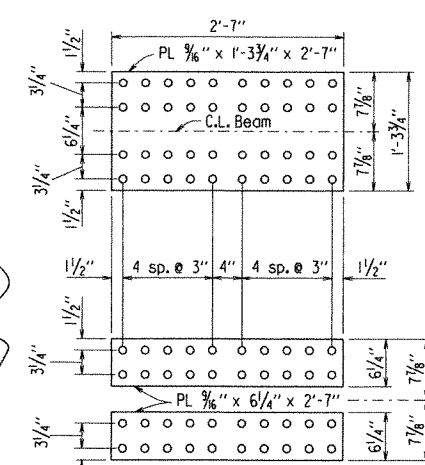


DETAIL S
NTS

Note: Stud placement at Int Bents shown, placement at End Bents similar.

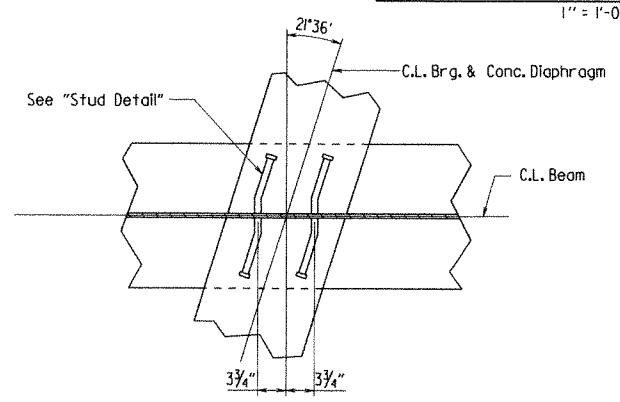


DETAILS OF BOLTED FIELD SPLICE NO. 1
1" = 1'-0"

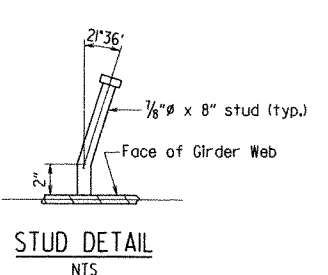


DETAILS OF BOLTED FIELD SPLICE NOS. 2, 3, AND 4
1" = 1'-0"

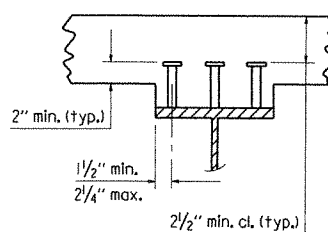
NOTE: All field splice plates shall be AASHTO M270, Gr. 50 steel.



SECTION T-T
NTS

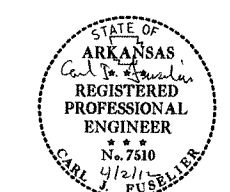


STUD DETAIL
NTS



SHEAR CONNECTOR DETAIL
NTS

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



BRIDGE ENGINEER

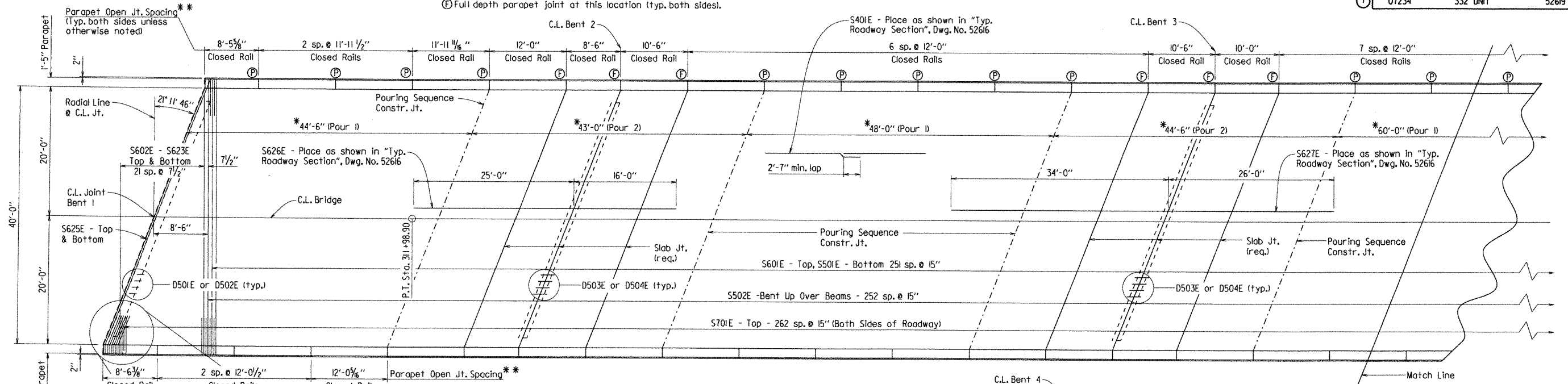
SHEET 3 OF 7
DETAILS OF
332'-0" CONTINUOUS W-BEAM UNIT
HWY. 149 OVER INTERSTATE 40
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: PGT DATE: 6-11 FILENAME: B10543x3.sldgn
CHECKED BY: AMS DATE: 9-19-11 SCALE: As Noted
DESIGNED BY: PGT DATE: 5-11
BRIDGE NO. 07234 DRAWING NO. 52618

NOTE: Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pour (2) can be placed, 48 hours shall elapse between the end of a pour and the start of the next pour, 72 hours shall elapse between adjacent pours. Any ralling pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

NOTE: Required Slab Joints and Pouring Sequence Construction Joints shall align with parapet joints at front face of parapet.

* * Measured along gutterline
* Measured along C.L. Bridge

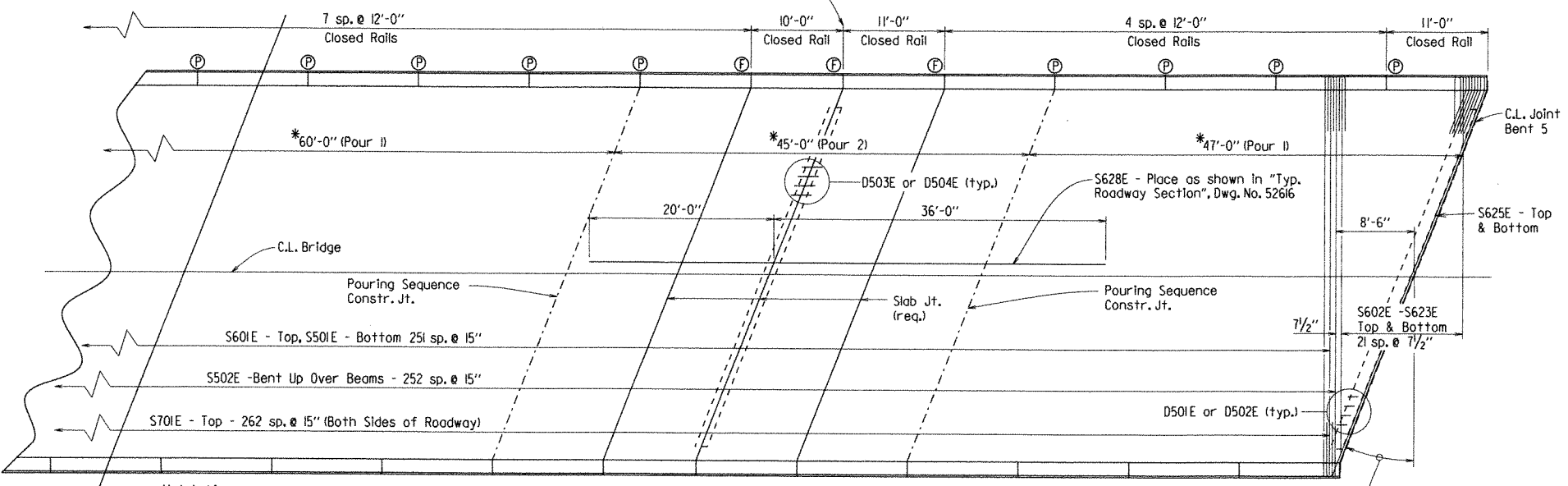
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.		110543	64	134
				07234		332' UNIT		52619



BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
S401E	1107	39'-3"	Str.	<p>Dimensions are out to out of bars.</p> <p>① 1/2" Overtolerance No Undertolerance</p> <p>Symmetrical about C.L. Bridge</p>
S501E	252	42'-10"	3"	
S502E	253	43'-8"	Str.	
S601E	252	42'-8"	Str.	
S602E-S623E	4 ea.	7'-5" to 40'-5"	Str.	
S624E	24	6'-4"	4 1/2"	
S625E	4	45'-11"	4 1/2"	
S626E	46	41'-0"	Str.	
S627E	46	60'-0"	Str.	
S628E	46	56'-0"	Str.	
S701E	526	11'-11"	6 1/2"	
P401E	1,324	5'-6"	3"	
P402E	152	5'-6"	Str.	
P403E	28	8'-11"	Str.	
P404E	28	9'-8"	Str.	
P405E	28	10'-2"	Str.	
P406E	28	10'-8"	Str.	
P407E	294	11'-7"	Str.	
P501E	1,324	5'-0"	3 3/4"	
D501E	48	7'-7"	2 1/2"	
D502E	24	5'-7"	2 1/2"	
D503E	84	7'-7"	2 1/2"	
D504E	24	5'-7"	2 1/2"	
D601E	96	9'-6"	Str.	
D602E	128	2'-10"	Str.	

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

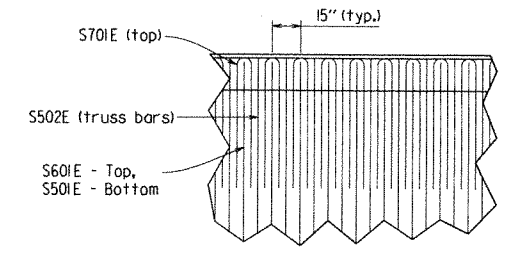


REINFORCING PLAN & POURING SEQUENCE
1/8" = 1'-0"

Note: All longitudinal lines and longitudinal reinforcing steel back of Sta. 311+98.90 shall be placed on arcs concentric with C.L. Bridge. All transverse reinforcing steel shall be placed on radial lines and shall be measured along C.L. Bridge.

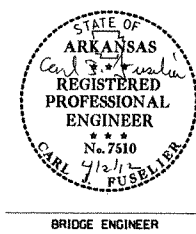


SLAB JOINT DETAIL
No Scale



REINFORCING DETAIL
No Scale

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

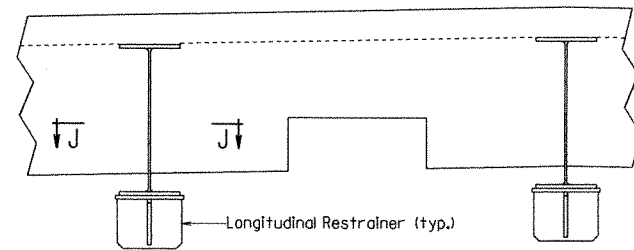


SHEET 4 OF 7
DETAILS OF
332'-0" CONTINUOUS W-BEAM UNIT
HWY. 149 OVER INTERSTATE 40

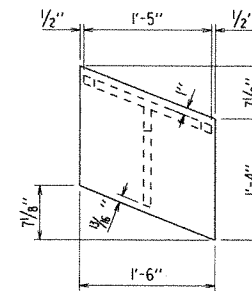
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6-11 FILENAME: bli0543x3.sl.dgn
CHECKED BY: AMS DATE: 9-19-11 SCALE: As Noted
DESIGNED BY: PGT DATE: 5-11
BRIDGE NO. 07234 DRAWING NO. 52619

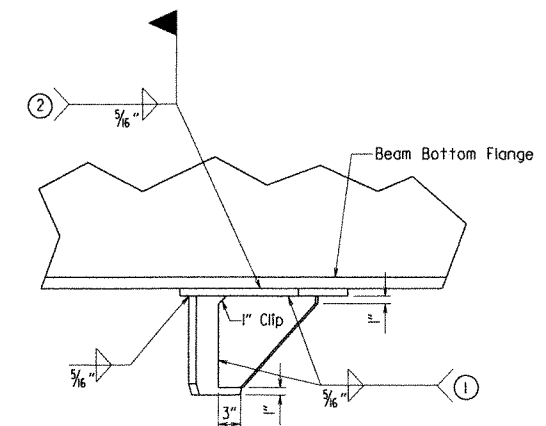
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.		110543	65	134
				07234		332' UNIT		52620



SKETCH OF LONGITUDINAL RESTRAINER DEVICES AT INTERMEDIATE BENTS
1/2" = 1'-0"

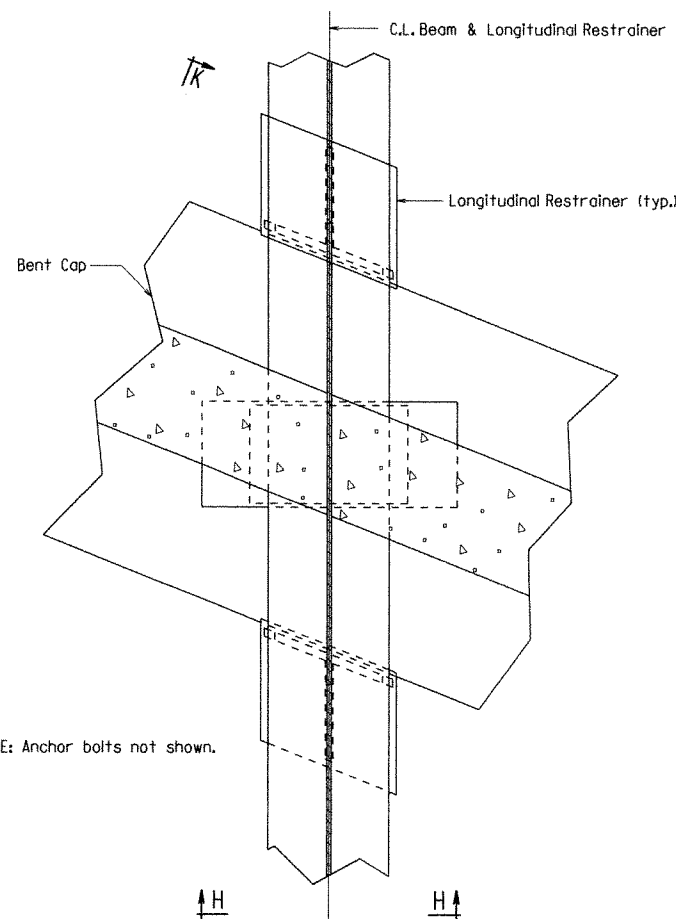


PLAN OF LONGITUDINAL RESTRAINER
1" = 1'-0"



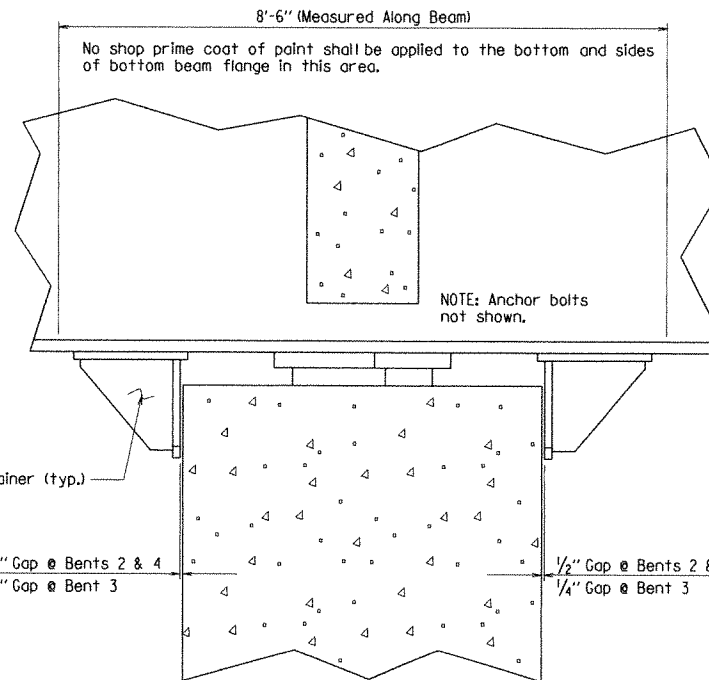
VIEW L-L
1" = 1'-0"

- ① Stop weld 1/2" from end of clip.
- ② Longitudinal restrainer shall not be welded to beam until deck has been poured.

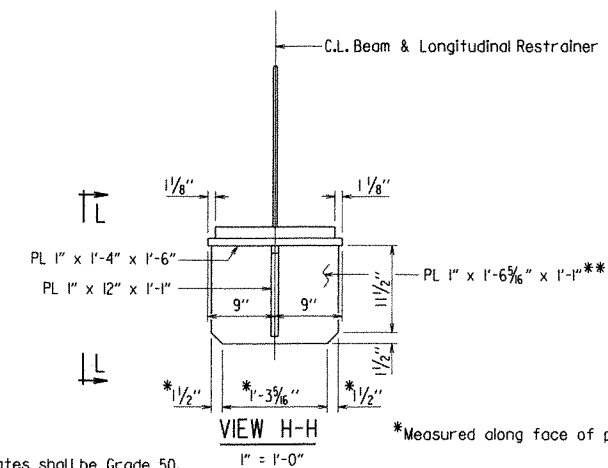


NOTE: Anchor bolts not shown.

VIEW J-J
1" = 1'-0"



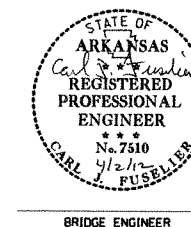
VIEW K-K
1" = 1'-0"



NOTE: All plates shall be Grade 50.

**Longitudinal restrainer shall be fabricated to account for grade so the final position of this plate will be vertical.

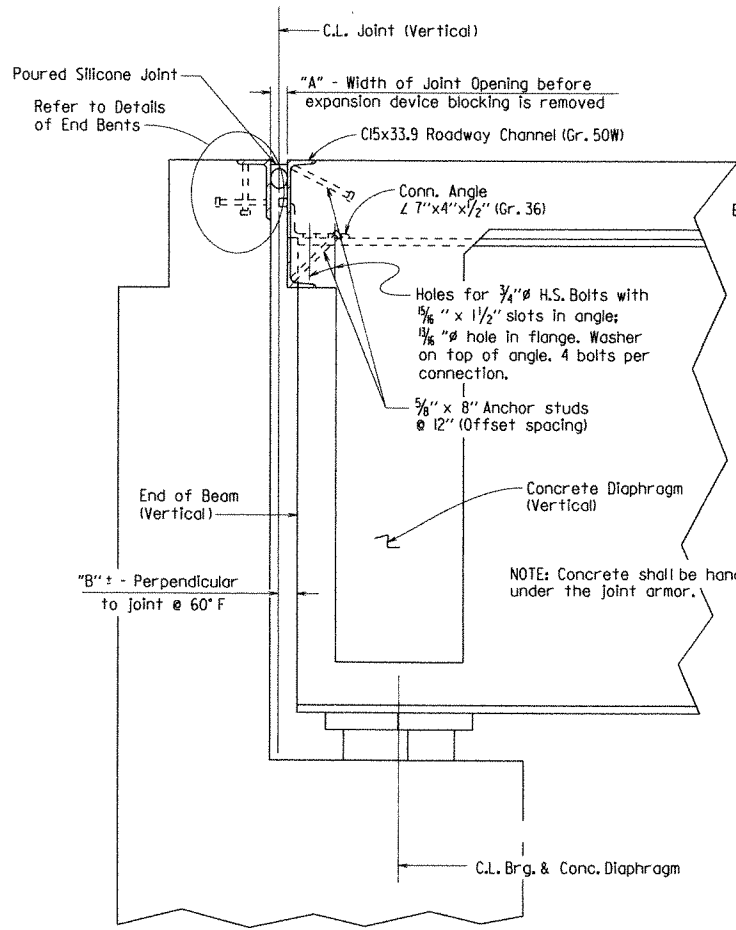
SHEET 5 OF 7
DETAILS OF
332'-0" CONTINUOUS W-BEAM UNIT
HWY. 149 OVER INTERSTATE 40
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.



BRIDGE ENGINEER

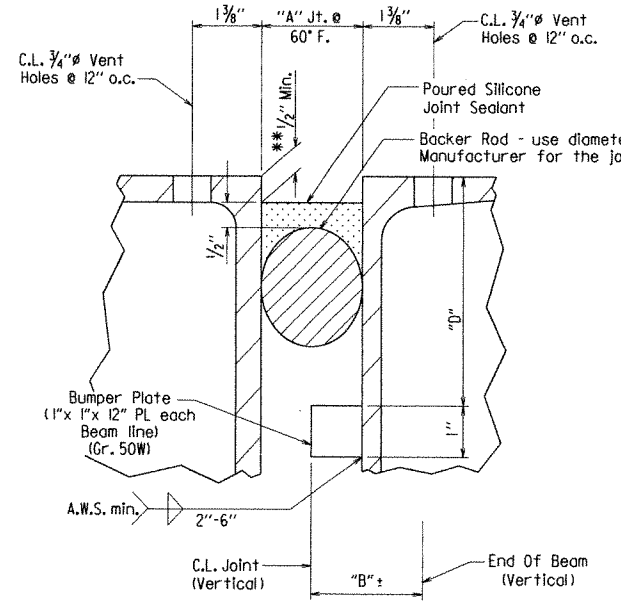
DRAWN BY: PGT DATE: 6-11 FILENAME: b110543x3.sldgn
CHECKED BY: AHS DATE: 9-19-11 SCALE: As Noted
DESIGNED BY: PGT DATE: 5-11
BRIDGE NO. 07234 DRAWING NO. 52620

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.	07234	110543	66	134
						332' UNIT		52621

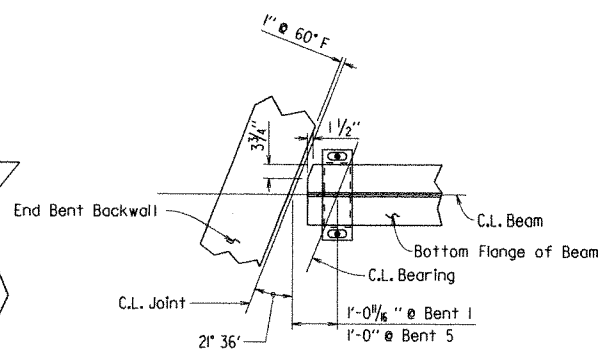


SECTION THRU JOINT AT END BENT
No Scale

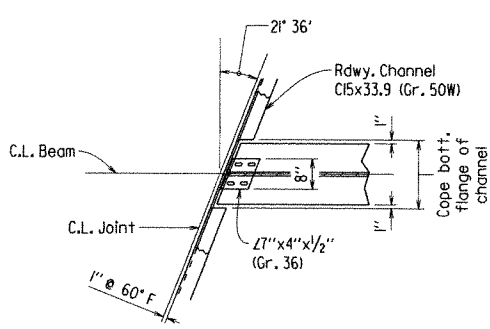
** Recess depth as recommended by the sealant Manufacturer.



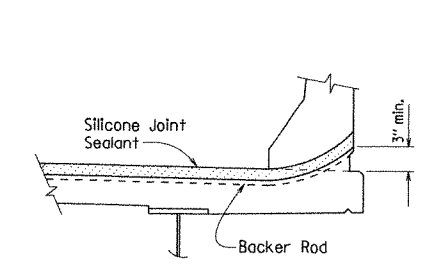
DETAIL OF POURED SILICONE JOINT
No Scale



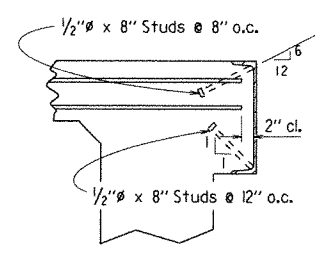
PLAN BEARING AT END BENT
No Scale



CHANNEL CONNECTION DETAIL
No Scale

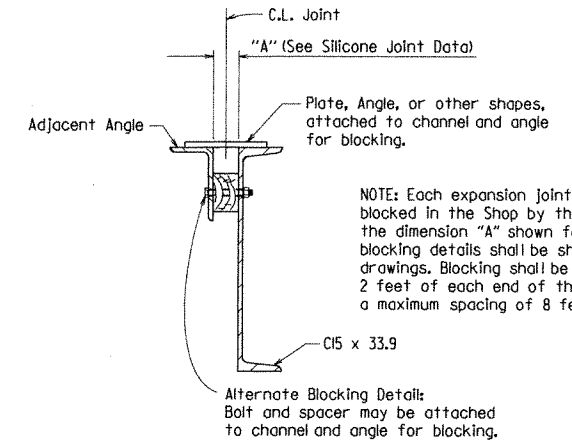


JOINT SEAL PLACEMENT AT CURB
No Scale



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

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT
No Scale



DETAILS FOR BLOCKING EXPANSION JOINT DEVICE
No Scale

EXPANSION DEVICE INSTALLATION AT END BENTS:

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

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

SILICONE JOINT DATA

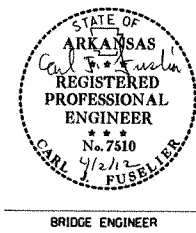
"A" Width Perpendicular to Joint at 24 Hour Average Temperature* Of:			"B" Perpendicular to Joint at 60° F	"D"	Bumper Plate Size
40° F	60° F	80° F			
2 1/4"	2"	1 3/4"	2 1/4" ±	4 1/2"	1" x 1" x 12"

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

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

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

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



SHEET 6 OF 7
DETAILS OF
332'-0" CONTINUOUS W-BEAM UNIT
HWY. 149 OVER INTERSTATE 40
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6-11 FILENAME: bl10543x3_sl.dgn
 CHECKED BY: AJS DATE: 2-19-11 SCALE: As Noted
 DESIGNED BY: PGT DATE: 5-11
 BRIDGE NO. 07234 DRAWING NO. 52621

GENERAL NOTES

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fifth Edition with 2010 Interim Revisions.

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

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

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

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

The concrete deck (except sidewalk) shall be given a fine finish in accordance with subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam.

Use of a longitudinal screed is prohibited.

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 :

All structural steel shall be AASHTO M 270, Grade 50 unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50)". All exposed surfaces shall be cleaned in accordance with subsection 807.84. Structural steel completely embedded in concrete may be AASHTO M 270, Grade 36 unless otherwise noted.

All Grade 50 and Grade 36 structural steel except galvanized steel and steel which is completely encased in concrete shall be painted in accordance with subsection 807.75. The color of paint shall conform to Federal Standard 595B, Color Chip No. 36270, Gray.

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 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. 50)".

All beams shall be assembled in the shop as specified in Section 807.54 and blocked in their true position with webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. 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 for main members 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 roll supports to the structural steel that do not exceed the limitations of subsection 802.13 will not require approval prior to construction. All welding shall conform to subsection 807.26.

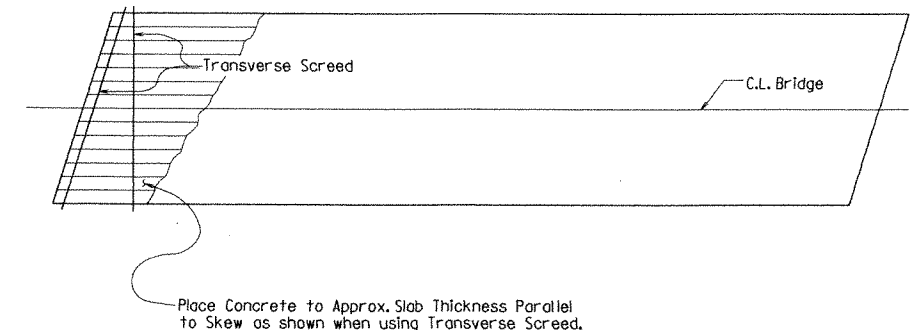
Field connections shall be bolted with high-strength bolts and shall be $\frac{3}{4}$ " # bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges. Holes for $\frac{3}{4}$ " # high-strength bolts may be $\frac{5}{16}$ " # diameter if a washer is supplied for use under both the nut and head of the bolt.

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

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

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

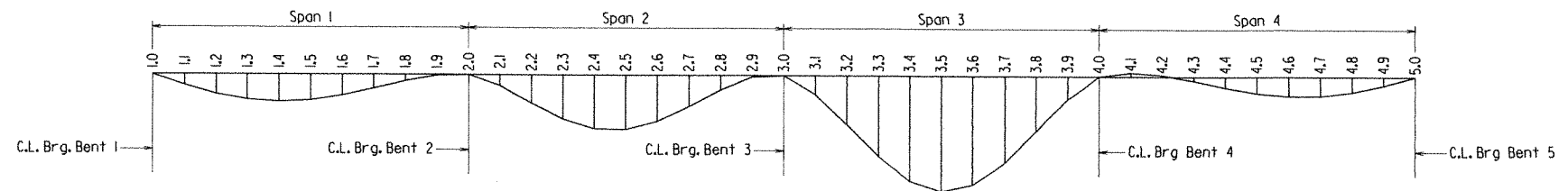
Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Exterior	Interior	Exterior	Interior	Exterior	Interior
1	1.0	0	0	0	0	0	0
	1.1	0.025	0.026	0.130	0.157	0.141	0.167
	1.2	0.045	0.047	0.237	0.287	0.256	0.305
	1.3	0.059	0.061	0.308	0.372	0.333	0.396
	1.4	0.064	0.066	0.334	0.403	0.361	0.429
	1.5	0.060	0.062	0.314	0.379	0.339	0.403
	1.6	0.048	0.050	0.254	0.307	0.274	0.326
	1.7	0.031	0.033	0.168	0.204	0.181	0.217
	1.8	0.014	0.015	0.078	0.094	0.084	0.100
	1.9	0.001	0.001	0.01	0.012	0.011	0.013
2	2.0	0	0	0	0	0	0
	2.1	0.026	0.027	0.130	0.156	0.141	0.167
	2.2	0.069	0.072	0.343	0.415	0.372	0.443
	2.3	0.110	0.114	0.544	0.657	0.590	0.701
	2.4	0.134	0.140	0.665	0.803	0.722	0.857
	2.5	0.137	0.142	0.674	0.813	0.732	0.868
	2.6	0.117	0.121	0.570	0.687	0.619	0.734
	2.7	0.080	0.083	0.383	0.461	0.416	0.493
	2.8	0.038	0.039	0.174	0.209	0.189	0.223
	2.9	0.005	0.005	0.017	0.020	0.018	0.021
3	3.0	0	0	0	0	0	0
	3.1	0.044	0.046	0.224	0.271	0.244	0.290
	3.2	0.118	0.123	0.601	0.726	0.654	0.777
	3.3	0.195	0.203	0.999	1.208	1.087	1.292
	3.4	0.252	0.263	1.303	1.576	1.417	1.684
	3.5	0.274	0.286	1.429	1.729	1.554	1.848
	3.6	0.255	0.267	1.346	1.630	1.464	1.742
	3.7	0.201	0.210	1.073	1.299	1.167	1.389
	3.8	0.124	0.129	0.677	0.820	0.737	0.877
	3.9	0.048	0.050	0.275	0.333	0.300	0.356
4	4.0	0	0	0	0	0	0
	4.1	-0.004	-0.005	-0.050	-0.062	-0.055	-0.067
	4.2	0.008	0.008	-0.020	-0.026	-0.022	-0.028
	4.3	0.028	0.028	0.053	0.059	0.057	0.062
	4.4	0.048	0.049	0.134	0.157	0.145	0.167
	4.5	0.063	0.064	0.201	0.237	0.217	0.253
	4.6	0.069	0.071	0.236	0.280	0.256	0.299
	4.7	0.066	0.067	0.232	0.275	0.251	0.293
	4.8	0.051	0.053	0.185	0.220	0.200	0.235
	4.9	0.028	0.029	0.103	0.123	0.112	0.131
5.0	0	0	0	0	0	0	



NOTE: At the Contractor's Option, the Transverse Screed may be placed parallel to the skew or perpendicular to C.L. Bridge.

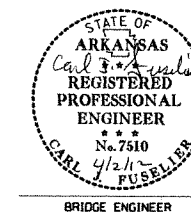
CONCRETE PLACEMENT PROCEDURE

No Scale



DEAD LOAD DEFLECTION DIAGRAM

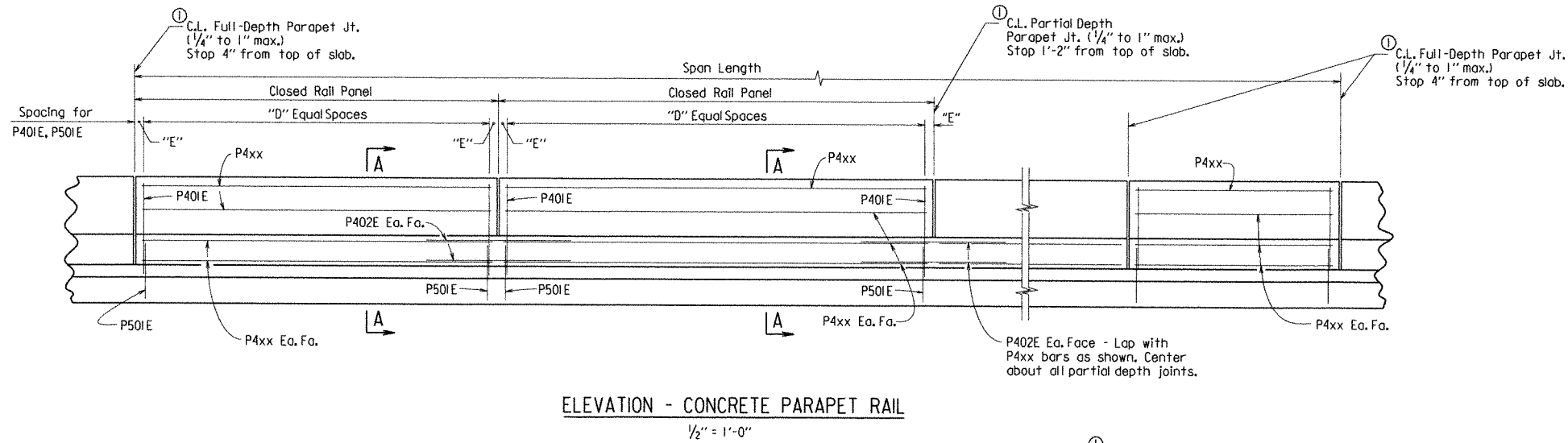
NOTE: Camber for Dead Load Deflection +/- $\frac{1}{4}$ " tolerance. Deflections shown are along C.L. Beam from a chord from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates point above chord. Vertical curve corrections not included.



SHEET 7 OF 7
DETAILS OF
332'-0" CONTINUOUS W-BEAM UNIT
HWY. 149 OVER INTERSTATE 40
 ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: PGT DATE: 6-11 FILENAME: bli0543x3_sl.dgn
 CHECKED BY: AHS DATE: 9-19-11 SCALE: As Noted
 DESIGNED BY: PGT DATE: 5-11
 BRIDGE NO. 07234 DRAWING NO. 52622

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
						110543	67	134
						07234	332' UNIT	52622

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.	110543	68134		
				07234	PARAPET	52623		

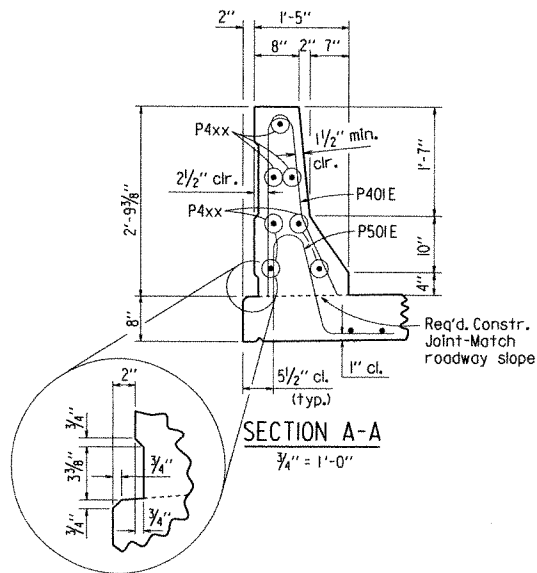


ELEVATION - CONCRETE PARAPET RAIL
1/2" = 1'-0"

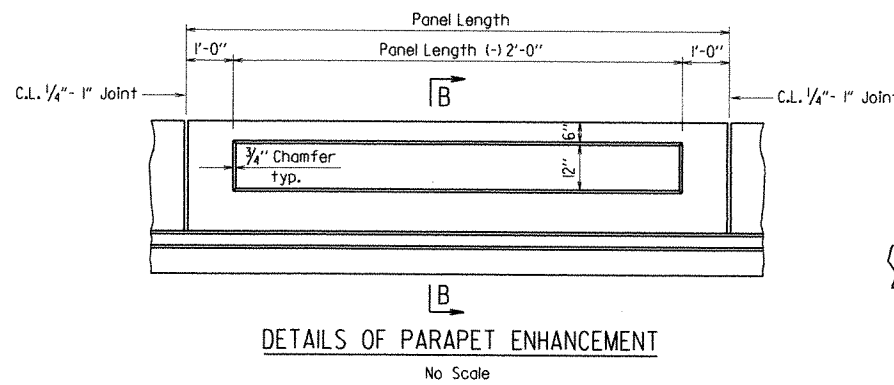
TABLE OF VARIABLES

Bridge No.	Closed Roll Panels			
	Length	"D"	"E"	P4xx Bar
07234 (Hwy. 149)	8'-5 7/8"	15	5 3/8"	P403E
	8'-6"	16	3"	P403E
	8'-6 3/8"	16	3 3/8"	P403E
	10'-0"	19	3"	P404E
	10'-6"	20	3"	P405E
	11'-0"	21	3"	P406E
	11'-11 1/2"	22	5 3/4"	P407E
	11'-11 3/8"	22	5 7/8"	P407E
	12'-0"	23	3"	P407E
	12'-0 5/8"	23	3 3/8"	P407E
12'-0 1/2"	23	3 1/4"	P407E	

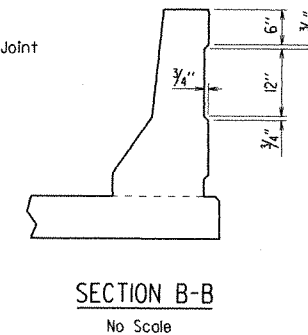
① For location of full and partial depth parapet joints, see "Reinforcing Plan & Pouring Sequence".



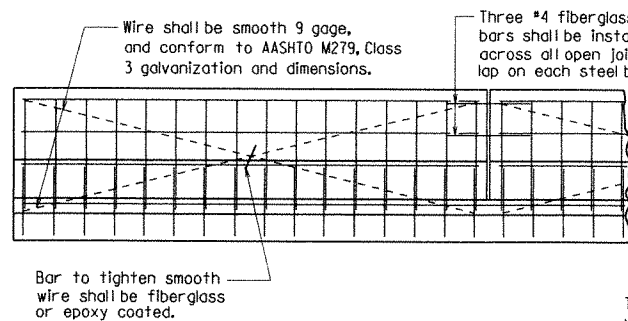
SECTION A-A
3/4" = 1'-0"



DETAILS OF PARAPET ENHANCEMENT
No Scale

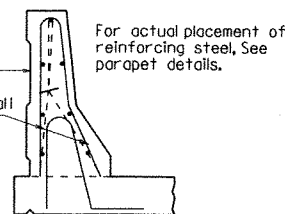


SECTION B-B
No Scale

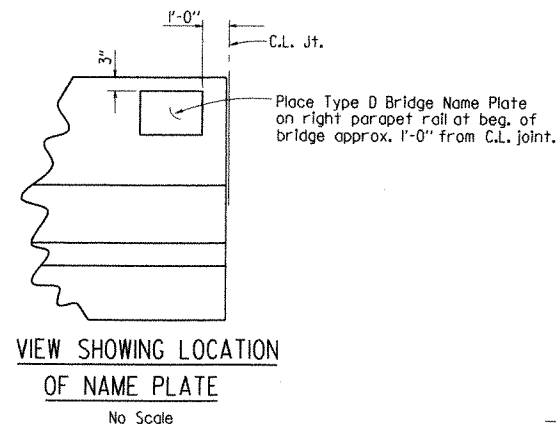


DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL
No Scale

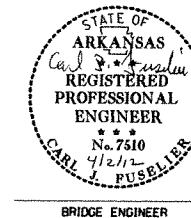
Recess shall be made continuous. All smooth wire bracing shall be placed on the inside faces of the reinforcing



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



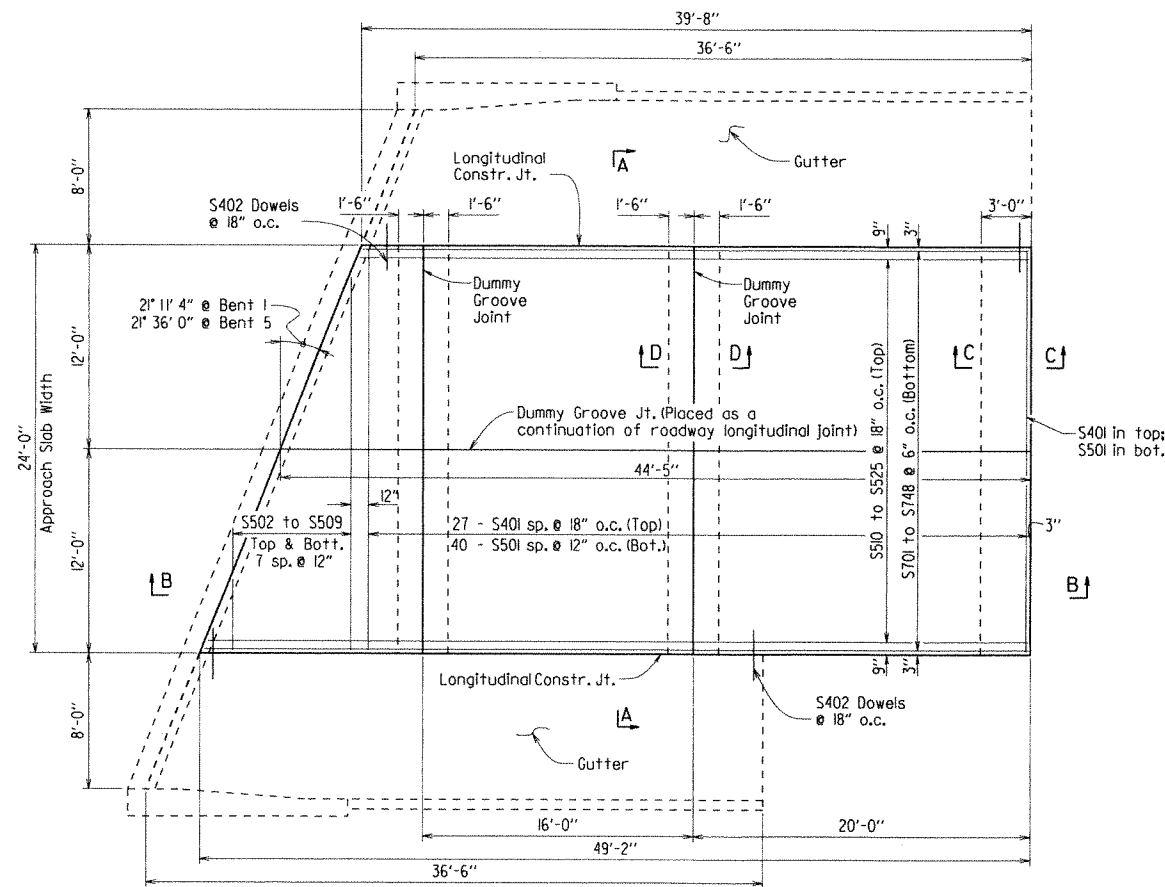
VIEW SHOWING LOCATION OF NAME PLATE
No Scale



DETAILS OF PARAPET RAIL

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: PGT DATE: 6-11 FILENAME: bl0543x3.sl.dgn
CHECKED BY: AHS DATE: 8-19-11 SCALE: As Noted
DESIGNED BY: PGT DATE: 5-11
BRIDGE NOS. 07234 DRAWING NO. 52623

REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-5-12				6	ARK.			
				JOB NO.	110543		69	134
				07234	APPROACH SLAB		52624	



PLAN OF TYPE SPECIAL APPROACH SLAB

Scale: 3/16" = 1'-0"
* Bent 5 Shown, Bent 1 Similar

QUANTITIES FOR ONE TYPE SPECIAL APPROACH SLAB

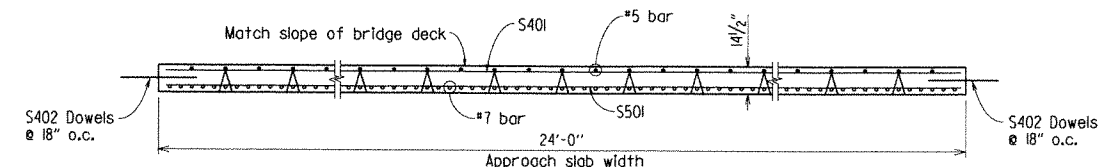
Length (ft.)	Reinforcing Steel (lbs.)	Concrete (cubic yards)
44'-5"	7476	62.42

* Note: At beginning of bridge, construct slab on arc concentric to C.L. Construction. Place longitudinal bars on arc concentric to C.L. Construction. Place transverse bars radially.

Approach Slab lengths and bar lengths of S502 - S525 and S701 - S748 at Bent 1 will vary slightly.

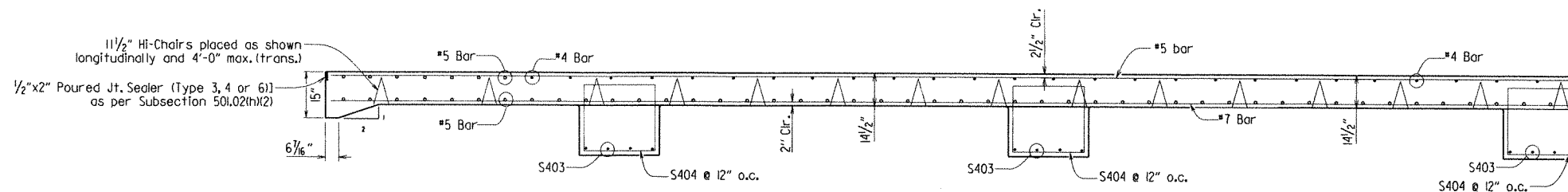
BAR LIST TYPE SPECIAL APPROACH SLAB

Mark	No. Req'd	Length	P.D.	Bending Diagram
S401	27	23'-8"		
S402	48	3'-0"	Str.	
S403	12	23'-8"	Str.	
S404	72	10'-4"	2"	
S501	40	23'-8"	Str.	
S502 to S509	2 ea.	4'-2" to 2'-11"	Str.	
S510 to S525	1 ea.	39'-8" to 48'-7"	Str.	
S701 to S748	1 ea.	39'-5" to 48'-9"	Str.	Dimensions are out to out of bar.



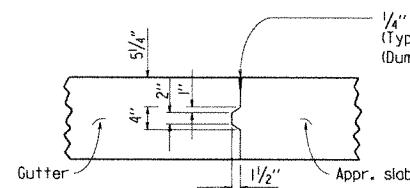
SECTION A-A

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



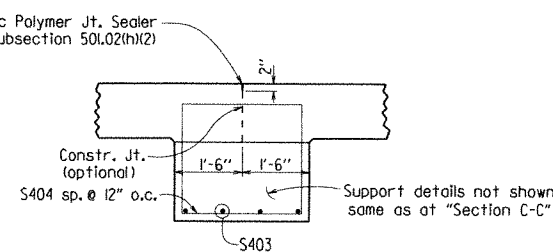
SECTION B-B

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



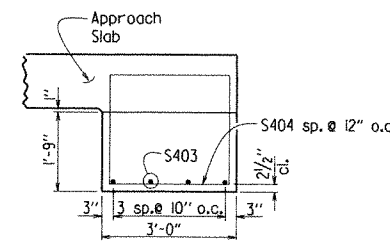
DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

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



SECTION D-D

Scale: None



SECTION C-C

Scale: None

GENERAL NOTES

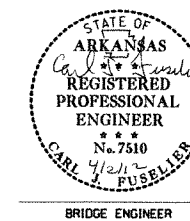
Concrete shall be Class 5 (AE) (f'c = 4,000 psi).
Reinforcement Steel shall conform to AASHTO M31 or M53, Grade 60 (fy = 60,000 psi).
Approach Slabs will be measured and paid for in accordance with Section 504 of the Standard Specifications.

DETAILS OF TYPE SPECIAL APPROACH SLAB

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

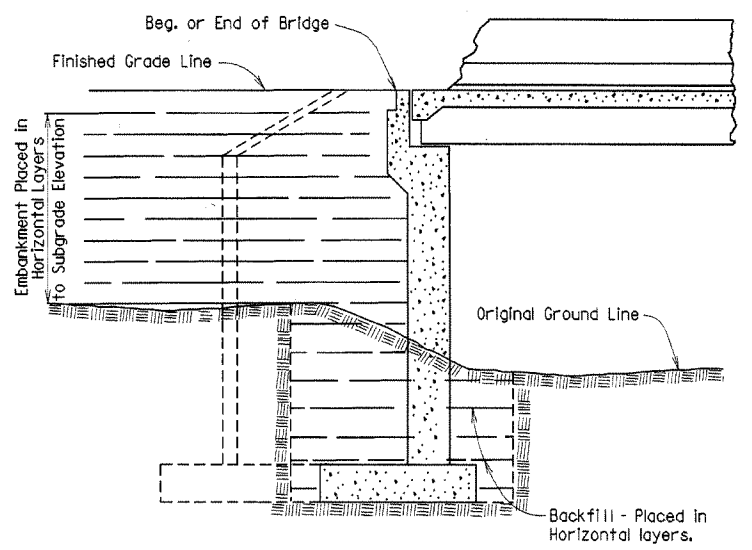
DRAWN BY: ACW DATE: 05/16/11 FILENAME: bli0543.as.dgn
CHECKED BY: PGT DATE: 9/19/11 SCALE: As Noted
DESIGNED BY: STD DATE:

BRIDGE NO. 07234 DRAWING NO. 52624

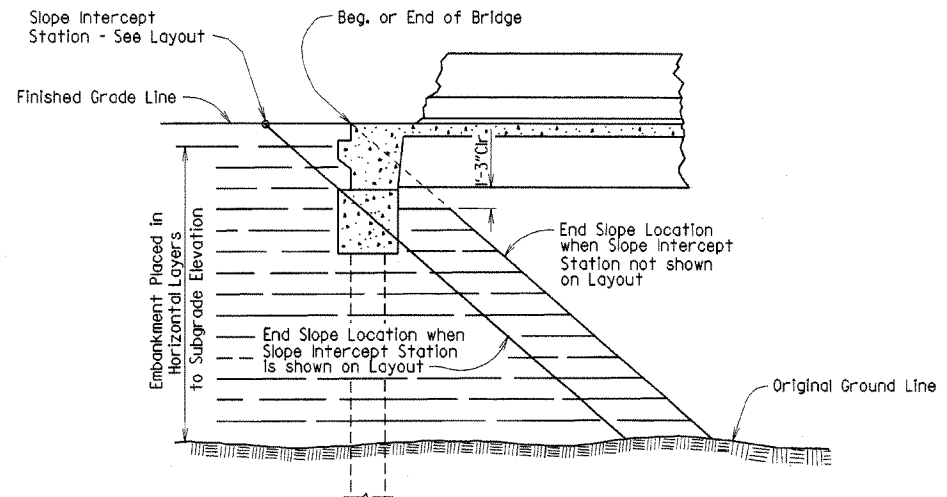


BRIDGE ENGINEER

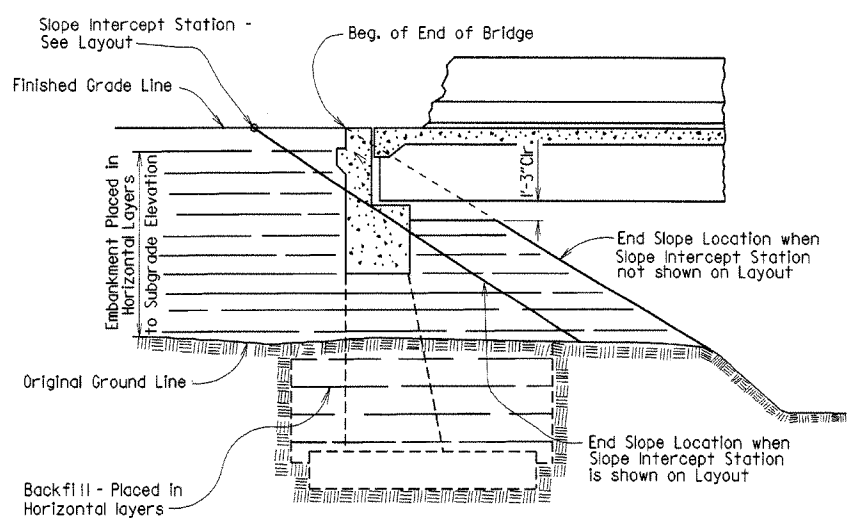
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		70	
							JOB NO.	
(1) EMBANKMENT & BACKFILL								1888A



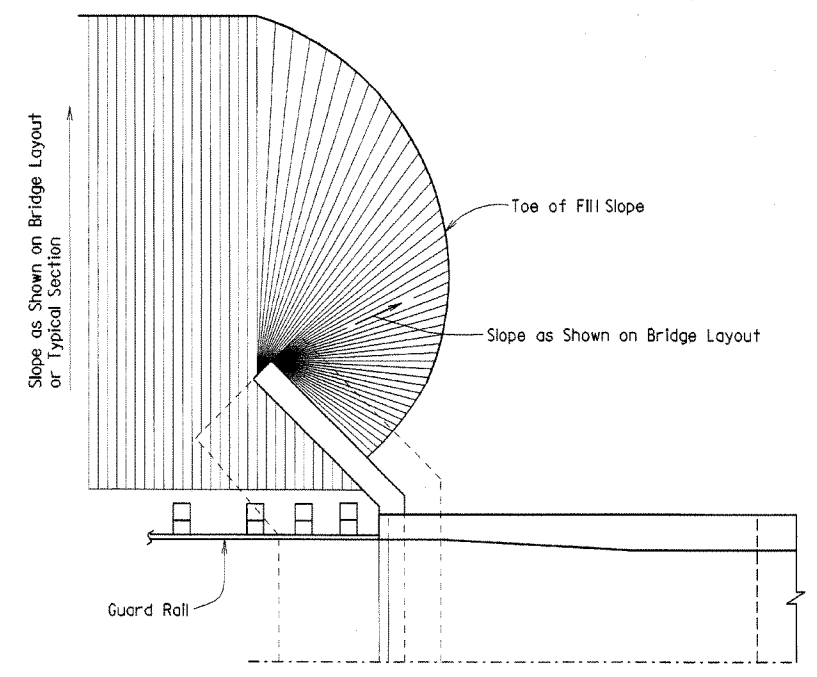
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



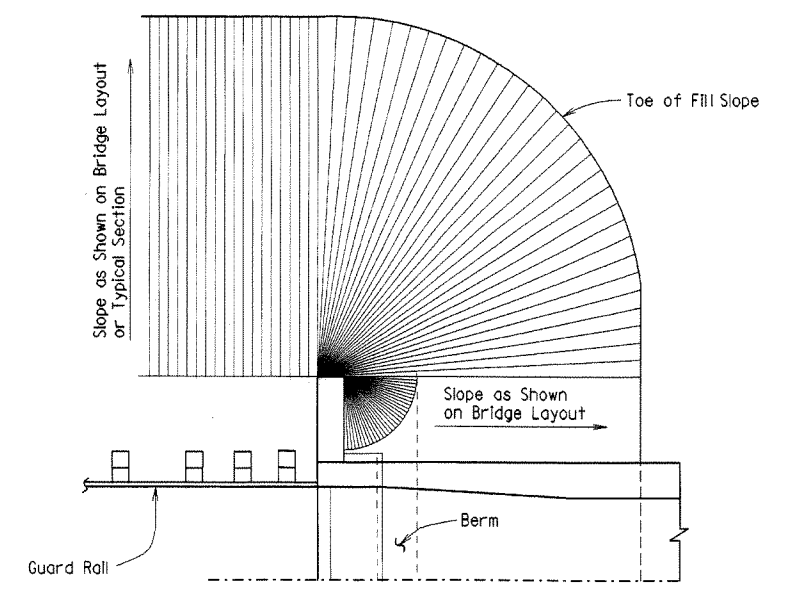
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



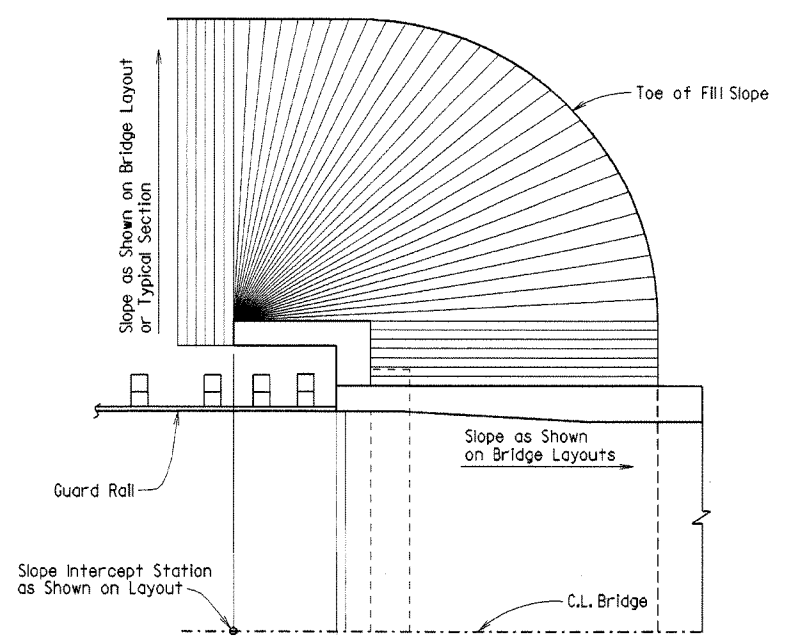
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



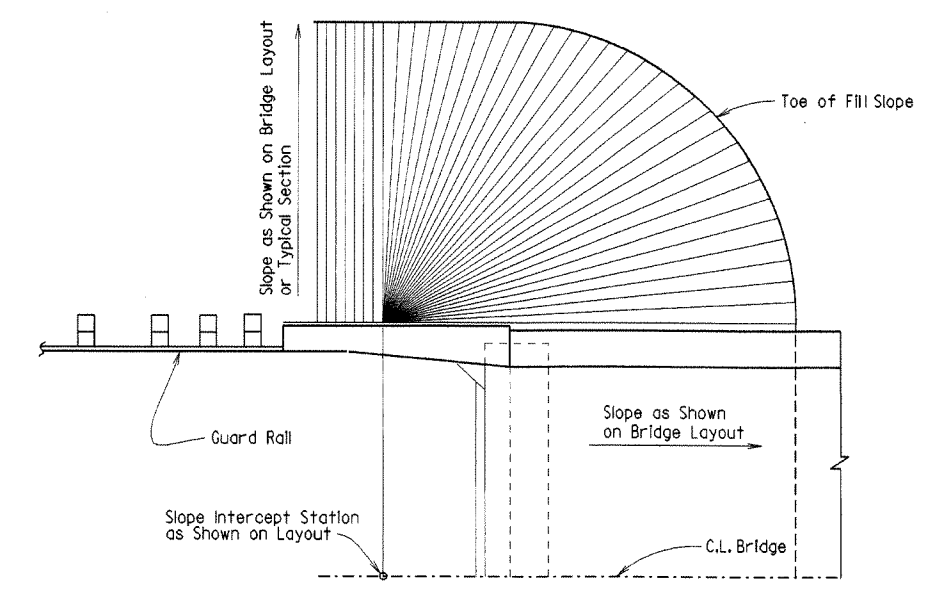
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



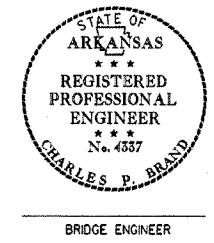
SPILL-THROUGH END BENTS WITH TRANSITION WING

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

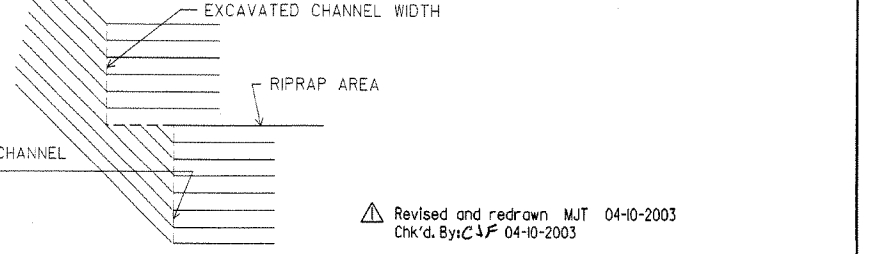
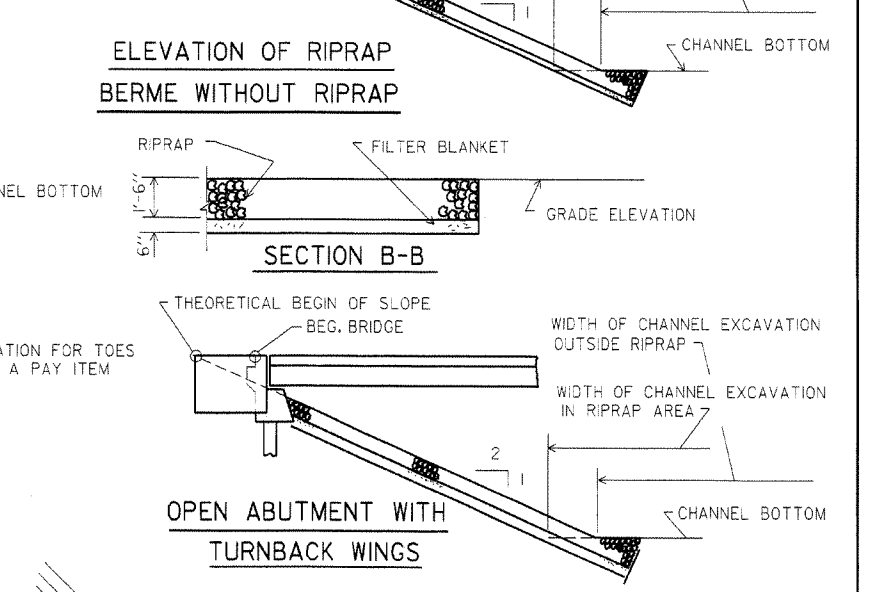
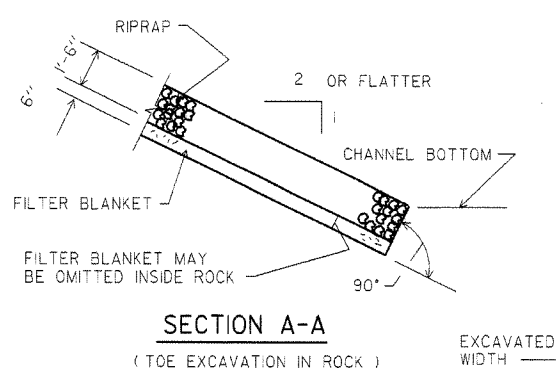
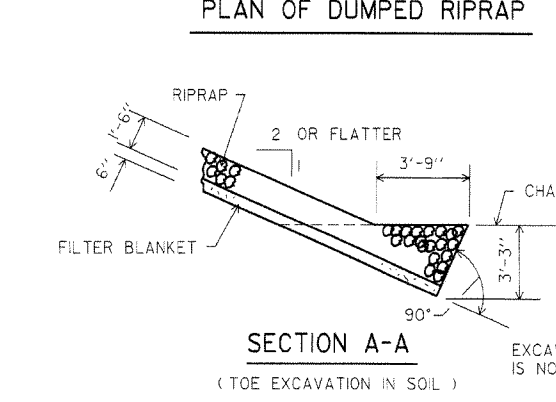
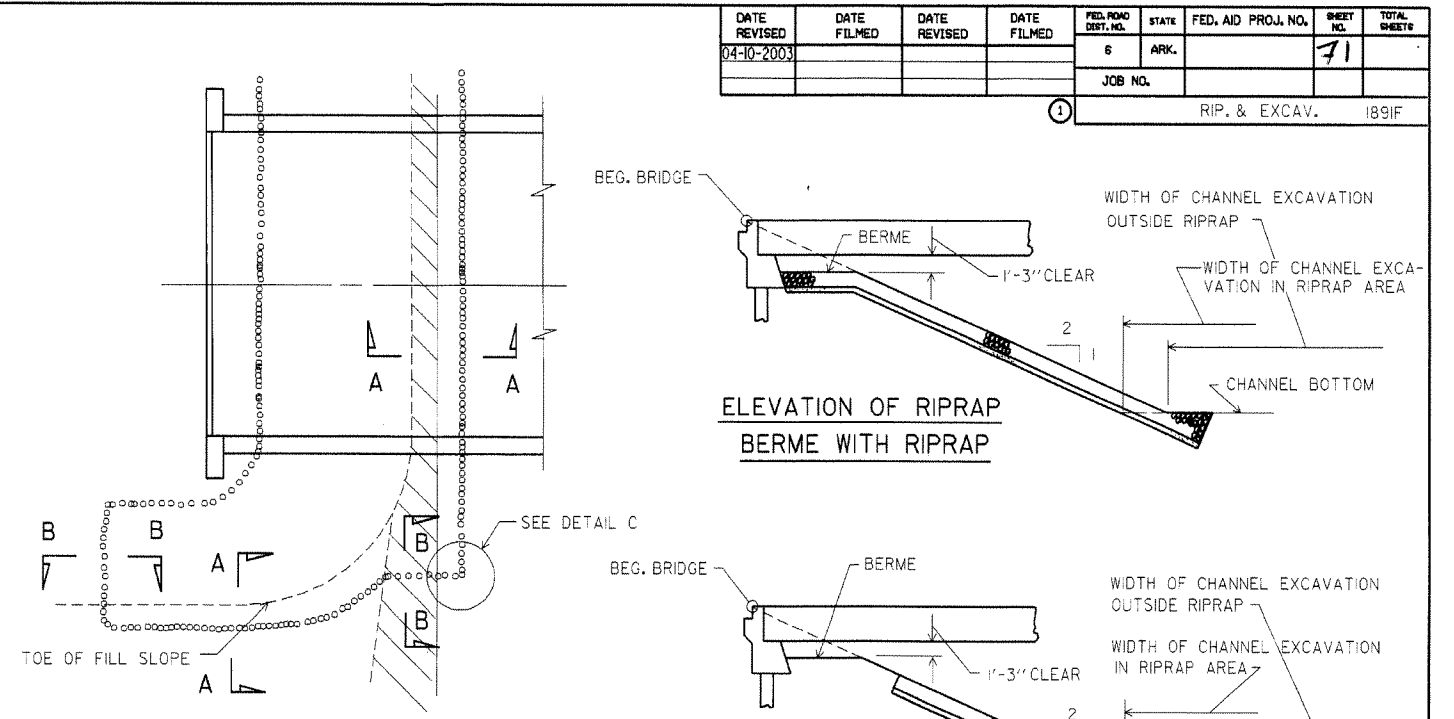
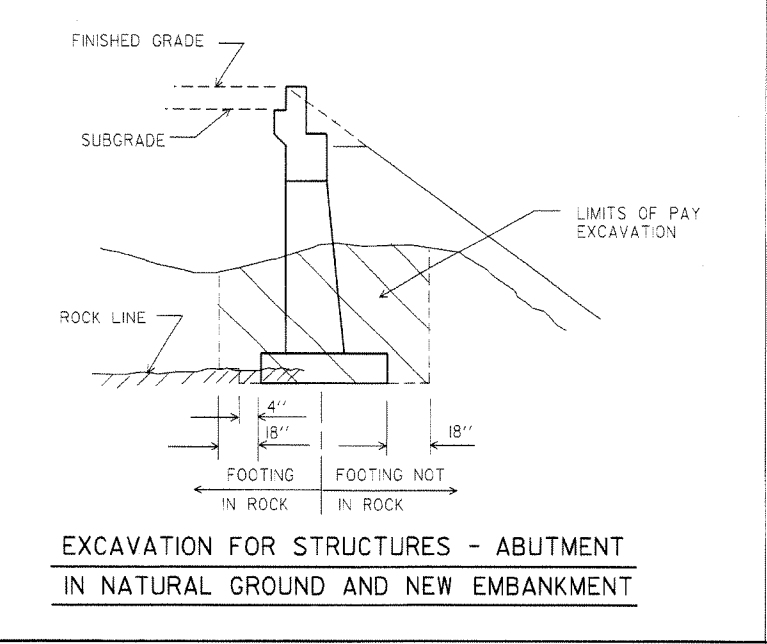
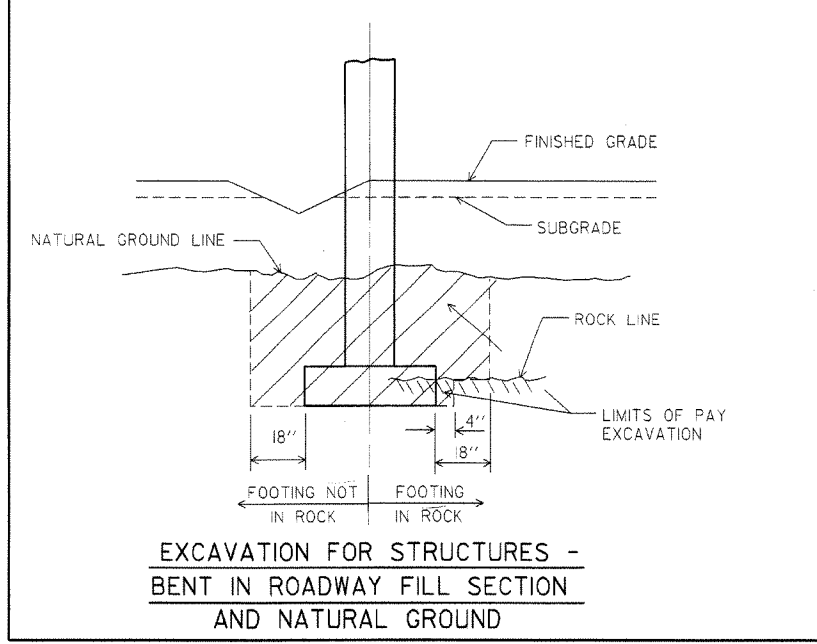
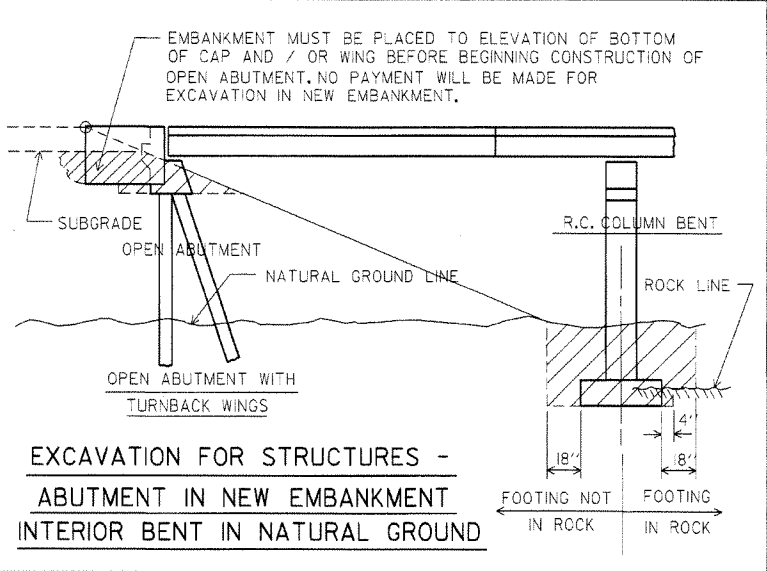
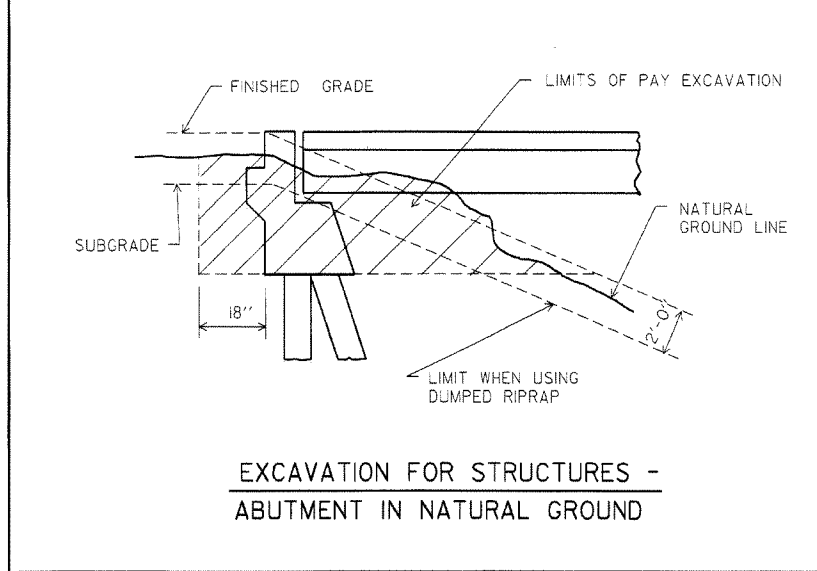
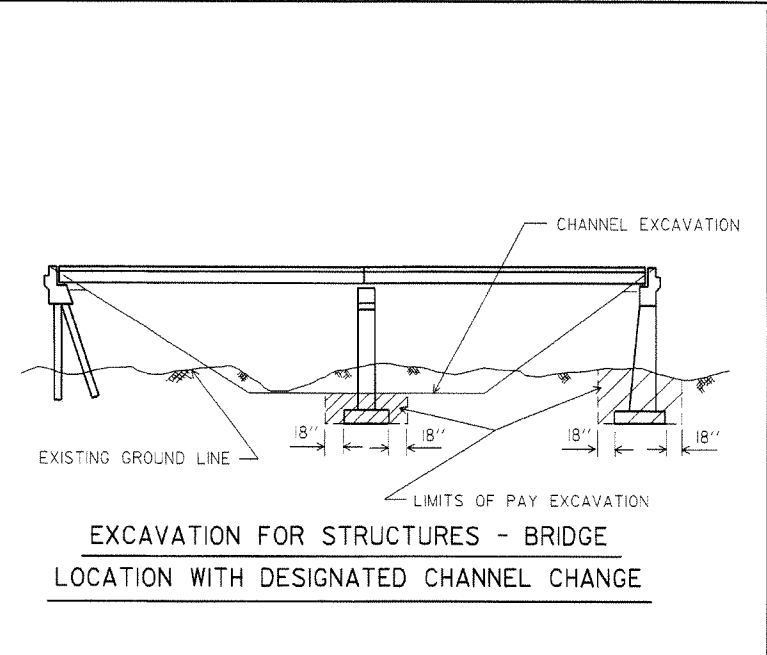
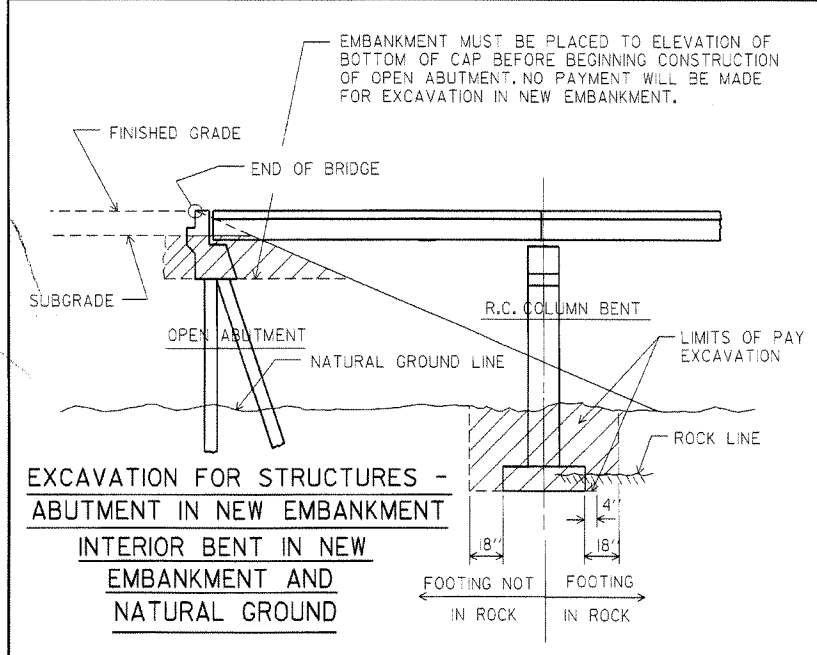


EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

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

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		71	
JOB NO.							1	
							1	



DETAIL C

EXCAVATED CHANNEL WIDTH

RIPRAP AREA

EXCAVATED CHANNEL WIDTH

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

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

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

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

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

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

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

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: B189IF.STD
 CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
 DESIGNED BY: STD DATE: NO SCALE
 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
9-8-11				6	ARK.		73	
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.

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

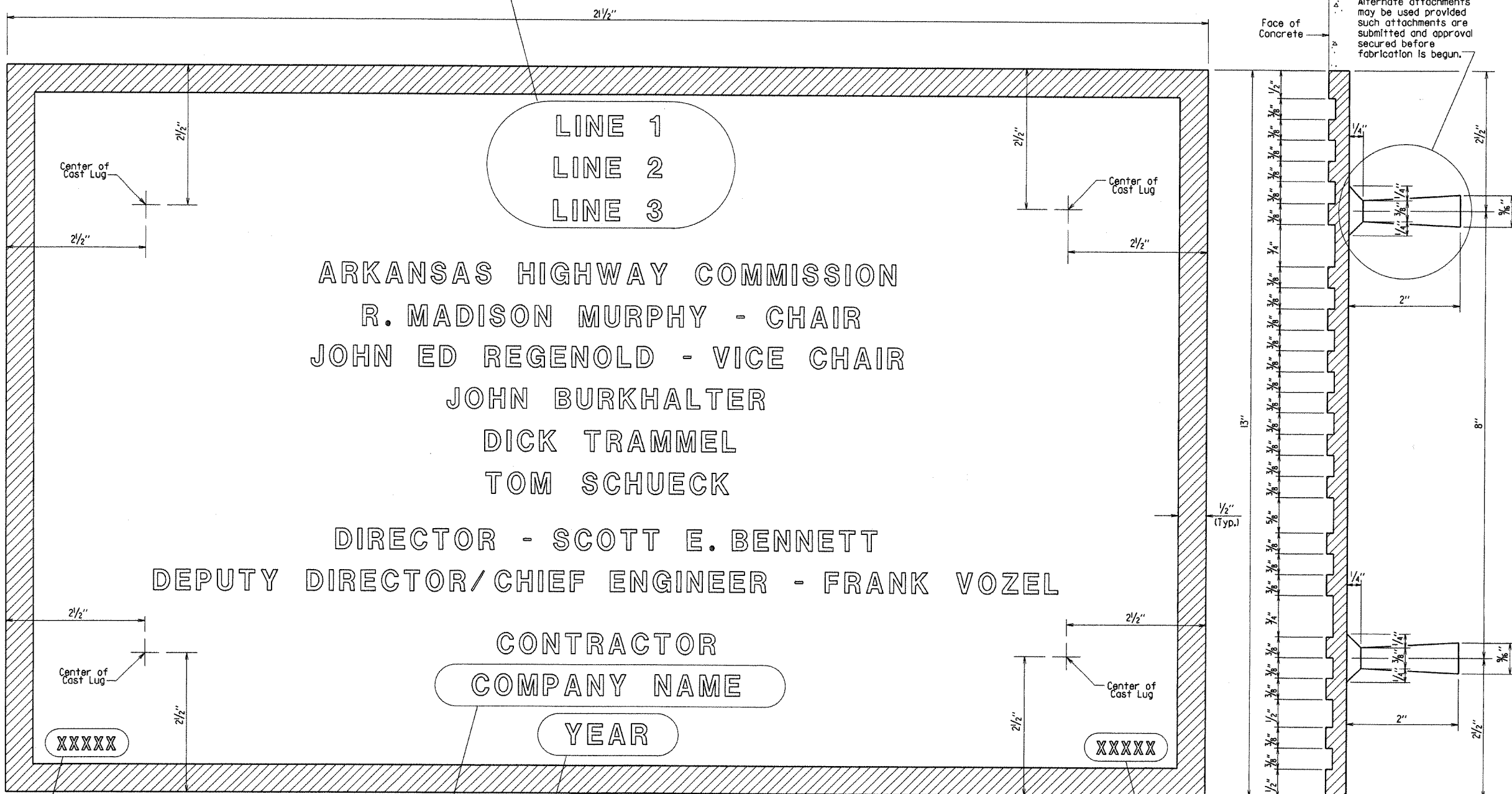
GENERAL NOTES

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 B12 of the Standard Specifications.

Body of plate shall be 1/4" thick and shall include four tapering cone lugs 3/8" to 3/8" 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.



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

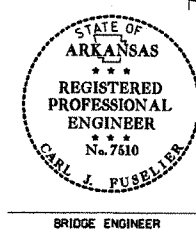
Place the Year in which Contract was awarded here using 1/8" raised numerals 3/8" high. Example: 2001

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

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

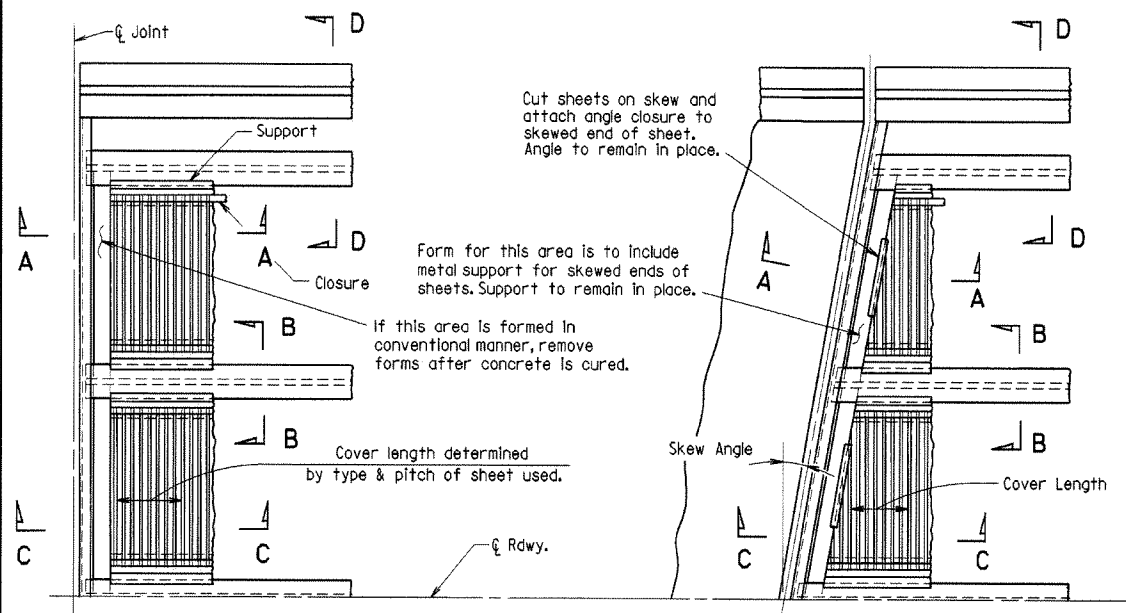


DETAILS OF STANDARD TYPE D BRIDGE NAME PLATE
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 9-8-11 FILENAME: B2387.STD
CHECKED BY: CRE DATE: 9-8-11 SCALE: 1'-0" = 1'-0"
DESIGNED BY: STD. DATE: OR AS NOTED
BRIDGE NO. DRAWING NO. 2387

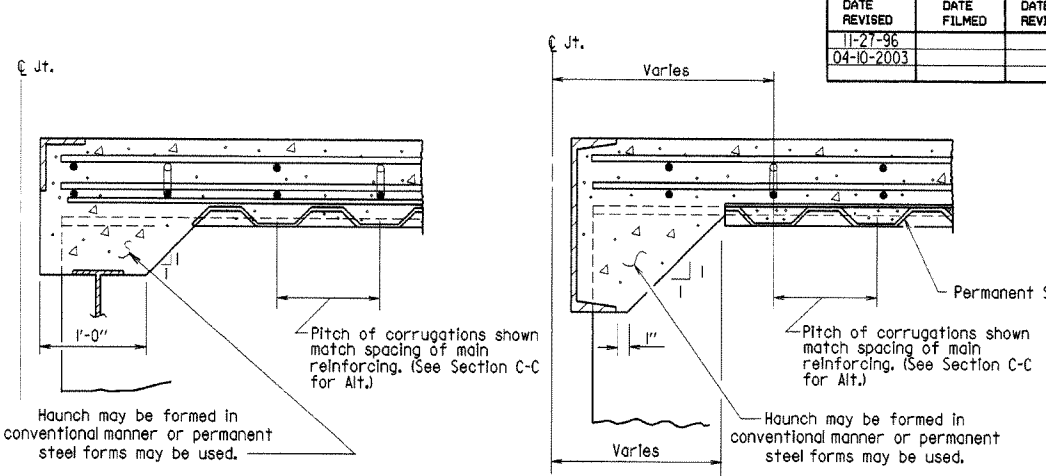
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11-27-96						6	ARK.		79	
04-10-2003										

BR. DECK FORMS 14991



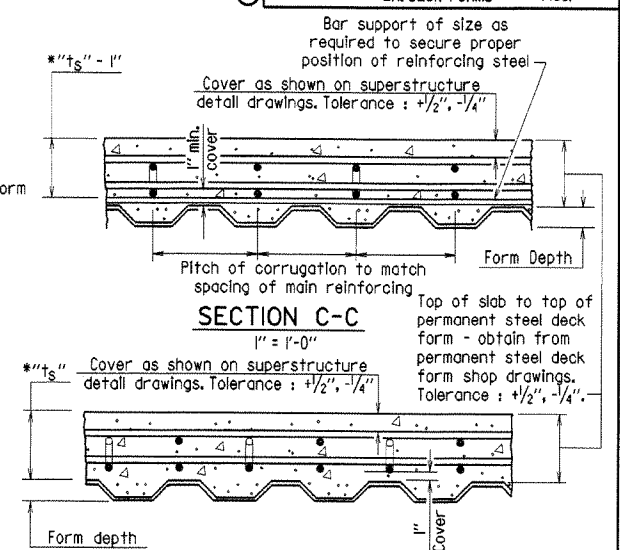
PART PLAN - SQUARE SPAN
3/8" = 1'-0"

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



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

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



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

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

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

*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 802J4(b) of the Standard Specifications. Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Bridge Engineer before work of forming the bridge deck is started.

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

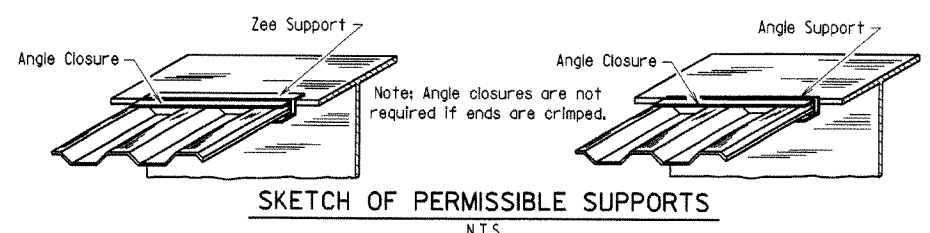
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Bridge Engineer.

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

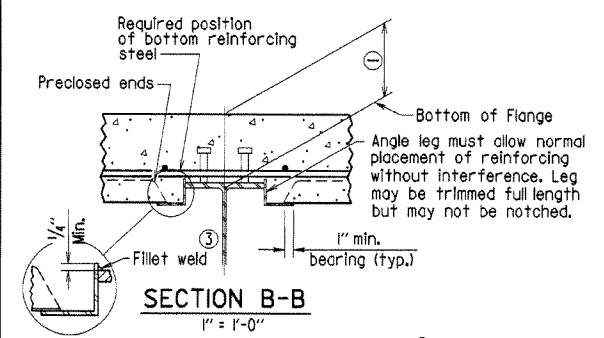
Bar support rods, when used, shall be sized and spaced to adequately support the bottom reinforcing mat at the required position.

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

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

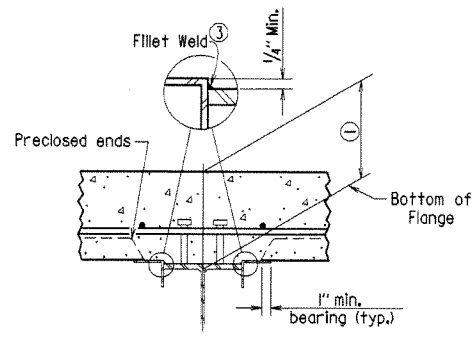


SKETCH OF PERMISSIBLE SUPPORTS
N.T.S.



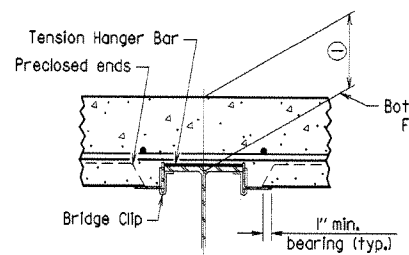
SECTION B-B
1" = 1'-0"

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



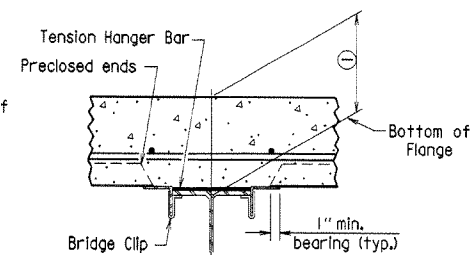
SECTION B-B
1" = 1'-0"

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



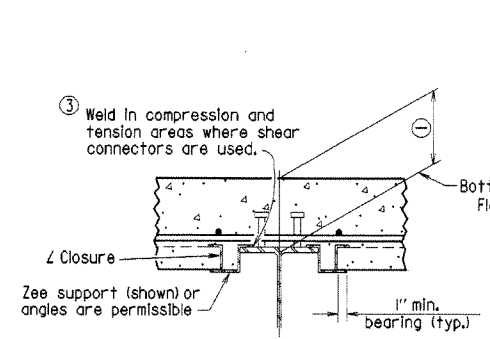
SECTION B-B
1" = 1'-0"

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



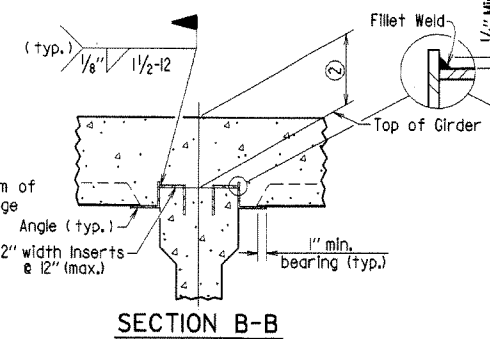
SECTION B-B
1" = 1'-0"

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



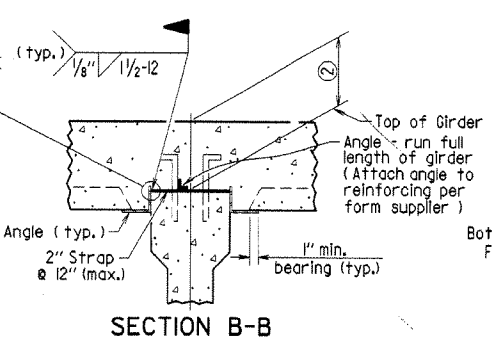
SECTION B-B
1" = 1'-0"

(Showing Z Closure)



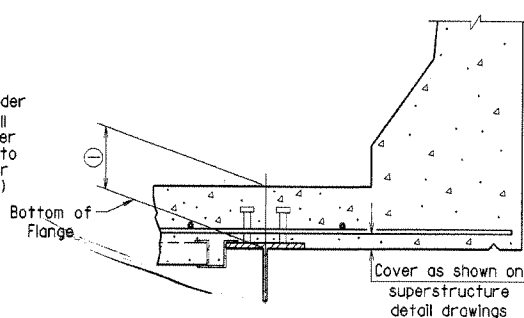
SECTION B-B (FOR CONCRETE GIRDERS)
1" = 1'-0"

(Showing support by Insert cast in girder)



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

(Showing support by Strap)



SECTION D-D
1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

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.

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

Redrawn and revised 11/27/96; MJT



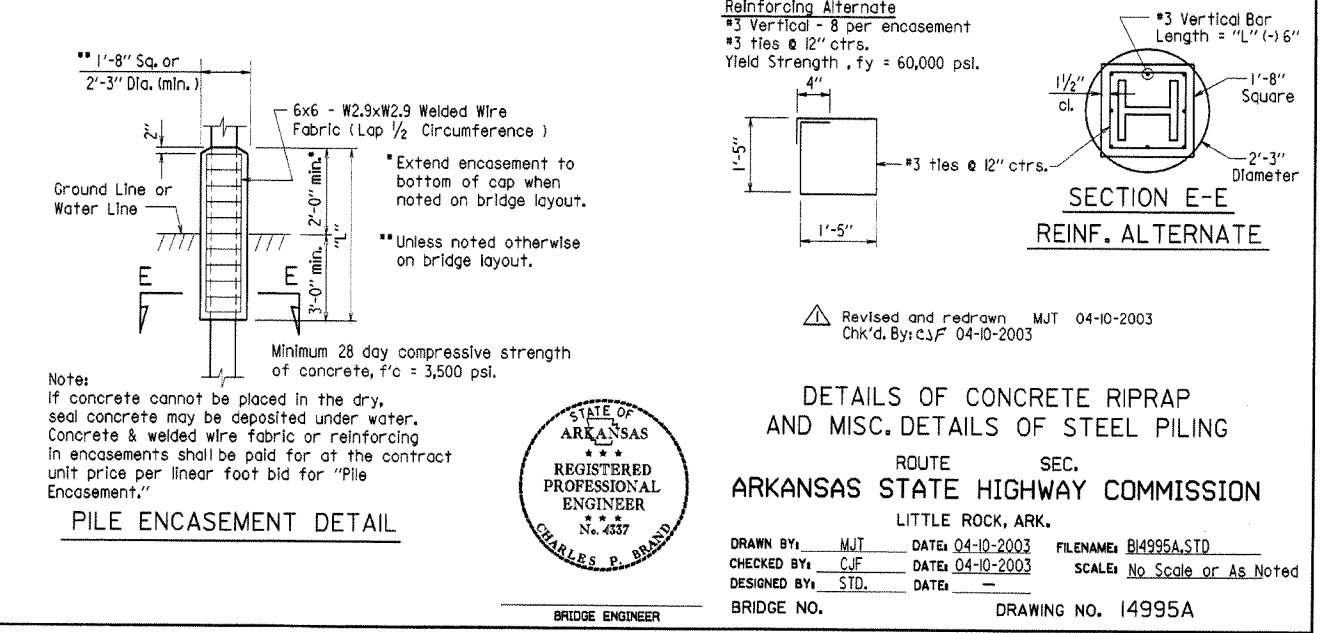
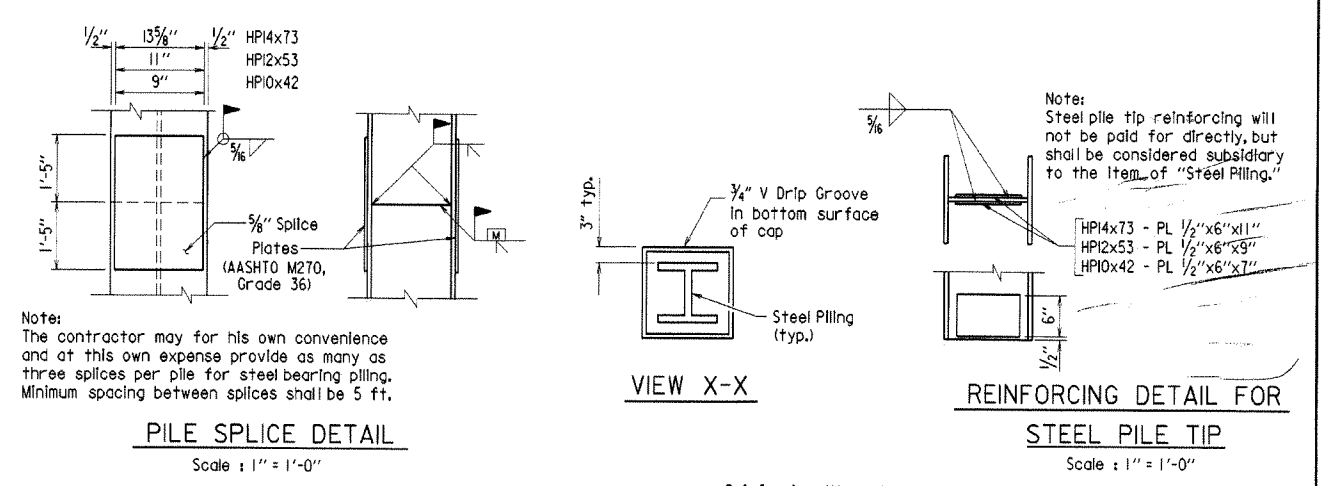
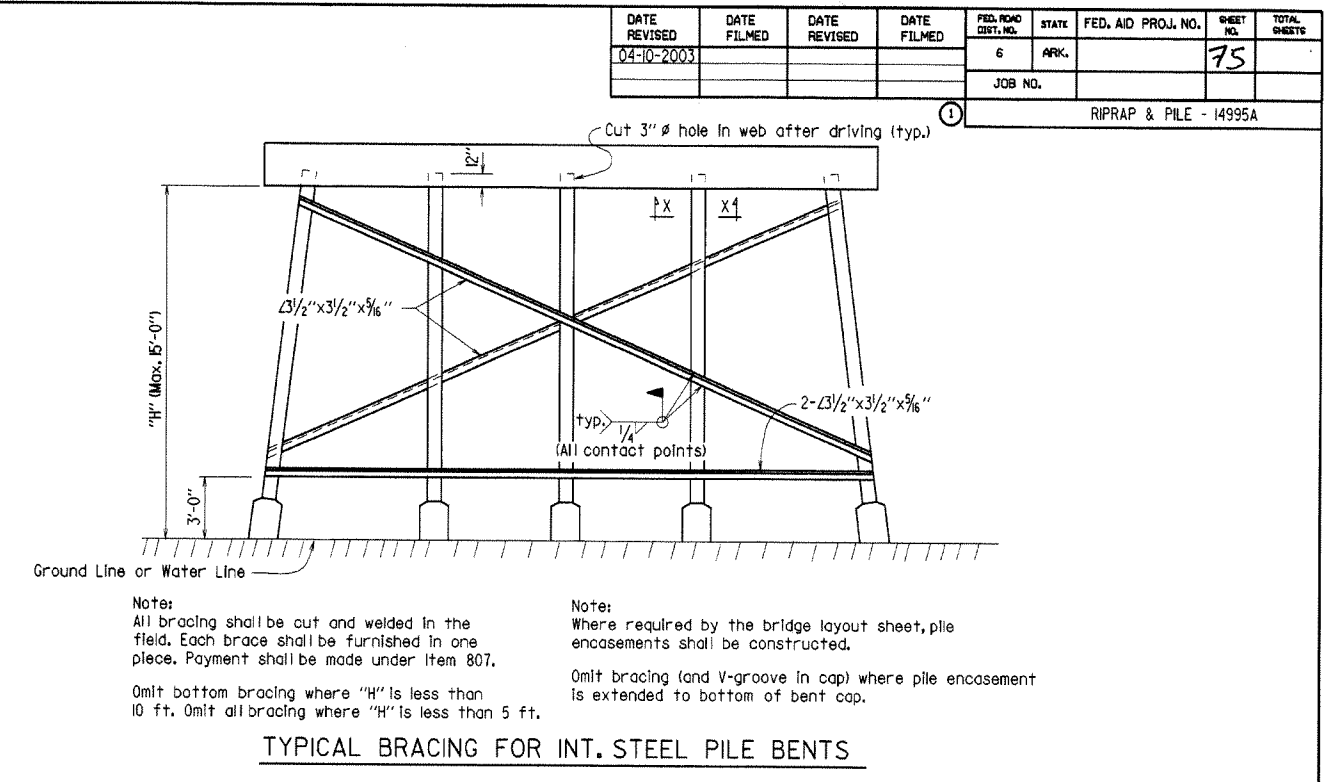
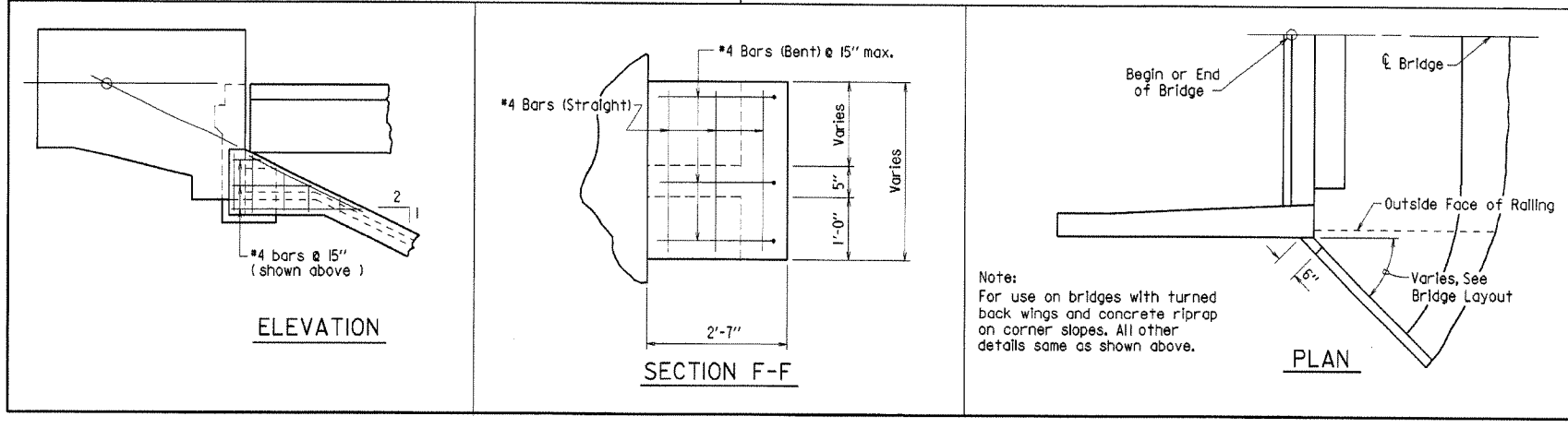
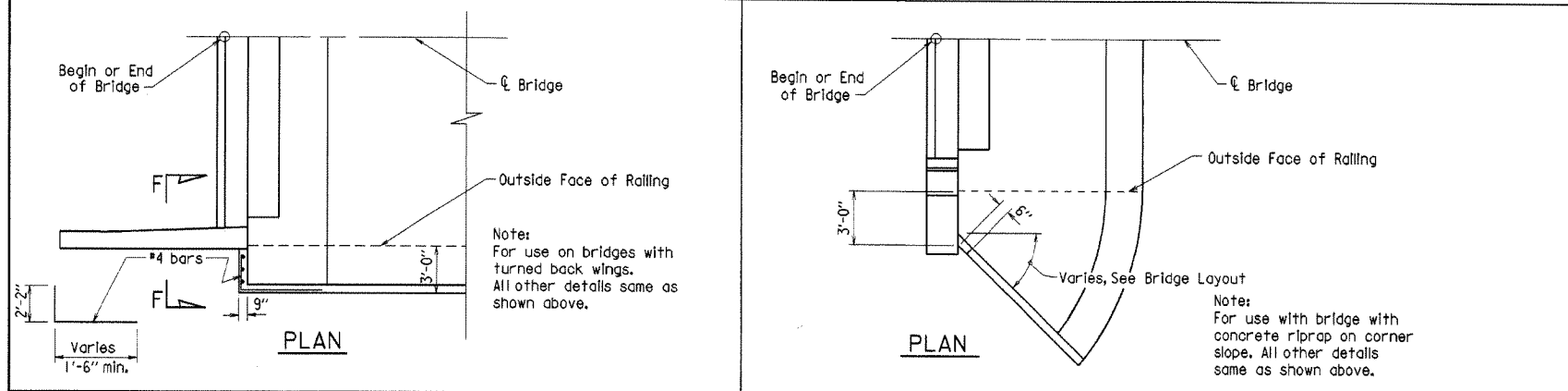
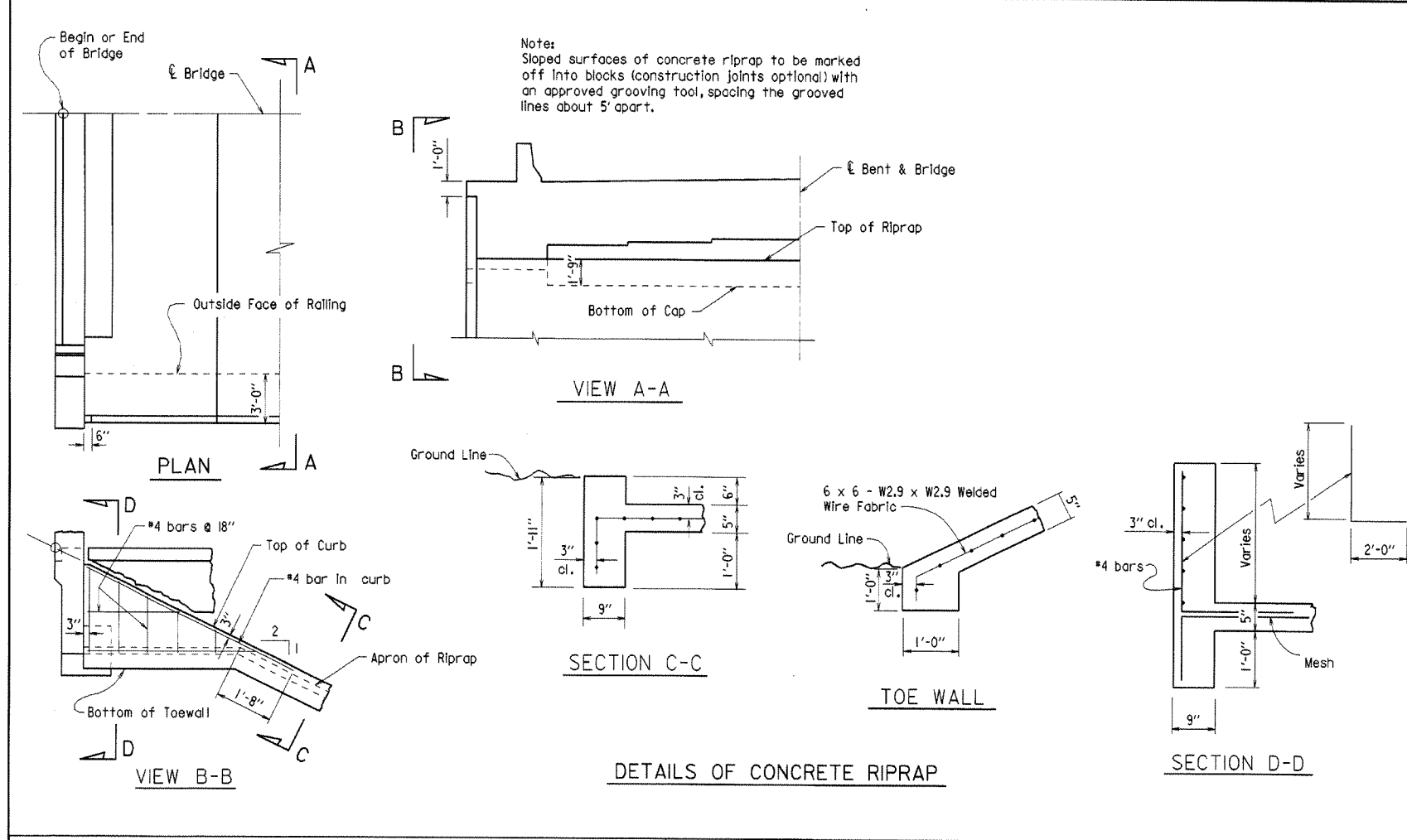
BRIDGE ENGINEER

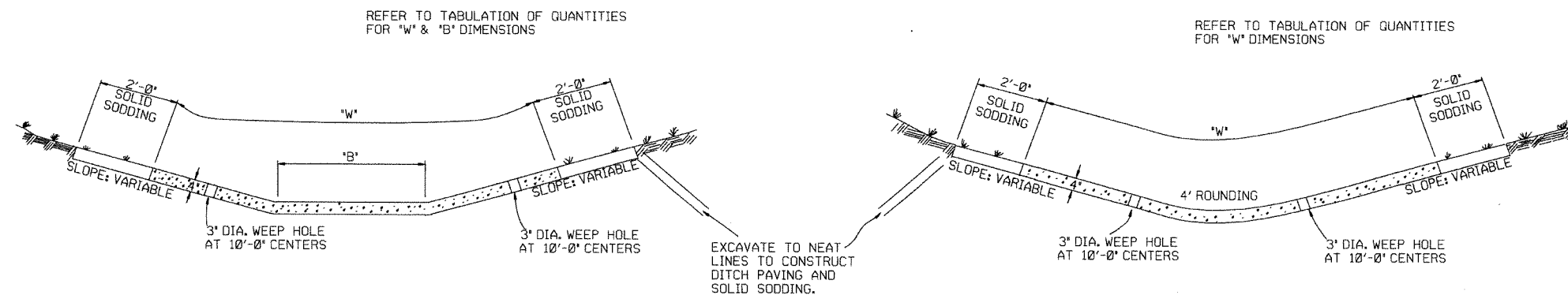
DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

DATE REVISION	DATE FILMED	DATE REVISION	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		75	
JOB NO.							RIPRAP & PILE - 14995A	

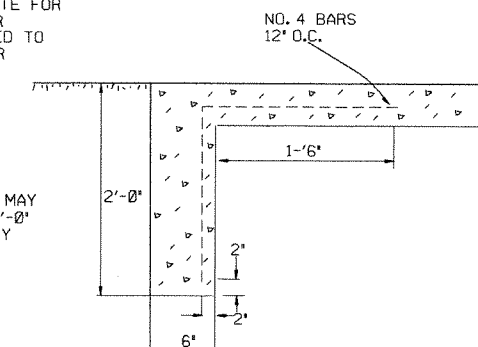




TYPE A

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

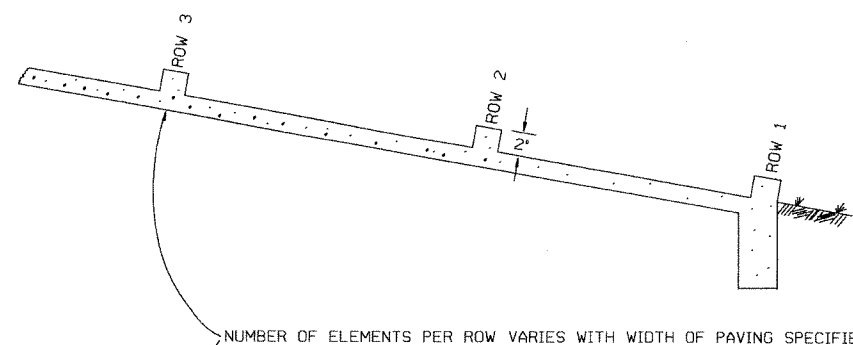
TOE WALL DETAIL FOR CONCRETE DITCH PAVING

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.

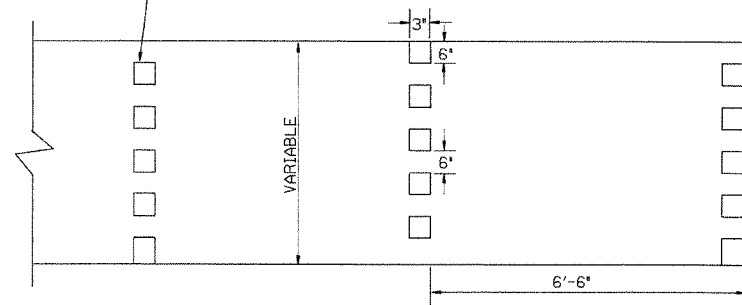
SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

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.



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

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 INCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.



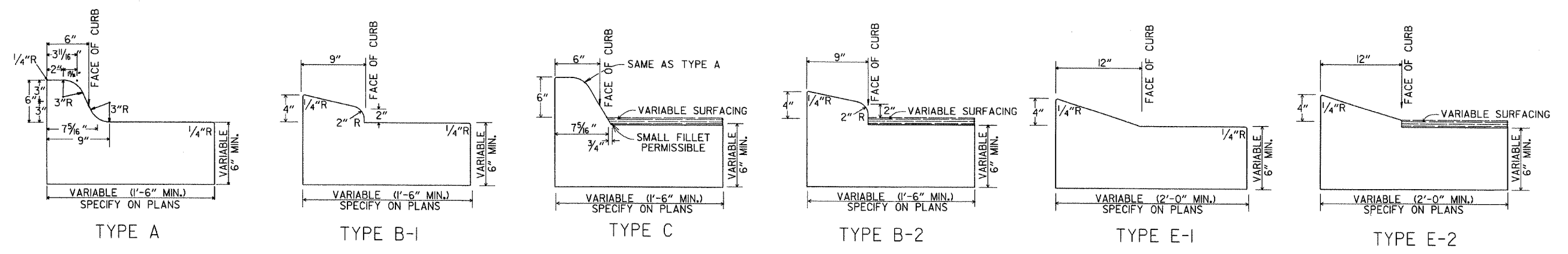
ENERGY DISSIPATORS
(NO SCALE)

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.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS	508-11-1-84
11-1-84	ADDED EXCAVATION DETAILS ADDED	
10-2-72	TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72
DATE	REVISION	DATE FILM'D

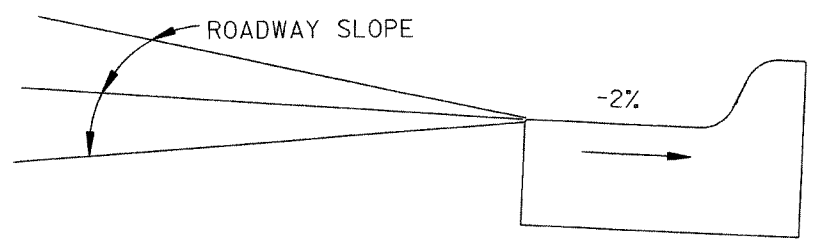
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

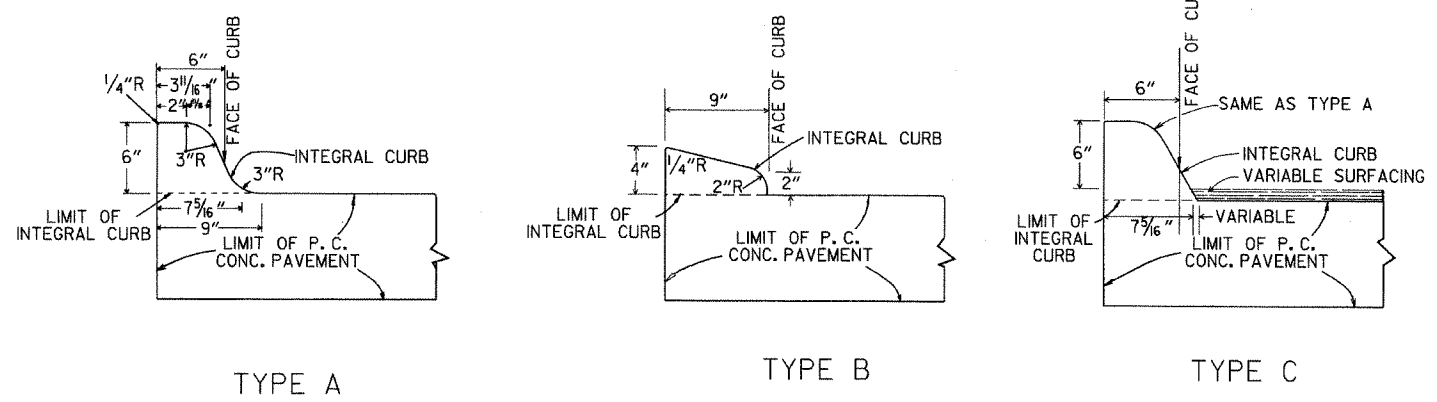
STANDARD DRAWING CDP-1



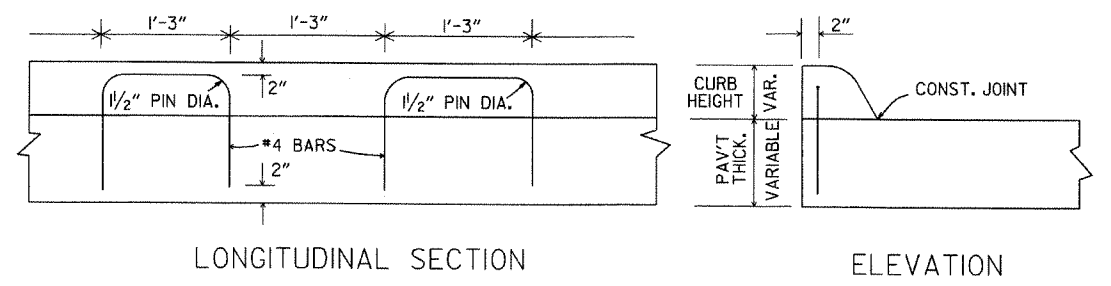
CONCRETE COMBINATION CURB AND GUTTER



DETAIL OF GUTTER SLOPE
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



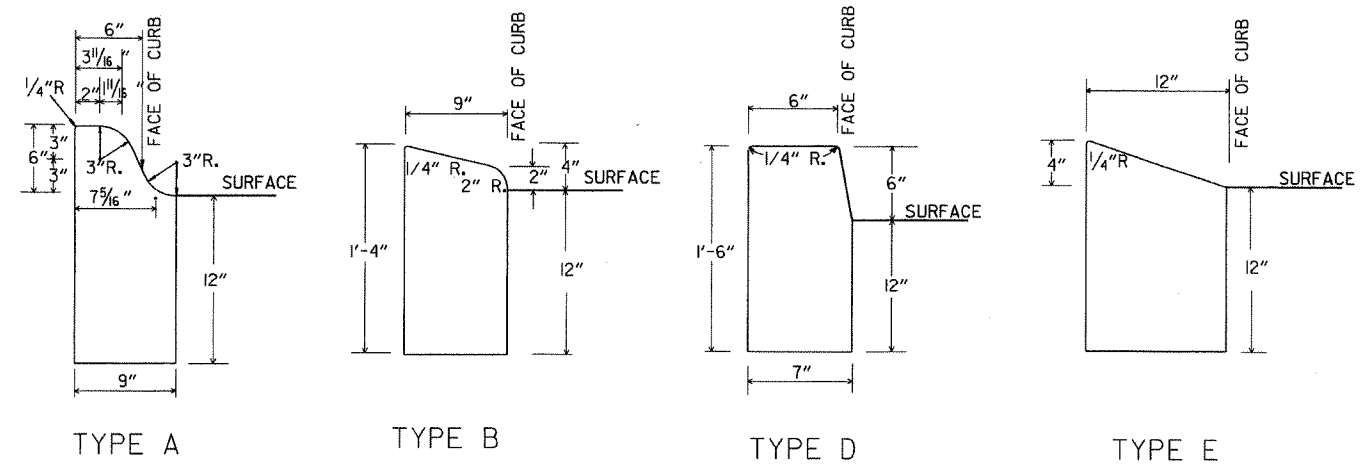
INTEGRAL CURB



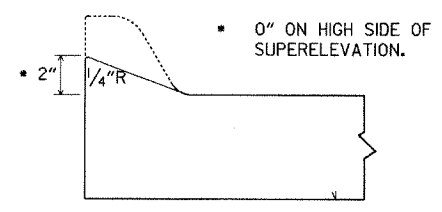
LONGITUDINAL SECTION

ELEVATION

ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



CONCRETE CURB



NOTE: USE MODIFIED CURB AS SPECIFIED ON STD. DR-1. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.

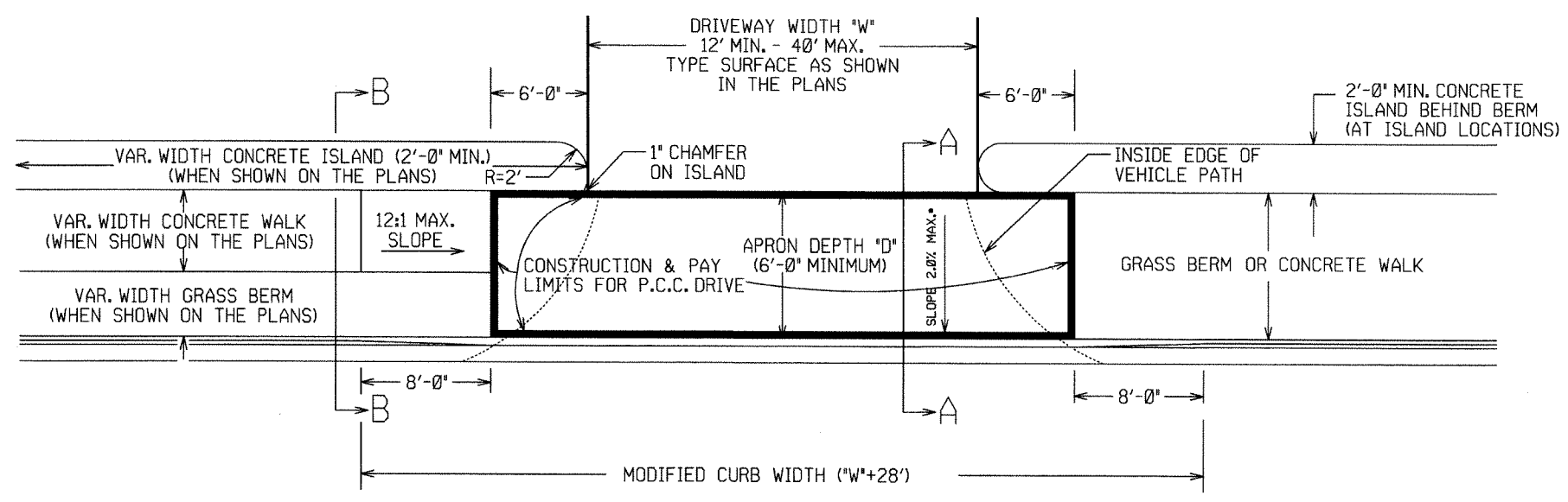
DETAILS OF MODIFIED CURB

DATE	REVISION	DATE FILMED
11-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
11-10-05	ADDED DETAILS OF TYPE E CURBS	
11-16-01	REVISED CONCRETE CURB TYPE B	
11-18-98	REVISED MODIFIED CURB	
8-2-94	ADDED NOTE TO SPECIAL MODIFIED CURB	
8-5-93	CORRECTED GUTTER SLOPE	8-5-93
10-1-92	ADDED DETAILS OF GUTTER SLOPE	10-1-92
5-24-90	ADDED DETAILS OF MODIFIED CURB	5-24-90
11-30-89	VARIABLE DEPTH TYPE A & B 1	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	512-10-2-72

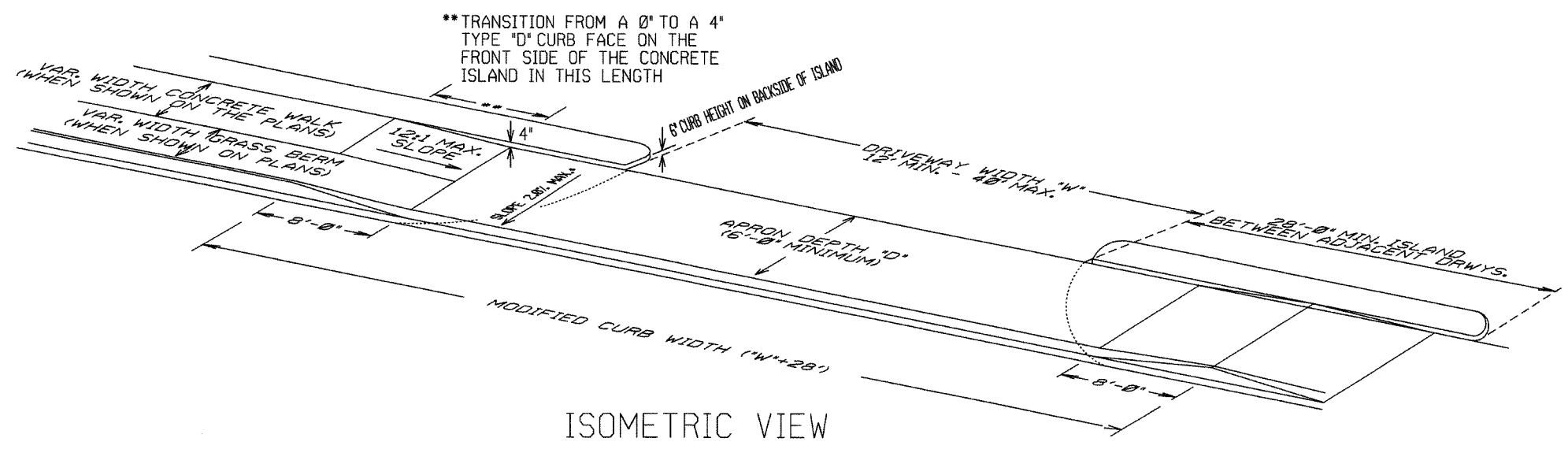
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

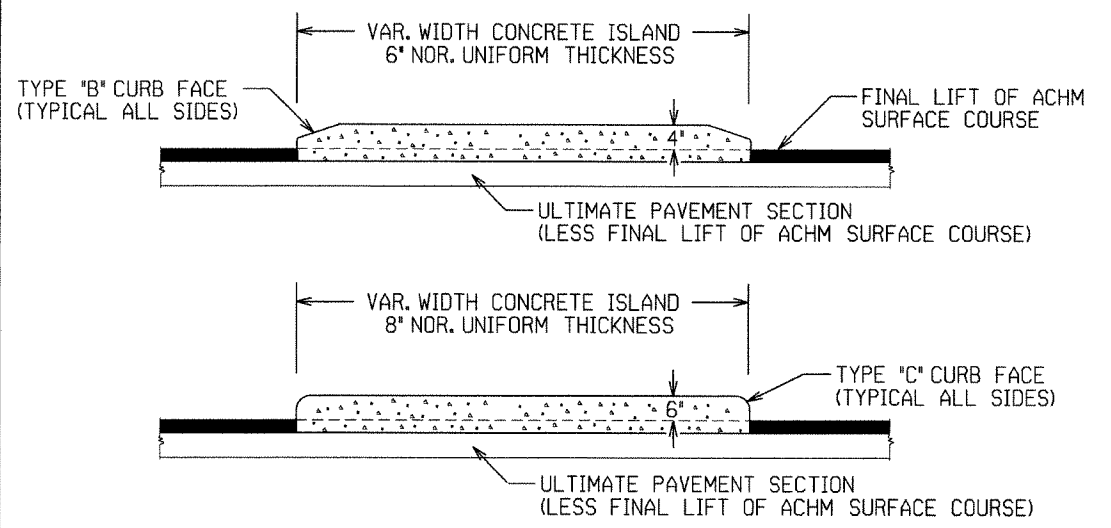
STANDARD DRAWING CG-1



PLAN VIEW

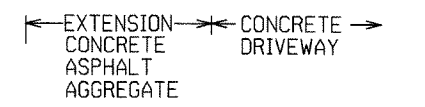


ISOMETRIC VIEW



CURBED ISLANDS FOR CHANNELIZATION

REFER TO PLANS FOR TYPE OF CURB FACE TO BE USED. NO DIRECT PAYMENT WILL BE MADE FOR THE CURB FACES SHOWN ON THE ISLAND DETAILS. PAYMENT FOR THE CURB FACE WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM "CONCRETE ISLAND".

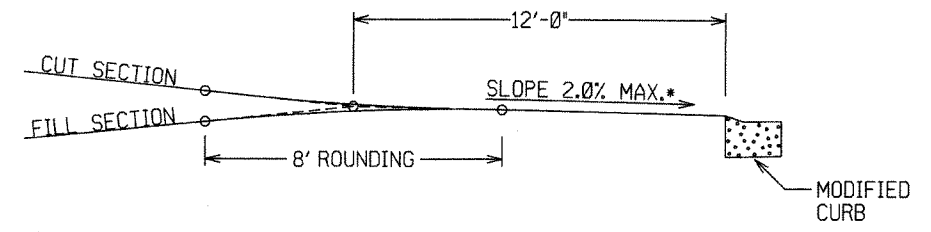


EXTENSION TYPICAL SECTIONS

- 1: CONCRETE - 6" P.C. CONCRETE DRIVEWAY
- 2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE (1") OR
4" ACHM BASE COURSE (1-1/2")
- 3: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
7" AGGREGATE BASE COURSE
- 4: AGGREGATE - 6" AGGREGATE BASE COURSE

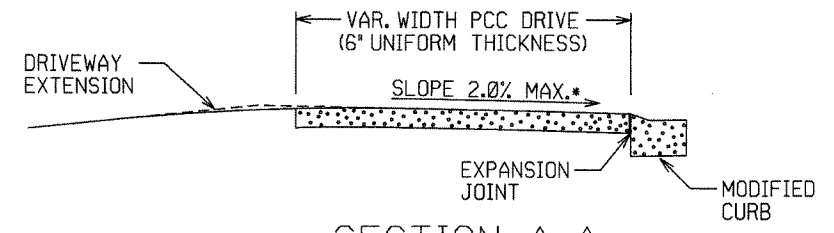
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

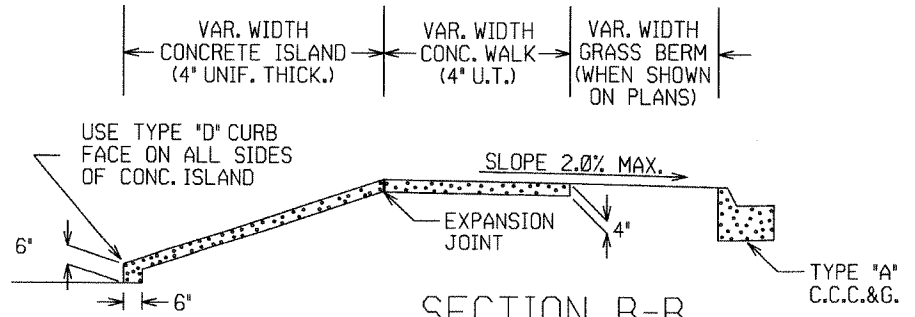


DRIVEWAY VERTICAL ALIGNMENT DETAILS

* NOTE: DRIVEWAYS MAY NOT BE SLOPED AWAY FROM THE ROADWAY UNLESS APPROVED BY THE ENGINEER.



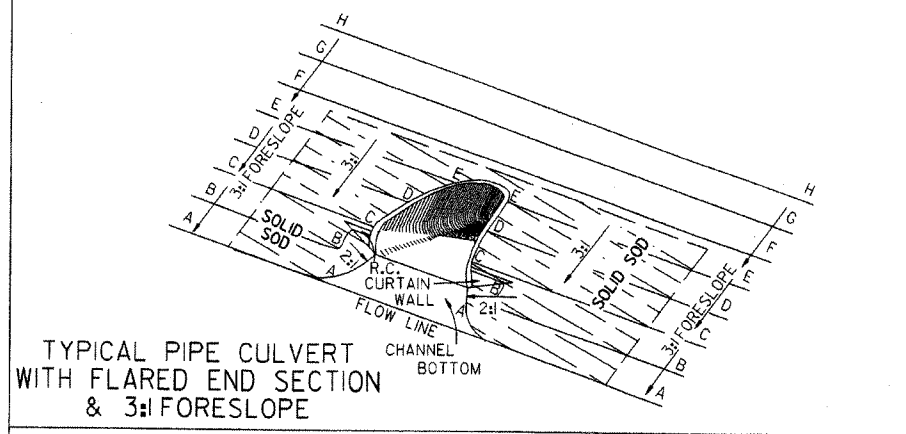
SECTION A-A



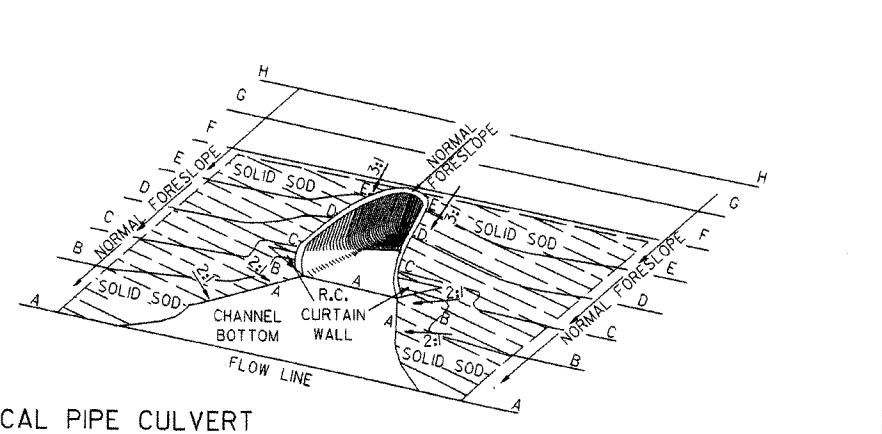
SECTION B-B
CURBED ISLAND BEHIND WALK

DATE	REV	DATE FILMED	DESCRIPTION
11-29-07			ADDED CHANNELIZATION ISLAND WITH TYPE C CURB FACE & REVISED DRIVEWAY SLOPE NOTE & VERTICAL ALIGNMENT DETAIL
11-10-05			REV. APRON SLOPE & DEPTH OF AGG. BASE.
8-22-02			ADDED ISLAND DETAILS & NOTES
3-30-00			REV. MOD. CURB WIDTH & TRANS. NOTE
11-19-98			REVISED NOTES
11-18-98			REDRAWN AND REISSUED

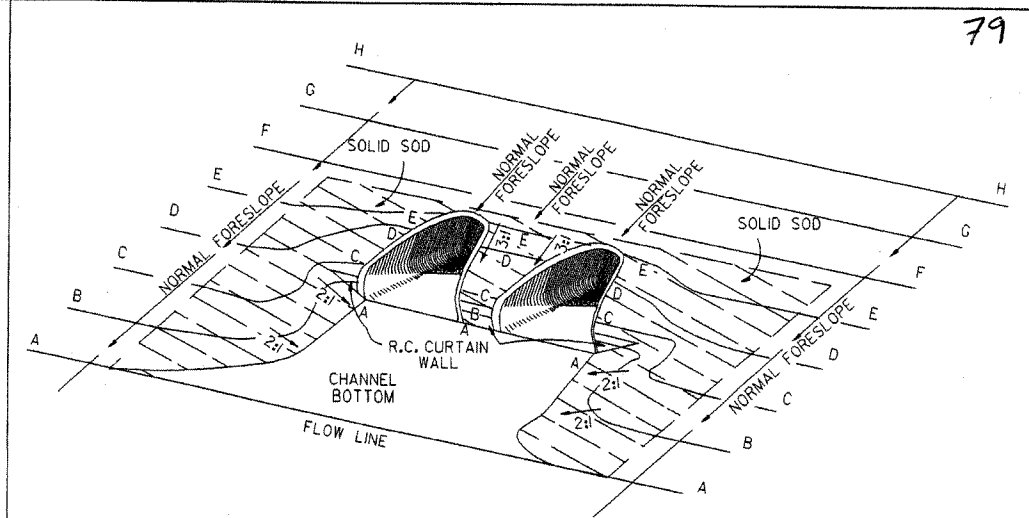
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1



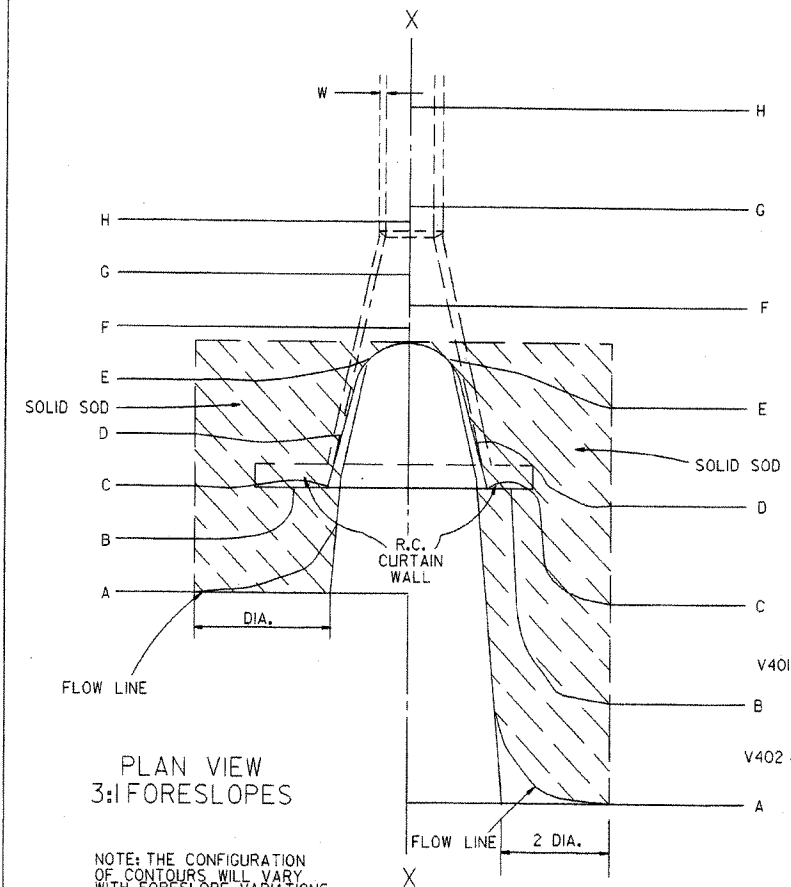
TYPICAL PIPE CULVERT WITH FLARED END SECTION & 3:1 FORESLOPE



TYPICAL PIPE CULVERT WITH FLARED END SECTION & FLATTENED ADJACENT SLOPES



TYPICAL MULTIPLE PIPE CULVERT WITH FLARED END SECTIONS & FLATTENED ADJACENT SLOPES



PLAN VIEW 3:1 FORESLOPES

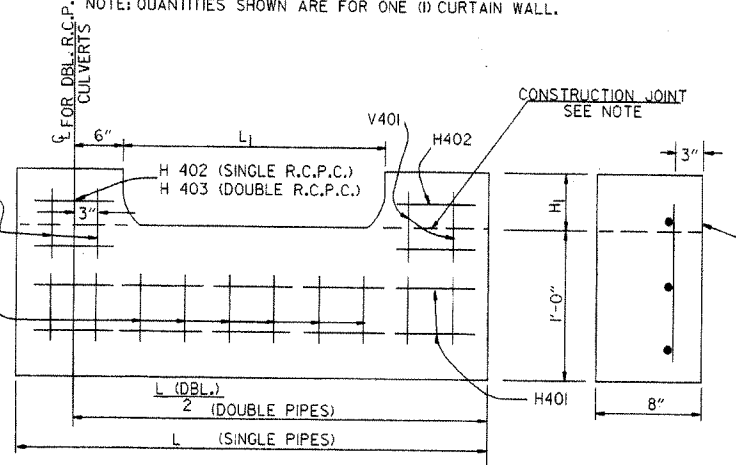
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW FLATTENED FORESLOPES

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

PIPE DIA.	H ₁	L ₁	L	L (DBL.) / 2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11 1/2"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0 1/2"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3 1/2"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1 1/2"	7'-3"	15'-6"	12'-0"	0.82	77.1	1.10	100.7
48"	2'-5"	7'-10"	17'-0"	13'-0"	0.98	94.9	1.27	120.4
54"	2'-9 1/2"	8'-5"	18'-6"	14'-0"	1.16	115.8	1.47	143.7
60"	3'-4"	9'-0"	20'-6"	15'-6"	1.47	149.7	1.84	180.3
72"	4'-5"	10'-2"	25'-6"	18'-6"	2.31	232.6	2.73	271.0

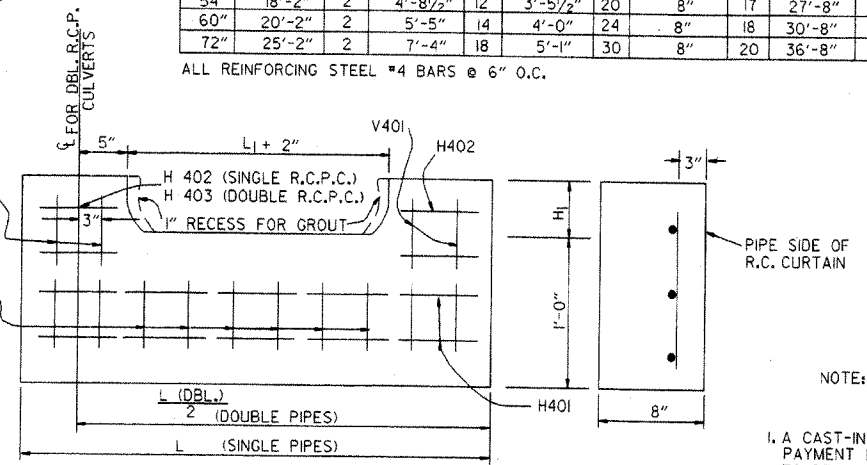
NOTE: QUANTITIES SHOWN ARE FOR ONE (1) CURTAIN WALL.



CAST-IN-PLACE

NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.

R.C. CURTAIN WALL DETAILS



PRECAST

NOTE: THE PRECAST CURTAIN WALL WILL BE SET AND BACKFILLED WITH COMPACTED MATERIAL. THE FLARED END SECTION SHALL THEN BE SET IN PLACE AND THE 1" RECESS FILLED WITH GROUT. WHERE "L" EXCEEDS 11' THE CURTAIN WALL MAY BE CAST IN TWO (2) OR MORE SECTIONS. THE METHOD OF JOINING THE SECTIONS FOR INSTALLATION SHALL BE APPROVED BY THE ENGINEER.

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT								DOUBLE R.C. PIPE CULVERT									
	H401		H402		V401		V402		H401		H402		H403		V401		V402	
	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.
18"	7'-8"	2	1'-11 1/2"	4	1'-7 1/2"	8	8"	8	12'-2"	2	1'-11 1/2"	4	8"	2	1'-7 1/2"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8 1/2"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8 1/2"	12	8"	18
30"	10'-8"	2	2'-4 1/2"	4	1'-11 1/2"	10	8"	12	17'-8"	2	2'-4 1/2"	4	8"	2	1'-11 1/2"	14	8"	22
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14	8"	28
42"	15'-2"	2	3'-9 1/2"	8	2'-9 1/2"	16	8"	15	23'-8"	2	3'-9 1/2"	8	8"	4	2'-9 1/2"	18	8"	30
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20	8"	32
54"	18'-2"	2	4'-8 1/2"	12	3'-5 1/2"	20	8"	17	27'-8"	2	4'-8 1/2"	12	8"	6	3'-5 1/2"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

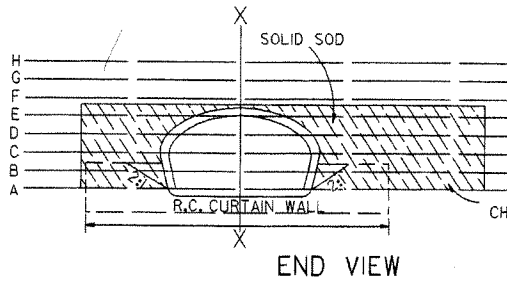
ALL REINFORCING STEEL #4 BARS @ 6" O.C.

SOLID SODDING

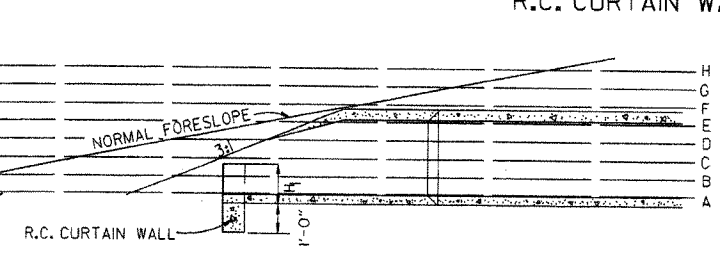
PIPE DIA.	SINGLE R.C.P.C.			DOUBLE R.C.P.C.		
	3:1	4:1	6:1	3:1	4:1	6:1
	SQ. YDS.					
18"	5	7	12	6	8	13
24"	8	12	19	9	13	20
30"	13	18	29	14	19	30
36"	17	26	41	18	28	43
42"	23	35	55	25	37	57
48"	29	46	68	31	48	70
54"	35	57	85	37	59	87
60"	45	62	104	48	65	107
72"	64	92	156	67	95	159

NOTE: QUANTITIES SHOWN ABOVE ARE FOR ONE (1) END OF F.E.S.

- GENERAL NOTES
1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL; AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
 2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".
 3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
 4. WELDED WIRE MESH 3 x 3 W/10 x W/10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW



SECTIONAL VIEW "X-X"

10-18-96	ADDED NOTE TO SOLID SODDING		ARKANSAS STATE HIGHWAY COMMISSION
10-12-95	CORRECTED SPELLING	10-18-96	
11-3-94	ADDED GENERAL NOTE NO. 4		
8-15-91	REV. CURTAIN WALL QUANT., STEEL SCH. & SOLID SOD QUANT.		
3-2-81	ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES		
5-15-80	ADDED PRECAST WALL & GENERAL NOTES		
10-2-72	REVISED AND REDRAWN		
DATE	REVISION	FILMED	STANDARD DRAWING FES-1

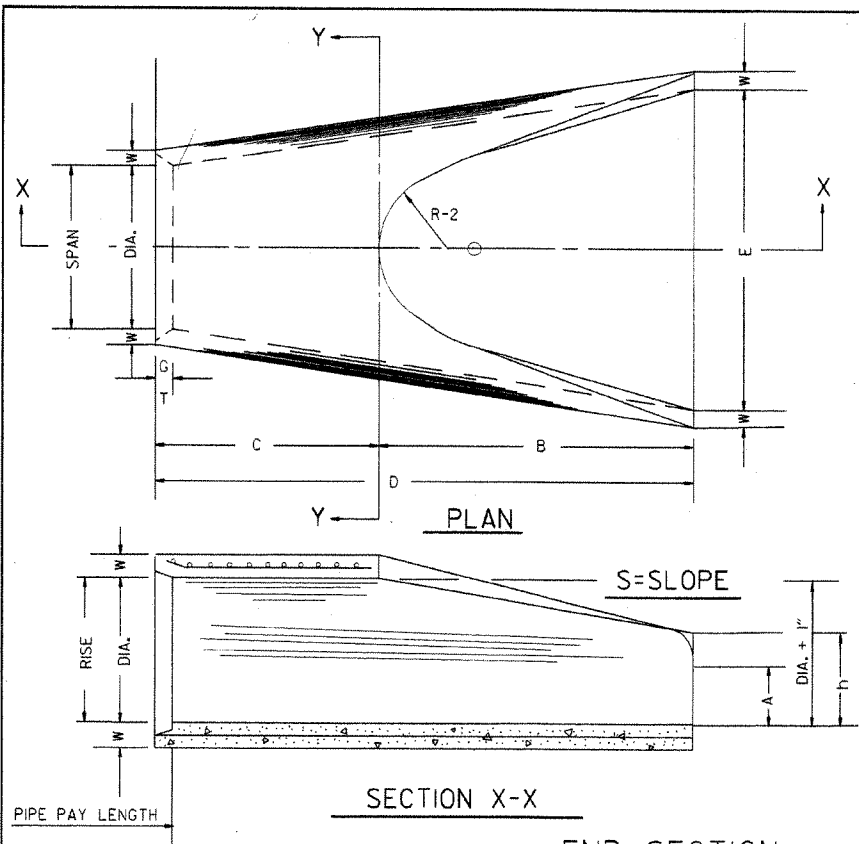
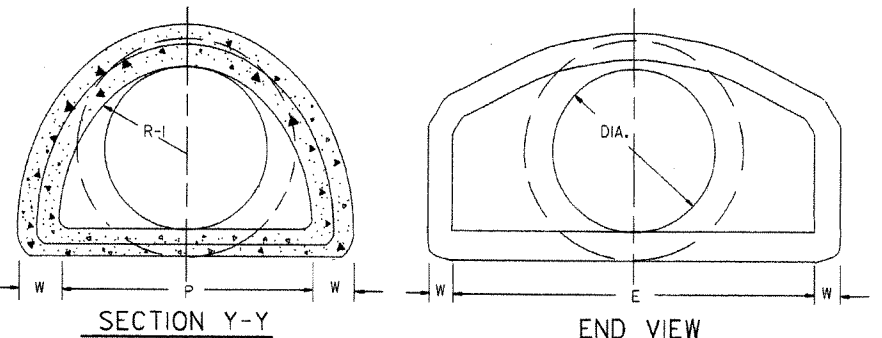


TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15 1/2"	12"	2"	1000	1'-0 1/2"
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3:1	25"	33 3/8"	16 9/16"	14"	2 1/2"	1600	1'-1 1/2"
30"	3 1/2"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3:1	31"	37"	18 1/2"	15"	3 1/4"	1940	1'-4 5/8"
36"	4"	1'-3"	5'-3"	2'-10 1/4"	8'-1 1/4"	6'-0"	3:1	37"	47 1/8"	24 3/8"	20"	3 1/2"	4100	1'-8"
42"	4 1/2"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53 1/8"	27 1/2"	22"	3 1/2"	5380	2'-2 1/2"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56 1/2"	28 3/4"	22"	3 1/2"	6550	2'-6"
54"	5 1/2"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65 1/2"	33 1/8"	24"	4"	8750	2'-10 1/2"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72 1/2"	36 1/8"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 1/8"	38 3/8"	24"	5"	13250	4'-6"

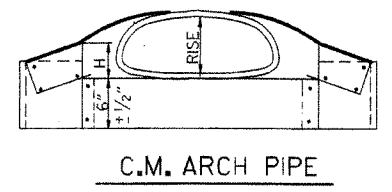
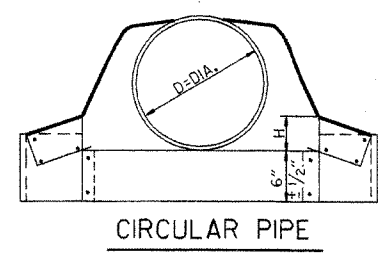
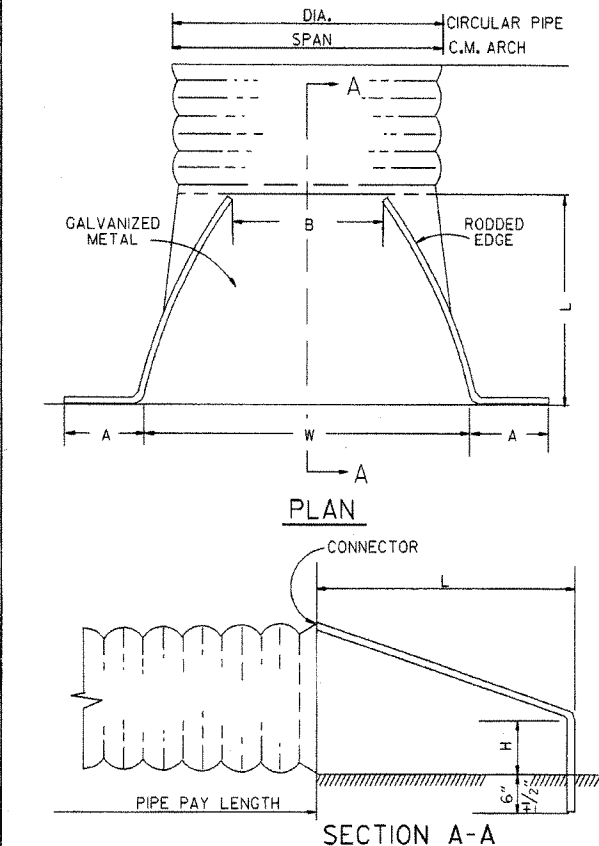
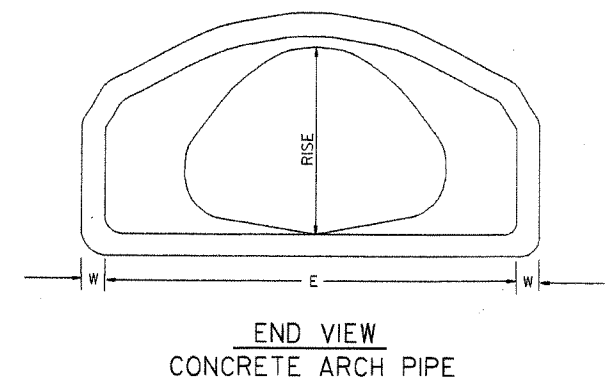


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

ARCH PIPE

EQUIV. DIA.	SPAN		RISE		W	A	B	C	D	E	P	R2	G-T	S
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL										
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1 1/2"	2 1/2:1
18	22	22	13 1/2	14	2 1/2"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32 1/8"	13"	2 1/2"	2 1/2:1
21	26	26	15 1/2	16	2 3/4"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34 1/8"	14"	2 1/2"	2 1/2:1
24	28 1/2	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 3/8"	15"	2 1/2"	2 1/2:1
30	36 1/4	36	22 1/2	23	3 1/2"	10"	3'-1"	3'-0 1/2"	6'-1 1/2"	6'-0"	47 1/8"	20"	3"	2 1/2:1
36	43 3/4	44	26 3/8	27	4"	10 1/2"	4'-0"	2'-1 1/2"	6'-1 1/2"	6'-6"	54 3/8"	22"	3 1/2"	2 1/2:1
42	51 1/8	51	31 1/8	31	4 1/2"	11 1/2"	4'-7"	1'-10 1/4"	6'-5 1/4"	7'-2"	59 1/2"	23"	3 3/4"	2 1/2:1
48	58 1/2	59	36	36	5"	1'-3"	5'-3"	2'-10 1/4"	8'-1 1/4"	7'-10"	70 1/8"	24"	4 1/4"	2 1/2:1
54	65	65	40	40	5 1/2"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/8"	24"	4 3/4"	2 1/2:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 1/8"	24"	5"	2 1/2:1

* THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.

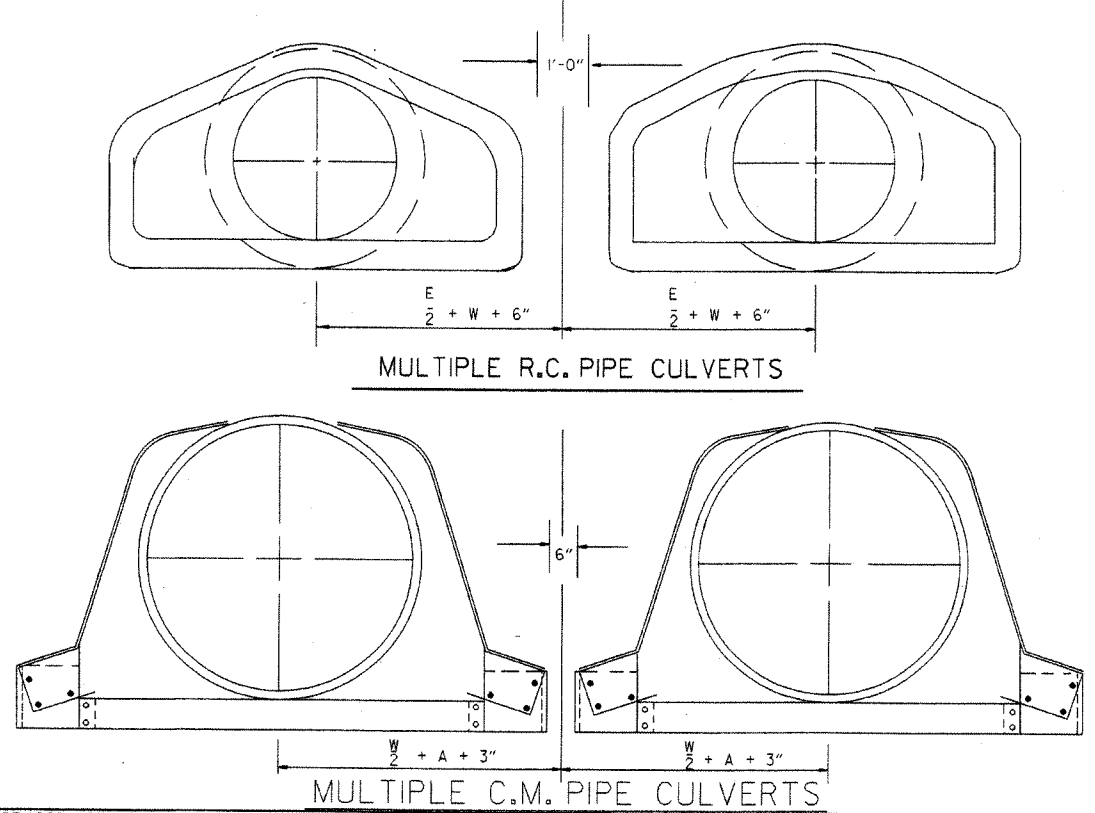


CIRCULAR PIPE

D. DIA.	GAUGE	A	B. MAX.	H	L	W	S
12	16	6	6	6	21	24	2 1/2:1
15	16	7	8	6	26	30	2 1/2:1
18	16	8	10	6	31	36	2 1/2:1
21	16	9	12	6	36	42	2 1/2:1
24	16	10	13	6	41	48	2 1/2:1
30	14	12	16	8	51	60	2 1/2:1
36	14	14	19	9	60	72	2 1/2:1
42	12	16	22	11	69	84	2 1/2:1
48	12	18	27	12	78	90	2 1/2:1
54	12	18	30	12	84	102	2:1
60	12	18	33	12	87	114	1 3/4:1
66	12	18	36	12	87	120	1 1/2:1
72	12	18	39	12	87	126	1 1/3:1

C.M. ARCH PIPE

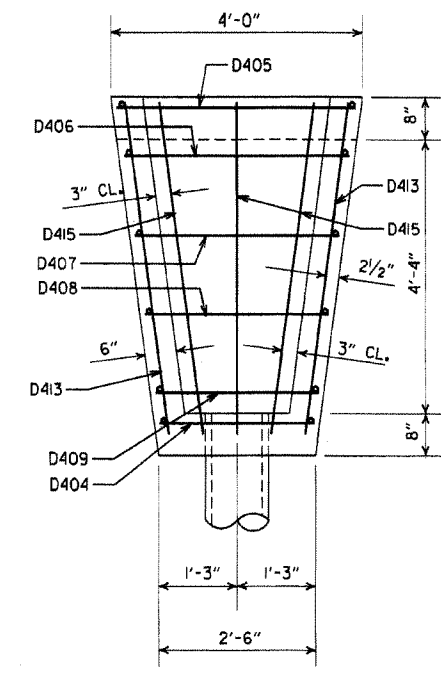
EQUIV. DIA.	SPAN	RISE	A	B. MAX.	H	L	W	S	GAUGE
15"	17	13	7	9	6	19	30	2 1/2:1	16
18"	21	15	7	10	6	23	36	2 1/2:1	16
21"	24	18	8	12	6	28	42	2 1/2:1	16
24"	28	20	9	14	6	32	48	2 1/2:1	16
30"	35	24	10	16	6	39	60	2 1/2:1	14
36"	42	29	12	18	8	46	75	2 1/2:1	14
42"	49	33	13	21	9	53	85	2 1/2:1	12
48"	57	38	18	26	12	63	90	2 1/2:1	12
54"	64	43	18	30	12	70	102	2 1/4:1	12
60"	71	47	18	33	12	77	114	2 1/4:1	12



NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

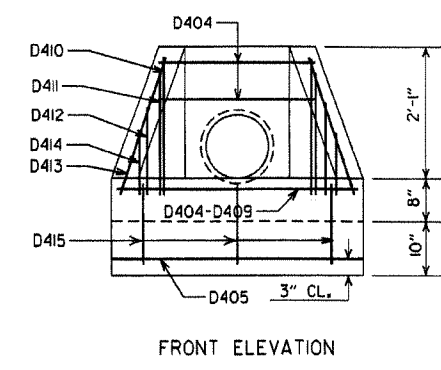
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96	ARKANSAS STATE HIGHWAY COMMISSION
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80	
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78	
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75	FLARED END SECTION
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74	
5-24-73	CMP END SECTION, SHOW PIPE PAY LENGTH	627-5-24-73	
10-2-72	REVISED AND REDRAWN	760-10-2-72	STANDARD DRAWING FES-2
DATE	REVISION	FILMED	



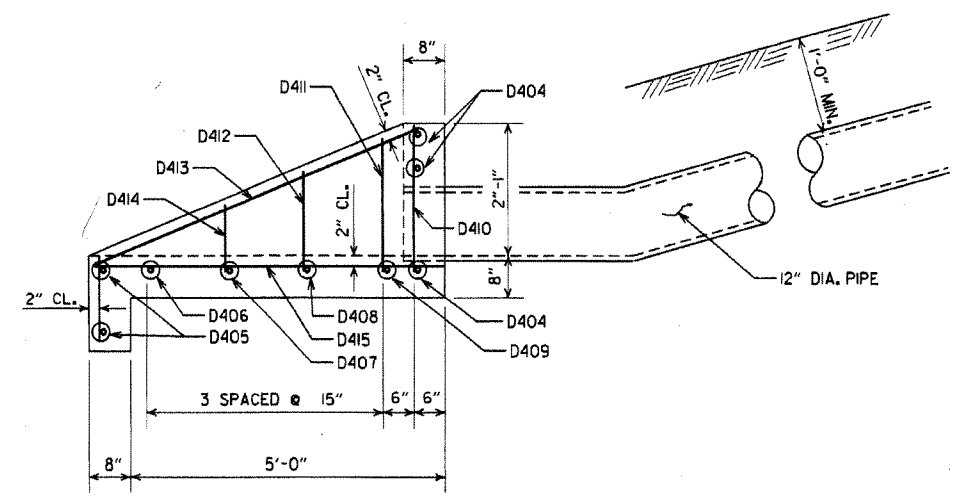
BAR LIST
(CONCRETE SPILLWAY)

MARK	NO. REQ'D.	LENGTH	BENDING DIAGRAM
D404	3	2'-2"	
D405	2	3'-8"	
D406	1	3'-5"	
D407	1	3'-1"	
D408	1	2'-9"	
D409	1	2'-5"	
D410	2	2'-5"	
D411	2	2'-2"	
D412	2	1'-9"	
D413	2	5'-6"	
D414	2	1'-2"	
D415	3	6'-5"	

PLAN

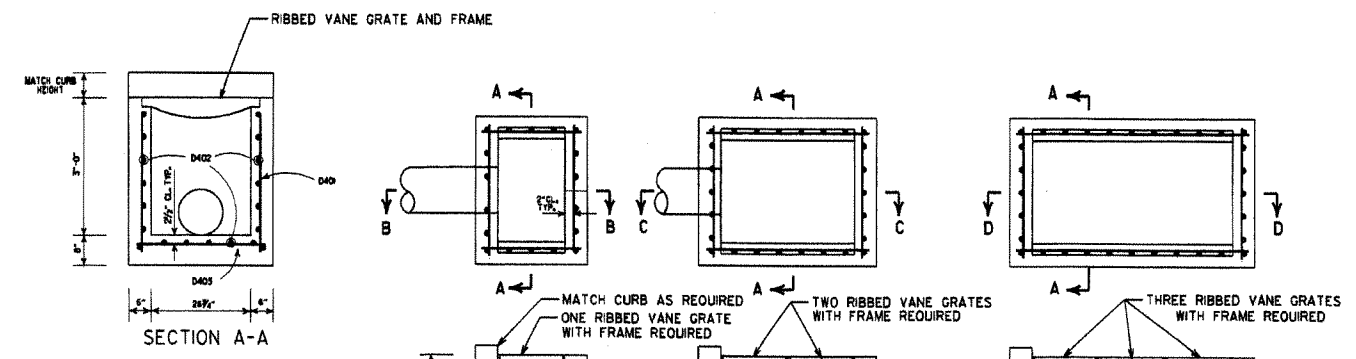


FRONT ELEVATION



SIDE ELEVATION
CONCRETE SPILLWAY

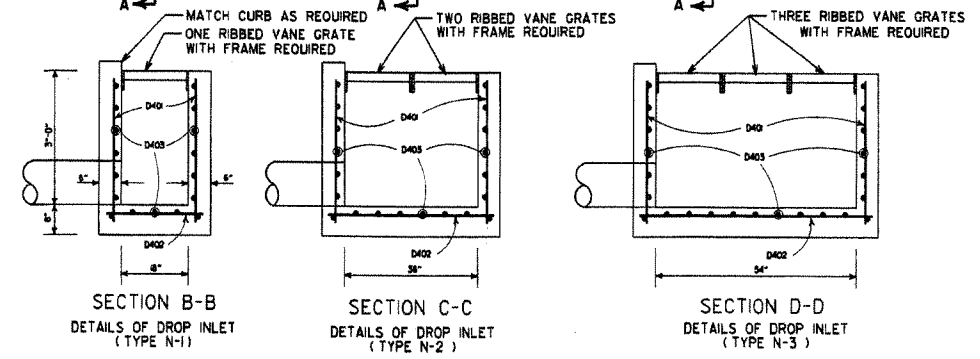
DETAILS OF CONCRETE SPILLWAY (TYPE A)



BAR LIST (DROP INLET)

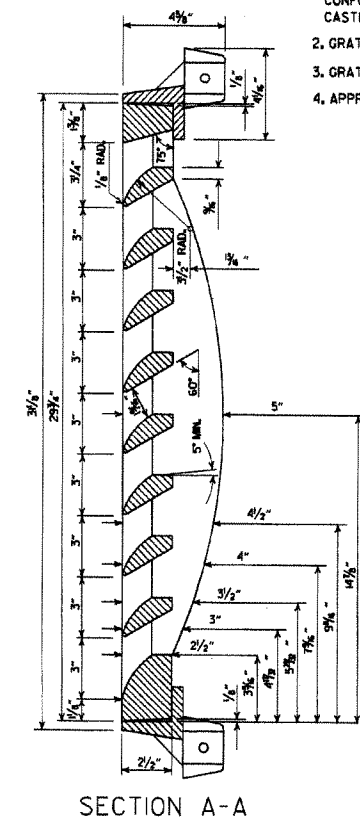
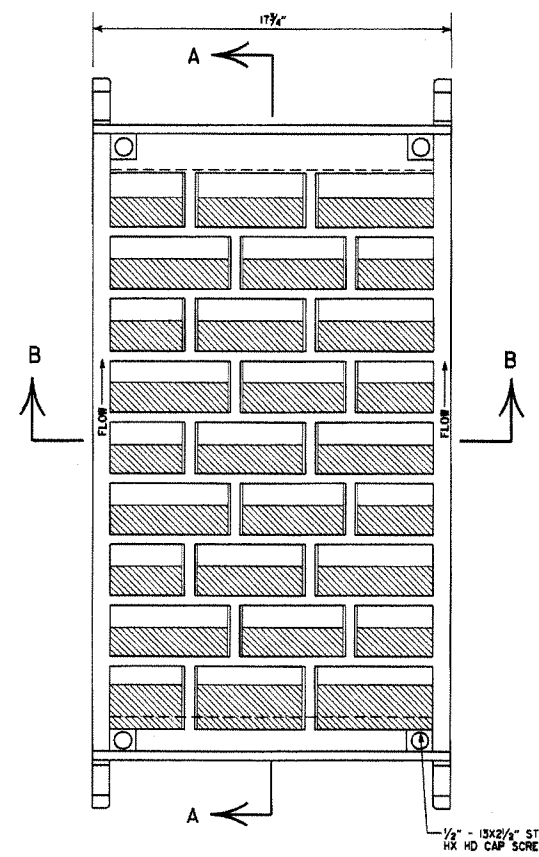
MARK	TYPE N-1		TYPE N-2		TYPE N-3	
	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH
D401	20	3'-0"	26	3'-0"	32	3'-0"
D402	19	2'-2"	19	3'-8"	19	5'-2"
D403	17	2'-11"	20	2'-11"	23	2'-11"

ALL BARS #4 @ 6" SPACING

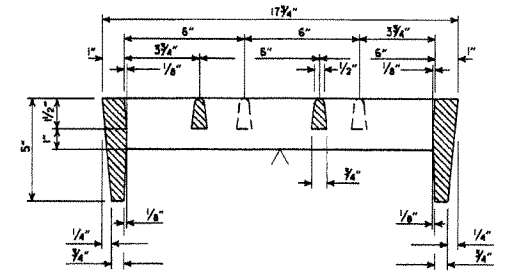


DETAILS OF DROP INLET

- GENERAL NOTES (GRATE & FRAME)
1. RIBBED VANE GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105 CLASS 35B & AASHTO M 306.
 2. GRATE AND FRAME SHALL NOT BE PAINTED.
 3. GRATE AND FRAME SHALL BE INSTALLED IN DROP INLET IN ASSEMBLED POSITION.
 4. APPROXIMATE WEIGHT OF GRATE SHALL BE 170 LBS.



SECTION A-A

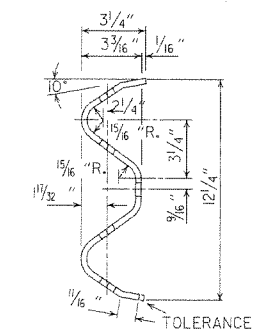
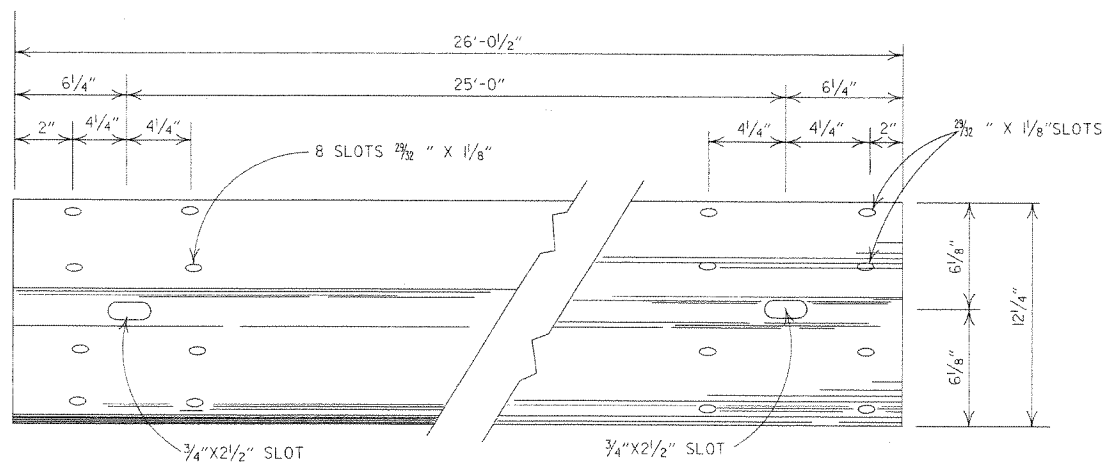


SECTION B-B

SECTION THRU FRAME

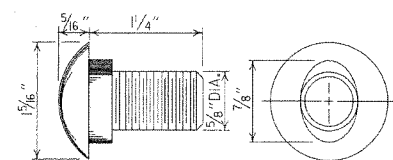
DETAILS OF RIBBED VANE GRATE AND FRAME

DATE REVISED	DATE FILMED	DESCRIPTION	ARKANSAS STATE HIGHWAY COMMISSION
7-02-98	7-2-98	REVISED SECT. A-A DETAIL OF DROP INLET & ADDED AASHTO REF. TO NOTE 1, REVISED GRATE	DETAILS OF DROP INLETS AND SPILLWAY OUTLET STANDARD DRAWING FPC-9N
10-18-96		REVISED ASTM REF. TO AASHTO	
8-15-91		ISSUED	

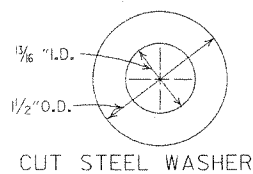


DETAILS OF W-BEAM GUARD RAIL

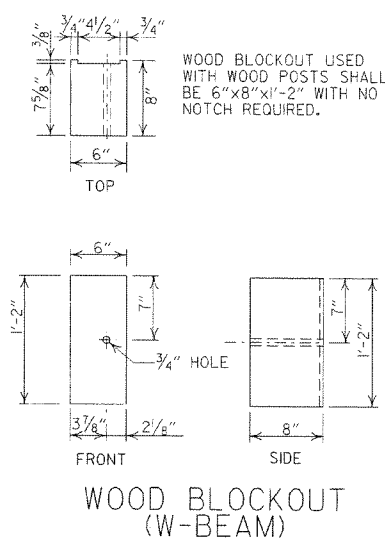
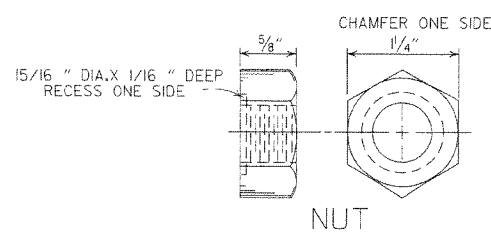
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



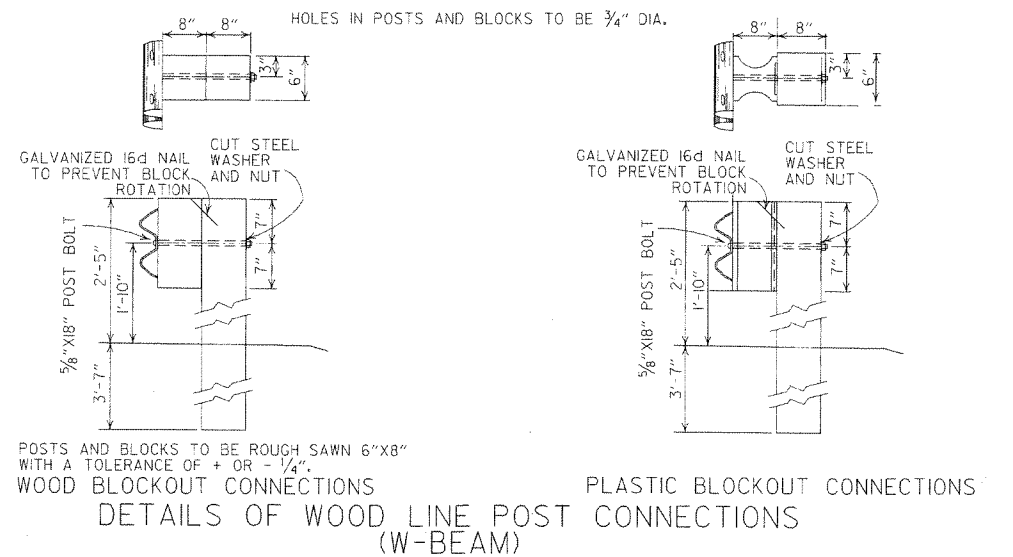
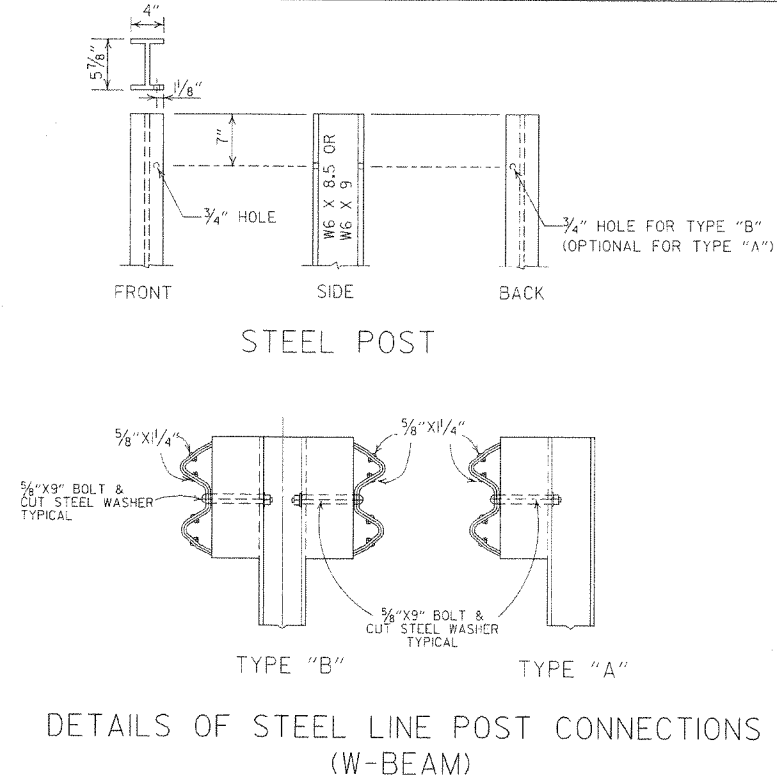
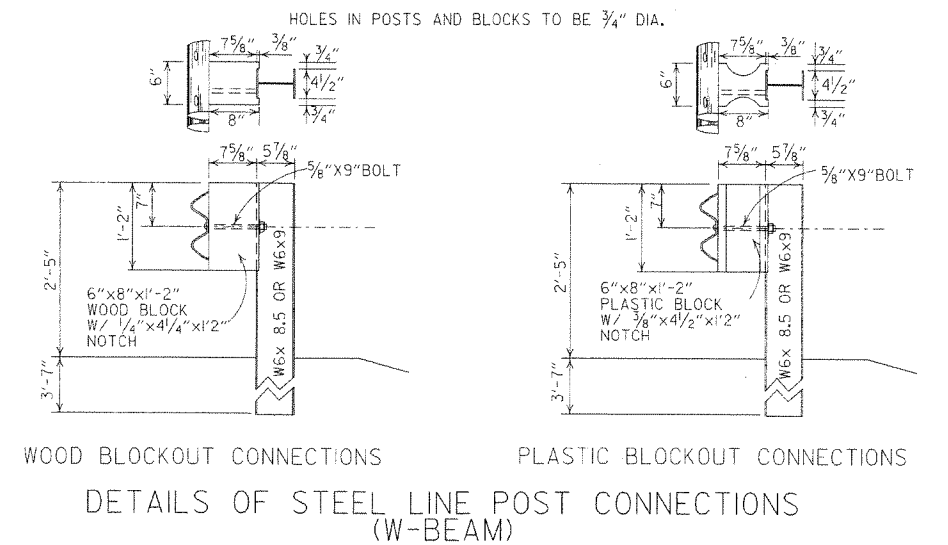
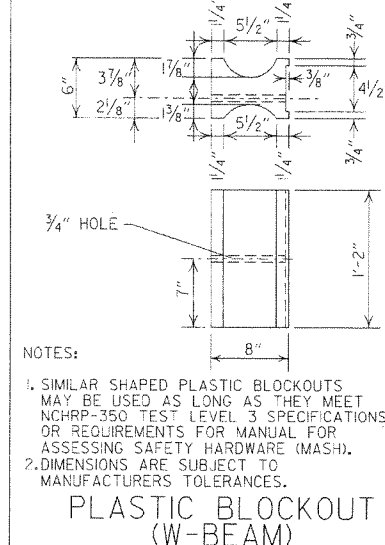
SPLICE BOLT POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER



WOOD BLOCKOUT (W-BEAM)



-GENERAL NOTES-

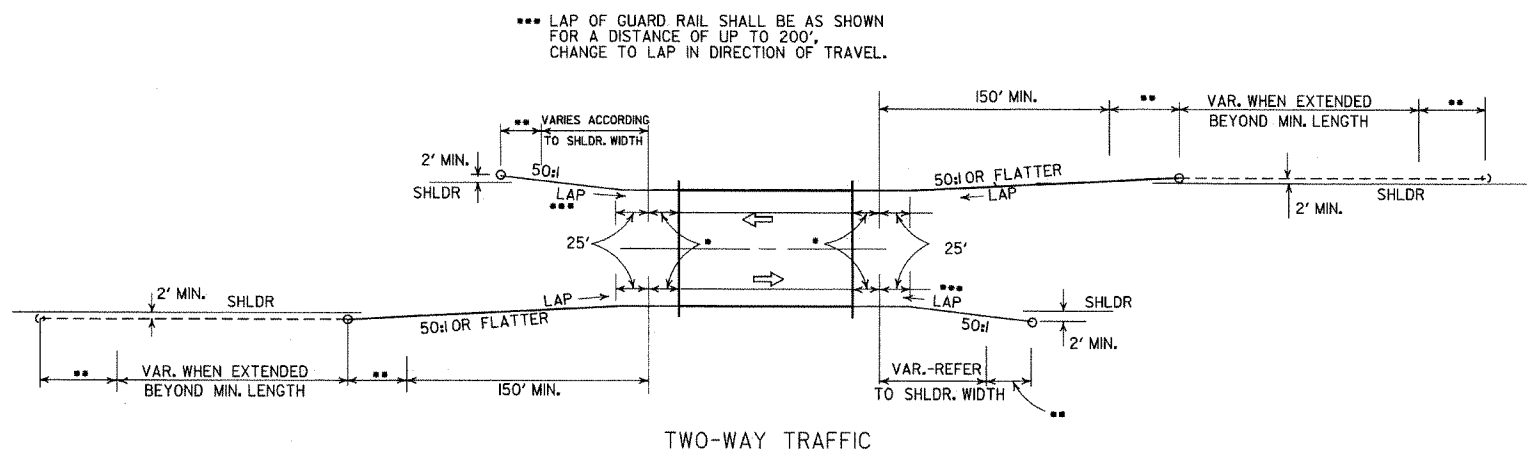
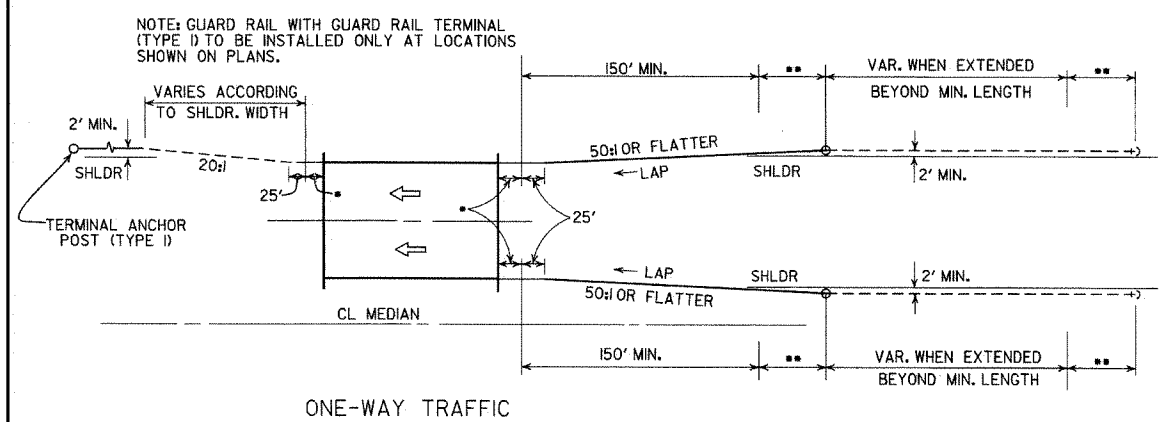
ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.
WHERE W-BEAM GUARD RAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.
W-BEAM GUARD RAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.
USE W-BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARD RAIL, W-BEAM GUARD RAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.
ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 (350 f SOUTHERN PINE).
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
0-15-09	ADDED REFERENCE TO MASH	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
3-30-00	REMOVED GUARD RAIL AT BRIDGE ENDS	
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 & DEPTH OF ANC. POST IN ROCK	8-2-90
7-15-88	REVISED SECTION 3 & GENERAL NOTES	
3-4-88	REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-9-87	REDRAWN & REVISED	802-10-9-87
DATE	REVISION	DATE FILM

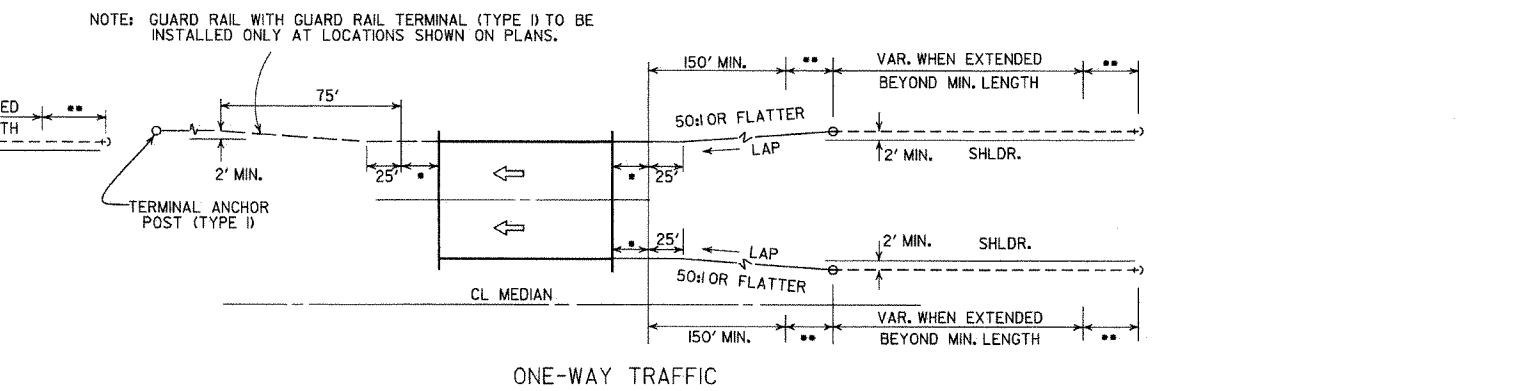
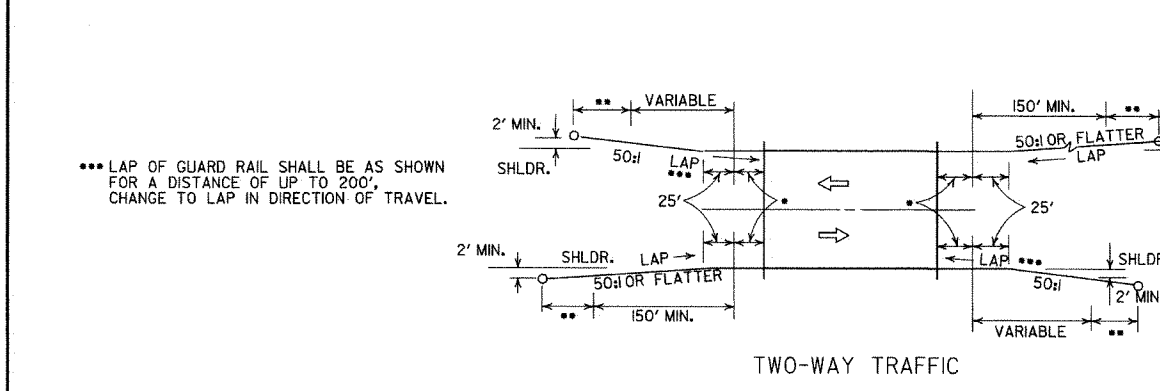
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8

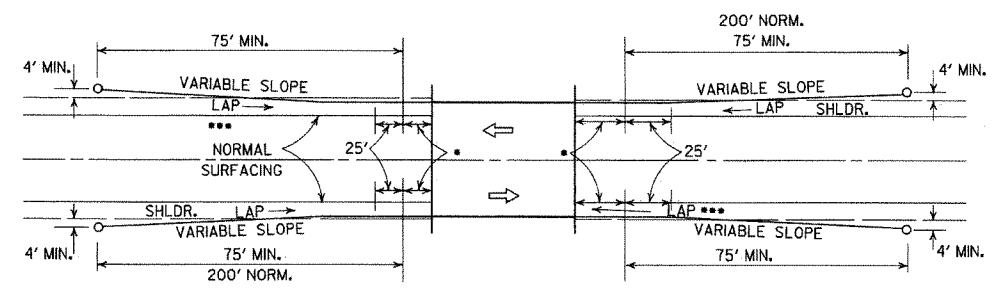


METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)



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

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



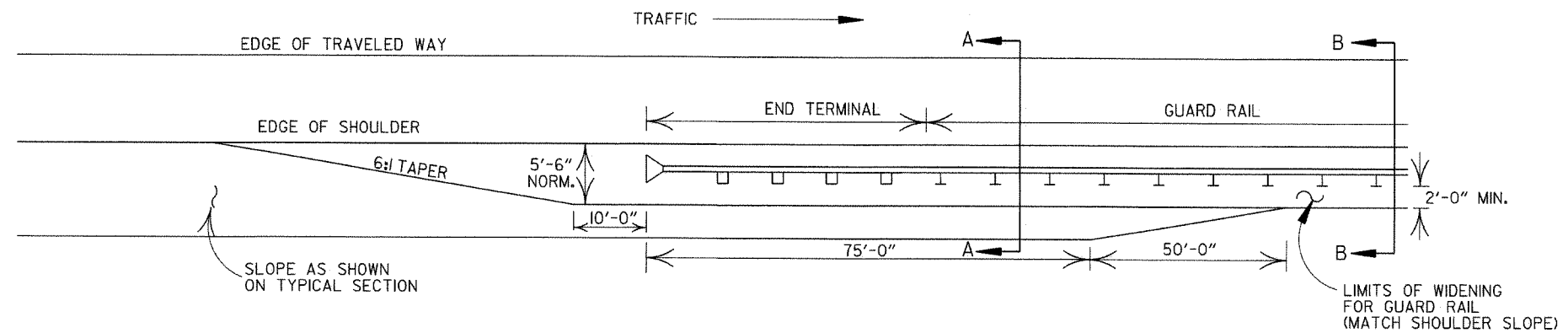
LEGEND

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

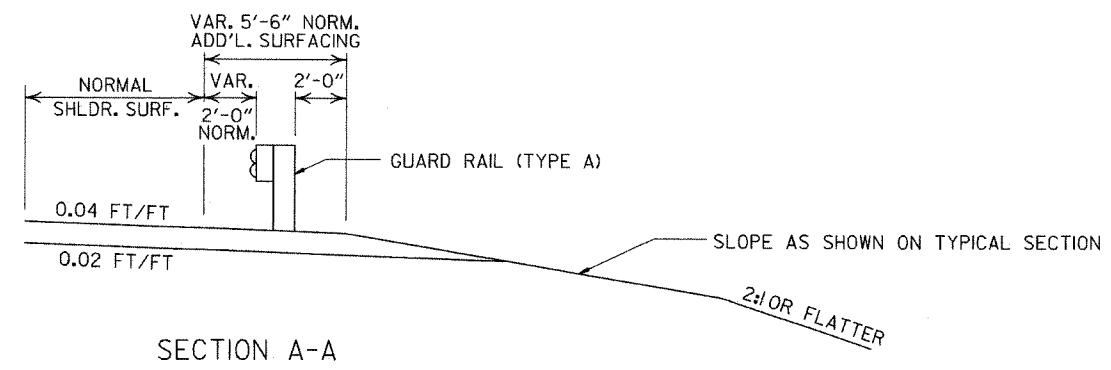
METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

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
10-9-87	ADDED NOTE	
	ADDED NOTE	
	ADDED NOTE	
	ADDED NOTE	

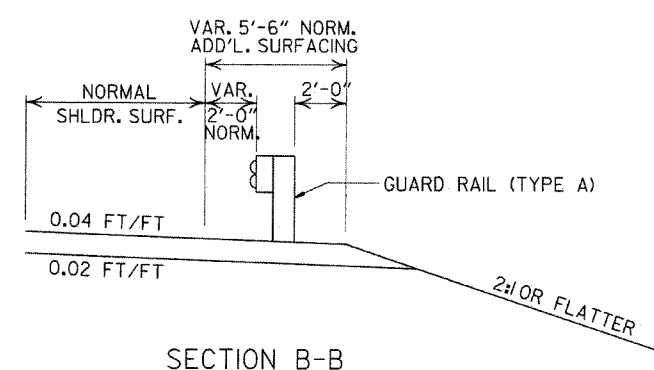
ARKANSAS STATE HIGHWAY COMMISSION
GUARD RAIL DETAILS
STANDARD DRAWING GR-9



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

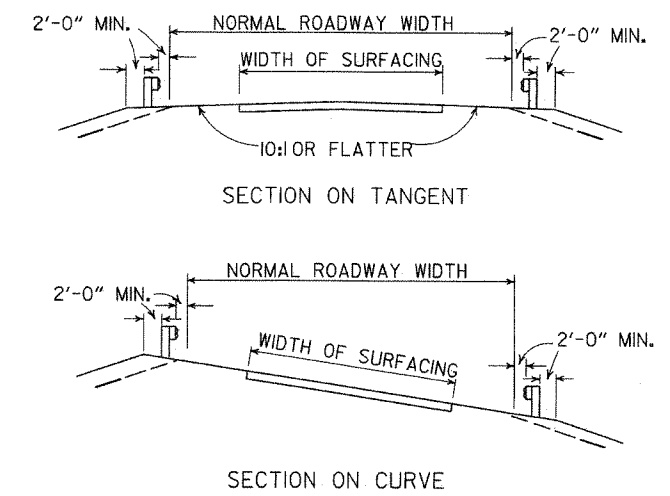


SECTION A-A

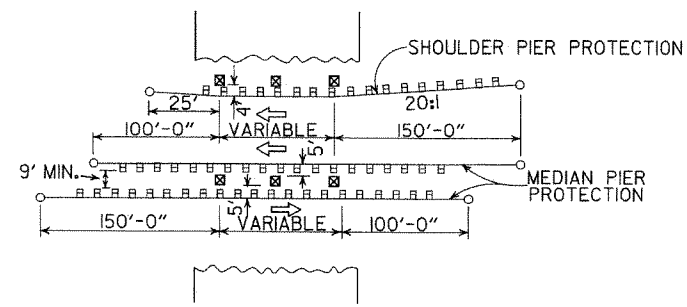


SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

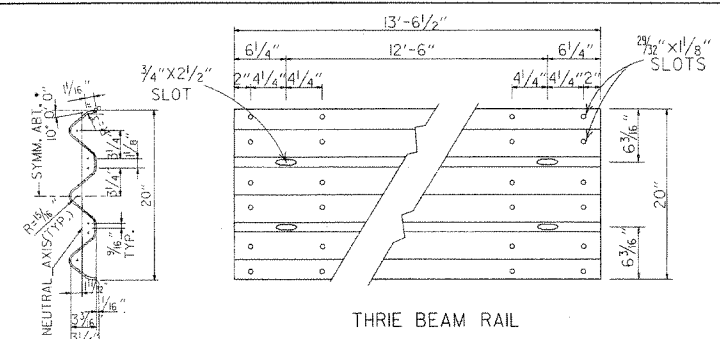


DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY

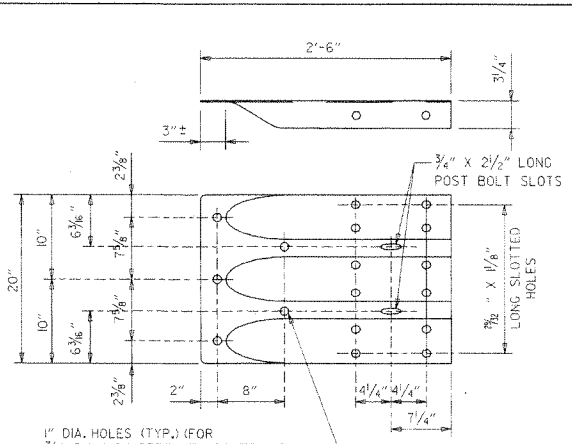


METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

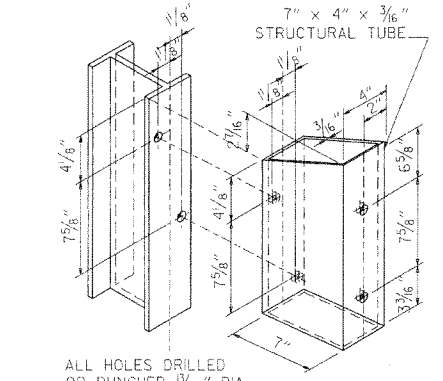
ARKANSAS STATE HIGHWAY COMMISSION			
GUARD RAIL DETAILS			
STANDARD DRAWING GR-9A			
4-17-08	MINOR REVISION		
11-10-05	DRAWN		
DATE	REVISION	DATE	FILM



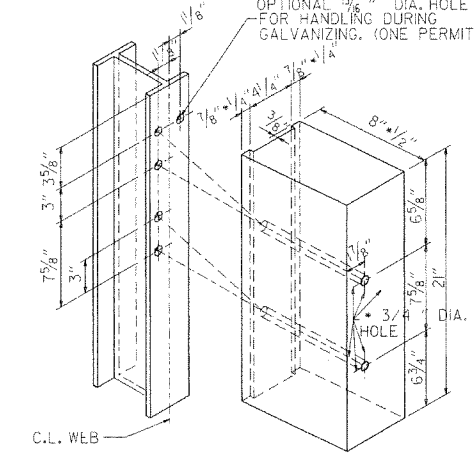
SECTION THRU THRIE BEAM RAIL



SPECIAL END SHOE



STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

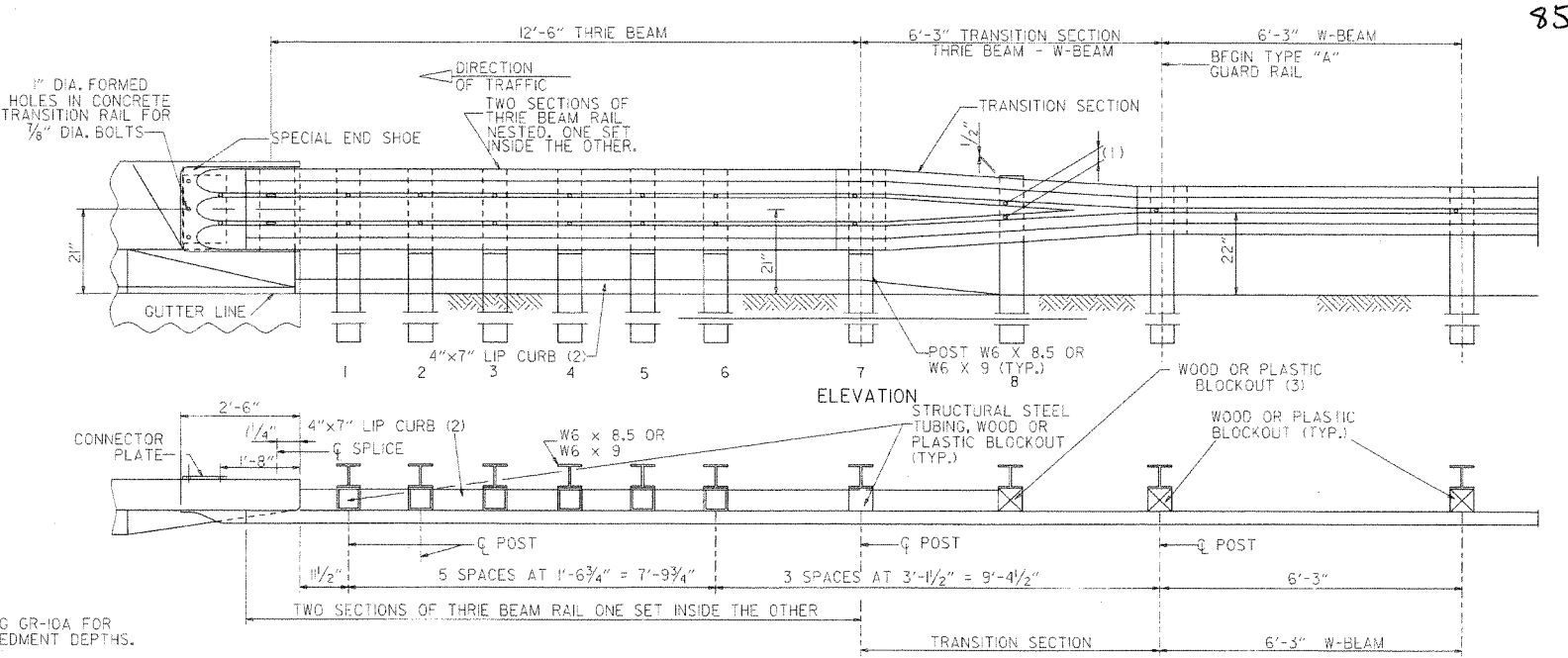
ATTACH BLOCKOUT TO POST USING 5/8\"/>

1\"/>

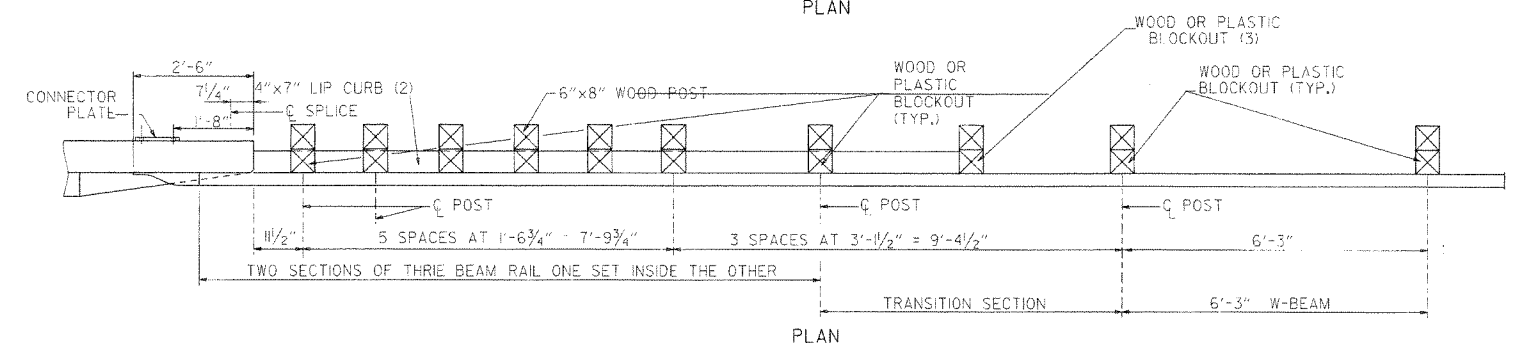
NOTE: SEE STANDARD DRAWING GR-10A FOR GUARD RAIL POST EMBEDMENT DEPTHS.

CONNECTOR PLATE

CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING 7/8\"/>



ELEVATION



PLAN

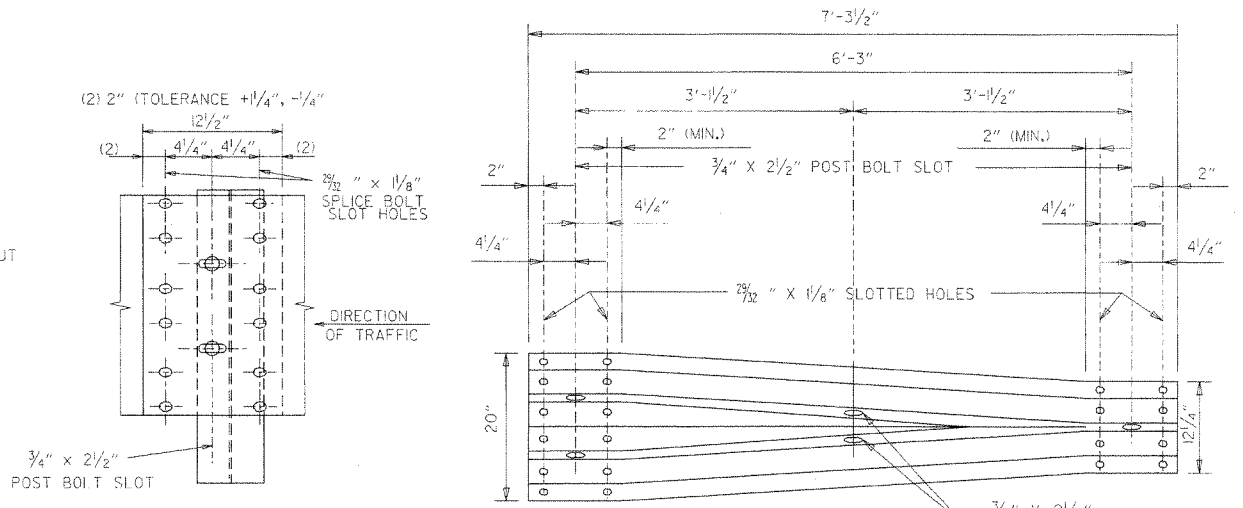
PLAN

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

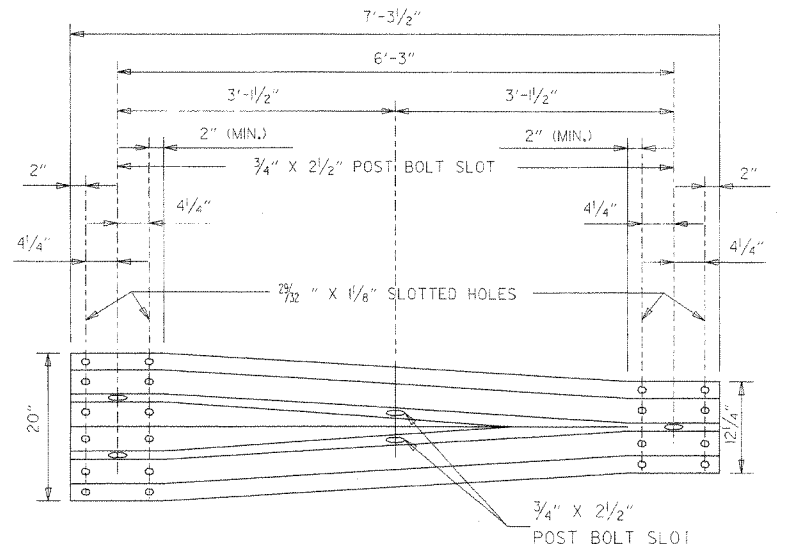
THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE I. RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION. ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4\"/>



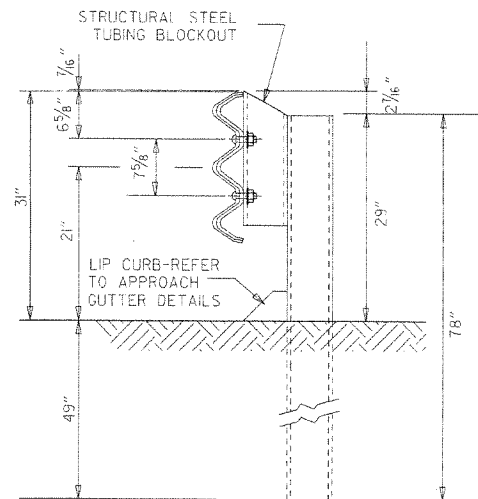
THRIE BEAM RAIL SPLICE AT POST



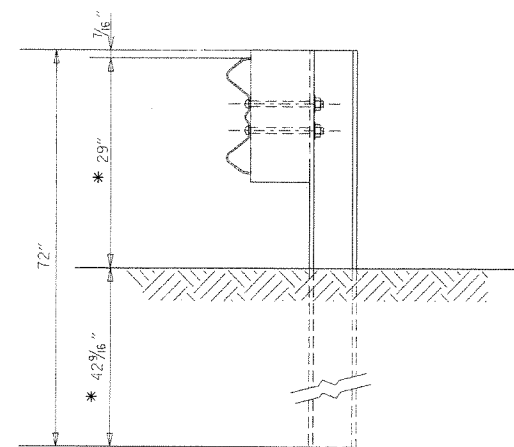
TRANSITION SECTION

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

ARKANSAS STATE HIGHWAY COMMISSION		
GUARD RAIL DETAILS		
STANDARD DRAWING GR-10		

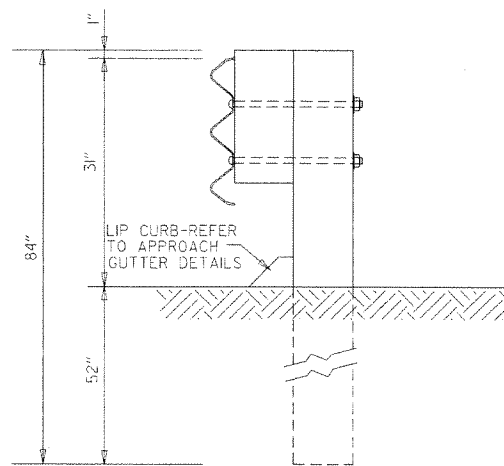


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT AND STEEL POST
POSTS 1-7

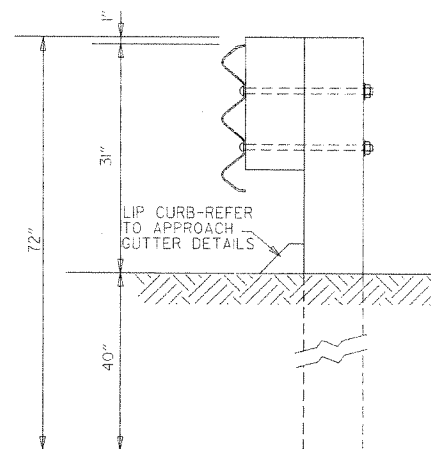


W-BEAM TO THRIE BEAM TRANSITION RAIL WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

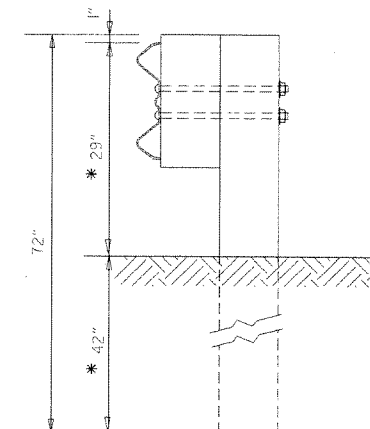
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



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.

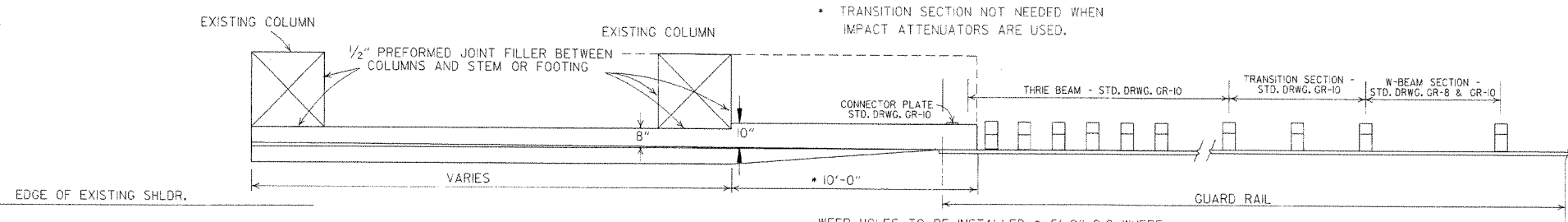
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 350 f SOUTHERN PINE.

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

ARKANSAS STATE HIGHWAY COMMISSION

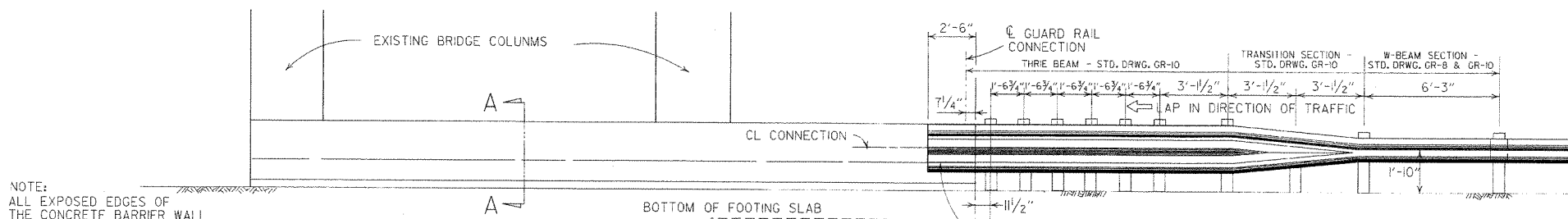
GUARD RAIL DETAILS

STANDARD DRAWING GR-10A



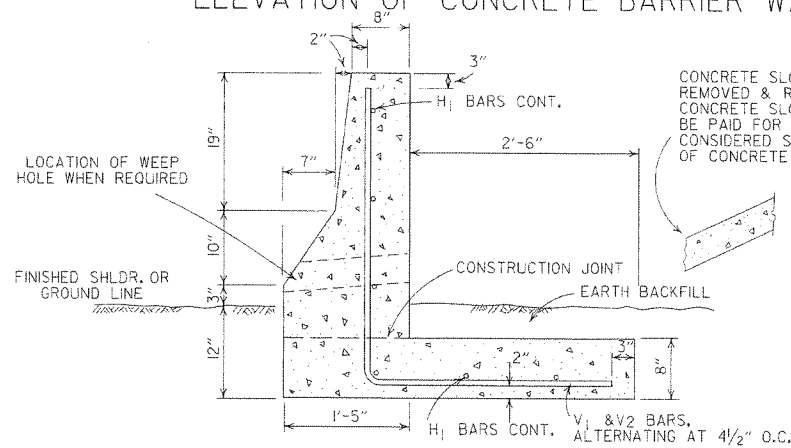
AT LEAST ONE 1/2" JOINT SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL. JOINTS SHALL BE EQUALLY SPACED AT A MAXIMUM OF 25'-0" O.C. FILL JOINT WITH PREFORMED JOINT FILLER.

PLAN OF CONCRETE BARRIER WALL

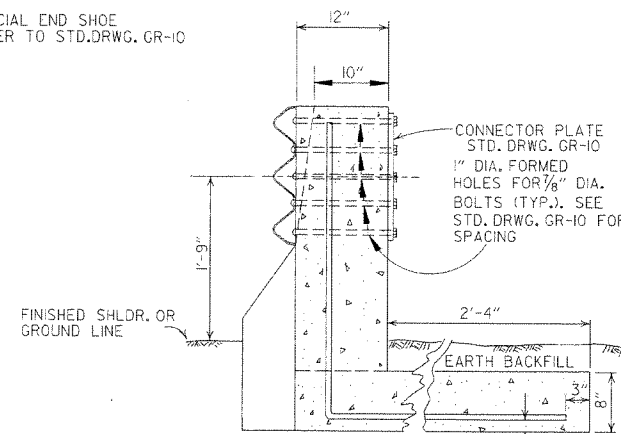


NOTE: ALL EXPOSED EDGES OF THE CONCRETE BARRIER WALL SHALL HAVE A 1/4" CHAMFER.

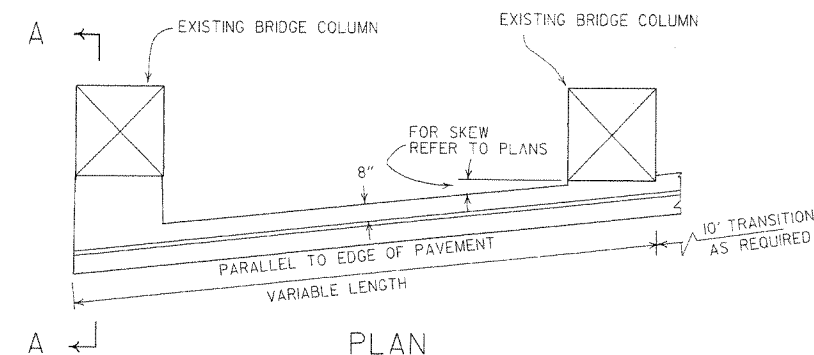
ELEVATION OF CONCRETE BARRIER WALL



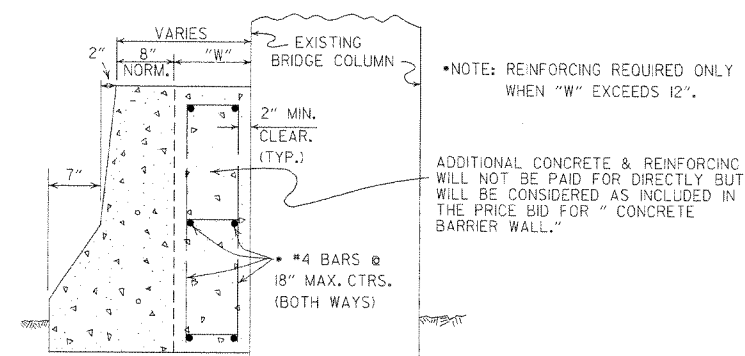
SECTION A-A



SECTION THRU CONNECTION



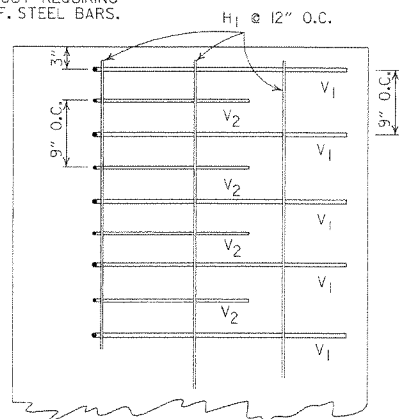
PLAN



SECTION A-A

DETAILS OF CONCRETE BARRIER WALL WHEN PIERS ARE SKEWED TO ROADWAY

IF FOR ANY REASON IT IS NECESSARY TO CONSTRUCT THE FOOTING AT A LOWER ELEVATION THAN IS SHOWN, THE STEM MAY BE LENGTHENED 1'-0" BETWEEN FIN. SHLDR. AND TOP OF FOOTING WITHOUT REQUIRING HEAVIER REINF. STEEL BARS.

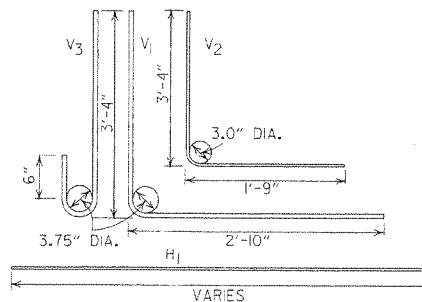


PLAN OF REINFORCING STEEL IN FOOTING

BAR LIST

MARK	NO.	SIZE	LENGTH
V1		#5	6'-2 1/4"
V2		#4	5'-1"
V3		#5	4'-1 1/8"
H1	6	4	VAR.

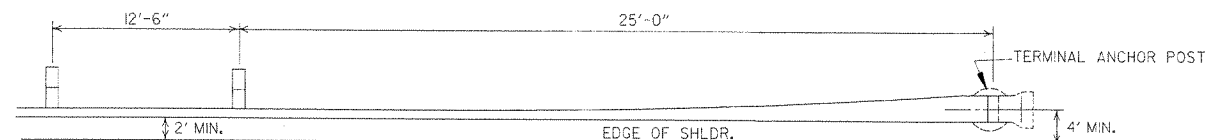
THE V3 BARS SHALL BE USED IN PLACE OF THE V1 & V2 BARS IN FRONT OF PIERS.



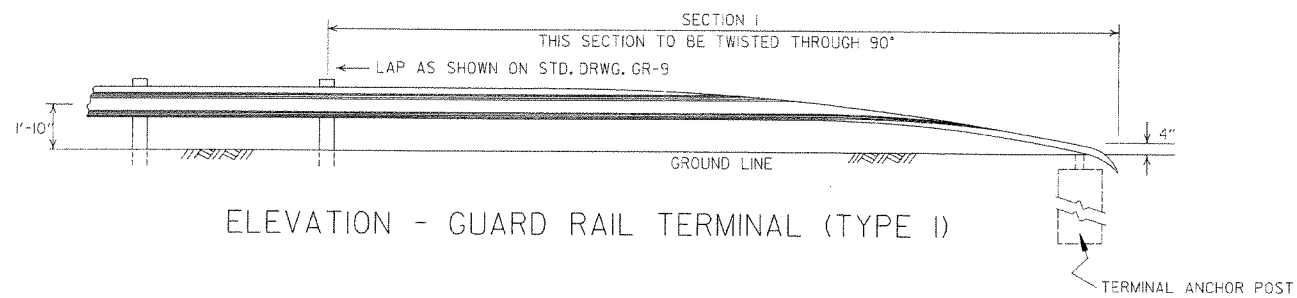
BEND DIAGRAMS

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF W-BEAM 1"	
8-22-02	REV. SECTION A-A OF DETAILS OF CONCRETE BARRIER WALL	
6-29-00	MOVED DIMENSION LINE	
5-18-00	ADDED NOTE	
3-30-00	REVISED TO INCLUDE THRIE BEAM	
6-2-94	ADDED TRANSITION SECTION NOTE	
10-1-92	REDRAWN & REVISED	10-1-92
8-15-91	REVISED DRAWING PLAN CONC. BARR.	8-15-91
2-16-89	ADDED SKEWED DETAILS	594-2-16-89
7-14-88	CHANGED TITLE	
10-9-87	REDRAWN & REVISED	

ARKANSAS STATE HIGHWAY COMMISSION
 CONCRETE BARRIER WALL (PIER PROTECTION TYPE A)
 STANDARD DRAWING GR-II

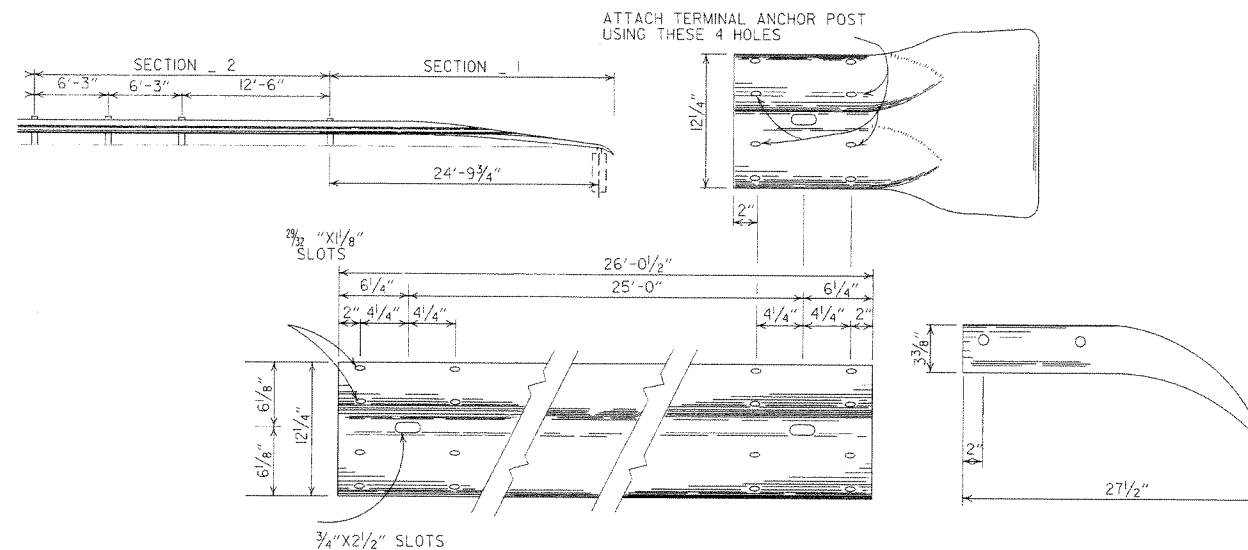


PLAN - GUARD RAIL TERMINAL (TYPE I)



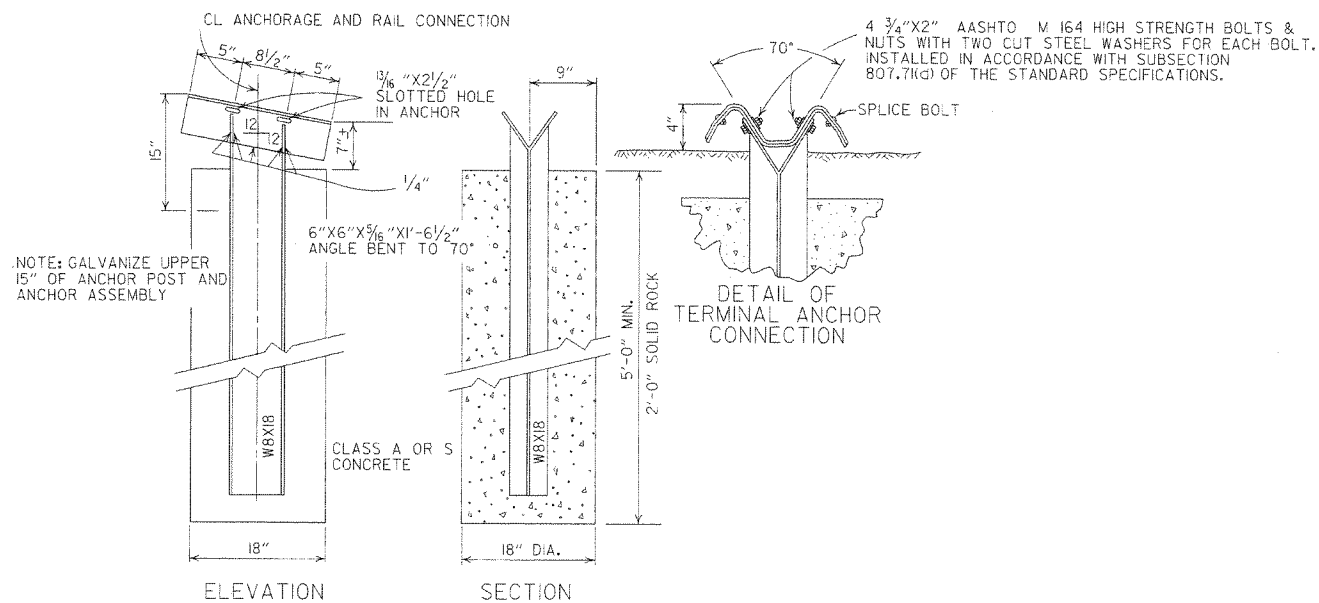
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

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

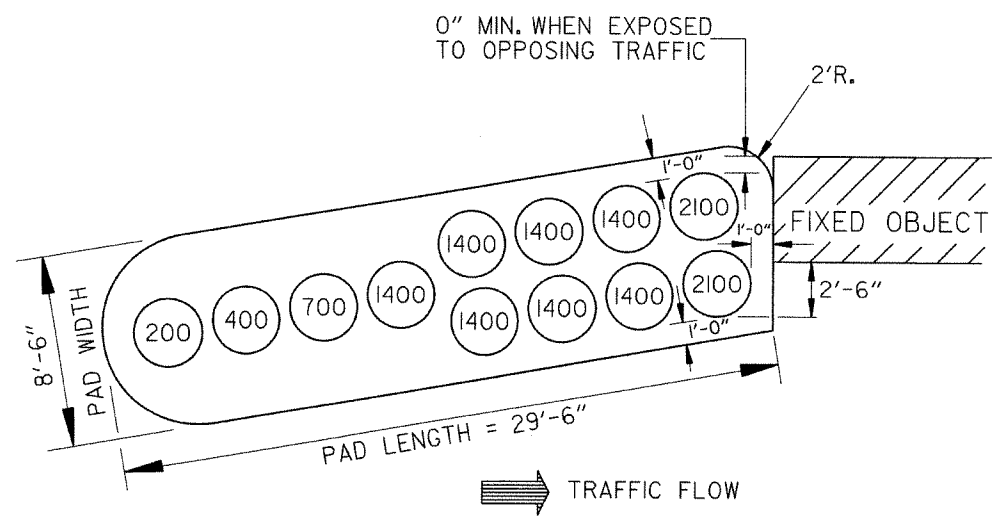
TERMINAL SECTION



DETAIL OF TERMINAL ANCHOR POST (TYPE I)

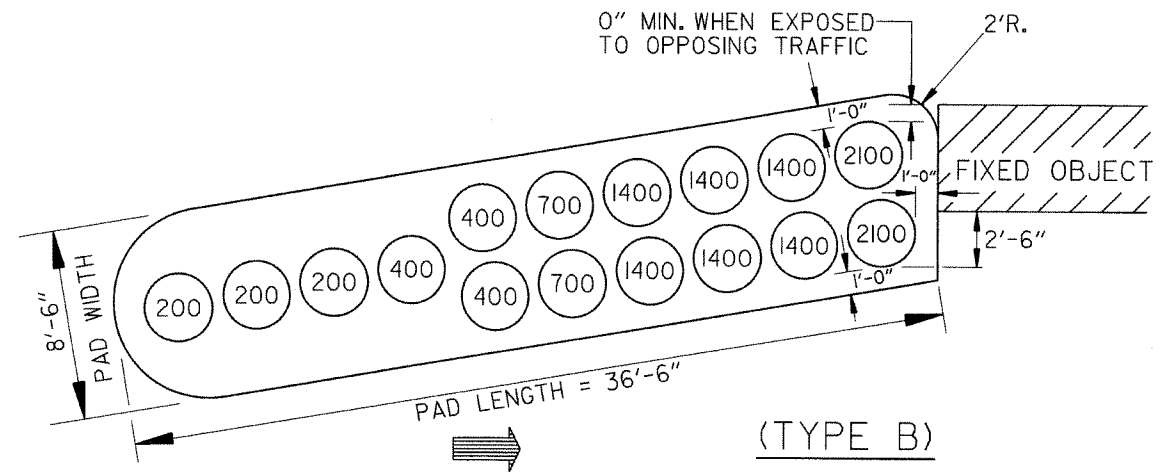
NOTE: RAIL MEMBERS MAY BE BOLTED TO ANGLE AT TERMINAL ANCHOR AND THE TWO ASSEMBLIES POSITIONED TO PROPER ALIGNMENT PRIOR TO PLACING CONCRETE AROUND 8 WF 17 POST IF CONTRACTOR SO DESIRES.

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



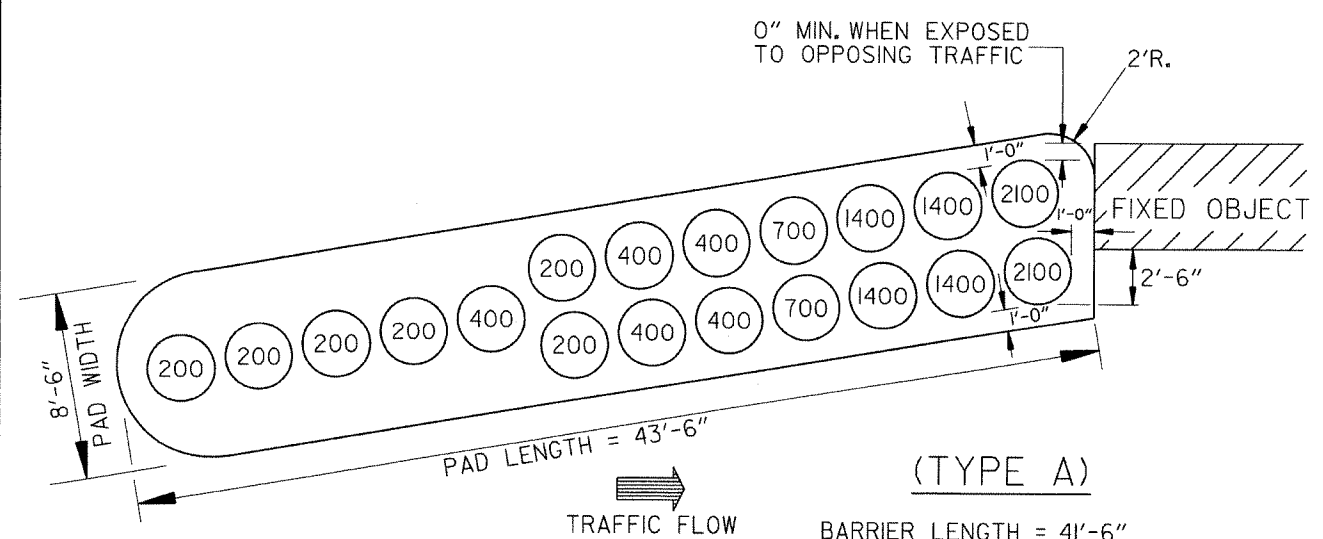
(TYPE C)

BARRIER LENGTH = 27'-6"
 DESIGN IMPACT SPEED = 50 M.P.H. = 73.3 fps



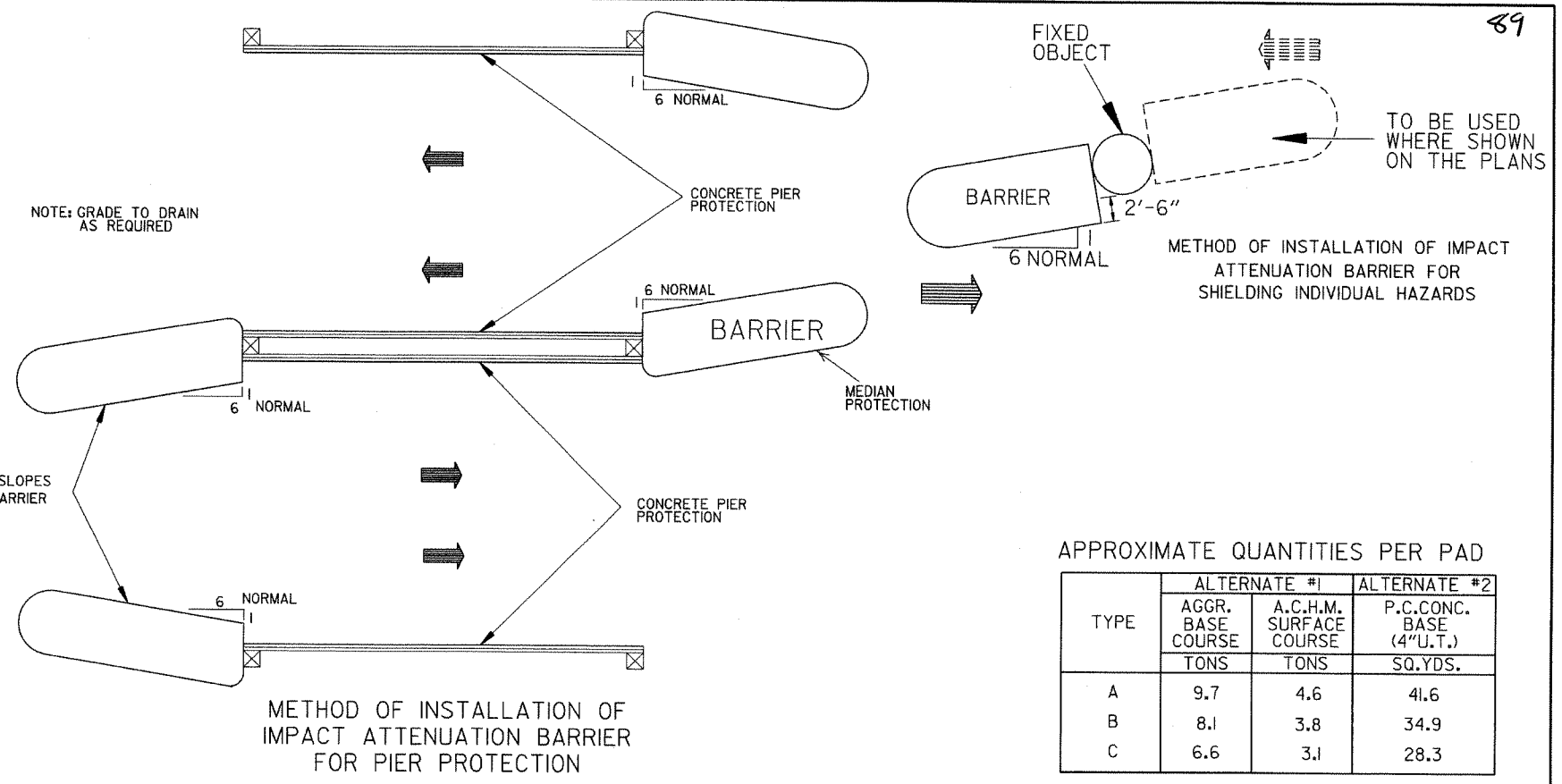
(TYPE B)

BARRIER LENGTH = 34'-6"
 DESIGN IMPACT SPEED = 60 M.P.H. = 88 fps



(TYPE A)

BARRIER LENGTH = 41'-6"
 DESIGN IMPACT SPEED = 70 M.P.H. = 103 fps



METHOD OF INSTALLATION OF IMPACT ATTENUATION BARRIER FOR PIER PROTECTION

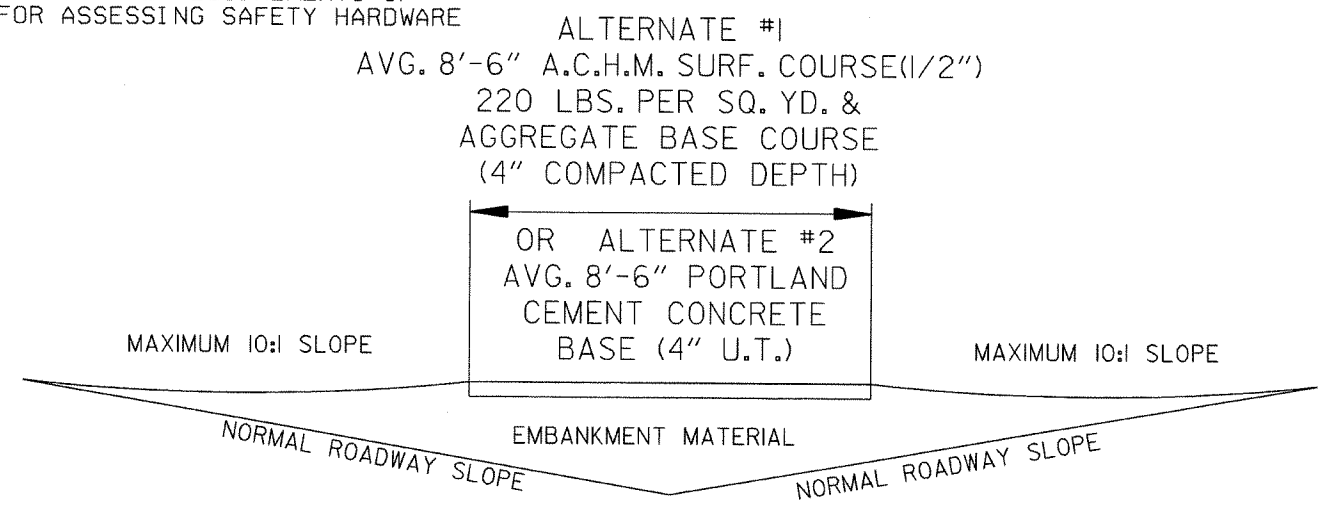
GENERAL NOTES

1. DIMENSIONS SHOWN ARE TO TOP OF PLASTIC MODULES.
2. SPACING BETWEEN PLASTIC MODULES SHALL NOT EXCEED 6" AT THE TOP.
3. PLASTIC MODULES SHALL MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

APPROXIMATE QUANTITIES PER PAD

TYPE	ALTERNATE #1		ALTERNATE #2
	AGGR. BASE COURSE TONS	A.C.H.M. SURFACE COURSE TONS	P.C. CONC. BASE (4" U.T.) SQ.YDS.
A	9.7	4.6	41.6
B	8.1	3.8	34.9
C	6.6	3.1	28.3

NOTE: APPROXIMATE QUANTITIES SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. PAYMENT TO BE INCLUDED IN UNIT PRICE BID FOR IMPACT ATTENUATION BARRIER.



DETAIL OF BARRIER PAD

NOTE: BARRIER PAD TO BE SKEWED TOWARD ONCOMING TRAFFIC A MAXIMUM OF 6:1 WITH 6:1 BEING NORMAL

10-15-09	ADDED REFERENCE TO MASH		ARKANSAS STATE HIGHWAY COMMISSION
11-29-07	REVISED TY. A & TY. C ARRAYS		
11-19-98	REVISED FIXED OBJECT		IMPACT ATTENUATION BARRIER
11-18-98	REV. NOTES & TYPE A MOD. WTS.		
10-18-96	REDRAWN		STANDARD DRAWING IB-1
7-15-88	CONFORMED TO 1988 SPECS		
7-29-87	REDRAWN		
DATE	REVISION	DATE FILMED	

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13 1/2	14
21	26	26	15 1/2	16
24	28 1/2	29	18	18
30	36 1/4	36	22 1/2	23
36	43 3/8	44	26 3/8	27
42	51 1/8	51	31 3/8	31
48	58 1/2	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77 1/2	77
108	138	138	87 1/8	87
120	154	154	96 3/8	97
132	168 3/4	169	106 1/2	107

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

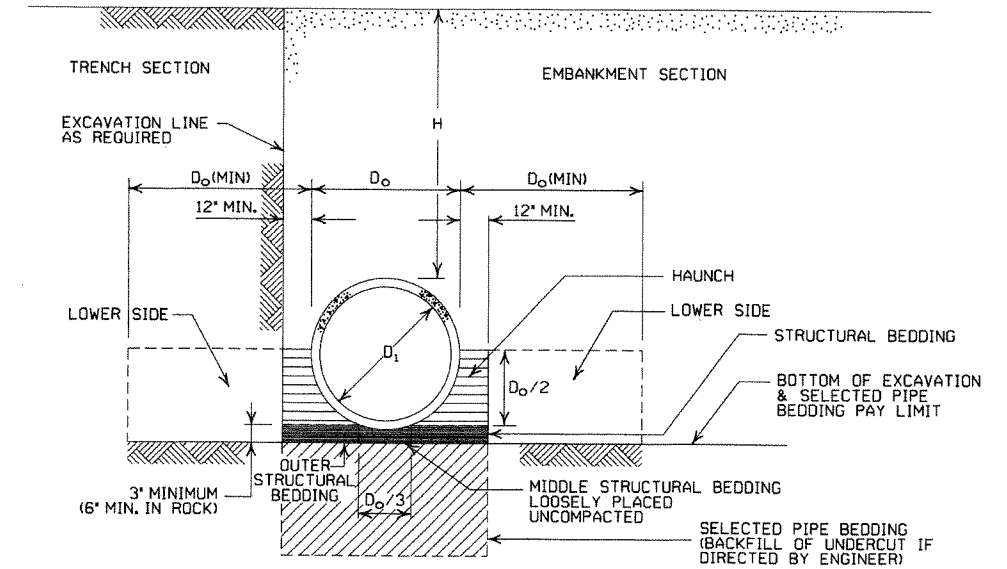
NOTE: HAUNCH AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF CONCRETE PIPE.

- LEGEND -

- D₁ = NORMAL INSIDE DIAMETER OF PIPE
- D_o = OUTSIDE DIAMETER OF PIPE
- H = FILL COVER HEIGHT OVER PIPE (FEET)
- MIN. = MINIMUM
- UNDISTURBED SOIL

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

- *SM-3 WILL NOT BE ALLOWED.
- **MATERIALS SHALL NOT INCLUDE ORGANIC MATERIALS OR STONES LARGER THAN 3 INCHES.



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS (INCHES)				
		0.064	0.079	0.109	0.138	0.168
2 3/4 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	34	36	47		
36	2		30	39	41	
42	2		43	67	70	73
48	2		37	58	61	64
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM						
36	1	48	60	88	111	118
42	1	41	51	72	90	102
48	1	36	45	64	77	85
54	2	32	40	59	71	79
60	2	29	36	53	64	71
66	2	26	33	47	58	64
72	2	24	30	44	53	59
78	2		28	41	49	54
84	2		26	38	45	51
90	2		24	35	43	45
96	2		22	33	40	44
102	2			31	38	42
108	2			30	35	39
114	2			28	34	37
120	2			27	32	35

CONSTRUCTION SEQUENCE

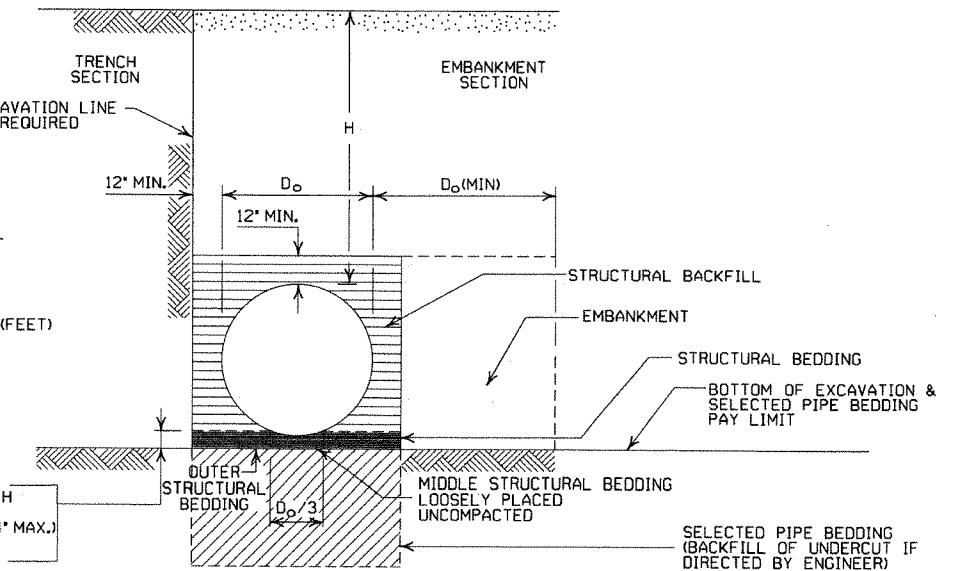
1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. COMPLETE STRUCTURAL BACKFILL OPERATION BY WORKING FROM SIDE TO SIDE OF THE PIPE. THE SIDE TO SIDE STRUCTURAL BACKFILL DIFFERENTIAL SHALL NOT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

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

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

③ SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
2 3/4 INCH BY 1/2 INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM						
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

EQUIVALENT METAL THICKNESSES AND GAUGES

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

CORRUGATED METAL PIPE ARCHES

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

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

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

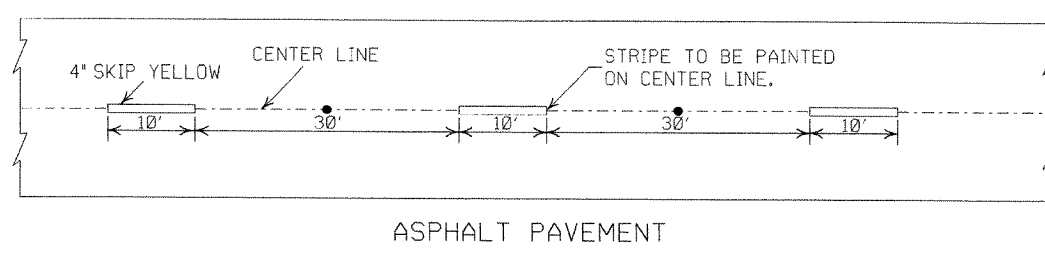
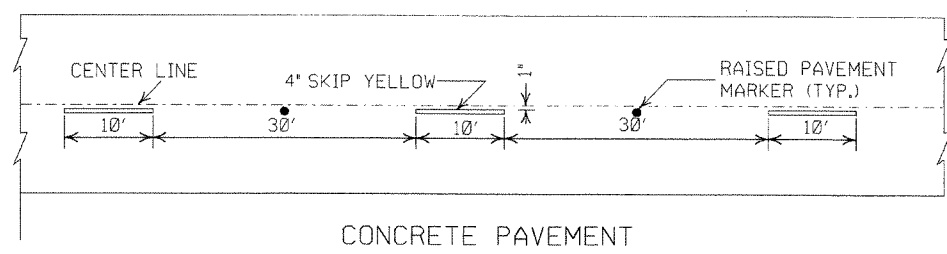
DATE	REVISION	DATE FILMED
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

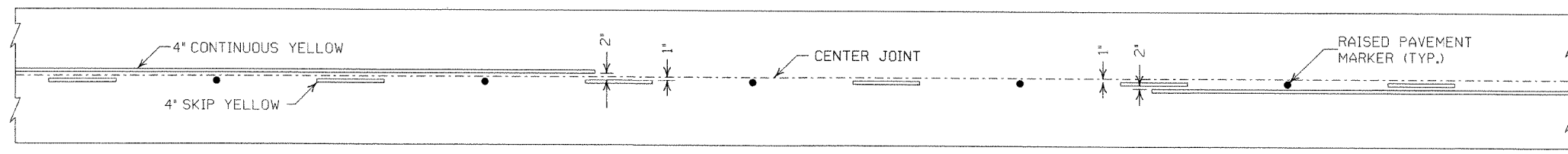
METAL PIPE CULVERT
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

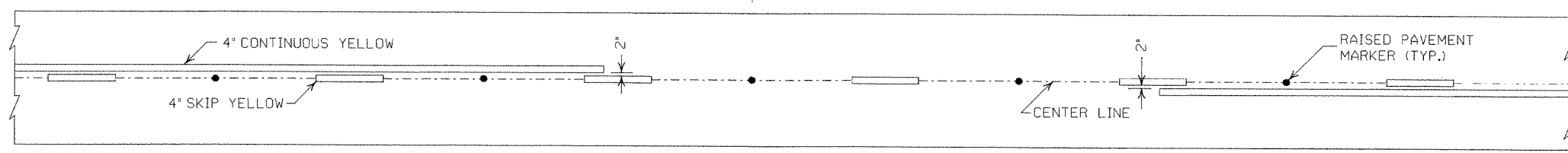
- NOTES:
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
 2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
 3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."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



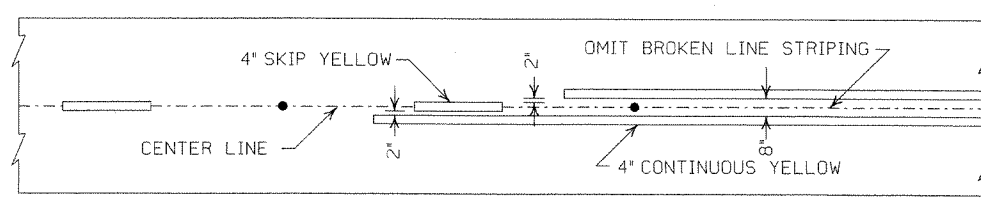
BROKEN LINE STRIPING



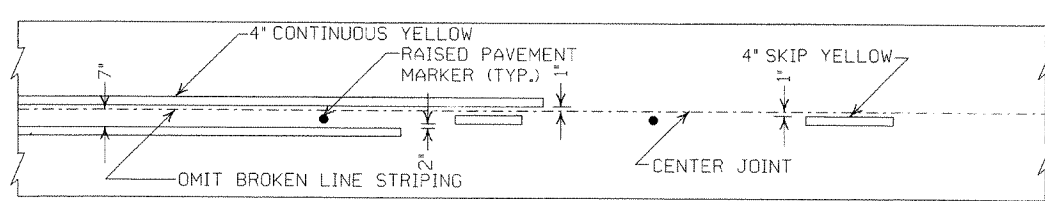
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

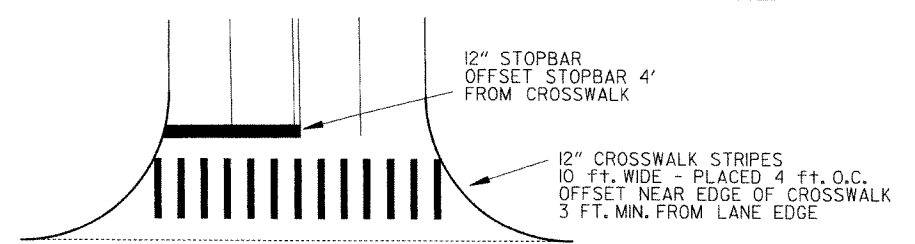


ASPHALT PAVEMENT



CONCRETE PAVEMENT

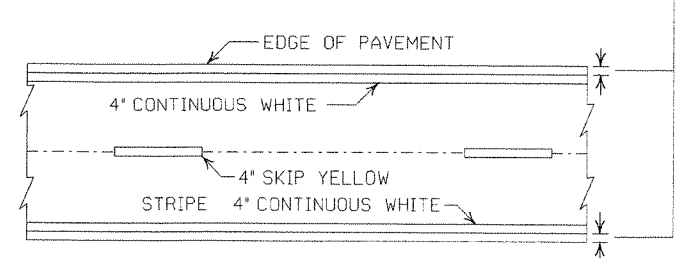
STRIPING AT ADJACENT NO PASSING LANES



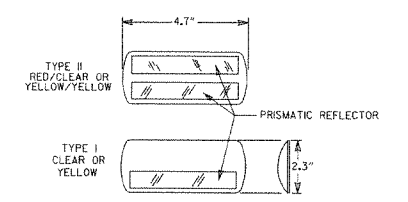
CROSSWALK AND STOPBAR DETAILS

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.

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



PAVEMENT EDGE LINE MARKING



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

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

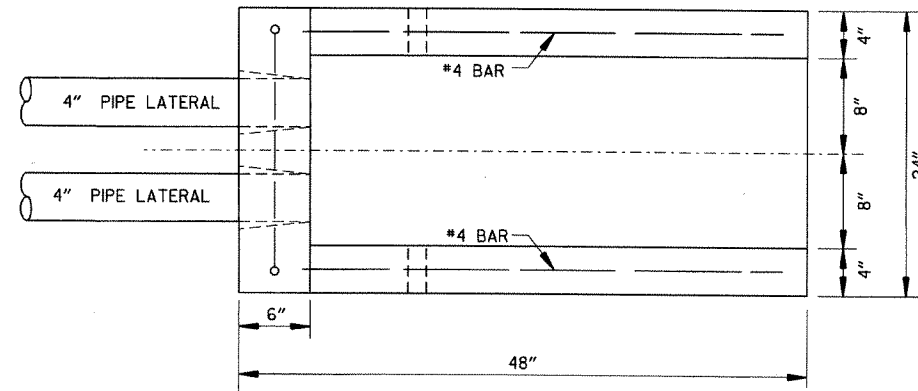
DATE	REVISION	FILMED
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

ARKANSAS STATE HIGHWAY COMMISSION

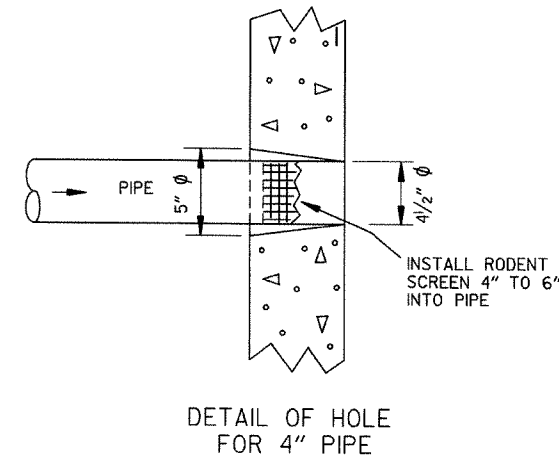
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

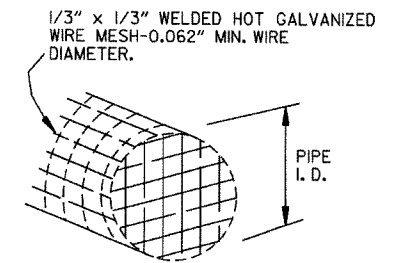
NOTE:
 1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.
 2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
 3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH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



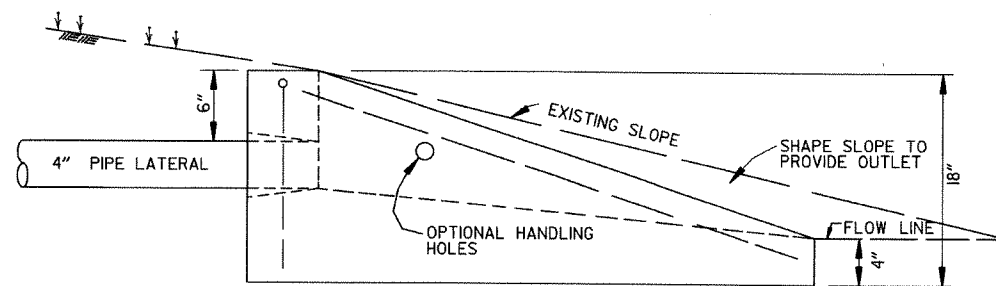
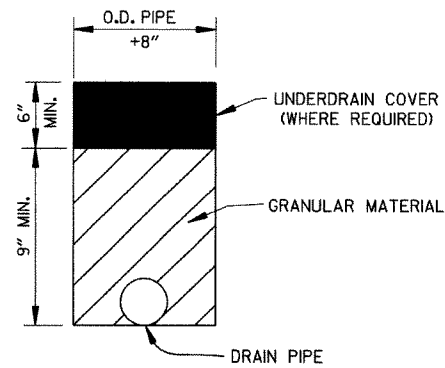
PLAN VIEW



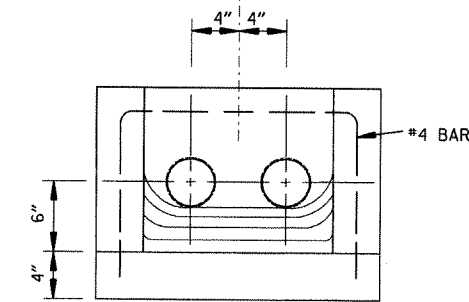
DETAIL OF HOLE FOR 4" PIPE



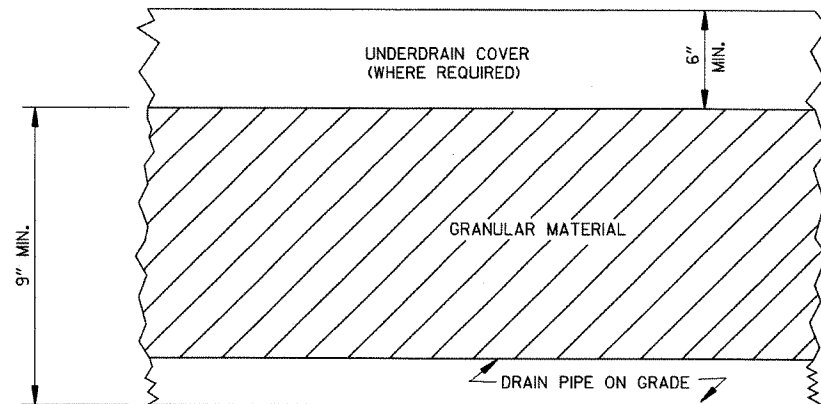
DETAIL OF RODENT SCREEN



SIDE VIEW

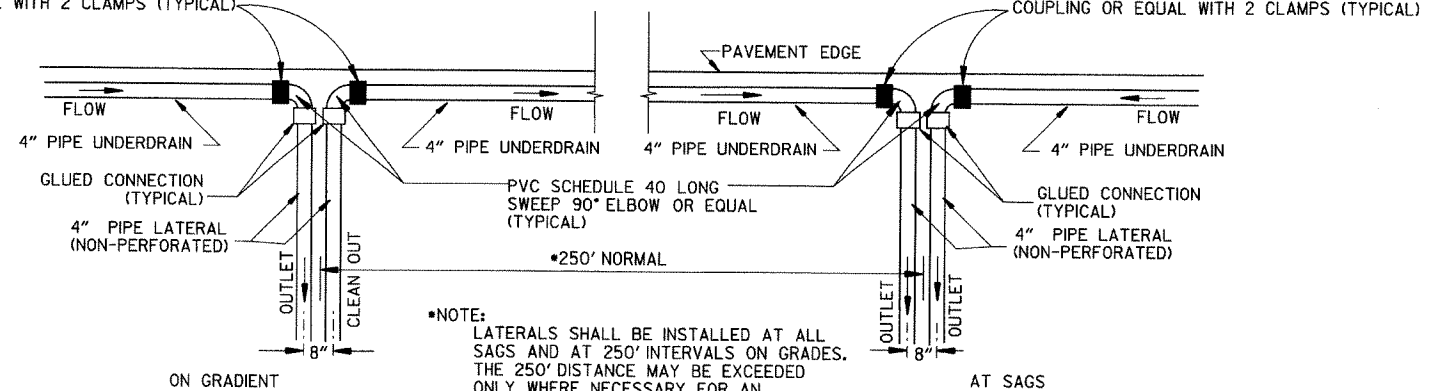


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

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



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

DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

ADVANCE DISTANCES
(XXXX)

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


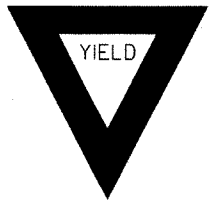
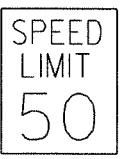
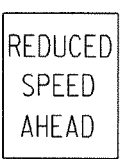





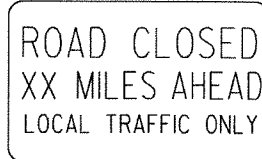
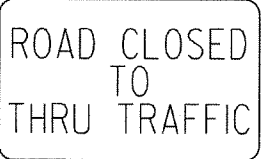

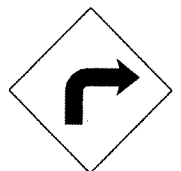
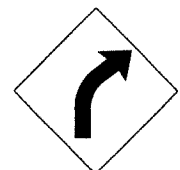
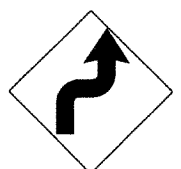

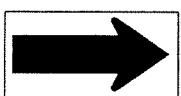

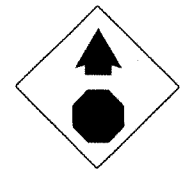
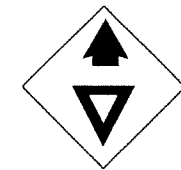
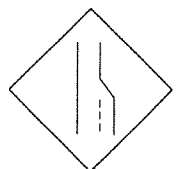

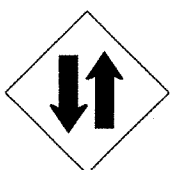

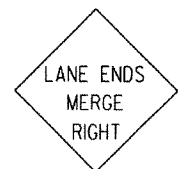

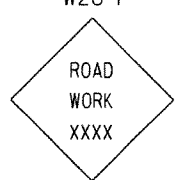
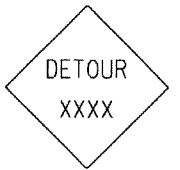
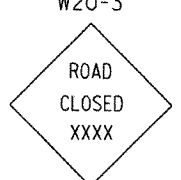

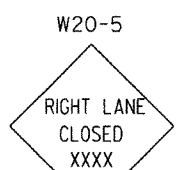


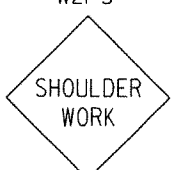
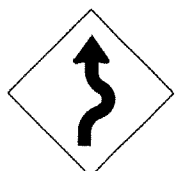
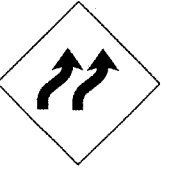


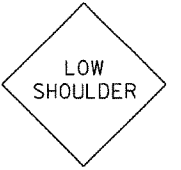
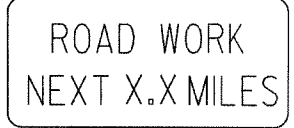
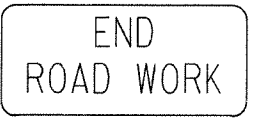
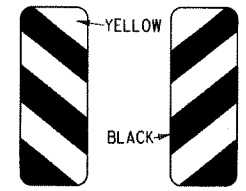


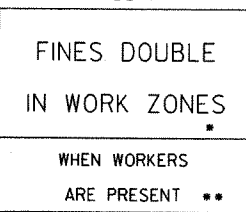
GENERAL NOTES:

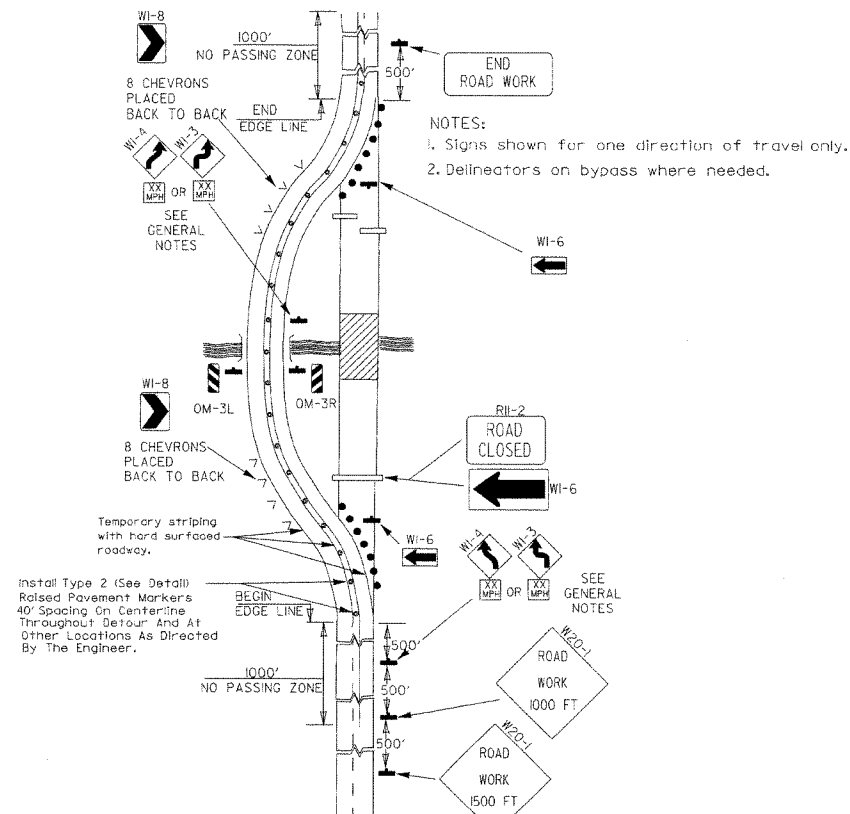
- ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
- TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.
- EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.
- SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
- SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.
- POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.
- ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.

- FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
- MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
- R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

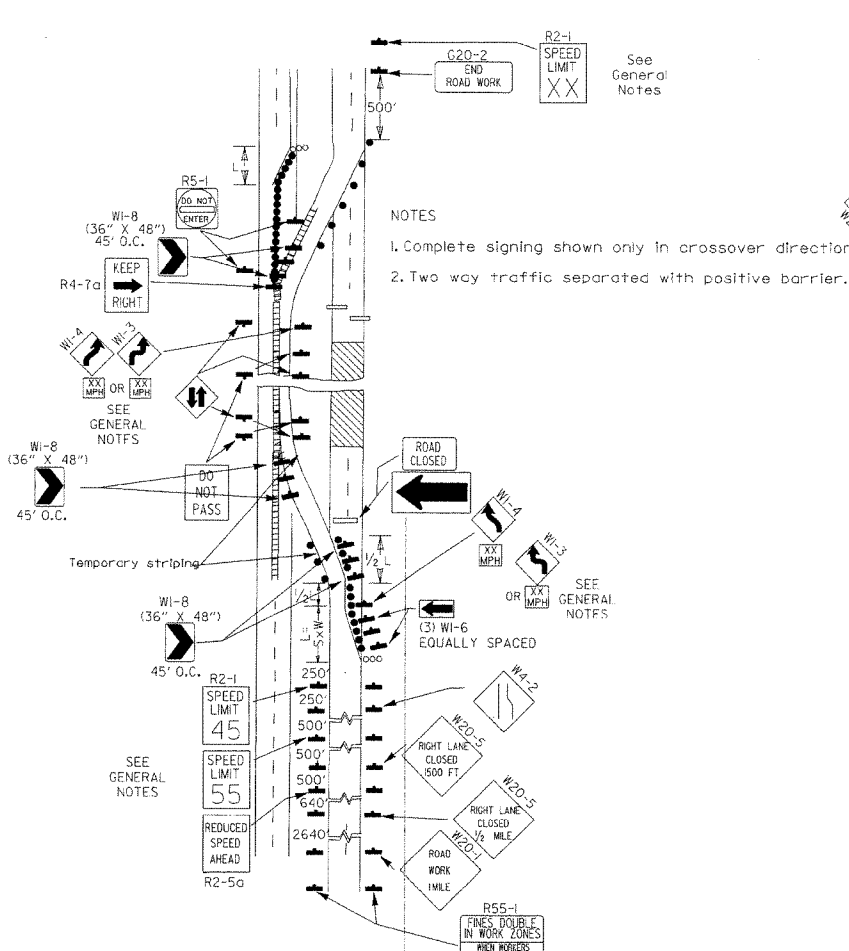
NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

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

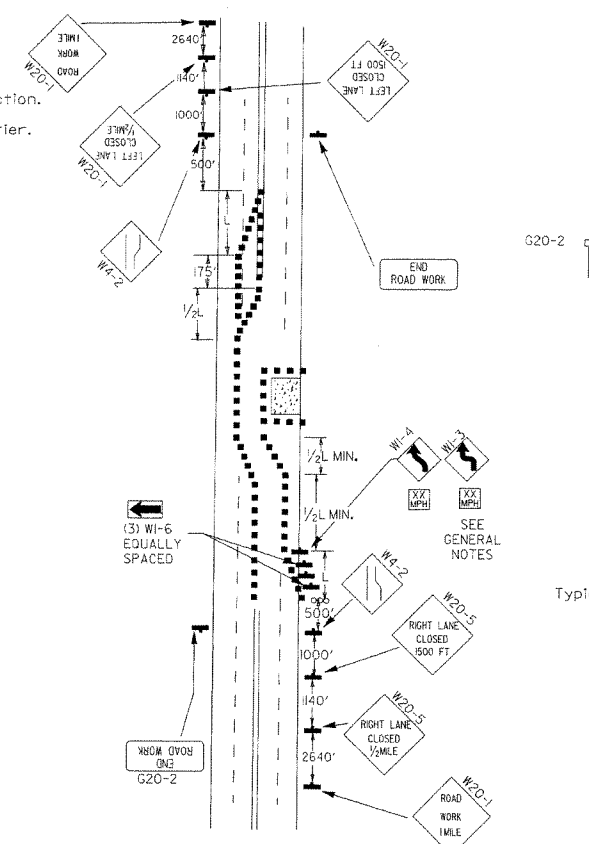
<p>RI-1</p>  <p>STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"</p>	<p>RI-2</p>  <p>STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"</p>	<p>R2-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R2-5A</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R2-5C</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-2</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>
<p>R5-1</p>  <p>STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>R11-2</p>  <p>48"x30"</p>	<p>R11-3A</p>  <p>60"x30"</p>	<p>R11-4</p>  <p>60"x30"</p>	<p>RSP-1</p>  <p>48"x30"</p>	<p>W1-1</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W1-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>
<p>W1-3</p>  <p>STD. 48"x48"</p>	<p>W1-4</p>  <p>STD. 48"x48"</p>	<p>W1-6</p>  <p>STD. 48"x24" SPECIAL 60"x30"</p>	<p>W1-8</p>  <p>STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"</p>	<p>W3-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W3-2</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W4-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>
<p>W5-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W6-3</p>  <p>EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>W8-7</p>  <p>EXPWY. 36"x36" FWY. 48"x48"</p>	<p>W9-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W13-1</p>  <p>STD. 24"x24"</p>	<p>W20-1</p>  <p>STD. 48"x48"</p>	<p>W20-2</p>  <p>STD. 48"x48"</p>
<p>W20-3</p>  <p>STD. 48"x48"</p>	<p>W20-4</p>  <p>STD. 48"x48"</p>	<p>W20-5</p>  <p>STD. 48"x48"</p>	<p>W20-7a</p>  <p>18" 500 FEET W16-2 24" STD. 36"x36" FWY. 48"x48"</p>	<p>W21-2</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W21-5</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W24-1</p>  <p>STD. 36"x36"</p>
<p>W1-4b</p>  <p>STD. 48"x48"</p>	<p>R56-1</p>  <p>STD. 18"x18"</p>	<p>W8-11</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W8-9</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>G20-1</p>  <p>60"x24"</p>	<p>G20-2</p>  <p>48"x24"</p>	<p>OM-3L OM-3R</p>  <p>12"x36"</p>
<p>M4-9</p>  <p>STD. 30"x24" SPECIAL 48"x36" SPECIAL 60"x48"</p>	<p>M4-10</p>  <p>48"x18"</p>	<p>R55-1</p>  <p>36"x60"</p> <p>WHEN WORKERS ARE PRESENT **</p> <p>* USE 6" C LETTERS ** USE 4" D LETTERS</p>				



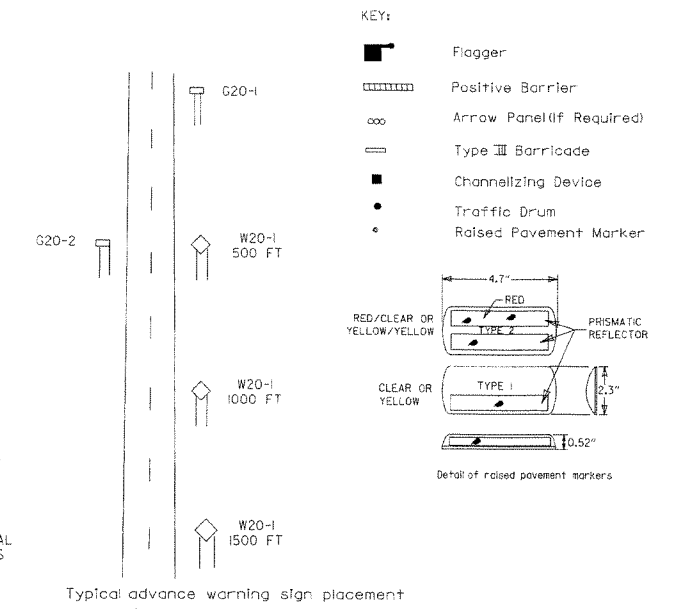
(A) Typical application of traffic control devices on a 2-lane highway where the entire roadway is closed and a bypass detour is provided.



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



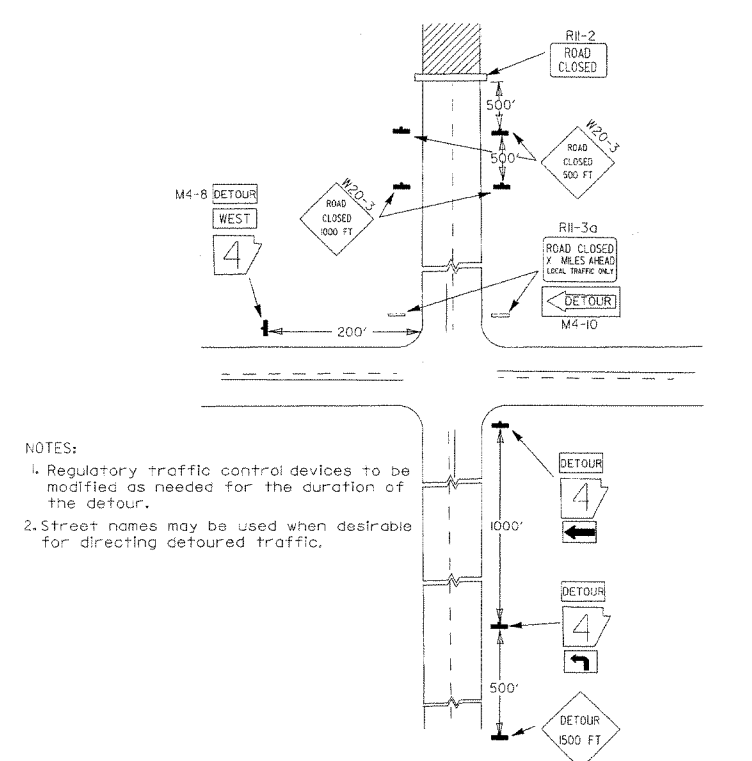
(C) Typical application - 4-lane undivided roadway where half of the roadway is closed.



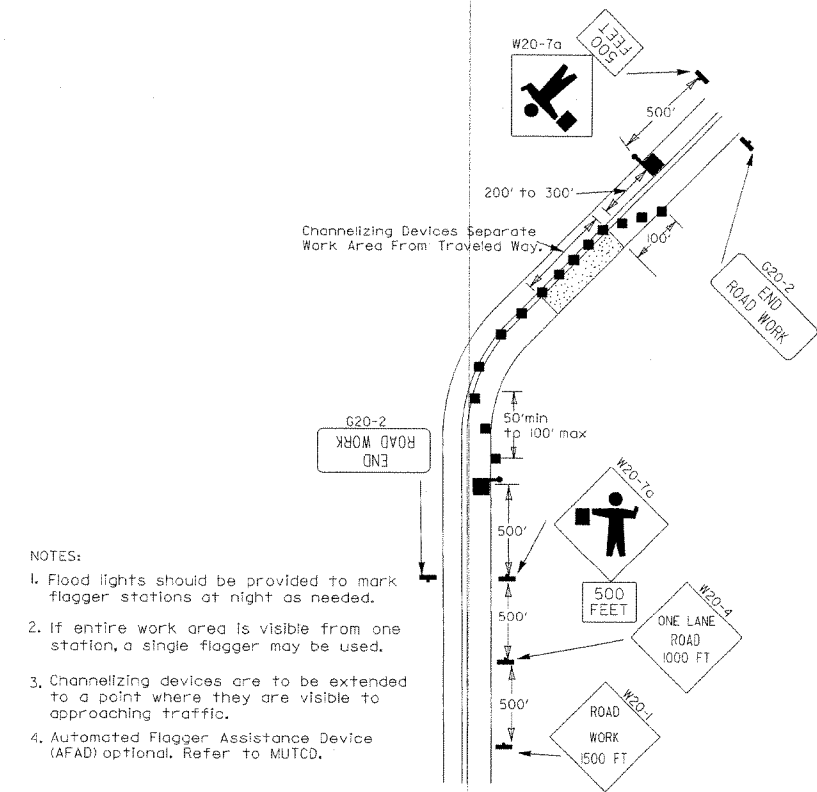
Typical advance warning sign placement

Taper formulae:
 $L = S \times W$ for speeds of 45mph or more.
 $L = \frac{WS^2}{60}$ for speeds of 40mph or less.
 Where:
 L = Minimum length of taper.
 S = Numerical value of posted speed limit prior to work or 85th percentile speed.
 W = Width of offset.

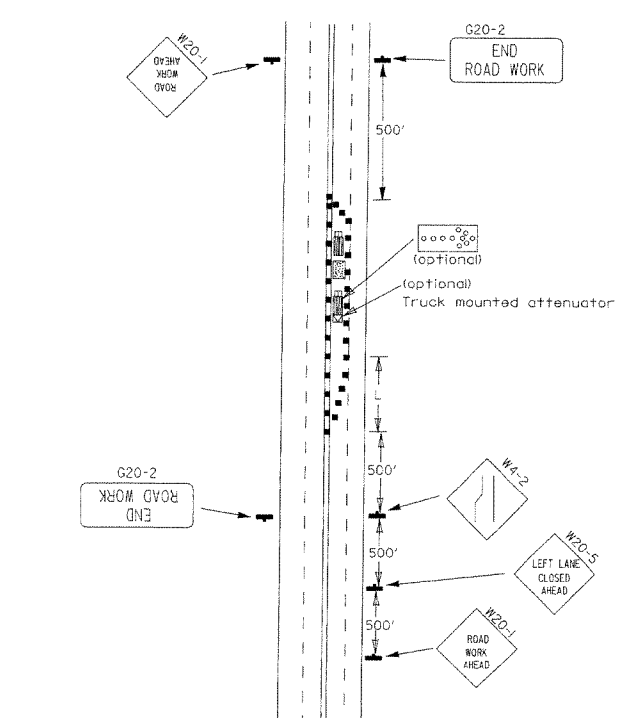
- GENERAL NOTES:
- Advisory speed posted on W1-3 or W1-4 curve warning signs to be determined at site. Use W1-4 when speed is greater than 30mph and W1-3 when 30mph or less.
 - When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1/2 mile intervals. At the end of the work area a R2-1(45) shall be installed to match original speed limit.
 - When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(65) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1/2 mile intervals. At the end of the work area a R2-1(55) shall be installed to match original speed limit.
 - The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit, or as directed by the Engineer.
 - Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
 - Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
 - Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.



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



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

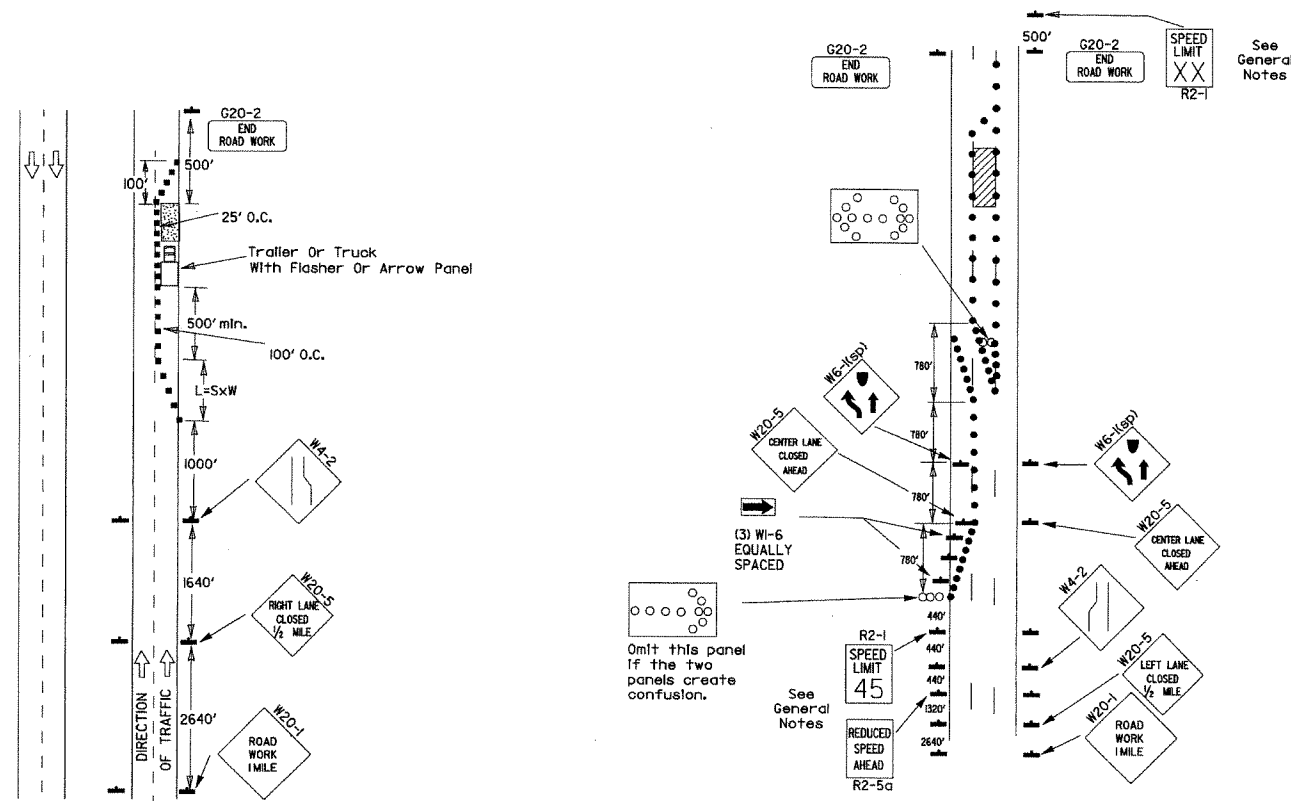


(F) Typical application - 4-lane undivided roadway with inside lane closed.

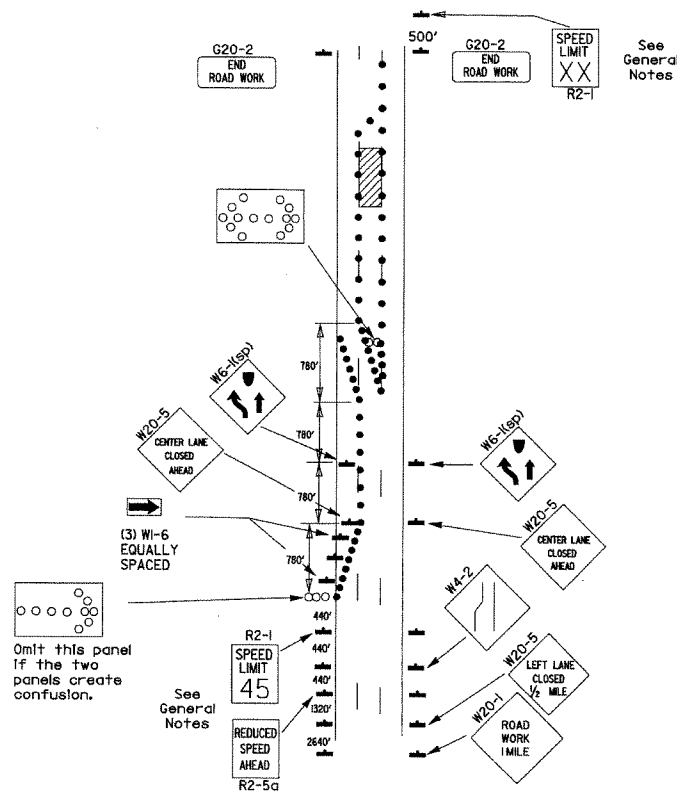
DATE	REVISION	FILMED
3-11-10	ADDED (AFAN)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI MUTCD, SEPT. 3, 1993	
8-5-91	DRAWN AND PLACED IN USE	

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

Channelizing devices



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

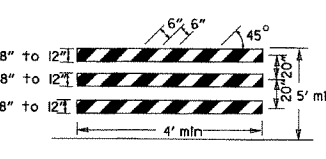
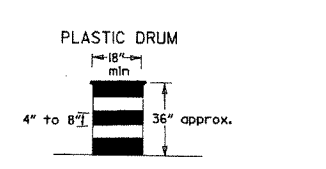
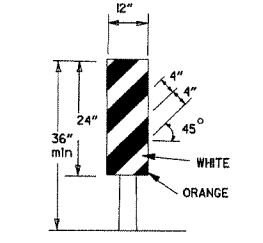
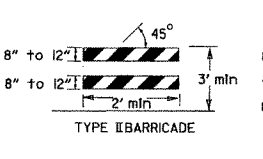
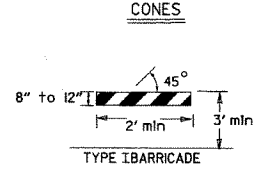
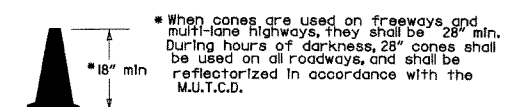


(B) Typical application - 3-lane oneway roadway where center lane is closed.

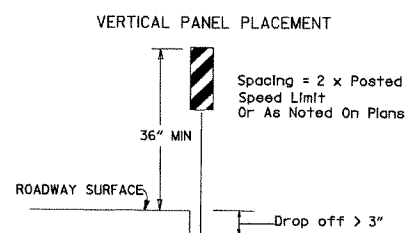
- KEY:
- Arrow Panel (if Required)
 - Channelizing Device
 - Traffic drum

GENERAL NOTES:

1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5a shall be installed at that location. Additional R2-145mph speed limit signs shall be installed at a maximum of 1/2 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 R2-155mph speed limit signs shall be installed at a maximum of 1/2 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 (1/2 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.



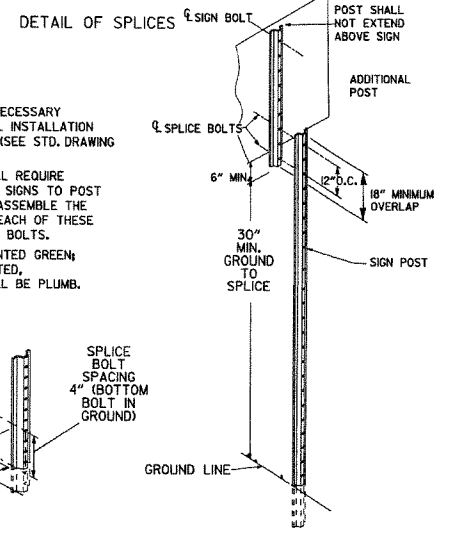
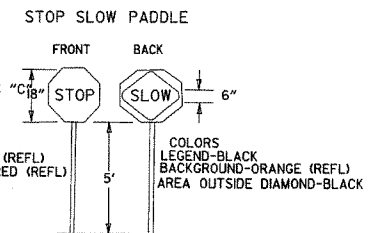
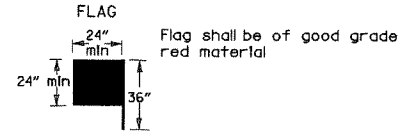
NOTE: For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.



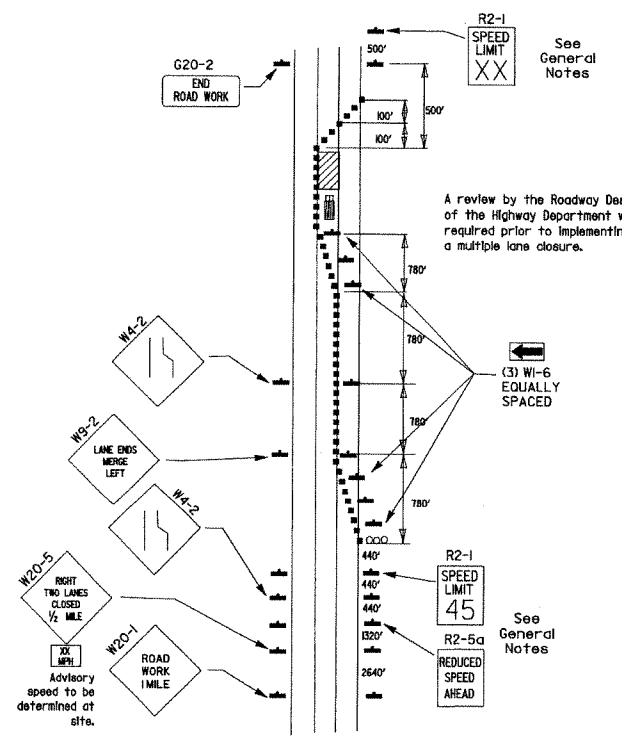
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

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

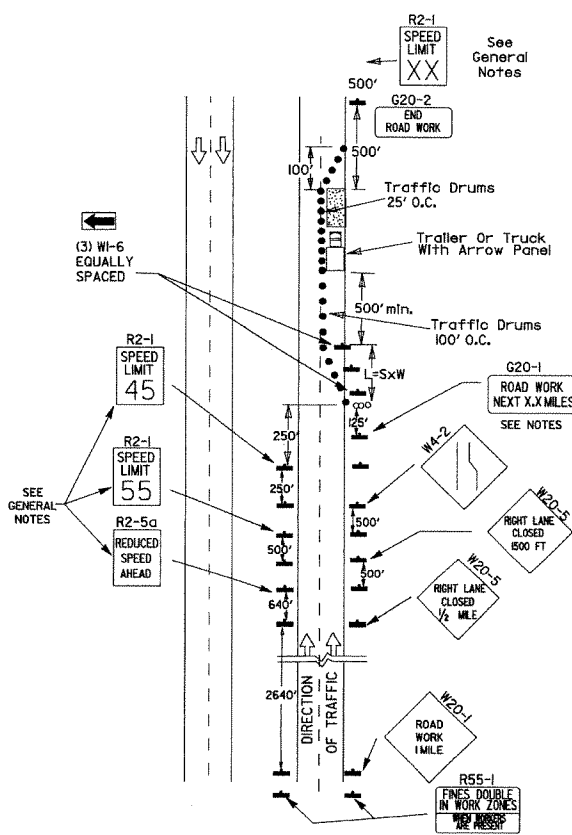
* When shown on the plans concrete barrier will be used.
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.



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



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

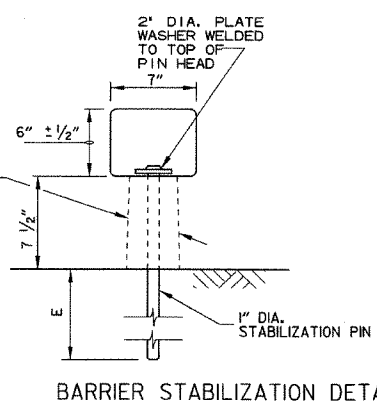
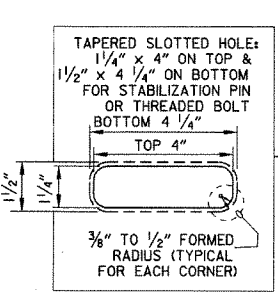
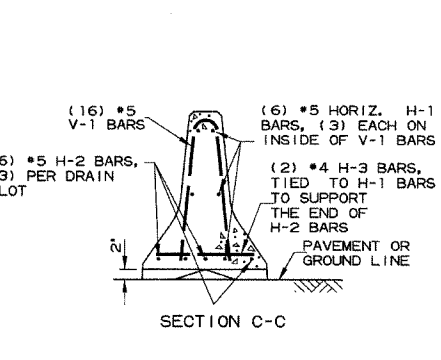
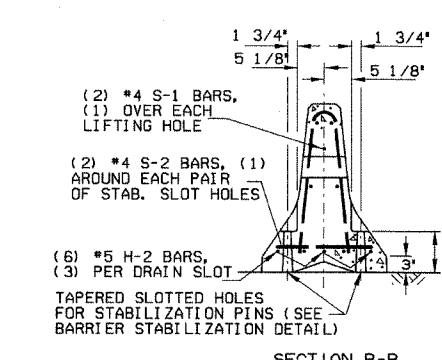
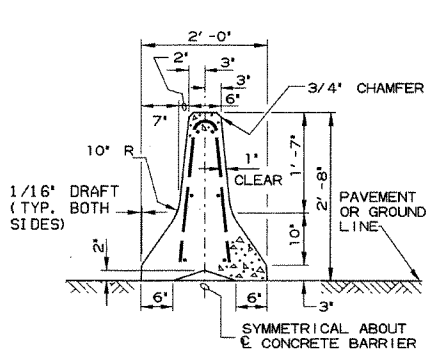
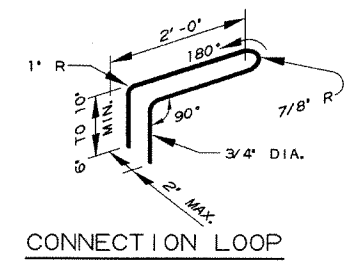
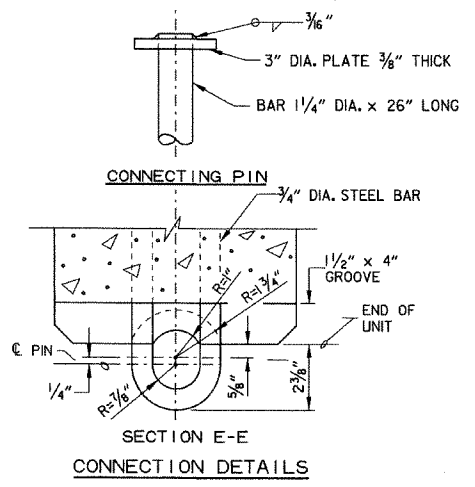


(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

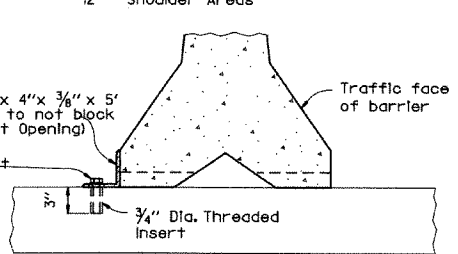
DATE	REVISION	FILED
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED 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

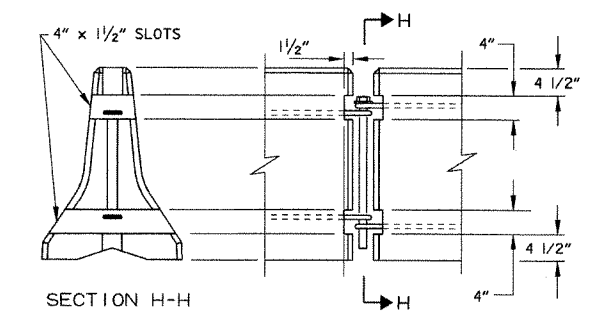
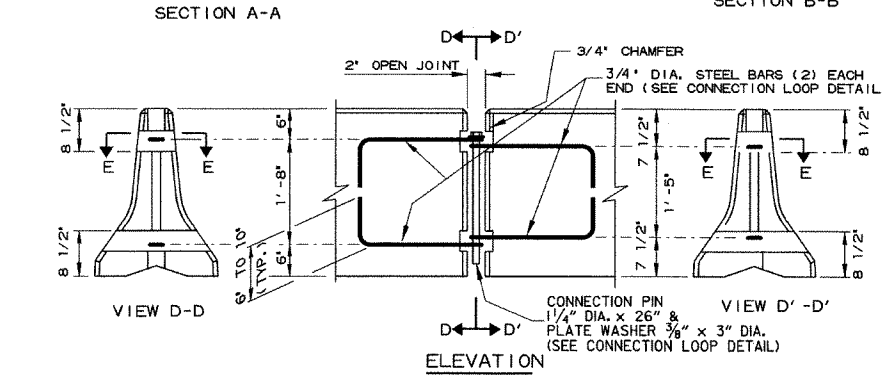
REINFORCING BAR TABLE PER BARRIER UNIT			
MARK	LOCATION	BAR SIZE	(NO. BARS)
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)
S-1	OVER LIFT HOLES	#4	(2)
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S & DRAIN SLOTS	#4	(2)
V-1	VERTICAL IN BARRIER (3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)



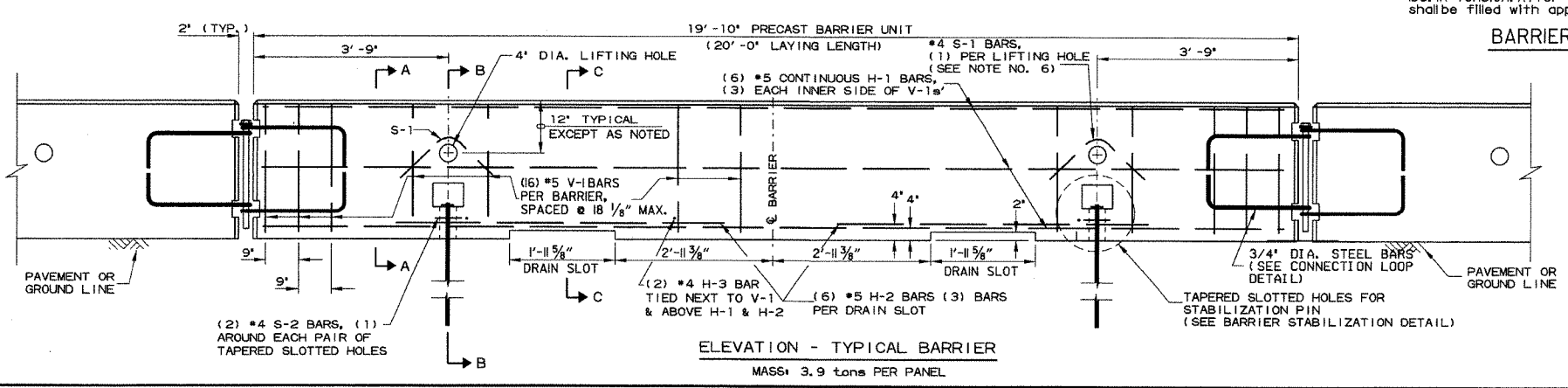
BARRIER STABILIZATION DETAIL
ROADWAY SECTION



BARRIER STABILIZATION DETAIL
BRIDGE DECKS



BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER
MASS: 3.9 tons PER PANEL

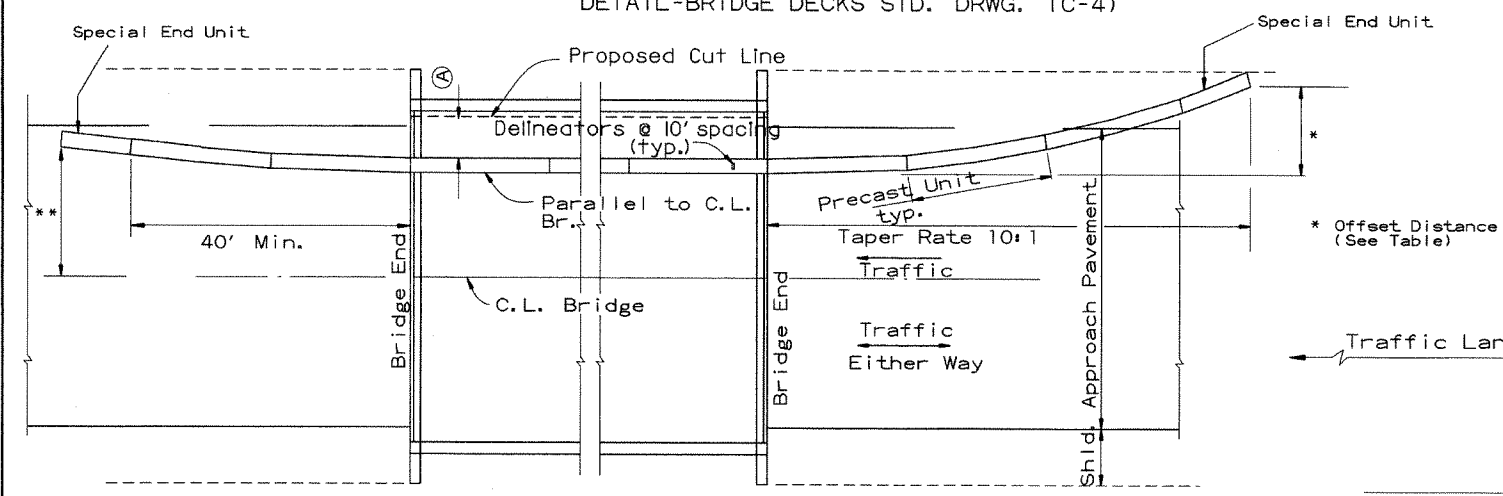
- General Notes**
- The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.
 - Materials shall meet the following minimum requirements: Concrete: 2500 psi compressive strength at 28 days. Reinforcing Steel: AASHTO M 31 or M 53, Grade 60 Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin. Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

In applications where barrier walls within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers. Delineator color shall be in accordance with the Manual Uniform Traffic Control Devices. Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier". The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.
 - Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 Test Level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.
 - Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.
 - Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.
 - A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION -
TEMPORARY PRECAST BARRIER
STANDARD DRAWING TC-4

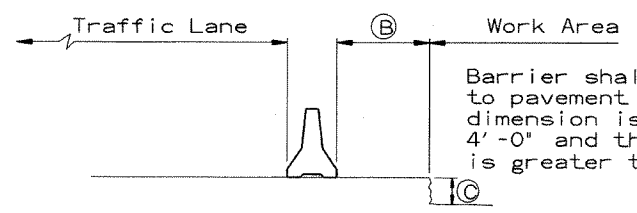
(A) 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

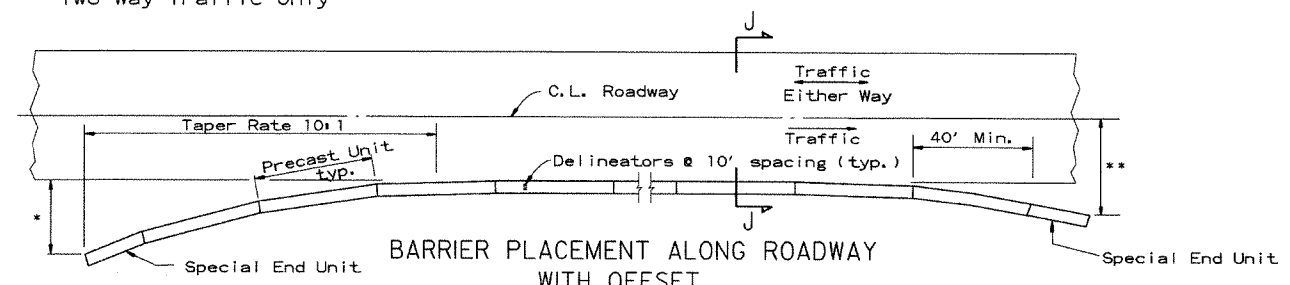
No Scale

** Offset Distance for Two Way Traffic Only



SECTION J-J
No Scale

Barrier shall be doweled to pavement when the (B) dimension is less than 4'-0" and the (C) dimension is greater than 24 inches.



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

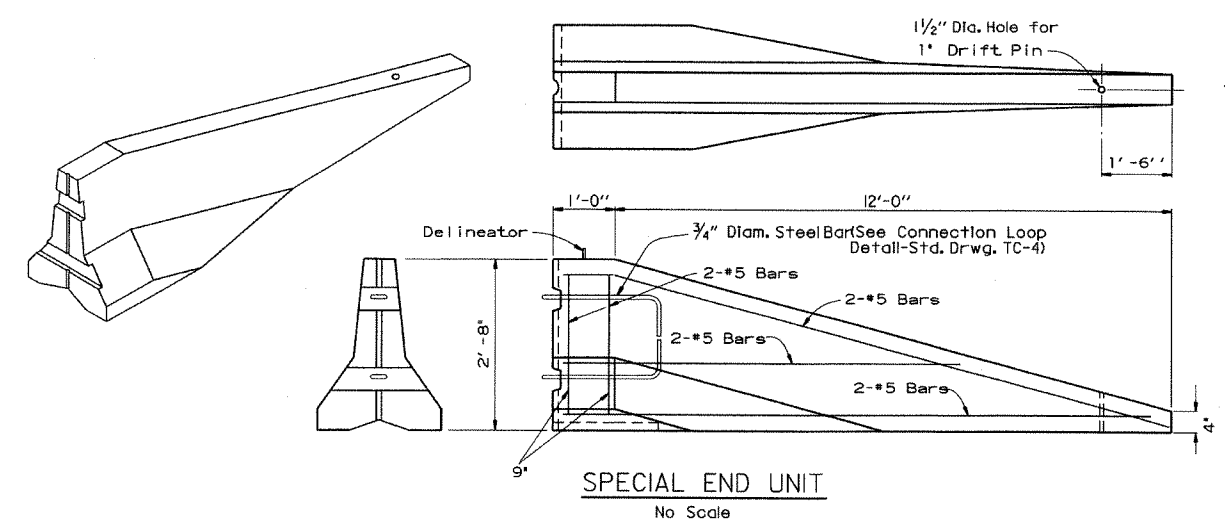
No Scale

* Offset Distance (See Table)

** Offset Distance For Two Way Traffic Only

Speed (MPH)	Offset Distance (FT.)
≤ 45	12
> 45	18

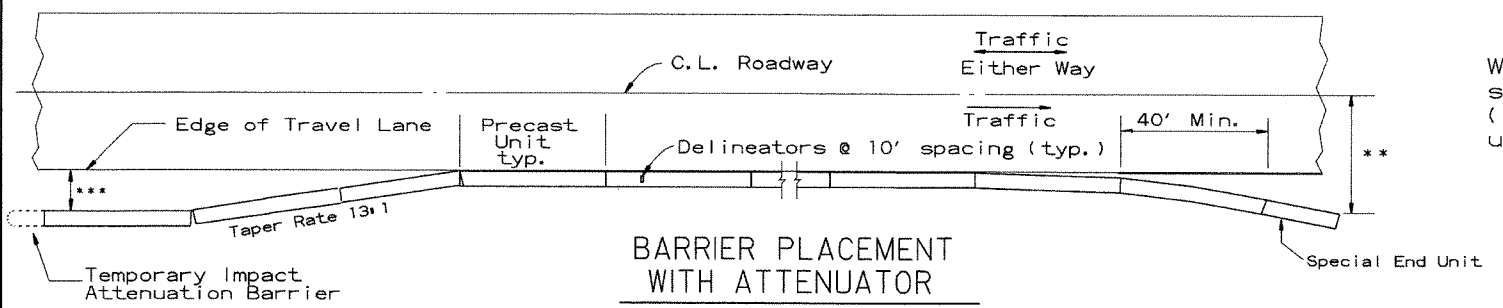
If offset distance is not attainable, then see 'Barrier Placement With Attenuator' Detail shown below.



SPECIAL END UNIT
No Scale

General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."



BARRIER PLACEMENT WITH ATTENUATOR

No Scale

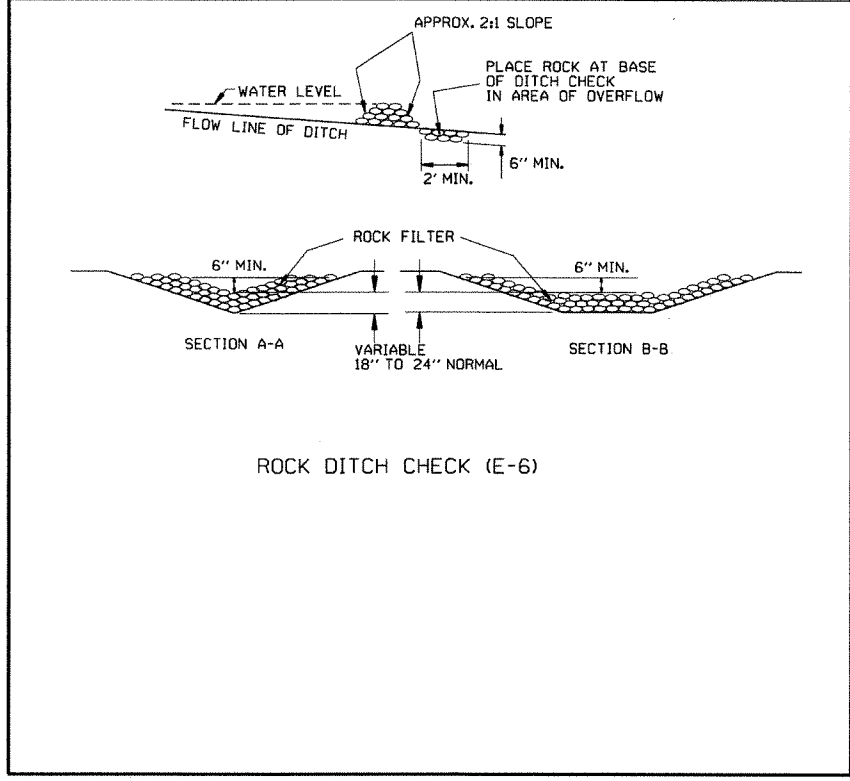
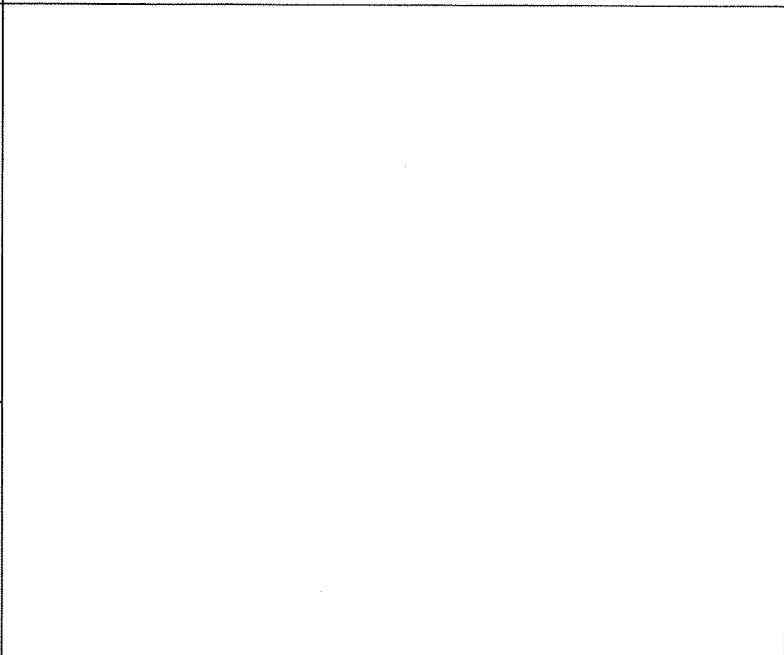
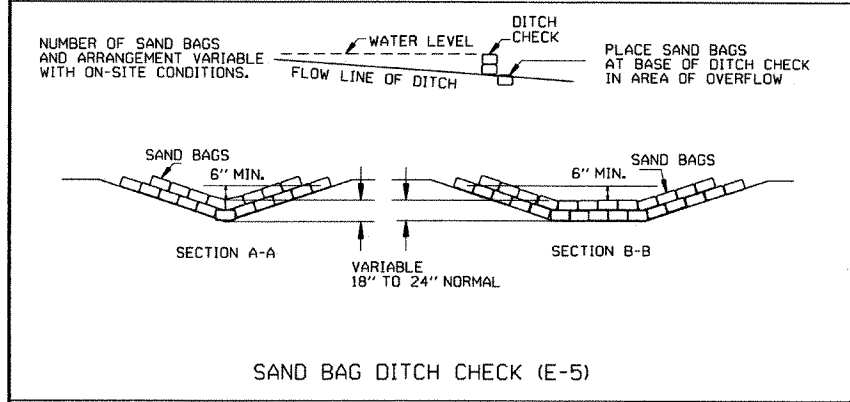
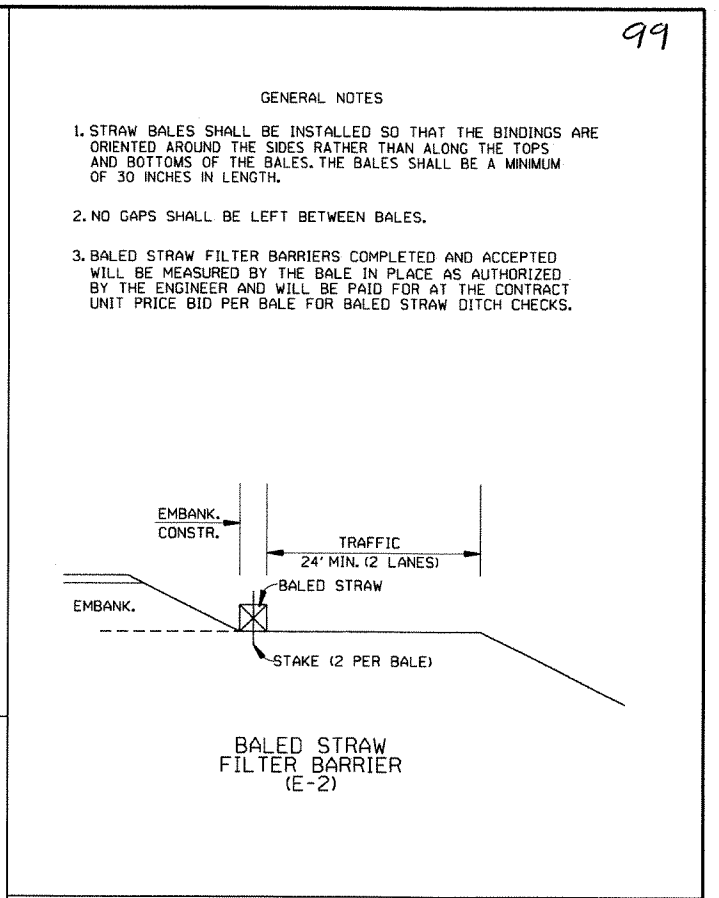
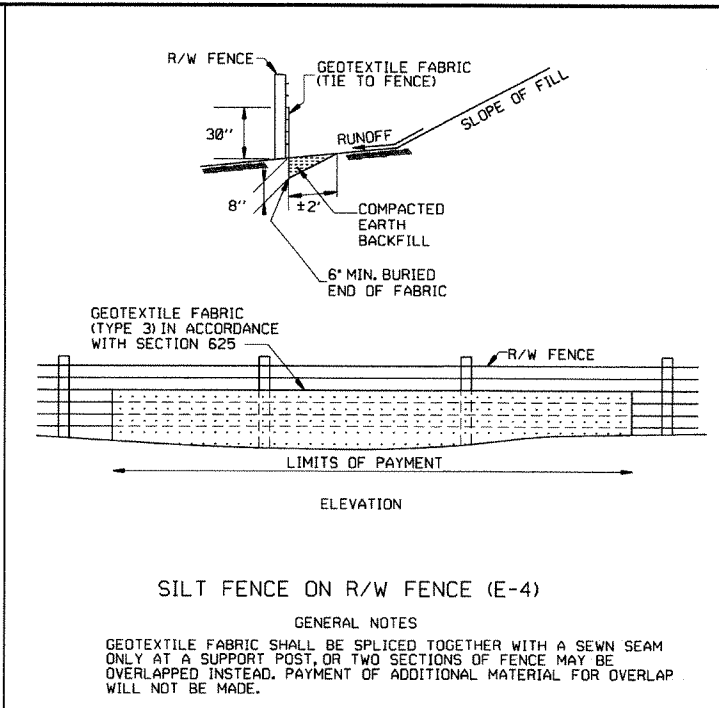
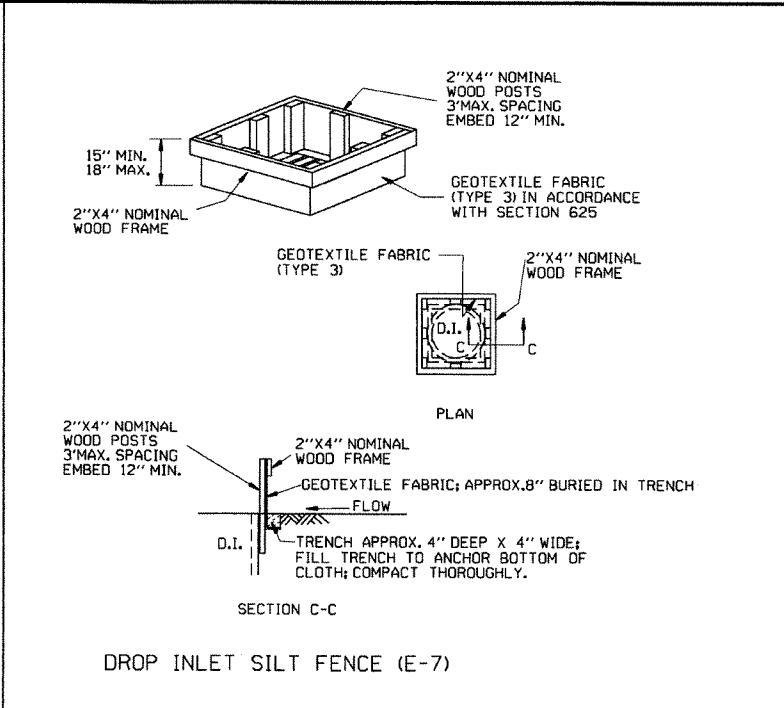
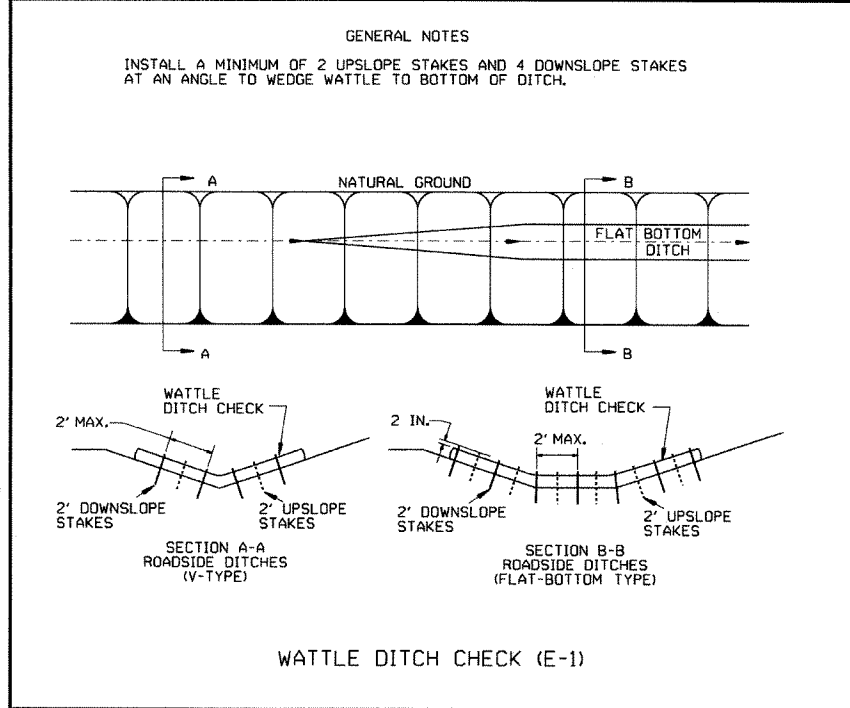
** Offset Distance For Two Way Traffic Only

*** Min. 3'-0" From Edge of Travel Lane to Nearest Edge of Attenuator

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION -
TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-5

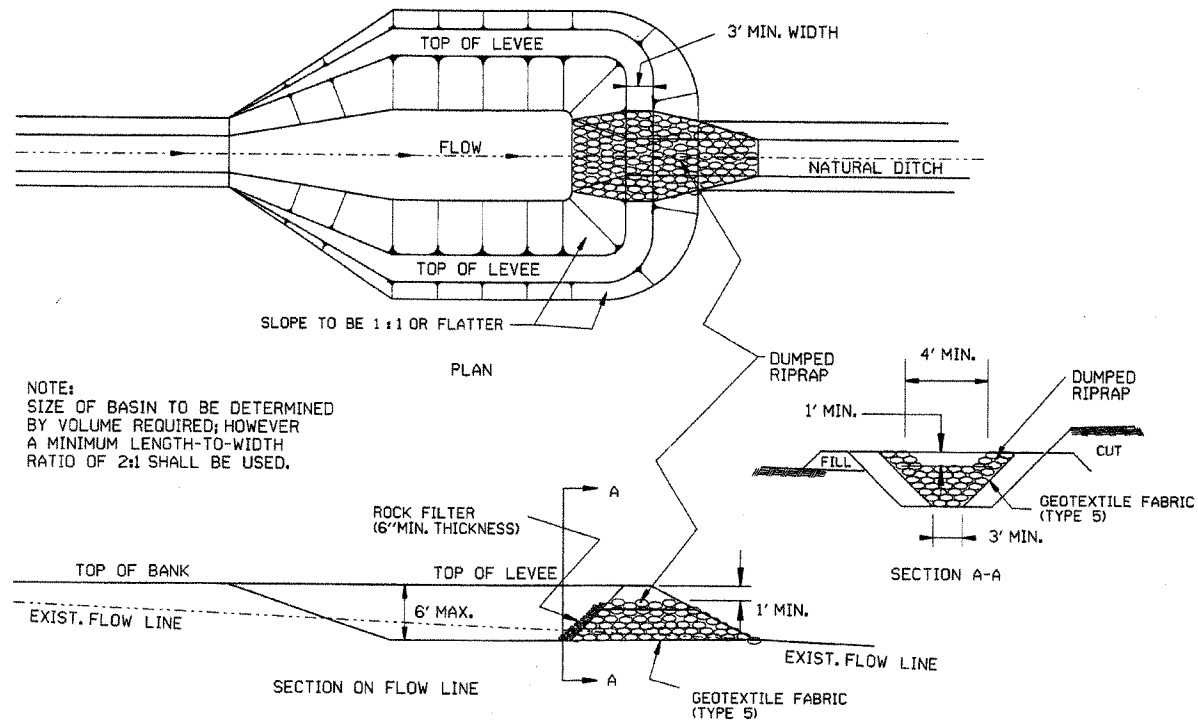


12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
7-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
6-2-94	REVISED E-1, 4, 7 & 11; DELETED E-2 & 3	6-2-94
4-1-93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

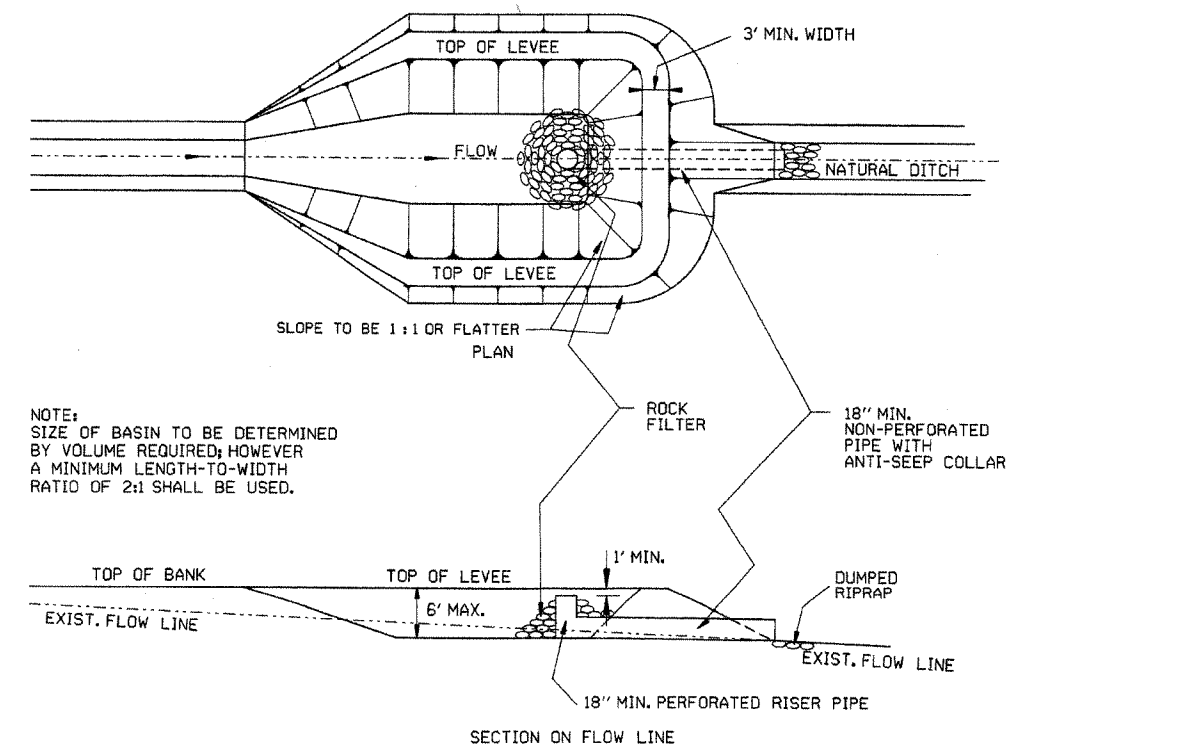
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

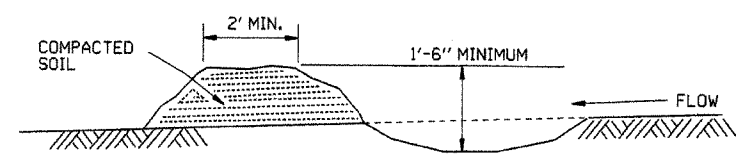
STANDARD DRAWING TEC-1



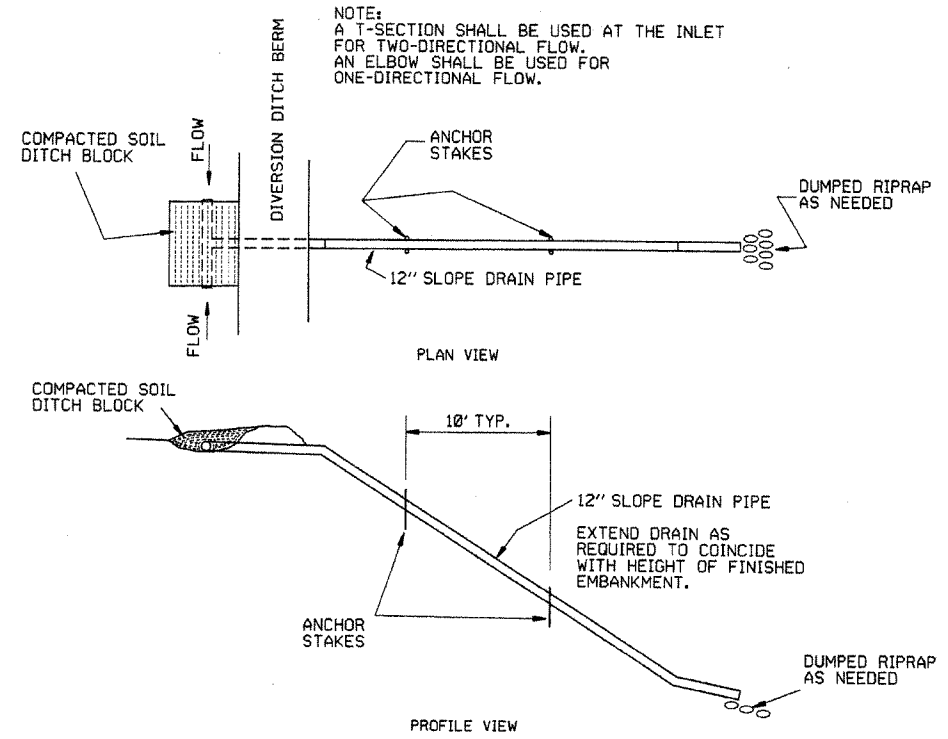
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



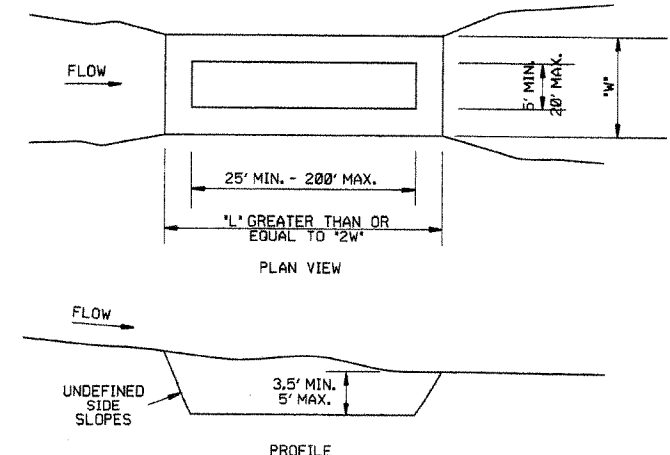
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

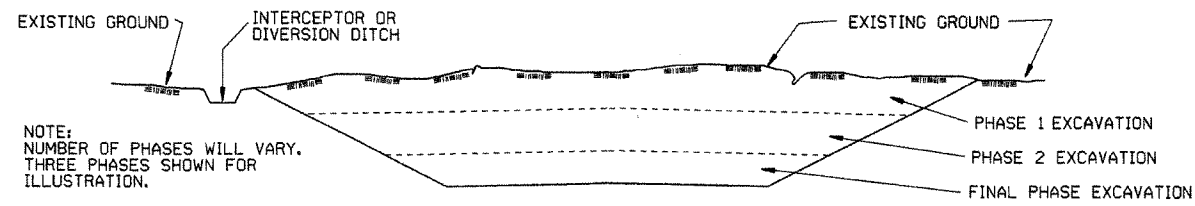
		ARKANSAS STATE HIGHWAY COMMISSION	
		TEMPORARY EROSION CONTROL DEVICES	
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13		
4-1-93	ISSUED		
DATE	REVISION		FILMED

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



NOTE:
NUMBER OF PHASES WILL VARY.
THREE PHASES SHOWN FOR
ILLUSTRATION.

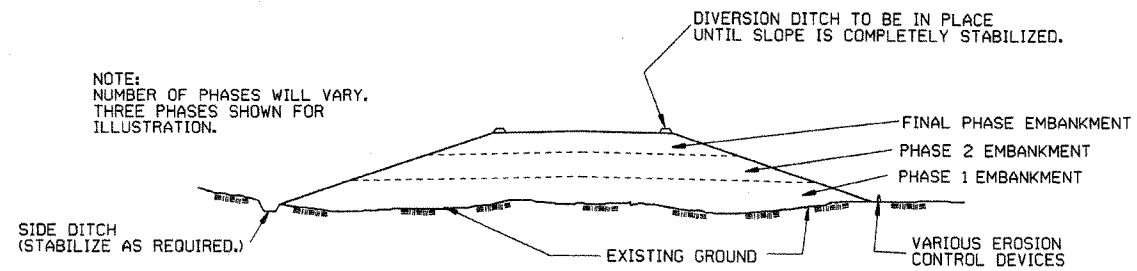
GENERAL NOTE

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



NOTE:
NUMBER OF PHASES WILL VARY.
THREE PHASES SHOWN FOR
ILLUSTRATION.

GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

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

GENERAL NOTES:

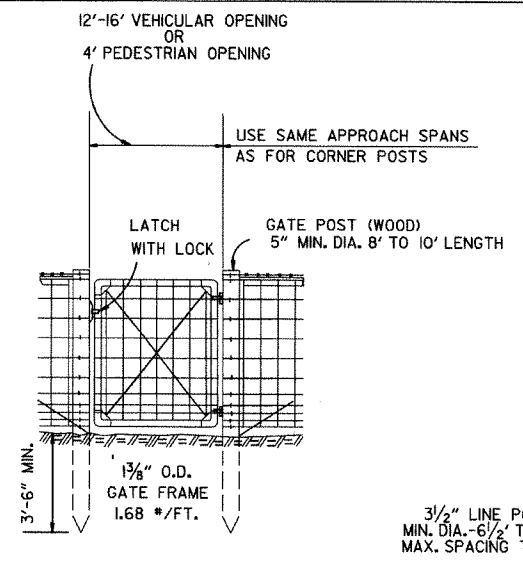
STEEL LINE POSTS SHALL BE GALVANIZED, 7 FT. IN LENGTH.
TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK).

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF WOOD LINE POSTS OF 7' LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.
GATE HINGES AND LATCHES WITH LOCKS TO BE OF A TYPE APPROVED BY THE ENGINEER. DRIVEWAY GATES, EITHER SINGLE 12' OR 16' OR DOUBLE 6' TO 8' OPENINGS OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE FOR USE BY MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON THE PLANS OR AS DESIGNATED BY THE ENGINEER.

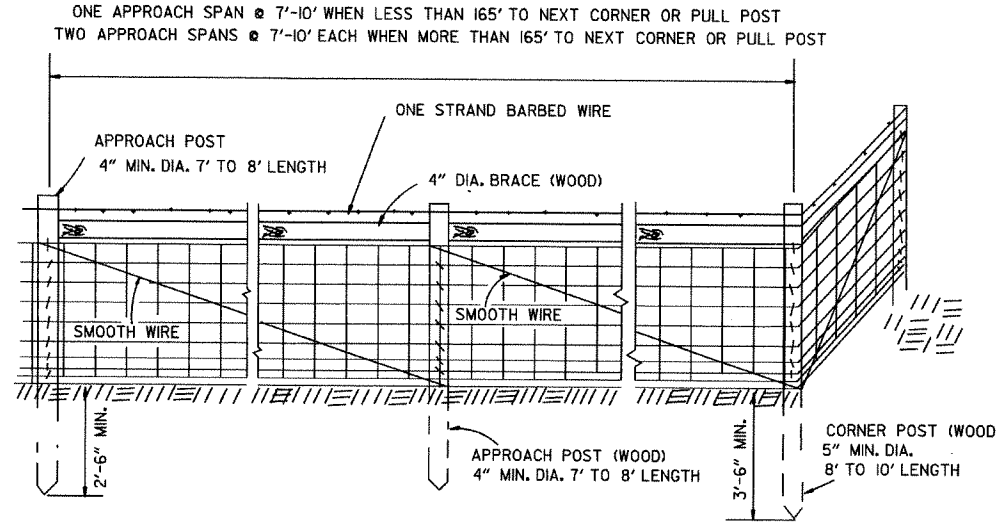
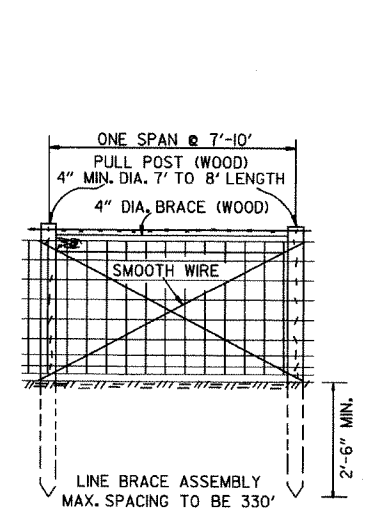
AT STREAM CROSSINGS THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF BANK TO THE BRIDGE STRUCTURE, A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED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

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

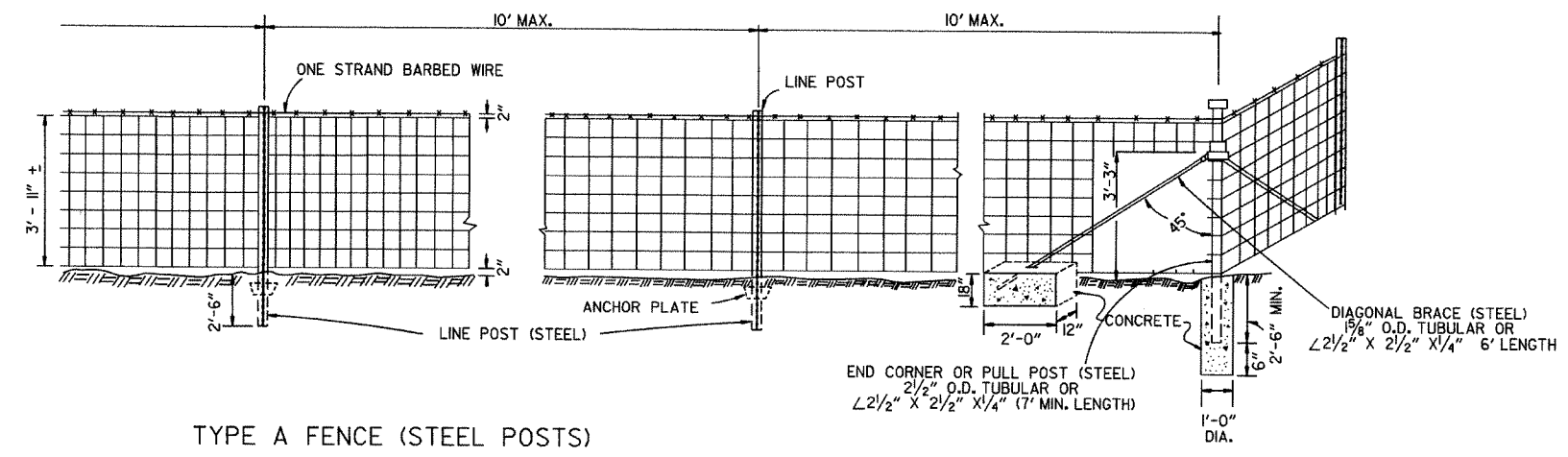
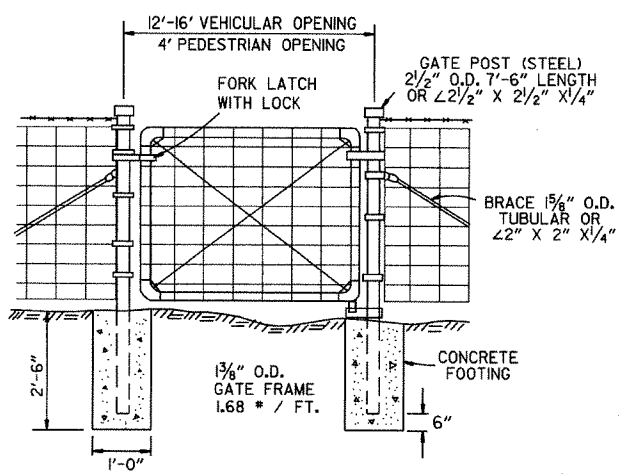
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRE A MINIMUM OF 4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



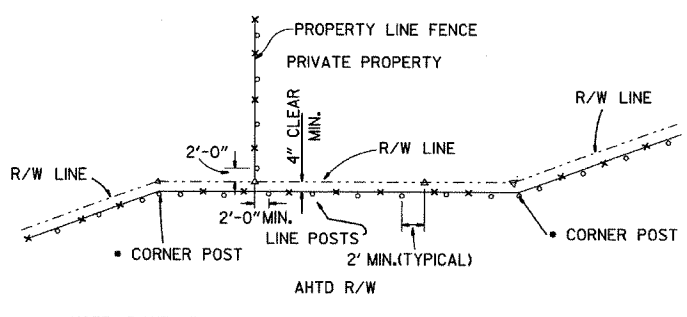
NOTE: STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.



TYPE A FENCE (WOOD POSTS)



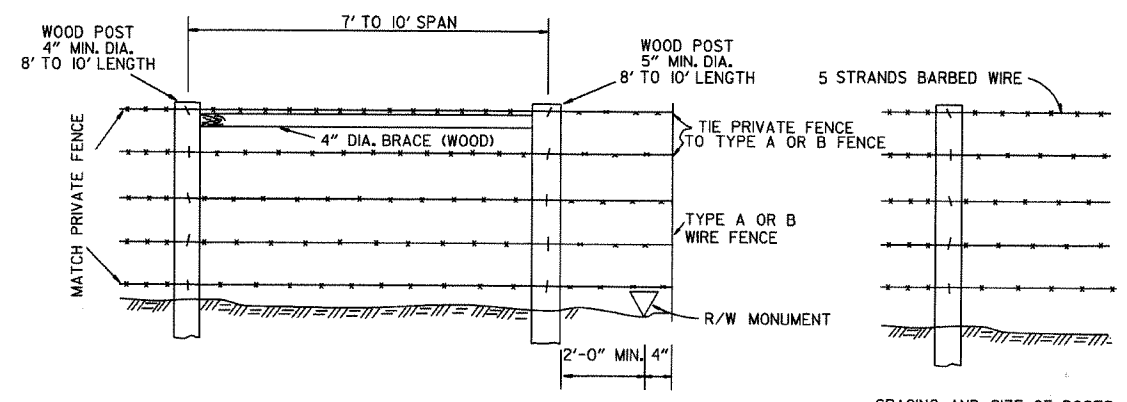
TYPE A FENCE (STEEL POSTS)



NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

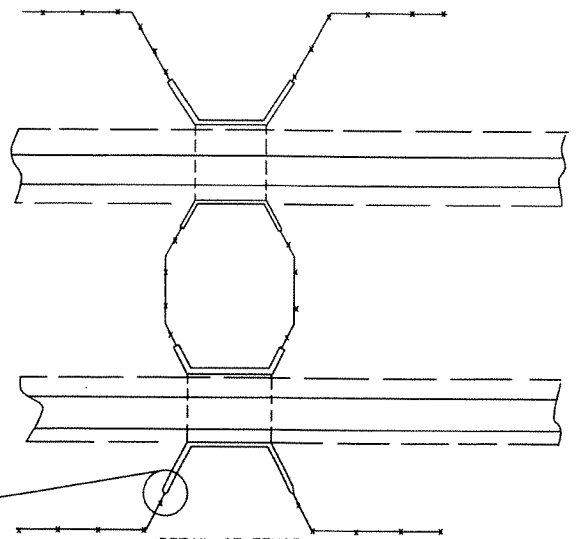
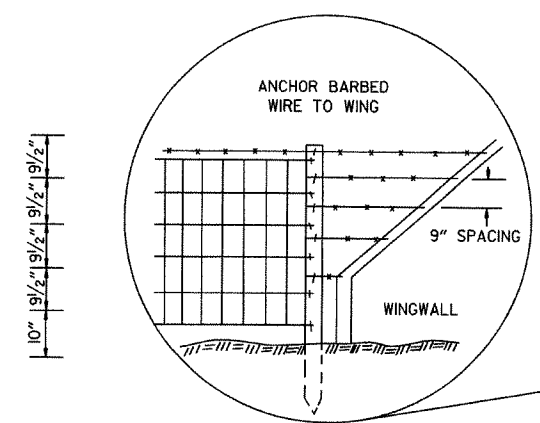
▲ - R/W MONUMENTS
● - FENCE POSTS

RIGHT-OF-WAY FENCE LOCATION



WHERE EXISTING PRIVATE FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN WITH TYPE A FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.

PRIVATE FENCE TERMINAL INSTALLATION



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

SPACING AND SIZE OF POSTS FOR TYPE B FENCE SHALL BE THE SAME AS TYPE A FENCE.

TYPE B FENCE

DATE	REVISION	DATE FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED ASTM REF. TO AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	ADDED CORNER POST NOTE	6-2-94
8-5-93	REVISED R-O-W LOCATION DETAIL	8-5-93
10-1-92	ADDED STAPLE NOTE	
8-2-90	REV'D PULL POST LENGTH	
11-30-89	DELETED CLASS CONC.	
7-15-88	ADDED SPLICE NOTES	
7-15-88	ADDED HEIGHT DIMENSION	
4-3-87	REVISED VARIOUS NOTES AND GENERAL NOTES	
11-1-84	MAX. POST SPACING	
1-4-83	MIN. DIA. LINE POST	
10-2-72	REVISED & REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE A AND B

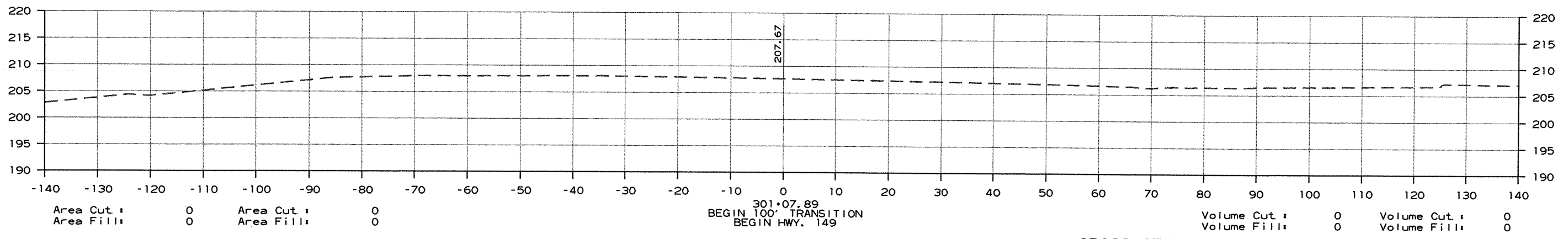
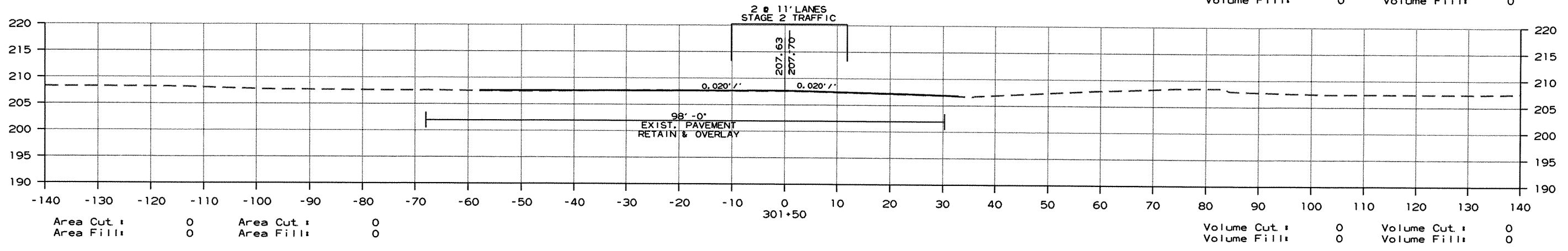
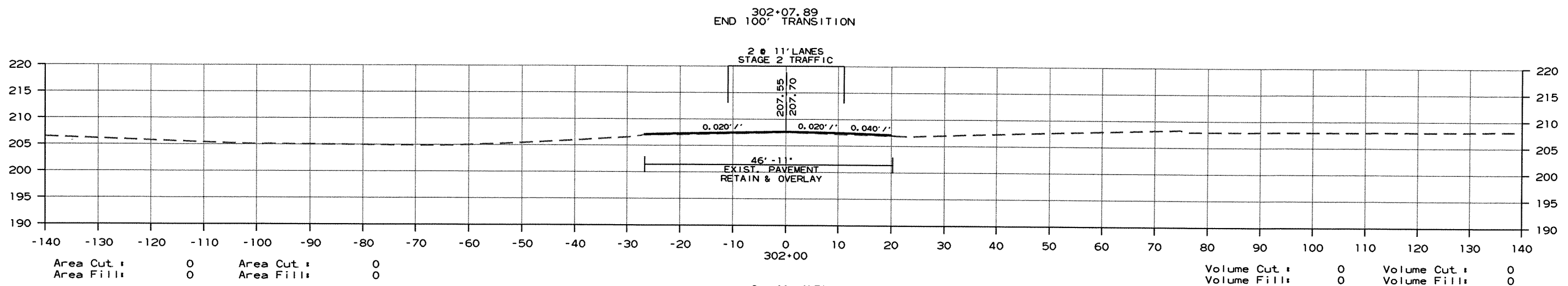
STANDARD DRAWING WF-1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
5/2/12								
						JOB NO. 110543	103	134

② CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



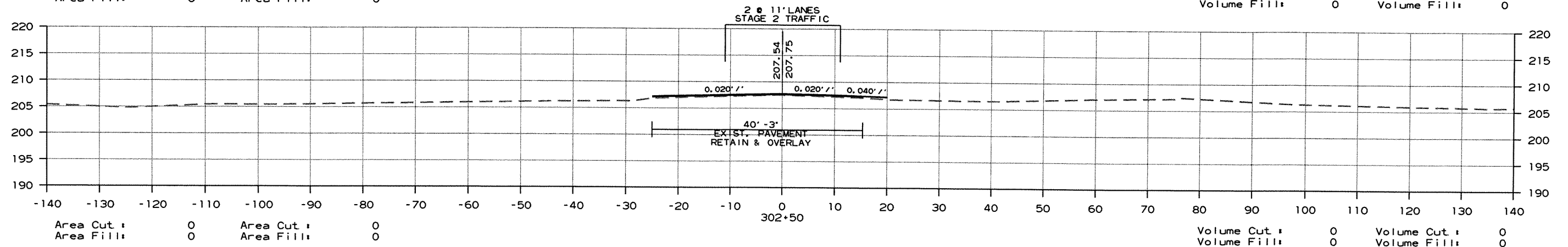
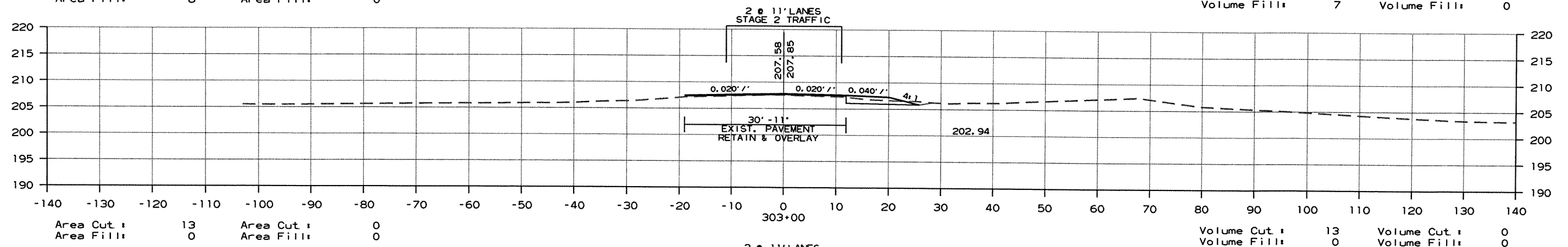
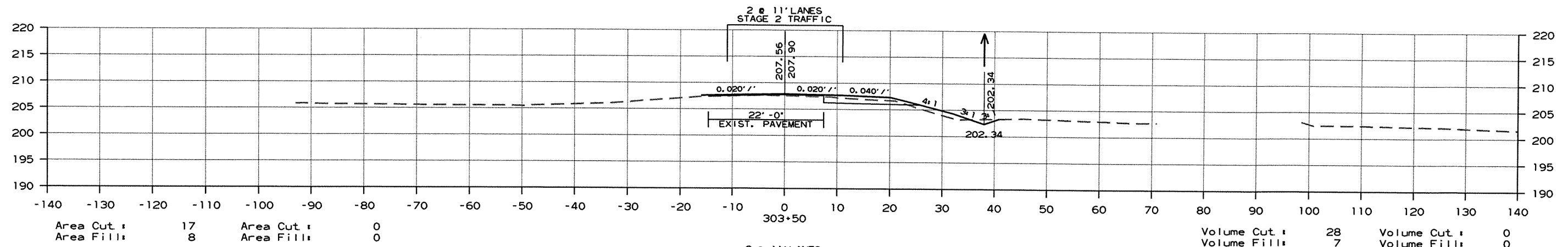
CROSS SECTION HWY. 149 STA. 301+08 TO STA. 302+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
5/2/12								
						JOB NO. 110543	104	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



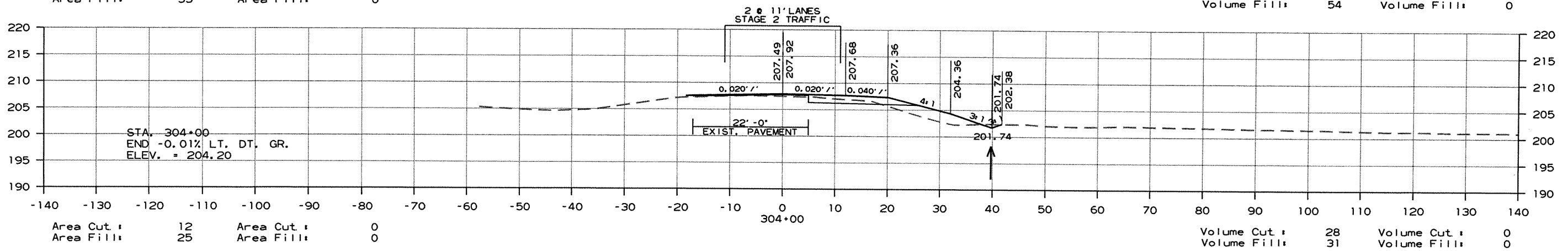
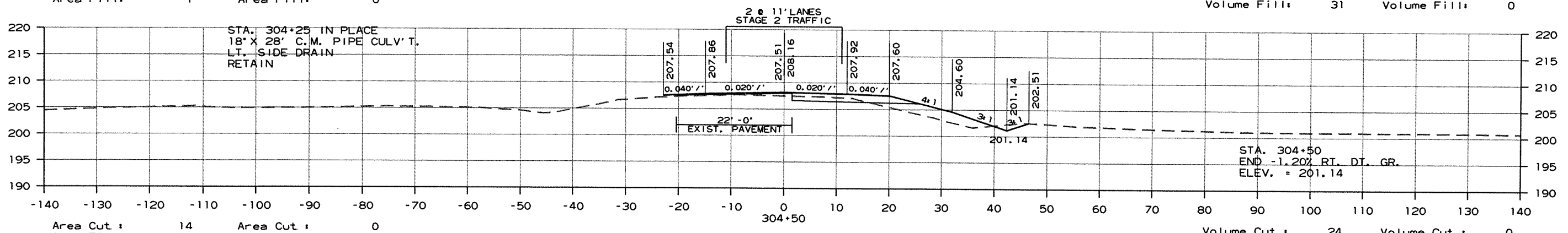
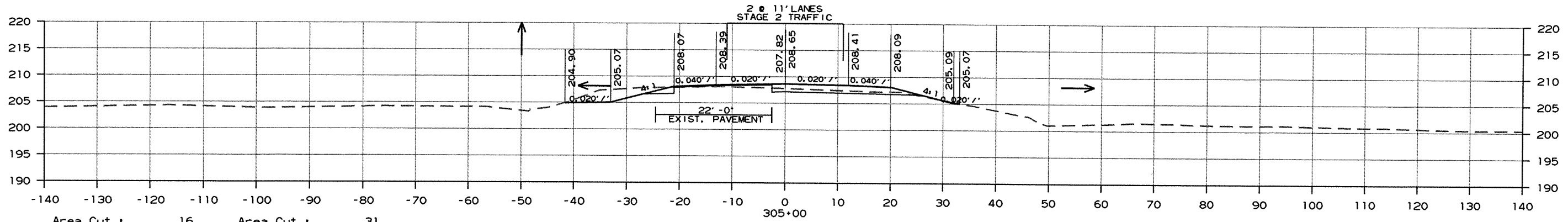
CROSS SECTION HWY. 149 STA. 302+50 TO STA. 303+50

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
5/2/12						JOB NO. 110543	105	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



CROSS SECTION HWY. 149 STA. 304+00 TO STA. 305+00

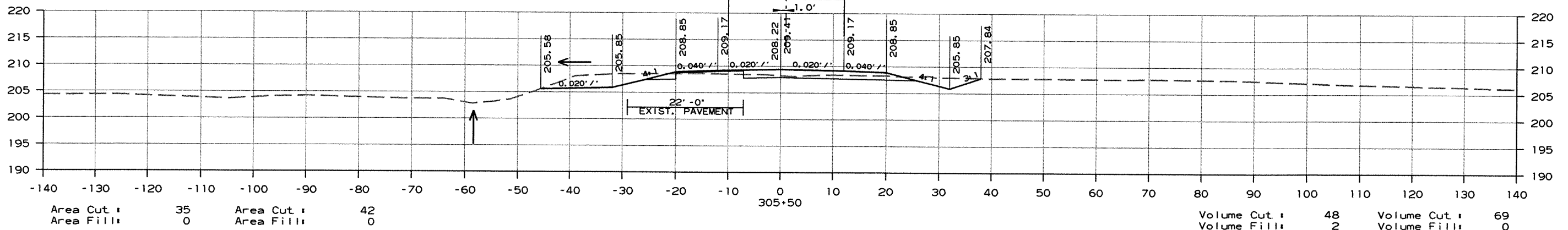
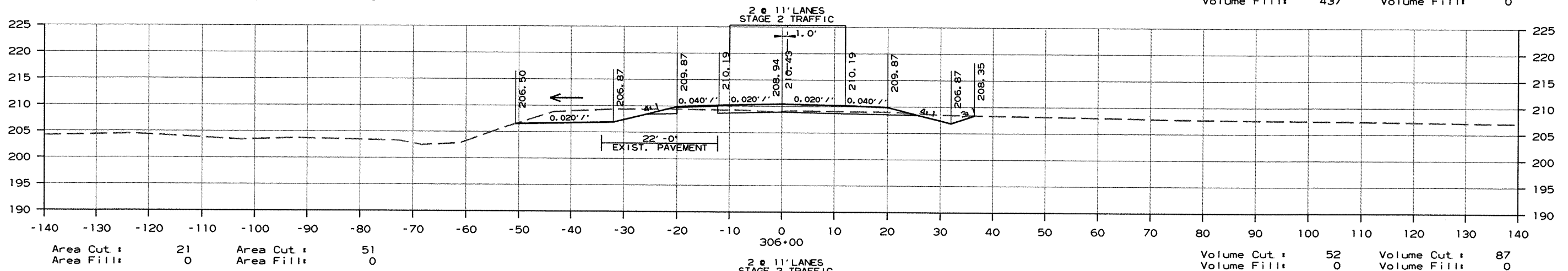
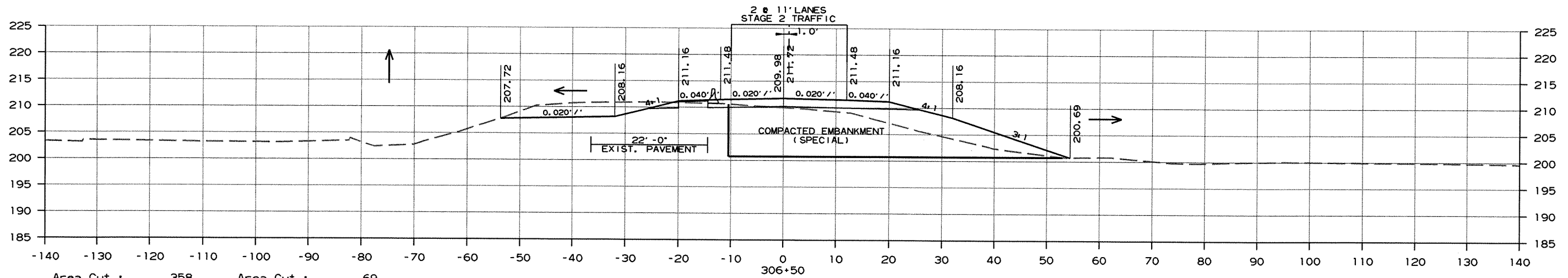
r110543.dgn 5/2/12

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	106	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



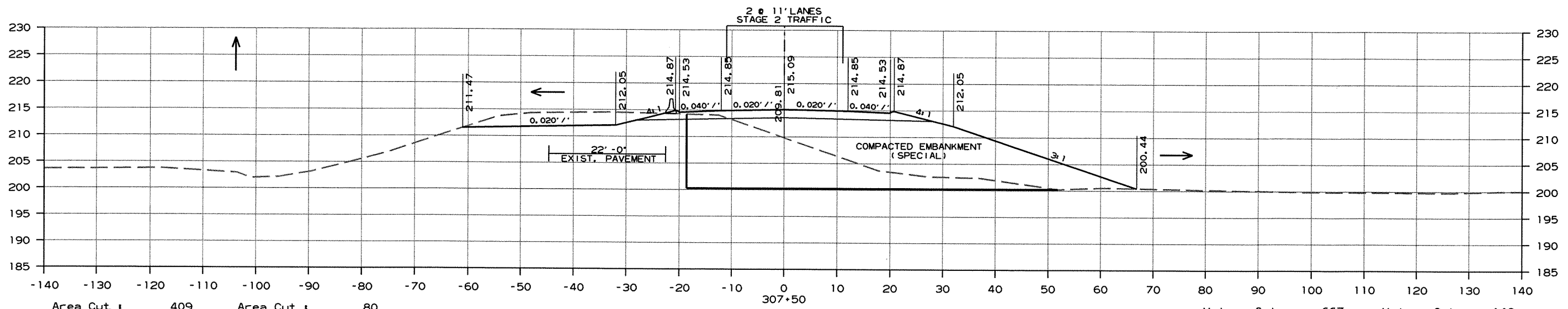
CROSS SECTION HWY. 149 STA. 305+50 TO STA. 306+50

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
				JOB NO.	110543		107	134

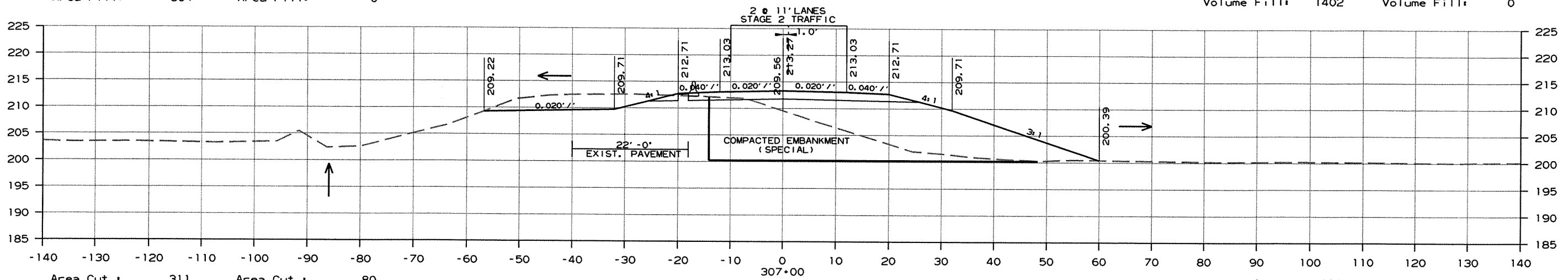
② CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



Area Cut :	409	Area Cut :	80	Volume Cut :	667	Volume Cut :	148
Area Fill :	864	Area Fill :	0	Volume Fill :	1402	Volume Fill :	0



Area Cut :	311	Area Cut :	80	Volume Cut :	620	Volume Cut :	139
Area Fill :	649	Area Fill :	0	Volume Fill :	1037	Volume Fill :	0

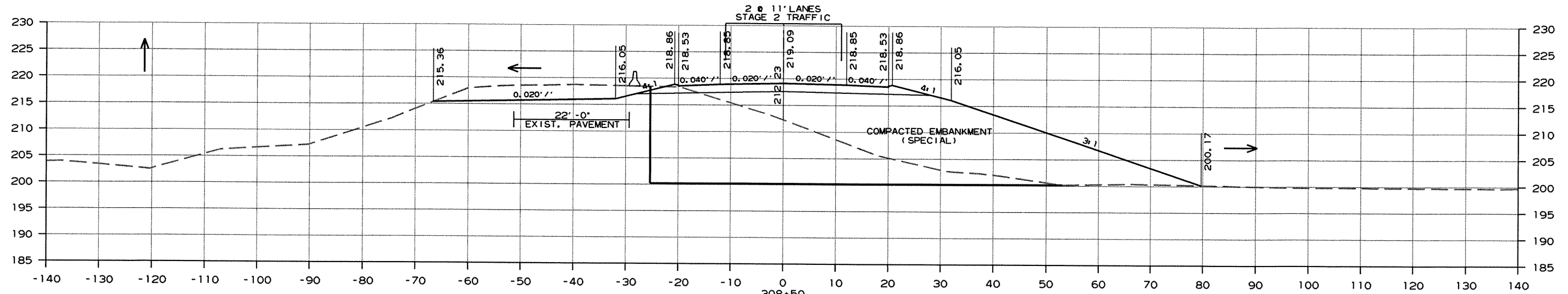
CROSS SECTION HWY. 149 STA. 307+00 TO STA. 307+50

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
JOB NO. 110543							108	134

2 CROSS SECTIONS

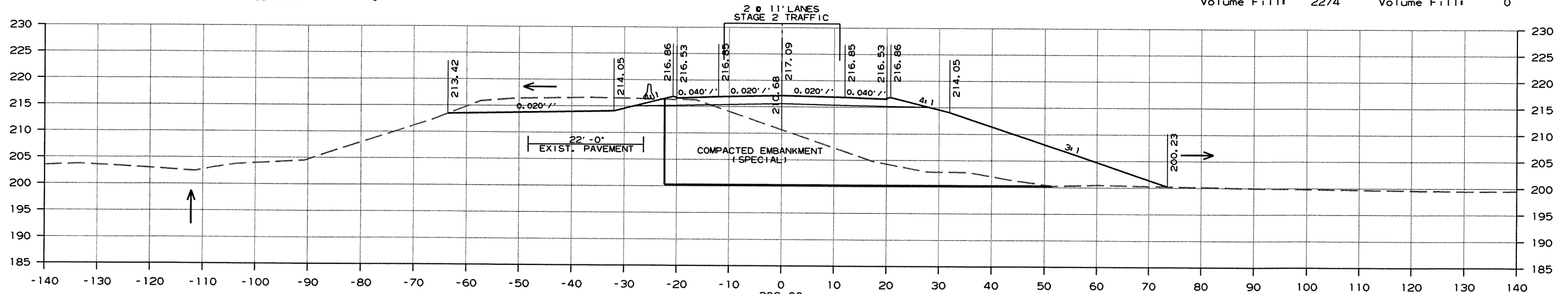
STAGE 1 AREA STAGE 2

STAGE 1 VOLUME STAGE 2



Area Cut : 641 Area Cut : 96
Area Fill : 1354 Area Fill : 0

Volume Cut : 1076 Volume Cut : 170
Volume Fill : 2274 Volume Fill : 0



Area Cut : 521 Area Cut : 88
Area Fill : 1102 Area Fill : 0

Volume Cut : 861 Volume Cut : 156
Volume Fill : 1820 Volume Fill : 0

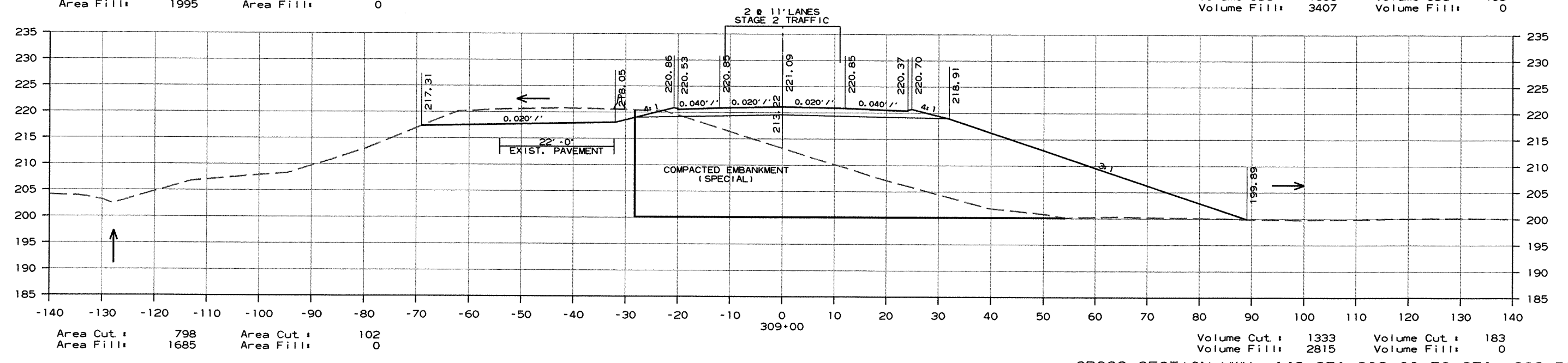
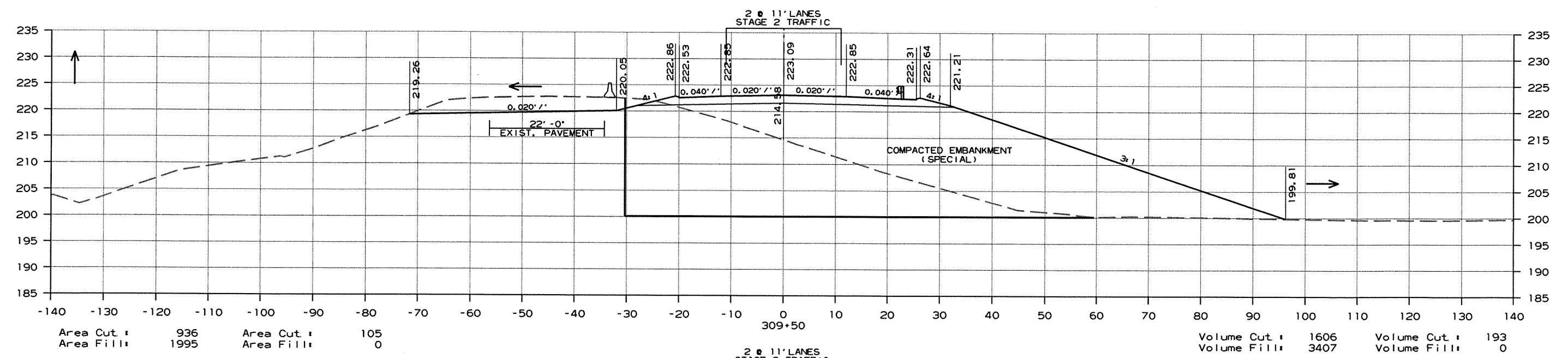
CROSS SECTION HWY. 149 STA. 308+00 TO STA. 308+50

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
				JOB NO.	110543		109	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



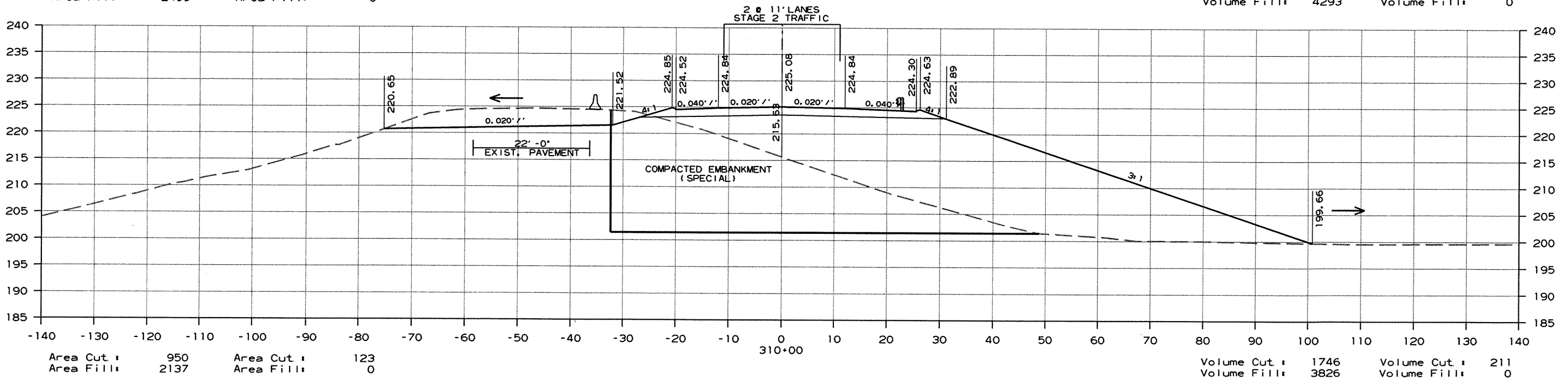
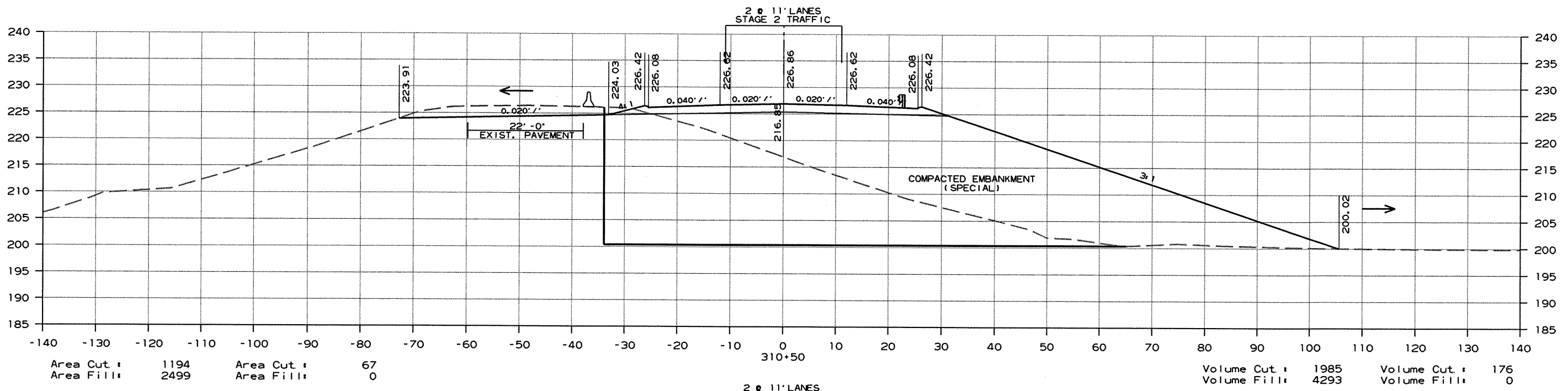
CROSS SECTION HWY. 149 STA. 309+00 TO STA. 309+50

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	110	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



CROSS SECTION HWY. 149 STA. 310+00 TO STA. 310+50

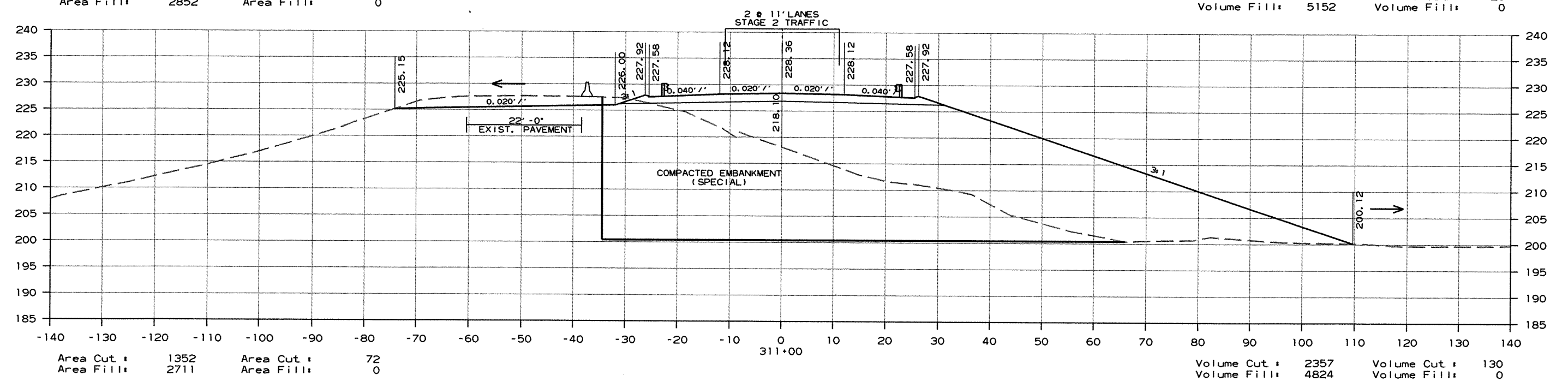
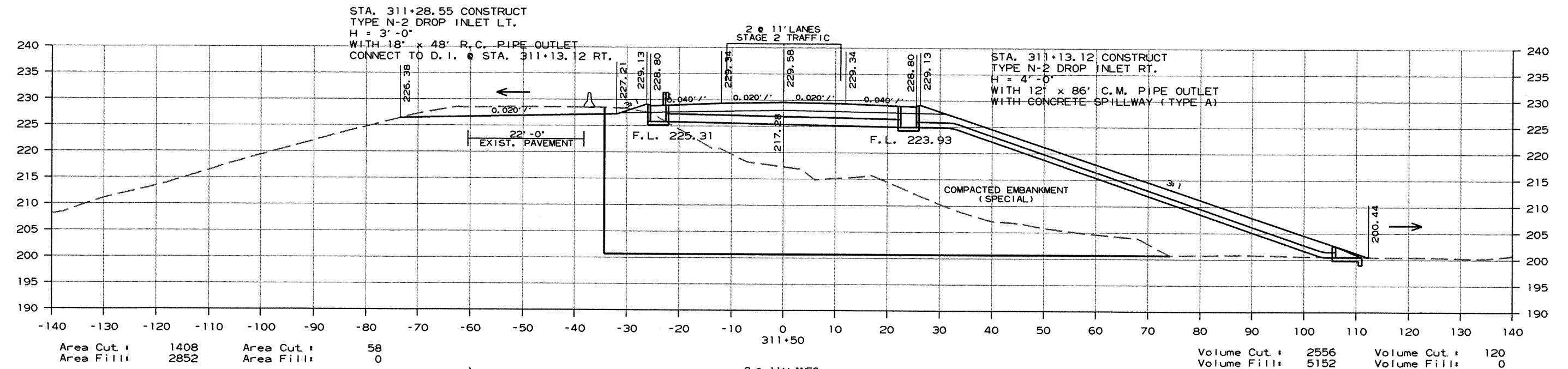
r110543.dgn 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	111	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



CROSS SECTION HWY. 149 STA. 311+00 TO STA. 311+50

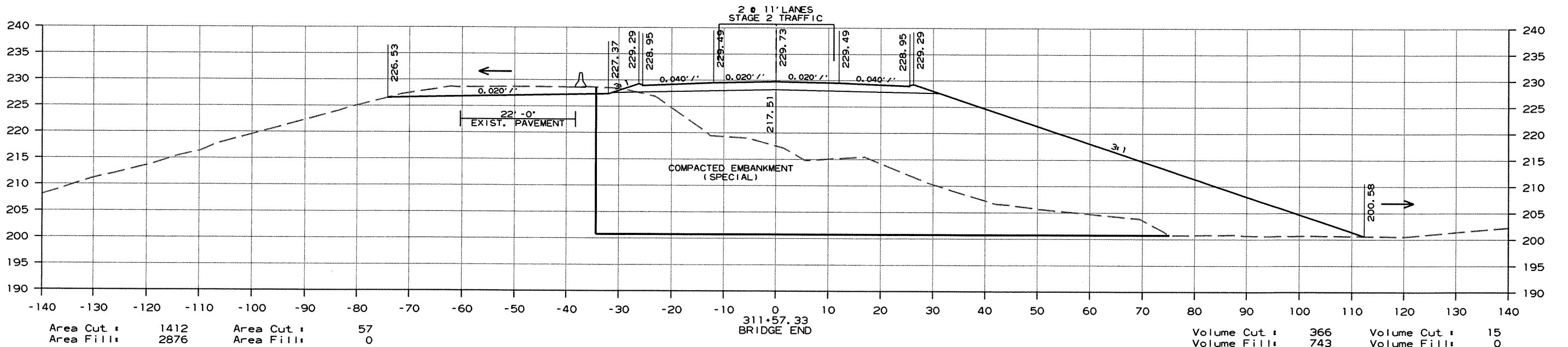
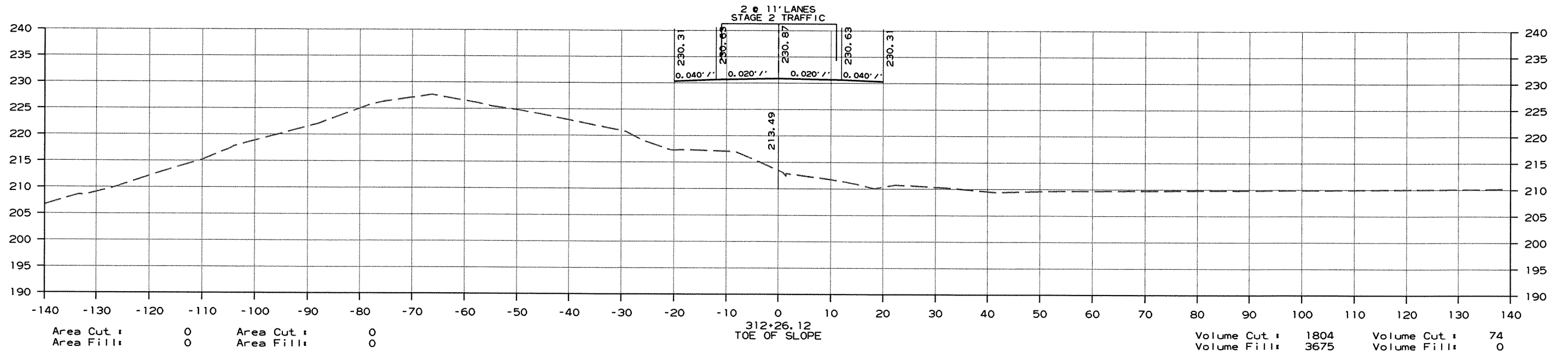
r110543.dgn 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	112	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



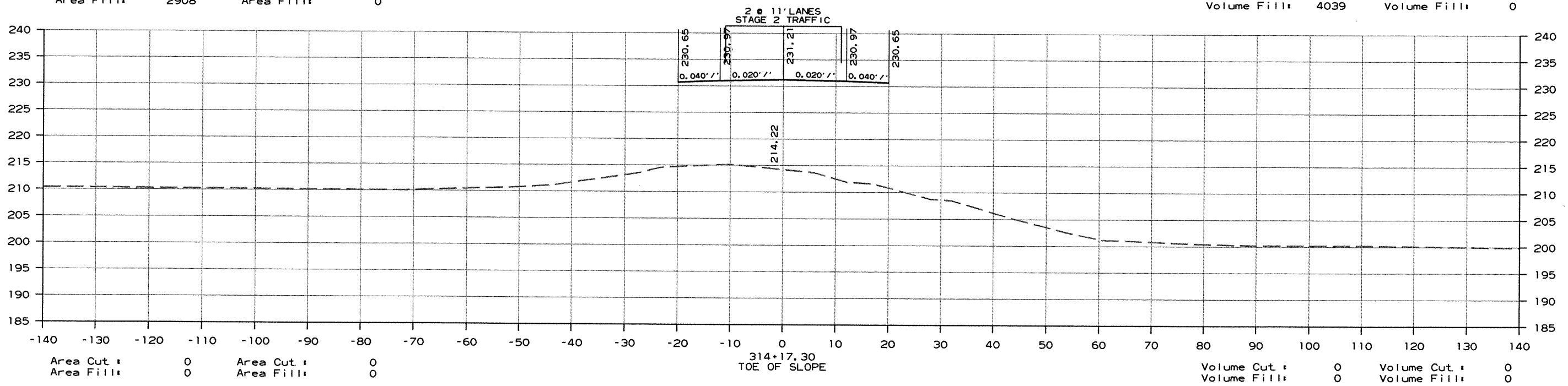
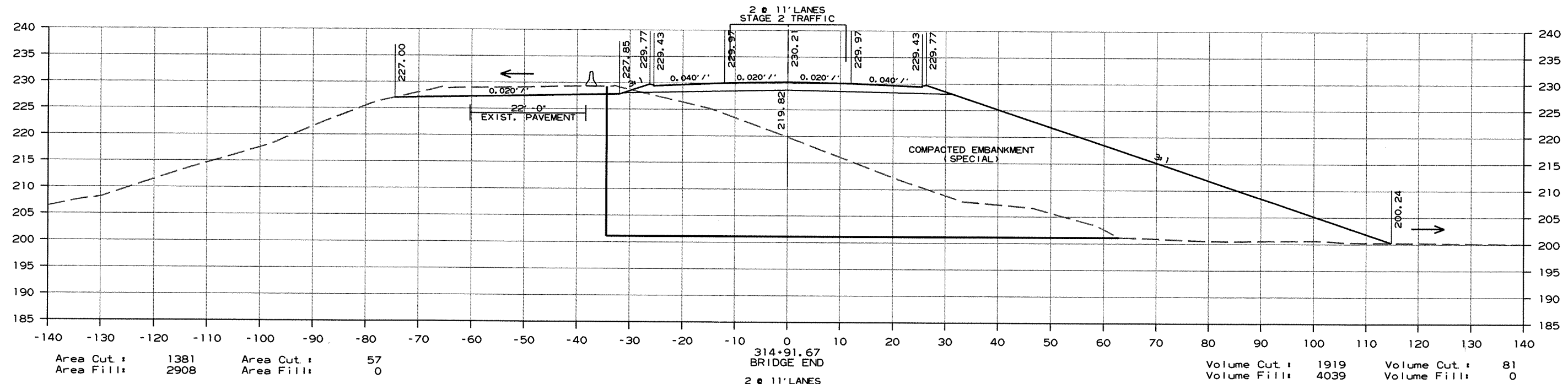
CROSS SECTION HWY. 149 STA. 311+57.33 TO STA. 312+26.12

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	113	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



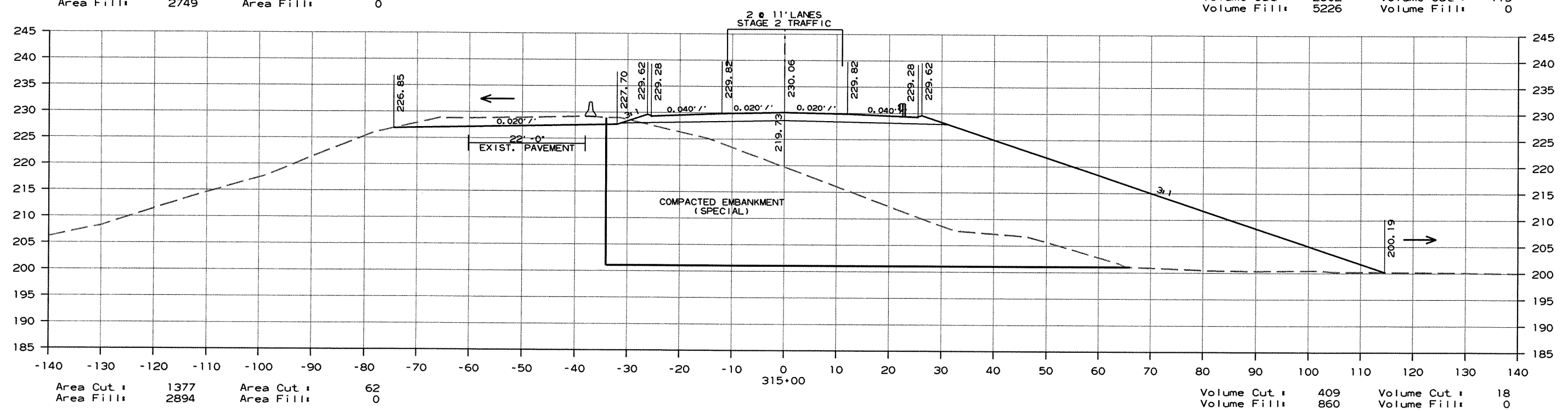
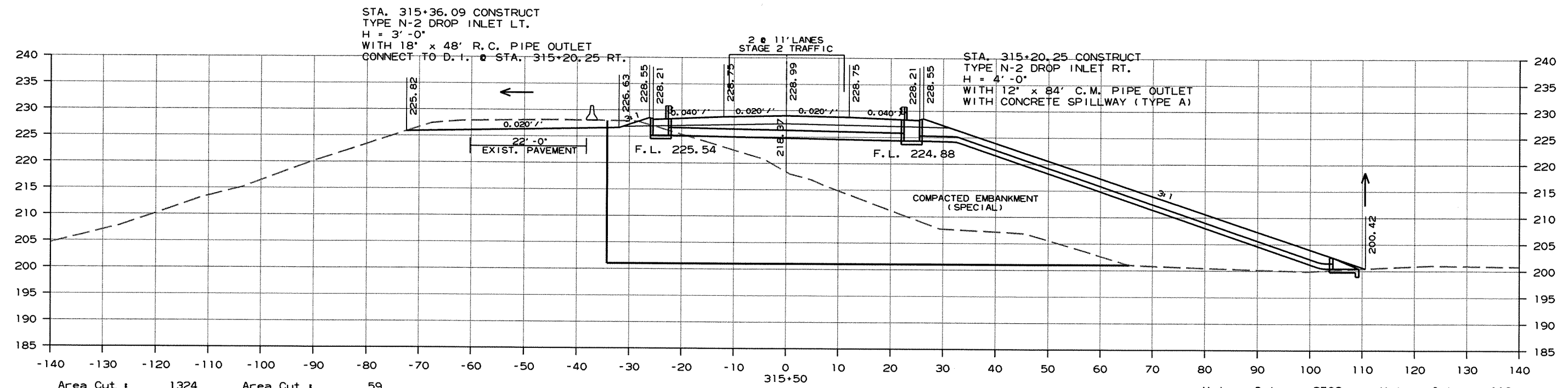
CROSS SECTION HWY. 149 STA. 314+17.30 TO STA. 314+91.67

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	114	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



CROSS SECTION HWY. 149 STA. 315+00 TO STA. 315+50

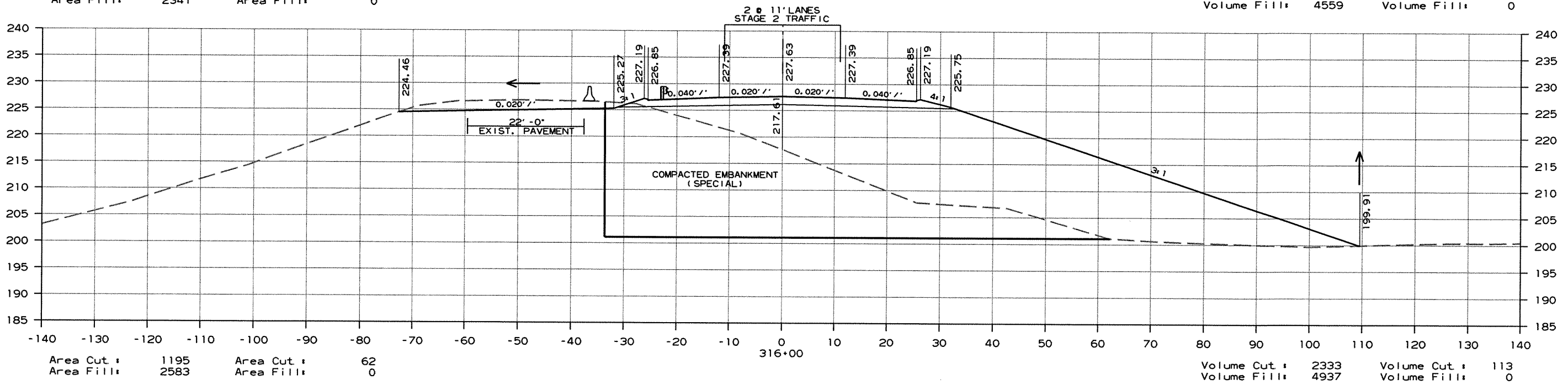
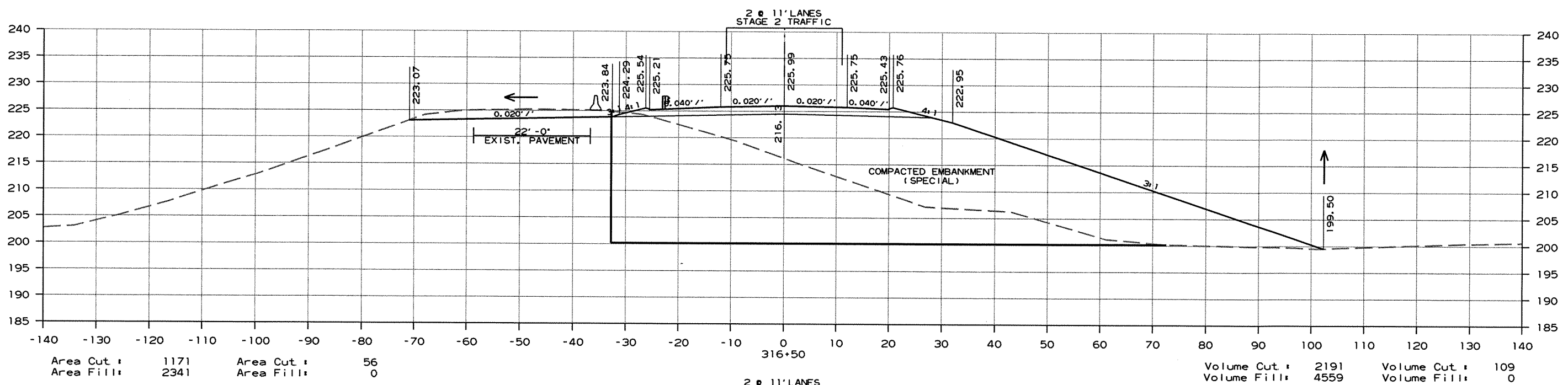
r110543.dgn 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
				JOB NO.	110543		115	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



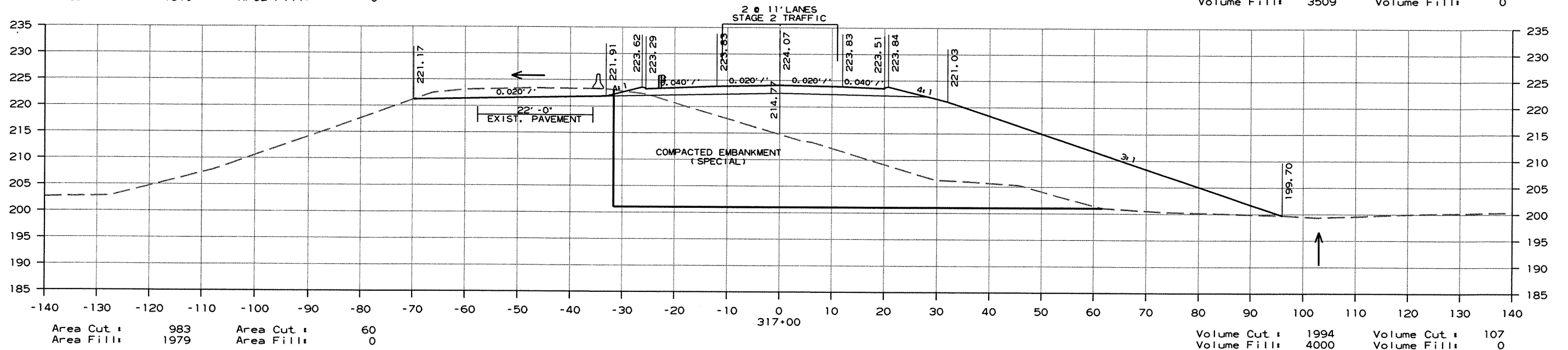
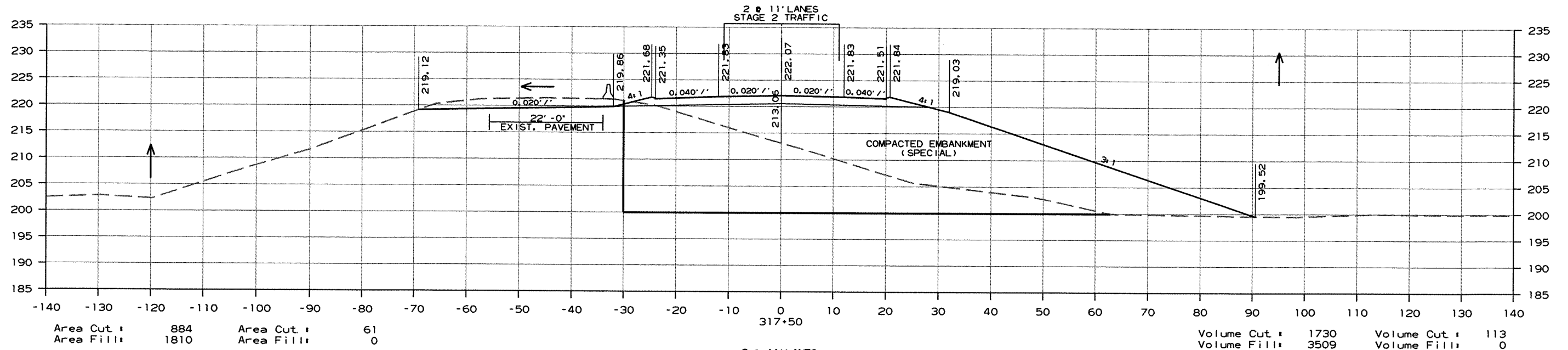
CROSS SECTION HWY. 149 STA. 316+00 TO STA. 316+50

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
				JOB NO. 110543			116	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



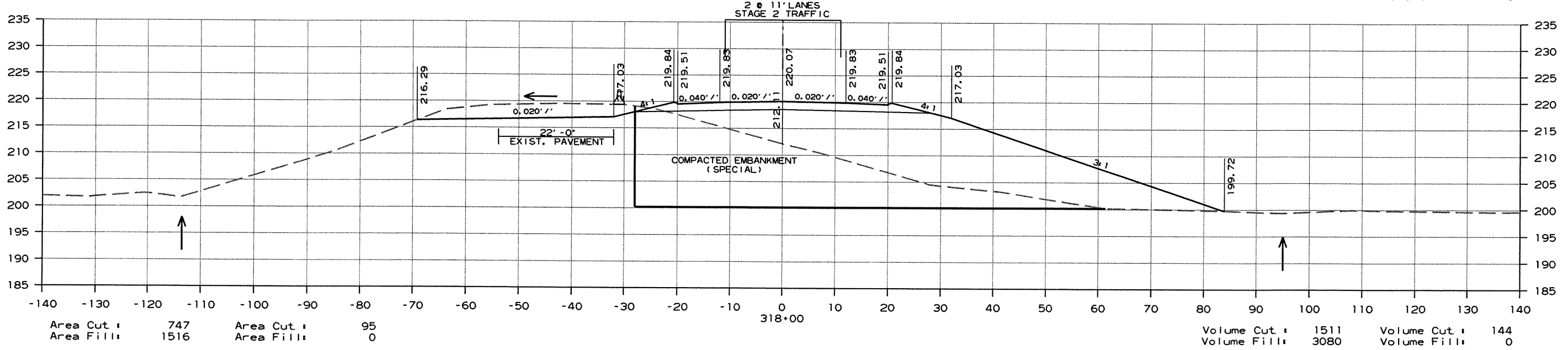
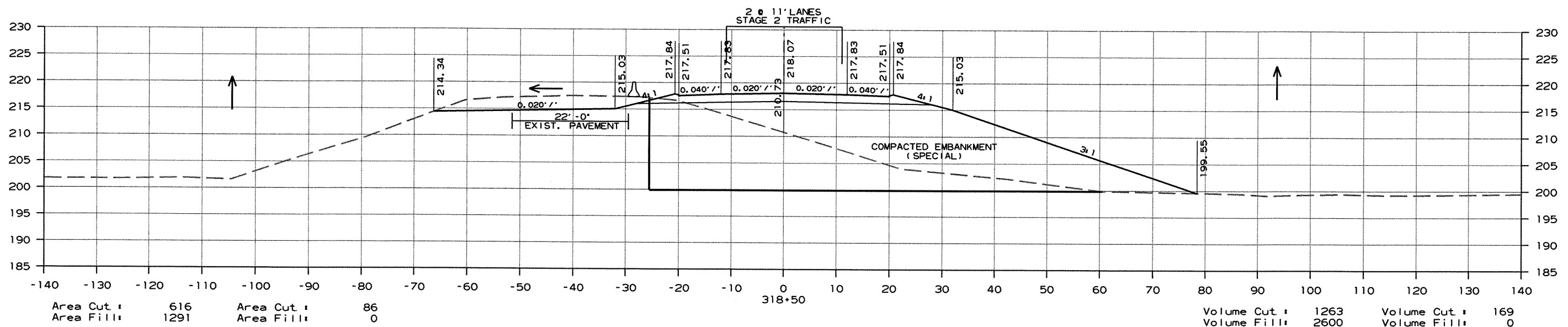
CROSS SECTION HWY. 149 STA. 317+00 TO STA. 317+50

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
				JOB NO.	110543		117	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



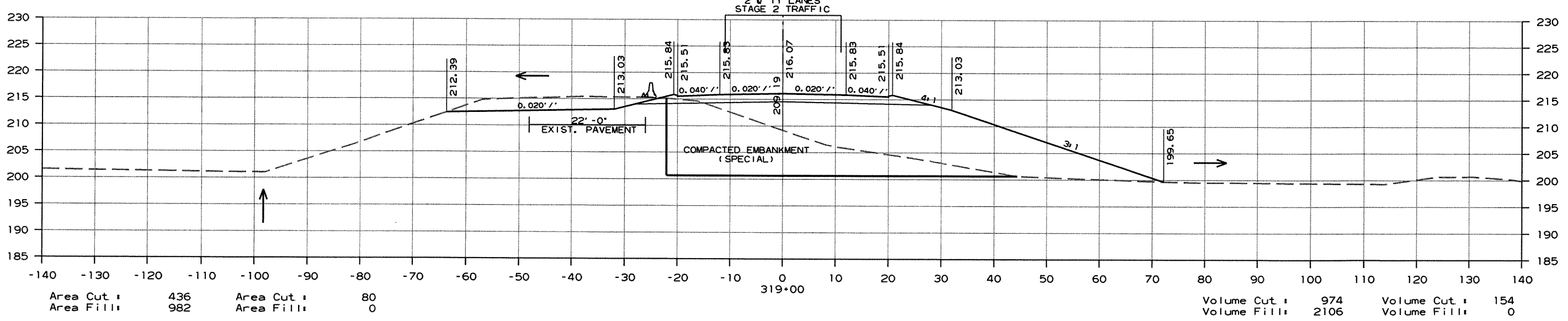
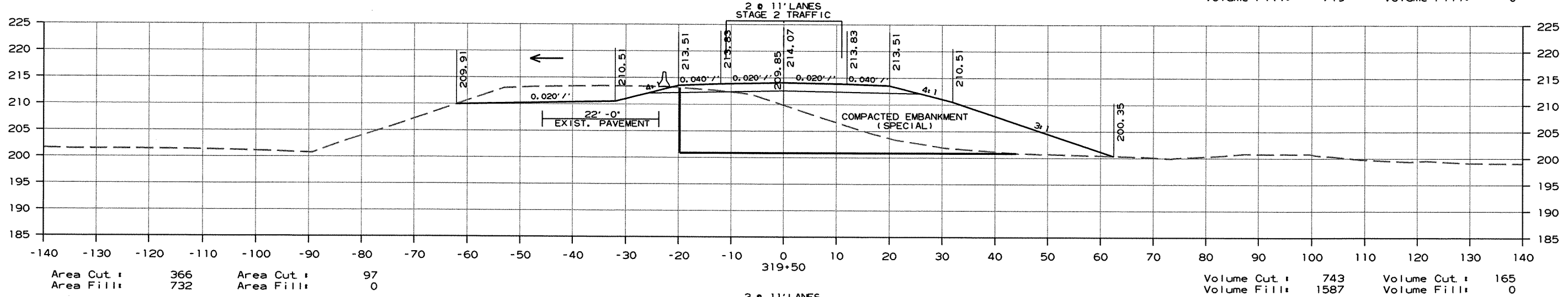
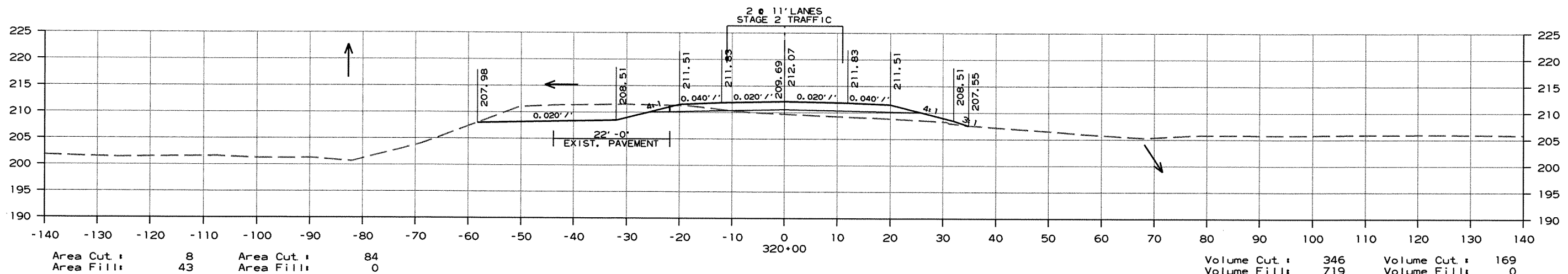
CROSS SECTION HWY. 149 STA. 318+00 TO STA. 318+50

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
				JOB NO.	110543		118	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



CROSS SECTION HWY. 149 STA. 319+00 TO STA. 320+00

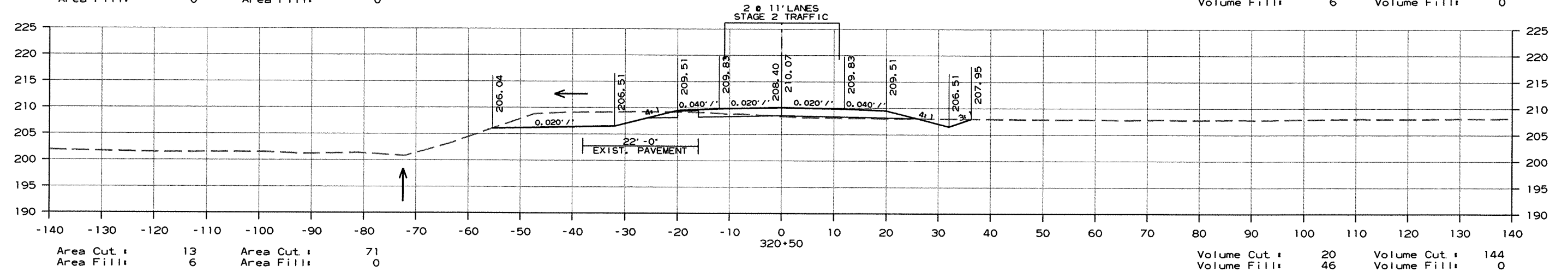
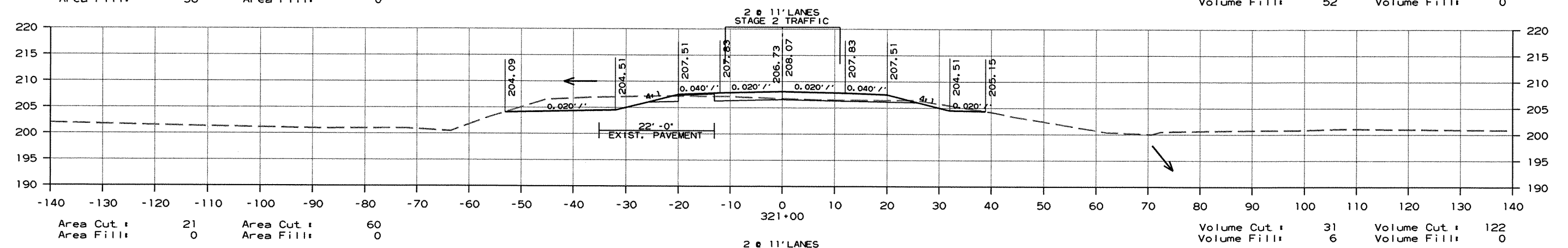
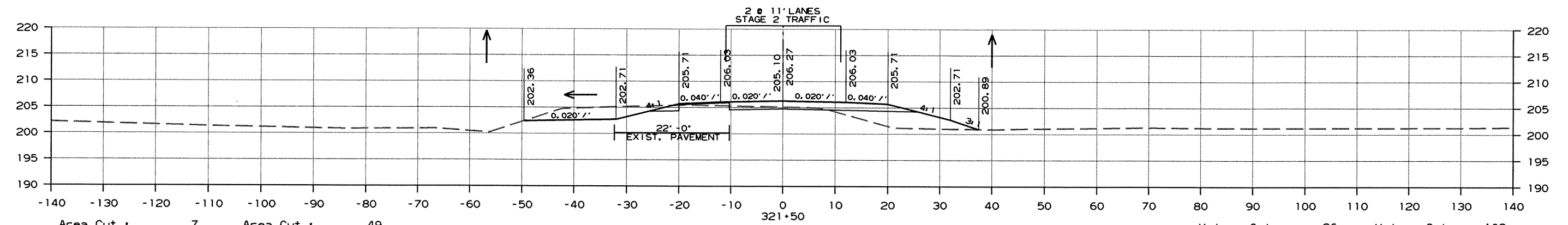
r110543.dgn 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	119	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



CROSS SECTION HWY. 149 STA. 320+50 TO STA. 321+50

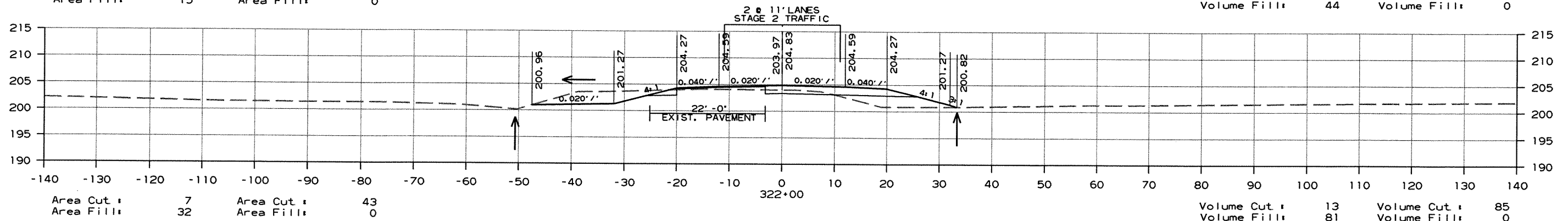
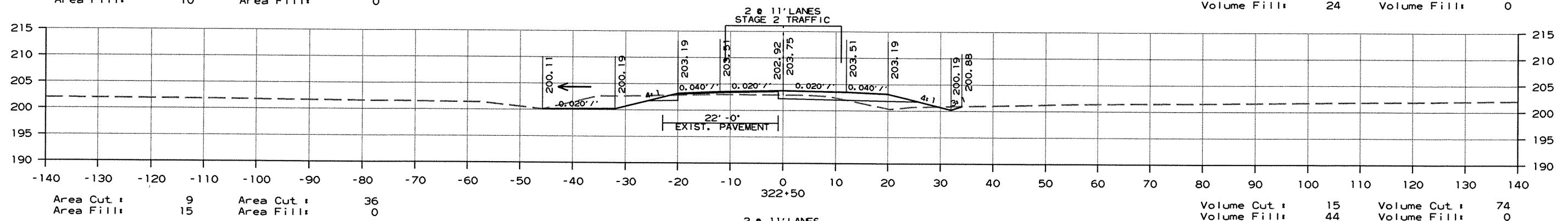
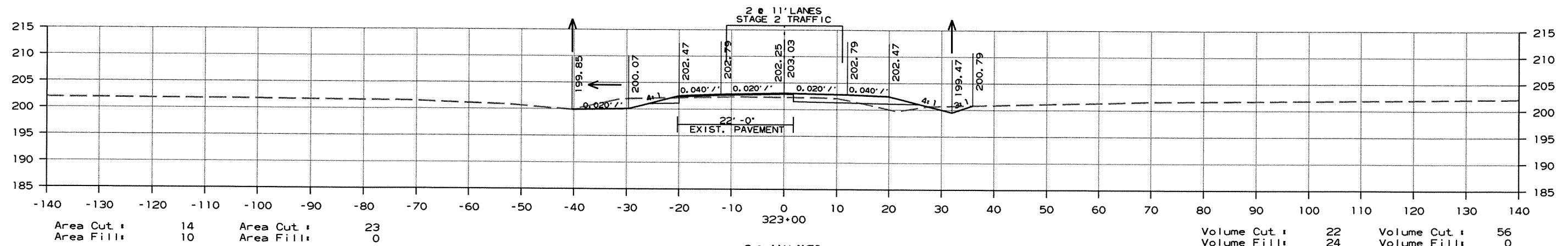
r110543.dgn 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	120	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



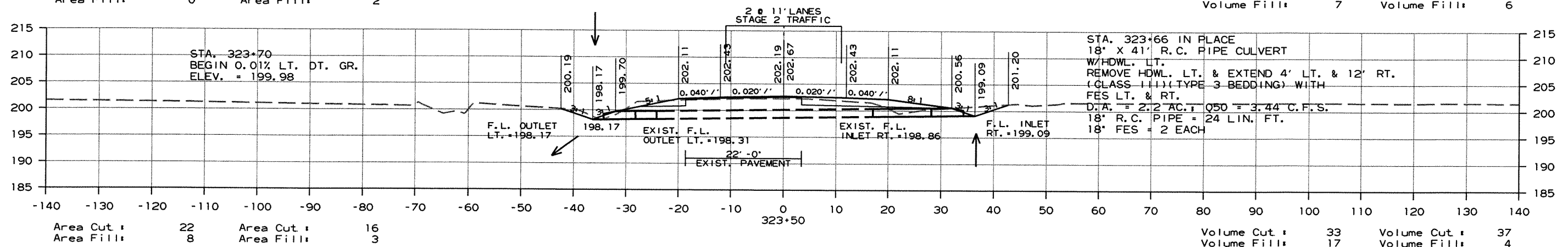
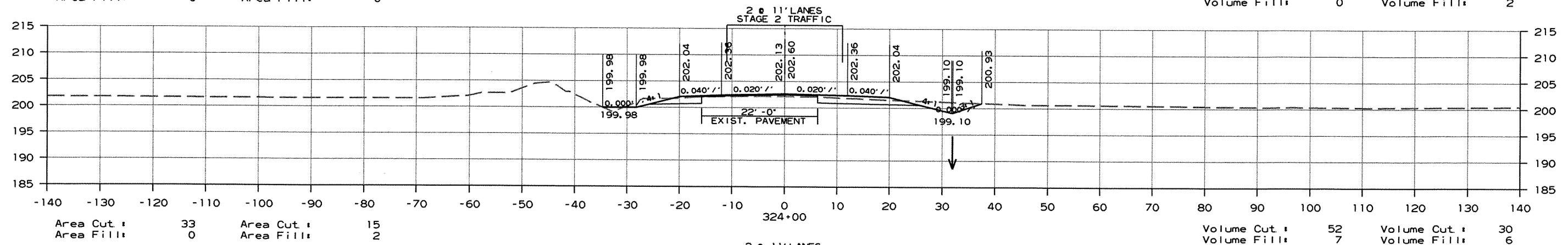
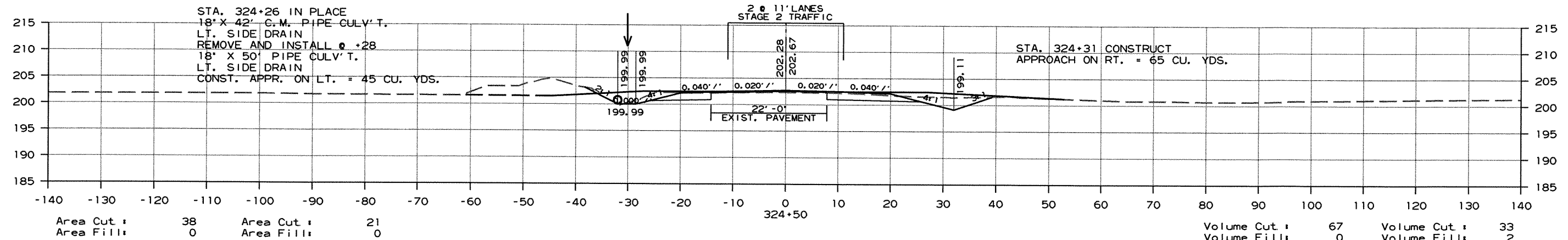
CROSS SECTION HWY. 149 STA. 322+00 TO STA. 323+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	121	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



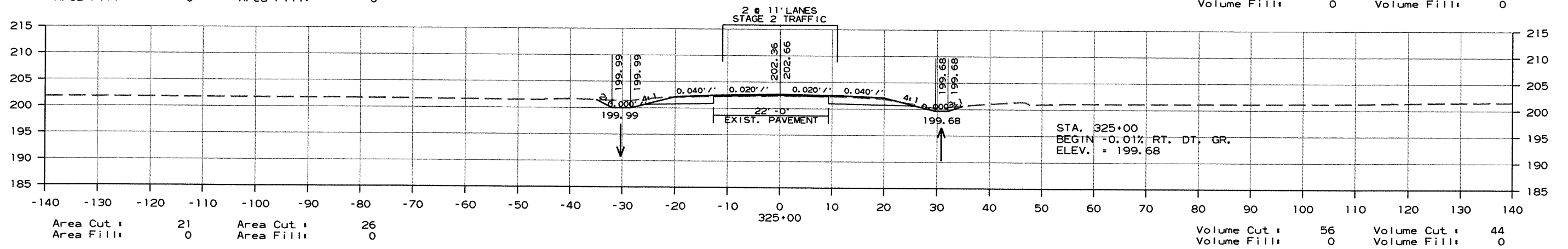
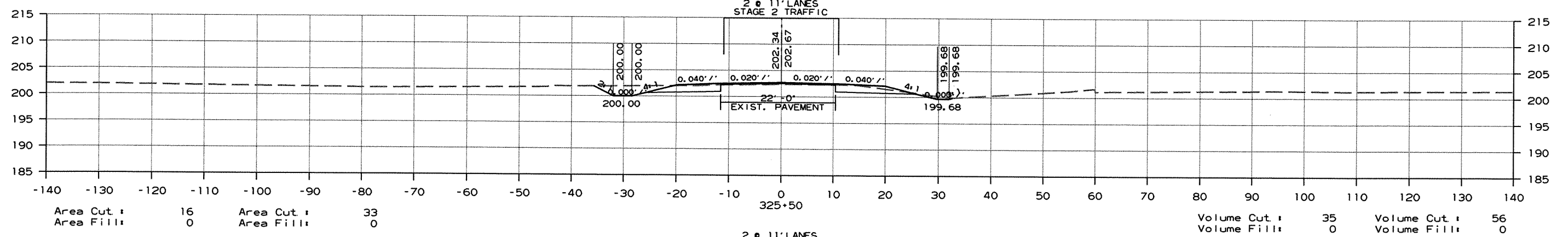
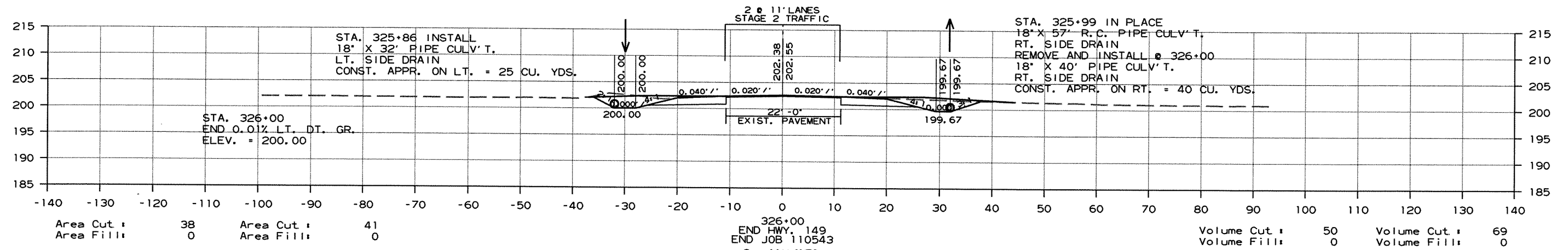
CROSS SECTION HWY. 149 STA. 323+50 TO STA. 324+50

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
				JOB NO. 110543			122	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



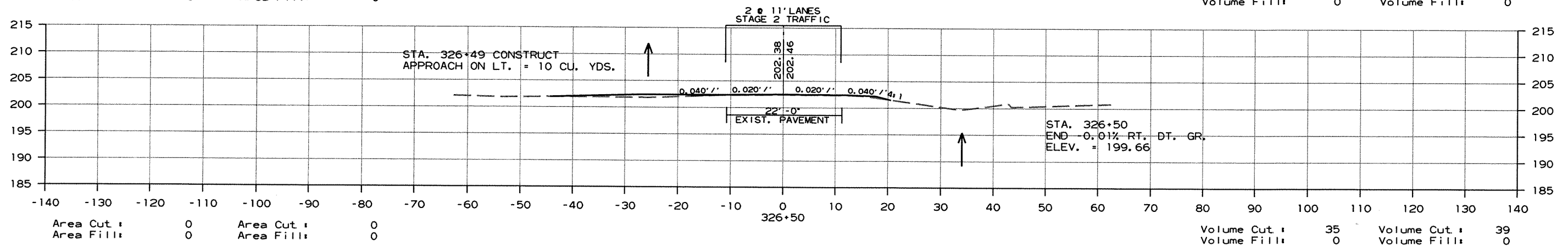
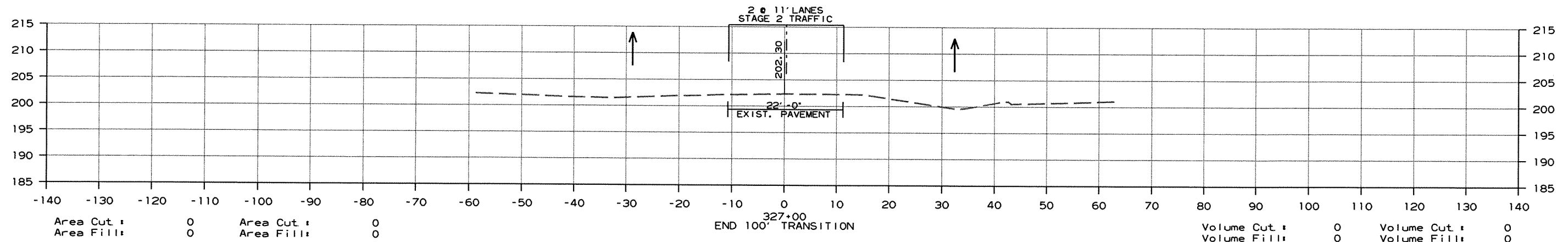
CROSS SECTION HWY. 149 STA. 325+00 TO STA. 326+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	123	134

② CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



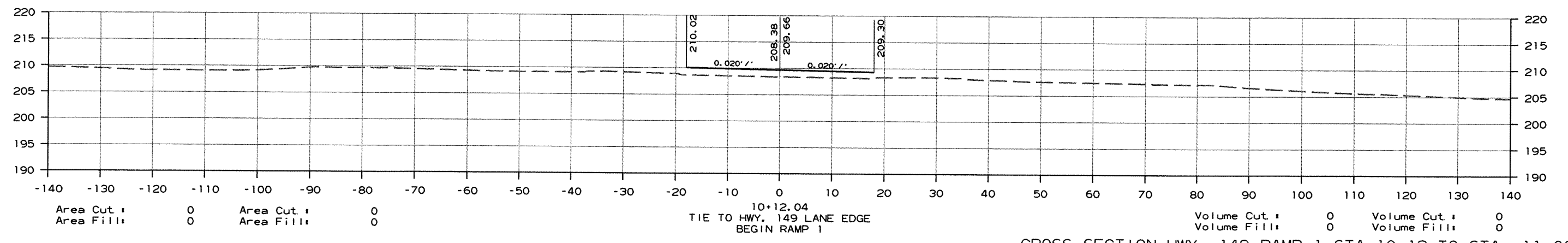
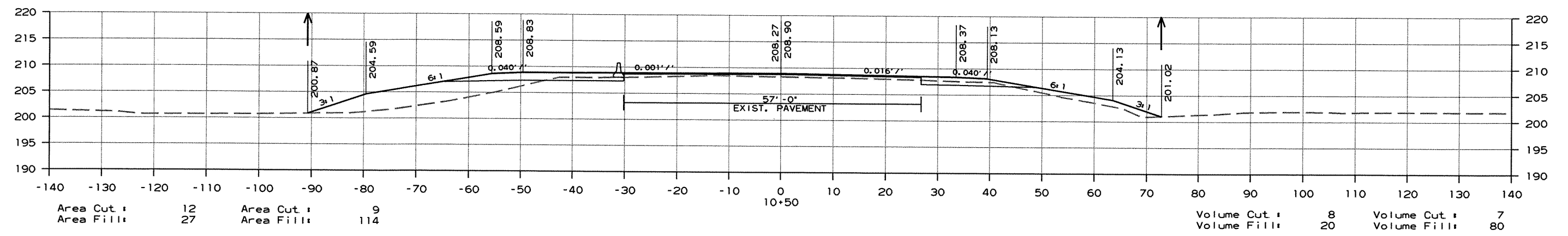
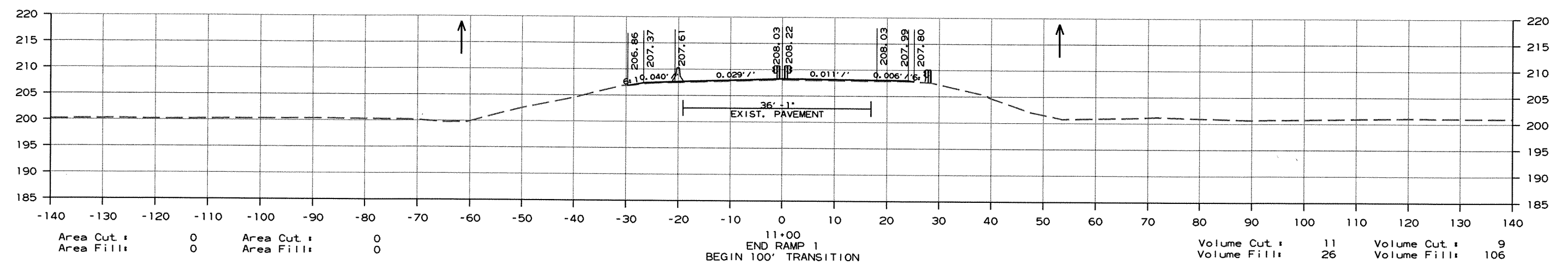
CROSS SECTION HWY. 149 STA. 326+50 TO STA. 327+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	124	134

2 CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



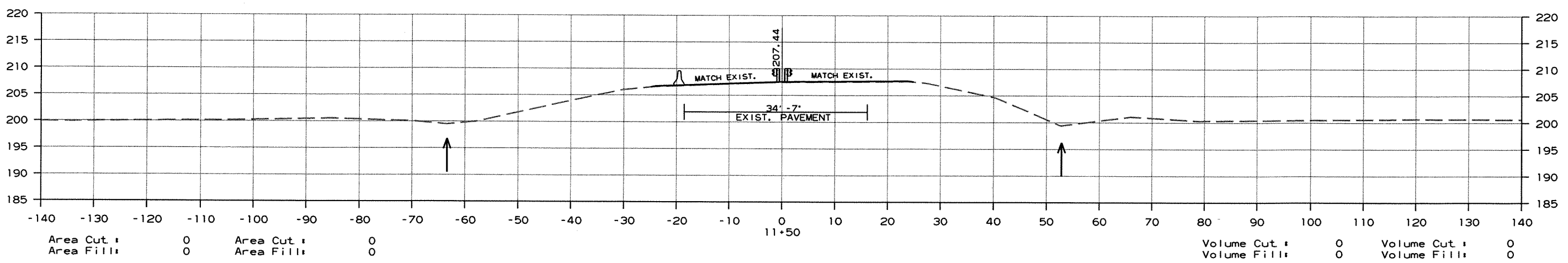
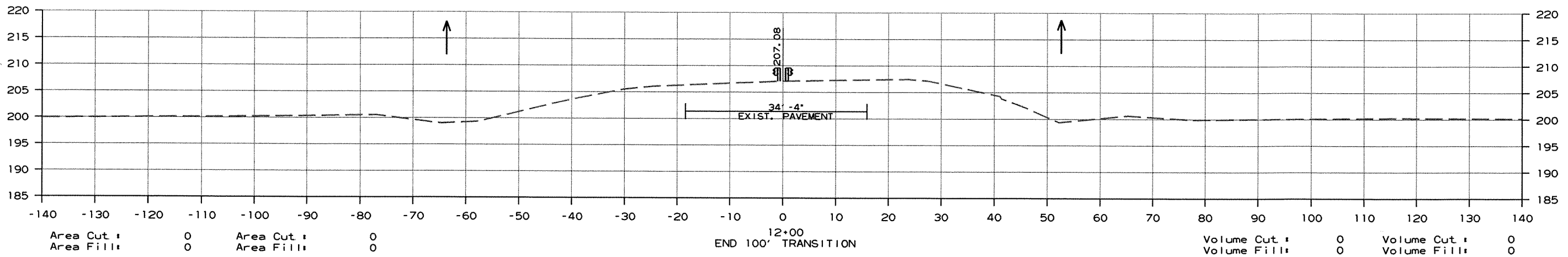
CROSS SECTION HWY. 149 RAMP 1 STA. 10+12 TO STA. 11+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
				JOB NO.	110543		125	134

② CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



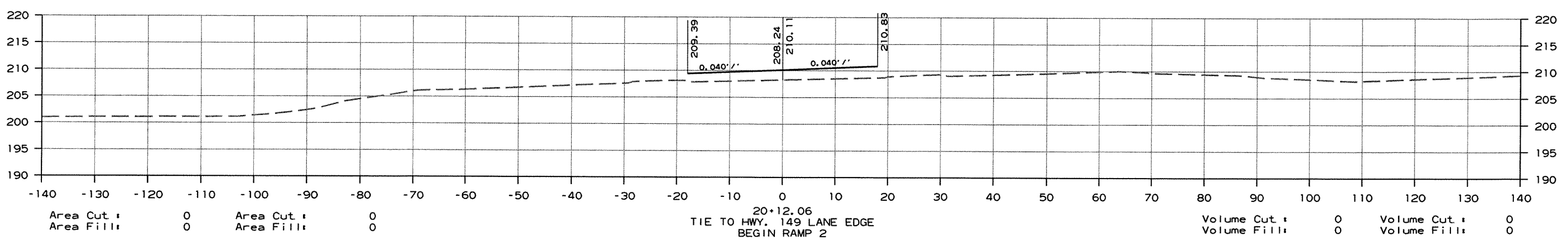
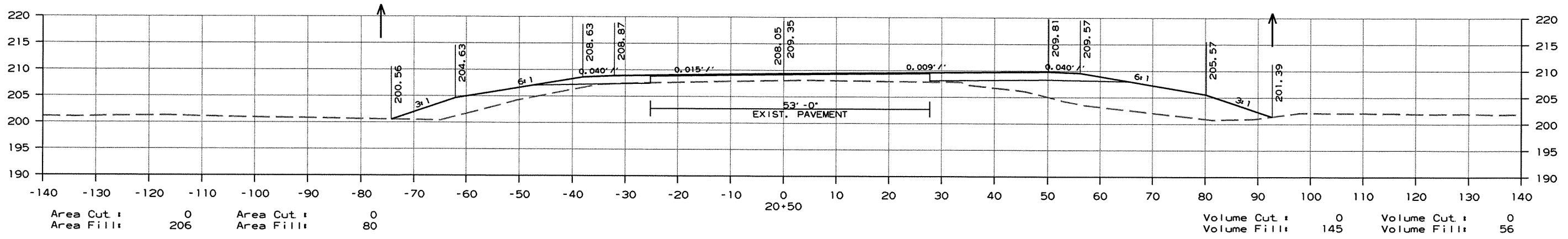
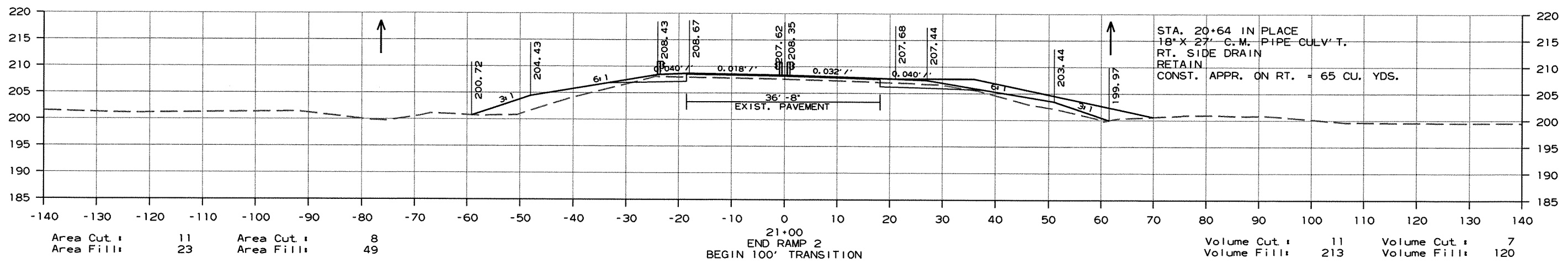
CROSS SECTION HWY. 149 RAMP 1 STA. 11+50 TO STA. 12+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
				JOB NO.	110543		126	134

② CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



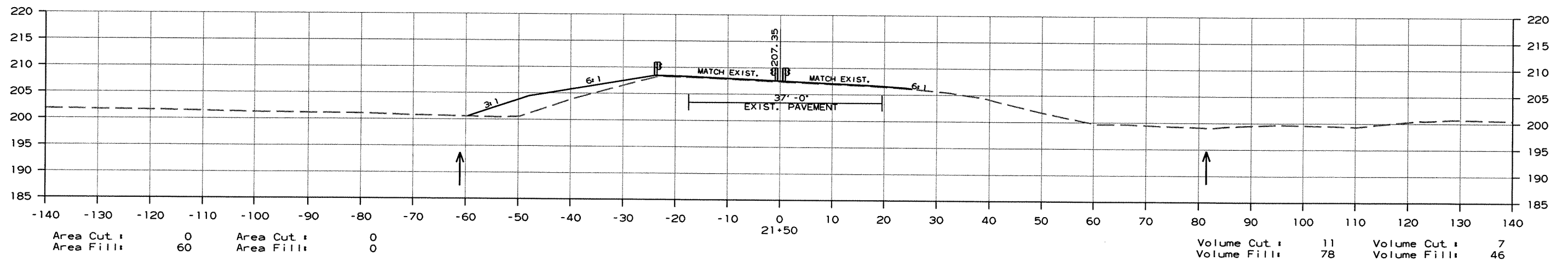
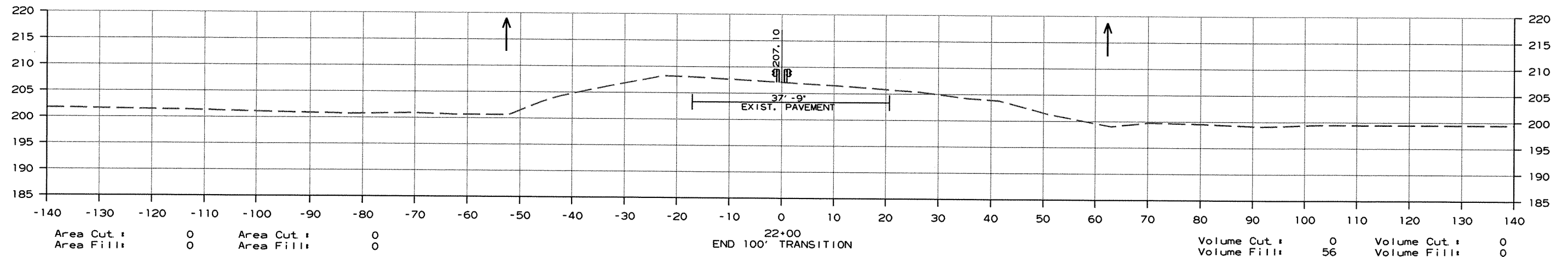
CROSS SECTION HWY. 149 RAMP 2 STA. 20+12 TO STA. 21+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	127	134

② CROSS SECTIONS

AREA
STAGE 1 STAGE 2

VOLUME
STAGE 1 STAGE 2



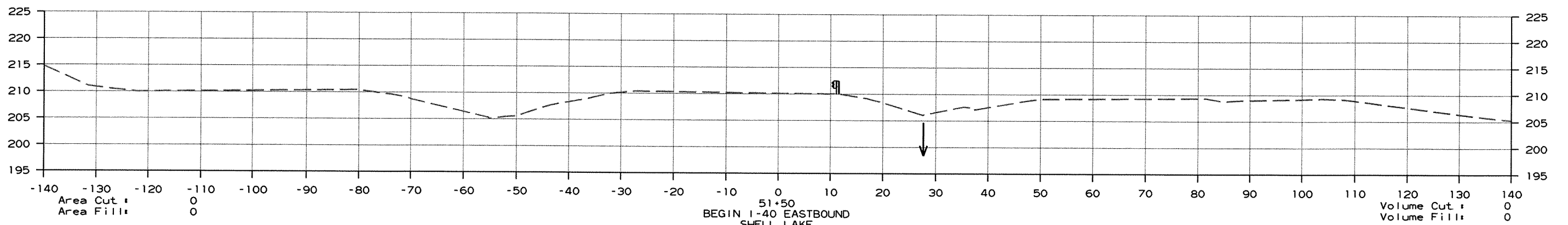
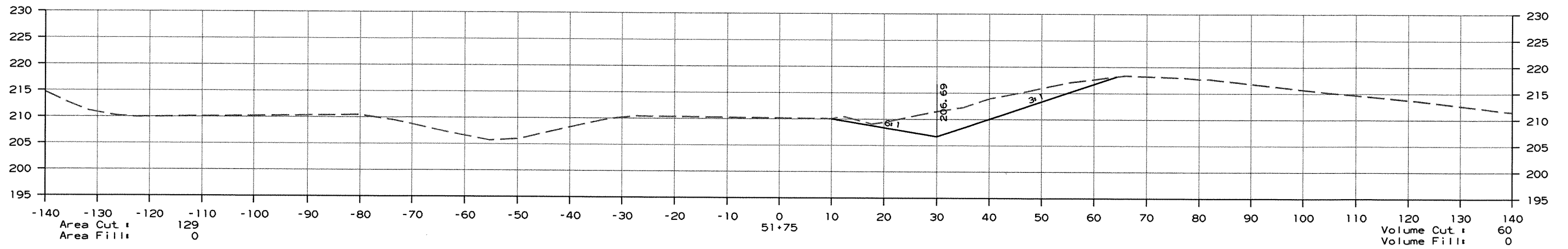
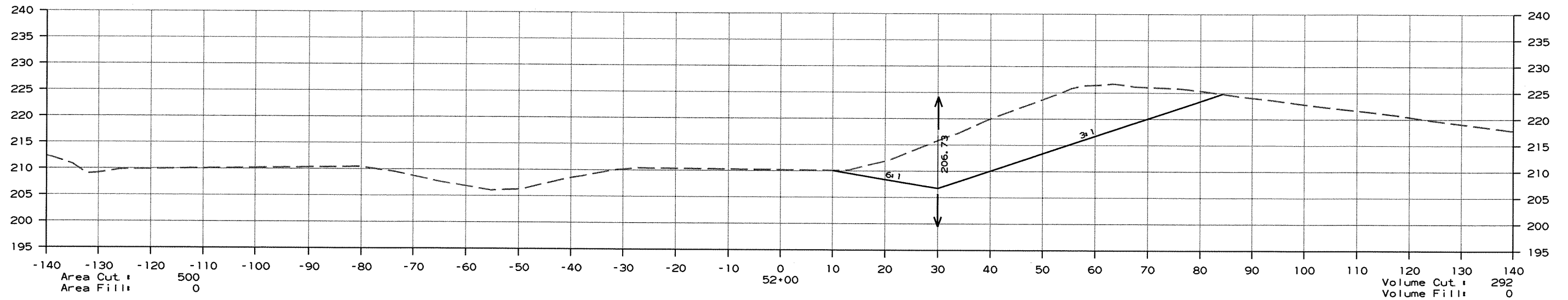
CROSS SECTION HWY. 149 RAMP 2 STA. 21+50 TO STA. 22+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	128	134

② CROSS SECTIONS

AREA

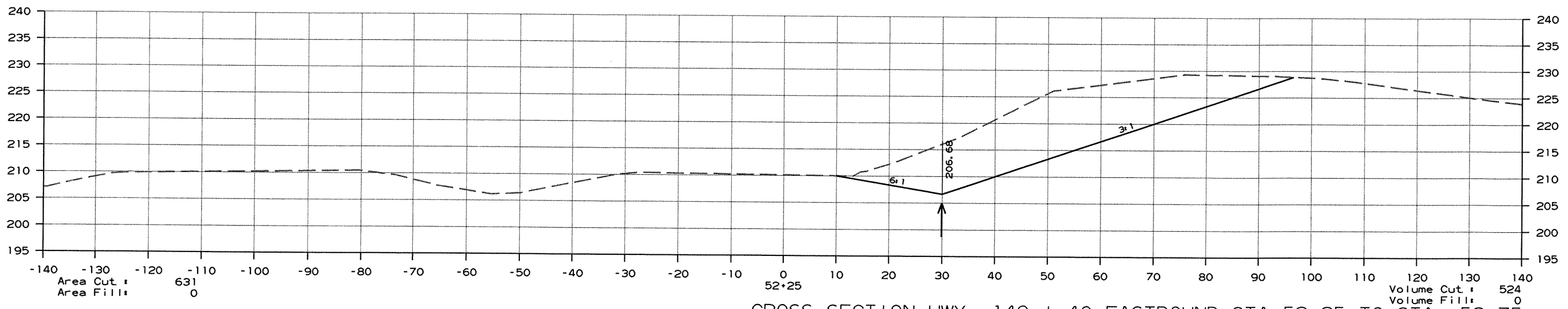
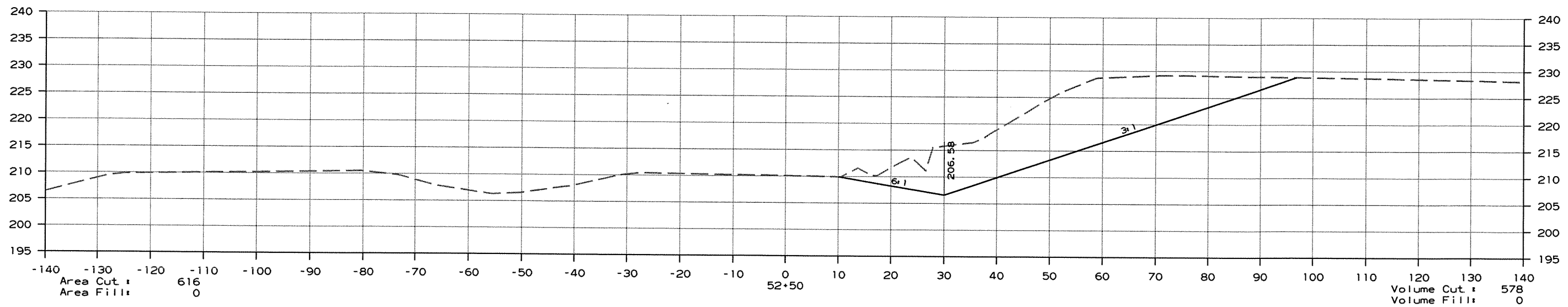
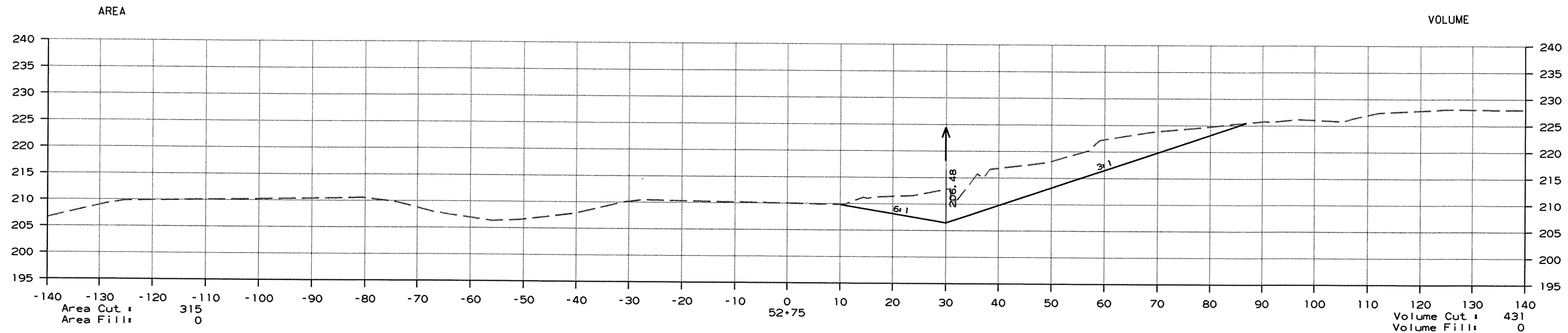
VOLUME



BEGIN I-40 EASTBOUND SHELL LAKE
CROSS SECTION HWY. 149 I-40 EASTBOUND STA. 51+50 TO STA. 52+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	129	134

2 CROSS SECTIONS



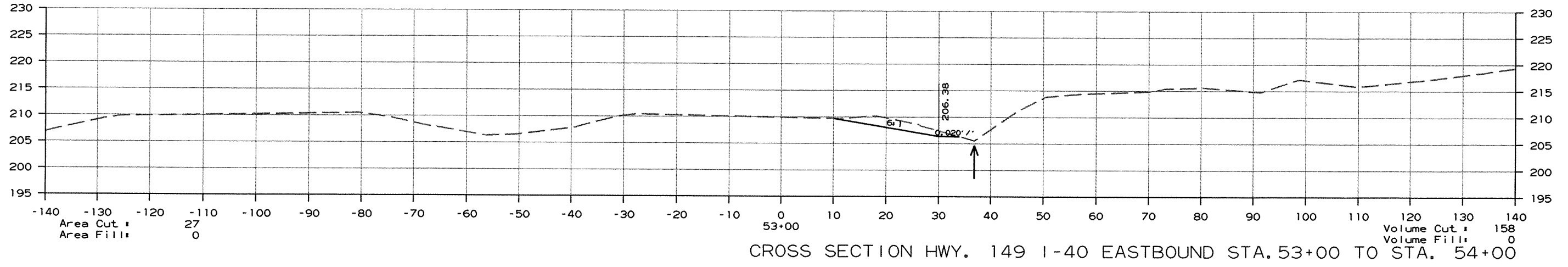
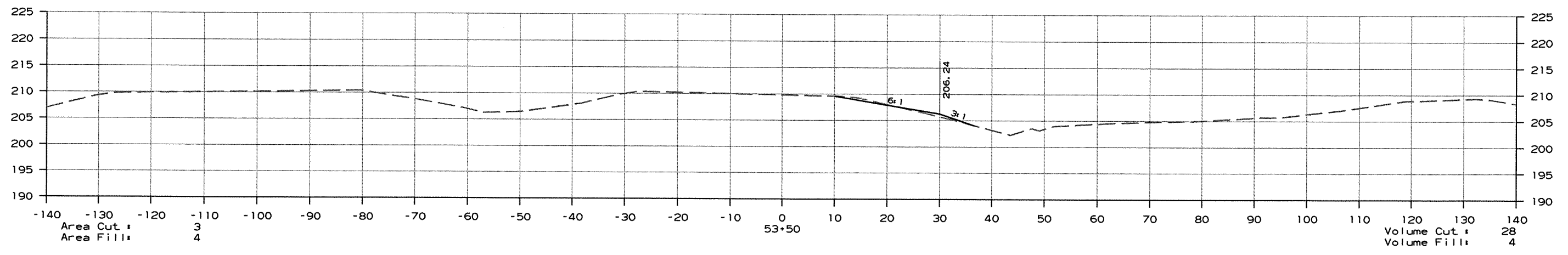
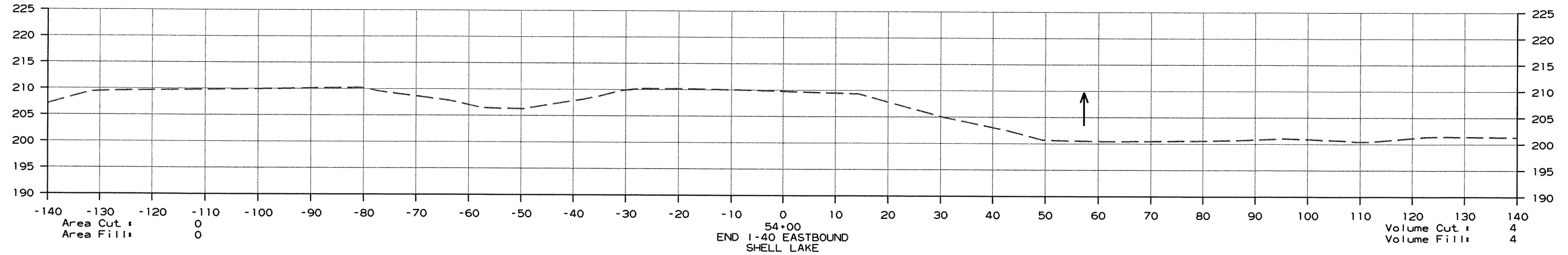
CROSS SECTION HWY. 149 I-40 EASTBOUND STA. 52+25 TO STA. 52+75

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	130	134

2 CROSS SECTIONS

AREA

VOLUME



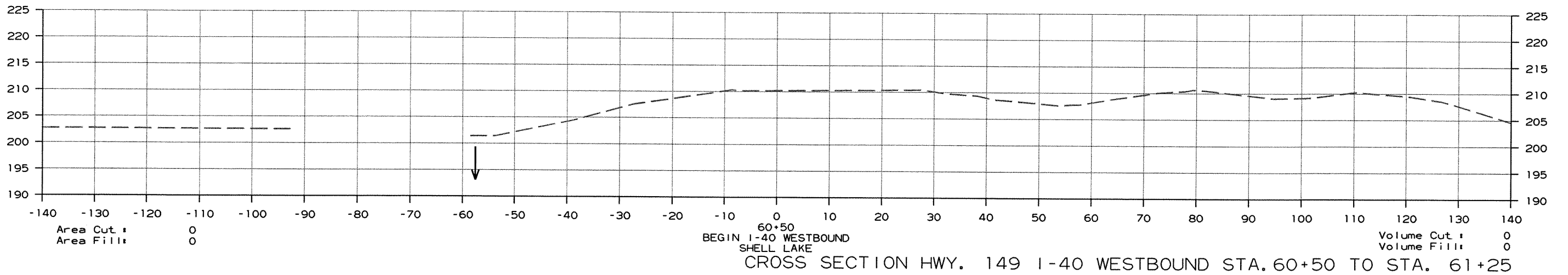
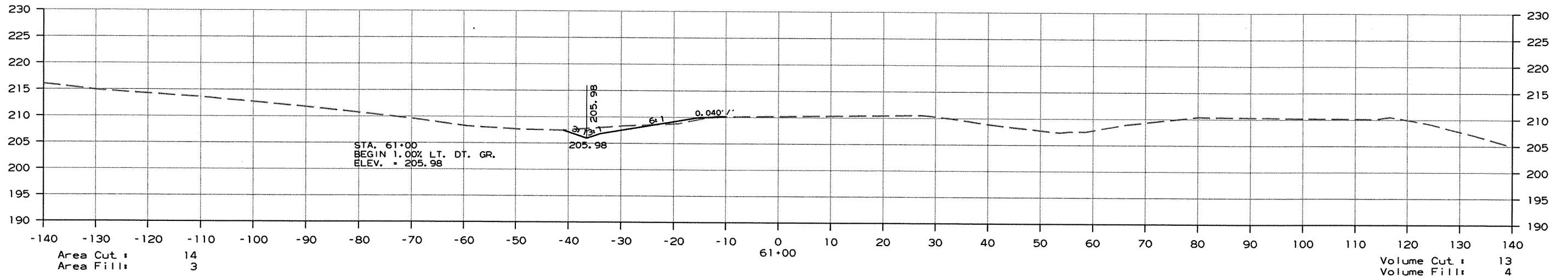
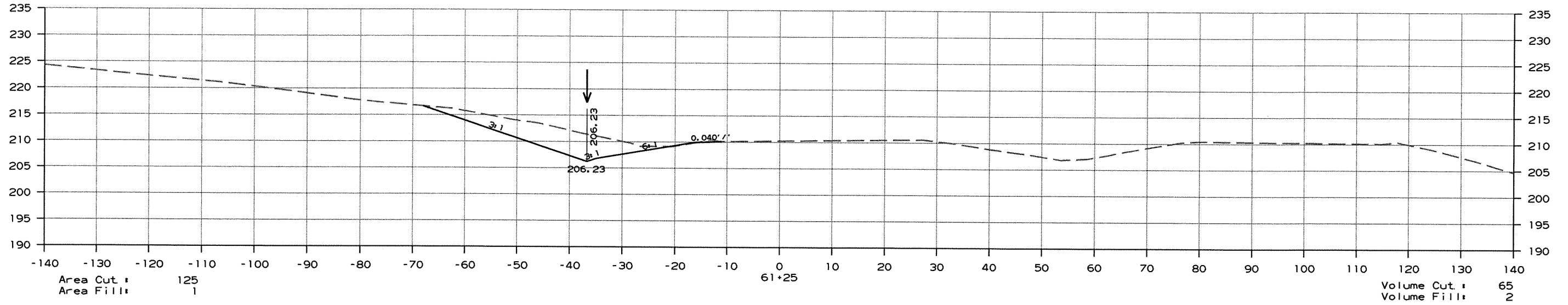
r110543.dgn 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	131	134

② CROSS SECTIONS

AREA

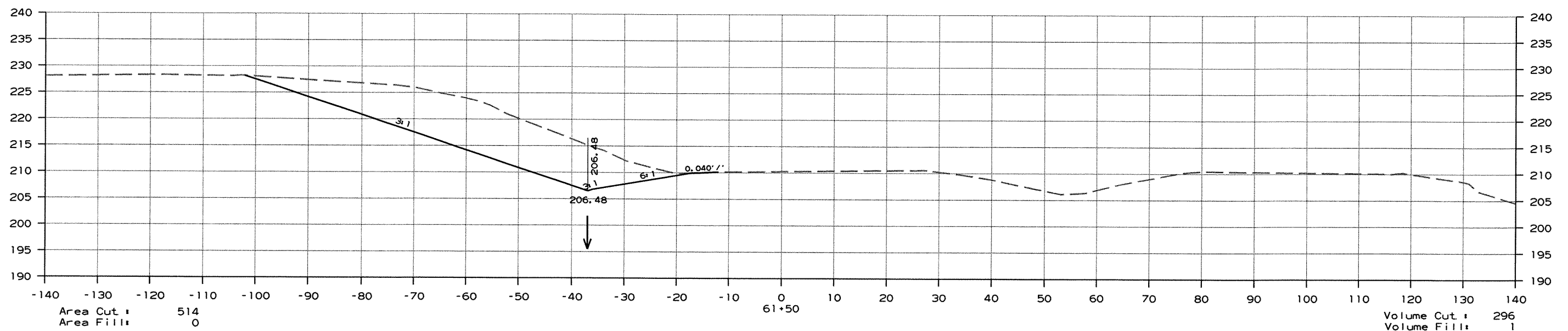
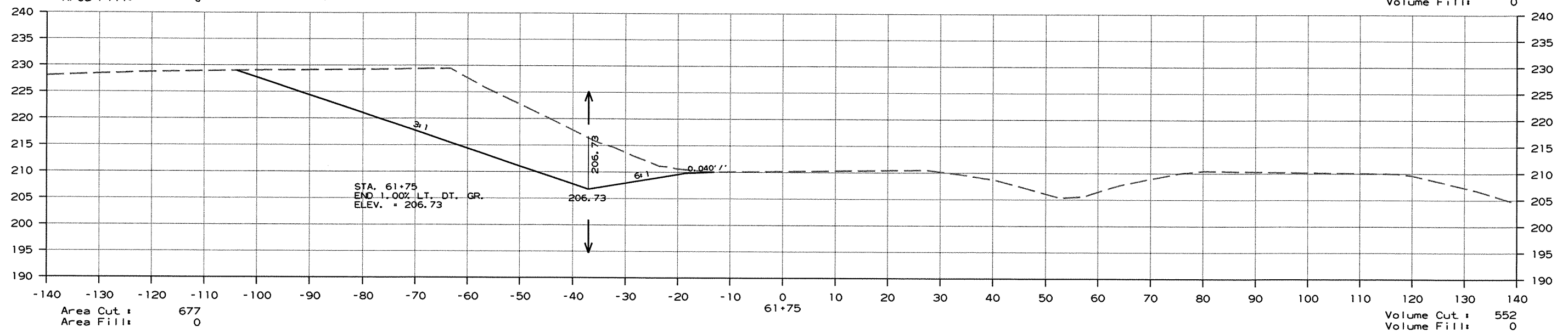
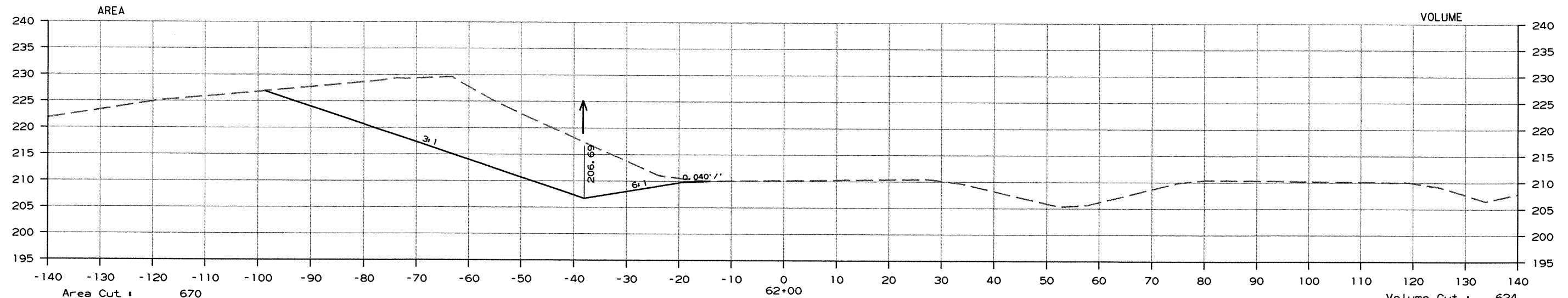
VOLUME



60+50
BEGIN I-40 WESTBOUND
SHELL LAKE
CROSS SECTION HWY. 149 I-40 WESTBOUND STA. 60+50 TO STA. 61+25

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	132	134

2 CROSS SECTIONS



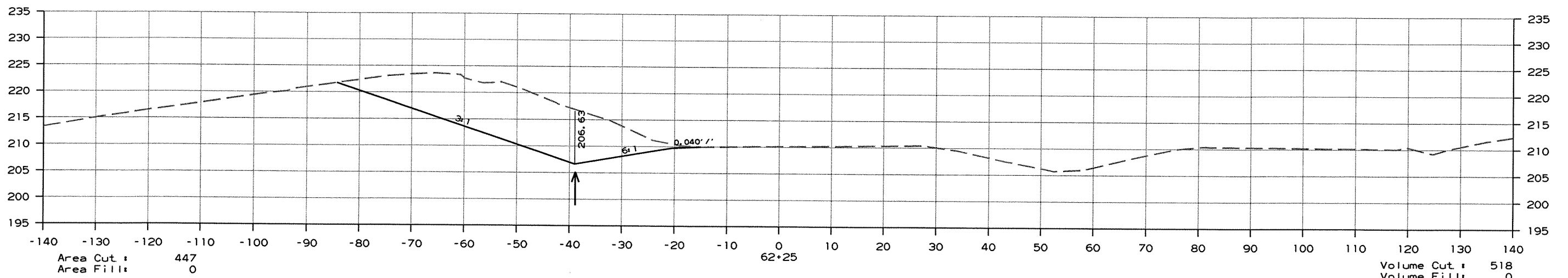
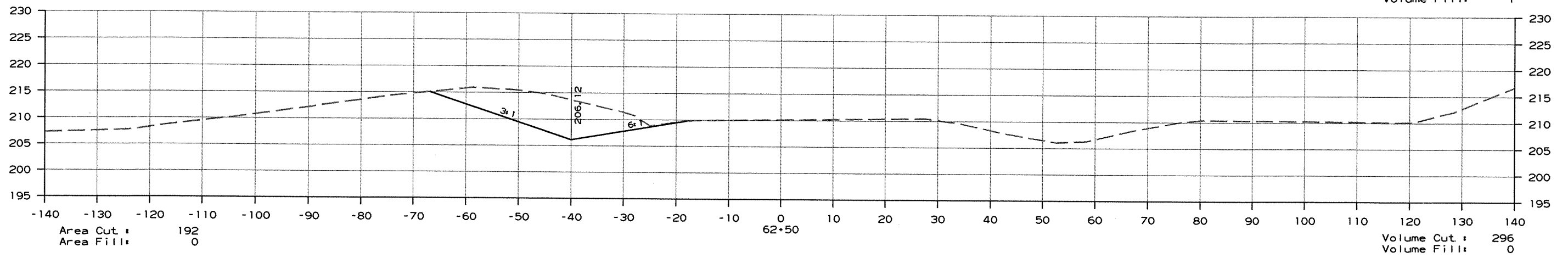
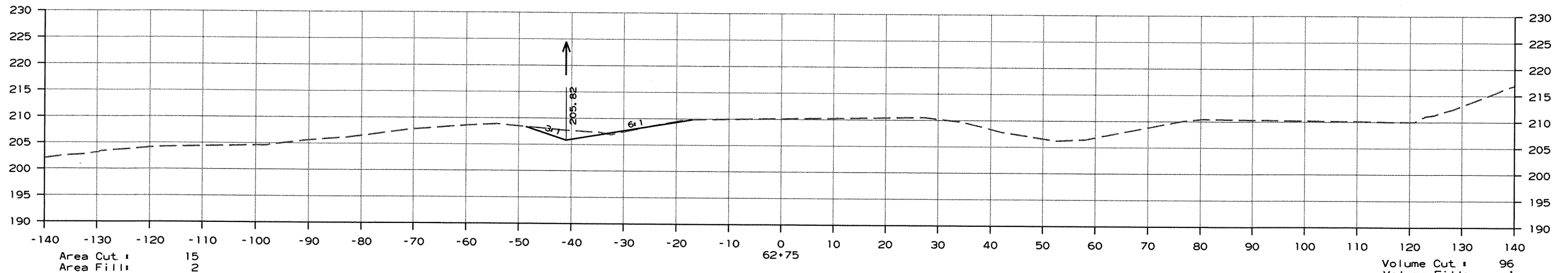
CROSS SECTION HWY. 149 I-40 WESTBOUND STA. 61+50 TO STA. 62+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	133	134

② CROSS SECTIONS

AREA

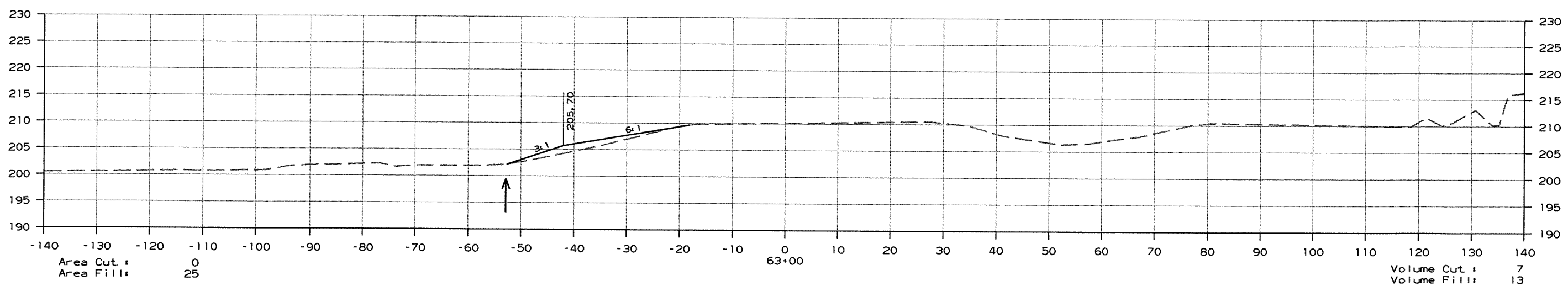
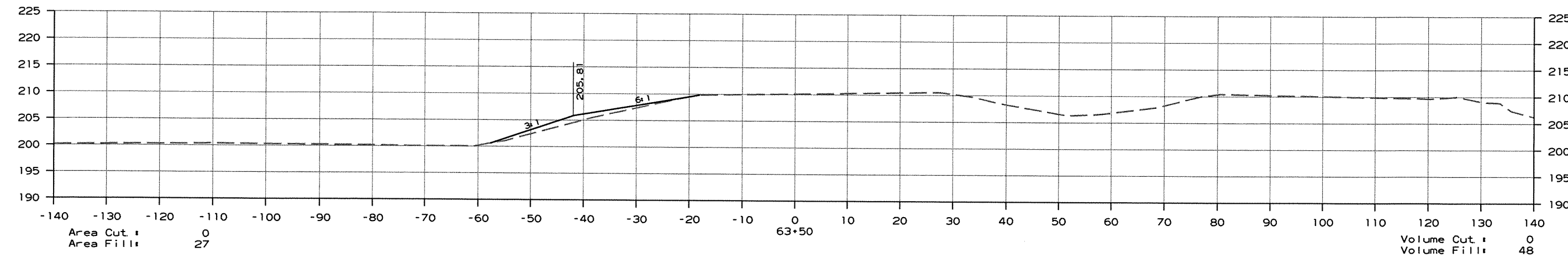
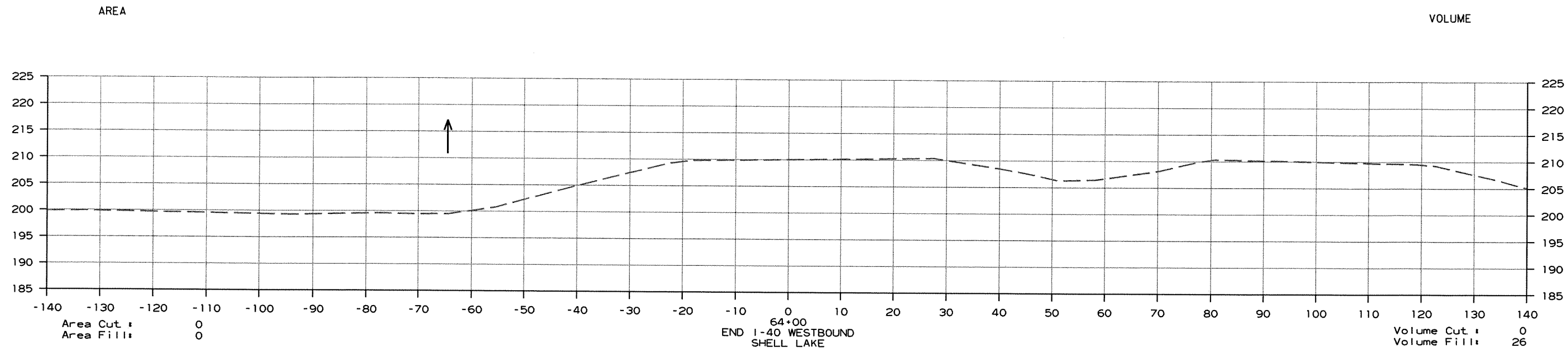
VOLUME



CROSS SECTION HWY. 149 I-40 WESTBOUND STA. 62+25 TO STA. 62+75

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4/5/12				6	ARK.			
						JOB NO. 110543	134	134

2 CROSS SECTIONS



CROSS SECTION HWY. 149 1-40 WESTBOUND STA. 63+00 TO STA. 64+00