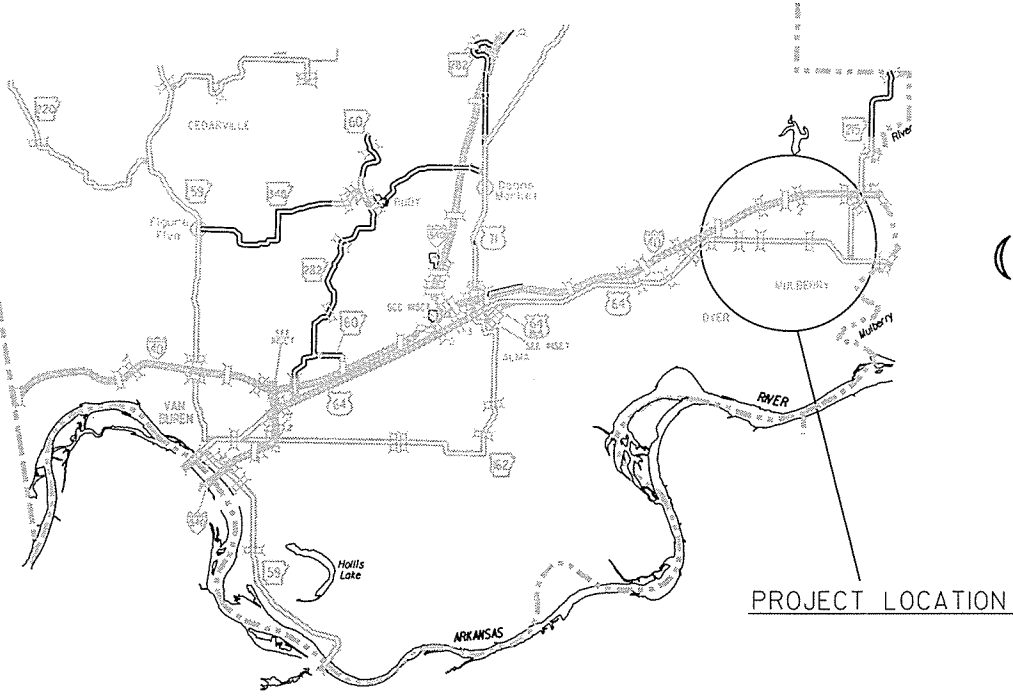


ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT  
CONSTRUCTION PLANS FOR STATE HIGHWAY

DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		040464	1	59
② WEST OF HAM TOWN RD.-EAST (WIRE RD.) (MULBERRY) (S)								



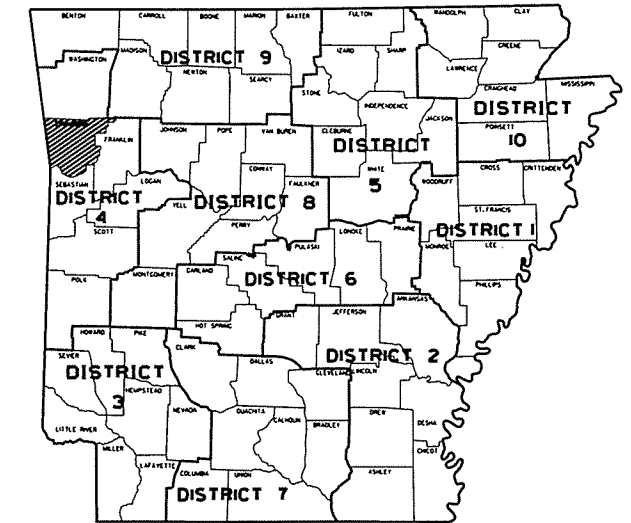
VICINITY MAP

GRAPHIC ROAD-WEST  
(WIRE ROAD) (MULBERRY) (S)

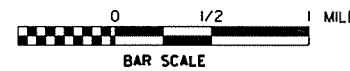
CRAWFORD COUNTY

JOB 040464

FED. AID PROJ. STP-0017(32)



ARK. HWY. DIST. NO. 4



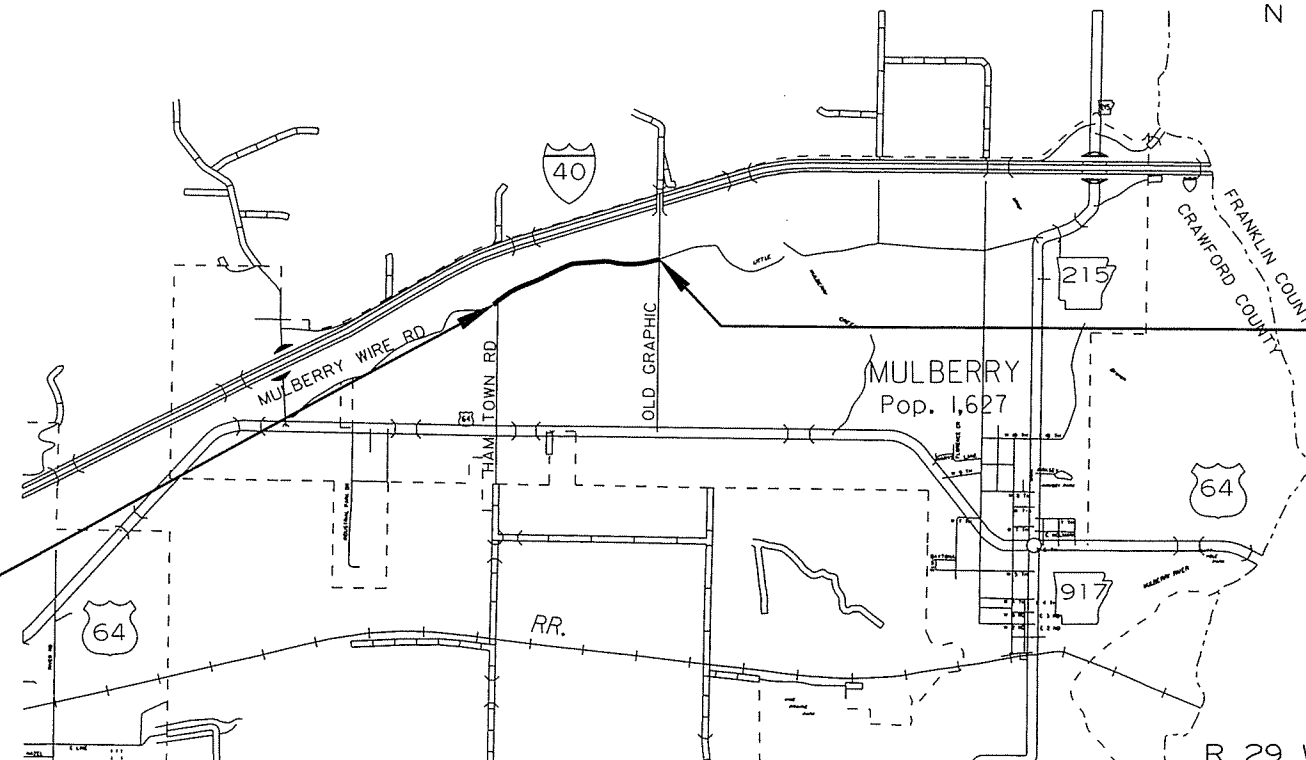
T  
10  
N

• DESIGN TRAFFIC DATA •

DESIGN YEAR	-----	2033
2013 ADT	-----	80
2033 ADT	-----	100
2033 DHV	-----	11
DIRECTIONAL DISTRIBUTION	-----	60 %
TRUCKS	-----	3 %
DESIGN SPEED	-----	40 MPH

STRUCTURE OVER 20' -0" SPAN

STA. 79+94 CONSTRUCT  
DBL. 11' X 6' X 62'  
PRECAST R.C. BOX CULVERT  
W/ 3:1 WINGS LT. & RT.  
ROADWAY SPAN = 23' - 8"  
Q25 = 740 CFS D.A. = 530 AC



STA. 103+75.28  
END JOB 040464

STA. 54+25.00  
BEGIN JOB 040464

BEGINNING:	
LAT:	N35° 31' 08"
LONG:	W94° 05' 53"
MID POINT:	
LAT:	N35° 31' 17"
LONG:	W94° 05' 27"
ENDING:	
LAT:	N35° 31' 20"
LONG:	W94° 04' 57"

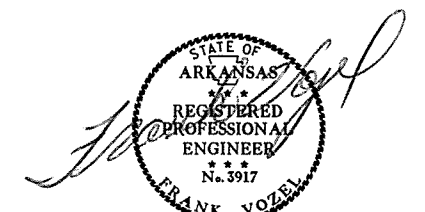
R 30 W

R 29 W

GROSS LENGTH OF PROJECT	4950.28	FEET	OR	0.937	MILES
NET " " ROADWAY	4926.61	"	"	0.933	"
NET " " BRIDGES	23.67	"	"	0.004	"
NET " " PROJECT	4950.28	"	"	0.937	"

P.E. 040464  
NON-PART.

APPROVED



12/13/13  
DEPUTY DIRECTOR  
AND CHIEF ENGINEER

DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
							JOB NO.	040464
								2
								59

INDEX, GOV. SPECS. & GENERAL NOTES

INDEX OF SHEETS

SHEET NO.	TITLE	DRAWING NO.	DATE
1	TITLE SHEET		
2	INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES		
3-4	TYPICAL SECTIONS OF IMPROVEMENT		
5	SPECIAL DETAILS		
6-9	TEMPORARY EROSION CONTROL DETAILS		
10-11	MAINTENANCE OF TRAFFIC DETAILS		
12-14	QUANTITY SHEETS		
15	SUMMARY OF QUANTITIES AND REVISIONS		
16-18	SURVEY CONTROL DETAILS		
19-22	PLAN AND PROFILE SHEETS		
23	CONCRETE DITCH PAVING	CDP-1	11-17-10
24	CURBING DETAILS	CG-1	11-29-07
25	FLARED END SECTION	FES-1	10-18-96
26	FLARED END SECTION	FES-2	10-18-96
27	MAILBOX DETAILS	MB-1	11-18-04
28	PRECAST CONCRETE BOX CULVERTS	PBC-1	12-15-11
29	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	PCC-1	12-15-11
30	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	PCM-1	12-15-11
31	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)	PCP-1	12-15-11
32	PLASTIC PIPE CULVERT (PVC F949)	PCP-2	12-15-11
33	PAVEMENT MARKING DETAILS	PM-1	9-12-13
34	DETAILS OF PIPE UNDERDRAIN	PU-1	4-10-03
35	REINFORCED CONCRETE BOX CULVERT DETAILS	RCB-1	7-26-12
36	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS	RCB-2	11-20-03
37	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	SE-2	10-18-96
38	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-1	12-15-11
39	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-2	9-12-13
40	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-3	10-15-09
41	TEMPORARY EROSION CONTROL DEVICES	TEC-1	12-15-11
42	TEMPORARY EROSION CONTROL DEVICES	TEC-2	6-02-94
43	TEMPORARY EROSION CONTROL DEVICES	TEC-3	11-03-94
44	WIRE FENCE WATER GAPS	WF-2	4-20-79
45	CHAIN LINK FENCE	WF-3	11-17-10
46	WIRE FENCE TYPE C AND D	WF-4	8-22-02
47-59	CROSS SECTIONS		

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-2	MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
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
404-2	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
409-1	MINERAL AGGREGATES
410-3	DENSITY TESTING FOR ACHM LEVELING COURSE AND BOND BREAKERS
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
620-1	MULCH COVER
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
JOB 040464	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 040464	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 040464	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
JOB 040464	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 040464	INTERNET BIDDING
JOB 040464	LRFD PRECAST REINFORCED CONCRETE BOX CULVERTS
JOB 040464	PLASTIC PIPE
JOB 040464	PRECAST REINFORCED CONCRETE BOX CULVERTS
JOB 040464	SOIL STABILIZATION
JOB 040464	STORM WATER POLLUTION PREVENTION PLAN
JOB 040464	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 040464	UTILITY ADJUSTMENTS
JOB 040464	WARM MIX ASPHALT

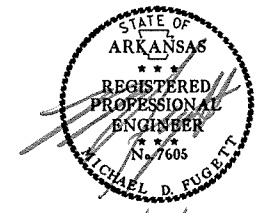


GENERAL NOTES

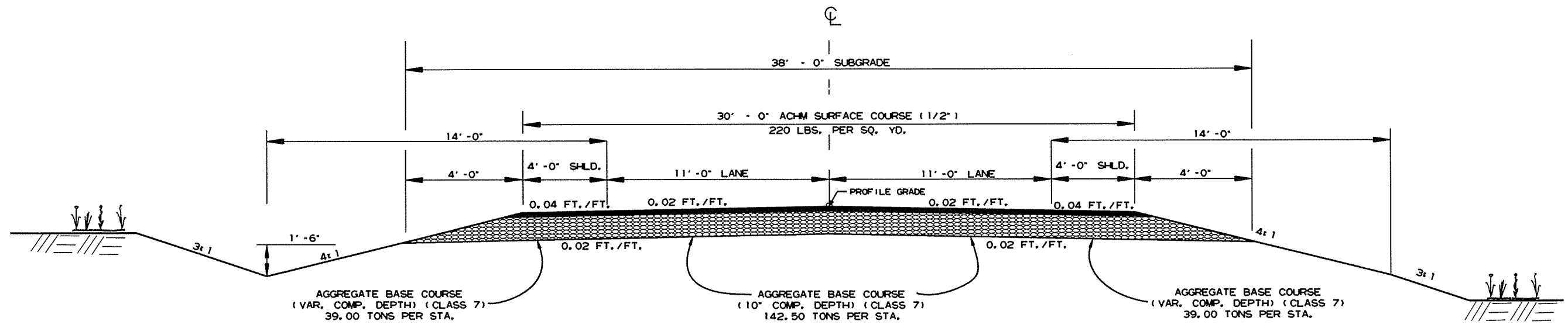
- GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
- ALL PIPE LINES, POWER, TELEPHONE AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
- ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U.S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
- 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.

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				6	ARK.			
				JOB NO.	040464		3	59

② TYPICAL SECTIONS OF IMPROVEMENT

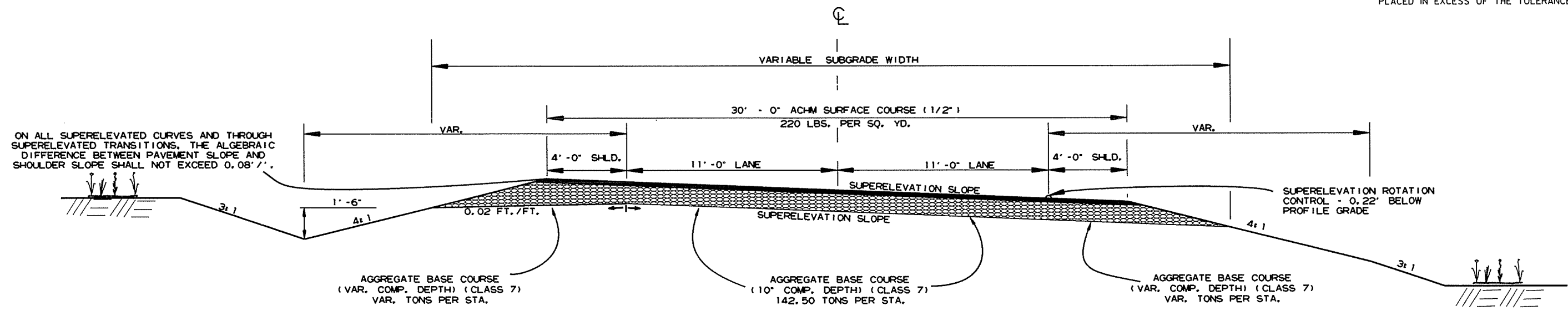


7/2/12



TYPICAL SECTION OF IMPROVEMENT  
 STA. 54+25.00 - STA. 84+00.00  
 STA. 85+27.00 - STA. 103+75.28

NOTES:  
 REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.  
 THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

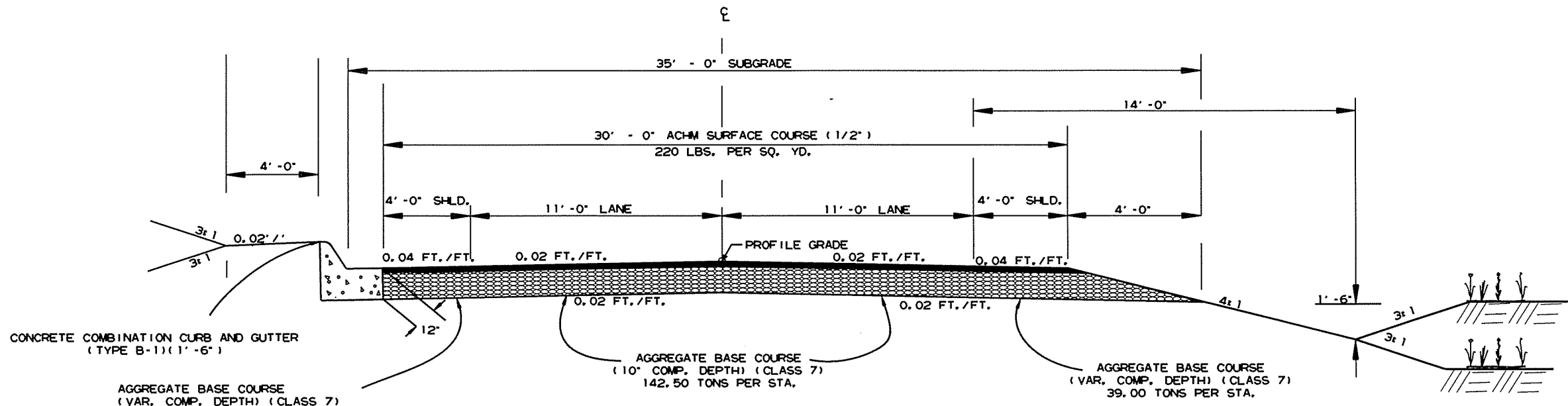


ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATED TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08'/'.

TYPICAL SECTION OF IMPROVEMENT  
 SUPERELEVATION

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				6	ARK.			
						JOB NO. 040464	4	59

2 TYPICAL SECTIONS OF IMPROVEMENT

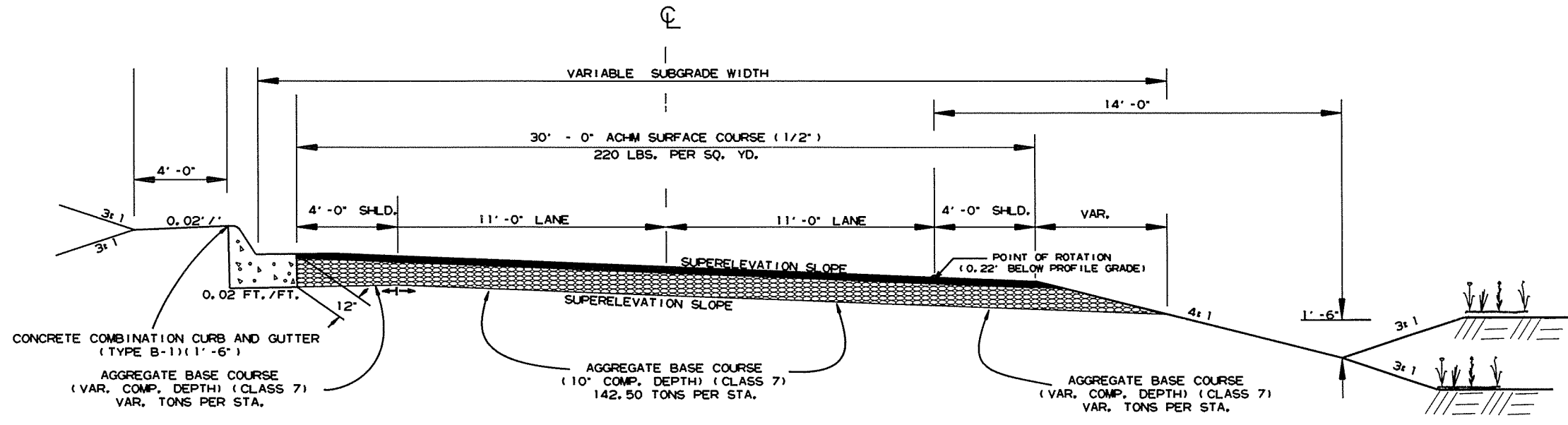


TYPICAL SECTION OF IMPROVEMENT  
CURB & GUTTER  
STA. 84+00.00 - STA. 85+27.00

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.

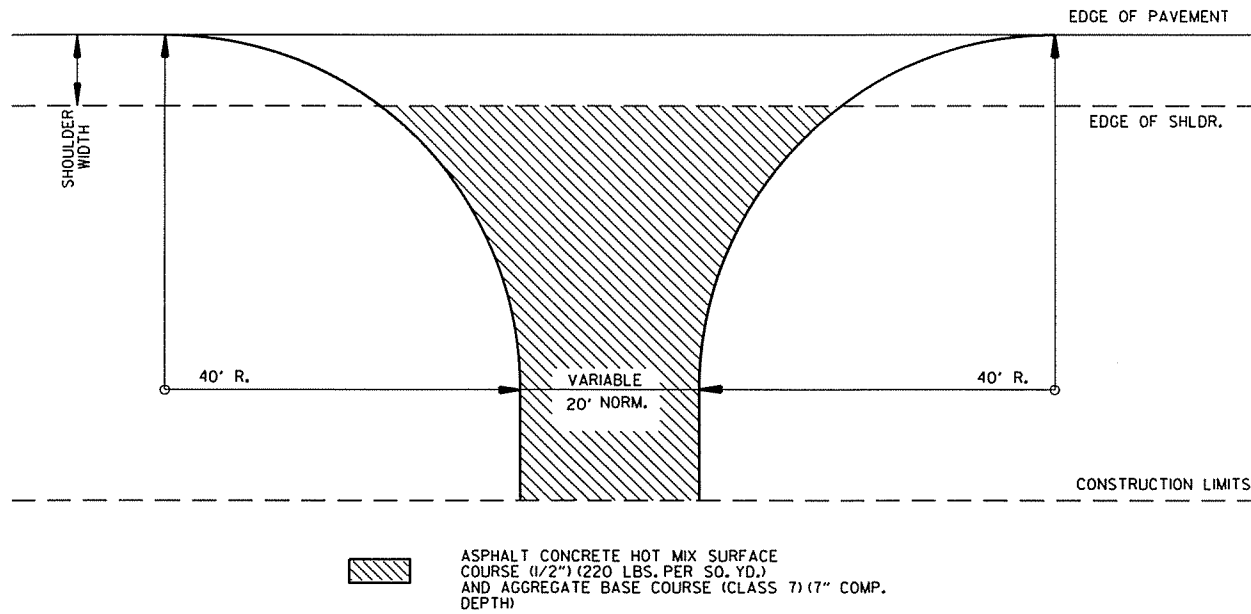
THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.



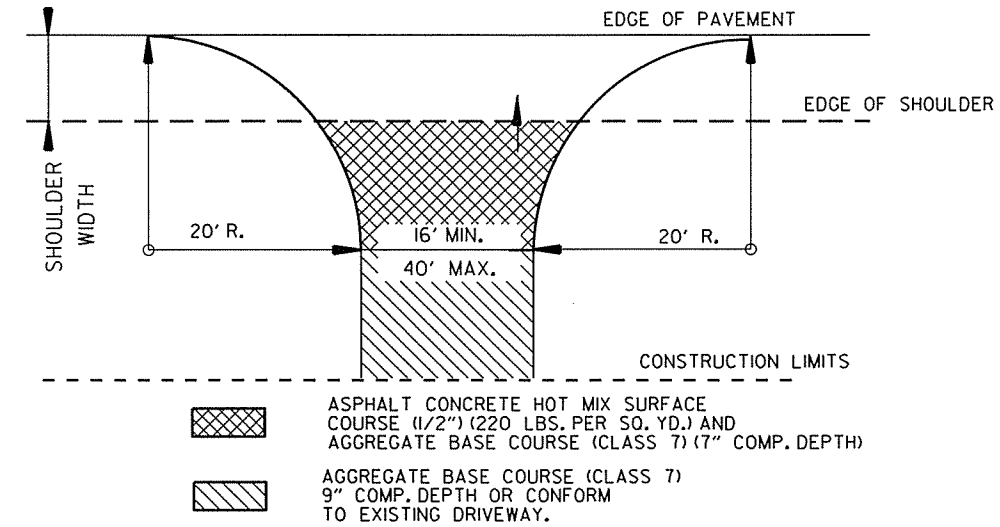
TYPICAL SECTION OF IMPROVEMENT  
CURB & GUTTER SUPERELEVATION

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		5	59
				JOB NO.	040464			

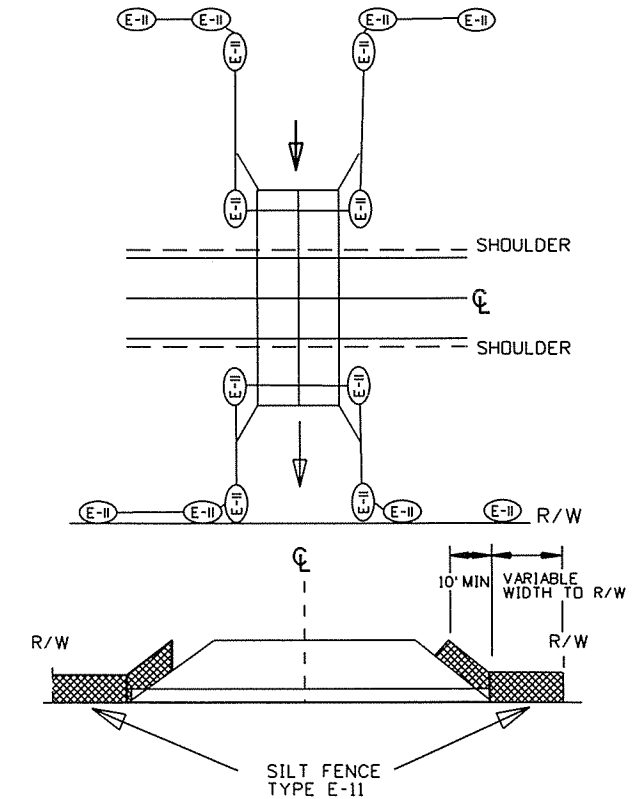
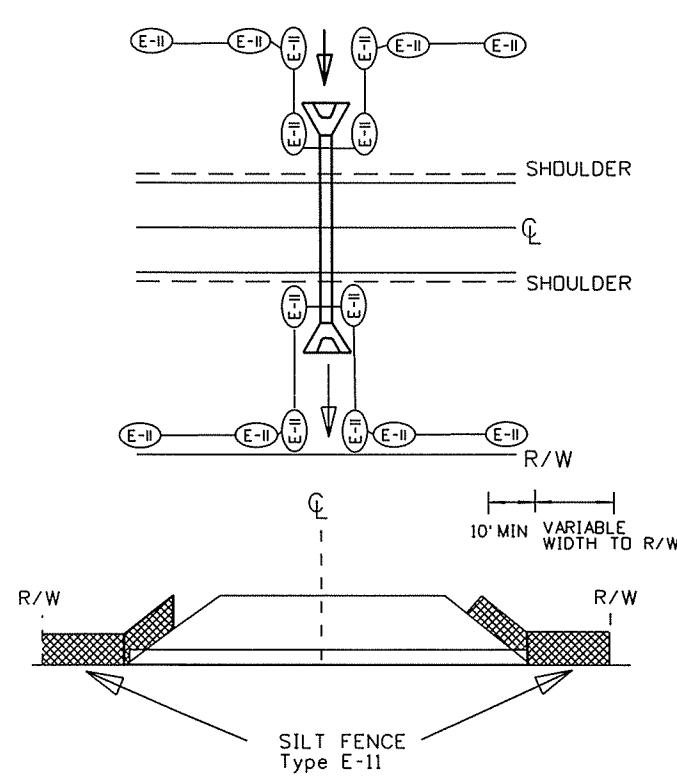
2 SPECIAL DETAILS



DETAIL FOR COUNTY ROAD TURNOUTS



DETAIL FOR DRIVEWAY TURNOUTS (COLLECTOR OR LOCAL ROADS)



DETAILS OF SILT FENCE AT CROSS DRAINS

SPECIAL DETAILS

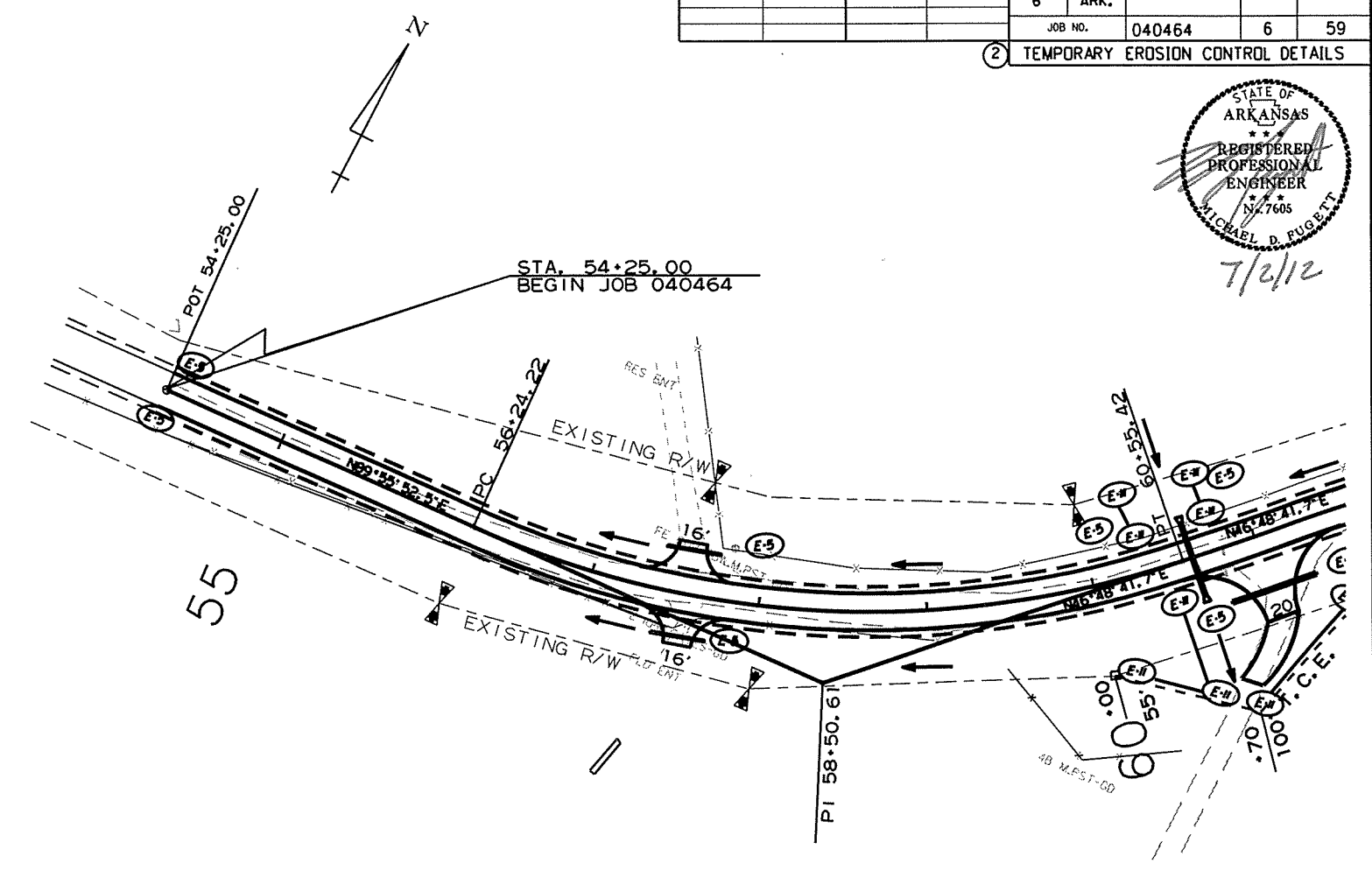
NOTE: TEMPORARY EROSION CONTROL DETAILS FOR STAGE 1. ALL ITEMS TO REMAIN IN PLACE FOR ALL STAGES.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 040464	6	59

2 TEMPORARY EROSION CONTROL DETAILS



STA.	STA.	SIDE	SAND BAG DITCH CHECKS (E-5) (BAGS)	SILT FENCE (E-11) (LIN. FT.)
54+25	-	RT.	20	
54+34	-	LT.	20	
57+85	-	RT.	20	
57+98	-	LT.	20	
60+32	- 60+32	LT.		45
60+00	- 60+45	RT.		135
60+65	-	RT.	20	
60+70	- 60+70	LT.		34
60+95	-	LT.	20	
60+70	- 61+50	RT.		95



REVISION BOX

DATE OF REVISION	REVISION

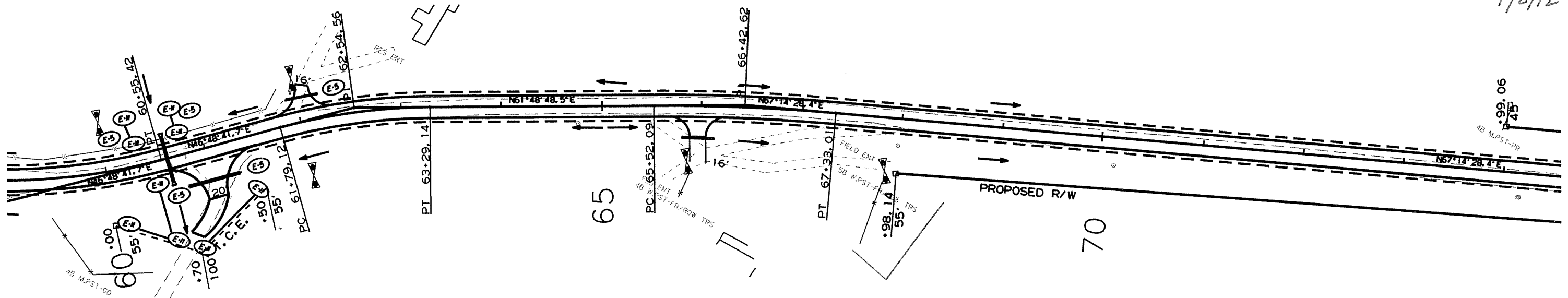
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 040464	7	59

NOTE: TEMPORARY EROSION CONTROL DETAILS FOR STAGE 1. ALL ITEMS TO REMAIN IN PLACE FOR ALL STAGES.

② TEMPORARY EROSION CONTROL DETAILS



7/2/12



STA.	STA.	SIDE	SAND BAG DITCH CHECKS (E-5) (BAGS)	SILT FENCE (E-11) (LIN. FT.)
60+95	-	LT.	20	
60+70	-	RT.		95
61+47	-	RT.	20	
62+37	-	LT.	20	
75+55	-	LT.	20	

REVISION BOX

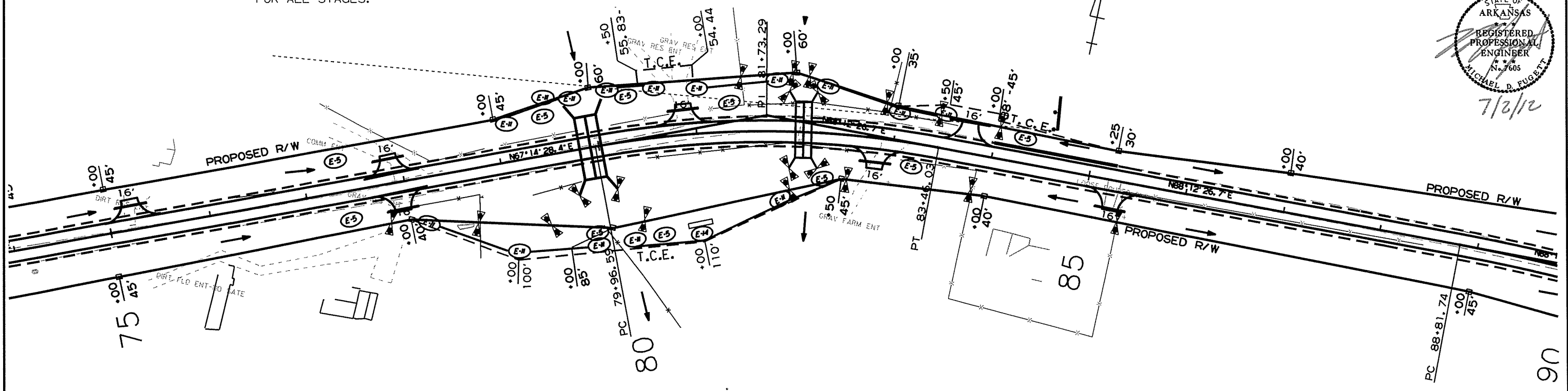
DATE OF REVISION	REVISION

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 040464							8	59

② TEMPORARY EROSION CONTROL DETAILS



NOTE: TEMPORARY EROSION CONTROL DETAILS FOR STAGE 1, ALL ITEMS TO REMAIN IN PLACE FOR ALL STAGES.



STA.	STA.	SIDE	SAND BAG DITCH CHECKS (E-5) (BAGS)	SILT FENCE (E-11) (LIN. FT.)	SEDIMENT BASIN (E-14) (CU. YD.)
75+55	-	LT.	20		
77+35	-	LT. & RT.	40		
78+00	- 79+96	RT.		214	
79+82	-	RT.	20		
79+00	- 79+72	LT.		76	
79+50	-	LT.	20		
80+07	- 82+00	RT.		195	
80+16	- 80+69	LT.		74	
80+33	-	LT.	20		
80+55	-	RT.	20		
80+98	-	RT.			16
81+34	-	LT.	20		
82+24	-	RT.	20		
82+20	- 83+52	LT.		143	
83+22	-	RT.	20		
84+29	-	LT.	20		

REVISION BOX

DATE OF REVISION	REVISION



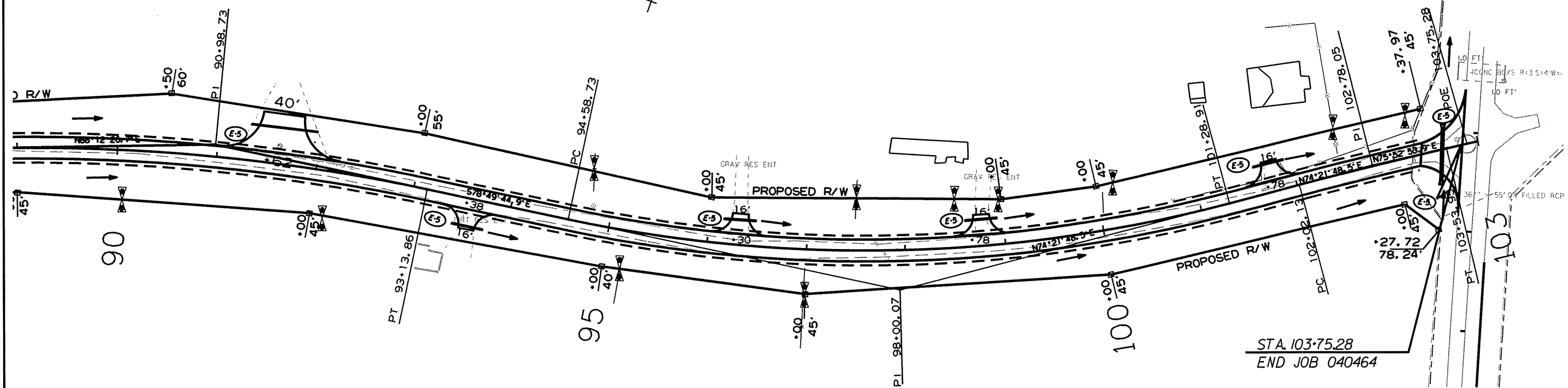
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		9	59
						JOB NO.	040464	

NOTE: TEMPORARY EROSION CONTROL DETAILS FOR STAGE 1. ALL ITEMS TO REMAIN IN PLACE FOR ALL STAGES.

② TEMPORARY EROSION CONTROL DETAILS



2/2/12



STA. 103+75.28  
END JOB 040464

STA.	STA.	SIDE	SAND BAG DITCH CHECKS (E-5) (BAGS)
91+16	-	LT.	20
93+28	-	RT.	20
96+00	-	LT.	20
98+47	-	LT.	20
101+47	-	RT.	20
103+20	-	RT.	20
103+60	-	LT.	20

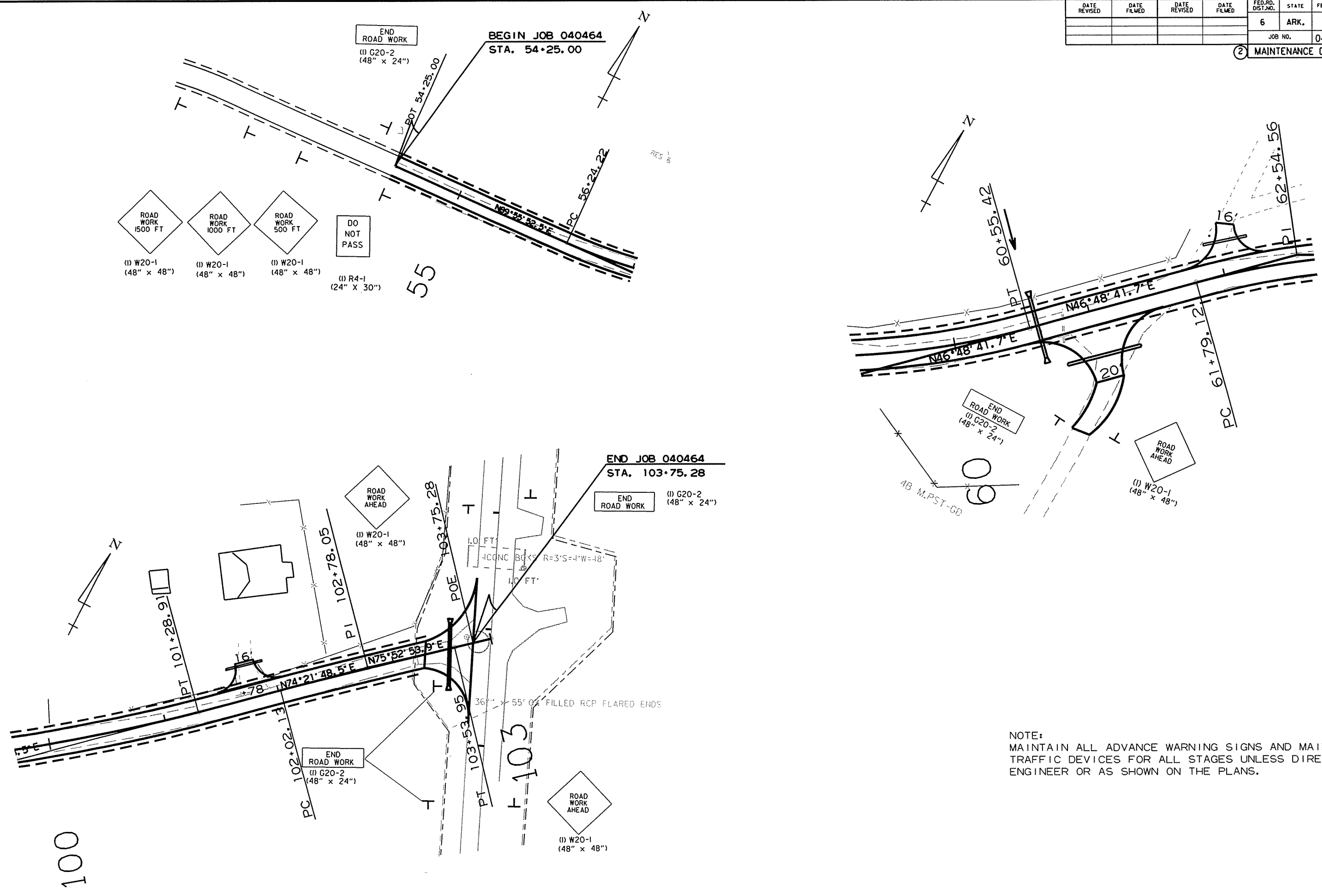
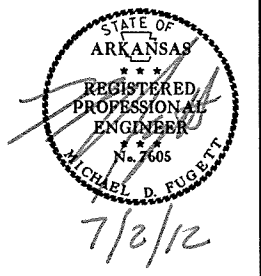
REVISION BOX

DATE OF REVISION	REVISION

r040464.e01.dgn 3/20/2012

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		10	59
				JOB NO.		040464	10	59

② MAINTENANCE OF TRAFFIC DETAILS

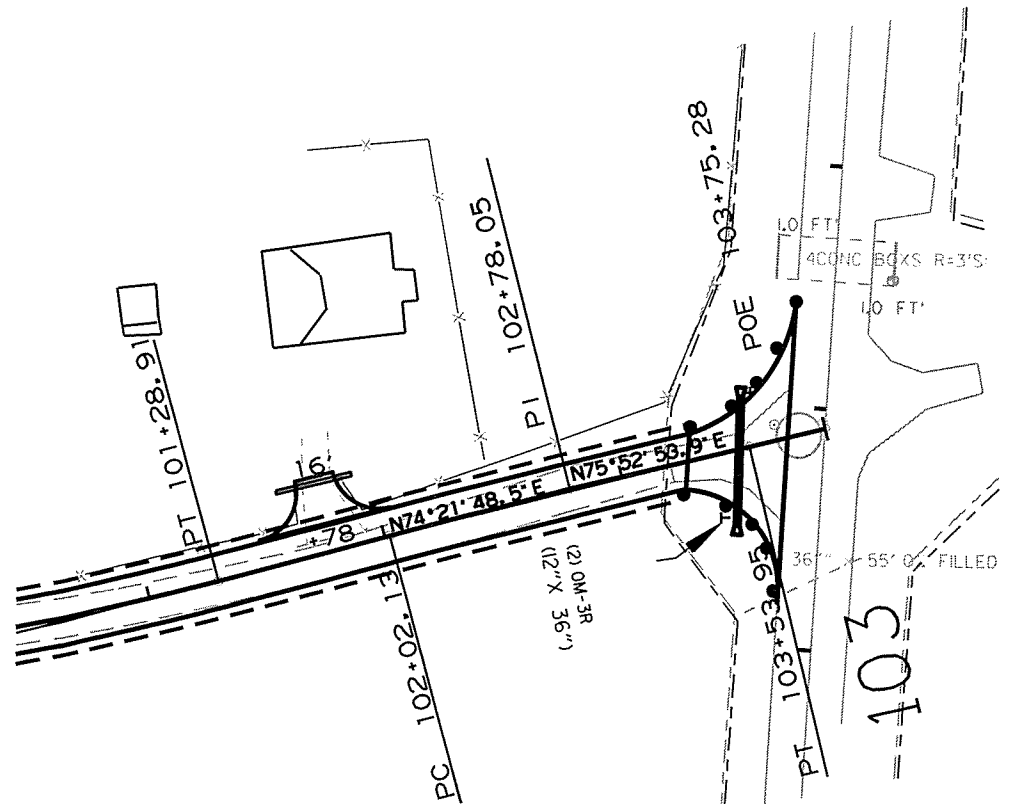


NOTE:  
 MAINTAIN ALL ADVANCE WARNING SIGNS AND MAINTENANCE OF TRAFFIC DEVICES FOR ALL STAGES UNLESS DIRECTED BY THE ENGINEER OR AS SHOWN ON THE PLANS.

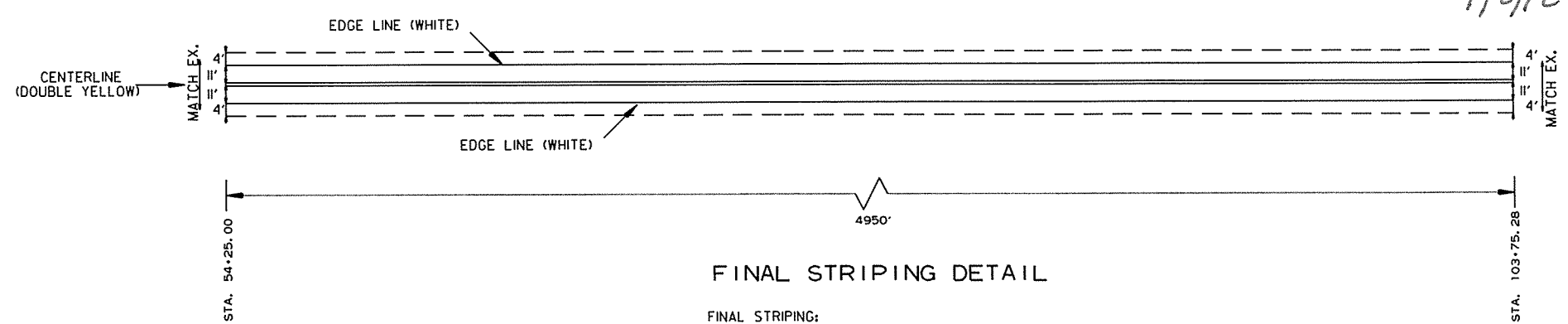
ADVANCE WARNING SIGNS  
 MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		11	59
				JOB NO.	040464			

② MAINTENANCE OF TRAFFIC DETAILS

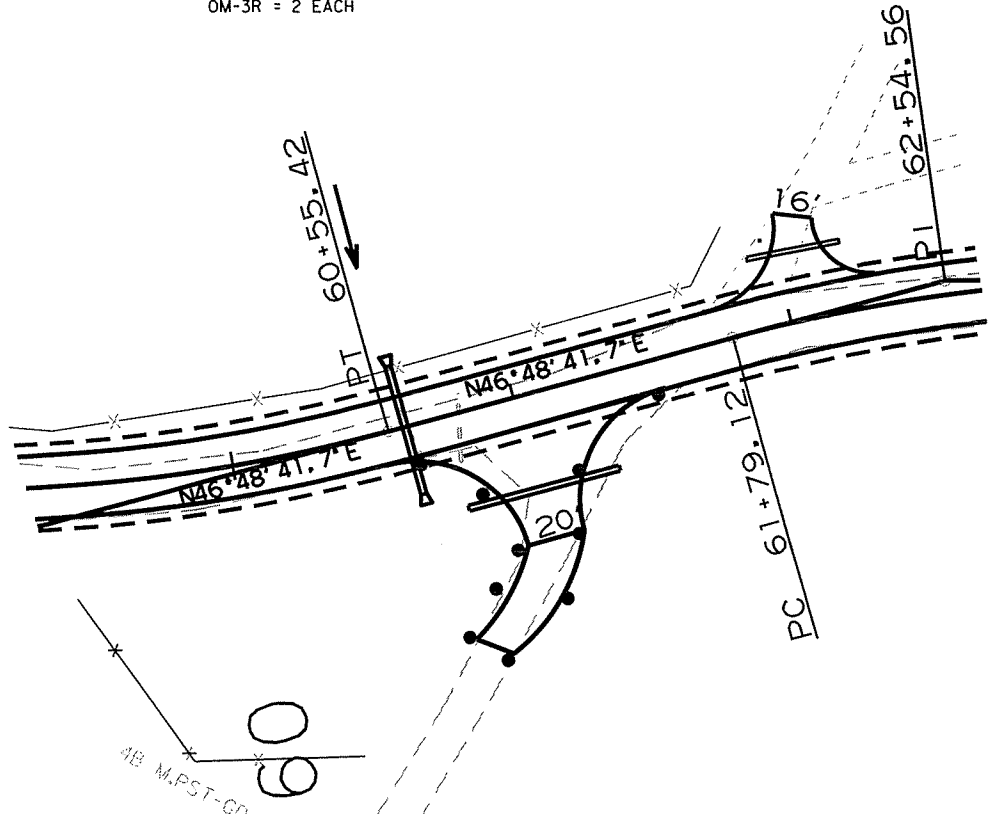


STA. 103+75.28  
 COUNTY ROAD TURNOUT/TRAFFIC DRUM DETAIL  
 TRAFFIC DRUMS = 10 EACH  
 OM-3R = 2 EACH

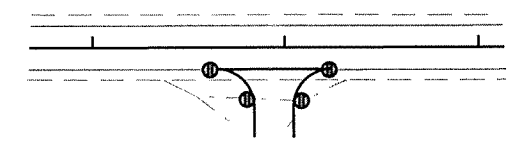


FINAL STRIPING DETAIL

FINAL STRIPING:  
 REFLECTORIZED PAINT PAVEMENT MARKINGS:  
 RT. AND LT. EDGE LINES = 9860 LIN. FT. WHITE  
 DBL. CENTERLINE = 9900 LIN. FT. YELLOW



STA. 61+01  
 COUNTY ROAD TURNOUT/TRAFFIC DRUM DETAIL  
 TRAFFIC DRUMS = 10 EACH

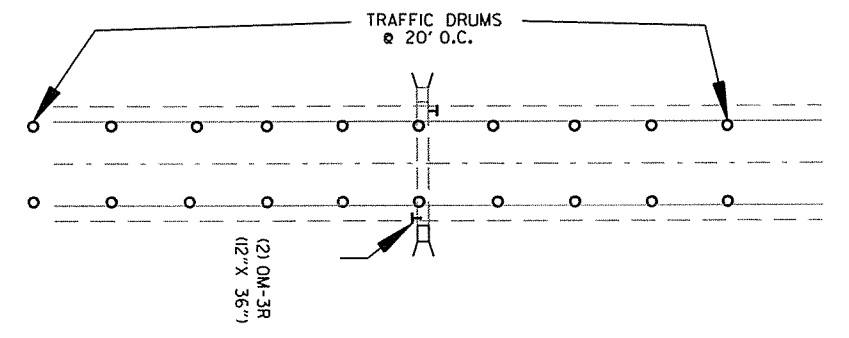


DRIVEWAY/TRAFFIC DRUM DETAIL

TRAFFIC DRUMS = 4 EACH  
 16 DRIVEWAYS @ 4 EACH = 64 TRAFFIC DRUMS

SEQUENCE OF WORK

1. PLACE ADVANCE WARNING SIGNS AND MAINTAIN TRAFFIC ON EXISTING ROADWAY.
2. PERFORM GRADING AND INSTALLATION OF PIPE CULVERTS AND PRECAST R.C. BOX CULVERTS UNDER TRAFFIC.
3. PERFORM FINAL GRADE AND SURFACE COURSE UNDER TRAFFIC AND COMPLETE PERMANENT SEEDING AND FINAL STRIPING.



TRAFFIC DRUMS ON ROADWAY FOR CONSTRUCTING CULVERTS UNDER TRAFFIC

STA. 60+61 STA. 79+94 STA. 82+00  
 TRAFFIC DRUMS = 20 EACH  
 TOTAL = 60 TRAFFIC DRUMS  
 OM-3R = 2 EACH  
 TOTAL = 6 OM-3R

r040464.e01.dgn 1/4/2012

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 040464	12	59

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

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	MAXIMUM REQUIRED	TOTAL SIGNS REQUIRED		TRAFFIC DRUMS EACH	REFLECTORIZED PAINT PAVEMENT MARKING (4")	
						NO.	SQ. FT.		WHITE	YELLOW
W20-1	ROAD WORK 1500 FT.	48" X 48"	1	1	1	1	16			
W20-1	ROAD WORK 1000 FT.	48" X 48"	1	1	1	1	16			
W20-1	ROAD WORK 500 FT.	48" X 48"	1	1	1	1	16			
W20-1	ROAD WORK AHEAD	48" X 48"	3	3	3	3	48			
G20-2	END ROAD WORK	48" X 24"	4	4	4	4	32			
OM-3R	OBJECT MARKER	12" X 36"	8	8	8	8	24			
	TRAFFIC DRUMS		144	144	144			144		
	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")								9860	
	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")									9900
<b>TOTALS</b>							152	144	9860	9900

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

**QUANTITIES**



**CLEARING AND GRUBBING**

STATION	STATION	CLEARING	GRUBBING
		STATION	
54+25	103+75	50	50
<b>TOTALS</b>		50	50

**SOIL LOG**

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO SOIL CLASS	COLOR
		FEET				
57+00	5' LT. OF CENTER	0 - 5	34	16	A-6(10)	RED
65+00	5' RT. OF CENTER	0 - 2 Z	ND	NP	A-4(0)	BROWN
73+00	5' LT. OF CENTER	0 - 4 Z	27	10	A-4(4)	BROWN
81+00	5' RT. OF CENTER	0 - 5	20	6	A-4(0)	BROWN
89+00	5' LT. OF CENTER	0 - 5	26	11	A-6(6)	BROWN
97+00	5' RT. OF CENTER	0 - 5	25	12	A-6(4)	RD/BR
103+00	5' LT. OF CENTER	0 - 5	17	4	A-4(0)	BROWN

NOTE: 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 THE SAME DIFFERING FROM THE ABOVE TABULATIONS.

**BENCH MARKS**

STATION	LOCATION	BENCH MARKS
		EACH
79+94	R.C. BOX CULVERT HEADWALL	1

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

**MAILBOXES**

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)
	EACH	
ENTIRE PROJECT	8	8
<b>TOTALS</b>	8	8

**4" PIPE UNDERDRAINS**

LOCATION	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
	LIN. FT.	EACH
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER	1000	8
<b>TOTALS</b>	1000	8

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

**SELECTED PIPE BEDDING**

LOCATION	SELECTED PIPE BEDDING
	CU. YD.
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.	8
<b>TOTAL</b>	8

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO.	040464	13

2 QUANTITIES

ADDITIONAL BASE AND SURFACING - DRIVEWAYS

STATION	SIDE	LOCATION	DESCRIPTION	WIDTH	ACHM EXTENSION LENGTH	TURNOUT AREA	TOTAL DRIVEWAY AREA	AGGREGATE BASE COURSE (CLASS 7)	ACHM SURFACE COURSE (1/2") (220 LB./SQ. YD.)	18" SIDE DRAIN	24" SIDE DRAIN	
				LIN. FT.	SQ. YD.	SQ. YD.	TON	TON	LIN. FT.	LIN. FT.		
57+55	LT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	28		
57+57	RT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	28		
61+01	RT.	MAIN LANES	COUNTY RD. TURNOUT- INSTALL 24" SIDE DRAIN	20	36	64	144	68	7		54	
62+08	LT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	28		
66+00	RT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	28		
75+23	LT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	30		
77+88	LT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	28		
77+94	RT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	28		
80+88	LT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	40		
82+83	RT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	30		
83+73	LT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	30		
85+26	RT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	28		
91+62	LT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	40		108	108	44	12	50		
93+60	RT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	28		
96+30	LT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	28		
98+78	LT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	28		
101+78	LT.	MAIN LANES	PRIVATE DRIVE-INSTALL 18" SIDE DRAIN	16		55	55	22	6	28		
103+75.28		MAIN LANES	COUNTY RD. TURNOUT	22		68	68	28	7			
		ENTIRE PROJECT	TEMPORARY DRIVES					45				
TOTALS								515	116	488	54	

BASIS OF ESTIMATE:

MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2").....94.1%.....ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2") .....5.9%

N<sub>max</sub> = 115 GYRATIONS

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.

STRUCTURES

STATION	DESCRIPTION	SPAN	HEIGHT	LENGTH	PRECAST R. C. BOX CULVERT (8' X 4')	PRECAST R. C. BOX CULVERT (11' X 6')	SOLID SODDING	WATER	STANDARD DRAWING NUMBERS
					LIN. FT.	LIN. FT.	SQ. YD.	M.GAL.	
82+00	CONSTRUCT PRECAST DBL. 8' X 4' R.C. BOX CULVERT	8	4	58	116		19	0.2	PBC-1, RCB-1, RCB-2
SUBTOTALS					116		19	0.2	
STRUCTURE OVER 20'-0" SPAN									
79+94	CONSTRUCT PRECAST DBL. 11' X 6' R.C. BOX CULVERT	11	6	62		124	25	0.3	PBC-1, RCB-1, RCB-2
SUBTOTALS						124	25	0.3	
TOTALS					116	124	44	0.5	

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

PRECAST REINFORCED CONCRETE BOX CULVERTS SHALL BE MANUFACTURED ACCORDING TO ASTM C 1577 AND MEET THE REQUIREMENTS OF SPECIAL PROVISION "LRFD PRECAST REINFORCED CONCRETE BOX CULVERTS".

DUMPED RIPRAP AND FILTER BLANKET

STATION	LOCATION	DUMPED RIPRAP	FILTER BLANKET
		CU. YD.	SQ. YD.
STA. 79+94	LT. & RT.	19	58
STA. 82+00	LT. & RT.	18	54
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER		3	9
TOTALS		40	121

STRUCTURES - PIPE CULVERTS

STATION	DESCRIPTION	CROSS DRAIN				FLARED END SECTIONS ALTERNATE 1-2	SOLID SODDING	WATER	STANDARD DRAWING NUMBERS
		24"							
		ALTERNATE 1	ALTERNATE 2 - 6	ALTERNATE 1	ALTERNATE 2 - 6				
		R. C. PIPE CLASS III	C.M. OR PLASTIC PIPE	R.C. PIPE CLASS IV	C.M. OR PLASTIC PIPE				
60+61	CONSTRUCT 24" PIPE CULVERT CROSS DRAIN					2	17	0.2	PCC-1, PCM-1, PCP-1, PCP-2, FES-1, FES-2
103+52	CONSTRUCT 24" PIPE CULVERT CROSS DRAIN	46	50	48	52	2	16	0.2	PCC-1, PCM-1, PCP-1, PCP-2, FES-1, FES-2
TOTALS		46	50	48	52	4	33	0.4	

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

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.



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO.						040464	14	59

**REMOVAL AND DISPOSAL ITEMS**

STATION	DESCRIPTION	SIDE	PIPE CULVERTS	CATTLE GUARD
			EACH	EACH
60+62	12" X 24' C.M. PIPE CROSS DRAIN		1	
60+81	12" X 24' C.M. PIPE CROSS DRAIN		1	
75+23	12" X 10' R.C. PIPE SIDE DRAIN	LT.	1	
77+94	12" X 28' C.M. PIPE SIDE DRAIN	RT.	1	
77+88	12" X 53' C.M. PIPE SIDE DRAIN	LT.	1	
79+98	60' X 24' C.M. PIPE CROSS DRAIN		1	
82+03	24" X 26' R.C. PIPE CROSS DRAIN		1	
82+07	24" X 26' C.M. PIPE CROSS DRAIN		2	
83+76	CATTLE GUARD	RT.		1
91+62	12" X 96' R.C. PIPE SIDE DRAIN	LT.	1	
96+60	12" X 20' C.M. PIPE SIDE DRAIN	RT.	1	
96+30	12" X 24' PLASTIC PIPE SIDE DRAIN	RT.	1	
97+76	18' X 23' C.M. PIPE CROSS DRAIN		1	
98+78	18' X 31' C.M. PIPE SIDE DRAIN	LT.	1	
101+78	18' X 31' C.M. PIPE SIDE DRAIN	RT.	1	
TOTAL			15	1

**REMOVAL & DISPOSAL OF FENCE ITEMS**

STATION	STATION	SIDE	REMOVAL AND DISPOSAL OF FENCE	REMOVAL AND DISPOSAL OF GATES
			LIN. FT.	EACH
54+25	57+30	RT.	340	
57+57		RT.		1
57+60	62+07	LT.	455	
57+66	59+47	RT.	202	
57+62	61+90	LT.	456	
65+91	67+88	RT.	193	
77+90	80+75	LT.	298	
78+10	78+71	RT.	30	
78+71	83+88	RT.	536	
78+30	83+66	LT.	619	
85+35	96+99	RT.	1175	
91+60		LT.		2
94+75	97+50	LT.	413	
98+79		LT.		1
100+04	101+67	LT.	190	
101+77	103+38	LT.	220	1
TOTALS			5127	5

**QUANTITIES**

**CONCRETE COMBINATION CURB AND GUTTER**

STATION	STATION	LOCATION	TYPE B-1 (1'-6") LIN. FT.
84+00	85+27	LT.	127
TOTAL			127



7/17/12

**CONCRETE DITCH PAVING**

STATION	STATION	SIDE	WIDTH	CONCRETE DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			FEET	SQ. YD.	SQ. YD.	M. GAL.
71+00	77+00	RT.	4	267	267	3.4
71+00	77+00	LT.	4	267	267	3.4
ENTIRE PROJECT			4	100	100	1.3
TOTALS				634	634	8.1

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

**FENCING ITEMS**

STATION	STATION	SIDE	WIRE FENCE		CHAIN LINK FENCE	GATES
			(TYPE D)	(TYPE D-1)	4'	16'
			LIN.FT.		LIN. FT.	EACH
54+25	57+30	RT.	325			
57+57		RT.				1
57+57	59+45	RT.	200			
57+72	60+88	RT.	350			
57+62	62+02	LT.	410			
61+12	65+87	RT.	475			
66+05	67+86	RT.	180			
78+03	80+77	LT.	210			
78+10	82+70	RT.	570			
81+05	83+50	LT.	245			
83+00	85+10	RT.		210		
85+43	90+10	RT.		460		
90+50	96+14	LT.		565		
91+60		LT.				2
90+00	93+45	RT.		345		
93+80	97+00	RT.		320		
96+50	97+50	LT.		100		
97+50	98+95	LT.			145	
98+78		LT.				1
98+95	101+60	LT.		265		
101+78		LT.				1
101+90	103+38	LT.		150		
TOTALS			3380	2000	145	5

**EARTHWORK**

STATION	STATION	LOCATION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
54+25	103+75.28	MAIN LANES	15998	7918	
ENTIRE PROJECT		CHANNEL EXCAVATION FOR RC BOX CULVERT	100		
ENTIRE PROJECT		DRIVEWAYS		395	
ENTIRE PROJECT		IF AND WHERE DIRECTED BY THE ENGINEER.			50
TOTALS			16098	8313	50

\* NOTE: QUANTITY ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS. EARTHWORK QUANTITIES TO BE PAID AS PLAN QUANTITY.

**EROSION CONTROL ITEMS - PERMANENT**

STATION	STATION	LOCATION	SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	EROSION CONTROL MATTING (CLASS 2)
			ACRE	TON	ACRE	M. GAL.	ACRE	SQ. YD.
54+25	103.75.28	MAIN LANES	3.64	7	3.64	371.3	3.64	
*ENTIRE PROJECT		MAIN LANES	1.00	2	1.00	102.0	1.00	
60+01		COUNTY RD. TURNOUT LT. & RT.						44
TOTALS			4.64	9	4.64	473.3	4.64	44

BASIS OF ESTIMATE:  
LIME ..... 2 TONS PER ACRE SEEDING;  
WATER ..... 102.0 M.GAL. PER ACRE SEEDING  
\*QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

**BASE COURSE AND SURFACING**

STATION	STATION	DESCRIPTION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		ACHM SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.)			
				TONS PER STATION	TON	AVERAGE WIDTH	SQ. YD.	LBS. PER SQ. YD.	TON
						FT.			
54+25.00	84+00.00	MAIN LANES	2975.00	220.50	6560	30.00	9917	220	1091
84+00.00	85+27.00	MAIN LANES - CURB	127.00	207.50	264	29.00	409	220	45
85+27.00	103+75.28	MAIN LANES	1848.28	220.50	4076	30.00	6161	220	678
ENTIRE PROJECT		ADDITIONAL FOR SUPERELEVATION			30				
ENTIRE PROJECT		ADDITIONAL FOR CURB & GUTTER			4				
TOTALS					10934		16487		1814

BASIS OF ESTIMATE:  
MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2").....94.1%.....ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2") .....5.9%  
Nmax= 115 GYRATIONS

**EROSION CONTROL ITEMS - TEMPORARY**

LOCATION	SAND BAG DITCH CHECKS (E-5)	SILT FENCE (E-11)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL AND DISPOSAL	TEMPORARY SEEDING	MULCH COVER	WATER
	BAG	LIN. FT.	CU. YD.	CU. YD.	CU. YD.	ACRE	ACRE	M.GAL.
MAIN LANES	520	1006	16	16	100	3.64	0.45	74.3
TOTALS	520	1006	16	16	100	3.64	0.45	74.3

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

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

SAND BAG DITCH CHECKS..... 20 BAGS / LOCATION

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

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	50	STATION
201	GRUBBING	50	STATION
202	REMOVAL AND DISPOSAL OF FENCE	5127	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	15	EACH
202	REMOVAL AND DISPOSAL OF GATES	5	EACH
202	REMOVAL AND DISPOSAL OF CATTLE GUARD	1	EACH
210	UNCLASSIFIED EXCAVATION	16098	CU. YD.
210	COMPACTED EMBANKMENT	8313	CU. YD.
SP& 210	SOIL STABILIZATION	50	TON
SS& 303	AGGREGATE BASE COURSE (CLASS 7)	11449	TON
SP,SS&407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	1816	TON
SP,SS&407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	114	TON
601	MOBILIZATION	1.00	LUMP SUM
SP& 602	FURNISHING FIELD OFFICE	1	EACH
SS& 603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
SS& 604	SIGNS	152	SQ. FT.
SS& 604	TRAFFIC DRUMS	144	EACH
605	CONCRETE DITCH PAVING (TYPE B)	634	SQ. YD.
* SS& 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) (ALTERNATE NO.1)	46	LIN. FT.
* 606	24" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE) (ALTERNATE NO.2)	50	LIN. FT.
* 606	24" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE) (ALTERNATE NO.3)	50	LIN. FT.
* 606	24" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (16 GAUGE) (ALTERNATE NO.4)	50	LIN. FT.
* SP& 606	24" HIGH DENSITY POLYETHYLENE PIPE (ALTERNATE NO.5)	50	LIN. FT.
* SP& 606	24" PVC PIPE (ALTERNATE NO.6)	50	LIN. FT.
* SS& 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV) (ALTERNATE NO.1)	48	LIN. FT.
* 606	24" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE) (ALTERNATE NO.2)	52	LIN. FT.
* 606	24" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE) (ALTERNATE NO.3)	52	LIN. FT.
* 606	24" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (16 GAUGE) (ALTERNATE NO.4)	52	LIN. FT.
* SP& 606	24" HIGH DENSITY POLYETHYLENE PIPE (ALTERNATE NO.5)	52	LIN. FT.
* SP& 606	24" PVC PIPE (ALTERNATE NO.6)	52	LIN. FT.
SP,SS&606	18" SIDE DRAIN	488	LIN. FT.
SP,SS&606	24" SIDE DRAIN	54	LIN. FT.
* 606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS (ALTERNATE NO.1)	4	EACH
* 606	24" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS (ALTERNATE NO.2)	4	EACH
606	SELECTED PIPE BEDDING	8	CU. YD.
SP& 607	PRECAST REINFORCED CONCRETE BOX CULVERTS (8' X 4')	116	LIN. FT.
611	4" PIPE UNDERDRAINS	1000	LIN. FT.
611	UNDERDRAIN OUTLET PROTECTORS	8	EACH
619	WIRE FENCE (TYPE D)	3380	LIN. FT.
619	WIRE FENCE (TYPE D-1)	2000	LIN. FT.
* 619	4' STEEL CHAIN LINK FENCE (ALTERNATE NO.1)	145	LIN. FT.
* 619	4' ALUMINUM CHAIN LINK FENCE (ALTERNATE NO.2)	145	LIN. FT.
* 619	16' STEEL GATE (ALTERNATE NO.1)	5	EACH
* 619	16' ALUMINUM GATE (ALTERNATE NO.2)	5	EACH
620	LIME	9	TON
620	SEEDING	4.64	ACRE
SS& 620	MULCH COVER	5.09	ACRE
SS& 620	WATER	556.6	M. GAL.
621	TEMPORARY SEEDING	3.64	ACRE
621	SILT FENCE	1006	LIN. FT.
621	SAND BAG DITCH CHECKS	520	BAG
621	SEDIMENT BASIN	16	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN	16	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	100	CU. YD.
623	SECOND SEEDING APPLICATION	4.64	ACRE
624	SOLID SODDING	711	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 2)	44	SQ. YD.
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE B-1) (1' 6")	127	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
637	MAILBOXES	8	EACH
637	MAILBOXES SUPPORTS (SINGLE)	8	EACH
SS& 718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")	9860	LIN. FT.
SS& 718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")	9900	LIN. FT.
816	FILTER BLANKET	121	SQ. YD.
816	DUMPED RIPRAP	40	CU. YD.
STRUCTURES OVER 20'-0" SPAN			
SP& 607	PRECAST REINFORCED CONCRETE BOX CULVERTS (11' X 6')	124	LIN. FT.

\* DENOTES ALTERNATE BID ITEMS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
							JOB NO. 040464	15 59

2 SUMMARY OF QUANTITIES AND REVISIONS



12/12/13

REVISION BOX

DATE	REVISION	SHEET NUMBER(S)

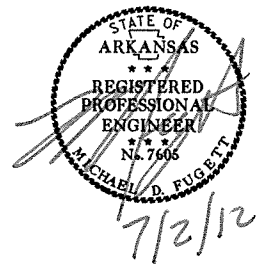
COORDINATES FEET  
ARKANSAS STATE PLANE, BASED ON GPS  
CONTROL, PROJECTED TO GROUND.

Table with columns: Station, Northing, Easting, Description. Includes station numbers 1000-1519 and various descriptions like REBAR/CAP, GPS, NGS POINT, etc.

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

JOB NO. 040464 16 59  
2 SURVEY CONTROL DETAILS

Point	Desc.	CL. Station	Construction Northing	Easting
8048	POT	54+25.00	438198.60150	688109.77836
8027	PC	56+24.22	438198.84052	688308.99873
8029	PT	60+55.42	438354.05030	688700.44339
8030	PC	61+79.12	438438.71145	688790.63493
8032	PT	63+29.14	438525.97720	688912.13415
8033	PC	65+52.09	438631.28523	689108.64377
8035	PT	67+33.01	438709.06823	689271.91971
8036	PC	79+96.59	439197.88850	690437.12267
8038	PT	83+46.03	439271.77042	690776.66806
8039	PC	88+81.74	439288.52820	691312.11873
8041	PT	93+13.86	439253.27838	691741.86855
8042	PC	94+58.73	439225.21222	619883.99250
8044	PT	101+28.91	439251.08538	692547.57617
8045	PC	102+02.13	439270.82174	692618.09037
8047	PT	103+53.95	439309.79958	692764.81235
328	POE	103+86.26	439317.68177	692796.15014



USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT

TO CONVERT TO GRID USE CAF = 0.9999183097

GRID DISTANCE = GROUND DISTANCE X CAF.  
GROUND COORDINATES ARE STORED UNDER FILE NAME s040351go.ct1  
HORIZONTAL DATUM: NAD 83  
VERTICAL DATUM: NGVD 88

REFERENCE POINTS (1500 SERIES) TO BE USED TO ESTABLISH CONTROL; NOT TO BE USED FOR VERTICAL CONTROL

POINTS BY RESECTION.  
BASIS OF BEARINGS

BASED ON NGS POINT 393  
BASED ON GPS PTS  
VINE - VINE AZ

ARKANSAS STATE PLANE GRID COORDINATES  
NORTH ZONE

GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.  
PN:703 01 13 09.5925 LEFT

MID POINT  
LAT N 35 31 12.21821  
LON W 94 05 43.5626

SURVEY CONTROL DETAILS

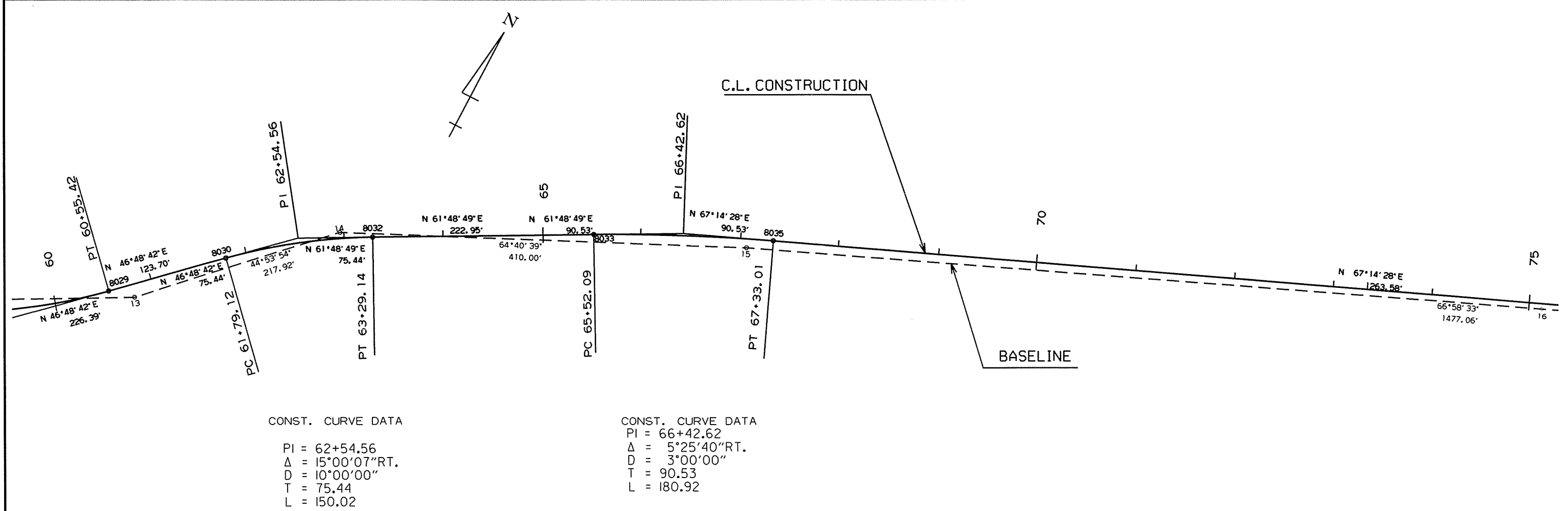
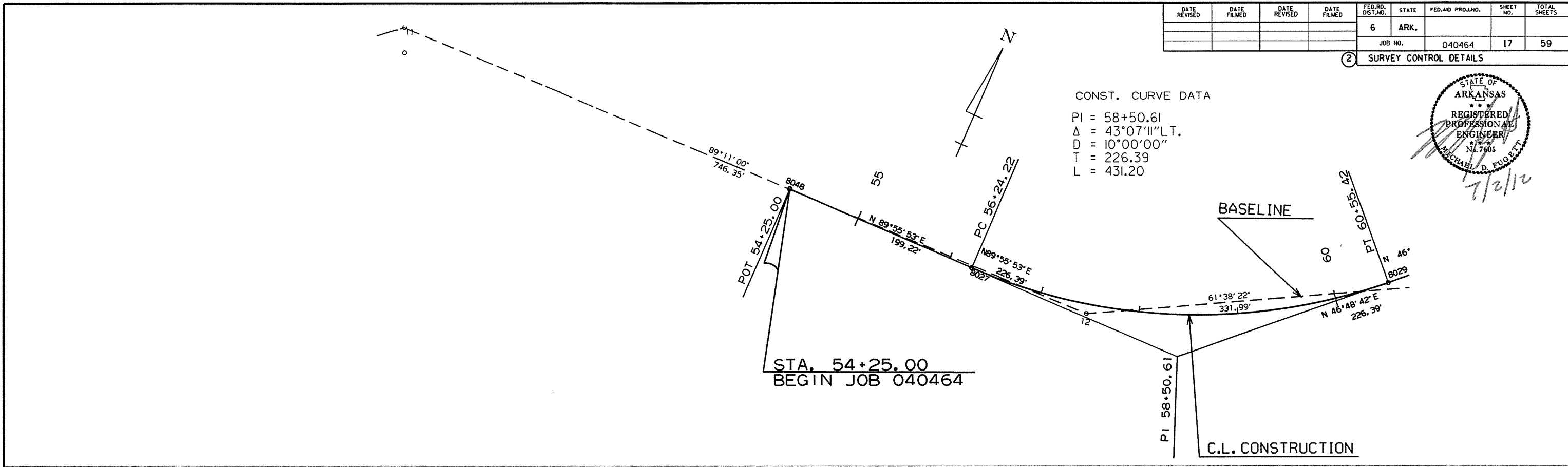


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	040464		17	59

2 SURVEY CONTROL DETAILS



CONST. CURVE DATA  
 PI = 58+50.61  
 Δ = 43°07'11" L.T.  
 D = 10°00'00"  
 T = 226.39  
 L = 431.20



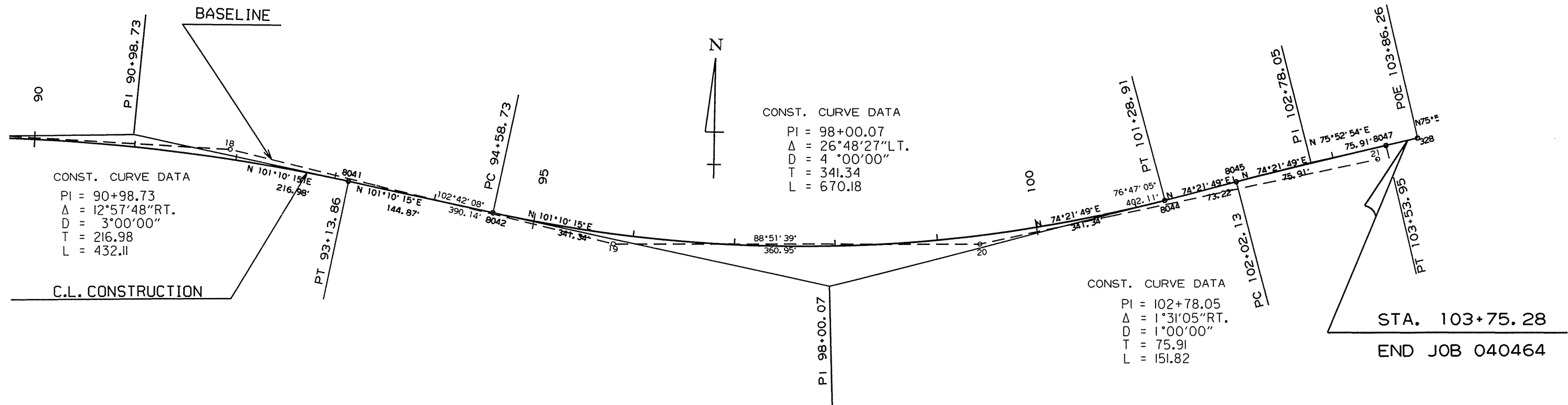
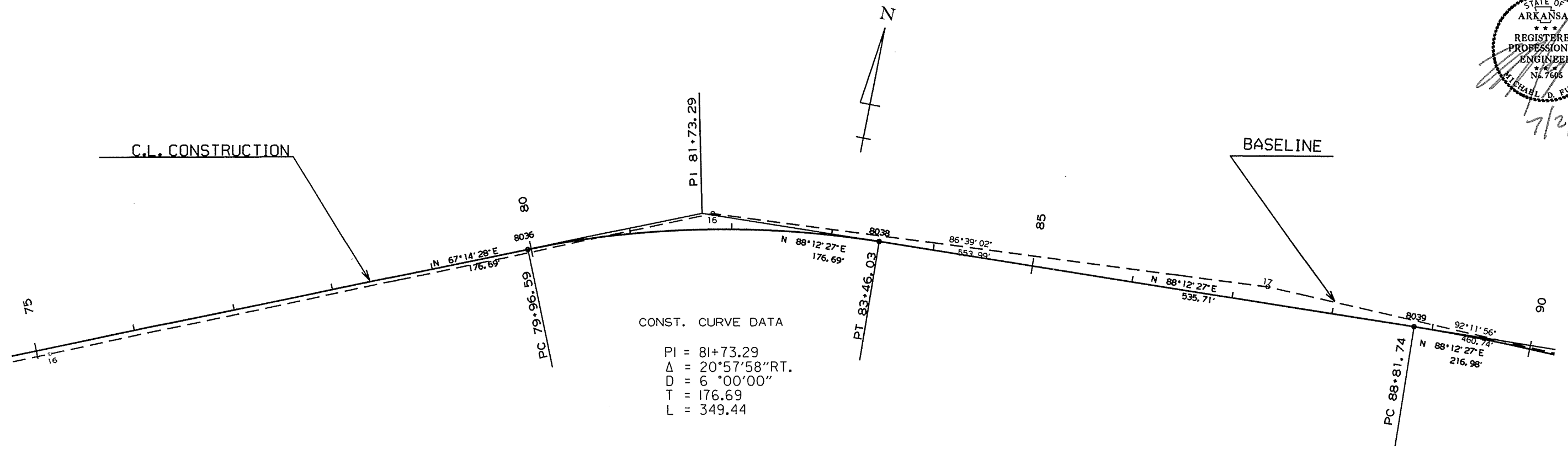
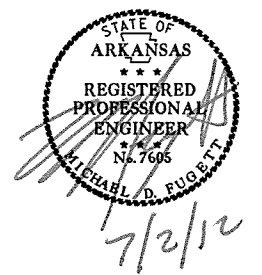
CONST. CURVE DATA  
 PI = 62+54.56  
 Δ = 15°00'07" RT.  
 D = 10°00'00"  
 T = 75.44  
 L = 150.02

CONST. CURVE DATA  
 PI = 66+42.62  
 Δ = 5°25'40" RT.  
 D = 3°00'00"  
 T = 90.53  
 L = 180.92

SURVEY CONTROL DETAILS

r040351.s01 11/03/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS	
				6	ARK.				
JOB NO.							040464	18	59
② SURVEY CONTROL DETAILS									

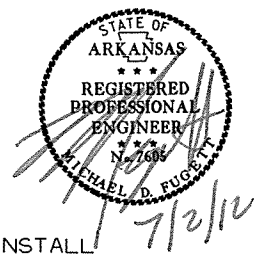


SURVEY CONTROL DETAILS

STA.	STA.	SIDE	FENCE ITEMS	
			TYPE D LIN. FT.	GATE EACH
54+25	57+30	RT.	325	1
57+57		RT.		
57+57	59+45	RT.	200	
57+72	60+88	RT.	350	
57+62	62+02	LT.	410	

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	040464		19	59

2 PLAN & PROFILE STA. 45+00 - 60+00

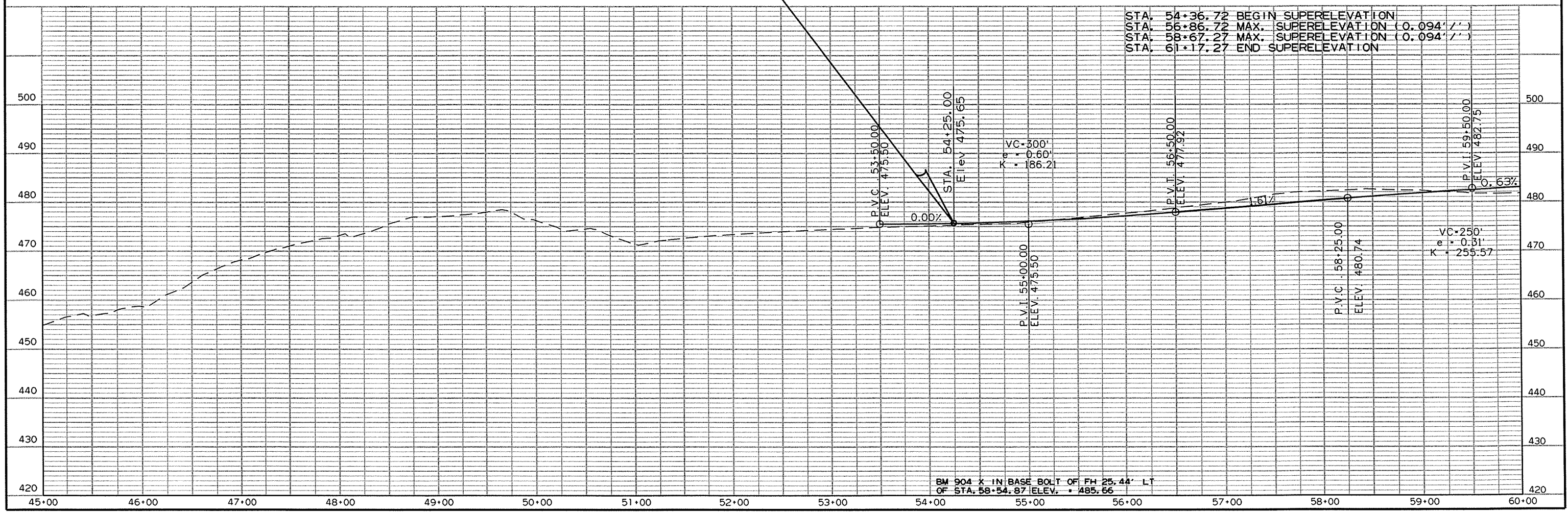


PI = 58+50.61  
 $\Delta = 43^{\circ}07'11''$  LT.  
D = 10°00'00"  
T = 226.39'  
L = 431.20'  
e = 0.094'/'  
Ls = 250'

STA. 57+55 INSTALL  
18' X 28' PIPE CULVERT  
LT. SIDE DRAIN  
CONST. APPR. = 20 CU. YD.

STA. 54+25.00  
BEGIN JOB 040464

STA. 57+57 INSTALL  
18' X 28' PIPE CULVERT  
RT. SIDE DRAIN  
CONST. APPR. = 10 CU. YD.



STA. 62+08 INSTALL  
18" X 28' PIPE CULVERT  
LT. SIDE DRAIN  
CONSTR. APPR. = 15 CU. YD.

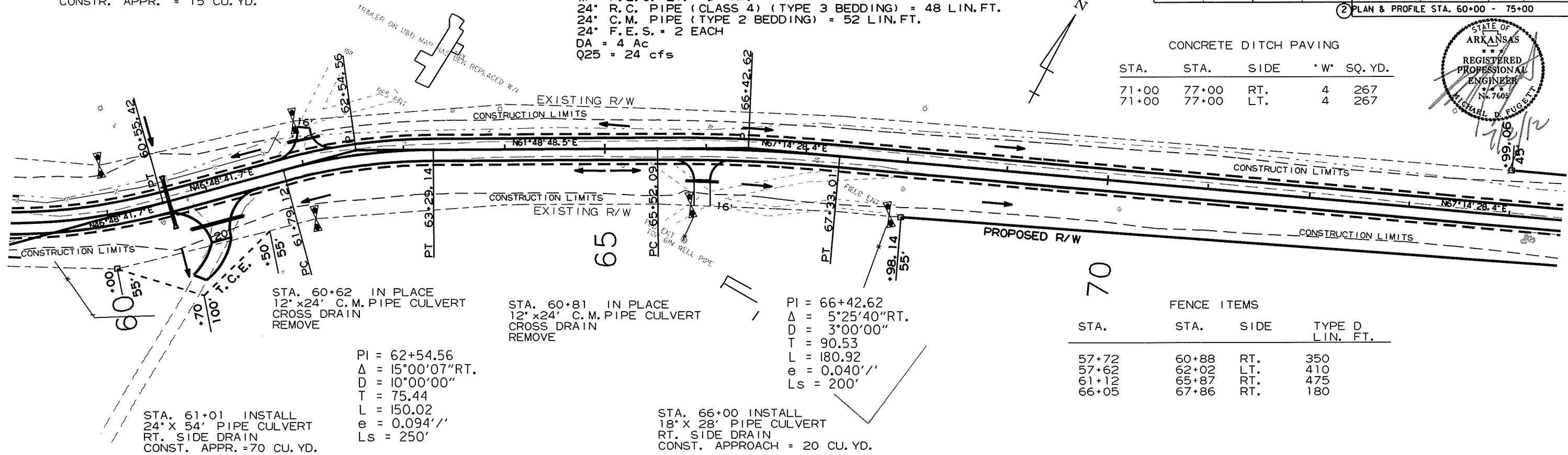
STA. 60+61 CONSTRUCT  
24" PIPE CULVERT  
W/ F.E.S. LT. & RT.  
24" R.C. PIPE (CLASS 4) (TYPE 3 BEDDING) = 48 LIN. FT.  
24" C.M. PIPE (TYPE 2 BEDDING) = 52 LIN. FT.  
24" F.E.S. = 2 EACH  
DA = 4 Ac  
Q25 = 24 cfs

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	040464		20	59

PLAN & PROFILE STA. 60+00 - 75+00

CONCRETE DITCH PAVING

STA.	STA.	SIDE	'W'	SQ. YD.
71+00	77+00	RT.	4	267
71+00	77+00	LT.	4	267



STA. 60+62 IN PLACE  
12" x 24' C.M. PIPE CULVERT  
CROSS DRAIN REMOVE

STA. 60+81 IN PLACE  
12" x 24' C.M. PIPE CULVERT  
CROSS DRAIN REMOVE

PI = 66+42.62  
Δ = 5°25'40" RT.  
D = 3°00'00"  
T = 90.53  
L = 180.92  
e = 0.040'/'  
Ls = 200'

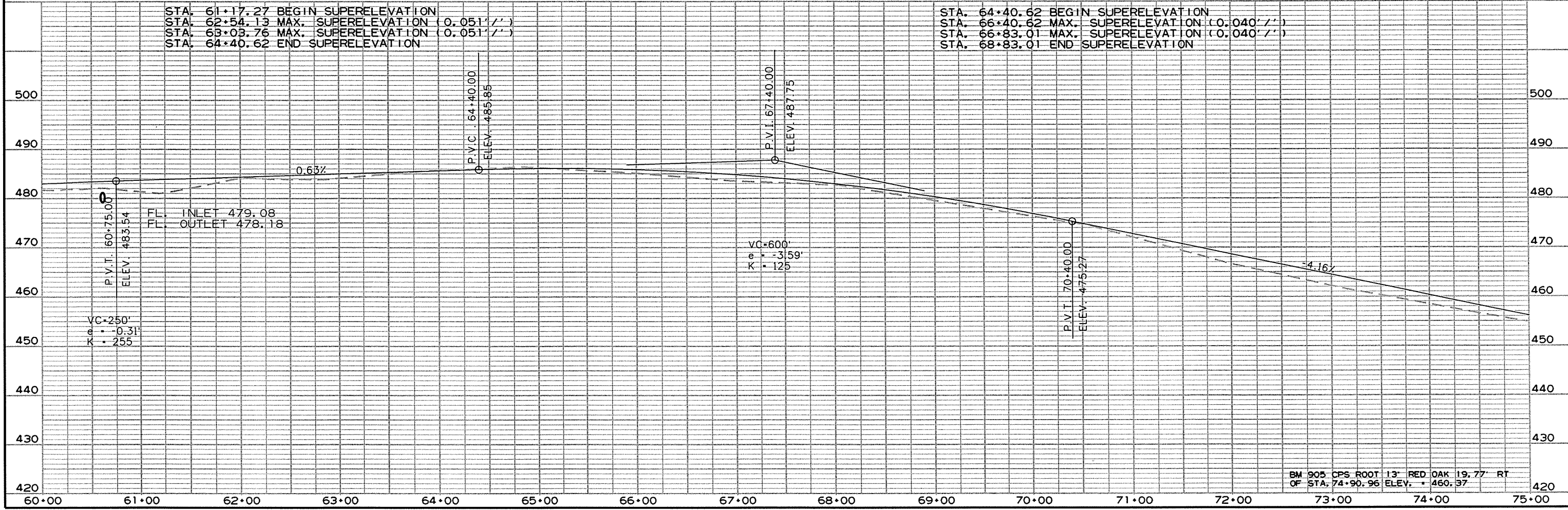
STA. 61+01 INSTALL  
24" X 54' PIPE CULVERT  
RT. SIDE DRAIN  
CONST. APPR. = 70 CU. YD.

PI = 62+54.56  
Δ = 15°00'07" RT.  
D = 10°00'00"  
T = 75.44  
L = 150.02  
e = 0.094'/'  
Ls = 250'

STA. 66+00 INSTALL  
18" X 28' PIPE CULVERT  
RT. SIDE DRAIN  
CONST. APPROACH = 20 CU. YD.

FENCE ITEMS

STA.	STA.	SIDE	TYPE D LIN. FT.
57+72	60+88	RT.	350
57+62	62+02	LT.	410
61+12	65+87	RT.	475
66+05	67+86	RT.	180



STA. 61+17.27 BEGIN SUPERELEVATION  
STA. 62+54.13 MAX. SUPERELEVATION (0.051'/'')  
STA. 63+03.76 MAX. SUPERELEVATION (0.051'/'')  
STA. 64+40.62 END SUPERELEVATION

STA. 64+40.62 BEGIN SUPERELEVATION  
STA. 66+40.62 MAX. SUPERELEVATION (0.040'/'')  
STA. 66+83.01 MAX. SUPERELEVATION (0.040'/'')  
STA. 68+83.01 END SUPERELEVATION

BM 905 CPS ROOT 13' RED OAK 19.77' RT  
OF STA. 74+90.96 ELEV. = 460.37

STA. 75+23 IN PLACE  
12' x 10' R.C. PIPE CULVERT  
LT. SIDE DRAIN  
REMOVE & INSTALL  
18' x 30' LT. SIDE DRAIN  
CONST. APPROACH = 20 CU. YD.  
FENCE ITEMS

STA. 77+88 IN PLACE  
12' x 53' C.M. PIPE CULVERT  
LT. SIDE DRAIN  
REMOVE & INSTALL  
18' x 28' LT. SIDE DRAIN  
CONST. APPROACH = 10 CU. YD.

STA. 80+88 INSTALL  
18' x 40' LT. SIDE DRAIN  
CONST. APPROACH = 65 CU. YD.

STA. 83+73 INSTALL  
18' x 30'  
LT. SIDE DRAIN  
CONST. APPROACH = 20 CU. YD.

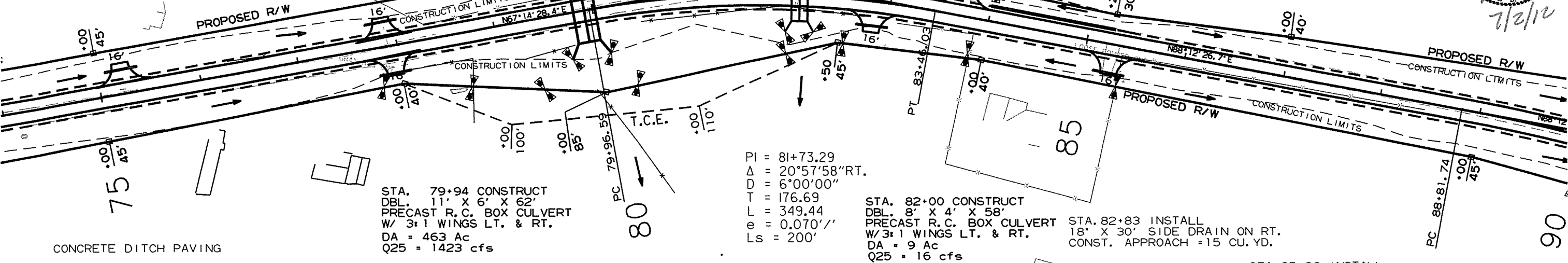
STA. 84+00 TO STA. 85+27 CONST.  
CONCRETE CURB (TYPE C) ON LT. = 127 LIN. FT.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		21	59
						JOB NO.	040464	

PLAN & PROFILE STA. 75+00 - 90+00



STA.	STA.	SIDE	TYPE D LIN. FT.	TYPE D-1 LIN. FT.
78+03	80+77	LT.	210	
78+10	82+70	RT.	570	
81+05	83+50	LT.	245	
83+00	85+10	RT.		
85+43	90+10	RT.		



CONCRETE DITCH PAVING

STA.	STA.	SIDE	"W"	SQ. YD.
71+00	77+00	RT.	4	267
71+00	77+00	LT.	4	267

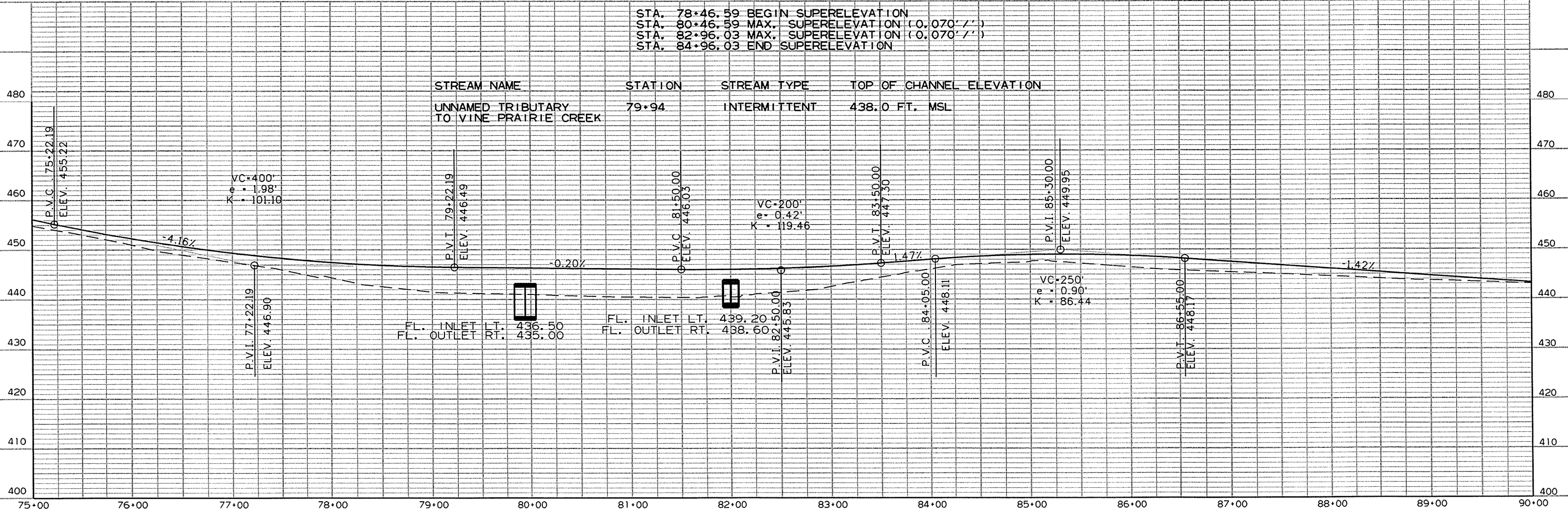
STA. 79+94 CONSTRUCT  
DBL. 11' x 6' x 62'  
PRECAST R.C. BOX CULVERT  
W/ 3:1 WINGS LT. & RT.  
DA = 463 Ac  
Q25 = 1423 cfs

STA. 79+46 IN PLACE  
60' x 48' x 24' C.M. ARCH  
PIPE CULVERT CROSS DRAIN  
REMOVE

STA. 82+03 IN PLACE  
24' x 26' R.C. PIPE CULVERT  
CROSS DRAIN  
REMOVE

STA. 82+07 IN PLACE  
DBL. 24' x 26' C.M. PIPE CULVERT  
CROSS DRAIN  
REMOVE

STA. 85+26 INSTALL  
18' x 28' SIDE DRAIN ON RT.  
CONST. APPROACH = 10 CU. YD.



STA. 78+46.59 BEGIN SUPERELEVATION  
STA. 80+46.59 MAX. SUPERELEVATION (0.070'/'')  
STA. 82+96.03 MAX. SUPERELEVATION (0.070'/'')  
STA. 84+96.03 END SUPERELEVATION

STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL ELEVATION
UNNAMED TRIBUTARY TO VINE PRAIRIE CREEK	79+94	INTERMITTENT	438.0 FT. MSL

FL. INLET LT. 436.50  
FL. OUTLET RT. 435.00

FL. INLET LT. 439.20  
FL. OUTLET RT. 438.60

P.V.I. 82+50.00  
ELEV. 445.83

P.V.C. 84+05.00  
ELEV. 448.11

VC=250'  
e = 0.90'  
K = 86.44

P.V.I. 86+55.00  
ELEV. 448.17

STA.	STA.	SIDE	FENCE ITEMS TYPE D LIN. FT.	TYPE D-1 LIN. FT.	4' CHAIN LINK LIN. FT.	16' GATE EACH
90+50	96+14	LT.		565		
91+60		LT.			2	
93+80	93+45	RT.		345		
96+50	97+00	RT.		320		
97+50	97+50	LT.		100		
98+78	98+95	LT.				
98+95	101+60	LT.	265			
101+78		LT.				
101+90	103+38	LT.	150			

STA. 96+30 IN PLACE  
12' x 24' PLASTIC PIPE CULVERT  
LT. SIDE DRAIN  
REMOVE & INSTALL  
18' x 28' PIPE CULVERT LT.  
SIDE DRAIN CONST. APPROACH = 15 CU. YD.

STA. 98+78 IN PLACE  
31' C.M. PIPE CULVERT  
LT. SIDE DRAIN  
REMOVE & INSTALL  
18' x 28' PIPE CULVERT  
LT. SIDE DRAIN  
CONST. APPROACH = 15 CU. YD.

STA. 91+62 IN PLACE  
12' x 96' R.C. PIPE CULVERT  
LT. SIDE DRAIN  
REMOVE & INSTALL  
18' x 50' PIPE CULVERT  
LT. SIDE DRAIN  
CONST. APPROACH = 50 CU. YD.

STA. 101+78 IN PLACE  
31' C.M. PIPE CULVERT  
LT. SIDE DRAIN  
REMOVE & INSTALL  
18' x 28' PIPE CULVERT  
LT. SIDE DRAIN  
CONST. APPROACH = 15 CU. YD.

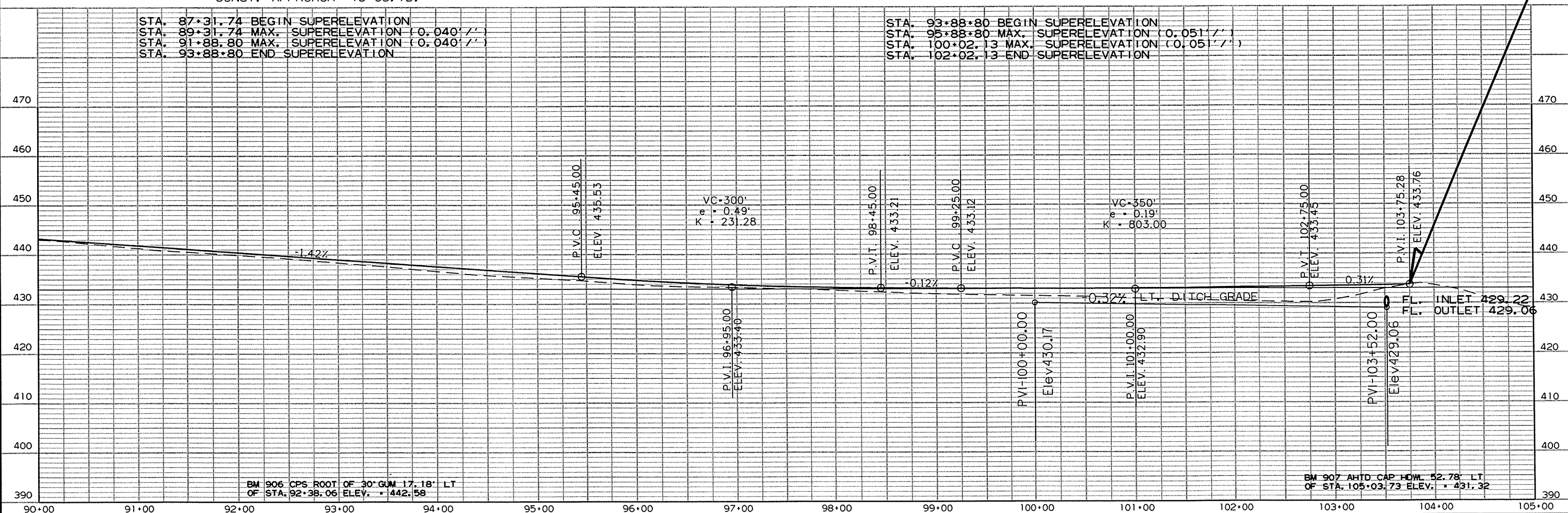
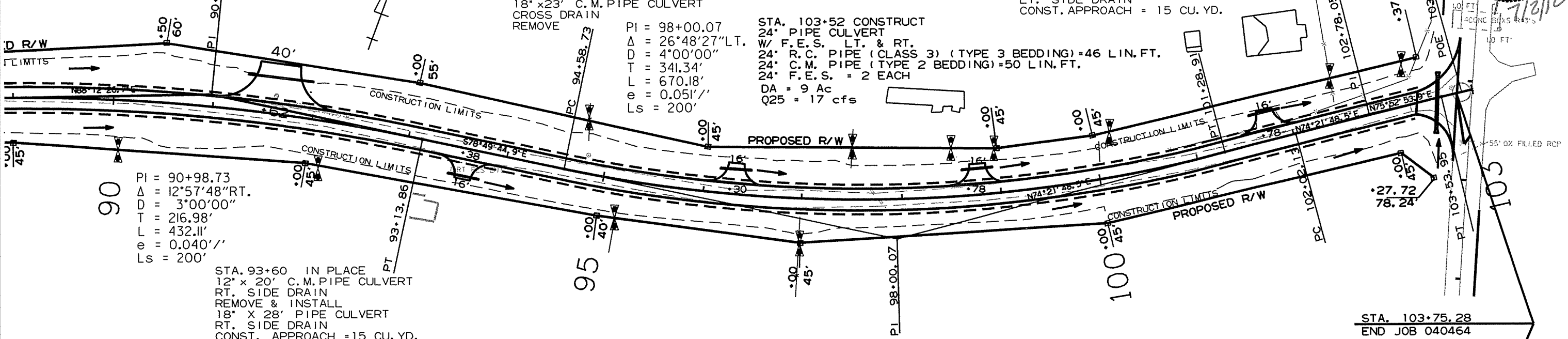
STA. 97+76 IN PLACE  
18' x 23' C.M. PIPE CULVERT  
CROSS DRAIN  
REMOVE

PI = 98+00.07  
Δ = 26°48'27"LT.  
D = 4°00'00"  
T = 341.34'  
L = 670.18'  
e = 0.051'/'  
Ls = 200'

STA. 103+52 CONSTRUCT  
24' PIPE CULVERT  
W/ F.E.S. LT. & RT.  
24' R.C. PIPE (CLASS 3) (TYPE 3 BEDDING) = 46 LIN. FT.  
24' C.M. PIPE (TYPE 2 BEDDING) = 50 LIN. FT.  
24' F.E.S. = 2 EACH  
DA = 9 AC  
Q25 = 17 cfs

PI = 102+78.05  
Δ = 1°31'05"RT.  
D = 1°00'00"  
T = 75.91'  
L = 151.82'  
e = NO SUPER

PLAN & PROFILE STA. 90+00 - 105+00

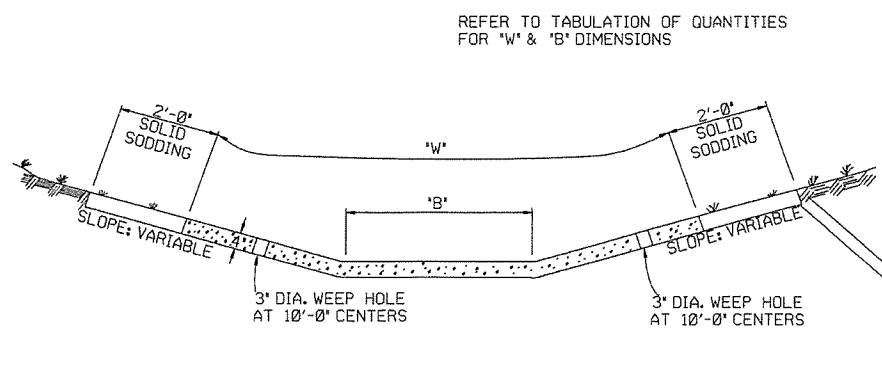


STA. 87+31.74 BEGIN SUPERELEVATION  
STA. 89+31.74 MAX. SUPERELEVATION (0.040'/'')  
STA. 91+88.80 MAX. SUPERELEVATION (0.040'/'')  
STA. 93+88.80 END SUPERELEVATION

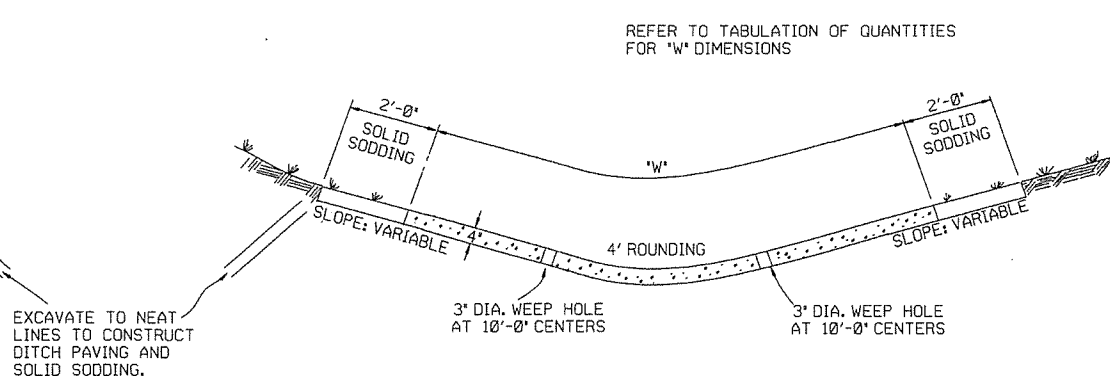
STA. 93+88.80 BEGIN SUPERELEVATION  
STA. 95+88.80 MAX. SUPERELEVATION (0.051'/'')  
STA. 100+02.13 MAX. SUPERELEVATION (0.051'/'')  
STA. 102+02.13 END SUPERELEVATION

BM 906 CPS ROOT OF 30' GUM 17.18' LT  
OF STA. 92+38.06 ELEV. = 442.58

BM 907 AHTD CAP HOWL 52.78' LT  
OF STA. 105+03.73 ELEV. = 431.32



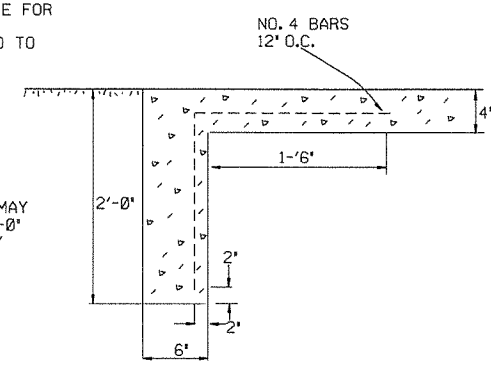
TYPE A



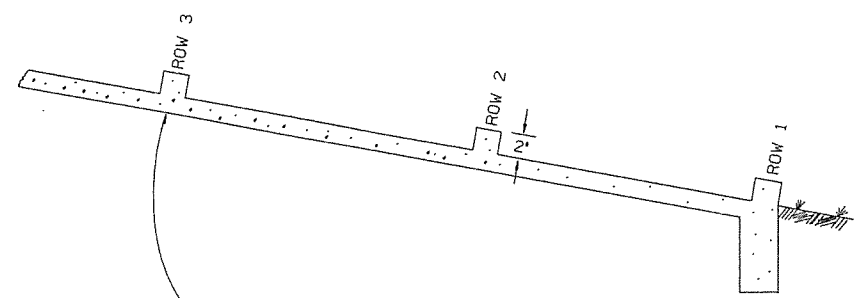
TYPE B

EXCAVATE TO NEAT LINES TO CONSTRUCT DITCH PAVING AND SOLID SODDING.

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.'

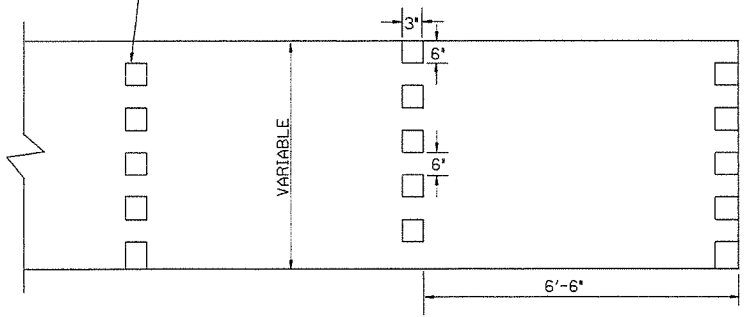


TOE WALL DETAIL FOR CONCRETE DITCH PAVING



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)

GENERAL NOTES:

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

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

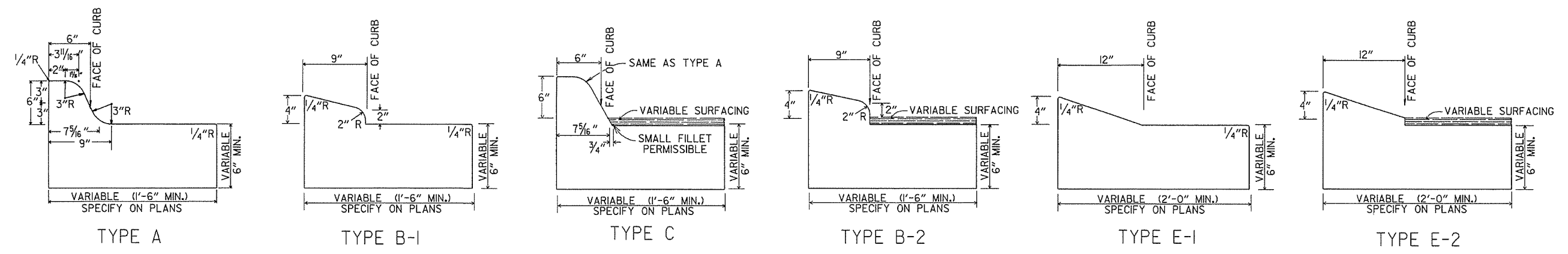
1' WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-88	ELIMINATED MIN. ROWS OF ELEMENTS	11-30-89
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	
10-2-72	TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

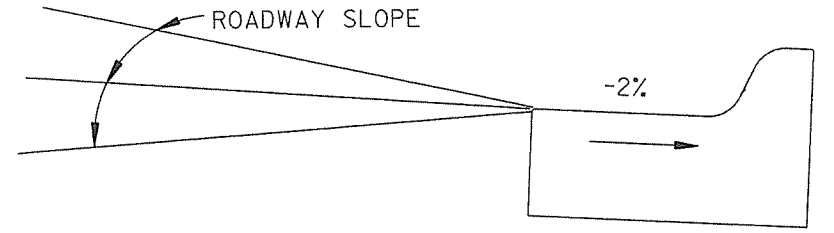
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

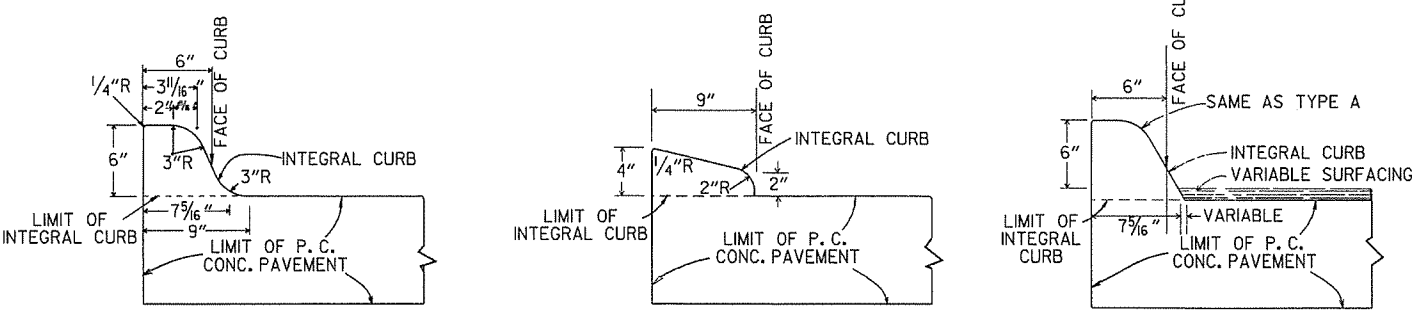
STANDARD DRAWING CDP-1



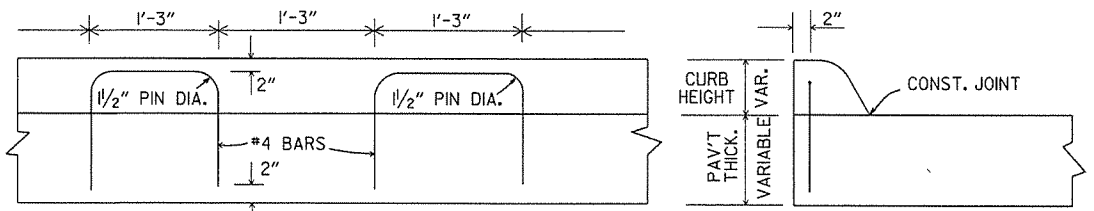
CONCRETE COMBINATION CURB AND GUTTER



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

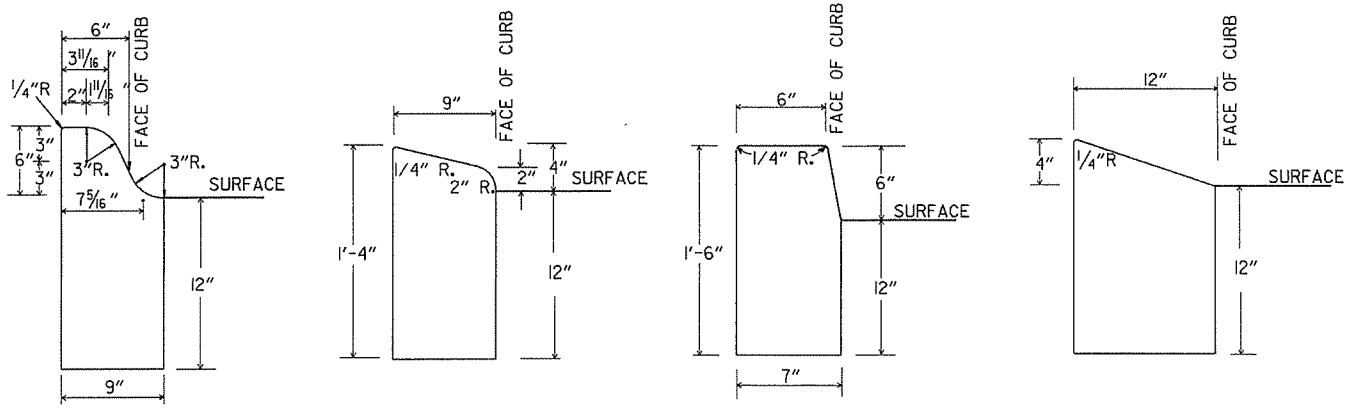


INTEGRAL CURB

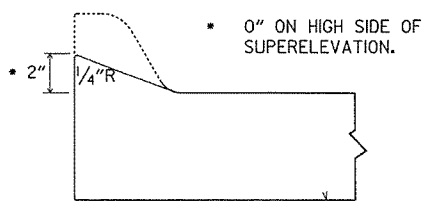


LONGITUDINAL SECTION ELEVATION

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

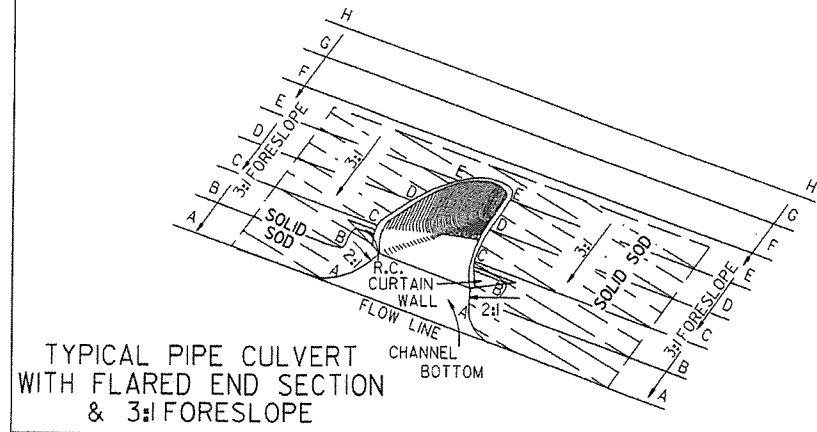
DATE	REVISION	DATE FILMED
II-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
II-10-05	ADDED DETAILS OF TYPE E CURBS	
II-16-01	REVISED CONCRETE CURB TYPE B	
II-18-98	REVISED MODIFIED CURB	
6-2-94	ADDED NOTE TO SPECIAL MODIFIED CURB	
8-5-93	CORRECTED GUTTER SLOPE	8-5-93
10-1-92	ADDED DETAILS OF GUTTER SLOPE	10-1-92
5-24-90	ADDED DETAILS OF MODIFIED CURB	5-24-90
II-30-89	VARIABLE DEPTH TYPE A & B I	II-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
II-1-73	REVISED MODIFIED CURB	500-1-1-73
10-2-72	REVISED AND REDRAWN	912-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

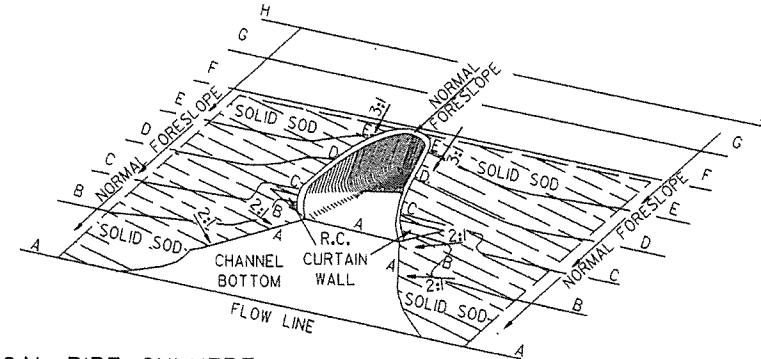
CURBING DETAILS

STANDARD DRAWING CG-1

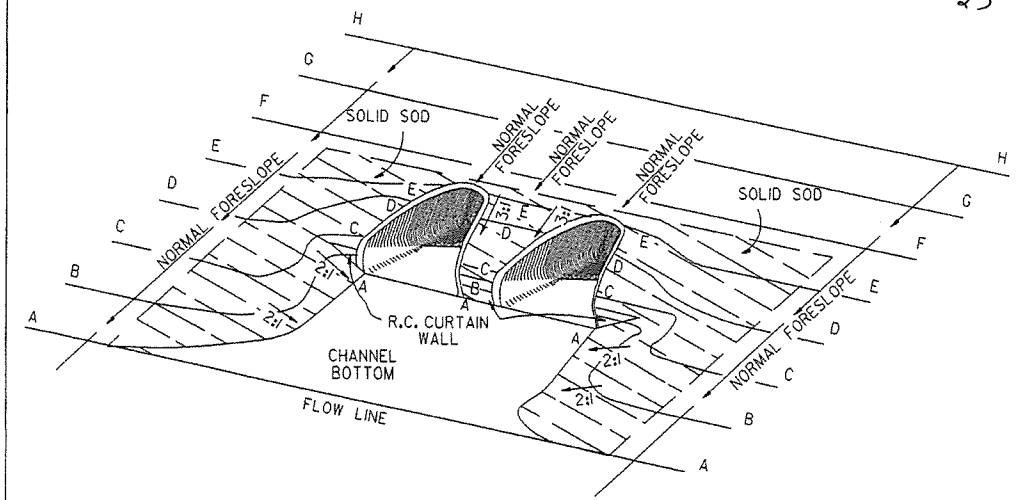




TYPICAL PIPE CULVERT WITH FLARED END SECTION & 3:1 FORESLOPE



TYPICAL PIPE CULVERT WITH FLARED END SECTION & FLATTENED ADJACENT SLOPES



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

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

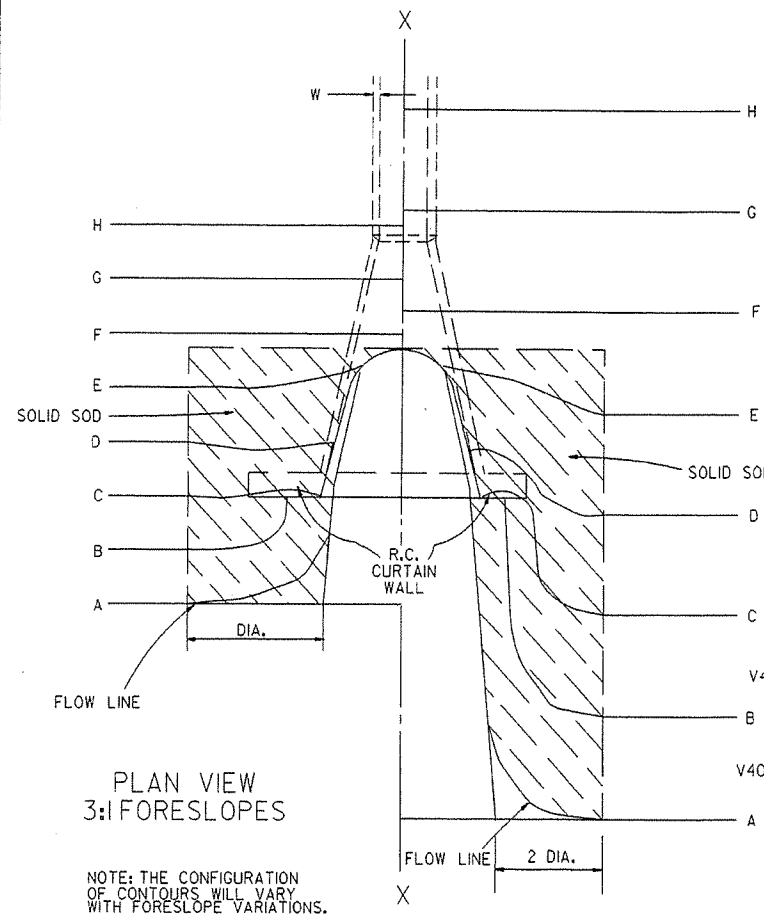
PIPE DIA.	H <sub>1</sub>	L <sub>1</sub>	L	L (DBL.) 2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11 1/2"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0 1/2"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3 1/2"	5'-7"	11'-0"	9'-0"	0.45	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.

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT								DOUBLE R.C. PIPE CULVERT									
	H401		H402		V401		V402		H401		H402		V401		V402			
	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'-9"	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

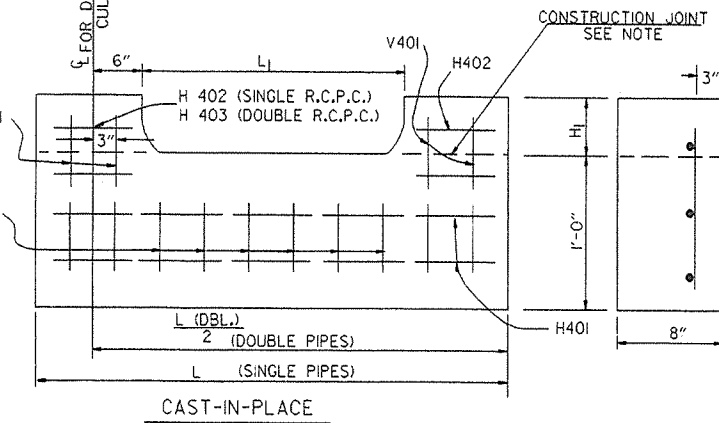
ALL REINFORCING STEEL #4 BARS @ 6" O.C.



PLAN VIEW 3:1 FORESLOPES

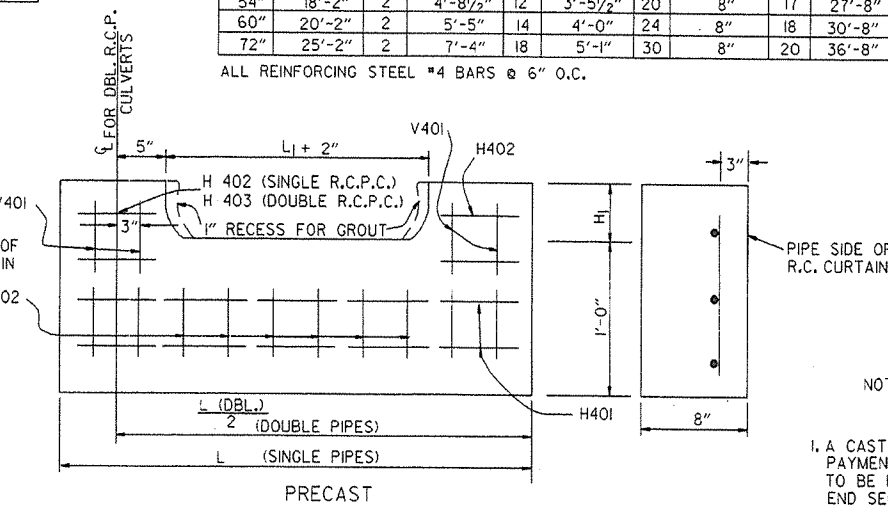
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW FLATTENED FORESLOPES



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.



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.

R.C. CURTAIN WALL DETAILS

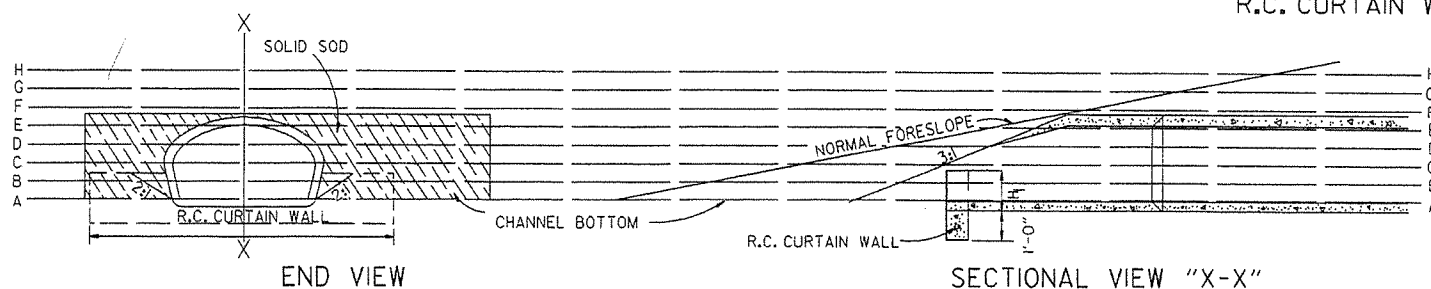
SOLID SODDING

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.						SQ. YDS.					
18"	5	7	12	6	8	13	8	12	19	9	13	20
24"	8	12	19	9	13	20	13	18	29	14	19	30
30"	13	18	29	14	19	30	17	26	41	18	28	43
36"	17	26	41	18	28	43	23	35	55	25	37	57
42"	23	35	55	25	37	57	29	46	68	31	48	70
48"	35	57	85	37	59	87	45	62	104	48	65	107
60"	45	62	104	48	65	107	64	92	156	67	95	159
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 W10 MAY BE USED IN LIEU OF REINFORCING BARS.



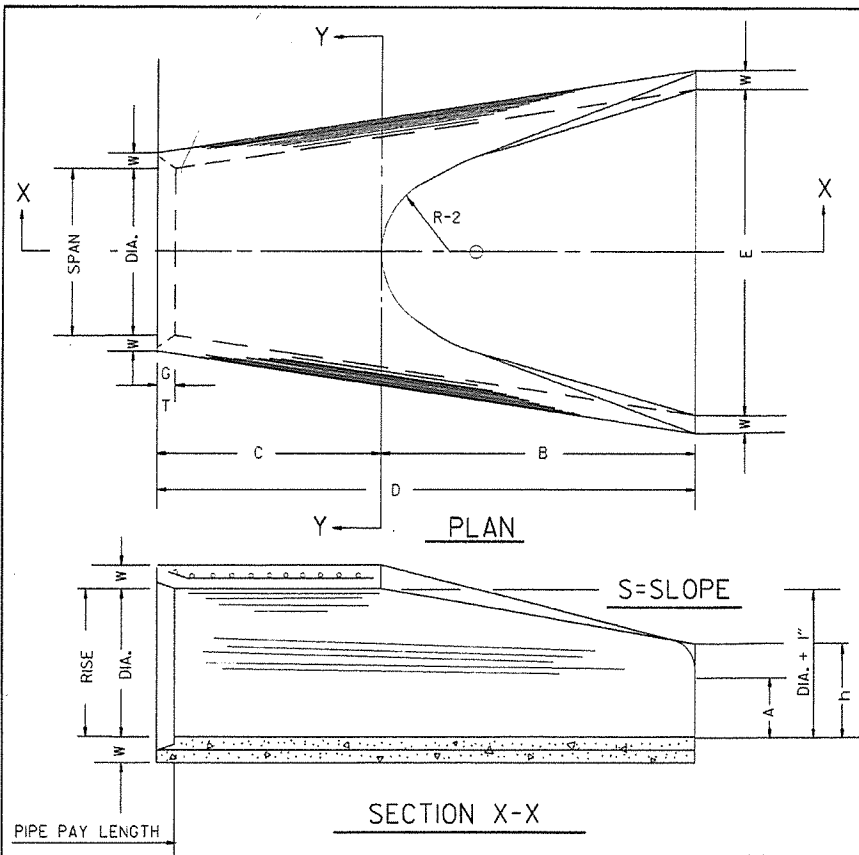
END VIEW

SECTIONAL VIEW "X-X"

10-18-96 ADDED NOTE TO SOLID SODDING	10-18-96	ARKANSAS STATE HIGHWAY COMMISSION
10-12-95 CORRECTED SPELLING		
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

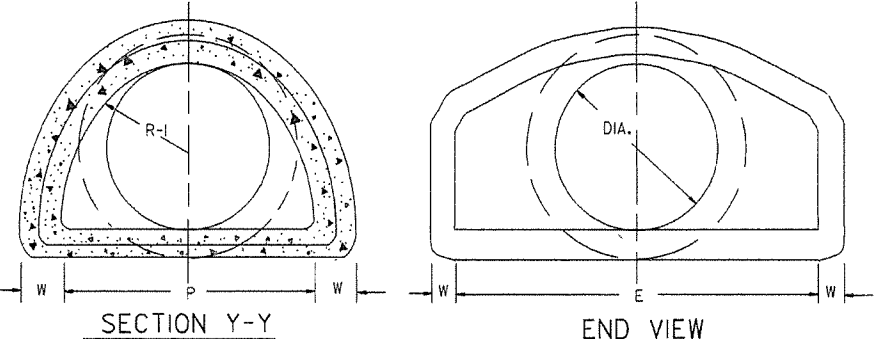
FLARED END SECTION

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 3/8"
36"	4"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	6'-0"	3:1	37"	47 1/8"	24 5/8"	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 3/8"	27 1/2"	22"	3 3/4"	5380	2'-2 1/2"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56 1/2"	28 1/2"	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 3/8"	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 5/8"	24"	5"	13250	4'-6"



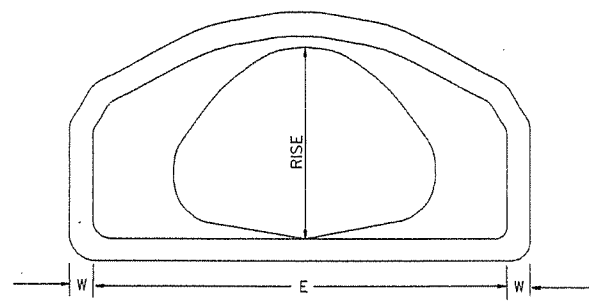
NOTE: TONGUE END ON UPSTREAM SECTION  
GROOVE END ON DOWNSTREAM SECTION

END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

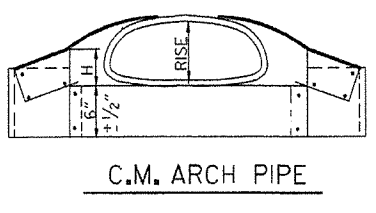
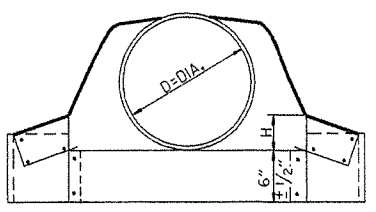
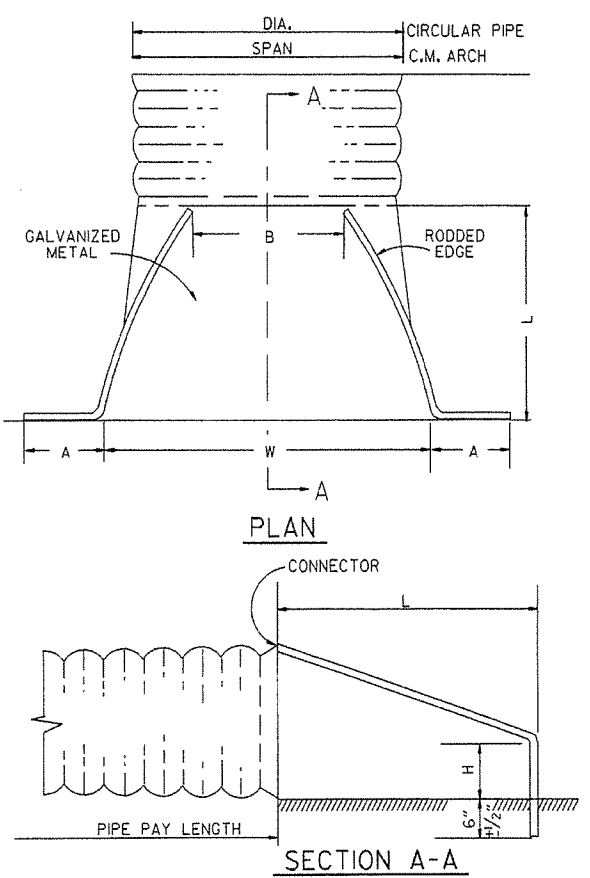
### ARCH PIPE

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										
INCHES														
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 1/8"	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 5/8	27	4"	10 1/2"	4'-0"	2'-1 1/2"	6'-1 1/2"	6'-6"	54 1/8"	22"	3 1/2"	2 1/2:1
42	51 1/8	51	31 5/8	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 3/4"	8'-1 3/4"	7'-10"	70 3/8"	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 1/16"	24"	4 3/4"	2 1/4:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 3/16"	24"	5"	2 1/4:1

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



END VIEW CONCRETE ARCH PIPE

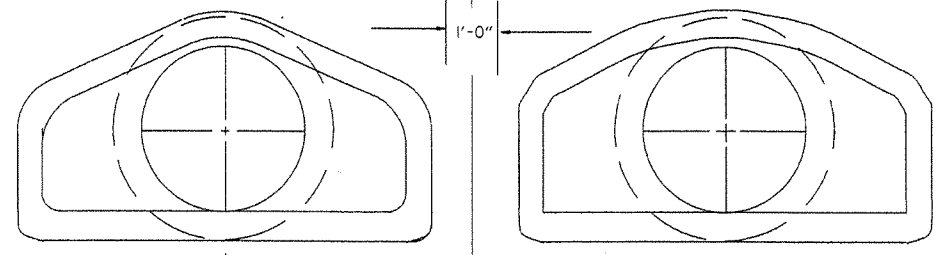


### CIRCULAR PIPE

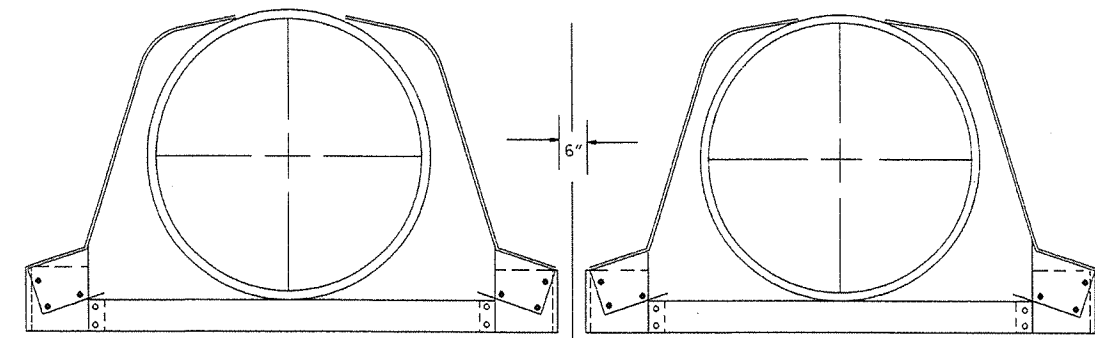
D. DIA.	GAUGE	A 1" ±	B. MAX. 1" ±	H 1 1/2" ±	L 1 1/2" ±	W ±	S
12	16	6	6	6	21	24	2 1/2:1
15	16	7	8	6	26	30	2 1/2:1
18	16	8	10	6	31	36	2 1/2:1
21	16	9	12	6	36	42	2 1/2:1
24	16	10	13	6	41	48	2 1/2:1
30	14	12	16	8	51	60	2 1/2:1
36	14	14	19	9	60	72	2 1/2:1
42	12	16	22	11	69	84	2 1/2:1
48	12	18	27	12	78	90	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 1" ±	B. MAX. 1" ±	H 1 1/2" ±	L 1 1/2" ±	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



MULTIPLE R.C. PIPE CULVERTS

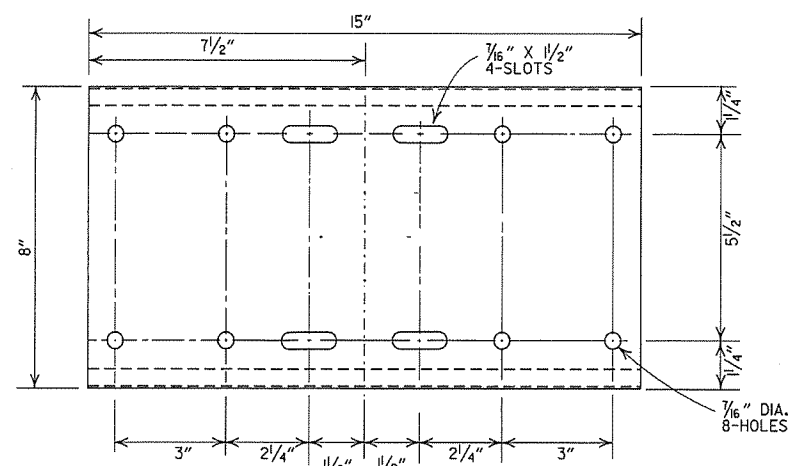


MULTIPLE C.M. PIPE CULVERTS

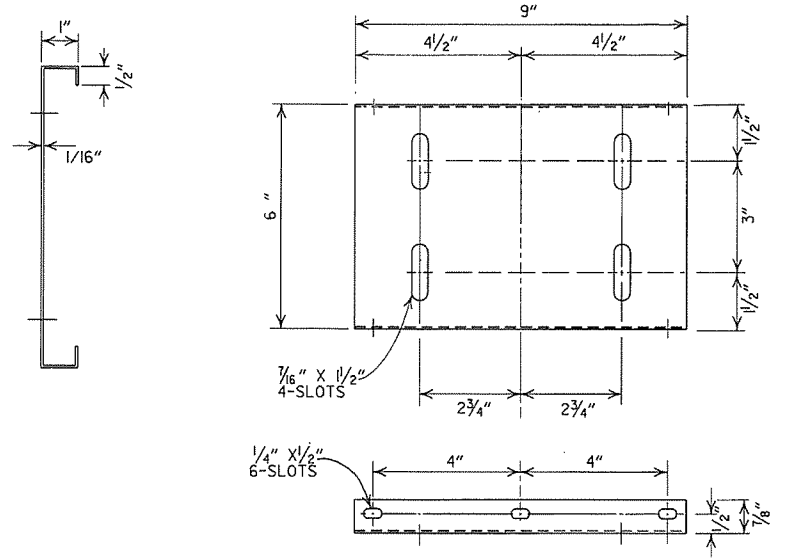
NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

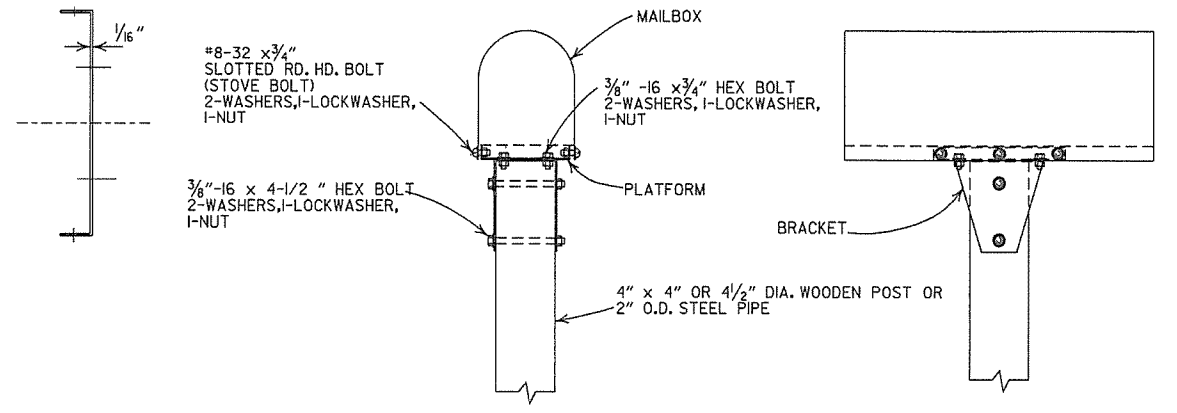
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96	ARKANSAS STATE HIGHWAY COMMISSION
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80	
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78	
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75	FLARED END SECTION
12-5-74	REMOVED NOTE 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	



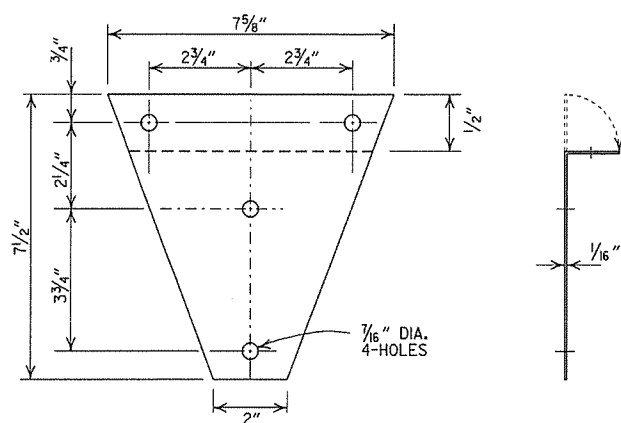
SHELF



PLATFORM

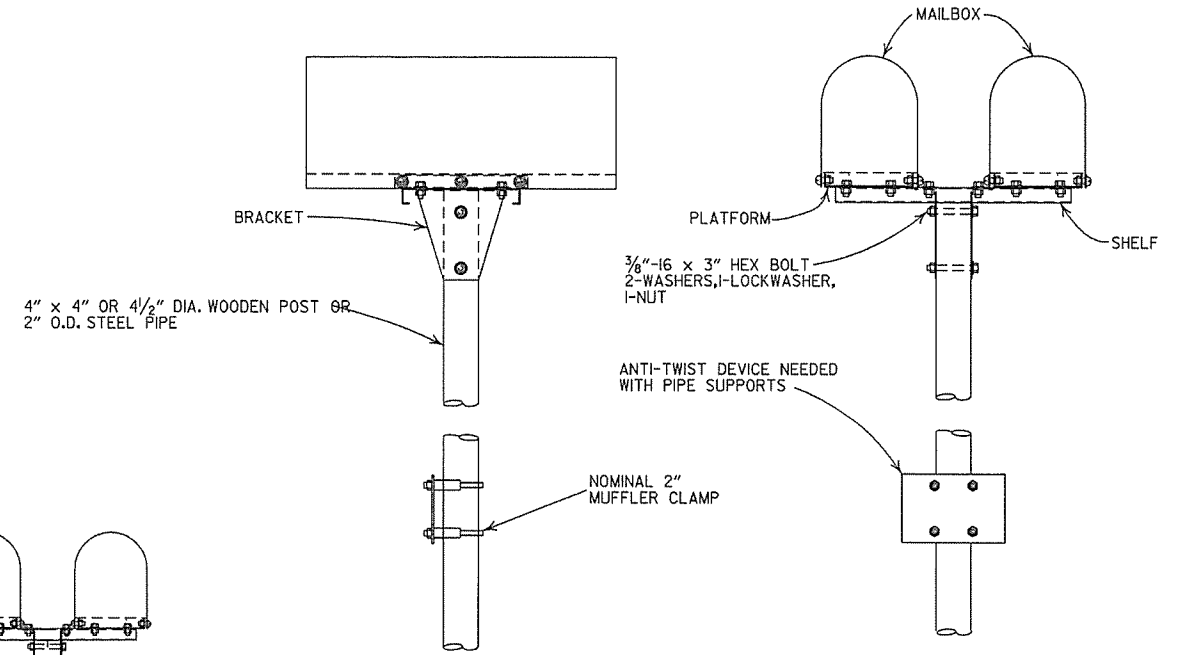


SINGLE INSTALLATION

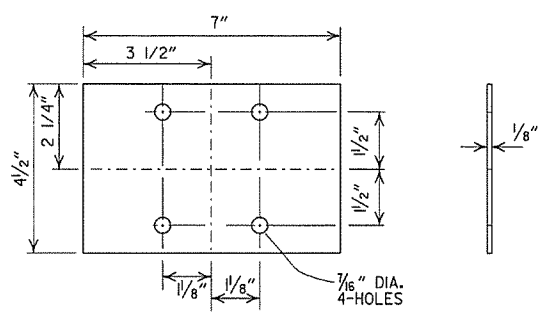


BRACKET

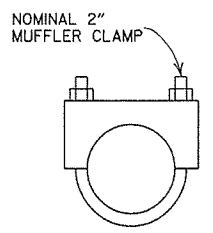
- GENERAL NOTES
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
  2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
  3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF 1/4" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X 3/4" FLATHEAD WOOD SCREWS USED TO ATTACH THE MAILBOX TO THE PLATFORM.
  4. THE MAILBOX SHELF AND PLATFORM THAT IS SHOWN IS FOR STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM SIZE SHALL BE MODIFIED TO FIT MAILBOXES OF A DIFFERENT SIZE.
  5. METAL PIPE FOR MAILBOX SUPPORT SHALL BE 2" OUTSIDE DIAMETER STEEL WITH A WALL THICKNESS OF 0.145" AND A WEIGHT OF 2.72 LBS PER FT. OUTSIDE DIAMETER AND WEIGHT SHALL HAVE A TOLERANCE OF +/- 5% ACCORDING TO AASHTO M 181.
  6. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE USED, PROVIDED THEY ARE ON THE AHTD QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



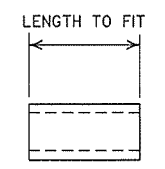
DOUBLE INSTALLATION



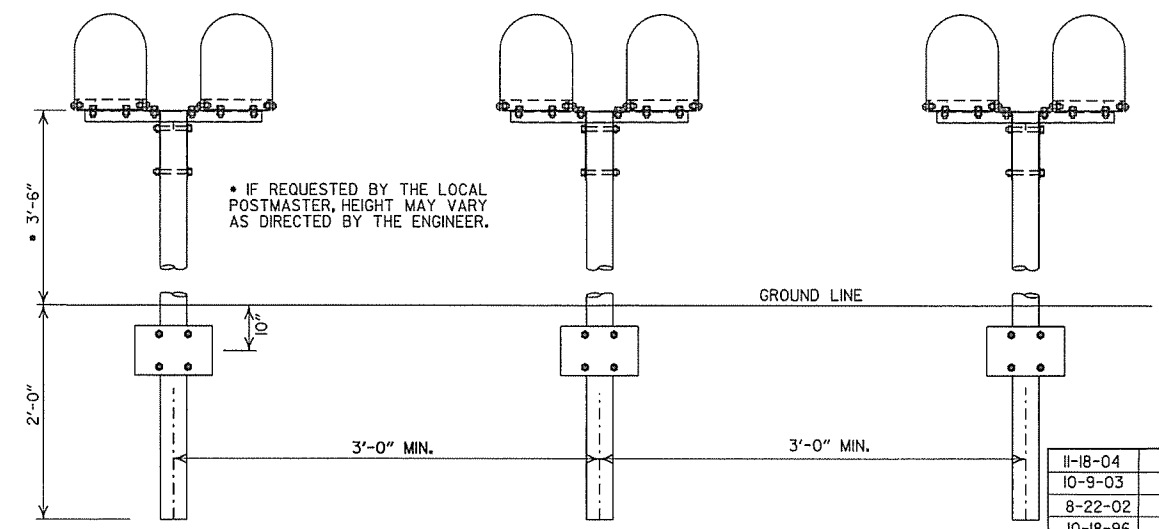
ANTI-TWIST PLATE



CLAMP



SPACER



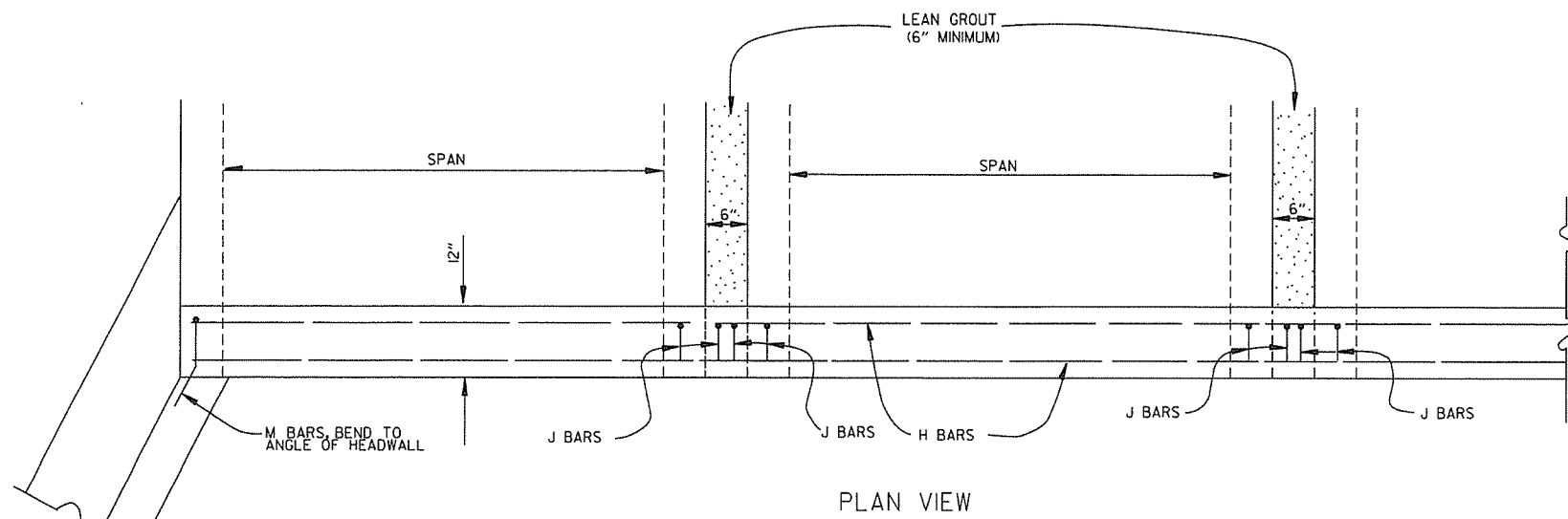
SPACING FOR MULTIPLE POST INSTALLATION

11-18-04	REVISED NOTES
10-9-03	REVISED NOTE 6
8-22-02	REVISED NOTE 6
10-18-96	CORRECTED AASHTO
10-1-92	CORRECTED SPELLING
9-26-91	NEW PHONE NUMBER
8-15-91	ADDED NOTE
11-30-89	ADJUSTED HEIGHT & ADDED NOTE
2-16-89	DELETED SLOTS FROM SHELF & PLTF
11-17-88	ADJUSTED DIMENSIONS OF STEEL POSTS
7-15-88	ISSUED
DATE	FILMED
	REVISION

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

STANDARD DRAWING MB-1



**BAR LIST**

BAR	NO.	SIZE	LENGTH	BAR BENDING DIAGRAM
H	2	#4	•	
I	•	#4	•	
J	•	#4	1'-5"	
L	•	#4	3'-2"	
M	•	#4	1'-8"	

• NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT

**GENERAL NOTES**

WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

WINGS, FOOTINGS, APRONS AND CURTAIN WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE WING DRAWING. STEEL AND CONCRETE QUANTITIES WILL BE ADJUSTED TO FIT THE IN-PLACE WIDTH & HEIGHT OF THE PRECAST CONCRETE BOX CULVERTS.

ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFERS.

WINGWALLS AND FOOTINGS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR INSTALLING PRECAST BOX CULVERTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS:  
 PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.  
 SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS. THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE. THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8" THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

MEMBRANE WATERPROOFING CONFORMING TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.

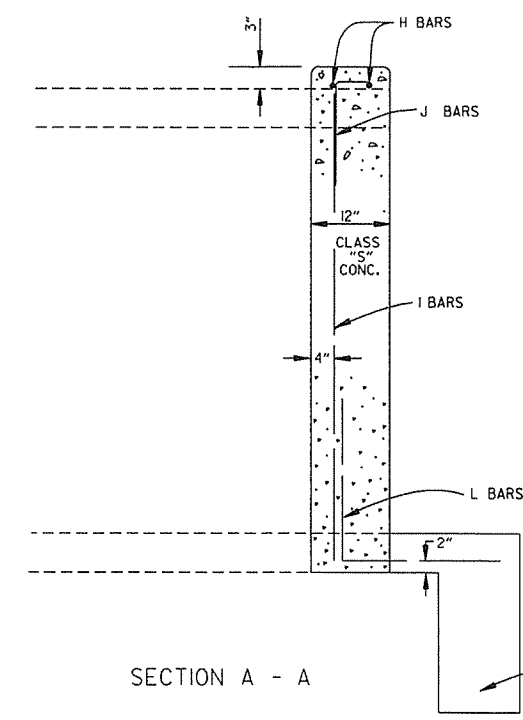
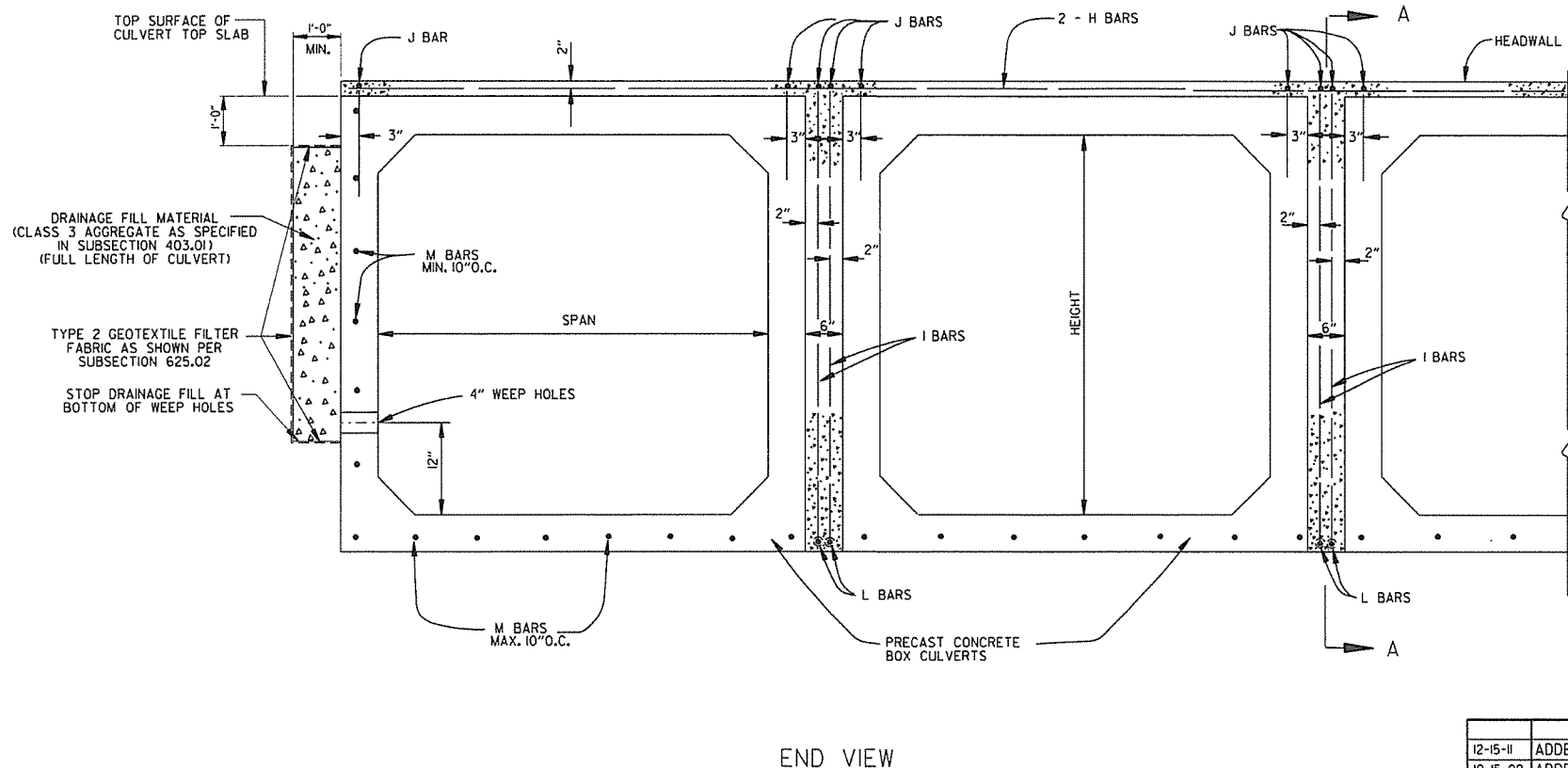
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

IN OUTER BARRELS, ONE WEEP HOLE IS REQUIRED IN EXTERIOR WALLS OF EACH PRECAST CULVERT SECTION. WEEP HOLES SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" IN THE ASSEMBLED CULVERT AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

MINIMUM WIDTH SHALL BE 12" (6" ON EACH SIDE OF JOINT). ON MULTIPLE BARREL CULVERTS, MEMBRANE WATERPROOFING SHALL BE APPLIED TO EACH BARREL AS DESCRIBED ABOVE.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, FLOWABLE SELECT MATERIAL CONFORMING TO SECTION 206 OF THE STANDARD SPECIFICATIONS IN LIEU OF LEAN GROUT.



DATE	REVISION	DATE FILMED
12-15-11	ADDED NOTE & DTLS FOR WEEP HOLE AND DRAINAGE FILL	
10-15-09	ADDED GENERAL NOTE	
11-10-05	REVISED SPACING OF "M" BARS	
4-10-03	REVISED GENERAL NOTES	
10-18-96	CORRECTED AASHTO REF.	
10-1-92	ADDED NOTE FOR MEMBRANE WATERPROOFING	
8-15-91	ADDED NOTE FOR LEAN GROUT	
11-8-90	REVISED FOR 1991 SPECS	
11-30-89	ISSUED; JABE	

ARKANSAS STATE HIGHWAY COMMISSION  
 PRECAST CONCRETE BOX CULVERTS  
 STANDARD DRAWING PBC-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	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 5/16	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).

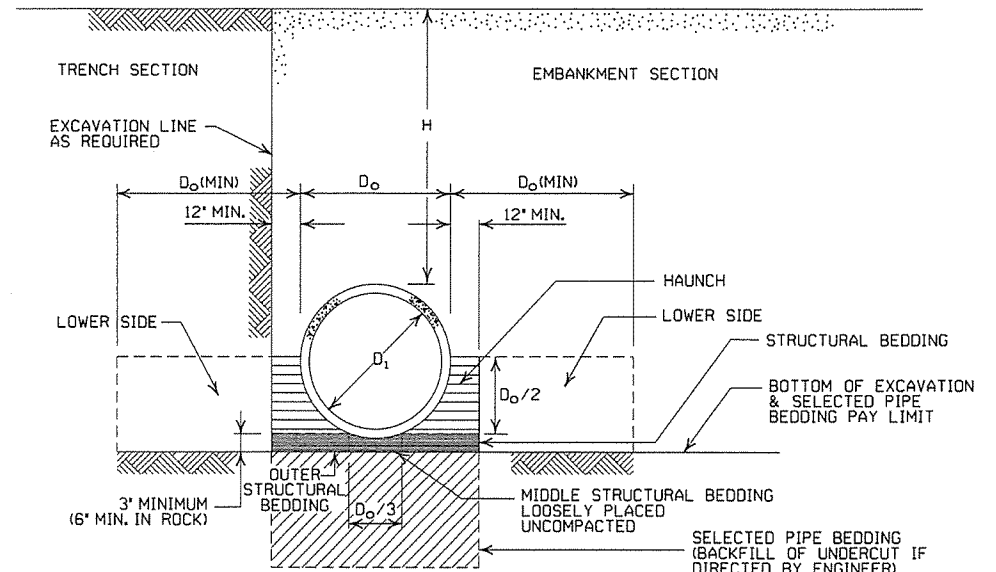
NOTE: HAUNCH AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF CONCRETE PIPE.

- LEGEND -

- D<sub>1</sub> = NORMAL INSIDE DIAMETER OF PIPE
- D<sub>o</sub> = 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			
	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
TYPE 1	21	32	50
TYPE 2	16	25	39
TYPE 3	12	20	30

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

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

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

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

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

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT  
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

Table with columns for PIPE DIAMETER (INCHES), MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET), MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET), and METAL THICKNESS (INCHES) for 2 1/2 inch by 1/2 inch corrugation and 3 inch by 1 inch or 5 inch by 1 inch corrugation.

CONSTRUCTION SEQUENCE

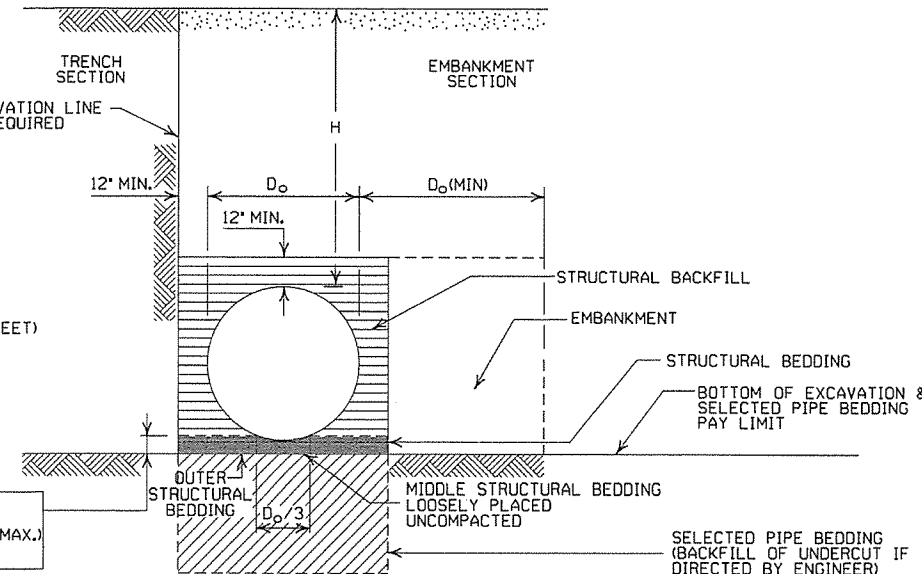
- 1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. COMPLETE STRUCTURAL BACKFILL OPERATION BY WORKING FROM SIDE TO SIDE OF THE PIPE...

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.

Table with columns for INSTALLATION TYPE and MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING, listing Type 1 and Type 2 materials.

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 3/8" X 1/2" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

GENERAL NOTES

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

CORRUGATED ALUMINUM PIPE (ROUND)

Table with columns for PIPE DIAMETER (INCHES), MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET), MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET), and METAL THICKNESS IN INCHES for 2 1/2 inch by 1/2 inch corrugation and 3 inch by 1 inch or 5 inch by 1 inch corrugation.

EQUIVALENT METAL THICKNESSES AND GAUGES

Table with columns for METAL THICKNESS IN INCHES (STEEL ZINC COATED, UNCOATED, ALUMINUM) and GAUGE NUMBER.

CORRUGATED METAL PIPE ARCHES

Table with columns for EQUIV. DIA. (INCHES), PIPE DIMENSION (SPAN X RISE) (INCHES), MINIMUM CORNER RADIUS (INCHES), MIN. THICKNESS REQUIRED INCHES, MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION, MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION, MIN. THICKNESS REQUIRED INCHES, MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION, and MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION for STEEL and ALUMINUM.

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

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.

Table with columns for DATE, REVISION, and DATE FILMED, containing revision history.

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1



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

- AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.
- SM3 WILL NOT BE ALLOWED.
- STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1/4 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.
- STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

①NOTE:  
18" MIN. (18" - 30" DIAMETERS)  
24" MIN. (36" - 48" DIAMETERS)  
MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

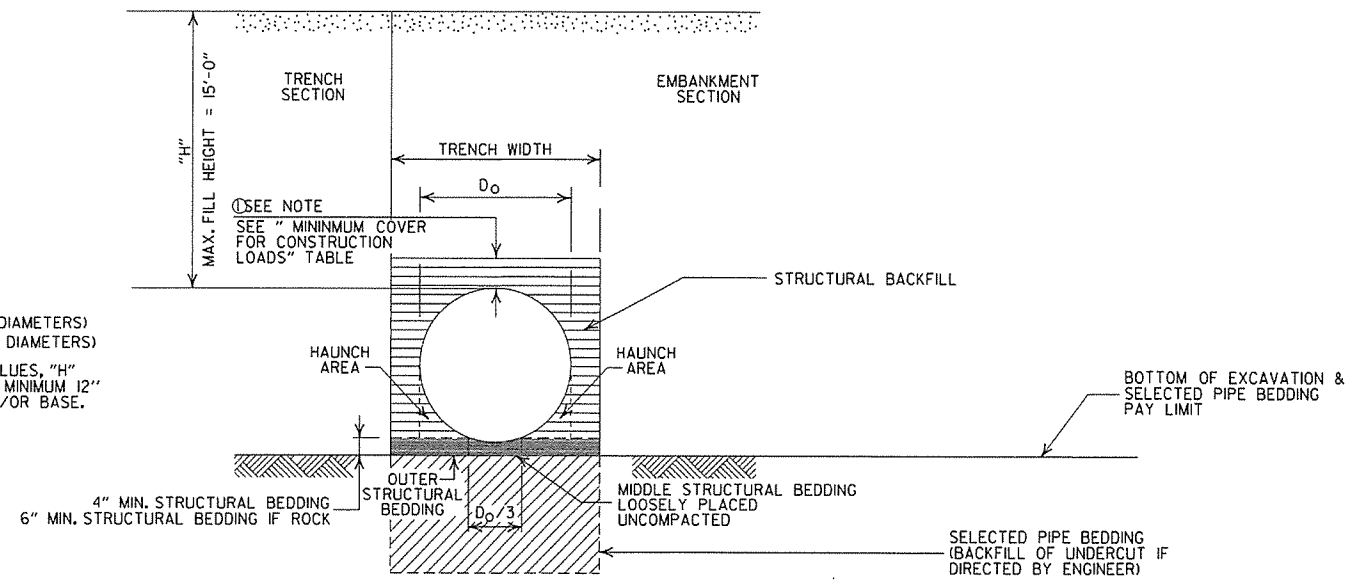
MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

- LEGEND -

- H = FILL HEIGHT (FT.)
- D<sub>o</sub> = OUTSIDE DIAMETER OF PIPE
- MAX. = MAXIMUM
- MIN. = MINIMUM
- ==== = STRUCTURAL BACKFILL MATERIAL
- ||||| = UNDISTURBED SOIL

GENERAL NOTES

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

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

ARKANSAS STATE HIGHWAY COMMISSION  
PLASTIC PIPE CULVERT  
(HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1



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

- AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL. SM3 WILL NOT BE ALLOWED.
  - STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1/4 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.
- STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF PVC PIPE.

MAXIMUM FILL HEIGHT  
BASED ON STRUCTURAL BACKFILL

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

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

MINIMUM TRENCH WIDTH  
BASED ON FILL HEIGHT "H"

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

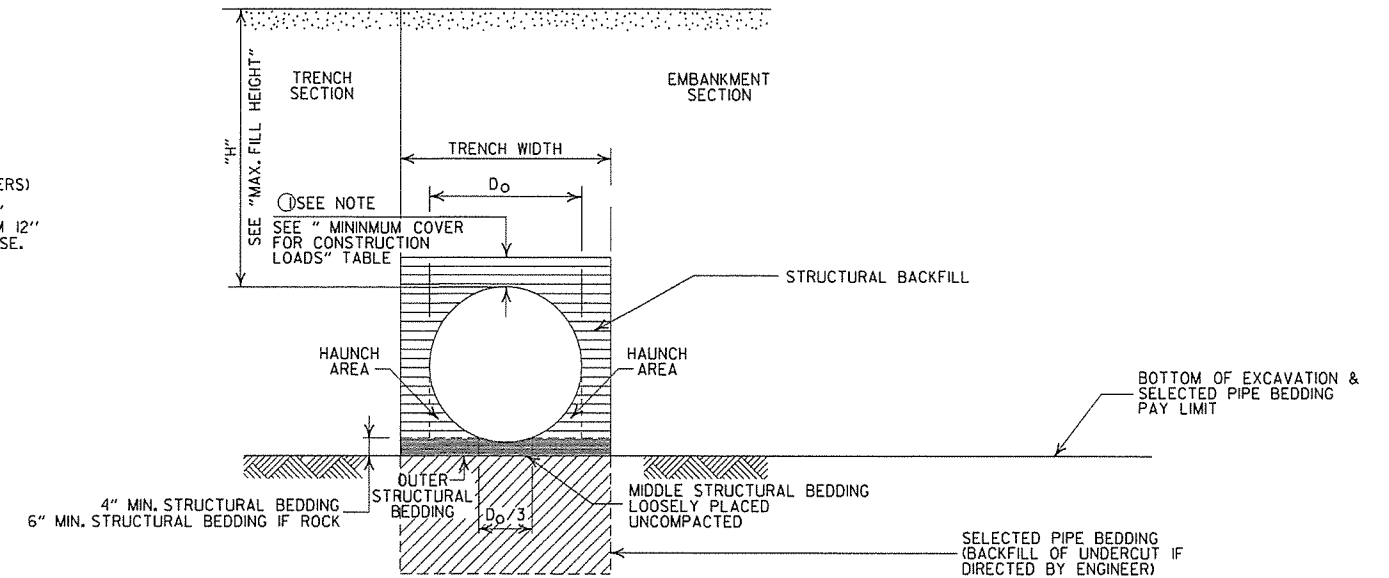
MULTIPLE INSTALLATION OF  
PVC PIPES

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

MINIMUM COVER FOR  
CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

- LEGEND -

H = FILL HEIGHT (FT.)  
D<sub>o</sub> = OUTSIDE DIAMETER OF PIPE  
MAX. = MAXIMUM  
MIN. = MINIMUM

==== = STRUCTURAL BACKFILL MATERIAL  
XXXXXX = UNDISTURBED SOIL

GENERAL NOTES

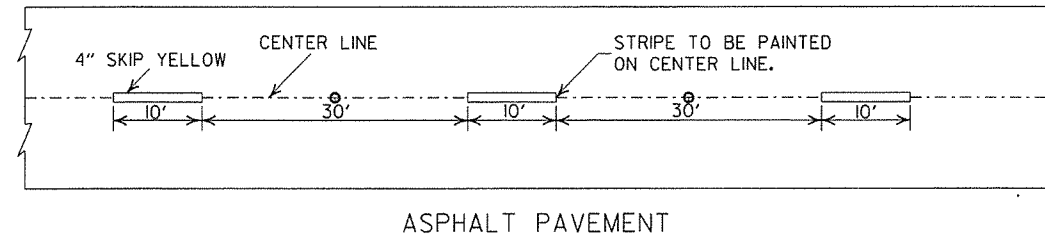
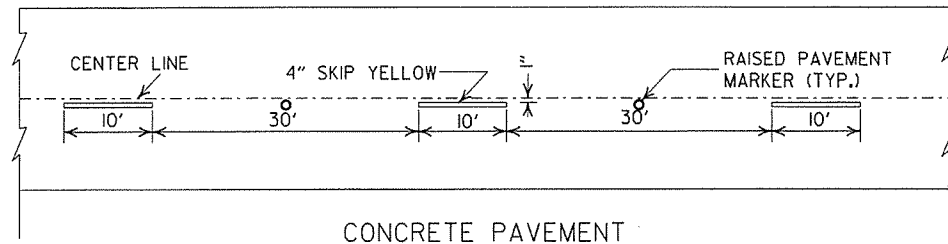
1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS I2454. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

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

ARKANSAS STATE HIGHWAY COMMISSION
PLASTIC PIPE CULVERT (PVC F949)
STANDARD DRAWING PCP-2



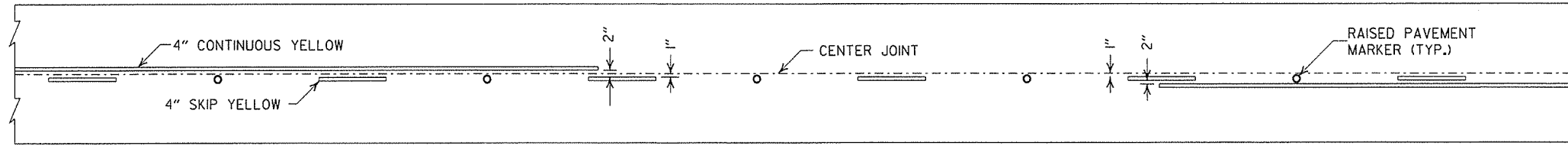




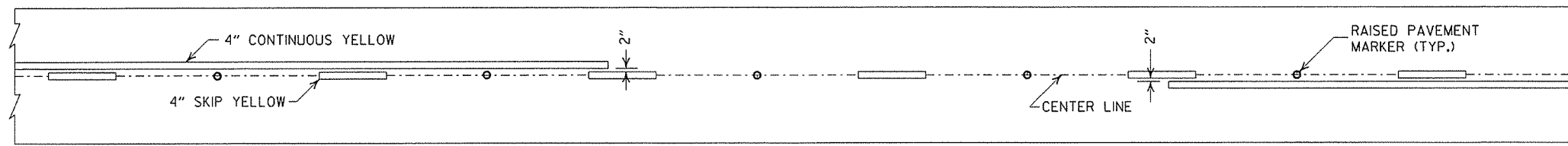
CONCRETE PAVEMENT

ASPHALT PAVEMENT

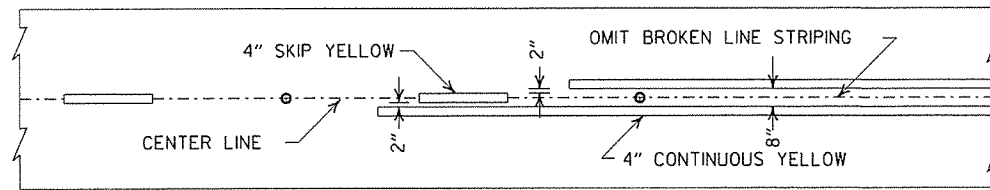
BROKEN LINE STRIPING



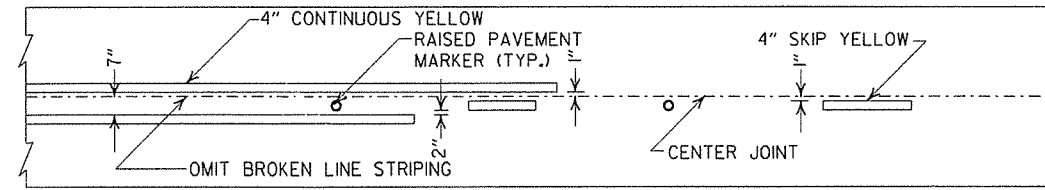
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

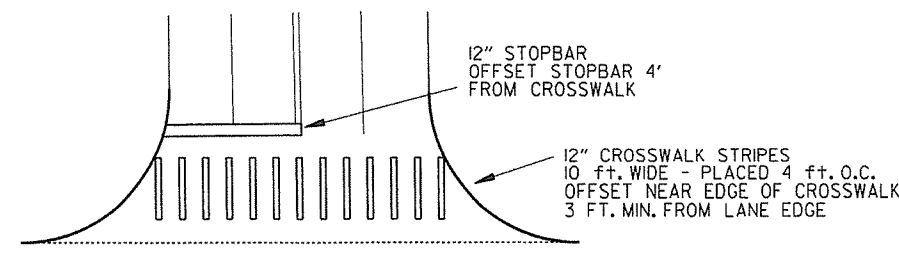


ASPHALT PAVEMENT



CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

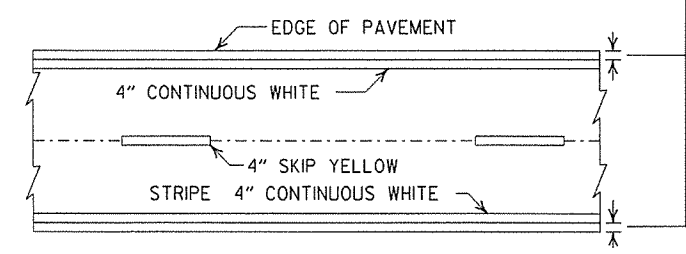


CROSSWALK AND STOPBAR DETAILS

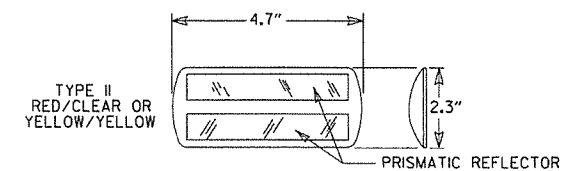
NOTES:

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

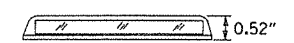
2" FOR ASPHALT OR CONCRETE PAVEMENT  
6" FOR BITUMINOUS SURFACE TREATMENT



PAVEMENT EDGE LINE MARKING



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



DETAIL OF  
STANDARD  
RAISED PAVEMENT MARKERS

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

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

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

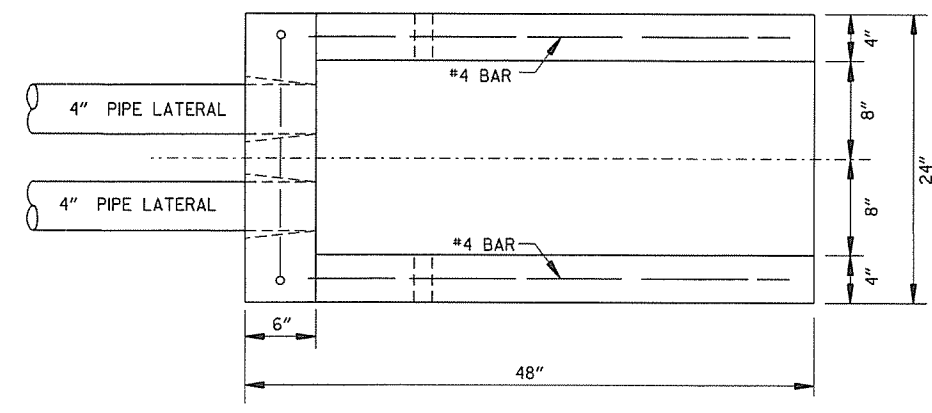
DATE	REVISION	FILMED
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

ARKANSAS STATE HIGHWAY COMMISSION

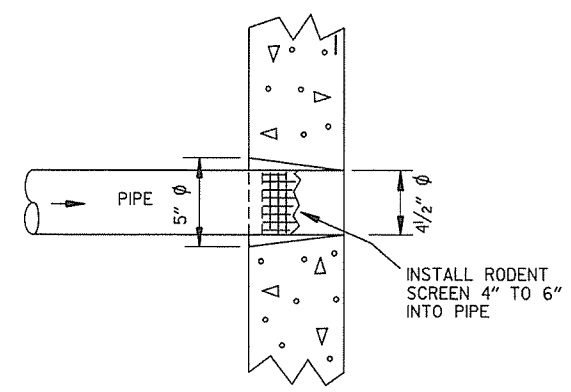
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

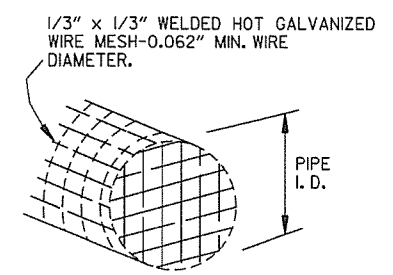
NOTE:  
 1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.  
 2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.  
 3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC, LAP FABRIC 12" OR THE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



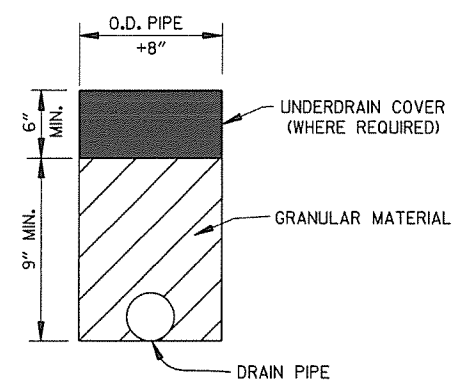
PLAN VIEW



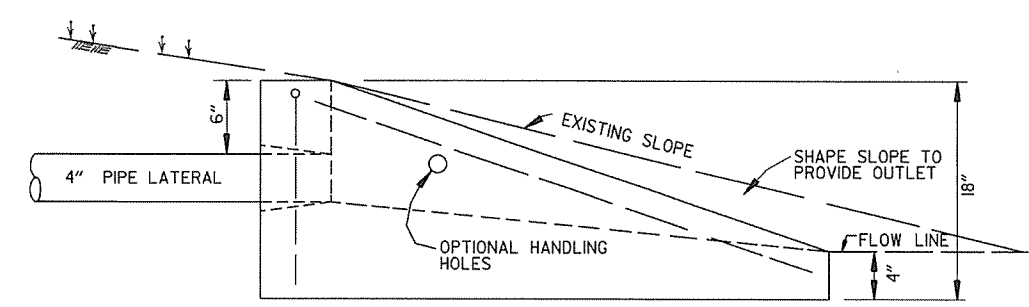
DETAIL OF HOLE FOR 4" PIPE



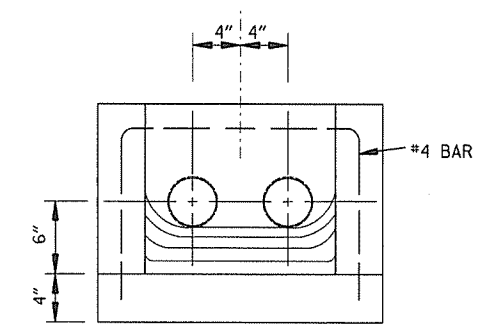
DETAIL OF RODENT SCREEN



DETAILS OF PIPE UNDERDRAIN



SIDE VIEW

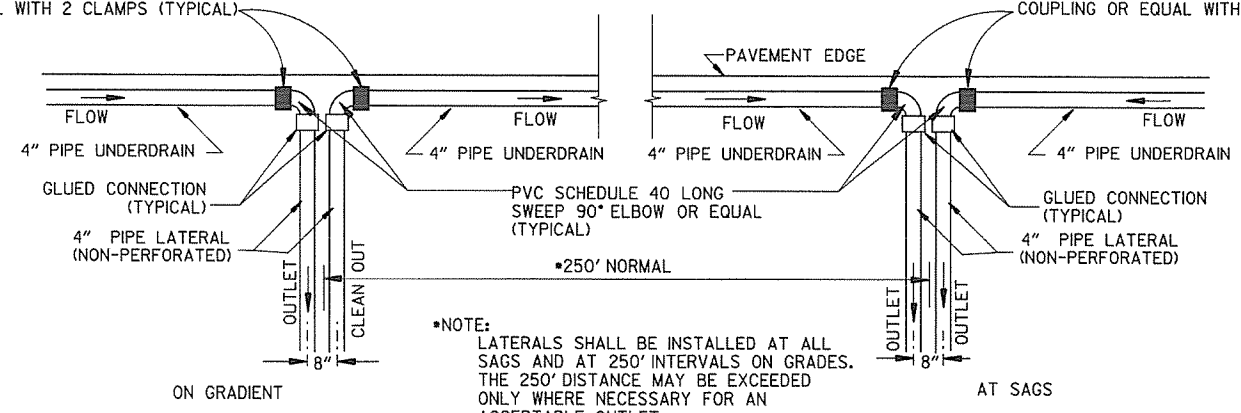


FRONT VIEW

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

UNDERDRAIN OUTLET PROTECTORS

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



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

DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

DATE	REVISION	DATE FILMED
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE; 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

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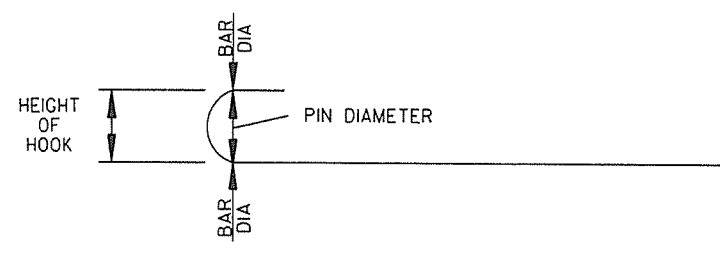
DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

STEEL FABRICATION: REINFORCING STEEL FABRICATION SHALL CONFORM TO THE DIMENSIONS LISTED IN THE TABLE BELOW:

BAR SIZE	PIN DIAMETER	HOOK EXTENSION "K"
3	2 1/4"	4"
4	3"	4 1/2"
5	3 3/4"	5"
6	4 1/2"	6"
7	5 1/4"	7"
8	6"	8"

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "b1", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2 3/4 INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.



NOTE: DIMENSIONS OF BARS ARE MEASURED OUT TO OUT OF BARS.

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

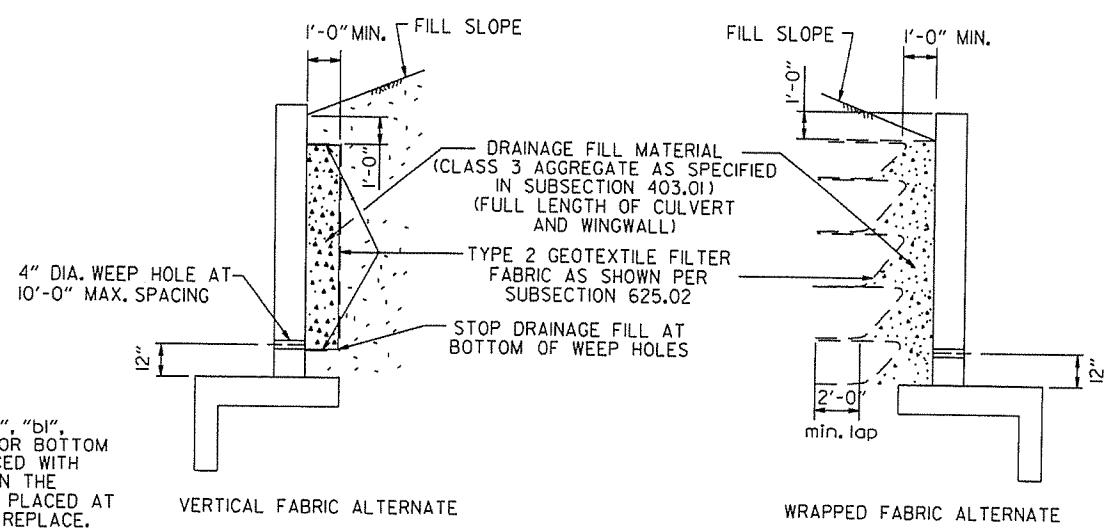
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

FOR SKEWED CULVERTS, THE REPLACEMENT STRAIGHT BAR MAY HAVE TO BE CUT IN FIELD TO FIT.

REPLACEMENT BAR LENGTHS TABLE

BAR SIZE: "b", "b1", "b2" OR "b3"	LENGTH OF HOOKED BAR	LENGTH OF STRAIGHT BAR
#4	L + 1' - 0"	SEE "c" BAR LENGTH
#5	L + 1' - 2"	SEE "c" BAR LENGTH
#6	L + 1' - 4"	SEE "c" BAR LENGTH
#7	L + 1' - 8"	SEE "c" BAR LENGTH
#8	L + 1' - 10"	SEE "c" BAR LENGTH
#9	L + 2' - 6"	SEE "c" BAR LENGTH

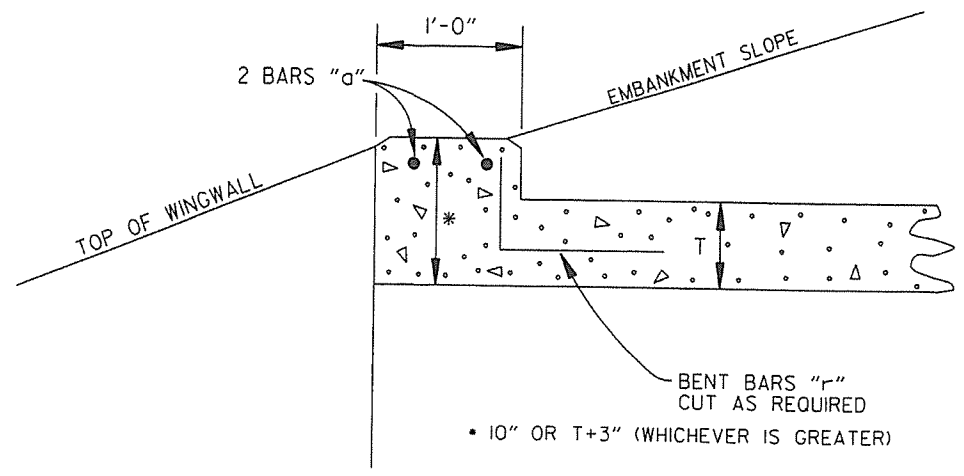
L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

- CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.
- REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.
- CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".
- MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.
- MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.
- REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS 1/2 INCH.
- WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.
- WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO (2) WEEP HOLES IN EACH WINGWALL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINGWALL FOOTING.
- THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.



NOTE: FOR ALL SKEWED R.C. BOX CULVERTS THE LENGTH "K" OF THE MODIFIED HEADWALL SHALL BE EQUAL TO THE ROADWAY LENGTH "RL". THE ENDS OF THE HEADWALL SHALL BE CONSTRUCTED PARALLEL TO THE SKEW ANGLE OF THE BOX CULVERT.

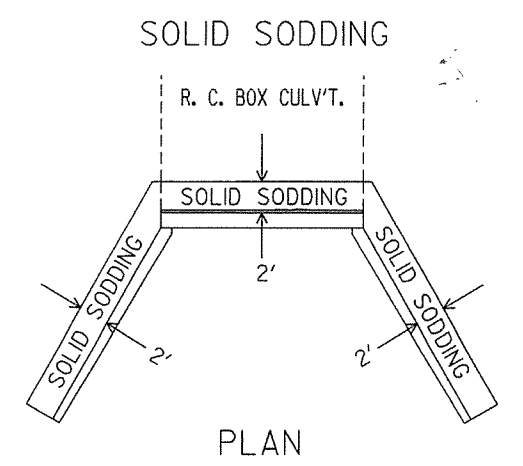
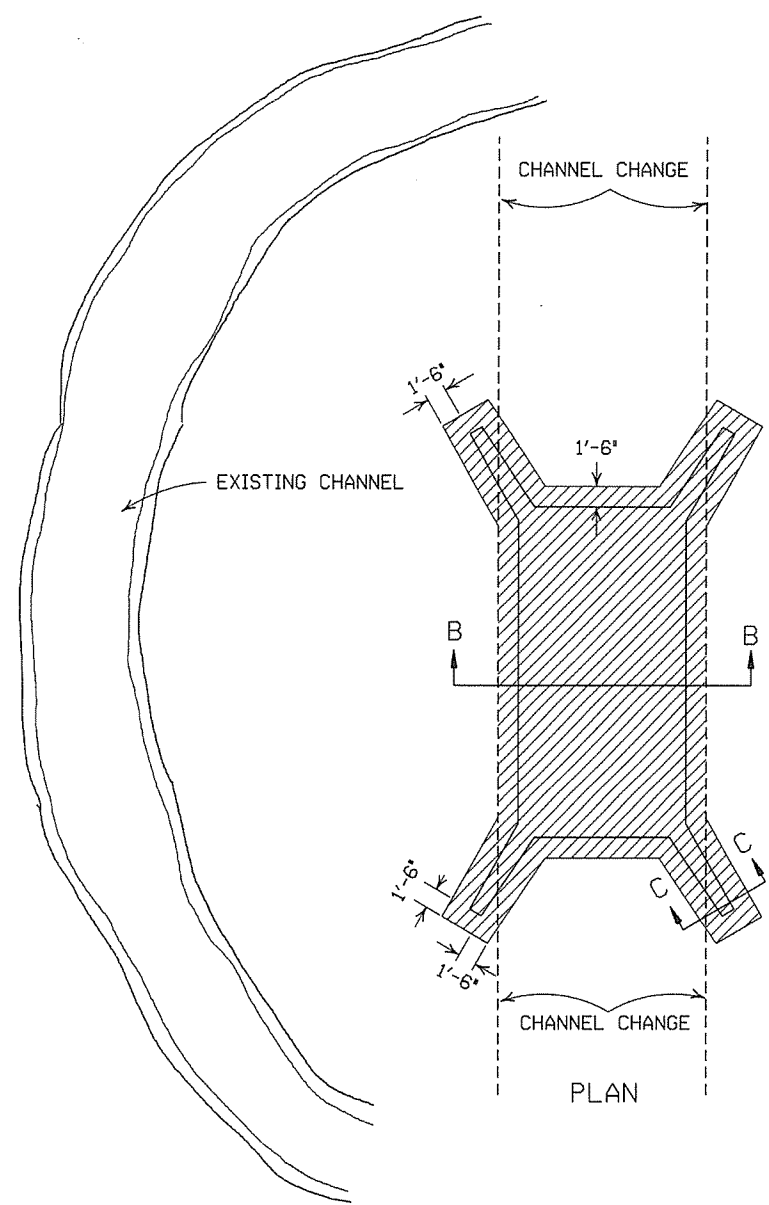
R.C. BOX CULVERT HEADWALL MODIFICATIONS

DATE	REVISION	DATE FILMED
7/26/12	REV. DRAINAGE FILL MATERIAL & DETAIL	
12/15/11	REQUIRE WEEP HOLES IN BOX CULVERT WALLS	
5-25-06	REV. GEN. NOTES AND DETAILS FOR WEEP HOLES; BAR DIAGRAM	
11-16-01	ADDED WINGWALL DRAINAGE DETAIL/EDITED GEN. NOTES	
10-18-96	REV. ASTM REF. TO AASHTO & ADDED BAR DIAGRAM	
10-12-95	MOVED SOLID SODDING DETAIL TO RCB-2	
6-2-94	ADDED SOLID SODDING PLAN DETAIL	
8-5-93	REVISED PIN DIAMETER TO SPECS.	
8-15-91	DRAWN AND ISSUED	

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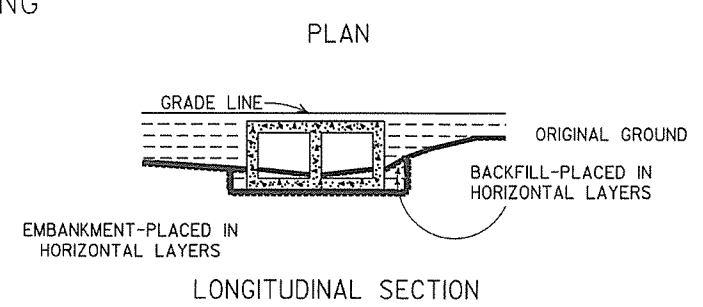
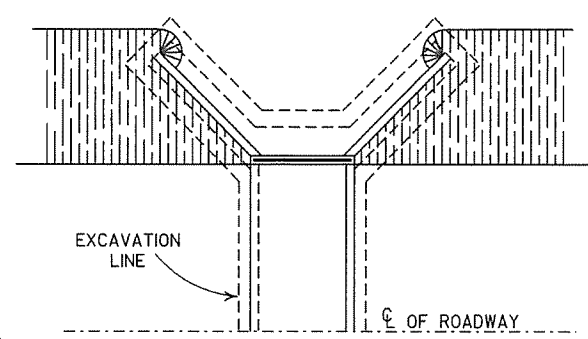
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1

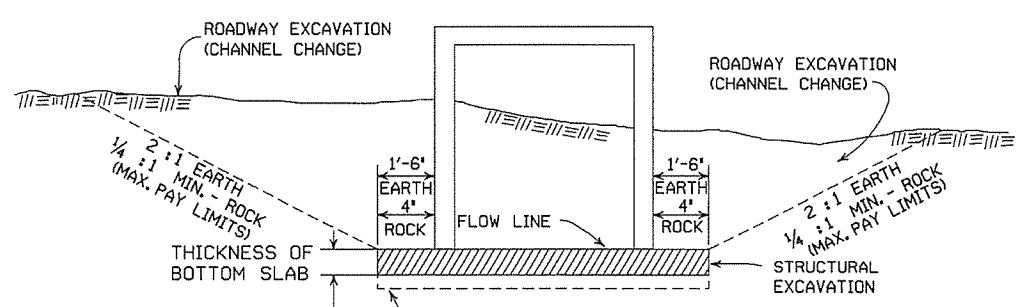
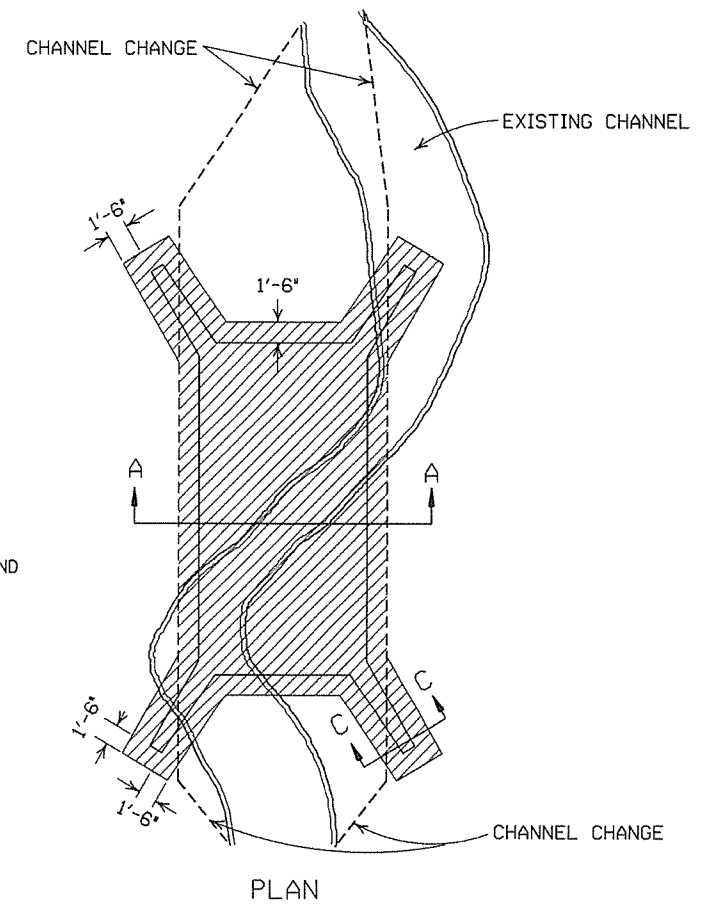


PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

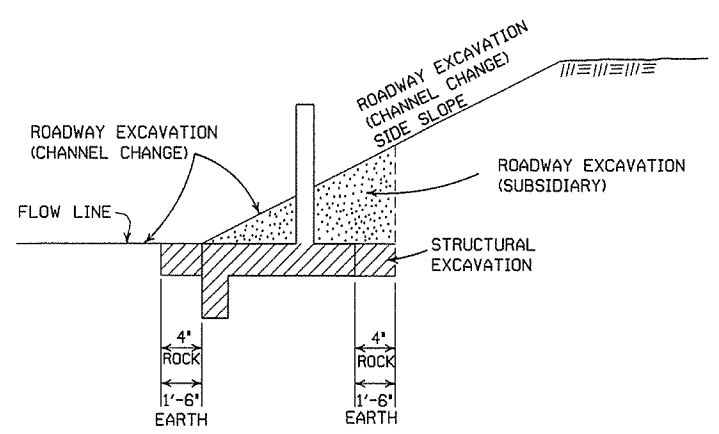


LONGITUDINAL SECTION  
BACKFILL DETAILS FOR BOX CULVERT

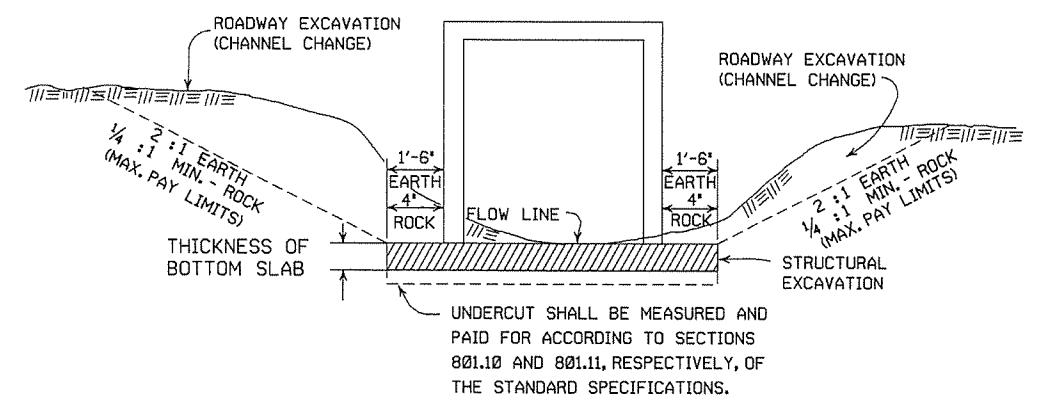


SECTION B-B  
DETAILS FOR NEW CHANNELS

UNDERCUT SHALL BE MEASURED AND PAID FOR ACCORDING TO SECTIONS 801.10 AND 801.11, RESPECTIVELY, OF THE STANDARD SPECIFICATIONS.



SECTION C-C



SECTION A-A  
DETAILS THROUGH EXISTING CHANNELS

UNDERCUT SHALL BE MEASURED AND PAID FOR ACCORDING TO SECTIONS 801.10 AND 801.11, RESPECTIVELY, OF THE STANDARD SPECIFICATIONS.

GENERAL NOTES:  
ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.  
EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.  
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES AND ADDED MAXIMUM PAY LIMIT NOTES.	674-1-4-83
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

STANDARD DRAWING RCB-2

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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

D MAX = 24' 45'

ABBREVIATIONS

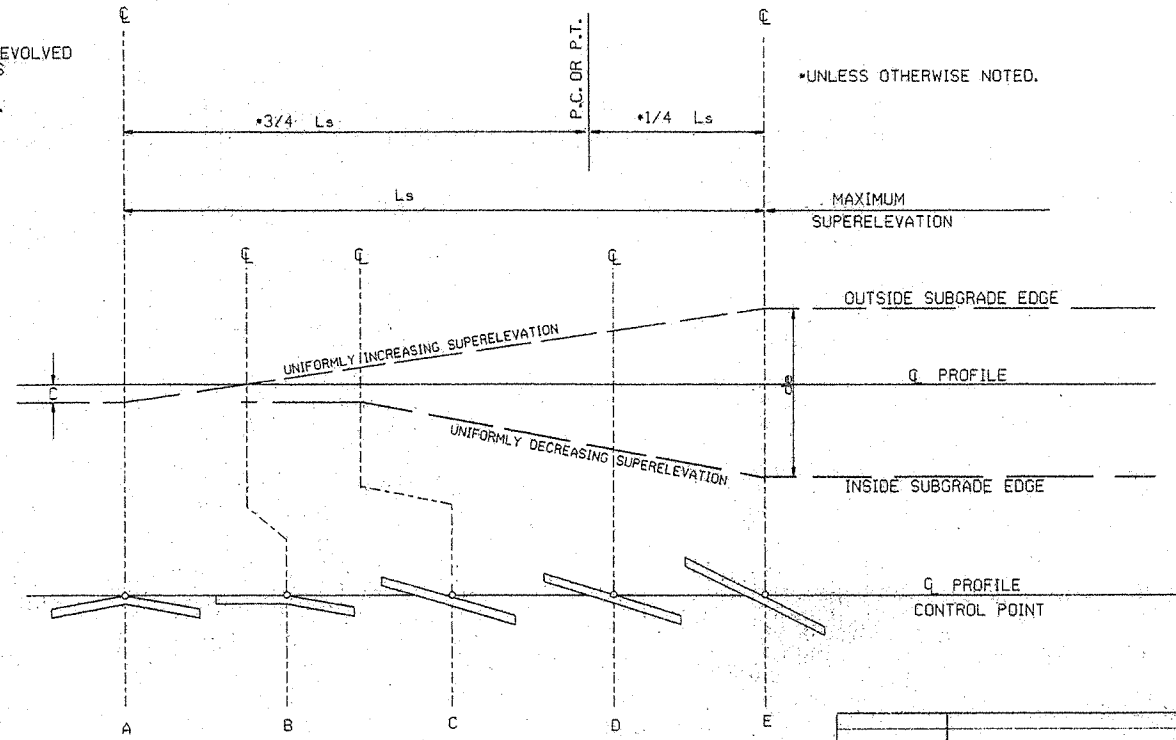
- NC - NORMAL CROWN
- RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
- e - RATE OF SUPERELEVATION (FT. PER FT.)
- Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
- L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
- d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)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

GENERAL NOTES

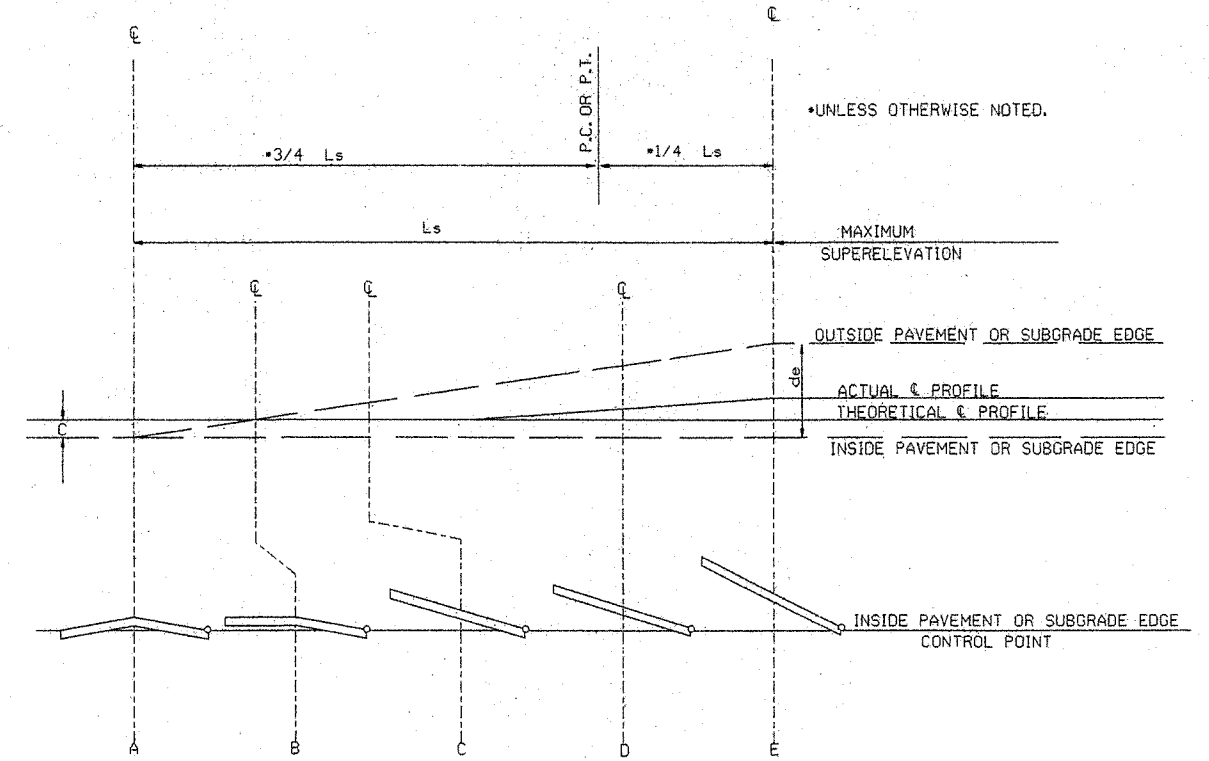
1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED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

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

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.  
RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE



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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2


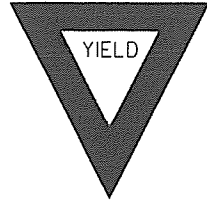
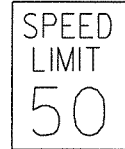
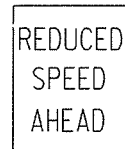

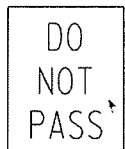



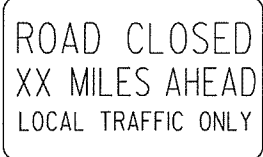
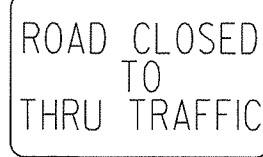

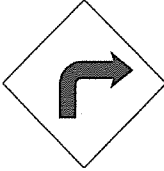
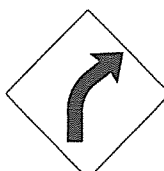
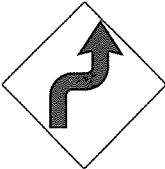
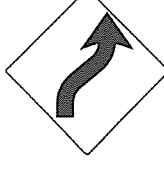
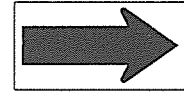
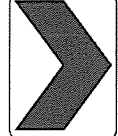
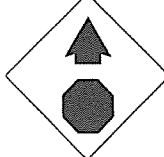
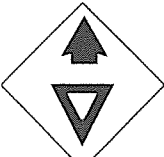
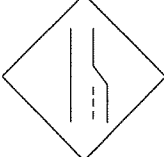



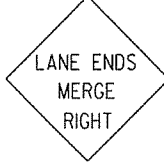





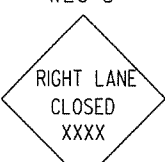


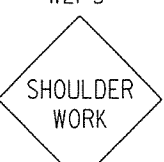
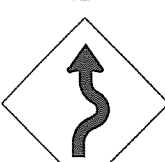



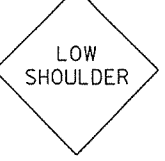
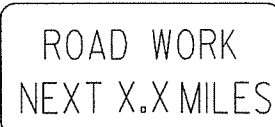
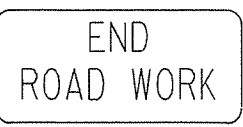
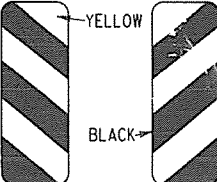
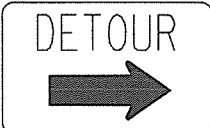

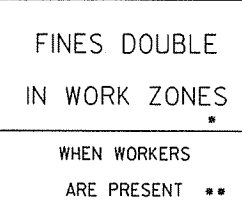
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87
DATE	REVISION	DATE FILLED

ADVANCE DISTANCES (XXXX)

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

GENERAL NOTES:

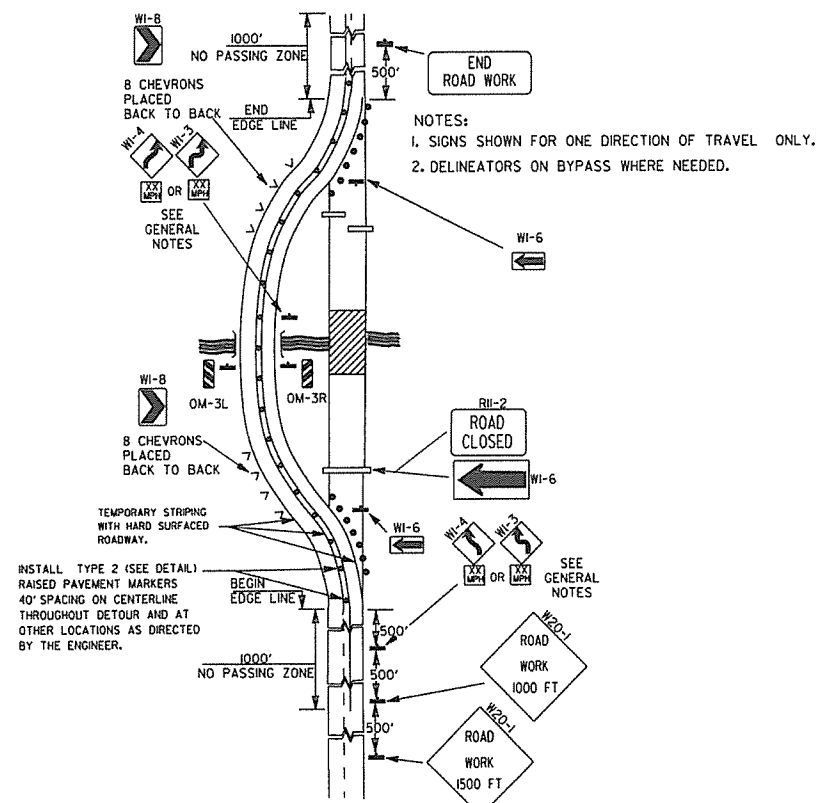
- ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
- TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START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

<p>RI-1</p>  <p>STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"</p>	<p>RI-2</p>  <p>STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"</p>	<p>R2-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R2-5A</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R2-5C</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-2</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>
<p>R5-1</p>  <p>STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>R11-2</p>  <p>48"x30"</p>	<p>R11-3A</p>  <p>60"x30"</p>	<p>R11-4</p>  <p>60"x30"</p>	<p>RSP-1</p>  <p>48"x30"</p>	<p>WI-1</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>WI-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>
<p>WI-3</p>  <p>STD. 48"x48"</p>	<p>WI-4</p>  <p>STD. 48"x48"</p>	<p>WI-6</p>  <p>STD. 48"x24" SPECIAL 60"x30"</p>	<p>WI-8</p>  <p>STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"</p>	<p>W3-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W3-2</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W4-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>
<p>W5-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W6-3</p>  <p>EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>W8-7</p>  <p>EXPWY. 36"x36" FWY. 48"x48"</p>	<p>W9-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W13-1</p>  <p>STD. 24"x24"</p>	<p>W20-1</p>  <p>STD. 48"x48"</p>	<p>W20-2</p>  <p>STD. 48"x48"</p>
<p>W20-3</p>  <p>STD. 48"x48"</p>	<p>W20-4</p>  <p>STD. 48"x48"</p>	<p>W20-5</p>  <p>STD. 48"x48"</p>	<p>W20-7a</p>  <p>18" 500 FEET 24" W16-2</p> <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W21-2</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W21-5</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W24-1</p>  <p>STD. 36"x36"</p>
<p>W21-4b</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>* USE 6" C LETTERS ** USE 4" D LETTERS</p>				

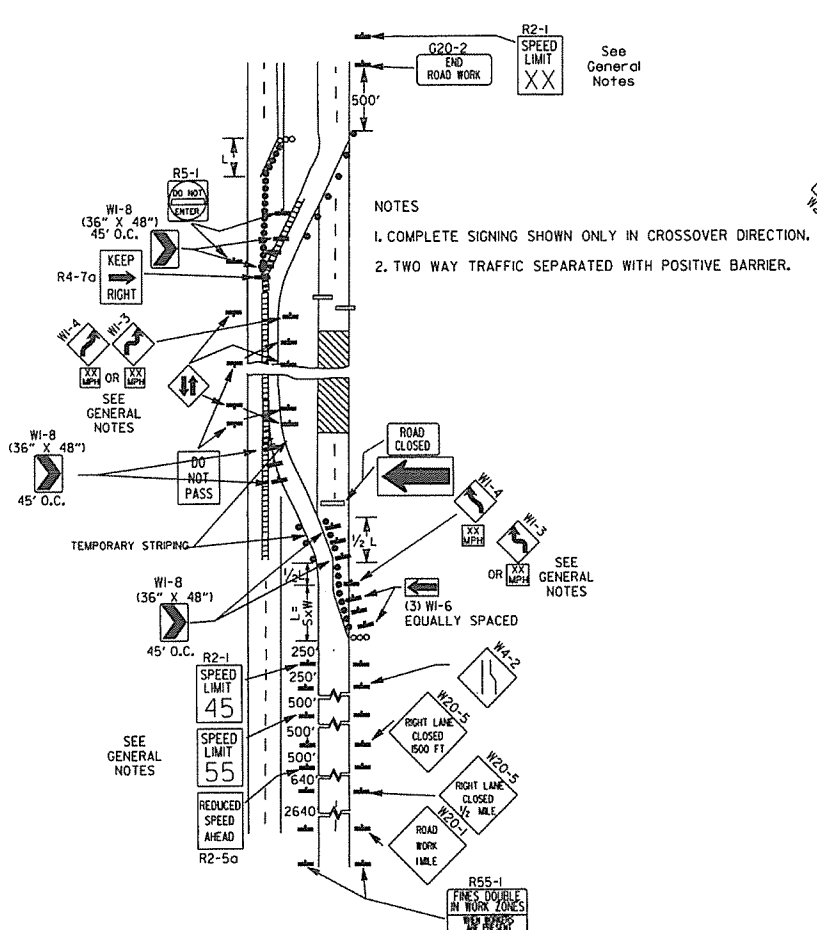
- FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
- MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER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

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

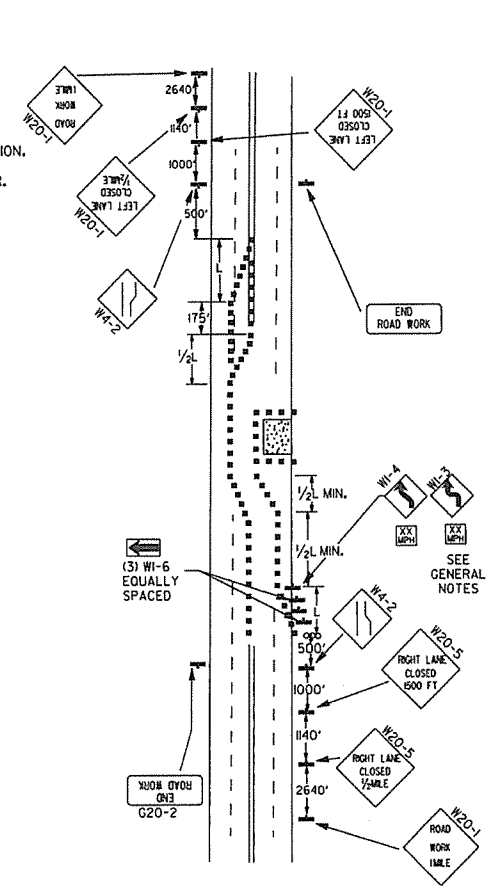
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED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



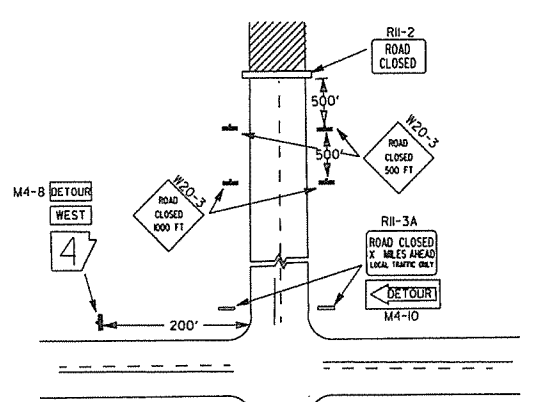
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



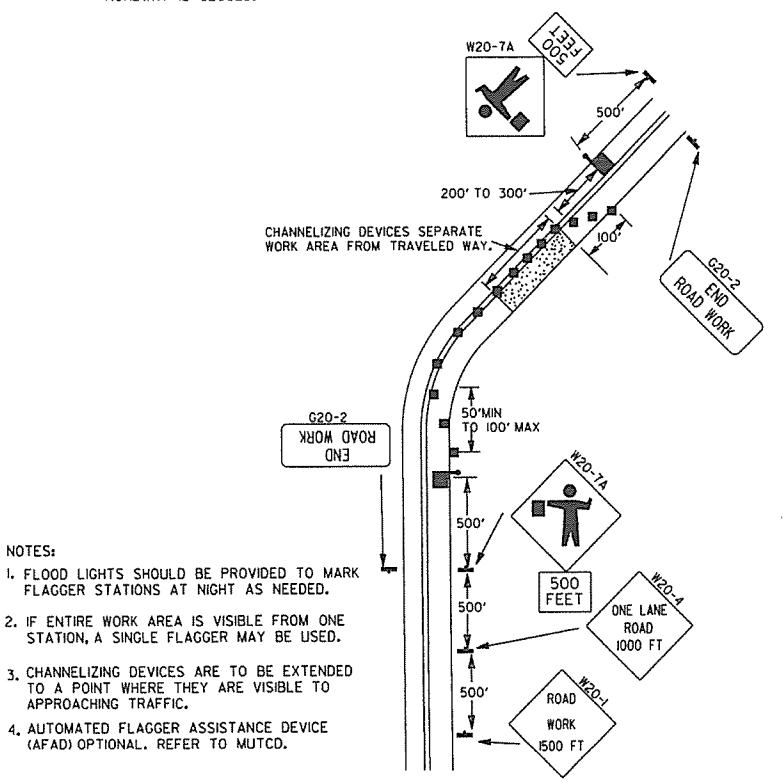
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



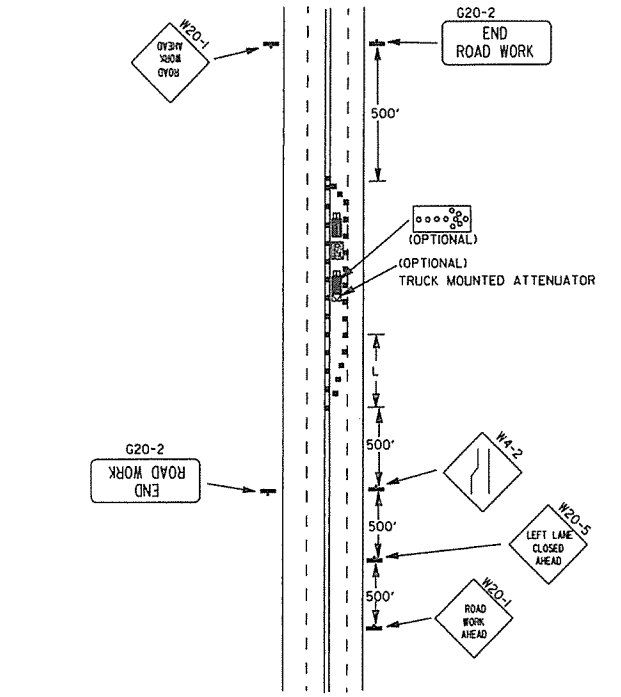
(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



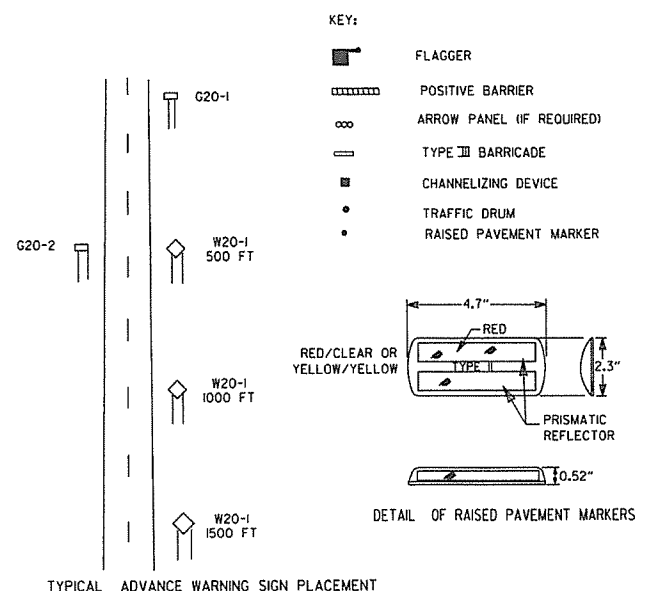
(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



(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.

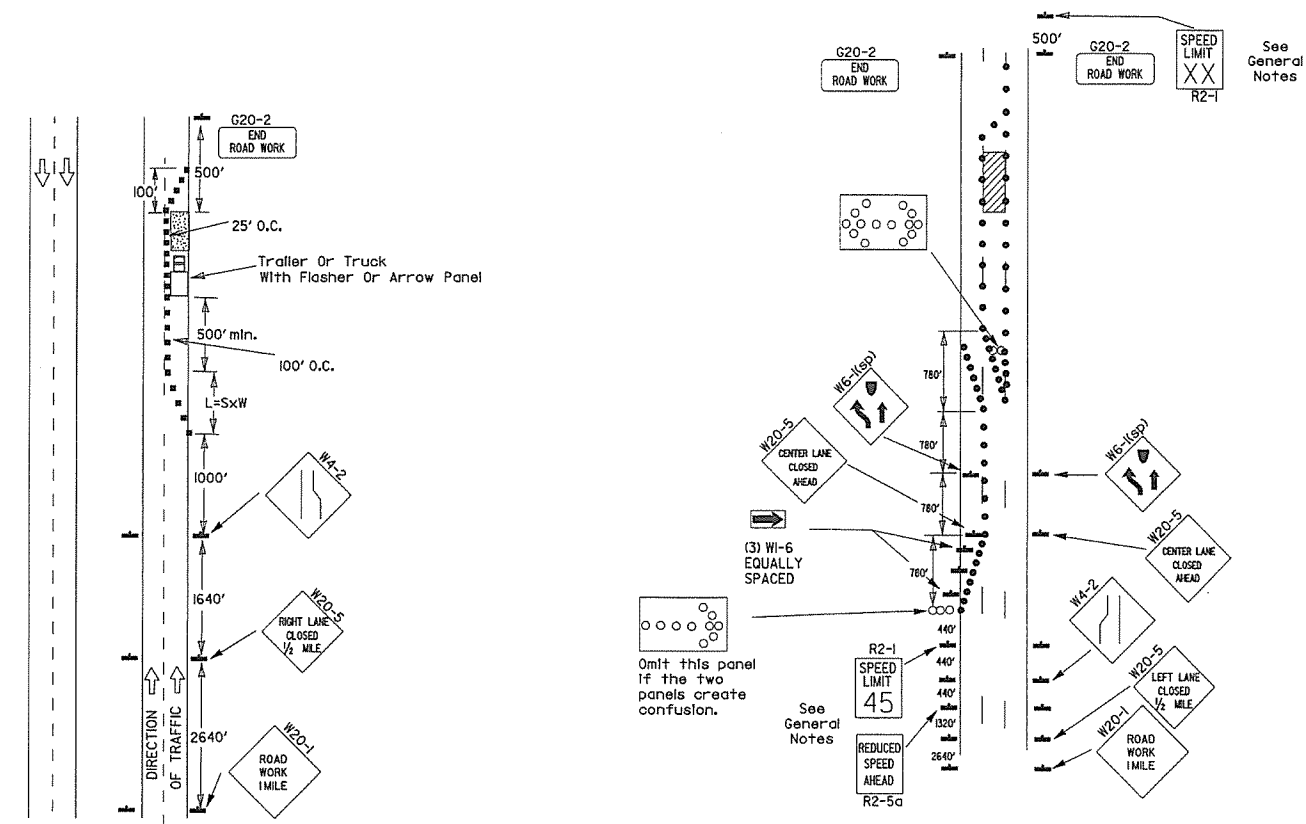


TAPER FORMULAE:  
 $L = SXW$  FOR SPEEDS OF 45MPH OR MORE.  
 $L = \frac{WS^2}{60}$  FOR SPEEDS OF 40MPH OR LESS.  
 WHERE:  
 L = MINIMUM LENGTH OF TAPER.  
 S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.  
 W = WIDTH OF OFFSET.

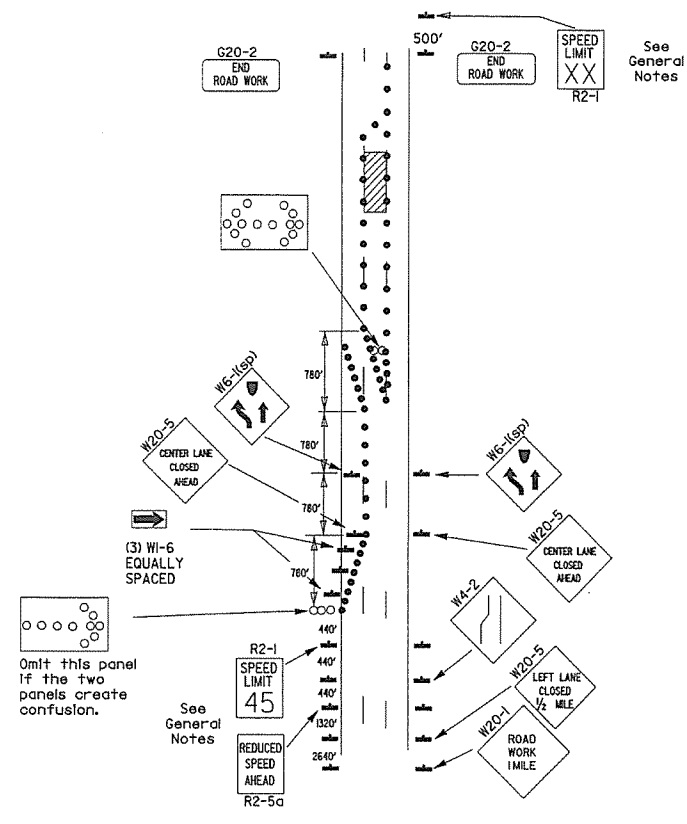
- GENERAL NOTES:
- ADVISORY SPEED POSTED ON WI-3 OR WI-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE WI-4 WHEN SPEED IS GREATER THAN 30MPH AND WI-3 WHEN 30MPH OR LESS.
  - WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-(155) SHALL BE OMITTED AND THE R2-5A SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-145MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(1XX) 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-(145) SHALL BE OMITTED. ADDITIONAL R2-155MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(1XX) 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.

DATE	REVISION	FILMED
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (g) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON WI-4A	6-8-95
2-2-95	REVISED PER PART VI MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

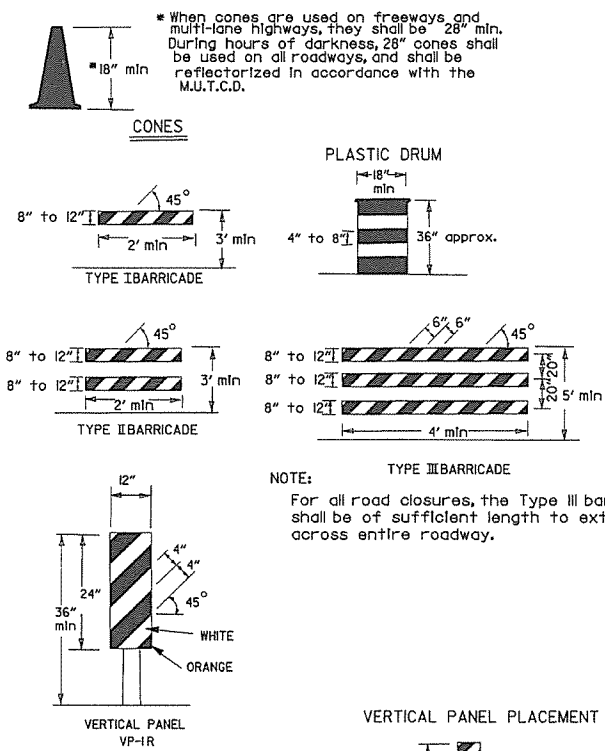
Channelizing devices



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



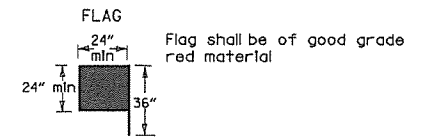
(B) Typical application - 3-lane oneway roadway where center lane is closed.



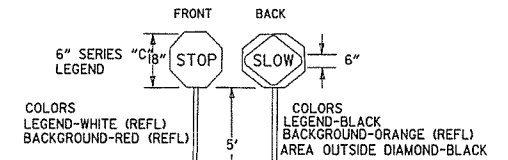
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

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-land vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical panels, drums or concrete barrier

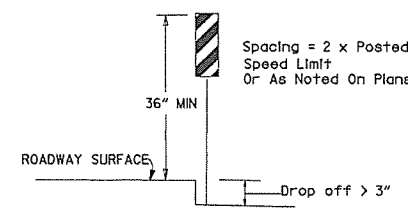
\* When shown on the plans concrete barrier will be used.  
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.



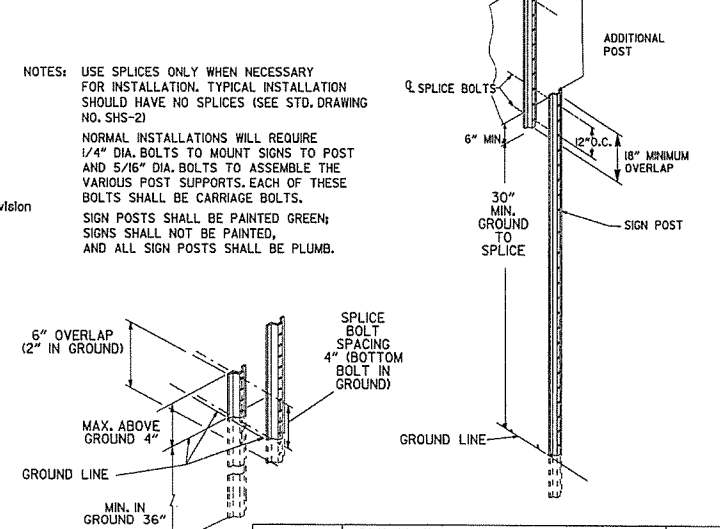
STOP SLOW PADDLE



VERTICAL PANEL PLACEMENT



DETAIL OF SPLICES

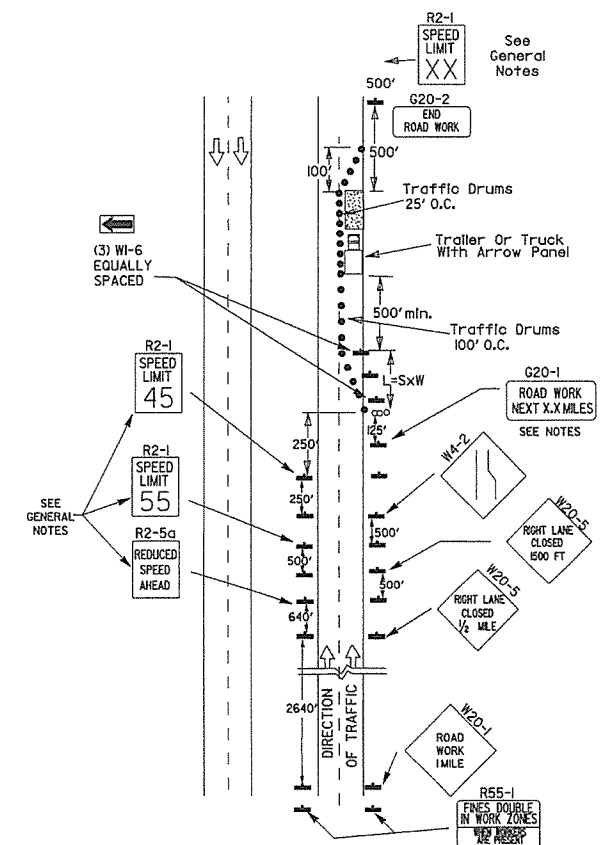


NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2).  
NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE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

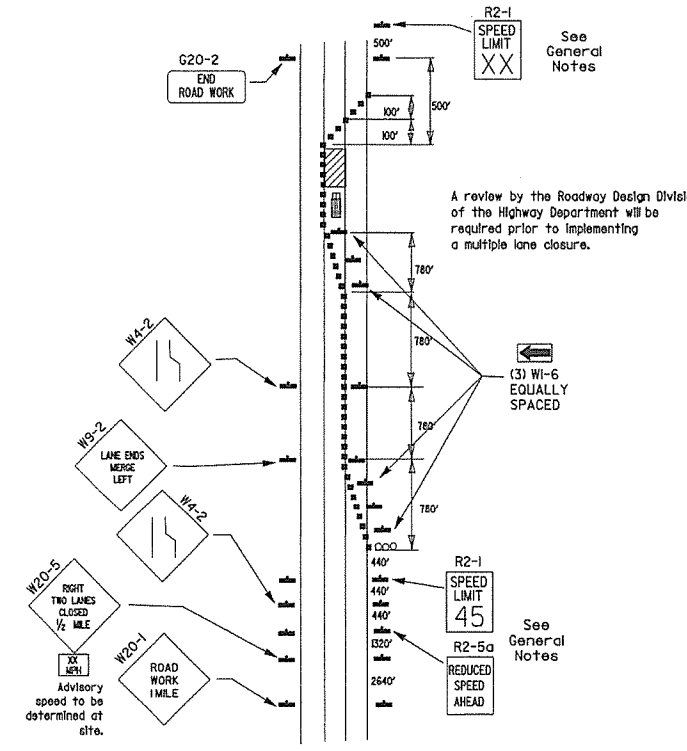
- KEY:
- Arrow Panel (if Required)
  - Channelizing Device
  - Traffic drum

GENERAL NOTES:

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



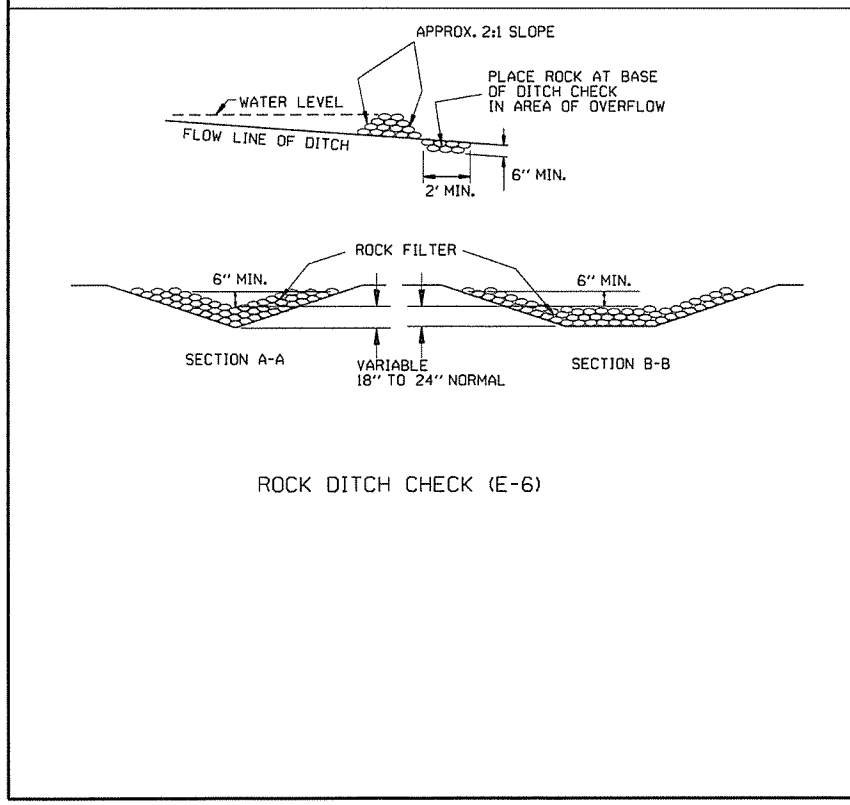
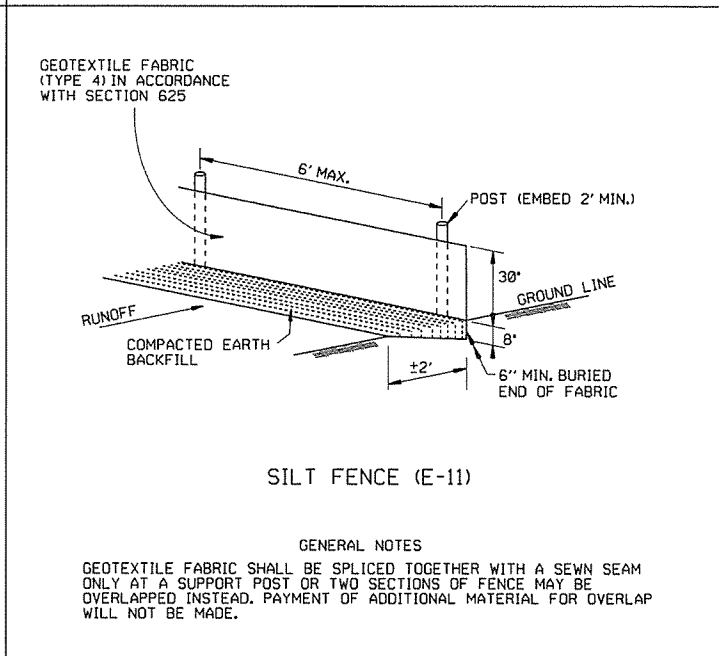
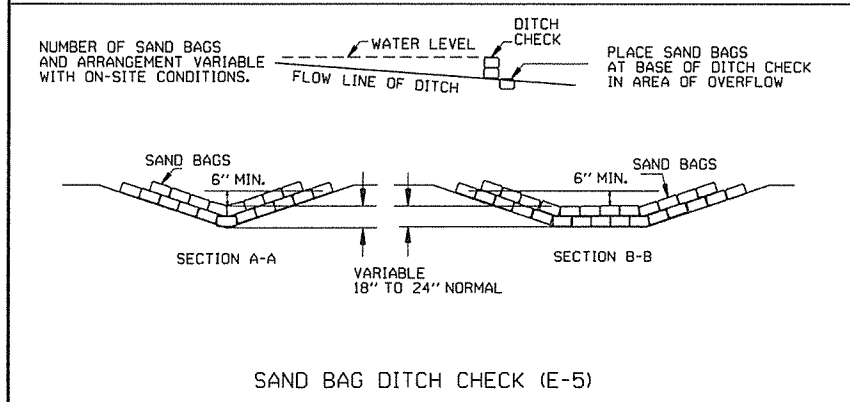
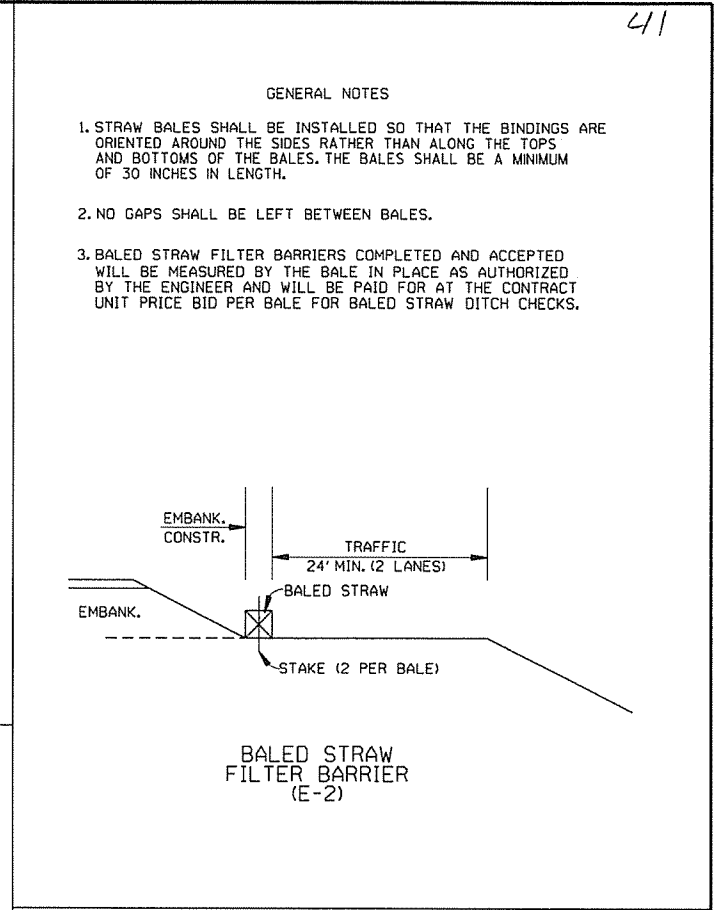
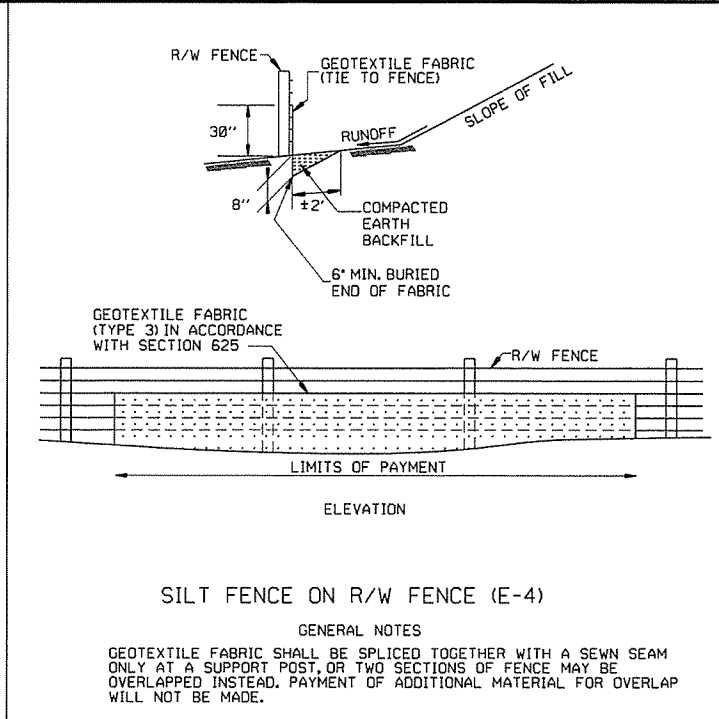
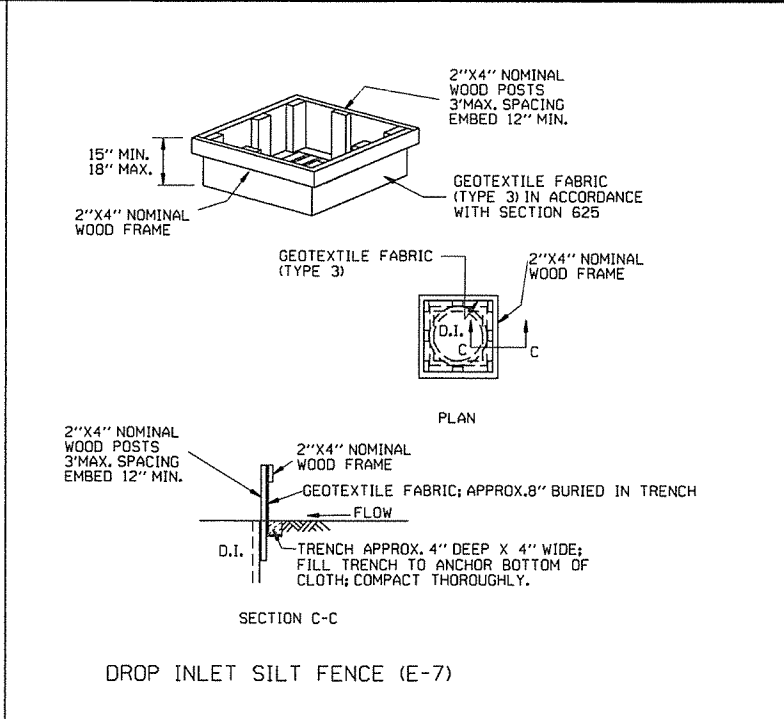
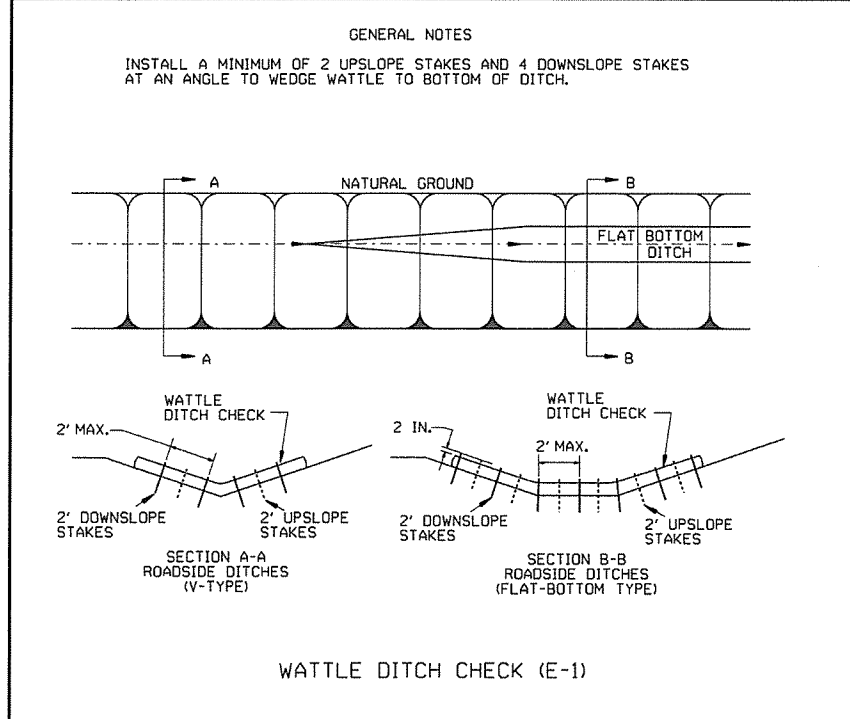
(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.



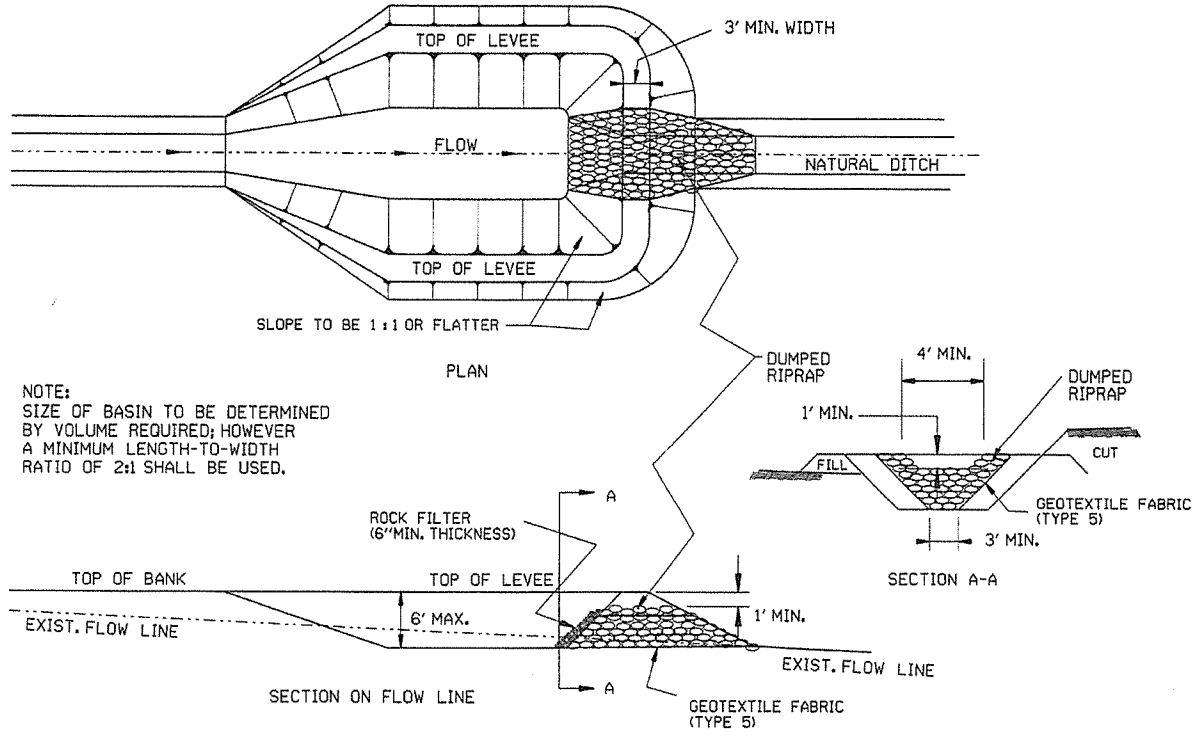
(D) Typical application - closing multiple lanes of a multilane highway.

DATE	REVISION	FILMED
10-16-09	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	

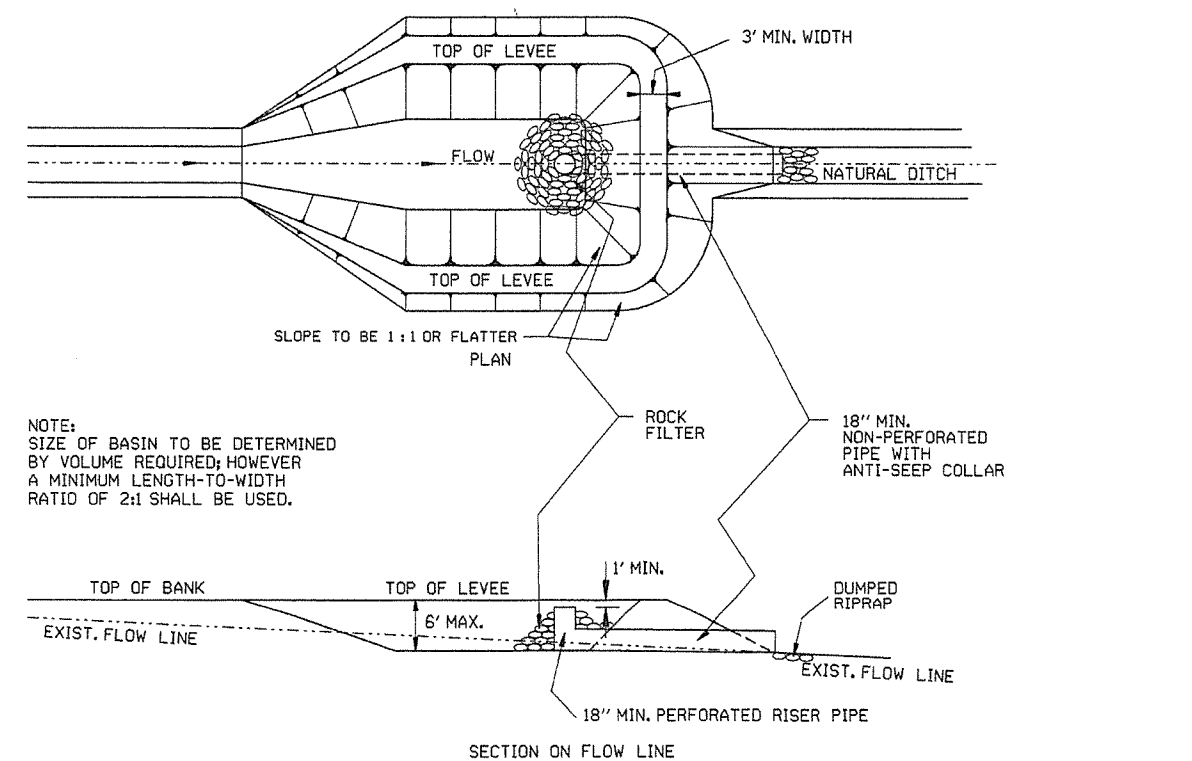




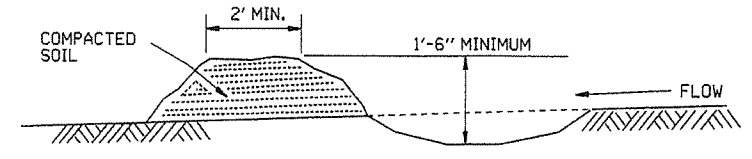
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK		ARKANSAS STATE HIGHWAY COMMISSION
11-18-98	ADDED NOTES		
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)		
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95	
7-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC		
6-2-94	REVISED E-1, 4, 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	STANDARD DRAWING TEC-1



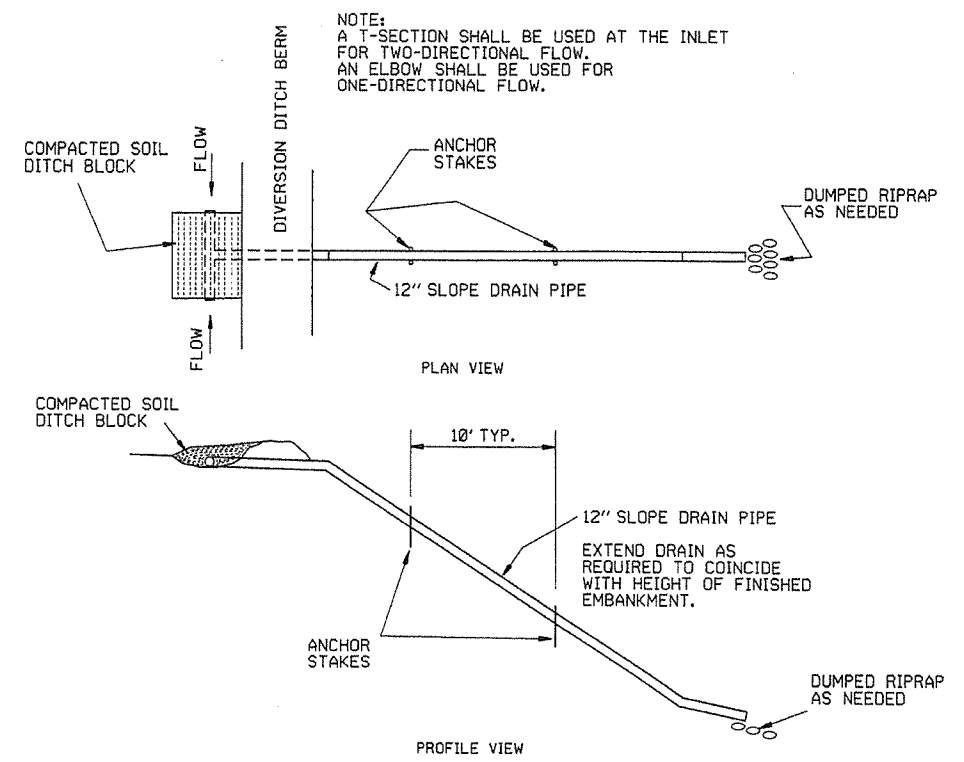
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



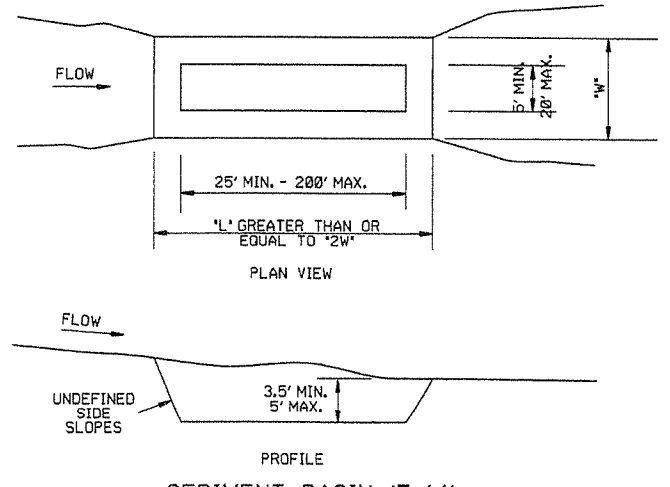
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

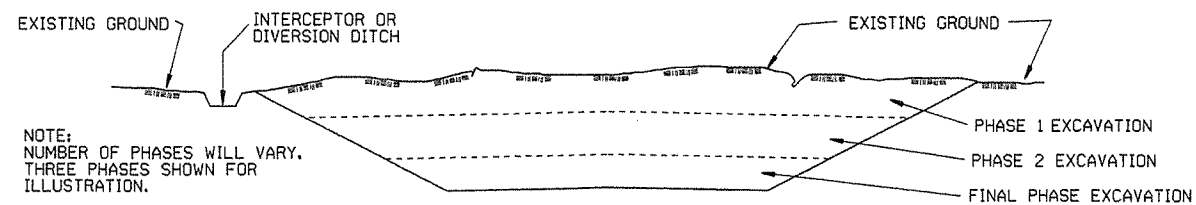
ARKANSAS STATE HIGHWAY COMMISSION  
 TEMPORARY EROSION CONTROL DEVICES  
 STANDARD DRAWING TEC-2

### CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

### EXCAVATION



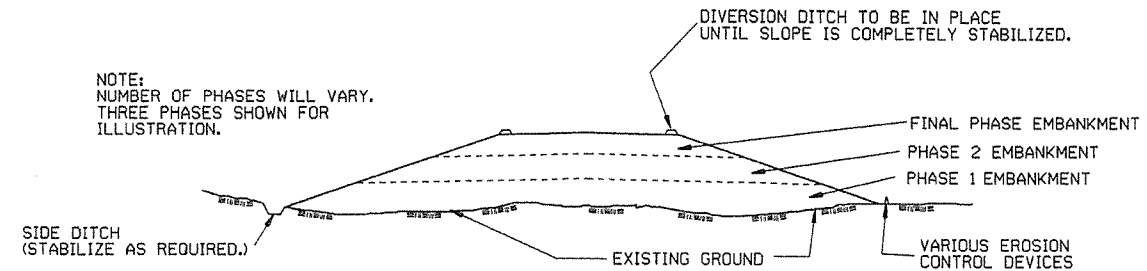
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

### EMBANKMENT



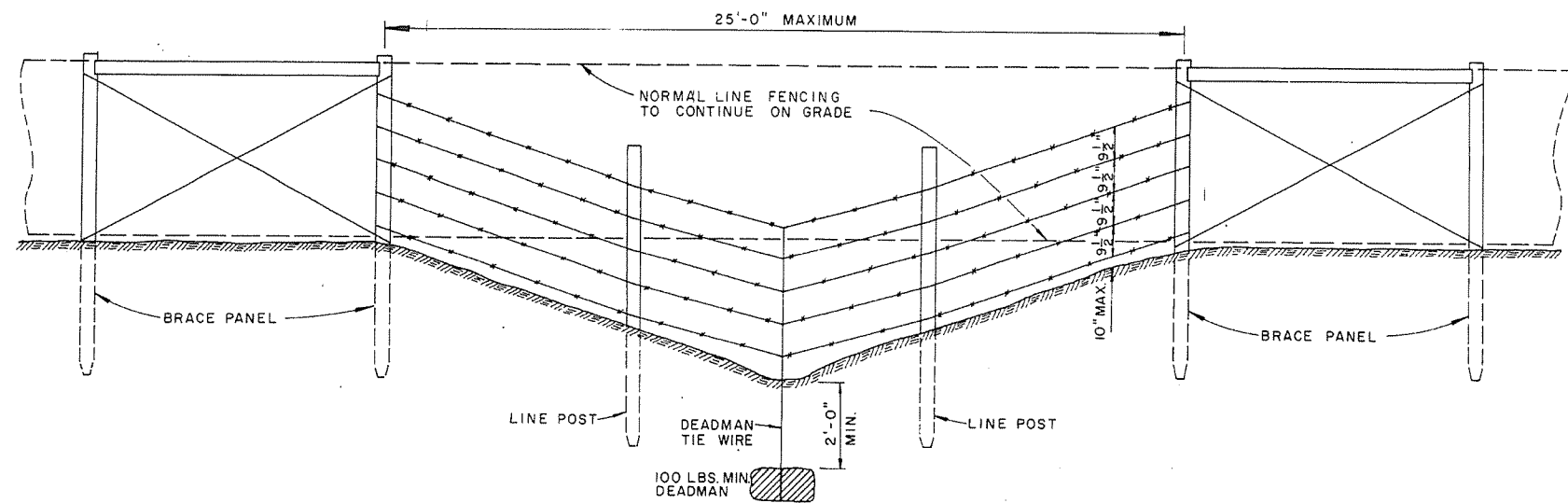
GENERAL NOTE

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

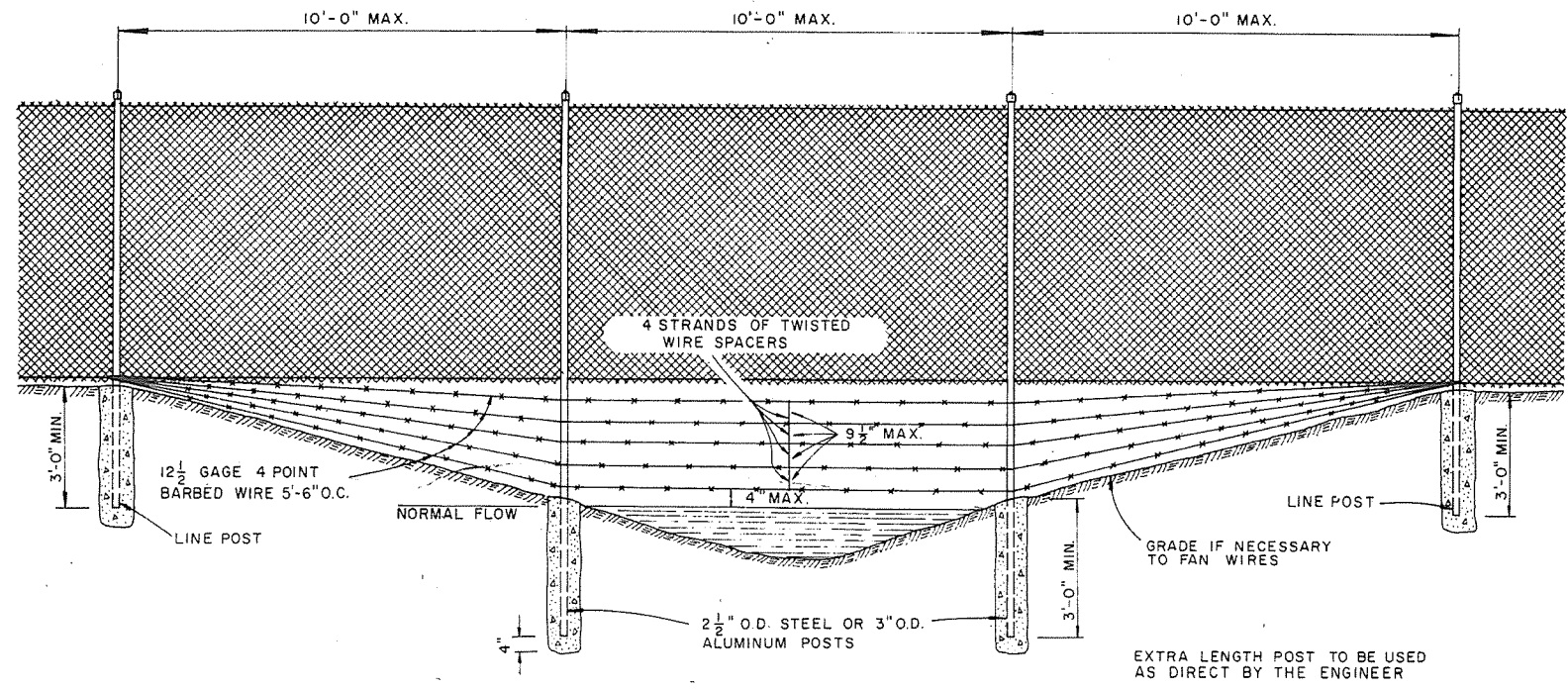
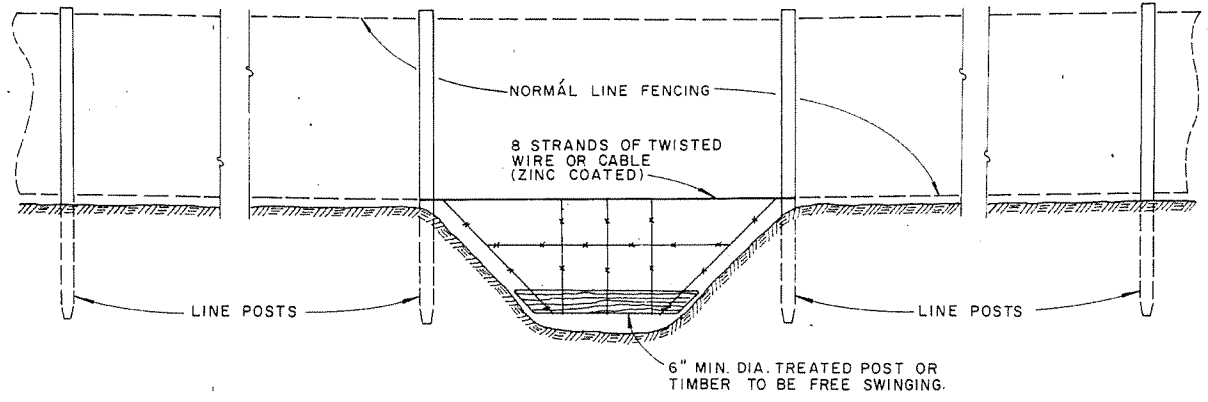
CONSTRUCTION SEQUENCE

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

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

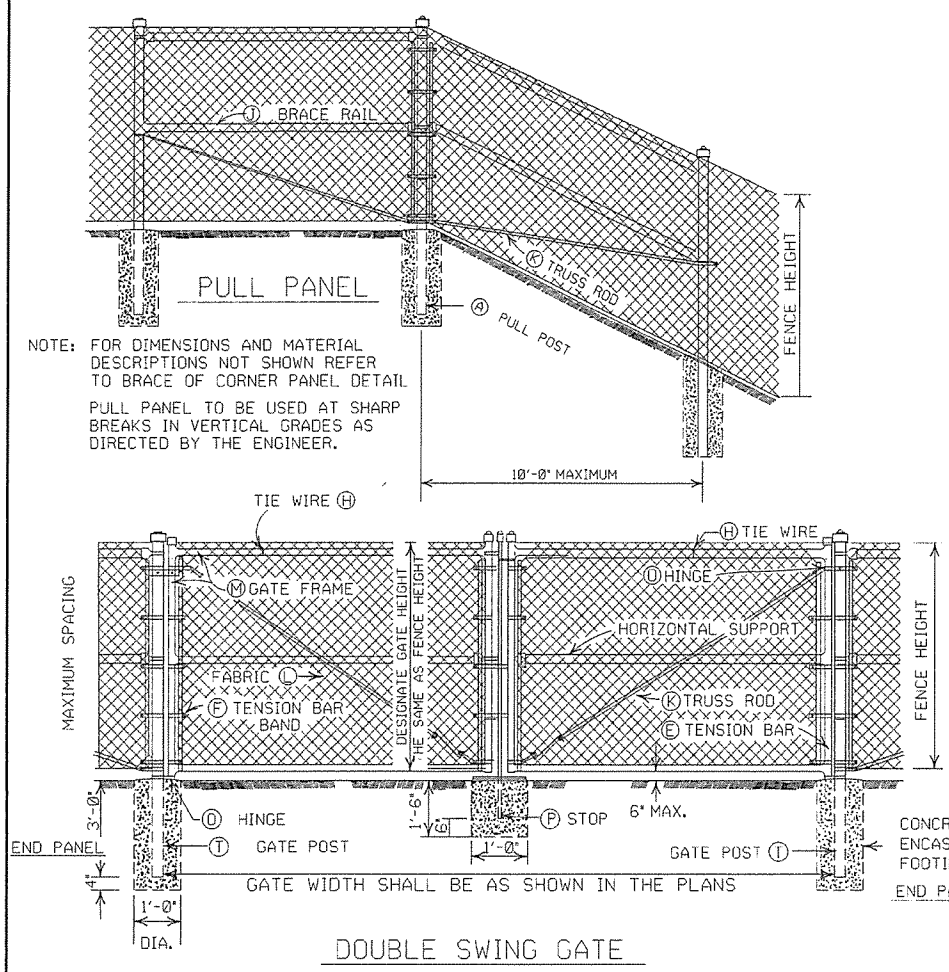


GENERAL NOTES:  
 THESE INSTALLATIONS TO BE USED WHERE NORMAL FENCING INSTALLATION WOULD CAUSE THE COLLECTING OF DRIFT IN THE CHANNEL OR THE DEPRESSION WILL NOT PERMIT NORMAL INSTALLATION. INSTALLATIONS WILL BE MADE ONLY WHERE DIRECTED BY THE ENGINEER.  
 WHEN A FENCE LINE APPROACHES A DITCH, GULLY OR DEPRESSION, THE LAST POST ON LEVEL GROUND SHALL BE PLACED CLOSE ENOUGH TO THE EDGE OF THE DROP OFF THAT THE FENCE MAY BE STRUNG TO THE POST IN THE DEPRESSION WITHOUT TOUCHING THE GROUND.  
 IN TERRAIN OF SUCH EXTREME IRREGULARITY THAT MINOR GRADING WILL NOT BE FEASIBLE, THE NORMAL FENCE SHALL CONTINUE ON GRADE AND THE GULLIES OR DEPRESSIONS TREATED BY AUXILIARY FENCES AS SHOWN.  
 PAYMENT FOR THE TYPE INSTALLATION USED WILL NOT BE MADE DIRECTLY BUT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR WIRE FENCE OR CHAIN LINK FENCE.

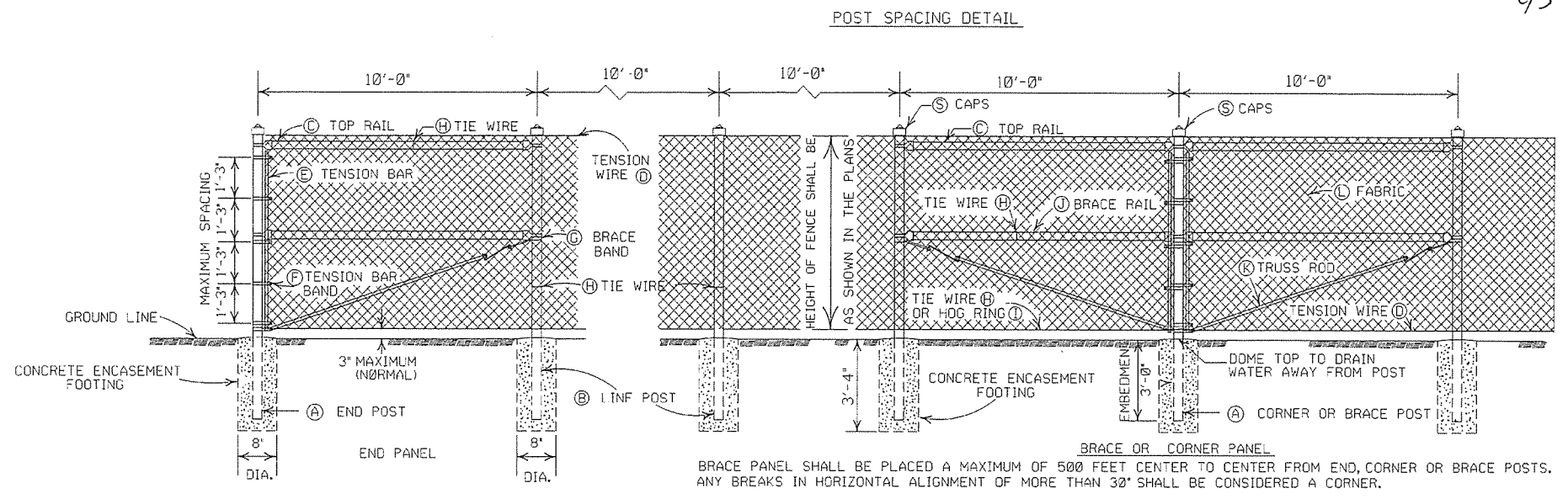


ARKANSAS STATE HIGHWAY COMMISSION		
WIRE FENCE WATER GAPS		
STANDARD DRAWING		
4-20-79	REVISED TOP RAIL & TENSION WIRE	696-4-20-79
10-2-72	REVISED & REDRAWN	529 10-2-72
DATE	REVISION	DATE FILMD

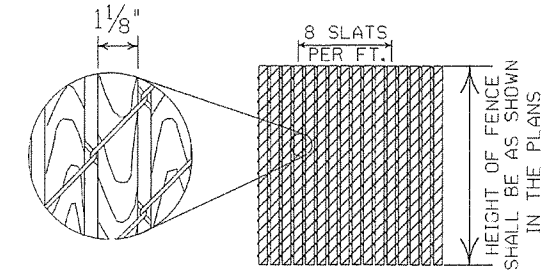
WF-2



NOTE: FOR DIMENSIONS AND MATERIAL DESCRIPTIONS NOT SHOWN REFER TO BRACE OF CORNER PANEL DETAIL. PULL PANEL TO BE USED AT SHARP BREAKS IN VERTICAL GRADES AS DIRECTED BY THE ENGINEER.



BRACE PANEL SHALL BE PLACED A MAXIMUM OF 500 FEET CENTER TO CENTER FROM END, CORNER OR BRACE POSTS. ANY BREAKS IN HORIZONTAL ALIGNMENT OF MORE THAN 30' SHALL BE CONSIDERED A CORNER.



1 1/8" x 1/4" REDWOOD SLATS (LENGTH TO MATCH HEIGHT OF FENCE) (L) FABRIC SHALL CONFORM TO THE SPECIFICATIONS. (WHERE APPLICABLE)

- GENERAL NOTES:**
- (C) CHAIN LINK FENCE BEING PLACED ON PRIVATE PROPERTY SHALL INCLUDE A TOP RAIL. ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LIN. FT. OF CHAIN LINK FENCE.
  - (D) TENSION WIRE: SHALL BE SECURED TO ALL TERMINAL, PULL, BRACE OR CORNER POSTS WITH TENSION BAR BANDS.
  - (J) BRACE RAIL: BRACE RAILS SHALL BE PROVIDED AT ALL TERMINAL, PULL, BRACE OR CORNER POSTS HALF WAY BETWEEN THE TOP RAIL AND GROUND LEVEL WHEN TOPRAIL IS SPECIFIED AND TWELVE INCHES (12") DOWN FROM TOP OF FABRIC WHEN TENSION WIRE IS SPECIFIED. BRACE RAIL SHALL EXTEND FROM SUCH POST TO THE FIRST ADJACENT LINE POST.
  - (M) GATE FRAMES: SHALL BE CONSTRUCTED OF TUBULAR MEMBERS ASSEMBLED BY USE OF HEAVY PRESSED STEEL, MALLEABLE FITTINGS OR BY WELDING. ALL GATES SHALL HAVE ONE HORIZONTAL SUPPORT EXTENDING THE WIDTH OF THE GATE AT THE MIDPOINTS OF VERTICAL FRAME MEMBERS. THE COMPLETE FRAME SHALL BE RIGID AND HAVE AMPLE STRENGTH TO BE FREE FROM SAG AND TWIST.
  - (O) HINGES: SHALL BE OF HEAVY PATTERN, OF ADEQUATE STRENGTH FOR GATE, AND WITH LARGE BEARING SURFACES FOR CLAMPING IN POSITION. THE HINGE SHALL BE OF THE PROPER TYPE TO ALLOW FOR THE DESIGNATED DEGREE OF SWING. THE HINGE SHALL NOT TWIST OR TURN UNDER THE ACTION OF THE GATE. THE GATES SHALL BE CAPABLE OF BEING OPENED AND CLOSED EASILY BY ONE PERSON.
  - (P) LATCHES AND STOPS: SHALL BE PROVIDED FOR ALL GATES. GATES SHALL HAVE A DROP BAR LATCH. LATCHES SHALL BE ARRANGED FOR LOCKING. THE STOP FOR DROP BAR LATCHES SHALL BE SET IN CONCRETE AND ENGAGE THE PLUNGER OF THE BAR LATCH.
  - (S) CAPS: ALL POSTS, EXCEPT ROLL FORMED POSTS AND "T" POSTS SHALL BE CAPPED OVER THE EXTERIOR OF THE POST, AND SHALL CONFORM TO ASTM F626.

HEIGHT OF FENCE FABRIC	(A) END, PULL CORNER OR BRACE POST		(B) LINE POSTS			(C) TOP RAIL			(D) TENSION WIRE		(E) TENSION BAR		(F) TENSION BAR BAND		(G) BRACE BAND	
	SIZE	TIE SPACING	SIZE	TIE SPACING	MIN. LENGTH	SIZE	TIE SPACING	MIN. OF	LENGTH	SIZE	BOLT SIZE	SPACING	SIZE	BOLT SIZE		
6' AND LESS	2 1/2" O.D.	1 TIE EVERY 1'-2"	2" O.D.	1 TIE EVERY 1'-2" OF FABRIC HEIGHT	1 1/2" O.D.	1 TIE EVERY 2'-0"	10'-0"	7 GAUGE COIL SPRING WIRE	1 TIE EVERY 1'-0"	MIN. OF 3/8" x 3/4"	MIN. OF 3/4" x 1 1/4"	1 BAND AT TOP AND BOTTOM 15" MAX. INTERVAL BETWEEN BANDS	MIN. OF 3/4" x 1/2"	3/8" x 1 1/4"		
OVER 6' TO 12' INCL.	3" O.D.	2 1/2" O.D.	2 1/2" O.D.	1 TIE EVERY 1'-2" OF FABRIC HEIGHT	1 1/2" O.D.	1 TIE EVERY 2'-0"	10'-0"	7 GAUGE COIL SPRING WIRE	1 TIE EVERY 1'-0"	MIN. OF 3/8" x 3/4"	MIN. OF 3/4" x 1 1/4"	1 BAND AT TOP AND BOTTOM 15" MAX. INTERVAL BETWEEN BANDS	MIN. OF 3/4" x 1/2"	3/8" x 1 1/4"		

HEIGHT OF FENCE FABRIC	(H) TIE WIRE	(I) HOG RING	(J) BRACE RAIL		(K) TRUSS ROD	(L) FABRIC		(M) GATE FRAME	(N) HORIZONTAL SUPPORT		(O) HINGE TYPE	(P) GATE POST		
	MIN. OF 12 GA. STEEL OR 9 GA. ALUM.	SAME GAUGE AS FABRIC	SIZE	TIE SPACING	MIN. OF 5/8" ROUND WITH TIGHTENERS AND FITTINGS	SIZE	MESH SELVAGE	SIZE	TIE SPACING	SIZE	TIE SPACING	180° SWING	GATE WIDTH	GATE WIDTH OVER
6' AND LESS	MIN. OF 12 GA. STEEL OR 9 GA. ALUM. <td>SAME GAUGE AS FABRIC</td> <td>1 1/2" O.D.</td> <td>1 TIE EVERY 2'-0"</td> <td>MIN. OF 5/8" ROUND WITH TIGHTENERS AND FITTINGS</td> <td>2" GA.</td> <td>2" KNUCK-ING AND/OR TWIST-ING</td> <td>2" O.D.</td> <td>1 TIE EVERY 1'-0"</td> <td>2" O.D.</td> <td>1 TIE EVERY 1'-0"</td> <td>180° SWING</td> <td>3' O.D.</td> <td>12' TO 24' INCL.</td>	SAME GAUGE AS FABRIC	1 1/2" O.D.	1 TIE EVERY 2'-0"	MIN. OF 5/8" ROUND WITH TIGHTENERS AND FITTINGS	2" GA.	2" KNUCK-ING AND/OR TWIST-ING	2" O.D.	1 TIE EVERY 1'-0"	2" O.D.	1 TIE EVERY 1'-0"	180° SWING	3' O.D.	12' TO 24' INCL.
OVER 6' TO 12' INCL.	MIN. OF 12 GA. STEEL OR 9 GA. ALUM. <td>SAME GAUGE AS FABRIC</td> <td>1 1/2" O.D.</td> <td>1 TIE EVERY 2'-0"</td> <td>MIN. OF 5/8" ROUND WITH TIGHTENERS AND FITTINGS</td> <td>2" GA.</td> <td>2" KNUCK-ING AND/OR TWIST-ING</td> <td>2" O.D.</td> <td>1 TIE EVERY 1'-0"</td> <td>2" O.D.</td> <td>1 TIE EVERY 1'-0"</td> <td>180° SWING</td> <td>3' O.D.</td> <td>12' TO 24' INCL.</td>	SAME GAUGE AS FABRIC	1 1/2" O.D.	1 TIE EVERY 2'-0"	MIN. OF 5/8" ROUND WITH TIGHTENERS AND FITTINGS	2" GA.	2" KNUCK-ING AND/OR TWIST-ING	2" O.D.	1 TIE EVERY 1'-0"	2" O.D.	1 TIE EVERY 1'-0"	180° SWING	3' O.D.	12' TO 24' INCL.

NOTE: POST SIZES SHOWN ARE FOR STEEL. WHERE ALUMINUM IS PROVIDED, LINE POSTS SHALL HAVE AN OUT SIDE DIAMETER OF 2 1/2" FOR FENCE HEIGHT OF 6' AND LESS; AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' TO 12'. END, PULL, CORNER OR BRACE POSTS SHALL HAVE AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' AND LESS; AN OUTSIDE DIAMETER OF 3 1/2" FOR FENCE HEIGHTS OF 6' TO 12'. GATE POSTS WHERE GATE WIDTH IS 12' AND LESS SHALL HAVE AN OUTSIDE DIAMETER OF 3 1/2" FOR FENCE HEIGHT OF 6' AND LESS. ALUMINUM TENSION WIRE SHALL BE 0.192" IN DIAMETER. MINIMUM THICKNESS OF MATERIAL FROM WHICH EXPANSION SLEEVES SHALL BE MADE WILL BE 0.078". POSTS AND RAILS MAY HAVE ANY CROSS-SECTIONAL SHAPE THAT WILL MEET THE SPECIFICATIONS.

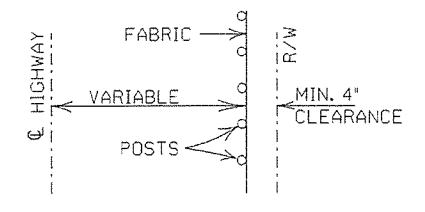
OTHER DETAILS APPLY TO BOTH STEEL AND ALUMINUM FENCE.

ALL MISCELLANEOUS FITTINGS AND HARDWARE SHALL MEET THE REQUIREMENTS AND PRODUCTION TOLERANCES AS SET FORTH IN THE SPECIFICATIONS. 9 GAUGE ALUMINUM WIRE SHALL BE ACCEPTABLE FOR TIEING FABRIC TO TUBULAR AND ROLL FORMED MEMBERS OF STEEL FENCE.

CONCRETE REQUIRED FOR THE EMBEDMENT OF ALL POSTS SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR CHAIN LINK FENCE.

POSTS SHALL BE SPACED EQUIDISTANT ON A MAXIMUM OF 10' CENTERS.

EXCAVATION FOR POSTS: IN OTHER THAN ROCK SHALL BE OF THE DIMENSIONS INDICATED. IF ROCK IS ENCOUNTERED BEFORE REACHING THE REQUIRED DEPTH, THE EXCAVATION SHALL BE CONTINUED TO THE DEPTH INDICATED OR 1'-6" INTO THE ROCK, WHICHEVER IS LESS, AND SHALL BE A MINIMUM OF 8 INCHES IN DIAMETER.



INSTALLATION MAY BE MODIFIED AS SHOWN IN THE PLANS  
TYPICAL INSTALLATION DIAGRAM

POSTS AND RAILS

SIZE O.D.	GRADE 1 AND ALUMINUM ALLOY				GRADE 2		
	O.D. INCHES	WALL THICKNESS	STEEL LBS. PER LINEAR FT.	ALUMINUM LBS. PER LINEAR FT.	O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT.
1 1/2"	1.660	0.140	2.27	0.786	1.660	0.111	1.84
2"	1.900	0.145	2.72	0.940	1.900	0.120	2.28
2 1/2"	2.375	0.154	3.65	1.264	2.375	0.130	3.11
3"	2.875	0.203	5.79	2.004	2.875	0.160	4.64
3 1/2"	3.500	0.216	7.58	2.621	3.500	0.160	5.71
4"	4.000	0.226	9.11	3.151	4.000	0.160	6.56

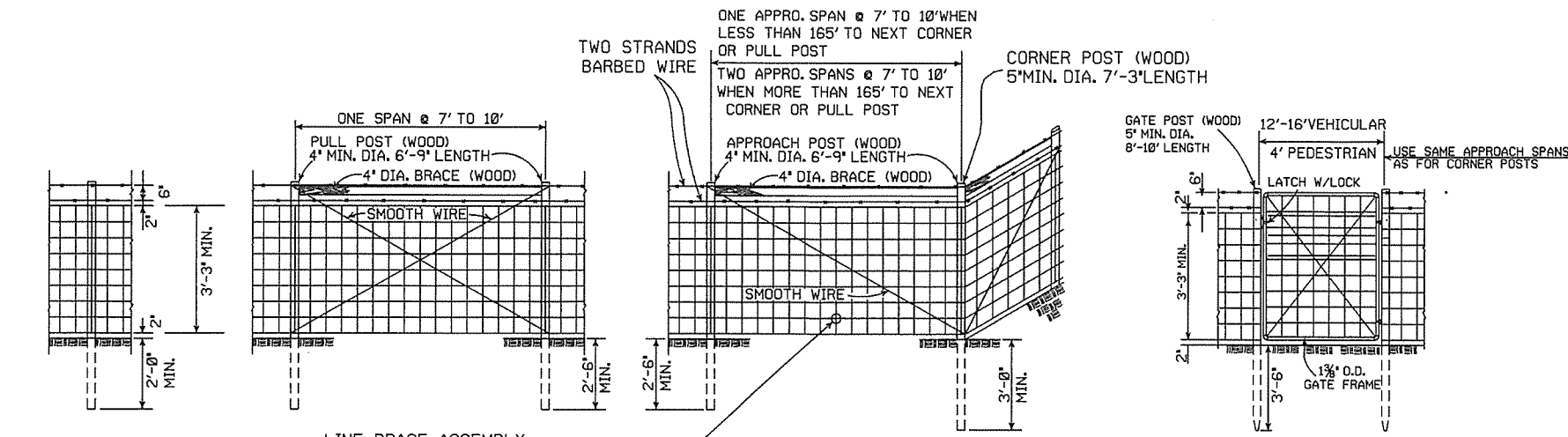
TOLERANCES ON DIMENSIONS AND WEIGHTS ACCORDING TO AASHTO M 181

DATE	REVISION	FILMED
11-17-10	REVISED TRUSS ROD	
12-10-09	REVISED POSTS & RAILS TABLE	
5-21-09	ADDED TABLE & GEN. NOTE (C)	
8-22-02	REVISED NOTES, REMOVED TABLE, & REMOVED FENCE ALTERNATE	
4-3-97	REVISED BRACE RAIL NOTE	
10-18-96	REVISED AASHTO & ASTM REF.	
11-3-94	REVISED NOTE (L)	
10-1-92	DELETED ALTERNATE POST	10-1-92
8-15-91	DELETED ROLL FORMED POST DETAIL & ADDED NOTE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
11-17-88	REVISED O.D. SIZES	668-11-17-88
10-30-87	GENERAL REVISIONS	548-10-30-87
4-20-79	REVISED TOP RAIL & TENSION WIRE	695-4-20-79
10-2-72	REVISED AND REDRAWN	530-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

CHAIN LINK FENCE

STANDARD DRAWING WF-3



GENERAL NOTES:

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

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

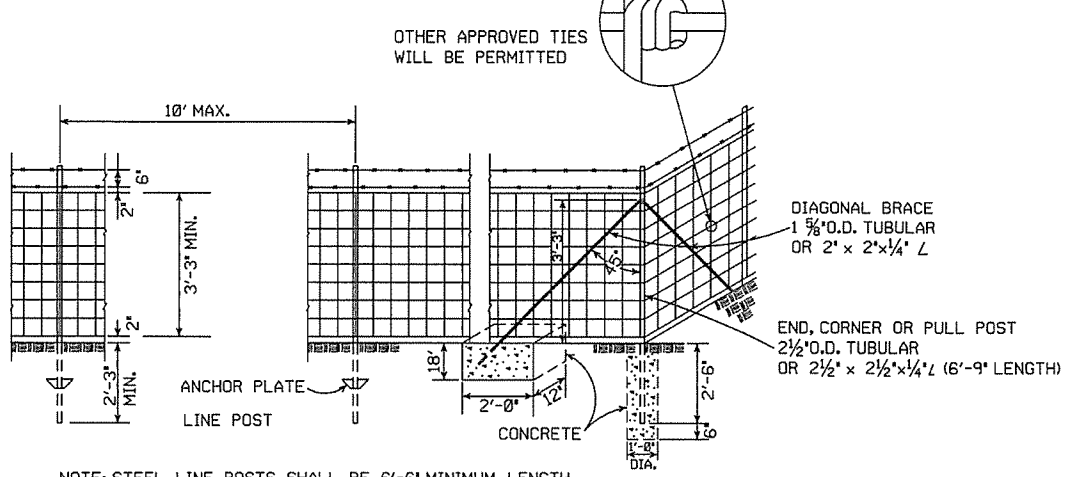
DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED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

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

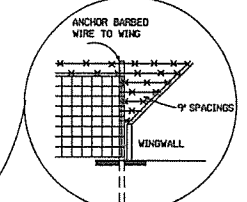
LINE POST 3" MIN. DIA. 6'-3" LENGTH MAX. SPACING TO BE 10'-0"

LINE BRACE ASSEMBLY MAX. SPACING TO BE 330'

TYPE C FENCE (WOOD POSTS)



NOTE: USE 3/8" x 1 1/2" LAG BOLT & SHIELD OR AS APPROVED BY THE ENGINEER.



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

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

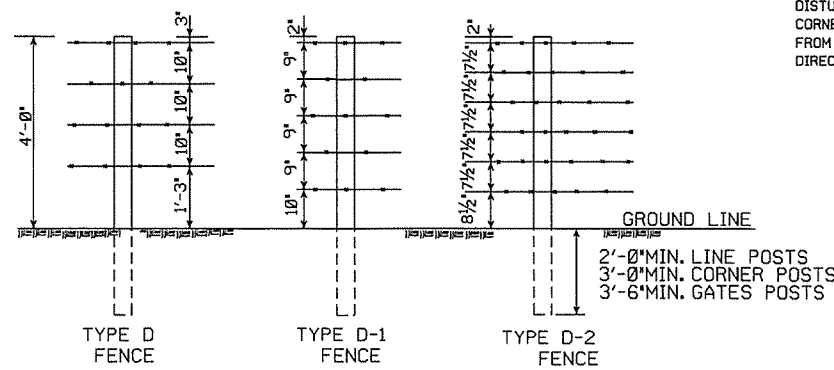
SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE 'WESTERN UNION METHOD' AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

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

NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.

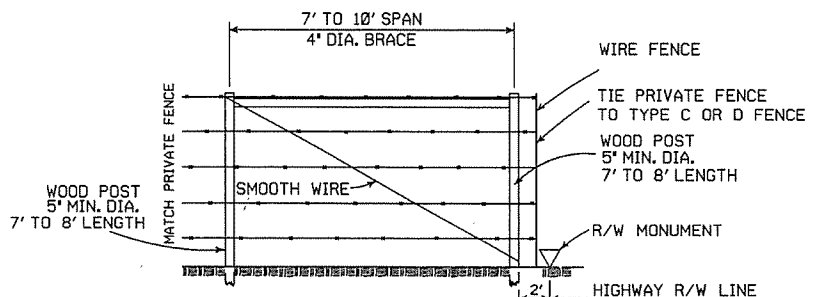
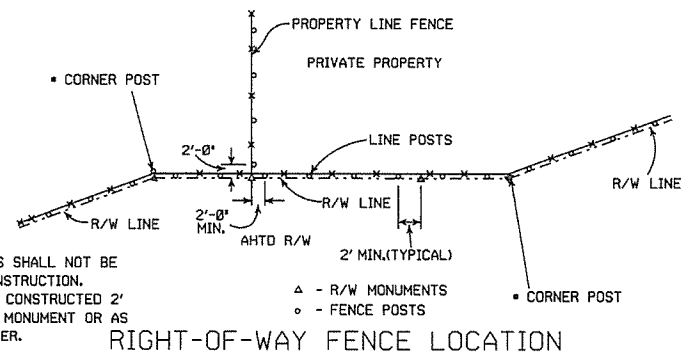
TYPE C FENCE (STEEL POSTS)

- 4 STRANDS BARBED WIRE (D)
- 5 STRANDS BARBED WIRE (D-1)
- 6 STRANDS BARBED WIRE (D-2)

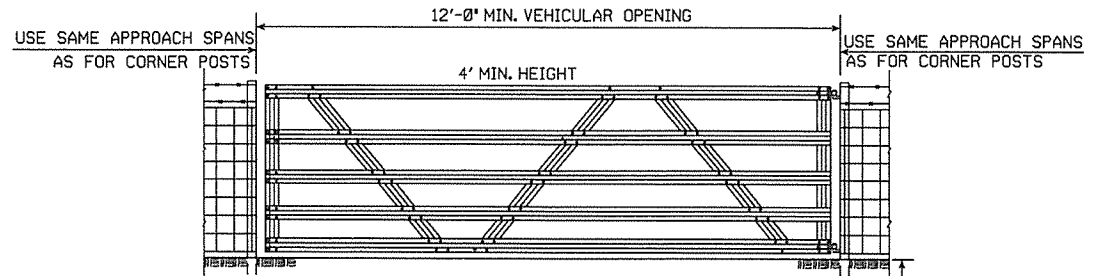


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.

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.



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



OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER. THE METHOD OF SECURING GATE (LATCH AND/OR LOCK) SHALL MEET THE APPROVAL OF THE ENGINEER.

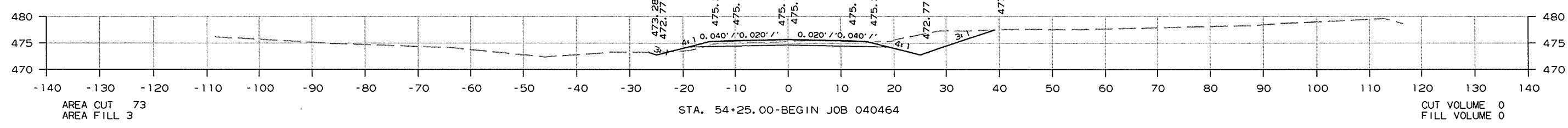
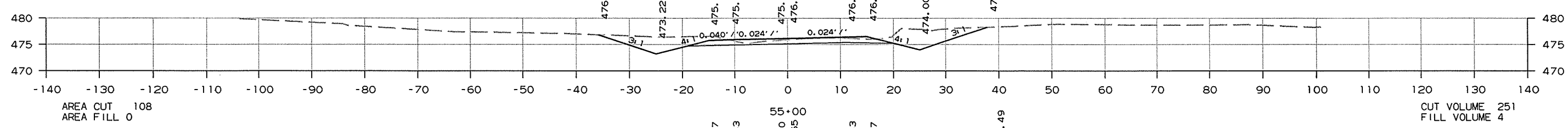
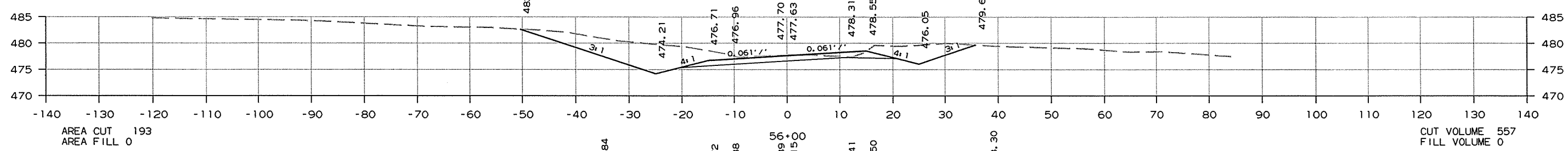
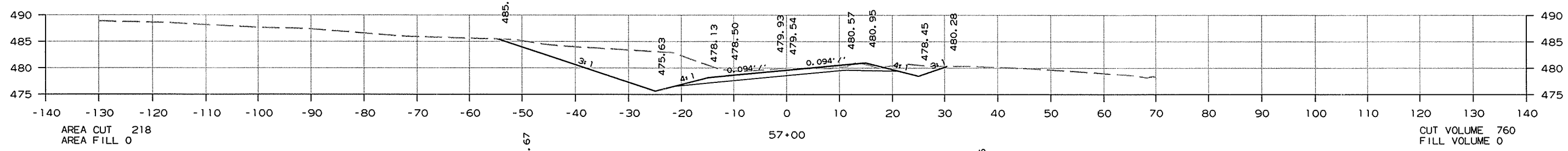
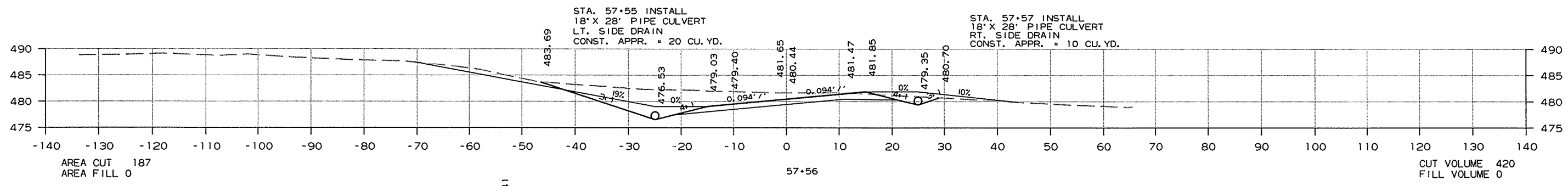
DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	700-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE TYPE C AND D

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 040464	47	59

② CROSS SECTIONS



STA. 54+25.00-BEGIN JOB 040464

CROSS SECTION STA. 54+25 TO STA. 57+56

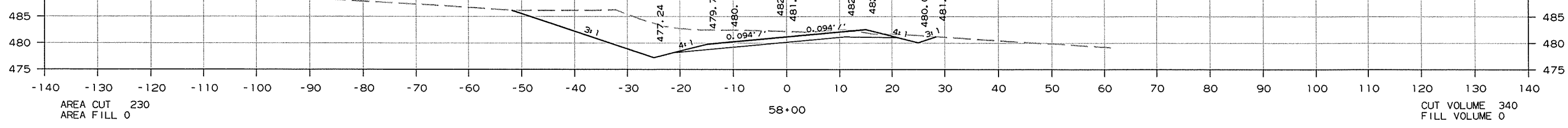
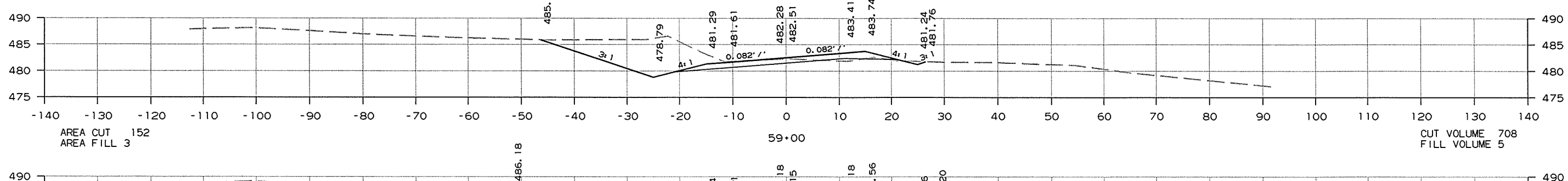
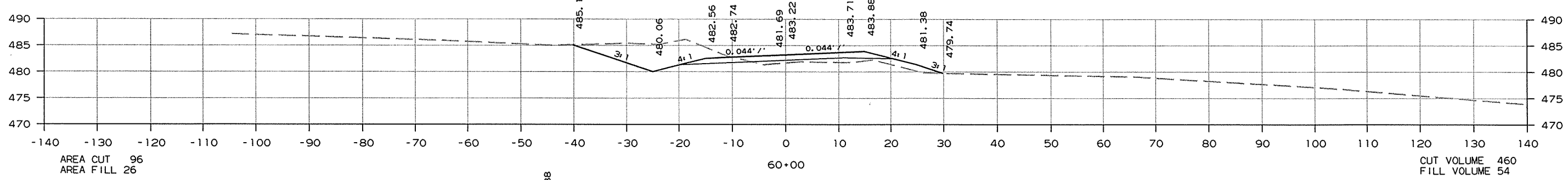
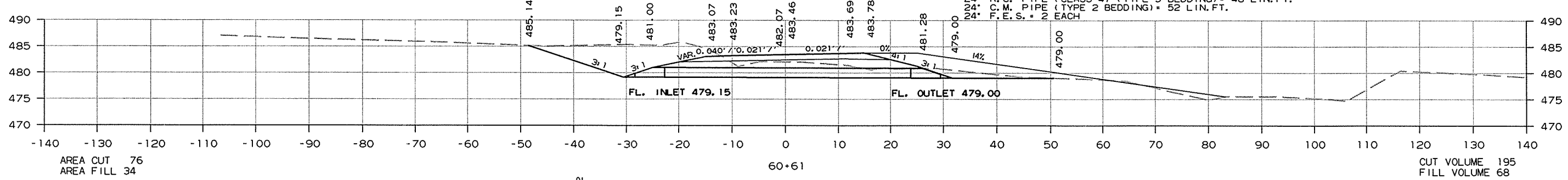
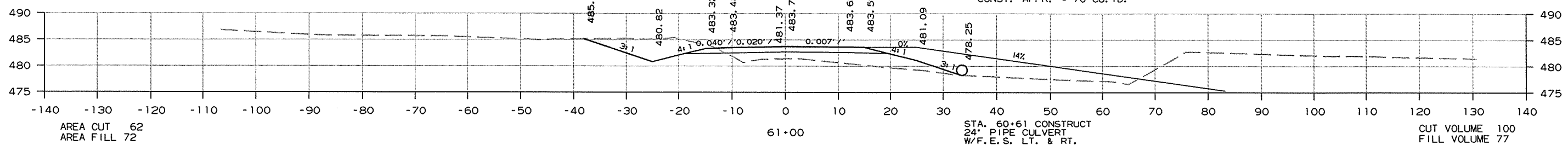
040464.DGN 4-09-2012

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	040464		48	59

2 CROSS SECTIONS

STA. 61+01 INSTALL  
24" X 54' PIPE CULVERT  
RT. SIDE DRAIN  
CONST. APPR. = 70 CU. YD.

STA. 60+61 CONSTRUCT  
24" PIPE CULVERT  
W/F. F.I.S. FT. & RT.  
24" R.C. PIPE (CLASS 4) (TYPE 3 BEDDING) = 48 LIN. FT.  
24" F.E.S. PIPE (TYPE 2 BEDDING) = 52 LIN. FT.  
F.E.S. = 2 EACH



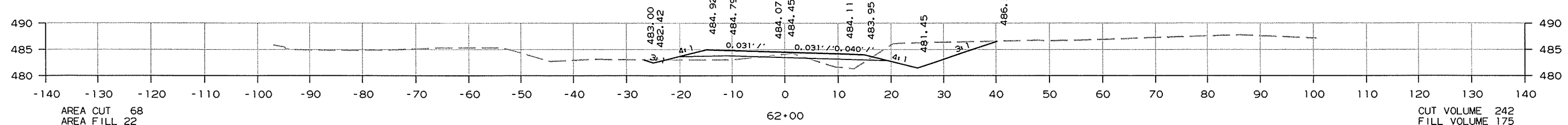
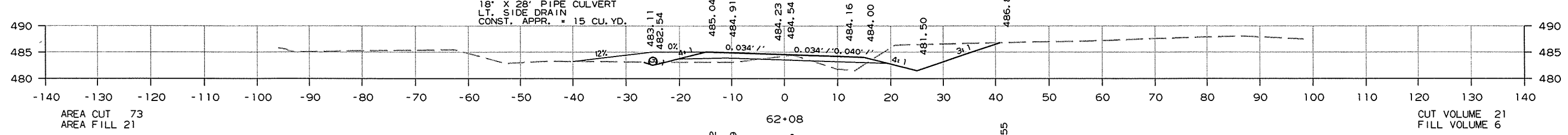
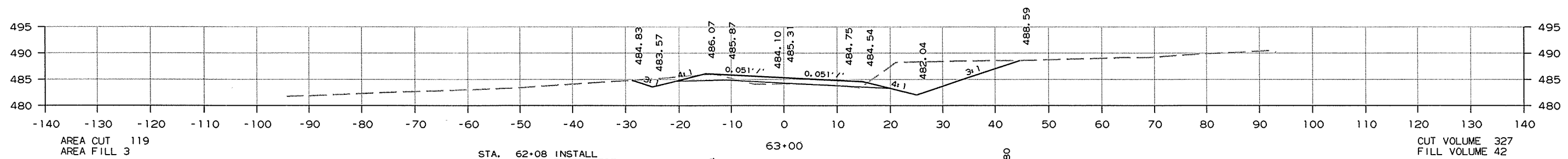
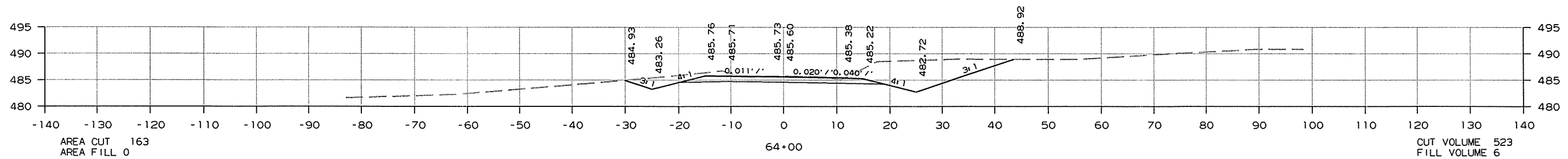
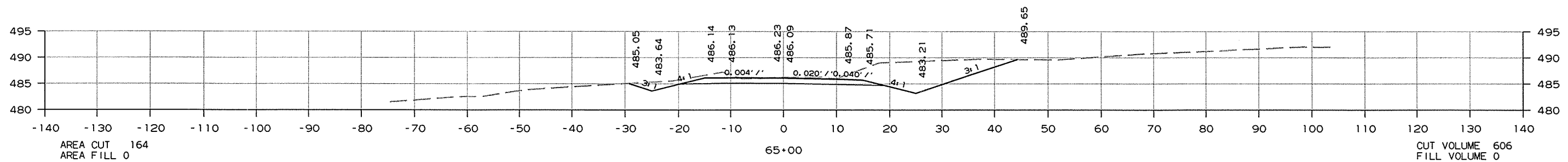
CROSS SECTION STA. 58+00 TO STA. 61+00

040464.DGN 4-09-2012



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 040464	49	59

2 CROSS SECTIONS



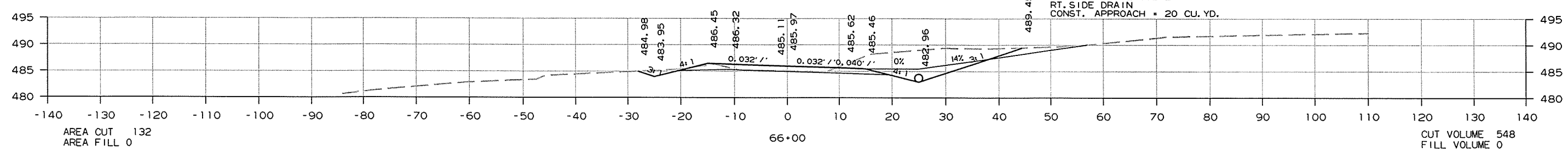
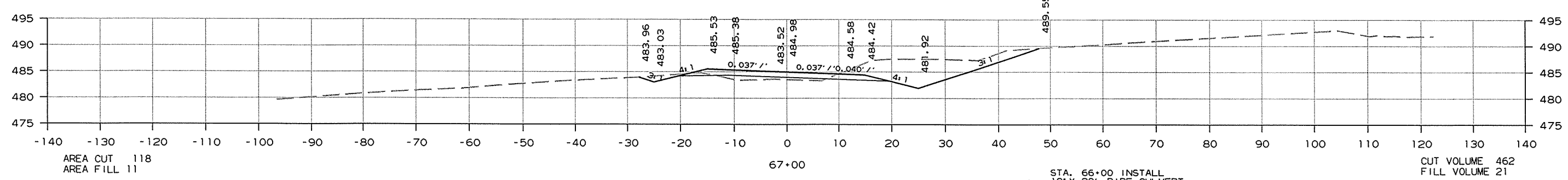
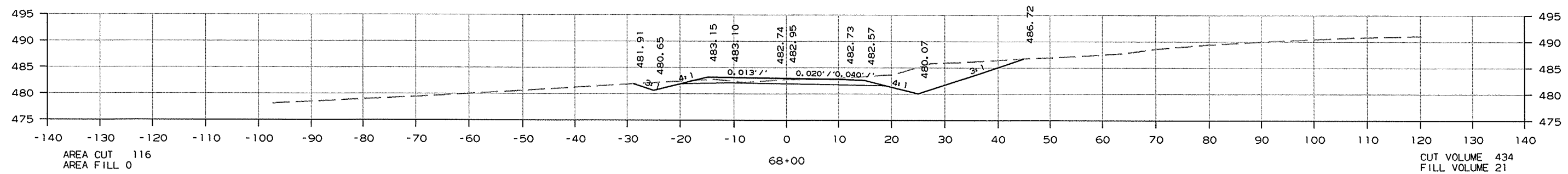
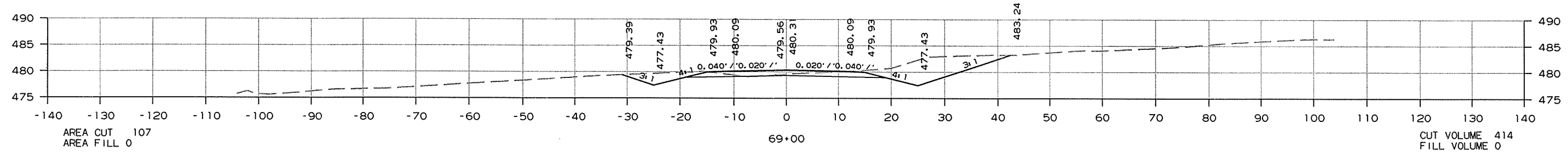
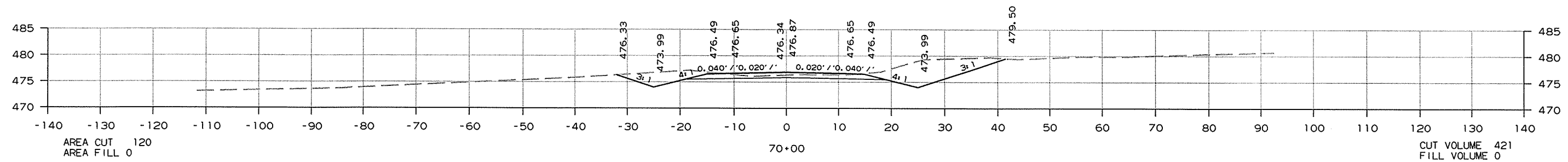
CROSS SECTION STA. 62+00 TO STA. 65+00

4-09-2012

040464.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	040464		50	59

② CROSS SECTIONS



STA. 66+00 INSTALL  
 18" X 28" PIPE CULVERT  
 RT. SIDE DRAIN  
 CONST. APPROACH = 20 CU. YD.

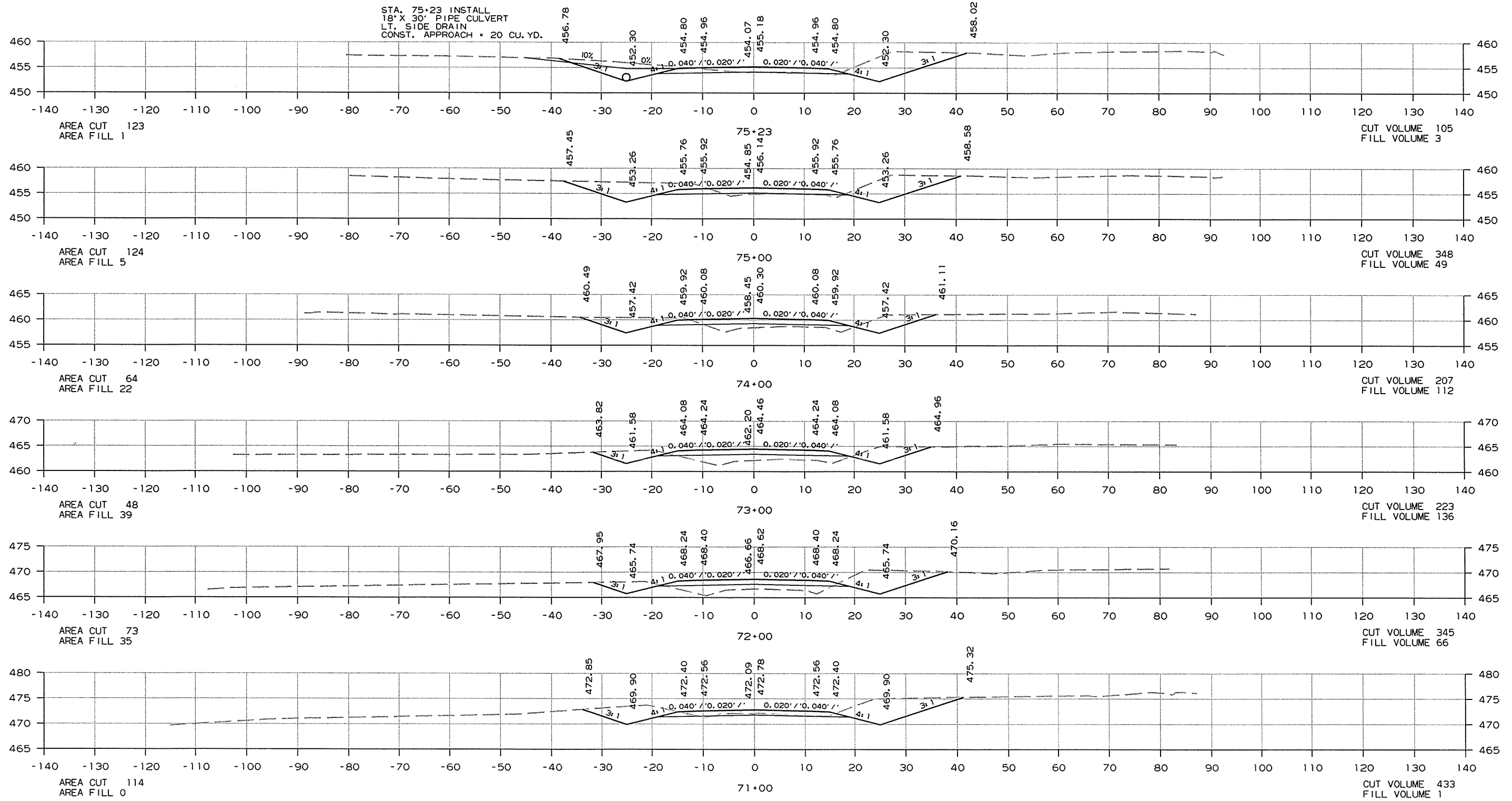
CROSS SECTION STA. 66+00 TO STA. 70+00

4-09-2012 040464.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	040464		51	59

② CROSS SECTIONS

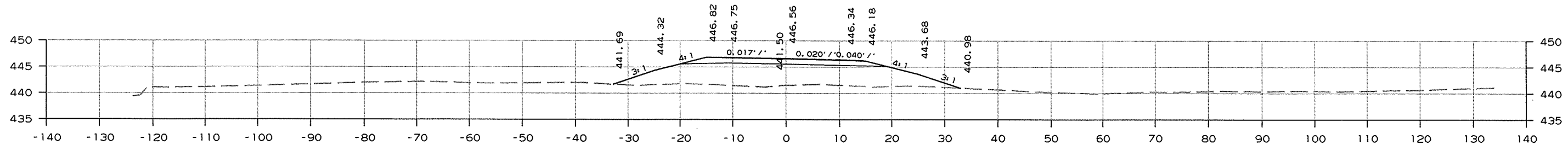
STA. 75+23 INSTALL  
18" X 30" PIPE CULVERT  
LT. SIDE DRAIN  
CONST. APPROACH = 20 CU. YD.



CROSS SECTION STA. 71+00 TO STA. 75+23

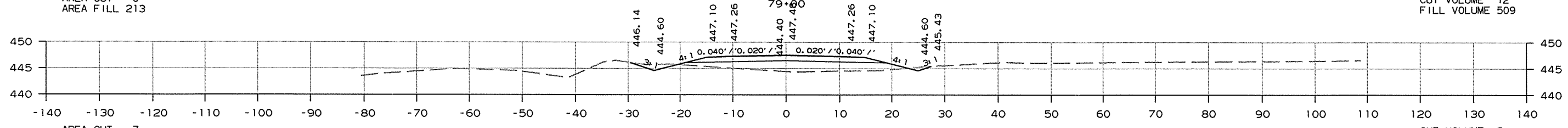
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				6	ARK.			
				JOB NO.	040464		52	59

2 CROSS SECTIONS



AREA CUT 0  
AREA FILL 213

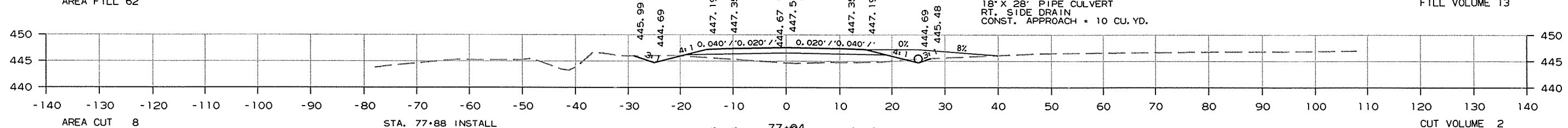
CUT VOLUME 12  
FILL VOLUME 509



AREA CUT 7  
AREA FILL 62

CUT VOLUME 2  
FILL VOLUME 13

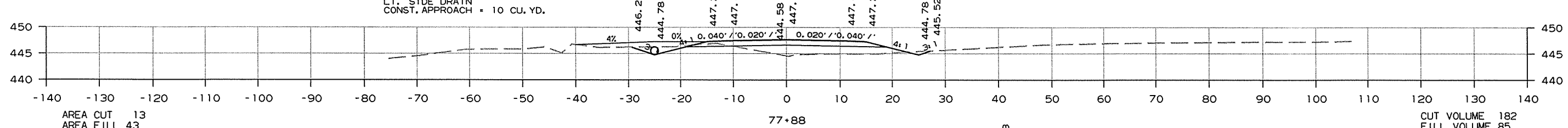
STA. 77+94 INSTALL  
18" X 28" PIPE CULVERT  
RT. SIDE DRAIN  
CONST. APPROACH = 10 CU. YD.



AREA CUT 8  
AREA FILL 55

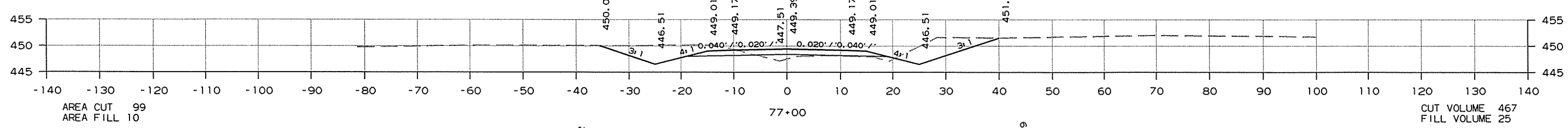
CUT VOLUME 2  
FILL VOLUME 11

STA. 77+88 INSTALL  
18" X 28" PIPE CULVERT  
LT. SIDE DRAIN  
CONST. APPROACH = 10 CU. YD.



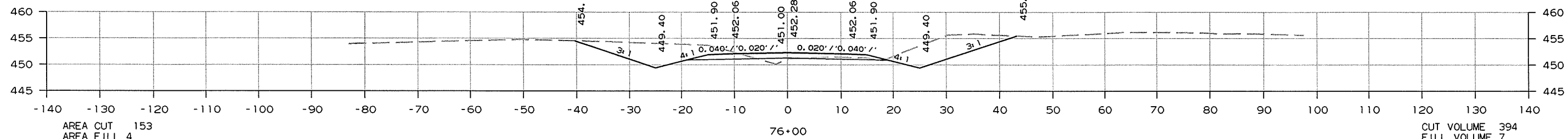
AREA CUT 13  
AREA FILL 43

CUT VOLUME 182  
FILL VOLUME 85



AREA CUT 99  
AREA FILL 10

CUT VOLUME 467  
FILL VOLUME 25



AREA CUT 153  
AREA FILL 4

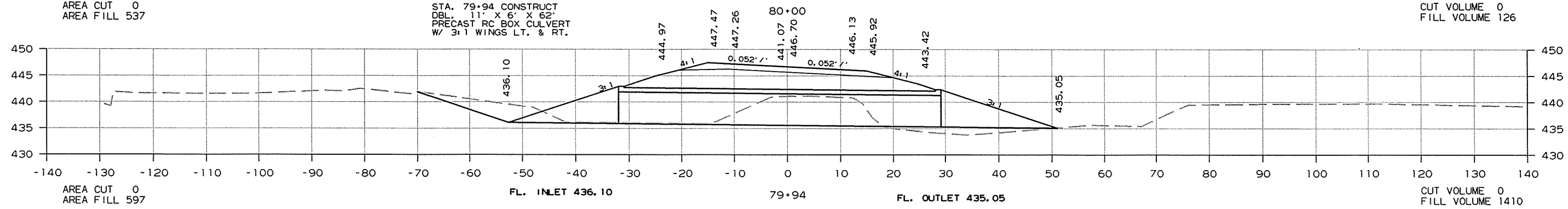
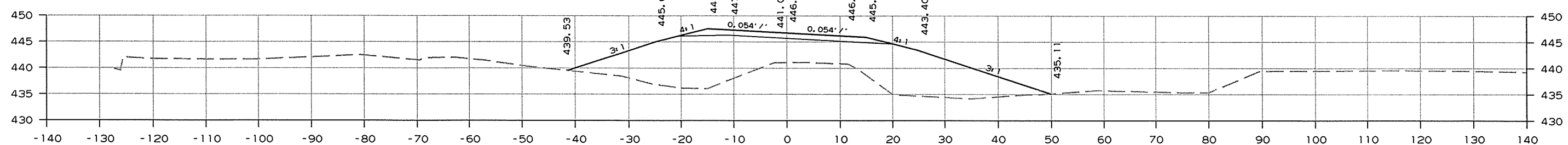
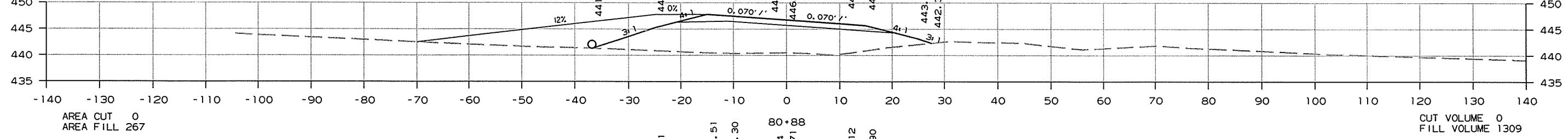
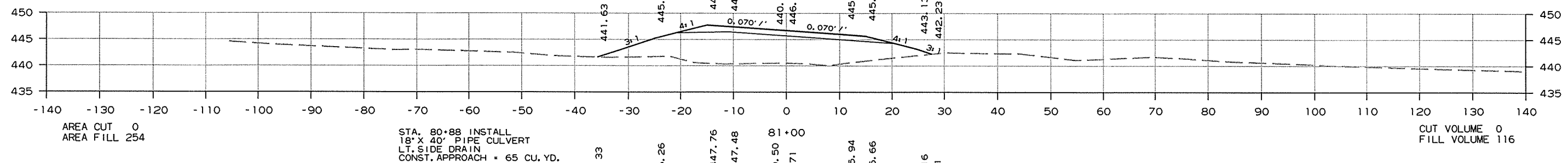
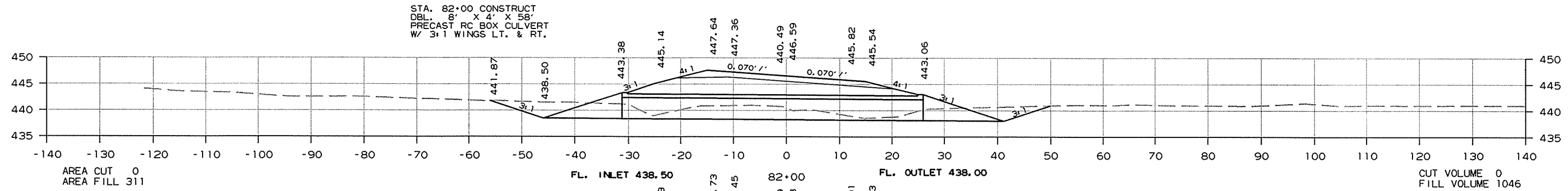
CUT VOLUME 394  
FILL VOLUME 7

CROSS SECTION STA. 76+00 TO STA. 79+00

040464.DGN 4-09-2012

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 040464							53	59

② CROSS SECTIONS

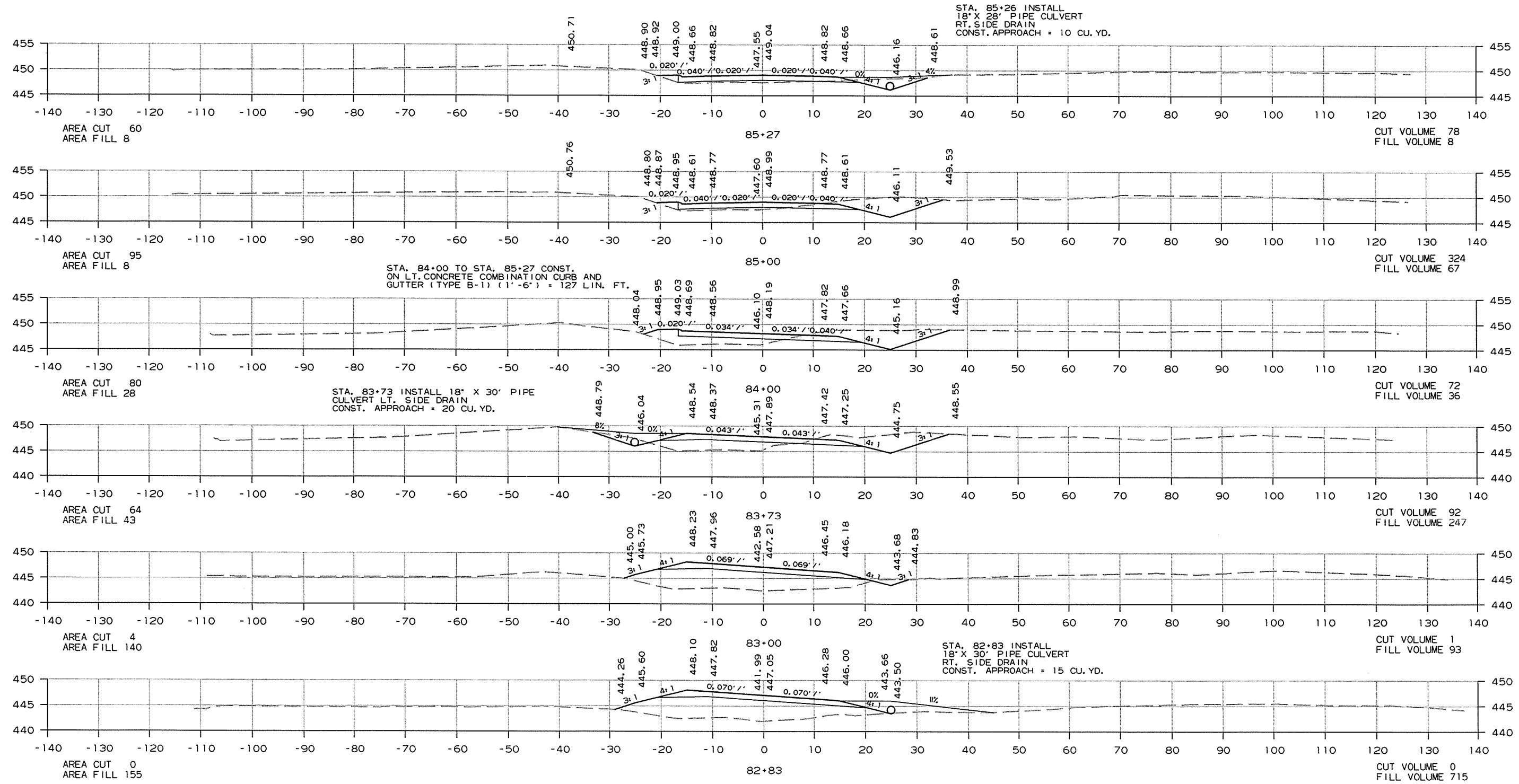


CROSS SECTION STA. 79+94 TO STA. 82+00

4-09-2012 040464.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	040464		54	59

② CROSS SECTIONS

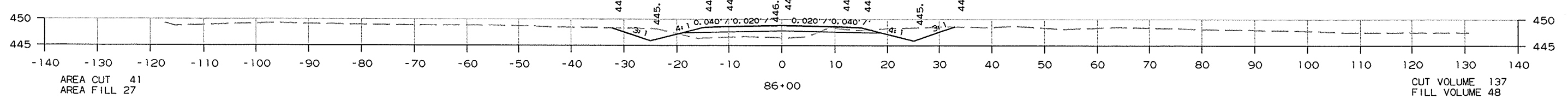
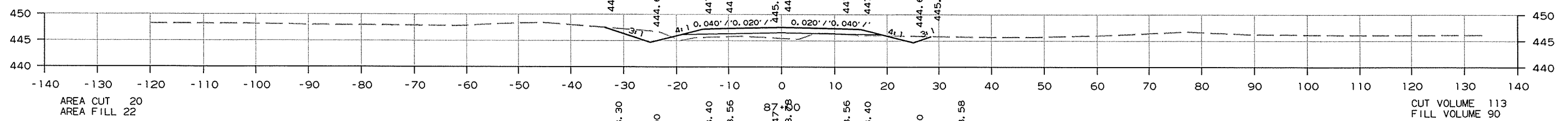
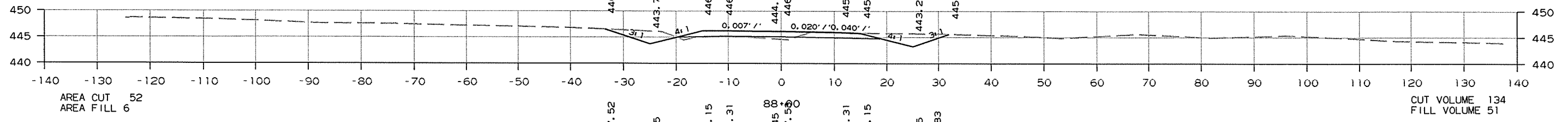
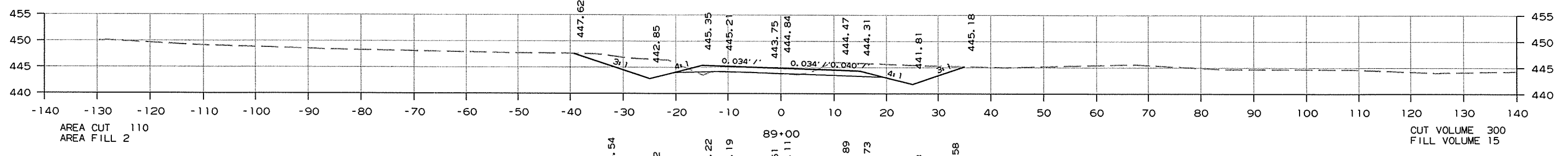
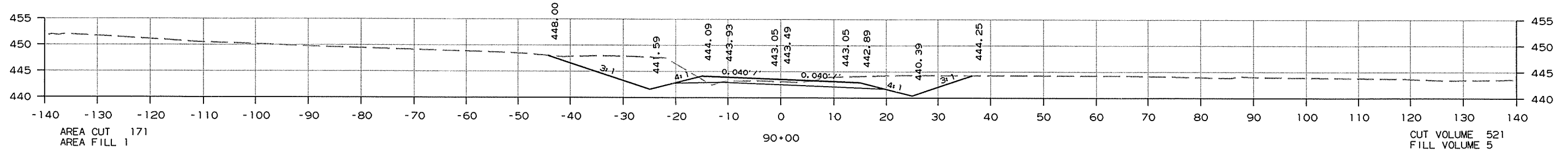
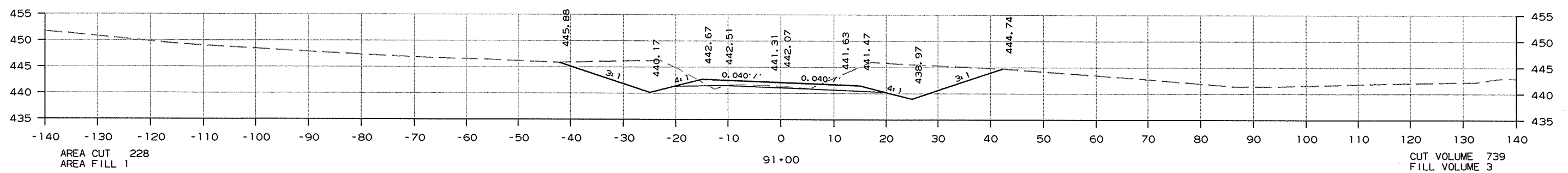


4-09-2012 040464.DGN

CROSS SECTION STA. 82+83 TO STA. 85+27

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 040464	55	59

2 CROSS SECTIONS

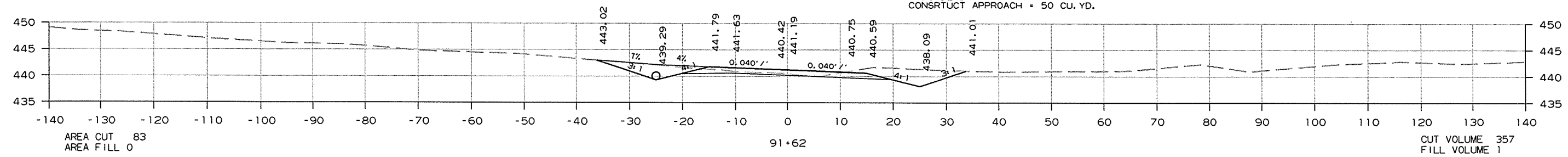
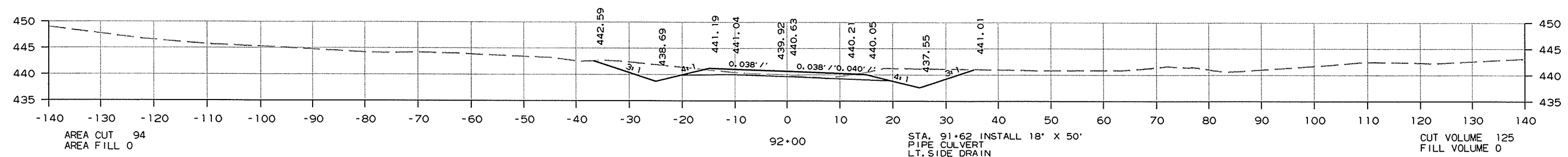
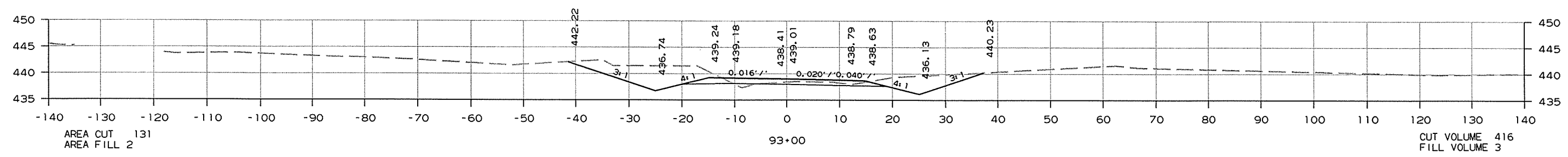
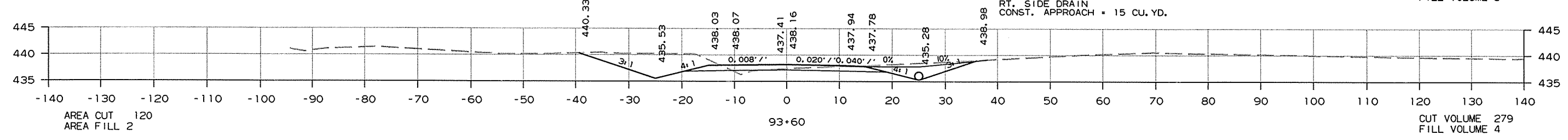
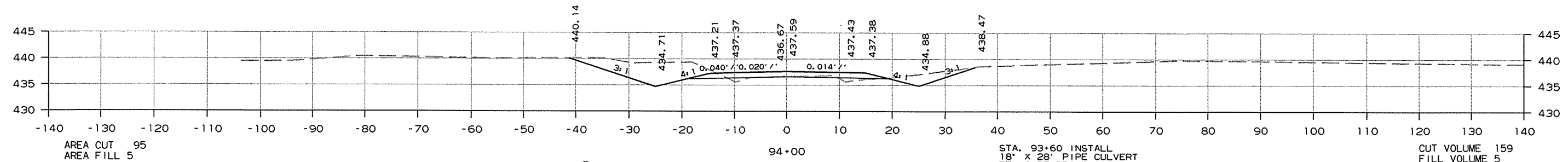


CROSS SECTION STA. 86+00 TO STA. 91+00

4-09-2012 040464.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	040464		56	59

2 CROSS SECTIONS



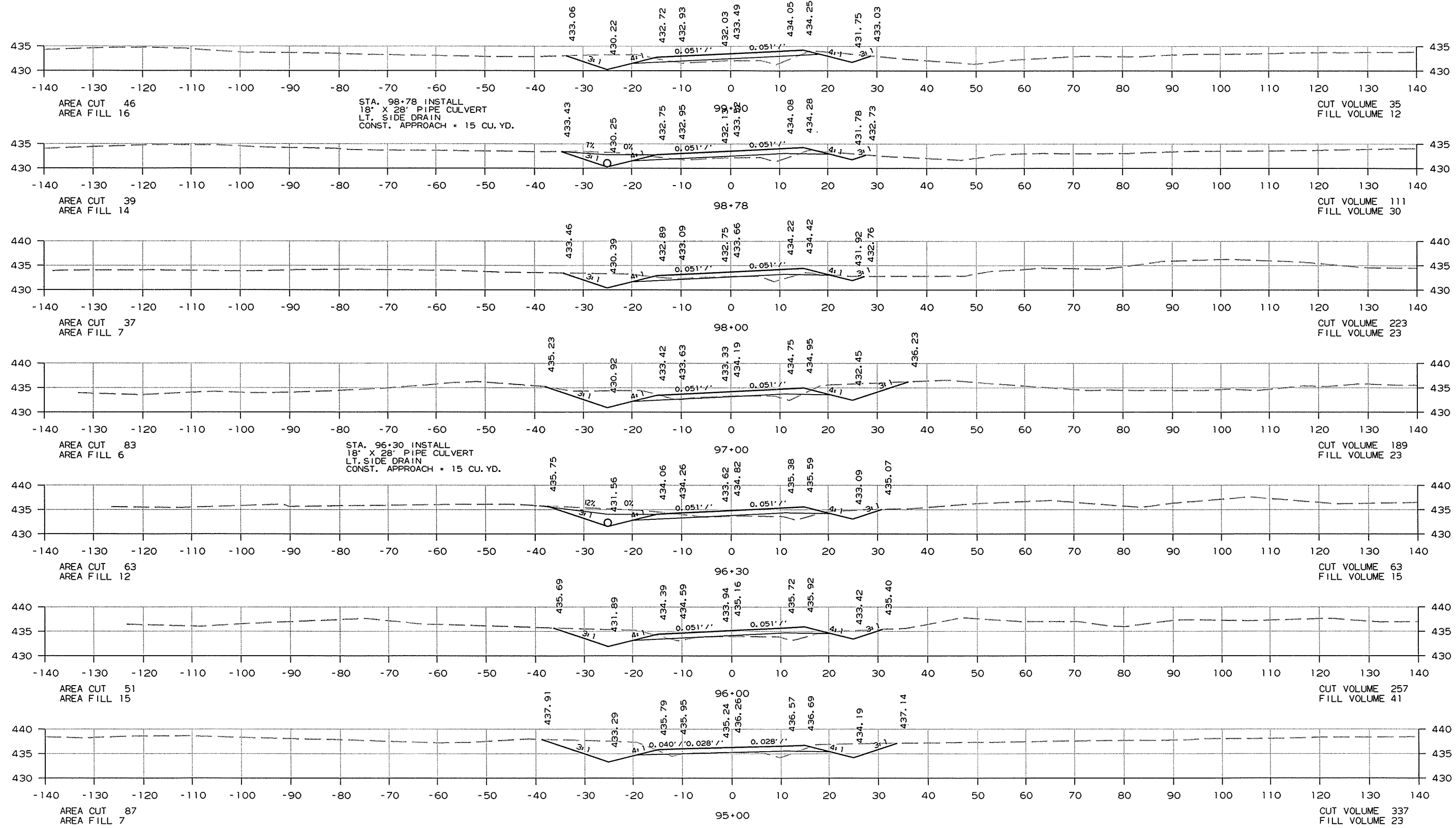
CROSS SECTION STA. 91+62 TO STA. 94+00

040464.DGN 4-09-2012



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	040464		57	59

2 CROSS SECTIONS

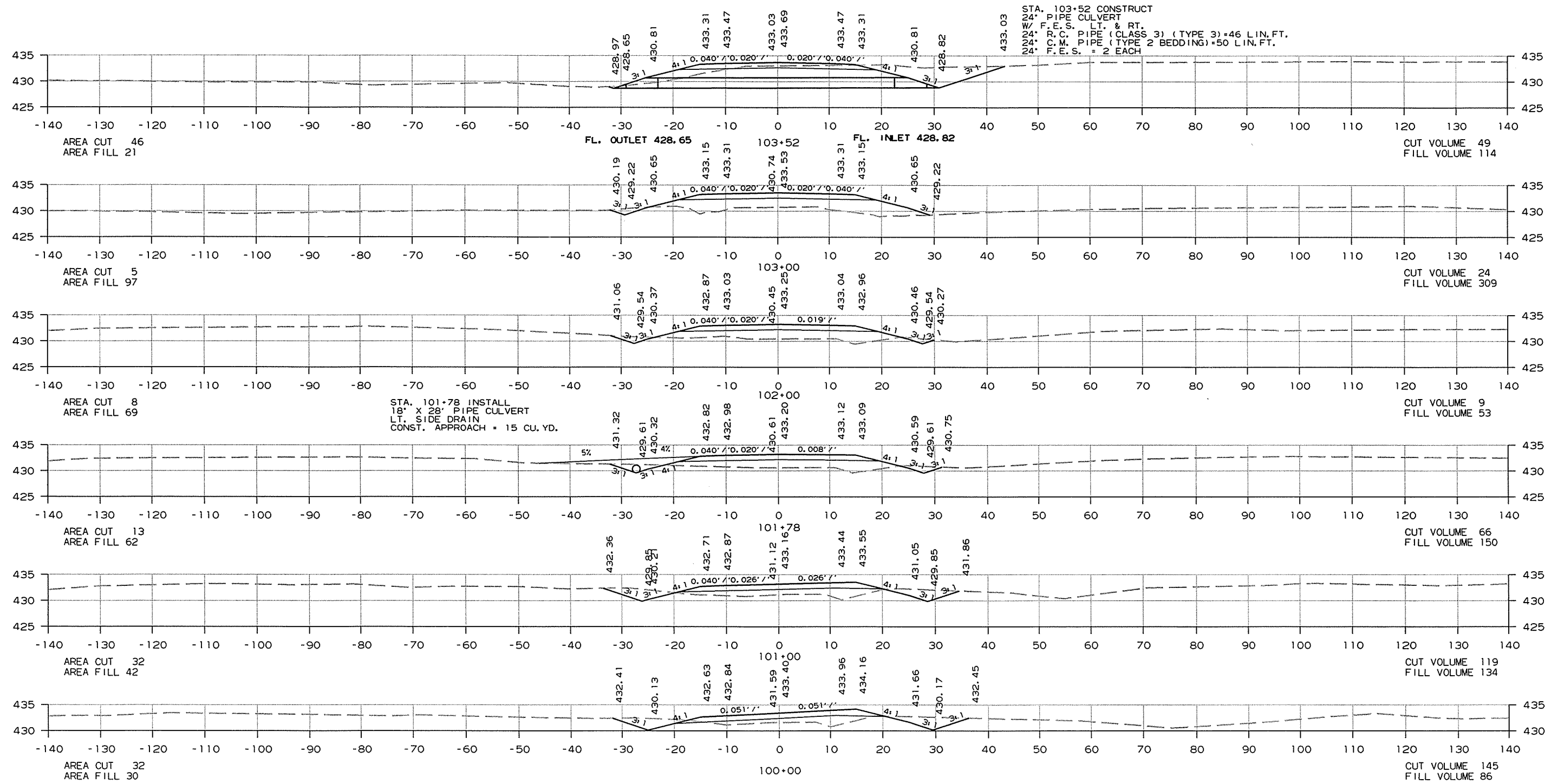


CROSS SECTION STA. 95+00 TO STA. 99+00

4-09-2012 040464.DCN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	040464		58	59

② CROSS SECTIONS

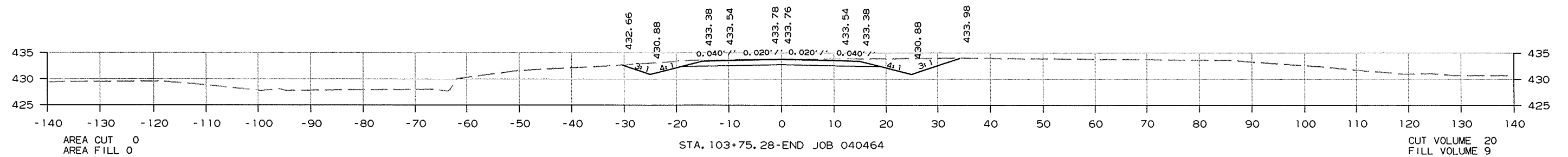


CROSS SECTION STA. 100+00 TO STA. 103+52

4-09-2012 040464.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO.	040464	59

② CROSS SECTIONS



CROSS SECTION STA. 103+75 TO STA. 103+75

4-09-2012

040464.DGN