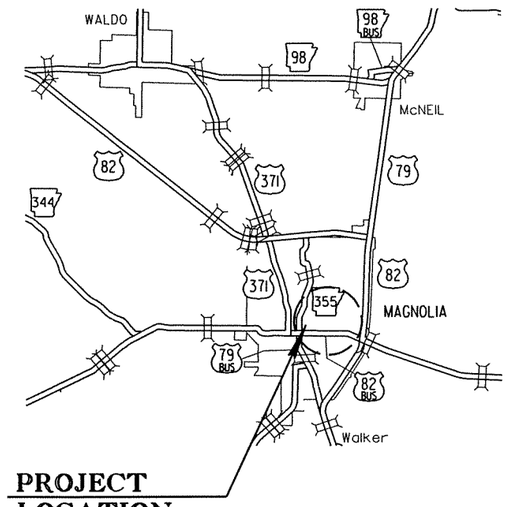
070304

JOB

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.		070304	1	102

(2) FREDERICK ST.-HWY. 82 (E. NORTH ST.)(MAGNOLIA)(S)



PROJECT LOCATION

VICINITY MAP

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

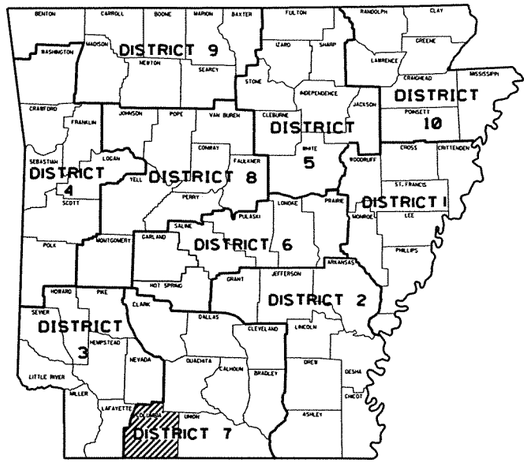
CONSTRUCTION PLANS

FREDERICK ST.- HWY. 82
(E. NORTH ST.)(MAGNOLIA) (S)

COLUMBIA COUNTY

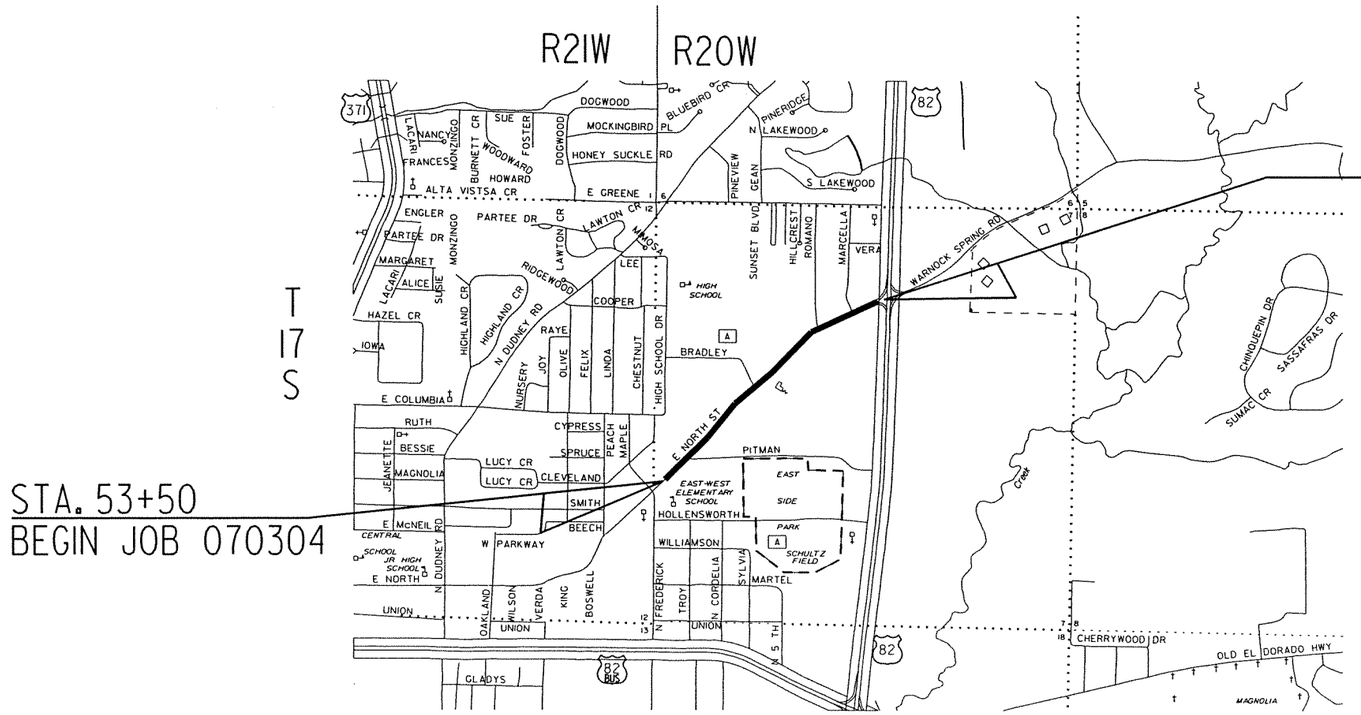
F.A.P. STP-9271(9)

JOB 070304



ARKANSAS HIGHWAY DIST.7

NOT TO SCALE



DESIGN TRAFFIC DATA

DESIGN YEAR		2011
2011	ADT	4600
2031	ADT	5500
2031	DHV	605
DIRECTIONAL DISTRIBUTION		60%
TRUCKS		3%
DESIGN SPEED		30 MPH URBAN

BEGINNING: LAT:N33° 16′ 22″ LONG:W93° 13′ 25″
MID POINT: LAT:N33° 16′ 33″ LONG:W93° 13′ 11″
ENDING: LAT:N33° 16′ 43″ LONG:W93° 12′ 55″

GROSS LENGTH OF PROJECT	3375 FEET OR	0.639 MILES
NET LENGTH OF ROADWAY	3375 FEET OR	0.639 MILES
NET LENGTH OF BRIDGES	0 FEET OR	0.000 MILES
NET LENGTH OF PROJECT	3375 FEET OR	0.639 MILES

P.E. JOB 070304

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 3917
FRANK VOZEL

3/30/11

DEPUTY DIRECTOR AND CHIEF ENGINEER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	2	102

(2) INDEX, GOV. SPECS. & GEN. NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-23-11

INDEX OF SHEETS

SHEET NO.	TITLE	DRAWING NO.	DATE
1	TITLE SHEET		
2	INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES		
3	TYPICAL SECTIONS OF IMPROVEMENT		
4	SPECIAL DETAILS		
5-8	TEMPORARY EROSION CONTROL DETAILS		
9-15	MAINTENANCE OF TRAFFIC DETAILS		
16-20	QUANTITY SHEETS		
21	SUMMARY OF QUANTITIES AND REVISIONS		
22-27	SURVEY CONTROL DETAILS		
28-35	PLAN AND PROFILE SHEET		
36	CONCRETE DITCH PAVING	CDP-1	11/17/10
37	CURBING DETAILS	CG-1	11/29/07
38	DETAILS OF DRIVEWAYS & ISLANDS	DR-1	11/29/07
39	FLARED END SECTION	FES-1	10/18/96
40	FLARED END SECTION	FES-2	10/18/96
41	DETAILS OF DROP INLETS & JUNCTION BOXES	FPC-9	11/16/01
42	DETAILS OF DROP INLETS (TYPE C)	FPC-9E	8/22/02
43	DETAILS OF DROP INLETS (TYPE MO)	FPC-9M	8/22/02
44	MAILBOX DETAILS	MB-1	11/18/04
45	PRECAST CONCRETE BOX CULVERTS	PBC-1	10/15/09
46	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	PCC-1	5/18/00
47	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	PCM-1	3/30/00
48	PAVEMENT MARKING DETAILS	PM-1	11/17/10
49	DETAILS OF PIPE UNDERDRAIN	PU-1	4/10/03
50	REINFORCED CONCRETE BOX CULVERT DETAILS	RCB-1	5/25/06
51	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS	RCB-2	11/20/03
52	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	SE-2	10/18/96
53	SAFETY END SECTION FOR CIRCULAR AND ARCH PIPES	SES-1	10/18/96
54	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-1	11/17/10
55	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-2	3/11/10
56	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-3	10/15/09
57	TEMPORARY EROSION CONTROL DEVICES	TEC-1	11/18/98
58	TEMPORARY EROSION CONTROL DEVICES	TEC-2	6/2/94
59	TEMPORARY EROSION CONTROL DEVICES	TEC-3	11/3/94
60	CHAIN LINK FENCE	WF-3	11/17/10
61	WIRE FENCE TYPE C AND D	WF-4	8/22/02
62	WHEELCHAIR RAMPS NEW CONSTRUCTION AND ALTERATIONS	WR-1	11/10/05
63	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 30^ SKEW BARRELS	W-X30	7/15/63
64	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 30^ SKEW BARRELS	W-X303-1	5/10/66
65	DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS 30^ SKEW BARRELS	R-130X-0	2/24/64
66	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 45^ SKEW BARRELS	W-X45	6/15/64
67	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 45^ SKEW BARRELS	W-X453-1	5/10/66
68	DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS 45^ SKEW BARRELS	R-245X-01	7/14/64
69-102	CROSS SECTIONS		

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

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	FHWA-1273 REVISIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-2	MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
103-1	DETERMINATION OF DBE PARTICIPATION
105-1	CONSTRUCTION CONTROL MARKINGS
105-2	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
107-1	WORKER VISIBILITY
108-1	LIQUIDATED DAMAGES
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
303-1	AGGREGATE BASE COURSE
404-1	PRODUCTION VERIFICATION OF ASPHALT CONCRETE HOT MIX
409-1	MINERAL AGGREGATES
410-3	DENSITY TESTING FOR ACHM LEVELING COURSES AND BOND BREAKERS
411-1	ASPHALT CONCRETE COLD PLANT MIX
600-1	WATER FOR VEGETATION
603-1	MAINTENANCE OF TRAFFIC
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
606-2	PIPE CULVERTS
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
719-2	THERMOPLASTIC PAVEMENT MARKING MATERIAL
JOB 070304	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 070304	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 070304	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 070304	INTERNET BIDDING
JOB 070304	PRECAST REINFORCED CONCRETE BOX CULVERTS
JOB 070304	REMOVAL AND SALVAGE OF PIPE CULVERTS
JOB 070304	SOIL STABILIZATION
JOB 070304	STORM WATER POLLUTION PREVENTION PLAN
JOB 070304	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 070304	UTILITY ADJUSTMENTS
JOB 070304	WARM MIX ASPHALT

GENERAL NOTES

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

r070304.dgn 8/27/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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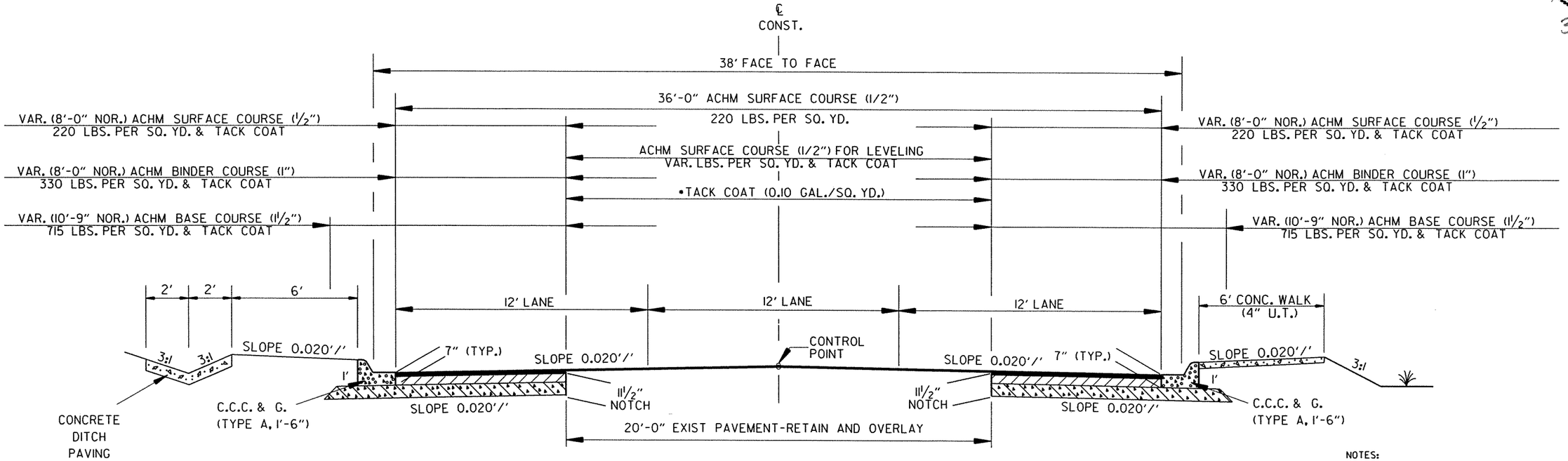
				JOB NO.		070304	3	102

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL B. FUGETT
3-29-11



TYPICAL SECTION OF IMPROVEMENT

• TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

NOTES:
PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB ABD GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACR ITEMS.

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

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

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

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

TRAVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

TYPICAL SECTIONS OF IMPROVEMENT

06-16-09 FILE r070304.dgn, TYPICAL SECTIONS OF IMPROVEMENT

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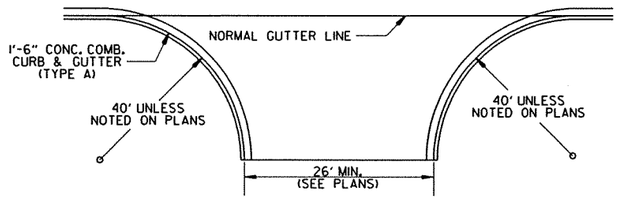
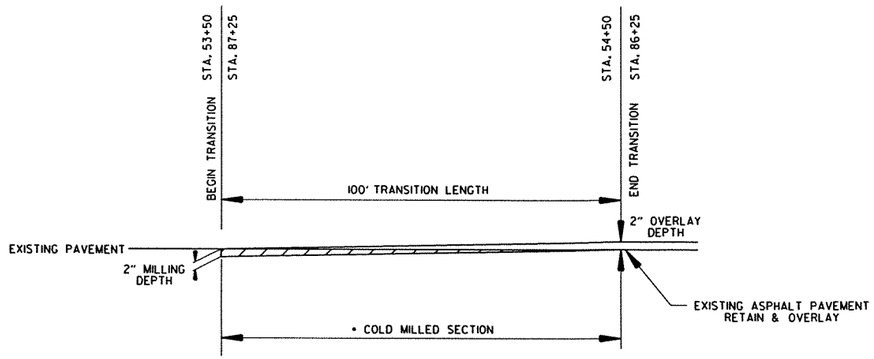
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11



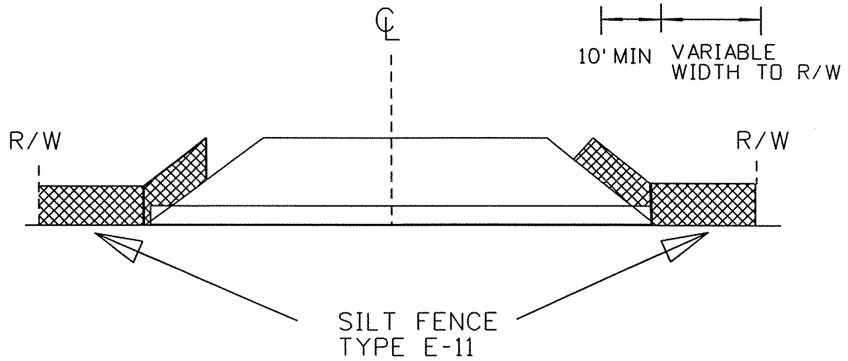
DETAIL OF CITY STREET TURNOUTS

NOTE: THE TYPICAL SECTION FOR THE CITY STREET CONNECTIONS IN THE CURB & GUTTER SECTION SHALL MATCH THE PROPOSED WIDENING SECTION SHOWN FOR THE MAIN LANES. UNLESS OTHERWISE NOTED ON THE PLANS, ALL CITY STREET RADII WILL BE 40'.

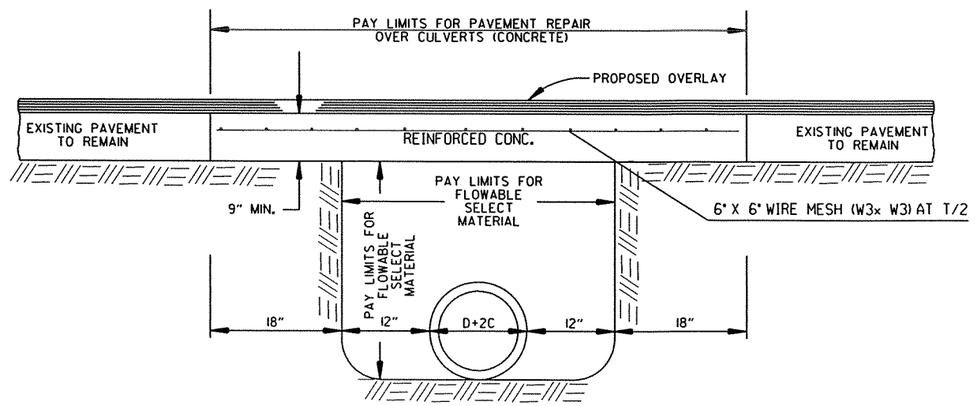


DETAIL SHOWING TRANSITION TO EXISTING PAVEMENT

• TO BE USED AS DIRECTED BY THE ENGINEER



DETAILS OF SILT FENCE AT CROSS DRAINS



06-16-09 FILE r070304.dgn, TYPICAL SECTIONS OF IMPROVEMENT

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				6	ARK.			
				JOB NO.		070304	5	102

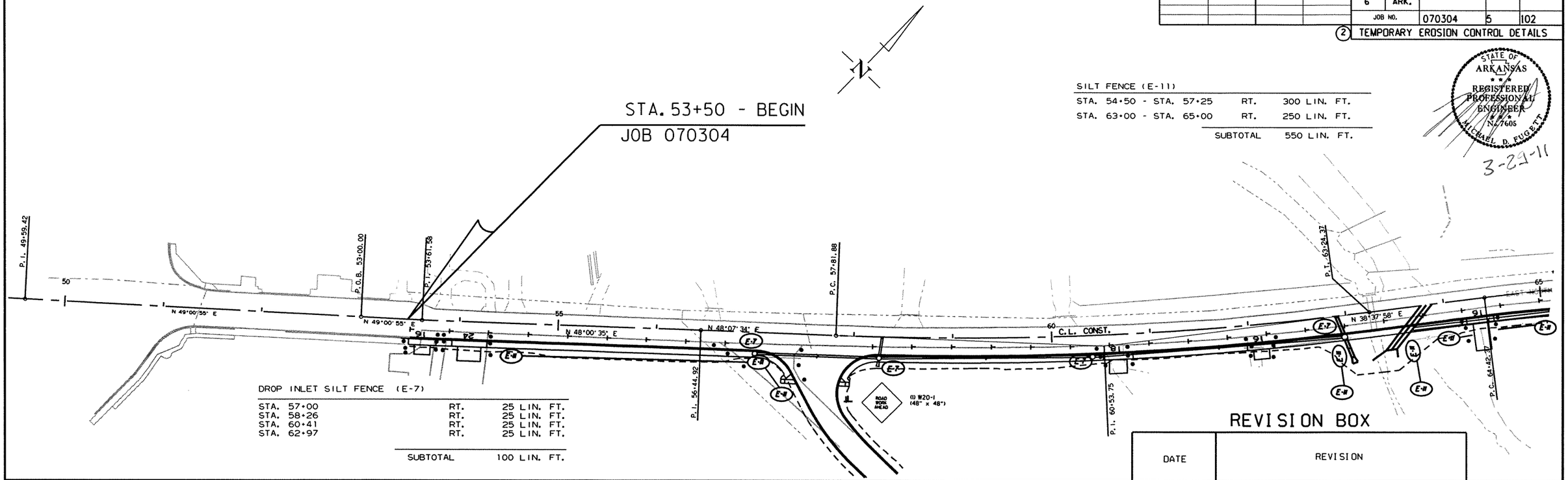
(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11

STA. 53+50 - BEGIN
JOB 070304

SILT FENCE (E-11)

STA. 54+50 - STA. 57+25	RT.	300 LIN. FT.
STA. 63+00 - STA. 65+00	RT.	250 LIN. FT.
SUBTOTAL		550 LIN. FT.

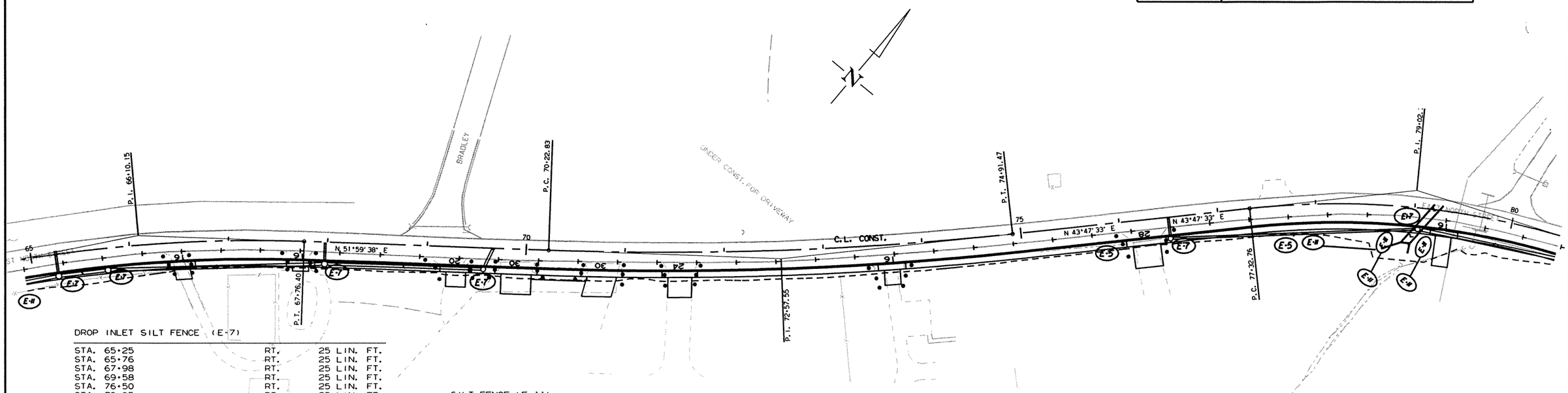


DROP INLET SILT FENCE (E-7)

STA. 57+00	RT.	25 LIN. FT.
STA. 58+26	RT.	25 LIN. FT.
STA. 60+41	RT.	25 LIN. FT.
STA. 62+97	RT.	25 LIN. FT.
SUBTOTAL		100 LIN. FT.

REVISION BOX

DATE	REVISION



DROP INLET SILT FENCE (E-7)

STA. 65+25	RT.	25 LIN. FT.
STA. 65+76	RT.	25 LIN. FT.
STA. 67+98	RT.	25 LIN. FT.
STA. 69+58	RT.	25 LIN. FT.
STA. 76+50	RT.	25 LIN. FT.
STA. 79+05	RT.	25 LIN. FT.
SUBTOTAL		150 LIN. FT.

SILT FENCE (E-11)

STA. 78+00 - STA. 79+00	RT.	250 LIN. FT.

SAND BAG DITCH CHECKS (E-5)

STA. 74+50 - STA. 76+50	RT.	1 INSTALLATIONS	5 CU. YDS.
STA. 77+00 - STA. 78+00	RT.	1 INSTALLATIONS	5 CU. YDS.

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

r070304.dgn 8/11/2009

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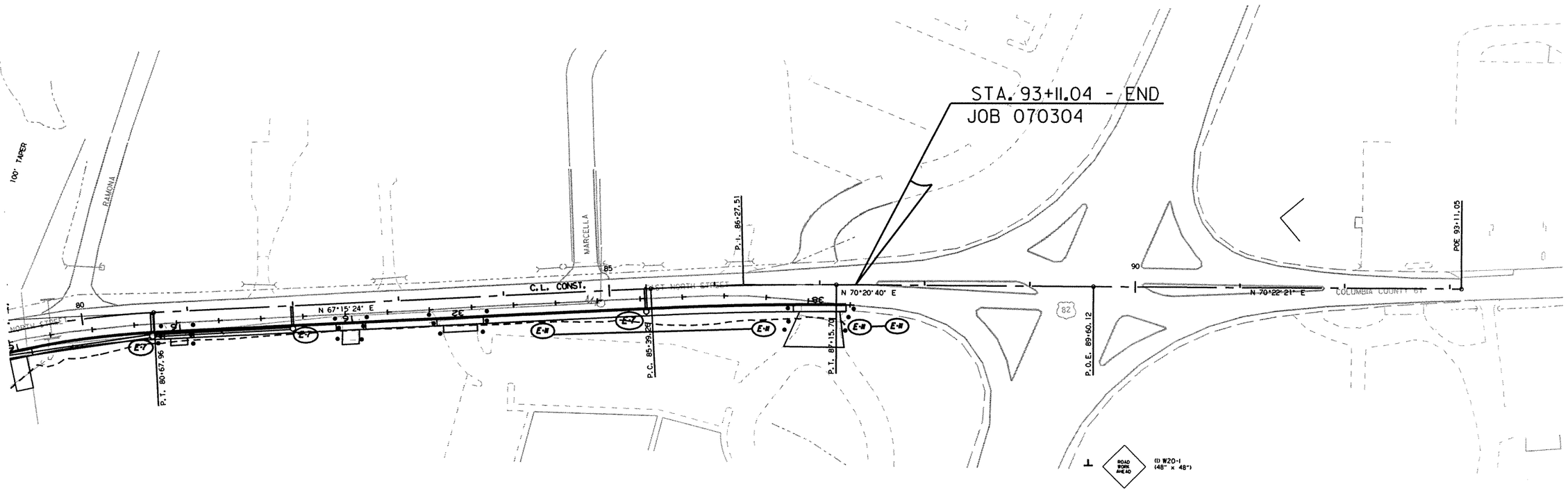
(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11



DROP INLET SILT FENCE (E-7)

STA. 80+66	RT.	25 LIN. FT.
STA. 81+99	RT.	25 LIN. FT.
STA. 85+34	RT.	25 LIN. FT.
SUBTOTAL		75 LIN. FT.

SILT FENCE (E-11)

STA. 84+00 - STA. 86+50	RT.	350 LIN. FT.

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TEMPORARY EROSION CONTROL DETAILS
STAGE 1

r070304.dgn 8/11/2009

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(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11

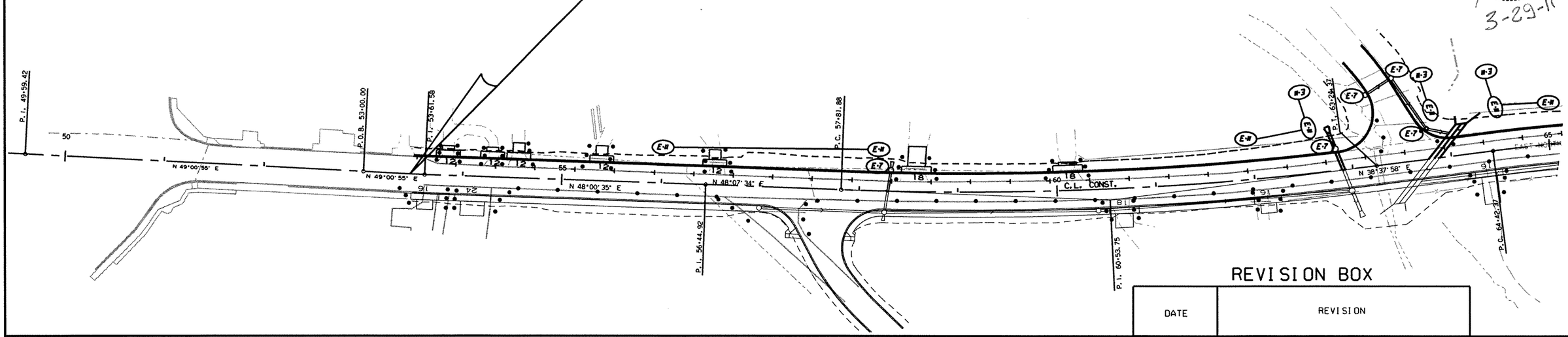
DROP INLET SILT FENCE (E-7)

STA. 58+32	LT.	25 LIN. FT.
STA. 62+85	LT.	25 LIN. FT.
STA. 63+22	LT.	25 LIN. FT.
STA. 63+50	LT.	25 LIN. FT.
STA. 63+79	LT.	25 LIN. FT.
SUBTOTAL		125 LIN. FT.

SILT FENCE (E-11)

STA. 56+00 - STA. 58+00	LT.	200 LIN. FT.
STA. 61+50 - STA. 65+00	LT.	300 LIN. FT.
SUBTOTAL		500 LIN. FT.

STA. 53+50 - BEGIN
JOB 070304



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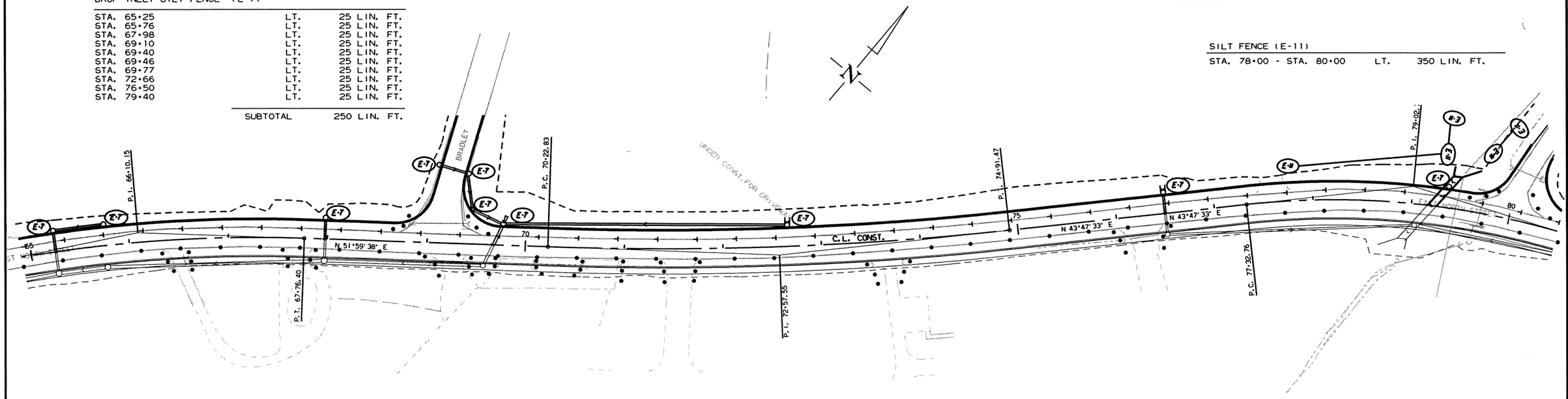
DROP INLET SILT FENCE (E-7)

STA. 65+25	LT.	25 LIN. FT.
STA. 65+76	LT.	25 LIN. FT.
STA. 67+98	LT.	25 LIN. FT.
STA. 69+10	LT.	25 LIN. FT.
STA. 69+40	LT.	25 LIN. FT.
STA. 69+46	LT.	25 LIN. FT.
STA. 69+77	LT.	25 LIN. FT.
STA. 72+66	LT.	25 LIN. FT.
STA. 76+50	LT.	25 LIN. FT.
STA. 79+40	LT.	25 LIN. FT.
SUBTOTAL		250 LIN. FT.

SILT FENCE (E-11)

STA. 78+00 - STA. 80+00	LT.	350 LIN. FT.



TEMPORARY EROSION CONTROL DETAILS
STAGE 2

r070304.dgn 8/11/2009

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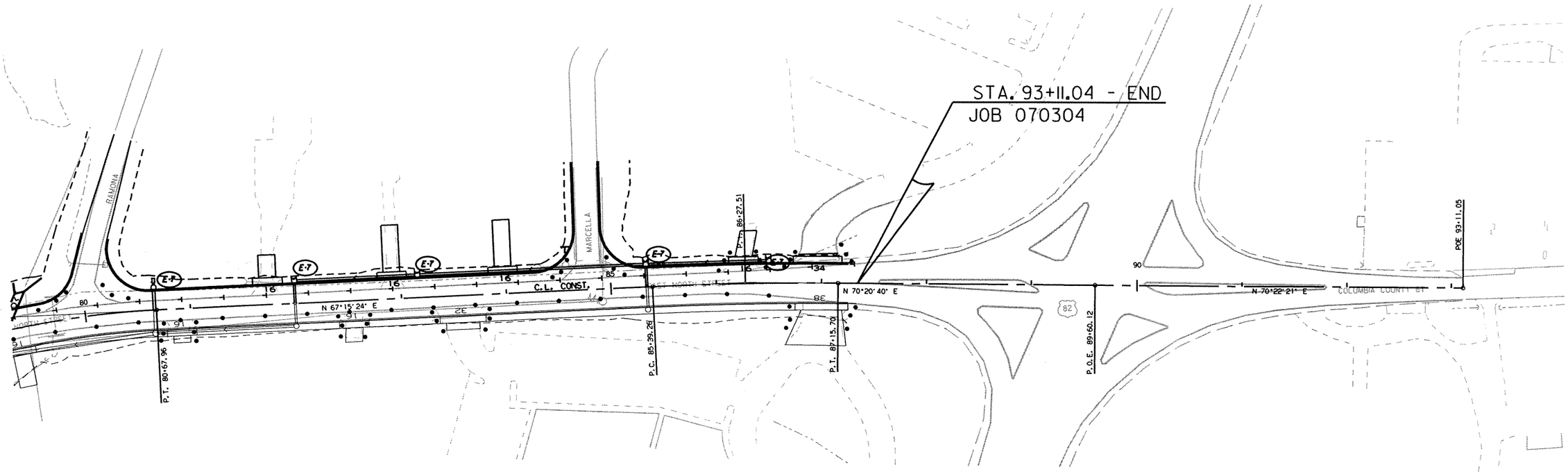
				JOB NO.		070304	8	102

(2) TEMPORARY EROSION CONTROL DETAILS

DROP INLET SILT FENCE (E-7)

STA. 80+66	LT.	25 LIN. FT.
STA. 81+99	LT.	25 LIN. FT.
STA. 83+16	LT.	25 LIN. FT.
STA. 85+34	LT.	25 LIN. FT.
STA. 86+50	LT.	25 LIN. FT.
SUBTOTAL		125 LIN. FT.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
6-3-11



REVISION BOX

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

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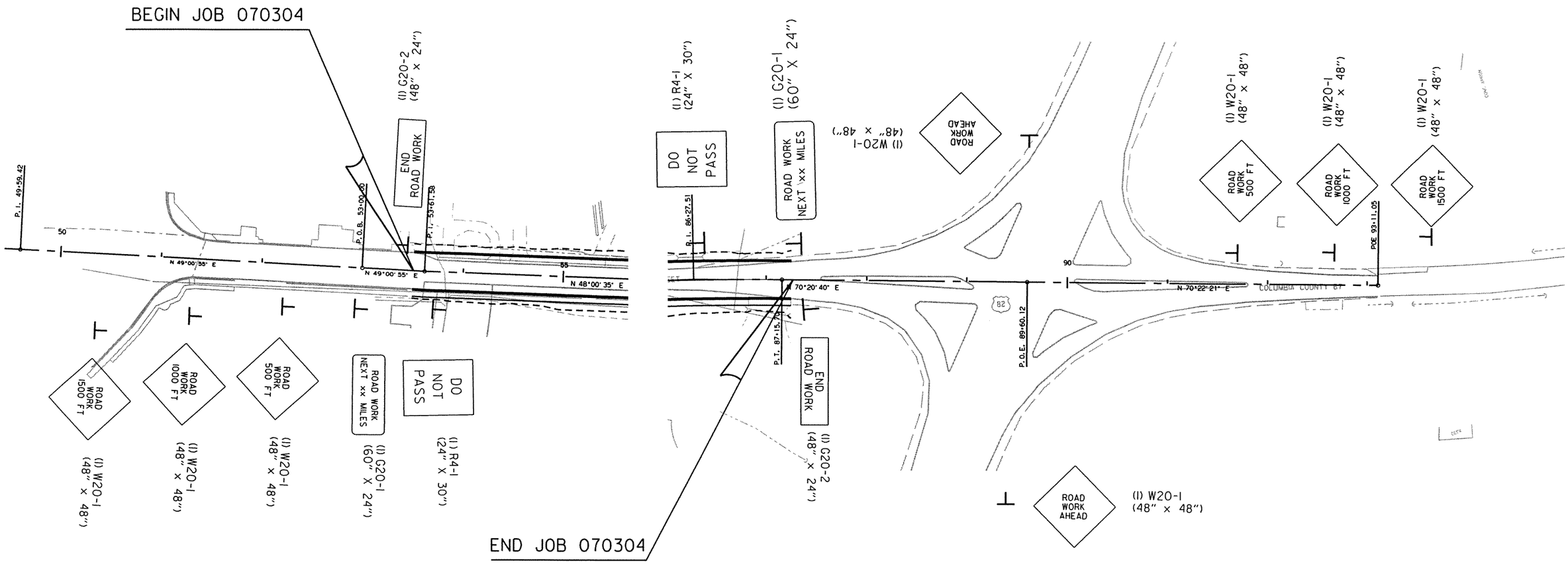
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	9	102

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11

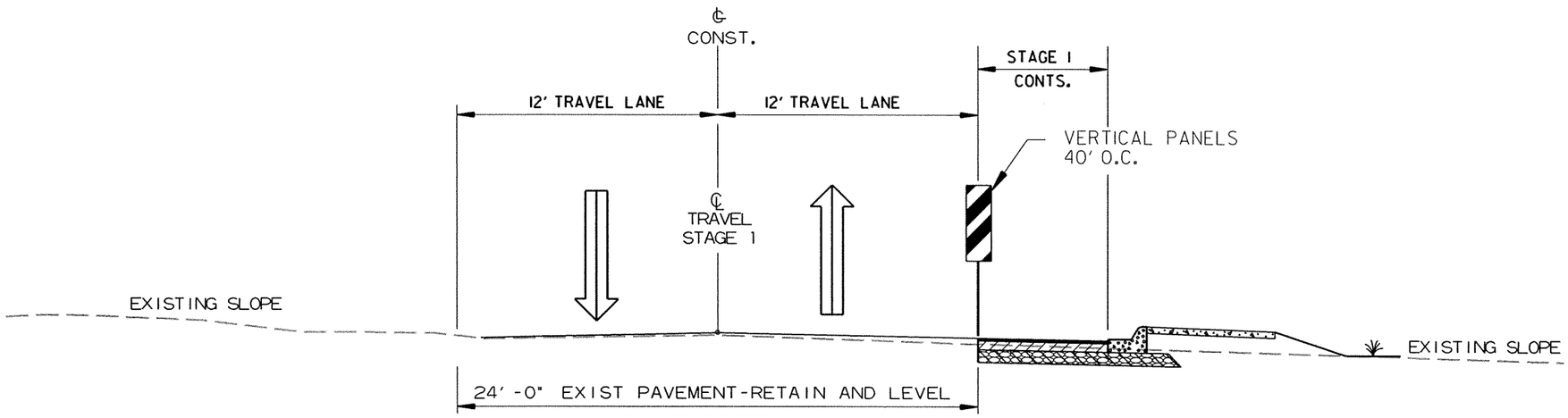


070304.dgn 3/17/2010

MAINTENANCE OF TRAFFIC DETAILS
ADVANCE WARNING SIGNS 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.		070304	10	102
				(2)	MAINTENANCE OF TRAFFIC DETAILS			

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11



STAGE 1 CONSTRUCTION

SEQUENCE OF CONSTRUCTION - STAGE 1

1. INSTALL ADVANCE WARNING SIGNS AS SHOWN ON SIGNING DETAILS. PLACE "DO NOT PASS" (R4-1) SIGNS AT 1/2 MILE INTERVALS.
2. MAINTAIN TRAFFIC IN EXISTING LANES. UNDER TRAFFIC APPLY LEVELING AND CONSTRUCTION PAVEMENT MARKINGS.
3. NOTCH AND WIDEN TO THE RIGHT. DELINEATE WIDENING WITH VERTICAL PANELS @ 40' O.C. DELINEATE DRIVEWAYS WITH 6 TRAFFIC DRUMS.

MAINTENANCE OF TRAFFIC- STAGE 1 QUANTITIES
SIGNS = 264 SQ. FT.
TRAFFIC DRUMS = 103 EACH
VERTICAL PANELS = 86 EACH
CONSTRUCTION PAVEMENT MARKINGS =13500'
RAISED PAVEMENT MARKERS
TYPE II (YEL./YEL.) 40' O.C. CENTERLINE = 86 EACH

MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

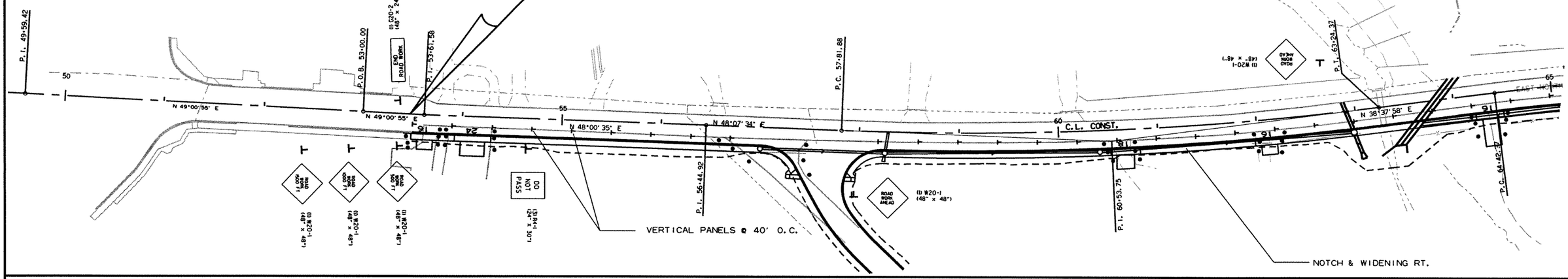
r070304.dgn 3/17/2010

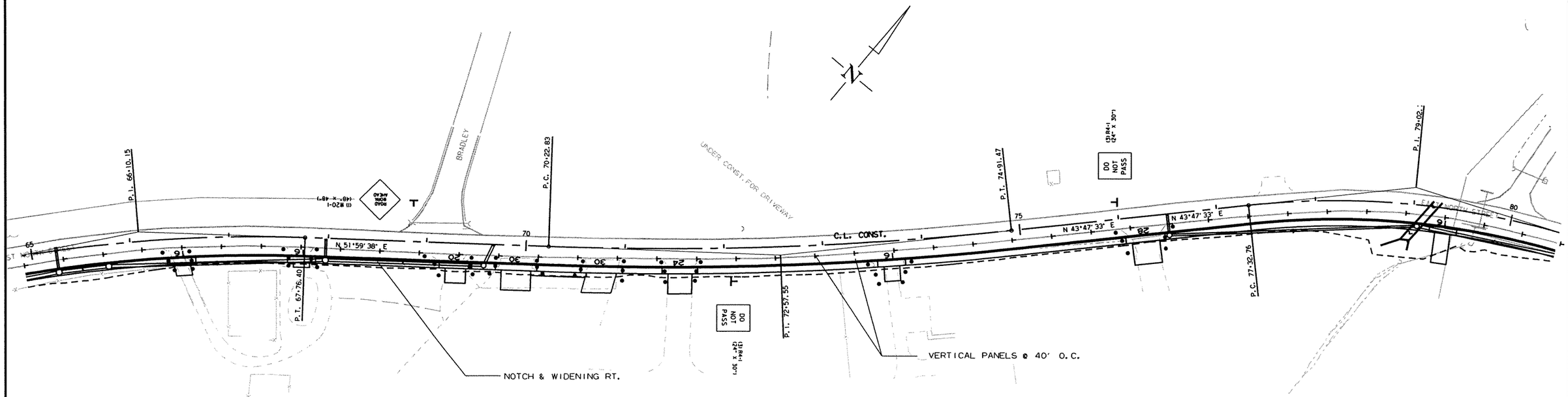
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	11	102

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 17686
MICHAEL D. FUGETT
3-29-11

STA. 53+50 - BEGIN
JOB 070304





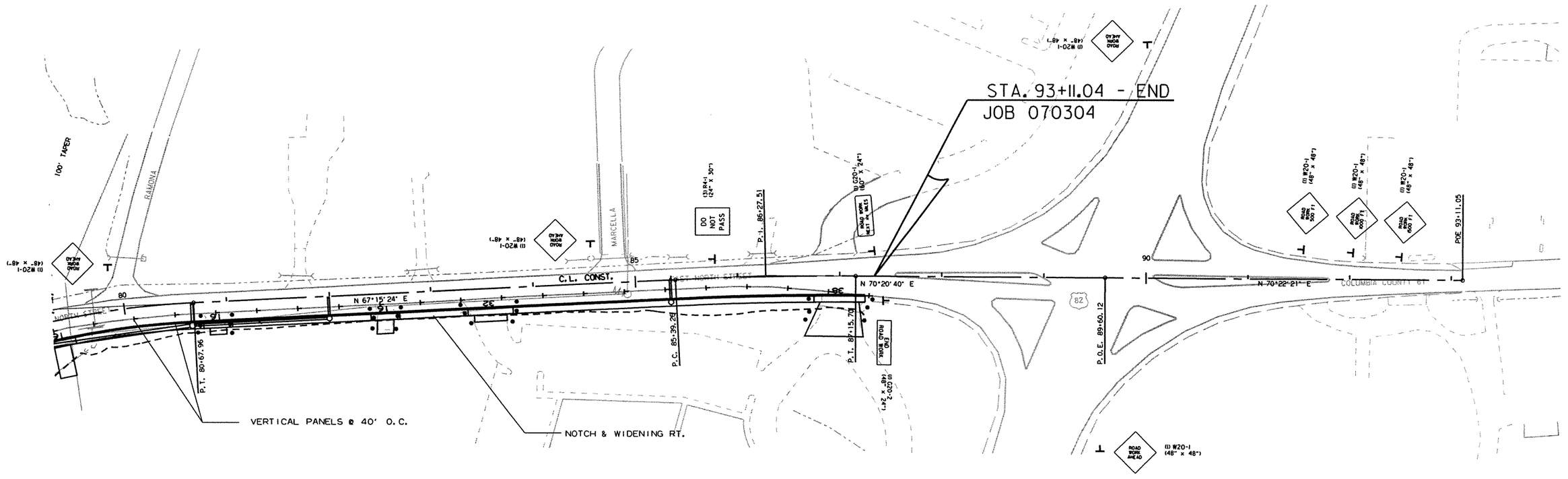
MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

r070304.dgn 8/11/2009

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.		070304	12	102

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11



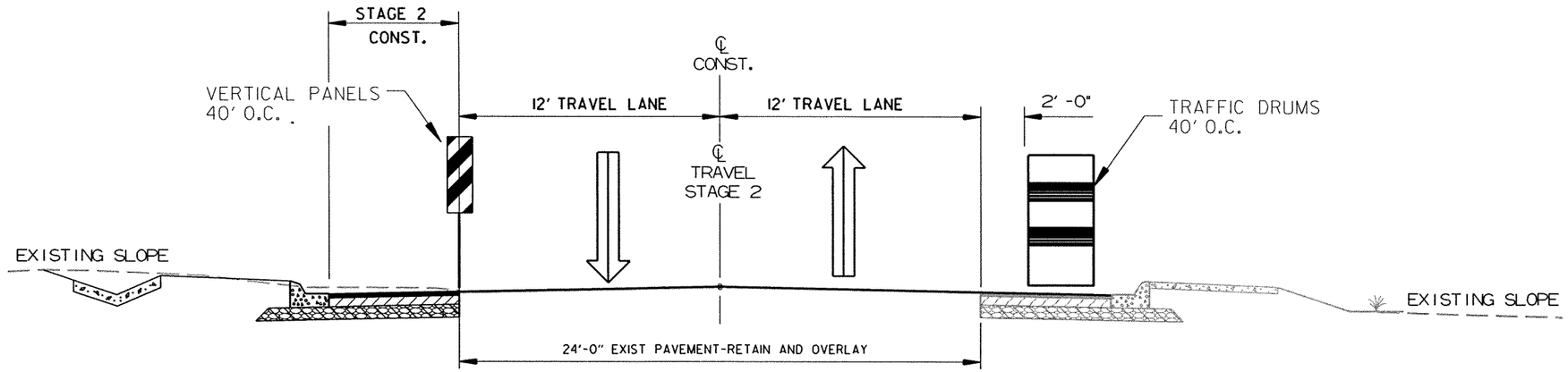
MAINTENANCE OF TRAFFIC DETAILS
STAGE 1

r070304.dgn 8/11/2009

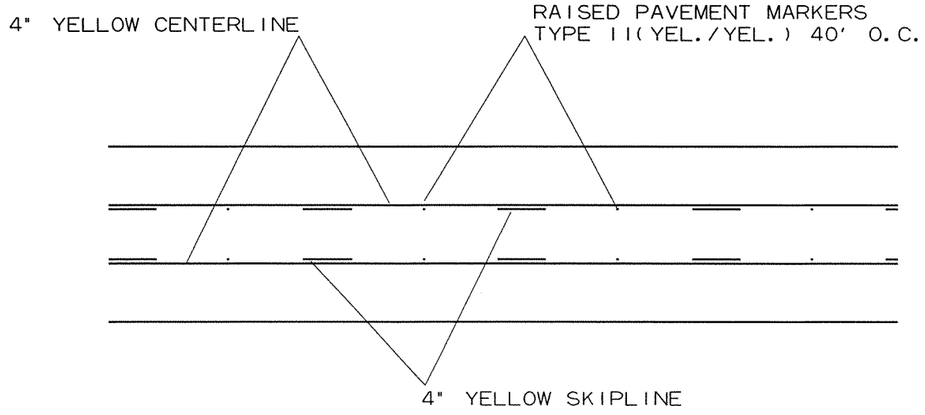
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	13	102

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11



STAGE 2 CONSTRUCTION



SEQUENCE OF CONSTRUCTION - STAGE 2

1. MAINTAIN ADVANCE WARNING SIGNS AND "DO NOT PASS" (R4-1) SIGNS AT 1/2 MILE INTERVALS AS SHOWN ON SIGNING DETAILS.
2. DELINEATE CONSTRUCTION ON RT. WITH TRAFFIC DRUMS @ 40' O.C.
3. NOTCH AND WIDEN TO THE LEFT AND DELINEATE WIDENING WITH VERTICAL PANELS @ 40' O.C. DELINEATE DRIVEWAY ON LT. WITH 6 TRAFFIC DRUMS.
4. OVERLAY ENTIRE PROJECT UNDER TRAFFIC.

MAINTENANCE OF TRAFFIC- STAGE 2 QUANTITIES
SIGNS = 264 SQ. FT.
TRAFFIC DRUMS = 276 EACH
VERTICAL PANELS = 86 EACH

PERMANENT PAVEMENT MARKINGS
4" YELLOW CENTERLINE = 8436'
RAISED PAVEMENT MARKERS
TYPE II(YEL./YEL.) 40' O.C. CENTERLINE = 172 EACH

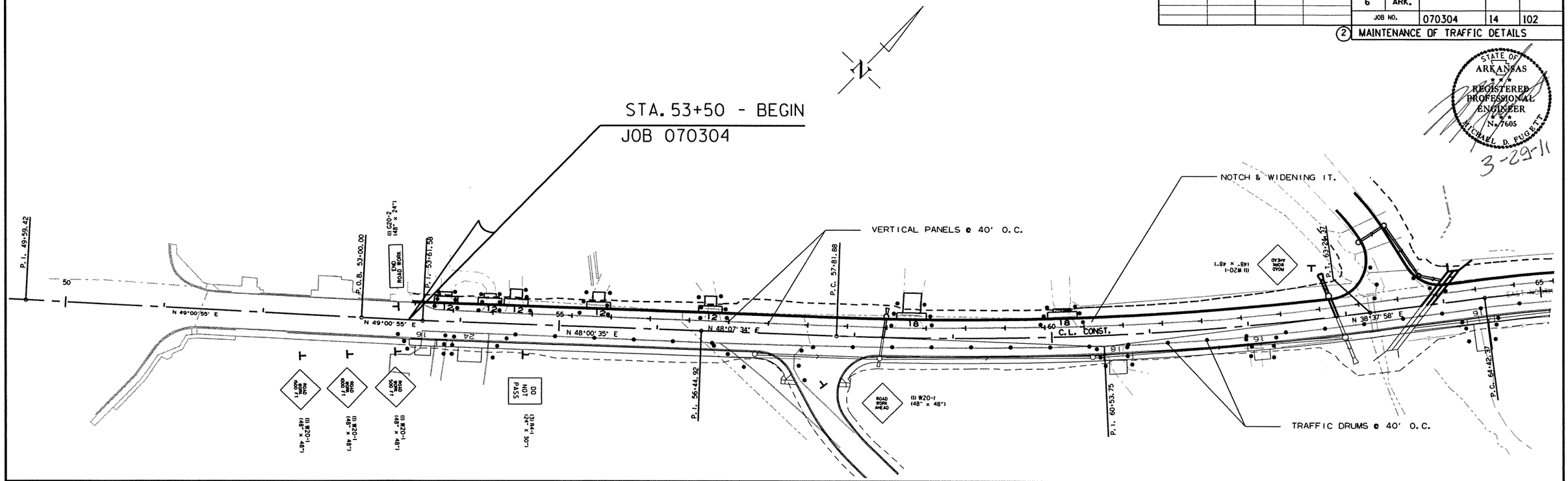
MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

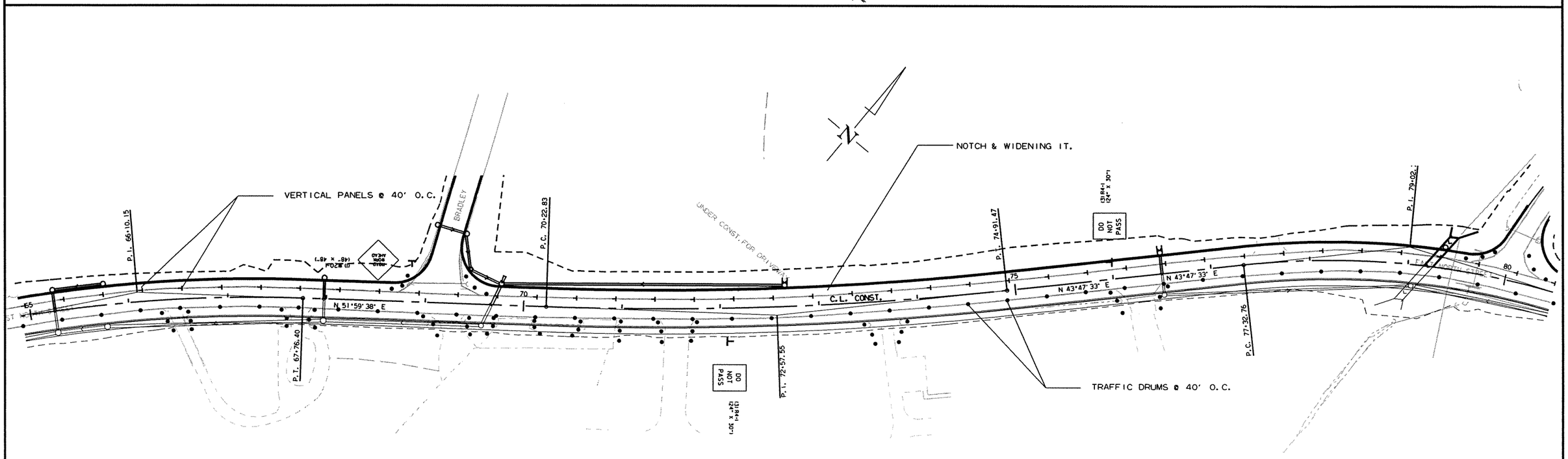
r070304.dgn 3/17/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	14	102

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11





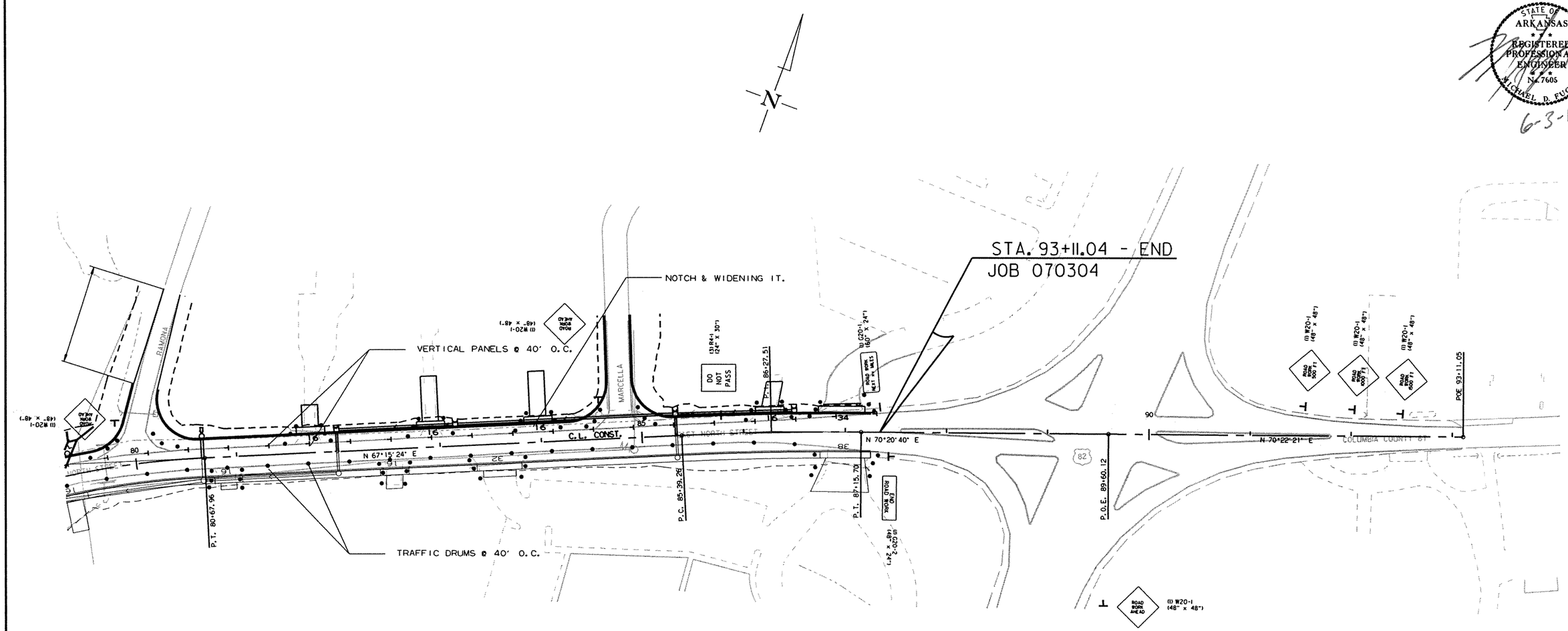
MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

r070304.dgn 8/11/2009

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.		070304	15	102

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
6-3-11



MAINTENANCE OF TRAFFIC DETAILS
STAGE 2

r070304.dgn 8/11/2009

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.		070304	16	102

(2) QUANTITY SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
6-3-11

SOIL LOG

STATION	LOCATION	DEPTH FEET	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
54+05	24'RT	0-5	31	16	A-2-6(1)	BROWN
549+05	5'RT	0-5	26	11	A-6(1)	BROWN
62+05	21'LT	0-5	30	15	A-6(5)	BROWN
62+05	5'LT	0-5	ND	NP	A-4(0)	BROWN
70+05	24'RT	0-5	24	10	A-4(1)	BROWN
70+05	5'RT	0-5	29	15	A-6(4)	BROWN
78+05	24'LT	0-5	22	4	A-2-4(0)	BROWN
78+05	5'LT	0-5	27	13	A-6(4)	BROWN
78+05	24'LT CL	0-5	26	8	A-4(2)	BROWN
86+05	21'RT	0-5	31	16	A-6(2)	BROWN
86+05	5'RT	0-5	38	22	A-6(6)	BROWN

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

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
53+50	87+25	MAIN LANES	1863	4403	200
63+25		CHANNEL CHANGE	500		
79+21		CHANNEL CHANGE	250		
0+21	1+86	PITMAN ST.	325	175	
1+97	3+07	COLUMBIA ST.	55	411	
0+50	2+14	BRADLEY ST.	343	28	
0+19	0+80	RAMONA ST.	23	347	
0+50	1+22	MARCELLA ST.	128	9	
ENTIRE PROJECT APPROACHES			260	405	
REMOVAL OF EXISTING COLUMBIA ST. CONNECTION			133	500	
TOTALS:			3880	6278	200

* QUANTITY ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STD. SPECS.

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

REMOVAL AND SALVAGE OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS EACH
63+50	TRP. 36" X 50' HDPE SIDE DRAIN ON LT.	3
TOTAL:		3

NOTE: QUANTITIES SHOWN ABOVE SHALL INCLUDE REMOVAL & DISPOSAL OF ALL HEADWALLS AND FLARED END SECTIONS IF APPLICABLE. REFER TO SPECIAL PROVISION FOR DETAILS.

CLEARING AND GRUBBING

STATION	STATION	CLEARING	GRUBBING
		STATION	
57+00	82+00	25	25
TOTALS:		25	25

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS EACH
55+39	15" x 19' R.C.P. SIDE DRAIN ON LT.	1
55+54	18" x 19' R.C.P. SIDE DRAIN ON LT.	1
57+50	15" X 71' C.M. P. SIDE DRAIN ON RT.	1
58+58	18" X 20' P.V.C. SIDE DRAIN ON LT.	1
60+12	18" X 24' C.M.P SIDE DRAIN ON RT	1
60+67	15" X21' P.V.C. SIDE DRAIN ON RT.	1
62+10	15" X 20' P.V.C. SIDE DRAIN ON RT.	1
63+23	DBL 30" X 34' R.C.P. CROSS DRAIN	2
64+36	18" X 36' R.C.P. SIDE DRAIN ON RT.	1
66+50	R.C.P SIDE DRAIN ON RT.	1
67+73	15" X 20' R.C.P. SIDE DRAIN ON RT.	1
69+10	R.C.P SIDE DRAIN ON LT.	1
69+29	12" X 29' R.C.P. SIDE DRAIN ON RT.	1
69+91	SIDE DRAIN ON RT.	1
70+72	SIDE DRAIN ON RT.	1
71+57	SIDE DRAIN ON RT.	1
73+70	SIDE DRAIN ON RT.	1
76+26	15" X 31' R.C.P. SIDE DRAIN ON RT.	1
79+26	66" X 65' STEEL SIDE DRAIN ON RT.	1
79+26	24" X 60' PLASTIC SIDE DRAIN ON RT.	1
79+70	30" X 38' R.C.P. CROSS DRAIN	1
80+00	24" X 32' R.C.P. SIDE DRAIN ON LT.	1
80+89	24" X 31' FIBERGLASS SIDE DRAIN ON RT.	1
81+73	15" X 30' R.C.P. SIDE DRAIN ON LT.	1
82+55	18" X 26' R.C.P. SIDE DRAIN ON RT.	1
82+92	18" X 34' C.M.P. SIDE DRAIN ON LT.	1
83+56	15" X 49' R.C.P. SIDE DRAIN ON RT.	1
84+45	15" X 21' R.C.P. SIDE DRAIN ON LT.	1
84+80	18" X 38' R.C.P. SIDE DRAIN ON LT.	1
85+42	18" X 17' R.C.P. SIDE DRAIN ON LT.	1
86+26	18' X 25' R.C.P. SIDE DRAIN ON LT.	1
87+00	18" X 41' R.C.P. SIDE DRAIN ON RT.	1
TOTAL:		33

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

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	DESCRIPTION	CONCRETE DRIVEWAYS	DROP INLETS	SIGNS	SIGNS POLE	SIGN FOUNDATIONS	LUMINAIRE POLE & FDN	SPRINKLER SYSTEM	RAILROAD TIE RETAINING WALL	BRICK COLUMNS	GUARDRAIL
				SQ. YD.	EACH	EACH	EACH	EACH	EACH	EACH	LIN. FT.	EACH	LIN. FT.
53+71		Lt.	Brick Column									1	
53+74		Rt.	X-Tie Retaining Wall								30		
53+80		Lt.	Brick Columns									2	
53+85		LT.		28									
54+31	54+31	LT.		24									
54+57	54+57	LT.		46									
55+39	55+39	LT.		39									
56+54	56+54	LT.		39									
58+58	58+58	LT.		84									
60+12	60+12	LT.		38									
69+42		Lt.	Sign			1							
69+42		Lt.	Sign Foundation					1					
69+91	69+91	RT.		111									
70+72	70+72	RT.		111									
71+57	71+57	RT.		89									
73+70	73+70	RT.		22									
79+75	79+75	RT.											25
80+25	80+25	LT.			1								
82+92	82+92	LT.		78									
83+56	83+56	RT.		94									
83+82		Rt.	Luminairie Pole & Foundation						1				
84+00	86+60	Rt.	Sprinkler System & Backflow Preventor							1			
85+39		Lt.	Sign Pole				1						
86+27		Rt.	Luminairie Pole & Foundation						1				
86+98	86+98	LT.		211									
87+00	87+00	RT.		44									
TOTAL:				1058	1	1	1	1	2	1	30	3	25

r070304.dgn 8/27/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	17	102

(2) QUANTITY SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
3-29-11

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL							
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	DROP INLET SILT FENCE (E-7)	SILT FENCE (E-11)	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	BAG	CU. YD.	LIN.FT.	LIN.FT.	CU. YD.
ENTIRE	PROJECT	STAGE 1	1.50	3.00	1.50	153.0	1.50	1.5	1.50	30.6	50	75	325	1150	55
ENTIRE	PROJECT	STAGE 2	2.25	4.50	2.25	229.5	2.25	2.25	2.25	45.9			500	850	50
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.															
TOTALS:			3.75	7.50	3.75	382.5	3.75	3.75	3.75	76.5	50	75	825	2000	105

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING.
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING.
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.
SAND BAG DITCH CHECKS.....22 BAGS / LOCATION
ROCK DITCH CHECKS.....3 CU.YD./LOCATION

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

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

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	TYPE A (1' 6")
			LIN. FT.
53+50	57+03	RT.	540
58+23	87+25	RT.	2818
50+53	62+87	LT.	845
64+03	68+67	LT.	772
69+74	79+59	LT.	1261
80+63	84+27	LT.	545
85+31	87+25	LT.	308
TOTAL:			7089

CONCRETE ISLAND

STATION	LOCATION	CURB FACE TYPE	CONCRETE ISLAND
			SQ.YD.
70+40	RT.	A	28
TOTAL:			28

WHEELCHAIR RAMPS

STATION	LOCATION	TYPE 3
		SQ. YD.
57+30	RT.	3.0
57+88	RT.	3.0
TOTAL:		6.0

4" PIPE UNDERDRAIN

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

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

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)
	EACH	
ENTIRE PROJECT	16	16
TOTALS:	16	16

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE C)	* 5' CHAIN LINK FENCE	* 6' CHAIN LINK FENCE
			LIN.FT.		
60+22	62+70	LT.			322
64+55	66+33	RT.	174		
66+99	67+48	RT.		50	
TOTALS:			174	50	322

* DENOTES ALTERNATE BID ITEM.

SELECTED PIPE BEDDING & BACKFILL

LOCATION	SELECTED PIPE BEDDING	SELECTED PIPE BACKFILL
	CU.YD.	
ENTIRE PROJECT TO BE USED IF		
AND WHERE DIRECTED BY THE	50	100
ENGINEER		
TOTALS:	50	100

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

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

STATION	LOCATION	WIDTH	LENGTH	PAVT. REPAIR OVER CULVTS. (CONCRETE)	FLOWABLE SELECT MATERIAL
		FEET		CU. YD.	
58+32	R.C. PIPE CROSS DRAIN	7.92	20	5.9	
62+84	R.C. PIPE CROSS DRAIN	17.00	20	12.6	12
79+21	R.C. BOX CROSS DRAIN	38.50	20	28.5	19
65+25	R.C. PIPE CROSS DRAIN	7.92	20	5.9	
67+98	R.C. PIPE CROSS DRAIN	7.92	20	5.9	
69+77	R.C. PIPE CROSS DRAIN	8.50	20	6.3	
76+50	R.C. PIPE CROSS DRAIN	7.92	20	5.9	
79+21	R.C. BOX CROSS DRAIN	29.50	20	21.9	22
80+66	R.C. PIPE CROSS DRAIN	8.50	20	6.3	
81+99	R.C. PIPE CROSS DRAIN	7.92	20	5.9	
85+34	R.C. PIPE CROSS DRAIN	7.92	20	5.9	
TOTALS:				111.0	53

AVG. DEPTH = 1'-0"

r070304.dgn 8/27/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	18	102

(2) QUANTITY SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE (CLASS III)			PIPE CULVERT STORM DRAIN ALTERNATES 1 & 2			FLARED END SECTIONS FOR R.C. PIPE		DROP INLETS TYPE		DROP INLETS EXT.		JUNCT. BOX (TYPE E)	YARD DRAIN	12" SIDE DRAINS	PRECAST REINFORCED CONCRETE BOX CULVERTS			FILTER BLANKET	DUMPED RIPRAP	SOLID SODDING	WATER	STD. DWG. NOS.
		18"	24"	30"	18"	24"	30"	18"	30"	MO	C	4'	8'				SPAN	HEIGHT	LENGTH					
		LIN. FT.						EACH									LIN. FT.			SQ. YD.	CU.YD.	SQ.YD.	M.GAL	
57+00	D.I. ON RT. W/O.I.B. & 18"X122' R.C. PIPE OUTLET	122								1		1												FPC-9E,FPC-9M,PCC-1
58+26	D.I. ON RT. W/ 18" FES INLET & 18"X212' PIPE OUTLET				212			1		1		1												FES-1,FES-2,FPC-9E,FPC-9M,PCC-1,PCM-1
58+32	D.I. ON LT. W/ 18" FES INLET & 18"X39' R.C. PIPE OUTLET	39						1		1		1												FES-1,FES-2,FPC-9E,FPC-9M,PCC-1
60+41	D.I. ON RT. W/ O.I.B. & 18"X253' PIPE OUTLET				253					1		1												FPC-9E,FPC-9M,PCC-1,PCM-1
62+84	D.I. ON LT. W/ 30" x15"R.C. PIPE INLET W/FES & 30"X41' R.C. PIPE OUTLET			56					1	1		1												FES-1,FES-2,FPC-9E,FPC-9M,PCC-1
62+97	D.I. ON RT. W/ 30"X20' R.C. PIPE OUTLET W/FES			20					1	1														FES-1,FES-2,FPC-9E,FPC-9M,PCC-1
63+83	DBL. 4'X3'X102' PRECAST CONCRETE BOX																4	3	204			16	0.20	W-X-45,W-X453-1,R-245X-01
64+06	D.I. ON LT. ON TOP OF BOX										1													FPC-9,FPC-9E
65+25	D.I. ON LT. W/ 18"X39' R.C. PIPE OUTLET	39								1			1											FPC-9E,FPC-9M,PCC-1
65+25	D.I. ON RT. W/ 30"X155' PIPE OUTLET						155			1			1											FPC-9E,FPC-9M,PCC-1,PCM-1
65+76	D.I. ON LT. W/ 18"X48' PIPE OUTLET						48			1														FPC-9E,FPC-9M,PCC-1,PCM-1
65+76	D.I. ON RT. W/ 30"X48' PIPE OUTLET						48			1														FPC-9E,FPC-9M,PCC-1,PCM-1
67+98	D.I. ON LT. W/ 18"X39' R.C. PIPE OUTLET	39								1			1											FPC-9E,FPC-9M,PCC-1
67+98	D.I. ON RT. W/ 30"X213' PIPE OUTLET						213			1		1												FPC-9E,FPC-9M,PCC-1,PCM-1
69+58	D.I. ON RT. W/ 24"X156' PIPE OUTLET					156				1		1												FPC-9E,FPC-9M,PCC-1,PCM-1
69+77	D.I. ON LT. W/ 18" FES INLET & 24"X43' R.C. PIPE OUTLET		43					1		1		1												FES-1,FES-2,FPC-9E,FPC-9M,PCC-1
72+66	D.I. ON LT. W/ O.I.B. & 18"X283' PIPE OUTLET				283					1														FPC-9E,FPC-9M,PCC-1,PCM-1
76+50	D.I. ON LT. W/ O.I.B. & 18"X39' R.C.PIPE OUTLET	39								1		1												FPC-9E,FPC-9M,PCC-1
76+50	D.I. ON RT. W/ 18"X246' PIPE OUTLET				246					1		1												FPC-9E,FPC-9M,PCC-1,PCM-1
79+05	D.I. ON RT. ON TOP OF BOX										1													FPC-9,FPC-9E,FPC-9M,
79+21	6'X4'X85' PRECAST CONCRETE BOX																6	4	85	78	39	18	0.23	W-X30,W-X303-1,1R-130X-0
79+35	D.I. ON LT. ON TOP OF BOX										1													FPC-9,FPC-9E,FPC-9M,
80+66	D.I. ON LT. W/ 18" FES INLET & 24"X39' R.C. PIPE OUTLET		39					1		1														FES-1,FES-2,FPC-9E,FPC-9M,PCC-1
80+66	D.I. ON RT. W/ 18"X246' PIPE OUTLET				246					1		1												FPC-9E,FPC-9M,PCC-1,PCM-1
81+99	D.I. ON LT. W/ O.I.B. & 18"X39' R.C.PIPE OUTLET	39								1		1												FPC-9E,FPC-9M,PCC-1
81+99	D.I. ON RT. W/ 18"X128' PIPE OUTLET				128					1		1												FPC-9E,FPC-9M,PCC-1,PCM-1
83+16	D.I. ON LT. W/ O.I.B. & 18"X113' PIPE OUTLET				113					1		1												FPC-9E,FPC-9M,PCC-1,PCM-1
85+34	D.I. ON LT. W/ O.I.B. & 18"X214' PIPE OUTLET				214					1		1												FPC-9E,FPC-9M,PCC-1,PCM-1
85+34	D.I. ON RT. W/ 18"X39' R.C. PIPE OUTLET	39								1		1												FPC-9E,FPC-9M,PCC-1
86+50	D.I. ON LT. W/ O.I.B. & 18"X113' PIPE OUTLET				113					1		1												FPC-9E,FPC-9M,PCC-1,PCM-1
	COLUMBIA ST.																							
2+03	JUNCTION BOX 0N RT. W/18"X23' PIPE OUTLET				23									1										FPC-9,PCC-1,PCM-1
2+64	D.I. ON LT. W/ 18"X27' R.C. PIPE OUTLET	27								1			1											FPC-9E,FPC-9M,PCC-1
2+64	D.I. ON RT. W/ 18"X59' PIPE OUTLET				59					1			1											FPC-9E,FPC-9M,PCC-1,PCM-1
	BRADLEY ST.																							
0+44	JUNCTION BOX 0N RT. W/18"X30' PIPE OUTLET				30									1										FPC-9,PCC-1,PCM-1
0+78	D.I. ON LT. W/ 18"X27' R.C. PIPE OUTLET	27								1			1											FPC-9E,FPC-9M,PCC-1
0+78	D.I. ON RT. W/ 18"X32' PIPE OUTLET				32					1			1											FPC-9E,FPC-9M,PCC-1,PCM-1
	ENTIRE PROJECT TO BE USED IF														12	1200								FPC-9
	AND WHERE DIRECTED BY THE																							
	ENGINEER *																							
TOTALS:		**410**	**82**	**76**	**1952**	**156**	**464**	**4**	**2**	**29**	**3**	**17**	**7**	**2**	**12**	**1200**			**289**	**78**	**39**	**34**	**0.43**	

BASIS OF ESTIMATE:
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.
NOTE: FOR R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.
NOTE: FOR C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.
NOTE: QUANTITIES ARE ESTIMATED. SEE SECTION 104.03 OF THE STD. SPECS.

r070304.dgn 8/27/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	19	102

(2) QUANTITY SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS
			LIN.FT. - EACH			NO.	SQ. FT.	EACH	
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	32.0		
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	32.0		
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	32.0		
W20-1	ROAD WORK AHEAD	48"x48"	7	7	7	7	112.0		
G20-2	END ROAD WORK	48"x24"	2	2	2	2	16.0		
G20-1	ROAD WORK NEXT xx MILES	60"x24"	2	2	2	2	20.0		
R4-1	DO NOT PASS	24"x30"	4	4	4	4	20.0		
	VERTICAL PANELS		86	86	86			86	
	TRAFFIC DRUMS		108	276	276				276
TOTALS:							264.0	86	276

THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH ANOTHER ONE-MILE SECTION. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELS THAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	THERMOPLASTIC PAVEMENT MARKINGS
			TYPE II (YEL/YEL)	4" YELLOW
	LIN.FT. - EACH	LIN. FT.	EACH	LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS	13500	13500		
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)	86		86	
			172	
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4")				8436
TOTALS:		13500	258	8436

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

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	TACK COAT				ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")						ACHM SURFACE COURSE (1/2")			
				TOTAL WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	PG 70-22	PG 76-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22
			FEET	FEET				FEET			TON	FEET			TON	TON	TON	FEET			TON
MAIN LANES																					
53+50	54+50	MAIN LANES	100.0	20.0	222.2	0.03	6.7											20.0	222.2	220.0	24.4
53+50	87+25	MAIN LANES	3375.0	60.0	22500.0	0.03	675.0	21.5	8062.5	715.0	2882.3	16.0	6000.0	330.0	990.0			52.0	19500.0	220.0	2145.0
86+25	87+25	MAIN LANES	100.0	20.0	222.2	0.03	6.7											20.0	222.2	220.0	24.4
62+87	64+16	PAVEMENT REPAIR OVER CULVERTS	129.0	60.0	860.0	0.03	25.8	20.0	286.7	715.0	102.5	20.0	286.7	330.0	47.3			20.0	286.7	220.0	31.5
PITMAN ST.																					
0+21	1+86		165.0	78.0	1430.0	0.03	42.9	29.5	540.8	715.0	193.3	24.0	440.0	330.0	72.6			24.0	440.0	440.0	96.8
		RADIUS			405.0	0.03	12.2		150.0	715.0	53.6		135.0	330.0	22.3				135.0	440.0	29.7
COLUMBIA ST																					
1+97	3+07		110.0	78.0	953.3	0.03	28.6	29.5	360.6	715.0	128.9	24.0	293.3	330.0	48.4			24.0	293.3	440.0	64.5
		RADIUS			330.0	0.03	9.9		125.0	715.0	44.7		110.0	330.0	18.2				110.0	440.0	24.2
BRADLEY ST.																					
0+19	2+14		195.0	78.0	1690.0	0.03	50.7	29.5	639.2	715.0	228.5	24.0	520.0	330.0	85.8			24.0	520.0	440.0	114.4
		RADIUS			222.0	0.03	6.7		85.0	715.0	30.4		74.0	330.0	12.2				74.0	440.0	16.3
RAMONA ST.																					
0+19	0+80		61.0	78.0	528.7	0.03	15.9	29.5	199.9	715.0	71.5	24.0	162.7	330.0	26.8			24.0	162.7	440.0	35.8
		TAPER			120.0	0.03	3.6		40.0	715.0	14.3		40.0	330.0	6.6				40.0	440.0	8.8
		RADIUS			270.0	0.03	8.1		100.0	715.0	35.8		90.0	330.0	14.9				90.0	440.0	19.8
MARCELLA ST.																					
0+18	1+22		104.0	78.0	901.3	0.03	27.0	29.5	340.9	715.0		24.0	277.3	330.0	45.8			24.0	277.3	440.0	61.0
		RADIUS			210.0	0.03	6.3		80.0	715.0	28.6		70.0	330.0	11.6				70.0	440.0	15.4
ADDITIONAL FOR LEVELING MAIN LANES																					
53+50	87+25	MAIN LANES	3375.0	20.0	7500.0	0.10	750.0											20.0	7500.0	220.0	825.0
TOTALS:							1676.1				3814.4				1402.5						3537.0

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.6% MIN. AGGR.....5.4% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.5% MIN. AGGR.....4.5% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....95.8% MIN. AGGR.....4.2% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

r070304.dgn 8/27/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	20	102

(2) QUANTITY SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
6-3-11

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	TURNOUT	PORTLAND CEMENT CONCRETE DRIVEWAY	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG64-22)		AGGREGATE BASE COURSE (CLASS 7)
			FEET	SQ. YD.	SQ. YD.	SQ. YD.	TON	TON
53+64	RT.		16	19	18.70	17.2	1.9	7.0
53+85	LT.		12	16	22.10			
54+11	RT.		24	24	24.00	38.7	4.3	15.8
54+31	LT.		12	16	22.10			
54+57	LT.		12	16	29.30			
55+39	LT.		12	16	29.30			
56+54	LT.		12	16	29.30			
58+58	LT.		18	20	60.60			
60+12	LT.		18	20	26.10			
60+67	RT.		18	20	20.00	28.7	3.2	11.7
62+10	RT.		16	19	18.70	17.8	2.0	7.3
64+36	RT.		16	19	18.70	48.7	5.4	19.9
66+50	RT.		16	19	18.70	20.4	2.2	8.3
67+73	RT.		16	19	18.70	8.1	0.9	3.3
69+29	RT.		20	21	21.30	32.7	3.6	13.4
69+91	RT.		30	28	94.30			
70+72	RT.		30	28	94.70			
71+57	RT.		24	24	77.90			
72+37	LT.		24	24	24.00	73.9	8.1	30.2
73+70	RT.		16	19	45.50			
76+26	RT.		28	27	26.70	70.2	7.7	28.7
79+26	RT.		16	19	18.70	53.8	5.9	22.0
80+89	RT.		16	19	18.70	11.4	1.3	4.7
81+73	LT.		16	19	18.70	38.4	4.2	15.7
82+55	RT.		16	19	18.70	24.0	2.6	9.8
82+92	LT.		16	19	97.80			
83+56	RT.		32	29	52.50			
84+13	LT.		16	19	18.70	79.1	8.7	32.3
86+26	LT.		16	19	18.70	43.9	4.8	17.9
86+98	LT.		34	31	39.60			
87+00	RT.		38	33	211.10			
* ENTIRE PROJECT TEMPORARY DRIVES								100.0
TOTALS:					1253.90		66.8	348.0

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.6% MIN. AGGR.....5.4% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

* QUANTITY ESTIMATED
SEE SECTION 104.03 OF THE STD. SPECS.
TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	100
DIRECTED BY THE ENGINEER	
TOTAL:	100

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

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

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

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

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	BOARD FENCE	CHAIN LINK FENCE	FENCE
			LIN. FT.		
60+22	63+00	LT.		275	
63+38	66+39	RT.			290
66+99	67+48	RT.			50
73+15	73+15	RT.		12	
84+56	84+56	LT.	140		20
TOTAL:			140	287	360

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
53+50	54+50	MAIN LANES	20	222.22
86+25	87+25	MAIN LANES	40	444.44
1+86	2+86	PITMAN ST.	20	222.22
3+07	4+07	COLUMBIA ST.	24	266.67
2+14	3+14	BRADLEY ST.	24	266.67
+80	1+80	RAMONA ST.	18	200.00
1+22	2+22	MARCELLA ST.	24	266.67
TOTAL:				1888.89

NOTE: AVERAGE MILLING DEPTH 1".

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
69+77	72+50	RT.	273.00	4	121.33	121.33	1.53
TOTALS:					121.33	121.33	1.53

BASIS OF ESTIMATE:
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.
NOTE: TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS.

CONCRETE WALKS

STATION	STATION	LOCATION	LENGTH	CONCRETE WALKS
			LIN.FT.	SQ.YD.
53+50	57+43	RT.	329	183
58+23	87+25	RT.	2402	1334
TOTAL:				1517

r070304.dgn 8/27/2010

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		25	STATION
201	GRUBBING		25	STATION
202	REMOVAL AND DISPOSAL OF FENCE		360	LIN. FT.
202	REMOVAL AND DISPOSAL OF CHAIN LINK FENCE		287	LIN. FT.
202	REMOVAL AND DISPOSAL OF BOARD FENCE		140	LIN. FT.
202	REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS		1058	SQ. YD.
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS		1	EACH
202	REMOVAL AND DISPOSAL OF DROP INLETS		1	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		33	EACH
SP&202	REMOVAL AND SALVAGE OF PIPE CULVERTS		3	EACH
202	REMOVAL AND DISPOSAL OF RAILROAD TIE RETAINING WALL		30	LIN. FT.
202	REMOVAL AND DISPOSAL OF GUARDRAIL		25	LIN. FT.
202	REMOVAL AND DISPOSAL OF SIGN POLE		1	EACH
202	REMOVAL AND DISPOSAL OF LUMINAIRE POLE AND FOUNDATION		2	EACH
202	REMOVAL AND DISPOSAL OF BRICK COLUMNS		3	EACH
202	REMOVAL AND DISPOSAL OF SIGNS		1	EACH
202	REMOVAL AND DISPOSAL OF SPRINKLER SYSTEM		1	EACH
206	FLOWABLE SELECT MATERIAL		53	CU. YD.
210	UNCLASSIFIED EXCAVATION		3880	CU. YD.
210	COMPACTED EMBANKMENT		6278	CU. YD.
SP & 210	SOIL STABILIZATION		200	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)		348	TON
401	TACK COAT		1706	GAL.
SP, SS, & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")		3654	TON
SP, SS, & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2")		160	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		1340	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		63	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		3409	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		195	TON
412	COLD MILLING ASPHALT PAVEMENT		1889	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		15	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY		100	TON
505	PORTLAND CEMENT CONCRETE DRIVEWAY		1253.90	SQ. YD.
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
SS & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
SS & 604	SIGNS		264	SQ. FT.
SS & 604	TRAFFIC DRUMS		276	EACH
SS & 604	CONSTRUCTION PAVEMENT MARKINGS		13500	LIN. FT.
SS & 604	VERTICAL PANELS		86	EACH
605	CONCRETE DITCH PAVING (TYPE B)		121	SQ. YD.
SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		410	LIN. FT.
* SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	1952	LIN. FT.
* 606	18" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	1952	LIN. FT.
SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		82	LIN. FT.
* SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	156	LIN. FT.
* 606	24" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	156	LIN. FT.
SS & 606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		76	LIN. FT.
* SS & 606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	464	LIN. FT.
* 606	30" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	464	LIN. FT.
SS & 606	12" SIDE DRAIN		1200	LIN. FT.
606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		4	EACH
606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		2	EACH
606	SELECTED PIPE BEDDING		50	CU. YD.
606	SELECTED PIPE BACKFILL		100	CU. YD.
SP & 607	PRECAST REINFORCED CONCRETE BOX CULVERT (4' X 3')		204	LIN. FT.
SP & 607	PRECAST REINFORCED CONCRETE BOX CULVERT (6' X 4')		85	LIN. FT.
609	DROP INLETS (TYPE C)		3	EACH
609	DROP INLETS (TYPE MO)		29	EACH
609	JUNCTION BOXES (TYPE E)		2	EACH
609	DROP INLET EXTENSIONS (4')		17	EACH
609	DROP INLET EXTENSIONS (8')		7	EACH
609	YARD DRAINS		12	EACH
611	UNDERDRAIN OUTLET PROTECTORS		8	EACH
611	4" PIPE UNDERDRAINS		1000	LIN. FT.
615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)		111.0	CU. YD.
619	WIRE FENCE (TYPE C)		174	LIN. FT.
* 619	5' STEEL CHAIN LINK FENCE	(ALTERNATE NO. 1)	50	LIN. FT.
* 619	5' ALUMINUM CHAIN LINK FENCE	(ALTERNATE NO. 2)	50	LIN. FT.
* 619	6' STEEL CHAIN LINK FENCE	(ALTERNATE NO. 1)	322	LIN. FT.
* 619	6' ALUMINUM CHAIN LINK FENCE	(ALTERNATE NO. 2)	322	LIN. FT.
620	LIME		8	TON
620	SEEDING		3.75	ACRE
620	MULCH COVER		7.50	ACRE
SS & 620	WATER		461.0	M.GAL.
621	TEMPORARY SEEDING		3.75	ACRE
621	SILT FENCE		2000	LIN. FT.
621	SAND BAG DITCH CHECKS		50	BAG
621	ROCK DITCH CHECKS		75	CU. YD.
621	DROP INLET SILT FENCE		825	LIN. FT.
621	SEDIMENT REMOVAL AND DISPOSAL		105	CU. YD.
623	SECOND SEEDING APPLICATION		3.75	ACRE
624	SOLID SODDING		155	SQ. YD.
632	CONCRETE ISLAND		28	SQ. YD.
633	CONCRETE WALKS		1517	SQ. YD.
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")		7089	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
637	MAILBOXES		16	EACH
637	MAILBOX SUPPORTS (SINGLE)		16	EACH
641	WHEELCHAIR RAMPS (TYPE 3)		6	SQ. YD.
SS & 719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")		8436	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		258	EACH
816	FILTER BLANKET		78	SQ. YD.
816	DUMPED RIPRAP		39	CU. YD.

*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.		070304	21	102

(2) SUMMARY OF QUANTITIES AND REVISIONS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
N.7605
MICHAEL D. PUGETT
6-3-11

REVISION BOX

DATE	REVISION	SHEET NUMBER

r070304.dgn 8/27/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	22	102

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11

SURVEY CONTROL COORDINATES

Project Name: s070304
Date: 5/4/2009
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	1535210.9732	938464.0662	337.78	CTL	REBAR & CAP
2	1534946.2726	938175.8037	336.62	CTL	CPS
3	1534498.7609	937648.4325	330.19	CTL	REBAR & CAP
4	1533853.8549	936751.5554	325.42	CTL	REBAR & CAP
5	1533792.2830	936385.9106	318.65	CTL	REBAR & CAP
6	1533854.1627	935533.5661	306.45	CTL	CPS
10	1534828.6595	938091.1786	333.33	CTL	REBAR & CAP
11	1535179.9606	938379.6027	340.10	CTL	REBAR & CAP
12	1535524.9686	938806.3334	323.74	CTL	REBAR & CAP
13	1535859.0526	939103.8917	316.46	CTL	REBAR & CAP
14	1536241.1102	939457.6616	322.75	CTL	REBAR & CAP
15	1536460.5354	939782.3258	328.06	CTL	REBAR & CAP
16	1536960.0945	940263.4133	309.30	CTL	REBAR & CAP
17	1537132.7722	940819.0594	328.70	CTL	REBAR & CAP
18	1536762.9721	941146.4060	316.83	CTL	REBAR & CAP
19	1537335.5025	941198.2740	332.04	CTL	REBAR & CAP
20	1537921.8014	941243.3380	327.26	CTL	REBAR & CAP
103	1533600.3995	938052.5281	330.54	GPS	140005A-AHTD CAP
154	1541600.3562	934628.5248	346.81	GPS	NGS MARK MAGNOLIA 2 PID DL0627
901	1534931.0907	938094.6985	335.53	BM	SQUARE CUT DROP INLET RIGHT CENTERLINE
902	1534034.0273	937281.6673	330.25	BM	SQUARE CUT CURB RIGHT CENTERLINE
903	1533804.3943	936104.7669	313.68	BM	SQUARE CUT CURB LEFT CENTERLINE
904	1533813.9994	935480.6734	306.28	BM	SQUARE CUT DROP INLET LEFT CENTERLINE
905	1534914.8006	938182.9149	337.18	TBM	
906	1535793.8813	939002.6612	317.52	TBM	
907	1536964.3051	940252.4942	309.64	TBM	
908	1537398.1853	941254.1630	330.71	TBM	
909	1538743.0006	941174.0943	322.06	TBM	
910	1541099.4767	941285.0130	352.16	TBM	
911	1541186.3666	939157.4867	346.86	TBM	
912	1541047.8283	936771.7369	333.37	TBM	
913	1540991.7487	935001.9980	320.38	TBM	
914	1541291.7050	934189.6413	335.81	TBM	
951	1532979.6010	933136.5076	346.34	BM	USC&GS CAP H 120 1934
958	1541554.1588	934598.7436	345.04	BM	NGS POINT MAGNOLIA RM 2
959	1541554.1588	934598.7436	345.90	BM	NGS POINT MAGNOLIA RM 4
960	1541169.3944	932981.0703	317.28	BM	NGS POINT T 203 PN:915 IN LEVEL FILES
1500	1536988.5933	940607.0250	318.03	CTL	8 SPIKE SET AT COR. NW. CHURCH PARKING
1501	1536769.5414	940624.0068	313.01	CTL	8 SPIKE SET AT S.W. COR. CHURCH PK
1502	1536631.4295	940249.6763	304.82	CTL	8 SPIKE SET AT COR. OF BATTING CAGES
1503	1537091.0950	940234.2063	311.71	CTL	8 SPIKE SET AT EDGE OF EP RAMONA ST
1504	1536309.1161	939778.1517	323.35	CTL	8 SPIKE SET CORNER OF CONC PK N.E. COR
1505	1536039.4270	939535.3151	316.71	CTL	CPS SET 6.0 W. OF COR OF BRICK COLUMN
1506	1536483.7144	939284.5633	339.99	CTL	8 SPIKE SET 4.0 S. OF CP
1507	1536389.3637	939563.0574	331.11	CTL	8 SPIKE SET 4.0 S. OF PP
1508	1535309.7094	938685.9534	335.19	CTL	8 SPIKE 1.0 W. OF EP PITTMAN NO. OF WV
1509	1535347.9259	938988.6758	336.13	CTL	8 SPIKE 10' E. OF EP ON PITMAN SO. OF TB

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.9999911571 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME S070304GI.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: MAGNOLIA 2 - 140005A
CONVERGENCE ANGLE: 00-41-07.22638 LEFT AT POINT NUMBER 103
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

C.L. CONSTRUCTION

POINT NO.	TYPE	STATION	NORTHING	EASTING
8022	POB	49+59.42	1534848.8521	938028.4440
8024	P.I.	53+00.00	1535072.2263	938285.5444
8025	P.I.	53+61.58	1535113.0443	938331.6469
8026	P.I.	56+44.91	1535302.1678	938542.6221
8027	P.C.	57+81.88	1535393.5932	938644.6110
8028	P.T.	63+24.36	1535787.4318	939016.7776
8029	P.C.	64+42.37	1535879.6127	939090.4507
8030	P.T.	67+76.39	1536113.9795	939327.3941
8031	P.C.	70+22.83	1536265.7192	939521.5687
8032	P.T.	74+91.47	1536579.6806	939868.9536
8033	P.C.	77+32.75	1536753.8506	940035.9335
8034	P.T.	80+67.95	1536942.2692	940310.3374
8035	P.C.	85+39.26	1537124.4772	940744.9980
8036	P.T.	87+15.70	1537188.2724	940909.4772
8037	P.I.	89+60.11	1537270.4854	941139.6516
8038	POE	93+11.04	1537388.3642	941470.1918

BRADLEY

POINT NO.	TYPE	STATION	NORTHING	EASTING
8050	POB	69+05.37	1536193.3886	939429.0104
8051	POE	69+67.30	1536231.5260	939477.8130

COLUMBIA

POINT NO.	TYPE	STATION	NORTHING	EASTING
8040	POB	63+72.68	1535825.1724	939046.9408
8041	PC	63+37.55	1535797.7249	939025.0041
8043	PT	63+13.48	1535778.9351	939009.9636
8044	POE	59+22.33	1535489.5507	938747.1437

MARCELLA

POINT NO.	TYPE	STATION	NORTHING	EASTING
8070	POB	84+78.52	1537100.9947	940688.9801
8071	POE	84+81.23	1537102.0424	940691.4795

PITMAN

POINT NO.	TYPE	STATION	NORTHING	EASTING
8030	POB	57+29.16	1535358.3971	938605.3482
8031	PC	57+66.67	1535383.4407	938633.2854
8033	PT	58+11.47	1535413.4412	938666.5520
8034	POE	59+32.33	1535496.5523	938754.2886

RAMONA

POINT NO.	TYPE	STATION	NORTHING	EASTING
8060	POB	79+89.34	1536908.4431	940239.4030
8061	PC	80+11.50	1536918.6642	940259.0620
8063	PT	80+60.10	1536939.1960	940303.1037
8064	POE	80+76.54	1536945.5874	940318.2530

r070304.dgn 8/11/2009

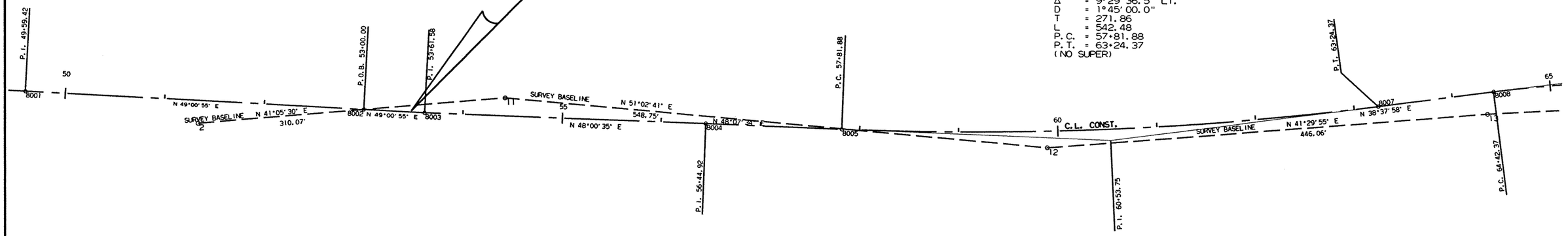
SURVEY CONTROL DETAILS

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.		070304	23	102

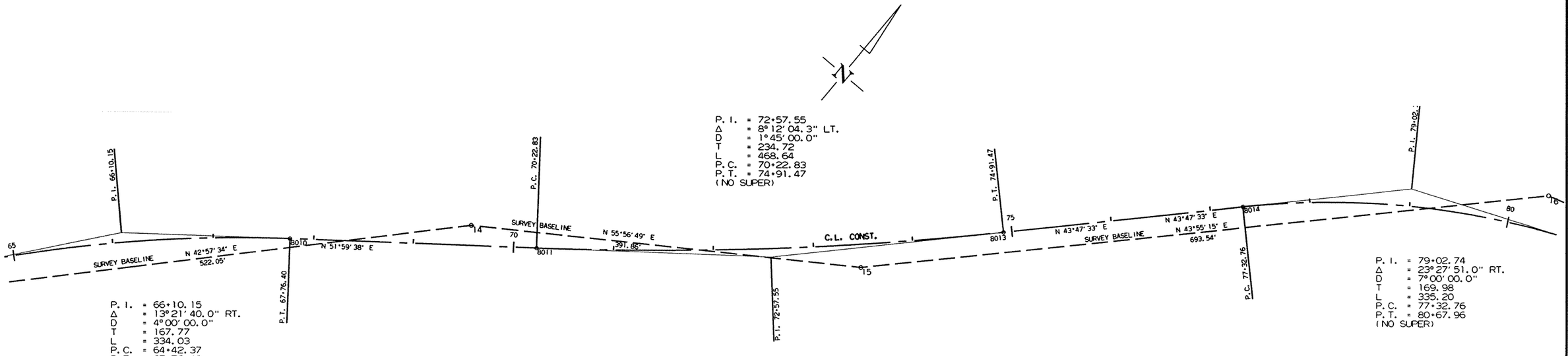
(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11

STA. 53+50 - BEGIN
JOB 070304



P. I. = 60+53.75
Δ = 9°29'36.5" LT.
D = 1°45'00.0"
T = 271.86
L = 542.48
P.C. = 57+81.88
P.T. = 63+24.37
(NO SUPER)



P. I. = 66+10.15
Δ = 13°21'40.0" RT.
D = 4°00'00.0"
T = 167.77
L = 334.03
P.C. = 64+42.37
P.T. = 67+76.40
(NO SUPER)

P. I. = 72+57.55
Δ = 8°12'04.3" LT.
D = 1°45'00.0"
T = 234.72
L = 468.64
P.C. = 70+22.83
P.T. = 74+91.47
(NO SUPER)

P. I. = 79+02.74
Δ = 23°27'51.0" RT.
D = 7°00'00.0"
T = 169.98
L = 335.20
P.C. = 77+32.76
P.T. = 80+67.96
(NO SUPER)

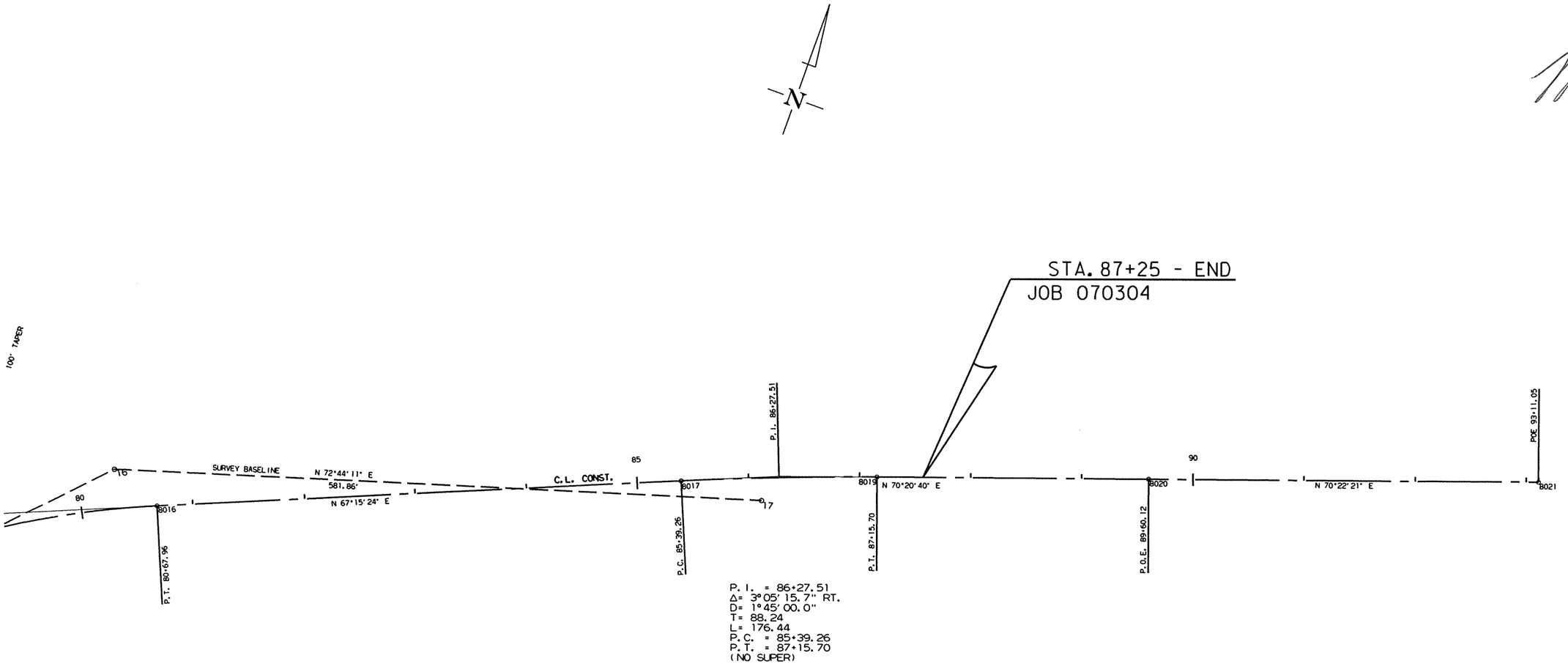
SURVEY CONTROL DETAILS

r070304.dgn 8/11/2009

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.		070304	24	102

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11



P. I. = 86+27.51
Δ= 3°05' 15.7" RT.
D= 1°45' 00.0"
T= 88.24
L= 176.44
P.C. = 85+39.26
P.T. = 87+15.70
(NO SUPER)

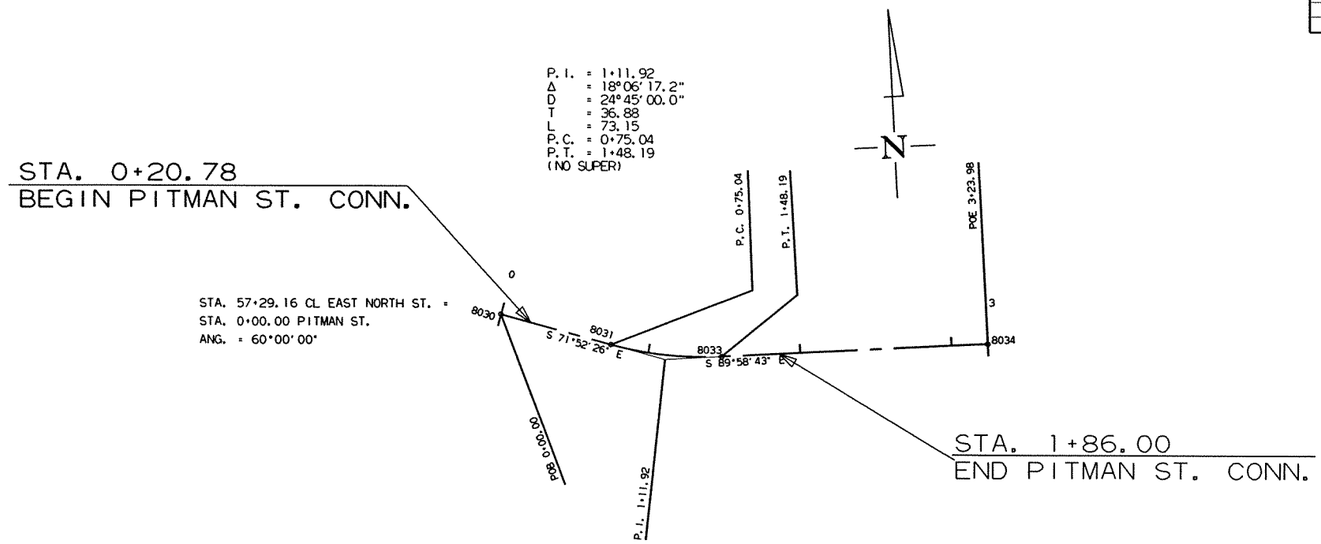
r070304.dgn 8/11/2009

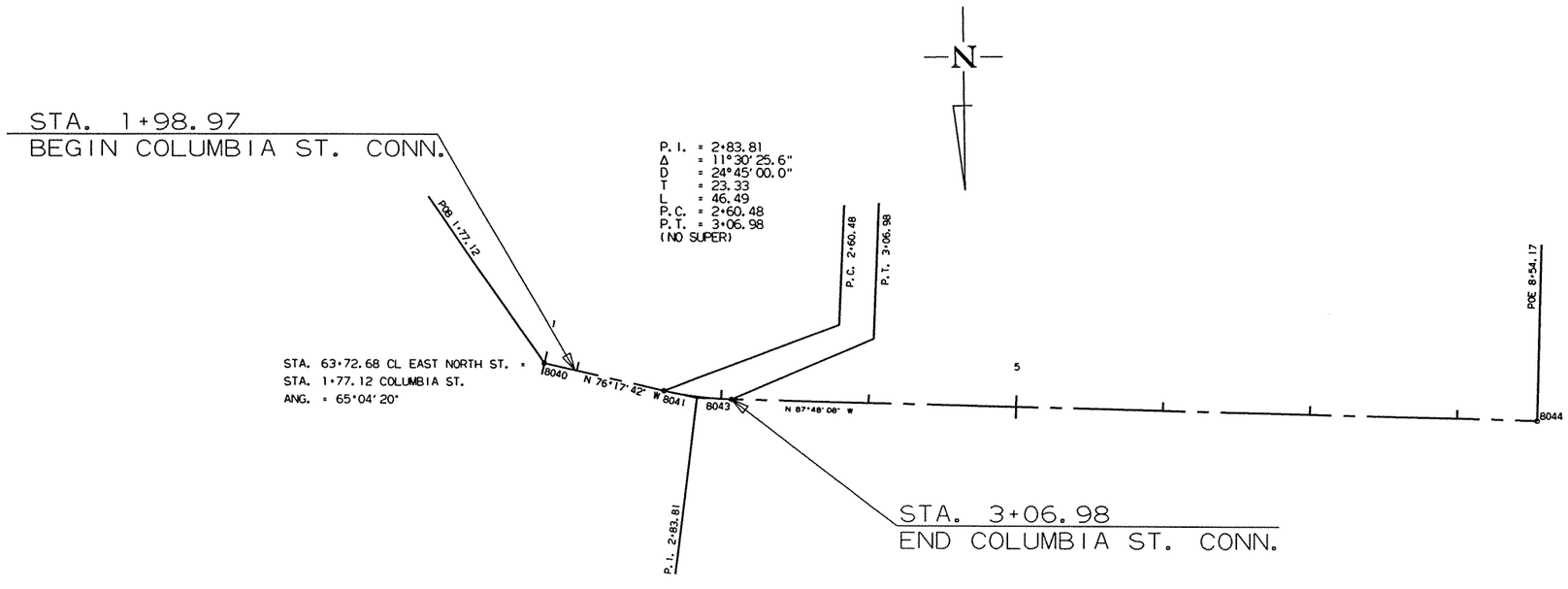
SURVEY CONTROL DETAILS

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.		070304	25	102

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11





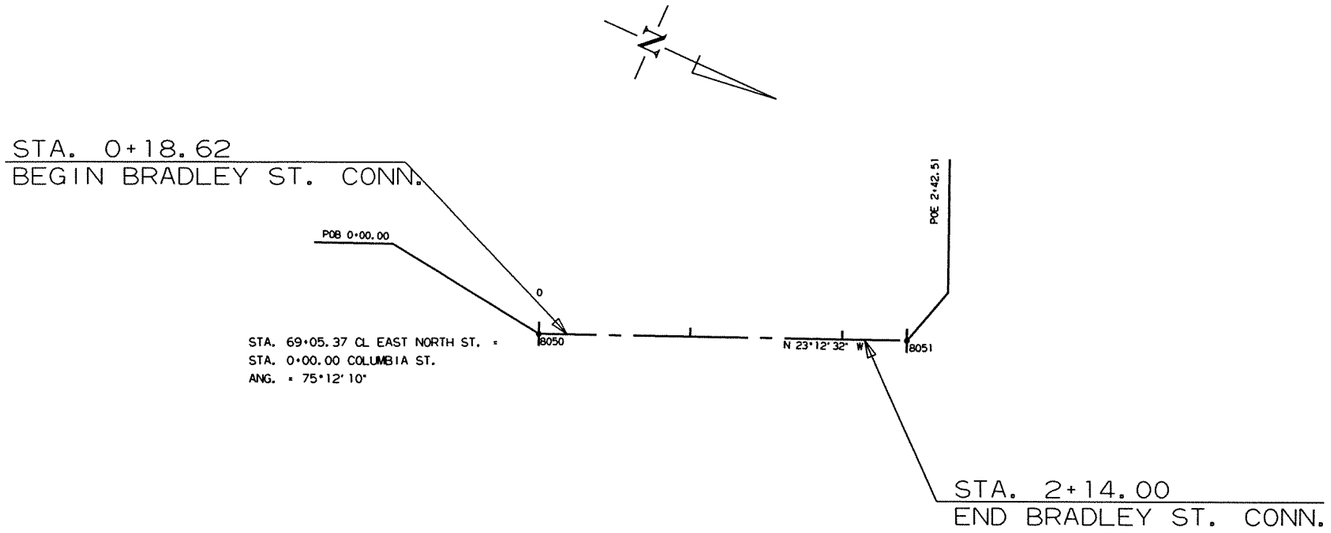
r070304.dgn 8/11/2009

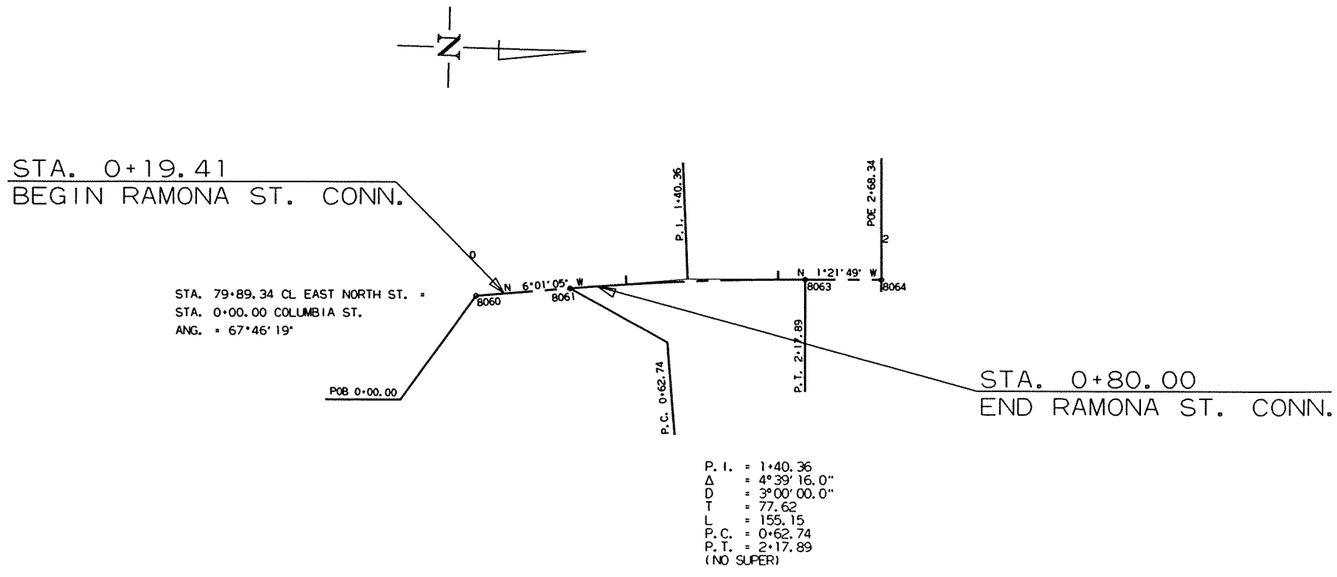
SURVEY CONTROL DETAILS

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.		070304	26	102

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9605
MICHAEL D. FUGETT
3-29-11





P. I. = 1+40.36
Δ = 4°39' 16.0"
D = 3°00' 00.0"
T = 77.62
L = 155.15
P.C. = 0+62.74
P.T. = 2+17.89
(NO SUPER)

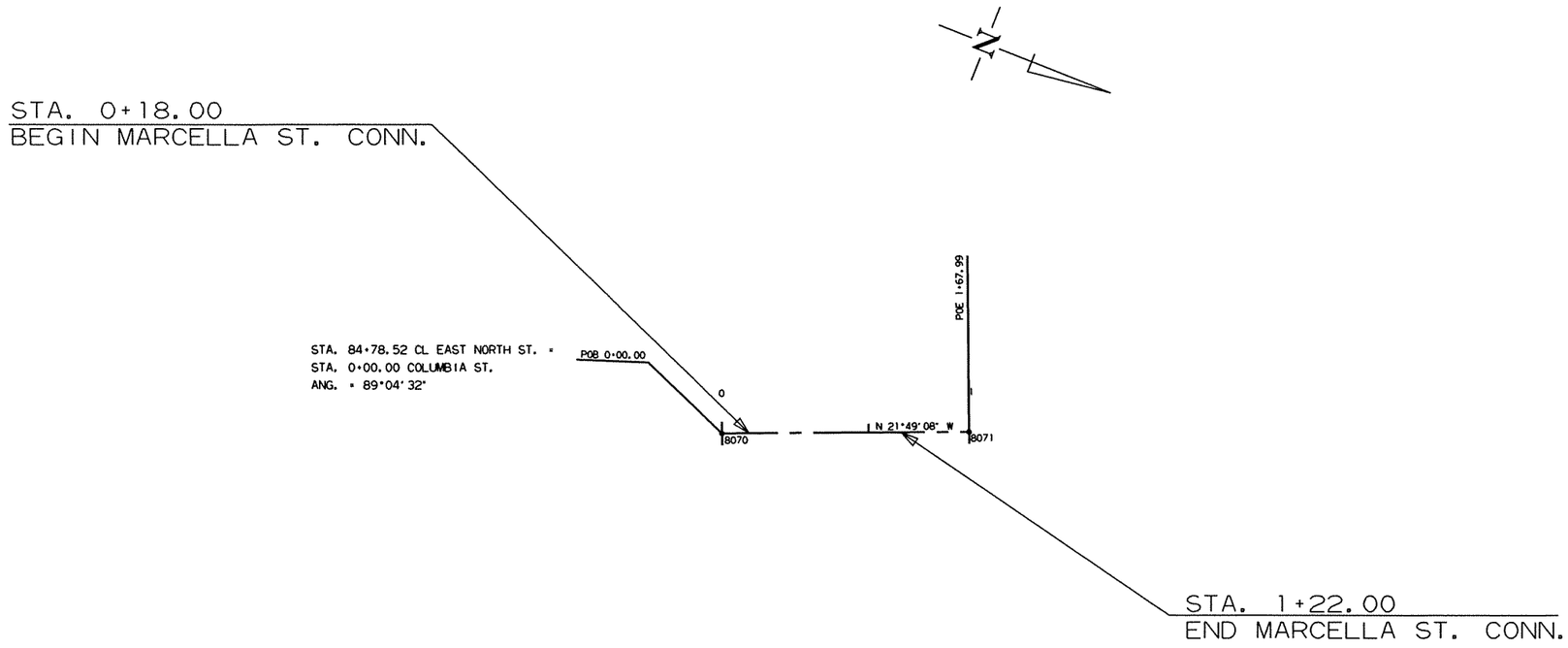
r070304.dgn 8/11/2009

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.		070304	27	102

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11



r070304.dgn 8/11/2009

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.		070304	28	102

(2) PLAN & PROFILE SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7905
MICHAEL D. FUGETT
3-29-11

STA. 53+85 LT.
CONSTR. APPR. = 5 CU. YD.

STA. 54+31 LT.
CONSTR. APPR. = 5 CU. YD.

STA. 54+57 LT.
CONSTR. APPR. = 5 CU. YD.

STA. 55+39 - IN PLACE
15" x 18' R.C. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.

STA. 56+54 - IN PLACE
18" x 19' R.C. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.

STA. 58+32 - CONSTRUCT
DROP INLET ON LT.
W/4'-0" EXTENSION
& 18" F.E.S. STUB IN BACK
& 18" x 39' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-0")

STA. 58+58 - IN PLACE
18" x 20' P.V.C. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 8 CU. YD.

STA. 60+12 - IN PLACE
18" x 24' C.M. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.

STA. 53+50.00
BEGIN JOB

STA. 53+64 RT.
CONSTR. APPR. = 5 CU. YD.

STA. 54+11 RT.
CONSTR. APPR. = 8 CU. YD.

STA. 57+00 - CONSTRUCT
DROP INLET ON RT.
W/4'-0" EXTENSION
& OPENING IN BACK
& 18" x 122' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-0")

STA. 57+50 - IN PLACE
15" x 71' C.M. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTRUCT PITMAN ST.
TURNOUT & APPROACH

STA. 58+26 - CONSTRUCT
DROP INLET ON RT.
W/4'-0" EXTENSION
& 18" F.E.S. STUB IN BACK
& 18" x 212' PIPE OUTLET
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-7")

P. I. : 60+53.75
Δ : 9°29'36.5"
D : 1°45'00.0"
L : 542.48
P. C. : 57+81.88
P. T. : 63+24.37
(NO SUPER)

STA. 60+41 - CONSTRUCT
DROP INLET ON RT.
W/4'-0" EXTENSION
OPENING IN BACK
& 18" x 253' PIPE OUTLET
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 3'-8")

STA. 60+67 - IN PLACE
15" x 21' P.V.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.

FOR R.C. PIPES USE TYPE 3 BEDDING
FOR C.M. PIPES USE TYPE 2 BEDDING
UNLESS OTHERWISE SPECIFIED.

REMOVAL & DISPOSAL OF FENCE
STA. 60+22 - STA. 63+00 LT. 280 LIN. FT.

WIRE FENCE (6' CHAIN LINK)
STA. 60+22 - STA. 62+70 LT. 322 LIN. FT.

+00
TOP D.I.
334.65 (RT.)

+26
TOP D.I.
330.57 (RT.)

+32
TOP D.I.
330.37 (LT.)

18"x 39' @ 1.00% (CR.)

F.L. D.I. 330.67 (RT.)

18"x 122' @ 3.84% (RT.)

F.L. D.I. 325.98 (RT.)

F.L. D.I. 326.37 (LT.)

+41
TOP D.I.
323.41 (RT.)

18"x 212' @ 2.94% (RT.)

F.L. D.I. 319.74 (RT.)

18"x 253' @ 2.00% (RT.)

355 350 345 340 335 330 325 320 315 310

46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00 54+00 55+00 56+00 57+00 58+00 59+00 60+00 61+00

r070304.dgn 8/11/2009

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.		070304	29	102

(2) PLAN & PROFILE SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-29-11

STA. 62+84 - CONSTRUCT
DROP INLET ON LT.
W/4'-0" EXTENSION
30" x 15' R.C. PIPE INLET
(CLASS III) W/FES
15° RT. FWD. SKEW
30" x 41' R.C. PIPE OUTLET
(CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 5'-0" I.D.
TYPE C = 4'-0" x 4'-0"
(H = 7'-7")
D.A. = 12 AC. 050 = 40 C.F.S

STA. 63+23 - IN PLACE
DBL. 30" x 34' R.C. PIPE CULV'T.
CROSS DRAIN REMOVE

STA. 63+50 - IN PLACE
TRP. 36" x 50' HDPE CORR. PIPE CULV'T.
LT. SIDE DRAIN REMOVE & SALVAGE
(REFER TO S.P.)
CONSTRUCT COLUMBIA ST.
TURNOUT & APPROACH

STA. 64+06 - CONSTRUCT
DROP INLET ON LT.
ON TO OF R.C. BOX CULVERT
TYPE C = 4'-0" x 3'-6"
(H = 1'-9")

STA. 65+25 - CONSTRUCT
DROP INLET ON LT.
W/8'-0" EXTENSION
& 18" x 39' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-0")

STA. 65+76 - CONSTRUCT
DROP INLET ON LT.
W/ 18" x 48' PIPE OUTLET
CONNECT TO D.I. ON LT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 3'-8")

STA. 67+98 - CONSTRUCT
DROP INLET ON LT.
W/8'-0" EXTENSION
& 18" x 39' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-0")

STA. 69+10 - IN PLACE
R.C. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTRUCT BRADLEY ST.
TURNOUT & APPROACH

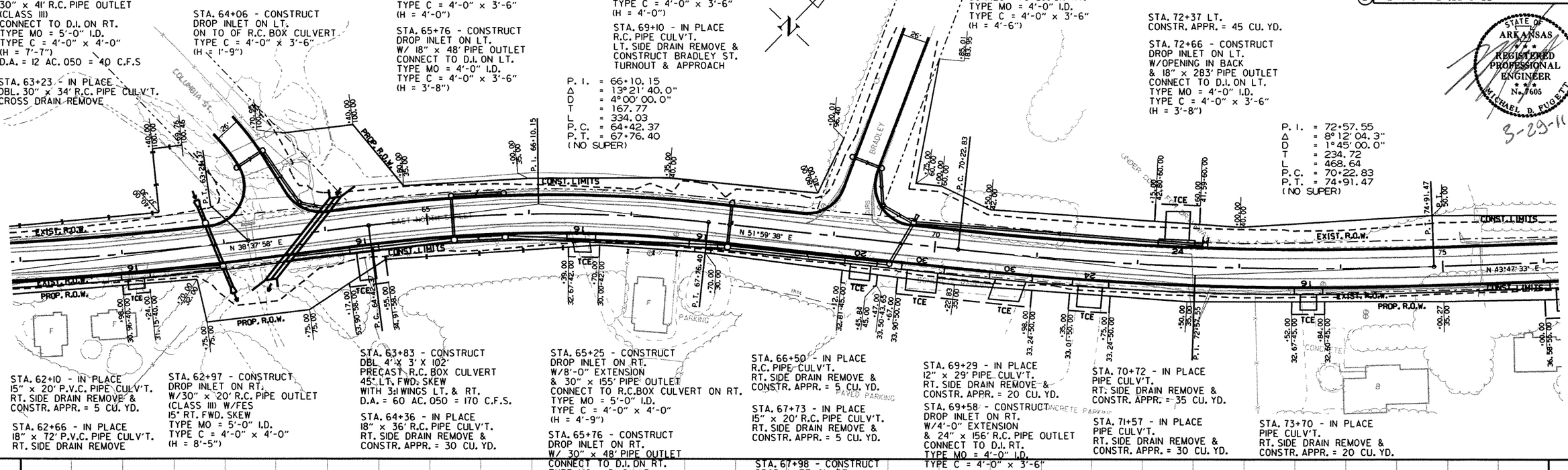
P. I. = 66+10.15
Δ = 13°21'40.0"
D = 4°00'00.0"
T = 167.77
L = 334.03
P.C. = 64+42.37
P.T. = 67+76.40
(NO SUPER)

STA. 69+77 - CONSTRUCT
DROP INLET ON LT.
W/4'-0" EXTENSION
& 18" F.E.S. STUB IN BACK
& 24" x 43' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-6")

STA. 72+37 LT.
CONSTR. APPR. = 45 CU. YD.

STA. 72+66 - CONSTRUCT
DROP INLET ON LT.
W/OPENING IN BACK
& 18" x 283' PIPE OUTLET
CONNECT TO D.I. ON LT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 3'-8")

P. I. = 72+57.55
Δ = 8°12'04.3"
D = 1°45'00.0"
T = 234.72
L = 468.64
P.C. = 70+22.83
P.T. = 74+91.47
(NO SUPER)



STA. 62+10 - IN PLACE
15" x 20' P.V.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.

STA. 62+66 - IN PLACE
18" x 72' P.V.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE

STA. 62+97 - CONSTRUCT
DROP INLET ON RT.
W/30" x 20' R.C. PIPE OUTLET
(CLASS III) W/FES
15° RT. FWD. SKEW
TYPE MO = 5'-0" I.D.
TYPE C = 4'-0" x 4'-0"
(H = 8'-5")

STA. 63+83 - CONSTRUCT
DBL. 4' x 3' x 102'
PRECAST R.C. BOX CULVERT
45° LT. FWD. SKEW
WITH 31 WINGS LT. & RT.
D.A. = 60 AC. 050 = 170 C.F.S.

STA. 64+36 - IN PLACE
18" x 36' R.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 30 CU. YD.

STA. 65+25 - CONSTRUCT
DROP INLET ON RT.
W/8'-0" EXTENSION
& 30" x 155' PIPE OUTLET
CONNECT TO R.C.BOX CULVERT ON RT.
TYPE MO = 5'-0" I.D.
TYPE C = 4'-0" x 4'-0"
(H = 4'-9")

STA. 65+76 - CONSTRUCT
DROP INLET ON RT.
W/ 30" x 48' PIPE OUTLET
CONNECT TO D.I. ON RT.
TYPE MO = 5'-0" I.D.
TYPE C = 4'-0" x 4'-0"
(H = 4'-5")

STA. 66+50 - IN PLACE
R.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.

STA. 67+73 - IN PLACE
15" x 20' R.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.

STA. 67+98 - CONSTRUCT
DROP INLET ON RT.
W/4'-0" EXTENSION
& 30" x 213' PIPE OUTLET
CONNECT TO D.I. RT.
TYPE MO = 5'-0" I.D.
TYPE C = 4'-0" x 4'-0"
(H = 4'-2")

STA. 69+29 - IN PLACE
12" x 29' PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 20 CU. YD.

STA. 69+58 - CONSTRUCT
DROP INLET ON RT.
W/4'-0" EXTENSION
& 24" x 156' R.C. PIPE OUTLET
CONNECT TO D.I. RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 5'-0")

STA. 69+91 - IN PLACE
PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 25 CU. YD.

STA. 70+72 - IN PLACE
PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 35 CU. YD.

STA. 71+57 - IN PLACE
PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 30 CU. YD.

STA. 73+70 - IN PLACE
PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 20 CU. YD.

FOR R.C. PIPES USE TYPE 3 BEDDING
FOR C.M. PIPES USE TYPE 2 BEDDING
UNLESS OTHERWISE SPECIFIED.

REMOVAL & DISPOSAL OF FENCE

STA. 64+55 - STA. 66+33	RT.	180 LIN. FT.
STA. 66+99 - STA. 67+48	RT.	50 LIN. FT.
STA. 73+15 - STA. 73+15	RT.	10 LIN. FT.

WIRE FENCE (TYPE C)

STA. 64+55 - STA. 66+33	RT.	174 LIN. FT.

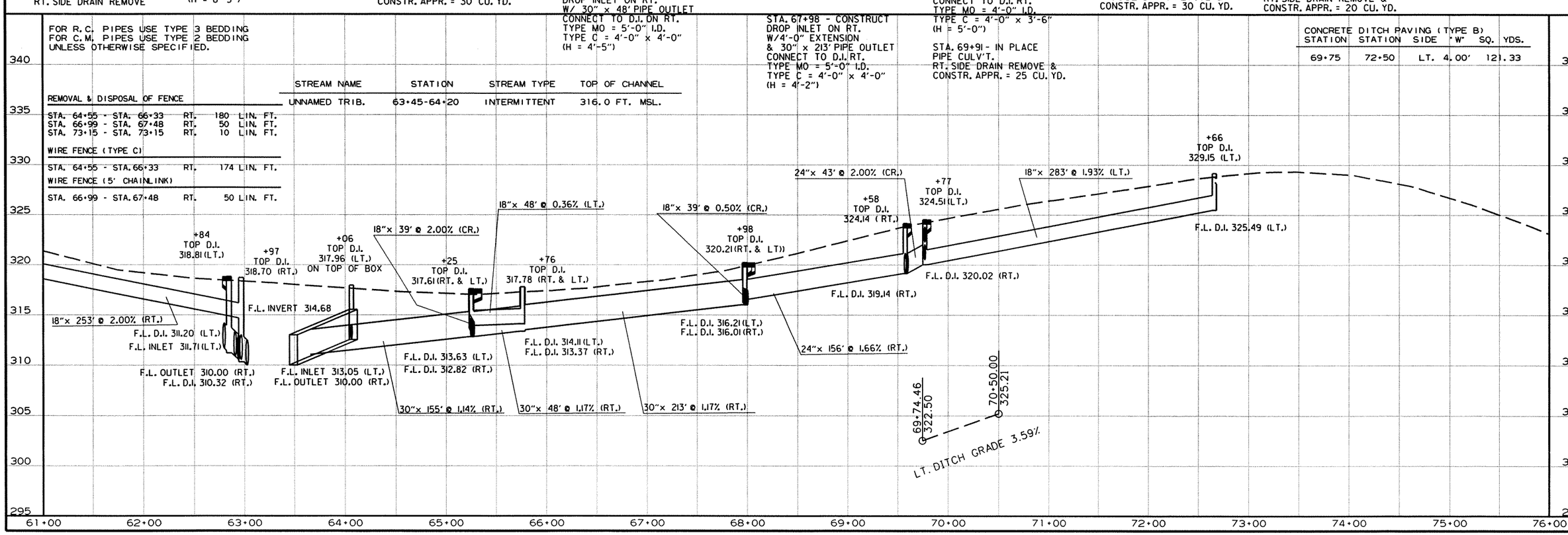
WIRE FENCE (5' CHAINLINK)

STA. 66+99 - STA. 67+48	RT.	50 LIN. FT.

STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL
UNNAMED TRIB.	63+45-64+20	INTERMITTENT	316.0 FT. MSL.

CONCRETE DITCH PAVING (TYPE B)

STATION	STATION	SIDE	"W"	SQ. YDS.
69+75	72+50	LT.	4.00'	121.33



r070304.dgn 8/11/2009

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.		070304	30	102

(2) PLAN & PROFILE SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7705
MICHAEL D. FUGETT
6-3-11

STA. 76+50 - CONSTRUCT DROP INLET ON LT. W/4'-0" EXTENSION & OPENING IN BACK & 18" x 39' R.C. PIPE OUTLET (CLASS III) CONNECT TO D.I. ON RT. TYPE MO = 4'-0" I.D. TYPE C = 4'-0" x 3'-6" (H = 4'-0")

STA. 79+70 - IN PLACE 30" x 38' R.C. PIPE CULV'T. CROSS DRAIN REMOVE

STA. 80+00 - IN PLACE 24" x 32' R.C. PIPE CULV'T. LT. SIDE DRAIN REMOVE & CONSTRUCT RAMONA ST. TURNOUT & APPROACH

STA. 79+35 - CONSTRUCT DROP INLET ON LT. ON TO OF R.C. BOX CULVERT TYPE C = 4'-0" x 3'-6" (H = 2'-6")

P. I. = 79+02.74
Δ = 23°27' 51.0"
D = 7°00' 00.0"
T = 169.98
L = 335.20
P.C. = 77+32.76
P.T. = 80+67.96
(NO SUPER)

STA. 80+66 - CONSTRUCT DROP INLET ON LT. W/18" F.E.S. STUB IN BACK & 24" x 39' R.C. PIPE OUTLET (CLASS III) CONNECT TO D.I. ON RT. TYPE MO = 4'-0" I.D. TYPE C = 4'-0" x 3'-6" (H = 4'-9")

STA. 81+73 - IN PLACE 15" x 30' R.C. PIPE CULV'T. LT. SIDE DRAIN REMOVE & CONSTR. APPR. = 35 CU. YD.

STA. 81+99 - CONSTRUCT DROP INLET ON LT. W/4'-0" EXTENSION & OPENING IN BACK & 18" x 39' R.C. PIPE OUTLET (CLASS III) CONNECT TO D.I. ON RT. TYPE MO = 4'-0" I.D. TYPE C = 4'-0" x 3'-6" (H = 4'-0")

STA. 82+92 - IN PLACE 18" x 34' C.M. PIPE CULV'T. LT. SIDE DRAIN REMOVE/& CONSTR. APPR. = 85 CU. YD.

STA. 84+13 - IN PLACE 18" x 22' C.M. PIPE CULV'T. LT. SIDE DRAIN REMOVE & CONSTR. APPR. = 35 CU. YD.

STA. 83+16 - CONSTRUCT DROP INLET ON LT. W/4'-0" EXTENSION & OPENING IN BACK & 18" x 113' PIPE OUTLET CONNECT TO D.I. ON LT. TYPE MO = 4'-0" I.D. TYPE C = 4'-0" x 3'-6" (H = 3'-8")

STA. 84+45 - IN PLACE 15" x 21' R.C. PIPE CULV'T. LT. SIDE DRAIN REMOVE

STA. 84+80 - IN PLACE 18" x 38' R.C. PIPE CULV'T. LT. SIDE DRAIN REMOVE & CONSTRUCT MARCELLA ST. TURNOUT & APPROACH

STA. 85+34 - CONSTRUCT DROP INLET ON LT. W/4'-0" EXTENSION & OPENING IN BACK & 18" x 214' PIPE OUTLET CONNECT TO D.I. ON LT. TYPE MO = 4'-0" I.D. TYPE C = 4'-0" x 3'-6" (H = 4'-5")

STA. 85+42 - IN PLACE 18" x 17' R.C.P. PIPE CULV'T. LT. SIDE DRAIN REMOVE

STA. 86+26 - IN PLACE 18" x 25' R.C. PIPE CULV'T. LT. SIDE DRAIN REMOVE & CONSTR. APPR. = 25 CU. YD.

STA. 86+50 - CONSTRUCT DROP INLET ON LT. W/OPENING IN BACK & 18" x 113' PIPE OUTLET CONNECT TO D.I. ON LT. TYPE MO = 4'-0" I.D. TYPE C = 4'-0" x 3'-6" (H = 3'-8")

STA. 86+95 LT. CONSTR. APPR. = 5 CU. YD.

STA. 76+26 - IN PLACE 15" x 31' R.C. PIPE CULV'T. RT. SIDE DRAIN REMOVE & CONSTR. APPR. = 20 CU. YD.

STA. 76+50 - CONSTRUCT DROP INLET ON RT. W/4'-0" EXTENSION & 18" x 246' PIPE OUTLET CONNECT TO R.C. BOX CULVERT ON RT. TYPE MO = 4'-0" I.D. TYPE C = 4'-0" x 3'-6" (H = 4'-5")

STA. 79+21 - CONSTRUCT 6' x 4' X 85' PRECAST R.C. BOX CULVERT 35° LT. FWD. SKEW WITH 3:1 WINGS LT. & RT. DUMPED RIPRAP AT OUTLET = 39 CU. YD. D.A. = 80 AC. 050 = 200 C.F.S.

STA. 79+05 - CONSTRUCT DROP INLET ON RT. ON TO OF R.C. BOX CULVERT TYPE C = 4'-0" x 3'-6" (H = 3'-4")

STA. 79+26 - IN PLACE 66" x 65' STEEL PIPE CULV'T. RT. SIDE DRAIN RETAIN

STA. 79+26 - IN PLACE 24" x 60' PLASTIC PIPE CULV'T. RT. SIDE DRAIN REMOVE & CONSTR. APPR. = 75 CU. YD.

STA. 80+66 - CONSTRUCT DROP INLET ON RT. W/4'-0" EXTENSION & 18" x 246' PIPE OUTLET CONNECT TO R.C. BOX CULVERT ON RT. TYPE MO = 5'-0" I.D. TYPE C = 4'-0" x 4'-0" (H = 5'-4")

STA. 80+89 - IN PLACE 24" x 31' FIBERGLASS PIPE CULV'T. RT. SIDE DRAIN REMOVE & CONSTR. APPR. = 5 CU. YD.

STA. 81+99 - CONSTRUCT DROP INLET ON RT. W/4'-0" EXTENSION & 18" x 128' PIPE OUTLET CONNECT TO D.I. ON RT. TYPE MO = 4'-0" I.D. TYPE C = 4'-0" x 3'-6" (H = 4'-7")

STA. 82+55 - IN PLACE 18" x 26' R.C. PIPE CULV'T. RT. SIDE DRAIN REMOVE & CONSTR. APPR. = 10 CU. YD.

STA. 83+56 - IN PLACE 15" x 49' R.C. PIPE CULV'T. RT. SIDE DRAIN REMOVE & CONSTR. APPR. = 5 CU. YD.

STA. 85+34 - CONSTRUCT DROP INLET ON RT. W/4'-0" EXTENSION & 18" x 39' R.C. PIPE OUTLET (CLASS III) CONNECT TO D.I. ON LT. TYPE MO = 4'-0" I.D. TYPE C = 4'-0" x 3'-6" (H = 4'-0")

STA. 87+00 - IN PLACE 18" x 41' R.C. PIPE CULV'T. RT. SIDE DRAIN REMOVE & CONSTR. APPR. = 85 CU. YD.

P. I. = 86+27.51
Δ = 3°05' 15.7"
D = 1°45' 00.0"
T = 88.24
L = 176.44
P. C. = 85+39.26
P. T. = 87+15.70
(NO SUPER)

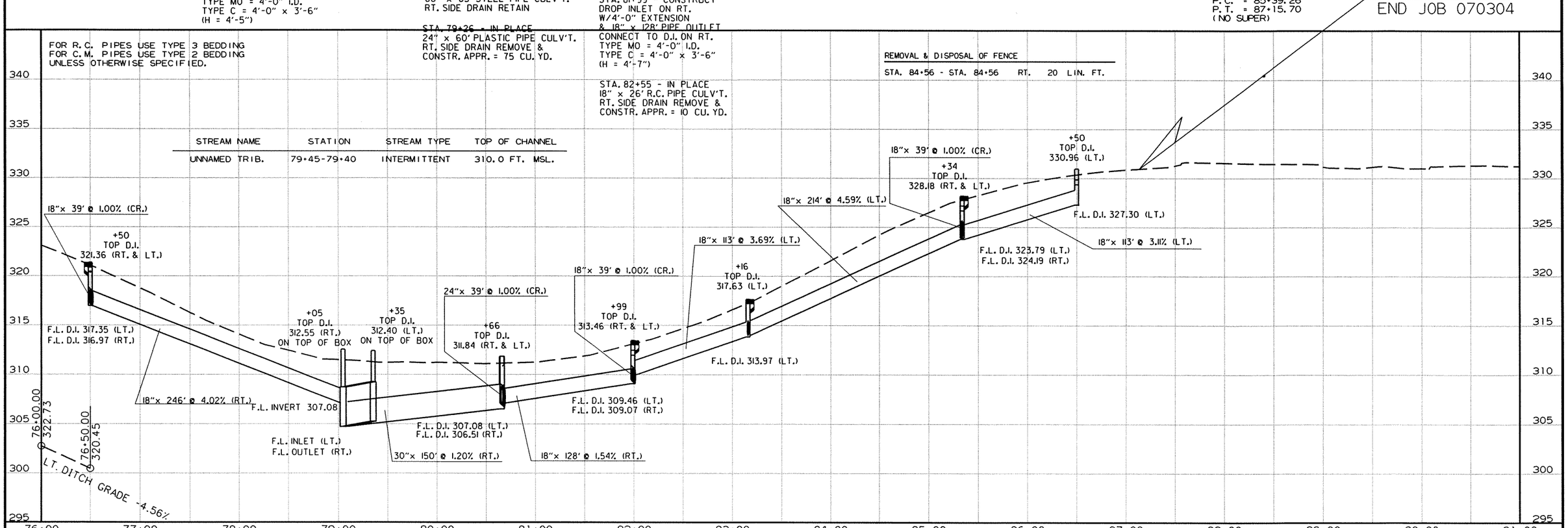
STA. 87+25.00
END JOB 070304

FOR R.C. PIPES USE TYPE 3 BEDDING
FOR C.M. PIPES USE TYPE 2 BEDDING
UNLESS OTHERWISE SPECIFIED.

REMOVAL & DISPOSAL OF FENCE

STA. 84+56 - STA. 84+56 RT. 20 LIN. FT.

STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL
UNNAMED TRIB.	79+45-79+40	INTERMITTENT	310.0 FT. MSL.



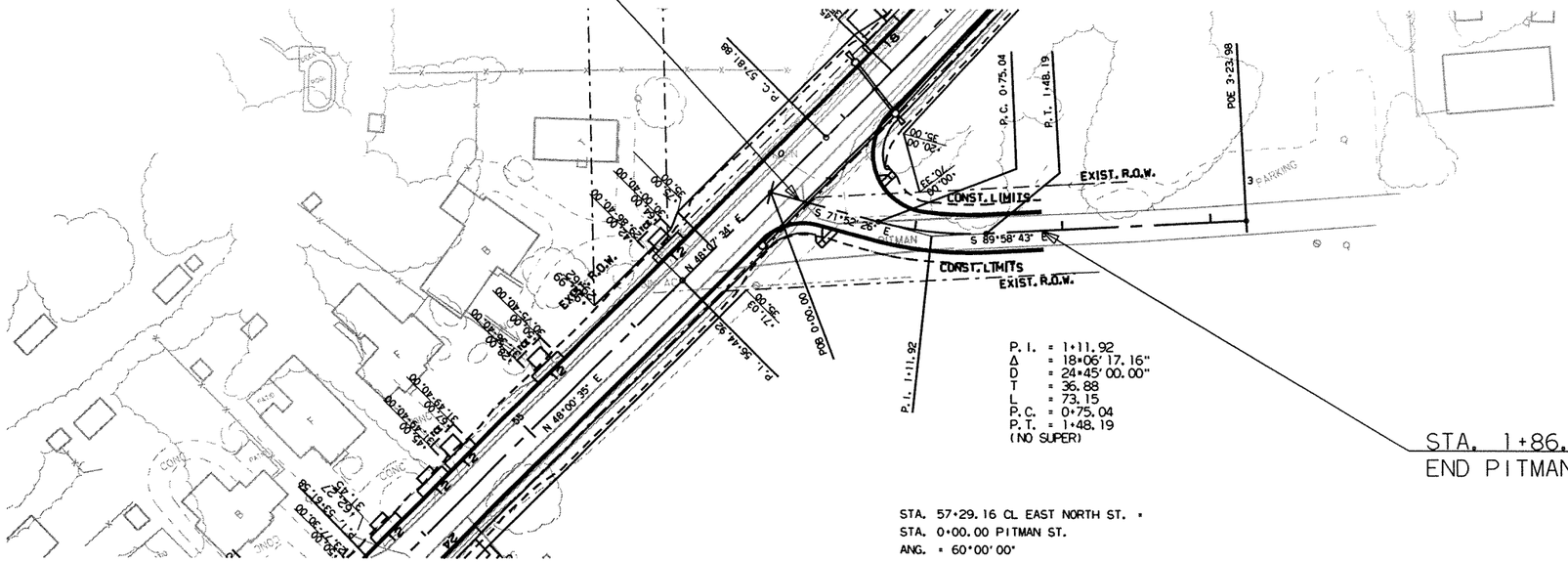
r070304.dgn 8/11/2009

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.		070304	31	102

(2) PLAN & PROFILE SHEET PITMAN ST.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11

STA. 0+20.78
BEGIN PITMAN ST. CONN.



P.I. = 1+11.92
Δ = 18°06' 17.16"
D = 24°45' 00.00"
T = 36.88
L = 73.15
P.C. = 0+75.04
P.T. = 1+48.19
(NO SUPER)

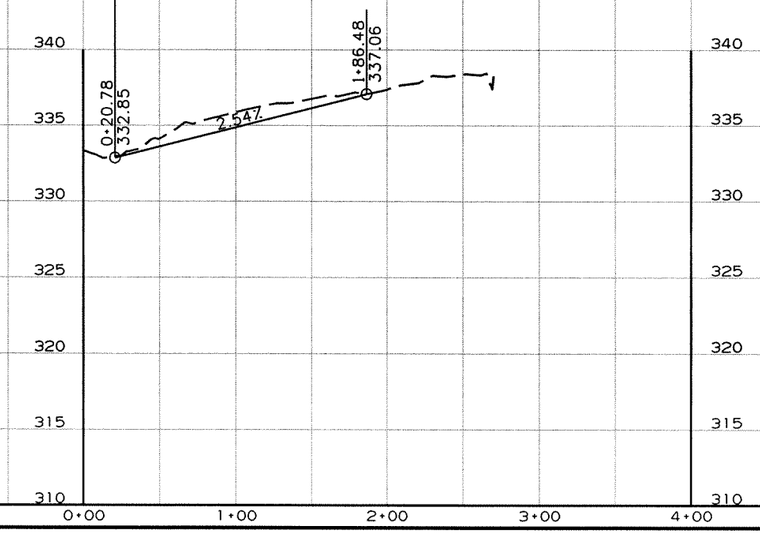
STA. 1+86.00
END PITMAN ST. CONN.

STA. 57+29.16 CL EAST NORTH ST. =
STA. 0+00.00 PITMAN ST.
ANG. = 60°00' 00"

PITMAN ST.

FOR R.C. PIPES USE TYPE 3 BEDDING
FOR C.M. PIPES USE TYPE 2 BEDDING
UNLESS OTHERWISE SPECIFIED.

STA. 0+20.78 PITMAN ST.
STA. 57+39.55 EAST NORTH ST. 18.00 RT OF C.L.
ELEV. 322.85



r070304.dgn 8/11/2009

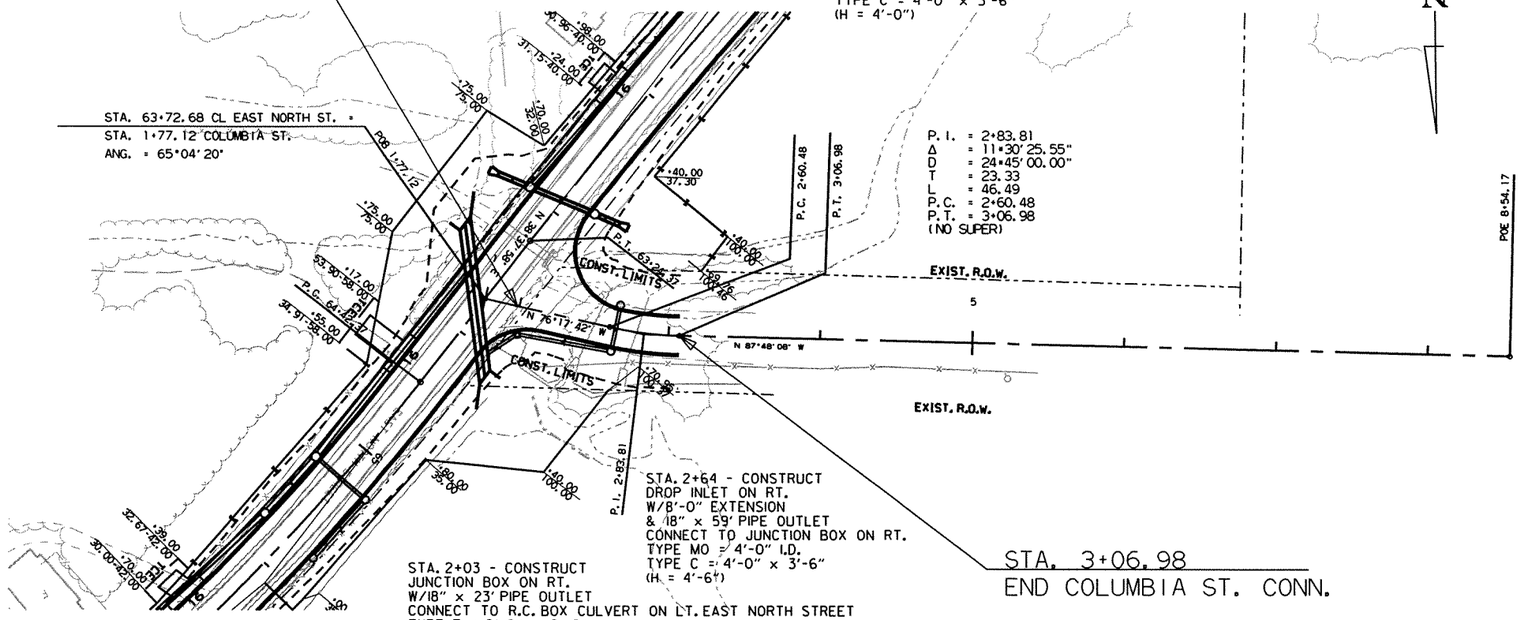
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	32	102

(2) PLAN & PROFILE SHEET COLUMBIA ST.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7405
MICHAEL D. PUGETT
3-29-11

STA. 1+98.97
BEGIN COLUMBIA ST. CONN.

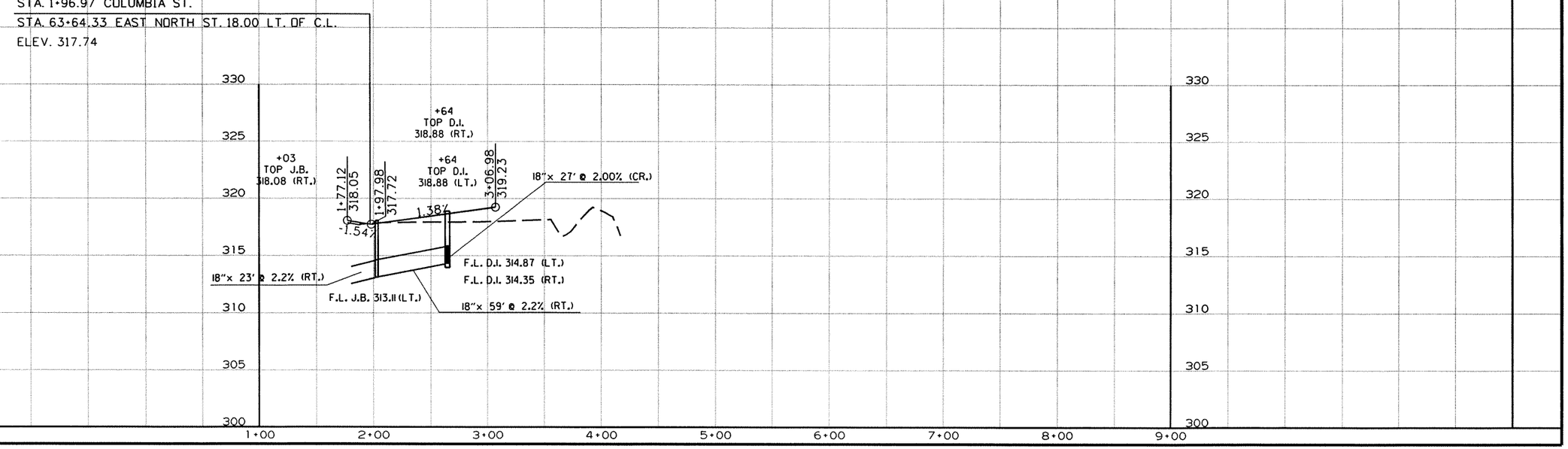
STA. 2+64 - CONSTRUCT
DROP INLET ON LT.
W/8'-0" EXTENSION
& 18" x 27' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-0")



STA. 3+06.98
END COLUMBIA ST. CONN.

COLUMBIA ST.

FOR R.C. PIPES USE TYPE 3 BEDDING
FOR C.M. PIPES USE TYPE 2 BEDDING
UNLESS OTHERWISE SPECIFIED.



r070304.dgn 8/11/2009

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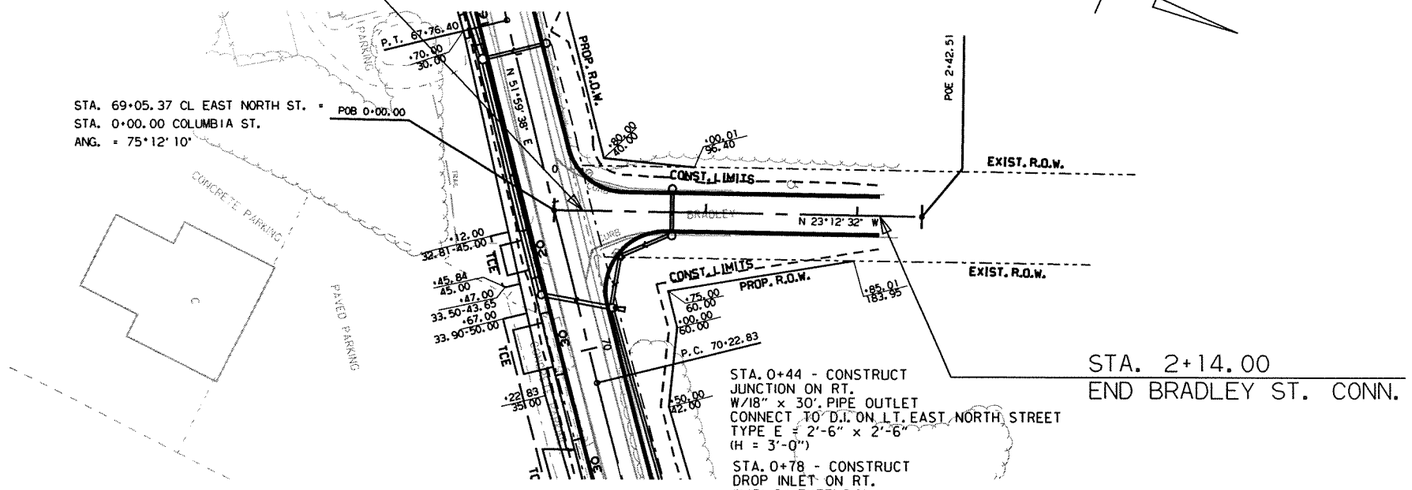
				JOB NO.		070304	33	102

(2) PLAN & PROFILE SHEET BRADLEY ST.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGATT
3-29-11

STA. 0+18.62
BEGIN BRADLEY ST. CONN.

STA. 0+78 - CONSTRUCT
DROP INLET ON LT.
W/8'-0" EXTENSION
& 18" x 27' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-0")



STA. 2+14.00
END BRADLEY ST. CONN.

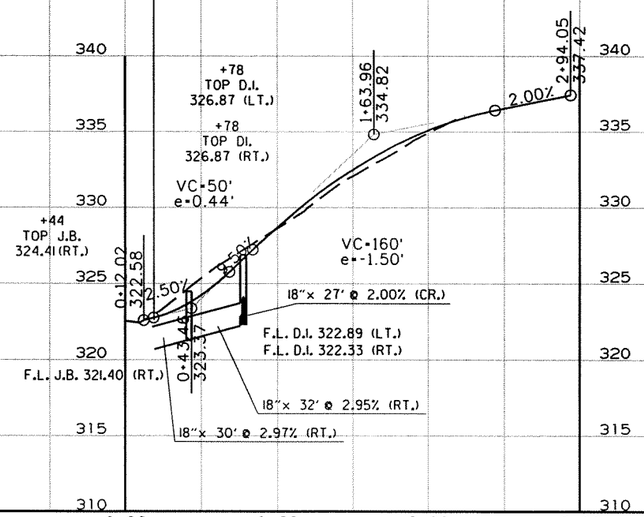
STA. 0+44 - CONSTRUCT
JUNCTION ON RT.
W/18" x 30' PIPE OUTLET
CONNECT TO D.I. ON LT. EAST NORTH STREET
TYPE E = 2'-6" x 2'-6"
(H = 3'-0")

STA. 0+78 - CONSTRUCT
DROP INLET ON RT.
W/8'-0" EXTENSION
& 18" x 32' PIPE OUTLET
CONNECT TO J.B. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-6")

BRADLEY ST.

FOR R.C. PIPES USE TYPE 3 BEDDING
FOR C.M. PIPES USE TYPE 2 BEDDING
UNLESS OTHERWISE SPECIFIED.

STA. 0+18.62 BRADLEY ST.
STA. 69+10.12 EAST NORTH ST. 18.00 LT. OF C.L.
ELEV. 322.75



r070304.dgn 8/11/2009

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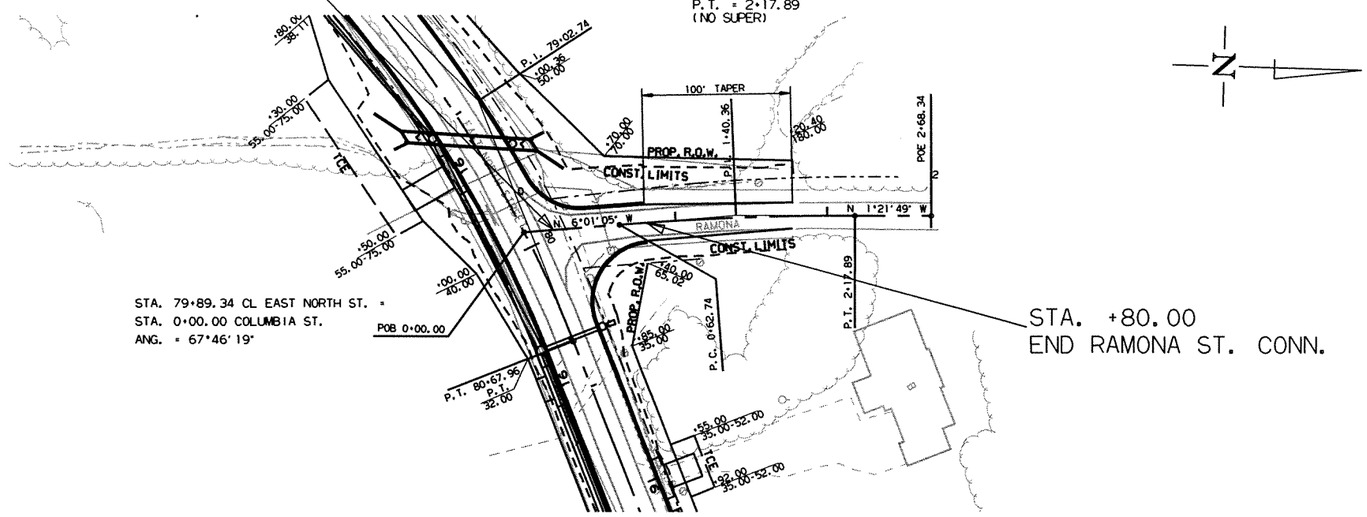
				6	ARK.			
				JOB NO.		070304	34	102

(2) PLAN & PROFILE SHEET RAMONA ST.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
3-29-11

STA. 0+19.41
BEGIN RAMONA ST. CONN.

P. I. = 1+40.36
Δ = 4°39' 16.01"
D = 3°00' 00.00"
T = 77.62
L = 155.15
P.C. = 0+62.74
P.T. = 2+17.89
(NO SUPER)

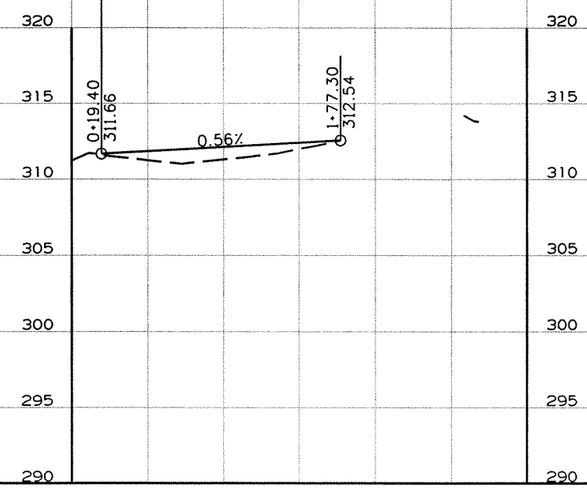


STA. +80.00
END RAMONA ST. CONN.

RAMONA ST.

FOR R.C. PIPES USE TYPE 3 BEDDING
FOR C.M. PIPES USE TYPE 2 BEDDING
UNLESS OTHERWISE SPECIFIED.

STA. 0+19.41 RAMONA ST.
STA. 79+96.53 EAST NORTH ST. 18.00 LT. OF C.L.
ELEV. 311.66



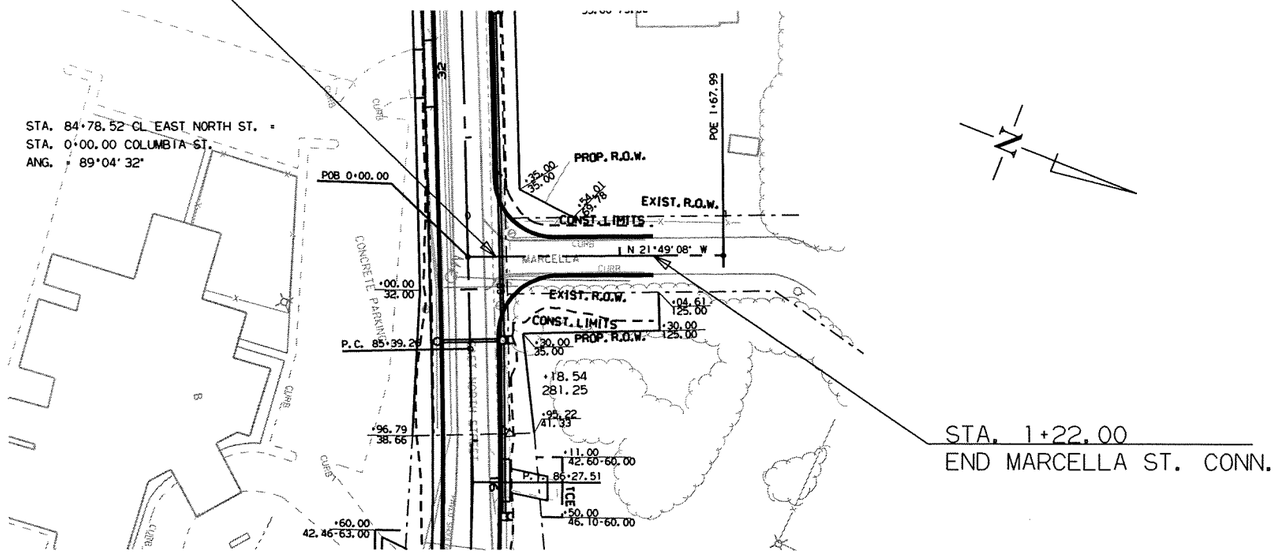
r070304.dgn 8/11/2009

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.		070304	35	102

(2) PLAN & PROFILE SHEET MARCELLA ST.

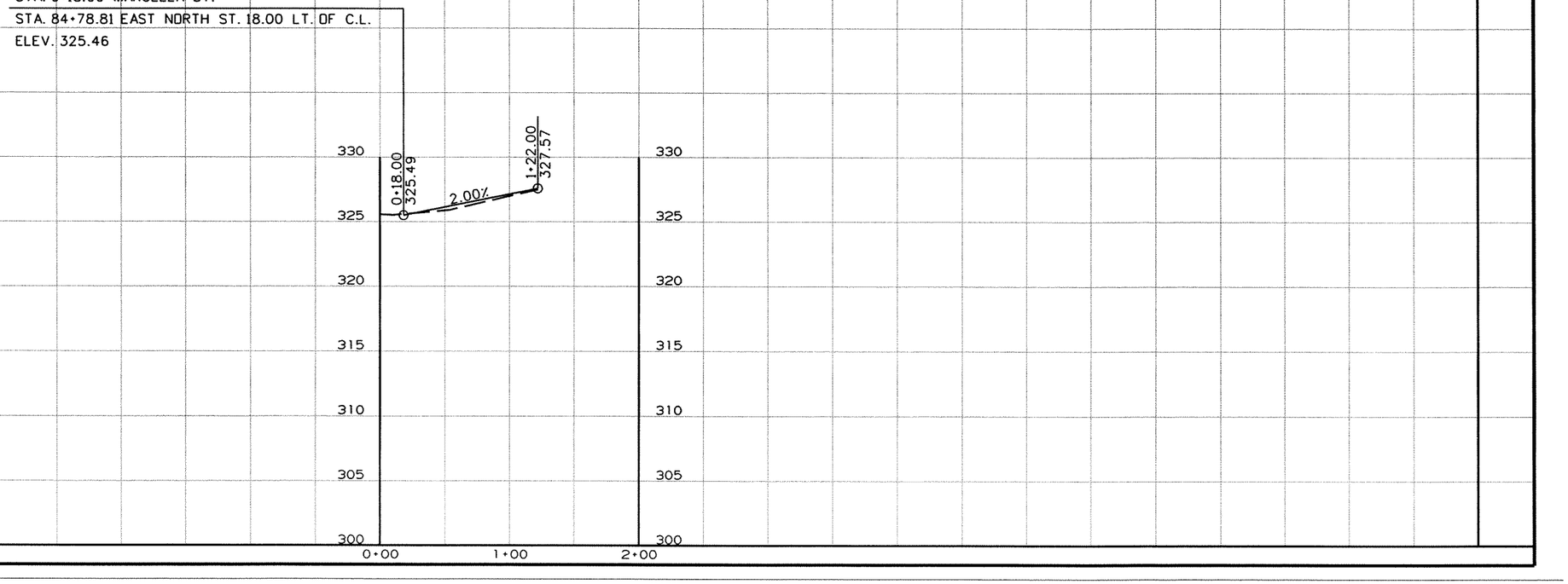
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
3-29-11

STA. 0+18.00
BEGIN MARCELLA ST. CONN.



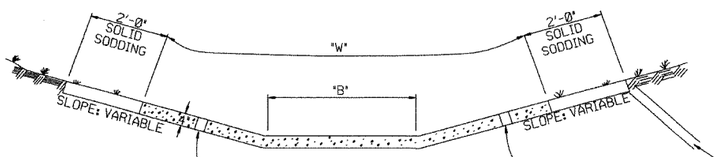
MARCELLA ST.

FOR R.C. PIPES USE TYPE 3 BEDDING
FOR C.M. PIPES USE TYPE 2 BEDDING
UNLESS OTHERWISE SPECIFIED.



r070304.dgn 8/11/2009

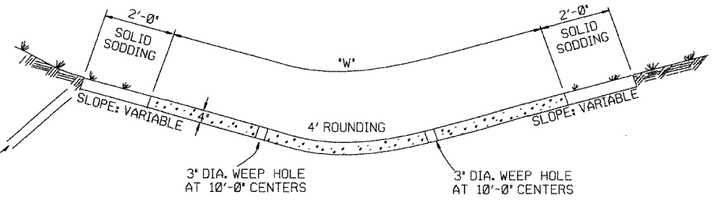
REFER TO TABULATION OF QUANTITIES FOR "W" & "B" DIMENSIONS



TYPE A

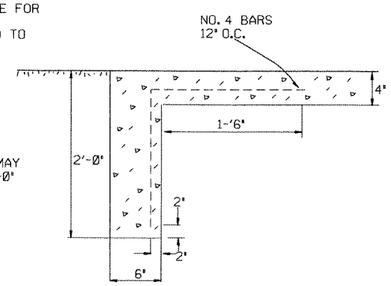
EXCAVATE TO NEAT LINES TO CONSTRUCT DITCH PAVING AND SOLID SODDING.

REFER TO TABULATION OF QUANTITIES FOR "W" DIMENSIONS



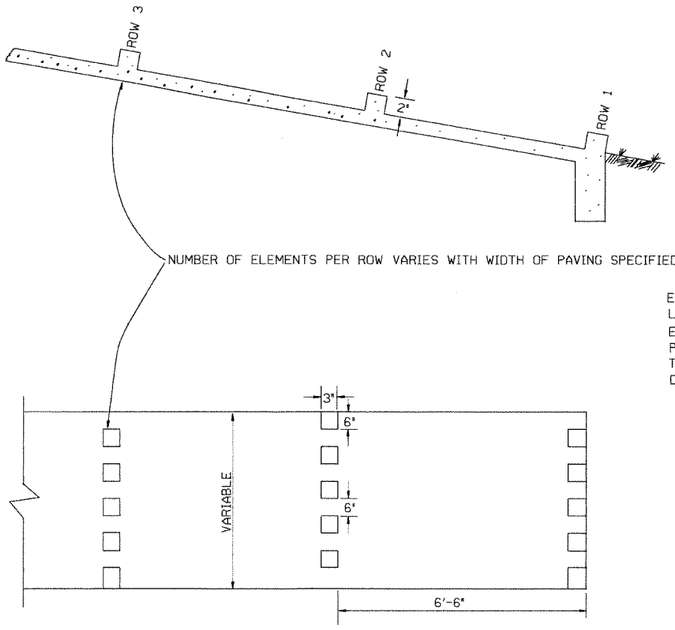
TYPE B

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



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

TOE WALL DETAIL FOR CONCRETE DITCH PAVING



ENERGY DISSIPATORS
(NO SCALE)

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

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

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

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

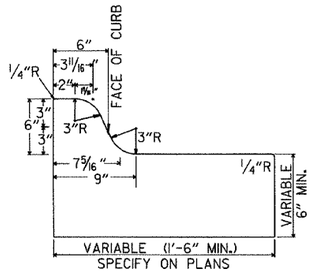
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

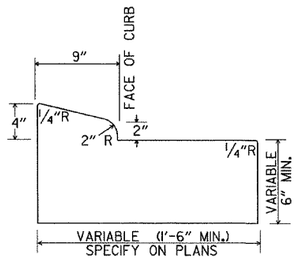
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

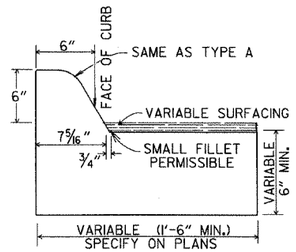
STANDARD DRAWING CDP-1



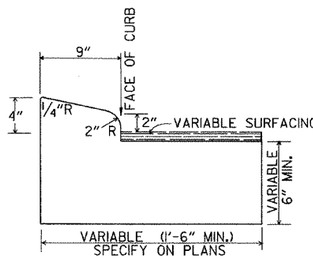
TYPE A



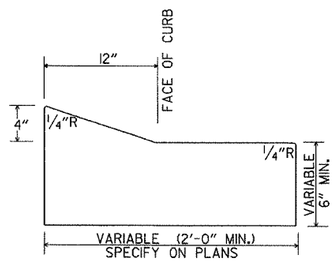
TYPE B-1



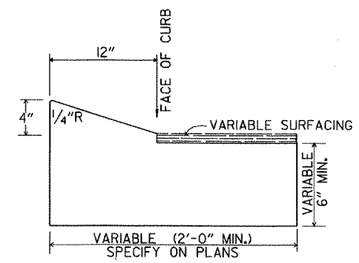
TYPE C



TYPE B-2

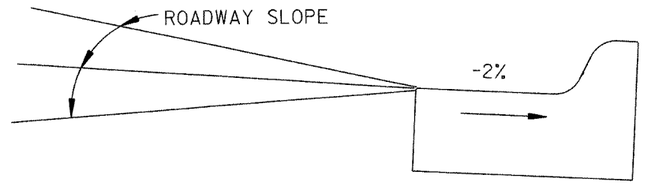


TYPE E-1



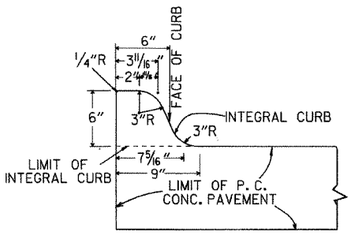
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

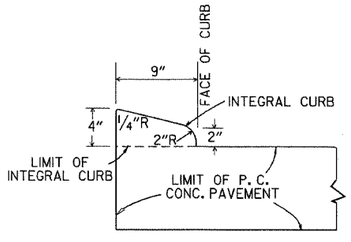


DETAIL OF GUTTER SLOPE

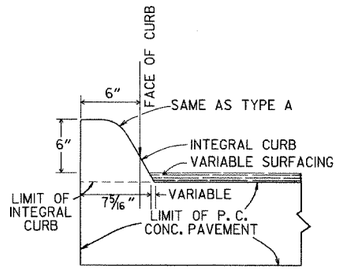
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

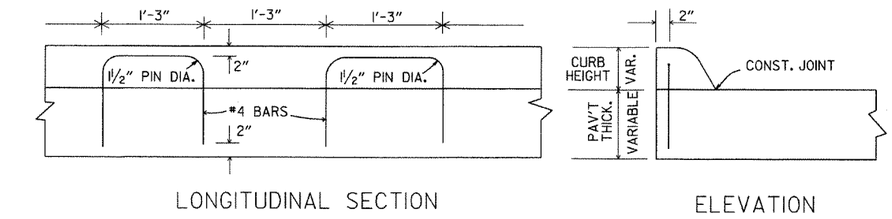


TYPE B

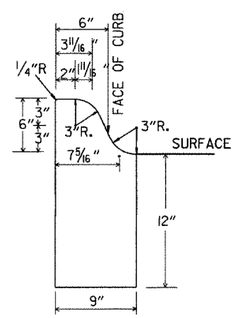


TYPE C

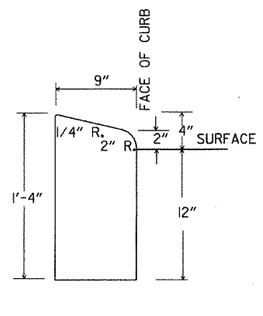
INTEGRAL CURB



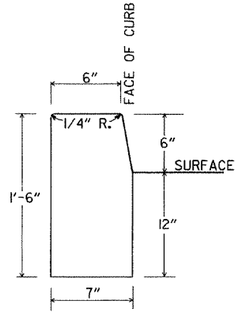
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



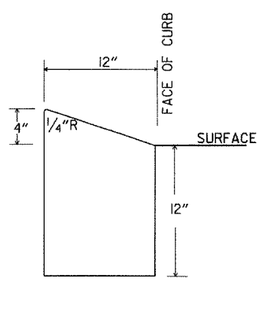
TYPE A



TYPE B

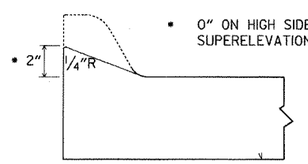


TYPE D



TYPE E

CONCRETE CURB



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

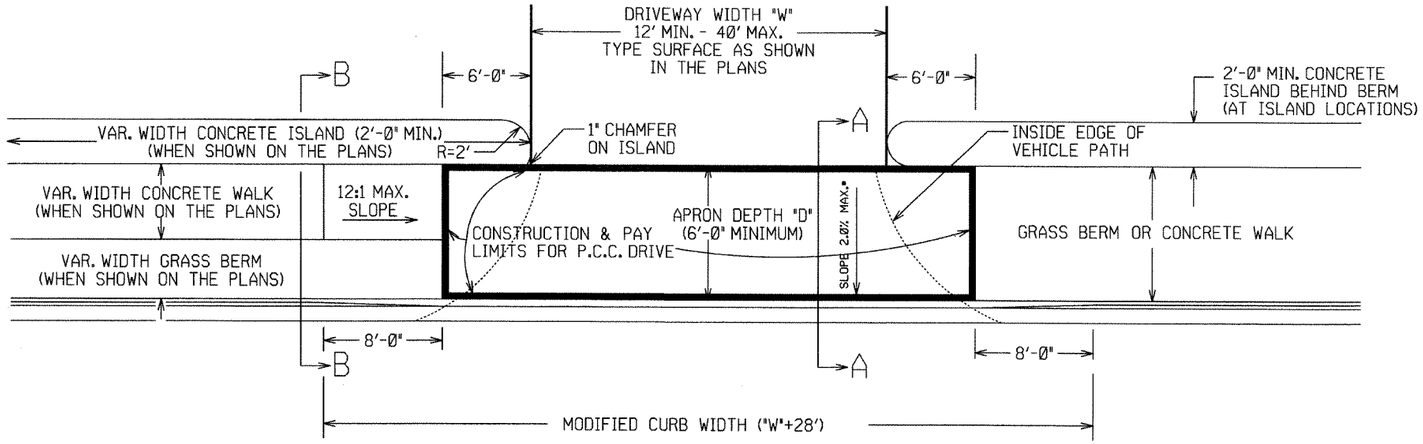
DETAILS OF MODIFIED CURB

DATE	REVISION	DATE FILMED
11-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
11-10-05	ADDED DETAILS OF TYPE E CURBS	
11-16-01	REVISED CONCRETE CURB TYPE B	
11-18-98	REVISED MODIFIED CURB	
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
11-30-89	VARIBLE DEPTH TYPE A & B	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	512-10-2-72

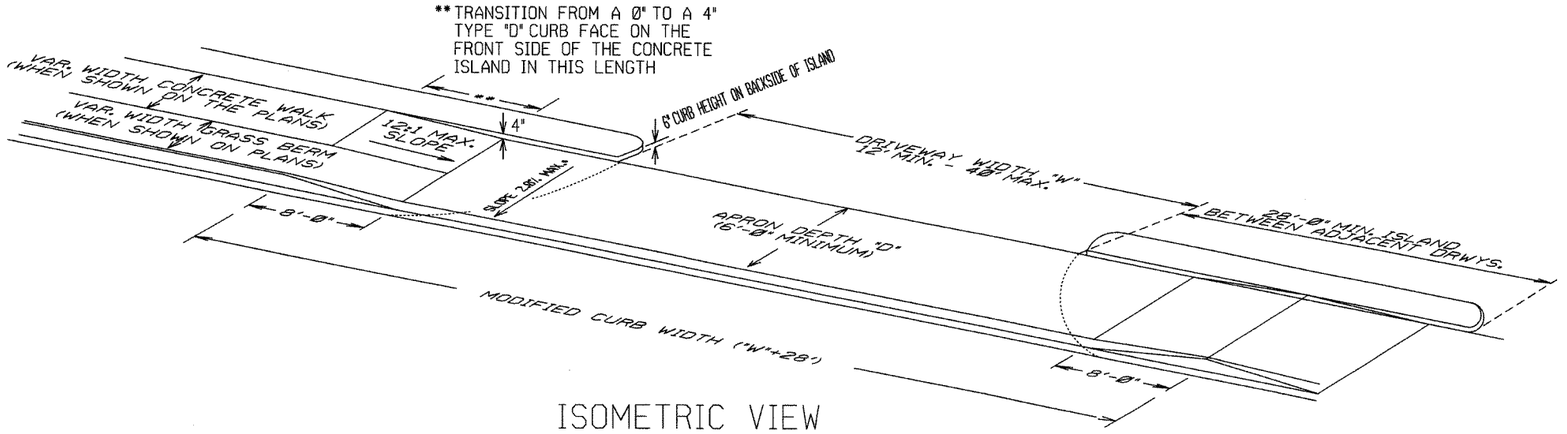
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

STANDARD DRAWING CG-1

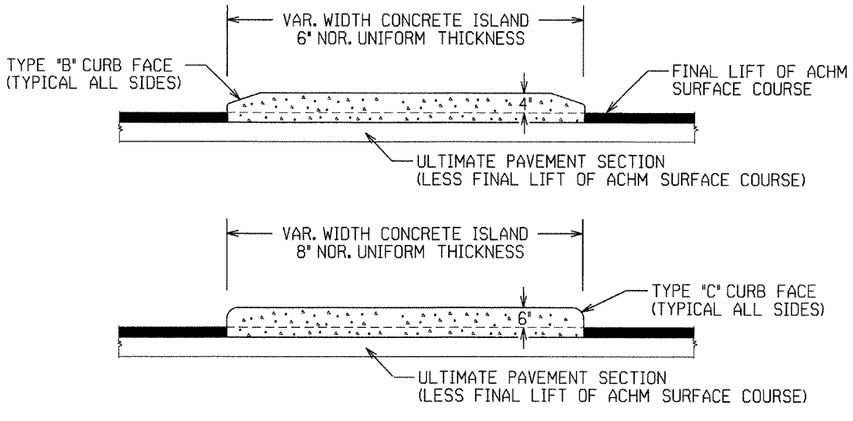


PLAN VIEW

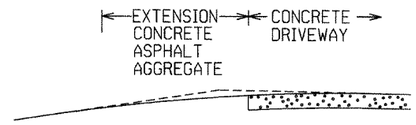


ISOMETRIC VIEW

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



CURBED ISLANDS FOR CHANNELIZATION



EXTENSION TYPICAL SECTIONS

1: CONCRETE - 6" P.C. CONCRETE DRIVEWAY

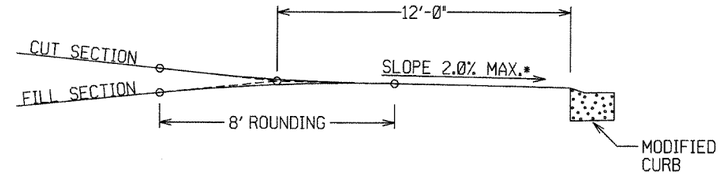
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

3: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
7" AGGREGATE BASE COURSE

4: AGGREGATE - 6" AGGREGATE BASE COURSE

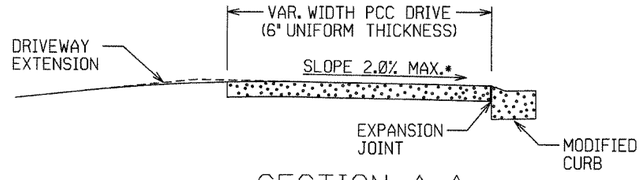
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

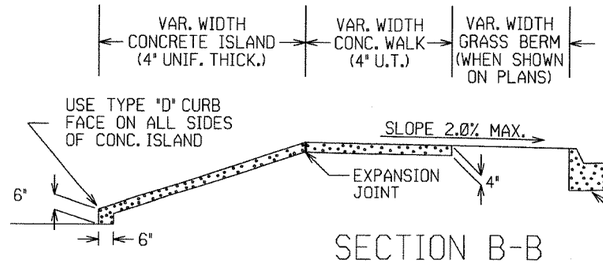


DRIVEWAY VERTICAL ALIGNMENT DETAILS

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



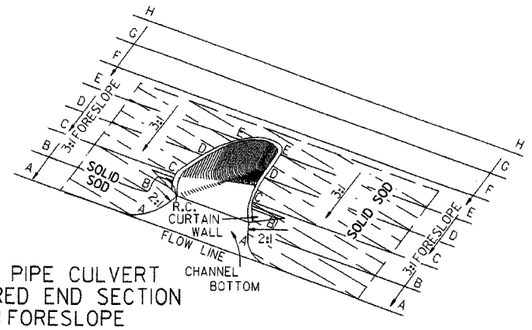
SECTION A-A



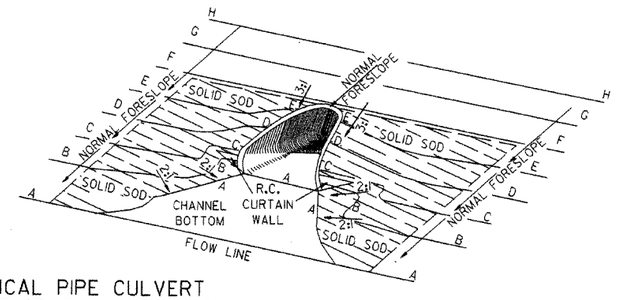
SECTION B-B
CURBED ISLAND BEHIND WALK

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

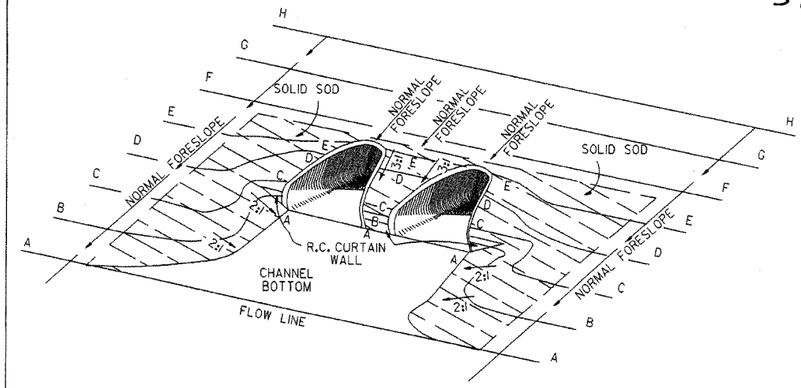
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1



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



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

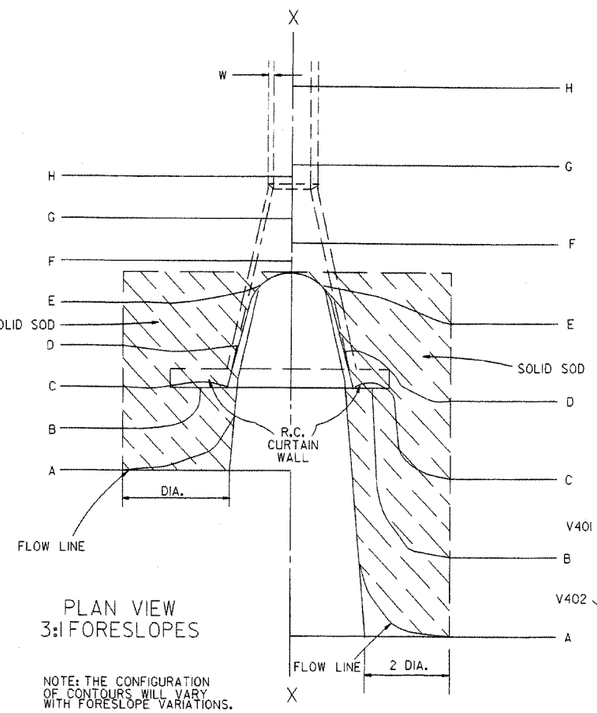
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1½"	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'-9½"	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 H401 L	H401 NO.	H402 L	H402 NO.	V401 L	V401 NO.	V402 L	V402 NO.	DOUBLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	H403 L	H403 NO.	V401 L	V401 NO.	V402 L	V402 NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8½"	12	8"	18
30"	10'-8"	2	2'-4½"	4	1'-11½"	10	8"	12	17'-8"	2	2'-4½"	4	8"	2	1'-11½"	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'-9½"	8	2'-9½"	16	8"	15	23'-8"	2	3'-9½"	8	8"	4	2'-9½"	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'-8½"	12	3'-5½"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5½"	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

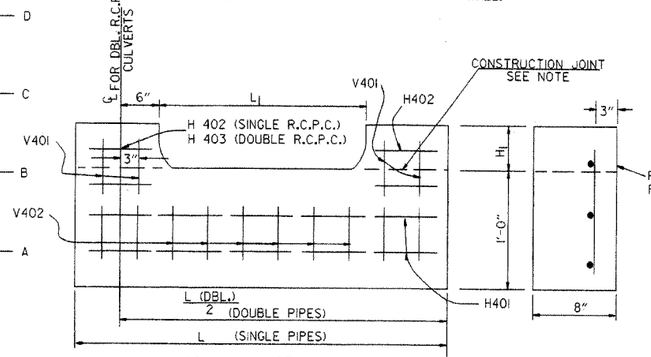
ALL REINFORCING STEEL #4 BARS @ 6" O.C.



PLAN VIEW
3:1 FORESLOPES

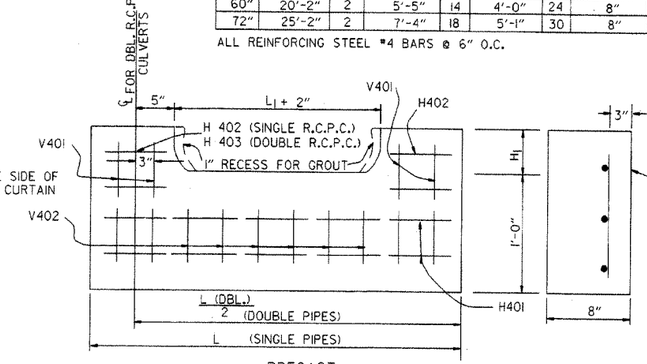
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

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

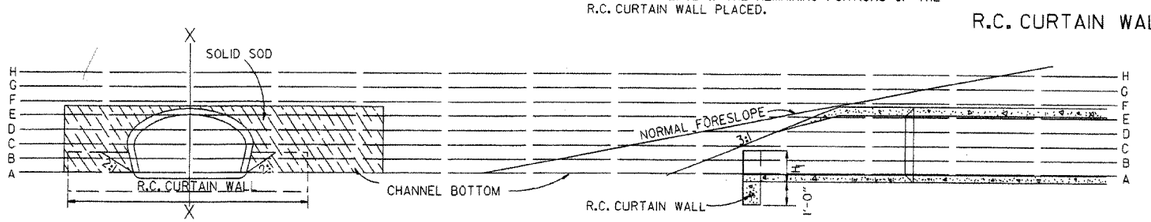
SOLID SODDING

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

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

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
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 W10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW

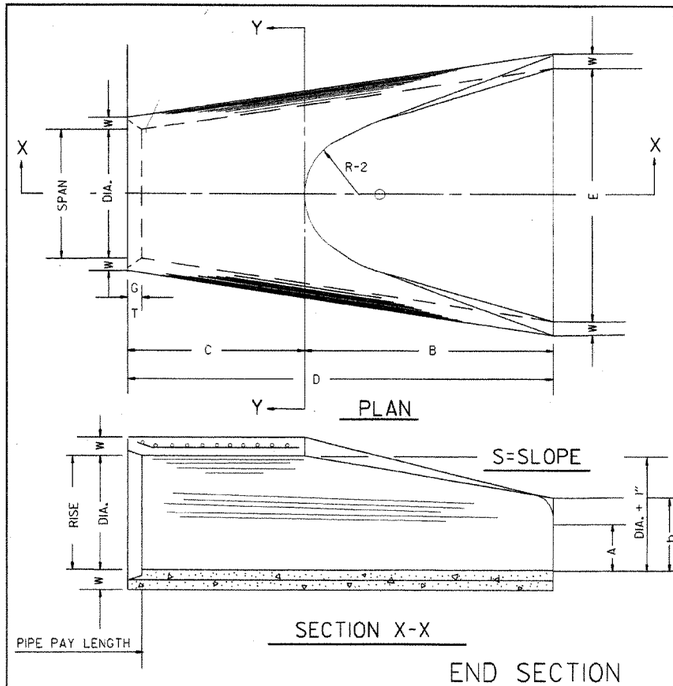
SECTIONAL VIEW "X-X"

DATE	REVISION	FILMED
10-18-96	ADDED NOTE TO SOLID SODDING	10-18-96
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	

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

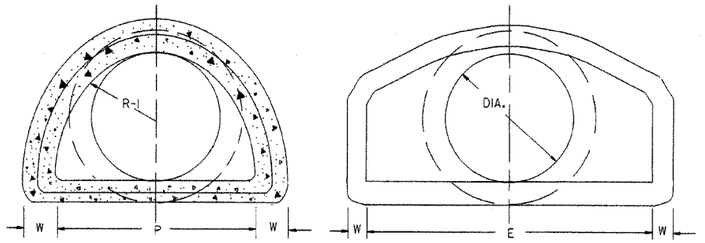
STANDARD DRAWING FES-1



END SECTION
FOR REINFORCED CONCRETE PIPE CULVERTS

TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	3:1	25"	33 3/16"	16 13/16"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4⅝"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	3:1	37"	47 13/16"	24 5/16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅞"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36 11/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 13/16"	38 5/16"	24"	5"	13250	4'-6"

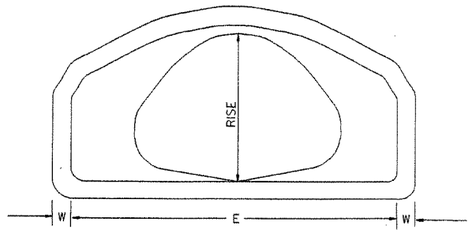


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

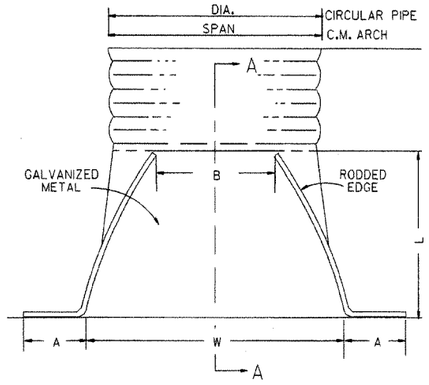
ARCH PIPE

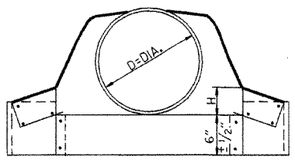
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 13/16"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 13/16"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-11½"	6'-1½"	6'-6"	54⅝"	22"	3½"	2½:1
42	51⅛	51	31⅝	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½:1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70⅝"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/16"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 13/16"	24"	5"	2¼:1

• 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

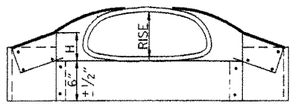




CIRCULAR PIPE

CIRCULAR PIPE

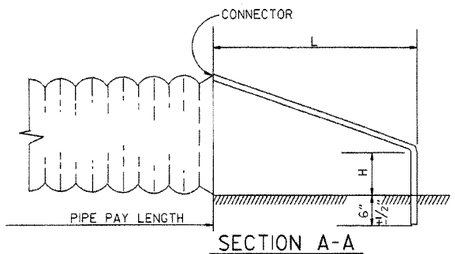
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12	84	102	2:1
60	12	18	33	12	87	114	1¾:1
66	12	18	36	12	87	120	1½:1
72	12	18	39	12	87	126	1 1/3:1



C.M. ARCH PIPE

C.M. ARCH PIPE

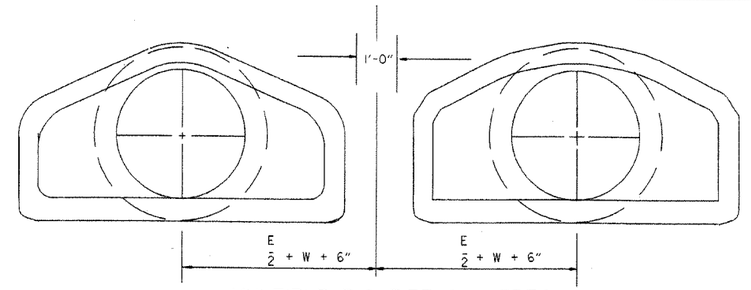
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12
48"	57	38	18	26	12	63	90	2½:1	12
54"	64	43	18	30	12	70	102	2¼:1	12
60"	71	47	18	33	12	77	114	2¼:1	12



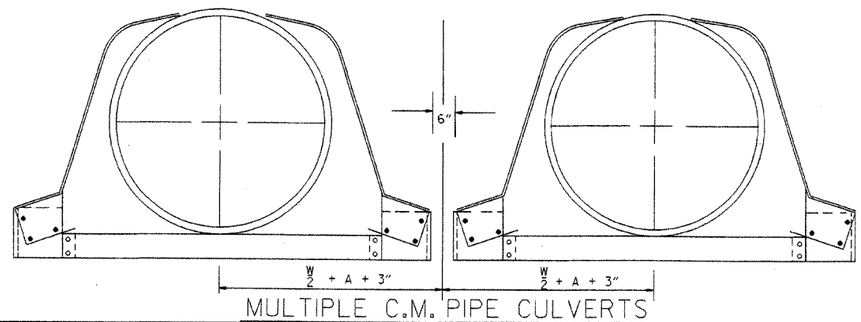
SECTION A-A

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



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

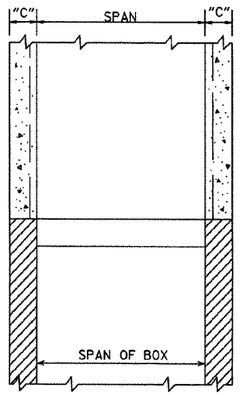
DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74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

ARKANSAS STATE HIGHWAY COMMISION

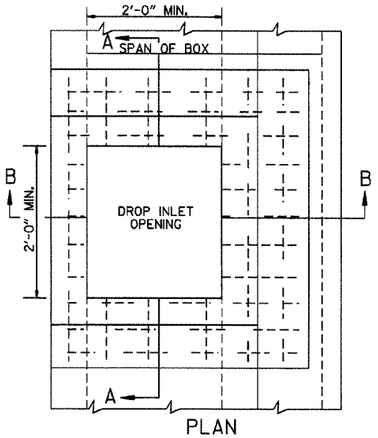
FLARED END SECTION

STANDARD DRAWING FES-2

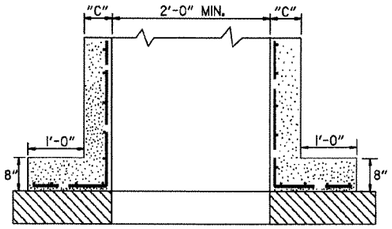
stdfes2.dgn



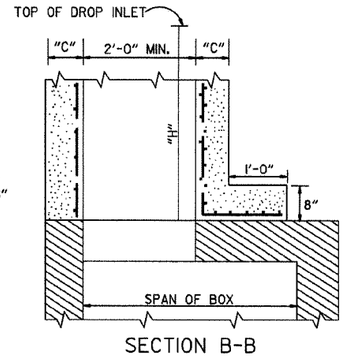
SECTION B-B



PLAN

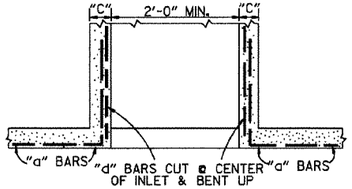


SECTION A-A

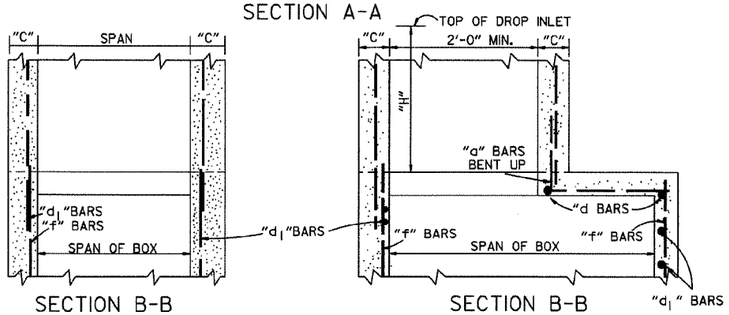


SECTION B-B

METHOD OF CONSTRUCTING DROP INLET



SECTION A-A

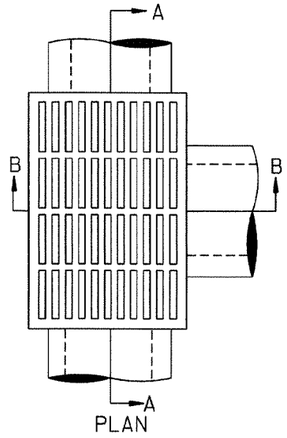


SECTION B-B SECTION B-B

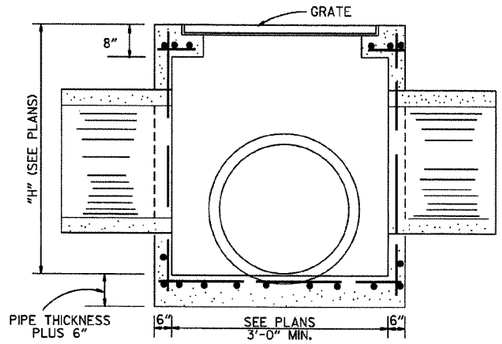
METHOD OF CONSTRUCTING DROP INLET ON EXISTING R.C. BOX CULVERT

METHOD OF CONSTRUCTING DROP INLET ON NEW R.C. BOX CULVERT

NOTE: "C" DIMENSIONS AND REINFORCING BAR SIZES, SHALL CONFORM TO THOSE SHOWN ON STANDARD DRAWING FOR DROP INLET.

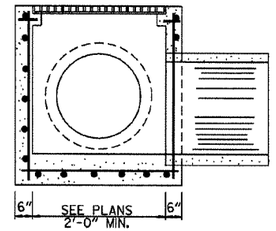


PLAN



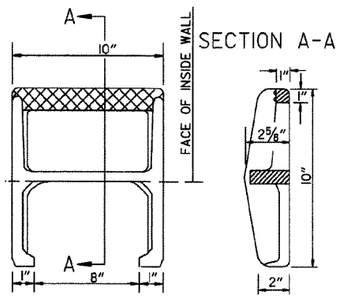
SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE DROP INLET TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.



SECTION B-B

DROP INLET (TYPE E)

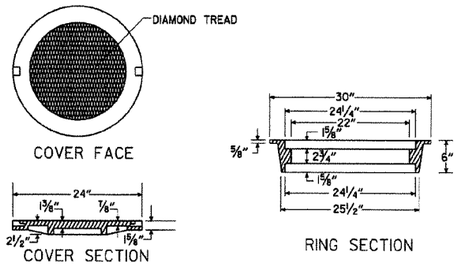


APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

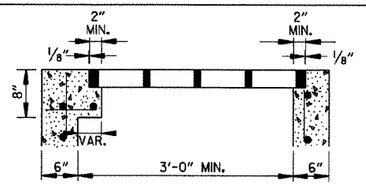
NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

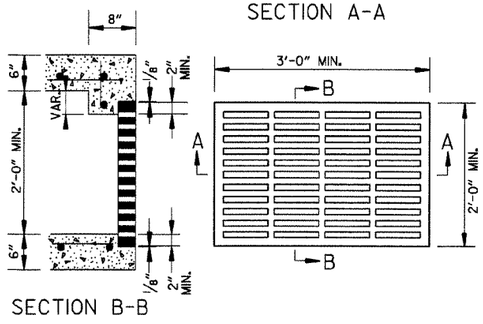


APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



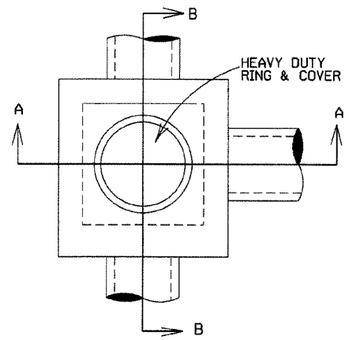
SECTION A-A



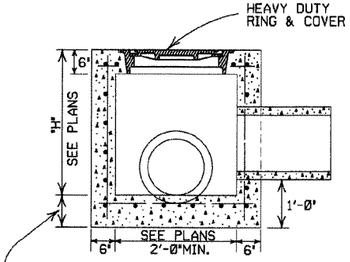
SECTION B-B

APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

GRATE FOR TYPE E DROP INLET

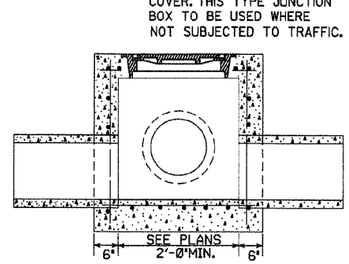


PLAN



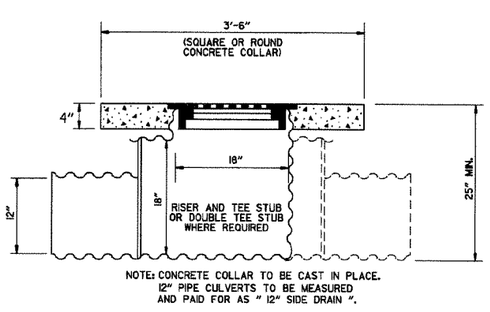
SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE JUNCTION BOX TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.

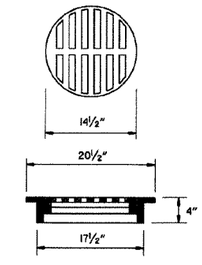


SECTION B-B

JUNCTION BOX (TYPE E)



NOTE: CONCRETE COLLAR TO BE CAST IN PLACE. 12" PIPE CULVERTS TO BE MEASURED AND PAID FOR AS " 12" SIDE DRAIN ".



USE NEENAH R-5901-C OR EQUIVALENT BICYCLE SAFE FRAME AND GRATE

DETAIL OF YARD DRAIN

GENERAL NOTES:

1. ALL EXPOSED CORNERS SHALL BE ¾" CHAMFERED.
2. STEPS SHALL BE INSTALLED ON 16" CENTERS ON ALL INLETS 4'-0" HIGH OR OVER, OR AS APPROVED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL SHALL BE ¾" PREFORMED FIBER.
4. GRATE OR GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105 CLASS 35B. GRATE MAY BE USED WITHOUT FRAME.
5. GRATE AND FRAME SHALL NOT BE PAINTED.
6. GRATE SHALL BE BICYCLE SAFE.
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
9. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
10. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

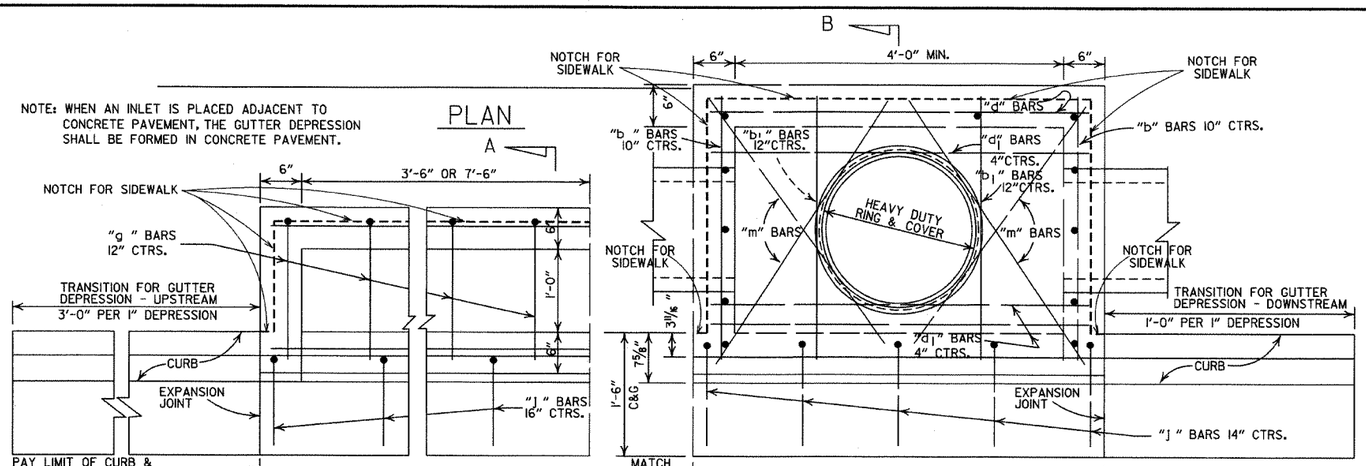
DATE REV.	REVISION	DATE FILMED
11-16-01	ADDED NOTE 10	
1-12-00	REVISED HEAVY DUTY RING & COVER	
7-02-98	CHANGED GRATE DETAIL, DELETED DI(TYPE D), REPLACED RING & COVER W/HEAVY DUTY RING & COVER, ADDED JUNCTION BOX (TYPE E)	
6-26-97	ADDED DIMENSION TO TYPE IV-A	
10-18-96	ADDED DETAIL OF YARD DRAIN	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

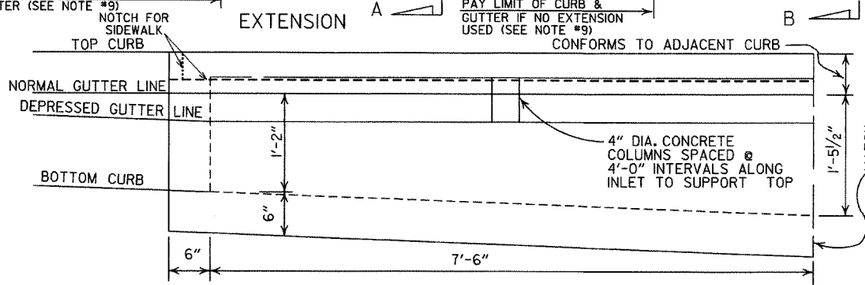
ARKANSAS STATE HIGHWAY COMMISSION

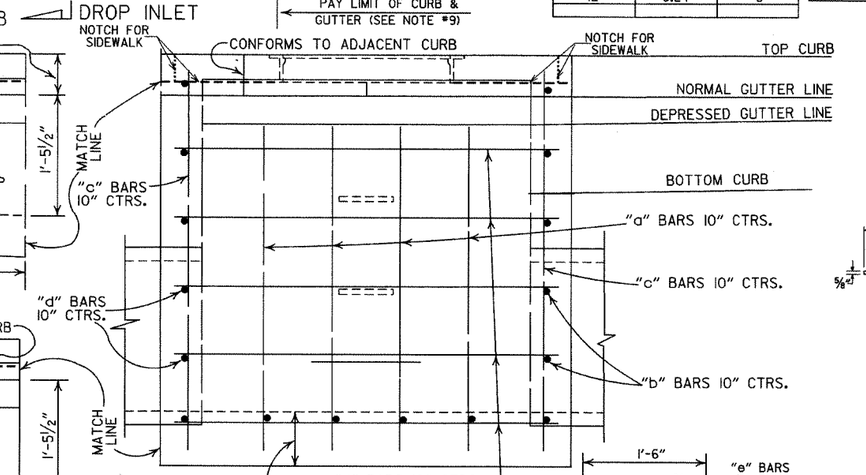
DETAILS OF DROP INLETS & JUNCTION BOXES

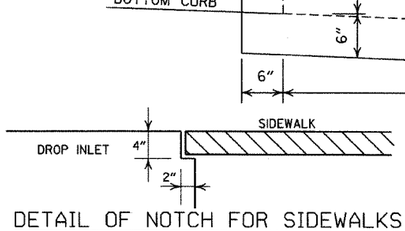
STANDARD DRAWING FPC-9

NOTE: WHEN AN INLET IS PLACED ADJACENT TO CONCRETE PAVEMENT, THE GUTTER DEPRESSION SHALL BE FORMED IN CONCRETE PAVEMENT.

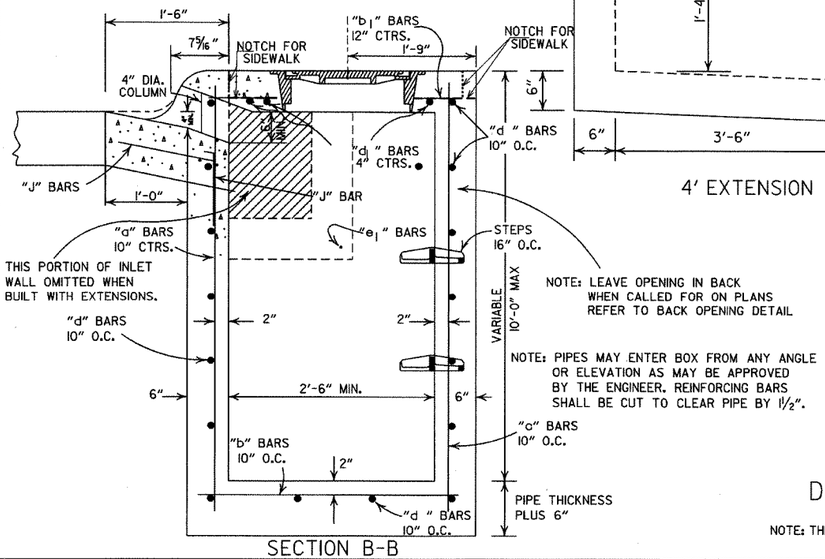




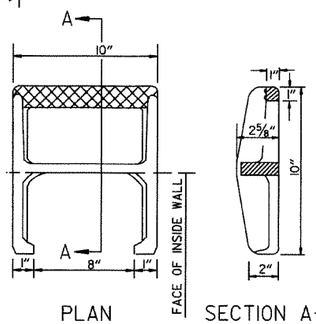




DETAIL OF NOTCH FOR SIDEWALKS



SECTION B-B



PLAN SECTION A-A

DETAIL OF STEP FOR DROP INLET

APPROX. WEIGHT = 11 LBS. (CAST IRON)

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

4'-0" LENGTH DROP INLET

PIPE SIZE	MIN. WIDTH	HEIGHT 5'-0" CLASS A CONC.	HEIGHT 5'-0" REINF. STEEL	PLUS OR MINUS PER LIN. FT. OF HEIGHT CLASS A CONC.	PLUS OR MINUS PER LIN. FT. OF HEIGHT REINF. STEEL
		CU. YDS.	POUNDS	CU. YDS.	POUNDS
18"	2'-6"	1.77	156	0.28	22
24"	2'-6"	1.79	156	0.28	22
30"	3'-2"	2.39	205	0.30	26
36"	3'-8"	2.63	236	0.32	28
42"	4'-4"	2.95	250	0.34	30
48"	4'-10"	3.21	265	0.36	32

DROP INLET EXTENSION

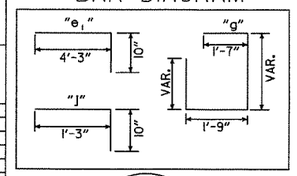
4'-0" CLASS A CONC.	4'-0" REINF. STEEL	8'-0" CLASS A CONC.	8'-0" REINF. STEEL
CU. YDS.	POUNDS	CU. YDS.	POUNDS
0.58	38	0.87	72
DEDUCT FROM QUANTITY COMPUTED FOR EACH EXTENSION ADDED.			
0.04	3		

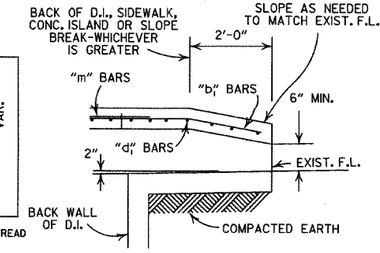
NOTE: QUANTITIES ARE APPROXIMATE AND ARE SHOWN FOR BIDDER INFORMATION ONLY.

DEDUCT FROM QUANTITY COMPUTED FOR EACH PIPE ENTERING INLET

INSIDE DIA. PIPE	CLASS A CONC.	REINF. STEEL
INCHES	CU. YDS.	POUNDS
18	0.05	2
24	0.09	3
30	0.13	4
42	0.24	8

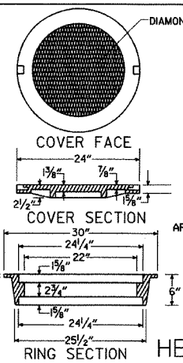
BAR DIAMETER





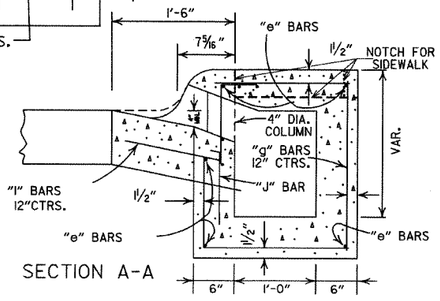
BACK OPENING

WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE C).



APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



SECTION A-A

GENERAL NOTES:

1. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OF AS APPROVED BY THE ENGINEER.
3. ALL REINF. BARS SHALL BE #4 AND HAVE 1½" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. THIS DROP INLET MAY BE CONSTRUCTED ON NEW OR EXISTING R.C. BOX CULVERT AS SHOWN ON F.P.C.-9.
6. WHEN PLANS CALL FOR DROP INLET OVER 10'-0" HIGH, FLOOR AND WALLS SHALL BE CONSTRUCTED AS SHOWN FOR TYPE "RM" DROP INLET (F.P.C.-9D).
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
9. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
10. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
11. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
12. 4"x2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

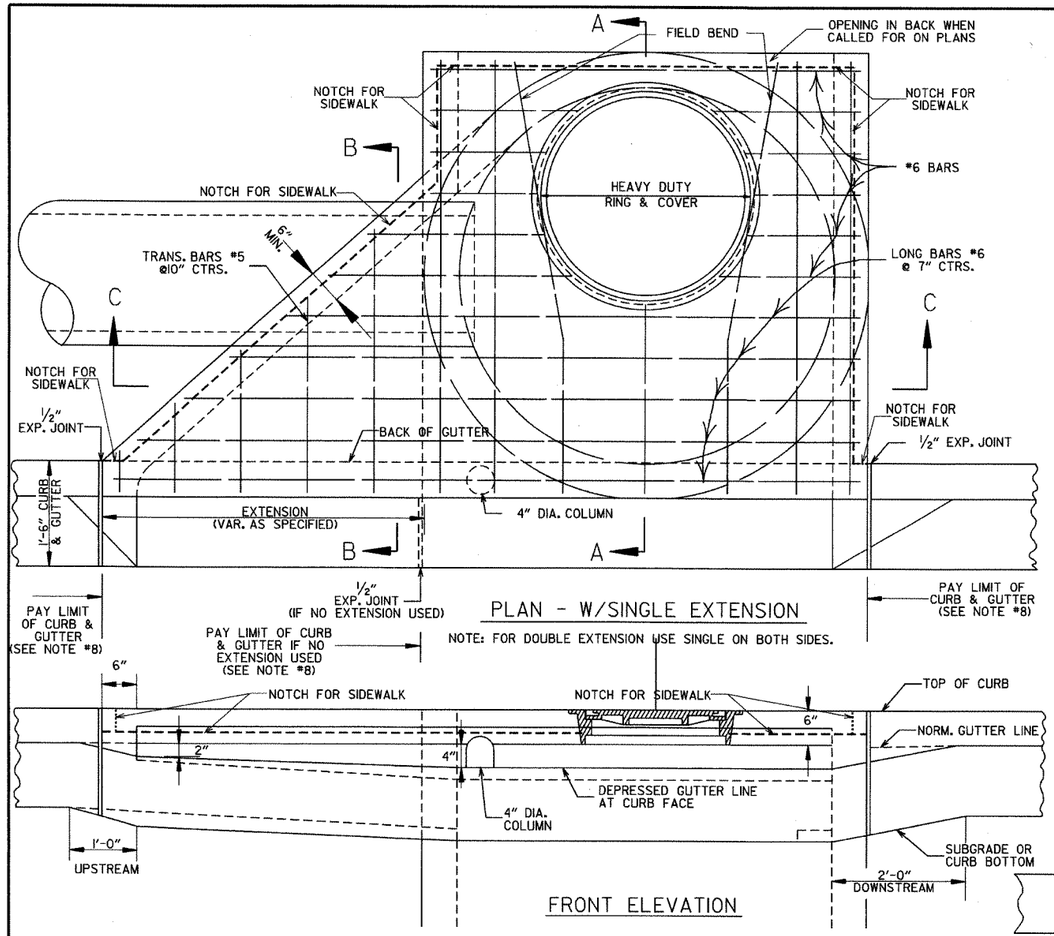
DATE REV.	REVISION	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13; REVISED SECTION B-B	
1-12-00	CORRECTED DIMENSION ON SECTION B-B & REVISED RING & COVER	
5-13-99	ADDED DETAIL OF NOTCH FOR SIDEWALKS	
7-02-98	REPLACED RING & COVER W/HEAVY DUTY RING & COVER ADDED NOTES 9,10,&11	
10-18-96	CORRECTED SPELLING	
4-26-96	ADDED NOTE 8 & REVISED (4')(8') EXTENSION TITLES	10-18-96
4-1-93	REVISED BACK OPENING & NOTE	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS

(TYPE C)

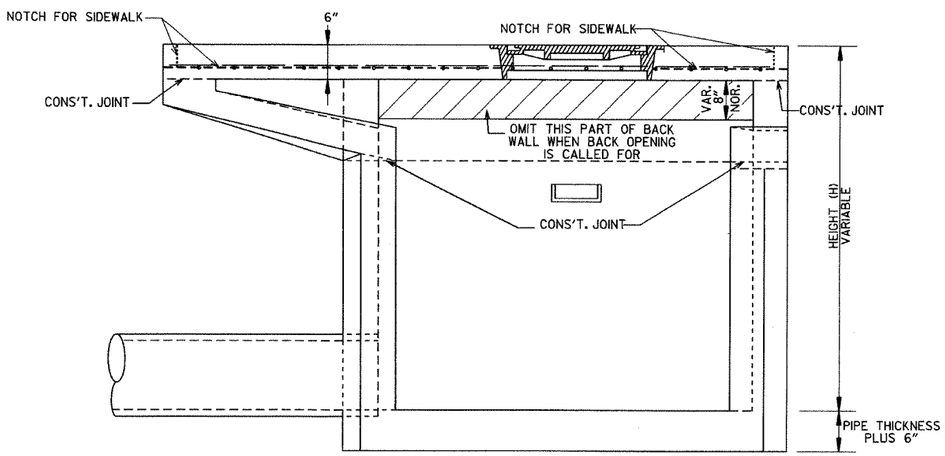
STANDARD DRAWING FPC-9E



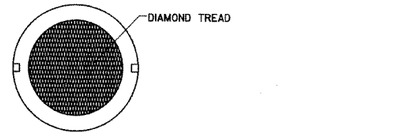
PLAN - W/SINGLE EXTENSION

NOTE: FOR DOUBLE EXTENSION USE SINGLE ON BOTH SIDES.

FRONT ELEVATION



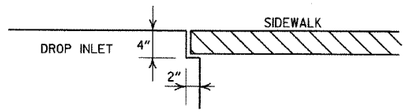
SECTION C-C



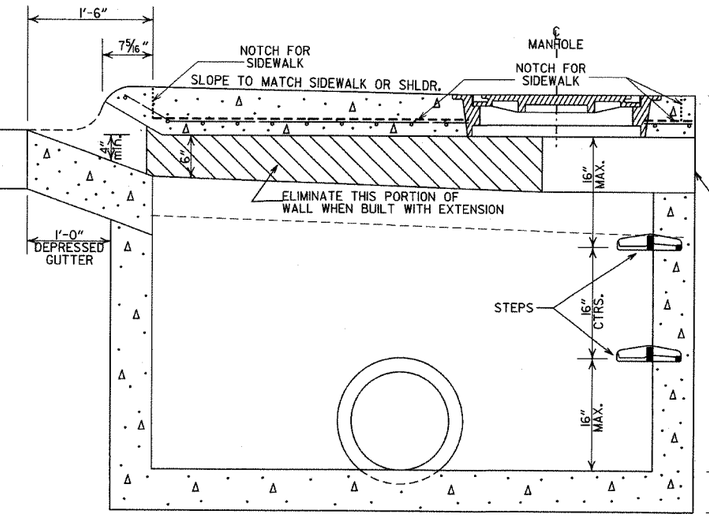
APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.

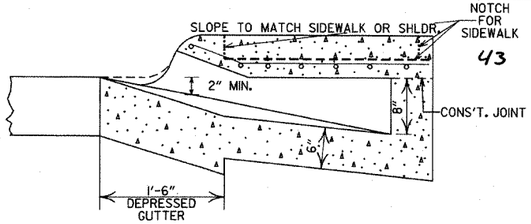


DETAIL OF NOTCH FOR SIDEWALKS

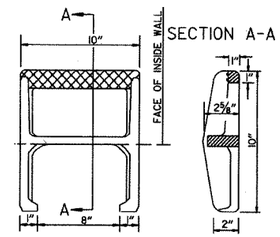


SECTION A-A

8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13	
1-12-00	REVISED HEAVY DUTY RING & COVER	
5-13-99	ADDED NOTCH DETAIL FOR SIDEWALKS	
7-02-98	REP. NOTE 8, REM. PLAN DET., REV. PICTURE FOR NEW RING & COVER, ADDED HEAVY DUTY RING & COVER AND DETAIL OF STEP FOR DROP INLET	
4-26-96	ADDED NOTE 11 ADJ. OPENING DIMENSION	
10-12-95	CORRECTED #6 BAR SPACING	
7-20-95	CORRECTED DIAMETER OF D.I. IN BOX	
2-2-95	TYPE X, TO MO (OPEN BACK DETAIL)	
11-1-94	REVISED GENERAL NOTES	11-3-94
4-1-93	REV. BACK OPEN DETAIL & NOTE	4-1-93
8-15-91	REVISED NOTES 11,12 & ADDED BK.OPEN DETAIL	8-15-91
11-30-89	ADDED NOTE NO. 12	11-30-89
4-24-89	ADDED NOTE & MINIMUM WALL THICKNESS	543-A-4-24-89
7-15-88	ADDED EXTEND NOTE TO SECTION A-A	639-7-15-88
1-14-87	MODIFIED WALL THICKNESS	783-1-14-87
6-12-87	ISSUED	4-6-2-87
DATE	REVISIONS	DATE FILMED



SECTION B-B

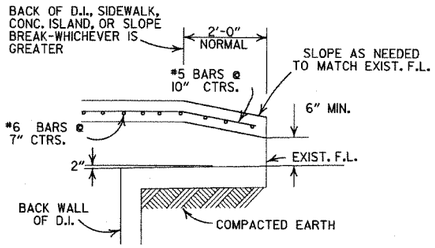


APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET



BACK OPENING

WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE MO).

GENERAL NOTES:

1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OR AS DIRECTED BY THE ENGINEER.
3. ALL REINFORCING BARS SHALL BE GRADE 60 AND HAVE MIN. 1 1/2" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. 4" DIA. COLUMNS SPACED AT MAX. 4'-0" INTERVALS SHALL BE INSTALLED ALONG INLET AND EXTENSION TO SUPPORT TOP.
6. BASE AND INLET WALLS SHALL BE CAST MONOLITHICALLY.
7. THE THROAT SHALL BE CAST INTEGRALLY WITH THE GUTTER.
8. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
9. PIPES MAY ENTER DROP INLET FROM ANY ANGLE OR ELEVATION AS MAY BE APPROVED BY THE ENGINEER.
10. APPROPRIATE SIZE TYPE C DROP INLETS MAY BE SUBSTITUTED FOR TYPE MO DROP INLETS AS APPROVED BY THE ENGINEER. PAYMENT TO BE AS DROP INLET (TYPE MO).
11. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
12. 4"x2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

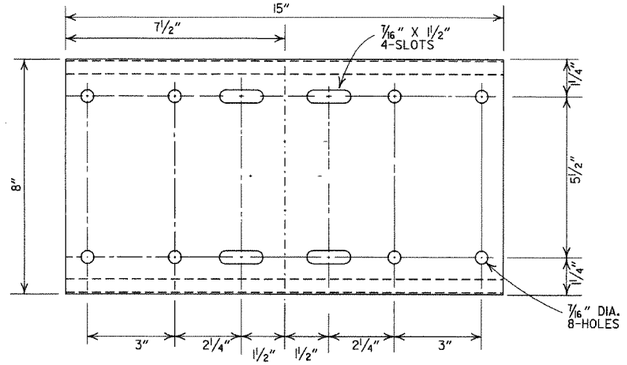
LEAVE OPENING IN BACK WHEN CALLED FOR ON PLANS REFER TO BACK OPENING DETAIL

DIA. OF D.I.	DIA. OF OUTLET PIPE	MINIMUM WALL THICKNESS	
		CAST IN PLACE	PRECAST
4' I.D.	12" THRU 27"	6"	5"
5' I.D.	30" THRU 42"	8"	6"
6' I.D.	48" THRU 54"	8"	7"

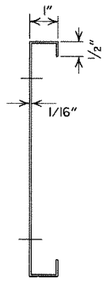
ARKANSAS STATE HIGHWAY COMMISSION

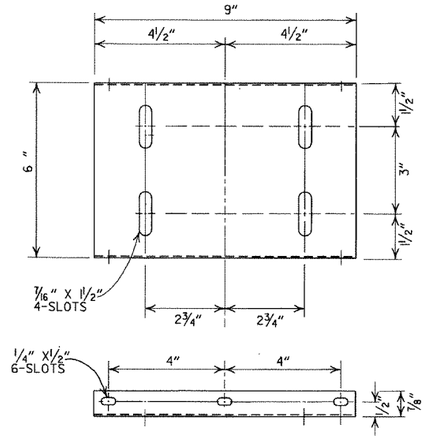
DETAILS OF DROP INLET (TYPE MO)

STANDARD DRAWING FPC-9M

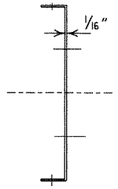


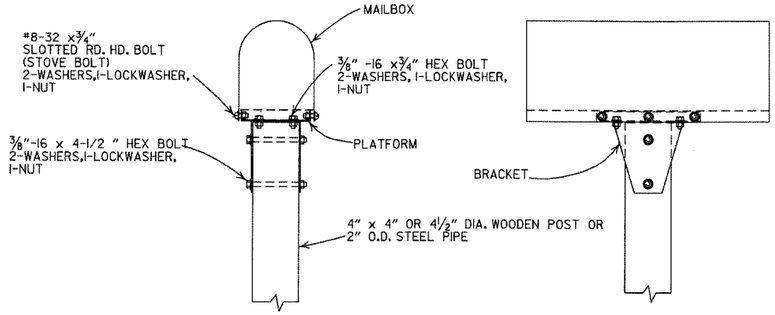
SHELF



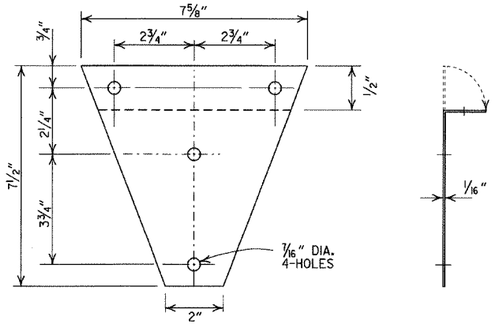


PLATFORM





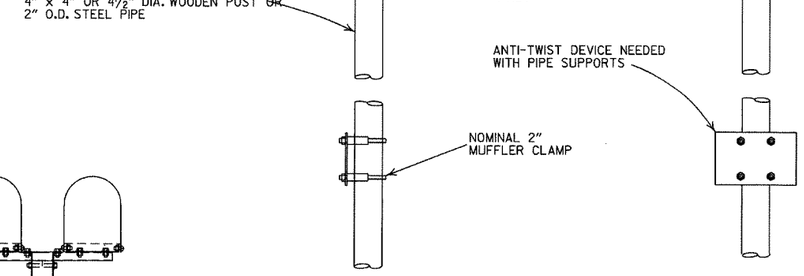
SINGLE INSTALLATION



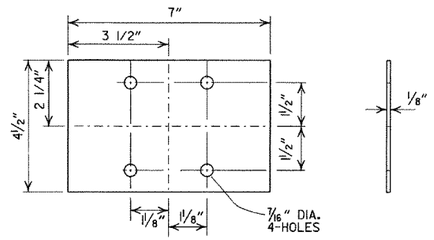
BRACKET

GENERAL NOTES

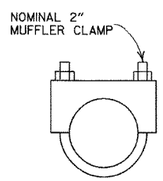
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF 3/4" 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.



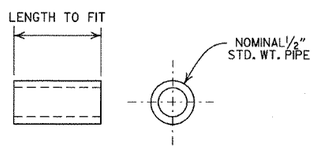
DOUBLE INSTALLATION



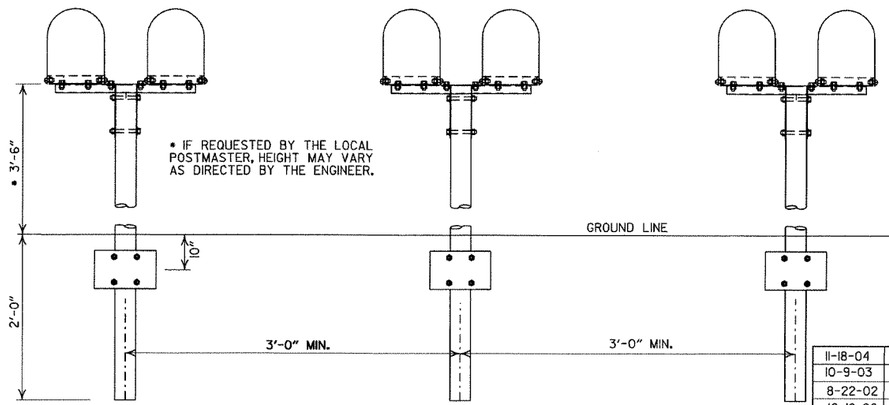
ANTI-TWIST PLATE



CLAMP



SPACER



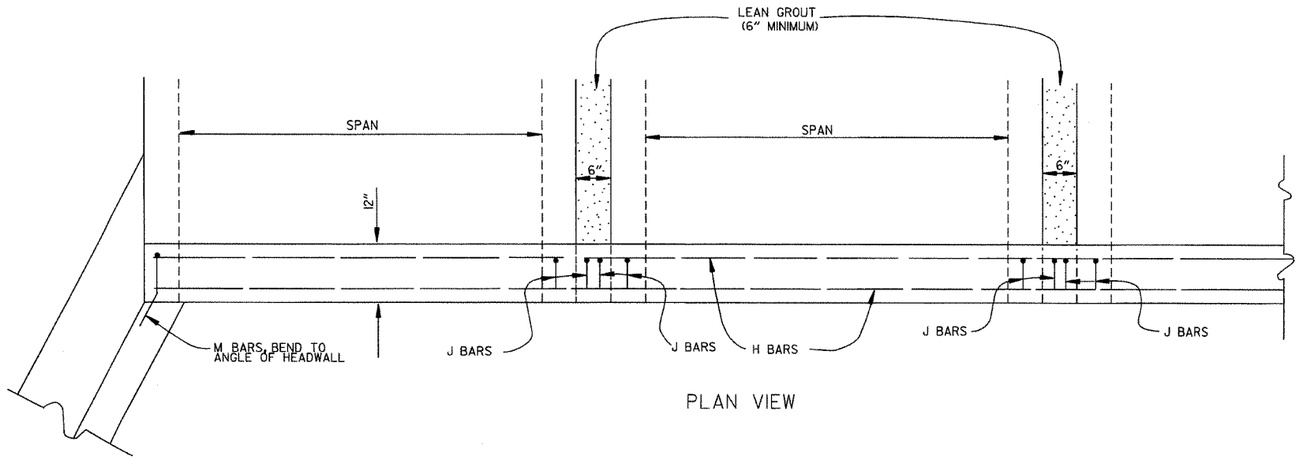
SPACING FOR MULTIPLE POST INSTALLATION

DATE	FILMED	REVISION
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	10-1-92	ADJUSTED DIMENSIONS OF STEEL POSTS
7-15-88	20-7-15-88	ISSUED

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

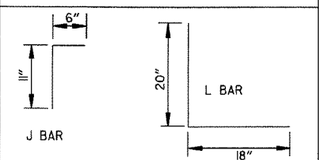
STANDARD DRAWING MB-1



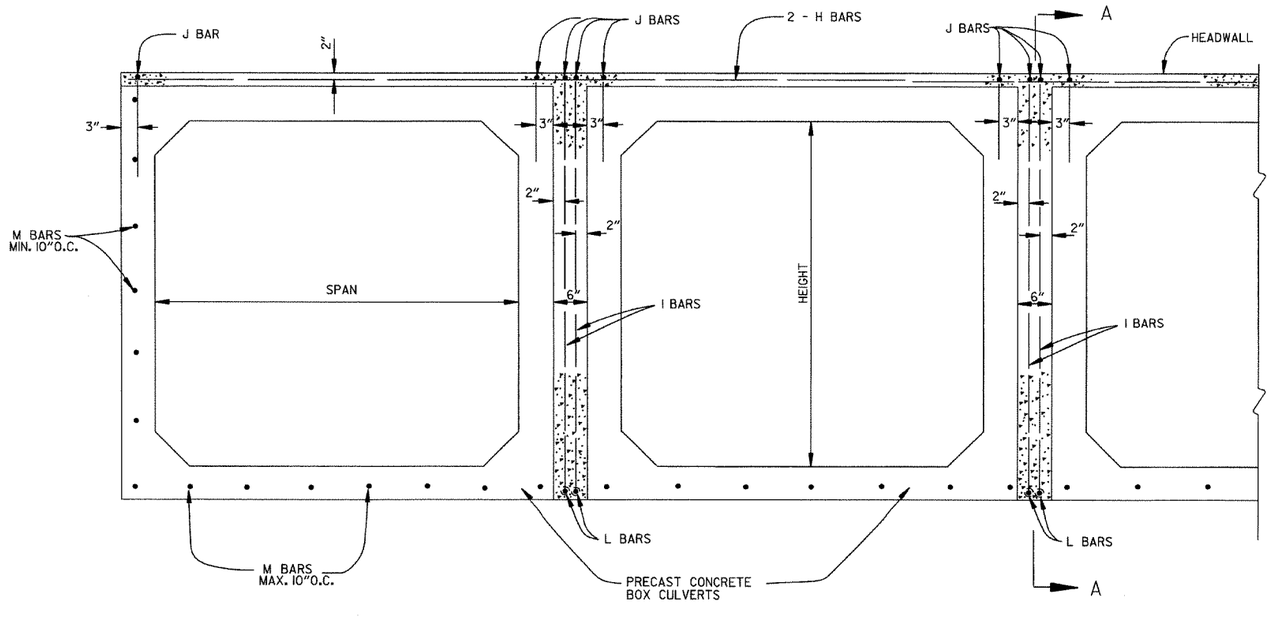
PLAN VIEW

BAR LIST

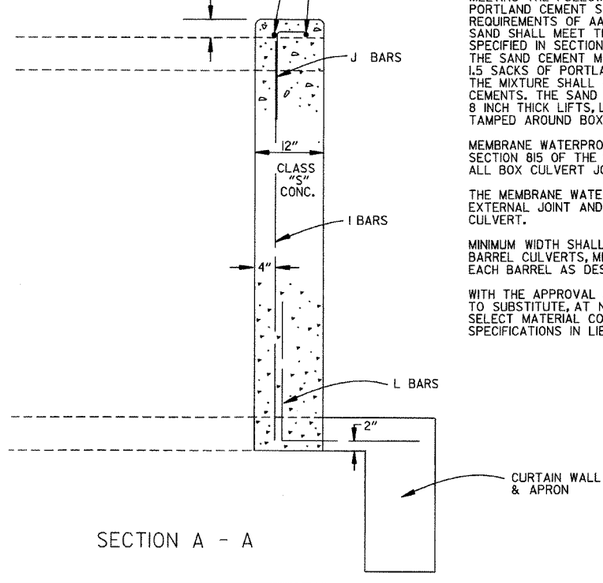
BAR	NO.	SIZE	LENGTH	BAR BENDING DIAGRAM
H	2	#4	•	
I	•	#4	•	
J	•	#4	1'-5"	
L	•	#4	3'-2"	
M	•	#4	1'-8"	



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



END VIEW



SECTION A - A

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 STANDARD 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, 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 INCH 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 1FOOT DOWN THE SIDES OF THE CULVERT.

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
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

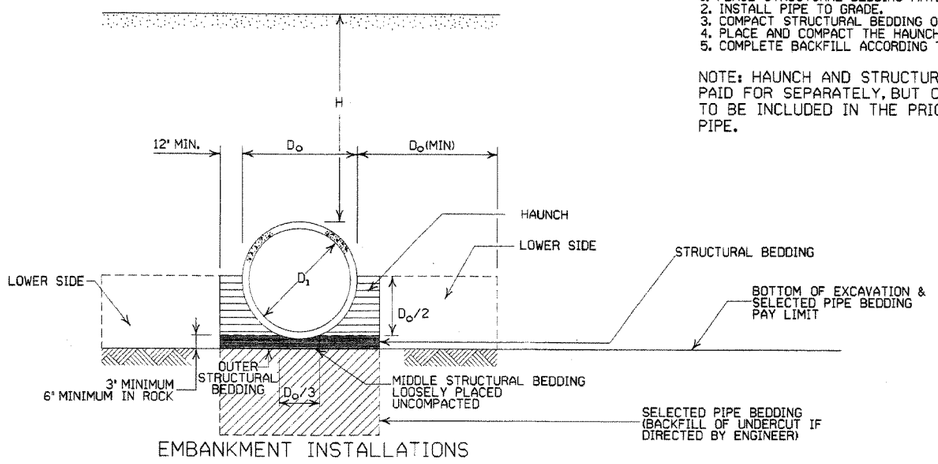
PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-1

CONSTRUCTION SEQUENCE

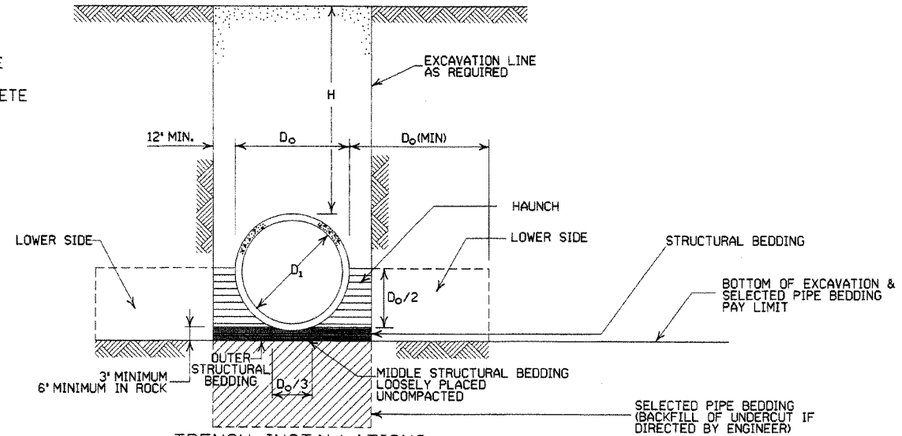
1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE MIDDLE OF THE PIPE.
5. COMPLETE BACKFILL ACCORDING TO SPECIFICATIONS.

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



EMBANKMENT INSTALLATIONS

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



TRENCH INSTALLATIONS

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

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	*SPAN		* RISE	
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43¾	44	26⅝	27
42	51⅛	51	31 5/16	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77¼	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

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

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

MAXIMUM HEIGHT OF FILL OVER R.C. PIPE CULVERTS

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

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

GENERAL NOTES

1. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
2. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
4. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE.
5. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
6. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
7. NOT MORE THAN ONE LIFTING HOLE MAY BE PROVIDED IN CONCRETE PIPE TO FACILITATE HANDLING. HOLE MAY BE CAST IN PLACE, CUT INTO THE FRESH CONCRETE AFTER FORMS ARE REMOVED, OR DRILLED. THE HOLE SHALL NOT BE MORE THAN TWO INCHES IN DIAMETER OR TWO INCHES SQUARE. CUTTING OR DISPLACEMENT OF REINFORCEMENT WILL NOT BE PERMITTED. SPALLED AREAS AROUND THE HOLE SHALL BE REPAIRED IN A WORKMANLIKE MANNER. LIFTING HOLE SHALL BE FILLED WITH MORTAR, CONCRETE, OR OTHER METHOD AS APPROVED BY THE ENGINEER.
8. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS 'STRUCTURAL BEDDING' ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS 'SELECTED PIPE BEDDING.'
9. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS THE HAUNCH), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF 'SELECTED PIPE BACKFILL.'

- LEGEND -

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

DATE	REVISION	DATE FILMED
5-18-00	REVISED TYPE 3 BEDDING & ADDED NOTE	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND) H-20 LOADING

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

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

•• WHERE THE STANDARD 2 ⅔'× ½' CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER A 3" × 1" OR 5" × 1" CORRUGATION PIPE OF THE SAME DIAMETER MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAGE AND CORRUGATION

CORRUGATED ALUMINUM PIPE (ROUND) H-20 LOADING

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

EQUIVALENT METAL THICKNESSES AND GAUGES

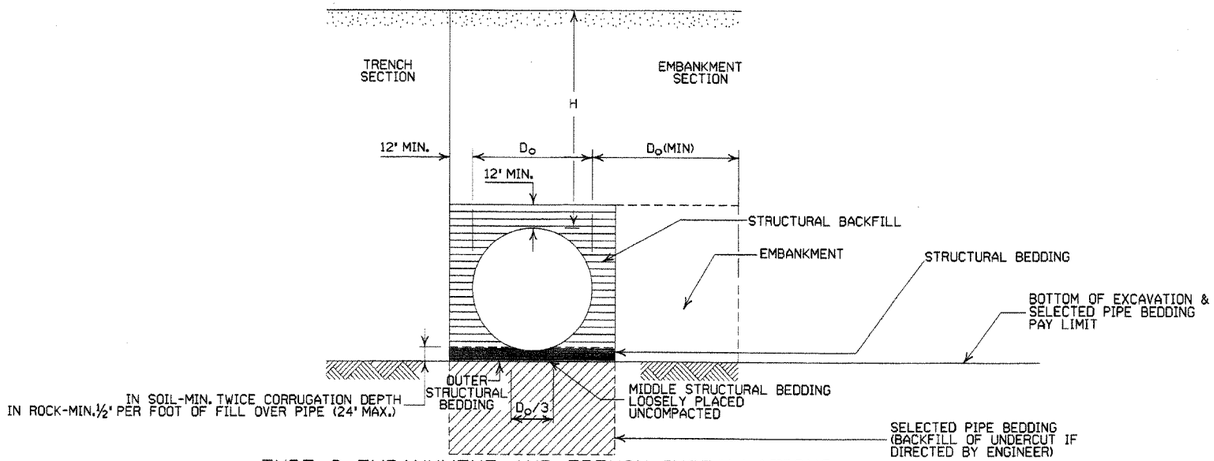
METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8
0.188	0.1838		7
0.218	0.2145		5
0.249	0.2451		3
0.280	0.2758		1

CORRUGATED METAL PIPE ARCHES (H - 20 LOADING)

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

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

•• WHERE THE STANDARD 2 ⅔ × ½' CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A 3" × 1" OR 5" × 1" CORRUGATION PIPE OF THE SAME DIAMETER MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAUGE AND CORRUGATION.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

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

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

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

GENERAL NOTES

1. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
2. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
4. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE.
5. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
6. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
7. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS 'STRUCTURAL BEDDING' ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS 'SELECTED PIPE BEDDING.'
8. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF 'SELECTED PIPE BACKFILL.'

- LEGEND -

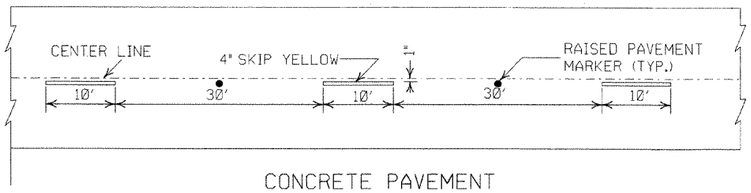
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL
ELONG. = ELONGATED
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)

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

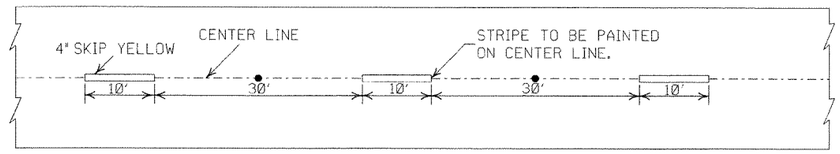
ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

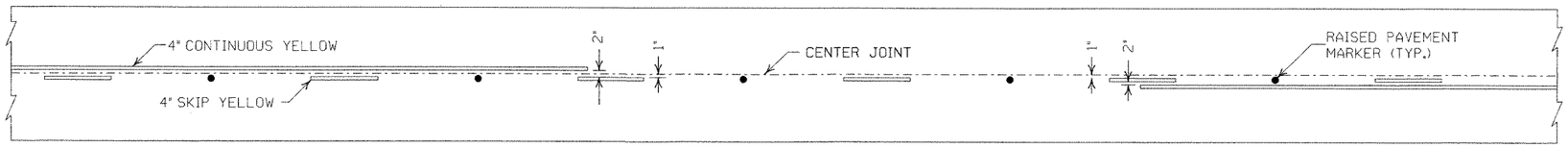


CONCRETE PAVEMENT

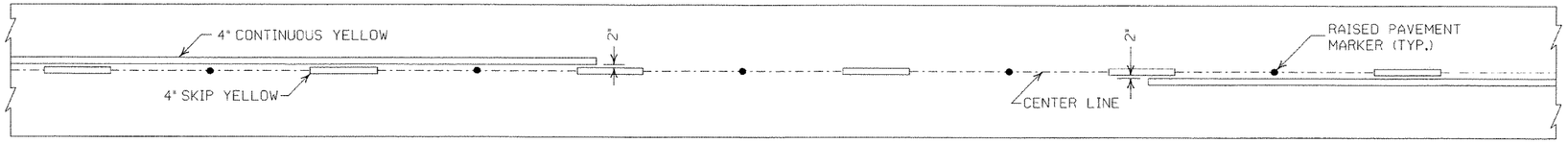


ASPHALT PAVEMENT

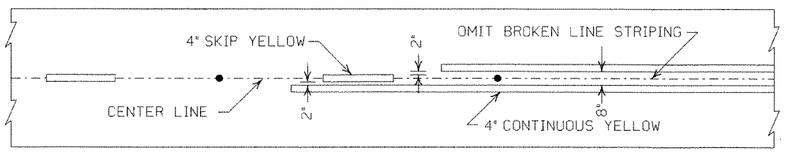
BROKEN LINE STRIPING



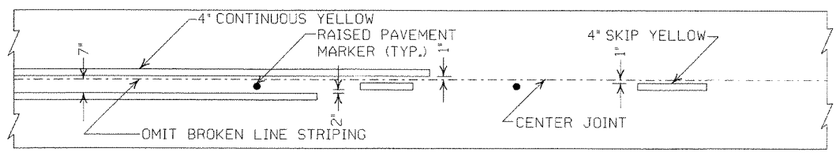
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

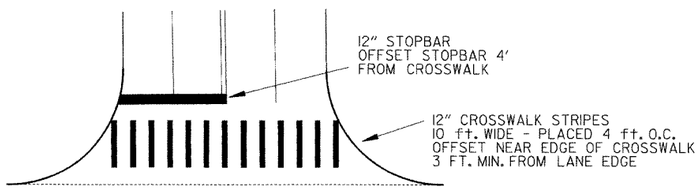


ASPHALT PAVEMENT



CONCRETE PAVEMENT

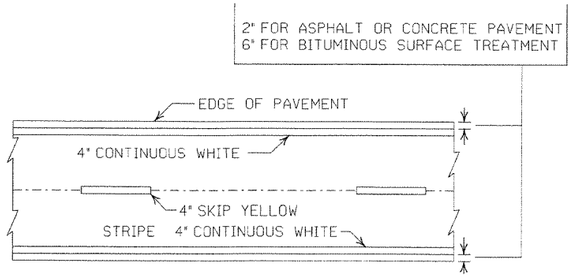
STRIPING AT ADJACENT NO PASSING LANES



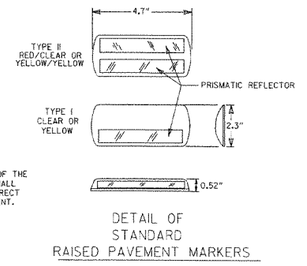
CROSSWALK AND STOPBAR DETAILS

NOTES:

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



PAVEMENT EDGE LINE MARKING



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

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

GENERAL NOTES:

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

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

NOTE:

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

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

ARKANSAS STATE HIGHWAY COMMISSION

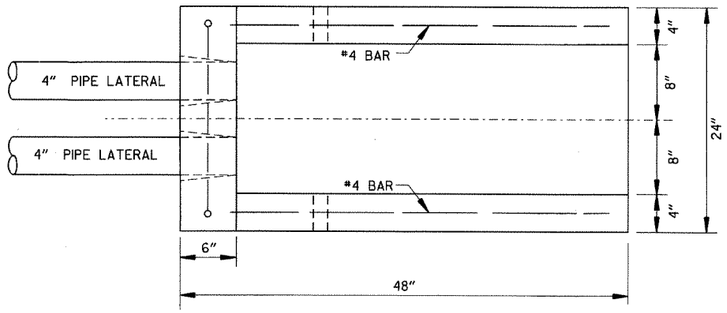
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

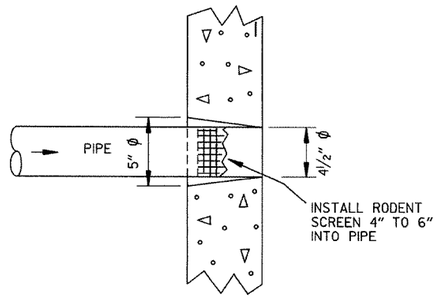
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

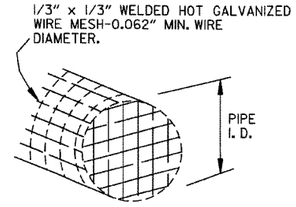
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



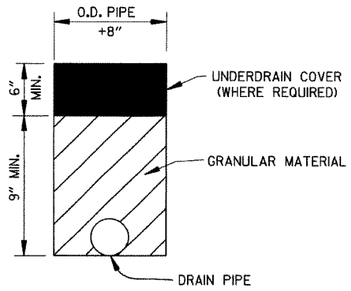
PLAN VIEW

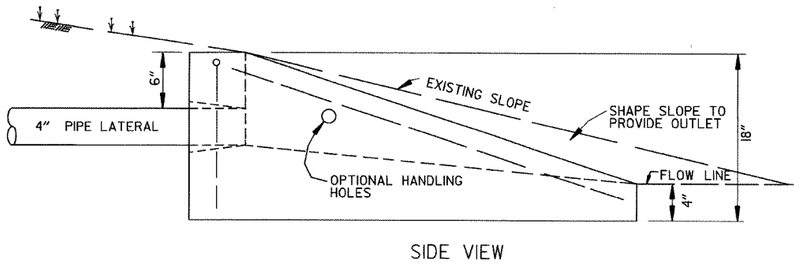


DETAIL OF HOLE FOR 4" PIPE

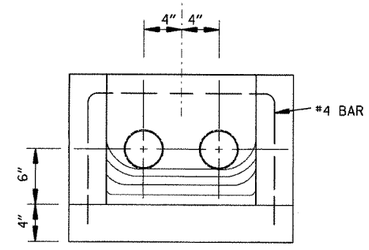


DETAIL OF RODENT SCREEN

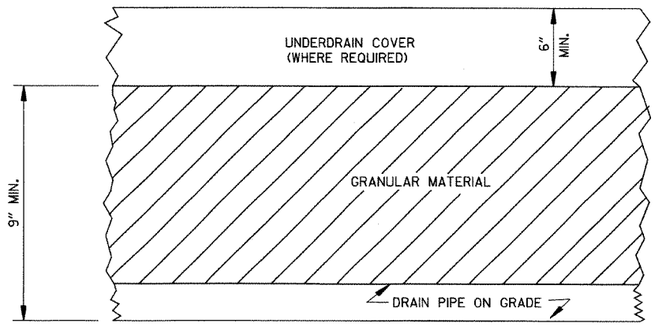




SIDE VIEW

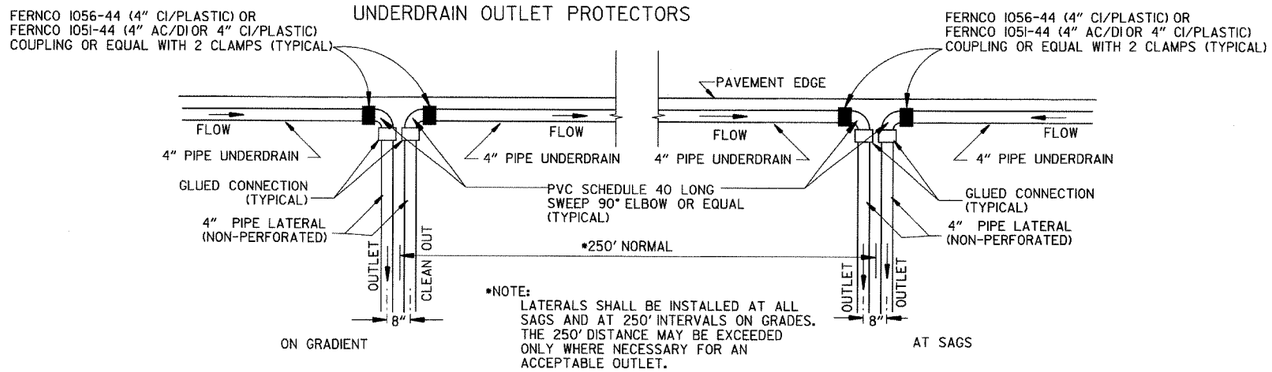


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

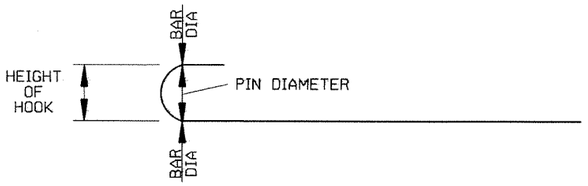
STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

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

BAR SIZE	PIN DIAMETER	HOOK EXTENSION "K"
3	2¼"	4"
4	3 "	4½"
5	3¾"	5"
6	4½"	6"
7	5¼"	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 2¾ 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

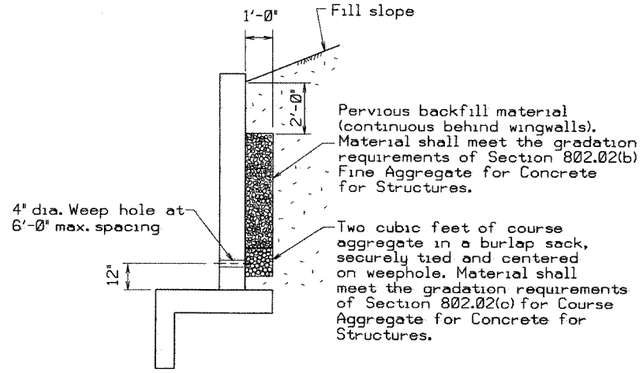
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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 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 DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".

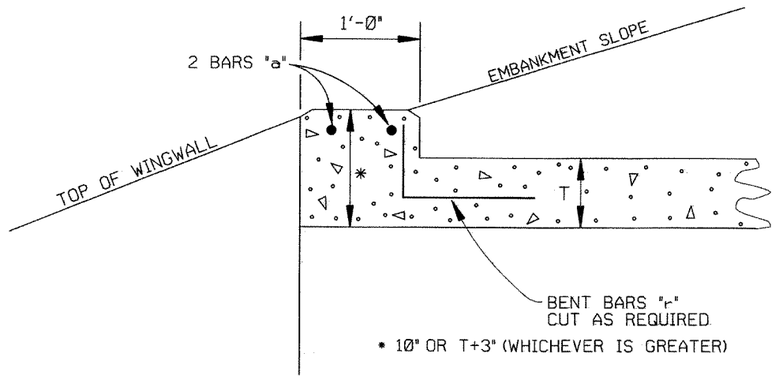
MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.

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 ½ INCH.

WEEP HOLES IN WINGWALLS: THE MAXIMUM HORIZONTAL SPACING OF WEEP HOLES IN WINGWALLS SHALL BE 6'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND PLACED 12" ABOVE TOP OF 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.

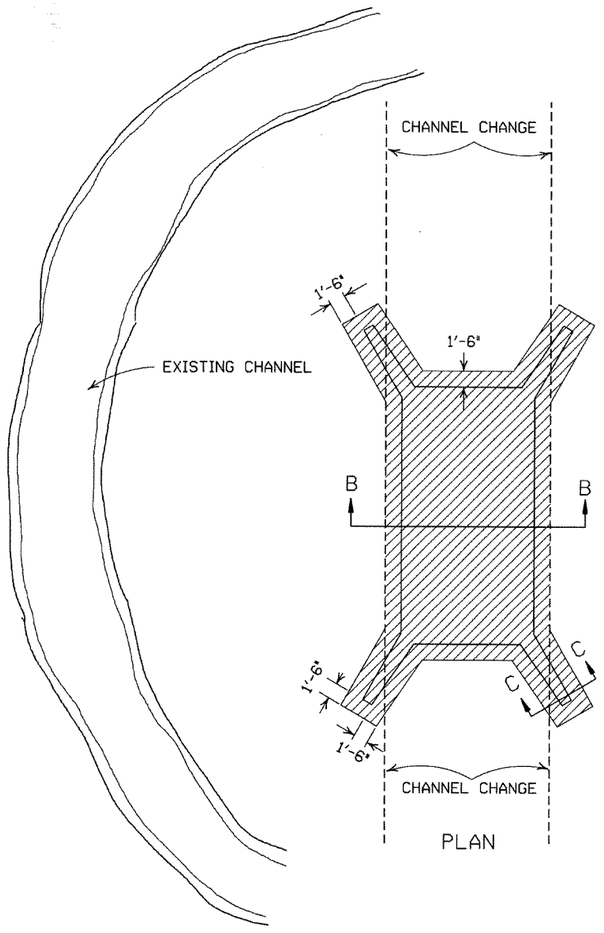
R.C. BOX CULVERT HEADWALL MODIFICATIONS

DATE	REVISION	DATE FILMED
05-25-06	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	

ARKANSAS STATE HIGHWAY COMMISSION

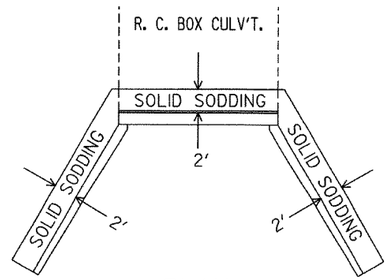
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

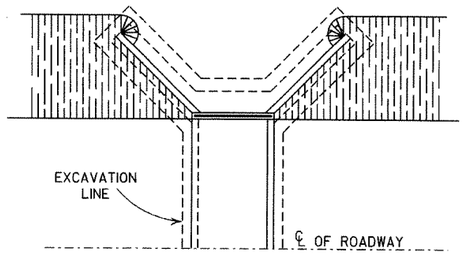
SOLID SODDING



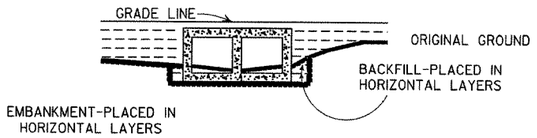
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

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

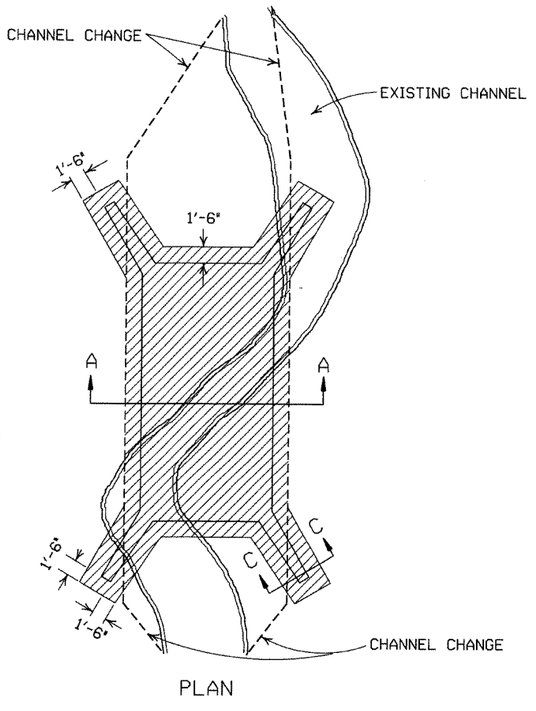


PLAN

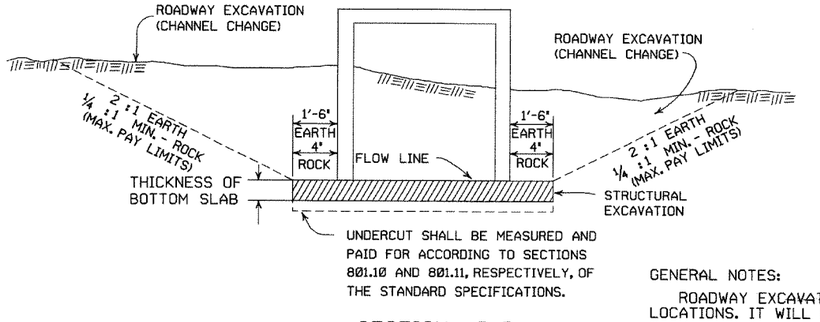


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

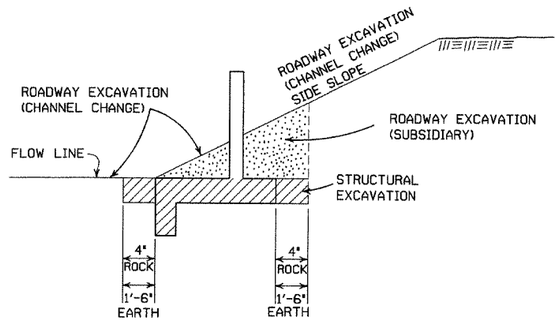


PLAN

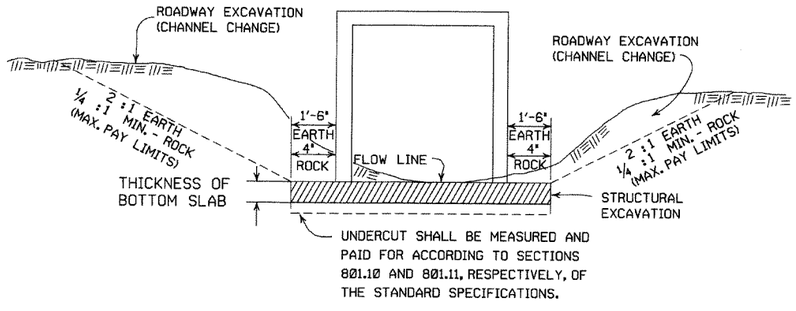


SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

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.

DATE	REVISION	FILMED
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	674-1-4-83
	AND ADDED MAXIMUM PAY	
	LIMIT NOTES.	
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

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

STANDARD DRAWING RCB-2

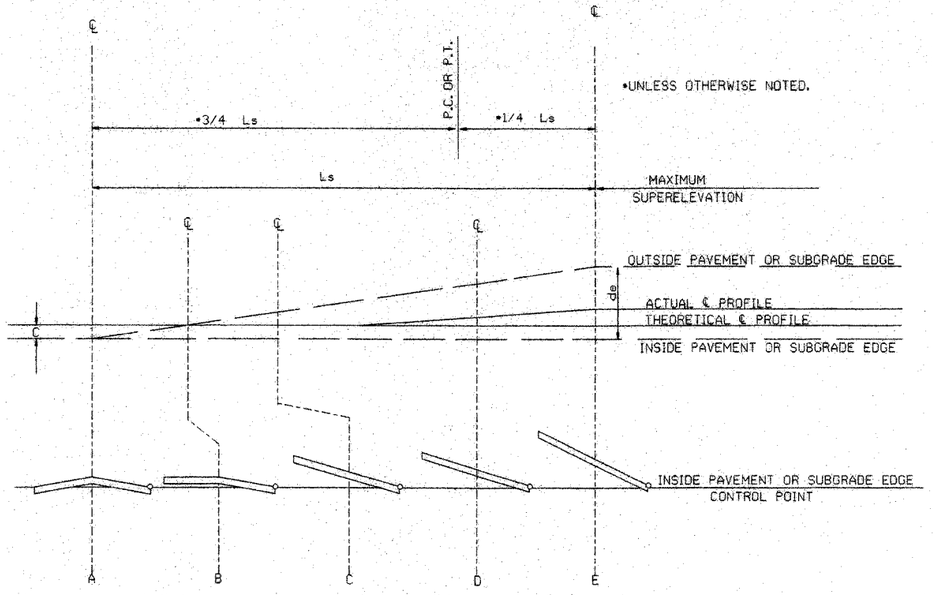
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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

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

ABBREVIATIONS

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



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

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

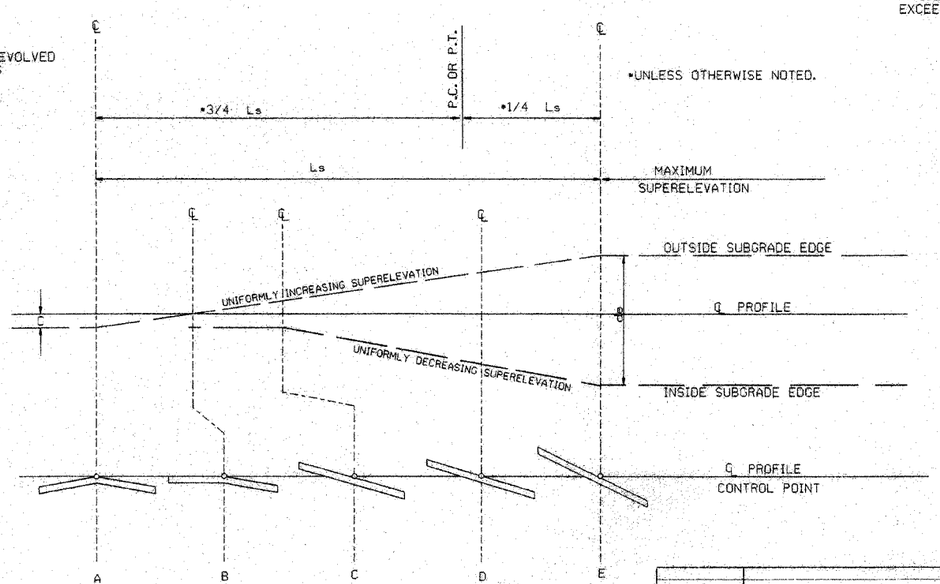
GENERAL NOTES

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

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

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

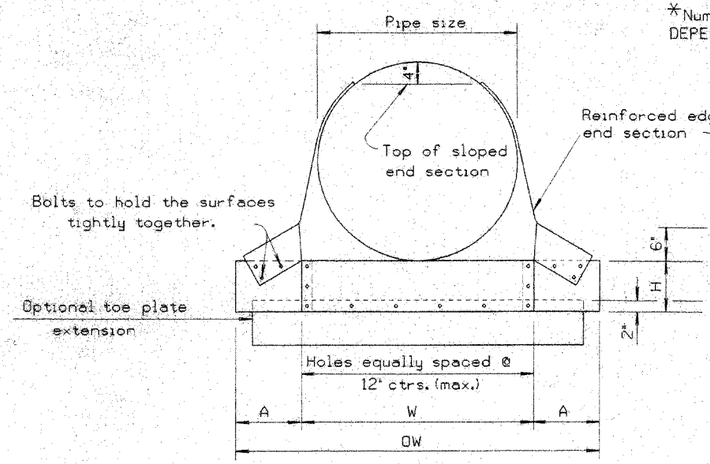
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

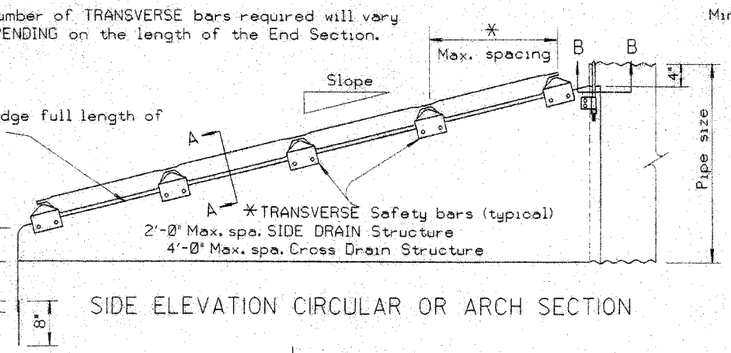
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

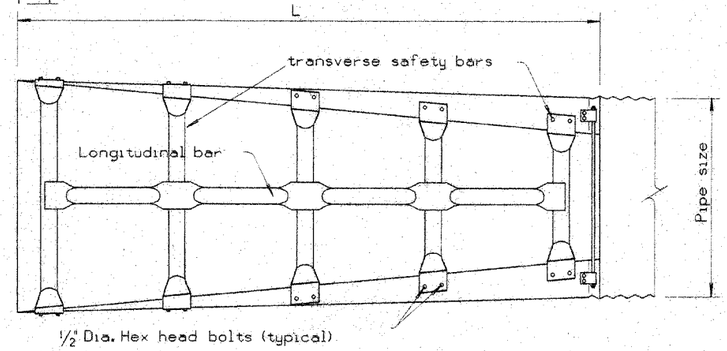
FILE STOSE2.DGN



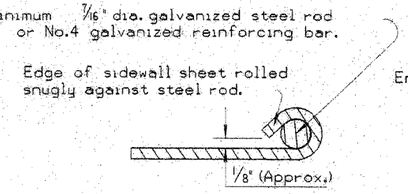
FRONT VIEW CIRCULAR PIPE



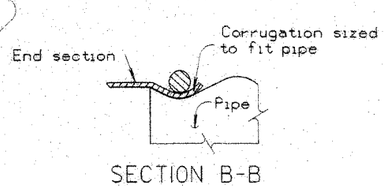
SIDE ELEVATION CIRCULAR OR ARCH SECTION



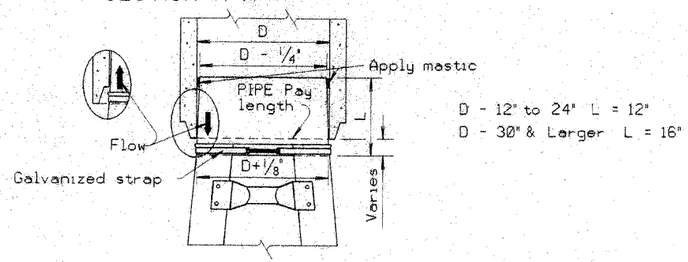
TOP VIEW CIRCULAR OR ARCH SECTION



SECTION A-A



SECTION B-B

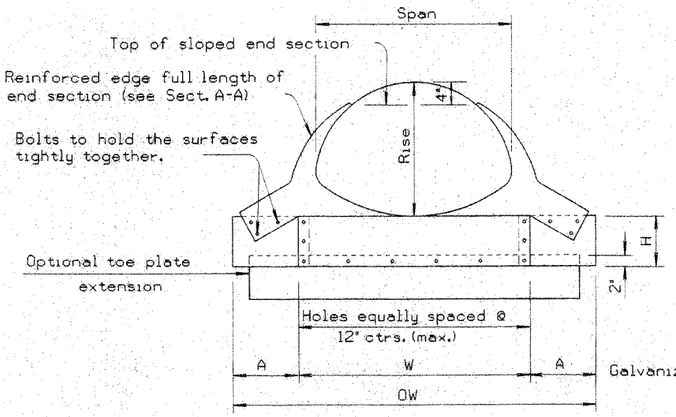


D - 12" to 24" L = 12"
D - 30" & Larger L = 16"

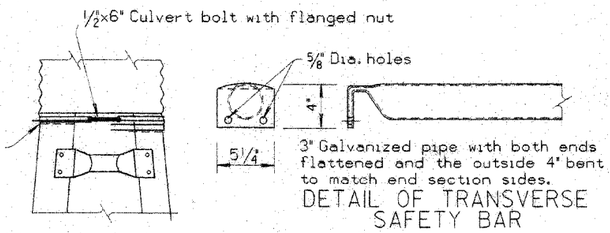
Note: Metal end section to be firmly wedged INTO PIPE END BEFORE BACKFILLING PIPE.

(Tapered sleeve to be 12 Ga. smooth galvanized steel in accordance with AASHTO M 218.)

STEEL END SECTION FOR CONCRETE PIPE
(Alternate for Concrete End Section)



FRONT VIEW ARCH PIPE



TYPE #1 CONNECTOR DETAIL
For 15" thru 24" pipe

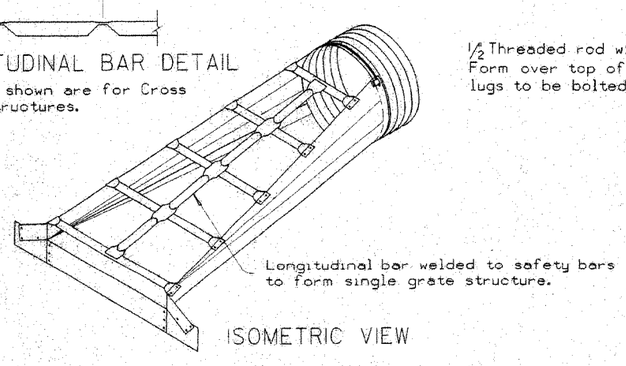
3" Galvanized pipe with both ends flattened and the outside 4" bent to match end section sides.

DETAIL OF TRANSVERSE SAFETY BAR

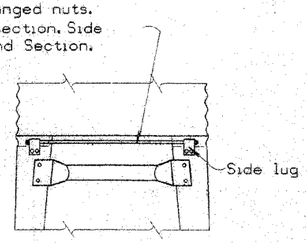


LONGITUDINAL BAR DETAIL

Note: Bars shown are for Cross Drain Structures.



ISOMETRIC VIEW



TYPE #2 CONNECTOR DETAIL
For 30" and larger round pipes & 21"x15" thru 64"x43" arch pipes

GENERAL NOTES

End sections shall be fabricated from galvanzied steel meeting the requirements of SUBSECTION 606.02(c)(1) OF THE STANDARD SPECIFICATIONS.
When specified optional toe plate extension shall be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension shall be same gauge as end section.
Dimensions shall be overall width less 6" by 8" high.
Attachment to circular pipes 15" through 24" diameter shall be made with Type #1 straps. All other sizes shall be attached with Type #2 rods and lugs.
Safety bars shall be fabricated from steel pipe meeting the requirements of ASTM A-53 Schedule 40 Specifications. Safety bars shall be hot dipped galvanized after fabrication.
All work and materials required for construction and installation of safety end section shall be included in the PRICE BID EACH FOR SAFETY END SECTIONS FOR PIPE CULVERTS.
Longitudinal and transverse bars will be required for cross drain structures when span is greater than 30". no safety bars will be REQUIRED FOR 30" SPAN OR LESS WHEN USED ON CROSS DRAIN STRUCTURES.
Transverse bars will be required for all sizes of side drain structures.
Class I safety end sections shall be end sections with a 4:1 slope.
Class 2 safety end sections shall be end sections with a 6:1 slope.

SAFETY END SECTIONS FOR ARCH PIPES														SAFETY END SECTIONS FOR CIRCULAR PIPES									
Equv. Dia.	Nom. W.W. Area Sq Ft	Pipe Arch Span (In.)	Pipe Arch Rise (In.)	Min. Gauge End Sect.	Dimensions in Inches A	H	W	OW	Slope	L (In)	Slope	L (In)	Pipe Dia.	Min. Gauge Ends	Dimensions in Inches A 1"Tol	H 1"Tol	W 2"Tol	OW	L Dimensions in Inches Slope	L	Slope	L
18"	1.6	21	15	16	8	6	27	43	4:1	20	6:1	30	15"	16	8	6	21	37	4:1	20	6:1	30
21"	2.2	24	18	16	8	6	30	46	4:1	32	6:1	48	18"	16	8	6	24	40	4:1	32	6:1	48
24"	2.9	28	20	16	8	6	34	50	4:1	40	6:1	60	21"	16	8	6	27	43	4:1	44	6:1	66
30"	4.5	35	24	14	12	9	41	65	4:1	56	6:1	84	24"	16	8	6	30	46	4:1	56	6:1	84
36"	6.5	42	29	12	12	9	48	72	4:1	76	6:1	114	30"	12	12	9	36	60	4:1	80	6:1	120
42"	8.9	49	33	12	16	12	55	87	4:1	92	6:1	138	36"	12	12	9	42	66	4:1	104	6:1	156
48"	11.6	57	38	12	16	12	63	95	4:1	112	6:1	168	42"	12	16	12	48	80	4:1	128	6:1	192
54"	14.7	64	43	12	16	12	70	102	4:1	132	6:1	198	48"	12	16	12	54	86	4:1	152	6:1	228
60"	18.1	71	47	12	16	12	77	109	4:1	148	6:1	222	54"	12	16	12	60	92	4:1	176	6:1	264
72"	26.0	83	57	12	16	12	89	121	4:1	188	6:1	282	60"	12	16	12	66	98	4:1	200	6:1	300

DATE	REVISION	DATE FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96
8-15-91	DRAWN & ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

SAFETY END SECTION FOR CIRCULAR AND ARCH PIPES

STANDARD DRAWING SES-1

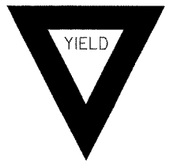
FILE stdses1.dgn

R1-1



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

R1-2



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

R2-1



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

R2-5A



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

R2-5C



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

R4-1



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

R4-2



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

R5-1



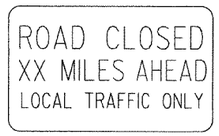
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

R11-2



48"X30"

R11-3A



60"X30"

R11-4



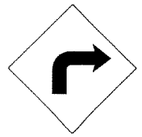
60"X30"

RSP-1



48"X30"

W1-1



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

W1-2



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

W1-3



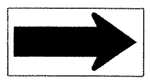
STD. 48"X48"

W1-4



STD. 48"X48"

W1-6



STD. 48"X24"
SPECIAL 60"X30"

W1-8



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

W3-1



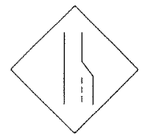
STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1



STD. 36"X36"
SPECIAL 48"X48"

W6-3



EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7



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

W9-2



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

W13-1



STD. 24"X24"

W20-1



STD. 48"X48"

W20-2



STD. 48"X48"

W20-3



STD. 48"X48"

W20-4



STD. 48"X48"

W20-5



STD. 48"X48"

W20-7a



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

W21-2



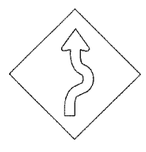
STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

W1-4b



STD. 48"X48"

R56-1



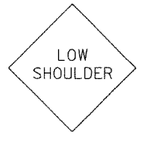
STD. 18"X18"

W8-11



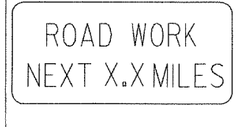
STD. 36"X36"
FWY. 48"X48"

W8-9



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

G20-1



60"X24"

G20-2

48"X24"

OM-3L OM-3R

12"X36"

M4-9

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

M4-10

48"X18"

R55-1

FINES DOUBLE
IN WORK ZONES *

WHEN WORKERS
ARE PRESENT **

36"X60"

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

ADVANCE DISTANCES
(XXXX)

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

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.

2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.

3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.

• 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.

• 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.

6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.

7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.

8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.

9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.

10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

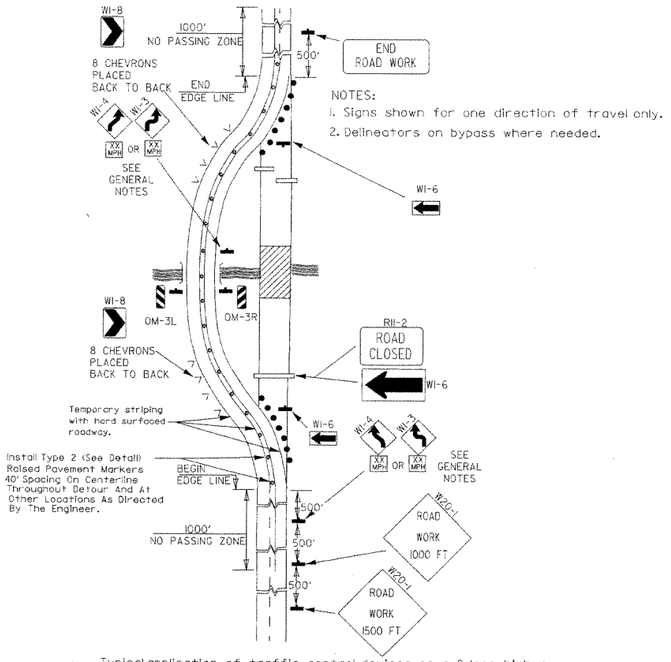
* NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

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

ARKANSAS STATE HIGHWAY COMMISSION

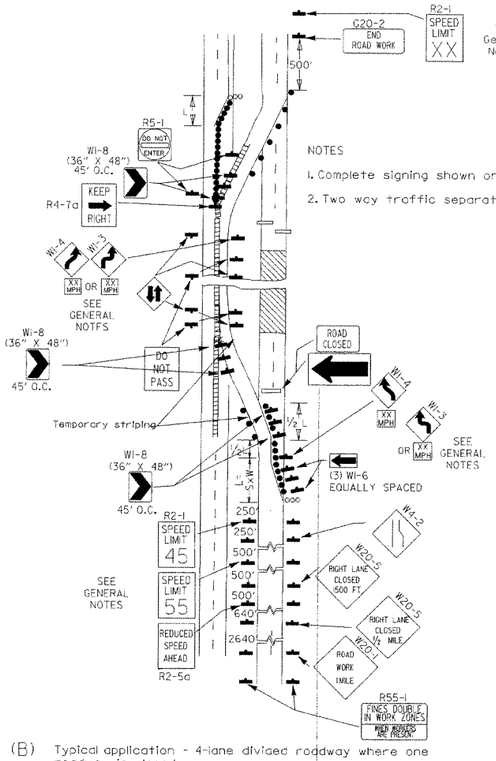
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



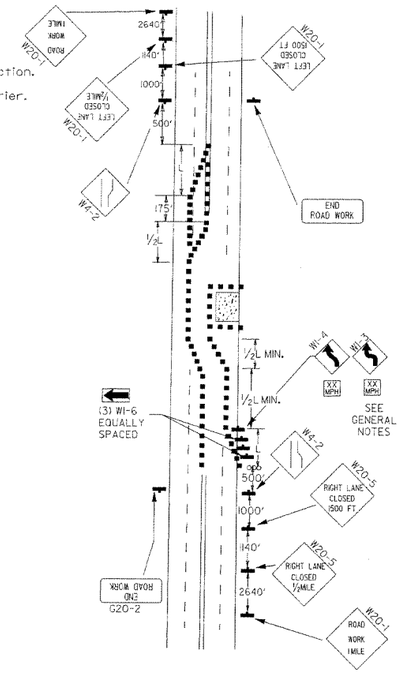
NOTES:
1. Signs shown for one direction of travel only.
2. Delineators on bypass where needed.

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

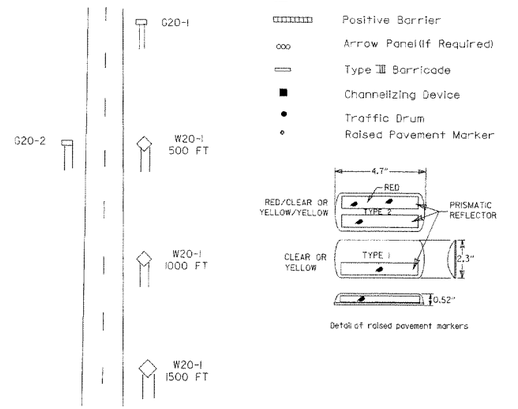


NOTES
1. Complete signing shown only in crossover direction.
2. Two way traffic separated with positive barrier.

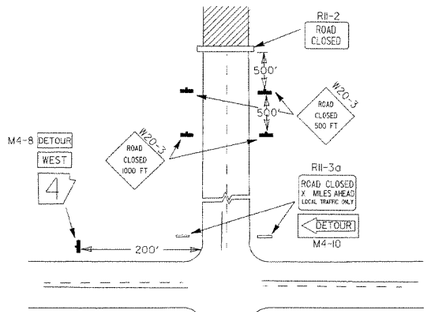
(B) Typical application - 4-lane divided roadway where one roadway is closed.

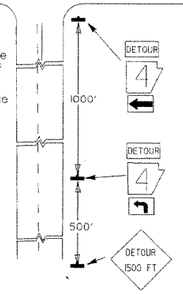


(C) Typical application - 4-lane undivided roadway where half of the roadway is closed.



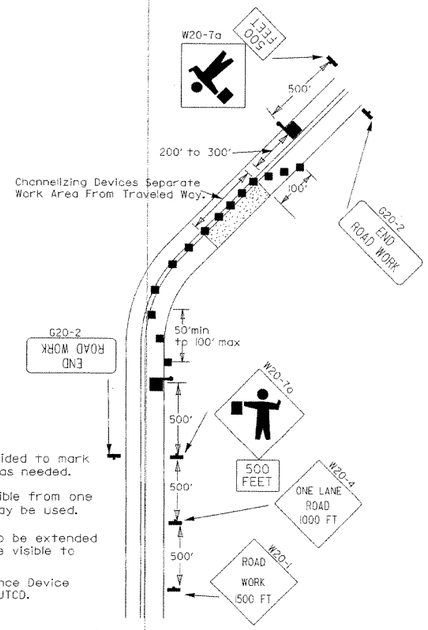
Typical advance warning sign placement





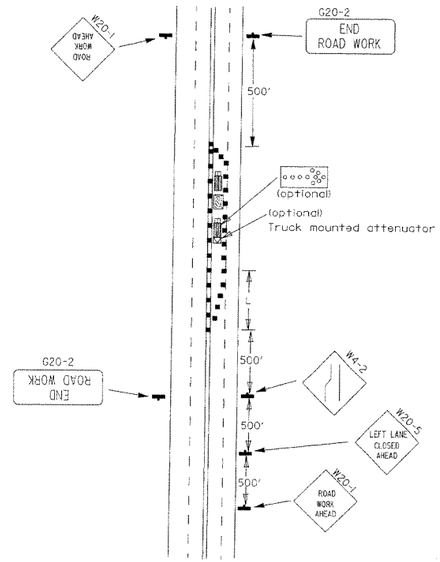
NOTES:
1. Regulatory traffic control devices to be modified as needed for the duration of the detour.
2. Street names may be used when desirable for directing detoured traffic.

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



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

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



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

Taper formulae:

L=SxW for speeds of 45mph or more.

$L = \frac{WS^2}{60}$ for speeds of 40mph or less.

Where:
L= Minimum length of taper.
S= Numerical value of posted speed limit prior to work or 85th percentile speed.
W= Width of offset.

GENERAL NOTES:

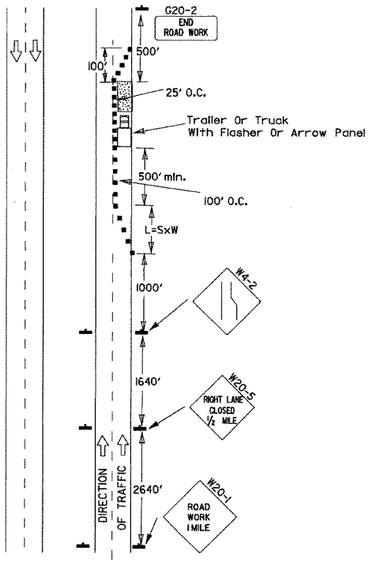
1. Advisory speed posted on W1-3 or W1-4 curve warning signs to be determined at site. Use W1-4 when speed is greater than 30mph and W1-3 when 30mph or less.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed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

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

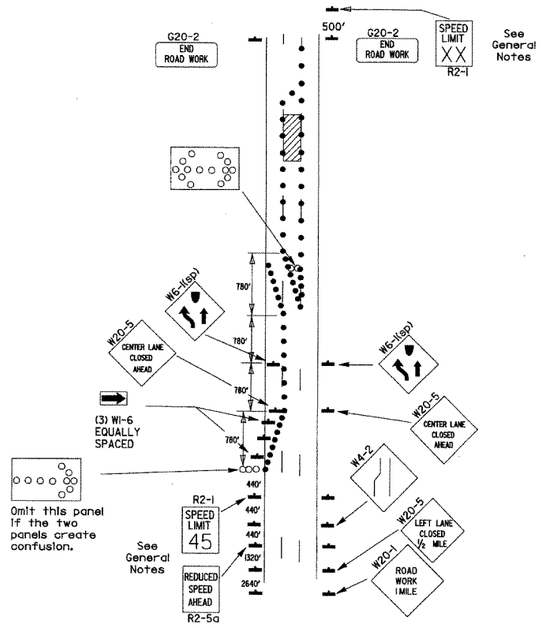
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-2



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



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

KEY:

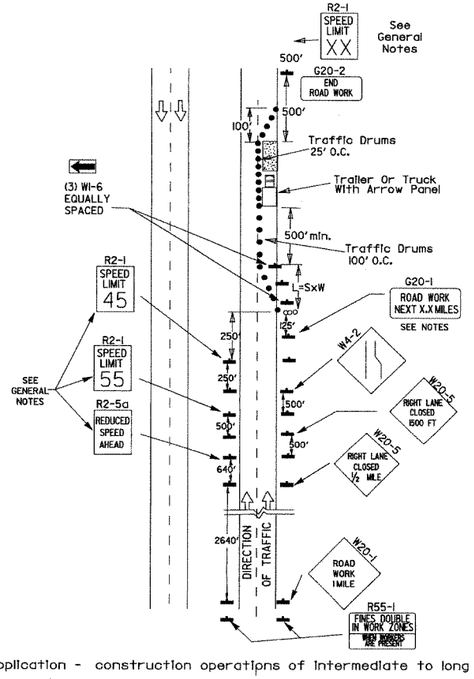
○○○ Arrow Panel (if Required)

■ Channelizing Device

● Traffic drum

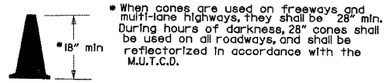
GENERAL NOTES:

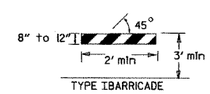
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional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

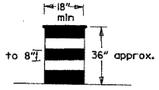


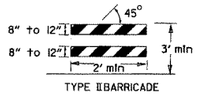
(C) Typical application - construction operatipns of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

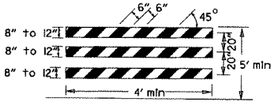
Channelizing devices

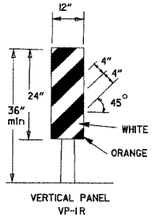












NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

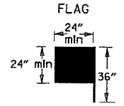
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

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

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

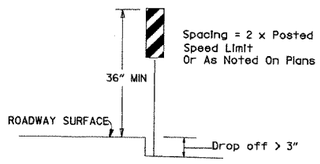
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

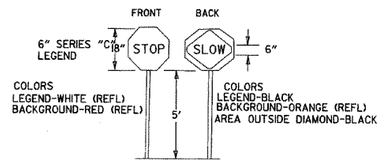


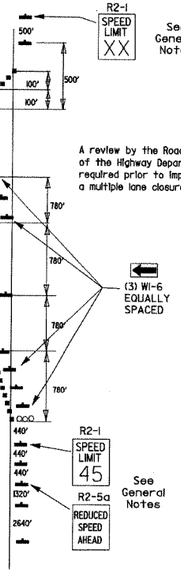
Flag shall be of good grade red material

VERTICAL PANEL PLACEMENT



STOP SLOW PADDLE





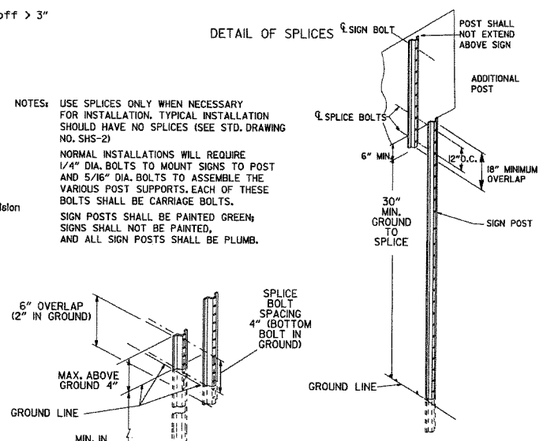
(D) Typical application - closing multiple lanes of a multilane highway.

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

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

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

DETAIL OF SPLICES



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

ARKANSAS STATE HIGHWAY COMMISSION

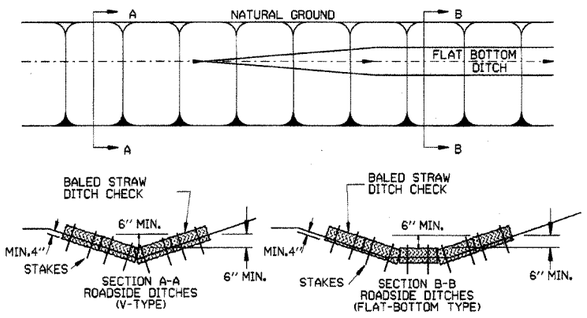
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-3

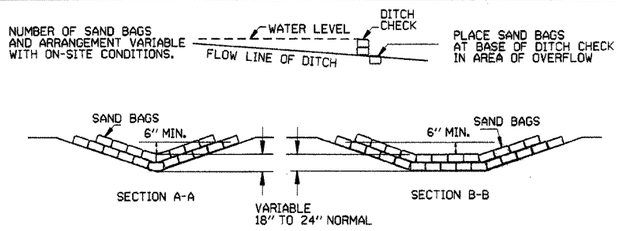
GENERAL NOTES

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

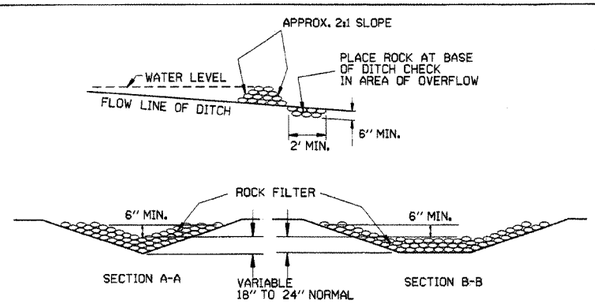
2. STRAW BALES SHALL BE KEYED INTO SOIL A MINIMUM OF 4" AND NO GAPS SHALL BE LEFT BETWEEN BALES.



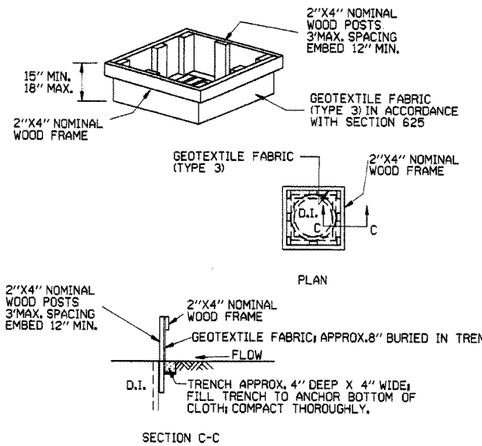
BALED STRAW DITCH CHECK (E-1)



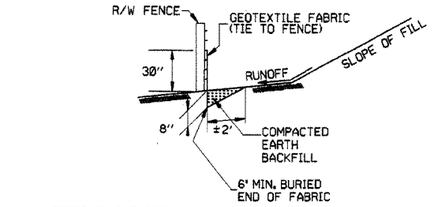
SAND BAG DITCH CHECK (E-5)

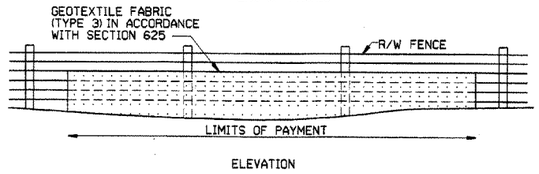


ROCK DITCH CHECK (E-6)



DROP INLET SILT FENCE (E-7)



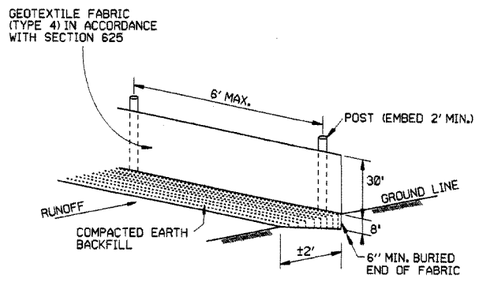


ELEVATION

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

GENERAL NOTES

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



SILT FENCE (E-11)

GENERAL NOTES

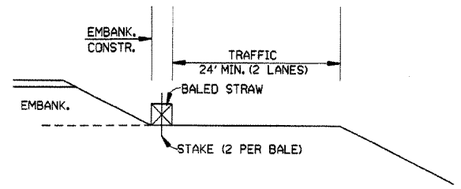
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

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

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

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



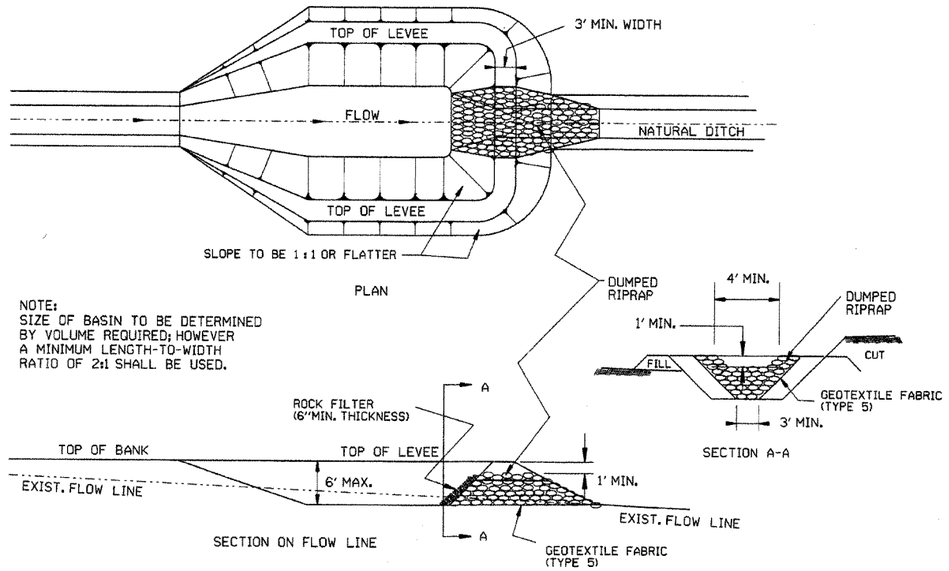
BALED STRAW FILTER BARRIER (E-2)

DATE	REVISION	FILMED
11-18-98	ADDED NOTES	11-18-98
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
7-15-94	Rev. E-4 & E-11 Min. 13' Buried End of Fabric	
6-2-94	Revised E-1,4,7, & 11; Deleted E-2 & 3	6-2-94
4-1-93	REDRAWN	
10-1-92	REDRAWN	
8-2-76	ISSUED R.D.M.	298-7-28-76

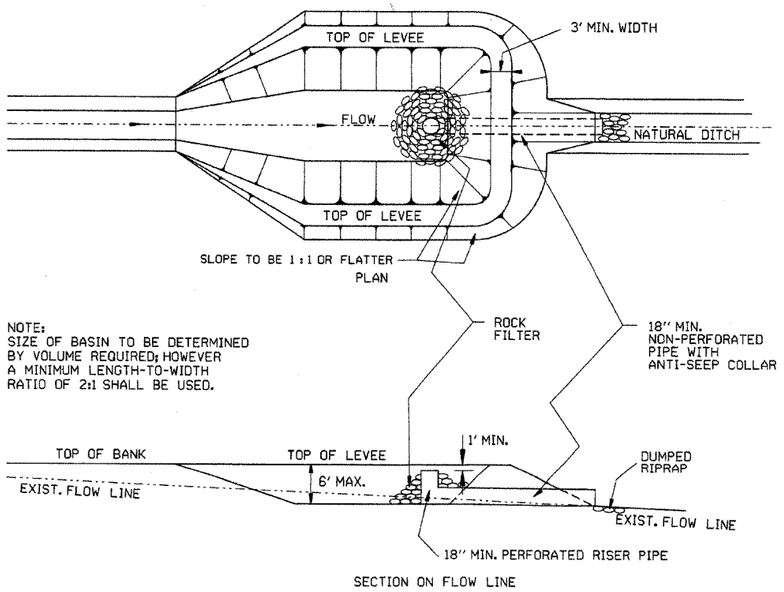
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

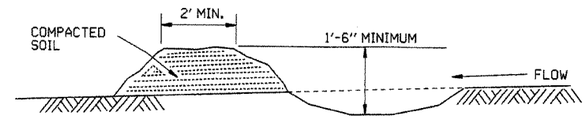
STANDARD DRAWING TEC-1



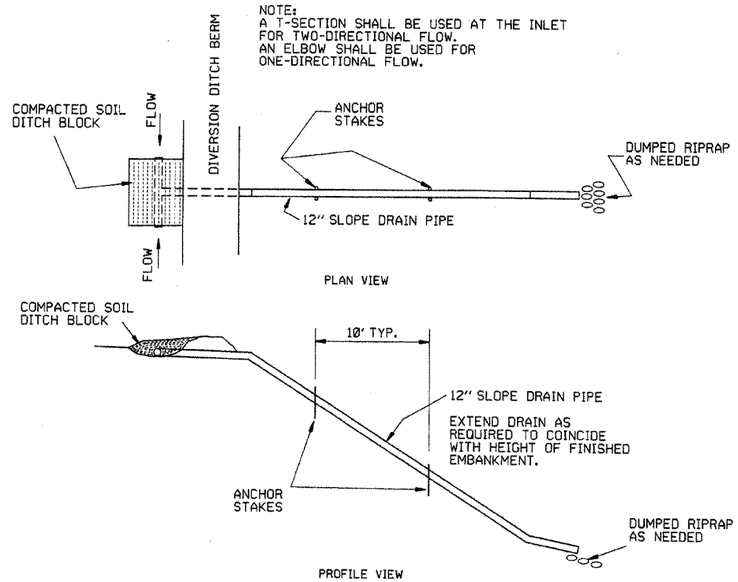
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



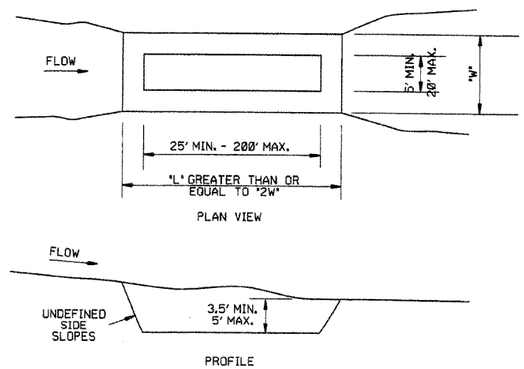
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

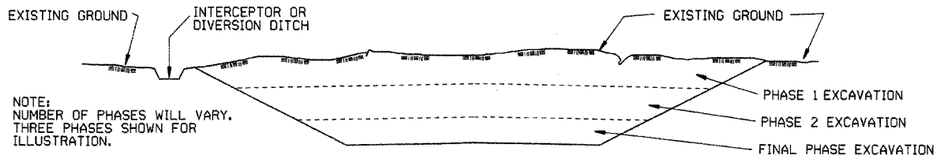
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



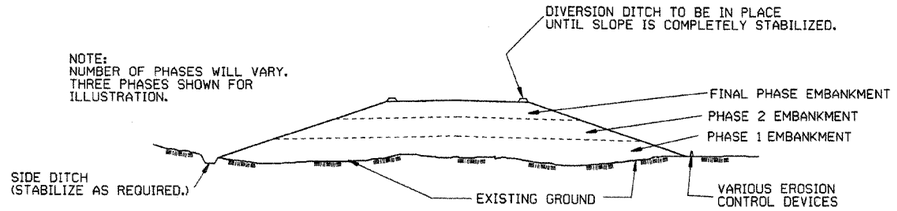
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

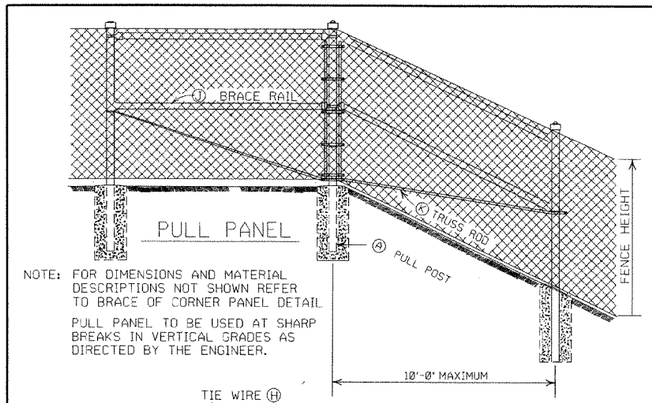
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

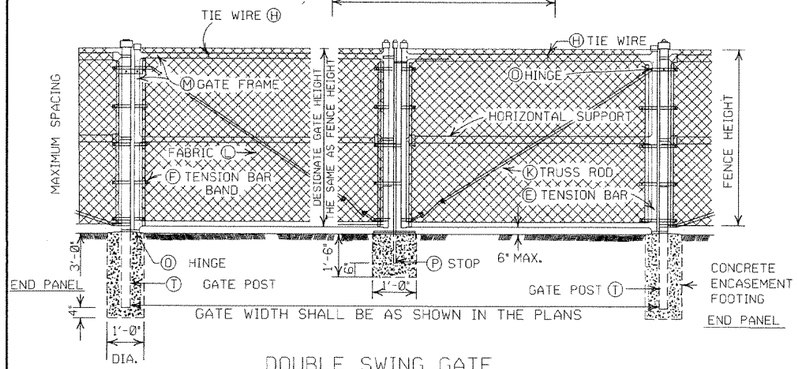
STANDARD DRAWING TEC-3



PULL PANEL

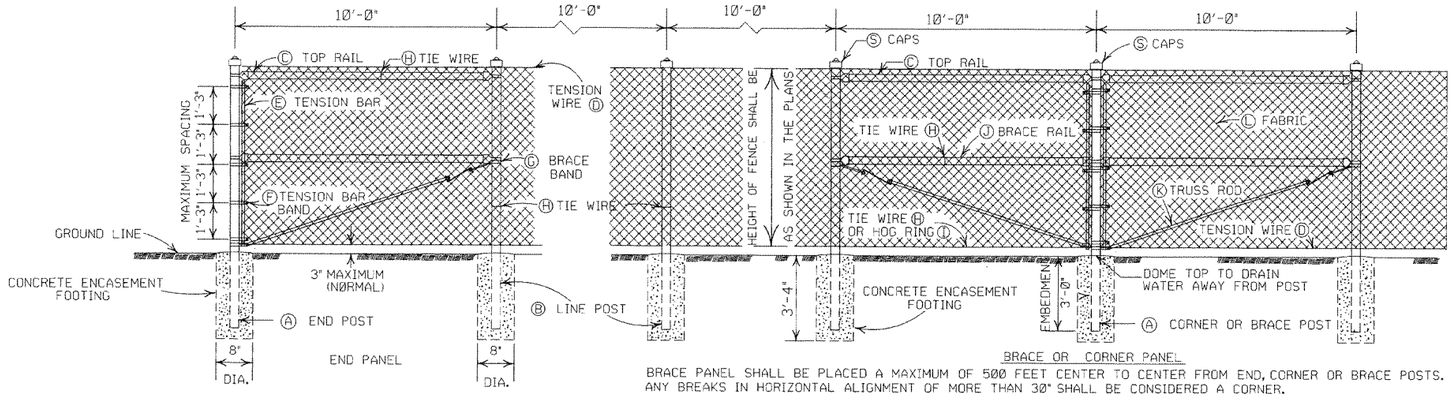
NOTE: FOR DIMENSIONS AND MATERIAL DESCRIPTIONS NOT SHOWN REFER TO BRACE OF CORNER PANEL DETAIL.

PULL PANEL TO BE USED AT SHARP BREAKS IN VERTICAL GRADES AS DIRECTED BY THE ENGINEER.



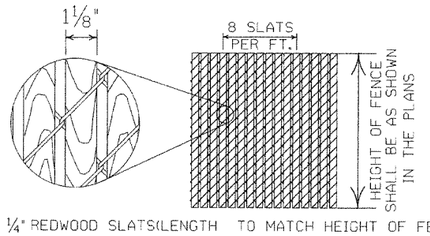
DOUBLE SWING GATE

POST SPACING DETAIL



BRACE OR CORNER PANEL

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.



1⅛" X ¼" REDWOOD SLATS (LENGTH TO MATCH HEIGHT OF FENCE)

DETAIL OF REDWOOD SLAT INSTALLATION

(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 HALFWAY BETWEEN THE TOP RAIL AND GROUND LEVEL WHEN TOPRAIL IS SPECIFIED AND TWELVE INCHES (12") DOWN FROM TOP OF FABRIC WHEN TOP TENSION WIRE IS SPECIFIED. BRACE RAIL SHALL EXTEND FROM SUCH POST TO THE FIRST ADJACENT LINE POST.

(L) FABRIC: SHALL CONFORM TO THE SPECIFICATIONS.

(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.

(D) 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.

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.

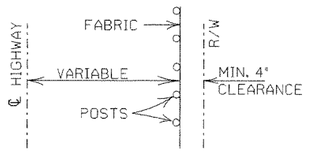
HEIGHT OF FENCE FABRIC	Ⓐ END, PULL CORNER OR BRACE POST	Ⓑ LINE POSTS SIZE	Ⓑ LINE POSTS TIE SPACING	Ⓒ TOP RAIL SIZE	Ⓒ TOP RAIL TIE SPACING	Ⓒ TOP RAIL MIN. LENGTH	Ⓓ TENSION WIRE SIZE	Ⓓ TENSION WIRE TIE SPACING	Ⓔ TENSION BAR SIZE	Ⓔ TENSION BAR LENGTH	Ⓕ TENSION BAR BAND SIZE	Ⓕ TENSION BAR BAND BOLT SIZE	Ⓕ TENSION BAR BAND SPACING	Ⓖ BRACE BAND SIZE	Ⓖ BRACE BAND BOLT SIZE
6' AND LESS	2½" O.D.	2" O.D.	1 TIE EVERY 1'-2" OF FABRIC HEIGHT	1⅝" O.D.	1 TIE EVERY 2'-0"	10'-0"	7 GAUGE COIL SPRING WIRE	1 TIE EVERY 1'-0"	MIN. OF ⅜" X ¾"	MIN. OF 2" LESS THAN FABRIC HEIGHT	MIN. OF ¾" X 0.074	⅝" X 1¼"	1 BAND AT TOP AND BOTTOM 15" MAX. INTERVAL BETWEEN BANDS	MIN. OF ¾" X 0.105	⅝" X 1¼"
OVER 6' TO 12' INCL.	3 " O.D.	2½" O.D.													

HEIGHT OF FENCE FABRIC	Ⓗ TIE WIRE	Ⓘ HOG RING	Ⓙ BRACE RAIL SIZE	Ⓙ BRACE RAIL TIE SPACING	Ⓚ TRUSS ROD	Ⓛ FABRIC SIZE	Ⓛ FABRIC MESH	Ⓛ FABRIC SELVAGE	Ⓜ GATE FRAME SIZE	Ⓜ GATE FRAME TIE SPACING	Ⓝ HORIZONTAL SUPPORT SIZE	Ⓝ HORIZONTAL SUPPORT TIE SPACING	Ⓞ HINGE TYPE 180° SWING	Ⓣ GATE POST GATE WIDTH 12' AND LESS	Ⓣ GATE POST GATE WIDTH OVER 12' TO 24' INCL.
6' AND LESS	MIN. OF 12 GA. STEEL OR 9 GA. ALUM.	SAME GAUGE AS FABRIC	1⅝" O.D.	1 TIE EVERY 2'-0"	MIN. OF ⅜" ROUND WITH TIGHTNERS AND FITTINGS	9 GA.	2"	KNUCK -ING AND/OR TWIST -ING	2" O.D.	1 TIE EVERY 1'-0"	2" O.D.	1 TIE EVERY 1'-0"	OFFSET	3" O.D.	4" O.D.
OVER 6' TO 12' INCL.														4" O.D.	

NOTE: POST SIZES SHOWN ARE FOR STEEL. WHERE ALUMINUM IS PROVIDED, LINE POSTS SHALL HAVE AN OUT SIDE DIAMETER OF 2½" 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 3½" FOR FENCE HEIGHTS OF 6' TO 12'. GATE POSTS WHERE GATE WIDTH IS 12' AND LESS SHALL HAVE AN OUTSIDE DIAMETER OF 3½" 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.



INSTALLATION MAY BE MODIFIED AS SHOWN IN THE PLANS

TYPICAL INSTALLATION DIAGRAM

POSTS AND RAILS

SIZE O.D.	GRADE 1 AND ALUMINUM ALLOY O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT. STEEL	LBS. PER LINEAR FT. ALUMINUM	GRADE 2 O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT.
1⅝	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
2½	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
3½	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

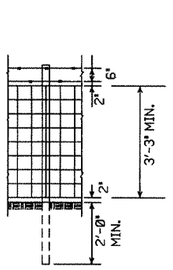
TOLERANCES ON DIMENSIONS AND WEIGHTS ACCORDING TO AASHTO M 181

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

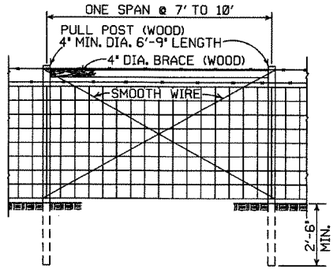
ARKANSAS STATE HIGHWAY COMMISSION

CHAIN LINK FENCE

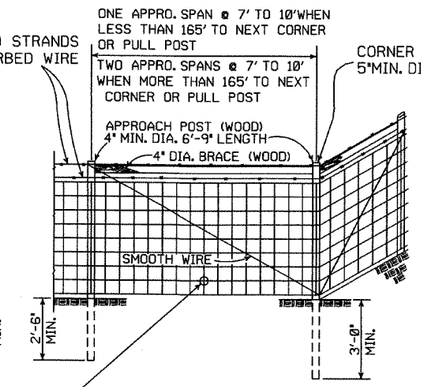
STANDARD DRAWING WF-3

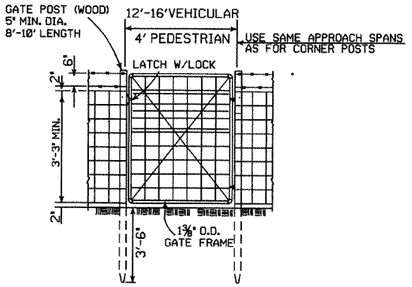


LINE POST
3" MIN. DIA. 6'-3" LENGTH
MAX. SPACING TO BE 10'-0"

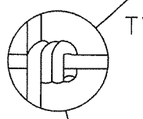


LINE BRACE ASSEMBLY
MAX. SPACING TO BE 330'

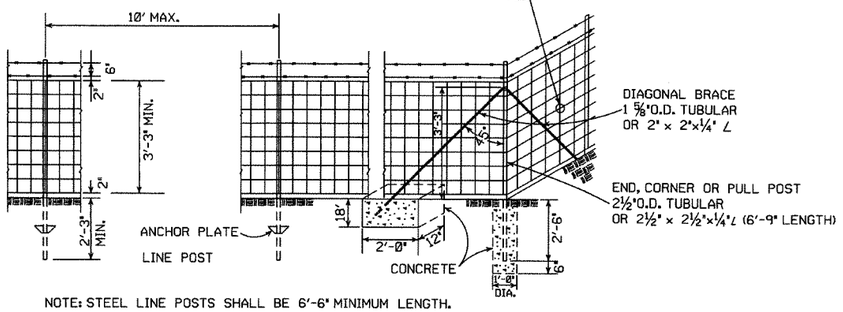


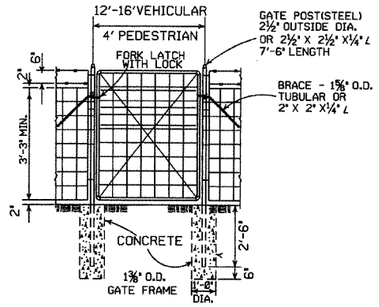


TYPE C FENCE (WOOD POSTS)

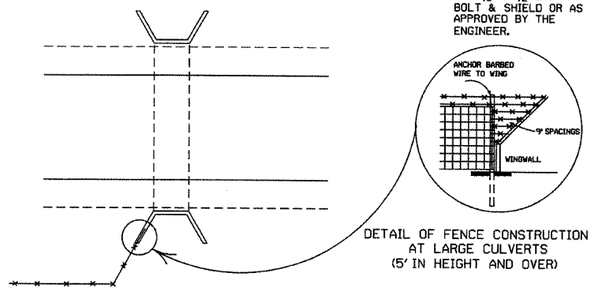


OTHER APPROVED TIES WILL BE PERMITTED





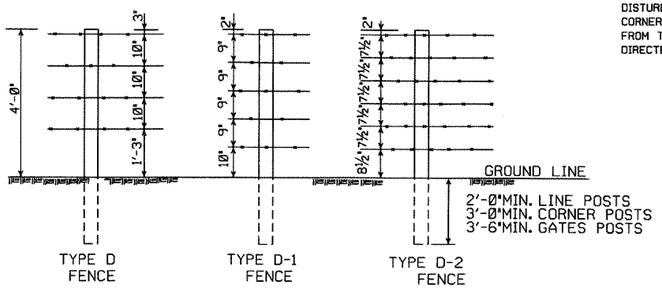
NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.



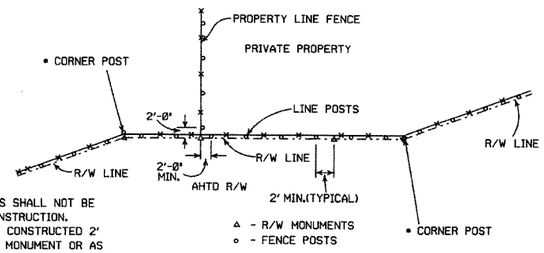
DETAIL OF FENCE CONSTRUCTION
AT LARGE CULVERTS
(5' IN HEIGHT AND OVER)

TYPE C FENCE (STEEL POSTS)

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

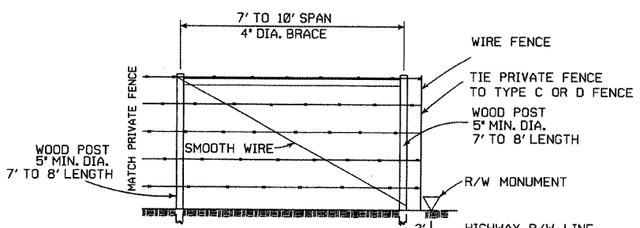


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



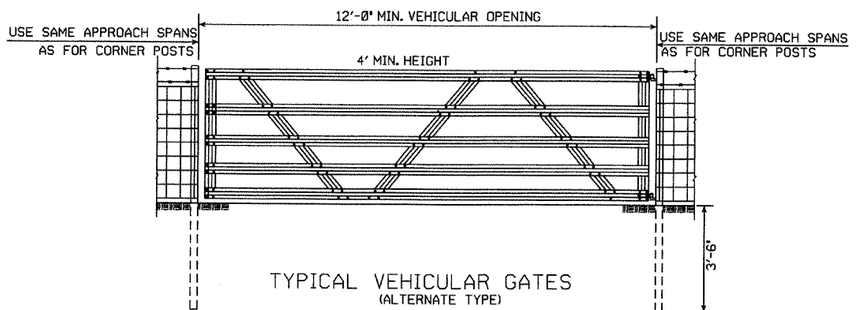
• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



PRIVATE FENCE TERMINAL INSTALLATION

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.



TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)

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.

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.

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.

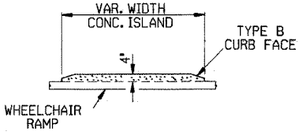
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

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

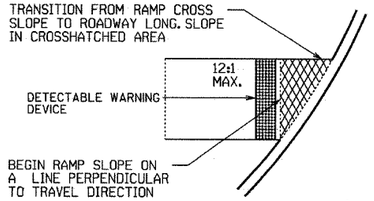
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE C AND D

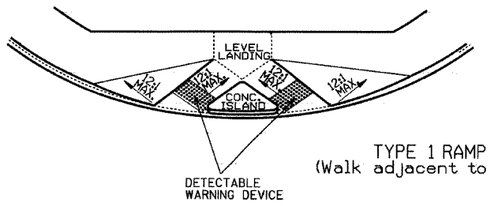
STANDARD DRAWING WF-4



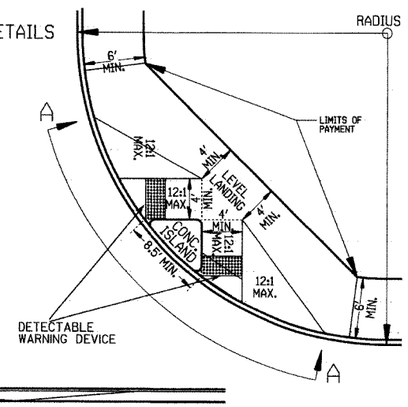
CONCRETE ISLAND DETAIL

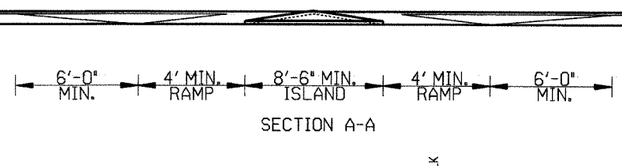


SLOPE TRANSITION DETAILS



TYPE 1 RAMP
(Walk adjacent to curb)

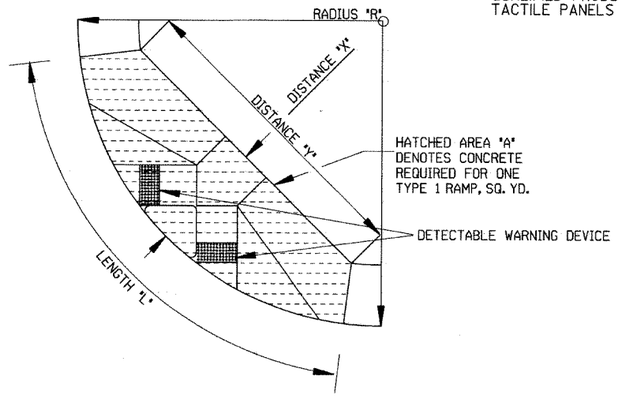




SECTION A-A

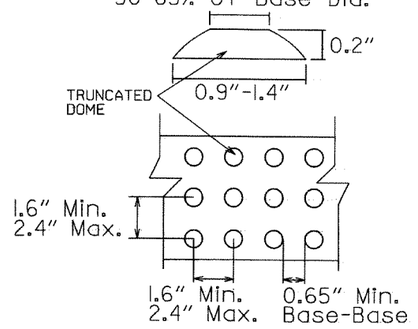
TYPE 1 RAMP DIMENSIONS AND QUANTITIES

RADIUS "R"	DISTANCE "X"	DISTANCE "Y"	LENGTH "L"	RAMP AREA "A"
FEET	FEET	FEET	FEET	SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	40.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35
55	11.24	44.07	51.31	49.63
60	11.22	46.33	53.21	51.80



GENERAL NOTES FOR DETECTABLE WARNING DEVICES

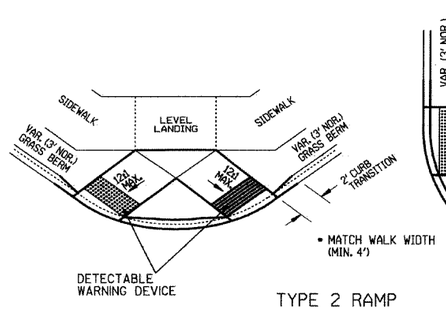
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
DETECTABLE WARNING DEVICE SHALL BE 24 INCHES IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE.
DETECTABLE WARNING DEVICE SHALL BE ON THE AHTD QUALIFIED PRODUCTS LIST FOR CAST-IN-PLACE TACTILE PANELS (ADA DETECTABLE WARNING).



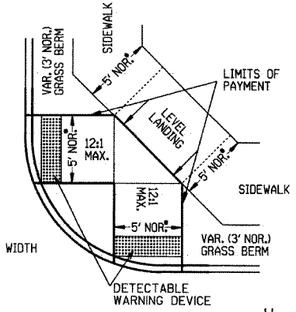
DETECTABLE WARNING DEVICE DETAIL

GENERAL NOTES:

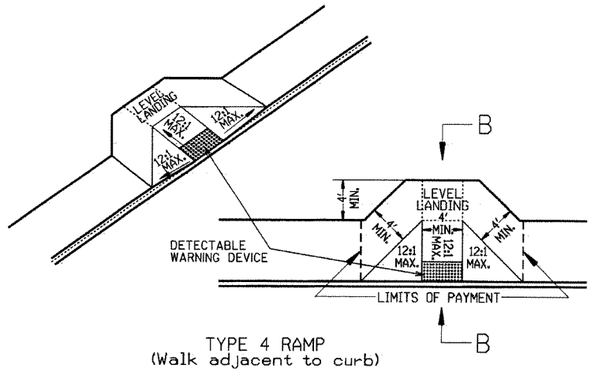
IN NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED ON THE PLANS, WHEELCHAIR RAMPS ARE TO BE PROVIDED AT ALL CORNERS OF CURBED STREET INTERSECTIONS AND MID-BLOCK CROSSWALK LOCATIONS.
IN ALTERATIONS WHEELCHAIR RAMPS ARE TO BE PROVIDED AT CURBED STREET INTERSECTIONS WITH PEDESTRIAN TRAFFIC AND MID-BLOCK CROSSWALK LOCATIONS.
THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEED 12:1. THE SURFACE TEXTURE OF THE RAMP SHALL CONFORM TO A CLASS 6 FINISH ACCORDING TO SECTION 802.19.
THE NORMAL GUTTER GRADE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
THE MINIMUM THICKNESS OF THE RAMP, WALK, & LANDING SHALL BE 4".
THE MINIMUM WIDTH OF THE RAMPS SHALL BE THE WALK WIDTH OR 36", WHICHEVER IS GREATER.
RAMPS SHALL BE MODIFIED AS NECESSARY TO INSURE THAT THEY ARE PARALLEL TO A LINE DRAWN FROM THE CENTER OF ONE RAMP TO THE CENTER OF THE RAMP ON THE OPPOSITE SIDE OF THE INTERSECTION.
THE DIMENSIONS AND QUANTITIES SHOWN ON THIS DRAWING ARE FOR A 90° INTERSECTION ONLY. DIMENSIONS AND QUANTITIES FOR SKEWED INTERSECTIONS WILL VARY, AND ARE TO BE DETERMINED BY THE ENGINEER.



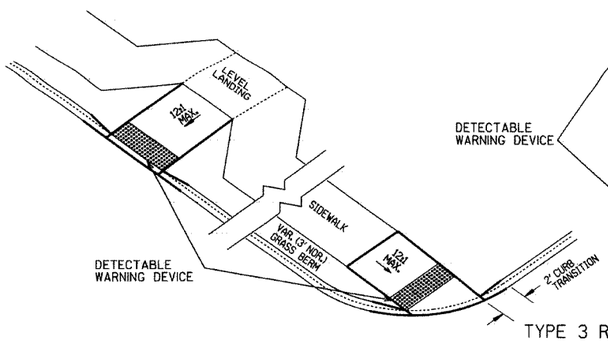
TYPE 2 RAMP

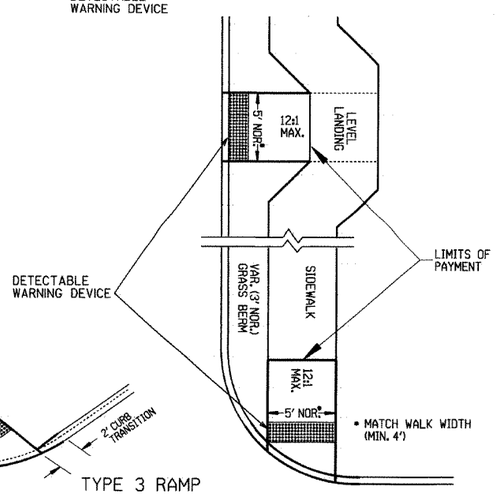


NOTE:
THE CROSS SLOPE OF THE RAMPS, LEVEL LANDINGS, AND SIDEWALKS SHALL NOT EXCEED 2.0% UNLESS REQUIRED TO MATCH STREET LONGTITUDINAL GRADE.

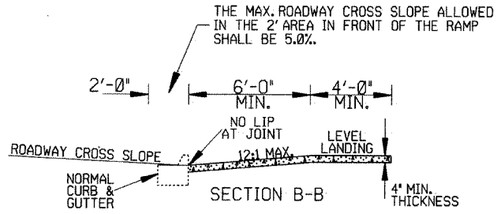


TYPE 4 RAMP
(Walk adjacent to curb)





TYPE 3 RAMP



SECTION B-B

RAMP SELECTION CRITERIA

FIRST CHOICE	TYPE 1	CORNER LOCATIONS WITH THE WALK ADJACENT TO THE CURB (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 2	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE INSUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 3	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE SUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 4	TANGENT LOCATIONS (BOTH NEW CONSTRUCTION AND ALTERATIONS).
SECOND CHOICE	TYPE 5	TANGENT LOCATIONS (ALTERATIONS ONLY).
THIRD CHOICE	TYPE 6	CORNER LOCATIONS (ALTERATIONS ONLY). THIS RAMP MAY BE USED ONLY IF THE TYPE 5 RAMPS CANNOT BE PLACED AT THE ENDS OF THE RADIUS.
FOURTH CHOICE		IF SITE CONSTRAINTS PREVENT THE CONSTRUCTION OF ANY OF THE TYPES LISTED, THEN AND ONLY THEN CAN THE 12:1 MAX. SLOPE ON THE RAMP BE EXCEEDED TO PROVIDE ACCESS TO THE STREET LEVEL (ALTERATIONS ONLY). THE SLOPE CAN BE STEEPENED TO A 10:1 MAX. FOR A MAX. LENGTH OF 5' OR A 8:1 MAX. FOR A MAX. LENGTH OF 2'. SLOPES STEEPER THAN 8:1 ARE NOT ALLOWED UNDER ANY CIRCUMSTANCES.

NOTE: IN ALTERATIONS, THE SELECTION OF THE TYPE OF WHEELCHAIR RAMP TO BE CONSTRUCTED SHALL BE BASED ON THE AMOUNT OF RIGHT-OF-WAY AVAILABLE, AND ON THE PRESENCE OF OTHER SITE CONSTRAINTS (UTILITIES, BUILDINGS, ETC.). THE TABLE ABOVE LISTS THE ORDER IN WHICH THE RAMPS ARE TO BE CONSIDERED.

AN ALTERATION IS DEFINED AS A PROJECT THAT CHANGES OR AFFECTS THE USE OF A PEDESTRIAN PATHWAY (OVERLAYS, SIGNALIZATION PROJECTS, ETC.) BUT DOES NOT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY. ALL PROJECTS THAT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY WILL USUALLY BE CONSIDERED NEW CONSTRUCTION FOR THE PURPOSES OF THE CHART ABOVE.

DATE	REVISION	DATE FILM
11-10-05	REVISED TO NEW SIDEWALK POLICY	
10-9-03	REVISED GEN. NOTES & ADDED NOTE	
4-10-03	REV. DETECTABLE WARNING DEVICES	
8-22-02	ADD DETECTABLE WARNING DEVICES	
3-30-00	ADD.SLOPE TRANS. & REV. ISL. DIMS.	
11-18-98	REVISED NOTES	
8-12-98	REVISED TEXTURE	
7-02-98	REDRAWN & REISSUED	
10-18-96	CORRECTED DIMENSIONS	10-18-96
5-24-90	FROM8dT012dMAX.SLOPES	5-24-90
7-15-88	ADJUSTED MAX. SLOPE	652-7-15-88
7-14-88	INCL.ID."CONC. ISLD."IN PAY ITEM	------
6-02-76	ISSUED-P.H.D.	299-7-28-76

ARKANSAS STATE HIGHWAY COMMISSION

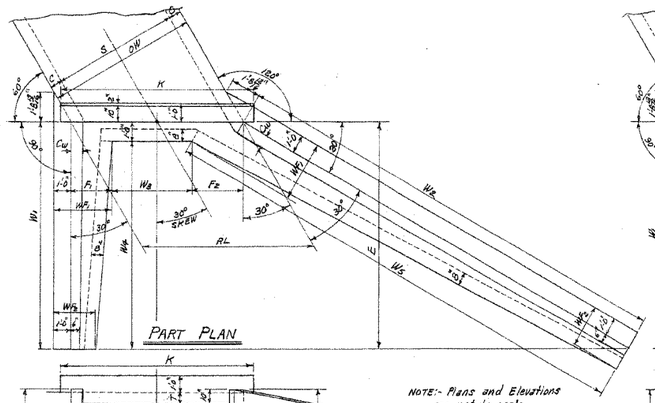
WHEELCHAIR RAMPS
NEW CONSTRUCTION
AND ALTERATIONS

STANDARD DRAWING WR-1

Reshot 3-8-93

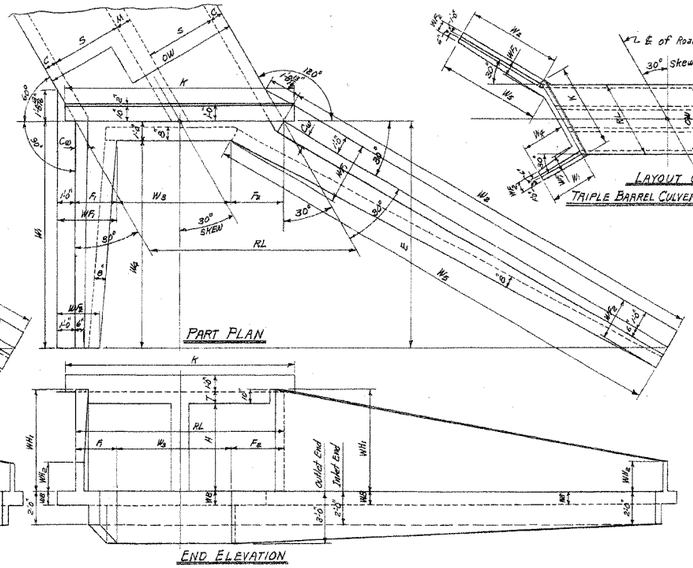
191

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			63	
JOB No.					



SINGLE BARREL CULVERT-30°SKEW RIGHT FORWARD

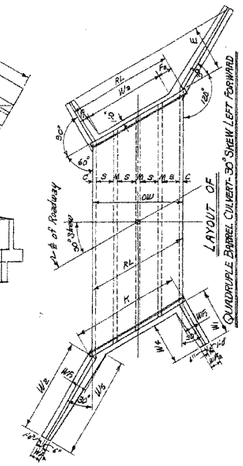
Details of Culvert with 30°Skew Left Forward is reversed, see Layout below.

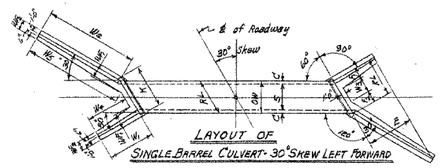


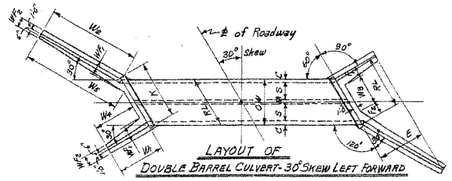
DOUBLE BARREL CULVERT-30°SKEW RIGHT FORWARD

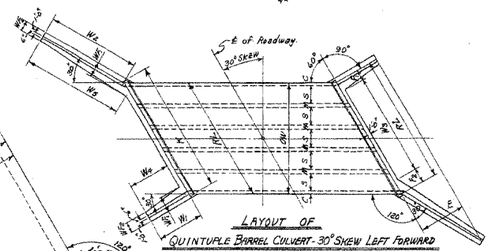
Details of Culvert with 30°Skew Left Forward is reversed, see Layout below.

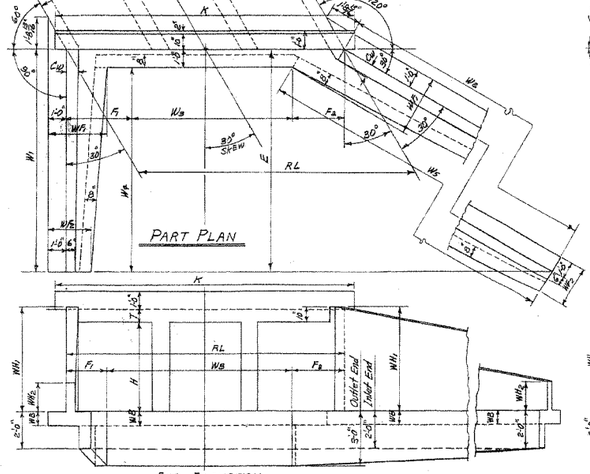
NOTE:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.





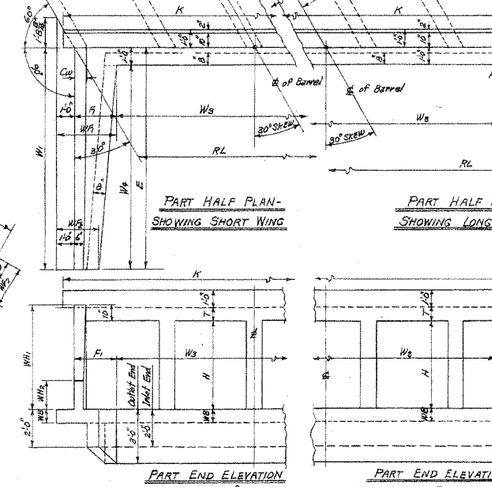






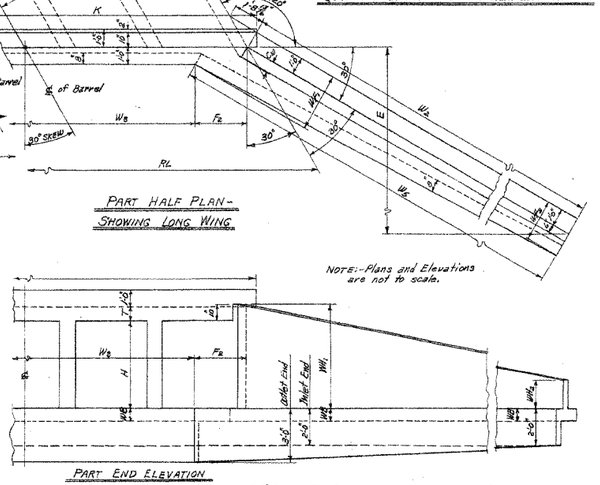
TRIPLE BARREL CULVERT-30°SKEW RIGHT FORWARD

Details of Culvert with 30° Skew Left Forward is reversed, see Layout at top center of sheet.



QUADRUPLE BARREL CULVERT-30°SKEW RT. FWD.

Details of Culvert with 30°Skew Left Forward is reversed, see Layout at above center.



QUINTUPLE BARREL CULVERT-30°SKEW RT. FWD.

Details of Culvert with 30° Skew Left Forward is reversed, see Layout above.

NOTE:-Plans and Elevations are not to scale.

ROADWAY LENGTH RL = OW x 1.1547

HEADWALL LENGTH K = RL + (1'-7⅝")

APRON DIMENSION W3 = RL - (F1 + F2)

USE WITH DRAWING NO.	CLEAR SPAN	CLEAR HEIGHT	SUM OF SKEW DIMENSIONS	SINGLE BARREL CULVERT				DOUBLE BARREL CULVERT				TRIPLE BARREL CULVERT				QUADRUPLE BARREL CULVERT				QUINTUPLE BARREL CULVERT			
	S	H	F1+F2	OW	RL	K	W3	OW	RL	K	W3	OW	RL	K	W3	OW	RL	K	W3	OW	RL	K	W3
W-X302-1, W-X303-1 or W-X304-1. (FOR H=8'0" OR LESS)	4'	2'	2'-3⅛"	5'-0"	5'-9⅛"	6'-11⅝"	3'-3⅛"	9'-8"	11'-2"	12'-3⅜"	8'-10⅝"	14'-8"	16'-6⅝"	17'-10½"	14'-3⅝"	19'-10"	21'-11⅝"	23'-1"	19'-8"	23'-8"	27'-4"	28'-5⅜"	25'-0⅝"
		3'	2'-3⅛"	5'-0"	"	"	2'-6"	9'-8"	"	"	7'-10⅝"	14'-9"	"	"	13'-3⅜"	19'-0"	"	"	18'-8"	23'-8"	"	"	29'-0⅝"
		4'	2'-3⅛"	5'-0"	"	"	1'-6"	9'-8"	"	"	5'-10⅝"	14'-9"	"	"	12'-3⅜"	19'-0"	"	"	17'-8"	23'-8"	"	"	23'-10⅝"
		5'	5'-3⅛"	5'-0"	5'-9⅛"	6'-11⅝"	0'-6"	9'-8"	11'-2"	12'-3⅜"	5'-10⅝"	14'-9"	16'-6⅝"	17'-10½"	11'-3⅜"	19'-6"	21'-11⅝"	23'-1"	16'-8"	23'-8"	27'-4"	28'-5⅜"	22'-10⅝"
		6'	6'-3⅛"	5'-2"	5'-11⅜"	7'-1½"	Ⓐ 0"	9'-11"	11'-5½"	12'-7⅛"	5'-2⅛"	14'-8"	16'-11½"	18'-1"	10'-8"	19'-5"	22'-5"	23'-7"	16'-1⅜"	24'-2"	27'-10⅜"	29'-0⅛"	21'-7⅜"
	5'	3'	3'-3⅛"	6'-0"	6'-11⅝"	8'-1"	3'-7⅛"	11'-8"	13'-5⅛"	14'-7½"	10'-2⅛"	17'-4"	20'-0⅛"	21'-2"	16'-9"	23'-0"	26'-6⅝"	27'-8⅛"	23'-3⅜"	28'-8"	33'-1½"	34'-3"	29'-10"
		4'	6'-3⅛"	6'-0"	"	"	2'-7⅝"	11'-8"	"	"	9'-2⅛"	17'-4"	"	"	15'-3"	23'-0"	"	"	22'-3⅜"	28'-8"	"	"	28'-10"
		5'	5'-3⅛"	6'-0"	6'-11⅝"	8'-1"	1'-7⅝"	11'-8"	13'-5⅛"	14'-7½"	8'-2⅛"	17'-4"	20'-0⅛"	21'-2"	14'-9"	23'-0"	26'-6⅝"	27'-8⅛"	21'-3⅜"	28'-8"	33'-1⅛"	34'-3"	27'-10"
		6'	6'-3⅛"	6'-2"	7'-1½"	8'-3⅛"	0'-10⅛"	11'-11"	13'-9⅛"	14'-11"	7'-5⅛"	17'-8"	20'-4⅝"	21'-6⅝"	14'-1⅝"	23'-5"	27'-0⅛"	28'-2⅛"	20'-9⅛"	29'-2"	33'-5⅝"	34'-10"	27'-5"
		7'	7'-3⅛"	6'-3"	7'-2⅝"	8'-4⅝"	Ⓐ 0"	12'-1"	13'-11⅛"	15'-1⅛"	6'-2⅛"	17'-11"	20'-8⅛"	21'-10"	12'-11"	23'-9"	27'-5⅛"	28'-7"	19'-8"	29'-7"	34'-2"	35'-3⅜"	26'-9⅜"
	6'	3'	3'-3⅛"	7'-0"	8'-1"	9'-2⅛"	4'-3⅜"	13'-8"	15'-9⅜"	16'-11⅛"	12'-6⅜"	20'-9"	23'-5⅛"	24'-7⅛"	20'-2⅜"	27'-10"	31'-2⅛"	32'-4"	27'-11"	33'-9"	38'-10⅜"	40'-0⅛"	35'-0⅛"
		4'	4'-3⅛"	7'-0"	"	"	3'-5⅜"	13'-8"	"	"	11'-4⅜"	20'-9"	"	"	19'-2⅜"	27'-10"	"	"	26'-11"	33'-8"	"	"	34'-7⅜"
		5'	5'-3⅛"	7'-0"	8'-1"	9'-2⅛"	2'-3⅜"	13'-8"	15'-9⅜"	16'-11⅛"	10'-4⅜"	20'-9"	23'-5⅛"	24'-7⅛"	18'-2⅜"	27'-10"	31'-2⅛"	32'-4"	25'-11"	33'-8"	38'-10⅜"	40'-0⅛"	33'-7⅜"
		6'	6'-3⅛"	7'-2"	8'-3⅛"	9'-5⅜"	2'-0"	13'-11"	16'-0⅛"	17'-2⅜"	9'-9⅜"	20'-8"	23'-3⅝"	24'-5⅝"	16'-4⅜"	27'-5"	31'-0⅜"	32'-2⅜"	23'-9⅜"	34'-2"	39'-5⅛"	40'-7⅜"	33'-2⅝"
		7'	7'-3⅛"	7'-3"	8'-4⅝"	9'-7⅛"	0'-7½"	14'-1"	16'-3⅛"	17'-5"	8'-6"	20'-11"	24'-1⅛"	25'-3⅜"	16'-11⅜"	27'-9"	32'-0⅝"	33'-2⅝"	23'-3⅜"	34'-7"	39'-11⅛"	41'-1"	32'-2"
		8'	8'-3⅛"	7'-4"	8'-5⅝"	9'-7⅞"	Ⓐ 0"	14'-2"	16'-4⅝"	17'-6⅛"	7'-1"	21'-0"	24'-2⅝"	25'-4⅝"	14'-11⅝"	27'-10"	32'-1⅝"	33'-3⅝"	22'-10⅜"	34'-8"	40'-0⅜"	41'-2⅝"	30'-9⅝"
	7'	4'	4'-3⅛"	8'-0"	9'-2⅝"	10'-5⅜"	4'-1⅛"	15'-6"	18'-1½"	19'-5"	18'-0⅜"	22'-6"	26'-1⅛"	28'-1⅛"	22'-8"	31'-0"	35'-9½"	36'-11⅝"	31'-6"	38'-6"	44'-2⅜"	45'-3⅜"	40'-0⅝"
		5'	5'-3⅛"	8'-0"	9'-2⅝"	10'-5⅜"	3'-1⅛"	15'-6"	18'-1½"	19'-5"	12'-9⅜"	22'-6"	26'-1⅛"	28'-1⅛"	21'-8"	31'-0"	35'-9½"	36'-11⅝"	30'-6"	38'-6"	44'-2⅜"	45'-3⅜"	39'-0⅝"
		6'	6'-3⅛"	8'-2"	9'-3⅝"	10'-7"	3'-2"	15'-11"	18'-6⅛"	19'-8⅝"	12'-1⅝"	22'-11"	26'-6⅛"	28'-5⅝"	21'-0⅜"	31'-3"	36'-0⅜"	37'-1⅝"	30'-1"	38'-11"	44'-7⅜"	45'-8⅜"	38'-11⅝"
		7'	7'-3⅛"	8'-3"	9'-4⅝"	10'-8⅝"	1'-3"	16'-1"	18'-7⅝"	19'-10⅛"	10'-3⅛"	23'-1"	26'-7⅝"	28'-7⅛"	19'-11⅛"	31'-9"	36'-3⅝"	37'-5⅝"	28'-10⅜"	39'-5"	45'-0⅛"	46'-1⅛"	37'-11⅛"
		8'	8'-3⅛"	8'-4"	9'-7½"	10'-9⅞"	0'-4⅛"	16'-2"	18'-8"	19'-10⅝"	9'-6⅜"	23'-2"	26'-8⅝"	28'-10⅝"	18'-5⅛"	31'-10"	36'-4⅜"	37'-7"	27'-6"	39'-5"	45'-3⅝"	46'-4⅛"	36'-4⅛"
	8'	4'	4'-3⅛"	9'-0"	10'-4⅝"	11'-6⅞"	6'-1½"	17'-6"	20'-4⅜"	21'-6⅜"	16'-1⅝"	25'-9"	30'-0⅜"	31'-6⅜"	26'-1⅜"	35'-6"	40'-5"	41'-6⅜"	36'-1⅜"	43'-8"	50'-5⅝"	51'-7"	46'-1⅜"
		5'	5'-3⅛"	9'-2"	10'-7"	11'-8⅝"	5'-3⅛"	17'-11"	20'-8⅛"	21'-10"	15'-5"	26'-8"	30'-3⅛"	31'-11⅜"	25'-6⅜"	35'-5"	40'-10⅝"	42'-0½"	35'-7⅜"	44'-2"	51'-0"	52'-1⅜"	45'-10⅜"
		6'	6'-3⅛"	9'-2"	10'-7"	11'-8⅝"	4'-3⅛"	17'-11"	20'-8⅛"	21'-10"	14'-5"	26'-8"	30'-3⅛"	31'-11⅜"	24'-6⅜"	35'-5"	40'-10⅝"	42'-0½"	34'-7⅜"	44'-2"	51'-0"	52'-1⅜"	44'-10⅜"
		7'	7'-3⅛"	9'-3"	10'-8⅝"	11'-10"	2'-11"	18'-1"	20'-10⅛"	22'-0⅛"	13'-1⅛"	26'-11"	31'-1"	32'-3⅜"	23'-3⅜"	35'-9"	41'-3⅜"	42'-5⅛"	33'-6⅜"	44'-7"	51'-5⅜"	52'-7⅛"	43'-5⅜"
		8'	8'-3⅛"	9'-4"	10'-9⅜"	11'-11¼"	1'-6⅝"	18'-2"	20'-11⅜"	22'-1⅛"	11'-8⅜"	27'-0"	31'-2⅜"	32'-4"	21'-11"	35'-10"	41'-5⅜"	42'-6⅝"	32'-5⅜"	44'-9"	51'-7"	52'-8⅜"	42'-3⅜"
	9'	5'	5'-3⅛"	10'-2"	11'-8⅜"	12'-10⅜"	6'-5⅜"	19'-11"	23'-0"	24'-1⅜"	17'-0⅜"	29'-8"	34'-3⅜"	35'-5"	28'-11⅜"	39'-5"	45'-6⅜"	46'-8"	40'-3"	49'-2"	56'-0⅜"	57'-1⅝"	51'-6"
		6'	6'-3⅛"	10'-3"	11'-10"	13'-0"	5'-6⅜"	20'-1"	23'-2⅛"	24'-3⅝"	16'-1"	29'-11"	34'-6⅜"	35'-8⅜"	28'-3⅜"	39'-9"	45'-10⅜"	47'-0⅛"	39'-7⅜"	49'-6"	56'-4⅜"	57'-5⅝"	50'-11⅜"
		7'	7'-3⅛"	10'-3"	11'-10"	13'-0"	4'-0⅜"	20'-1"	23'-2⅛"	24'-3⅝"	15'-5"	29'-11"	34'-6⅜"	35'-8⅜"	27'-6⅜"	39'-9"	45'-10⅜"	47'-0⅛"	38'-10⅜"	49'-7"	56'-5"	57'-6⅜"	50'-7⅜"
		8'	8'-3⅛"	10'-4"	11'-11⅝"	13'-1"	2'-8"	20'-2"	23'-3⅝"	24'-5⅛"	14'-10⅛"	30'-0"	34'-7⅜"	35'-9⅝"	25'-9⅛"	39'-10"	46'-0"	47'-1⅜"	36'-8⅜"	49'-8"	57'-0⅜"	58'-0"	49'-1"
	10'	5'	5'-3⅛"	11'-2"	12'-10⅜"	14'-0⅝"	7'-7⅛"	21'-4"	25'-0⅜"	26'-2⅝"	20'-0⅛"	32'-6"	37'-0⅜"	38'-10½"	32'-5⅛"	43'-5"	50'-2⅜"	51'-3⅝"	44'-10⅛"	54'-2"	62'-6⅛"	63'-3½"	57'-3⅜"
		6'	6'-3⅛"	11'-3"	12'-10⅜"	14'-1⅝"	6'-6⅜"	22'-1"	25'-6"	26'-7⅜"	19'-2⅜"	32'-11"	37'-6⅜"	39'-2"	31'-9"	43'-9"	50'-6⅜"	51'-8"	43'-10⅜"	54'-7"	63'-0⅛"	63'-10½"	57'-7⅜"
		7'	7'-3⅛"	11'-3"	12'-11"	14'-1⅝"	5'-5⅜"	22'-1"	25'-6"	26'-7⅜"	17'-10⅜"	33'-0"	38'-1⅛"	39'-2"	30'-3"	43'-9"	50'-6⅜"	51'-8"	42'-10"	54'-7"	63'-0⅛"	64'-2⅛"	55'-8"
		8'	8'-3⅛"	11'-4"	12'-1"	14'-3"	3'-9⅛"	22'-2"	25'-7⅛"	26'-9"	16'-4"	33'-0"	38'-1⅛"	39'-3"	28'-10"	43'-10"	50'-7⅛"	51'-9⅝"	41'-9⅛"	54'-8"	63'-1⅛"	64'-3⅛"	53'-10⅛"
	11'	6'	6'-3⅛"	12'-6"	14'-2⅝"	15'-6⅝"	7'-11⅝"	24'-2"	27'-10⅝"	29'-0⅜"	21'-7⅛"	36'-0"	41'-6⅜"	42'-8⅝"	35'-3⅜"	47'-10"	55'-2⅝"	56'-4⅜"	48'-11⅝"	—	—	—	—
		7'	7'-3⅛"	12'-6"	"	"	6'-5⅜"	24'-2"	"	"	20'-1⅜"	36'-0"	"	"	33'-8"	47'-10"	"	"	47'-5⅝"	—	—	—	—
		8'	8'-3⅛"	12'-6"	"	"	4'-11⅝"	24'-2"	"	"	18'-7⅞"	36'-0"	"	"	32'-1⅜"	47'-10"	"	"	45'-11⅝"	—	—	—	—
	12'	6'	6'-3⅛"	13'-6"	15'-4⅝"	16'-8⅝"	9'-1⅞"	26'-2"	30'-2⅝"	31'-6⅜"	23'-1⅛"	39'-0"	45'-0⅜"	46'-2⅝"	38'-9⅜"	51'-10"	59'-10⅝"	61'-0"	53'-7"	—	—	—	—
		7'	7'-3⅛"	13'-6"	"	"	7'-7⅝"	26'-2"	"	"	22'-5⅝"	39'-0"	"	"	37'-3⅜"	51'-10"	"	"	52'-1"	—	—	—	—
		8'	8'-3⅛"	13'-6"	"	"	6'-1⅞"	26'-2"	"	"	20'-11⅛"	39'-0"	"	"	35'-9⅝"	51'-10"	"	"	50'-7"	—	—	—	—
W-X302-2, W-X303-2 OR W-X309-2 (FOR H=9'0" & OVER)	7'	9'	10'-9⅜"	8'-6"	9'-10⅜"	10'-11⅝"	Ⓐ 0"	16'-5"	18'-11⅝"	20'-1⅛"	8'-2⅛"	28'-4"	28'-1⅛"	29'-3"	17'-9"	32'-3"	37'-2⅜"	38'-6⅜"	26'-5⅜"	40'-2"	46'-9⅝"	47'-6⅝"	35'-7⅜"
	8'	9'	10'-9⅜"	9'-6"	10'-11⅜"	12'-1⅛"	0'-2⅜"	18'-5"	21'-3⅜"	22'-5"	10'-6"	27'-8"	31'-11⅜"	33'-1⅛"	20'-3⅜"	34'-8"	41'-1⅝"	42'-3⅝"	31'-1"	45'-2"	52'-1⅜"	53'-3⅜"	41'-9⅝"
		10'	12'-3⅜"	9'-8"	11'-2"	12'-3⅜"	Ⓐ 0"	18'-8"	21'-6⅜"	22'-8⅝"	9'-3⅜"	27'-8"	31'-11⅜"	33'-1⅛"	19'-6⅜"	34'-8"	41'-1⅝"	42'-3⅝"	30'-6⅜"	45'-8"	52'-8⅜"	53'-10⅜"	40'-5⅜"
	9'	9'	10'-9⅜"	10'-6"	12'-1⅝"	13'-3⅜"	1'-4⅛"	19'-5"	22'-3⅝"	23'-5⅞"	12'-3⅛"	30'-8"	35'-0⅛"	36'-2⅜"	26'-3"	40'-3"	46'-8⅜"	47'-11⅝"	35'-9⅜"	50'-2"	57'-1⅛"	58'-1"	47'-2"
		10'	12'-3⅜"	10'-8"	12'-3⅜"	13'-5⅝"	0'-10⅝"	20'-8"	23'-10⅜"	25'-0⅛"	11'-7⅛"	30'-8"	35'-4⅝"	36'-6⅝"	23'-1⅜"	40'-8"	46'-11⅝"	48'-1⅜"	34'-8⅜"	50'-8"	58'-1⅝"	59'-1⅝"	46'-2⅜"
		11'	13'-9⅜"	10'-10"	12'-4⅝"	13'-8"	Ⓐ 0"	20'-10"	24'-0⅝"	25'-2⅞"	10'-8⅜"	30'-10"	35'-7⅛"	36'-9"	21'-10"	40'-10"	47'-1⅞"	48'-3⅜"	33'-9⅜"	50'-10"	58'-3⅜"	59'-3⅛"	44'-11⅞"
	10'	9'	10'-9⅜"	11'-6"	13'-3⅜"	14'-5⅜"	2'-6⅛"	22'-5"	25'-10⅜"	27'-0⅛"	15'-3⅜"	33'-6"	38'-5⅜"	39'-7⅜"	27'-8⅜"	44'-3"	51'-1⅛"	52'-3"	40'-1⅜"	55'-2"	63'-0⅜"	64'-0⅛"	52'-11⅛"
		10'	12'-3⅜"	11'-8"	13'-5⅜"	14'-7⅝"	1'-2⅜"	22'-8"	26'-1⅜"	27'-4"	15'-10⅜"	33'-6"	38'-10⅛"	40'-0⅛"	26'-7⅛"	44'-8"	51'-7"	52'-8½"	39'-11⅜"	55'-8"	64'-3⅜"	65'-5⅛"	52'-10"
		11'	13'-9⅜"	11'-10"	13'-8"	14'-9⅜"	Ⓐ 0"	22'-10"	26'-4⅜"	27'-7⅛"	12'-7⅛"	33'-10"	39'-1⅜"	40'-2⅝"	25'-3⅜"	44'-10"	51'-9⅛"	52'-11"	38'-0"	55'-10"	64'-5⅜"	65'-7⅛"	50'-8⅜"
		12'	15'-3⅜"	12'-0"	13'-10⅝"	15'-0⅛"	Ⓐ 0"	23'-0"	26'-6⅝"	27'-8⅝"	11'-3⅜"	34'-0"	39'-3⅝"	40'-5"	24'-0"	45'-0"	51'-11⅝"	53'-1⅛"	36'-8⅝"	56'-0"	64'-8"	65'-9⅜"	49'-11⅜"
	11'	9'	10'-9⅜"	12'-6"	14'-5⅝"	15'-7"	3'-8"	24'-5"	28'-2⅜"	29'-4⅝"	17'-5"	36'-4"	41'-11⅜"	43'-1⅛"	31'-2⅝"	48'-3"	55'-0⅜"	56'-2⅝"	44'-1⅛"	—	—	—	—
		10'	12'-3⅜"	12'-8"	14'-7⅛"	15'-9⅛"	2'-4⅜"	24'-8"	28'-5⅛"	29'-7⅝"	16'-2⅜"	36'-8"	42'-2⅜"	43'-4"	30'-2⅜"	48'-8"	55'-6⅜"	56'-8⅝"	44'-7⅛"	—	—	—	—
		11'	13'-9⅜"	12'-10"	14'-9⅜"	15'-11⅝"	1'-0⅝"	24'-10"	28'-8⅛"	29'-10"	14'-11"	36'-10"	42'-6⅜"	43'-8⅛"	28'-9⅜"	49'-0"	56'-0⅜"	57'-1⅝"	45'-2⅛"	—	—	—	—
		12'	15'-3⅜"	13'-0"	15'-0⅛"	16'-2"	Ⓐ 0"	25'0"	28'-10⅜"	30'-0⅛"	13'-7⅜"	37'-0"	42'-8⅜"	43'-10⅛"	27'-5⅜"	49'-0"	56'-7"	57'-8⅜"	47'-3⅜"	—	—	—	—
	12'	9'	10'-9⅜"	13'-6"	15'-5⅜"	16'-7⅛"	4'-9⅜"	26'-5"	30'-1⅛"	31'-3"	19'-0⅜"	39'-4"	44'-9⅝"	45'-11⅜"	33'-8"	51'-6"	58'-7⅛"	59'-8⅜"	47'-5⅜"	—	—	—	—
		10'	12'-3⅜"	13'-8"	15'-7⅜"	16'-9⅛"	3'-8⅜"	26'-8"	30'-3⅜"	31'-5⅛"	18'-1⅜"	39'-8"	45'-3⅜"	46'-5⅛"	33'-2⅜"	52'-0"	59'-1⅛"	60'-2⅜"	48'-1⅜"	—	—	—	—
		11'	13'-9⅜"	13'-10"	15'-11⅝"	17'-1⅛"	2'-2⅜"	26'-10"	30'-5⅛"	32'-1⅛"	17'-2⅜"	39'-10"	45'-6"	47'-1⅛"	32'-7⅜"	52'-10"	61'-0⅛"	62'-2"	49'-2⅜"	—	—	—	—
		12'	15'-3⅜"	14'-0"	16'-2"	17'-3⅝"	0'-10⅝"	27'-0"	31'-2⅝"	32'-4"	15'-11"	40'-0"	46'-2⅛"	47'-4"	30'-11"	53'-0"	61'-2⅝"	62'-4⅝"	49'-11⅛"	—	—	—	—

Ⓐ *Special case for these boxes, See Detail "a" and Table "A" for revised values of F1, F2, W4 and W5, when apron width is more than 1'0" and W3=0. For Details "A" and Tables "A" for each slope, see Drawing Nos. W-X302-1, W-X302-2, or W-X303-1, W-X303-2, or W-X309-1, W-X304-2.*

NOTE:- This drawing to be used in conjunction with Standard Wing Drawings for 30°Skews for each slope as listed below.

2:1 Slopes	3:1 Slopes	4:1 Slopes
W-X302-1 or W-X302-2	W-X303-1 or W-X303-2	W-X309-1 or W-X304-2.

NOTE:-
This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.-

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-130X-0	R-230X-01	R-330X-01	R-430X-01	R-530X-01
	R-230X-02	R-330X-02	R-430X-02	R-530X-02
R-130X-1	R-230X-1	R-330X-1	R-430X-1	R-530X-1
	R-230X-2	R-330X-2		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 30° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 & 4:1 SLOPES

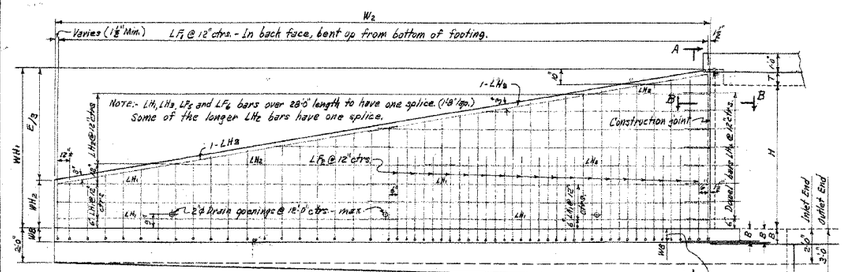
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER H=2', 3', 4', 5', 6', 7', 8', 9', 10', 11' & 12'.

STANDARD DRAWING NO. W-X30

Designed by:- W.C.H. 5-16-63 Checked by:- RMS - 8-21-63
Drawn by:- W.C.H. 7-15-63 Checked by:-
Quantities by:- Checked by:-

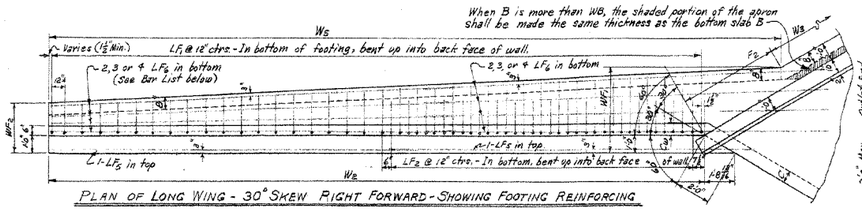
Revised 3-8-93

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			64	
JOB No.					

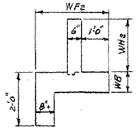


REAR ELEVATION OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING

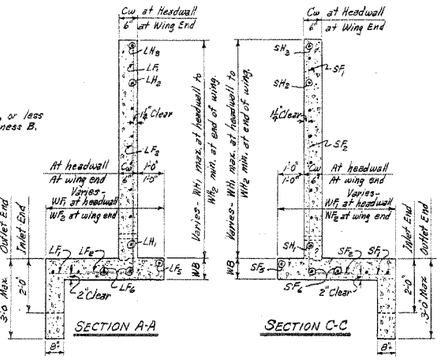
WB may be more, equal to, or less than the bottom slab thickness B.



PLAN OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING

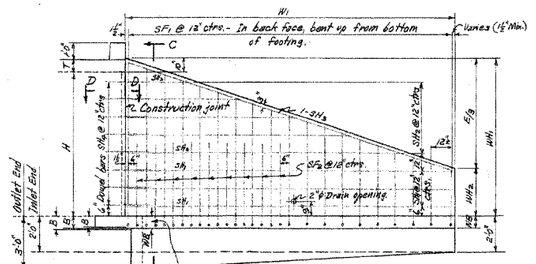


TYPICAL END VIEW OF WING



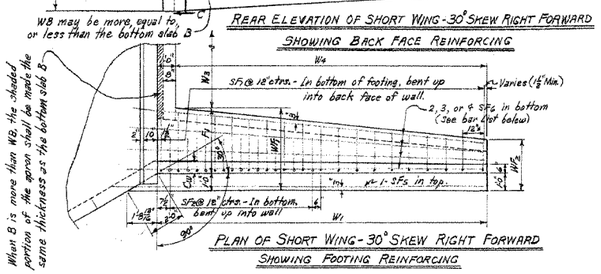
SECTION A-A

SECTION C-C

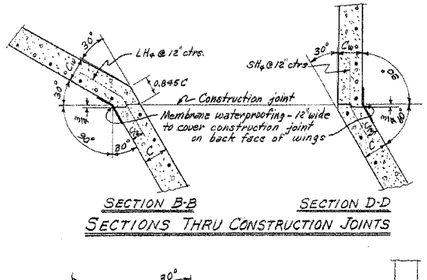


REAR ELEVATION OF SHORT WING - 30° SKEW RIGHT FORWARD SHOWING BACK FACE REINFORCING

WB may be more, equal to, or less than the bottom slab B



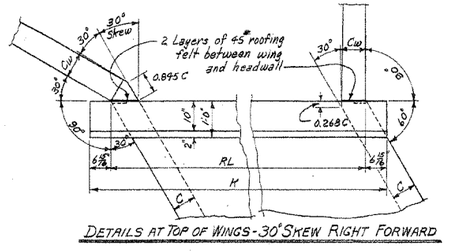
PLAN OF SHORT WING - 30° SKEW RIGHT FORWARD SHOWING FOOTING REINFORCING



SECTION B-B SECTION D-D

SECTIONS THRU CONSTRUCTION JOINTS

NOTE:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.



DETAILS AT TOP OF WINGS - 30° SKEW RIGHT FORWARD

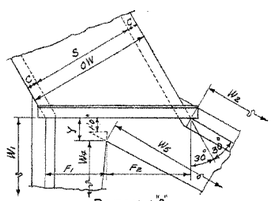
REGULAR WING DIMENSIONS - 3:1 SLOPES

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HDWL & C	WINGWALL HEIGHTS AT HEADWALL	WINGWALL HEIGHTS AT END OF WING	WIDTHS OF WING FOOTINGS AT HEAD WALL	WIDTHS OF WING FOOTINGS AT END OF WING	FOOTING DIMENSION PARALLEL WITH HEADWALL		PERPENDICULAR DIST. FROM HDWL TO END OF WING	LENGTHS OF WINGWALLS		INSIDE FOOTING DIMENSION		* QUANTITY PER WING CLASS S CONCRETE			
														INLET END		OUTLET END	
							SHORT WING	LONG WING		SHORT WING	LONG WING	SHORT WING	LONG WING	SHORT WING	LONG WING	SHORT WING	LONG WING
H	WB	Cw	WH1	WH2	WF1	WF2	F1	F2	E	W1	W2	W4	W5	CU.YD.	CU.YD.	CU.YD.	CU.YD.
2'	7"	6"	2'-10"	0'-8"	2'-6"	2'-0"	1'-4"	0'-11½"	6'-6"	6'-6"	13'-0"	5'-6"	13'-3⅜"	0.752	1.549	0.836	1.717
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1½"	1'-8"	1'-1⅞"	8'-6"	8'-6"	17'-0"	7'-6"	17'-10⅜"	1.130	2.340	1.239	2.565
4'	7"	6"	4'-10"	1'-8"	3'-0"	2'-5"	2'-0"	2'-3⅜"	10'-6"	10'-6"	21'-0"	9'-6"	22'-5¼"	1.577	3.290	1.711	3.552
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-9½"	2'-4"	2'-11⅛"	12'-6"	12'-6"	25'-0"	11'-6"	27'-0½"	2.093	4.341	2.252	4.680
		7"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-4"	2'-11⅛"	12'-6"	12'-6"	25'-0"	11'-6"	27'-0½"	2.179	4.529	2.337	4.862
@ 6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-7⅛"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	2.908	6.024	3.092	6.419
		7½"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-7⅛"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	2.966	6.147	3.150	6.543
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-7⅛"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	3.025	6.272	3.208	6.667
@ 7'	8½"	7½"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-2"	4'-7⅛"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5⅜"	3.811	7.895	4.019	8.350
		8"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-2"	4'-7⅛"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5⅜"	3.887	8.057	4.095	8.512
@ 8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-8"	5'-7⅛"	18'-6"	18'-6"	37'-0"	17'-6"	41'-4⅜"	4.874	10.097	5.107	10.612

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W3.
@ See Table 'A' for special values of F1 & F2 and W4 & W5 for Single 9'x6', 5'x7' and 6'x8' Box Culverts.

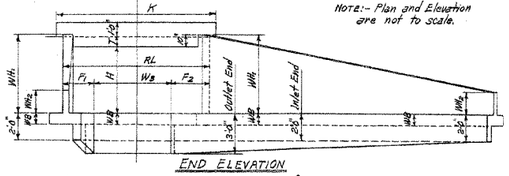
TABLE "A" - DIMENSIONS FOR DETAIL "A"

S	H	F1	F2	W3	Y	W4	W5
4'	6'	2'-7⅞"	3'-3⅝"	0"	1'-1⅞"	13'-0⅛"	31'-3½"
5'	7'	3'-1⅜"	4'-1"	0"	1'-3⅛"	15'-2⅛"	35'-10⅜"
6'	8'	3'-7½"	4'-10⅛"	0"	1'-4⅜"	17'-1⅛"	40'-6"



DETAIL "A"

PART PLAN



END ELEVATION

Note:- Plan and Elevation are not to scale.

SINGLE BARREL CULVERT - 30° SKEW RIGHT FORWARD

Details of Culvert with 30° Skew Left Forward is reversed, see Drawing No. W-X.30.

TYPICAL WING DETAILS

NOTE:-
For remainder of General Plans and Elevations of Single, Double, Triple, Quadruple and Quintuple Span Culverts, see Std. Drawing No. W-X.30.
For values of RL, K and W3 for each box, see above Std. also.

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three moppings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints at wings.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	@ REINFORCING STEEL - LBS. FOR 4 WINGS	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS				
					SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
4'	2'	6"	7"	144	5.80	6.90	8.01	9.12	10.23
	3'	6"	7"	218	8.08	9.18	10.29	11.40	12.51
	4'	6"	7"	327	10.78	11.88	12.99	14.10	15.21
	5'	6"	7"	460	13.90	15.00	16.11	17.22	18.32
	6'	7"	8"	762	18.85	19.99	21.13	22.27	23.41
5'	3'	6"	7"	218	8.33	9.47	11.01	12.36	13.70
	4'	6"	7"	327	11.08	12.36	13.71	15.06	16.40
	5'	6"	7"	460	14.14	15.48	16.83	18.17	19.52
	6'	7"	8"	762	19.11	20.49	21.86	23.24	24.62
	7'	7½"	8½"	1474	24.51	25.96	27.35	28.75	30.16
6'	3'	6"	7"	218	8.57	10.17	11.79	13.33	1492
	4'	6"	7"	327	11.27	12.86	14.49	16.03	17.62
	5'	6"	7"	460	14.38	15.98	17.55	19.15	20.79
	6'	7"	8"	762	19.35	20.98	22.59	24.21	25.83
	7'	7½"	8½"	1474	24.79	26.44	28.08	29.73	31.38
	8'	8"	9"	1870	31.15	32.87	34.51	36.17	37.83
7'	4'	6"	7"	327	11.52	13.37	15.19	17.05	18.85
	5'	6"	7"	460	14.63	16.49	18.31	20.16	21.97
	6'	7"	8"	762	19.61	21.98	23.82	25.20	27.04
	7'	7½"	8½"	1474	25.05	26.94	28.82	30.71	32.59
	8'	8"	9"	1870	31.47	33.37	35.25	37.16	39.05
8'	4'	6"	7"	327	11.77	13.89	15.97	18.09	20.12
	5'	7"	7"	460	15.46	17.60	19.70	21.83	23.89
	6'	7"	8"	762	19.86	21.98	24.05	26.17	28.20
	7'	7½"	8½"	1474	25.80	27.96	29.58	31.73	33.81
	8'	8"	9"	1870	31.72	33.88	36.00	38.16	40.27
9'	5'	7"	7"	460	15.72	18.13	20.67	22.87	25.15
	6'	7½"	8"	762	20.50	22.93	25.29	27.71	30.01
	7'	7½"	8½"	1474	25.55	27.98	30.38	32.76	35.07
	8'	8"	9"	1870	31.97	34.39	36.76	39.18	41.49
10'	5'	7"	7"	460	15.98	18.65	21.25	23.80	26.92
	6'	7½"	8"	762	20.74	23.45	26.07	28.69	31.28
	7'	7½"	8½"	1474	25.81	28.50	31.12	33.70	36.34
	8'	8"	9"	1870	32.22	34.91	37.54	40.12	42.76
11'	6'	8"	8"	762	21.39	24.38	27.25	30.11	——
	7'	8"	8½"	1474	26.55	29.53	32.41	35.27	——
	8'	8"	9"	1870	32.97	35.65	38.33	41.19	——
12'	6'	8"	8"	762	21.46	24.93	28.05	31.20	——
	7'	8"	8½"	1474	26.81	30.08	33.21	36.36	——
	8'	8"	9"	1870	32.78	35.99	39.13	42.28	——

@ For reinforcing steel in Headwalls and Aprons, see Drawing Nos. of Barrel Sections listed below.

GENERAL NOTES:-
CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.
REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.
CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.
SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.
UNIT STRESSES:-
Class S Concrete (n=10) 1200 #/□"
Reinforcing Steel 20,000 #/□"

NOTE:-
This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.:-

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-130X-0	R-230X-01	R-330X-01	R-430X-01	R-530X-01
	R-230X-02	R-330X-02	R-430X-02	R-530X-02
R-130X-1	R-230X-1	R-330X-1	R-430X-1	R-530X-1
	R-230X-2	R-330X-2		

CLASS S CONCRETE

BAR LIST FOR ONE SHORT AND ONE LONG WING - 2 EACH REQUIRED

CLEAR HEIGHT	WING	LOCATION	SF1 & LF1 BENT: In bottom of footing, bent up into back face of wing. One bar (or two bars) of each length						SF2 & LF2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars						SF3 & LF3 STRAIGHT: Longitudinal in top of wing footing slab.			SF6 & LF6 STRAIGHT: Longitudinal in bottom of wing footing slab.			SH1 & LH1 STRAIGHT: Horizontal in back face of wing.			SH2 & LH2 STRAIGHT: Horizontal in back face of wing. One bar of each length. *				SH3 & LH3 STRAIGHT: In back face of wing at top - on slope.			SH4 & LH4 BENT: Dowels thru construction joint at headwall.				BAR BENDING DIAGRAM	QUANTITY: REINFORCING STEEL PER WING - LBS.	
H	SHORT OR LONG		SIZE	SPACING	NO. REQD	LENGTHS VARY MIN.	X MAX.	Y MIN.	MAX.	SIZE	SPACING	NO. REQD	LENGTH	X	Y	SIZE	NO. REQD	LENGTH	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTHS VARY MAX.	MIN.	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	X		SHORT WING	LONG WING
2'	Short		#3	12"	7	1'-7"	3'-11"	0'-8"	1'-0"	#3	12"	1	6'-3"	——	——	#3	1	9'-0"	#3	2	8'-0"	#3	12"	1	6'-3"	#3	12"	1	—	3'-3"	#3	1	6'-7"	#3	12"	2	2'-8"	1'-4"			
	Long		#3	12"	19	1'-5"	3'-11"	0'-8"	1'-0"	#3	12"	1	15'-6"	——	——	#3	2	15'-6"	#3	2	15'-6"	#3	12"	1	12'-6"	#3	12"	1	—	6'-6"	#3	1	12'-11"	#3	12"	2	"	"			
3'	Short		#3	12"	9	2'-1"	5'-3"	0'-10"	1'-4"	#3	12"	1	11'-0"	——	——	#3	2	10'-6"	#3	2	10'-6"	#3	12"	1	8'-3"	#3	12"	2	6'-3"	3'-3"	#3	1	8'-8"	#3	12"	3	"	"			
	Long		#3	12"	18	1'-11"	5'-3"	0'-10"	1'-4"	#3	12"	1	19'-6"	——	——	#3	2	20'-0"	#3	2	20'-0"	#3	12"	1	16'-8"	#3	12"	2	12'-6"	6'-6"	#3	1	16'-11"	#3	12"	3	"	"			
4'	Short		#3	12"	11	2'-6"	6'-7"	0'-11"	1'-8"	#3	12"	1	13'-0"	——	——	#3	3	12'-0"	#3	3	9'-8"	#3	12"	2	9'-8"	#3	12"	3	18'-6"	6'-6"	#3	1	21'-0"	#3	12"	4	"	"			
	Long		#3	12"	22	2'-4"	6'-6"	0'-11"	1'-7"	#3	12"	1	23'-6"	——	——	#3	3	24'-10"	#3	3	20'-8"	#3	12"	2	20'-8"	#3	12"	3	18'-6"	6'-6"	#3	1	21'-0"	#3	12"	4	"	"			
5'	Short		#3	12"	13	2'-11"	7'-11"	1'-0"	2'-0"	#3	12"	2	15'-0"	#3	3'-6"	#3	3	15'-0"	#3	3	11'-3"	#2	12"	3	9'-3"	#3	12"	3	9'-3"	3'-3"	#3	1	12'-1"	#3	12"	5	"	"			
	Long		#3	12"	26	2'-9"	7'-10"	1'-0"	1'-10"	#3	12"	2	27'-6"	#3	6'-6"	#3	3	27'-6"	#3	3	23'-0"	#3	12"	2	24'-9"	#3	12"	3	18'-6"	6'-6"	#3	1	25'-1"	#3	12"	5	"	"			
6'	Short		#3	12"	15	3'-6"	9'-3"	1'-2"	2'-4"	#3	12"	3	6'-6"	1'-8"	3'-9"	#3	4	17'-0"	#3	3	16'-0"	#3	12"	2	14'-3"	#3	12"	4	12'-3"	3'-3"	#3	1	15'-0"	#3	12"	6	"	"			
	Long		#3	12"	30	3'-4"	9'-3"	1'-2"	2'-3"	#3	12"	6	8'-6"	1'-8"	3'-9"	#3	6	18'-8"	#3	6	18'-0"	#3	12"	4	15'-2"	#3	12"	9	24'-6"	6'-6"	#3	2	15'-5"	#3	12"	6	2'-8"	1'-4"			
7'	Short		#4	12"	17	3'-11"	10'-10"	1'-3"	2'-10"	#3	12"	6	5'-6"	1'-7"	4'-0"	#4	1	19'-0"	#4	4	18'-0"	#4	12"	2	16'-3"	#4	12"	5	15'-3"	3'-3"	#4	1	17'-1"	#4	12"	7	3'-6"	1'-5"			
	Long		#4	12"	34	3'-9"	10'-8"	1'-3"	2'-8"	#3	12"	12	5'-6"	1'-7"	4'-0"	#4	2	18'-8"	#4	8	20'-4"	#4	12"	4	17'-2"	#4	12"	5	*30'-6"	6'-6"	#4	2	17'-5"	#4	12"	7	"	"			
8'	Short		#4	12"	19	4'-6"	12'-5"	1'-5"	3'-4"	#3	12"	9	6'-6"	1'-10"	4'-9"	#4	1	21'-0"	#4	4	20'-0"	#4	12"	3	18'-3"	#4	12"	5	15'-3"	3'-3"	#4	1	19'-5"	#4	12"	8	"	"			
	Long		#4	12"	38	4'-4"	12'-3"	1'-5"	3'-2"	#3	12"	18	6'-6"	1'-10"	4'-9"	#4	2	22'-8"	#4	8	22'-8"	#4	12"	6	19'-2"	#4	12"	5	*30'-6"	6'-6"	#4	2	19'-6"	#4	12"	8	3'-6"	1'-9"			

SF1 & SF2 / LF1 & LF2 / LF3 & LF6 / SH1 & SH2 / SH3 & SH4 / LH1 & LH2 / LH3 & LH4

SHORT WING	29.7	37.0	56.2	78.0	127.8	267.0
LONG WING	95.6	69.5	107.2	152.2	253.1	489.8

NOTE:- Bars for short wing shall be marked with prefix letter 'S', while those for long wing shall be marked with letter 'L'.

* Length without splice. Bars over 28'-0" length may be spliced. (1'-8" lap.)

NOTE:- Dimensions are to bar centers.

REVISIONS:- Membrane Added. 5-10-66 W.C.H.

Designed By:- W.C.H. 5-13-63 Checked By:- [illegible] 8-19-63
Drawn By:- W.C.H. 7-26-63 Checked By:- DMT 7-15-64
Quantities By:- W.C.H. 1-17-64

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 30° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES

SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

STANDARD DRAWING NO. W-X303-1

RESHOT 3-8-93

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			65	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH - TWO 30° SKEWED ENDS.

Note:- For Details of Standard Wings and bar lists, see Drawing No. W-X302-1 or W-X302-2; W-X303-1 or W-X303-2, and W-X304-1 or W-X304-2. Also W-X30.

DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	"a" bars STRAIGHT In Top and Bottom Slabs of Barrel. SIZE	SPACING	NO. REQ'D	LENGTH	"a₁" bars STRAIGHT In Top and Bottom Slab (Four of each Length) SIZE	SPACING	NO. REQ'D	LENGTH MAX.	LENGTH MIN.
0'-0" TO 5'-0" MAXIMUM	4'	2'			108	4'-9"			4	2'-11"	—
		3'			108	4'-9"			4	"	—
		4'	#5	13"	108	4'-9"	#5	13"	4	"	—
		5'			108	4'-9"			4	"	—
		6'			108	4'-11"			4	3'-1"	—
	5'	3'			108	5'-3"			4	3'-11"	—
		4'			108	5'-3"			4	"	—
		5'	#6	18"	108	5'-3"	#6	18"	4	"	—
		6'			108	5'-3"			4	"	—
		7'			108	5'-11"			4	4'-1"	—
	6'	4'			106	6'-3"			4	4'-2"	—
		5'			106	6'-3"			4	"	—
		6'	#6	18"	106	7'-1"	#6	18"	4	"	—
		7'			106	7'-1"			4	"	—
		8'			106	7'-9"			4	4'-10"	—
	7'	4'			114	6'-9"			8	5'-0"	3'-8"
		5'			114	6'-9"			8	"	"
		6'	#6	12"	114	6'-9"	#6	12"	8	"	"
		7'			114	7'-5"			8	5'-2"	3'-5"
		8'			114	7'-1"			8	5'-3"	3'-6"
		9'			114	7'-7"			8	5'-4"	3'-7"
	8'	4'			124	7'-9"			12	6'-2"	3'-0"
		5'			124	7'-9"			12	"	"
		6'	#6	11"	124	7'-11"	#6	11"	12	6'-4"	3'-2"
		7'			124	8'-0"			12	6'-5"	3'-3"
		8'			124	8'-1"			12	6'-6"	3'-4"
		9'			124	8'-3"			12	6'-8"	3'-5"
	9'	4'			112	8'-9"			12	7'-0"	3'-6"
		5'			112	8'-11"			12	7'-2"	3'-8"
		6'	#7	12"	112	8'-11"	#6	12"	12	"	"
		7'			112	9'-0"			12	7'-3"	3'-9"
		8'			112	9'-1"			12	7'-4"	3'-10"
		9'			112	9'-3"			12	7'-6"	4'-0"
		10'			112	9'-5"			16	7'-8"	2'-5"
	10'	5'			122	9'-11"			16	8'-9"	3'-7"
		6'			122	10'-0"			16	9'-5"	3'-8"
		7'	#7	11"	122	10'-0"	#6	11"	16	"	"
		8'			122	10'-1"			16	9'-6"	3'-9"
		9'			122	10'-3"			16	9'-8"	3'-11"
		10'			122	10'-4"			16	9'-9"	4'-0"
		11'			122	10'-6"			16	9'-11"	4'-2"
	11'	5'			110	10'-6"			20	9'-8"	3'-4"
		6'			110	10'-7"			20	9'-9"	3'-5"
		7'			110	10'-7"			20	"	"
		8'	#7	12"	110	10'-8"	#6	12"	20	9'-10"	3'-6"
		9'			110	10'-9"			20	9'-11"	3'-7"
		10'			110	10'-10"			20	10'-0"	3'-8"
		11'			110	10'-11"			20	10'-1"	3'-9"
	12'	5'			118	12'-3"			24	10'-6"	2'-7"
		6'			118	12'-3"			24	"	"
		7'			118	12'-3"			24	"	"
		8'			118	12'-3"			24	10'-7"	2'-8"
		9'	#7	11"	118	12'-3"	#7	11"	24	10'-8"	2'-9"
		10'			118	12'-5"			24	10'-10"	2'-11"
		11'			118	12'-7"			24	11'-0"	3'-1"
		12'			118	12'-9"			24	11'-2"	3'-3"
	13'	6'			108	13'-1"			24	11'-4"	2'-7"
		7'			108	13'-1"			24	"	"
		8'			108	13'-1"			24	"	"
		9'	#8	12"	108	13'-3"	#7	12"	24	11'-6"	2'-9"
		10'			108	13'-5"			24	11'-8"	2'-11"
		11'			108	13'-7"			24	11'-10"	3'-1"
		12'			106	13'-9"			24	12'-0"	3'-3"

"a" bars BENT - See Diagrams below In Top and Bottom Slabs of Barrel-hooked. Alternate with "a" bars SIZE	SPACING	NO. REQ'D	LENGTH	X
#6	13"	108	5'-10"	6'-8"
		108	5'-10"	"
		108	5'-10"	"
		108	6'-0"	6'-10"
#6	13"	106	6'-10"	5'-9"
		106	6'-10"	"
		106	7'-0"	5'-10"
		106	7'-1"	5'-11"
#6	12"	114	7'-10"	6'-8"
		114	7'-10"	"
		114	7'-11"	"
#6	12"	114	8'-0"	6'-10"
		114	8'-1"	6'-11"
		114	8'-2"	7'-0"
#6	11"	122	8'-10"	7'-8"
		122	8'-10"	"
		122	9'-0"	7'-10"
		122	9'-1"	7'-11"
		122	9'-2"	8'-0"
		122	9'-3"	8'-1"
#6	11"	112	9'-10"	8'-8"
		112	10'-0"	8'-10"
		112	10'-0"	"
#6	12"	112	10'-1"	8'-11"
		112	10'-2"	9'-0"
		112	10'-4"	9'-2"
		110	10'-6"	9'-4"
#6	11"	120	11'-0"	9'-10"
		120	11'-1"	9'-11"
		120	11'-3"	9'-11"
#6	11"	120	11'-2"	10'-0"
		120	11'-4"	"
		120	11'-6"	10'-2"
		120	11'-7"	10'-3"
#6	11"	108	12'-4"	11'-0"
		108	12'-6"	11'-2"
		108	12'-8"	11'-4"
		108	12'-10"	11'-6"
#6	11"	118	13'-4"	12'-0"
		118	13'-4"	"
		118	13'-5"	"
#6	11"	118	13'-6"	12'-2"
		116	13'-8"	12'-4"
		116	13'-10"	12'-6"
		116	14'-0"	12'-8"
#6	11"	106	14'-6"	13'-0"
		106	14'-6"	"
		106	14'-6"	"
#6	12"	106	14'-8"	13'-2"
		106	14'-8"	13'-4"
		106	14'-10"	13'-4"
		106	15'-0"	13'-6"

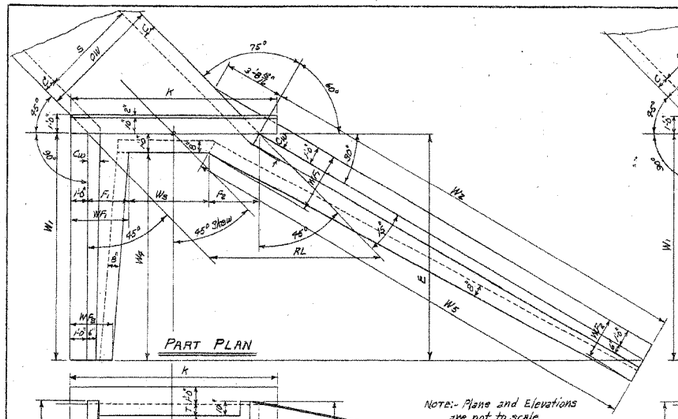
"b" bars BENT - See Diagrams below In Top and Bottom Slabs of Barrel-hooked. Alternate with "a" bars SIZE	SPACING	NO. REQ'D	LENGTH	X
#5	18"	4	4'-5"	—
		4	"	—
		4	"	—
		4	"	—
		8	4'-8"	2'-8"
#5	18"	8	5'-5"	3'-6"
		8	"	"
		8	5'-7"	3'-8"
		8	5'-8"	3'-9"
#5	12"	12	6'-5"	2'-11"
		12	"	"
		12	6'-7"	3'-1"
		12	6'-8"	3'-2"
		12	6'-9"	3'-3"
		12	6'-10"	3'-4"
#5	12"	16	7'-5"	2'-4"
		16	7'-6"	3'-1"
		16	7'-7"	3'-2"
		16	7'-8"	3'-3"
		16	7'-9"	3'-4"
		16	7'-10"	3'-5"
#5	10"	20	9'-8"	3'-4"
		20	9'-9"	3'-5"
		20	"	"
		20	9'-10"	3'-6"
		20	9'-11"	3'-7"
		20	10'-0"	3'-8"
#5	10"	20	10'-10"	3'-10"
		20	10'-11"	4'-0"
		20	11'-0"	4'-0"
		20	11'-1"	4'-1"
		20	11'-2"	4'-2"
		20	11'-3"	4'-3"
#5	10"	20	11'-6"	4'-6"
		20	11'-7"	4'-7"
		20	11'-8"	4'-8"
		20	11'-9"	4'-9"
		20	11'-10"	4'-10"
#5	10"	24	12'-1"	4'-10"
		24	"	"
		24	"	"
		24	12'-1"	4'-11"
		24	12'-2"	5'-0"
		24	12'-3"	5'-1"
		24	12'-4"	5'-2"
#5	10"	24	12'-6"	5'-4"
		24	12'-7"	5'-5"
		24	12'-8"	5'-6"
		24	12'-9"	5'-7"
		24	12'-10"	5'-8"
		24	12'-11"	5'-9"

"d" bars STRAIGHT Longitudinal in Top Slab of Barrel. SIZE	SPACING	NO. REQ'D	LENGTH
#5	12"	6	
		6	
		6	
		10	
		6	
#5	12"	7	
		7	
		7	
		7	
#5	12"	8	
		8	
		8	
		8	
		8	
		8	
#5	10"	9	
		9	
		9	
		9	
		9	
		9	
#5	10"	10	
		10	
		10	
		10	
		10	
		10	
#5	10"	12	
		12	
		12	
		12	
		12	
		12	
#5	10"	13	
		13	
		13	
		13	
		13	
		13	
#5	10"	15	
		15	
		15	
		15	
		15	
		15	
#5	10"	16	
		16	
		16	
		16	
		16	
		16	

"e" bars STRAIGHT Longitudinal in Sidewalls. SIZE	SPACING	NO. REQ'D	LENGTH
#4	12"	4	
		6	
		8	
		10	
		12	
#4	12"	4	
		6	
		8	
		10	
		12	
#4	12"	4	
		6	
		8	
		10	
		12	
		14

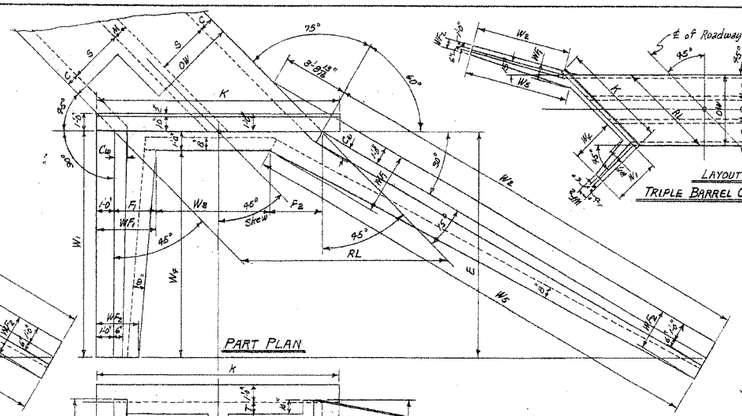
Reshot 3-8-93

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			66	
JOB No.					



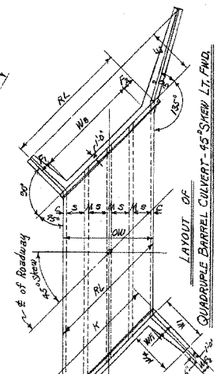
SINGLE BARREL CULVERT - 45° SKEW RIGHT FORWARD

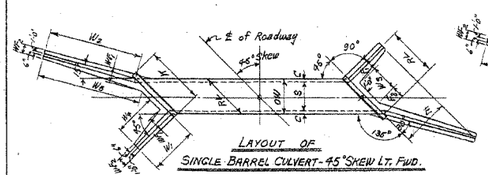
Details of Culvert with 45° Skew Left Forward is reversed, see Layout below.

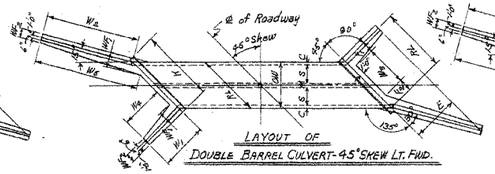


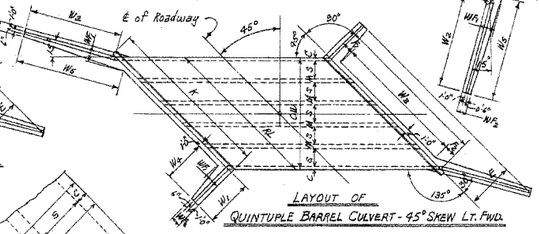
DOUBLE BARREL CULVERT - 45° SKEW RIGHT FORWARD

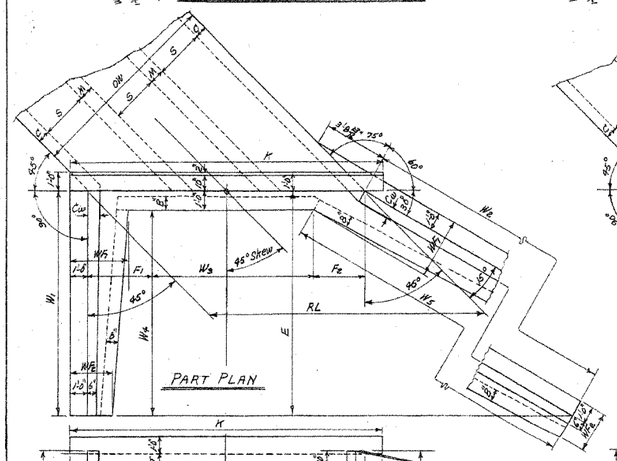
Details of Culvert with 45° Skew Left Forward is reversed, see Layout below.





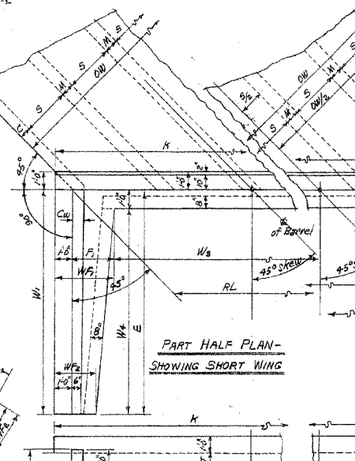






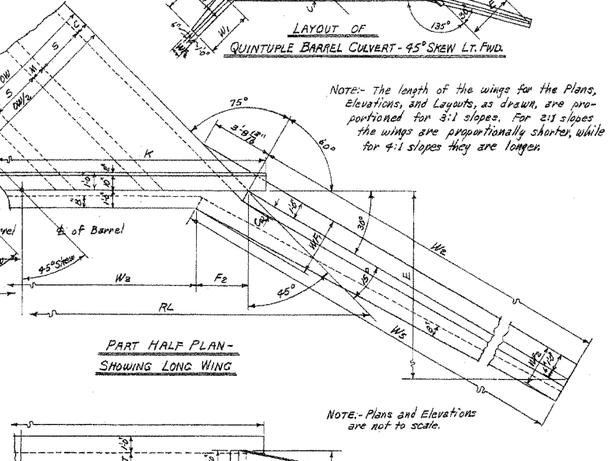
TRIPLE BARREL CULVERT - 45° SKEW RIGHT FORWARD

Details of Culvert with 45° Skew Left Forward is reversed, see Layout at top center of sheet.



QUADRUPLE BARREL CULVERT - 45° SKEW RT. FWD.

Details of Culvert with 45° Skew Left Forward is reversed, see Layout at above center.



QUINTUPLE BARREL CULVERT - 45° SKEW RT. FWD.

Details of Culvert with 45° Skew Left Forward is reversed, see Layout above.

Note:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.

Note:- Plans and Elevations are not to scale.

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION W_3

RL = OW × 1.41421 — K = RL + (2'-0") — W_3 = RL - (F_1 + F_2)

USE WITH Drawing No.	CLEAR SPAN	CLEAR HEIGHT	SUM OF FOOTING DIMENSIONS	SINGLE BARREL CULVERT				DOUBLE BARREL CULVERT				TRIPLE BARREL CULVERT				QUADRUPLE BARREL CULVERT				QUINTUPLE BARREL CULVERT			
	S	H	F_1 & F_2	OW	RL	K	W_3	OW	RL	K	W_3	OW	RL	K	W_3	OW	RL	K	W_3	OW	RL	K	W_3
W-X452-1, W-X453-1 OR W-X454-1. (FOR H=8'-0" OR LESS)	4'	2'-3⅛"	5'-0"	7'-0⅜"	9'-0⅝"	4'-9⅜"	9'-8"	13'-8"	15'-8"	11'-4⅜"	19'-0"	20'-9⅜"	22'-3⅜"	18'-8"	19'-0"	26'-10⅝"	28'-10⅝"	24'-7⅝"	23'-8"	33'-5⅞"	35'-5⅞"	31'-2⅝"
		3'-3⅛"	5'-0"	"	"	"	3'-9⅜"	9'-8"	"	"	10'-4⅜"	"	"	"	23'-7⅝"	"	"	"	"	33'-8"	"	"	32'-2⅝"
		4'-3⅛"	5'-0"	"	"	"	2'-9⅜"	9'-8"	"	"	9'-4⅜"	"	"	"	22'-7⅛"	"	"	"	"	33'-8"	"	"	29'-2⅝"
		5'-3⅛"	5'-0"	7'-0⅜"	9'-0⅝"	1'-9⅜"	9'-8"	13'-8"	15'-8"	9'-4⅜"	19'-0"	20'-9⅜"	22'-3⅜"	15'-0"	19'-0"	26'-10⅝"	28'-10⅝"	21'-7⅝"	23'-8"	33'-5⅞"	35'-5⅞"	28'-2⅝"
		6'-3⅛"	5'-2"	7'-3⅜"	9'-3⅝"	1'-0⅜"	9'-11"	14'-0⅛"	16'-0⅛"	7'-10⅜"	19'-5⅜"	20'-8⅝"	22'-9"	16'-5⅜"	19'-5"	27'-5⅜"	29'-5⅜"	22'-2⅜"	24'-2"	34'-2⅛"	36'-2"	27'-10⅜"
	5'	3'-3⅛"	6'-0"	8'-5⅞"	10'-8⅝"	5'-2⅝"	11'-8"	16'-6"	18'-6"	13'-2⅝"	17'-4"	21'-4⅛"	24'-6⅝"	21'-3"	23'-0"	32'-6⅝"	34'-6⅝"	29'-3"	28'-8"	40'-6⅝"	42'-6⅝"	37'-3⅜"
		4'-3⅛"	6'-0"	"	"	4'-2⅝"	11'-8"	"	"	12'-2⅝"	17'-4"	"	"	20'-3"	23'-0"	"	"	28'-3"	28'-8"	"	"	36'-3⅝"	
		5'-3⅛"	6'-0"	8'-5⅞"	10'-8⅝"	3'-2⅝"	11'-8"	16'-6"	18'-6"	11'-2⅝"	17'-4"	21'-4⅛"	24'-6⅝"	19'-3"	23'-0"	32'-6⅝"	34'-6⅝"	27'-3"	28'-8"	40'-6⅝"	42'-6⅝"	35'-3⅜"
		6'-3⅛"	6'-2"	8'-5⅞"	10'-8⅝"	2'-5⅝"	11'-11"	16'-10⅛"	18'-10⅛"	10'-7"	17'-8"	20'-10⅜"	23'-0⅝"	17'-10"	23'-5"	33'-1⅜"	35'-1⅜"	26'-10⅝"	29'-2"	41'-3"	43'-3"	34'-11⅝"
		7'-3⅛"	6'-8"	8'-10⅝"	10'-10⅝"	1'-0⅜"	12'-5"	17'-1"	19'-1"	9'-3⅜"	17'-11"	21'-6"	24'-0⅜"	17'-4⅝"	23'-9"	33'-7"	35'-7"	26'-9⅜"	29'-7"	41'-10"	43'-10"	34'-0⅜"
	6'	3'-3⅛"	7'-0"	9'-10⅜"	11'-10⅜"	6'-7⅜"	13'-8"	19'-3⅜"	21'-3⅜"	16'-0⅜"	20'-6"	24'-8⅞"	30'-9"	25'-5⅜"	27'-0"	38'-2⅜"	40'-2⅜"	34'-1⅛"	33'-8"	47'-1⅝"	49'-1⅝"	44'-4"
		4'-3⅛"	7'-0"	"	"	5'-7⅜"	13'-8"	"	"	15'-0⅜"	"	"	"	29'-5⅝"	"	"	"	33'-11"	"	"	"	43'-3"	
		5'-3⅛"	7'-0"	9'-10⅜"	11'-10⅜"	4'-7⅜"	13'-8"	19'-3⅜"	21'-4"	14'-0⅜"	20'-6"	24'-8⅞"	30'-9"	23'-5⅜"	27'-0"	38'-2⅜"	40'-2⅜"	32'-1"	33'-8"	47'-1⅝"	49'-2"	42'-4"
		6'-3⅛"	7'-2"	10'-1⅝"	12'-1⅝"	3'-10⅜"	13'-11"	19'-8⅜"	21'-8⅜"	13'-5"	20'-9"	25'-0⅝"	31'-2⅝"	23'-11"	27'-5"	38'-9⅝"	40'-9⅝"	30'-10"	33'-11"	47'-6⅝"	50'-3⅜"	42'-0⅜"
		7'-3⅛"	7'-3"	10'-3"	12'-3"	2'-5⅜"	14'-1"	19'-11"	22'-1"	12'-1⅜"	20'-11"	25'-3"	31'-7"	21'-9⅜"	27'-10"	39'-3"	41'-3"	29'-5"	34'-2"	48'-0⅜"	50'-1"	41'-1⅜"
		8'-3⅛"	7'-6"	10'-4⅜"	12'-4⅜"	1'-1⅜"	14'-2"	20'-1⅜"	22'-0⅝"	10'-9⅜"	21'-0"	25'-5⅜"	31'-10⅜"	20'-1⅝"	27'-10"	39'-4⅝"	41'-5⅝"	28'-0⅜"	34'-4"	48'-3⅝"	50'-4⅝"	39'-9"
	7'	6'-3⅛"	8'-0"	11'-3⅜"	13'-3⅜"	7'-0⅜"	15'-8"	22'-1⅛"	24'-1⅛"	17'-10⅜"	23'-4"	27'-10⅜"	34'-1"	28'-5⅜"	31'-0"	43'-10⅜"	45'-10"	39'-6⅜"	38'-8"	54'-0⅛"	56'-0⅛"	50'-5"
		5'-3⅛"	8'-0"	11'-3⅜"	13'-3⅜"	6'-0⅜"	15'-8"	22'-1⅛"	24'-1⅛"	16'-7⅜"	23'-4"	27'-10⅜"	34'-1"	27'-5⅜"	31'-0"	43'-10⅜"	45'-10"	38'-6⅜"	38'-8"	54'-0⅛"	56'-0⅛"	49'-5"
		6'-3⅛"	8'-2"	11'-4⅝"	13'-5⅝"	5'-3⅜"	15'-11"	22'-4⅝"	24'-5⅝"	16'-2⅜"	23'-8"	28'-2⅝"	34'-5⅝"	26'-1⅜"	31'-3"	44'-3⅜"	46'-3⅜"	37'-11⅝"	39'-1"	54'-7⅛"	56'-7⅛"	49'-1⅛"
		7'-3⅛"	8'-5"	11'-8"	13'-8"	4'-5⅜"	16'-2"	22'-9"	24'-9"	15'-8⅜"	24'-0"	28'-5⅜"	34'-8⅜"	25'-4⅝"	31'-5"	44'-7⅝"	46'-7⅝"	37'-7⅛"	39'-5"	55'-0⅛"	57'-0⅛"	48'-10⅛"
		8'-3⅛"	8'-8"	11'-9⅝"	13'-9⅝"	3'-10⅜"	16'-5"	23'-0⅛"	25'-0⅛"	15'-3"	24'-3"	28'-8⅝"	34'-11⅝"	24'-10"	31'-8"	44'-11⅝"	46'-11⅝"	37'-3⅝"	39'-8"	55'-3⅜"	57'-3⅜"	48'-5⅜"
	8'	6'-3⅛"	8'-10"	12'-0⅜"	14'-0⅜"	8'-5⅛"	17'-0"	24'-1⅛"	26'-1⅛"	20'-8⅛"	26'-4"	31'-0⅛"	37'-3⅛"	33'-3"	35'-0"	48'-1⅛"	50'-1⅛"	45'-5⅛"	43'-8"	59'-5⅛"	61'-5⅛"	56'-8"
		7'-3⅛"	9'-0"	12'-3⅝"	14'-3⅝"	7'-8⅜"	17'-4"	25'-0"	27'-0"	19'-5⅜"	27'-1"	31'-7⅜"	38'-0⅜"	31'-5⅝"	35'-0"	48'-4⅜"	50'-4⅜"	43'-8⅝"	43'-8"	59'-8⅜"	61'-8⅜"	54'-11⅜"
		8'-3⅛"	9'-2"	12'-6"	14'-6"	6'-9⅜"	17'-11"	25'-6⅛"	27'-6⅛"	18'-5"	27'-10"	32'-4⅛"	38'-7⅛"	29'-6⅜"	35'-0"	48'-9⅛"	50'-9⅛"	41'-9⅜"	43'-8"	60'-0⅛"	62'-0⅛"	53'-1⅜"
	9'	6'-3⅛"	10'-2"	14'-4⅝"	16'-4⅝"	9'-1⅜"	19'-4"	26'-8"	30'-2"	22'-10⅜"	29'-9"	34'-5⅞"	41'-1⅜"	36'-8⅜"	39'-9"	53'-1⅜"	57'-9"	50'-5⅜"	48'-8"	65'-2⅜"	69'-2⅜"	61'-6⅜"
		7'-3⅛"	10'-5"	14'-6"	16'-6"	8'-5⅜"	20'-1"	28'-4⅜"	30'-4⅜"	22'-1⅛"	29'-11"	34'-11⅜"	41'-4⅜"	34'-5⅛"	39'-9"	53'-5⅜"	57'-9"	48'-1⅛"	48'-8"	65'-6⅜"	69'-6⅜"	60'-10⅜"
		8'-3⅛"	10'-8"	14'-7⅝"	16'-7⅝"	7'-6⅜"	20'-2"	28'-6⅝"	30'-6⅝"	21'-5⅜"	30'-1"	35'-3⅛"	41'-6⅛"	33'-1⅝"	39'-9"	53'-5⅜"	57'-9"	46'-5⅝"	48'-8"	65'-10⅛"	69'-10⅛"	60'-2⅝"
	10'	6'-3⅛"	10'-8"	14'-7⅝"	16'-7⅝"	11'-2⅜"	20'-2"	28'-6⅝"	30'-6⅝"	22'-5⅛"	30'-1"	35'-3⅛"	41'-6⅛"	34'-0"	40'-11"	54'-3⅛"	58'-3⅛"	49'-0"	49'-7"	67'-1⅝"	71'-1⅝"	62'-6"
		7'-3⅛"	10'-11"	15'-0⅛"	17'-0⅛"	10'-0⅜"	20'-5"	28'-10⅝"	30'-10⅝"	21'-9⅜"	30'-4"	35'-7⅝"	41'-10⅝"	33'-4⅜"	40'-11"	54'-3⅛"	58'-3⅛"	48'-4⅜"	49'-7"	67'-1⅝"	71'-1⅝"	61'-10⅜"
		8'-3⅛"	11'-2"	15'-0⅛"	17'-0⅛"	9'-1⅜"	20'-5"	28'-10⅝"	30'-10⅝"	20'-10⅜"	30'-4"	35'-7⅝"	41'-10⅝"	32'-5⅜"	40'-11"	54'-3⅛"	58'-3⅛"	47'-5⅜"	49'-7"	67'-1⅝"	71'-1⅝"	60'-11⅜"
	11'	6'-3⅛"	12'-5"	17'-5⅝"	19'-5⅝"	11'-2⅜"	24'-2"	33'-2"	35'-2"	27'-11"	34'-0"	40'-11"	48'-2"	39'-0"	46'-11"	62'-3"	66'-3"	55'-9"	57'-6"	77'-1⅜"	81'-1⅜"	71'-2"
		7'-3⅛"	12'-6"	"	"	9'-8⅛"	24'-2"	"	"	26'-5"	"	"	"	37'-6⅛"	"	"	"	53'-10⅝"	"	"	"	74'-0⅝"	
		8'-3⅛"	12'-8"	"	"	8'-2⅛"	24'-2"	"	"	28'-11"	"	"	"	36'-0"	"	"	"	49'-7⅜"	"	"	"	68'-4⅜"	
	12'	6'-3⅛"	13'-4"	18'-10⅛"	20'-10⅛"	12'-7⅜"	26'-2"	37'-0⅛"	39'-0"	30'-8⅜"	38'-0"	45'-10⅜"	53'-9⅜"	44'-0"	51'-10"	70'-3⅜"	74'-3⅜"	62'-10⅜"	65'-5"	87'-1⅝"	91'-1⅝"	80'-6"
		7'-3⅛"	13'-6"	"	"	11'-1⅝"	26'-2"	"	"	29'-2⅝"	"	"	"	39'-0"	"	"	"	57'-1⅛"	"	"	"	77'-3⅛"	
		8'-3⅛"	13'-8"	"	"	9'-7⅝"	26'-2"	"	"	27'-10⅝"	"	"	"	39'-10"	"	"	"	46'-10⅝"	51'-10"	"	"	64'-10⅝"	
W-X452-2, W-X453-2 OR W-X454-2. (FOR H=9'-0" & OVER)	7'	9'-10⅛"	8'-6"	12'-0⅝"	14'-0⅝"	7'-3"	16'-5"	23'-2⅝"	25'-2⅝"	18'-0⅜"	24'-9"	31'-5"	38'-5"	31'-3⅝"	32'-3"	45'-7⅝"	47'-7⅝"	39'-10"	40'-2"	56'-9⅝"	58'-9⅝"	49'-0⅝"
	8'	9'-10⅛"	9'-4"	13'-2⅝"	15'-2⅝"	8'-11⅜"	18'-5"	26'-0⅝"	28'-0⅝"	19'-3⅜"	27'-4"	33'-7⅞"	40'-7⅞"	33'-3"	34'-3"	48'-7⅜"	50'-7⅜"	42'-10"	45'-2"	63'-10⅝"	65'-10⅝"	53'-1⅜"
		10'-1⅛"	9'-8"	13'-8"	15'-8"	7'-4⅜"	18'-8"	26'-4⅜"	28'-4⅜"	18'-1⅝"	27'-8"	33'-11⅜"	41'-1⅜"	26'-10⅜"	34'-8"	49'-1⅜"	51'-1⅜"	39'-7"	45'-8"	64'-1"	66'-1"	52'-3⅜"
	9'	10'-5⅝"	10'-6"	14'-10½"	16'-10½"	9'-1⅜"	20'-5"	28'-10⅝"	30'-10⅝"	18'-1⅝"	30'-4"	42'-10⅜"	49'-10⅜"	42'-1⅝"	43'-2"	61'-0⅜"	63'-0⅜"	49'-6"	45'-8"	64'-1"	66'-1"	52'-3⅜"
		10'-1⅛"	10'-8"	15'-1"	17'-1"	8'-5⅜"	20'-5"	28'-10⅝"	30'-10⅝"	18'-1⅝"	30'-4"	42'-10⅜"	49'-10⅜"	41'-5⅛"	43'-2"	61'-0⅜"	63'-0⅜"	48'-10"	45'-8"	64'-1"	66'-1"	52'-3⅜"
		12'-3⅝"	10'-8"	15'-1"	17'-1"	6'-1⅜"	20'-5"	28'-10⅝"	30'-10⅝"	18'-1⅝"	30'-4"	42'-10⅜"	49'-10⅜"	40'-8⅝"	43'-2"	61'-0⅜"	63'-0⅜"	48'-2"	45'-8"	64'-1"	66'-1"	52'-3⅜"
	10'	9'-10⅛"	11'-6"	16'-3½"	18'-3½"	9'-4⅜"	22'-5"	31'-8"	33'-8"	20'-11⅝"	33'-4"	47'-1⅜"	53'-11⅜"	44'-3"	46'-2"	65'-7"	69'-7"	51'-9⅜"	55'-8"	78'-6⅜"	80'-6⅜"	63'-3"
		10'-1⅛"	11'-8"	16'-6"	18'-6"	8'-2⅜"	22'-10"	32'-4⅜"	34'-4⅜"	19'-9⅜"	33'-8"	47'-7⅛"	53'-11⅜"	43'-5⅜"	46'-2"	65'-7"	69'-7"	50'-10⅜"	55'-8"	78'-6⅜"	80'-6⅜"	62'-4"
		12'-3⅝"	11'-10"	16'-8⅝"	18'-8⅝"	7'-0⅜"	23'-0"	32'-6⅜"	34'-6⅜"	18'-6⅜"	33'-10"	47'-10⅛"	53'-11⅜"	42'-7⅜"	46'-2"	65'-7"	69'-7"	50'-0"	55'-8"	78'-6⅜"	80'-6⅜"	61'-5"
	11'	9'-10⅛"	12'-10"	18'-1⅜"	20'-1⅜"	10'-2⅝"	24'-8"	34'-2⅜"	36'-2⅜"	21'-4⅝"	35'-10"	50'-1⅜"	57'-0⅜"	46'-10"	49'-8"	69'-3⅜"	73'-3⅜"	53'-8"	59'-8"	83'-0⅜"	87'-0⅜"	66'-8"
		10'-1⅛"	12'-10"	18'-1⅜"	20'-1⅜"	9'-3⅝"	24'-8"	34'-2⅜"	36'-2⅜"	20'-5⅛"	35'-10"	50'-1⅜"	57'-0⅜"	45'-8⅜"	49'-8"	69'-3⅜"	73'-3⅜"	52'-6⅜"	59'-8"	83'-0⅜"	87'-0⅜"	65'-6"
		12'-3⅝"	13'-0"	18'-3⅝"	20'-3⅝"	8'-1⅜"	24'-8"	34'-4⅜"	36'-4⅜"	19'-7⅜"	35'-10"	50'-3⅜"	57'-2⅜"	44'-10⅜"	49'-8"	69'-5⅜"	73'-5⅜"	51'-4⅜"	59'-8"	83'-2⅜"	87'-2⅜"	64'-4"
	12'	9'-10⅛"	13'-6"	19'-0⅝"	21'-0⅝"	9'-2⅜"	25'-5"	35'-6⅝"	37'-6⅝"	20'-1"	37'-6"	52'-3⅝"	59'-4⅝"	47'-10⅜"	49'-8"	69'-5⅜"	73'-5⅜"	53'-6"	59'-8"	83'-2⅜"	87'-2⅜"	66'-5⅜"
		10'-1⅛"	13'-8"	19'-2⅝"	21'-2⅝"	8'-2⅜"	25'-5"	35'-6⅝"	37'-6⅝"	19'-7⅜"	37'-6"	52'-3⅝"	59'-4⅝"	47'-5⅜"	49'-8"	69'-5⅜"	73'-5⅜"	53'-1⅜"	59'-8"	83'-2⅜"	87'-2⅜"	66'-0⅜"
		12'-3⅝"	13'-10"	19'-5"	21'-5"	7'-3⅜"	25'-5"	35'-8⅜"	37'-8⅜"	19'-3⅜"	37'-6"	52'-5⅜"	59'-6⅜"	47'-1⅜"	49'-8"	69'-7⅜"	73'-7⅜"	52'-9⅜"	59'-8"	83'-4⅜"	87'-4⅜"	65'-7⅜"
		9'-10⅛"	14'-0"	19'-8⅜"	21'-8⅜"	9'-4⅝"	27'-0"	38'-0⅛"	40'-0⅛"	22'-11"	40'-0"	56'-6⅝"	63'-6⅝"	50'-4⅜"	53'-0"	74'-1⅜"	78'-1⅜"	59'-8⅝"	—	—	—	—
		10'-1⅛"	14'-0"	19'-8⅜"	21'-8⅜"	8'-5⅜"	27'-0"	38'-0⅛"	40'-0⅛"	22'-2⅜"	39'-10"	56'-6⅝"	63'-6⅝"	49'-7⅜"	53'-0"	74'-1⅜"	78'-1⅜"	58'-9⅜"	—	—	—	—
		12'-3⅝"	14'-0"	19'-8⅜"	21'-8⅜"	7'-4⅜"	27'-0"	38'-2⅝"	40'-2⅝"	21'-5⅜"	39'-10"	56'-9"	63'-9"	48'-10⅝"	52'-10"	74'-1⅝"	78'-1⅝"	58'-0⅜"	—	—	—	—
		9'-10⅛"	14'-2"	20'-0⅛"	22'-0⅛"	9'-7⅝"	27'-5"	38'-6⅛"	40'-6⅛"	23'-2⅝"	40'-6"	57'-3⅝"	64'-3⅝"	51'-1⅜"	53'-8"	75'-0⅜"	79'-0⅜"	60'-7⅝"	—	—	—	—
		10'-1⅛"	14'-2"	20'-0⅛"	22'-0⅛"	8'-8⅜"	27'-5"	38'-6⅛"	40'-6⅛"	23'-2⅝"	40'-6"	57'-3⅝"	64'-3⅝"	50'-4⅜"	53'-8"	75'-0⅜"	79'-0⅜"	59'-9⅜"	—	—	—	—
		12'-3⅝"	14'-2"	20'-0⅛"	22'-0⅛"	7'-7⅜"	27'-5"	38'-8⅝"	40'-8⅝"	22'-5⅜"	40'-6"	57'-6⅝"	64'-6⅝"	49'-10⅜"	53'-8"	75'-0⅜"	79'-0⅜"	58'-11⅜"	—	—	—	—

Note:- This drawing to be used in conjunction with Standard Wing Drawings for 45° Skews for each slope as listed below.

2:1 Slopes	3:1 Slopes	4:1 Slopes
W-X452-1 or W-X452-2	W-X453-1 or W-X453-2	W-X454-1 or W-X454-2.

Note:-
This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.-

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-145X-0	R-245X-01	R-345X-01	R-445X-01	R-545X-01
	R-245X-02	R-345X-02	R-445X-02	R-545X-02
R-145X-1	R-245X-1	R-345X-1	R-445X-1	
	R-245X-2	R-345X-2		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 45° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 & 4:1 SLOPES

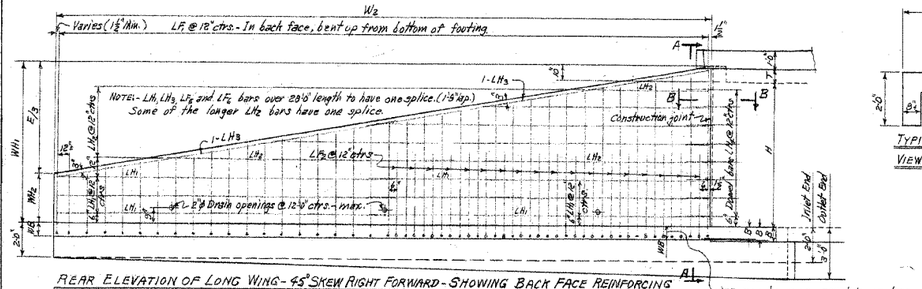
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES — ALL DEPTHS OF COVER H = 2', 3', 4', 5', 6', 7', 8', 9', 10', 11' & 12'

STANDARD DRAWING No. W-X45

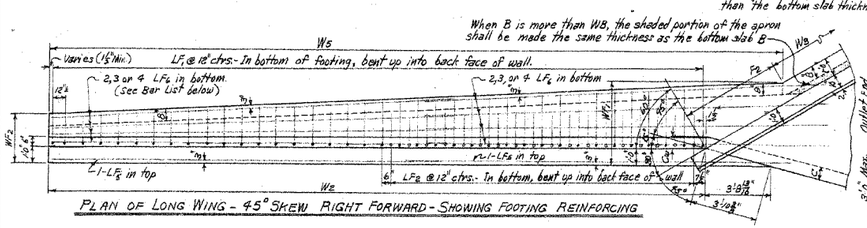
Designed by:- W.C.M. 5-16-63 Checked by:-
Drawn by:- W.C.H. 6-15-64 Checked by:- J.E.M. 6-23-64
Quantities by:- Checked by:-

Reshot 3-8-93 352

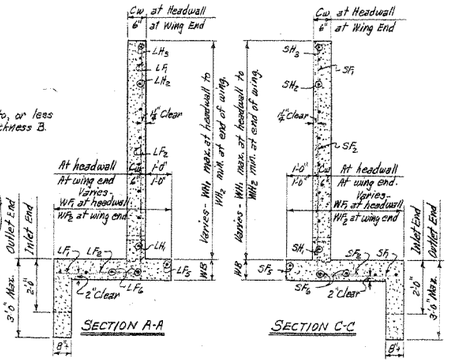
FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			67	
JOB No.					



REAR ELEVATION OF LONG WING - 45° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING

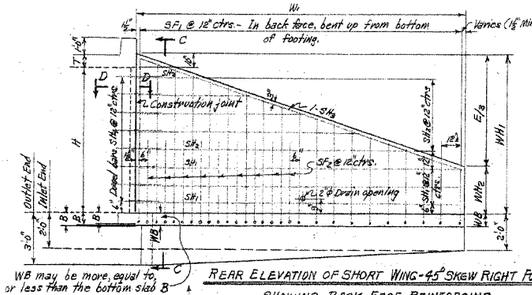


PLAN OF LONG WING - 45° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING



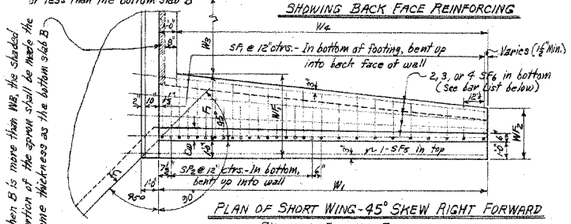
SECTION A-A

SECTION C-C

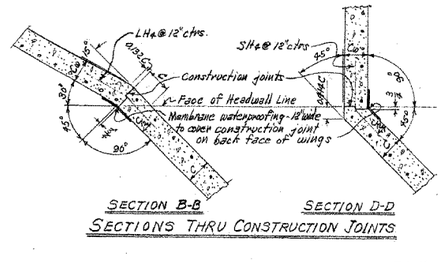


WB may be more, equal to, or less than the bottom slab B

REAR ELEVATION OF SHORT WING - 45° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING

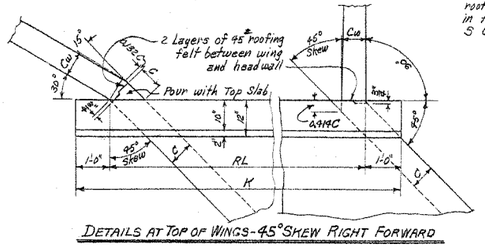


PLAN OF SHORT WING - 45° SKEW RIGHT FORWARD SHOWING FOOTING REINFORCING



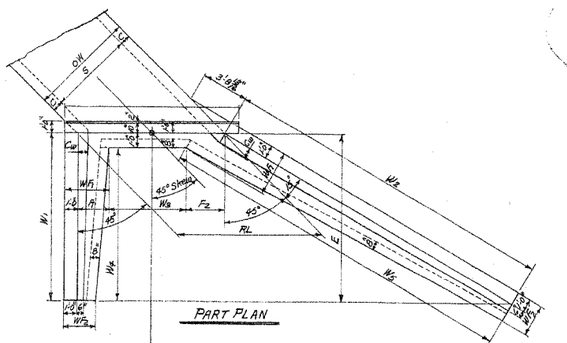
SECTION B-B SECTION D-D

SECTIONS THRU CONSTRUCTION JOINTS

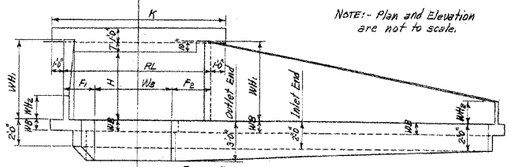


DETAILS AT TOP OF WINGS - 45° SKEW RIGHT FORWARD

NOTE:- Payment for the membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.



PART PLAN



END ELEVATION

Note:- Plan and Elevation are not to scale.

SINGLE BARREL CULVERT - 45° SKEW RIGHT FORWARD

Details of Culvert with 45° Skew Left Forward is reversed, see Drawing No. W-X45.

REGULAR WING DIMENSIONS - 3:1 SLOPES

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HDWALL = C	WINGWALL HEIGHTS AT HDWALL	WINGWALL HEIGHTS AT END OF WING	WIDTHS OF WING FOOTINGS AT HDWALL	WIDTHS OF WING FOOTINGS AT END OF WING	FOOTING DIMENSION - PARALLEL WITH HDWALL SHORT WING	FOOTING DIMENSION - PARALLEL WITH HDWALL LONG WING	PERPENDICULAR DIST. FROM HDWL. TO END OF WING	LENGTHS OF WINGWALLS SHORT WING	LENGTHS OF WINGWALLS LONG WING	INSIDE FOOTING DIMENSION SHORT WING	INSIDE FOOTING DIMENSION LONG WING	* QUANTITY PER WING CLASS S CONCRETE IN LET END SHORT WING	IN LET END LONG WING	OUTLET END SHORT WING	OUTLET END LONG WING
H	WB	Cw	WH1	WH2	WF1	WF2	F1	F2	E	W1	W2	W4	W5	CU.YD.	CU.YD.	CU.YD.	CU.YD.
2'	7"	6"	2'-10"	0'-8"	2'-5"	2'-0"	1'-6"	0'-10½"	6'-6"	6'-6"	13'-0"	5'-6"	13'-3⅜"	0.793	1.572	0.827	1.741
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1½"	1'-8"	1'-7½"	8'-6"	8'-6"	17'-0"	7'-6"	17'-10⅝"	1.120	2.369	1.229	2.590
4'	7"	6"	4'-10"	1'-8"	3'-0"	2'-3"	2'-0"	2'-3½"	10'-6"	10'-6"	21'-0"	9'-6"	22'-3½"	1.567	3.295	1.700	3.577
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-4"	2'-11½"	12'-6"	12'-6"	25'-0"	11'-6"	27'-10½"	2.088	4.367	2.241	4.705
		7"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-4"	2'-11½"	12'-6"	12'-6"	25'-0"	11'-6"	27'-10½"	2.166	4.551	2.325	4.889
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-3⅝"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	2.894	6.055	3.078	6.460
		2-⅛	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-3⅝"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	2.952	6.180	3.195	6.675
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-3⅝"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	3.009	6.305	3.192	6.700
7'	8½"	7½"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-0"	4'-3⅛"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5⅜"	3.794	7.930	4.003	8.385
		8"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-0"	4'-3⅛"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5⅜"	3.870	8.093	4.078	8.598
8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-6"	5'-1½"	18'-6"	18'-6"	37'-0"	17'-6"	41'-9½"	9.955	10.136	5.088	10.651

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W_5.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING STEEL FOR 4 WINGS ⊕	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS				
					SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
4'	2'	6"	7"	142	6.15	7.50	8.86	10.22	11.58
	3'	6"	7"	214	8.44	9.79	11.14	12.50	13.86
	4'	6"	7"	328	11.13	12.98	13.89	15.20	16.54
	5'	6"	7"	468	14.25	15.60	16.96	18.32	19.68
	6'	7"	8"	763	19.23	20.62	22.02	23.41	24.81
5'	3'	6"	7"	214	8.74	10.38	12.03	13.67	15.32
	4'	6"	7"	328	11.43	13.07	14.72	16.37	18.02
	5'	6"	7"	468	14.55	16.19	17.84	19.49	21.13
	6'	7"	8"	763	19.53	21.21	22.90	24.59	26.28
	7'	7½	8½	1975	24.95	26.69	28.51	30.14	31.86
6'	3'	6"	7"	214	9.03	10.99	12.91	14.86	16.79
	4'	6"	7"	328	11.73	13.69	15.60	17.56	19.48
	5'	6"	7"	468	14.85	16.80	18.72	20.68	22.60
	6'	7"	8"	763	19.83	21.82	23.79	25.78	27.74
	7'	7½	8½	1975	25.25	27.30	29.31	31.33	33.35
	8'	8"	9"	1872	31.70	33.74	35.75	37.79	39.81
7'	4'	6"	7"	328	12.04	14.31	16.54	18.81	21.02
	5'	6"	7"	468	15.15	17.43	19.65	21.93	24.13
	6'	7"	8"	763	20.14	22.44	24.69	26.99	29.24
	7'	7½	8½	1975	25.59	27.91	30.21	32.53	34.83
	8'	8"	9"	1872	32.02	34.36	36.66	38.99	41.31
8'	4'	6"	7"	328	12.35	14.65	17.49	20.08	22.57
	5'	7"	7"	463	16.05	18.47	21.24	23.86	26.37
	6'	7"	8"	763	20.95	23.07	25.66	28.26	30.77
	7'	7½	8½	1975	25.90	28.54	31.18	33.78	36.32
	8'	8"	9"	1872	32.39	34.97	37.56	40.21	42.80
9'	5'	7"	7"	463	16.37	19.32	22.18	25.02	27.91
	6'	7½	8"	763	21.16	24.13	27.02	29.89	32.81
	7'	7½	8½	1975	26.21	29.18	32.08	34.94	37.86
	8'	8"	9"	1872	32.63	35.61	38.61	41.37	44.29
10'	5'	7"	7"	463	16.69	19.96	23.14	26.27	29.47
	6'	7½	8"	763	21.69	24.77	27.99	31.13	34.36
	7'	7½	8½	1975	26.53	29.82	33.04	36.19	39.42
	8'	8"	9"	1872	32.95	36.25	39.96	42.62	45.85
11'	6'	8"	8"	763	22.18	25.85	29.35	32.84	——
	7'	8"	8½	1975	27.39	30.99	34.51	38.01	——
	8'	8"	9"	1872	33.86	36.91	40.98	43.93	——
12'	6'	8"	8"	763	22.50	26.51	30.85	34.19	——
	7'	8"	8½	1975	27.66	31.66	35.49	39.35	——
	8'	8"	9"	1872	33.58	37.58	41.41	45.27	——

⊕ For reinforcing steel in Headwalls and Aprons, see Drawing Nos. of Barrel Sections listed below.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾ chamfers.

REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.

CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

UNIT STRESSES:-

Class S Concrete (n=10) 1200 #/□"
Reinforcing Steel 20,000 #/□"

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos.-

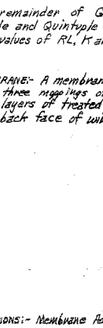
SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-145X-0	R-245X-01	R-345X-01	R-445X-01	R-545X-01
	R-245X-02	R-345X-02	R-445X-02	R-545X-02
R-145X-1	R-245X-1	R-345X-1	R-445X-1	
	R-245X-2	R-345X-2		

CLASS S CONCRETE

BAR LIST FOR ONE SHORT AND ONE LONG WING - 2 EACH REQUIRED

CLEAR HEIGHT	WING LOCATION	SF1 & LF1 BENT: In bottom of footing, bent up into back face of wing. One bar (or two bars) of each length. SIZE	SPACING	NO. REQD	LENGTHS VARY X MIN.	X MAX.	Y MIN.	Y MAX.	SF2 & LF2 BENT: In bottom of footing, bent up into back face of wing, Alt. with F1 bars. SIZE	SPACING	NO. REQD	LENGTH	X	Y	SF3 & LF3 STRAIGHT: Longitudinal in top of wing footing heel. SIZE	NO. REQD	LENGTH	SF4 & LF4 STRAIGHT: Longitudinal in bottom of wing footing toe. SIZE	NO. REQD	LENGTH	SH1 & LH1 STRAIGHT: Horizontal in back face of wing. SIZE	SPACING	NO. REQD	LENGTH	SH2 & LH2 STRAIGHT: Horizontal in back face of wing. One bar of each length. X SIZE	SPACING	NO. REQD	LENGTHS VARY MAX.	MIN.	SH3 & LH3 STRAIGHT: In back face of wing at top - on slope. SIZE	NO. REQD	LENGTH	SH4 & LH4 BENT: Dowels thru construction joint at head wall. SIZE	SPACING	NO. REQD	LENGTH	X
H	SHORT OR LONG				MIN.	MAX.	MIN.	MAX.																																
2'	Short	#3	12"	7	1'-7"	3'-1"	0'-8"	1'-0"	#3	12"	3	3'-6"	1'-1"	2'-6"	#3	1	8'-6"	#3	2	8'-0"	#3	12"	1	6'-3"	#3	12"	1	—	3'-3"	#3	1	6'-7"	#3	12"	2	2'-8"	1'-9"
	Long	#3	12"	14	1'-5"	3'-1"	0'-8"	1'-0"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	17'-6"	#3	2	15'-6"	#3	12"	1	12'-3"	#3	12"	1	—	6'-6"	#3	1	12'-11"	#3	12"	2	"	"
3'	Short	#5	12"	9	2'-1"	5'-3"	0'-10"	1'-4"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	10'-6"	#3	2	10'-0"	#3	12"	1	8'-3"	#3	12"	1	6'-3"	3'-8"	#3	1	8'-8"	#3	12"	3	"	"
	Long	#3	12"	18	1'-11"	5'-3"	0'-10"	1'-9"	#3	12"	5	3'-6"	1'-1"	2'-6"	#5	1	21'-6"	#3	2	20'-6"	#3	12"	1	16'-8"	#3	12"	2	12'-6"	6'-6"	#3	1	14'-11"	#3	12"	3	"	"
4'	Short	#3	12"	11	2'-6"	6'-7"	0'-11"	1'-8"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	12'-6"	#3	3	12'-0"	#3	12"	1	10'-3"	#3	12"	2	9'-3"	5'-3"	#3	1	10'-9"	#3	12"	4	"	"
	Long	#3	12"	22	2'-4"	6'-7"	0'-11"	1'-7"	#3	12"	5	3'-6"	1'-1"	2'-6"	#5	1	25'-6"	#3	3	24'-6"	#3	12"	1	20'-8"	#3	12"	3	18'-6"	6'-6"	#3	1	21'-0"	#3	12"	4	"	"
5'	Short	#3	12"	13	2'-11"	7'-11"	1'-0"	2'-0"	#3	12"	3	3'-6"	1'-1"	2'-6"	#3	1	14'-6"	#3	3	13'-10"	#3	12"	1	12'-8"	#3	12"	2	9'-3"	5'-3"	#3	1	12'-11"	#3	12"	5	"	"
	Long	#3	12"	26	2'-9"	7'-10"	1'-0"	1'-11"	#3	12"	6	3'-6"	1'-1"	2'-6"	#5	2	15'-8"	#3	6	15'-2"	#3	12"	2	24'-9"	#3	12"	3	18'-6"	6'-6"	#3	1	25'-1"	#3	12"	5	"	"
6'	Short	#4	12"	15	3'-6"	9'-4"	1'-2"	2'-4"	#3	12"	5	4'-6"	1'-4"	3'-3"	#3	1	16'-6"	#3	3	16'-0"	#5	12"	2	14'-3"	#5	12"	3	12'-3"	7'-3"	#3	1	15'-0"	#3	12"	6	"	"
	Long	#4	12"	30	3'-4"	9'-3"	1'-2"	2'-3"	#3	12"	6	4'-6"	1'-4"	3'-3"	#5	2	17'-8"	#3	6	18'-0"	#3	12"	4	15'-2"	#5	12"	4	24'-6"	6'-6"	#3	2	15'-5"	#3	12"	6	2'-8"	1'-4"
7'	Short	#4	12"	17	3'-11"	10'-10"	1'-3"	2'-10"	#3	12"	6	5'-6"	1'-7"	4'-0"	#4	1	18'-6"	#4	4	18'-0"	#4	12"	2	16'-8"	#4	12"	5	15'-3"	9'-3"	#4	1	17'-1"	#4	12"	7	3'-6"	1'-9"
	Long	#4	12"	34	3'-9"	10'-9"	1'-3"	2'-8"	#3	12"	12	5'-6"	1'-7"	4'-0"	#4	2	19'-8"	#4	8	20'-0"	#4	12"	4	17'-2"	#4	12"	5	30'-6"	6'-6"	#4	2	17'-5"	#4	12"	7	"	"
8'	Short	#4	12"	19	4'-6"	12'-5"	1'-5"	3'-2"	#3	12"	9	6'-6"	1'-10"	4'-9"	#4	1	20'-6"	#4	4	20'-0"	#4	12"	3	19'-3"	#4	12"	5	12'-3"	9'-3"	#4	1	19'-8"	#4	12"	8	"	"
	Long	#4	12"	38	4'-4"	12'-3"	1'-5"	3'-2"	#3	12"	18	6'-6"	1'-10"	4'-9"	#4	2	21'-8"	#4	8	22'-0"	#4	12"	6	19'-2"	#4	12"	5	30'-6"	6'-6"	#4	2	19'-6"	#4	12"	8	3'-6"	1'-9"

BAR BENDING DIAGRAM



QUANTITY	REINFORCING STEEL PER WING - LBS. SHORT WING	LONG WING
	29.4	46.3
	36.8	70.3
	56.9	107.9
	72.7	153.7
	127.6	253.9
	266.5	491.1
	312.5	623.6

NOTE:- Bars for short wing shall be marked with prefix letter "S", while those for long wing shall be marked with letter "L".

⊠ Length without splice. Bars over 28'-0" length may be spliced. (1'-8" lap)

NOTE:- Payment for the membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.

MEMBRANE:- A membrane waterproofing 18" wide, consisting of three moppings of waterproofing asphalt and two alternate layers of treated cotton fabric, shall be applied to the back face of wing to cover the construction joints in wings.

REVISIONS:- Membrane Added. 5-10-66 W.C.H.

TYPICAL WING DETAILS

NOTE:- For remainder of General Plans and Elevations of Single, Double, Triple, Quadruple and Quintuple Span Culverts, see Std. Drawing No. W-X45. For values of RL, K and W_3 for each box, see above Std. also.

Designed By:- W.C.H. 5-13-63 Checked By:- JEM 7-21-64
Drawn By:- W.C.H. 6-5-64 Checked By:- JEM 7-21-64
Quantities By:- W.C.H. 7-2-64

ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF STANDARD WINGS
FOR
REINFORCED CONCRETE BOX CULVERTS
45° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES — ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

STANDARD DRAWING No. W-X453-1

RESHOT 3-9-93 386

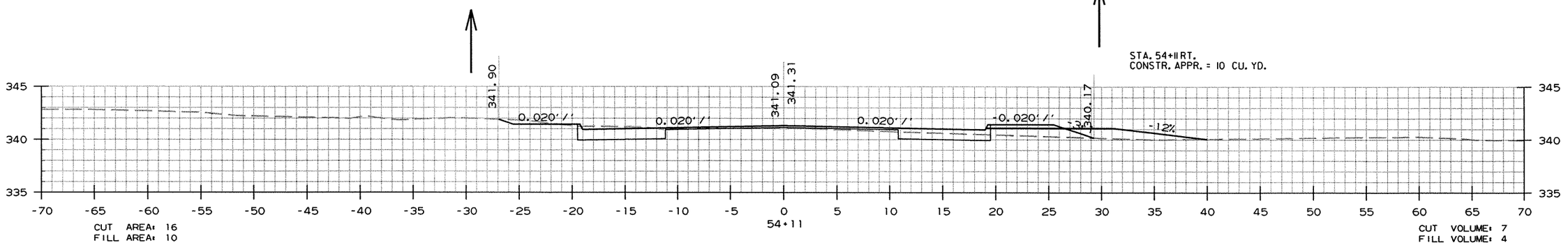
FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			68	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH – TWO 45° SKEWED ENDS

| DEPTH OF COVER | CLEAR SPAN | CLEAR HEIGHT | "a" bars STRAIGHT In Top and Bottom Slab of Barrel. SIZE | "a" SPACING | "a" No. REQD | "a" LENGTH | "a₁" bars STRAIGHT In Top and Bottom Slab of Barrel. (Four of each Length) SIZE | "a₁" SPACING | "a₁" No. REQD | "a₁" LENGTH | "b" bars BENT - See Diagrams below. In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars. SIZE | "b" SPACING | "b" No. REQD | "b" LENGTH | "b" X | "b" Y | "b" Z | "b₁" bars BENT - See Diagrams below. In Bottom of Top Slab - one end hooked. (2 of Each Length) Alternate with "a" and "c" or "c₁" bars. SIZE | "b₁" SPACING | "b₁" No. REQD | "b₁" LENGTH MAX. | "b₁" LENGTH MIN. | "b₂" bars BENT - See Diagrams below. In Top of Bottom Slab - bent down under Division Wall - hooked. Alternate with "a" and "c" bars. SIZE | "b₂" SPACING | "b₂" No. REQD | "b₂" LENGTH | "b₂" X | "b₂" Y | "b₂" Z | "b₃" bars BENT - See Diagrams below. In Top of Bottom Slab - some bent down under Division Wall - one end hooked. (2 of Each Length) Alternate with "a" and "c" or "c₂" bars. SIZE | "b₃" SPACING | "b₃" No. REQD | "b₃" LENGTH MAX. | "b₃" LENGTH MIN. | "c" bars STRAIGHT In Top and Bottom Slab of Barrel. Alternate with "b" and "b₂" bars. SIZE | "c" SPACING | "c" No. REQD | "c" LENGTH | "c₁" bars STRAIGHT In Top and Bottom Slab of Barrel. Alt. with "b, b₂" bars. (Four of each Length) SIZE | "c₁" SPACING | "c₁" No. REQD | "c₁" LENGTH MAX. | "c₁" LENGTH MIN. | "j" bars STRAIGHT Longitudinal in Top Slab of Barrel SIZE | "j" SPACING | "j" No. REQD | "j" LENGTH | "d₁" bars STRAIGHT Longitudinal in Sidewalls and Division Wall SIZE | "d₁" SPACING | "d₁" No. REQD | "d₁" LENGTH | "e" bars STRAIGHT Longitudinal in Bottom Slab of Barrel SIZE | "e" SPACING | "e" No. REQD | "e" LENGTH | "f" bars STRAIGHT Verticals in Sidewalls and Division Wall. SIZE | "f" SPACING | "f" No. REQD | "f" LENGTH | "k" bars STRAIGHT In Bottom of Headwalls SIZE | "k" No. REQD | "k" LENGTH | "k₂" bars STRAIGHT In Top of Headwalls and Aprons (2 Each) SIZE | "k₂" No. REQD | "k₂" LENGTH |
|---|---|---|---|---|---

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.		070304	69	102

(2) CROSS SECTIONS



BEGIN JOB 070304

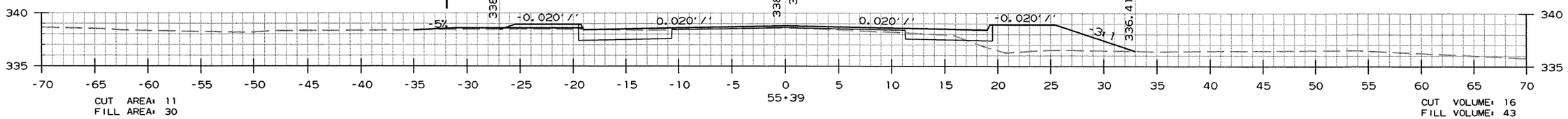
CROSS SECTION STA. 53+50 TO STA. 54+11

r070304.dgn 8/25/2009

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.		070304	70	102

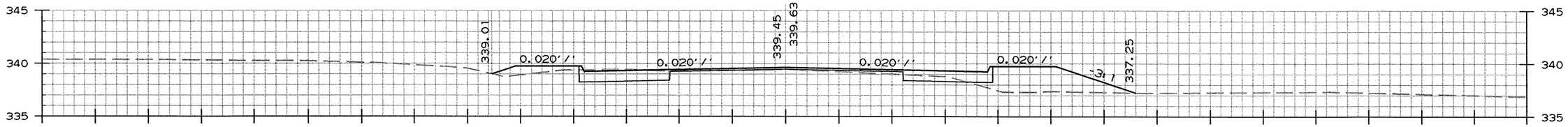
(2) CROSS SECTIONS

STA. 55+39 - IN PLACE
15" x 18' R.C. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.



CUT AREA: 11
FILL AREA: 30

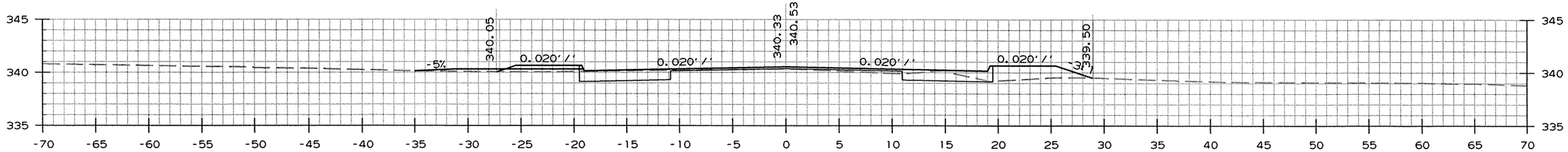
CUT VOLUME: 16
FILL VOLUME: 43



CUT AREA: 12
FILL AREA: 30

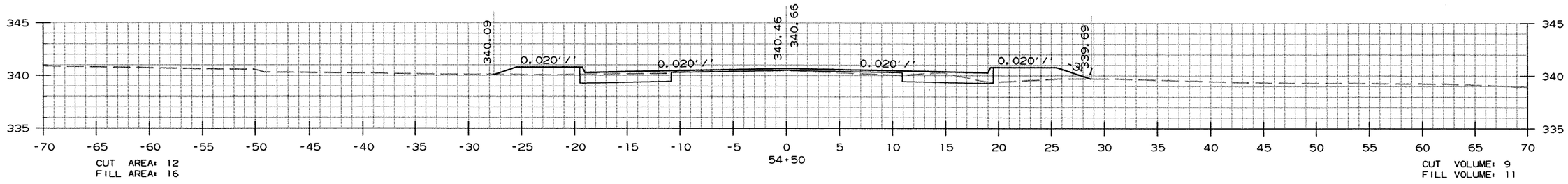
CUT VOLUME: 20
FILL VOLUME: 37

STA. 54+57 LT.
CONSTR. APPR. = 5 CU. YD.



CUT AREA: 13
FILL AREA: 16

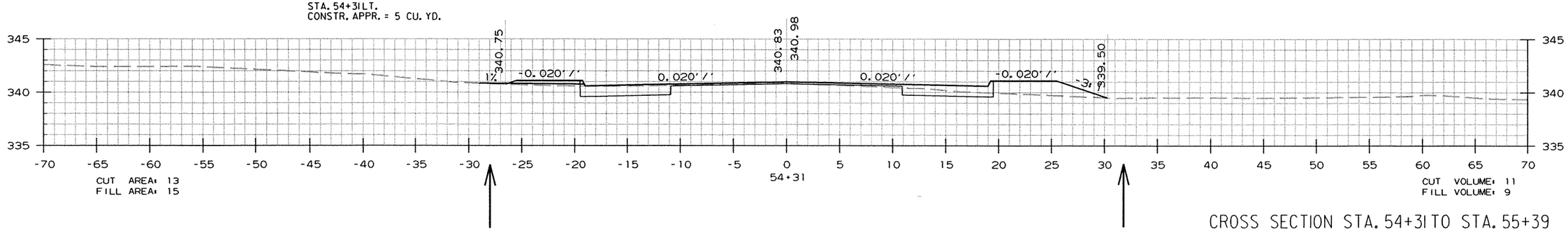
CUT VOLUME: 3
FILL VOLUME: 4



CUT AREA: 12
FILL AREA: 16

CUT VOLUME: 9
FILL VOLUME: 11

STA. 54+31LT.
CONSTR. APPR. = 5 CU. YD.



CUT AREA: 13
FILL AREA: 15

CUT VOLUME: 11
FILL VOLUME: 9

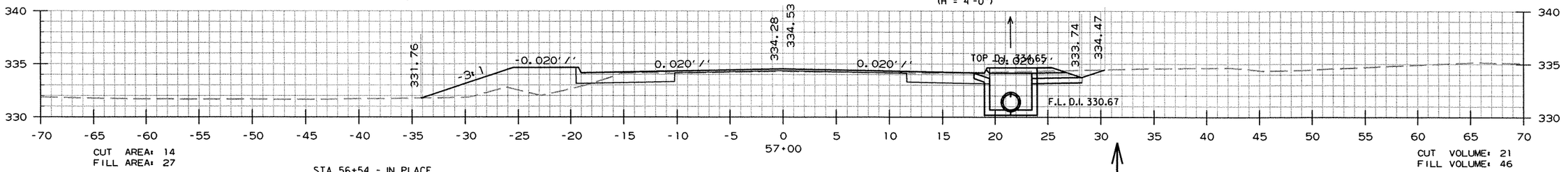
CROSS SECTION STA. 54+31 TO STA. 55+39

r070304.dgn 8/25/2009

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.		070304	71	102

(2) CROSS SECTIONS

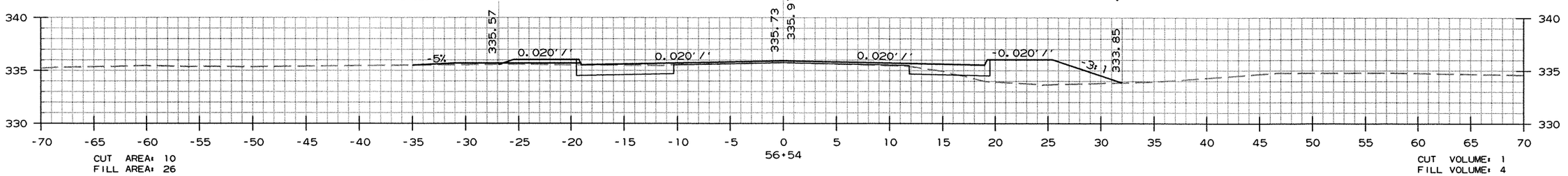
STA. 57+00 - CONSTRUCT
DROP INLET ON RT.
W/4'-0" EXTENSION
& OPENING IN BACK
& 18" x 122' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-0")



CUT AREA: 14
FILL AREA: 27

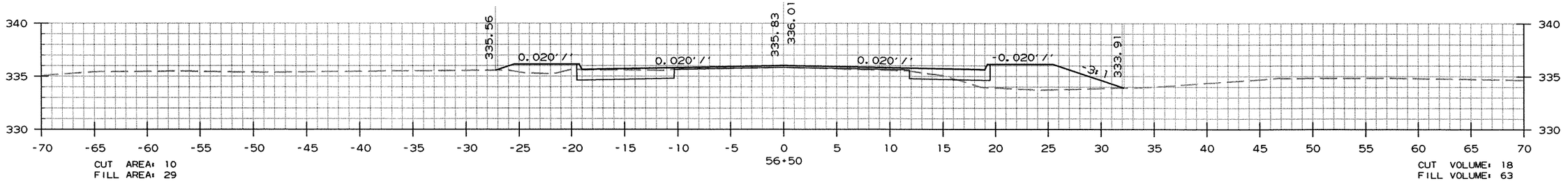
CUT VOLUME: 21
FILL VOLUME: 46

STA. 56+54 - IN PLACE
18" x 19' R.C. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.



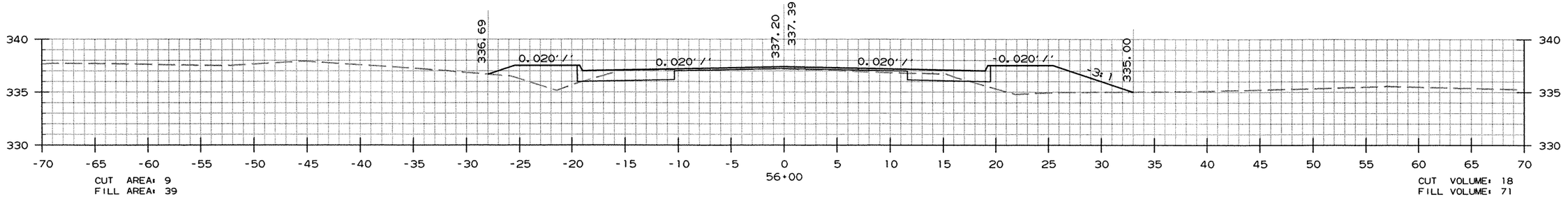
CUT AREA: 10
FILL AREA: 26

CUT VOLUME: 1
FILL VOLUME: 4



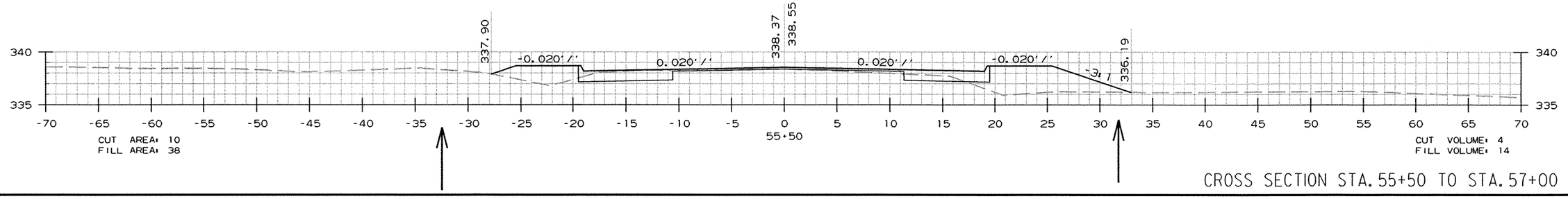
CUT AREA: 10
FILL AREA: 29

CUT VOLUME: 18
FILL VOLUME: 63



CUT AREA: 9
FILL AREA: 39

CUT VOLUME: 18
FILL VOLUME: 71



CUT AREA: 10
FILL AREA: 38

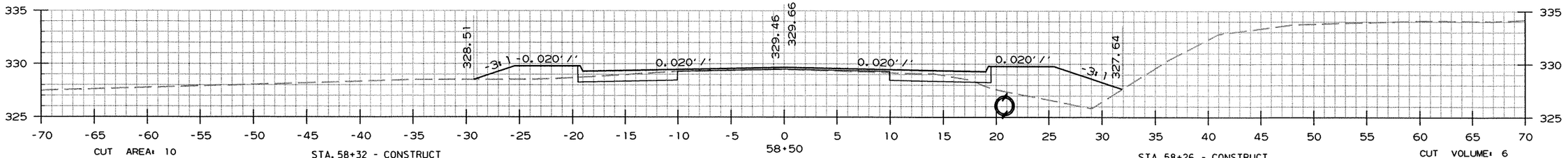
CUT VOLUME: 4
FILL VOLUME: 14

CROSS SECTION STA. 55+50 TO STA. 57+00

r070304.dgn 8/25/2009

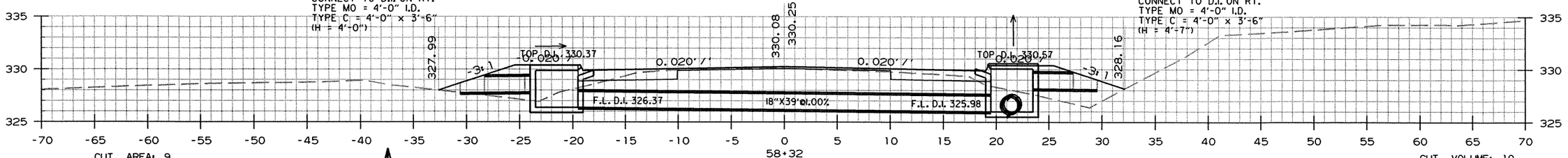
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	72	102

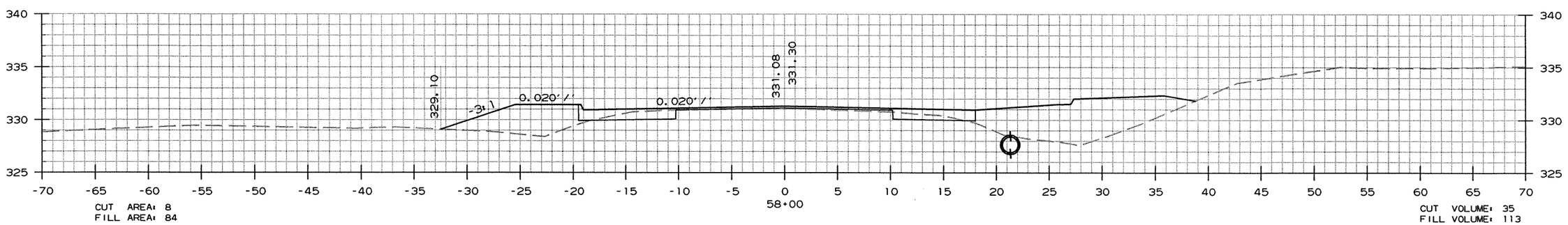
(2) CROSS SECTIONS



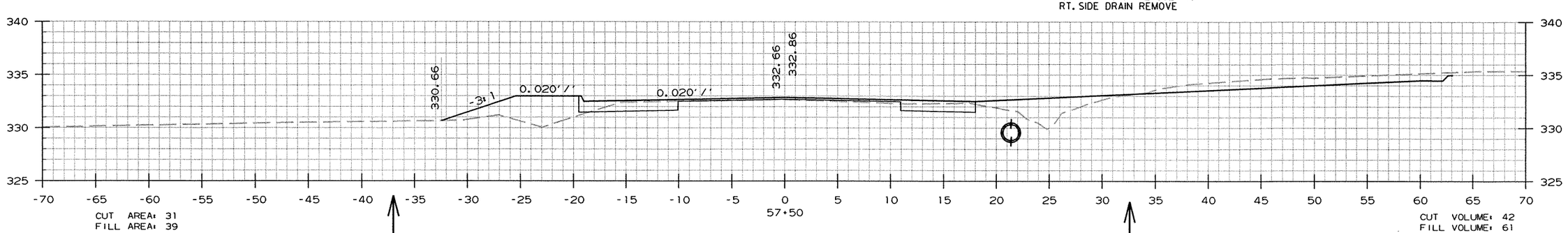
STA. 58+32 - CONSTRUCT
DROP INLET ON LT.
W/4'-0" EXTENSION
& 18" F.E.S. STUB IN BACK
& 18" x 39' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-0")

STA. 58+26 - CONSTRUCT
DROP INLET ON RT.
W/4'-0" EXTENSION
& 18" F.E.S. STUB IN BACK
& 18" x 212' PIPE OUTLET
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-7")





STA. 57+50 - IN PLACE
15" x 71' C.M. PIPE CULV'T.
RT. SIDE DRAIN REMOVE

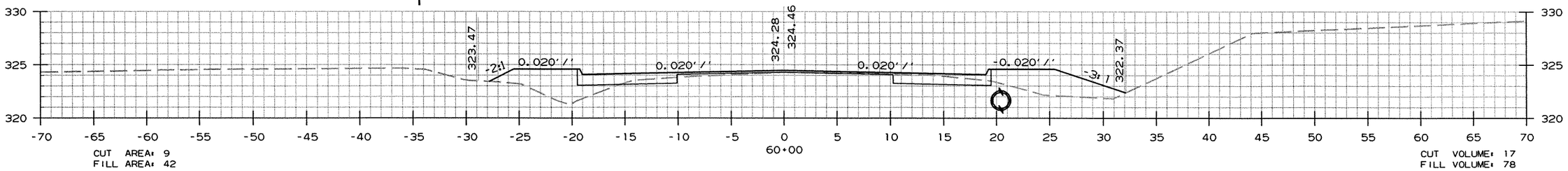


CROSS SECTION STA. 57+50 TO STA. 58+50

r070304.dgn 8/25/2009

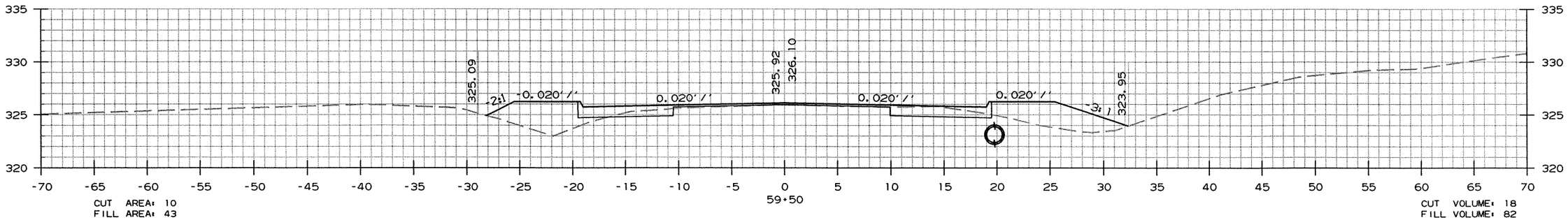
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	73	102

(2) CROSS SECTIONS



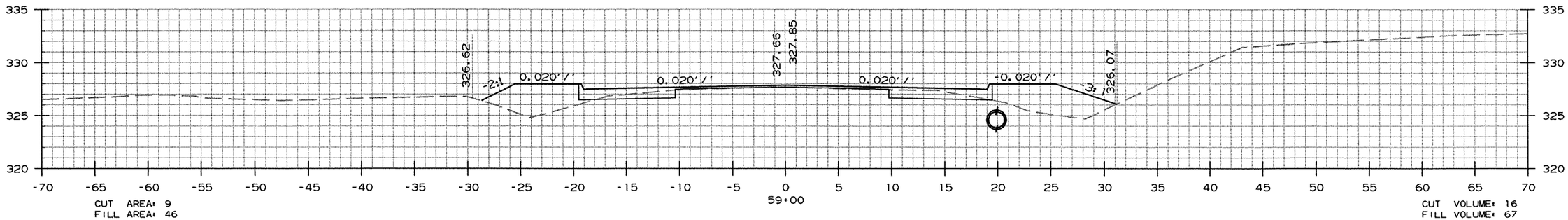
CUT AREA: 9
FILL AREA: 42

CUT VOLUME: 17
FILL VOLUME: 78



CUT AREA: 10
FILL AREA: 43

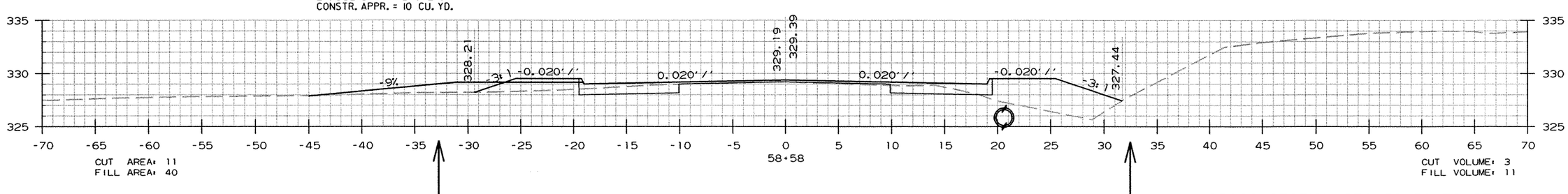
CUT VOLUME: 18
FILL VOLUME: 82



CUT AREA: 9
FILL AREA: 46

CUT VOLUME: 16
FILL VOLUME: 67

STA. 58+58 - IN PLACE
18" x 20' P.V.C. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 10 CU. YD.



CUT AREA: 11
FILL AREA: 40

CUT VOLUME: 3
FILL VOLUME: 11

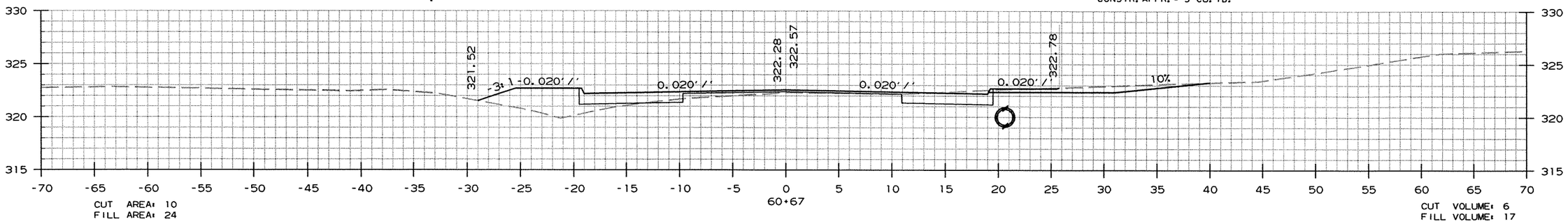
CROSS SECTION STA. 58+58 TO STA. 60+00

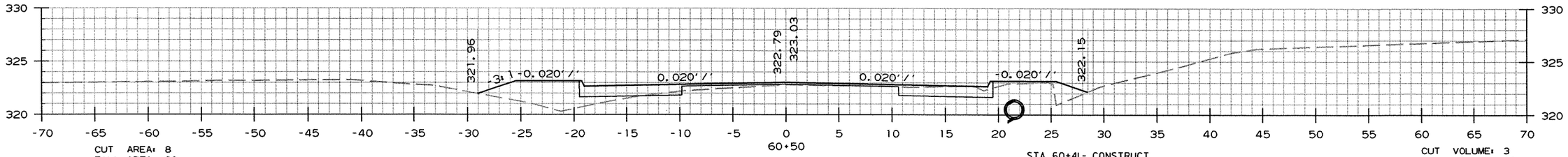
r070304.dgn 8/25/2009

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.		070304	74	102

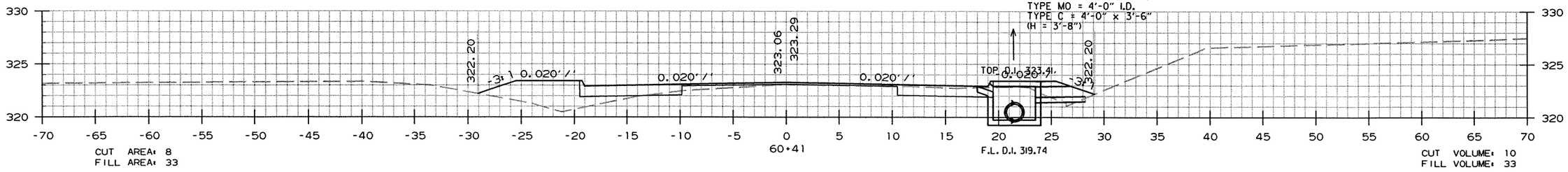
(2) CROSS SECTIONS

STA. 60+67 - IN PLACE
15" x 21' P.V.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.

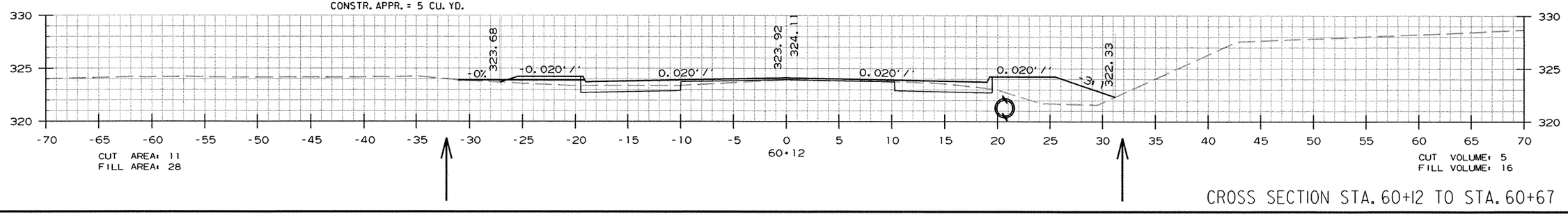




STA. 60+41 - CONSTRUCT
DROP INLET ON RT.
W/4'-0" EXTENSION
OPENING IN BACK
& 18" x 253' PIPE OUTLET
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 3'-8")



STA. 60+12 - IN PLACE
18" x 24' C.M. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.

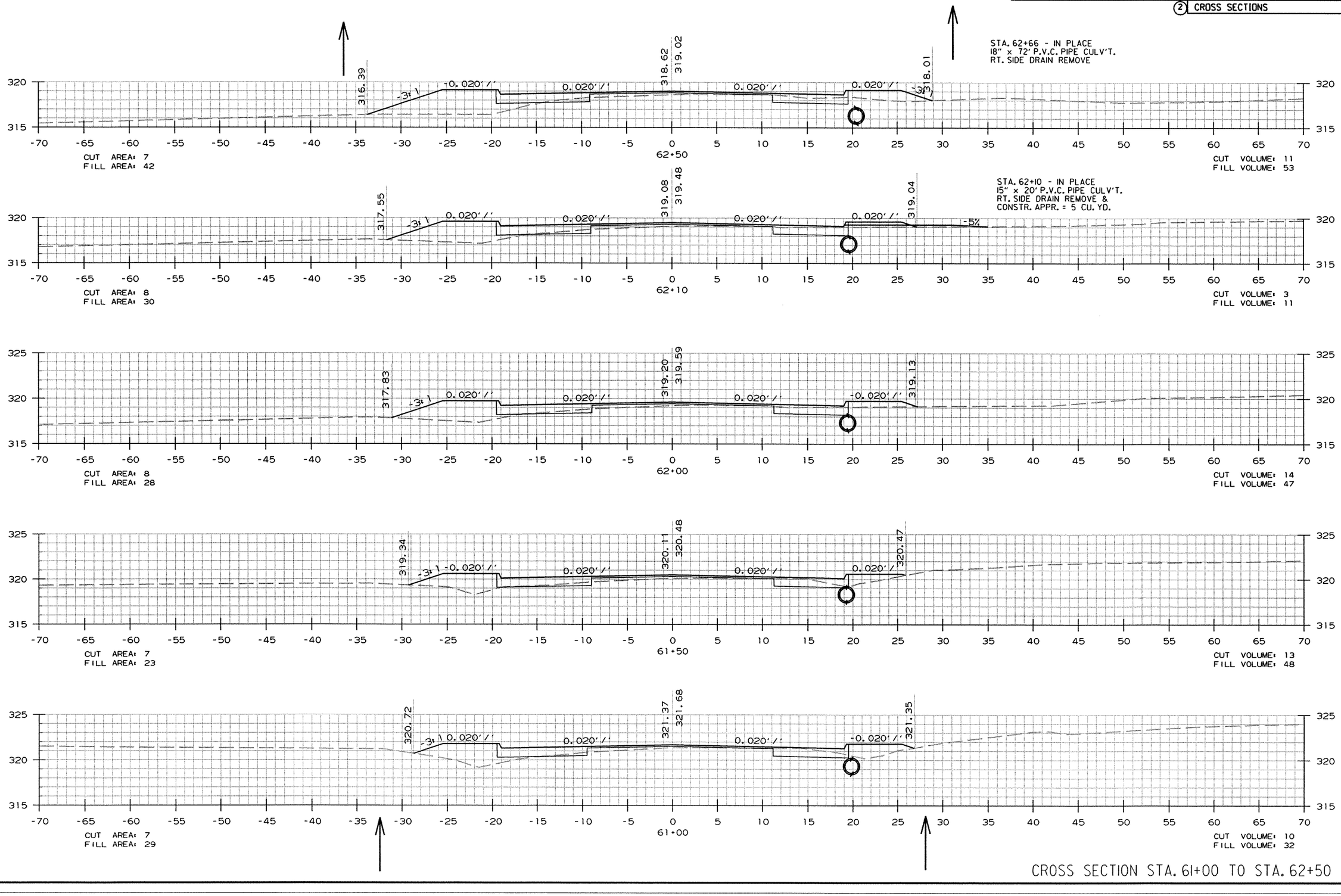


CROSS SECTION STA. 60+12 TO STA. 60+67

r070304.dgn 8/25/2009

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.		070304	75	102

(2) CROSS SECTIONS



CROSS SECTION STA. 61+00 TO STA. 62+50

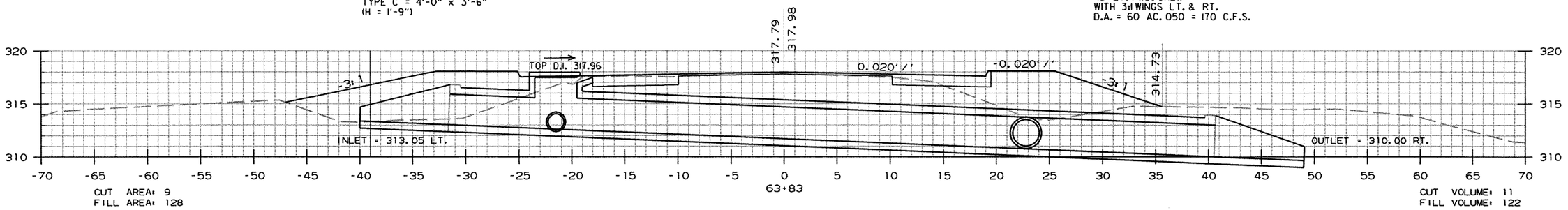
r070304.dgn 8/25/2009

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.		070304	76	102

(2) CROSS SECTIONS

STA. 64+06 - CONSTRUCT
DROP INLET ON LT.
ON TO OF R.C. BOX CULVERT
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 1'-9")

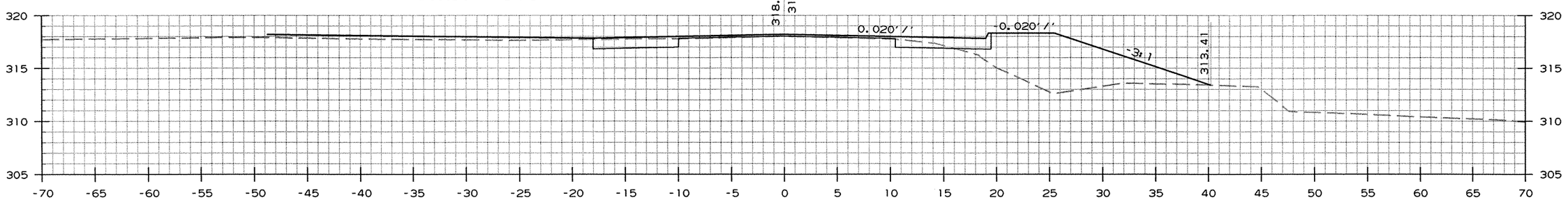
STA. 63+83 - CONSTRUCT
DBL 4' X 3' X 102'
PRECAST R.C. BOX CULVERT
45° LT. FWD. SKEW
WITH 3:1 WINGS LT. & RT.
D.A. = 60 AC. 050 = 170 C.F.S.



CUT AREA: 9
FILL AREA: 128

CUT VOLUME: 11
FILL VOLUME: 122

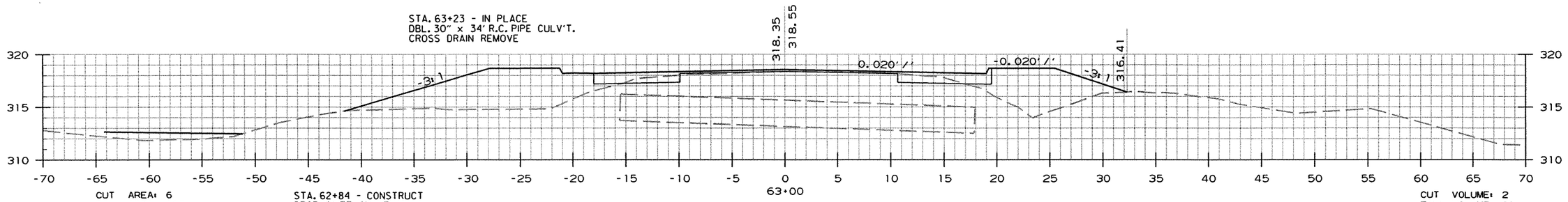
STA. 63+50 - IN PLACE
TRP. 36" x 50' HDPE CORR. PIPE CULV'T.
LT. SIDE DRAIN REMOVE



CUT AREA: 9
FILL AREA: 75

CUT VOLUME: 14
FILL VOLUME: 166

STA. 63+23 - IN PLACE
DBL. 30" x 34' R.C. PIPE CULV'T.
CROSS DRAIN REMOVE

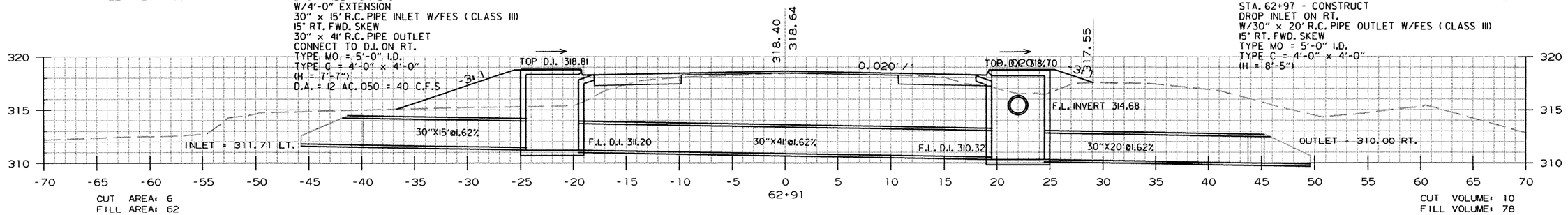


CUT AREA: 6
FILL AREA: 103

CUT VOLUME: 2
FILL VOLUME: 29

STA. 62+84 - CONSTRUCT
DROP INLET ON LT.
W/4'-0" EXTENSION
30" x 15' R.C. PIPE INLET W/FES (CLASS III)
15° RT. FWD. SKEW
30" x 41' R.C. PIPE OUTLET
CONNECT TO D.I. ON RT.
TYPE MO = 5'-0" I.D.
TYPE C = 4'-0" x 4'-0"
(H = 7'-7")
D.A. = 12 AC. 050 = 40 C.F.S

STA. 62+97 - CONSTRUCT
DROP INLET ON RT.
W/30" x 20' R.C. PIPE OUTLET W/FES (CLASS III)
15° RT. FWD. SKEW
TYPE MO = 5'-0" I.D.
TYPE C = 4'-0" x 4'-0"
(H = 8'-5")



CUT AREA: 6
FILL AREA: 62

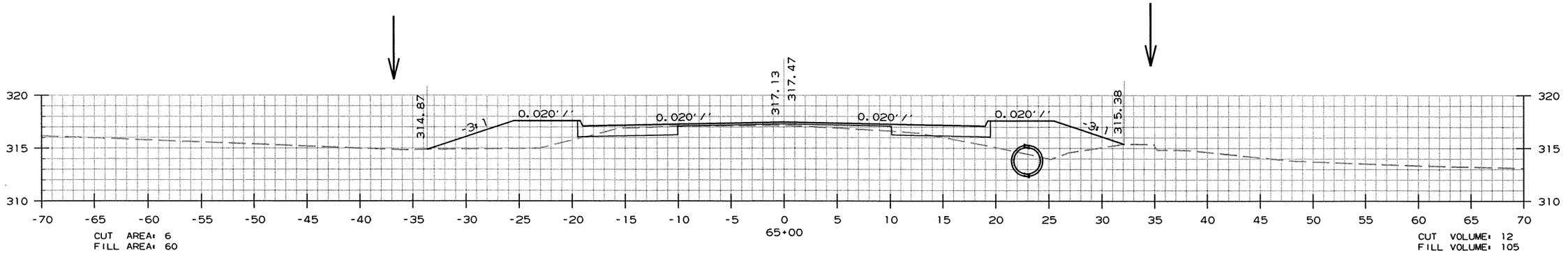
CUT VOLUME: 10
FILL VOLUME: 78

CROSS SECTION STA. 62+91 TO STA. 63+83

r070304.dgn 8/25/2009

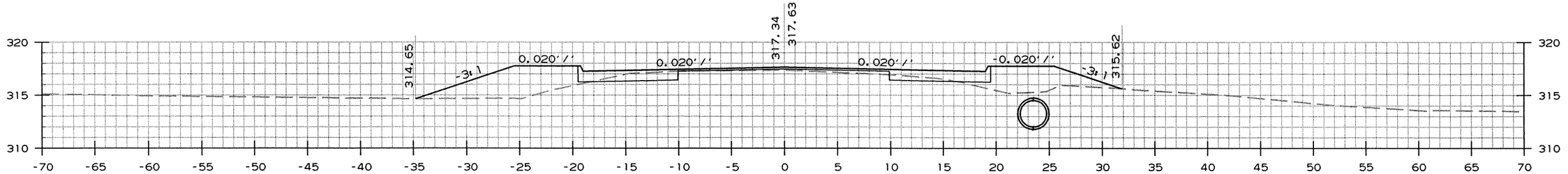
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	77	102

(2) CROSS SECTIONS



CUT AREA: 6
FILL AREA: 60

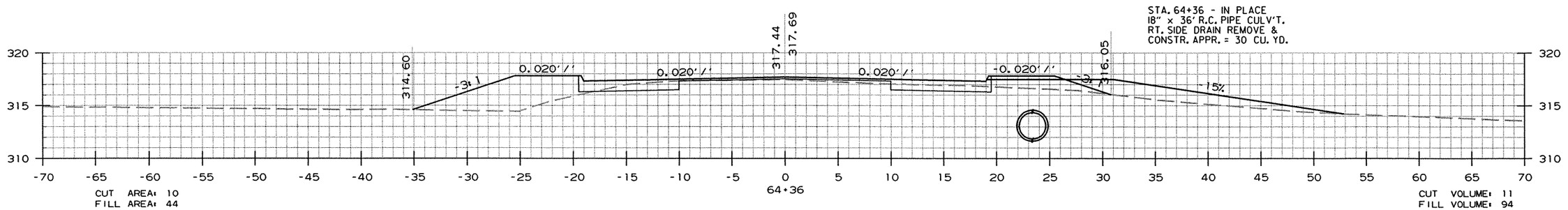
CUT VOLUME: 12
FILL VOLUME: 105



CUT AREA: 7
FILL AREA: 53

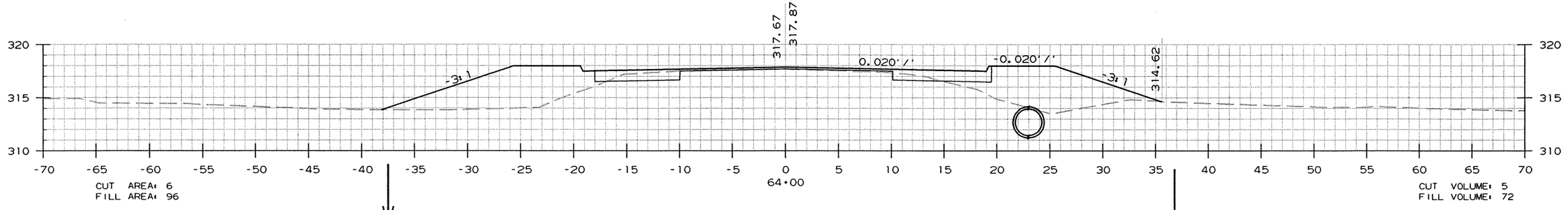
CUT VOLUME: 4
FILL VOLUME: 25

STA. 64+36 - IN PLACE
18" x 36' R.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 30 CU. YD.



CUT AREA: 10
FILL AREA: 44

CUT VOLUME: 11
FILL VOLUME: 94



CUT AREA: 6
FILL AREA: 96

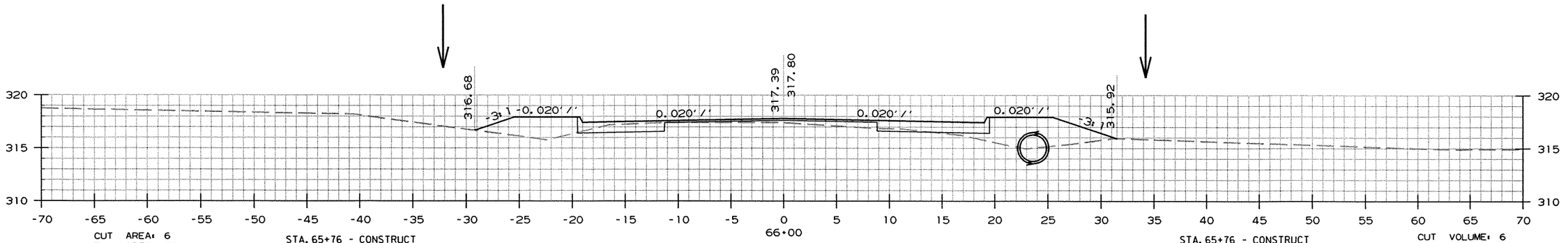
CUT VOLUME: 5
FILL VOLUME: 72

CROSS SECTION STA. 64+00 TO STA. 65+00

r070304.dgn 8/25/2009

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.		070304	78	102

(2) CROSS SECTIONS

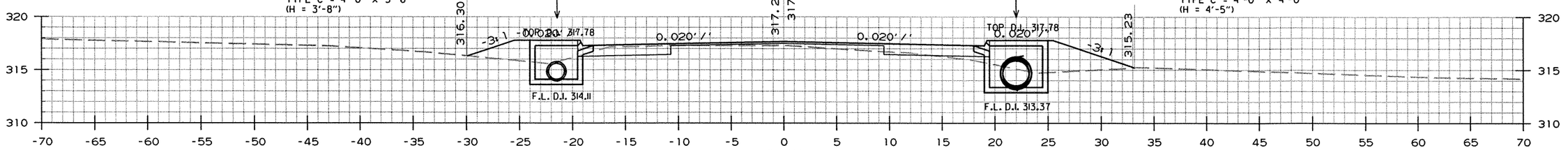


CUT AREA: 6
FILL AREA: 46

STA. 65+76 - CONSTRUCT
DROP INLET ON LT.
W/ 18" x 48' PIPE OUTLET
CONNECT TO D.I. ON LT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 3'-8")

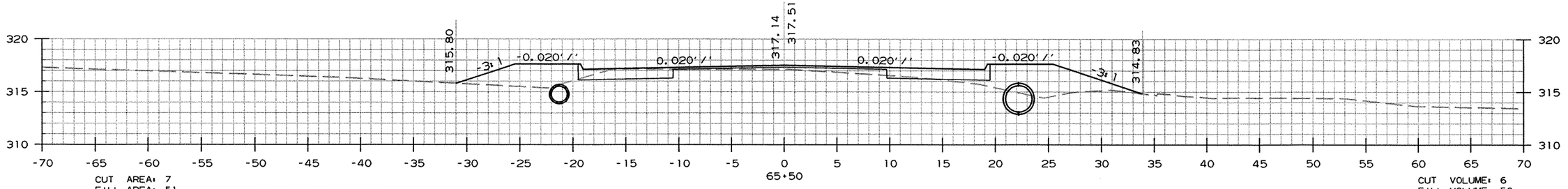
STA. 65+76 - CONSTRUCT
DROP INLET ON RT.
W/ 30" x 48' PIPE OUTLET
CONNECT TO D.I. ON RT.
TYPE MO = 5'-0" I.D.
TYPE C = 4'-0" x 4'-0"
(H = 4'-5")

CUT VOLUME: 6
FILL VOLUME: 43



CUT AREA: 7
FILL AREA: 51

CUT VOLUME: 7
FILL VOLUME: 49

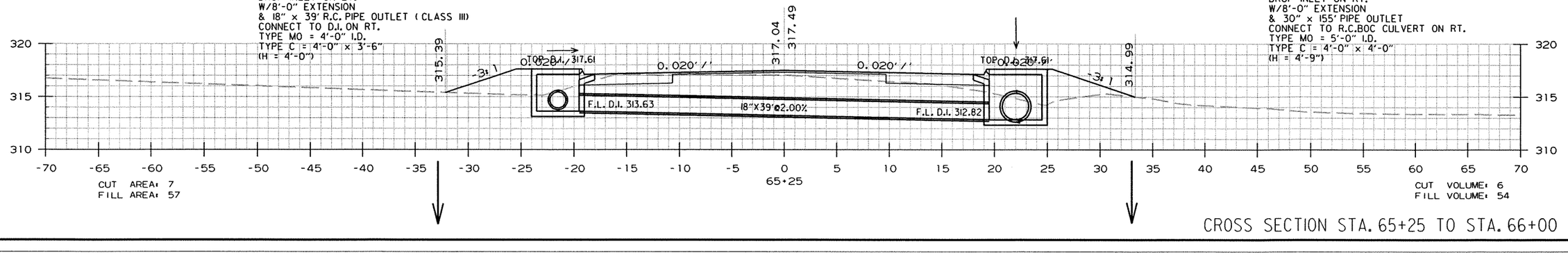


CUT AREA: 7
FILL AREA: 51

CUT VOLUME: 6
FILL VOLUME: 50

STA. 65+25 - CONSTRUCT
DROP INLET ON LT.
W/8'-0" EXTENSION
& 18" x 39' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-0")

STA. 65+25 - CONSTRUCT
DROP INLET ON RT.
W/8'-0" EXTENSION
& 30" x 155' PIPE OUTLET
CONNECT TO R.C.BOC CULVERT ON RT.
TYPE MO = 5'-0" I.D.
TYPE C = 4'-0" x 4'-0"
(H = 4'-9")



CUT AREA: 7
FILL AREA: 57

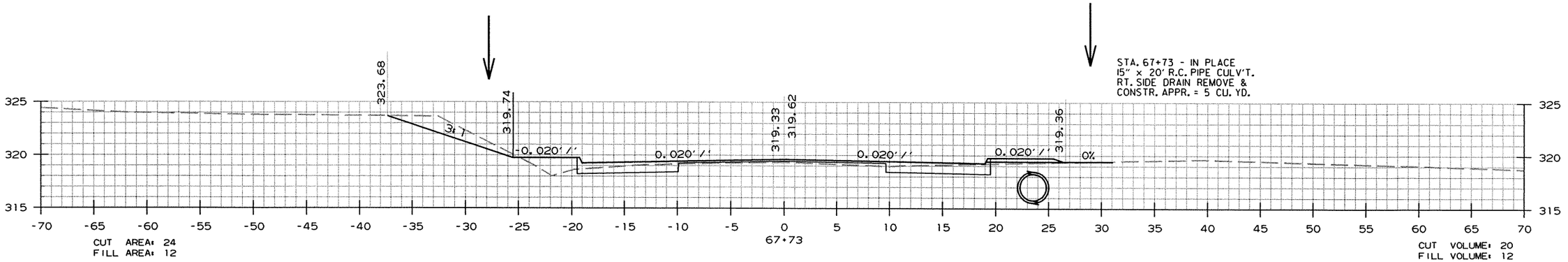
CUT VOLUME: 6
FILL VOLUME: 54

CROSS SECTION STA. 65+25 TO STA. 66+00

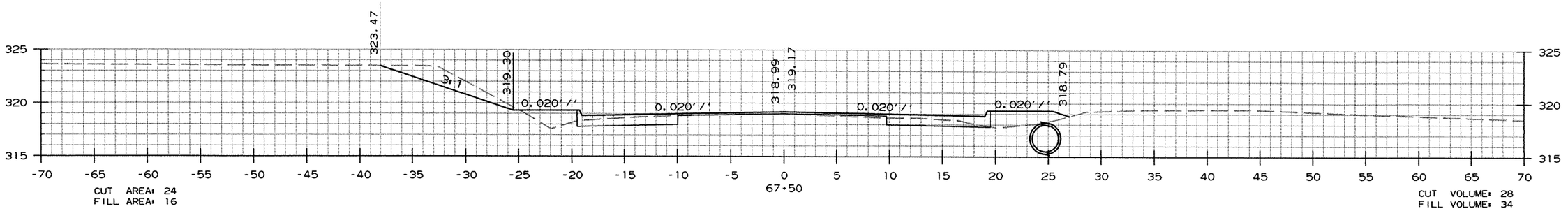
r070304.dgn 8/25/2009

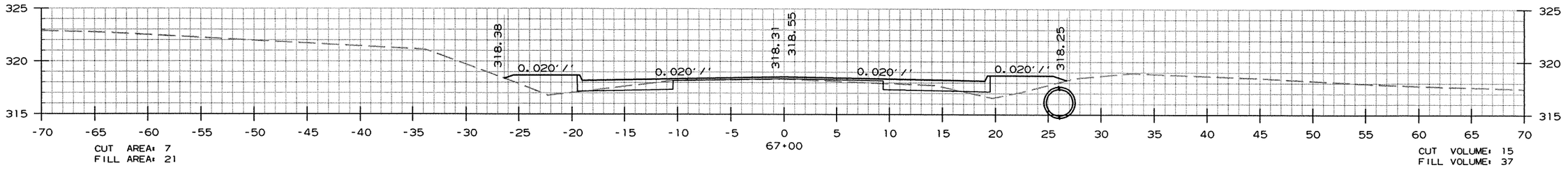
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	79	102

(2) CROSS SECTIONS

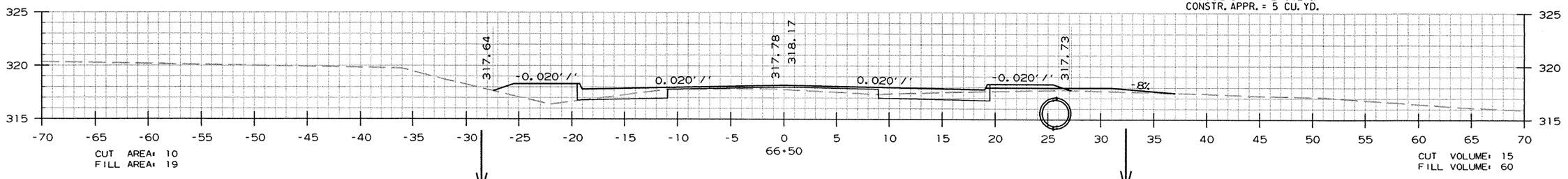


STA. 67+73 - IN PLACE
15" x 20' R.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.





STA. 66+50 - IN PLACE
R.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.



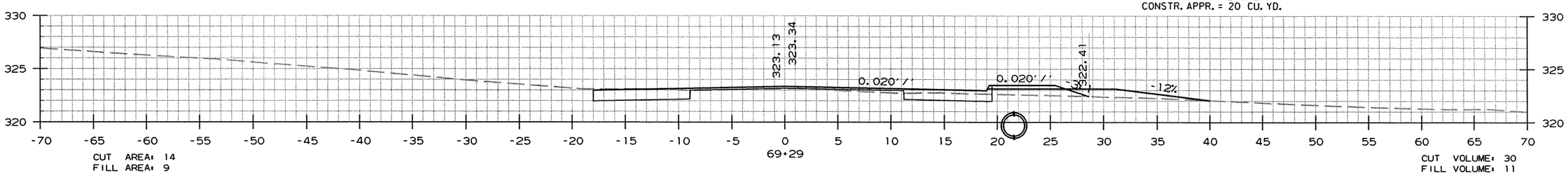
CROSS SECTION STA. 66+50 TO STA. 67+73

r070304.dgn 8/25/2009

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.		070304	80	102

(2) CROSS SECTIONS

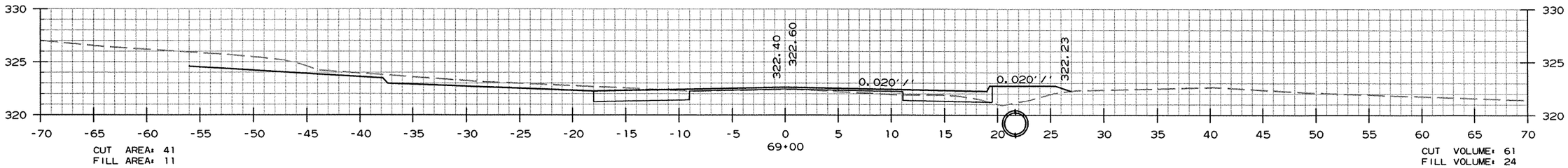
STA. 69+29 - IN PLACE
12" x 29' R.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 20 CU. YD.



CUT AREA: 14
FILL AREA: 9

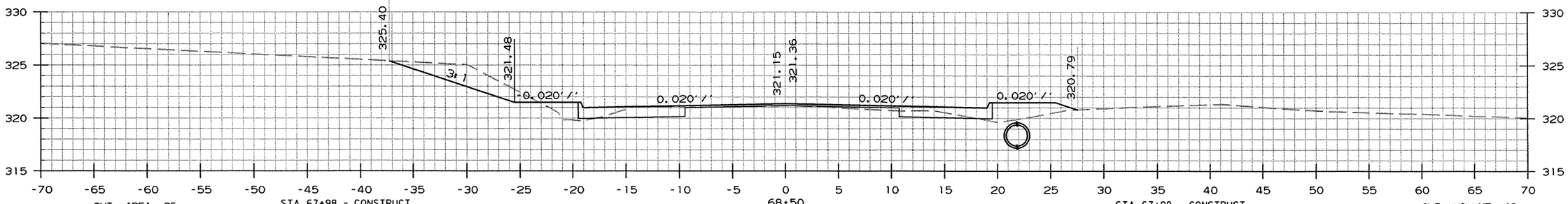
CUT VOLUME: 30
FILL VOLUME: 11

STA. 69+10 - IN PLACE
R.C. PIPE CULV'T.
LT. SIDE DRAIN REMOVE



CUT AREA: 41
FILL AREA: 11

CUT VOLUME: 61
FILL VOLUME: 24

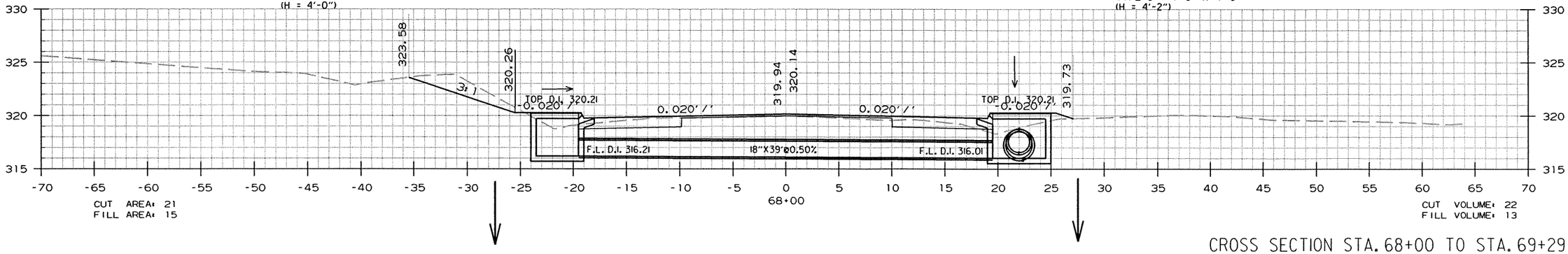


CUT AREA: 25
FILL AREA: 16

STA. 67+98 - CONSTRUCT
DROP INLET ON LT.
W/8'-0" EXTENSION
& 18" x 39' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-0")

STA. 67+98 - CONSTRUCT
DROP INLET ON RT.
W/4'-0" EXTENSION
& 30" x 213' PIPE OUTLET
CONNECT TO D.I. RT.
TYPE MO = 5'-0" I.D.
TYPE C = 4'-0" x 4'-0"
(H = 4'-2")

CUT VOLUME: 43
FILL VOLUME: 28



CUT AREA: 21
FILL AREA: 15

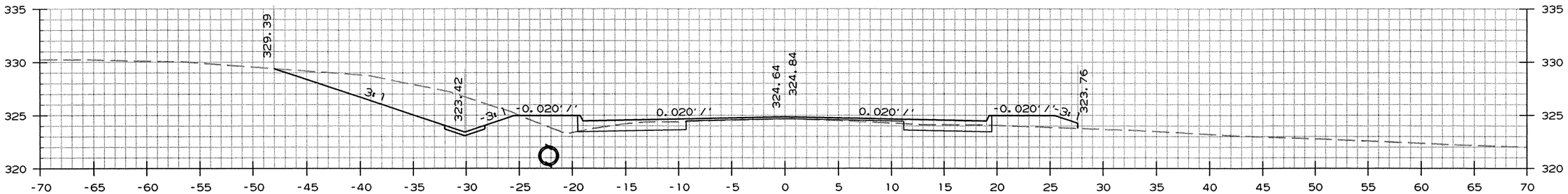
CUT VOLUME: 22
FILL VOLUME: 13

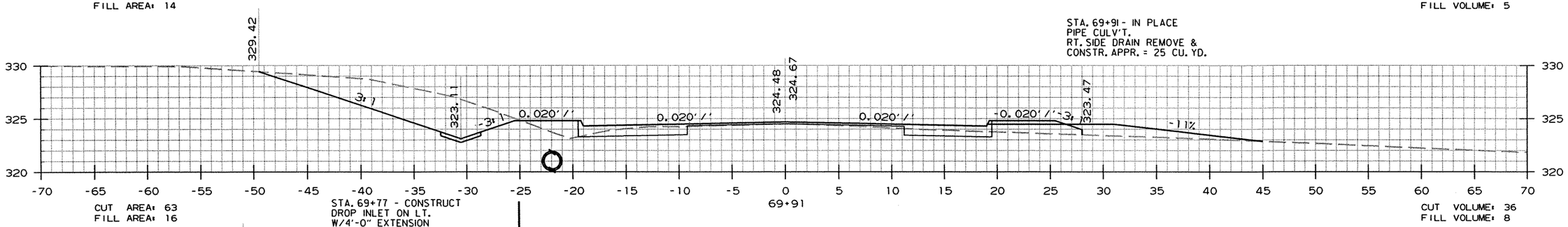
CROSS SECTION STA. 68+00 TO STA. 69+29

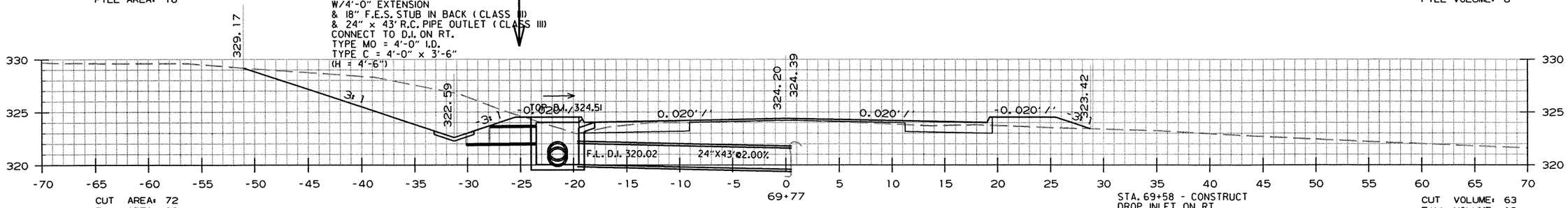
r070304.dgn 8/25/2009

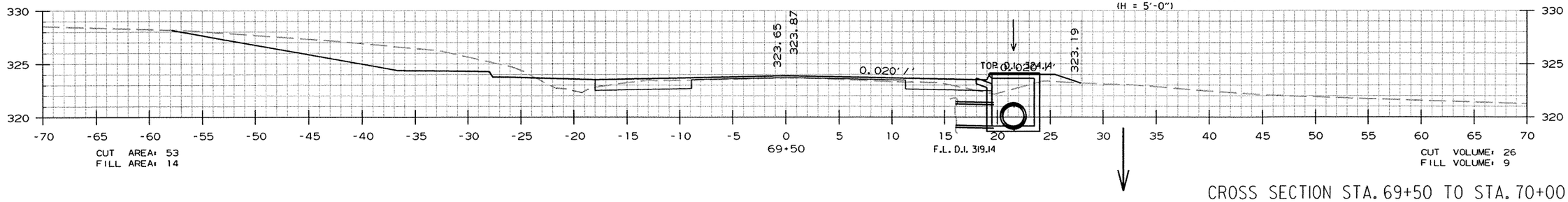
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	81	102

(2) CROSS SECTIONS







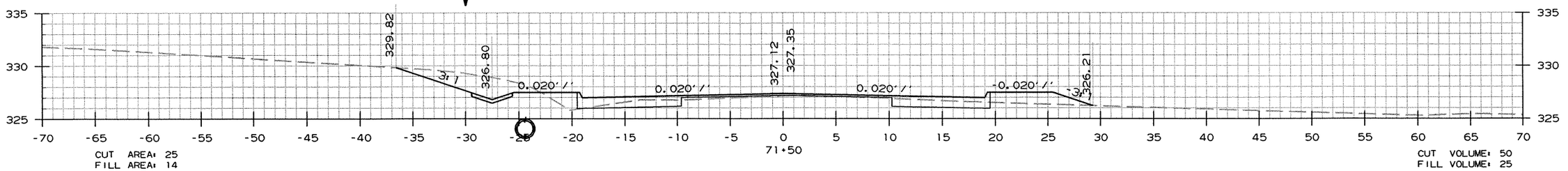


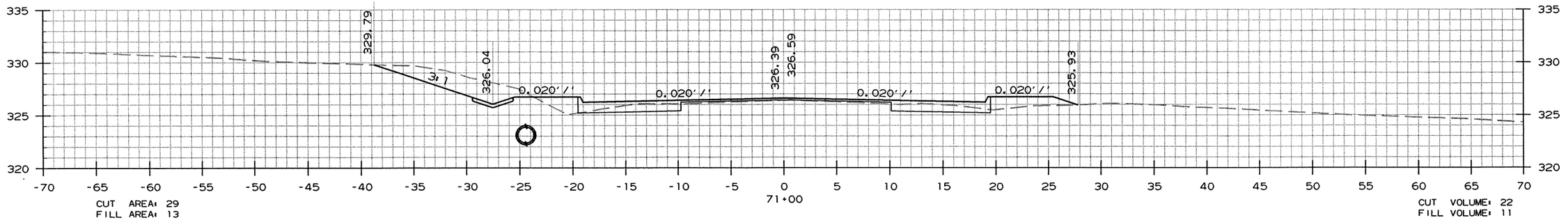
CROSS SECTION STA. 69+50 TO STA. 70+00

r070304.dgn 8/25/2009

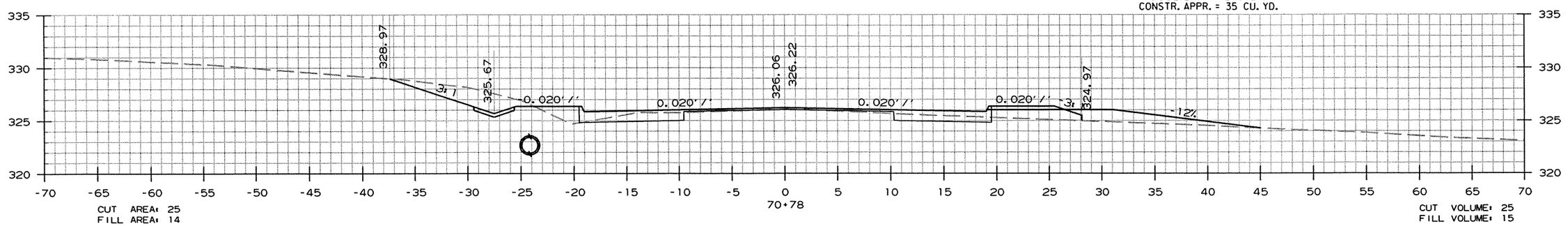
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	82	102

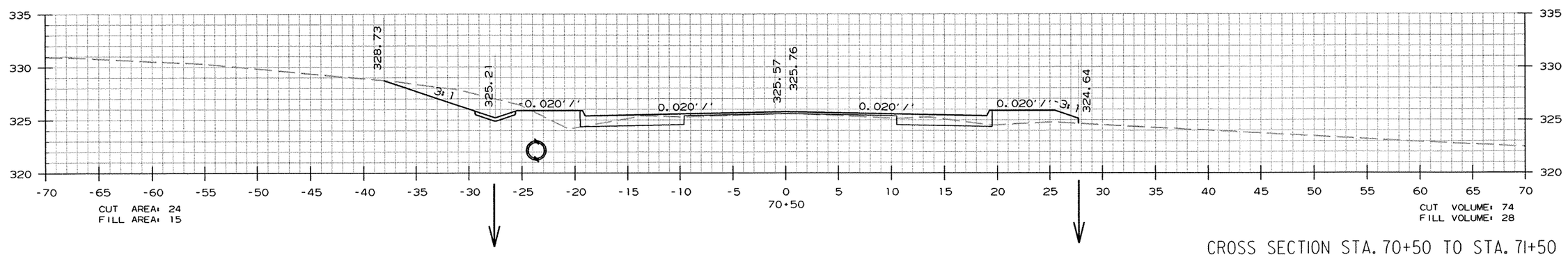
(2) CROSS SECTIONS





STA. 70+72 - IN PLACE
PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 35 CU. YD.



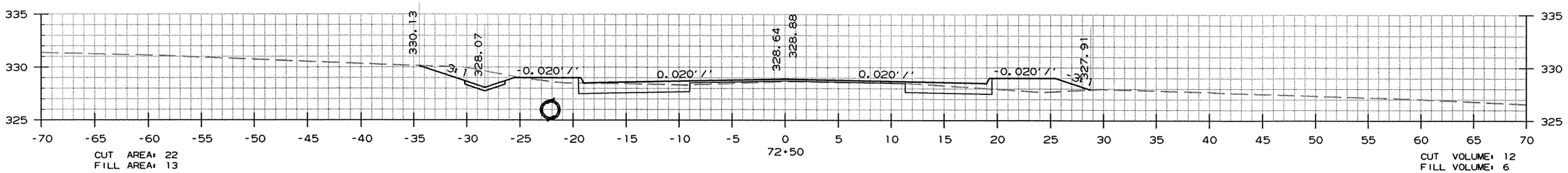


CROSS SECTION STA. 70+50 TO STA. 71+50

r070304.dgn 8/25/2009

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.		070304	83	102

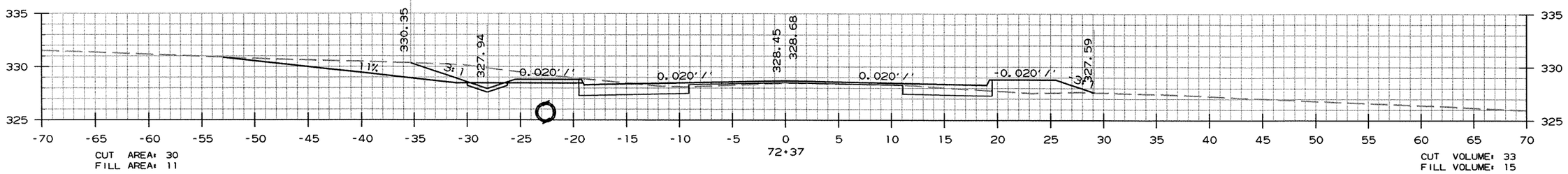
(2) CROSS SECTIONS



CUT AREA: 22
FILL AREA: 13

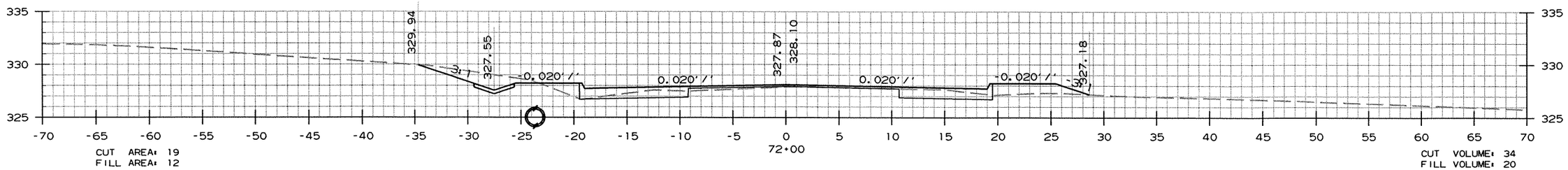
CUT VOLUME: 12
FILL VOLUME: 6

STA. 72+37 LT.
CONSTR. APPR. = 45 CU. YD.



CUT AREA: 30
FILL AREA: 11

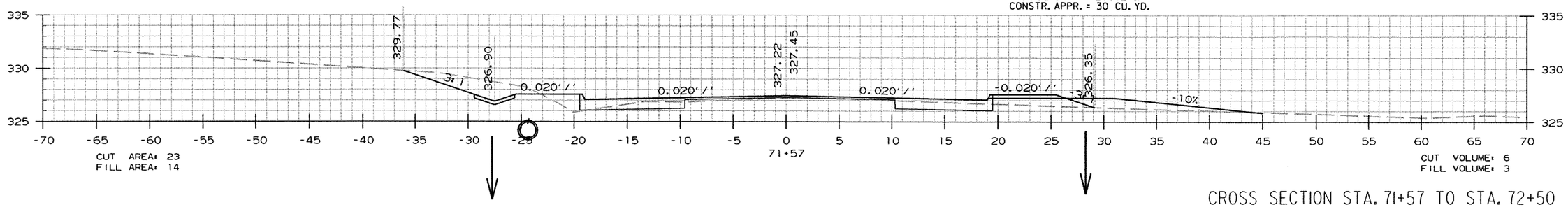
CUT VOLUME: 33
FILL VOLUME: 15



CUT AREA: 19
FILL AREA: 12

CUT VOLUME: 34
FILL VOLUME: 20

STA. 71+57 - IN PLACE
PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 30 CU. YD.



CUT AREA: 23
FILL AREA: 14

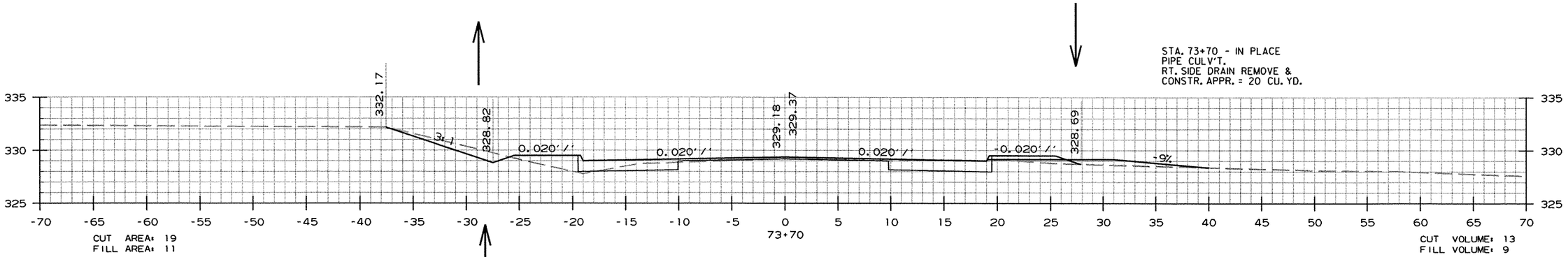
CUT VOLUME: 6
FILL VOLUME: 3

CROSS SECTION STA. 71+57 TO STA. 72+50

r070304.dgn 8/25/2009

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.		070304	84	102

(2) CROSS SECTIONS

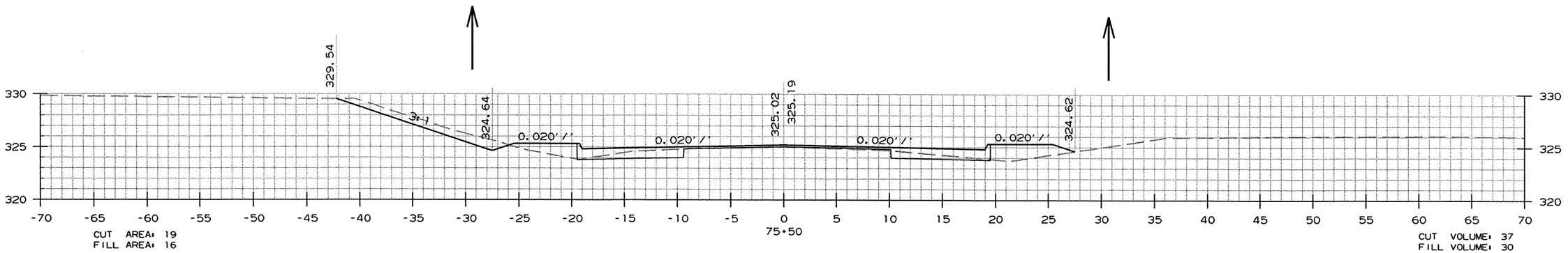


CROSS SECTION STA. 72+66 TO STA. 73+70

r070304.dgn 8/25/2009

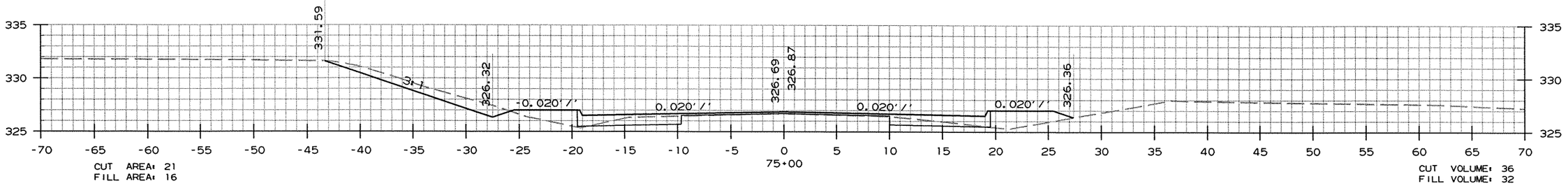
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	85	102

(2) CROSS SECTIONS



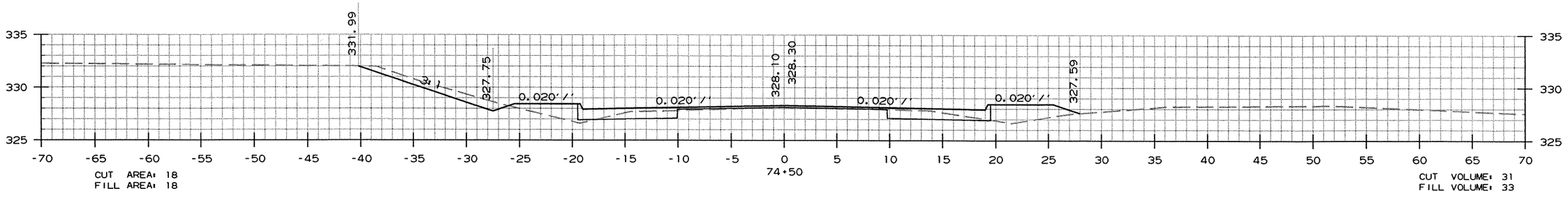
CUT AREA: 19
FILL AREA: 16

CUT VOLUME: 37
FILL VOLUME: 30



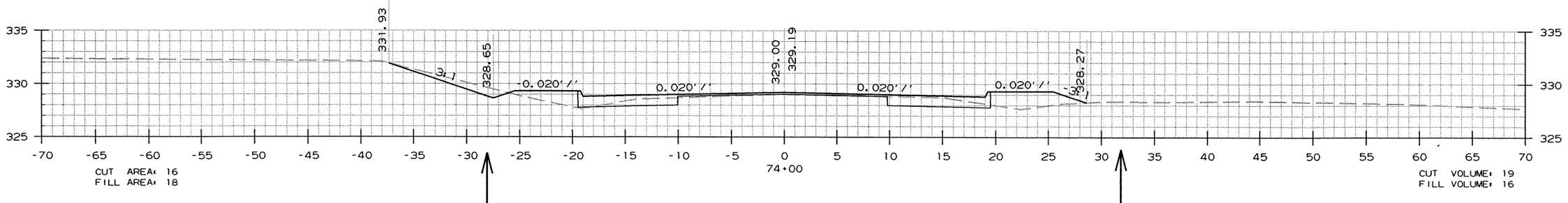
CUT AREA: 21
FILL AREA: 16

CUT VOLUME: 36
FILL VOLUME: 32



CUT AREA: 18
FILL AREA: 18

CUT VOLUME: 31
FILL VOLUME: 33



CUT AREA: 16
FILL AREA: 18

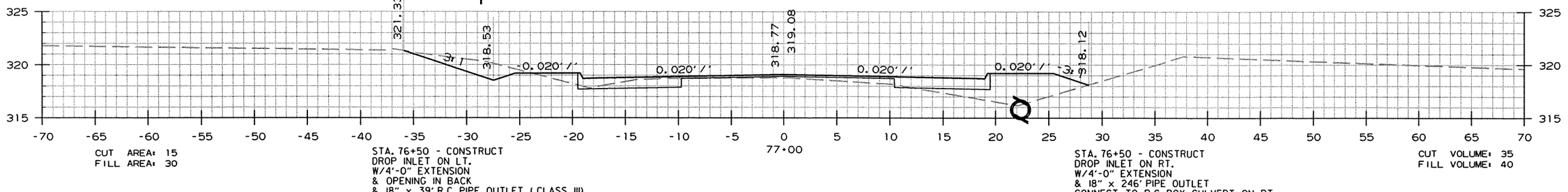
CUT VOLUME: 19
FILL VOLUME: 16

CROSS SECTION STA. 74+00 TO STA. 75+50

r070304.dgn 8/25/2009

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.		070304	86	102

(2) CROSS SECTIONS

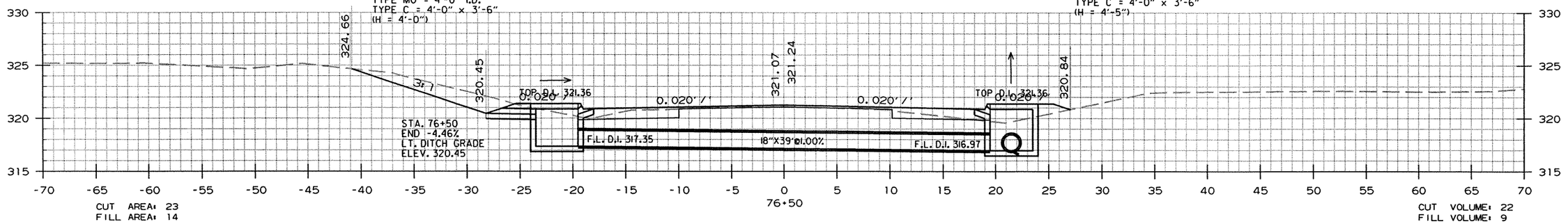


CUT AREA: 15
FILL AREA: 30

STA. 76+50 - CONSTRUCT
DROP INLET ON LT.
W/4'-0" EXTENSION
& OPENING IN BACK
& 18" x 39' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-0")

STA. 76+50 - CONSTRUCT
DROP INLET ON RT.
W/4'-0" EXTENSION
& 18" x 246' PIPE OUTLET
CONNECT TO R.C. BOX CULVERT ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-5")

CUT VOLUME: 35
FILL VOLUME: 40

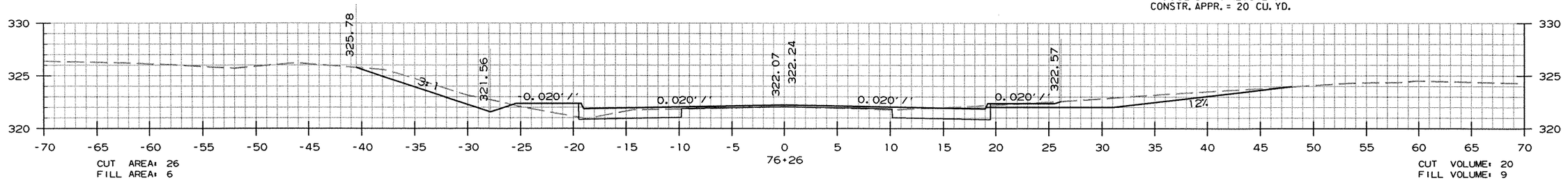


STA. 76+50
END -4.46%
LT. DITCH GRADE
ELEV. 320.45

CUT AREA: 23
FILL AREA: 14

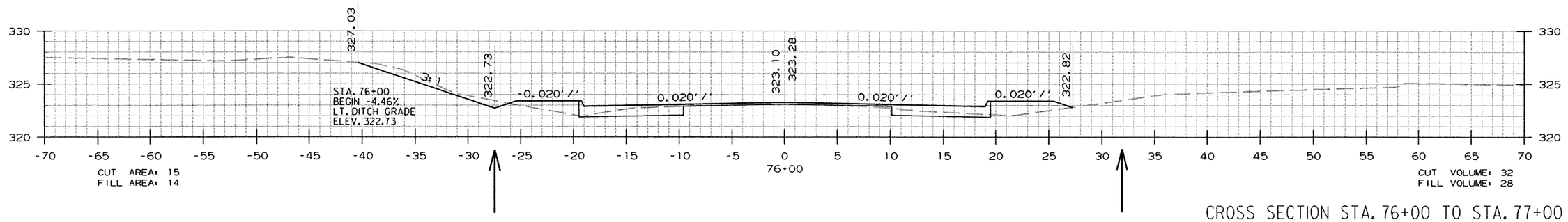
CUT VOLUME: 22
FILL VOLUME: 9

STA. 76+26 - IN PLACE
15" x 31' R.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 20 CU. YD.



CUT AREA: 26
FILL AREA: 6

CUT VOLUME: 20
FILL VOLUME: 9



STA. 76+00
BEGIN -4.46%
LT. DITCH GRADE
ELEV. 322.73

CUT AREA: 15
FILL AREA: 14

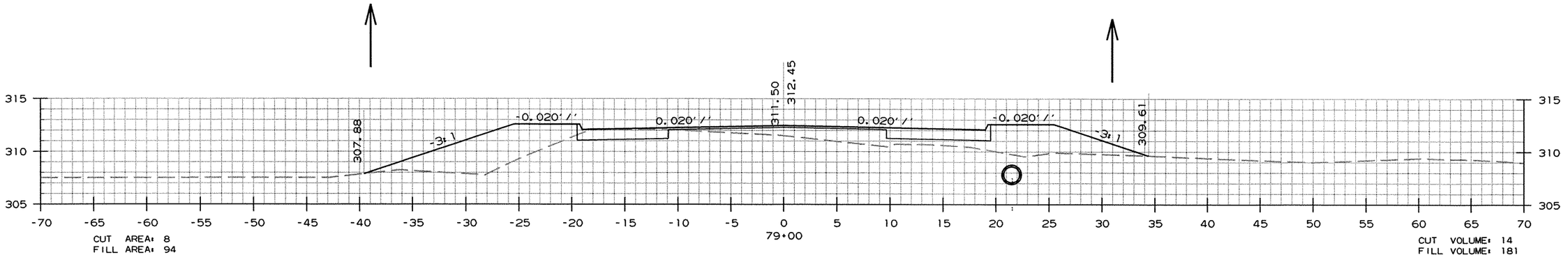
CUT VOLUME: 32
FILL VOLUME: 28

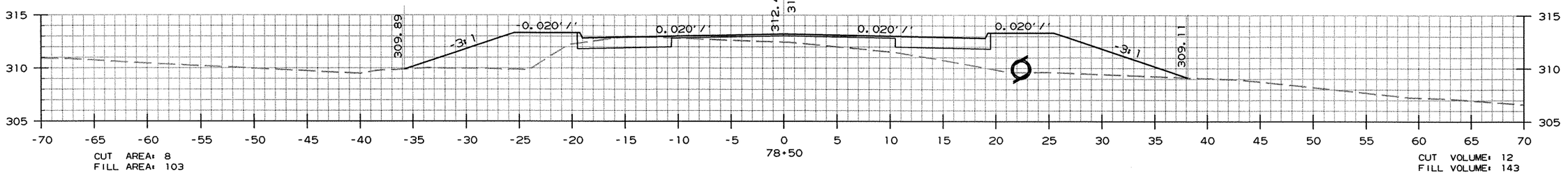
CROSS SECTION STA. 76+00 TO STA. 77+00

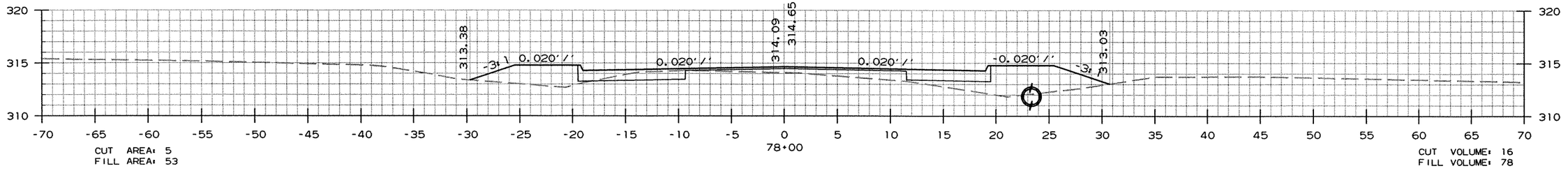
r070304.dgn 8/25/2009

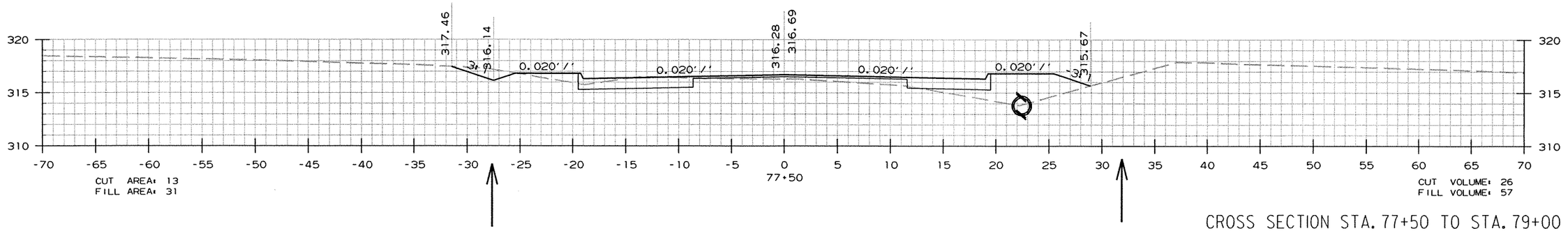
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	87	102

(2) CROSS SECTIONS







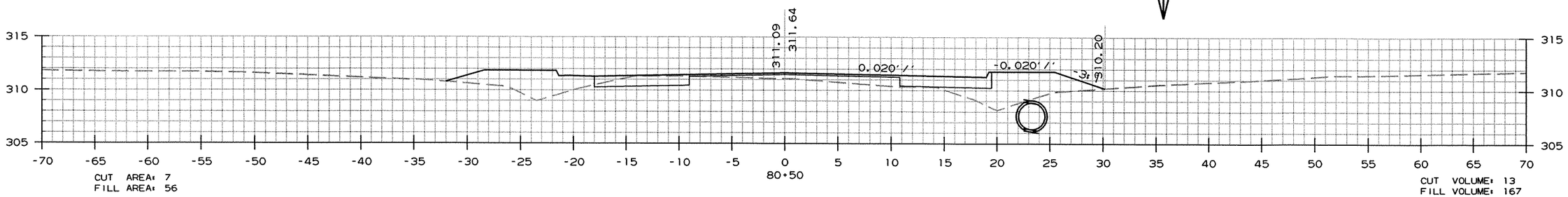


CROSS SECTION STA. 77+50 TO STA. 79+00

r070304.dgn 8/25/2009

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.		070304	88	102

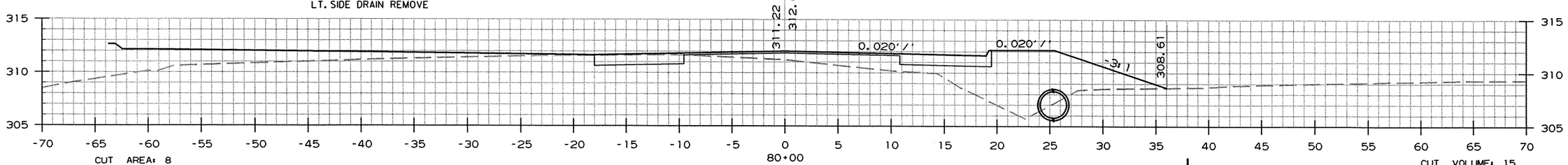
(2) CROSS SECTIONS



CUT AREA: 7
FILL AREA: 56

CUT VOLUME: 13
FILL VOLUME: 167

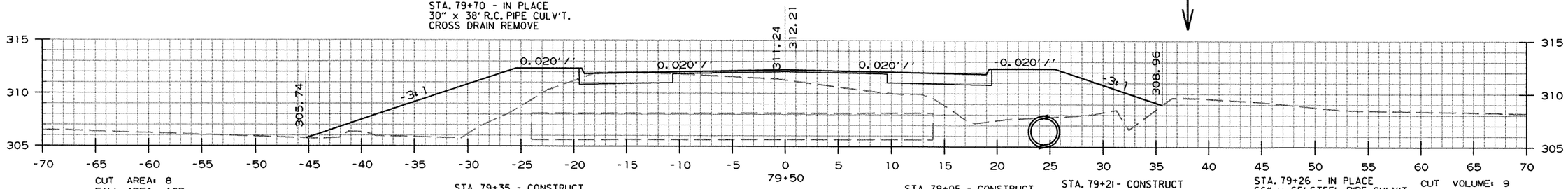
STA. 80+00 - IN PLACE
24" x 32' R.C. PIPE CULV'T.
LT. SIDE DRAIN REMOVE



CUT AREA: 8
FILL AREA: 125

CUT VOLUME: 15
FILL VOLUME: 265

STA. 79+70 - IN PLACE
30" x 38' R.C. PIPE CULV'T.
CROSS DRAIN REMOVE



CUT AREA: 8
FILL AREA: 162

STA. 79+35 - CONSTRUCT
DROP INLET ON LT.
ON TO OF R.C. BOX CULVERT
TYPE C = 4'-0" x 3'-6"
(H = 2'-6")

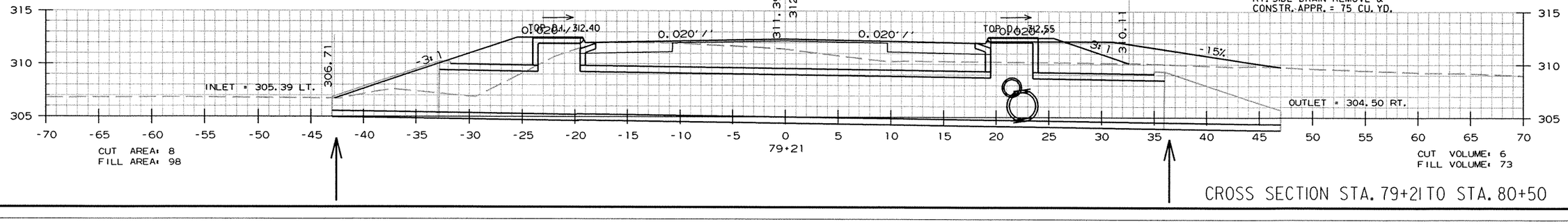
STA. 79+05 - CONSTRUCT
DROP INLET ON LT.
ON TO OF R.C. BOX CULVERT
TYPE C = 4'-0" x 3'-6"
(H = 3'-4")

STA. 79+21 - CONSTRUCT
6' X 4' X 85'
PRECAST R.C. BOX CULVERT
35° LT. FWD. SKEW
WITH 3:1 WINGS LT. & RT.
D.A. = 80 AC. 050 = 200 C.F.S.

STA. 79+26 - IN PLACE
66" x 65' STEEL PIPE CULV'T.
RT. SIDE DRAIN RETAIN &

STA. 79+26 - IN PLACE
24" x 60' PLASTIC PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 75 CU. YD.

CUT VOLUME: 9
FILL VOLUME: 142



CUT AREA: 8
FILL AREA: 98

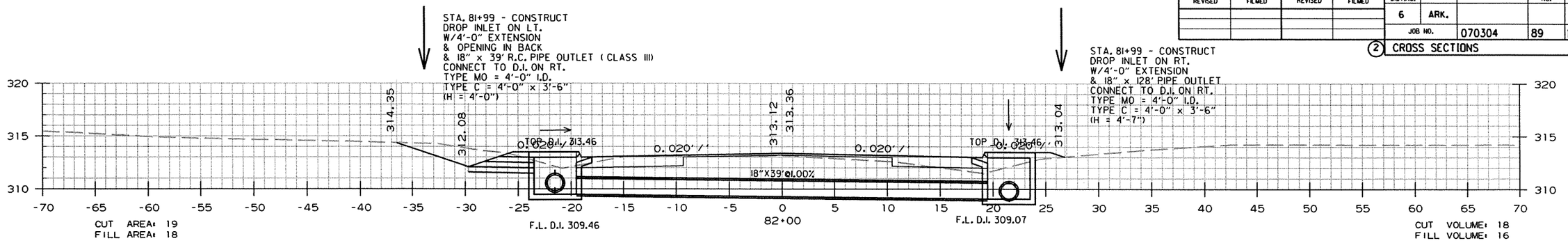
CUT VOLUME: 6
FILL VOLUME: 73

CROSS SECTION STA. 79+21 TO STA. 80+50

r070304.dgn 8/25/2009

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.		070304	89	102

(2) CROSS SECTIONS

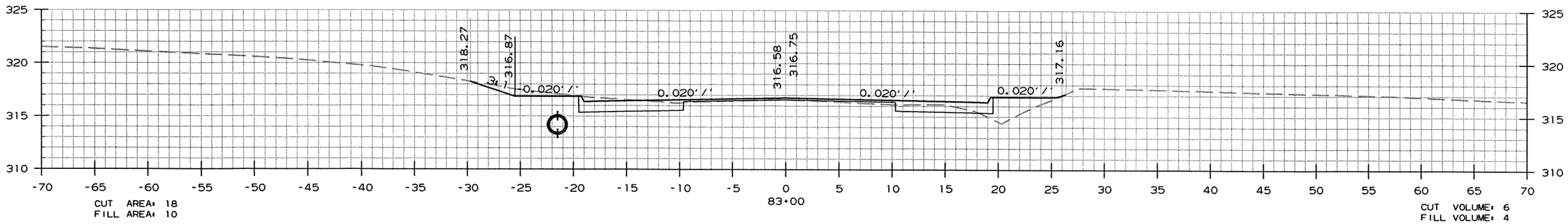


CROSS SECTION STA. 80+66 TO STA. 82+00

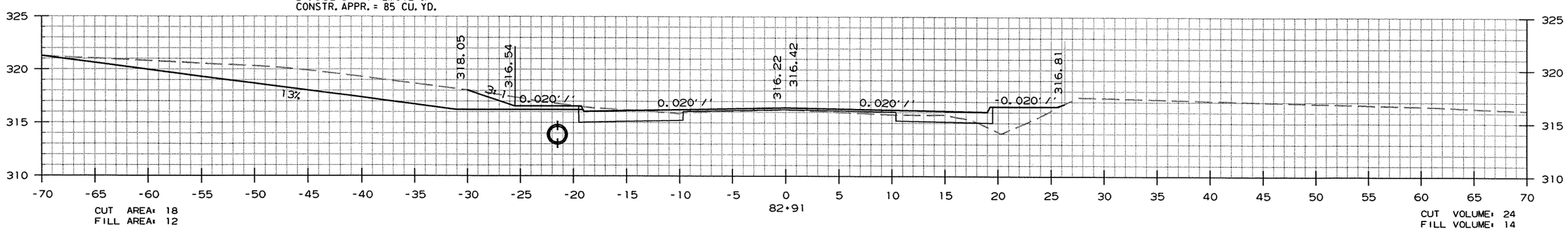
r070304.dgn 8/25/2009

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.		070304	90	102

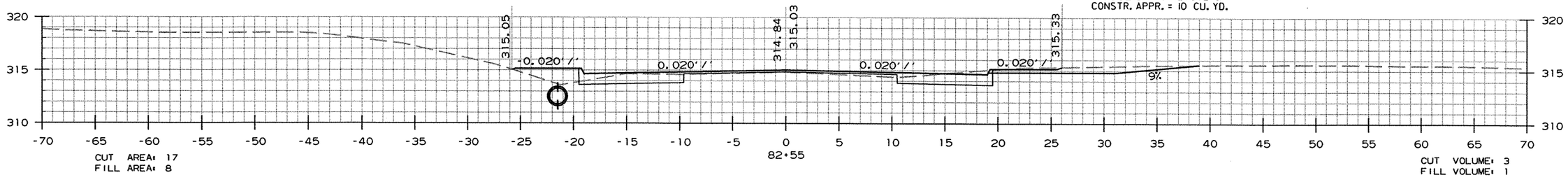
(2) CROSS SECTIONS

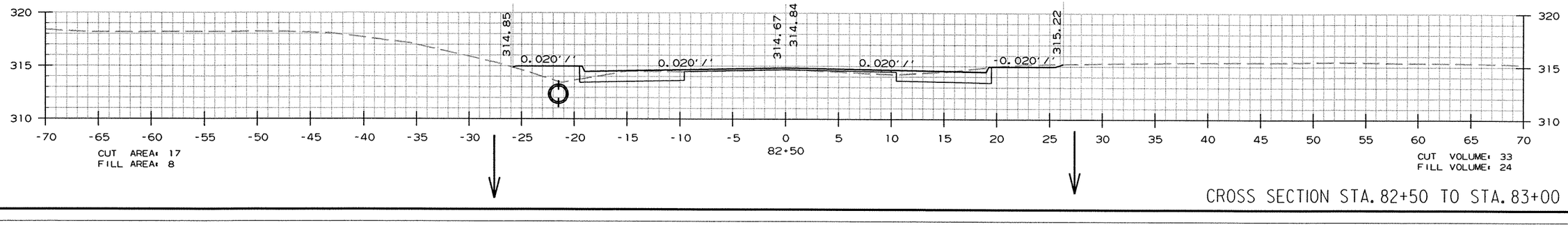


STA. 82+92 - IN PLACE
18" x 34' C.M. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 85 CU. YD.



STA. 82+55 - IN PLACE
18" x 26' R.C. PIPE CULV'T.
RT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 10 CU. YD.





CROSS SECTION STA. 82+50 TO STA. 83+00

r070304.dgn 8/25/2009

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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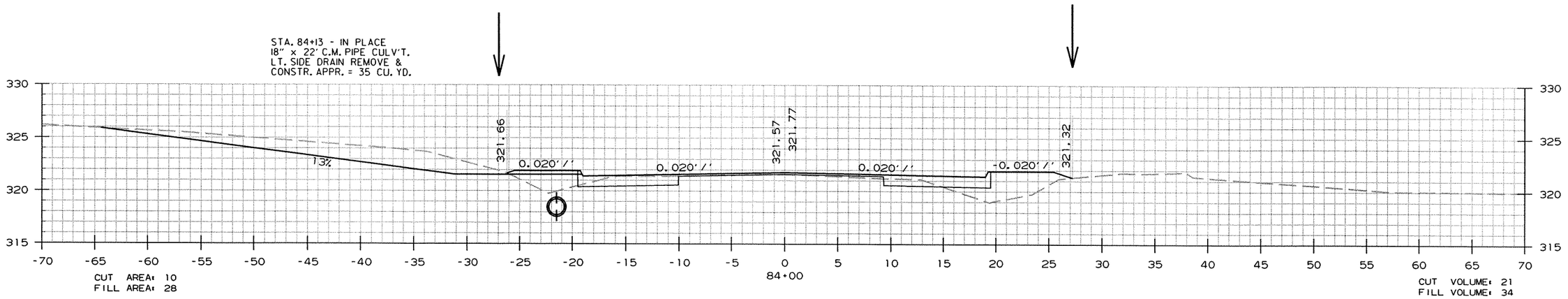
				JOB NO.		070304	91	102

(2) CROSS SECTIONS

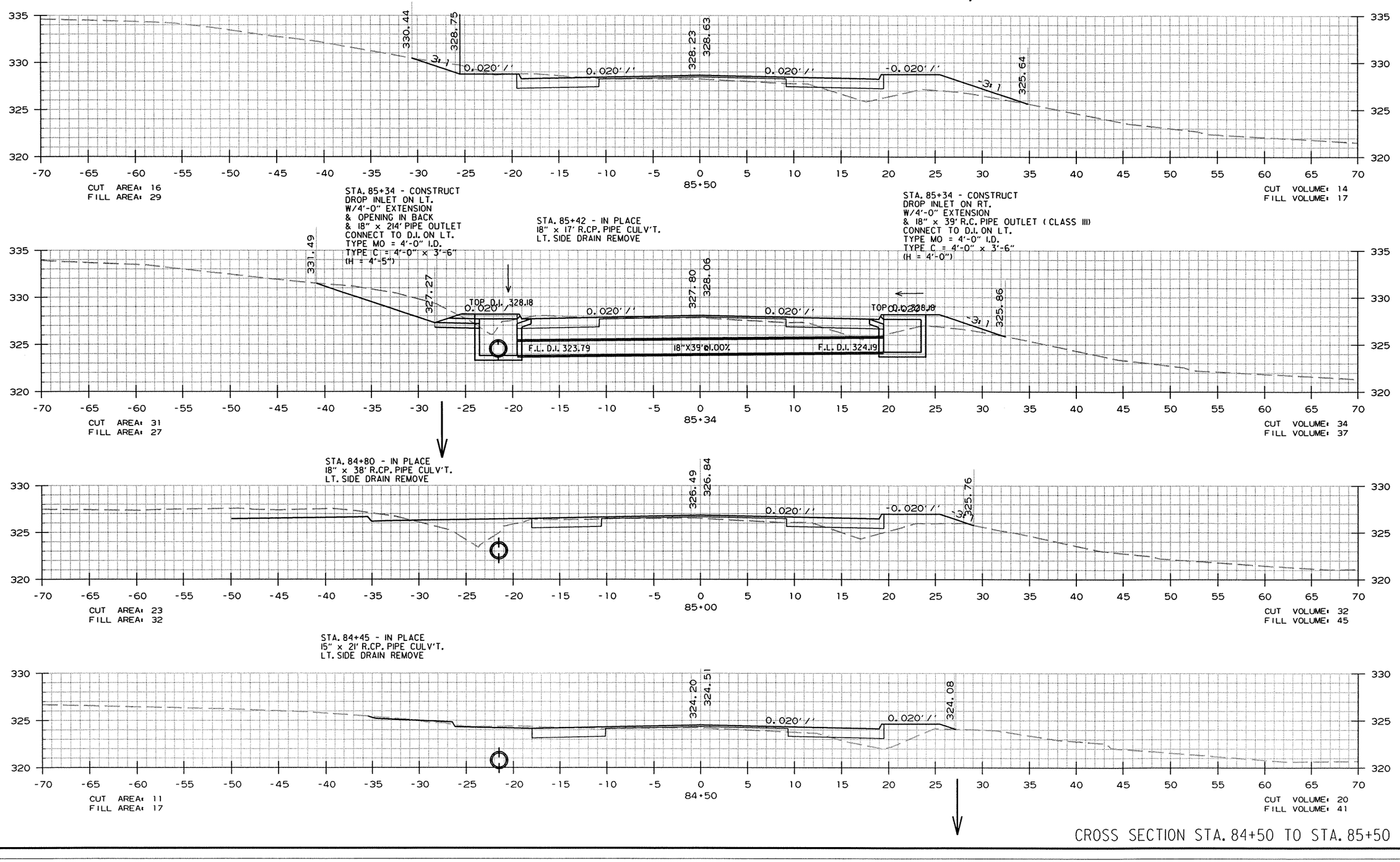


CROSS SECTION STA. 83+16 TO STA. 84+00

r070304.dgn 8/25/2009

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.		070304	92	102

(2) CROSS SECTIONS

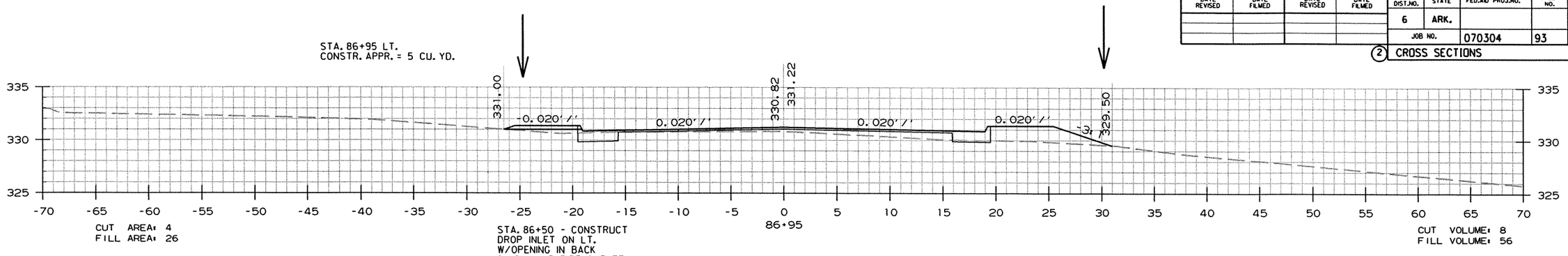


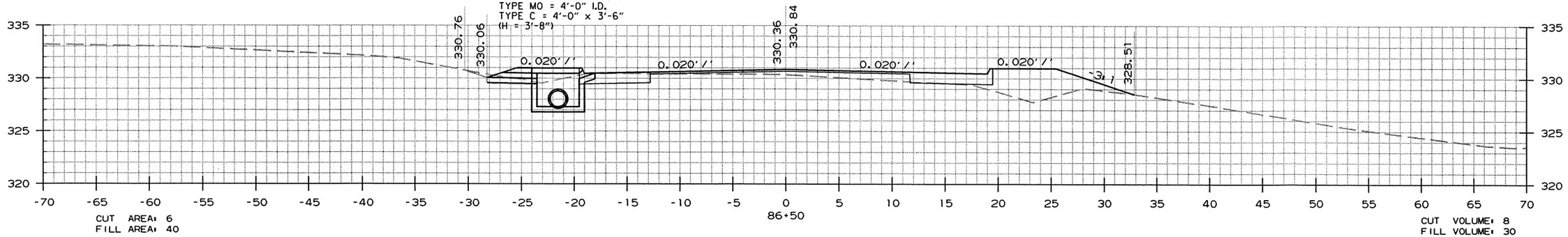
CROSS SECTION STA. 84+50 TO STA. 85+50

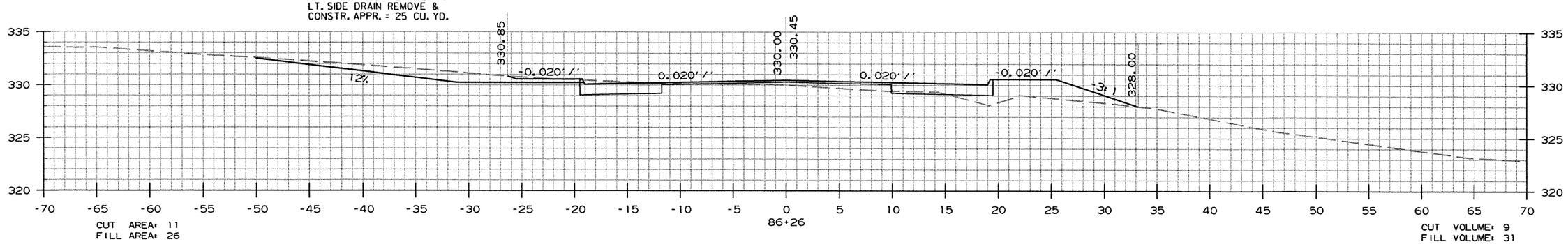
r070304.dgn 8/25/2009

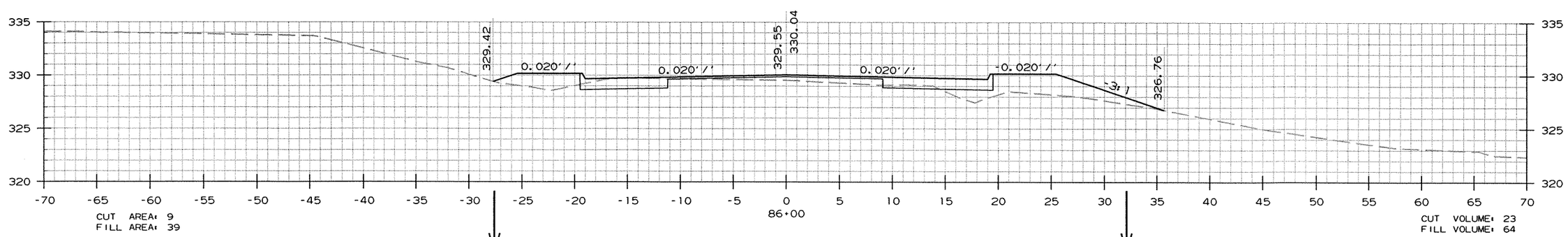
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	93	102

(2) CROSS SECTIONS







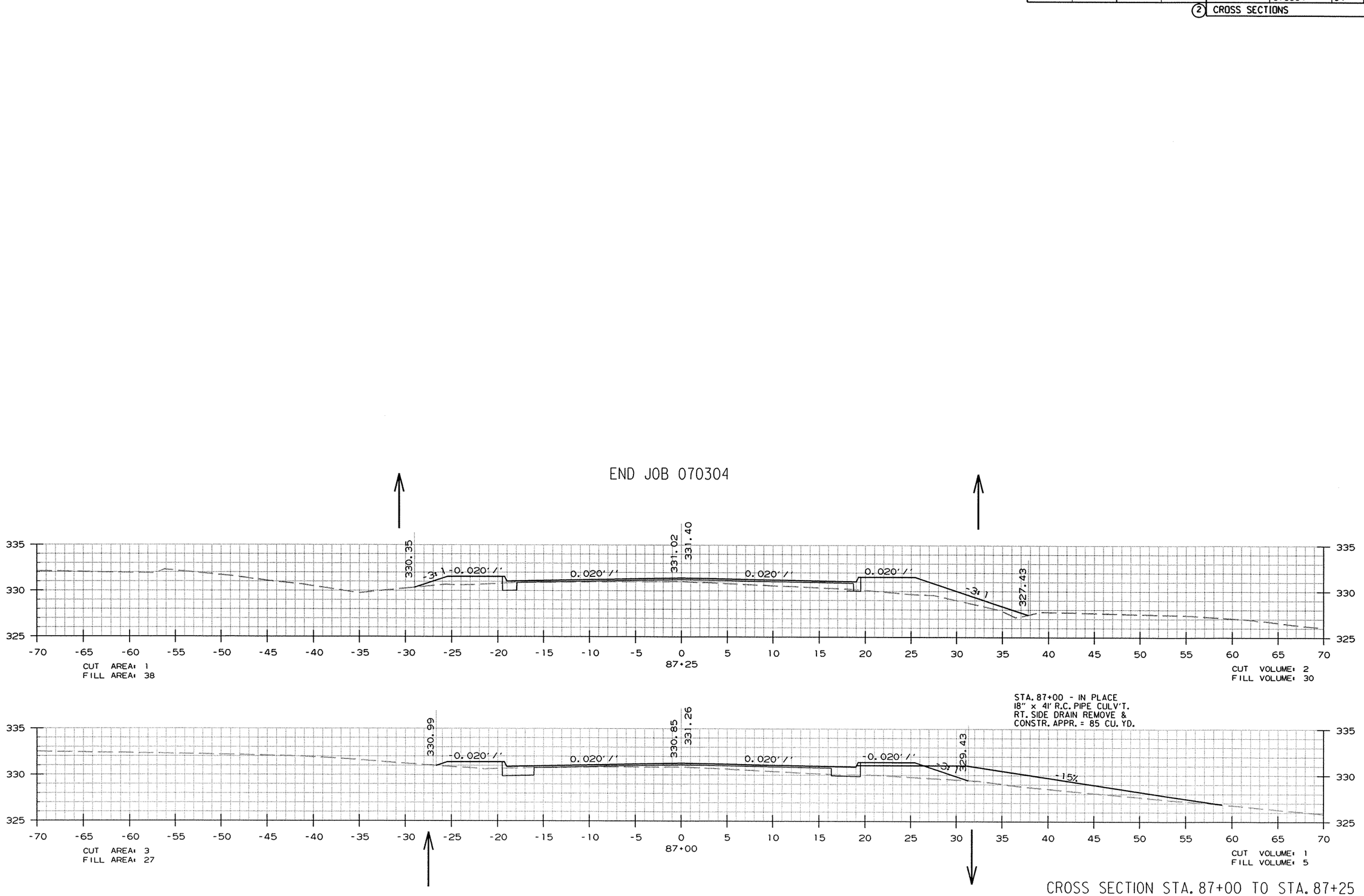


CROSS SECTION STA. 86+00 TO STA. 86+95

r070304.dgn 8/25/2009

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.		070304	94	102

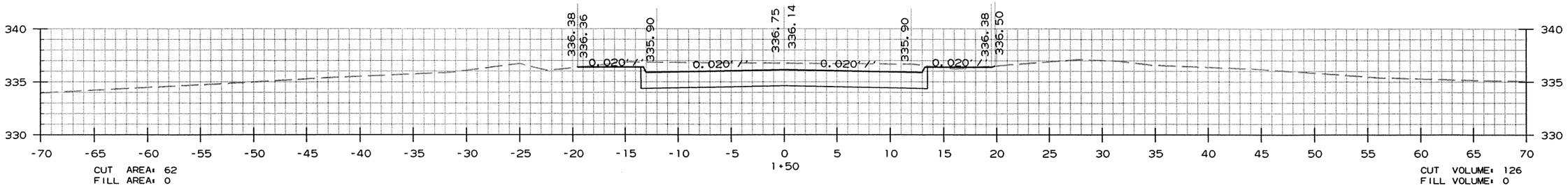
(2) CROSS SECTIONS

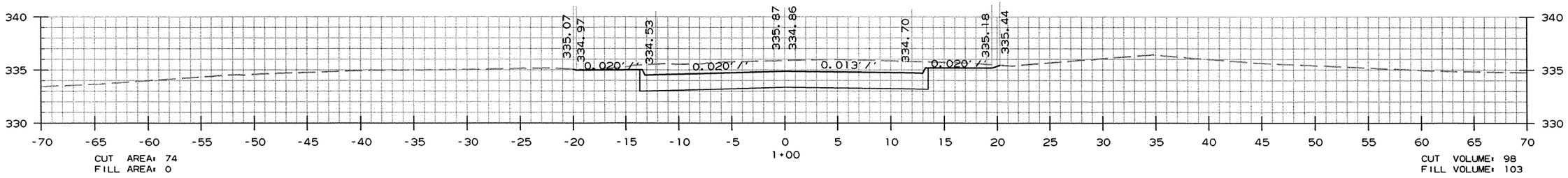


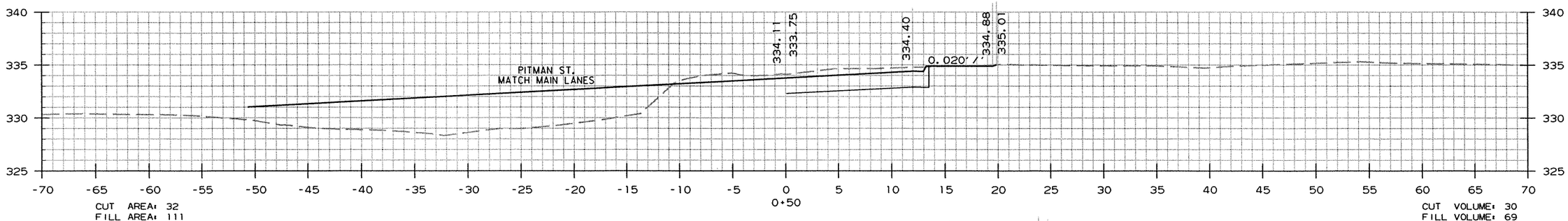
r070304.dgn 8/25/2009

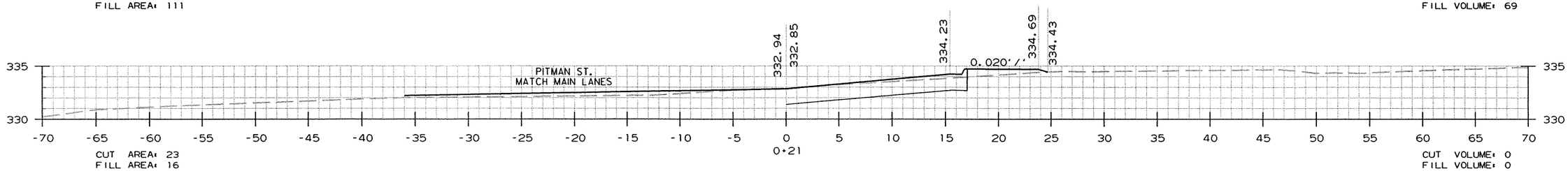
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070304	95	102

(2) CROSS SECTIONS PITMAN ST.









BEGIN PITMAN ST. CONN.

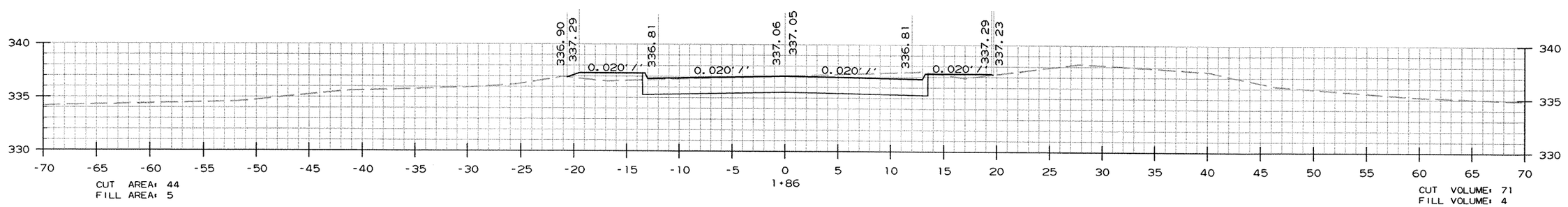
CROSS SECTION STA. 0+21 TO STA. 1+50

r070304.dgn 8/25/2009

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.		070304	96	102

(2) CROSS SECTIONS PITMAN ST.

END PITMAN ST. CONN.



CROSS SECTION STA. 1+86 TO STA. 1+86

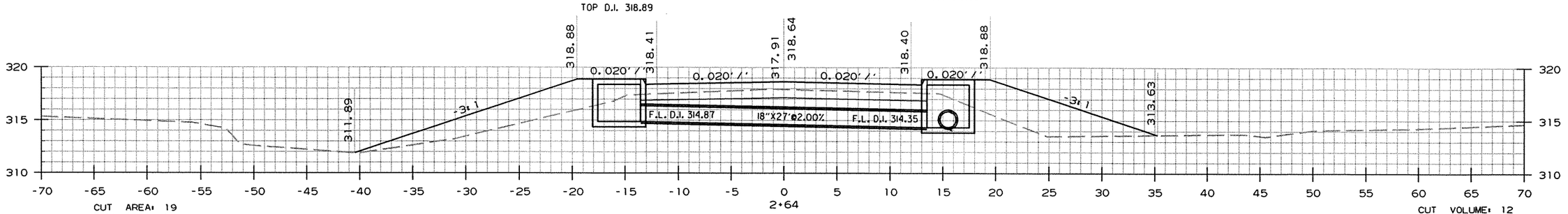
r070304.dgn 8/25/2009

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.		070304	97	102

(2) CROSS SECTIONS COLUMBIA ST.

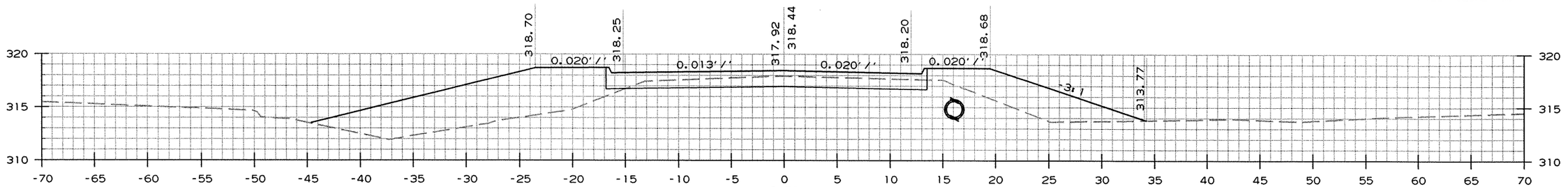
STA. 2+64 - CONSTRUCT
DROP INLET ON LT.
W/8'-0" EXTENSION
& 18" x 27' R.C. PIPE OUTLET (CLASS III)
CONNECT TO D.I. ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-0")

STA. 2+64 - CONSTRUCT
DROP INLET ON RT.
W/8'-0" EXTENSION
& 18" x 59'. PIPE OUTLET
CONNECT TO JUNCTION BOX ON RT.
TYPE MO = 4'-0" I.D.
TYPE C = 4'-0" x 3'-6"
(H = 4'-6")



CUT AREA: 19
FILL AREA: 99

CUT VOLUME: 12
FILL VOLUME: 63

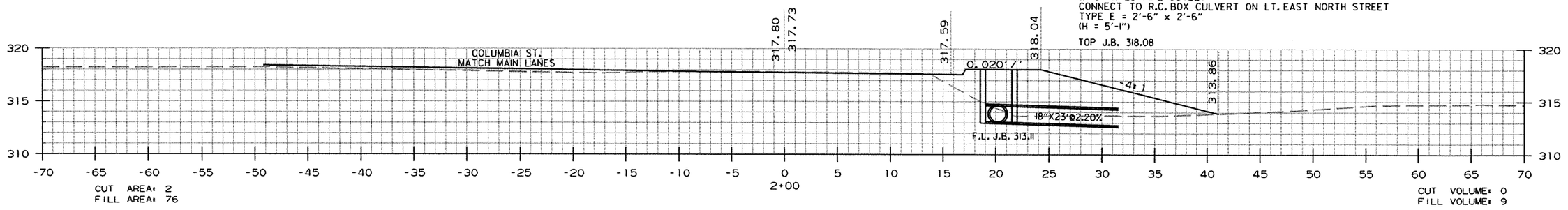


CUT AREA: 24
FILL AREA: 134

STA. 2+03 - CONSTRUCT
JUNCTION BOX ON RT.
W/18" x 23' PIPE OUTLET
CONNECT TO R.C. BOX CULVERT ON LT. EAST NORTH STREET
TYPE E = 2'-6" x 2'-6"
(H = 5'-1")

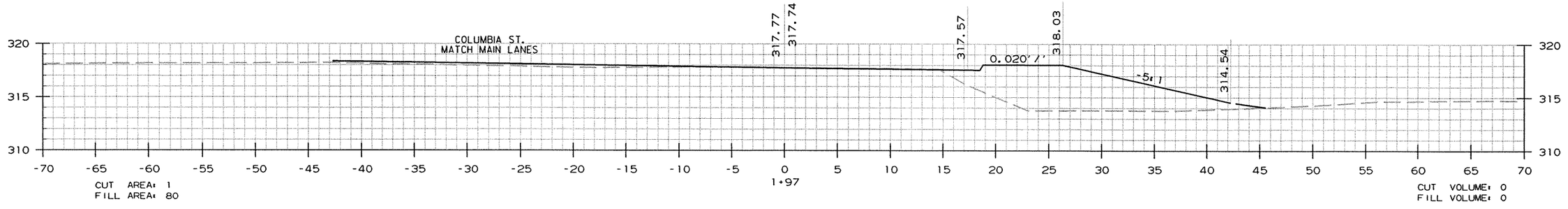
TOP J.B. 318.08

CUT VOLUME: 24
FILL VOLUME: 195



CUT AREA: 2
FILL AREA: 76

CUT VOLUME: 0
FILL VOLUME: 9



CUT AREA: 1
FILL AREA: 80

CUT VOLUME: 0
FILL VOLUME: 0

BEGIN COLUMBIA ST. CONN.

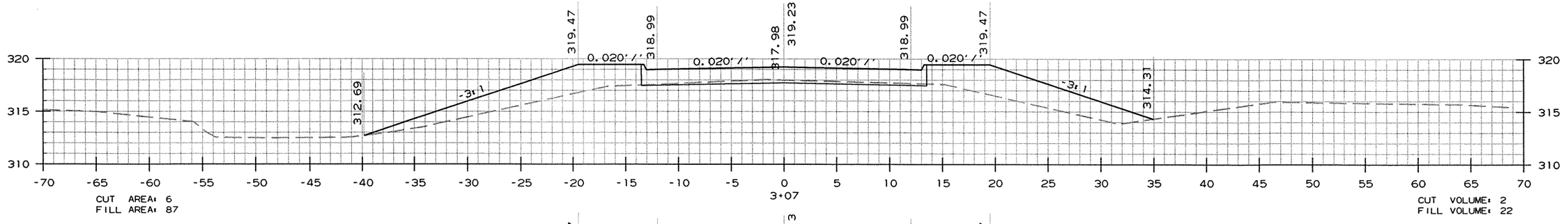
CROSS SECTION STA. 1+97 TO STA. 2+64

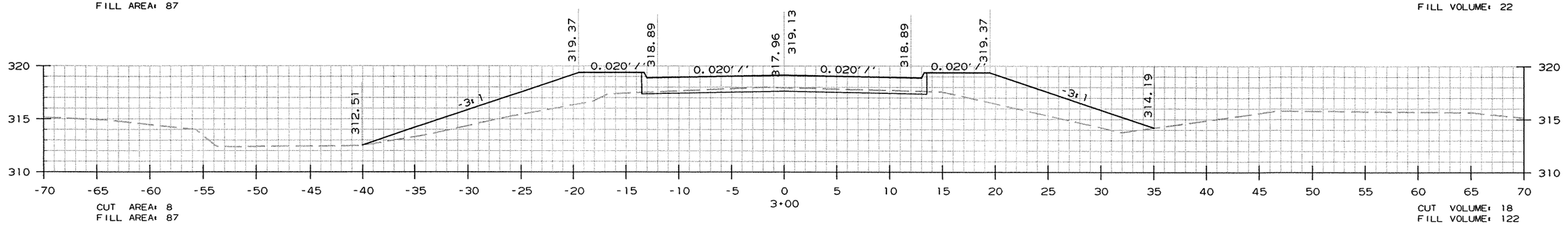
r070304.dgn 8/25/2009

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.		070304	98	102

(2) CROSS SECTIONS COLUMBIA ST.

END COLUMBIA ST. CONN.



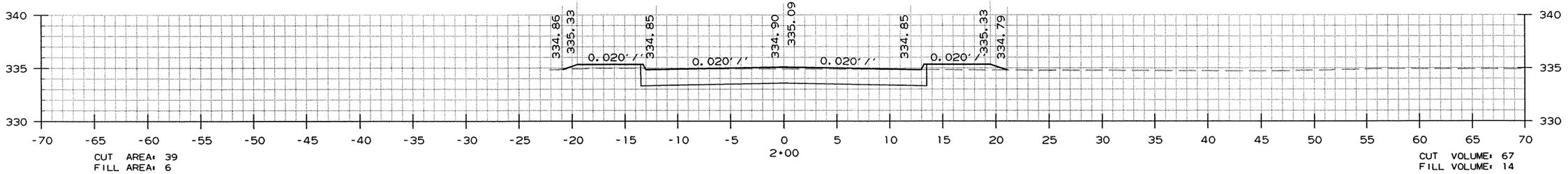


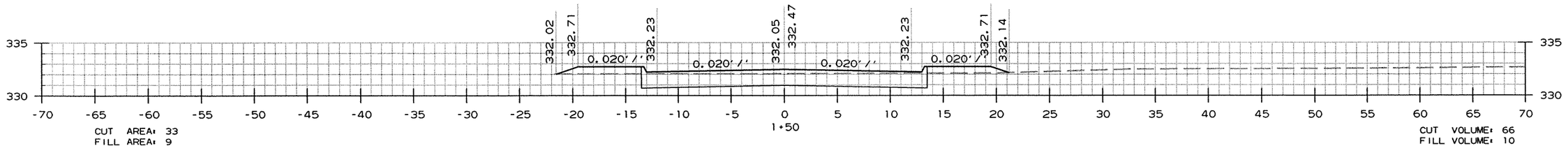
CROSS SECTION STA. 3+00 TO STA. 3+07

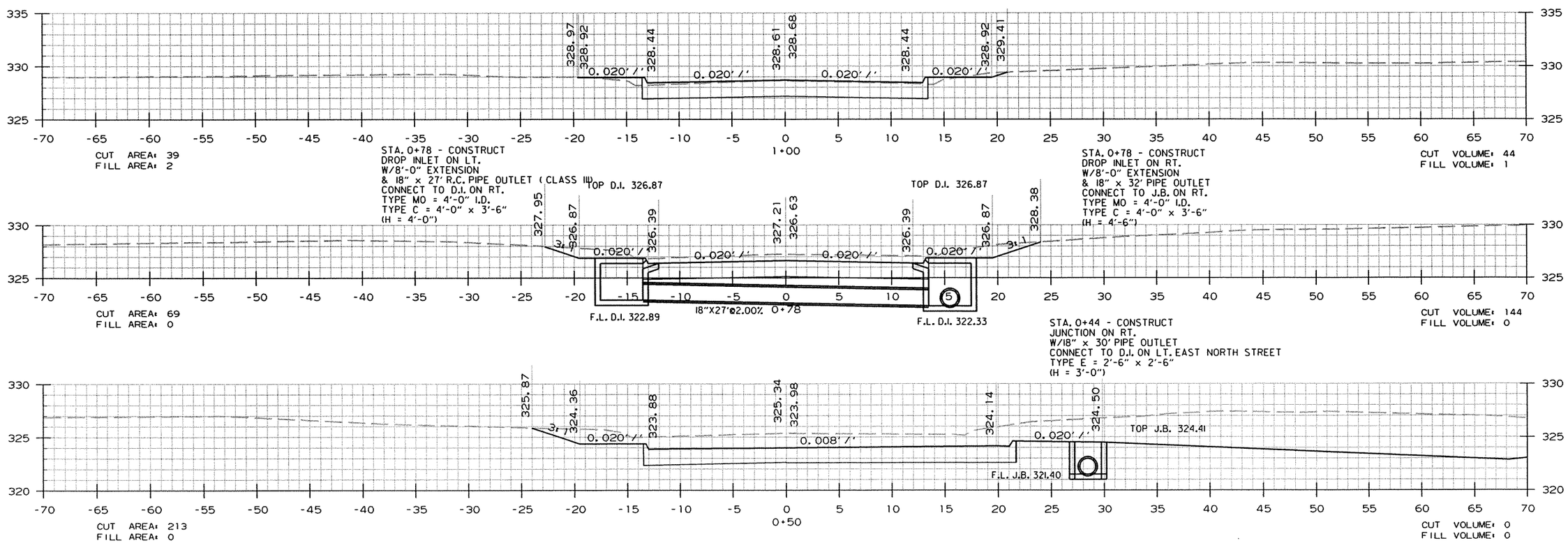
r070304.dgn 8/25/2009

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.		070304	99	102

(2) CROSS SECTIONS BRADLEY ST.







BEGIN BRADLEY ST. CONN.

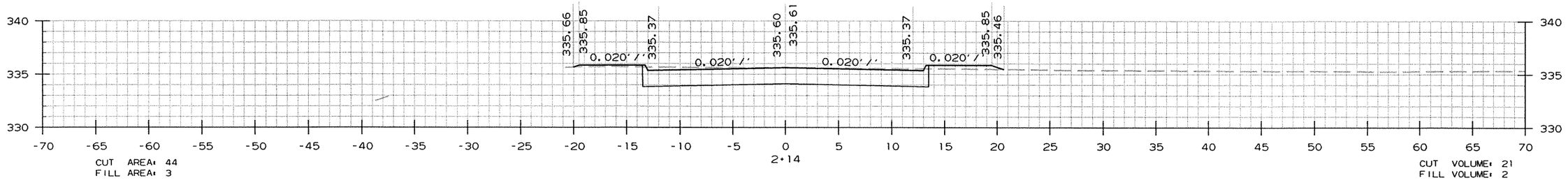
CROSS SECTION STA. 0+50 TO STA. 2+00

r070304.dgn 8/25/2009

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.		070304	100	102

(2) CROSS SECTIONS BRADLEY ST.

END BRADLEY ST. CONN.



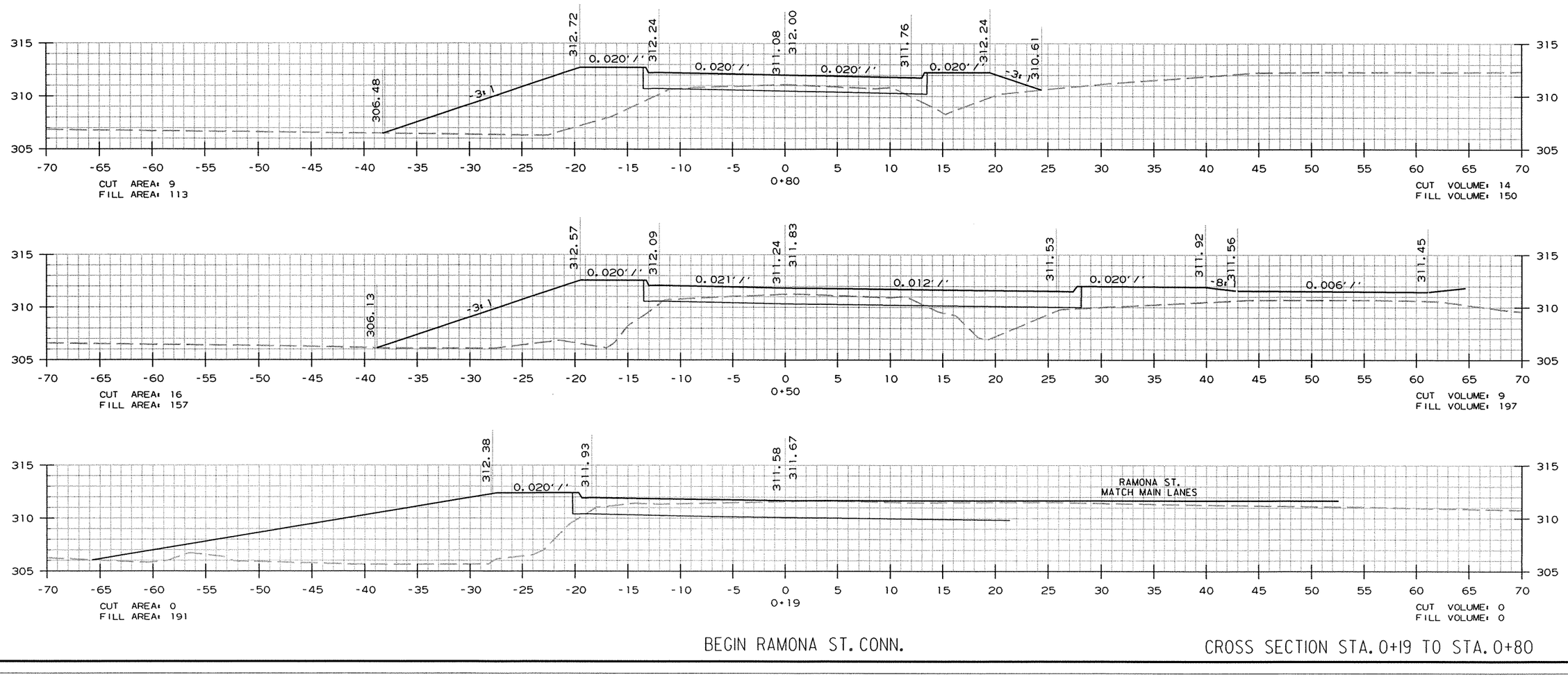
CROSS SECTION STA. 2+14 TO STA. 2+14

r070304.dgn 8/25/2009

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.		070304	101	102

(2) CROSS SECTIONS RAMONA ST.

END RAMONA ST. CONN.



BEGIN RAMONA ST. CONN.

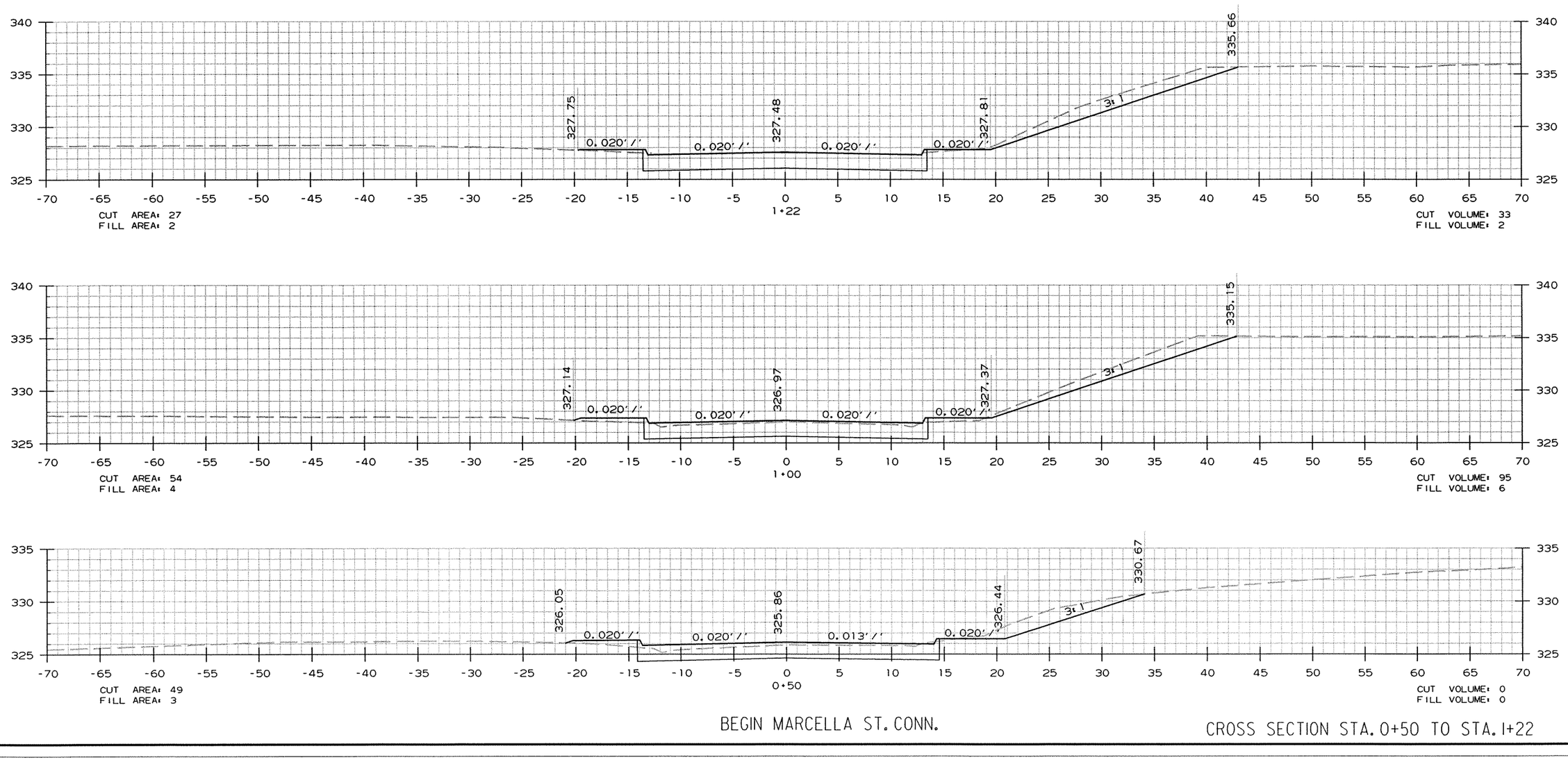
CROSS SECTION STA. 0+19 TO STA. 0+80

r070304.dgn 8/25/2009

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.		070304	102	102

(2) CROSS SECTIONS MARCELLA ST.

END MARCELLA ST. CONN.



BEGIN MARCELLA ST. CONN.

CROSS SECTION STA. 0+50 TO STA. 1+22

r070304.dgn 8/25/2009