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.		061259	1	157
				(2) HWY. 7 - HOT SPRINGS VILLAGE (SAFETY IMPVTS.) (S)				

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

CONSTRUCTION PLANS FOR STATE HIGHWAY

HWY. 7 - HOT SPRINGS VILLAGE (SAFETY IMPVTS.) (S)

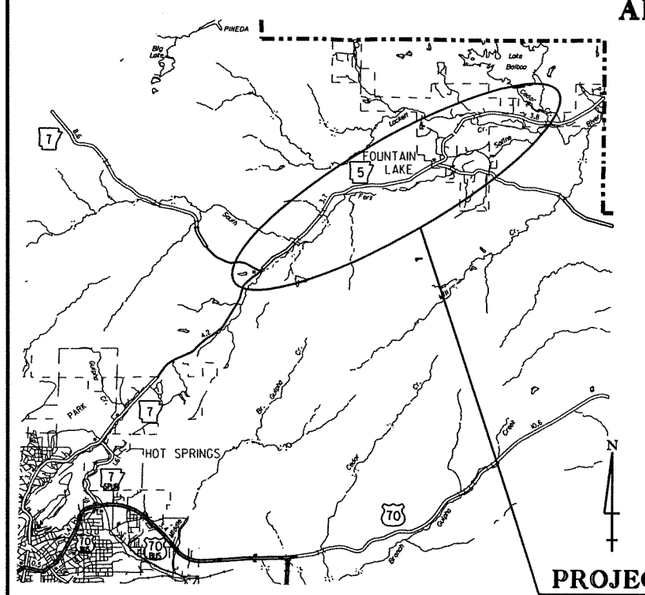
GARLAND COUNTY

ROUTE 5 SECTION 6

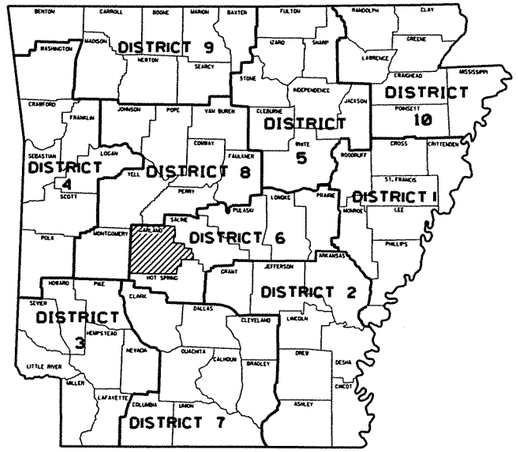
F.A.P. HRRR-0026(26)

JOB 061259

NOT TO SCALE



VICINITY MAP

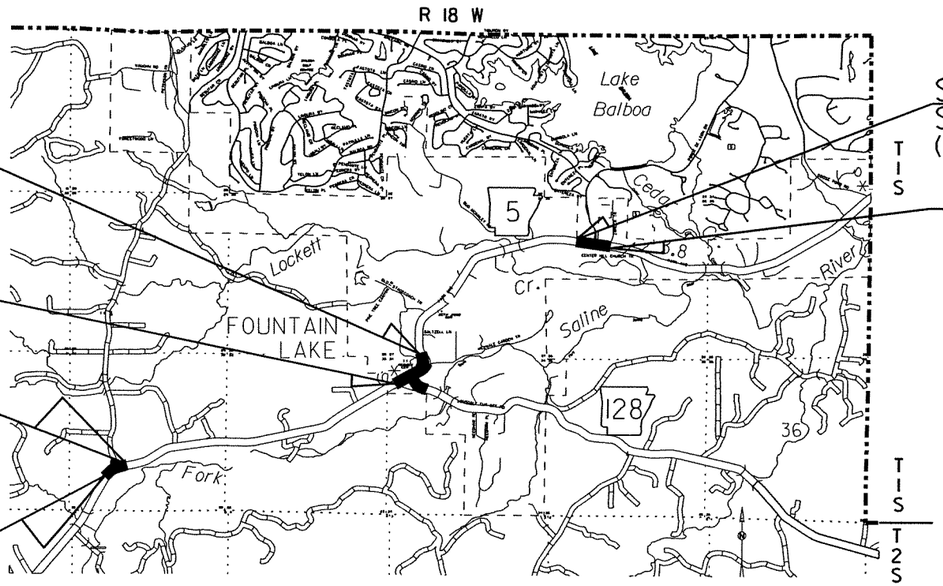


DISTRICT 6

DESIGN TRAFFIC DATA

DESIGN YEAR----------2032
2012 ADT----------8,500
2032 ADT----------11,000
2032 DHV----------1,210
DIRECTIONAL DISTRIBUTION----------60%
TRUCKS----------8% DHV
AVERAGE RUNNING SPEED----------55 MPH

R 18 W



STA. 234+00 END
SECTION 2

STA. 206+00 BEGIN
SECTION 2
(LOG MILE 3.61)

STA. 105+00 BEGIN
JOB 061259 &
SECTION 1 (LOG MILE 1.725)

STA. 116+30 END
SECTION 1

STA. 310+35 BEGIN
SECTION 3
(LOG MILE 5.48)

STA. 317+95 END
SECTION 3 &
JOB 061259

N

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 3917
FRANK VOZEL

12/12/11

DEPUTY DIRECTOR
AND CHIEF ENGINEER

PROJECT COORDINATES:

	BEGIN	MID-POINT	END
LAT.	N34° 35' 43"	N34° 36' 16"	N34° 36 '59"
LON.	W92° 57' 38"	W92° 55' 41"	W92° 54 '16"

LENGTH COMPUTED ALONG HWY. 5

GROSS LENGTH OF PROJECT	4690.00 FEET OR	0.888 MILES
NET LENGTH OF ROADWAY	4690.00 FEET OR	0.888 MILES
NET LENGTH OF BRIDGES	0.00 FEET OR	0.000 MILES
NET LENGTH OF PROJECT	4690.00 FEET OR	0.888 MILES

P.E. JOB 061259
LS20-0026-026

061259

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
1-19-12				6	ARK.			
2-1-12				JOB NO.		061259	2	157
				(2) INDEX OF SHEETS, GOV. SPEC. & GEN. NOTES				

SHEET NO.		TITLE	DRWG.NO.	DATE
1	_____	TITLE SHEET		
2	_____	INDEX OF SHEETS, GOVERNING SPECIFICATIONS AND GENERAL NOTES		
3-4	_____	TYPICAL SECTIONS OF IMPROVEMENT		
5-6A	_____	SPECIAL DETAILS		
7-16	_____	TEMPORARY EROSION CONTROL DETAILS		
17-27	_____	MAINTENANCE OF TRAFFIC DETAILS		
28-30	_____	PERMANENT PAVEMENT MARKING DETAILS		
31-35	_____	QUANTITY SHEETS		
36	_____	SUMMARY OF QUANTITIES AND REVISIONS		
37-42	_____	SURVEY CONTROL DETAILS		
43-50	_____	PLAN AND PROFILE SHEETS		
51-52	_____	DETOUR PLAN AND PROFILE SHEETS		
53	_____	CONCRETE DITCH PAVING	CDP-1	11-17-10
54	_____	CURBING DETAILS	CG-1	11-29-07
55	_____	DETAILS OF DRIVEWAYS AND ISLANDS	DR-1	11-29-07
56	_____	FLARED END SECTION	FES-1	10-18-96
57	_____	FLARED END SECTION	FES-2	10-18-96
58	_____	DETAILS OF DROP INLETS	FPC-9D	8-22-02
59	_____	DETAILS OF DROP INLET (TYPE MO)	FPC-9S	1-16-01
60	_____	MAILBOX DETAILS	MB-1	11-18-04
61	_____	PRECAST CONCRETE BOX CULVERTS	PBC-1	12-15-11
62	_____	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	PCC-1	12-15-11
63	_____	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	PCM-1	12-15-11
64	_____	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)	PCP-1	12-15-11
65	_____	PLASTIC PIPE CULVERT (PVC F949)	PCP-2	11-17-10
66	_____	PAVEMENT MARKING DETAILS	PM-1	11-17-10
67	_____	DETAILS OF PIPE UNDERDRAIN	PU-1	4-10-03
68	_____	REINFORCED CONCRETE BOX CULVERT DETAILS	RCB-1	12-15-11
69	_____	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS	RCB-2	11-20-03
70	_____	METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS	RCB-3	10-12-95
71	_____	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	SE-2	10-18-96
72	_____	SAFETY END SECTION FOR CIRCULAR AND ARCH PIPES	SES-1	10-18-96
73	_____	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-1	12-15-11
74	_____	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-2	3-11-10
75	_____	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-3	10-15-09
76	_____	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	TC-4	10-15-09
77	_____	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	TC-5	10-15-09
78	_____	TEMPORARY EROSION CONTROL DEVICES	TEC-1	12-15-11
79	_____	TEMPORARY EROSION CONTROL DEVICES	TEC-2	6-02-94
80	_____	TEMPORARY EROSION CONTROL DEVICES	TEC-3	11-03-94
81	_____	CHAIN LINK FENCE	WF-3	11-17-10
82	_____	WIRE FENCE TYPE C AND D	WF-4	8-22-02
83	_____	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS	W-X003-1	5-10-66
84	_____	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS	W-X30	7-15-63
85	_____	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS	W-X303-1	5-10-66
86	_____	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS	W-X45	6-15-64
87	_____	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS	W-X453-1	5-10-66
88	_____	DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS	R-100X-0	2-08-63
89	_____	NOT USED		
90	_____	DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS	R-245X-01	7-14-64
91-157	_____	CROSS SECTIONS		

NOTE: CROSS SECTIONS NOT NORMALLY INCLUDED IN 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
804-1	INSTALLATION OF DOWEL BARS AND TIE BARS
JOB 061259	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 061259	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 061259	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 061259	INTERNET BIDDING
JOB 061259	NESTING SITES OF MIGRATORY BIRDS
JOB 061259	PARTNERING REQUIREMENTS
JOB 061259	PLASTIC PIPE
JOB 061259	SITE USE (A + C METHOD)
JOB 061259	SOIL STABILIZATION
JOB 061259	STORM WATER POLLUTION PREVENTION PLAN
JOB 061259	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 061259	TEMPORARY IMPACT ATTENUATION BARRIER
JOB 061259	UTILITY ADJUSTMENTS
JOB 061259	VALUE ENGINEERING
JOB 061259	WARM MIX ASPHALT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
14476605
MICHAEL D. FUGETT
2-1-12

GENERAL NOTES

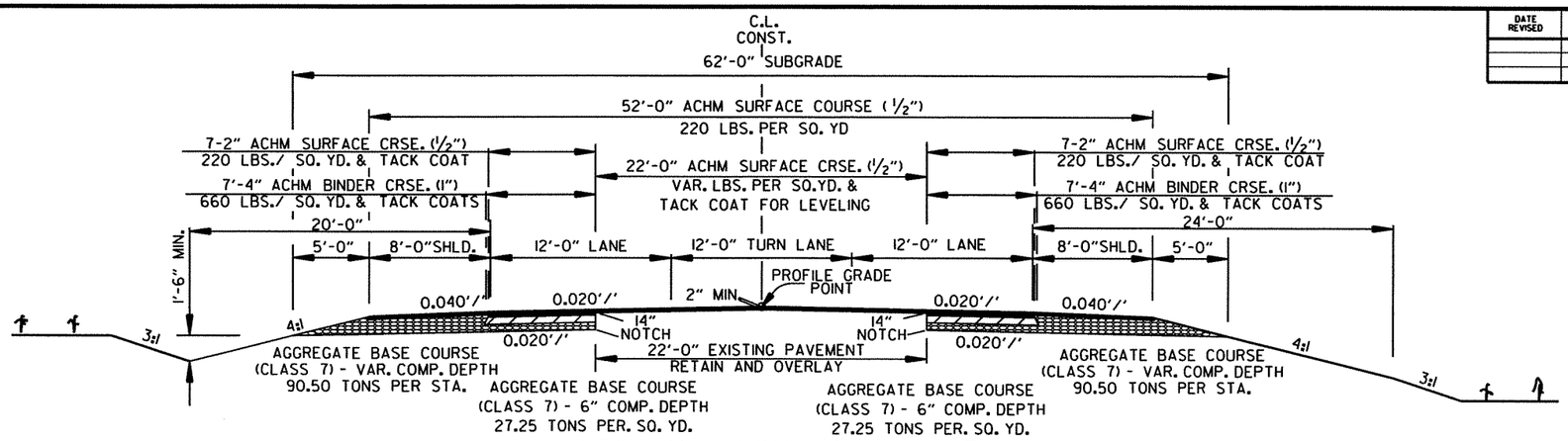
1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY 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. 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.
8. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
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. THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONWIDE 14 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003, AND THE JOB SPECIAL PROVISION, FOR PERMIT REQUIREMENTS.

R061259.DGN 5/16/2011

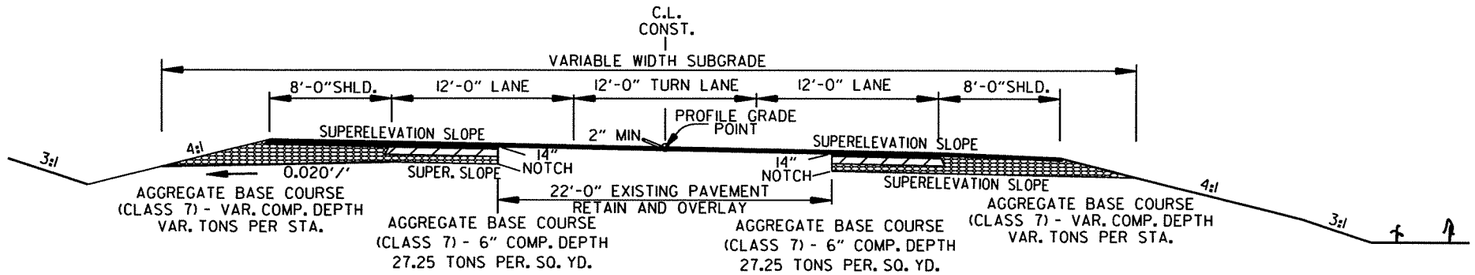
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	3	157

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-21-11

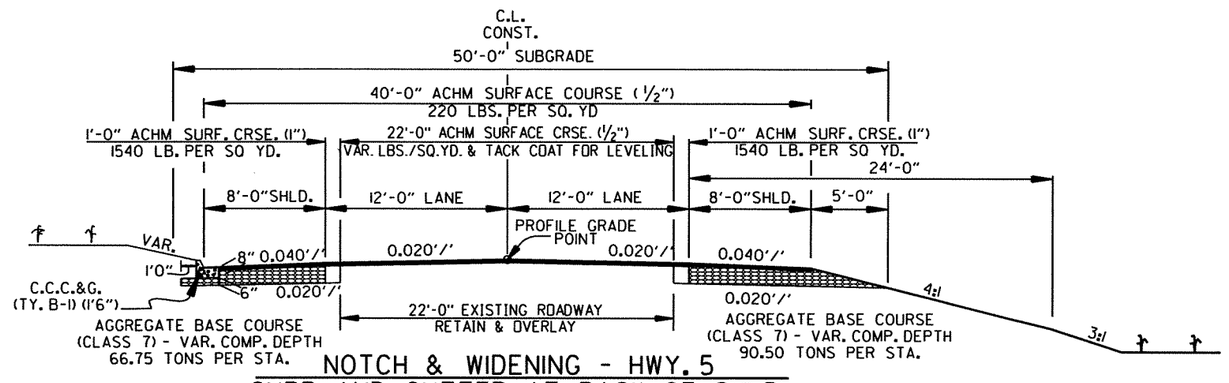


NOTCH AND WIDENING - HWY. 5

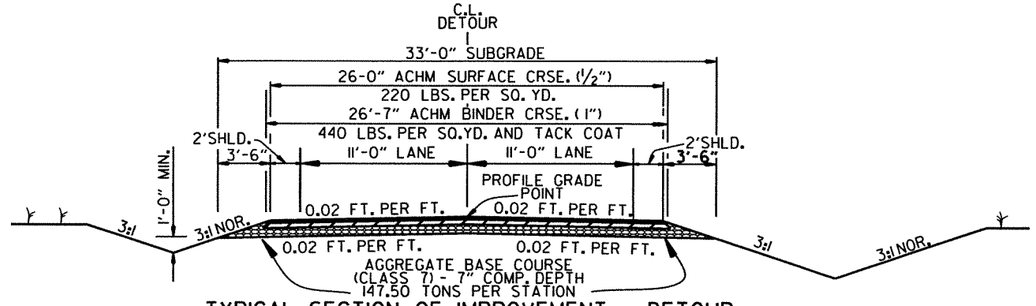


NOTCH AND WIDENING - SUPERELEVATION - HWY. 5

REFER TO TYPICAL SECTION ABOVE FOR DETAILS



NOTCH & WIDENING - HWY. 5
CURB AND GUTTER AT BACK OF SHLD.



TYPICAL SECTION OF IMPROVEMENT - DETOUR

NOTES:

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

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

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.

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.

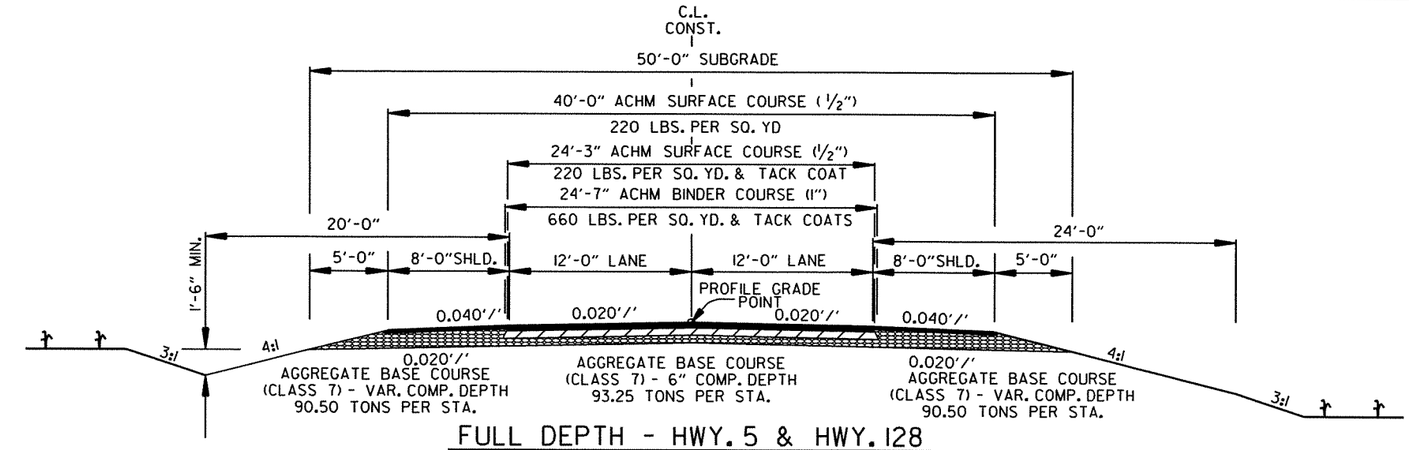
R061259.DGN 5/19/2011

TYPICAL SECTIONS OF IMPROVEMENT

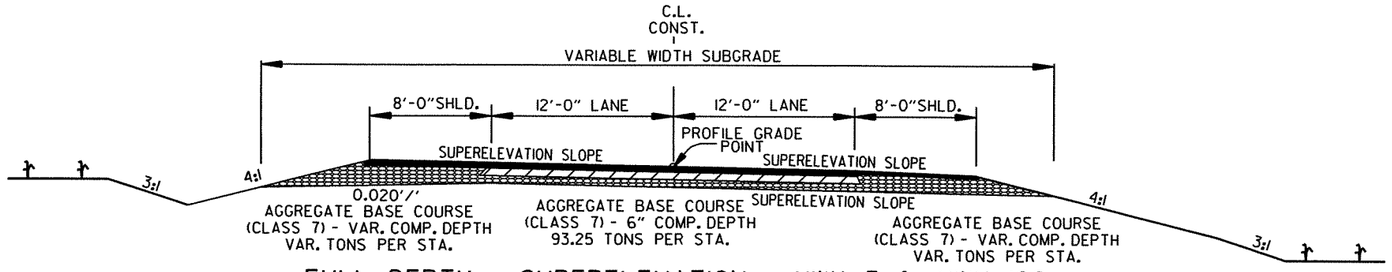
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	4	157

(2) TYPICAL SECTIONS OF IMPROVEMENT



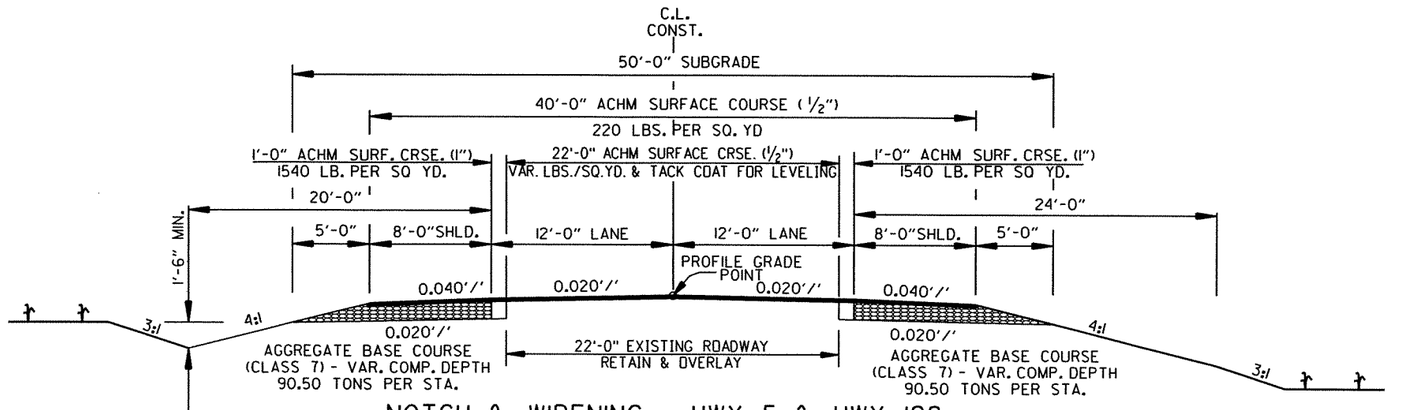


FULL DEPTH - HWY. 5 & HWY. 128

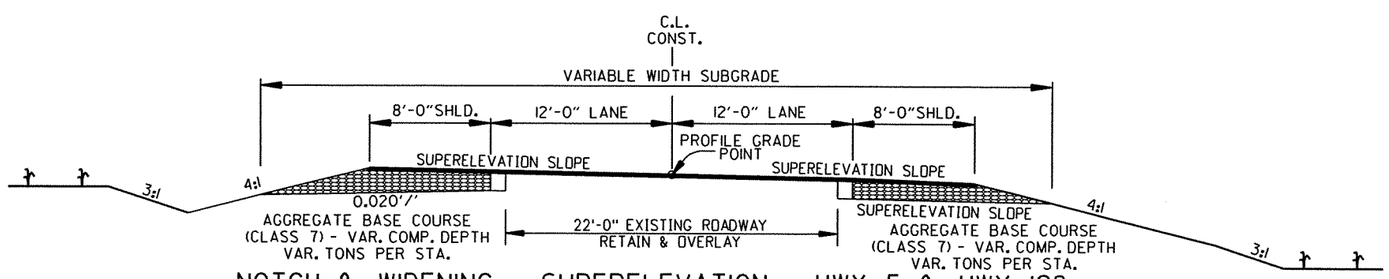


FULL DEPTH - SUPERELEVATION - HWY. 5 & HWY. 128

REFER TO TYPICAL SECTION ABOVE FOR DETAILS



NOTCH & WIDENING - HWY. 5 & HWY. 128



NOTCH & WIDENING - SUPERELEVATION - HWY. 5 & HWY. 128

REFER TO TYPICAL SECTION ABOVE FOR DETAILS

NOTES:

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

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

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.

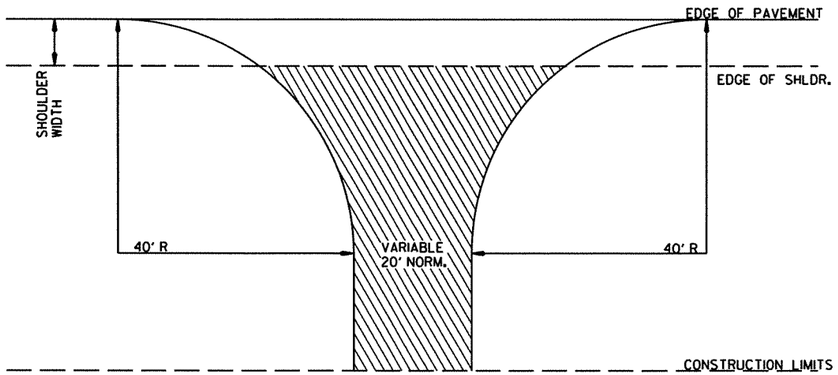
ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING.

R061259.DGN 5/19/2011

TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	5	157

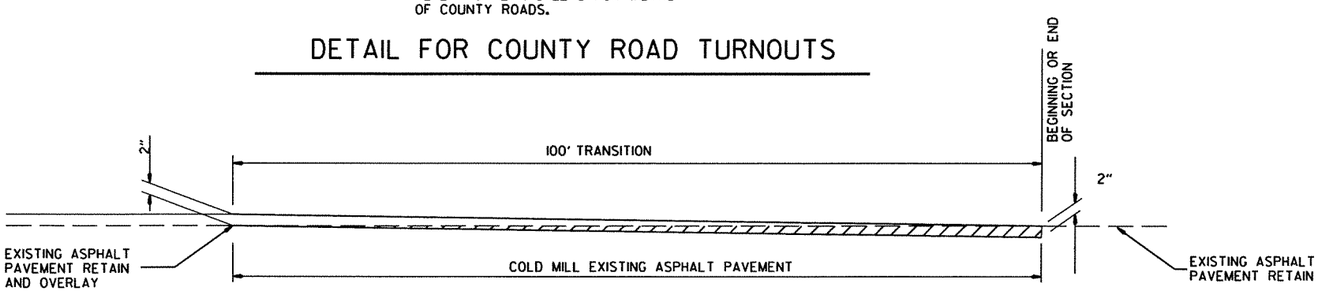
(2) SPECIAL DETAILS



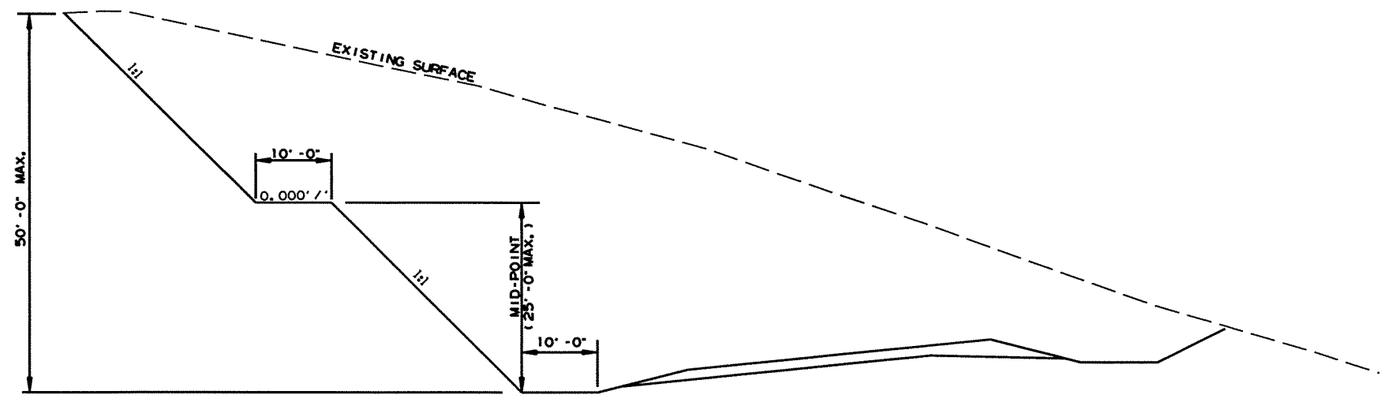
ASPHALT CONCRETE HOT MIX SURFACE COURSE (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP.

NOTE:
REFER TO PLAN SHEETS FOR WIDTHS OF COUNTY ROADS.

DETAIL FOR COUNTY ROAD TURNOUTS

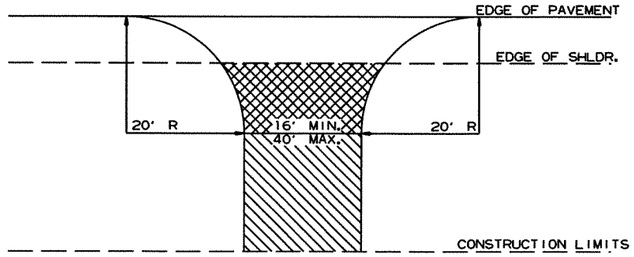


DETAIL FOR COLD MILLING



DETAIL FOR BENCHING

(REFER TO CROSS SECTIONS FOR LOCATIONS.)

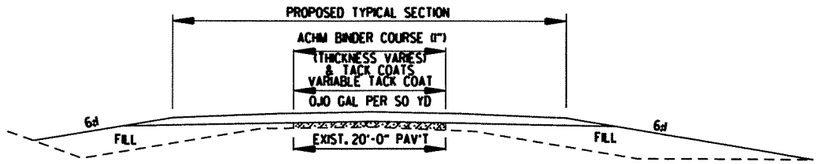


ASPHALT CONCRETE HOT MIX SURFACE COURSE (220 LBS. PER SQ. YD.)
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH IF ASPHALT DRIVE EXIST OR
6" CONCRETE IF CONCRETE DRIVE EXIST.

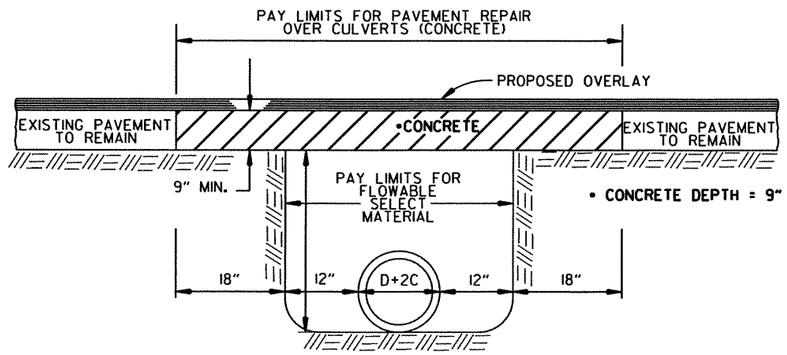
AGGREGATE BASE COURSE (CLASS 7)
9" COMP. DEPTH OR CONFORM TO EXISTING DRIVEWAY

DETAIL FOR DRIVEWAY TURNOUTS

(COLLECTORS)



METHOD OF RAISING GRADE



PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

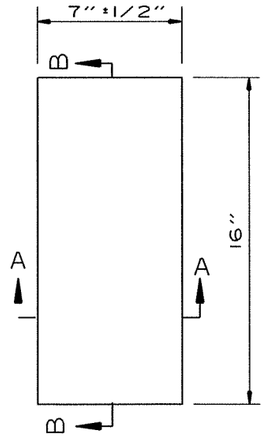
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

R061259.DGN 5/16/2011

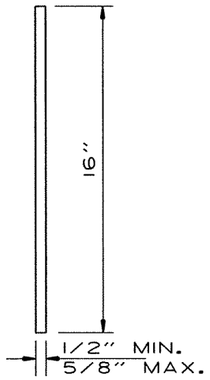
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	6	157

(2) SPECIAL DETAILS

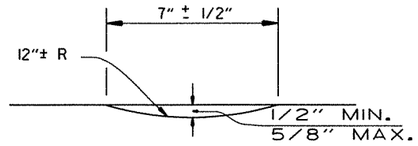
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
12-20-11



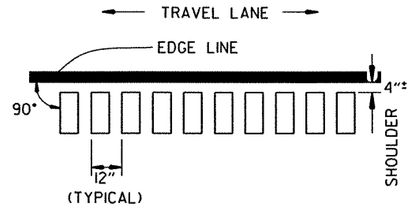
PLAN



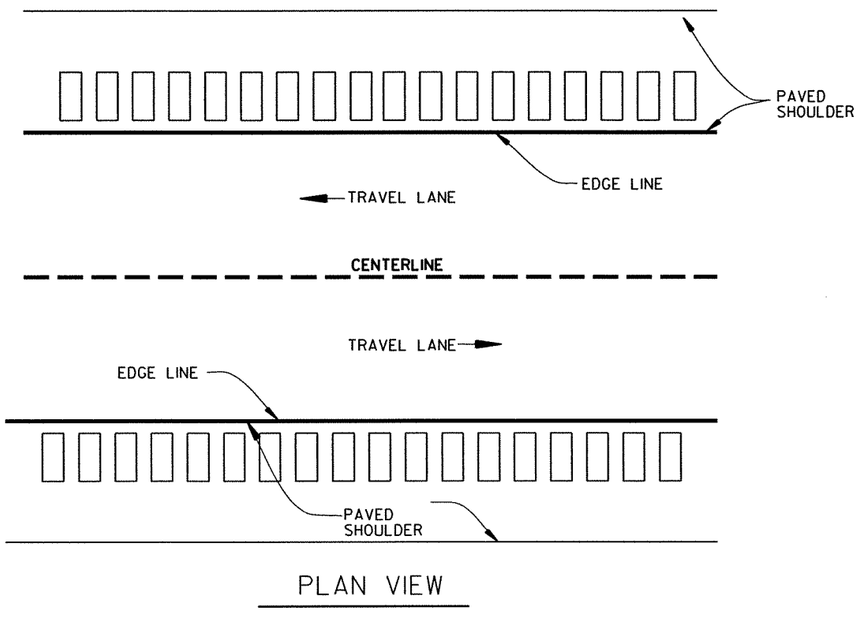
SECTION B-B



SECTION A-A



LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER



PLAN VIEW

NOTES:

1. ALIGNMENT OF RUMBLE STRIPS SHALL GENERALLY BE STRAIGHT AND OFFSET APPROXIMATELY 4" FROM THE OUTER EDGE OF THE EDGE LINE. THIS OFFSET MAY BE ADJUSTED TO ACCOMMODATE VARIATIONS IN THE EDGE LINE AS WELL AS TO AVOID EXISTING LONGITUDINAL JOINTS.
2. THE 1/2" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 16" LENGTH. SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.

DETAILS OF RUMBLE STRIPS

R061259.DGN 5/16/2011

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.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
2-1-12				6	ARK.	5		
				JOB NO.		061289	6A	157

(2) SPECIAL DETAILS

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

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 of Barrel - Four of each Length) Size	Spacing	No. Req'd	Length Max.	Length Min.	"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	"b1" bars (Bent; In Top and Bottom Slabs of Barrel - one end hooked. (Four of each Length) Alternate with "a1" bars.) Size	Spacing	No. Req'd	Length Max.	Length Min.	X Max.	X Min.
0'-0" TO 5'-0" MAXIMUM	1 @ 4'	2'	#5	13"	108	4'-9"	#5	13"	4	2'-11"	—	#6	13"	108	5'-10"	4'-8"	#6	13"	4	4'-5"	—	3'-10"	—
		3'			108	4'-9"			4	"	—			108	5'-10"	"			4	"	—	"	—
		4'			108	4'-9"			4	"	—			108	5'-10"	"			4	"	—	"	—
		5'			108	4'-9"			4	"	—			108	5'-10"	"			4	"	—	"	—
		6'			108	4'-11"			4	3'-1"	—			108	6'-0"	4'-10"			8	4'-8"	2'-8"	4'-0"	2'-1"
	1 @ 5'	3'	#6	13"	108	5'-9"	#6	13"	4	3'-11"	—	#6	13"	106	6'-10"	5'-8"	#6	13"	8	5'-5"	3'-6"	4'-10"	2'-11"
		4'			108	5'-9"			4	"	—			106	6'-10"	"			8	"	"	"	"
		5'			108	5'-9"			4	"	—			106	6'-10"	"			8	"	"	"	"
		6'			108	5'-11"			4	4'-1"	—			106	7'-0"	5'-10"			8	5'-7"	3'-8"	5'-0"	3'-1"
		7'			108	6'-0"			4	4'-2"	—			106	7'-1"	5'-11"			8	5'-8"	3'-9"	5'-1"	3'-2"
	1 @ 6'	3'	#6	12"	114	6'-9"	#6	12"	8	5'-0"	3'-3"	#6	12"	114	7'-10"	6'-8"	#6	12"	12	6'-5"	2'-11"	5'-10"	2'-4"
		4'			114	6'-9"			8	"	"			114	7'-10"	"			12	"	"	"	"
		5'			114	6'-9"			8	"	"			114	7'-10"	"			12	"		"	"
		6'			114	6'-11"			8	5'-2"	3'-5"			114	8'-0"	6'-10"			12	6'-7"	3'-1"	6'-0"	2'-6"
		7'			114	7'-0"			8	5'-3"	3'-6"			114	8'-1"	6'-11"			12	6'-8"	3'-2"	6'-1"	2'-7"
		8'			114	7'-1"			8	5'-4"	3'-7"			114	8'-2"	7'-0"			12	6'-9"	3'-3"	6'-2"	2'-8"
	1 @ 7'	4'	#6	11"	124	7'-9"	#6	11"	12	6'-2"	3'-0"	#6	11"	122	8'-10"	7'-8"	#6	11"	12	7'-6"	4'-4"	6'-11"	3'-9"
		5'			124	7'-9"			12	"	"			122	8'-10"	"			12	"	"	"	"
		6'			124	7'-11"			12	6'-4"	3'-2"			122	9'-0"	7'-10"			16	7'-8"	2'-11"	7'-1"	2'-4"
		7'			124	8'-0"			12	6'-5"	3'-3"			122	9'-1"	7'-11"			16	7'-9"	3'-0"	7'-2"	2'-5"
		8'			124	8'-1"			12	6'-6"	3'-4"			122	9'-2"	8'-0"			16	7'-10"	3'-1"	7'-3"	2'-6"
		9'			124	8'-3"			12	6'-8"	3'-6"			122	9'-4"	8'-2"			16	8'-0"	3'-3"	7'-5"	2'-8"
	1 @ 8'	4'	#7	12"	112	8'-9"	#7	12"	12	7'-0"	3'-6"	#6	12"	112	9'-10"	8'-8"	#6	12"	16	8'-5"	3'-2"	7'-10"	2'-7"
		5'			112	8'-11"			12	7'-2"	3'-8"			112	10'-0"	8'-10"			16	8'-7"	3'-4"	8'-0"	2'-9"
		6'			112	8'-11"			12	"	"			112	10'-0"	"			16	"	"	"	"
		7'			112	9'-0"			12	7'-3"	3'-9"			112	10'-1"	8'-11"			16	8'-8"	3'-5"	8'-1"	2'-10"
		8'			112	9'-1"			12	7'-4"	3'-10"			112	10'-2"	9'-0"			16	8'-9"	3'-6"	8'-2"	2'-11"
		9'			112	9'-3"			12	7'-6"	4'-0"			112	10'-4"	9'-2"			16	8'-11"	3'-8"	8'-4"	3'-1"
		10'			112	9'-5"			16	7'-8"	2'-5"			110	10'-6"	9'-4"			16	9'-1"	3'-10"	8'-6"	3'-3"
	1 @ 9'	5'	#7	11"	122	9'-11"	#7	11"	16	8'-4"	3'-7"	#6	11"	120	11'-0"	9'-10"	#6	11"	20	9'-8"	3'-4"	9'-1"	2'-9"
		6'			122	10'-0"			16	8'-5"	3'-8"			120	11'-1"	9'-11"			20	9'-9"	3'-5"	9'-2"	2'-10"
		7'			122	10'-0"			16	"	"			120	11'-1"	9'-11"			20	"	"	"	"
		8'			122	10'-1"			16	8'-6"	3'-9"			120	11'-2"	10'-0"			20	9'-10"	3'-6"	9'-3"	2'-11"
		9'			120	10'-3"			20	8'-8"	2'-4"			120	11'-4"	10'-2"			20	10'-0"	3'-8"	9'-5"	3'-1"
		10'			120	10'-5"			20	8'-10"	2'-6"			120	11'-6"	10'-4"			20	10'-2"	3'-10"	9'-7"	3'-3"
		11'			120	10'-7"			20	9'-0"	2'-8"			120	11'-8"	10'-6"			20	10'-4"	4'-0"	9'-9"	3'-5"
	1 @ 10'	5'	#7	12"	110	10'-11"	#7	12"	16	9'-2"	3'-11"	#7	12"	110	12'-2"	10'-10"	#7	12"	20	10'-8"	3'-8"	10'-0"	3'-0"
		6'			110	11'-0"			16	9'-3"	4'-0"			110	12'-3"	10'-11"			20	10'-9"	3'-9"	10'-1"	3'-1"
		7'			110	11'-0"			16	"	"			110	12'-3"	"			20	"	"	"	"
		8'			110	11'-1"			20	9'-4"	2'-4"			110	12'-4"	11'-0"			20	10'-10"	3'-10"	10'-2"	3'-2"
		9'			110	11'-3"			20	9'-6"	2'-6"			108	12'-6"	11'-2"			20	11'-0"	4'-0"	10'-4"	3'-4"
		10'			110	11'-5"			20	9'-8"	2'-8"			108	12'-8"	11'-4"			20	11'-2"	4'-2"	10'-6"	3'-6"
		11'			110	11'-7"			20	9'-10"	2'-10"			108	12'-10"	11'-6"			20	11'-4"	4'-4"	10'-8"	3'-8"
		12'			110	11'-9"			20	10'-0"	3'-0"			108	13'-0"	11'-8"			20	11'-6"	4'-6"	10'-10"	3'-10"
	1 @ 11'	6'	#7	11"	118	12'-1"	#7	11"	24	10'-6"	2'-7"	#7	11"	118	13'-4"	12'-0"	#7	11"	24	11'-11"	4'-0"	11'-3"	3'-4"
		7'			118	12'-1"			24	"	"			118	13'-4"	"			24	"	"	"	"
		8'			118	12'-1"			24	"	"			118	13'-4"	"			24	"	"	"	"
		9'			118	12'-3"			24	10'-8"	2'-9"			118	13'-6"	12'-2"			24	12'-1"	4'-2"	11'-5"	3'-6"
		10'			118	12'-5"			24	10'-10"	2'-11"			116	13'-8"	12'-4"			24	12'-3"	4'-4"	11'-7"	3'-8"
		11'			118	12'-7"			24	11'-0"	3'-1"			116	13'-10"	12'-6"			24	12'-5"	4'-6"	11'-9"	3'-10"
		12'			118	12'-9"			24	11'-2"	3'-3"			116	14'-0"	12'-8"			24	12'-7"	4'-8"	11'-11"	4'-0"
	1 @ 12'	4'	#8	12"	108	13'-1"	#8	12"	24	11'-4"	2'-7"	#7	12"	106	14'-4"	13'-0"	#7	12"	24	12'-10"	4'-1"	12'-2"	3'-5"
		7'			108	13'-1"			24	"	"			106	14'-4"	"			24	"	"	"	"
		8'			108	13'-1"			24	"	"			106	14'-4"	"			24	"	"	"	"
		9'			108	13'-3"			24	11'-6"	2'-9"			106	14'-6"	13'-2"			24	13'-0"	4'-3"	12'-4"	3'-7"
		10'			108	13'-5"			24	11'-8"	2'-11"			106	14'-8"	13'-4"			24	13'-2"	4'-5"	12'-6"	3'-9"
		11'			108	13'-7"			24	11'-10"	3'-1"			106	14'-10"	13'-6"			24	13'-4"	4'-7"	12'-8"	3'-11"
		12'			106	13'-9"			24	12'-0"	3'-3"			106	15'-0"	13'-8"			24	13'-6"	4'-9"	12'-10"	4'-1"

S	H	"d" bars (Straight; Longitudinal in Top Slab of Barrel) Size	Spacing	No. Req'd	Length	"d1" bars (Straight; Longitudinal in Sidewalls) Size	Spacing	No. Req'd	Length	"e" bars (Straight; Longitudinal in Bottom Slab of Barrel) Size	Spacing	No. Req'd	Length	"f" bars (Straight; Verticals in Sidewalls) Size	Spacing	No. Req'd	Length	"k1" bars (Straight; In Bottom of Headwall) Size	No. Req'd	Length	"k2" bars (In Top of Headwall and Apron (2 Each)) Size	No. Req'd	Length
1 @ 4'	2'	#5	10½"	6	2 @ 30'-8" for 60'-0" Length Barrel. (1'-8" Lap)	#4	12"	4	2 @ 30'-6" for 60'-0" Length Barrel. (1'-3" Lap)	#4	12"	5	2 @ 31'-8" for 60'-0" Length Barrel. (1'-3" Lap)	#4	12"	120	2'-11"	#5	6	5'-6"	#5	8	6'-8"
	3'			6				6				5				120	3'-11"		6	"		8	"
	4'			6				8				5				120	4'-11"		6	"		8	"
	5'			6				10				5				120	5'-11"		6	"		8	"
	6'			6				12				5				120	6'-11"		6	5'-8"		8	6'-10"
1 @ 5'	3'	#5	10½"	7		#4	12"	6		#4	12"	6		#4	12"	120	4'-0"	#6	6	6'-8"	#6	8	7'-10"
	4'			7				8				6				120	5'-0"		6	"		8	"
	5'			7				10				6				120	6'-0"		6	"		8	"
	6'			7				12				6				120	7'-0"		6	6'-10"		8	8'-0"
	7'			7				14				6				120	8'-0"		6	6'-11"		8	8'-1"
1 @ 6'	3'	#5	10½"	8		#4	12"	6		#4	12"	7		#4	12"	120	4'-1"	#6	6	7'-10"	#6	8	9'-0"
	4'			8				8				7				120	5'-1"		6	"		8	"
	5'			8				10				7				120	6'-1"		6	"		8	"
	6'			8				12				7				120	7'-1"		6	8'-0"		8	9'-2"
	7'			8				14				7				120	8'-1"		6	8'-1"		8	9'-3"
	8'			8				16				7		#5	12"	120	9'-1"		6	8'-2"		8	9'-4"
1 @ 7'	4'	#5	10½"	9		#4	12"	8		#4	12"	8		#4	12"	120	5'-2"	#6	6	9'-0"	#6	8	10'-2"
	5'			9				10				8				120	6'-2"		6	"		8	"
	6'			9				12				8				120	7'-2"		6	9'-2"		8	10'-4"
	7'			9				14				8				120	8'-2"		6	9'-3"		8	10'-5"
	8'			9				16				8			10"	144	9'-2"		6	9'-4"		8	10'-6"
	9'			9				18				8		#5	12"	120	10'-2"		6	9'-6"		8	10'-8"
1 @ 8'	4'	#5	10"	11		#4	12"	8		#4	12"	9		#4	12"	120	5'-4"	#7	6	10'-1"	#7	8	11'-3"
	5'			11				10				9				120	6'-4"		6	10'-4"		8	11'-6"
	6'			11				12				9				120	7'-4"		6	"		8	"
	7'			11				14				9				120	8'-4"		6	10'-5"		8	11'-7"
	8'			11				16				9			10"	144	9'-4"		6	10'-6"		8	11'-8"
	9'			11				18				9		#5	12"	120	10'-4"		6	10'-8"		8	11'-10"
	10'			11				20				9			11"	132	11'-4"		6	10'-11"		8	12'-0"
1 @ 9'	5'	#5	10"	12		#4	12"	10		#4	12"	10		#4	12"	120	6'-5"	#7	6	11'-5"	#7	8	12'-7"
	6'			12				12				10				120	7'-5"		6	11'-7"		8	12'-9"
	7'			12				14				10				120	8'-5"		6	"		8	"
	8'			12				16				10			10"	144	9'-5"		6	11'-8"		8	12'-10"
	9'			12				18				10		#5	12"	120	10'-5"		6	11'-10"		8	13'-0"
	10'			12				20				10			11"	132	11'-5"		6	12'-1"		8	13'-2"
	11'			12				22				10			10"	144	12'-5"		6	12'-3"		8	13'-5"
1 @ 10'	5'	#5	10"	13		#4	12"	10		#4	12"	11		#4	12"	120	6'-6"	#7	6	12'-7"	#7	8	13'-9"
	6'			13				12				11				120	7'-6"		6	12'-8"		8	13'-10"
	7'			13				14				11				120	8'-6"		6	"		8	"
	8'			13				16				11			10"	144	9'-6"		6	12'-10"		8	14'-0"
	9'			13				18				11		#5	12"	120	10'-6"		6	13'-0"		8	14'-2"
	10'			13				20				11			11"	132	11'-6"		6	13'-2"		8	14'-4"
	11'			13				22				11			10"	144	12'-6"		6	13'-5"		8	14'-6"
	12'			13				24				11		#6	12"	120	13'-6"		6	13'-7"		8	14'-9"
1 @ 11'	6'	#5	9½"	15		#4	12"	12		#4	12"	12		#4	12"	120	7'-7"	#7	6	14'-0"	#7	8	15'-1"
	7'			15				14				12				120	8'-7"		6	"		8	"
	8'			15				16				12			10"	144	9'-7"		6	"		8	"
	9'			15				18				12		#5	12"	120	10'-7"		6	14'-2"		8	15'-4"
	10'			15				20				12			11"	132	11'-7"		6	14'-4"		8	15'-6"
	11'			15				22				12			10"	144	12'-7"		6	14'-7"		8	15'-8"
	12'			15				24				12		#6	12"	120	13'-7"		6	14'-9"		8	15'-11"
1 @ 12'	4'	#5	9½"	16		#4	12"	8		#4	12"	13		#4	12"	120	5'-9"	#8	6	15'-1"	#8	8	16'-3"
	7'			16				14				13				120	8'-9"		6	"		8	"
	8'			16				16				13			10"	144	9'-9"		6	"		8	"
	9'			16				18				13		#5	12"	120	10'-9"		6	15'-4"		8	16'-6"
	10'			16				20				13			11"	132	11'-9"		6	15'-6"		8	16'-8"
	11'			16				22				13			10"	144	12'-9"		6	15'-8"		8	16'-10"
	12'			16				24				13		#6	12"	120	13'-9"		6	15'-11"		8	17'-0"

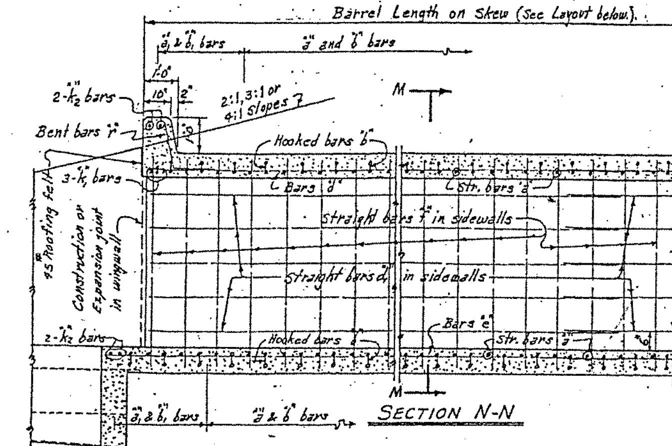
These bars are in the skewed portion of barrel only. The length of "a1" bars and overall length X of "b1" bars vary by 1'-11" for 13" spacing, 1'-9" for 12" spacing and 1'-7" for 11" spacing.

BAR SIZE	PIN DIAM.	K	ADD FOR HOOKS	BENDING DIAGRAMS FOR BARS "b" & "b1"
#6	3"	5"	1'-2"	2 Hooks: "b" bars — K, Pin diam, X
#7	3½"	5¾"	1'-4"	
#6	3"	5"	0'-7"	1 Hook: "b1" bars — K, Pin diam., X
#7	3½"	5¾"	0'-8"	

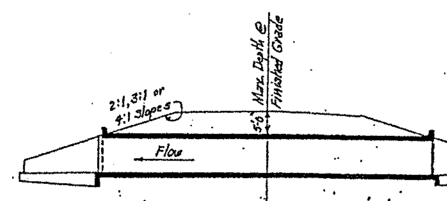
NOTE:- Dimensions are to centers of bars. ("b" and "b1")

DOWEL BARS FOR TWO HEADWALLS

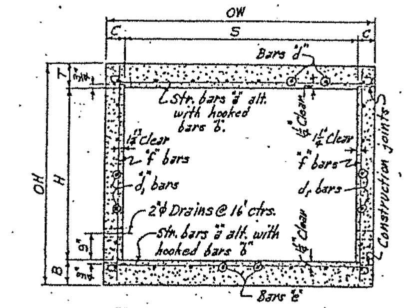
SPAN	SIZE	SPACING	NO. REQ'D	LENGTH	X	Dowel bars "r" in Two Headwalls.
4'	#4	12"	12	2'-6"	1'-3"	(diagram: X, 2, 12, X)
5'	#4	12"	16	2'-7"	1'-3½"	
6'	#4	12"	18	2'-8"	1'-4"	
7'	#4	12"	20	2'-9"	1'-4½"	
8'	#4	12"	22	2'-11"	1'-5½"	
9'	#4	12"	26	3'-0"	1'-6"	
10'	#4	12"	28	3'-1"	1'-6½"	
11'	#4	12"	30	3'-2"	1'-7"	
12'	#4	12"	32	3'-3"	1'-7¼"	



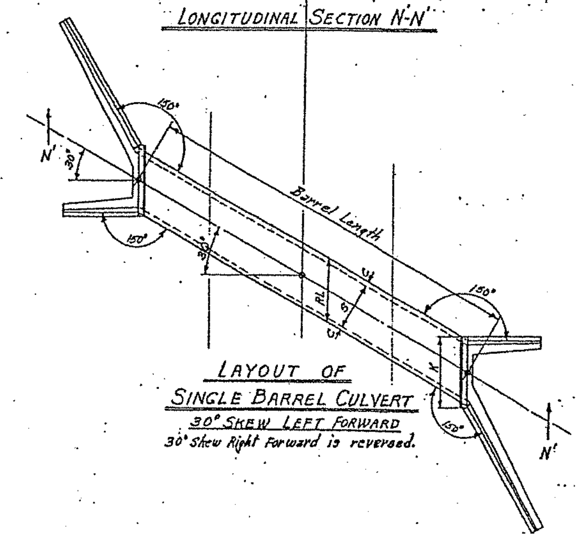
SECTION N-N



LONGITUDINAL SECTION N-N'



TYPICAL SECTION M-M



LAYOUT OF SINGLE BARREL CULVERT

30° SKEW LEFT FORWARD

30° Skew Right Forward is reversed.

DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961
AND
SPECIAL MILITARY LOADING
Two 24,000 Lb. Axles @ 4'-0" ctrs

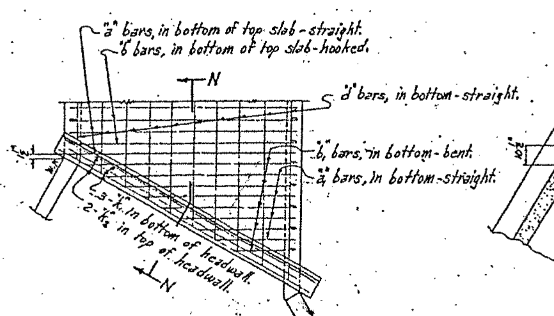
UNIT STRESSES:-

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

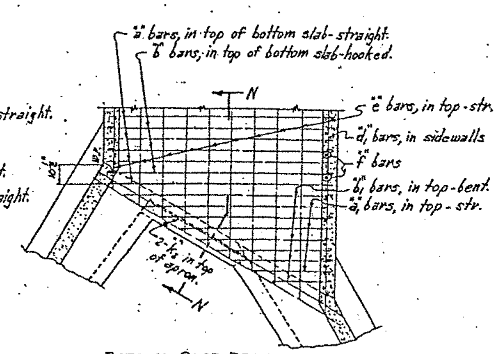
NOTE:- This drawing to be used in conjunction with Standard Wing Drawing Nos. W-X302-1 or W-X302-2, W-X303-1 or W-X303-2, and W-X304-1 or W-X304-2. Also W-X30.

MAX. DESIGN DEPTH OF COVER D	CLEAR SPANS S	CLEAR HEIGHT H	SQ. FT. OPENING A	OVERALL WIDTH OW	THICKNESS OF TOP SLAB T	THICKNESS OF SIDEWALLS C	THICKNESS OF BOTTOM SLAB B	OVERALL HEIGHT OH	ROADWAY LENGTH RL	LENGTH OF HEADWALLS K	* CLASS S CONC. PER LIN. FT. OF BARREL Cu. Yd.	TOTAL FOR 60'-0" LENGTH OF BARREL Lb.	PER LIN. FT. OF BARREL Lb.	ADDITIONAL PER LAP Lb.
5'-0"	1 @ 4'	2'	8	5'-0"	7"	6"	6½"	3'-1½"	5'-9¼"	6'-11½"	0.282	2622	41.99	17.95
		3'	12	5'-0"		6"		4'-1½"	"	"	0.319	2784	44.16	19.62
		4'	16	5'-0"		6"		5'-1½"	"	"	0.356	2946	46.83	21.29
		5'	20	5'-0"		6"		6'-1½"	"	"	0.394	3107	49.50	22.96
		6'	24	5'-2"		7"		7'-1½"	5'-11⅝"	7'-1½"	0.474	3335	52.96	24.63
	1 @ 5'	3'	15	6'-0"	7½"	6"	7"	4'-2½"	6'-11⅝"	8'-1"	0.380	3541	55.55	22.19
		4'	20	6'-0"		6"		5'-2½"	"	"	0.417	3703	58.23	23.86
		5'	25	6'-0"		6"		6'-2½"	"	"	0.454	3865	60.90	25.53
		6'	30	6'-2"		7"		7'-2½"	7'-1½"	8'-3¾"	0.535	4091	64.99	27.20
		7'	35	6'-3"		7½"		8'-2½"	7'-2⅝"	8'-4½"	0.604	4283	67.63	28.87
	1 @ 6'	3'	18	7'-0"	8"	6"	7½"	4'-3½"	8'-1"	9'-2⅞"	0.446	4221	66.29	24.76
		4'	24	7'-0"		6"		5'-3½"	"	"	0.483	4383	68.96	26.43
		5'	30	7'-0"		6"		6'-3½"	"	"	0.520	4545	71.64	28.10
		6'	36	7'-2"		7"		7'-3½"	8'-3¼"	9'-5⅛"	0.602	4772	75.31	29.77
		7'	42	7'-3"		7½"		8'-3½"	8'-4½"	9'-6⅜"	0.671	4966	78.48	31.44
		8'	48	7'-4"		8"		9'-3½"	8'-5⅝"	9'-7½"	0.746	5570	88.47	33.11
	1 @ 7'	4'	28	8'-0"	8½"	6"	8½"	5'-5"	9'-2⅞"	10'-4¾"	0.568	5146	81.32	29.01
		5'	35	8'-0"		6"		6'-5"	"	"	0.605	5307	84.00	30.68
		6'	42	8'-2"		7"		7'-5"	9'-5¼"	10'-7"	0.688	5558	87.76	32.35
		7'	49	8'-3"		7½"		8'-5"	9'-6¼"	10'-8⅛"	0.757	5755	90.98	34.02
		8'	56	8'-4"		8"		9'-5"	9'-7½"	10'-9⅜"	0.832	6100	96.65	35.69
		9'	63	8'-6"		9"		10'-5"	9'-9¾"	10'-11⅝"	0.946	6649	105.59	37.36
	1 @ 8'	4'	32	9'-0"	9½"	6"	9½"	5'-7"	10'-4⅜"	11'-6½"	0.676	6114	95.26	33.32
		5'	40	9'-2"		7"		6'-7"	10'-7"	11'-8⅞"	0.759	6357	99.12	34.99
		6'	48	9'-2"		7"		7'-7"	"	"	0.797	6518	101.79	36.66
		7'	56	9'-3"		7½"		8'-7"	10'-8¼"	11'-10"	0.867	6720	105.05	38.33
		8'	64	9'-4"		8"		9'-7"	10'-9⅜"	11'-11¼"	0.992	7070	110.81	40.00
		9'	72	9'-6"		9"		10'-7"	10'-11⅝"	12'-1½"	1.057	7627	119.92	41.67
		10'	80	9'-8"		10"		11'-7"	11'-2"	12'-3¾"	1.184	8043	126.67	43.34
	1 @ 9'	5'	45	10'-2"	10"	7"	10"	6'-8"	11'-8⅞"	12'-10¾"	0.894	7356	114.92	37.56
		6'	54	10'-3"		7½"		7'-8"	11'-10"	13'-0"	0.910	7564	118.04	39.23
		7'	63	10'-3"		7½"		8'-8"	"	"	0.957	7725	120.71	40.90
		8'	72	10'-4"		8"		9'-8"	11'-11½"	13'-1"	1.033	8081	126.59	42.57
		9'	81	10'-6"		9"		10'-8"	12'-1½"	13'-3¼"	1.148	8625	135.80	44.24
		10'	90	10'-8"		10"		11'-8"	12'-3⅞"	13'-5¾"	1.276	9063	142.68	45.91
		11'	99	10'-10"		11"		12'-8"	12'-6⅛"	13'-8"	1.416	9526	150.40	47.58
	1 @ 10'	5'	50	11'-2"	10½"	7"	11"	6'-9½"	12'-10¾"	14'-0½"	0.957	8359	130.64	40.13
		6'	60	11'-3"		7½"		7'-9½"	12'-11⅞"	14'-1⅜"	1.024	8567	133.99	41.80
		7'	70	11'-3"		7½"		8'-9½"	"	"	1.071	8729	136.66	43.47
		8'	80	11'-4"		8"		9'-9½"	13'-1"	14'-3"	1.147	9110	142.55	45.14
		9'	90	11'-6"		9"		10'-9½"	13'-3⅜"	14'-5½"	1.263	9634	151.32	46.81
		10'	100	11'-8"		10"		11'-9½"	13'-5¾"	14'-7½"	1.391	10,019	158.89	48.48
		11'	110	11'-10"		11"		12'-9½"	13'-8"	14'-9⅞"	1.532	10,597	166.71	50.15
		12'	120	12'-0"		12"		13'-9½"	13'-10⅛"	15'-0¼"	1.685	11,278	176.67	51.82
	1 @ 11	6'	66	12'-4"	11"	8"	11½"	7'-10½"	14'-2⅞"	15'-4⅜"	1.153	9888	155.16	46.12
		7'	77	12'-4"		8"		8'-10½"	"	"	1.202	10,099	157.83	47.79
		8'	88	12'-4"		8"		9'-10½"	"	"	1.252	10,364	163.06	49.46
		9'	99	12'-6"		9"		10'-10½"	14'-5¼"	15'-7"	1.368	10,952	172.60	51.13
		10'	110	12'-8"		10"		11'-10½"	14'-7½"	15'-9¾"	1.497	11,349	179.70	52.80
		11'	121	12'-10"		11"		12'-10½"	14'-9⅞"	15'-11⅜"	1.638	11,927	187.67	54.47
		12'	132	13'-0"		12"		13'-10½"	15'-0⅛"	16'-2"	1.792	12,569	199.79	56.14
	1 @ 12	4'	48	13'-4"	11¾"	8"	12¼"	6'-0"	15'-4¾"	16'-6½"	1.186	10,663	167.90	48.69
		7'	84	13'-4"		8"		9'-0"	"	"	1.333	11,293	179.87	50.36
		8'	96	13'-4"		8"		10'-0"	"	"	1.383	11,561	180.15	52.03
		9'	108	13'-6"		9"		11'-0"	15'-7¼"	16'-9"	1.500	12,162	189.85	53.70
		10'	120	13'-8"		10"		12'-0"	15'-9⅜"	16'-11¼"	1.630	12,625	197.07	55.37
		11'	132	13'-10"		11"		13'-0"	15'-11⅝"	17'-1½"	1.772	13,113	205.16	57.04
		12'	144	14'-0"		12"		14'-0"	16'-2"	17'-3¾"	1.926	13,795	212.45	58.71

* For remainder of quantities see Std. Wing Drawings listed at left. Total steel quantities listed above include one lap of longitudinal bars.



TOP SLAB REINFORCING
PART PLAN AT END OF CULVERT



BOTTOM SLAB REINFORCING
PART PLAN AT END OF CULVERT

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 to be deformed bars of intermediate or hard grade.

BAR LAP:- In computing the quantities of steel from the tables add one lap for each additional 33'-0" length of barrel over 32'-0". Lap longitudinal bars 30 diameters min.

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

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

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

2-1-12

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS

30° SKEW

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

SINGLES — UNDER 5'-0" COVER

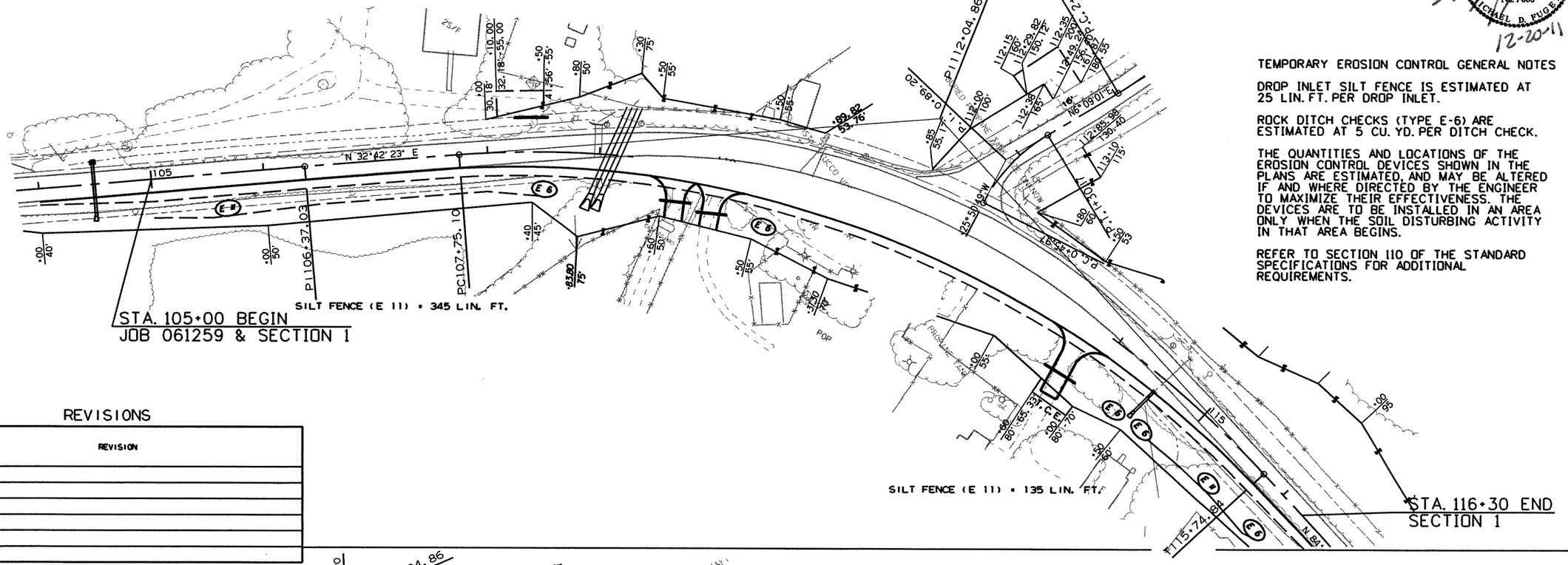
SPECIAL DETAIL — No. R-130X-0

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.		061259	7	157

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE
(E-14) SEDIMENT BASIN

LEGEND



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
12-20-11

TEMPORARY EROSION CONTROL GENERAL NOTES

DROP INLET SILT FENCE IS ESTIMATED AT 25 LIN. FT. PER DROP INLET.

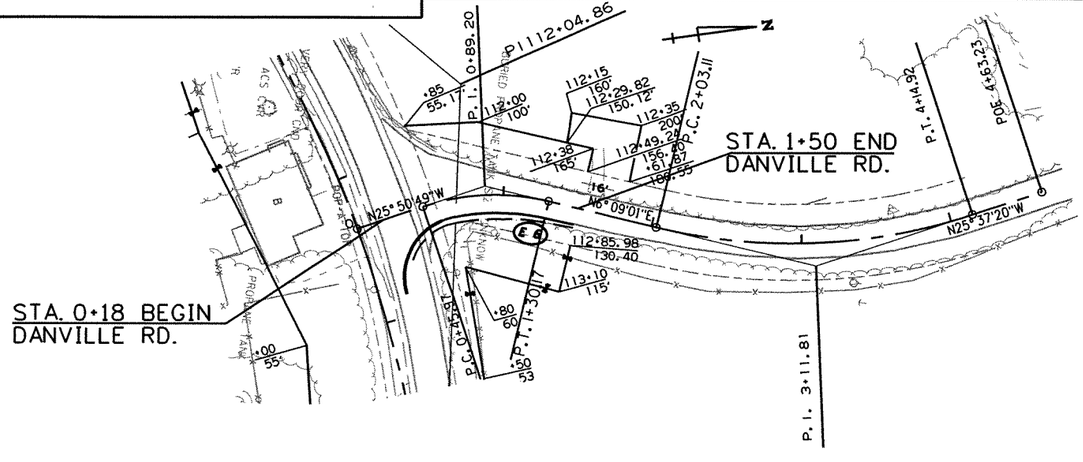
ROCK DITCH CHECKS (TYPE E-6) ARE ESTIMATED AT 5 CU. YD. PER DITCH CHECK.

THE QUANTITIES AND LOCATIONS OF THE EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED, AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.

REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

REVISIONS

DATE	REVISION



TEMPORARY EROSION CONTROL QUANTITIES STAGE I SECTION 1:
SILT FENCE (E-11) = 480 LIN. FT.
ROCK DITCH CHECK (E 6) = 30 CU. YDS.
SEDIMENT REMOVAL = 20 CU. YDS.

FOR STAGE CONSTRUCTION SEQUENCE REFER TO MAINTENANCE OF TRAFFIC DETAILS.

R061259.DGN 3/23/2011

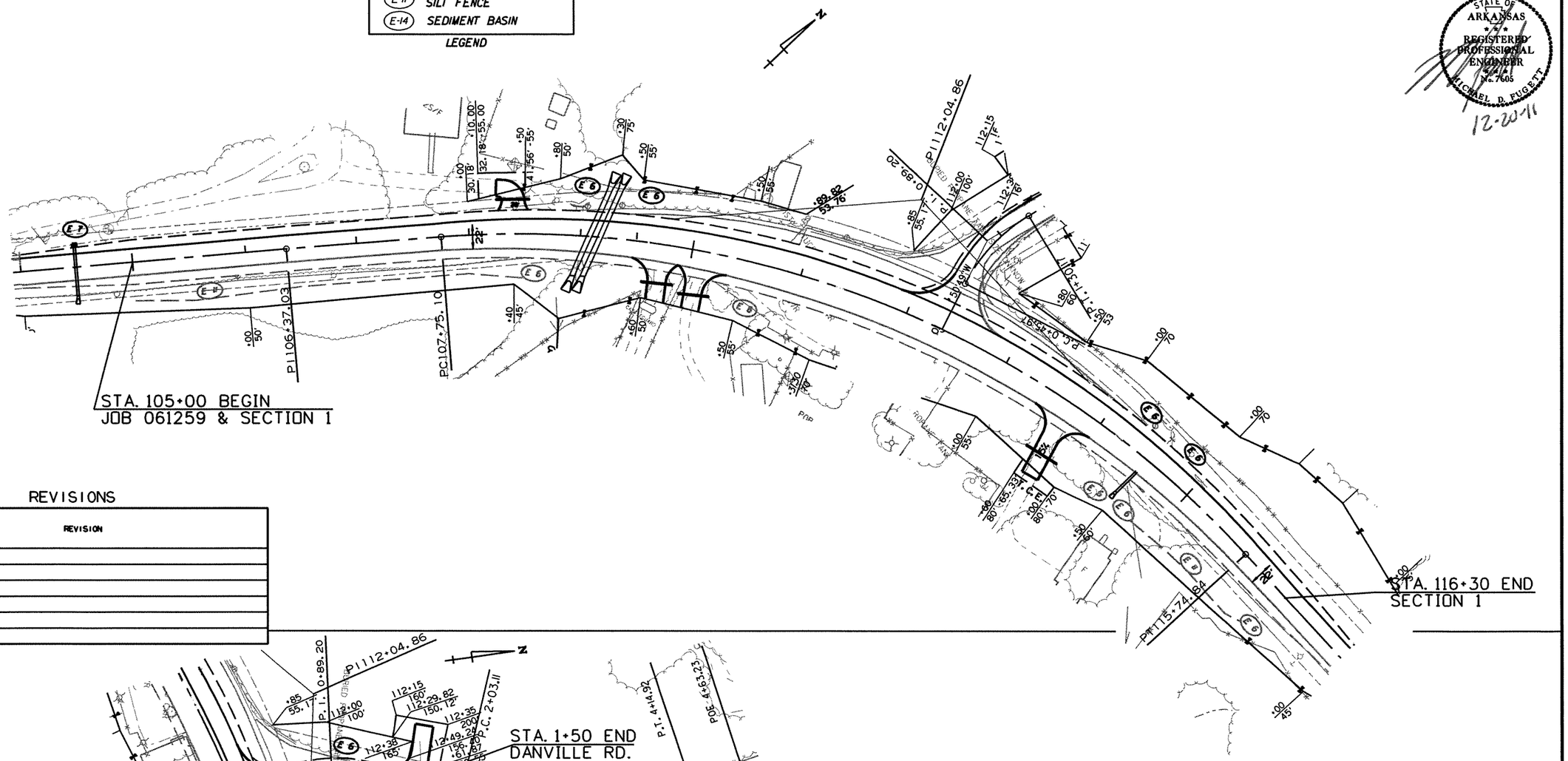
TEMPORARY EROSION CONTROL DETAILS
SECTION I (STAGE I)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	8	157

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE
(E-14) SEDIMENT BASIN

LEGEND



REVISIONS

DATE	REVISION

TEMPORARY EROSION CONTROL QUANTITIES STAGE 2 SECTION 2:
DROP INLET SILT FENCE (E 7) = 25 LIN. FT.
ROCK DITCH CHECK (E 6) = 25 CU. YDS.
SEDIMENT REMOVAL = 10 CU. YDS.

RETAIN EROSION CONTROL ITEMS FROM STAGE 1.

FOR STAGE CONSTRUCTION SEQUENCE REFER TO MAINTENANCE OF TRAFFIC DETAILS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

TEMPORARY EROSION CONTROL DETAILS
SECTION 1(STAGE 2)

R061259.DGN 3/23/2011

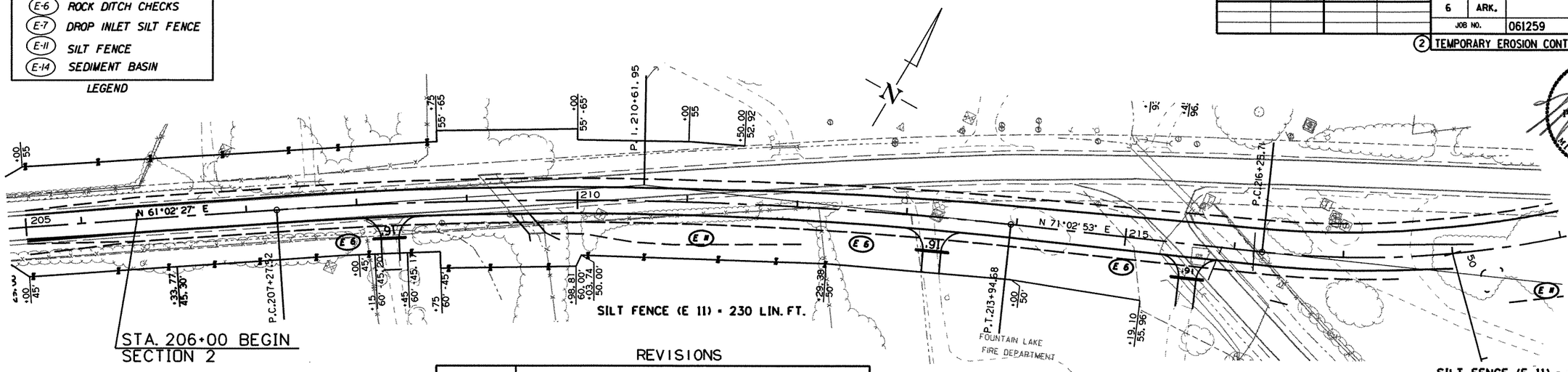
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	9	157

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE
(E-14) SEDIMENT BASIN

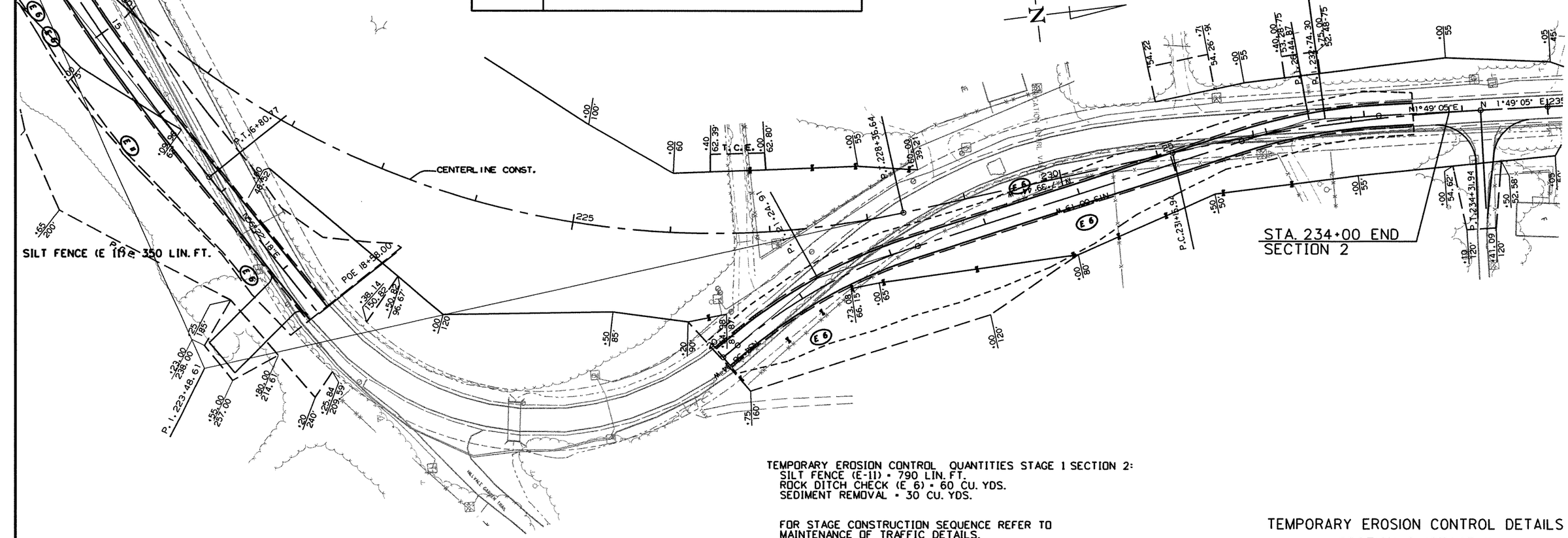
LEGEND

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11



REVISIONS

DATE	REVISION



TEMPORARY EROSION CONTROL QUANTITIES STAGE I SECTION 2:
SILT FENCE (E-11) - 790 LIN. FT.
ROCK DITCH CHECK (E 6) - 60 CU. YDS.
SEDIMENT REMOVAL - 30 CU. YDS.

FOR STAGE CONSTRUCTION SEQUENCE REFER TO MAINTENANCE OF TRAFFIC DETAILS.

TEMPORARY EROSION CONTROL DETAILS
SECTION 2 (STAGE I)

R061259.DGN 3/23/2011

REVISIONS

DATE	REVISION

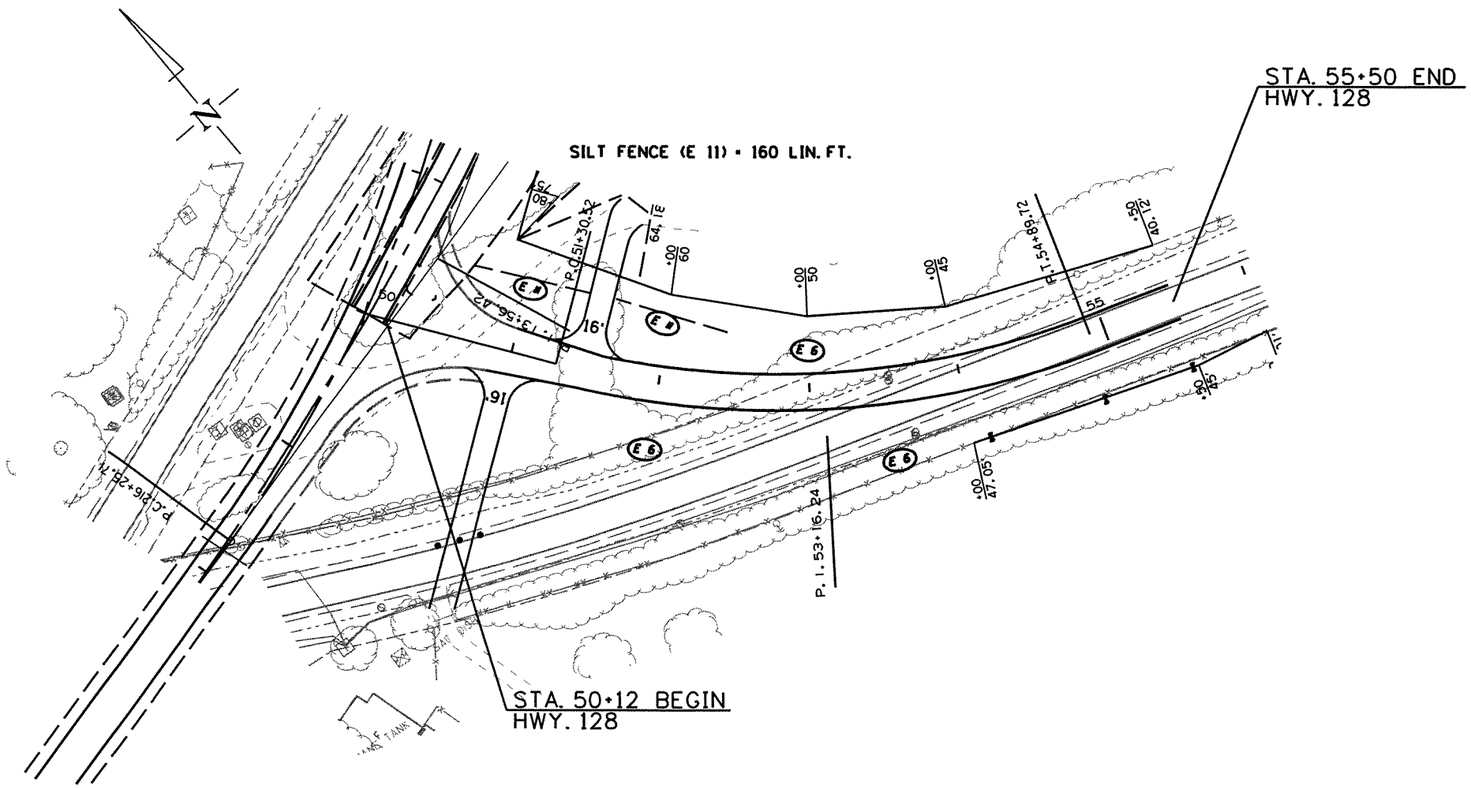
E-6	ROCK DITCH CHECKS
E-7	DROP INLET SILT FENCE
E-11	SILT FENCE
E-14	SEDIMENT BASIN

LEGEND

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.		061259	10	157

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11



R061259.DGN 3/23/2011

TEMPORARY EROSION CONTROL DETAILS
HWY. 128 (STAGE I)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	11	157

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE
(E-14) SEDIMENT BASIN

LEGEND

SEDIMENT BASIN (E 14) = 40 CU. YD.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

STA. 206+00 BEGIN
SECTION 2

REVISIONS

DATE	REVISION

STA. 40+12 BEGIN
HILLVALE GARDEN TR. CONN.

STA. 43+50 END
HILLVALE GARDEN TR. CONN.

SILT FENCE (E 11) = 245 LIN. FT.

STA. 234+00 END
SECTION 2

TEMPORARY EROSION CONTROL QUANTITIES STAGE 2 SECTION 2:
SILT FENCE (E 11) = 245 LIN. FT.
ROCK DITCH CHECK (E 6) = 45 CU. YD.
SEDIMENT BASIN (E 14) = 40 CU. YD.
OBLITERATION OF SEDIMENT BASIN = 40 CU. YD.
SEDIMENT REMOVAL = 50 CU. YD.

RETAIN EROSION CONTROL ITEMS FROM STAGE 1.

FOR STAGE CONSTRUCTION SEQUENCE REFER TO MAINTENANCE OF TRAFFIC DETAILS.

TEMPORARY EROSION CONTROL DETAILS
SECTION 2 (STAGE 2)

R061259.DGN 3/23/2011

REVISIONS

DATE	REVISION

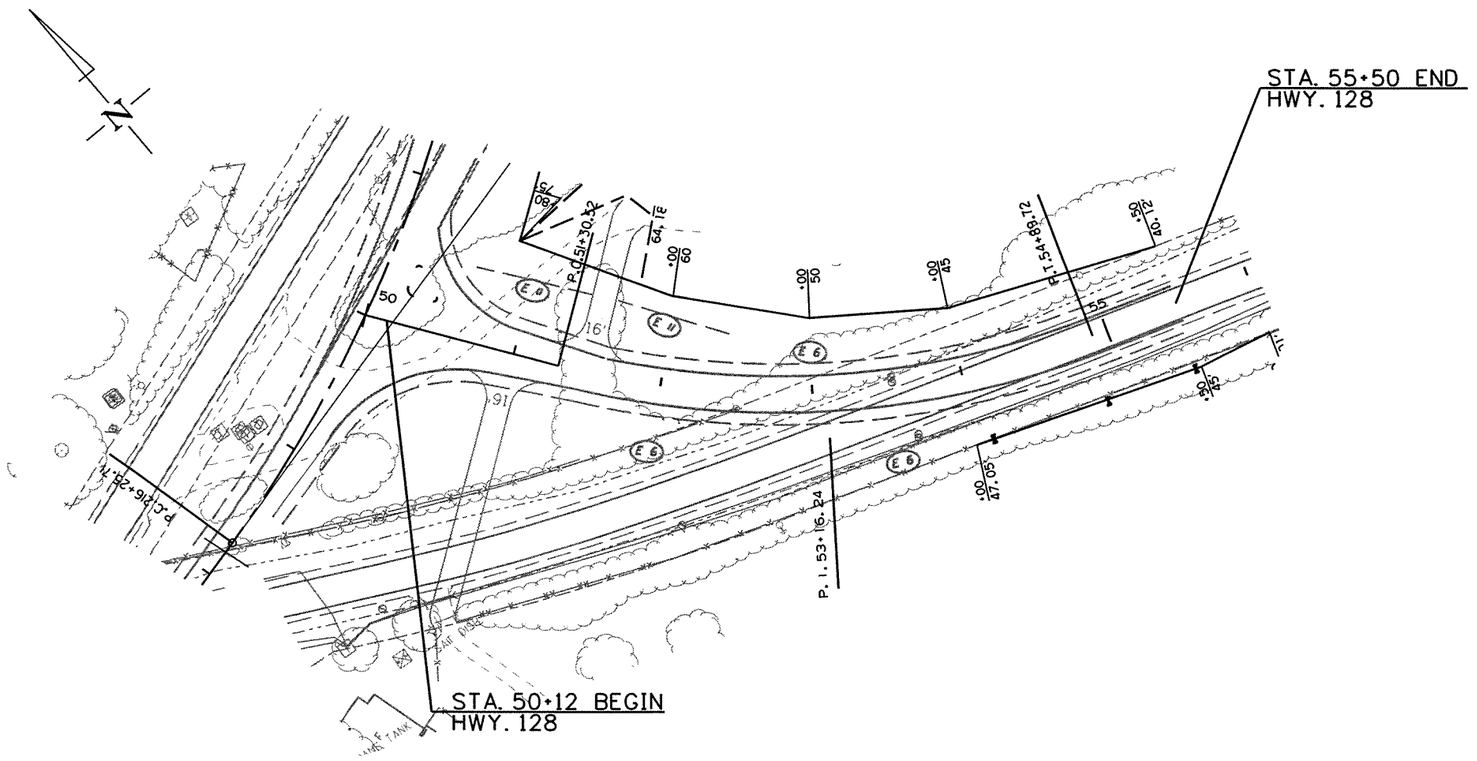
(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE
(E-14) SEDIMENT BASIN

LEGEND

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.		061259	12	157

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11



R061259.DGN 3/23/2011

TEMPORARY EROSION CONTROL DETAILS
HWY. 128 (STAGE 2)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	13	157

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE
(E-14) SEDIMENT BASIN

LEGEND

OBLITERATION AREA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

STA. 206+00 BEGIN
SECTION 2

REVISIONS

DATE	REVISION

OBLITERATION AREA

STA. 234+00 END
SECTION 2

TEMPORARY EROSION CONTROL QUANTITIES STAGE 3 SECTION 2:
ROCK DITCH CHECK (E 6) = 30 CU. YDS.
SILT FENCE (E 11) = 650 LIN.FT.
SEDIMENT REMOVAL = 25 CU. YDS.

RETAIN EROSION CONTROL ITEMS FROM STAGES 1 & 2.

FOR STAGE CONSTRUCTION SEQUENCE REFER TO MAINTENANCE OF TRAFFIC DETAILS.

R061259.DGN 3/23/2011

TEMPORARY EROSION CONTORL DETAILS
SECTION 2 (STAGE 3)

REVISIONS

DATE	REVISION

E-6	ROCK DITCH CHECKS
E-7	DROP INLET SILT FENCE
E-11	SILT FENCE
E-14	SEDIMENT BASIN

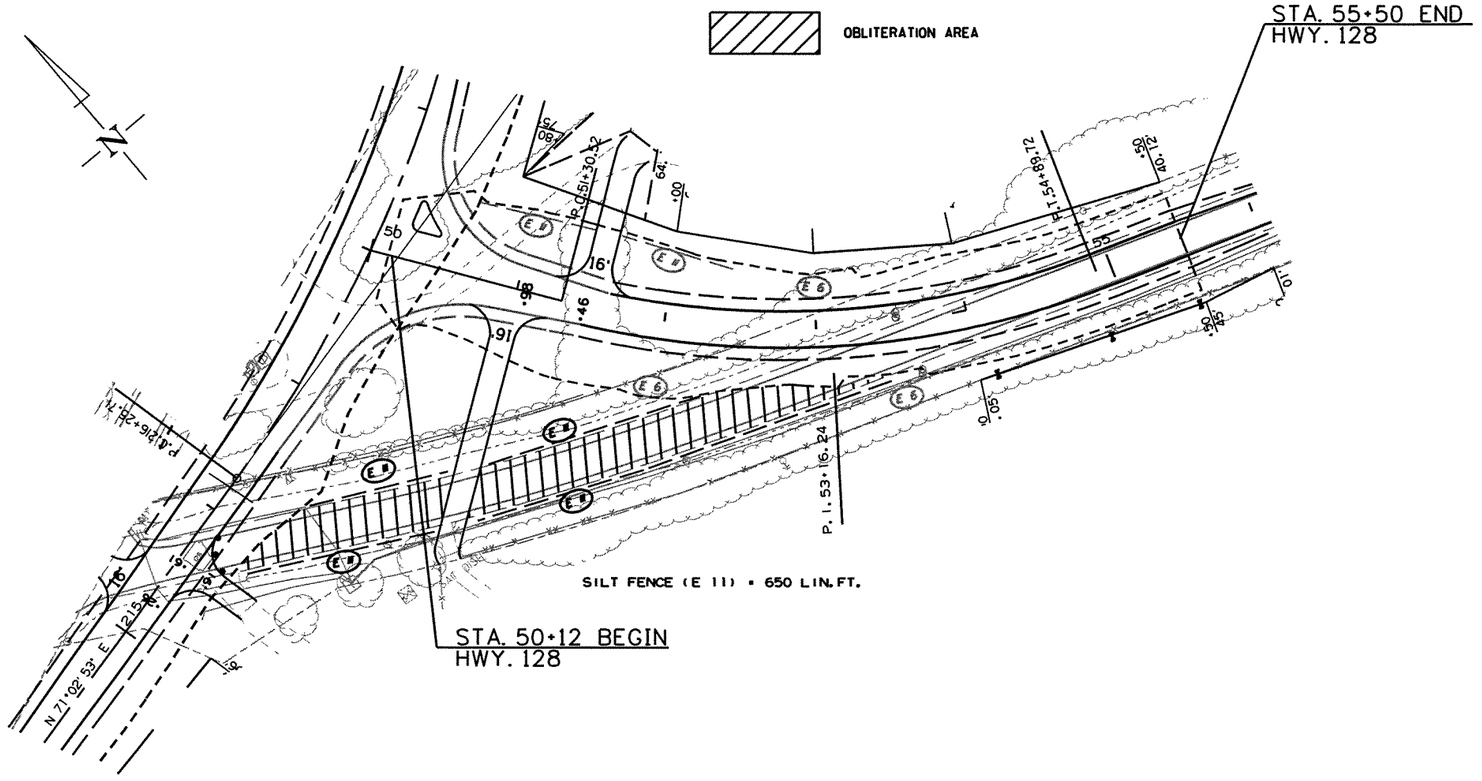
LEGEND

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.		061259	14	157

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

OBLITERATION AREA



R061259.DGN 3/23/2011

TEMPORARY EROSION CONTROL DETAILS
HWY. 128 (STAGE 3)

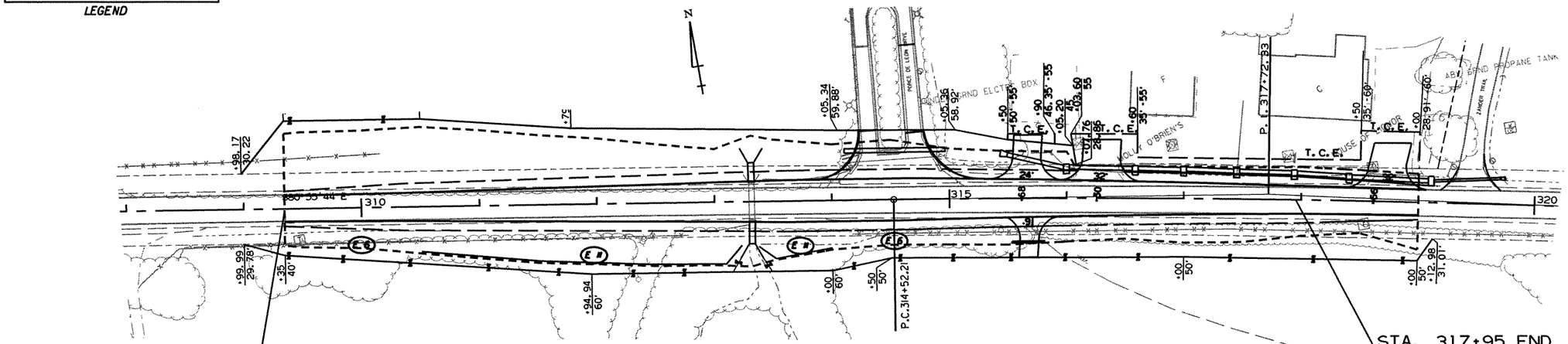
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	15	157

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE
(E-14) SEDIMENT BASIN

LEGEND

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. RUGETT
12-20-11



TEMPORARY EROSION CONTROL QUANTITIES STAGE 1 SECTION 3:
SILT FENCE (E-11) - 350 LIN. FT.
ROCK DITCH CHECK (E 6) - 10 CU. YDS.
SEDIMENT REMOVAL - 10 CU. YDS.

FOR STAGE CONSTRUCTION SEQUENCE REFER TO
MAINTENANCE OF TRAFFIC DETAILS.

REVISIONS

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS
SECTION 3 (STAGE 1)

R061259.DGN 3/23/2011

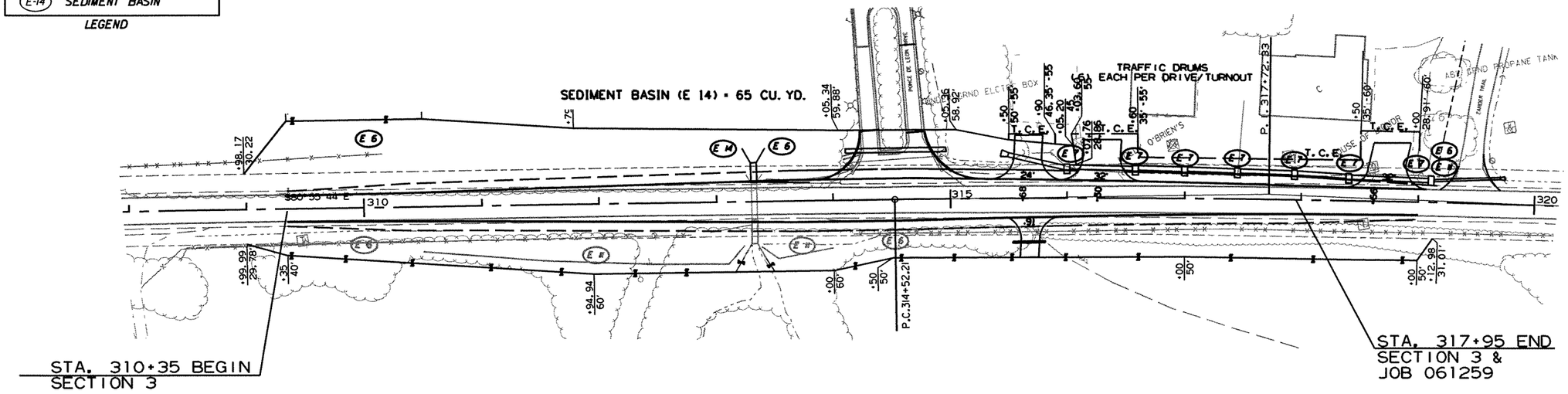
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	16	157

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-7) DROP INLET SILT FENCE
(E-11) SILT FENCE
(E-14) SEDIMENT BASIN

LEGEND

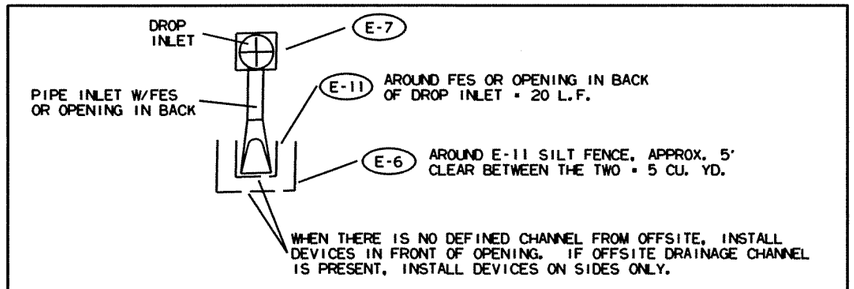
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11



TEMPORARY EROSION CONTROL QUANTITIES STAGE 2 SECTION 3:
SILT FENCE (E 11) - 20 LIN. FT.
DROP INLET SILT FENCE (E 7) - 175 LIN. FT.
ROCK DITCH CHECK (E 6) - 15 CU. YD.
SEDIMENT BASIN (E 14) - 65 CU. YD.
OBLITERATION OF SEDIMENT BASIN - 65 CU. YD.
SEDIMENT REMOVAL - 75 CU. YD.

RETAIN EROSION CONTROL ITEMS FROM STAGE 1.

FOR STAGE CONSTRUCTION SEQUENCE REFER TO MAINTENANCE OF TRAFFIC DETAILS.



TYPICAL DEVICE PLACEMENT AT DROP INLETS

REVISIONS

DATE	REVISION

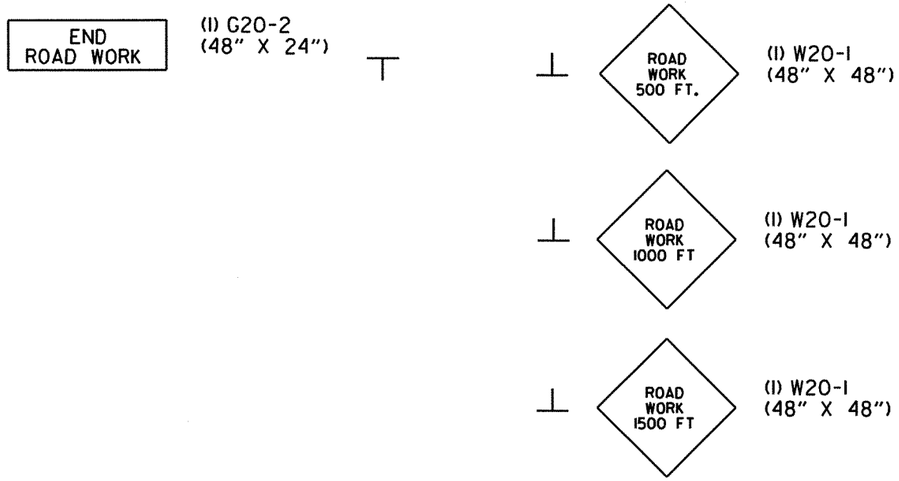
TEMPORARY EROSION CONTROL DETAILS
SECTION 3 (STAGE 2)

R061259.DGN 3/23/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	17	157

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11



DETAIL OF SIGN PLACEMENT AT BEGINNING AND END OF EACH SECTION & END OF HWY. 128

NOTE: THE CONTRACTOR MAY WORK ON ALL SECTIONS OF THE PROJECT SIMULTANEOUSLY.

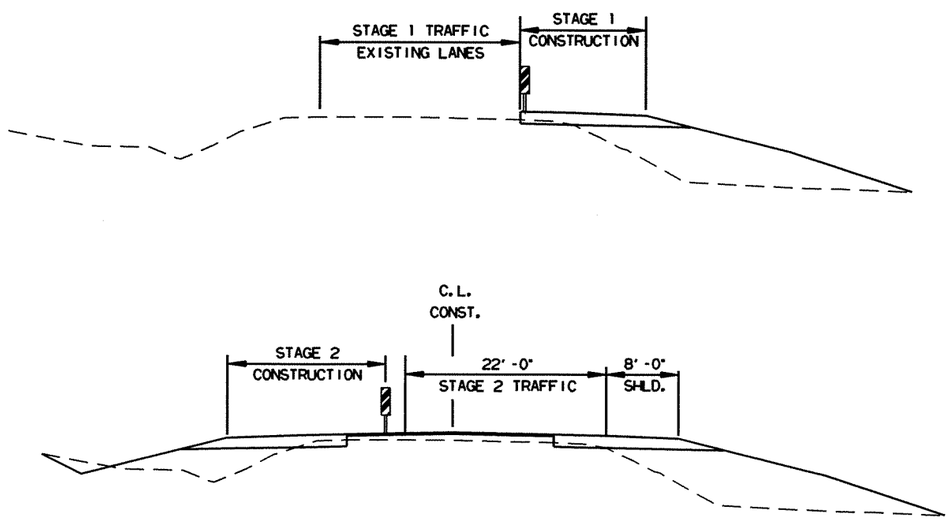
MAINTENANCE OF TRAFFIC:

CONSTRUCTION PAVEMENT MARKING QUANTITIES ARE BASED ON RT. AND LT. EDGE LINES AND DOUBLE YELLOW CENTERLINE FOR THE ENTIRE PROJECT FOR EACH STAGE OF CONSTRUCTION.

ALL COUNTY ROADS, CITY STREET INTERSECTIONS AND DRIVEWAYS ON THE SIDE BEING WIDENED ARE TO BE DELINEATED USING TRAFFIC DRUMS (6 EACH).

R4-1 SIGNS ARE TO BE PLACED THROUGH THE WORK ZONES AT 1/2 MI. INTERVALS.

W20-1 (AHEAD) SIGNS ARE TO BE PLACED AT ALL COUNTY ROAD AND CITY STREET INTERSECTIONS THROUGH THE WORK ZONE.



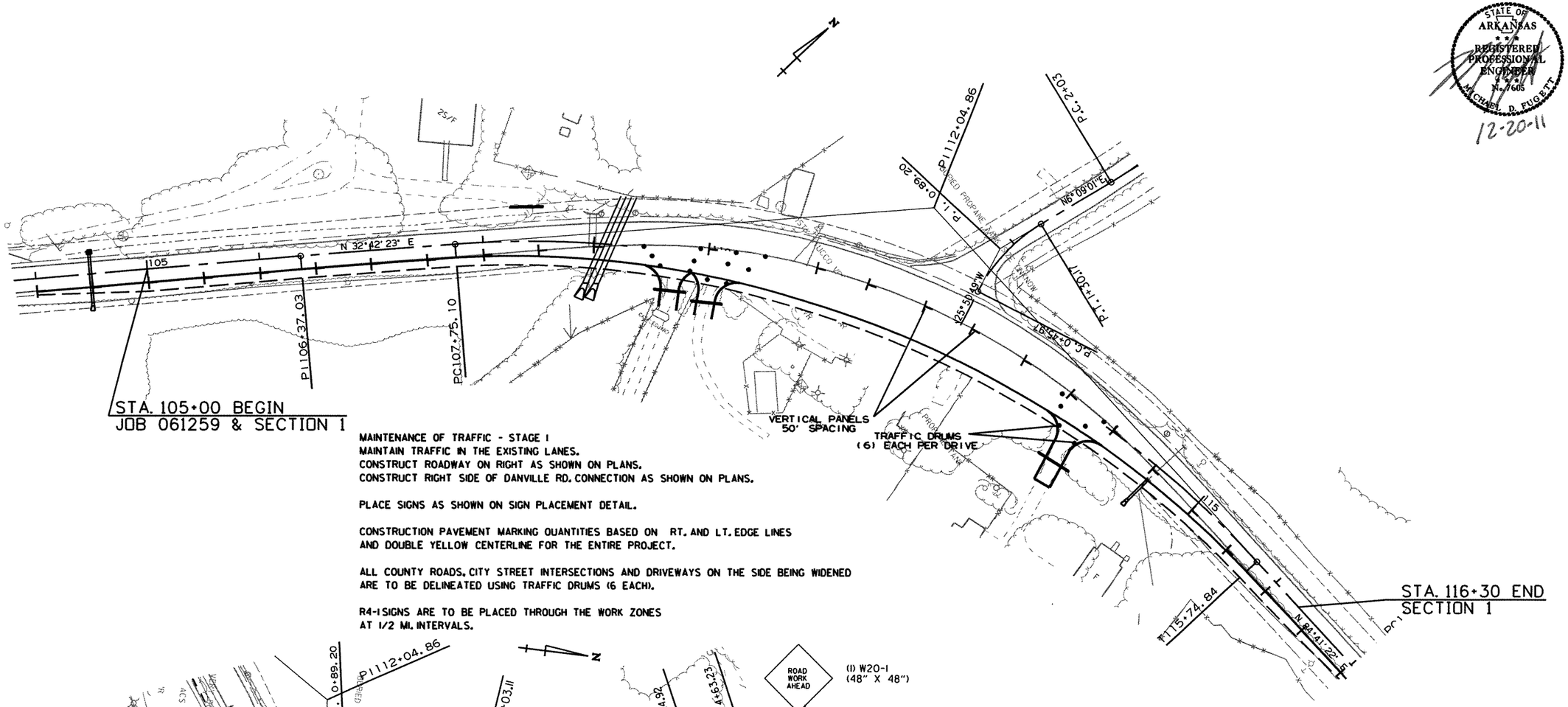
DETAILS OF STAGE CONSTRUCTION SECTIONS 1 & 3

R061259.DGN 3/23/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	18	157

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11



MAINTENANCE OF TRAFFIC - STAGE I
MAINTAIN TRAFFIC IN THE EXISTING LANES.
CONSTRUCT ROADWAY ON RIGHT AS SHOWN ON PLANS.
CONSTRUCT RIGHT SIDE OF DANVILLE RD. CONNECTION AS SHOWN ON PLANS.

PLACE SIGNS AS SHOWN ON SIGN PLACEMENT DETAIL.

CONSTRUCTION PAVEMENT MARKING QUANTITIES BASED ON RT. AND LT. EDGE LINES AND DOUBLE YELLOW CENTERLINE FOR THE ENTIRE PROJECT.

ALL COUNTY ROADS, CITY STREET INTERSECTIONS AND DRIVEWAYS ON THE SIDE BEING WIDENED ARE TO BE DELINEATED USING TRAFFIC DRUMS (6 EACH).

R4-1 SIGNS ARE TO BE PLACED THROUGH THE WORK ZONES AT 1/2 MI. INTERVALS.

MAINTENANCE OF TRAFFIC QUANTITIES - SECTION I (STAGE I)
SIGNS = 138 SQ. FT.
VERTICAL PANELS = 21 EACH
TRAFFIC DRUMS = 24 EACH
CONSTRUCTION PAVEMENT MARKINGS = 4400 LIN. FT.

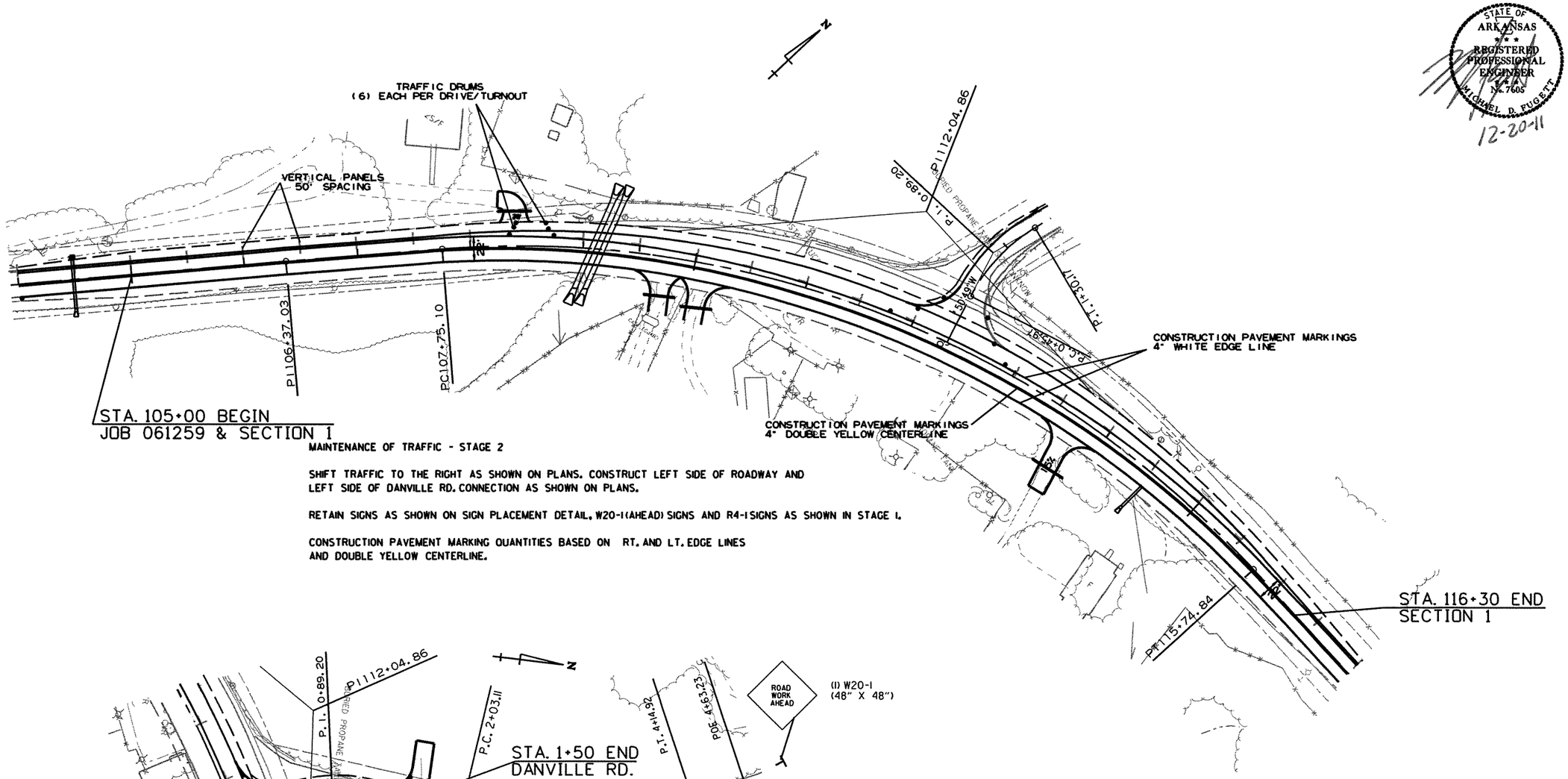
R061259.DGN 3/23/2011

MAINTENANCE OF TRAFFIC DETAILS
SECTION I (STAGE I)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	19	157

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

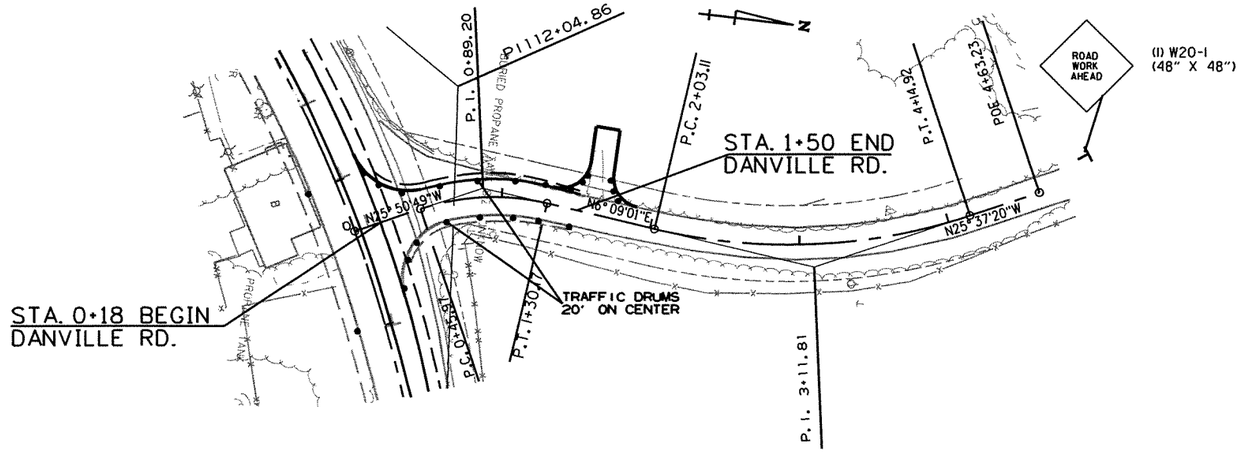


MAINTENANCE OF TRAFFIC - STAGE 2

SHIFT TRAFFIC TO THE RIGHT AS SHOWN ON PLANS. CONSTRUCT LEFT SIDE OF ROADWAY AND LEFT SIDE OF DANVILLE RD. CONNECTION AS SHOWN ON PLANS.

RETAIN SIGNS AS SHOWN ON SIGN PLACEMENT DETAIL, W20-1(AHEAD) SIGNS AND R4-1 SIGNS AS SHOWN IN STAGE 1.

CONSTRUCTION PAVEMENT MARKING QUANTITIES BASED ON RT. AND LT. EDGE LINES AND DOUBLE YELLOW CENTERLINE.



MAINTENANCE OF TRAFFIC QUANTITIES - SECTION 1(STAGE 2)
SIGNS = 138 SQ. FT.
VERTICAL PANELS = 25 EACH
TRAFFIC DRUMS = 25 EACH
CONSTRUCTION PAVEMENT MARKINGS = 4400 LIN. FT.
REMOVAL OF CONST. PVMT. MARKINGS = 4400 LIN. FT.

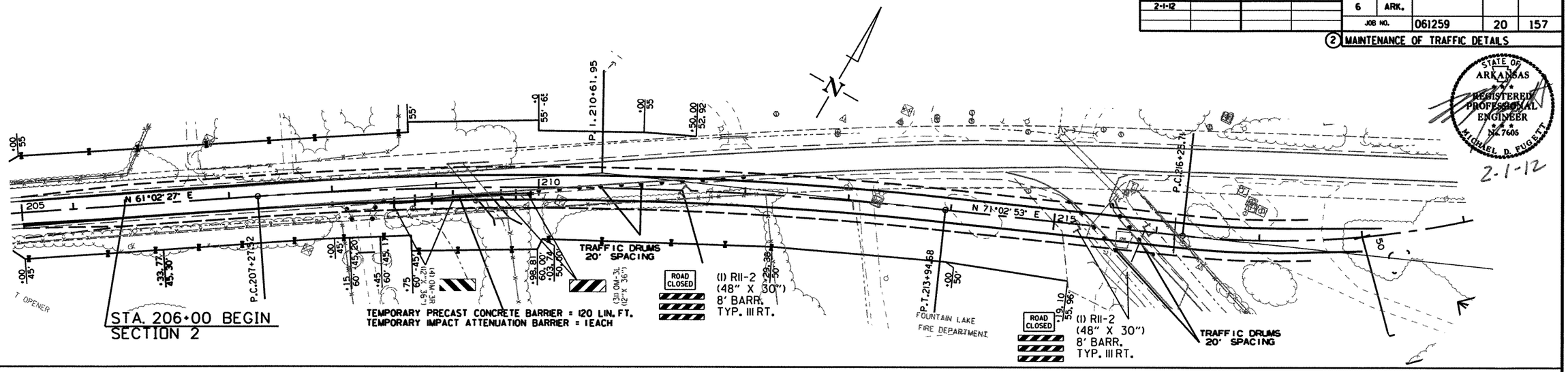
R061259.DGN 3/23/2011

MAINTENANCE OF TRAFFIC DETAILS
SECTION 1(STAGE 2)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
2-1-12				6	ARK.			
				JOB NO.		061259	20	157

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
14760
MICHAEL D. FUGETT
2-1-12



MAINTENANCE OF TRAFFIC - STAGE I

MAINTAIN TRAFFIC IN THE EXISTING LANES.
CONSTRUCT NEW ROADWAY STA. 206+00 - STA. 219+00 RT. OF EXISTING LANES.
CONSTRUCT DETOURS AND NEW HWY. 128 CONNECTION AS SHOWN ON PLANS.

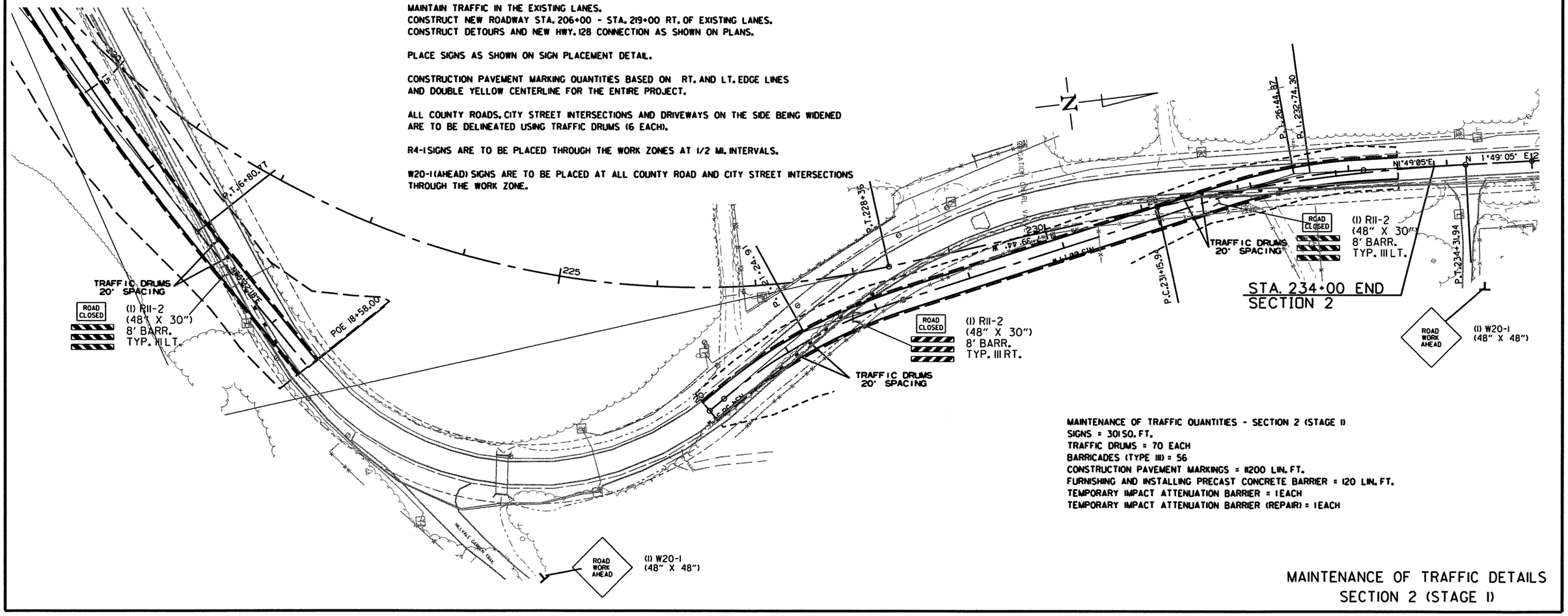
PLACE SIGNS AS SHOWN ON SIGN PLACEMENT DETAIL.

CONSTRUCTION PAVEMENT MARKING QUANTITIES BASED ON RT. AND LT. EDGE LINES AND DOUBLE YELLOW CENTERLINE FOR THE ENTIRE PROJECT.

ALL COUNTY ROADS, CITY STREET INTERSECTIONS AND DRIVEWAYS ON THE SIDE BEING WIDENED ARE TO BE DELINEATED USING TRAFFIC DRUMS (6 EACH).

R4-1 SIGNS ARE TO BE PLACED THROUGH THE WORK ZONES AT 1/2 MI. INTERVALS.

W20-1 (AHEAD) SIGNS ARE TO BE PLACED AT ALL COUNTY ROAD AND CITY STREET INTERSECTIONS THROUGH THE WORK ZONE.



MAINTENANCE OF TRAFFIC QUANTITIES - SECTION 2 (STAGE I)
SIGNS = 301 SQ. FT.
TRAFFIC DRUMS = 70 EACH
BARRICADES (TYPE III) = 56
CONSTRUCTION PAVEMENT MARKINGS = 11200 LIN. FT.
FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 120 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 1EACH
TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR) = 1EACH

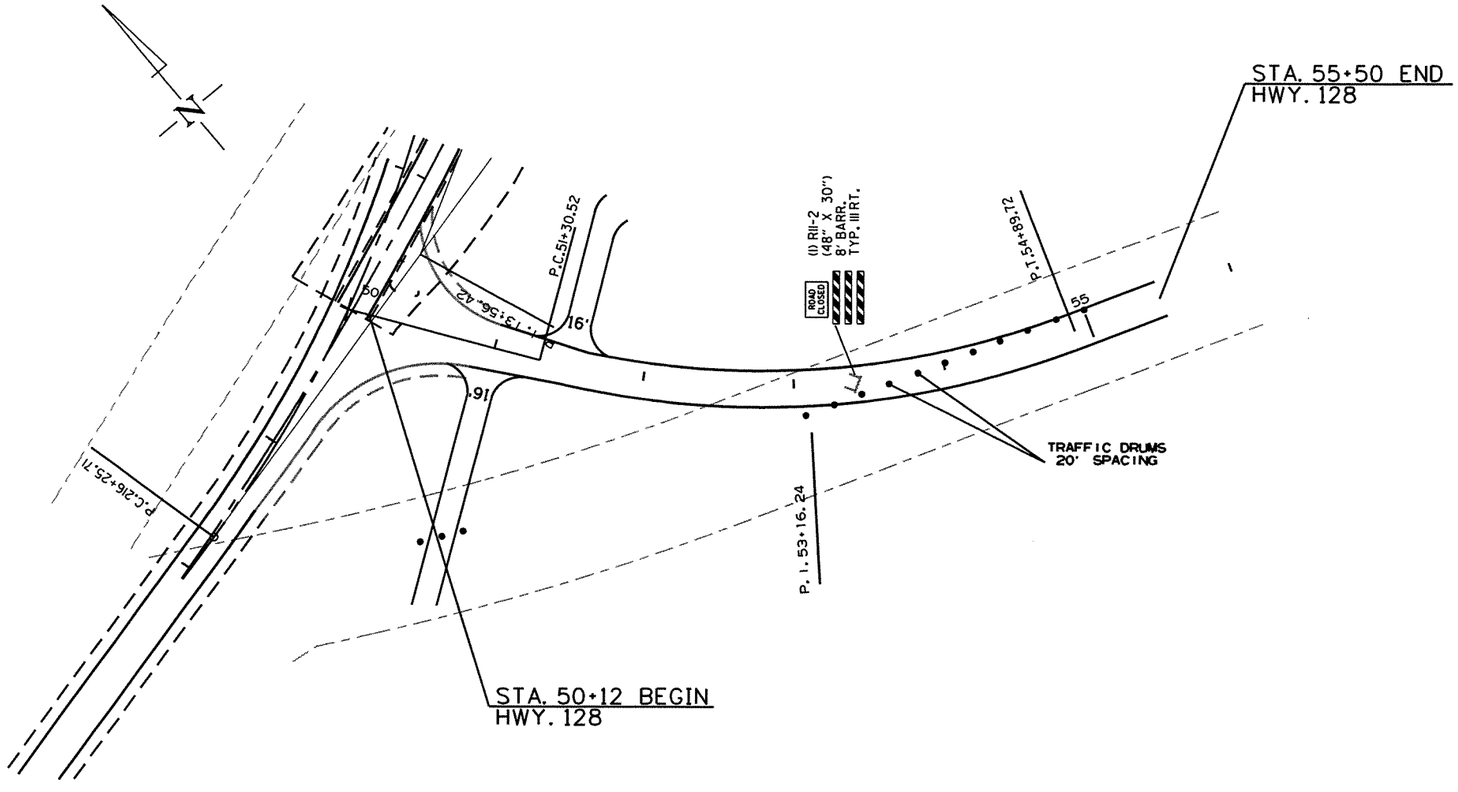
MAINTENANCE OF TRAFFIC DETAILS
SECTION 2 (STAGE I)

R061259.DGN 3/23/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	21	157

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11



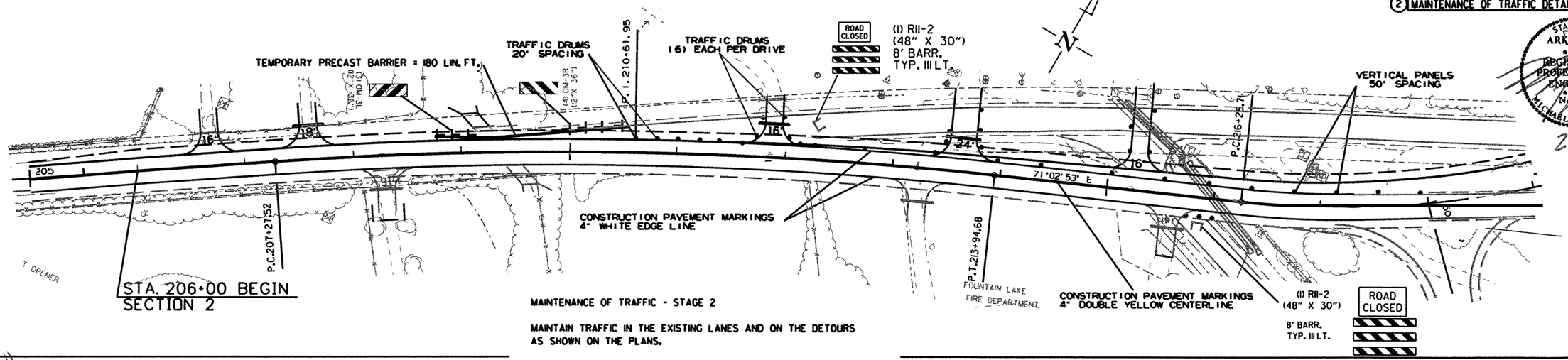
R061259.DGN 3/23/2011

MAINTENANCE OF TRAFFIC DETAILS
HWY. 128 (STAGE I)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
2-1-12				6	ARK.			
				JOB NO.		061259	22	157

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
2-1-12



MAINTENANCE OF TRAFFIC - STAGE 2

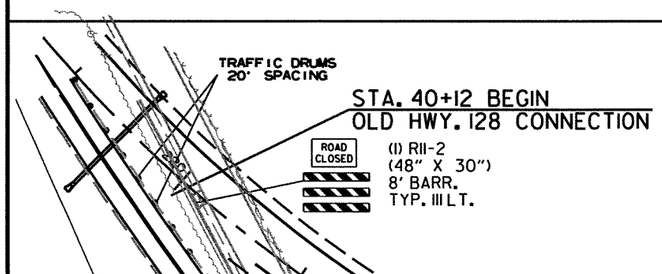
MAINTAIN TRAFFIC IN THE EXISTING LANES AND ON THE DETOURS AS SHOWN ON THE PLANS.

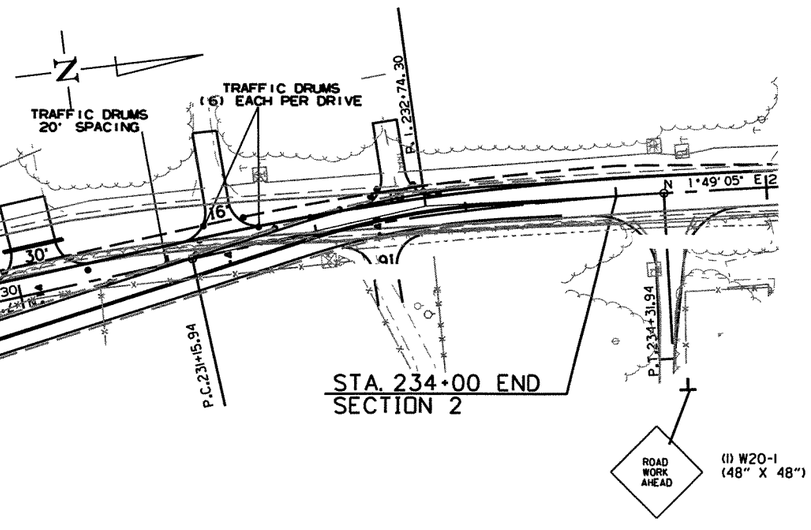
CONSTRUCT NEW ROADWAY AS SHOWN ON PLANS:
STA. 206+00 - STA. 219+00 LT. OF THE EXISTING LANES AND DETOUR
STA. 219+00 - STA. 228+00 ENTIRE NEW ROADWAY
STA. 228+00 - STA. 234+00 LT. OF DETOUR 2
STA. 40+12 - STA. 43+50 HILLVALE GARDEN TRAIL CONNECTION

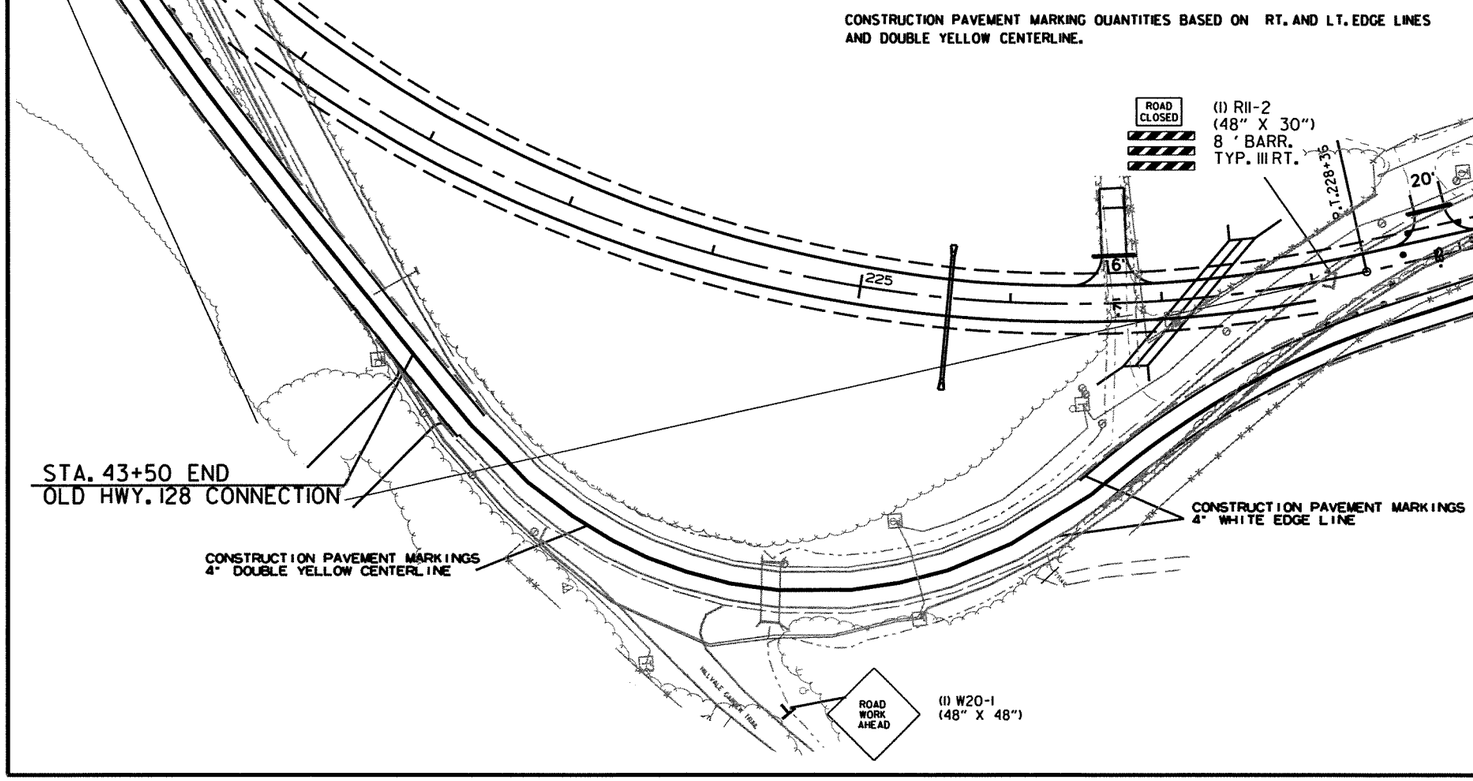
RETAIN SIGNS AS SHOWN ON SIGN PLACEMENT DETAIL, W20-1(AHEAD) SIGNS AND R4-1 SIGNS AS SHOWN IN STAGE 1.

PLACE VERTICAL PANELS ON THE RIGHT (50' ON CENTER).

CONSTRUCTION PAVEMENT MARKING QUANTITIES BASED ON RT. AND LT. EDGE LINES AND DOUBLE YELLOW CENTERLINE.







MAINTENANCE OF TRAFFIC QUANTITIES - SECTION 2 (STAGE 2)
SIGNS = 289 SQ. FT.
TRAFFIC DRUMS = 100 EACH
BARRICADES (TYPE III) = 48
CONSTRUCTION PAVEMENT MARKINGS = 13350 LIN. FT.
REMOVAL OF CONST. PVMT. MARKINGS = 4200 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (YEL./YEL) = 40 EACH
FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 60 LIN. FT.
RELOCATING PRECAST CONCRETE BARRIER = 120 LIN. FT.

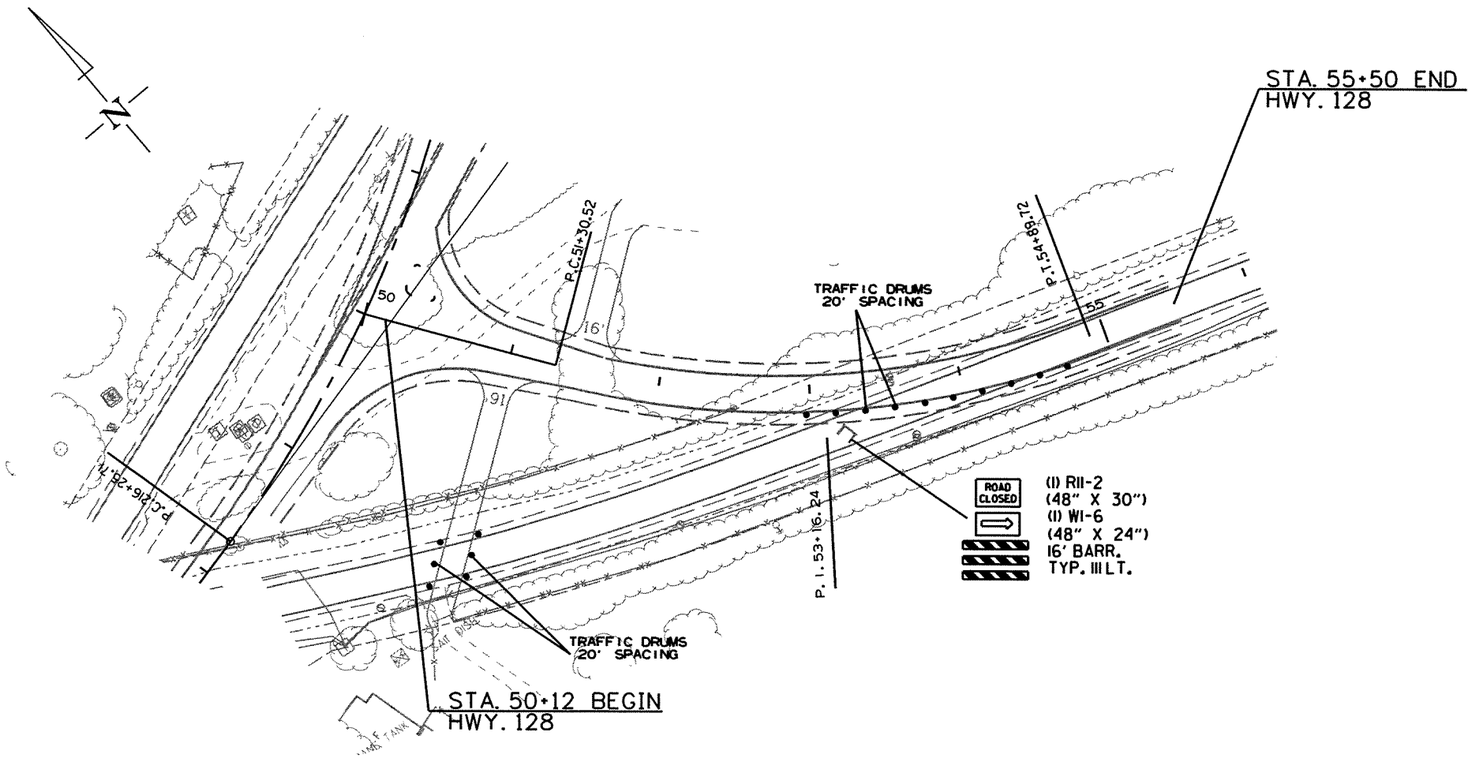
MAINTENANCE OF TRAFFIC DETAILS
SECTION 2 (STAGE 2)

R061259.DGN 3/23/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	23	157

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
MICHAEL D. FUGETT
12-20-11

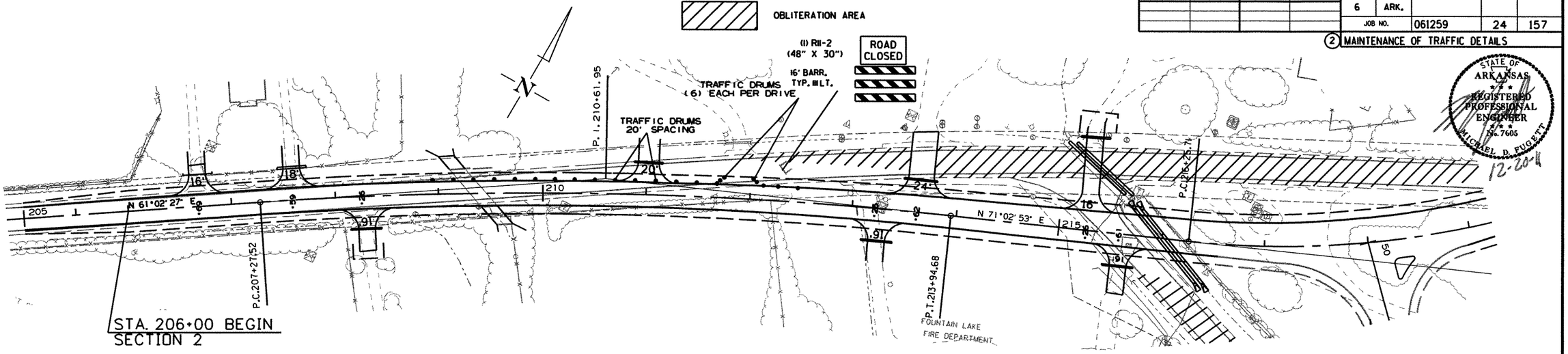


R061259.DGN 3/23/2011

MAINTENANCE OF TRAFFIC DETAILS
HWY. 128 (STAGE 2)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	24	157

(2) MAINTENANCE OF TRAFFIC DETAILS



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

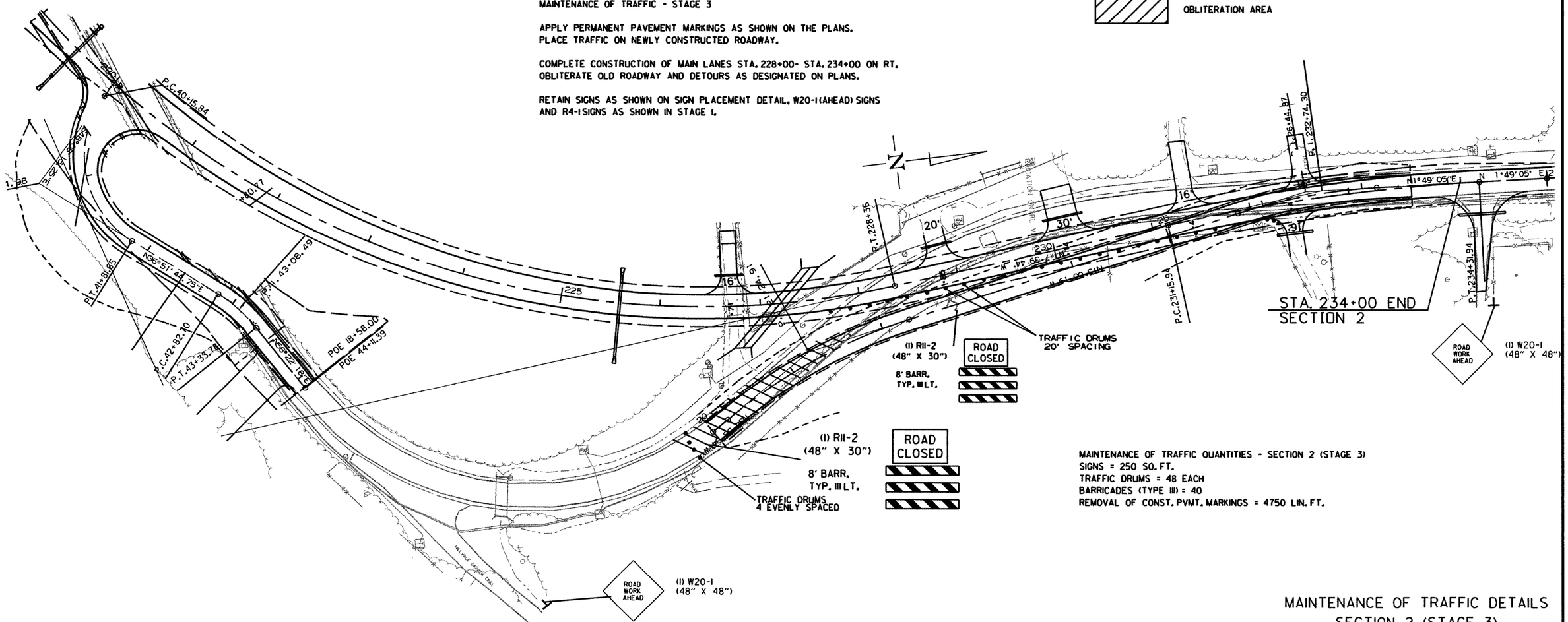
MAINTENANCE OF TRAFFIC - STAGE 3

APPLY PERMANENT PAVEMENT MARKINGS AS SHOWN ON THE PLANS.
PLACE TRAFFIC ON NEWLY CONSTRUCTED ROADWAY.

COMPLETE CONSTRUCTION OF MAIN LANES STA. 228+00- STA. 234+00 ON RT.
OBLITERATE OLD ROADWAY AND DETOURS AS DESIGNATED ON PLANS.

RETAIN SIGNS AS SHOWN ON SIGN PLACEMENT DETAIL, W20-1(AHEAD) SIGNS AND R4-1 SIGNS AS SHOWN IN STAGE 1.

OBLITERATION AREA



MAINTENANCE OF TRAFFIC QUANTITIES - SECTION 2 (STAGE 3)
SIGNS = 250 SQ. FT.
TRAFFIC DRUMS = 48 EACH
BARRICADES (TYPE III) = 40
REMOVAL OF CONST. PVMT. MARKINGS = 4750 LIN. FT.

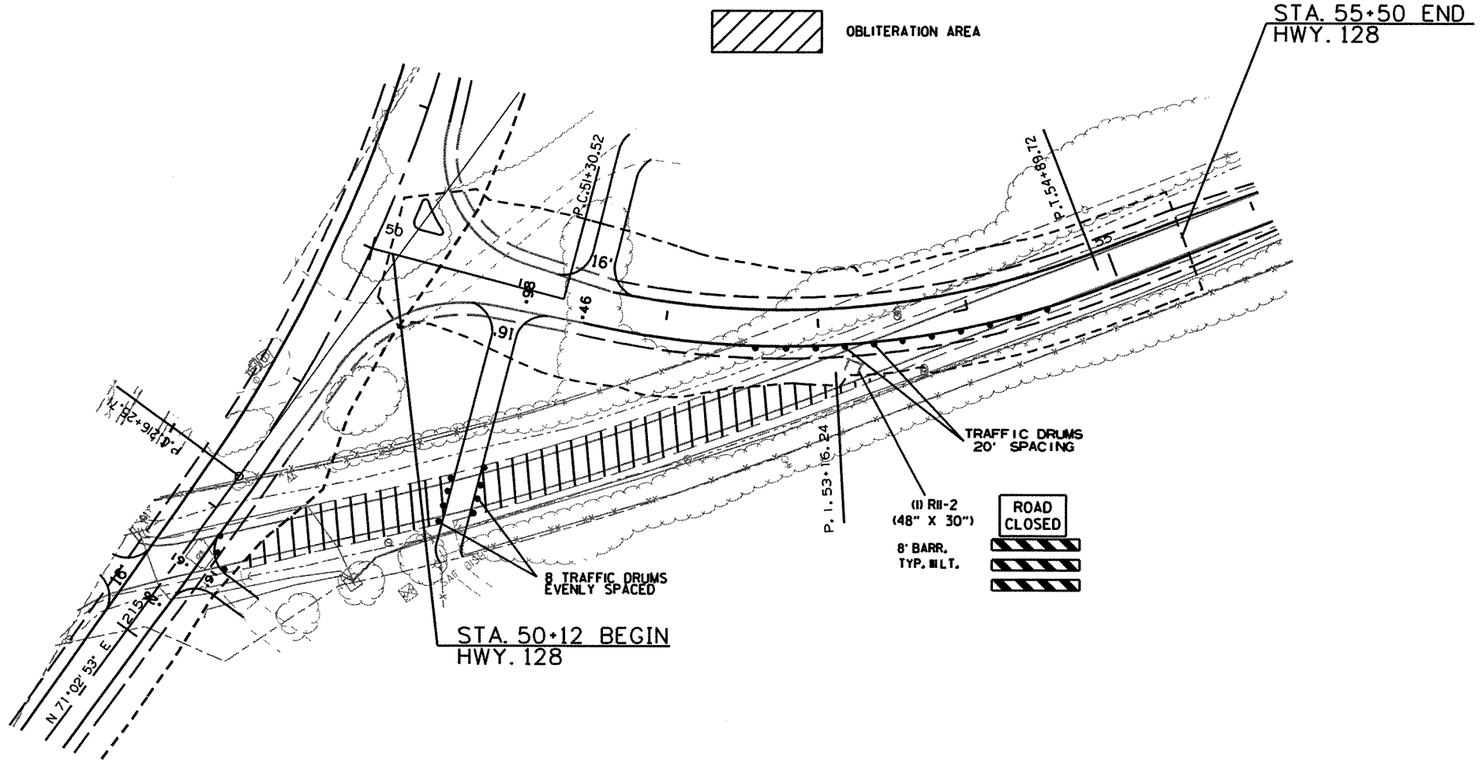
MAINTENANCE OF TRAFFIC DETAILS
SECTION 2 (STAGE 3)

R061259.DGN 3/23/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	25	157

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
14,7605
MICHAEL D. FUGETT
12-20-11



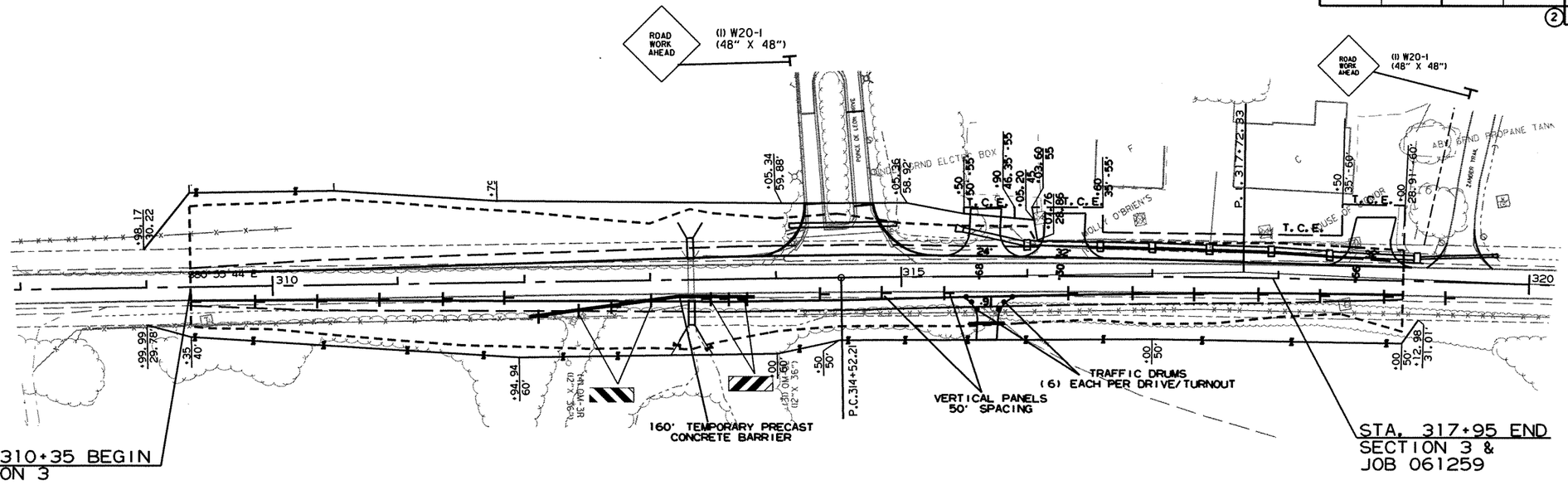
R061259.DGN 3/23/2011

MAINTENANCE OF TRAFFIC DETAILS
HWY. 128 (STAGE 3)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	26	157

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11



MAINTENANCE OF TRAFFIC - STAGE I
MAINTAIN TRAFFIC IN THE EXISTING LANES.
CONSTRUCT ROADWAY ON RIGHT AS SHOWN ON PLANS.

PLACE SIGNS AS SHOWN ON SIGN PLACEMENT DETAIL.

CONSTRUCTION PAVEMENT MARKING QUANTITIES BASED ON RT. AND LT. EDGE LINES AND DOUBLE YELLOW CENTERLINE FOR THE ENTIRE PROJECT.

ALL COUNTY ROADS, CITY STREET INTERSECTIONS AND DRIVEWAYS ON THE SIDE BEING WIDENED ARE TO BE DELINEATED USING TRAFFIC DRUMS (6 EACH).

R4-1 SIGNS ARE TO BE PLACED THROUGH THE WORK ZONES AT 1/2 MI. INTERVALS.

W20-1 (AHEAD) SIGNS ARE TO BE PLACED AT ALL COUNTY ROAD AND CITY STREET INTERSECTIONS THROUGH THE WORK ZONE.

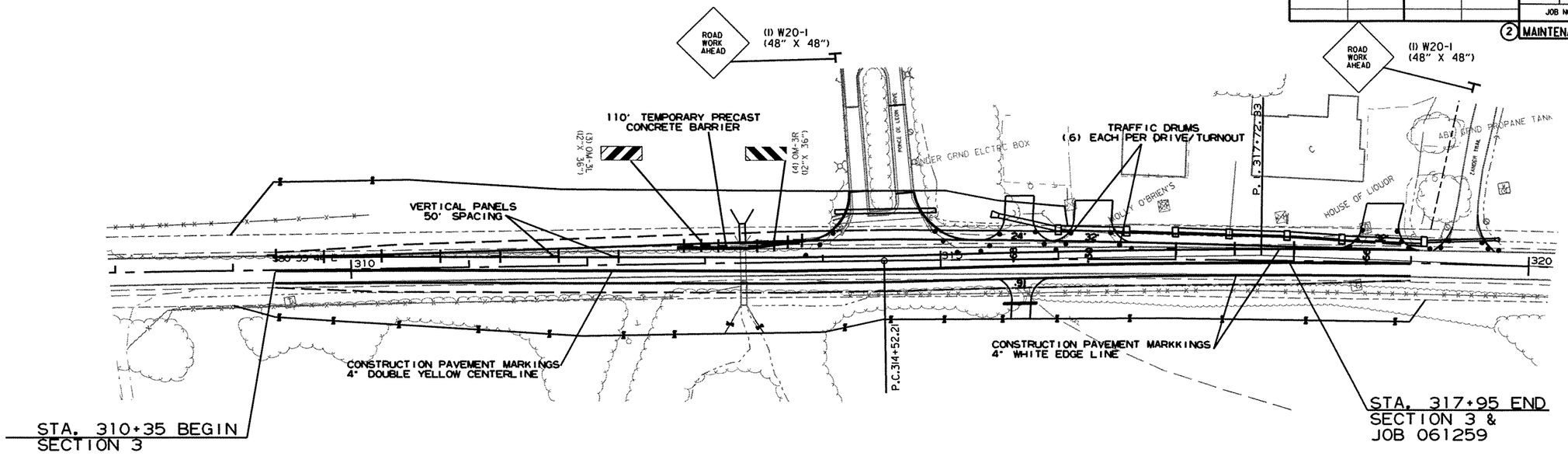
MAINTENANCE OF TRAFFIC QUANTITIES - SECTION 3 (STAGE I)
SIGNS = 175 SQ. FT.
VERTICAL PANELS = 15 EACH
TRAFFIC DRUMS = 6 EACH
TEMPORARY PRECAST CONCRETE BARRIER = 160 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS = 3040 LIN. FT.

R061259.DGN 3/23/2011

MAINTENANCE OF TRAFFIC DETAILS
SECTION 3 (STAGE I)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	27	157

(2) MAINTENANCE OF TRAFFIC DETAILS



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

MAINTENANCE OF TRAFFIC - STAGE 2

SHIFT TRAFFIC TO THE RIGHT AS SHOWN ON PLANS.
CONSTRUCT ROADWAY ON LEFT AS SHOWN ON PLANS.

RETAIN SIGNS AS SHOWN ON SIGN PLACEMENT DETAIL, W20-1(AHEAD) SIGNS AND R4-1 SIGNS AS SHOWN IN STAGE 1.
PLACE VERTICAL PANELS ON THE RIGHT (50' ON CENTER).

CONSTRUCTION PAVEMENT MARKING QUANTITIES BASED ON RT. AND LT. EDGE LINES
AND DOUBLE YELLOW CENTERLINE FOR THE ENTIRE PROJECT.

ALL COUNTY ROADS, CITY STREET INTERSECTIONS AND DRIVEWAYS ON THE SIDE BEING WIDENED
ARE TO BE DELINEATED USING TRAFFIC DRUMS (6 EACH).

MAINTENANCE OF TRAFFIC QUANTITIES - SECTION 3 (STAGE 2)
SIGNS = 175 SQ. FT.
VERTICAL PANELS = 10 EACH
TRAFFIC DRUMS = 30 EACH
RELOCATING PRECAST CONCRETE BARRIER = 110 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS = 3040 LIN. FT.
REMOVAL OF CONST. PVMT. MARKINGS = 3040 LIN. FT.

R061259.DGN 3/23/2011

MAINTENANCE OF TRAFFIC DETAILS
SECTION 3 (STAGE 2)

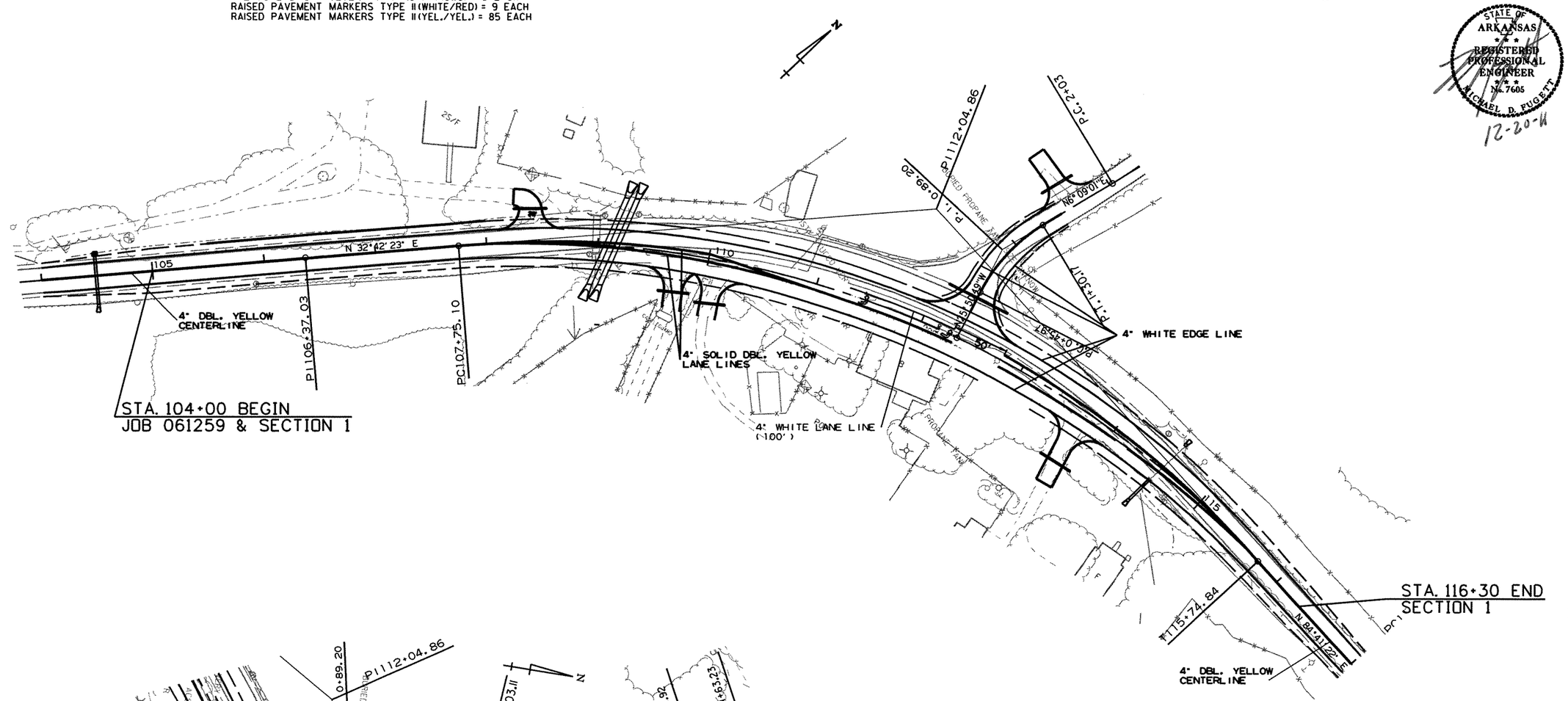
PERMANENT PAVEMENT MARKINGS:

THERMOPLASTIC PAVEMENT MARKING WHITE (4") = 11836 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (8") = 110 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (4") = 14934 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING (WORDS) = 3 EACH
THERMOPLASTIC PAVEMENT MARKING (ARROWS) = 6 EACH
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 9 EACH
RAISED PAVEMENT MARKERS TYPE II (YEL./YEL.) = 85 EACH

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.		061259	28	157

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. RUGETT
12-20-11



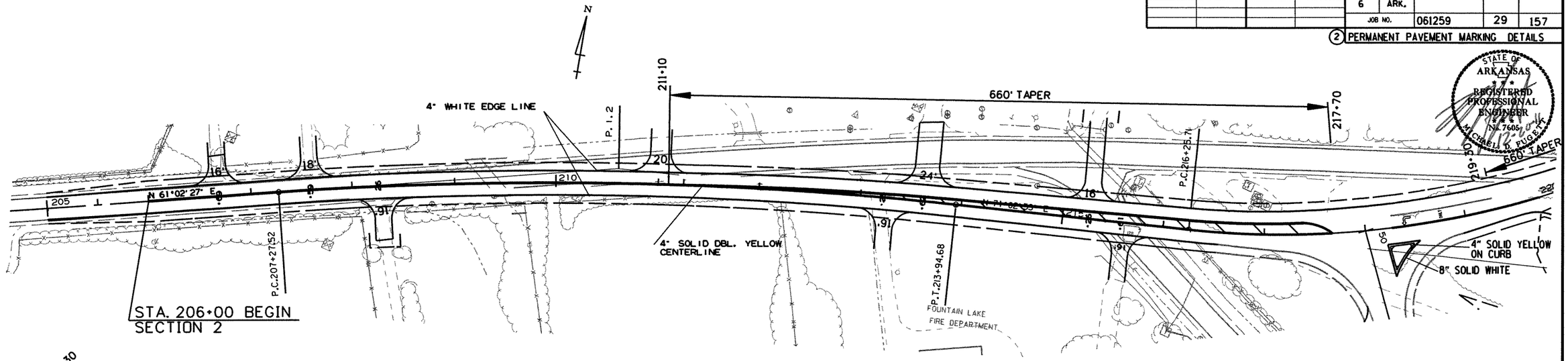
R061259.DGN 3/23/2011

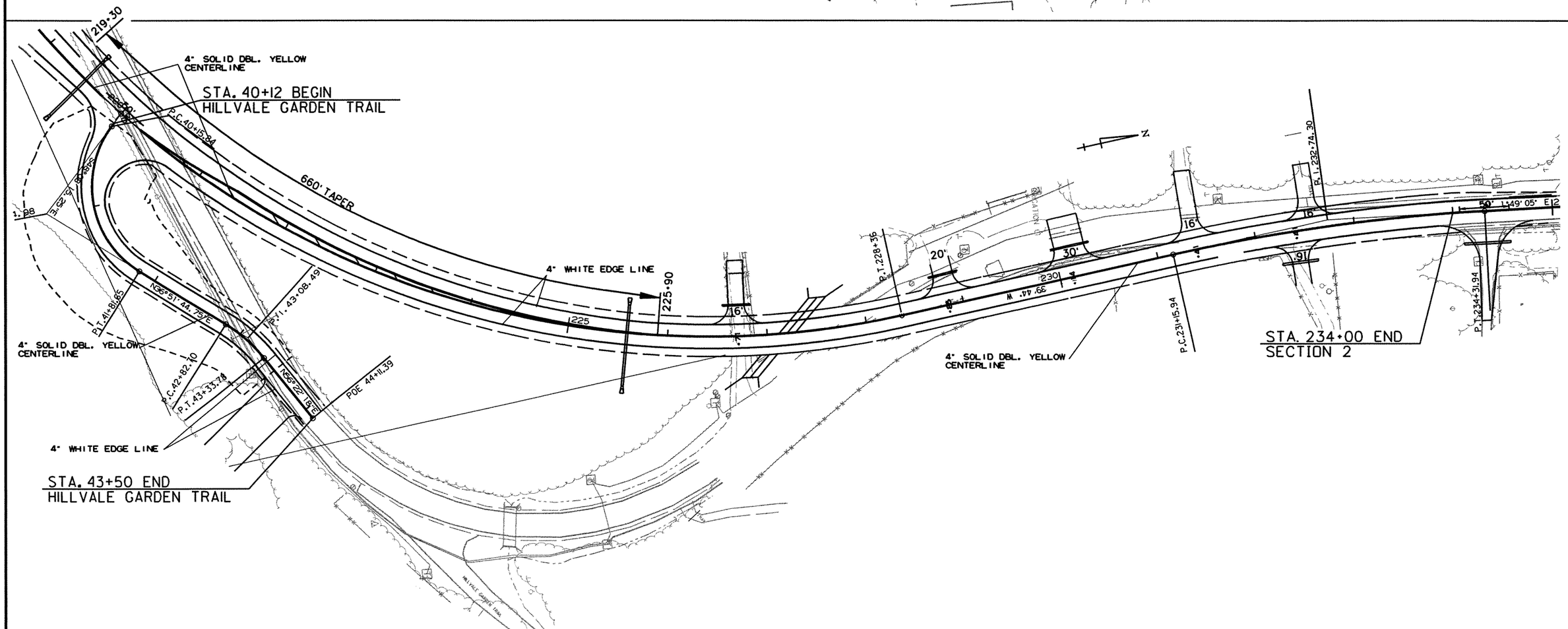
PERMANENT PAVEMENT MARKING DETAILS

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.		061259	29	157

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. PUGH





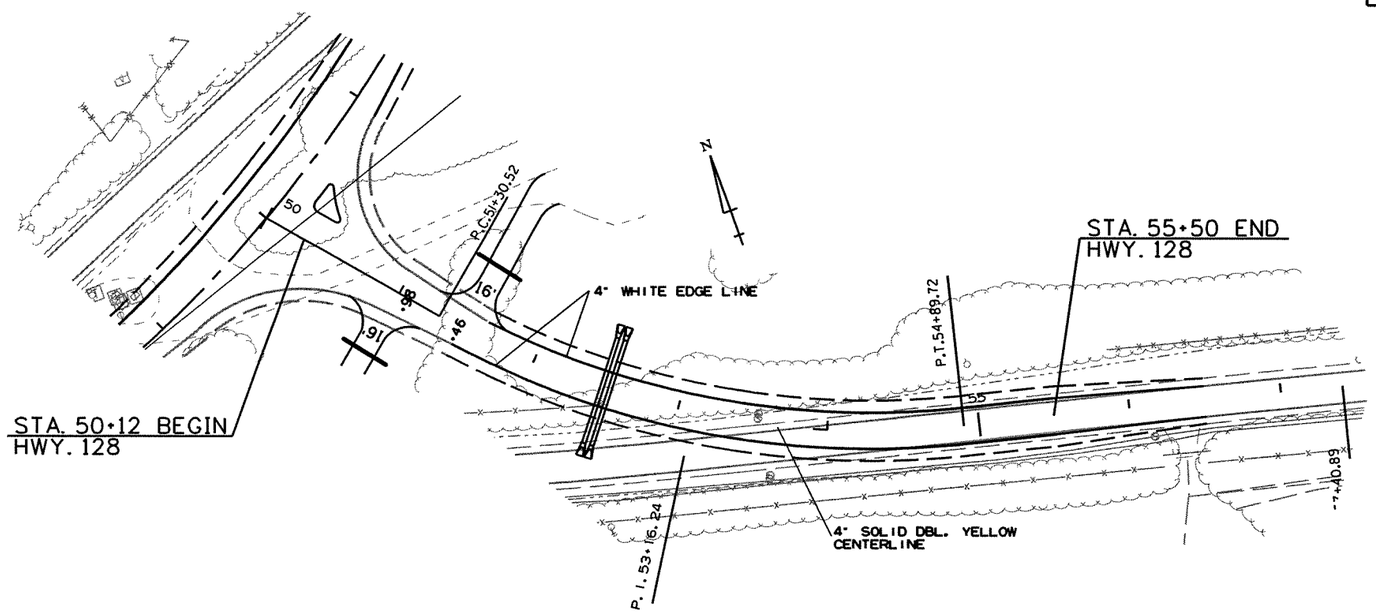
R061259.DGN 3/23/2011

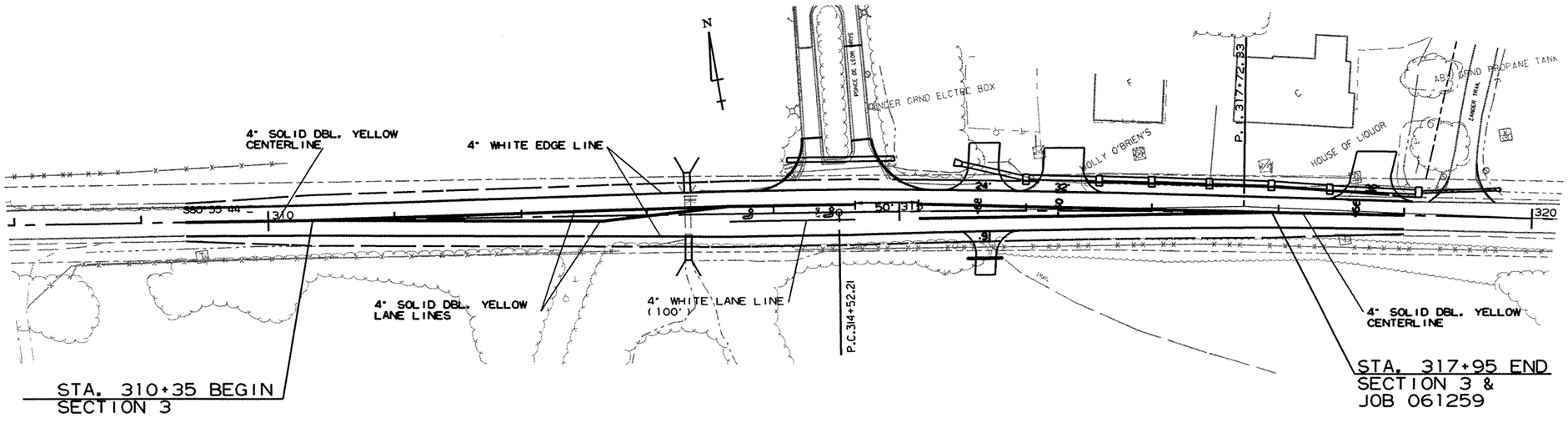
PERMANENT PAVEMENT MARKING DETAILS

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.		061259	30	157

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
M. 7605
MICHAEL D. FUGETT
12-20-11





R061259.DGN 3/23/2011

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
2-1-12				6	ARK.			
				JOB NO.		061259	31	157

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13015
MICHAEL D. FUGETT

2-1-12

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMPORARY IMPACT ATTENU. BARR. (REPAIR)
											RIGHT	LEFT				
			LIN.FT. - EACH				NO.	SQ. FT.	EACH		LIN.FT.				EACH	EACH
W20-1	ROAD WORK 1500 FT.	48"x48"	7	7	3	7	7	112.0								
W20-1	ROAD WORK 1000 FT.	48"x48"	7	7	3	7	7	112.0								
W20-1	ROAD WORK 500 FT.	48"x48"	7	7	3	7	7	112.0								
W20-1	ROAD WORK AHEAD	48"x48"	5	5	2	5	5	80.0								
G20-2	END ROAD WORK	48"x24"	7	7	3	7	7	56.0								
W13-1	SPEED LIMIT (ADVISORY)	24"x24"														
R11-2	ROAD CLOSED	48"x30"	7	5	4	7	7	70.0								
OM-3L	OBJECT MARKER	12"x36"	6	6		6	6	18.0								
OM-3R	OBJECT MARKER	12"x36"	8	8		8	8	24.0								
W1-6	LARGE ARROW	48"x24"		1		1	1	8.0								
R4-1	DO NOT PASS	24"x30"	6	6	2	6	6	30.0								
	VERTICAL PANELS		36	35		36	36		36							
	TRAFFIC DRUMS		100	155	48	155	155			155						
	TYPE III BARRICADE-RT. (8')		4	1		4	4				32					
	TYPE III BARRICADE-LT. (8')		2	3	3	3	3					24				
	TYPE III BARRICADE-RT. (16')															
	TYPE III BARRICADE-LT. (16')			1	1	1	1					16				
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		280	60		340							340			
	RELOCATING PRECAST CONCRETE BARRIER			230		230								230		
	TEMPORARY IMPACT ATTENUATION BARRIER		1			1									1	
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)		1			1										1
TOTALS:								622.0	36	155	32	40	340	230	1	1

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	END OF JOB	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	THERMOPLASTIC PAVEMENT MARKINGS				RAISED PAVEMENT MARKERS	
							4"		WORDS	ARROWS	TYPE II	
							WHITE	YELLOW			WHITE/RED	YEL./YEL.
	LIN.FT. - EACH				LIN.FT.	LIN.FT.	LIN.FT.		EACH		EACH	
CONSTRUCTION PAVEMENT MARKINGS	18640	20790			39430							
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		11640	4750			16390						
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)				9							9	
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)		40		85								125
THERMOPLASTIC PAVEMENT MARKINGS WHITE (4")				11836			11836					
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4")				14994				14994				
THERMOPLASTIC PAVEMENT MARKINGS WORDS				3					3			
THERMOPLASTIC PAVEMENT MARKINGS ARROWS				6						6		
TOTALS:					39430	16390	11836	14994	3	6	9	125

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
105+00	117+00	SECTION 1	12	12
205+00	210+00	SECTION 2	5	5
212+15	212+40	SECTION 2	1	1
215+75	235+00	SECTON 2	20	20
309+00	316+00	SECTION 3	7	7
TOTALS:			45	45

R061259.DGN 5/16/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
2-1-12				6	ARK.			
				JOB NO.		061259	32	157

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
2-1-12

REMOVAL AND DISPOSAL ITEMS

STATION	STATION	DESCRIPTION	CURB	CONCRETE DRAIN	CONCRETE DRIVEWAYS	SIGNS	SIGN FOUNDATIONS	CATTLE GUARD	LUMINAIRE POLE & FOUNDATION	SEPTIC SYSTEM	WATER WELL	BUILDINGS	STORM CELLAR	STEPS
			LIN.FT.	SQ. YD.	SQ. YD.	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	SQ. YD.
107+66		ROCK STEPS ON LT.												40
109+67		CATTLE GUARD ON RT.						1						
110+37		STORM CELLAR ON LT.											1	
110+54		STUCCO HOUSE ON LT										1		
110+54		WATER WELL ON LT. - CLOSE									1			
110+54		SEPTIC SYSTEM ON LT.								1				
110+89		SIGN AND SIGN FOUDATION ON RT.				1	1							
111+54		LUMINAIRE POLE AND FDN. ON RT.							1					
111+65		BUILDING ON RT.											1	
112+65		SIGN ON LT.				1								
112+67		SIGN ON LT.				1								
112+80		WATER WELL ON RT. - CLOSE									1			
119+52		SIGN ON LT.				1								
213+04		SIGN AND SIGN FOUDATION ON RT.				1	1							
215+03		SIGN AND SIGN FOUDATION ON LT.				1	1							
215+85		SIGN ON LT.				1								
216+43		SIGN ON LT.				1								
226+47		SIGN ON RT.				1								
314+10	315+00	CONCRETE DRIVE WITH CURB ON LT.	145		288									
314+10		CONCRETE DRAIN ON LT.		7										
TOTALS:			145	7	288	9	3	1	1	1	2	1	2	40

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE	GATES
			LIN. FT.	EACH
108+60		GATE ON LT.		1
109+86		GATES ON RT.		2
108+67	110+26	FENCE ON LT.	160	
110+00	111+65	WOOD PRIVACY FENCE ON RT.	165	
110+89		SIGN AND SIGN FOUDATION ON RT.		
112+92	117+40	FENCE ON LT.	502	
112+63		FENCE ON RT.	40	
116+34	117+00	FENCE ON RT.	68	
204+50	206+17	FENCE ON LT.	155	
204+80	208+10	FENCE ON RT.	345	
206+74	207+45	FENCE ON LT.	80	
207+67	208+67	FENCE ON LT.	122	
208+52	212+30	FENCE ON RT.	420	
215+78	218+38	FENCE ON RT. (EXIST. HWY. 128)	200	
226+83	228+42	CHAIN LINK FENCE	260	
226+73	232+32	FENCE ON RT.	690	
309+07	310+17	FENCE ON LT.	110	
309+00	312+78	FENCE ON RT.	345	
314+17	319+00	FENCE ON RT.	480	
TOTALS:			4142	3

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	*SOIL STABILIZATION
			CU. YD.		TON
104+00	117+00	SECTION 1	6911	2141	
206+00	234+00	SECTION 2	62067	8594	
310+35	317+95	SECTION 3	2398	1793	
0+18	1+50	DANVILLE RD.	581	122	
50+12	55+50	HWY. 128 CONNECTION	382	5385	
40+12	43+50	HILLVALE GARDEN TRAIL CONNECTION		5067	
13+00	18+58	DETOUR 1	1063	7313	
13+00	18+58	DETOUR 1 REMOVAL	4849	1012	
20+00	27+50	DETOUR 2	7535	253	
20+00	27+50	DETOUR 2 REMOVAL	110	3990	
* ENTIRE	PROJECT	UNDERCUT FOR DITCHES	700	700	
ENTIRE	PROJECT	APPROACHES	120	2520	
ENTIRE	PROJECT	OBLITERATION AREAS	586		
ENTIRE	PROJECT				200
ENTIRE	PROJECT	CHANNEL CHANGE	150		
TOTALS:			87452	38890	200

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

SOIL LOG

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIF.	COLOR
		FEET				
108+00	22'RT	0-5	28	9	A-4(3)	BROWN
108+00	22'RT	0-5	25	7	A-4(3)	BROWN
108+00	5'RT	0-5	37	19	A-6(8)	BR/GR
116+00	20'LT	0-5	36	18	A-6(13)	BROWN
116+00	5'LT	0-3.0Z	31	13	A-6(6)	BROWN
209+00	20'RT	0-5	28	10	A-4(7)	BROWN
209+00	5'RT	0-5	28	10	A-4(4)	BROWN
218+00	CL	0-5	36	18	A-6(15)	BROWN
218+00	CL	0-5	35	16	A-6(13)	BROWN
234+00	23'LT	0-5	34	16	A-6(4)	BROWN
234+00	5'LT	0-5	40	22	A-6(10)	BROWN
310+40	21'RT	0-5	32	13	A-6(9)	BROWN
311+00	5'RT	0-5	24	8	A-4(3)	RD/BR
311+00	21'RT	0-5	33	14	A-6(9)	BROWN
319+00	21'LT	0-5	33	16	A-6(8)	BROWN
319+00	5'LT	0-5	31	14	A-6(8)	BROWN
56+00	23'LT	0-5	25	7	A-4(4)	BROWN
56+00	13'LT	0-5	26	7	A-4(2)	BROWN
56+00	5'LT	0-5	25	8	A-4(3)	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

REMOVAL AND DISPOSAL OF CULVERTS AND DROP INLETS

STATION	DESCRIPTION	PIPE CULVERTS	BOX CULVERTS
		EACH	EACH
108+60	24" X 31' C.M.P. - L.S.D.	1	
109+00	6' X 2' X 35' R.C. BOX CULVERT		1
110+56	18" X 56' R.C.P. - L.S.D.	1	
114+87	12" X 18" X 84' R.C.A.P. ON RT.	1	
206+65	18" X 26' PLASTIC PIPE - L.S.D.	1	
207+60	24" X 24' PLASTIC PIPE - L.S.D.	1	
208+28	18" X 24' C.M.P. - R.S.D.	1	
211+86	DBL. 18" X 25' R.C.P. - L.S.D.	2	
215+25	18" X 20' C.M.P. - L.S.D.	1	
215+30	DBL. 30" X 82' C.M.P.	2	
215+64	18" X 28' C.M.P. ON RT. (EXIST. HWY.128)	1	
226+73	20" X 15' STEEL PIPE ON RT.	1	
232+30	18" X 21' R.C.P. - R.S.D.	1	
234+31	18" X 37' R.C.P. - R.S.D.	1	
314+51	36" X 80' C.M.P. - L.S.D.	1	
315+78	18" X 16' C.M.P. - L.S.D.	1	
316+27	18" X 40' C.M.P. - L.S.D.	1	
318+80	24" X 40' C.M.P. - L.S.D.	1	
319+47	18" X 40' C.M.P. - L.S.D.	1	
TOTALS:		20	1

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

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)	MAILBOX SUPPORTS (DOUBLE)
	EACH	EACH	EACH
ENTIRE PROJECT	35	25	5
TOTALS:	35	25	5

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
104+50	TOP OF TYPE TM DROP INLET ON LT.	1
209+35	HEADWALL ON RT. OF 12' X 4' R.C. BOX	1
314+32	HEADWALL ON LT. OF 5' X 5' R.C. BOX	1

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

4" PIPE UNDERDRAINS

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN.FT.	EACH
105+13	116+39	MAIN LANES - SUPERELEVATON	1126	6
205+02	215+11	MAIN LANES - SUPERELEVATON	1009	6
215+11	229+77	MAIN LANES - SUPERELEVATON	1466	7
229+77	235+04	MAIN LANES - SUPERELEVATON	527	4
311+00	315+00	MAIN LANES - SAG	400	3
51+10	55+10	HWY. 128 - SUPERELEVATON	400	3
40+43	43+50	HILLVALE GDN. TR. - SUPERELEVATION	307	3
* ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			1000	4
* TOTALS:			6235	36

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

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

STATION	LOCATION	*FLOWABLE SELECT MATERIAL	PAVEMENT REPAIR
		CU. YD.	
104+50	MAIN LANES	10	6.1
109+00	MAIN LANES	20	10.1
109+13	MAIN LANES	20	8.2
TOTALS:		50	24.4

*AVG. DEPTH = 1'-0"

R061259.DGN 5/16/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	33	157

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

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 BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	BAG	CU.YD.	LIN.FT.	LIN.FT.	CU.YD.	CU.YD.	CU. YD.
		STAGE 1 SECTION 1										30		480			20
		STAGE 2 SECTION 1										25	25				10
		STAGE 1 SECTION 2										60		790			30
		STAGE 2 SECTION 2										45		245	40	40	50
		STAGE 3 SECTION 2										30		650			25
		STAGE 1 SECTION 3										10		350			10
		STAGE 2 SECTION 3										15	175	20	65	65	75
ENTIRE	PROJECT	TEMPORARY SEEDING & DETOURS						12.68	12.68	258.7							
ENTIRE	PROJECT	ALL SECTIONS, DANVILLE RD, HWY. 128 & HILLVALE	7.88	15.76	7.88	803.8	7.88										
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER											100						
TOTALS:			7.88	15.76	7.88	803.8	7.88	12.68	12.68	258.7	100	215	200	2535	105	105	220

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.
BALED STRAW DITCH CHECKS....4 BALES / LOCATION
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 DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
208+50	209+50	LT. OF MAIN LANES	100.00	6	66.67	44.44	0.56
227+30	230+00	RT. OF MAIN LANES	270.00	6	180.00	120.00	1.51
310+35	313+32	LT. OF MAIN LANES	297.00	6	198.00	132.00	1.66
217+24	217+36	LT. OF M.L. BETWEEN PIPES	12.00	12	16.00	5.33	0.07
ENTIRE	PROJECT	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			200.00	133.33	1.68
TOTALS:					660.67	435.10	5.48

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

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
207+50	208+50	LT. OF MAIN LANES	100.0	88.9
230+00	235+00	RT. OF MAIN LANES	500.0	444.4
313+50	315+00	LT. OF MAIN LANES	150.0	133.3
309+35	310+25	RT. OF MAIN LANES	90.0	80.0
313+32	315+00	LT. OF MAIN LANES	168.0	149.3
40+00	43+50	LT. OF HILLVALE GDN. TR. CONN.	350.0	311.1
ENTIRE	PROJECT	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER		200.0
TOTAL:				1407.0

NOTE: AVERAGE WIDTH = 8'-0"

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	TYPE B-1 (1' 6")
			LIN. FT.
105+50	108+00	SECTION 1 - LT. SHOULDER	250
316+50	319+00	SECTION 3 - LT. SHOULDER	250
TOTAL:			500

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE C)	WIRE FENCE (TYPE D)	WIRE FENCE (TYPE D-1)	* 4' CHAIN LINK FENCE	* 6' CHAIN LINK FENCE	* 16'-0" GATES
			LIN.FT.					EACH
314+17	319+00	RT. OF MAIN LANES	500					
309+00	312+78	RT. OF MAIN LANES		375				
315+67		GATE ON RT.						1
309+07	310+17	LT. OF MAIN LANES	130					
226+73	232+32	RT. OF MAIN LANES	610					
226+83	228+42	LT. OF MAIN LANES					170	
208+52	212+30	RT. OF MAIN LANES	395					
207+67	208+67	LT. OF MAIN LANES				100		
206+74	207+45	LT. OF MAIN LANES				75		
204+50	206+17	LT. OF MAIN LANES				172		
204+80	208+10	RT. OF MAIN LANES			335			
112+92	117+40	LT. OF MAIN LANES		520				
116+34	117+00	RT. OF MAIN LANES		58				
108+67	110+26	LT. OF MAIN LANES	160					
108+39		GATE ON LT.						1
TOTALS:			1795	953	335	347	170	2

* DENOTES ALTERNATE BID ITEM.

CONCRETE ISLAND

STATION	STATION	LOCATION	CURB FACE TYPE	CONC. ISLAND
				SQ YDS.
218+29	218+41	SECTION 2 ON LT.	B-2	27
TOTAL:				27

ACHM PATCHING OF EXISTING ROADWAY

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

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

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
104+00	105+00	BEGINNING SECTION 1	22	244.44
116+30	117+00	ENDING SECTION 1	22	171.11
205+00	206+00	BEGINNING SECTION 2	22	244.44
234+00	235+05	ENDING SECTION 2	22	256.67
55+50	56+50	ENDING HWY. 128	20	222.22
309+35	310+35	BEGINNING SECTION 3	22	244.44
317+95	319+00	ENDING SECTION 3	22	256.67
TOTAL:				1639.99

NOTE: AVERAGE MILLING DEPTH 1".

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	25	50
TOTALS:	25	50

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

R061259.DGN 5/16/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
2-1-12				6	ARK.			
				JOB NO.		061259	34	157

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
2-1-12

STRUCTURES

STATION	DESCRIPTION	REINF. CONC. PIPE CULVERT (CLASS III)	CROSS DRAIN PIPE ALTERNATES			PIPE CULVERT STORM DRAIN ALTERNATES			FLARED END SECTIONS FOR R.C. PIPE CULV'TS.	FLARED END SECTIONS PIPE CULVERTS				SAFETY END SECTIONS	TEMPORARY PIPE CULVERTS	DROP INLETS TYPE		SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL. EXC. FOR STR.-ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.
		24"	24"	30"	51"x31"	18"	24"	36"X23"	24"	24"	30"	36"X23"	51"x31"	18"	18"	ST	TM									
			LIN. FT.							EACH					LIN. FT.	EACH			LIN. FT.			CU.YD.	POUND	CU.YD.	SQ.YD.	M.GAL	
104+50	CONST. D.I. LT. W/ PIPE OUTLET & F.E.S. RT.						44			1							1									FPC-9D, FES-1, FES-2, PCC-1, PCM-1
109+13	DBL. PIPE CULVERT W/ F.E.S. LT. & RT.				172								2													FES-1, FES-2, PCC-1, PCM-1
114+54	EXTEND PIPE 16' RT. W/ F.E.S. LT. & RT.	40							2																	FES-1, FES-2, PCC-1, PCM-1
209+38	EXTEND R.C.BOX 13' LT. & 18' RT. W/3:1 WINGS (30^ R.F.S.)																	12	4	35.5	54.96	6876	27	20	0.25	W-X30, W-X303-1, RCB-1, RCB-2, RCB-3 SPEC. DET. (SH. NO. 6A)
216+00	CONST. DBL. PIPE CULVERT W/ F.E.S. LT. & RT.			152							4															FES-1, FES-2, PCC-1, PCM-1
219+50	CONST. PIPE CULVERT W/ F.E.S. LT. & RT.		86							2																FES-1, FES-2, PCC-1, PCM-1
225+50	CONST. PIPE CULVERT W/ F.E.S. LT. & RT.		80							4																FES-1, FES-2, PCC-1, PCM-1
227+30	CONST. DBL. R.C. BOX W/ 3:1 WINGS (45^ L.F.S.)																	6	4	110.5	110.93	17903	57	20	0.25	W-X45, W-X453-1, R-245X-01, RCB-1, RCB-2
313+32	EXTEND R.C.BOX 26' LT. & 26' RT. W/ 3:1 WINGS																	5	5	56.5	36.59	3900	24	16	0.20	W-X003-1, R-100X-0, RCB-1, RCB-2, RCB-3
316+00	D.I. ON LT. W/ ARCH PIPE OUTLET							49				1				1										FPC-9S, FES-1, FES-2, PCC-1, PCM-1
316+60	D.I. ON LT. W/ ARCH PIPE OUTLET							54								1										FPC-9S, FES-1, FES-2, PCC-1, PCM-1
317+00	D.I. ON LT. W/ ARCH PIPE OUTLET							38								1										FPC-9S, FES-1, FES-2, PCC-1, PCM-1
317+45	D.I. ON LT. W/ ARCH PIPE OUTLET							41								1										FPC-9S, FES-1, FES-2, PCC-1, PCM-1
317+95	D.I. ON LT. W/ ARCH PIPE OUTLET							45								1										FPC-9S, FES-1, FES-2, PCC-1, PCM-1
318+40	D.I. ON LT. W/ ARCH PIPE OUTLET							43								1										FPC-9S, FES-1, FES-2, PCC-1, PCM-1
319+00	D.I. ON LT. W/ ARCH PIPE INLET W/ S.E.S. & PIPE OUTLET					62		66						1		1										FPC-9S, FES-1, FES-2, PCC-1, PCM-1
52+50	CONST. DBL. PIPE CULVERT W/ F.E.S. LT. & RT.			148							4															FES-1, FES-2, PCC-1, PCM-1
13+50	INSTALL TEMPORARY PIPE CULVERT														56											PCC-1, PCM-1
215+25	INSTALL DBL. PIPE CULVERTS ON LT.			140																						
TOTALS:		40	166	440	172	62	44	336	2	7	8	1	2	1	56	7	1				202.48	28679	108	56	0.70	

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.

DRIVEWAYS & TURNOUTS

STATION	SIDE	WIDTH	PORTLAND CEMENT CONCRETE DRIVEWAY	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS			
							18"	24"	36"	21"X15"
		FEET	SQ. YD.	SQ. YD.	TON	TON	LIN. FT.			
108+40	LT.	20		30.1	3.3	28.3		40		
109+75	RT.	16		24.7	2.7	24.1	28			
110+10	RT.	16		24.7	2.7	25.1	28			
112+37	LT.						60			
113+69	RT.	16		24.7	2.7	36.6	32			
206+69	LT.	16		67.4	7.4	27.5		28		
207+59	LT.	18		27.4	3.0	28.2		28		
208+26	RT.	16		24.7	2.7	26.6		28		
211+00	LT.	20		83.4	9.2	34.1	32			
213+25	RT.	16		24.7	2.7	62.6	32			
213+62	LT.	24		35.4	3.9	66.5	32			
215+26	LT.	16		24.7	2.7	64.1				28
215+61	RT.	16		24.7	2.7	29.6	30			
226+71	LT.	16		24.7	2.7	42.6	38			
228+85	LT.	20		30.1	3.3	29.3				30
230+14	LT.	30	146.70							
231+41	LT.	16		24.7	2.7	44.6		36		
232+41	RT.	16		24.7	2.7	27.1		46		
232+55	LT.	16		24.7	2.7	35.6				
314+50	LT.								78	
315+68	LT.	24		88.7	9.8	36.2				
315+68	RT.	16		24.7	2.7	21.6	28			
316+30	LT.	32		102.9	11.3	42.0				
51+46	LT.	16		24.7	2.7	66.1	34			
50+98	RT.	16		24.7	2.7	120.1		68		
43+85	RT.	40		56.7	6.2	173.2				
* ENTIRE PROJECT TEMPORARY DRIVES						350.0				
TOTALS:			146.70		95.2	1441.7	374	274	78	58

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

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

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

SELECTED PIPE BEDDING & BACKFILL

LOCATION	SELECTED PIPE BEDDING	SELECTED PIPE BACKFILL
	CU.YD.	
ENTIRE PROJECT TO BE USED IF		
AND WHERE DIRECTED BY THE	160	320
ENGINEER		
TOTALS:	150	300

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

RUMBLE STRIPS IN ASPHALT SHOULDERS

STATION	STATION	LOCATION	RUMBLE STRIPS
			LIN. FT.
105+00	116+30	LT. & RT. SHOULDERS	2260
206+00	234+00	LT. & RT. SHOULDERS	5600
310+35	317+95	LT. & RT. SHOULDERS	1520
TOTAL:			9380

DUMPED RIPRAP

STATION	STATION	LOCATION	DUMPED RIPRAP	FILTER BLANKET
			CU. YD.	SQ. YD.
ENTIRE	PROJECT	TO BE USED IF AND WHERE	50	100
		DIRECTED BY THE ENGINEER		
TOTALS:			50	100

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

R061259.DGN 5/16/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	35	157

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2") 1540 LBS./SQ. YD. FOR NOTCH			ACHM SURFACE COURSE (1/2")			
				TON / STATION	TON	TOTAL WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ. YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22
			FEET			FEET				FEET			TON	FEET		TON	FEET			TON
104+00	105+00	SECTION 1 - TRANSITION	100.00	153.00	153.0	23.00	255.6	0.03	7.7					2.0	22.2	17.1	35.00	388.9	220.0	42.8
105+00	107+70	SECTION 1 - NOTCH AND WIDEN	270.00	181.00	488.7	24.00	720.0	0.03	21.6					2.0	60.0	46.2	40.00	1200.0	220.0	132.0
107+70	111+00	SECTION 1 - NOTCH AND WIDEN - TAPER	330.00	247.00	815.1	65.00	2383.3	0.03	71.5	17.67	647.9	660.0	213.8				63.33	2322.1	220.0	255.4
111+00	113+00	SECTION 1 - NOTCH AND WIDEN	200.00	305.50	611.0	101.00	2244.4	0.03	67.3	32.67	726.0	660.0	239.6				84.33	1874.0	220.0	206.1
113+00	116+30	SECTION 1 - NOTCH AND WIDEN - TAPER	330.00	247.00	815.1	65.00	2383.3	0.03	71.5	17.67	647.9	660.0	213.8				63.33	2322.1	220.0	255.4
116+30	117+00	SECTION 1 - TRANSITION	70.00	153.00	107.1	23.00	178.9	0.03	5.4					2.0	15.6	12.0	35.00	272.2	220.0	29.9
205+00	206+00	SECTION 2 - TRANSITION	100.00	153.00	153.0	23.00	255.6	0.03	7.7					2.0	22.2	17.1	35.00	388.9	220.0	42.8
206+00	208+00	SECTION 2 - NOTCH AND WIDEN	200.00	181.00	362.0	24.00	533.3	0.03	16.0					2.0	44.4	34.2	40.00	888.9	220.0	97.8
208+00	211+25	SECTION 2 - NOTCH AND WIDEN	325.00	231.50	752.4	51.00	1841.7	0.03	55.3	13.67	493.6	660.0	162.9				53.33	1925.8	220.0	211.8
211+10	217+70	SECTION 2 - FULL DEPTH - TAPER	660.00	297.75	1965.2	60.83	4460.9	0.03	133.8	30.58	2242.5	660.0	740.0				76.25	5591.7	220.0	615.1
217+70	219+30	SECTION 2 - FULL DEPTH - 3 LANES	160.00	321.00	513.6	72.83	1294.8	0.03	38.8	36.58	650.3	660.0	214.6				88.25	1568.9	220.0	172.6
219+30	225+90	SECTION 2 - FULL DEPTH - TAPER	660.00	297.75	1965.2	60.83	4460.9	0.03	133.8	30.58	2242.5	660.0	740.0				76.25	5591.7	220.0	615.1
225+90	228+00	SECTION 2 - FULL DEPTH	210.00	274.25	575.9	48.83	1139.4	0.03	34.2	24.58	573.5	660.0	189.3				64.25	1499.2	220.0	164.9
228+00	229+00	SECTION 2 - NOTCH AND WIDEN	100.00	231.50	231.5	51.00	566.7	0.03	17.0	13.67	151.9	660.0	50.1				53.33	592.6	220.0	65.2
229+00	231+00	SECTION 2 - FULL DEPTH	200.00	274.50	549.0	72.83	1618.4	0.03	48.6	24.58	546.2	660.0	180.2				64.25	1427.8	220.0	157.1
231+00	234+00	SECTION 2 - NOTCH AND WIDEN	300.00	231.50	694.5	51.00	1700.0	0.03	51.0	13.67	455.7	660.0	150.4				53.33	1777.7	220.0	195.5
234+00	235+00	SECTION 2 - TRANSITION	100.00	153.00	153.0	23.00	255.6	0.03	7.7					2.0	22.2	17.1	35.00	388.9	220.0	42.8
309+35	310+35	SECTION 3 - TRANSITION	100.00	153.00	153.0	23.00	255.6	0.03	7.7					2.0	22.2	17.1	35.00	388.9	220.0	42.8
310+35	313+65	SECTION 3 - NOTCH AND WIDEN - TAPER	330.00	212.25	700.4	47.00	1723.3	0.03	51.7	8.67	317.9	660.0	104.9				54.33	1992.1	220.0	219.1
313+65	314+65	SECTION 3 - NOTCH AND WIDEN	100.00	235.50	235.5	65.00	722.2	0.03	21.7	14.67	163.0	660.0	53.8				66.33	737.0	220.0	81.1
314+65	317+95	SECTION 3 - NOTCH AND WIDEN - TAPER	330.00	212.25	700.4	47.00	1723.3	0.03	51.7	8.67	317.9	660.0	104.9				54.33	1992.1	220.0	219.1
317+95	319+00	SECTION - 3 TRANSITION	105.00	153.00	160.7	23.00	268.3	0.03	8.0					2.0	23.3	17.9	35.00	408.3	220.0	44.9
50+12	51+00	HWY. 128 - RADIUS	88.00		214.2		1836.0	0.03	55.1		612.0	660.0	202.0					1224.0	220.0	134.6
51+00	54+00	Hwy. 128 - FULL DEPTH	300.00	274.25	822.8	72.83	2427.7	0.03	72.8	24.58	819.3	660.0	270.4				64.25	2141.7	220.0	235.6
54+00	55+50	HWY. 128 - NOTCH AND WIDEN	150.00	181.00	271.5	24.00	400.0	0.03	12.0					2.0	33.3	25.6	40.00	666.7	220.0	73.3
55+50	56+50	HWY. 128 - TRANSITION	100.00	153.00	153.0	23.00	255.6	0.03	7.7					2.0	22.2	17.1	35.00	388.9	220.0	42.8
0+18	0+50	DANVILLE RD. - RADIUS	32.00		63.2													154.8	220.0	17.0
0+50	1+00	DANVILLE RD. - FULL DEPTH	50.00	163.50	81.8												32.00	177.8	220.0	19.6
1+00	1+50	DANVILLE RD. - TRANSITION	50.00	150.25	75.1												29.00	161.1	220.0	17.7
40+12	41+00	HILLVALE GARDEN TRAIL - RADIUS	88.00		150.0													367.8	220.0	40.5
41+00	44+00	HILLVALE GARDEN TRAIN - FULL DEPTH	300.00	163.50	490.5												30.00	1000.0	220.0	110.0
13+00	17+00	DETOUR 1 - FULL DEPTH	400.00	147.50	590.0	52.58	2336.9	0.03	70.1	26.58	1181.3	440.0	259.9				26.00	1155.6	220.0	127.1
17+00	18+58	DETOUR 1 - NOTCH AND WIDEN	158.00	88.50	139.8	26.00	456.4	0.03	13.7	11.58	203.3	440.0	44.7				26.00	456.4	220.0	50.2
20+00	21+50	DETOUR 2 - NOTCH AND WIDEN	150.00	88.50	132.8	26.00	433.3	0.03	13.0	11.58	193.0	440.0	42.5				26.00	433.3	220.0	47.7
21+00	25+50	DETOUR 2 - FULL DEPTH	450.00	147.50	663.8	52.58	2629.0	0.03	78.9	26.58	1329.0	440.0	292.4				26.00	1300.0	220.0	143.0
25+50	27+50	DETOUR 2 - NOTCH AND WIDEN	200.00	88.50	177.0	26.00	577.8	0.03	17.3	11.58	257.3	440.0	56.6				26.00	577.8	220.0	63.6
ADDITIONAL FORSUPERELEVATION																				
105+13	116+39	SECTION 1	1126.0		1157.0															
205+03	215+11	SECTION 2	1008.0		372.0															
215+11	229+77	SECTION 2	1466.0		1742.0															
229+77	235+04	SECTION 2	527.0		365.0															
51+10	55+11	HWY. 128	401.0		155.0															
ADDITIONAL OF LEVELING AND GRADE RAISE																				
105+00	116+30	SECTION 1 - MAIN LANES	1130.0			22.0	2762.2	0.10	276.2								VAR.	VAR.	VAR.	1100.0
0+18	1+50	SECTION 1- DANVILLE RD.	132.0			22.0	322.7	0.10	32.3								VAR.	VAR.	VAR.	105.0
206+00	235+00	SECTION 2 - MAIN LANES	2900.0			22.0	2200.0	0.10	220.0								VAR.	VAR.	VAR.	600.0
50+12	55+50	SECTION 2 - HWY. 128 CONNECTION	538.0			22.0	367.0	0.10	36.7								VAR.	VAR.	VAR.	50.0
310+35	317+95	SECTION 3 - MAIN LANES	760.0			22.0	1857.8	0.10	185.8								VAR.	VAR.	VAR.	405.0
TOTALS:					**20671.8**				**2021.3**				**4526.8**			**221.4**				**7292.0**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.4% MIN. AGGR.....4.6% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

R061259.DGN 5/16/2011

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		45	STATION
201	GRUBBING		45	STATION
202	REMOVAL AND DISPOSAL OF CURB		145	LIN. FT.
202	REMOVAL AND DISPOSAL OF WATER WELL		2	EACH
202	REMOVAL AND DISPOSAL OF FENCE		4142	LIN. FT.
202	REMOVAL AND DISPOSAL OF GATES		3	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS		288	SQ. YD.
202	REMOVAL AND DISPOSAL OF STEPS		40	SQ. YD.
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS		3	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		20	EACH
202	REMOVAL AND DISPOSAL OF BOX CULVERTS		1	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE DRAIN		7	SQ. YD.
202	REMOVAL AND DISPOSAL OF LUMINAIRE POLE AND FOUNDATION		1	EACH
202	REMOVAL AND DISPOSAL OF BUILDINGS		1	EACH
202	REMOVAL AND DISPOSAL OF STORM CELLAR		2	EACH
202	REMOVAL AND DISPOSAL OF CATTLE GUARD		1	EACH
202	REMOVAL AND DISPOSAL OF SIGNS		9	EACH
202	REMOVAL AND DISPOSAL OF SEPTIC SYSTEM		1	EACH
206	FLOWABLE SELECT MATERIAL		50	CU. YD.
210	UNCLASSIFIED EXCAVATION		87452	CU. YD.
210	COMPACTED EMBANKMENT		38890	CU. YD.
SP & 210	SOIL STABILIZATION		200	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)		22114	TON
401	TACK COAT		2071	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		4319	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		208	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		7191	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		418	TON
412	COLD MILLING ASPHALT PAVEMENT		1640	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		25	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY		25	TON
505	PORTLAND CEMENT CONCRETE DRIVEWAY		146.70	SQ. YD.
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
SS & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
603	18" TEMPORARY CULVERT		56	LIN. FT.
SS & 604	SIGNS		622	SQ. FT.
SS & 604	BARRICADES		72	LIN. FT.
SS & 604	TRAFFIC DRUMS		155	EACH
SS & 604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		340	LIN. FT.
SS & 604	RELOCATING PRECAST CONCRETE BARRIER		230	LIN. FT.
SS & 604	CONSTRUCTION PAVEMENT MARKINGS		39430	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		16390	LIN. FT.
SS & 604	VERTICAL PANELS		36	EACH
605	CONCRETE DITCH PAVING (TYPE B)		661	SQ. YD.
* SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	62	LIN. FT.
* 606	18" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	62	LIN. FT.
* SP & 606	18" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 3)	62	LIN. FT.
* SP & 606	18" PVC PIPE	(ALTERNATE NO. 4)	62	LIN. FT.
SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		40	LIN. FT.
* SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	166	LIN. FT.
* 606	24" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 2)	166	LIN. FT.
* 606	24" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 3)	166	LIN. FT.
* 606	24" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 4)	166	LIN. FT.
* SP & 606	24" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 5)	166	LIN. FT.
* SP & 606	24" PVC PIPE	(ALTERNATE NO. 6)	166	LIN. FT.
* SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	44	LIN. FT.
* 606	24" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	44	LIN. FT.
* SP & 606	24" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 3)	44	LIN. FT.
* SP & 606	24" PVC PIPE	(ALTERNATE NO. 4)	44	LIN. FT.
* SS & 606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	440	LIN. FT.
* 606	30" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 2)	440	LIN. FT.
* 606	30" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 3)	440	LIN. FT.
* 606	30" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (16 GAUGE)	(ALTERNATE NO. 4)	440	LIN. FT.
* SP & 606	30" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 5)	440	LIN. FT.
* SP & 606	30" PVC PIPE	(ALTERNATE NO. 6)	440	LIN. FT.
* SS & 606	36" X 23" REINFORCED CONCRETE ARCH PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	336	LIN. FT.
* 606	35" X 24" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL ARCH PIPE	(ALTERNATE NO. 2)	336	LIN. FT.
* SS & 606	51" X 31" REINFORCED CONCRETE ARCH PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	172	LIN. FT.
* 606	49" X 33" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL ARCH PIPE	(ALTERNATE NO. 2)	172	LIN. FT.
SS & 606	18" SIDE DRAIN		374	LIN. FT.
SS & 606	24" SIDE DRAIN		274	LIN. FT.
SS & 606	36" SIDE DRAIN		78	LIN. FT.
SS & 606	21" X 15" SIDE DRAIN		58	LIN. FT.
606	18" SAFETY END SECTIONS FOR CROSS DRAIN PIPE CULVERTS (CLASS 1)		1	EACH
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		2	EACH
* 606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	(ALTERNATE NO. 1)	7	EACH
* 606	24" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS	(ALTERNATE NO. 2)	7	EACH
* 606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	(ALTERNATE NO. 1)	8	EACH
* 606	30" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS	(ALTERNATE NO. 2)	8	EACH
* 606	36" X 23" FLARED END SECTIONS FOR REINFORCED CONCRETE ARCH PIPE CULVERTS	(ALTERNATE NO. 1)	1	EACH
* 606	35" X 24" FLARED END SECTIONS FOR CORRUGATED STEEL ARCH PIPE CULVERT	(ALTERNATE NO. 2)	1	EACH
* 606	51" X 31" FLARED END SECTIONS FOR REINFORCED CONCRETE ARCH PIPE CULVERTS	(ALTERNATE NO. 1)	2	EACH
* 606	49" X 33" FLARED END SECTIONS FOR CORRUGATED STEEL ARCH PIPE CULVERTS	(ALTERNATE NO. 2)	2	EACH
606	SELECTED PIPE BEDDING		150	CU. YD.
606	SELECTED PIPE BACKFILL		300	CU. YD.
609	DROP INLETS (TYPE ST)		7	EACH
609	DROP INLETS (TYPE TM)		1	EACH
611	UNDERDRAIN OUTLET PROTECTORS		36	EACH
611	4" PIPE UNDERDRAINS		6235	LIN. FT.
615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)		24.4	CU. YD.
619	WIRE FENCE (TYPE C)		1795	LIN. FT.
619	WIRE FENCE (TYPE D)		953	LIN. FT.
619	WIRE FENCE (TYPE D-1)		335	LIN. FT.
* 619	4' STEEL CHAIN LINK FENCE	(ALTERNATE NO. 1)	347	LIN. FT.
* 619	4' ALUMINUM CHAIN LINK FENCE	(ALTERNATE NO. 2)	347	LIN. FT.
* 619	6' STEEL CHAIN LINK FENCE	(ALTERNATE NO. 1)	170	LIN. FT.
* 619	6' ALUMINUM CHAIN LINK FENCE	(ALTERNATE NO. 2)	170	LIN. FT.
* 619	16' STEEL GATES	(ALTERNATE NO. 1)	2	EACH
* 619	16' ALUMINUM GATES	(ALTERNATE NO. 2)	2	EACH
620	LIME		16	TON
620	SEEDING		7.88	ACRE
620	MULCH COVER		20.56	ACRE
SS & 620	WATER		1068.7	M.GAL.
621	TEMPORARY SEEDING		12.68	ACRE
621	SILT FENCE		2535	LIN. FT.
621	SAND BAG DITCH CHECKS		100	BAG
621	DROP INLET SILT FENCE		200	LIN. FT.
621	SEDIMENT BASIN		105	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN		105	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL		220	CU. YD.
621	ROCK DITCH CHECKS		215	CU. YD.
623	SECOND SEEDING APPLICATION		7.88	ACRE
624	SOLID SODDING		491	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)		1407	SQ. YD.
632	CONCRETE ISLAND		27	SQ. YD.
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE B-1) (1' 6")		500	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
637	MAILBOXES		35	EACH
637	MAILBOX SUPPORTS (SINGLE)		25	EACH
637	MAILBOX SUPPORTS (DOUBLE)		5	EACH
642	RUMBLE STRIPS IN ASPHALT SHOULDERS		9380	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")		11836	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")		14994	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING (WORDS)		3	EACH
SS & 719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)		6	EACH
721	RAISED PAVEMENT MARKERS (TYPE II)		134	EACH
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		108	CU. YD.
802	CLASS S CONCRETE-ROADWAY		202.48	CU. YD.
SS&804	REINFORCING STEEL-ROADWAY (GRADE 60)		28679	POUND
SP	TEMPORARY IMPACT ATTENUATION BARRIER		1	EACH
SP	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)		1	EACH
816	FILTER BLANKET		100	SQ. YD.
816	DUMPED RIPRAP		50	CU. YD.

*ALTERNATE BID ITEMS

REVISION BOX

DATE	REVISION	SHEET NUMBER
1/19/2012	ADDED SPECIAL PROVISION "NESTING SITES OF MIGRATORY BIRDS"	2,36
2/1/2012	REVISED QUANTITIES FOR R.C. BOX CULVERT, FURN. & INSTALLING PRECAST CONC. BARR., RELOCATING PRECAST	2,6A,20,22,31,32,34,36,
	CONC. BARR. AND PVMT. REPAIR OVER CULVERTS (CONC.), ADDED QUANTITIES FOR TEMP. IMPACT ATTEN. BARR.	46,89, 108
	TEMP. IMPACT ATTEN. BARR. (REPAIR), ADDED SPECIAL DETAIL FOR R.C. BOX CULVERT, REMOVED SHEET 89	

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7606
TIMOTHY R. RUGETT
2-1-12

DATE REVISED	DATE PLANS	DATE REVISED	DATE PLANS
2-1-12			
1-19-12			

(2) SUMMARY OF QUANTITIES & REVISIONS

FED.ROAD DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.	061259	36	157

JOB NO.

SURVEY CONTROL COORDINATES

MID JOB LATITUDE: N34-36-16
LONGITUDE: W092-55-41

Project Name: s061259
Date: 9/3/2009
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	2014033.4423	1022133.4131	524.96	CTL	5/8" REBAR W/ 2" ALUM CAP
2	2015118.9623	1022994.3805	519.36	CTL	REBAR & CAP T-2
3	2016139.0903	1023644.4460	519.45	CTL	REBAR & CAP T-3
4	2016377.7281	1024027.3750	525.62	CTL	REBAR & CAP T-4
5	2016449.2543	1024705.2996	521.14	CTL	REBAR & CAP T-5
6	2016768.9074	1025349.1362	514.68	CTL	REBAR & CAP T-6
7	2016960.6897	1025796.4427	509.66	CTL	5/8" REBAR W/ 2" ALUM CAP
8	2017004.8865	1026562.0135	500.93	CTL	5/8" REBAR W/ 2" ALUM CAP
9	2017062.8254	1027192.6404	502.63	CTL	5/8" REBAR W/ 2" ALUM CAP
10	2017025.6745	1028006.7818	505.32	CTL	5/8" REBAR W/ 2" ALUM CAP
11	2017087.1200	1028762.5579	516.36	CTL	5/8" REBAR W/ 2" ALUM CAP
12	2017268.9347	1029550.4195	499.44	CTL	5/8" REBAR W/ 2" ALUM CAP
13	2017373.8550	1030346.6037	494.22	CTL	5/8" REBAR W/ 2" ALUM CAP
14	2017534.2978	1030919.2808	493.82	CTL	5/8" REBAR W/ 2" ALUM CAP
15	2017897.7266	1031367.0864	495.54	CTL	5/8" REBAR W/ 2" ALUM CAP
16	2018246.6655	1032073.2256	491.39	CTL	5/8" REBAR W/ 2" ALUM CAP
17	2018700.9092	1032817.8037	488.20	CTL	5/8" REBAR W/ 2" ALUM CAP
18	2019347.5237	1034186.2563	481.67	CTL	5/8" REBAR W/ 2" ALUM CAP
19	2019978.2562	1033912.7539	503.07	CTL	5/8" REBAR W/ 2" ALUM CAP
20	2020740.4465	1033943.0293	527.52	CTL	5/8" REBAR W/ 2" ALUM CAP
21	2021133.3962	1034229.5205	543.74	CTL	5/8" REBAR W/ 2" ALUM CAP
22	2021537.2211	1034880.4600	546.97	CTL	5/8" REBAR W/ 2" ALUM CAP
23	2022012.8702	1035256.6386	534.73	CTL	5/8" REBAR W/ 2" ALUM CAP
24	2022874.6094	1035809.2668	482.40	CTL	5/8" REBAR W/ 2" ALUM CAP
25	2023110.5078	1036557.1349	470.39	CTL	5/8" REBAR W/ 2" ALUM CAP
26	2023250.7870	1037308.2805	475.35	CTL	5/8" REBAR W/ 2" ALUM CAP
27	2023448.5486	1037956.3886	485.51	CTL	5/8" REBAR W/ 2" ALUM CAP
28	2023471.5032	1038685.6676	481.59	CTL	5/8" REBAR W/ 2" ALUM CAP
29	2023291.3654	1039880.5181	463.56	CTL	5/8" REBAR W/ 2" ALUM CAP
30	2023026.0191	1040981.4931	459.09	CTL	5/8" REBAR W/ 2" ALUM CAP
31	2022858.9494	1041491.7829	455.43	CTL	5/8" REBAR W/ 2" ALUM CAP
32	2022602.1710	1041979.1069	450.55	CTL	5/8" REBAR W/ 2" ALUM CAP
33	2022411.4076	1042808.6950	446.89	CTL	5/8" REBAR W/ 2" ALUM CAP
34	2022355.0120	1043533.4946	446.19	CTL	5/8" REBAR W/ 2" ALUM CAP
35	2018948.2116	1033425.6354	486.82	CTL	BRASS CAP SET IN CONC. W 104 1935 ON SOUTH SIDE OF ROAD
100	2014621.1021	1022706.1412	521.87	GPS	REBAR & CAP GPS-260023
101	2015686.1757	1023294.2327	520.91	GPS	REBAR & CAP GPS-260023A
102	2017999.2850	1031631.6479	494.24	GPS	AHTD GPS 260024A
103	2018868.6868	1033090.2053	487.40	GPS	AHTD GPS 260024
104	2023368.4150	1039115.6793	486.21	GPS	AHTD GPS 260025A
105	2023177.6386	1040668.5628	479.49	GPS	AHTD GPS 260025
900	2014514.2320	1022610.9470	524.64	TBM	CHISELED SQUARE CENTER OF SOUTH CONC. BR RAIL
901	2015328.6185	1023112.0397	517.71	TBM	CHISELED SQUARE CENTER OF HW SOUTH SIDE OF ROAD
902	2016086.6689	1023552.4092	519.81	TBM	CHISELED SQUARE NORTH SIDE OF ROAD IN CENTER OF CONC
903	2016344.2554	1024040.9079	521.34	TBM	CHISELED SQUARE CENTER OF HW SOUTH SIDE OF ROAD IN FRONT OF YELLOW 1-S-F
904	2016433.0520	1024635.5800	519.07	TBM	CHISELED SQUARE EAST END OF HW ON SOUTH SIDE OF ROAD A SMALL POND
905	2016735.3651	1025287.1917	515.13	TBM	CHISELED SQUARE SOUTH SIDE OF RD SET IN CENTER OF HW ACROSS FROM HAIR SALON
906	2016921.3744	1025761.0941	509.84	TBM	CHISELED SQUARE CENTER OF HW ON SOUTH SIDE OF ROAD RT OF CL
907	2016936.5571	1025886.8039	524.25	BM	USGS MARK 523 HALF OF BRASS CAP ON 3-1/2" STEEL POST FOUND IN WOODS
908	2017048.0414	1026987.3661	498.81	TBM	CHISELED SQUARE SET IN CENTER OF HW ON SOUTH SIDE OF ROAD
909	2017046.6175	1027606.3986	502.18	TBM	CHISELED SQUARE IN CENTER OF HW ON SOUTH SIDE OF ROAD ACROSS FROM BRYANTS CABINETS
910	2017058.5207	1028012.2778	503.77	TBM	CHISELED SQUARE CENTER OF HW ON NORTH SIDE OF ROAD HAND LAID ROCK WING WALLS
911	2017165.3814	1029207.9037	505.96	TBM	CHISELED SQUARE IN CENTER OF HW ON SOUTH SIDE OF ROAD ACROSS FROM 1-S-F & ROCK
912	2017254.5973	1029684.4756	495.76	TBM	CHISELED SQUARE CENTER OF HW ON SOUTH SIDE OF ROAD ACROSS ROAD FROM BLOCK WR
913	2017573.3189	1030975.8789	491.86	TBM	CHISELED SQUARE IN CENTER OF HW ON SOUTH SIDE OF ROAD
914	2018632.1797	1032767.4822	487.34	TBM	CHISELED SQUARE CENTER OF HW SOUTH SIDE OF ROAD APPROX 500' W OF JNCTN128
916	2018391.2918	1034644.8197	478.56	TBM	AHTD CAP SET IN BR ABUTMENT ON NW CORNER OF BR ON HWY 128 LOG MILE 8.45 SEC 11
917	2021118.6565	1034284.4692	541.25	TBM	CHISELED SQUARE CENTER OF HW SOUTH SIDE OF ROAD
918	2022878.3664	1035826.7761	481.84	TBM	CHISELED SQUARE CENTER OF HW NORTH SIDE OF ROAD FRONT OF HUDDLESTON STORAGE
919	2023174.1913	1036981.6680	475.04	TBM	ALUMINUM CAP SET IN SW CORNER OF BR LOG MILE 5.01 SEC 6
920	2023441.0081	1038427.1990	475.12	TBM	CHISELED SQUARE CENTER OF HW SOUTH SIDE OF ROAD
921	2023286.8750	1039691.0013	463.74	TBM	CHISELED SQUARE CENTER OF HW SOUTH SIDE OF ROAD
922	2023264.9841	1040808.8255	457.92	TBM	CHISELED SQUARE CENTER OF HW SOUTH SIDE OF ROAD
923	2022807.6995	1041511.2002	452.45	TBM	CHISELED SQUARE CENTER OF HW SOUTH SIDE OF ROAD
924	2022487.2819	1042386.7867	445.89	TBM	CHISELED SQUARE CENTER OF HW SOUTH SIDE OF ROAD
925	2022357.2909	1043674.0509	449.68	TBM	ALUMINUM AHTD CAP SW CORNER OF BR LOG MILE 6.32 SEC 6
926	2019427.1211	1034174.6422	482.83	TBM	CHISELED SQUARE IN CENTER OF HW E OF INTERSECTION HILLVALE GARDEN TR & HWY 5
927	2012275.4592	1020394.5838	537.36	TBM	ALUM CAP CAP SET IN SE BR ABUTMENT LOG MILE 0.87
928	2010764.0141	1018433.5351	564.83	TBM	CPS IN CP WITH A TRANFORMER
929	2009127.9681	1016568.3688	565.78	TBM	CHISELED SQ TOP CENTER OF HW OVER 3 48" CMP'S JUST S OF INTERSECTION 5& 7
1500	2013428.2358	1023292.0134	520.46	CTL	5/8" REBAR W/ 2" ALUM CAP
1501	2014121.5625	1022545.9553	519.76	CTL	5/8" REBAR W/ 2" ALUM CAP
1502	2015669.1985	1022312.5966	582.83	CTL	5/8" REBAR W/ 2" ALUM CAP
1503	2015753.7061	1023014.4525	549.97	CTL	5/8" REBAR W/ 2" ALUM CAP
1504	2018433.9075	1025537.2052	566.15	CTL	5/8" REBAR W/ 2" ALUM CAP
1505	2017603.3488	1025716.3366	536.01	CTL	5/8" REBAR W/ 2" ALUM CAP
1506	2020491.5307	1035148.1442	536.81	CTL	5/8" REBAR W/ 2" ALUM CAP
1507	2019539.5825	1035134.6930	466.35	CTL	5/8" REBAR W/ 2" ALUM CAP
1508	2021285.5797	1033651.1595	570.19	CTL	5/8" REBAR W/ 2" ALUM CAP
1509	2021279.9349	1034024.8733	552.90	CTL	5/8" REBAR W/ 2" ALUM CAP
1510	2023690.1653	1036790.4820	463.59	CTL	5/8" REBAR W/ 2" ALUM CAP
1511	2023524.3505	1037221.2991	468.06	CTL	5/8" REBAR W/ 2" ALUM CAP
1512	2018474.3280	1034574.5103	478.29	CTL	5/8" REBAR W/ 2" ALUM CAP
1513	2017990.3073	1035312.4855	488.05	CTL	5/8" REBAR W/ 2" ALUM CAP
1514	2023976.0097	1039664.4227	487.81	CTL	5/8" REBAR W/ 2" ALUM CAP
1515	2024366.3015	1039600.8456	497.04	CTL	5/8" REBAR W/ 2" ALUM CAP
1516	2023003.5144	1041495.4023	487.63	CTL	5/8" REBAR W/ 2" ALUM CAP

*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).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.9999346105 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 S061259GI.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: 260025 - 260025A
CONVERGENCE ANGLE: 0-30-30.11 LEFT AT POINT 104
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

R061259.DGN 3/15/2011

CENTERLINE CONSTRUCTION SECTION 1

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	100+00.00	2015316.9174	1023084.9660
8001	PI	106+37.03	2015855.8450	1023424.6187
8002	PC	107+75.10	2015972.0221	1023499.2211
8004	PT	115+74.84	2016373.4228	1024159.3538
8005	PC	117+04.03	2016385.3800	1024287.9904
8007	PT	119+93.86	2016435.7529	1024573.0781
8008	PC	122+14.58	2016491.8755	1024786.5483
8010	PT	124+25.49	2016572.8002	1024980.5852
8011	POE	127+00.00	2016712.3234	1025216.9961

CENTERLINE CONSTRUCTION DANVILLE ROAD

POINT NO.	TYPE	STATION	NORTHING	EASTING
8060	POB	0+00.00	2016278.2809	1023835.2115
8061	PC	0+45.97	2016319.6478	1023815.1722
8063	PT	1+30.17	2016401.5362	1023800.9566
8064	PC	2+03.11	2016474.0533	1023808.7708
8066	PT	4+14.92	2016680.1552	1023773.4079
8067	POE	4+63.23	2016723.7131	1023752.5175

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.		061259	37	157

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

CENTERLINE CONSTRUCTION SECTION 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8020	POB	200+00.00	2018190.5840	1031930.2985
8021	PC	207+27.52	2018542.8400	1032566.8531
8023	PT	213+94.68	2018813.3812	1033175.7699
8024	PC	216+25.71	2018888.4133	1033394.2756
8026	PT	228+36.64	2019839.6317	1033981.6000
8027	PC	231+15.94	2020116.4386	1033944.3605
8029	PT	234+31.94	2020431.6734	1033928.2698
8030	PC	235+49.81	2020549.4760	1033932.0091
8032	PT	242+18.97	2021115.9371	1034240.6576
8033	PC	249+56.65	2021535.3366	1034847.5095
8035	PT	252+16.07	2021717.8584	1035029.8680
8036	POE	257+01.91	2022117.7822	1035305.7298

CENTERLINE CONSTRUCTION HWY. 128 CONNECTION

POINT NO.	TYPE	STATION	NORTHING	EASTING
8050	POB	50+00.00	2018960.8937	1033552.4678
8051	PC	51+30.52	2018861.3190	1033636.8556
8053	PT	54+89.72	2018675.3357	1033937.2885
8054	PC	57+40.89	2018615.4229	1034181.2113
8056	PT	61+66.94	2018454.2097	1034573.8829
8057	POE	65+92.81	2018235.8784	1034939.5310

CENTERLINE CONSTRUCTION HILLVALE CONNECTION

POINT NO.	TYPE	STATION	NORTHING	EASTING
8080	POB	40+00.00	2019080.4468	1033712.3738
8081	PC	40+15.84	2019069.8729	1033724.1741
8083	PT	41+81.65	2019084.3583	1033870.9164
8084	PC	42+82.70	2019165.2085	1033931.5376
8086	PT	43+33.78	2019200.1212	1033968.4788
8087	POE	44+11.39	2019243.1050	1034033.1052

CENTERLINE CONSTRUCTION DETOUR 1

POINT NO.	TYPE	STATION	NORTHING	EASTING
8100	POB	10+00.00	2018847.5861	1033275.3802
8101	PC	10+28.48	2018856.8356	1033302.3163
8103	PT	16+80.77	2019144.9561	1033885.5377
8087	POE	18+58.00	2019243.1050	1034033.1052

CENTERLINE CONSTRUCTION DETOUR 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8110	POB	20+00.00	2019645.5472	1034111.9287
8111	PC	20+18.99	2019661.1080	1034101.0440
8113	PT	22+28.23	2019851.1064	1034016.4877
8114	PC	25+73.89	2020187.8963	1033938.7014
8116	PT	27+15.06	2020328.0063	1033924.9793
8117	POE	28+86.84	2020499.6954	1033930.4290

CENTERLINE CONSTRUCTION SECTION 3

POINT NO.	TYPE	STATION	NORTHING	EASTING
8040	POB	299+62.64	2023462.7245	1038335.6505
8041	PC	302+98.68	2023453.9110	1038671.5774
8043	PT	304+66.87	2023438.4254	1038838.9213
8044	PC	314+52.21	2023283.0767	1039811.9456
8046	PT	320+92.28	2023164.5702	1040440.8573
8047	POE	325+67.47	2023063.5721	1040905.1921

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.		061259	38	157

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. RUGETT
12-20-11

STA. 105+00 BEGIN
JOB 061259 & SECTION 1

POB 100+00.00

100 PT. NO. 8000

C.L. CONSTRUCTION

N 32°13'14" E
637.03'

105

PT. NO. 8001

N 32°42'23" E
138.07'

PT. NO. 8002

N 32°42'23" E
429.76'

110

P.I. 112+04.86

P.I.= 112+04.86
Δ = 51°58'59.20" RT.
D = 6°30'00.00"
T = 429.76'
L = 799.74'
P.C.= 107+75.10
P.T.= 115+74.84
e = 0.10
Ls = 350'

N 32°30'25" E
1209.65'

SURVEY BASELINE

PT. NO. 2
REBAR & CAP T-2

P.I. 106+37.03

PC 107+75.10

PT. NO. 3
REBAR & CAP T-3

N 20°09'01" E
43.23'

DANVILLE RD.

N25°50'49" W
43.23'

PT. NO. 8061

PC 0+45.97

N 58°04'09" E
451.20'

POB 0+00.00
PT. NO. 8060

N25°50'49" W
43.23'

PT 1+30.17
PT. NO. 8063

N 84°41'22" E
429.76'

PT. NO. 4115
REBAR & CAP T-4

SURVEY BASELINE

C.L. CONSTRUCTION

PT. NO. 8004

N 84°41'22" E
129.19'

PT. NO. 8005

N 83°58'38" E
681.69'

N 84°41'22" E
145.24'

N 75°16'12" E
145.24'

PT. NO. 8007

N 75°16'12" E
220.72'

PT. NO. 8008

N 75°16'12" E
106.13'

PT. NO. 5
REBAR & CAP T-5

N 59°27'07" E
106.13'

PT. NO. 8010

N 59°27'07" E
274.51'

PT. NO. 8011

N 63°

125

P.I. 118+49.27

P.I.= 118+49.27
Δ = 9°25'10.11" LT.
D = 3°15'00.00"
T = 145.24'
L = 289.83'
P.C. 117+04.03
P.T. 119+93.86

PC 117+04.03

PT 119+93.86

20

PC 122+14.58

P.I.= 123+20.71
Δ = 15°49'04.37" LT.
D = 7°30'00.00"
T = 106.13'
L = 210.91'
P.C. 122+14.58
P.T. 124+25.49

PT 124+25.49

POE 127+00.00

P.I. 123+20.71

STA. 0+00.00 C.L. DANVILLE RD. =
STA. 112+34.92 C.L. HWY. 5

PT 115+74.84

STA. 116+30 END
SECTION 1

DANVILLE RD.
P.I.= 0+89.20
Δ = 31°59'49.74" RT.
D = 38°00'00.00"
T = 43.23'
L = 84.20'
P.C. 0+45.97
P.T. 1+30.17
NO SUPER.

P.I. 0+89.20

N25°50'49" W
43.23'

N6°09'01" E
43.23'

PC 2+03.11

PT. NO. 8064

DANVILLE RD.
P.I.= 3+11.81
Δ = 31°46'21.35" LT.
D = 15°00'00.00"
T = 108.71'
L = 211.82'
P.C. 2+03.11
P.T. 4+14.92

PT 4+14.92

PT. NO. 8066

PT. NO. 8067

N6°09'01" E
72.94'

N6°09'01" E
108.71'

N25°37'20" W
108.71'

N25°37'20" W
48.31'

P.I. 13+11.81

STA. 112+34.92 C.L. HWY. 5=
STA. 0+00.00 C.L. DANVILLE RD.
Δ= 90°00'00"

STA. 0+18 BEGIN
DANVILLE RD.

STA. 1+50 END
DANVILLE RD.

SURVEY CONTROL DETAILS
SECTION 1 AND DANVILLE RD.

R061259.DGN 3/15/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	39	157

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

STA. 206+00 BEGIN
SECTION 2

P.I.= 210+61.95
q = 10° 00'26.65" RT.
D = 1° 30'00.00"
T = 334.43'
L = 667.16'
P.C.207+27.52
P.T.213+94.68
e = 0.037
Ls= 300'

P.I.= 223+48.61
q = 78° 42'37.08" LT.
D = 6° 30'00.00"
T = 722.90'
L = 1210.93'
P.C.216+25.71
P.T.228+36.64
e = 0.100
Ls= 350'

HILLVALE CONN.
P.I.= 41+24.98
q = 95° 00'00.00" LT.
D = 57° 17'44.81"
R = 100.00'
T = 109.13'
L = 165.81'
P.C.40+15.84
P.T.41+81.65
NO SUPER.

HILLVALE CONN.
P.I.= 43+08.49
q = 19° 30'33.19" RT.
D = 38° 11'49.87"
R = 150.00'
T = 25.79'
L = 51.08'
P.C.42+82.70
P.T.43+33.78
e = 0.071'/' (MATCH EXIST.)
Ls = 157.00'

STA. 40+12 BEGIN
HILLVALE CONNECTION

STA. 43+50 END
HILLVALE CONNECTION

SURVEY CONTROL DETAILS
SECTION 2 & HILLVALE CONNECTION

R061259.DGN 3/15/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	40	157

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. PUGETT
12-20-11

STA. 234+00 END
SECTION 2

PT. NO. 1509
5/8" REBAR W/ 2" ALUM CAP

P1239+11.06

N 1°49'05" E
361.25'

N 55°21'05" E
361.25'

C.L. CONSTRUCTION

235

240

N 1°49'05" E
117.86'

PT. NO. 8029

P1232+74.30

N 1°49'05" E
158.36'

PT1234+31.94

P0235+49.81

P.I.= 239+11.06
Δ = 53° 32'00.04" RT.
D = 8° 00'00.00"
T = 361.25'
L = 669.17'
P.C.235+49.81
P.T.242+18.97

PT242+18.97

PT. NO. 8032

N 7°39'44" W
158.36'

PT. NO. 8027

230

N 7°39'44" W
279.30'

P0231+15.94

P.I.= 232+74.30
Δ = 9° 28'48.60" RT.
D = 3° 00'00.00"
T = 158.36'
L = 316.01'
P.C.231+15.94
P.T.234+31.94
e = 0.067
Ls= 230'

245

N 55°21'05" E
737.68'

SECTION 2

HWY. 128 CONNECTION

SURVEY BASELINE

PT. NO. 39
BRASS CAP SET IN CONC.

P0850+00.00

N 71°02'53" E
722.90'

HWY. 128
P.I.= 53+16.24
Δ = 35° 55'09.82" LT.
D = 10° 00'00.00"
T = 185.72'
L = 359.19'
P.C.51+30.52
P.T.54+89.72
e = 0.0544
Ls= 200'

PC51+30.52

PT. NO. 8050

S 40°16'50" E
130.52'

PT. NO. 8051

C.L. CONSTRUCTION

PT54+89.72

STA. 55+50 END
HWY. 128 CONNECTION

STA. 50+12 BEGIN
HWY. 128 CONNECTION

S 76°12'00" E
185.72'

55

PT. NO. 8053

S 76°12'00" E
251.17'

PT. NO. 8054

P159+55.50

S 76°12'00" E
214.61'

S 59°09'30" E
214.61'

60

P.I.= 59+55.50
Δ = 17° 02'30.58" RT.
D = 4° 00'00.00"
T = 214.61'
L = 426.05'
P.C.57+40.89
P.T.61+66.94

PT. NO. 8056

PT. NO. 1512
5/8" REBAR W/ 2" ALUM CAP

P153+16.24

PC57+40.89

PT61+66.94

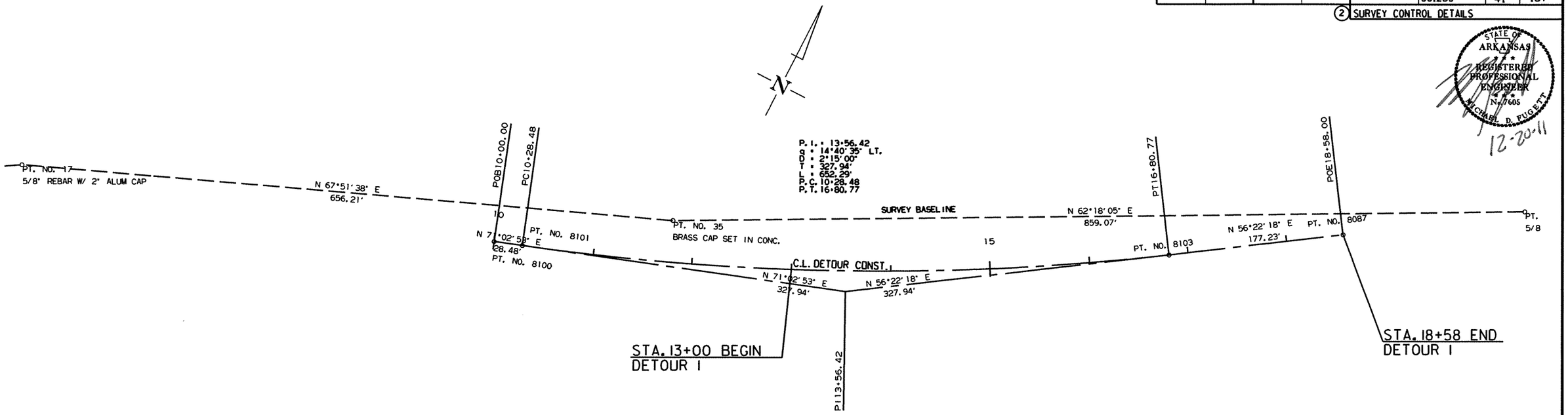
SURVEY CONTROL DETAILS

R061259.DGN 3/15/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	41	157

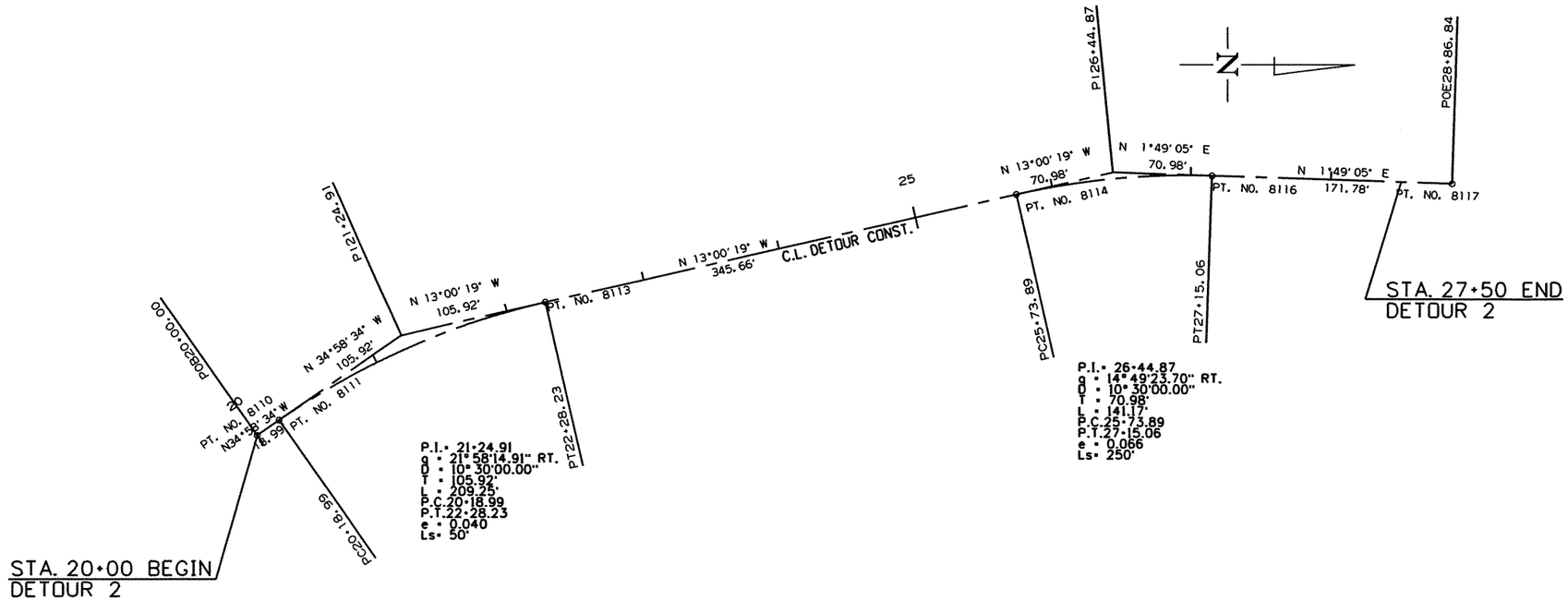
(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11



DETOUR 1

DETOUR 2



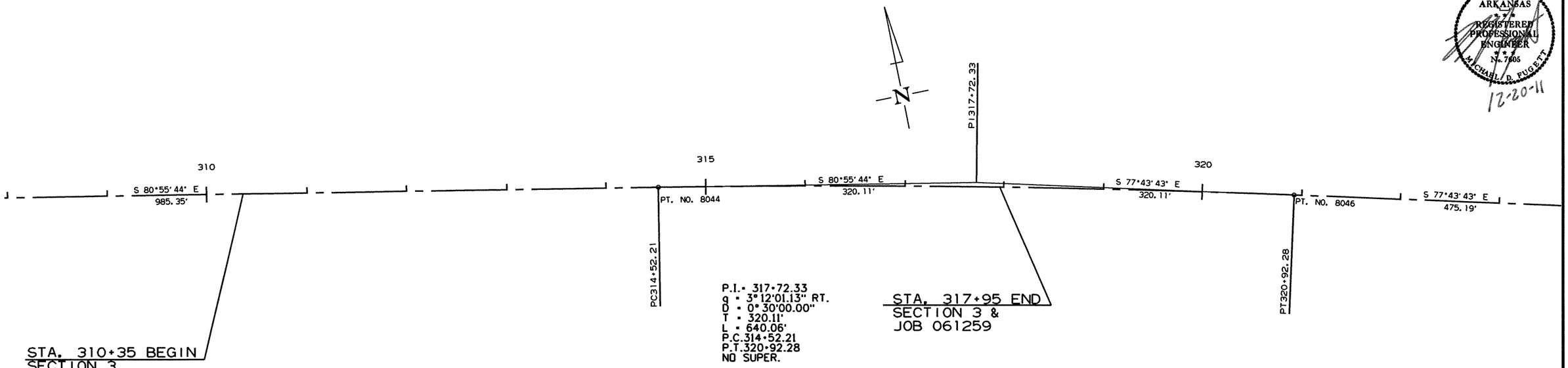
SURVEY CONTROL DETAILS

R061259.DGN 3/15/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	42	157

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
12-20-11



R061259.DGN 3/15/2011

SURVEY CONTROL DETAILS
SECTION 3

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	43	157

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11

STA. 104+50 CONST.
D.I. ON LT. H = 3'-0"
TYPE TM (4' X 3')
24" X 44' PIPE OUTLET
TO RT. W/ F.E.S.

STA. 108+40 INSTALL
24" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONSTR. APPR. ON LT. = 45 C.Y.

STA. 109+13 CONST.
DBL. 51" X 31" X 86' PIPE CULVERT
W/ F.E.S. LT. & RT.
Q25 = 75.2 C.F.S., D.A. = 108.60 AC.

STA. 108+50 IN PLACE
24" X 18" C.M. PIPE CULVT.
LT. SIDE DRAIN
REMOVE

STA. 109+00 IN PLACE
6' X 3' X 34' R.C. BOX CULVERT
REMOVE

STA. 110+57 IN PLACE
18" X 56' R.C. PIPE CULVERT
ON LT. - REMOVE

STA. 112+37 INSTALL
18" X 76' PIPE CULVERT
LT. SIDE DRAIN

STA. 105+50 - STA. 108+00
CONC. COMB. CURB
& GUTTER (TYPE B-II)

POB 100+00.00
100' TRANSITION
CONST. LIMITS
EXIST. R/W
PROP. R/W
N 32°13'14" E
N 32°42'23" E
N 16°09'01" E
24'
105
110
EXIST. R/W
CONST. LIMITS
PROP. R/W
330' TAPER
P.I. 112+04.86
Δ = 51°58'59.20" RT.
D = 6°30'00.00"
T = 429.76'
L = 799.74'
P.C. 107+75.10
P.T. 115+74.84
e = 0.10
Ls = 350'
P.I. 106+37.03 RT.
Δ = 0°29'08.22"
P.C. 107+75.10
STA. 105+00 BEGIN
JOB 061259 & SECTION 1

FENCING

	TYPE	16'0"GATE
STA. 108+39	LT.	1 EACH
STA. 108+67 - STA. 110+26	LT. TY.C	160 LIN. FT.

STA. 109+75 INSTALL
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH
ON RT. = 45 CU. YD.

STA. 110+10 INSTALL
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH
ON RT. = 45 CU. YDS.

STA. 112+34.92 C.L. HWY. 5
STA. 0+00.00 C.L. DANVILLE RD.
Δ = 90°00'00"

STA. 113+69 INSTALL
18" X 32' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH
ON RT. = 145 CU. YDS.

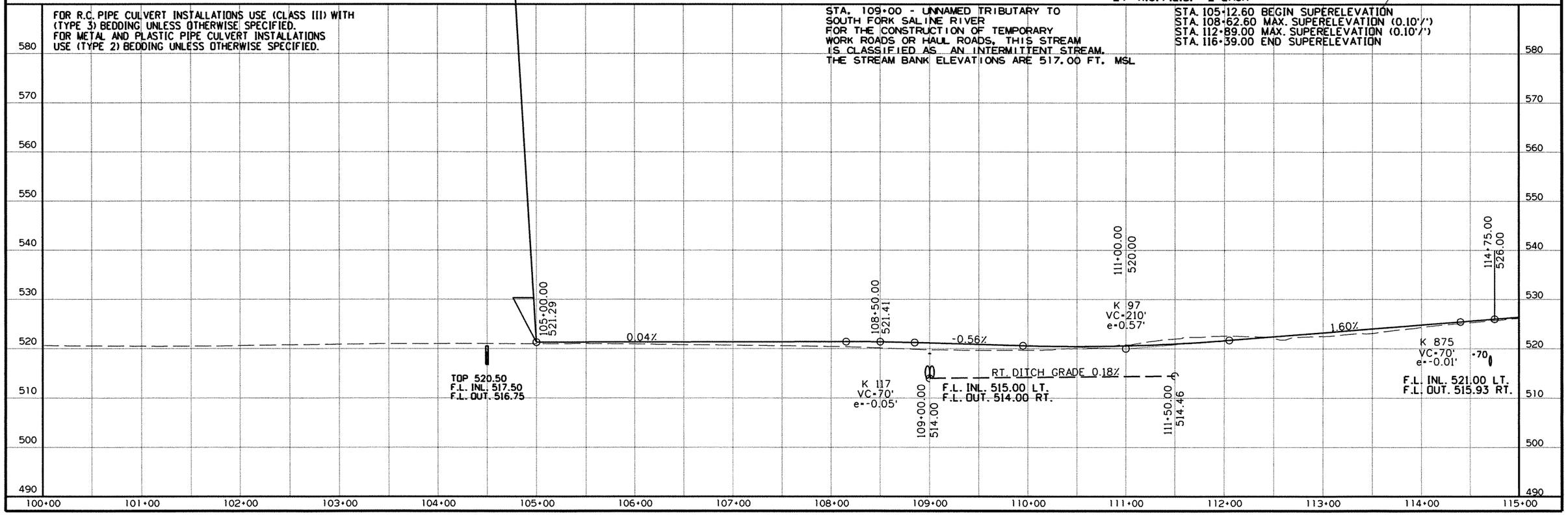
STA. 114+54 IN PLACE
24" X 44' R.C. PIPE CULVERT
RETAIN AND EXTEND
PIPE 4' LT. & 28' RT.
W/ F.E.S. LT. & RT.
Q25 = 3.94 C.F.S., D.A. = 4.3 AC.
24" R.C. PIPE = 40 LIN. FT.
24" R.C. F.E.S. = 2 EACH

SECTION 1

FOR R.C. PIPE CULVERT INSTALLATIONS USE (CLASS III) WITH (TYPE 3) BEDDING UNLESS OTHERWISE SPECIFIED.
FOR METAL AND PLASTIC PIPE CULVERT INSTALLATIONS USE (TYPE 2) BEDDING UNLESS OTHERWISE SPECIFIED.

STA. 109+00 - UNNAMED TRIBUTARY TO SOUTH FORK SALINE RIVER
FOR THE CONSTRUCTION OF TEMPORARY WORK ROADS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM.
THE STREAM BANK ELEVATIONS ARE 517.00 FT. MSL

STA. 105+12.60 BEGIN SUPERELEVATION
STA. 108+62.60 MAX. SUPERELEVATION (0.10'/')
STA. 112+89.00 MAX. SUPERELEVATION (0.10'/')
STA. 116+39.00 END SUPERELEVATION



R061259.DGN 9/15/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	44	157

(2) PLAN AND PROFILE SHEETS

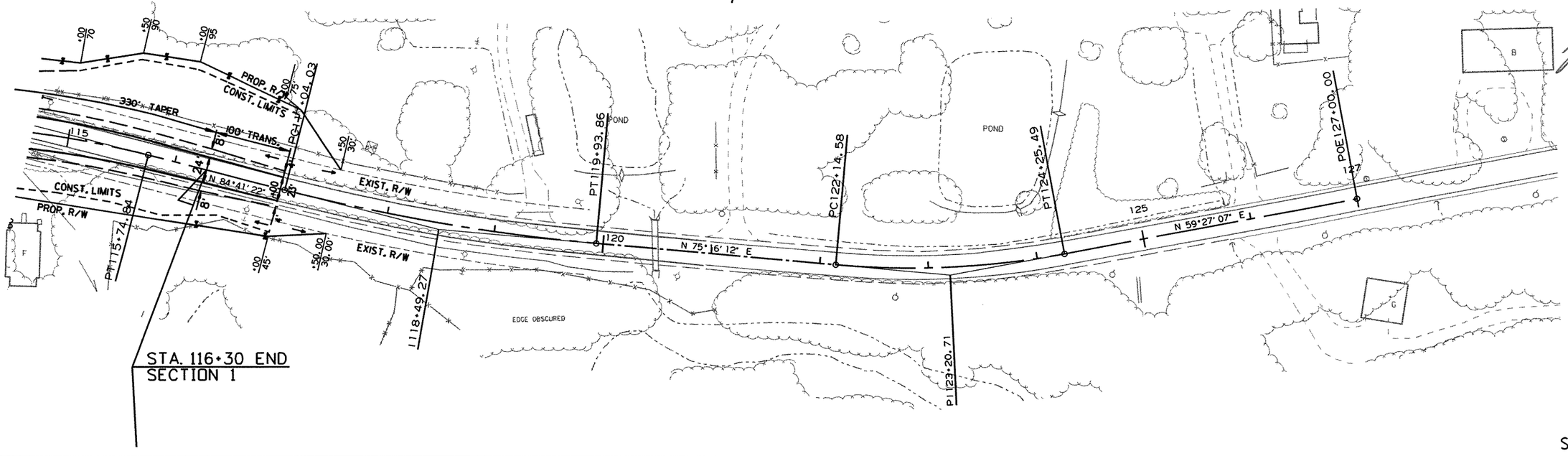
FENCING

STA. 116+34 - STA. 117+00 RT. TYPE D 58 LIN. FT.
STA. 112+92 - STA. 117+40 LT. TYPE D 520 LIN. FT.

P.I.= 118+49.27
Δ = 9° 25'10.11" LT.
D = 3° 15'00.00"
T = 145.24'
L = 289.83'
P.C. 117+04.03
P.T. 119+93.86

P.I.= 123+20.71
Δ = 15° 49'04.37" LT.
D = 7° 30'00.00"
T = 106.13'
L = 210.91'
P.C. 122+14.58
P.T. 124+25.49

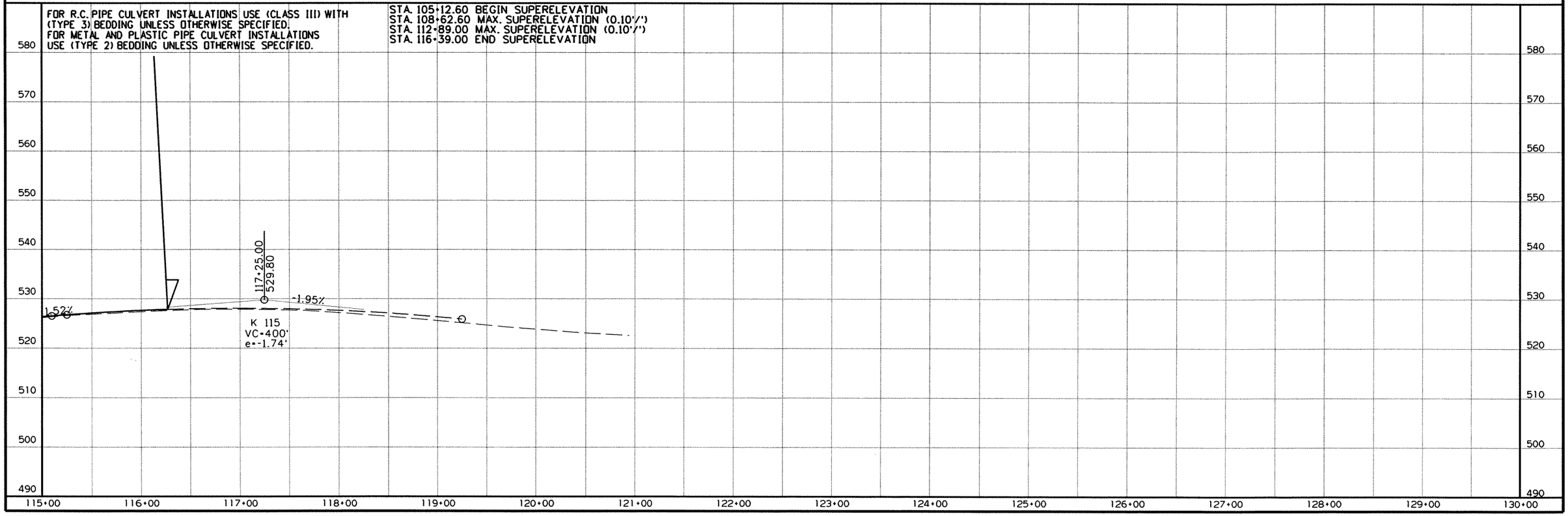
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11



SECTION 1

FOR R.C. PIPE CULVERT INSTALLATIONS USE (CLASS III) WITH (TYPE 3) BEDDING UNLESS OTHERWISE SPECIFIED.
FOR METAL AND PLASTIC PIPE CULVERT INSTALLATIONS USE (TYPE 2) BEDDING UNLESS OTHERWISE SPECIFIED.

STA. 105+12.60 BEGIN SUPERELEVATION
STA. 108+62.60 MAX. SUPERELEVATION (0.10'/')
STA. 112+89.00 MAX. SUPERELEVATION (0.10'/')
STA. 116+39.00 END SUPERELEVATION



R061259.DGN 9/15/2011

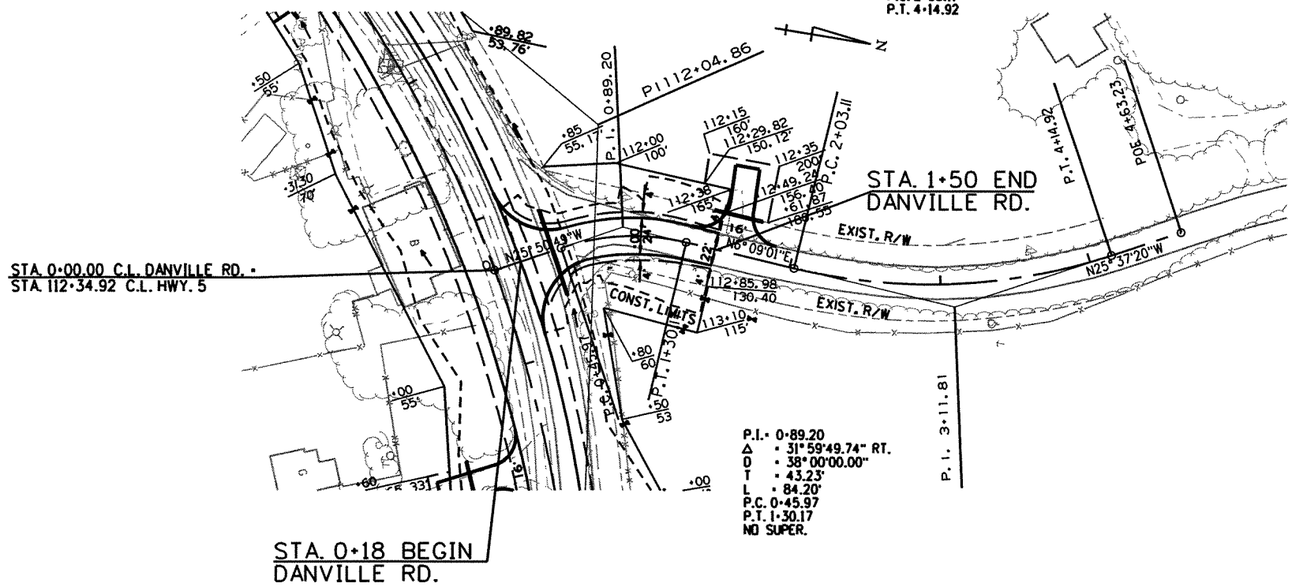
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	45	157

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. PUGETT
12-20-11

STA. 1+60 INSTALL
18" X 32' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 30 CU. YDS.

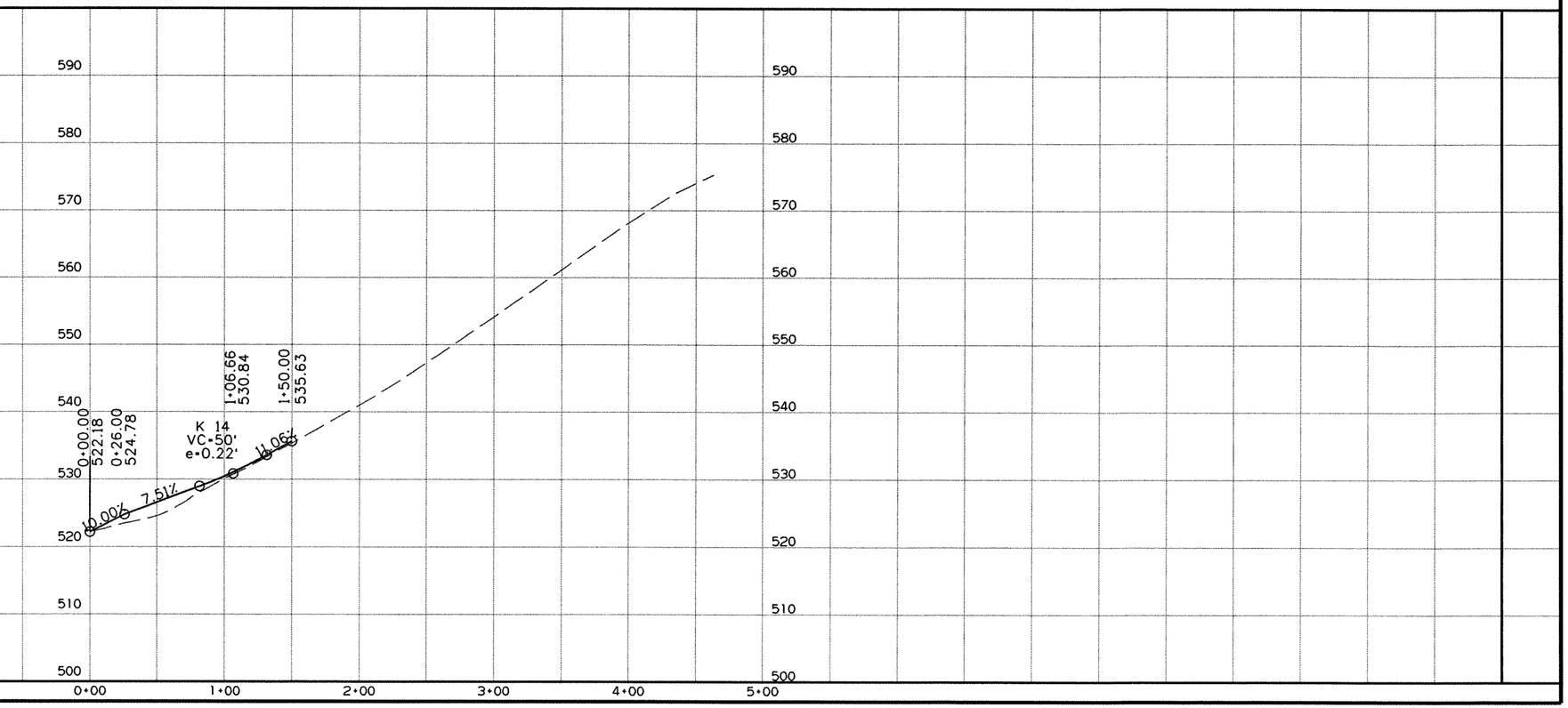
P.I.= 3+11.81
Δ = 31°46'21.35" LT.
D = 15°00'00.00"
T = 108.71'
L = 211.82'
P.C. 2+03.11
P.T. 4+14.92



P.I.= 0+89.20
Δ = 31°59'49.74" RT.
D = 38°00'00.00"
T = 43.23'
L = 84.20'
P.C. 0+45.97
P.T. 1+30.17
NO SUPER.

DANVILLE RD.

FOR R.C. PIPE CULVERT INSTALLATIONS USE (CLASS III) WITH (TYPE 3) BEDDING UNLESS OTHERWISE SPECIFIED.
FOR METAL AND PLASTIC PIPE CULVERT INSTALLATIONS USE (TYPE 2) BEDDING UNLESS OTHERWISE SPECIFIED.



R061259.DGN 9/15/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
2-1-12				6	ARK.			
				JOB NO.		061259	46	157

(2) PLAN AND PROFILE SHEETS

STA. 206+69 INSTALL
24" X 28" PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 25 CU. YDS.

STA. 211+00 INSTALL
18" X 32" PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 45 CU. YDS.

STA. 209+38 IN PLACE
12' X 4' X 48' R.C. BOX CULVERT
W/ 3:1 WINGWALLS LT. & RT.
RETAIN AND EXTEND 13' LT AND 18' RT.
Q25 = 121.0 C.F.S., D.A. = 134.4 AC.

STA. 213+62 INSTALL
18" X 32" PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 35 CU. YDS.

STA. 215+25 IN PLACE
DBL. 30" X 82" RC. PIPE CULVERT ON LT.
REMOVE AND INSTALL
DBL. 30" X 70" R.C. PIPE CULVERT ON LT.

STA. 207+59 INSTALL
24" X 28" PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 45 CU. YDS.

FENCING

STA. 204+50 - STA. 206+17 LT. 4' CHAIN LINK 172 LIN. FT.
STA. 204+80 - STA. 208+10 RT. TYPE D-1 335 LIN. FT.
STA. 206+74 - STA. 207+45 LT. 4' CHAIN LINK 75 LIN. FT.
STA. 207+67 - STA. 207+45 LT. 4' CHAIN LINK 100 LIN. FT.
STA. 208+52 - STA. 212+30 RT. TYPE C 395 LIN. FT

STA. 215+25 INSTALL
21" X 15" X 28" PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 40 CU. YDS.

P.I.= 223+48.61
Δ = 78°42'37.08" LT.
D = 6°30'00.00"
T = 722.90'
L = 1210.93'
P.C.216+25.71
P.T.228+36.64
e = 0.100
Ls= 350'

660' TAPER

STA. 219+50 CONSTRUCT
24" X 86" PIPE CULVERT
W/ F.E.S. LT. & RT.
Q25 = 1.97 C.F.S., D.A. = 2.2 AC.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
2-1-12

STA. 218+00.00 C.L. HWY. 5
STA. 50+00.00 C.L. HWY. 128
Δ= 81°02'04.7"

100' TRANSITION

PROP. R/W

EXIST. R/W

CONST. LIMITS

N 61°02' 27" E

N 71°02' 53" E

P.I.= 210+61.95
Δ = 10°00'26.65" RT.
D = 1°30'00.00"
T = 334.43'
L = 667.16'
P.C.207+27.52
P.T.213+94.68
e = 0.037
Ls= 300'

660' TAPER

STA. 206+00 BEGIN
SECTION 2

STA. 208+26 INSTALL
18" X 30' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 35 CU. YDS.

STA. 213+25 INSTALL
18" X 30' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 25 CU. YDS.

STA. 215+61 INSTALL
18" X 30' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 35 CU. YDS.

STA. 216+00 CONSTRUCT
DBL. 30" X 76' PIPE CULVERT
W/ F.E.S. LT & RT.
Q25 = 25.0 C.F.S., D.A. = 27.4 AC.

SECTION 2

FOR R.C. PIPE CULVERT INSTALLATIONS USE (CLASS III) WITH (TYPE 3) BEDDING UNLESS OTHERWISE SPECIFIED.
FOR METAL AND PLASTIC PIPE CULVERT INSTALLATIONS USE (TYPE 2) BEDDING UNLESS OTHERWISE SPECIFIED.

STA. 205+02.52 BEGIN SUPERELEVATION
STA. 208+02.52 MAX. SUPERELEVATION (0.037'/')
STA. 212+10.68 MAX. SUPERELEVATION (0.037'/')
STA. 215+10.68 END SUPERELEVATION

STA. 215+10.71 BEGIN SUPERELEVATION
STA. 218+60.71 MAX. SUPERELEVATION (0.10'/')
STA. 226+26.64 MAX. SUPERELEVATION (0.10'/')
STA. 229+76.64 END SUPERELEVATION

205+00.00 491.10
208+00.00 489.50
210+50.00 489.40
207+50.00 487.39
208+50.00 484.50
209+50.00 481.05
215+50.00 485.00
216+50.00 480.50
218+50.00 481.25

-0.53%
-2.89%
LT. DT. GR.
-3.45%
LT. DT. GR.
-0.04%
-0.88%
0.40%
LT. DITCH GRADE 0.38%

K 203
VC=100'
e=0.06'

K 179
VC=150'
e=-0.16'

K 117
VC=150'
e=0.24'

K 238
VC=125'
e=0.08'

F.L. INL. 481.05 LT.
F.L. OUT. 480.80 RT.

F.L. INL. 480.50 LT.
F.L. OUT. 477.35 RT.

F.L. INL. 480.50 LT.
F.L. OUT. 476.79 RT.

540 530 520 510 500 490 480 470 460 450

205+00 206+00 207+00 208+00 209+00 210+00 211+00 212+00 213+00 214+00 215+00 216+00 217+00 218+00 219+00 220+00

R061259.DGN 9/15/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	47	157

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7905
MICHAEL D. FUGETT

STA. 225+50 CONSTRUCT
24" X 80' PIPE CULVERT
W/ F.E.S. LT. & RT.
Q25 = 2.31 C.F.S., D.A. = 1.8 AC.

STA. 228+85 INSTALL
21" X 15" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 25 CU. YDS.

STA. 230+14 INSTALL
18" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 35 CU. YDS.

P.I. = 223+48.61
Q = 78°42'37.08" LT.
D = 6°30'00.00"
T = 722.90'
L = 1210.93'
P.C. 216+25.71
P.T. 228+36.64
e = 0.100
Ls = 350'

STA. 231+41 CONSTRUCT
APPROACH ON LT. = 80 CU. YDS.

STA. 232+55 CONST.
APPR. ON LT. = 55 CU. YDS.

STA. 226+71 INSTALL
18" X 38' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 100 CU. YDS.

NOTE: STA. 220+10 - STA. 225+50
REFER TO CROSS SECTIONS FOR
DITCH SLOPE AND BENCHING.

STA. 220+00.09 C.L. HWY. 5
STA. 40+00.00 C.L. HILLVALE GARDEN TR.

STA. 234+00 END
SECTION 2

FENCING

STA. 226+73 - STA. 232+32 RT. TYPE C 610 LIN. FT
STA. 226+83 - STA. 228+42 LT. 6' CHAIN LINK 170 LIN. FT.

STA. 227+30 CONSTRUCT
DBL. 6' X 4' X 110' R.C. BOX CULVERT
(45° LT. FWD. SKEW)
W/ 3:1 WINGWALLS LT. & RT.
Q25 = 43.3 C.F.S., D.A. = 42.9 AC.

STA. 232+41 INSTALL
24" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 30 CU. YDS.

P.I. = 232+74.30
Q = 9°28'48.60" RT.
D = 3°00'00.00"
T = 158.36'
L = 316.01'
P.C. 231+15.94
P.T. 234+31.94
e = 0.067
Ls = 230'

STA. 234+27 INSTALL
24" X 46' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 150 CU. YDS.

SECTION 2

FOR R.C. PIPE CULVERT INSTALLATIONS USE (CLASS III) WITH (TYPE 3) BEDDING UNLESS OTHERWISE SPECIFIED.
FOR METAL AND PLASTIC PIPE CULVERT INSTALLATIONS USE (TYPE 2) BEDDING UNLESS OTHERWISE SPECIFIED.

STA. 215+10.71 BEGIN SUPERELEVATION
STA. 218+60.71 MAX. SUPERELEVATION (0.10'/')
STA. 226+26.64 MAX. SUPERELEVATION (0.10'/')
STA. 229+76.64 END SUPERELEVATION

STA. 229+76.94 BEGIN SUPERELEVATION
STA. 232+06.94 MAX. SUPERELEVATION (0.067'/')
STA. 232+73.96 MAX. SUPERELEVATION (0.067'/')
STA. 235+03.96 END SUPERELEVATION

K 238
VC=125'
e=0.08'
220+50.00
487.00
0.92%
K 117
VC=325'
e=1.13'
226+50.00
492.55
F.L. INL 485.60 LT.
F.L. OUT 481.00 RT.
F.L. INL 487.00 LT.
F.L. OUT 485.20 RT.
3.70%
230+00.00
505.50
K 273
VC=300'
e=-0.41'
2.60%
232+50.00
512.00
K 251
VC=120'
e=0.07'
3.08%

560 550 540 530 520 510 500 490 480 470

220+00 221+00 222+00 223+00 224+00 225+00 226+00 227+00 228+00 229+00 230+00 231+00 232+00 233+00 234+00 235+00

R061259.DGN 9/15/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	48	157

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 17605
MICHAEL D. FUGETT
12-20-11

STA. 51+46 INSTALL
18" X 34' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 340 CU. YDS.

STA. 52+50 CONSTRUCT
DBL. 30" X 74' PIPE CULVERT
WITH F.E.S. LT. & RT.
Q25 = 25 C.F.S., D.A. = 27.4 AC.

STA. 50+00.00 C.L. HWY. 128 =
STA. 218+00.00 C.L. HWY. 5

P.I.= 53+16.24
Δ = 35°55'09.82" LT.
D = 10°00'00.00"
T = 185.72'
L = 359.19'
P.C.51+30.52
P.T.54+89.72
e = 0.054
Ls= 200'

STA. 55+50 END
HWY. 128

P.I.= 59+55.50
Δ = 17°02'30.58" RT.
D = 4°00'00.00"
T = 214.61'
L = 426.05'
P.C.57+40.89
P.T.61+66.94

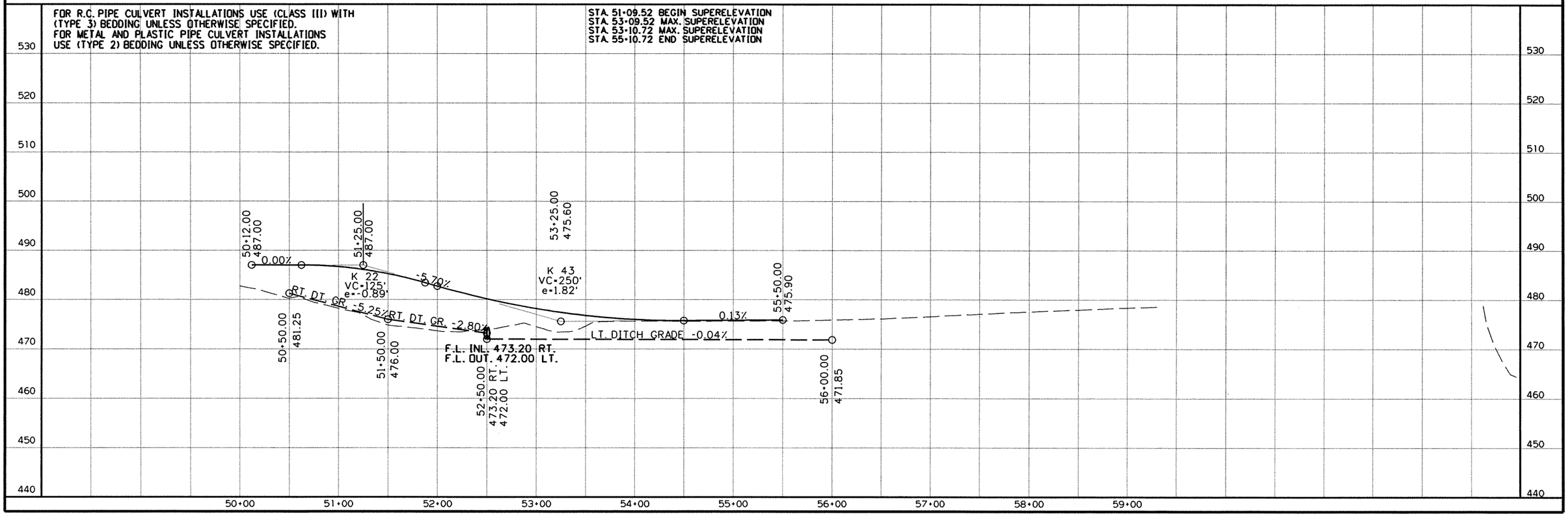
STA. 50+98 INSTALL
18" X 34' PIPE CULVERT
RT. SIDE DRAIN AND
DBL. 24" X 34' PIPE CULVERT
ON RT. (DITCH OF EXIST HWY. 128)
CONST. APPR. = 375 CU. YD.

STA. 50+12 BEGIN
HWY. 128

HWY. 128

FOR R.C. PIPE CULVERT INSTALLATIONS USE (CLASS III) WITH (TYPE 3) BEDDING UNLESS OTHERWISE SPECIFIED.
FOR METAL AND PLASTIC PIPE CULVERT INSTALLATIONS USE (TYPE 2) BEDDING UNLESS OTHERWISE SPECIFIED.

STA. 51+09.52 BEGIN SUPERELEVATION
STA. 53+09.52 MAX. SUPERELEVATION
STA. 53+10.72 MAX. SUPERELEVATION
STA. 55+10.72 END SUPERELEVATION

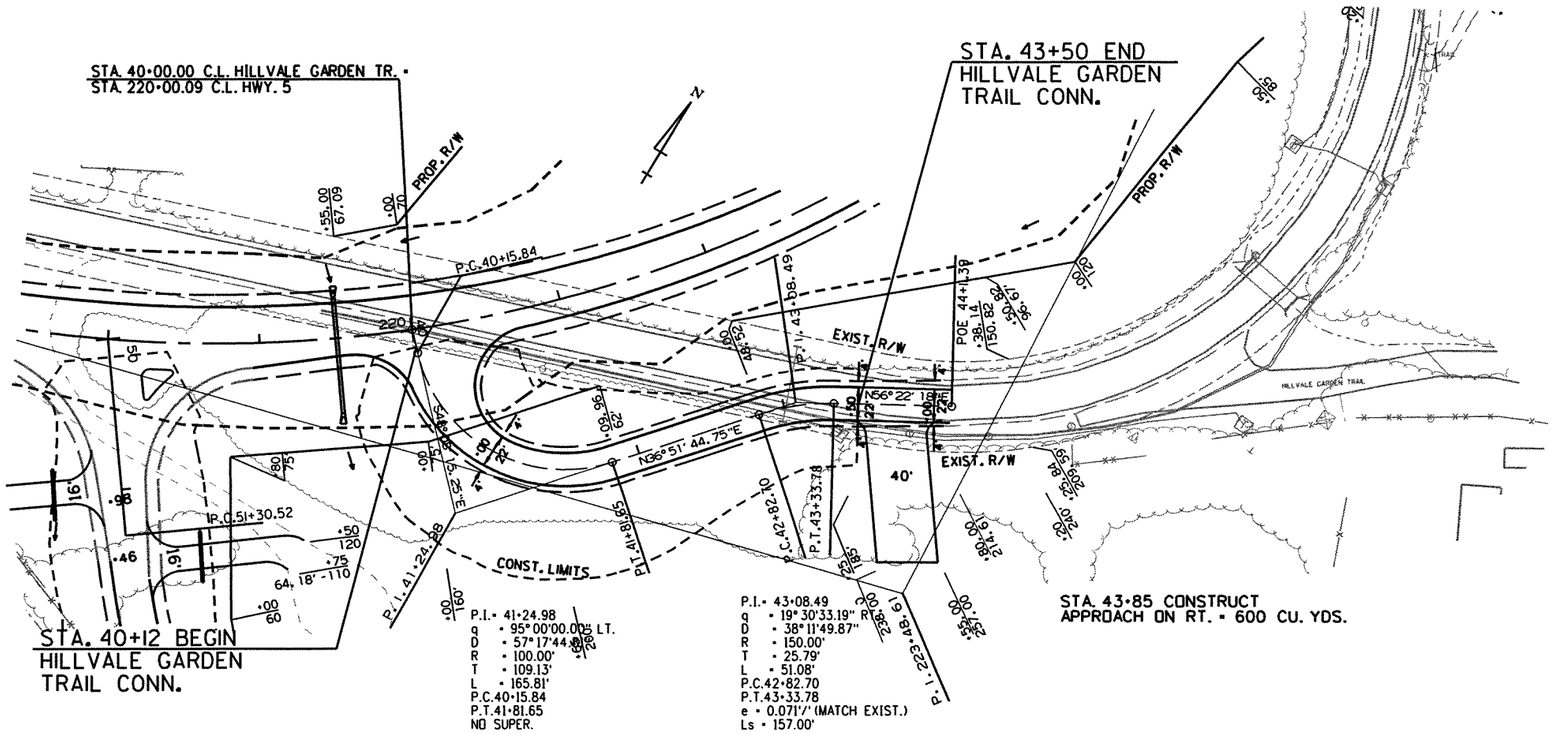


R061259.DGN 9/15/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	49	157

(2) PLAN AND PROFILE SHEETS

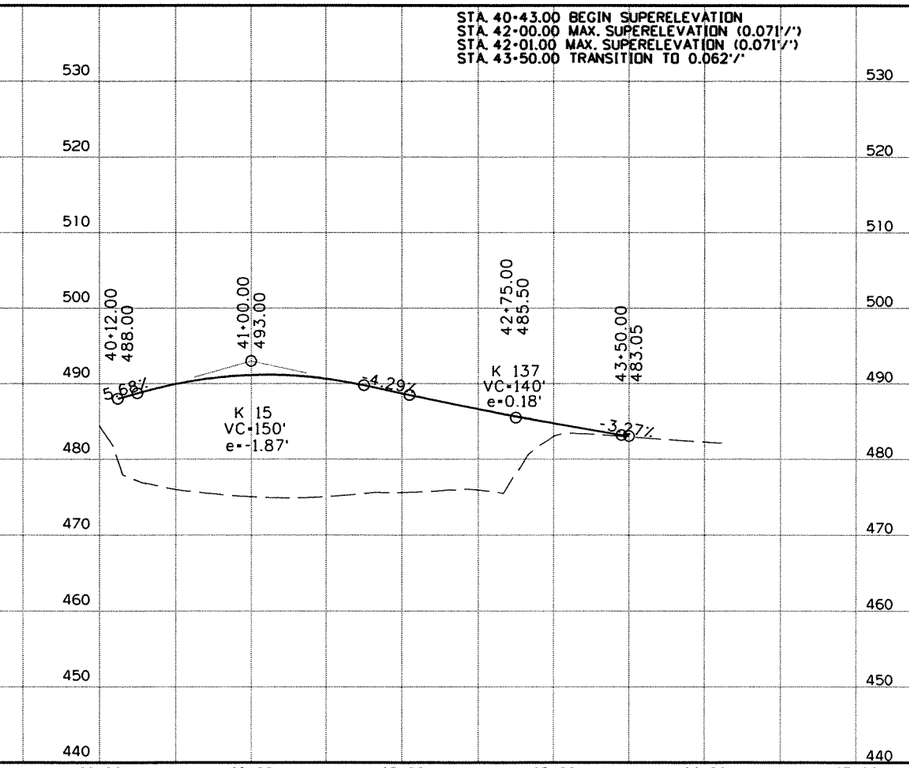
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11



HILLVALE GARDEN TRAIL CONNECTION

FOR R.C. PIPE CULVERT INSTALLATIONS USE (CLASS III) WITH (TYPE 3) BEDDING UNLESS OTHERWISE SPECIFIED.
FOR METAL AND PLASTIC PIPE CULVERT INSTALLATIONS USE (TYPE 2) BEDDING UNLESS OTHERWISE SPECIFIED.

STA. 40+43.00 BEGIN SUPERELEVATION
STA. 42+00.00 MAX. SUPERELEVATION (0.071'/')
STA. 42+01.00 MAX. SUPERELEVATION (0.071'/')
STA. 43+50.00 TRANSITION TO 0.062'/'



R061259.DGN 9/15/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	50	157

(2) PLAN AND PROFILE SHEETS

STA. 313+32 IN PLACE
5' X 5' X 32' R.C. BOX CULVERT
WITH 3:1 WINGWALLS
RETAIN AND EXTEND 26' LT & 26' RT
Q25 = 10.4 C.F.S., D.A. = 8.2 AC.

STA. 314+50 INSTALL
36" X 78' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 140 CU. YDS.

STA. 315+68 CONST.
APPROACH ON LT. = 60 CU. YDS.

STA. 316+30 CONST.
APPROACH ON LT. = 35 CU. YDS.

STA. 316+00 CONSTRUCT
D.I. ON LT. (H=3'-9")
TYPE ST = 3' X 7'
36" X 23' X 49' R.C. ARCH PIPE OUTLET
(CLASS III) (TYPE 3 BEDDING)
W/ F.E.S.

STA. 316+60 CONSTRUCT
D.I. ON LT. (H=3'-0")
TYPE ST = 3' X 7'
36" X 23' X 54' ARCH PIPE OUTLET
TO D.I. STA. 316+00

STA. 317+00 CONSTRUCT
D.I. ON LT. (H=3'-0")
TYPE ST = 3' X 7'
36" X 23' X 38' ARCH PIPE OUTLET
TO D.I. STA. 316+60

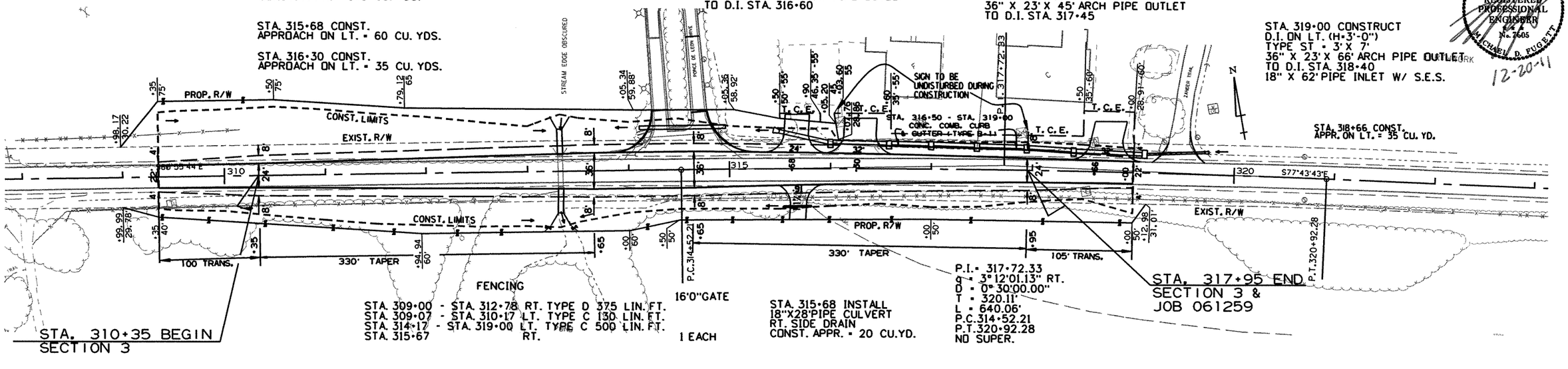
STA. 317+45 CONSTRUCT
D.I. ON LT. (H=3'-1")
TYPE ST = 3' X 7'
36" X 23' X 41' ARCH PIPE OUTLET
TO D.I. STA. 317+00

STA. 317+95 CONSTRUCT
D.I. ON LT. (H=3'-1")
TYPE ST = 3' X 7'
36" X 23' X 45' ARCH PIPE OUTLET
TO D.I. STA. 317+45

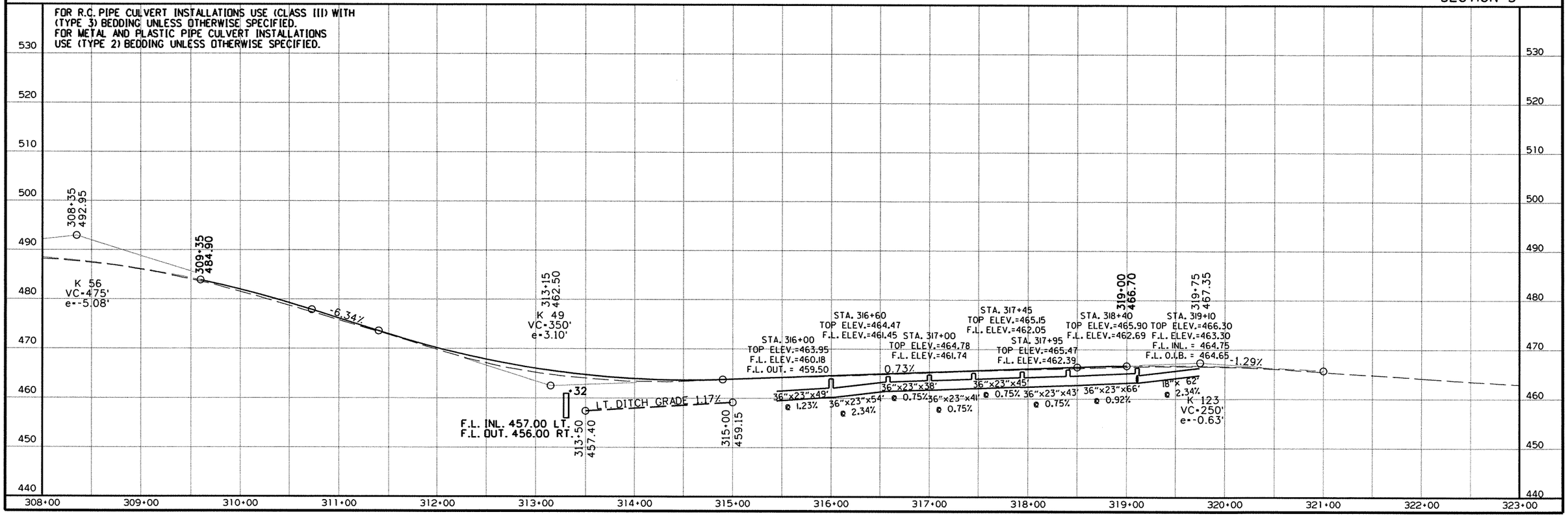
STA. 318+40 CONSTRUCT
D.I. ON LT. (H=3'-3")
TYPE ST = 3' X 7'
36" X 23' X 43' ARCH PIPE OUTLET
TO D.I. STA. 317+95

STA. 319+00 CONSTRUCT
D.I. ON LT. (H=3'-0")
TYPE ST = 3' X 7'
36" X 23' X 66' ARCH PIPE OUTLET
TO D.I. STA. 318+40
18" X 62' PIPE INLET W/ S.E.S.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
12-20-11



SECTION 3

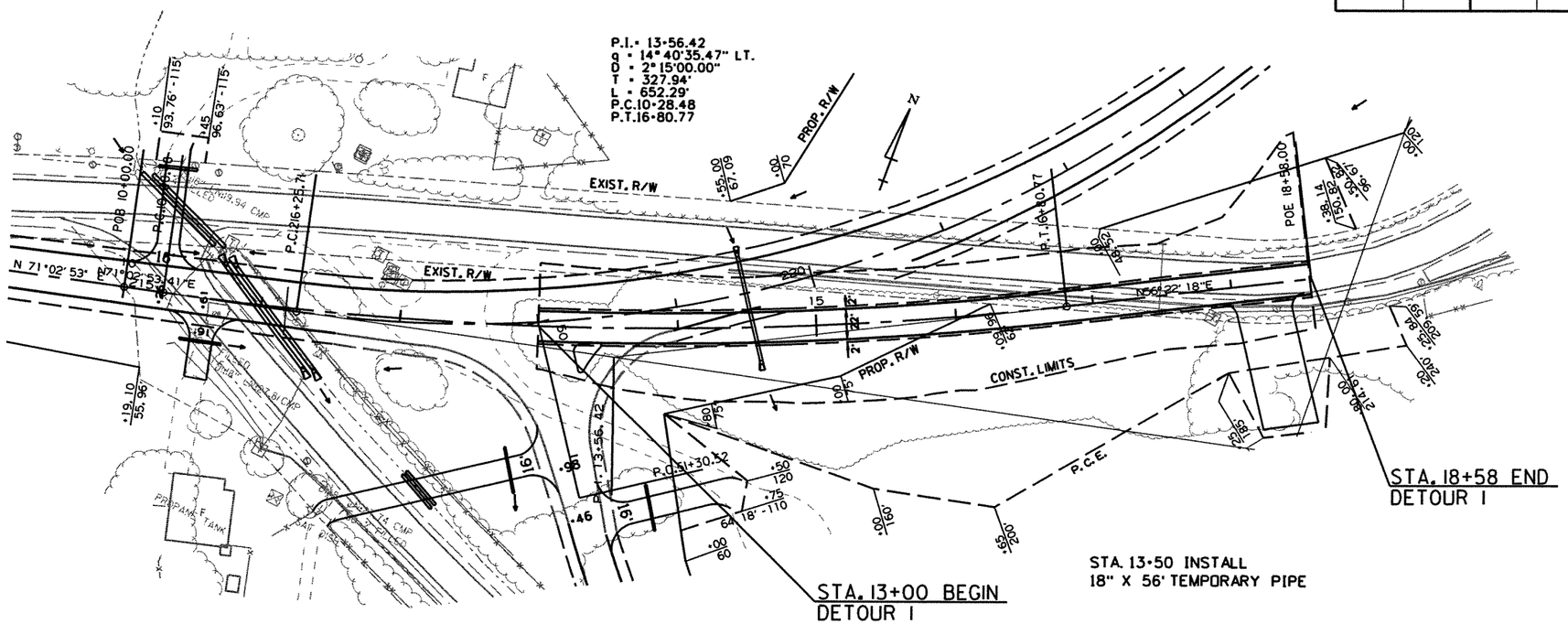


9/15/2011
R061259.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	51	157

(2) DETOUR PLAN AND PROFILE SHEETS

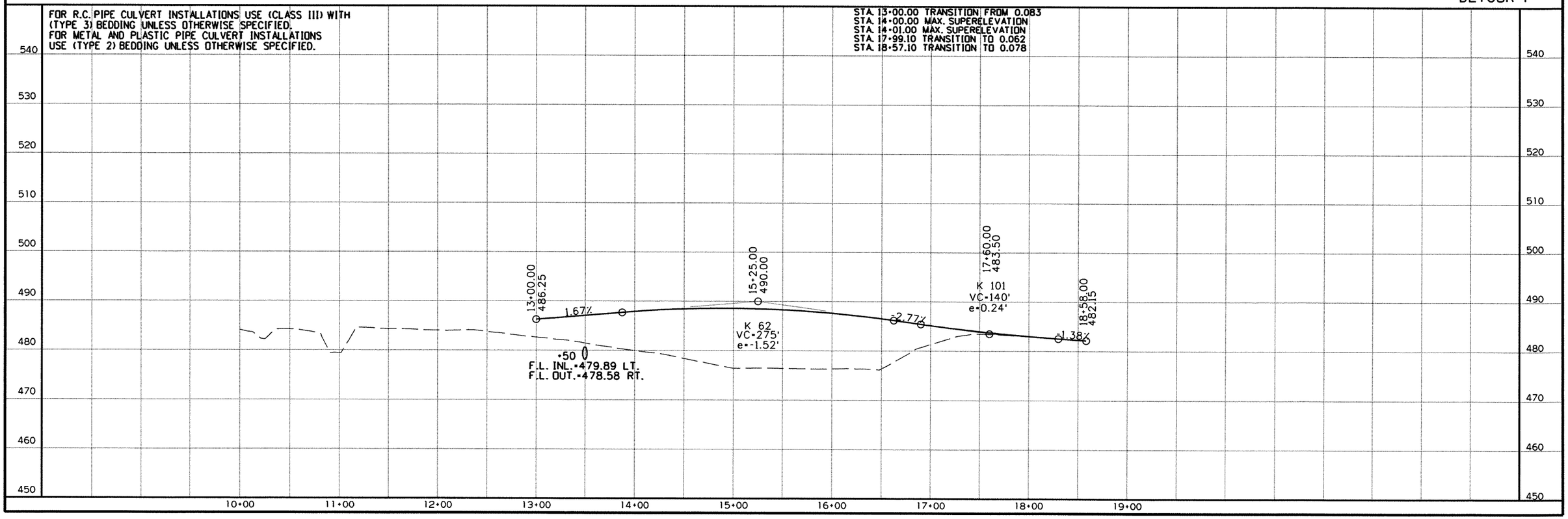
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
14577605
MICHAEL D. PUGGETT
12-20-11



DETOUR 1

FOR R.C. PIPE CULVERT INSTALLATIONS USE (CLASS III) WITH (TYPE 3) BEDDING UNLESS OTHERWISE SPECIFIED.
FOR METAL AND PLASTIC PIPE CULVERT INSTALLATIONS USE (TYPE 2) BEDDING UNLESS OTHERWISE SPECIFIED.

STA. 13+00.00 TRANSITION FROM 0.083
STA. 14+00.00 MAX. SUPERELEVATION
STA. 14+01.00 MAX. SUPERELEVATION
STA. 17+99.10 TRANSITION TO 0.062
STA. 18+57.10 TRANSITION TO 0.078

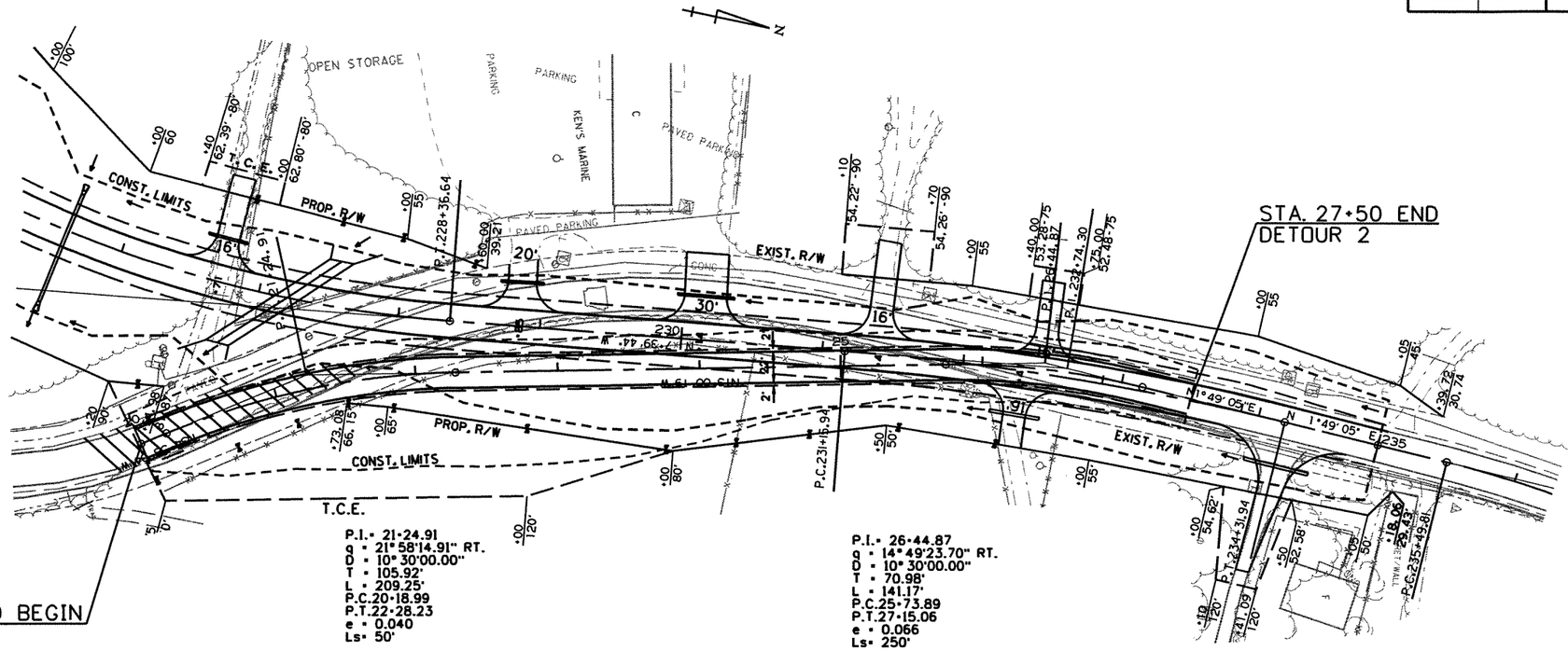


9/15/2011
R061259.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	52	157

(2) DETOUR PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
12-20-11



P.I.= 21+24.91
Δ = 21°58'14.91" RT.
D = 10°30'00.00"
T = 105.92'
L = 209.25'
P.C.20+18.99
P.T.22+28.23
e = 0.040
Ls= 50'

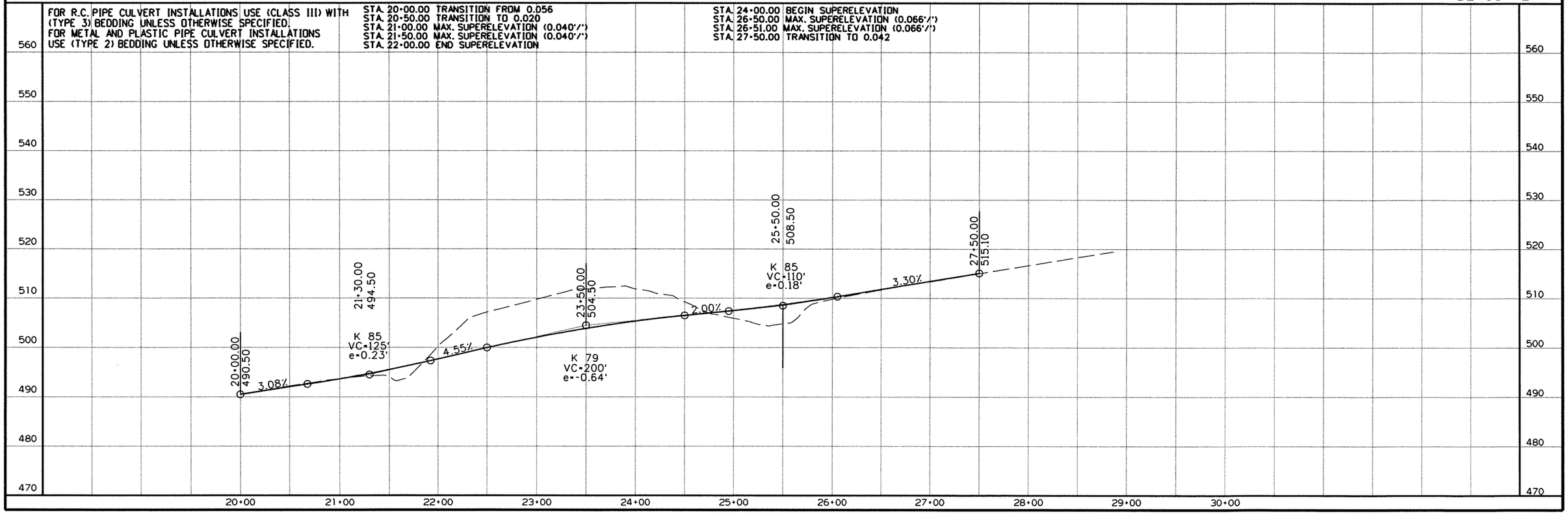
P.I.= 26+44.87
Δ = 14°49'23.70" RT.
D = 10°30'00.00"
T = 70.98'
L = 141.17'
P.C.25+73.89
P.T.27+15.06
e = 0.066
Ls= 250'

DETOUR 2

FOR R.C. PIPE CULVERT INSTALLATIONS USE (CLASS III) WITH (TYPE 3) BEDDING UNLESS OTHERWISE SPECIFIED.
FOR METAL AND PLASTIC PIPE CULVERT INSTALLATIONS USE (TYPE 2) BEDDING UNLESS OTHERWISE SPECIFIED.

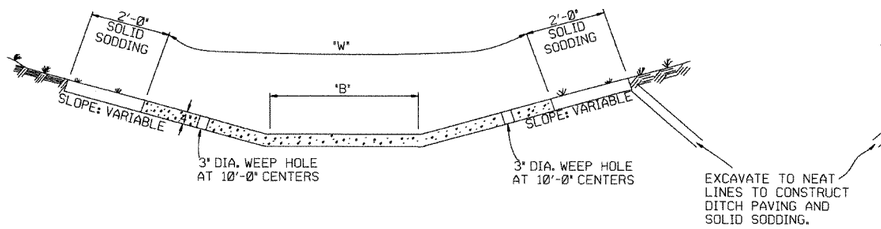
STA. 20+00.00 TRANSITION FROM 0.056
STA. 20+50.00 TRANSITION TO 0.020
STA. 21+00.00 MAX. SUPERELEVATION (0.040'/')
STA. 21+50.00 MAX. SUPERELEVATION (0.040'/')
STA. 22+00.00 END SUPERELEVATION

STA. 24+00.00 BEGIN SUPERELEVATION
STA. 26+50.00 MAX. SUPERELEVATION (0.066'/')
STA. 26+51.00 MAX. SUPERELEVATION (0.066'/')
STA. 27+50.00 TRANSITION TO 0.042



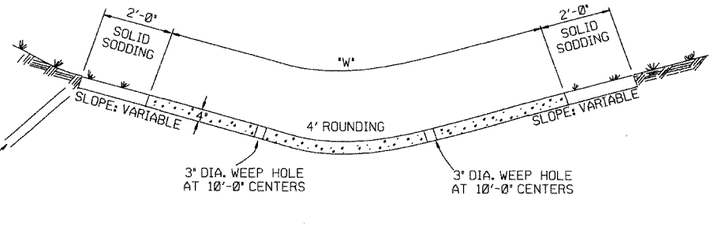
R061259.DGN 9/15/2011

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



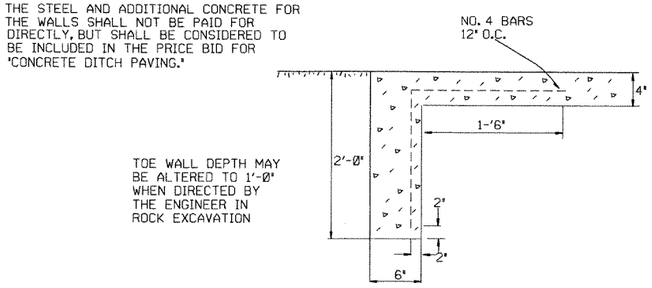
TYPE A

REFER TO TABULATION OF QUANTITIES FOR "W" DIMENSIONS

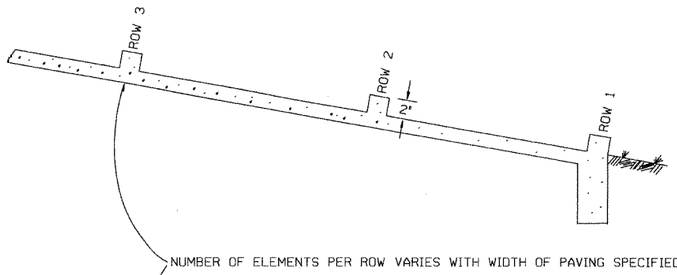


TYPE B

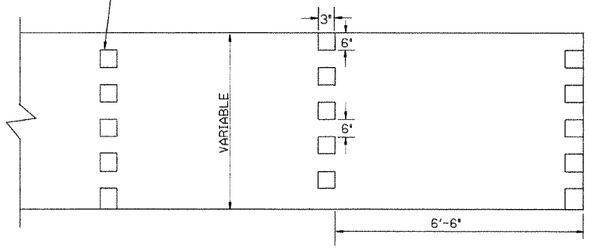
THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR "CONCRETE DITCH PAVING."



TOE WALL DETAIL FOR CONCRETE DITCH PAVING



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED



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.

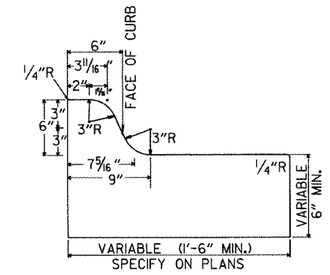
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

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

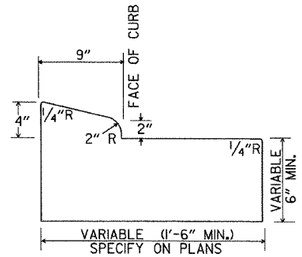
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

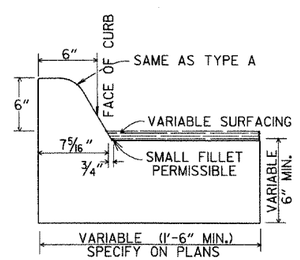
STANDARD DRAWING CDP-1



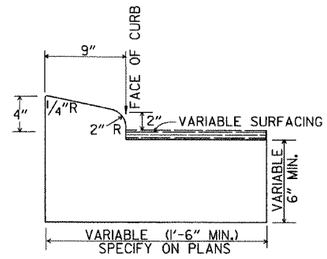
TYPE A



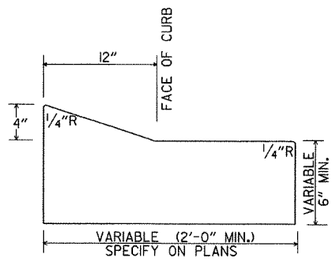
TYPE B-I



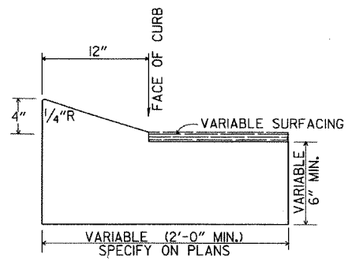
TYPE C



TYPE B-2

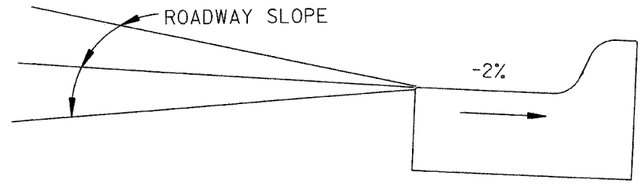


TYPE E-1



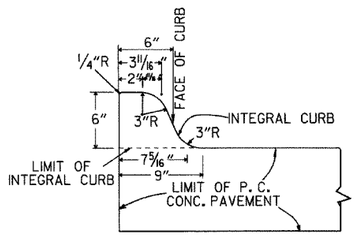
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

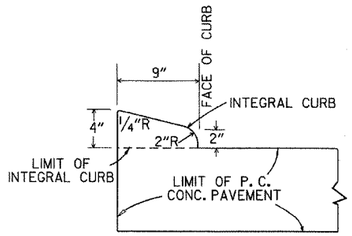


DETAIL OF GUTTER SLOPE

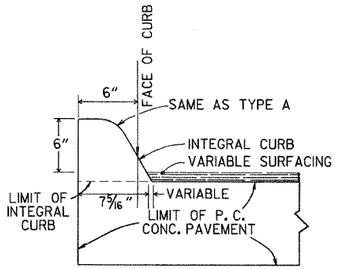
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

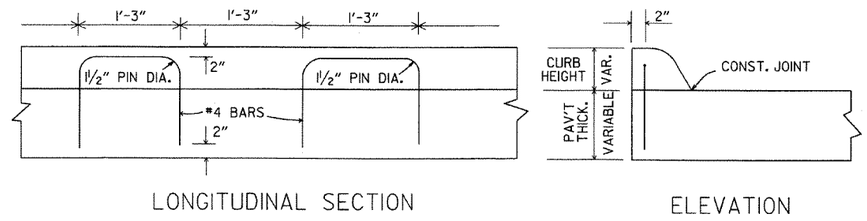


TYPE B



TYPE C

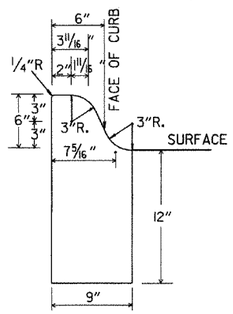
INTEGRAL CURB



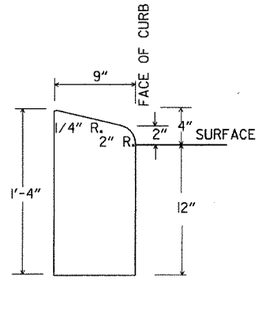
LONGITUDINAL SECTION

ELEVATION

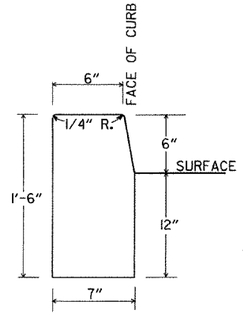
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



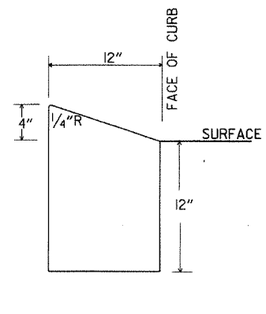
TYPE A



TYPE B

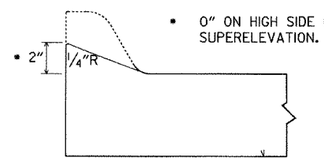


TYPE D



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.

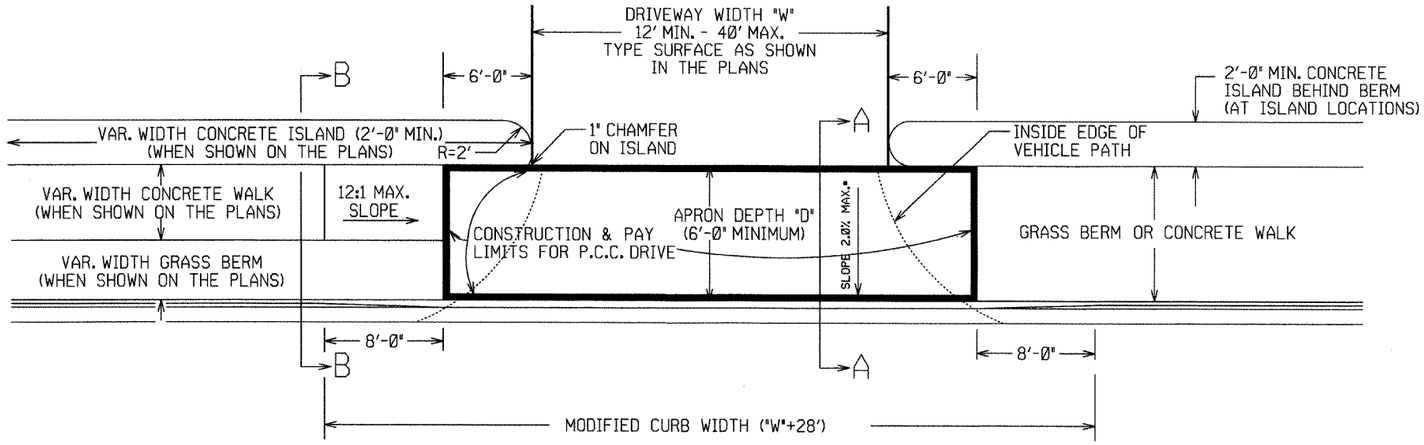
DETAILS OF MODIFIED CURB

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 I	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	512-10-2-72

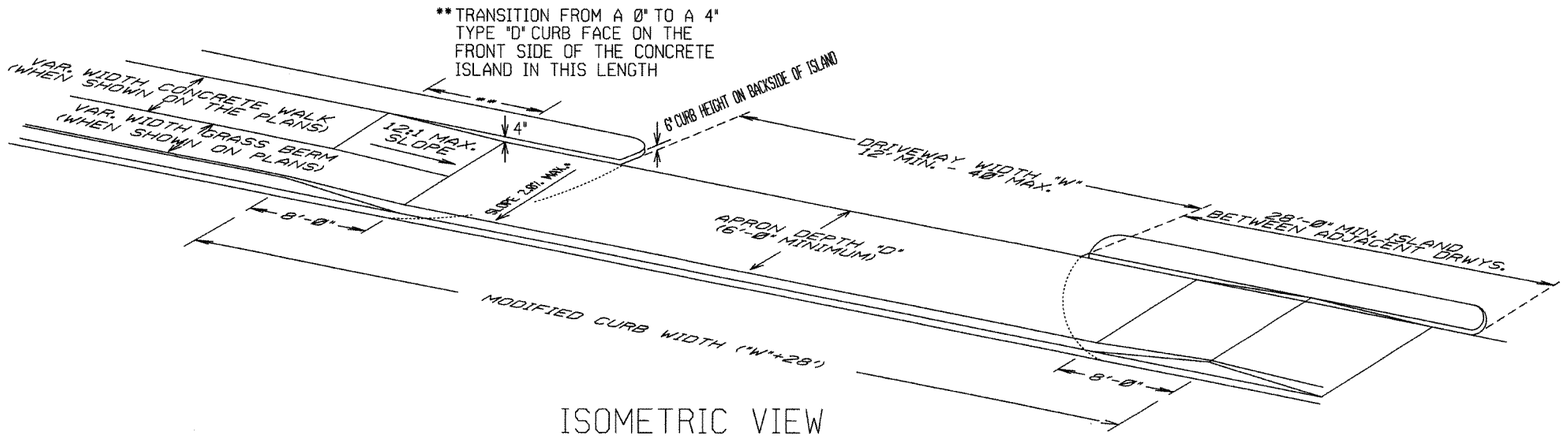
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

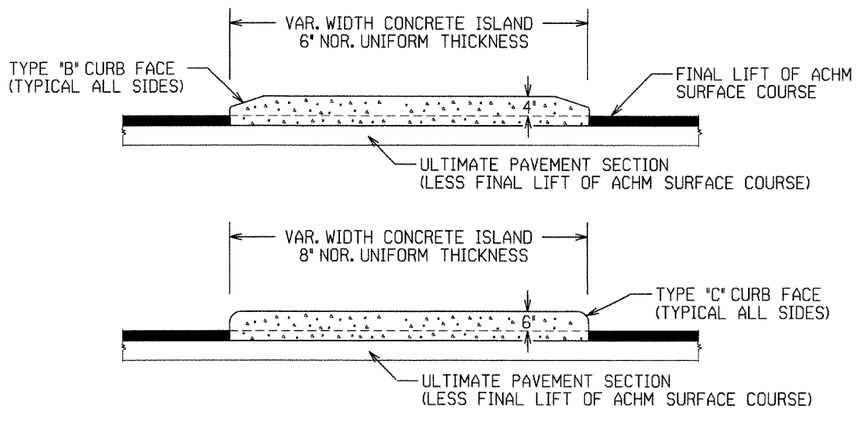
STANDARD DRAWING CG-1



PLAN VIEW

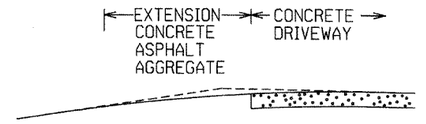


ISOMETRIC VIEW



CURBED ISLANDS FOR CHANNELIZATION

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



EXTENSION TYPICAL SECTIONS

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

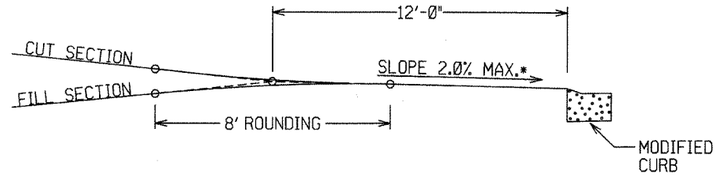
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

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

4: AGGREGATE - 6" AGGREGATE BASE COURSE

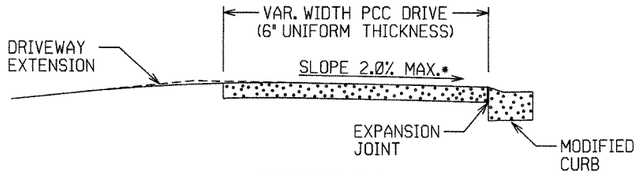
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

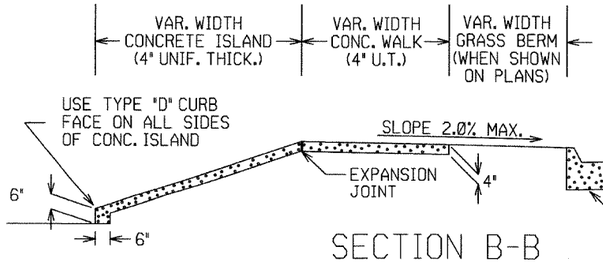


DRIVEWAY VERTICAL ALIGNMENT DETAILS

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



SECTION A-A

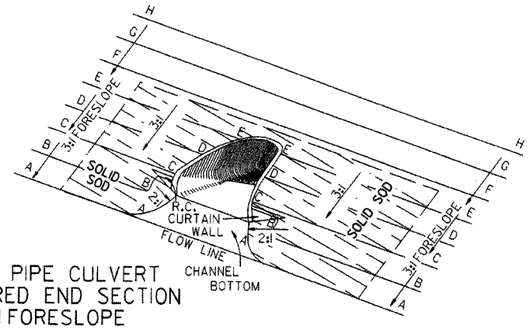


SECTION B-B

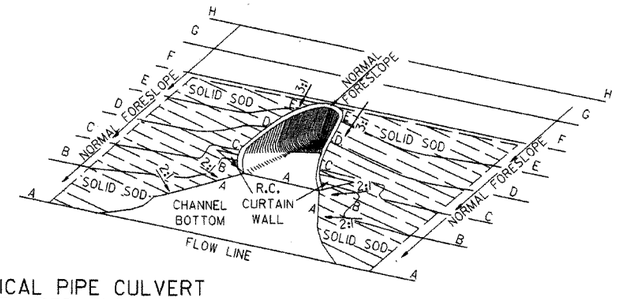
CURBED ISLAND BEHIND WALK

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

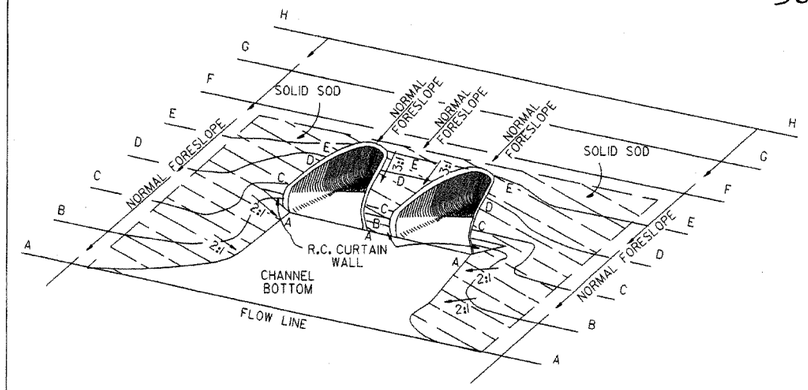
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1



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



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

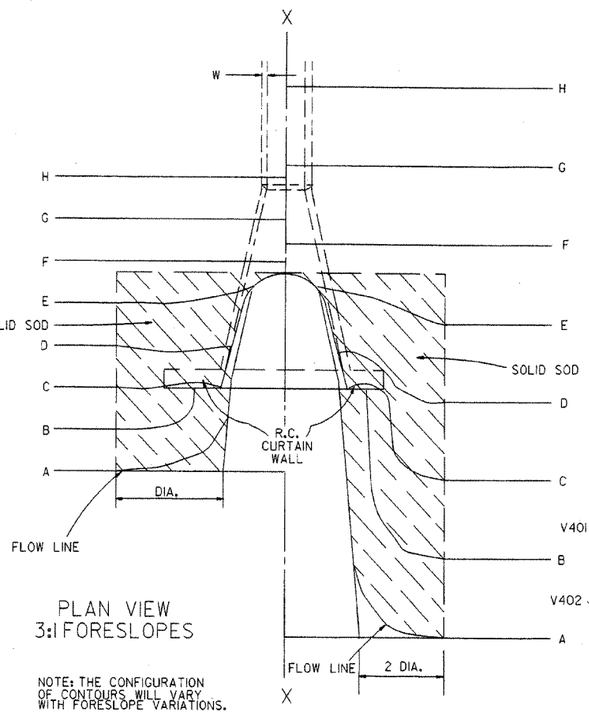
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	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

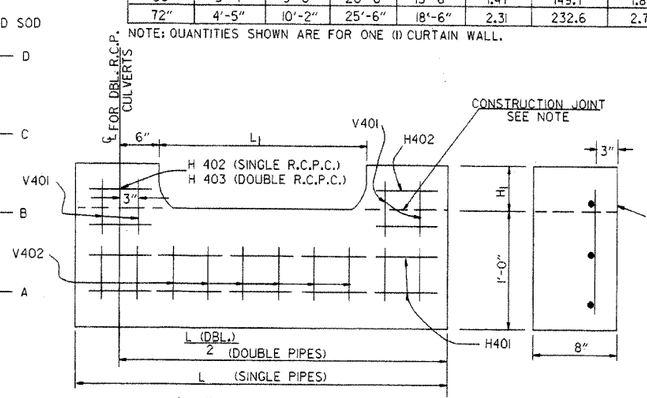
ALL REINFORCING STEEL #4 BARS @ 6" O.C.



PLAN VIEW
3:1 FORESLOPES

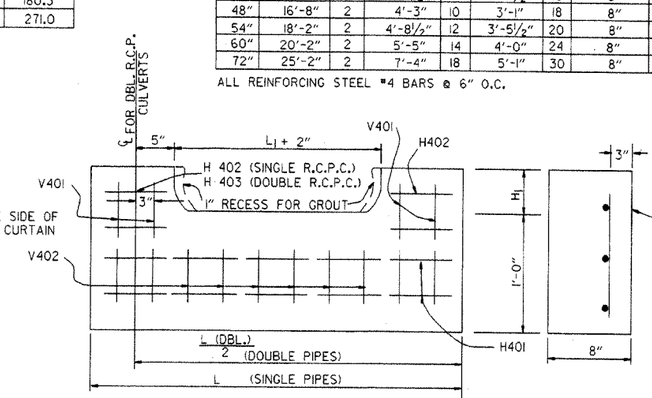
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

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

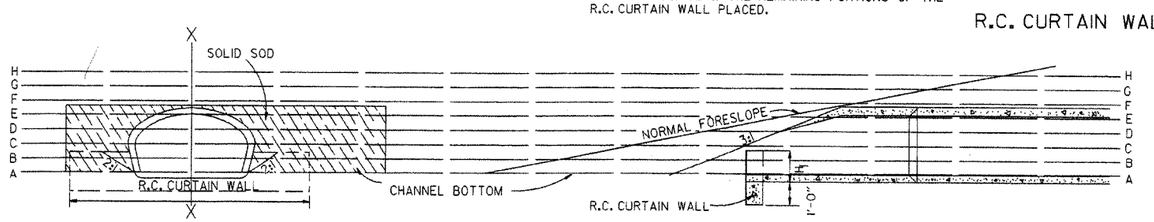
SOLID SODDING

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"	35	57	85	37	59	87
60"	45	62	104	48	65	107
72"	64	92	156	67	95	159

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

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE: FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 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 W/10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW

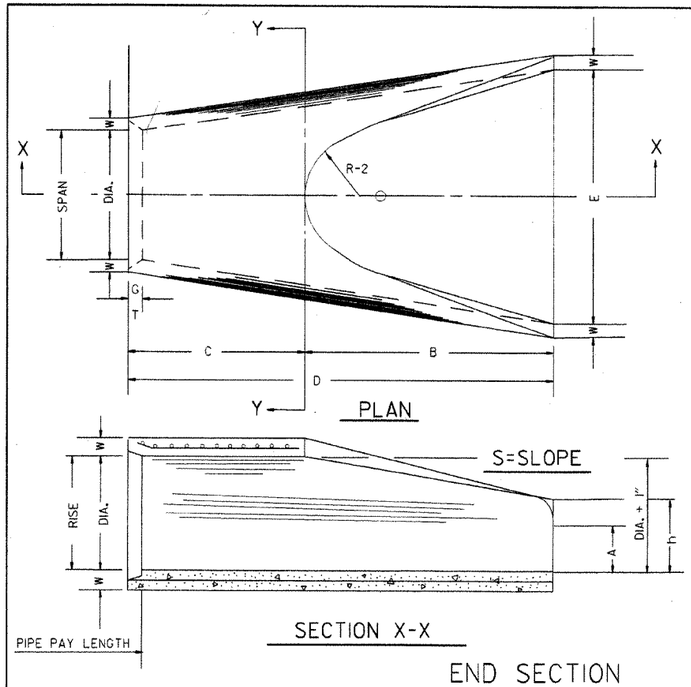
SECTIONAL VIEW "X-X"

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

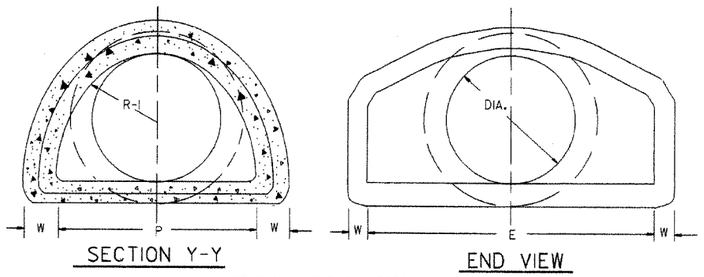
STANDARD DRAWING FES-1



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 5/16"	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 1/16"	24 5/16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅛"	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 15/16"	24"	5"	13250	4'-6"

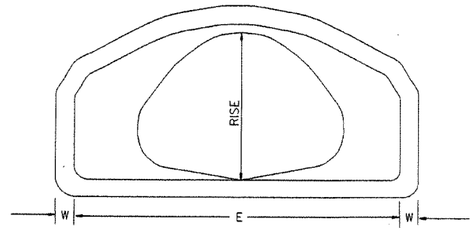


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

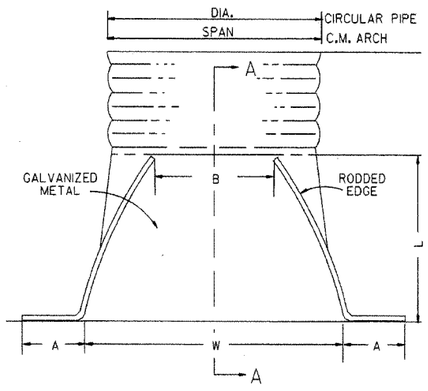
ARCH PIPE

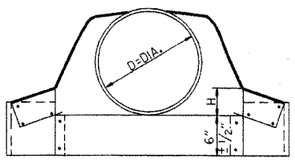
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2¼"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 5/16"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 1/16"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-11½"	6'-1½"	6'-6"	54⅜"	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"	2½:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 13/16"	24"	5"	2½:1

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

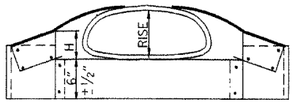


END VIEW
CONCRETE ARCH PIPE





CIRCULAR PIPE



C.M. ARCH PIPE

CIRCULAR PIPE

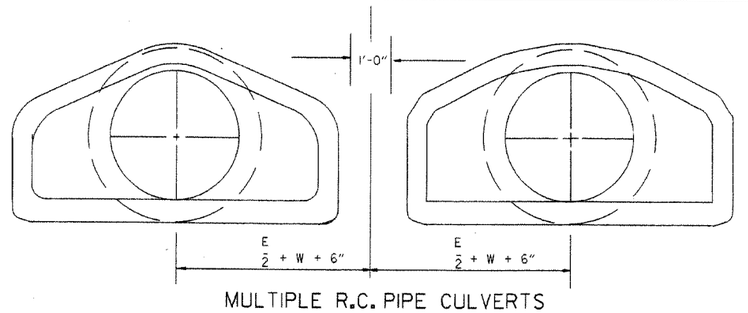
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12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

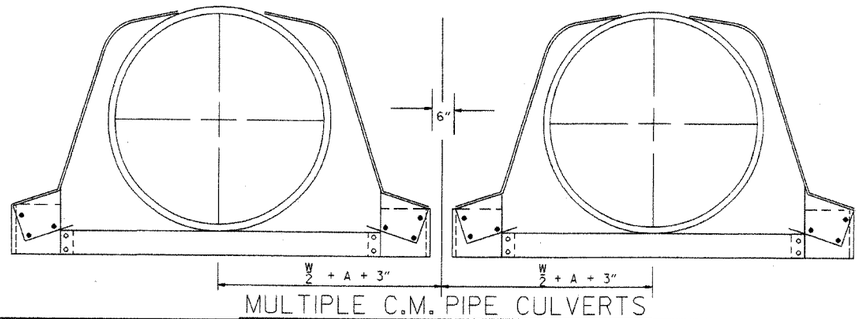
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12
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

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

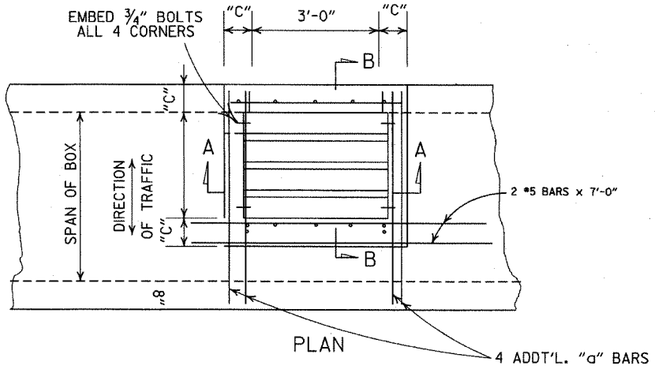
DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74
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

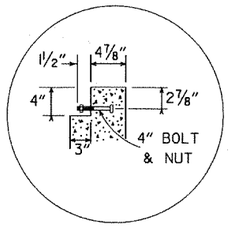
FLARED END SECTION

STANDARD DRAWING FES-2

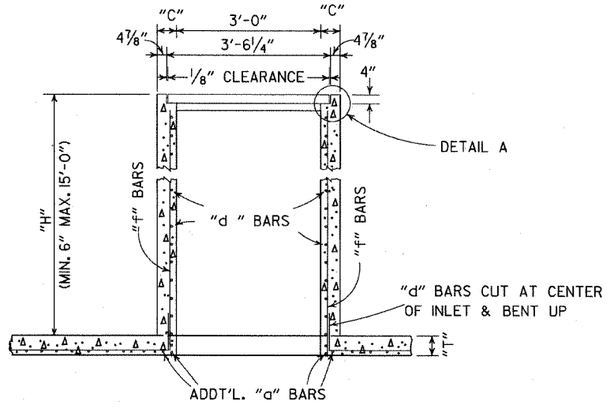
stdfes2.dgn



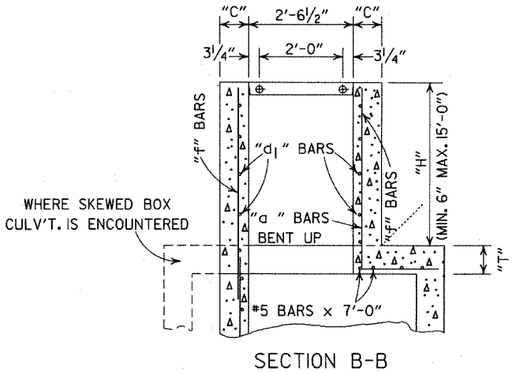
PLAN



DETAIL A



SECTION A-A

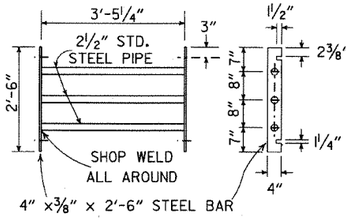


SECTION B-B

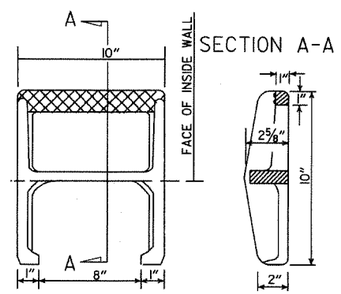
NOTE: ADDT'L.REINF. STEEL TO BE INCLUDED IN UNIT PRICE BID PER TYPE "TM" D.I.

DIMENSIONS & REINF. BARS FOR D.I. TO BE THE SAME AS THOSE SHOWN ON APPLICABLE STD. BARREL DRAWING FOR R.C. BOX CULVERTS.

DROP INLET TYPE "TM"
FOR REINFORCED CONC. BOX CULVERTS



GRATE DETAIL



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

GENERAL NOTES:

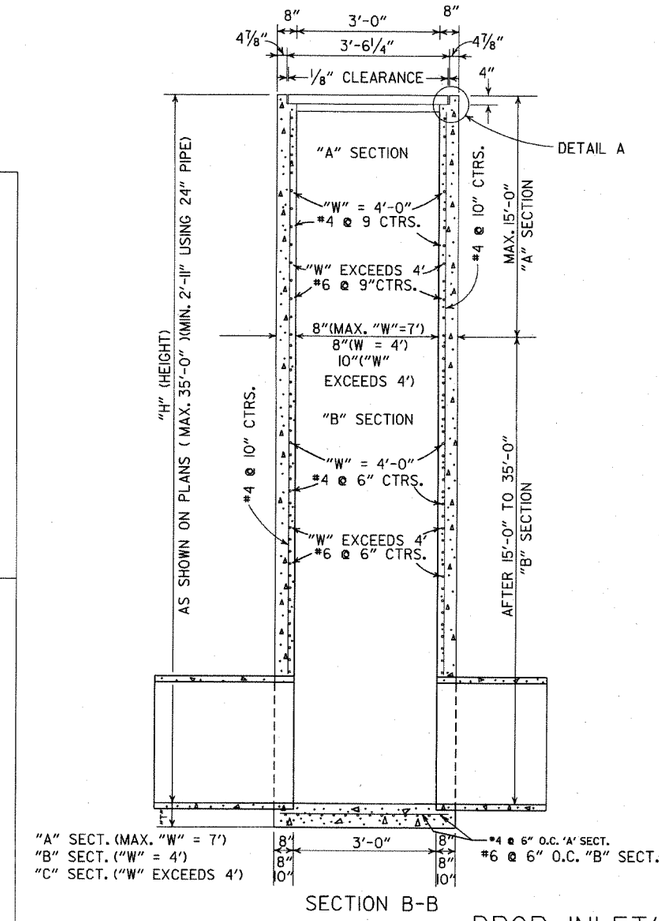
1. STEEL PIPE FOR GRATES AND BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 807. BOLTS SHALL CONFORM TO ONE OF THE FOLLOWING: ASTM A193, GRADE B8 CLASS 1 OR 2, ASTM A307 OR AASHTO M 164.
2. STEEL PIPE FOR GRATES SHALL BE "STANDARD WEIGHT" PIPE CONFORMING TO ASTM A53 NATIONAL STANDARD PIPE.
3. BOLTS, NUTS, WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 232 OR AASHTO M 298, CLASS 40 OR 50.
4. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
5. ALL #4 AND #5 REINFORCING BARS TO HAVE 1½" COVER. LARGER SIZES TO HAVE 2" COVER.
6. THE COMPLETE PIPE GRATE SHALL BE PAINTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TABLE OF "W" DIMENSIONS

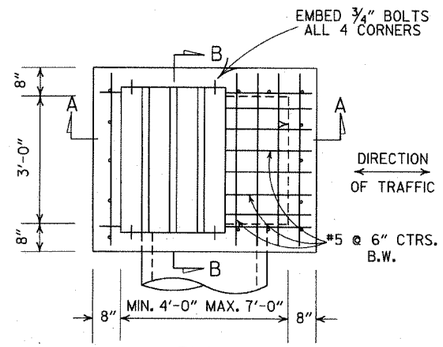
58

I.D. PIPE	SKEW OF CROSS DRAIN		
	STRAIGHT	30°	45°
	"W"	"W"	"W"
24"	4'-0"	4'-0"	4'-0"
30"	4'-0"	4'-0"	4'-5"
36"	4'-0"	4'-3"	5'-3"
42"	4'-3"	4'-11"	6'-1"
48"	4'-10"	5'-7"	6'-11"

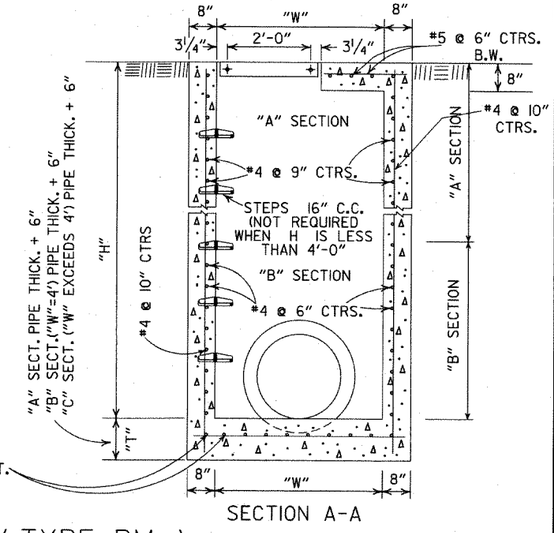
NOTE: DIMENSIONS SHOWN ABOVE ARE FOR PIPES INTERSECTING DROP INLET ON ONE SIDE ONLY. FOR SKEWED PIPES INTERSECTING BOTH SIDES OF DROP INLET, "W" WILL NEED TO BE INCREASED OR AXIS OF INTERSECTING PIPES WILL NEED TO BE SHIFTED.



SECTION B-B



PLAN



SECTION A-A

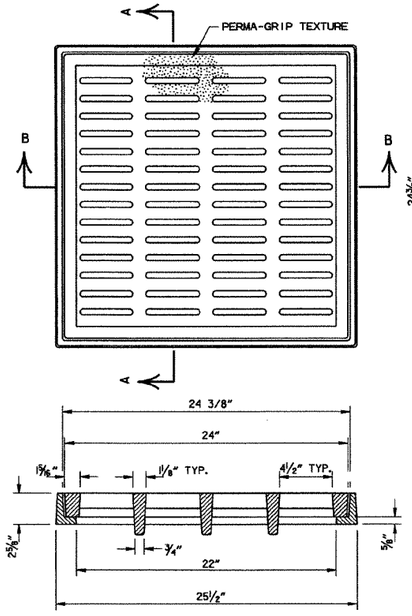
DROP INLET(TYPE RM)

REVISED		DATE FILMED
8-22-02	ADDED & REVISED DIMENSION TO SECTION A-A	
1-12-00	CORRECTED DIMENSION ON SECTION B-B	
11-06-97	ADDED DIMENSION TO SECTION A-A	
10-18-96	REVISED ASTM REF. TO AASHTO AND ADDED NOTE TO TABLE OF "W" DIMENSIONS	
10-1-92	ADDED DIRECTION OF TRAFFIC	10-1-92
8-15-91	ADDED NOTE ABOUT PAINTING OF GRATE	8-15-91
11-30-89	ALTERED DETAIL A	11-30-89
7-15-88	REVISED STEP DETAIL,TM & RM D.I. & GRATE DETAIL	719-7-15-88
10-2-72	REVISED AND REDRAWN	542-10-2-72

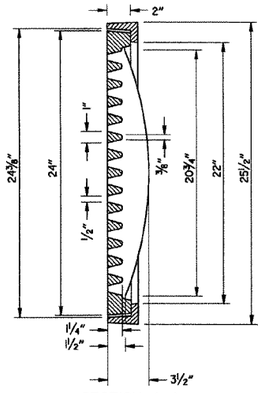
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS

STANDARD DRAWING FPC-9D



SECTION B-B

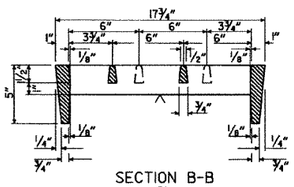


SECTION A-A

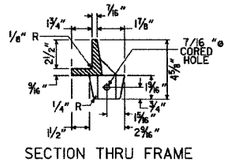
DETAILS OF PEDESTRIAN GRATE AND FRAME

GENERAL NOTES (PEDESTRIAN GRATE & FRAME)

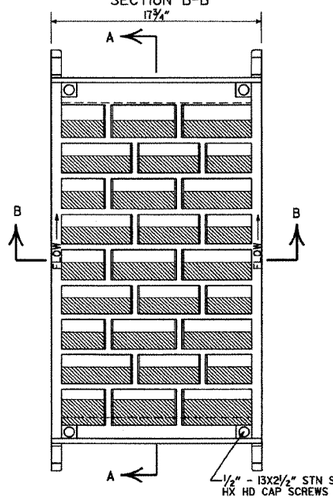
1. THE PEDESTRIAN GRATE SHALL BE ORIENTED IN THE TOP OF THE DROP INLET SO THAT THE ½" OPENINGS ARE PERPENDICULAR TO THE PATH OF PEDESTRIAN TRAVEL.
2. THE PEDESTRIAN GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
3. THE GRATE AND FRAME SHALL NOT BE PAINTED.
4. THE GRATE AND FRAME SHALL BE INSTALLED IN THE DROP INLET IN THE ASSEMBLED POSITION.
5. THE APPROXIMATE WEIGHT OF THE GRATE AND FRAME SHALL BE 211LBS.
6. THE MINIMUM WATERWAY OPENING SHALL BE 122 SQ. IN.

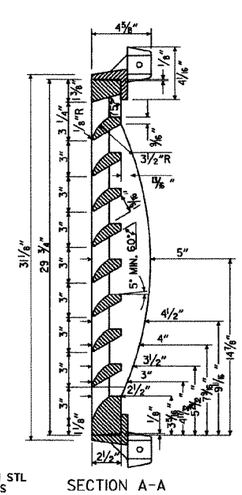


SECTION B-B



SECTION THRU FRAME



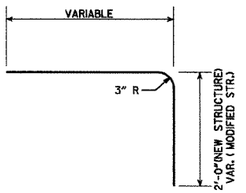


SECTION A-A

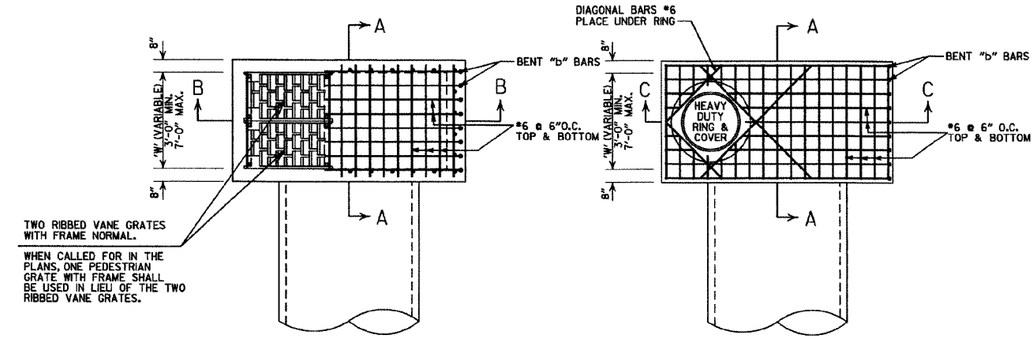
DETAILS OF RIBBED VANE GRATE AND FRAME

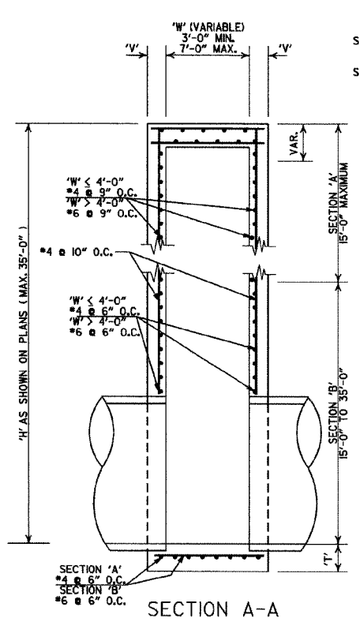
GENERAL NOTES (RIBBED VANE GRATE & FRAME)

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



DETAIL OF BENT "b" BAR





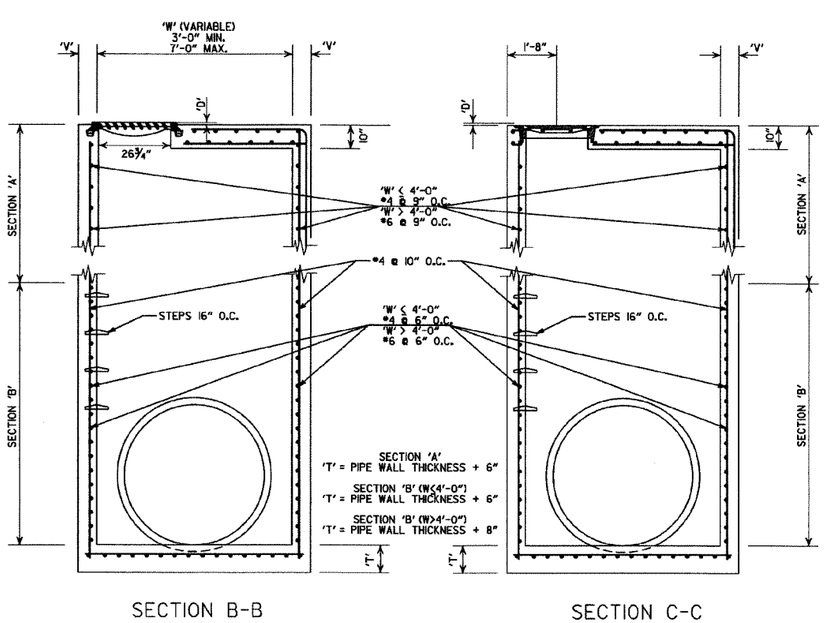
SECTION 'A'
'V' = 8"

SECTION 'B' (W<4'-0")
'V' = 8"

SECTION 'B' (W)4'-0")
'V' = 10"

SECTION A-A

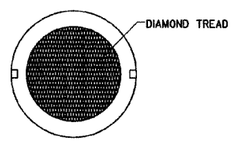
DETAILS OF DROP INLET
(TYPE ST)



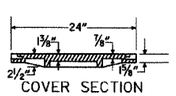
SECTION B-B

SECTION C-C

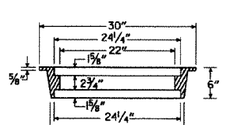
DETAILS OF JUNCTION BOX
(TYPE ST)



COVER FACE



COVER SECTION



RING SECTION

HEAVY DUTY
RING & COVER

APPROXIMATE TOTAL WEIGHT = 333 LBS.

GENERAL NOTES (TYPE ST DROP INLET & JUNCTION BOX)

1. THE 'D' DIMENSION SHALL MATCH THE FINAL LIFT OF ACHM SURFACE COURSE SHOWN IN THE PLANS WHEN ASPHALT PAVING SURROUNDS THE GRATE OR RING COVER, AND SHALL BE 0" AT OTHER INSTALLATIONS.
2. THE STEPS SHALL BE OMITTED WHERE 'H' IS LESS THAN 4'-0".
3. ALL EXPOSED CORNERS ARE TO HAVE A ¾" CHAMFER.
4. ALL #4 & #5 REINFORCING BARS ARE TO HAVE A MIN. 1½" COVER. ALL LARGER SIZE BARS ARE TO HAVE A 2" MIN. COVER.

GENERAL NOTES (HEAVY DUTY RING & COVER):

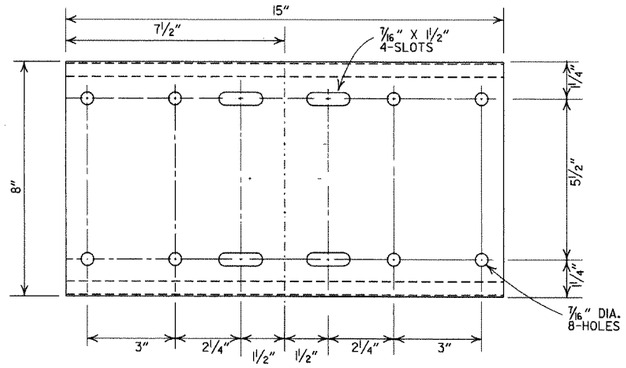
1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
4. 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 REVISED	DATE FILMED	DESCRIPTION
11-16-01		ADDED NOTE 4
1-12-00		REVISED HEAVY DUTY RING & COVER
5-13-99		ADDED PEDESTRIAN FRAME & GRATE
7-02-98		REMOVED NOTE 5, REV. DIMENSIONS, ADDED HEAVY DUTY RING & COVER ADDED AASHTO REF. REVISED GRATE
10-18-96		REVISED ASTM REF. TO AASHTO
10-1-92		REVISED & REISSUED
8-15-91	8-15-91	REVISED & REISSUED

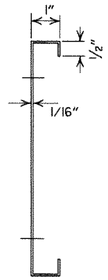
ARKANSAS STATE HIGHWAY COMMISSION

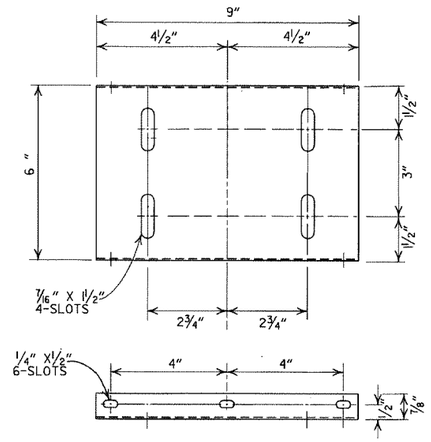
DETAILS OF DROP INLET & JUNCTION BOX (TYPE ST)

STANDARD DRAWING FPC-9S

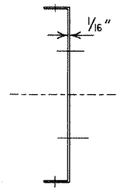


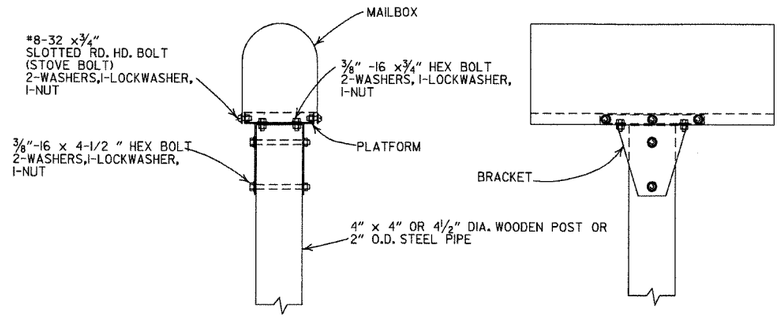
SHELF



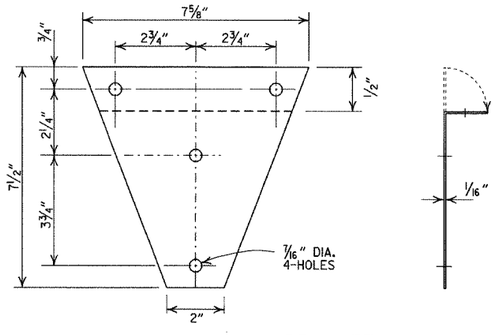


PLATFORM





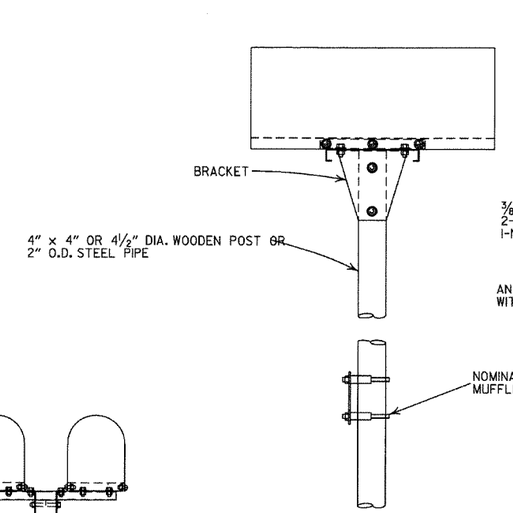
SINGLE INSTALLATION



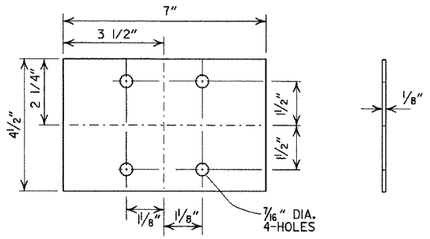
BRACKET

GENERAL NOTES

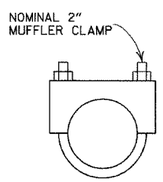
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF ¾" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X¾" 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.



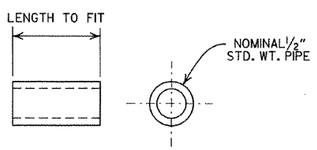
DOUBLE INSTALLATION



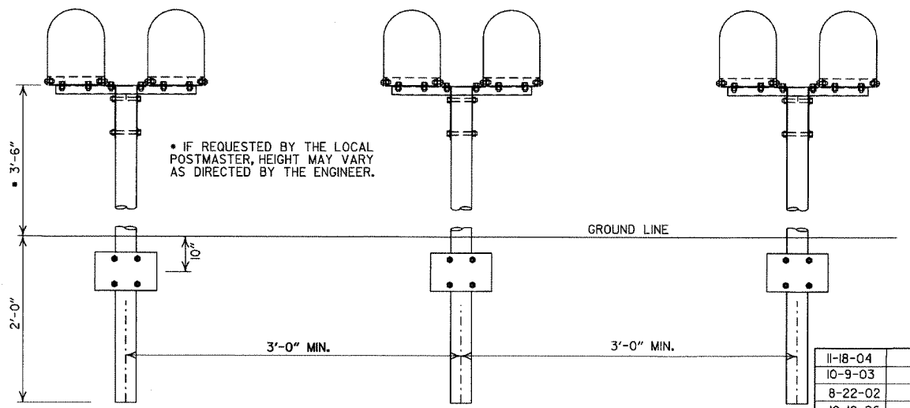
ANTI-TWIST PLATE



CLAMP



SPACER



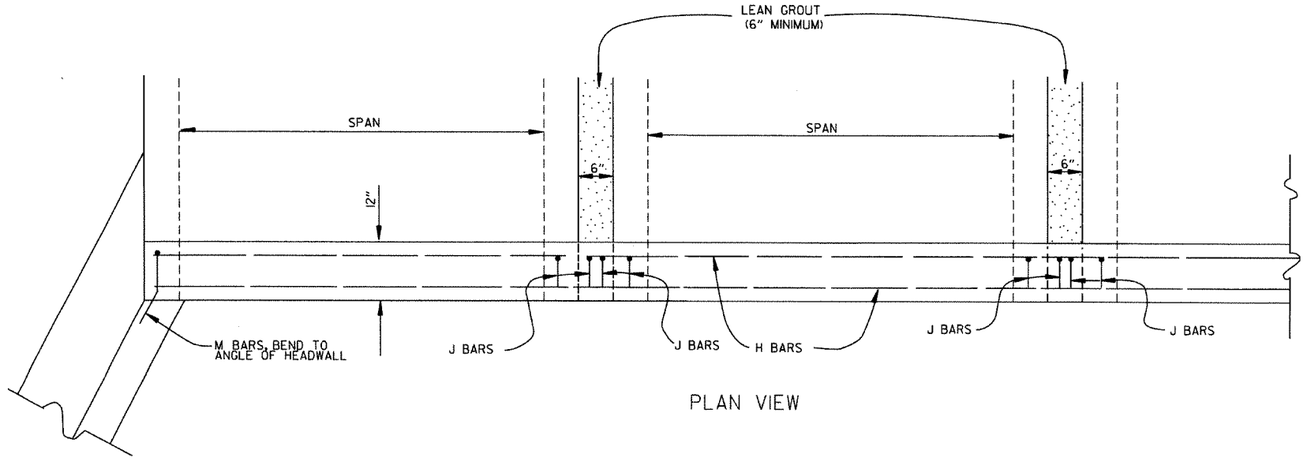
SPACING FOR MULTIPLE POST INSTALLATION

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

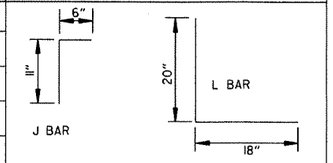
STANDARD DRAWING MB-1



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

GENERAL NOTES

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

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

ALL EXPOSED CORNERS TO HAVE ¾" CHAMFERS.

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

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

LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS:
PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS.
THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE.
THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8 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.

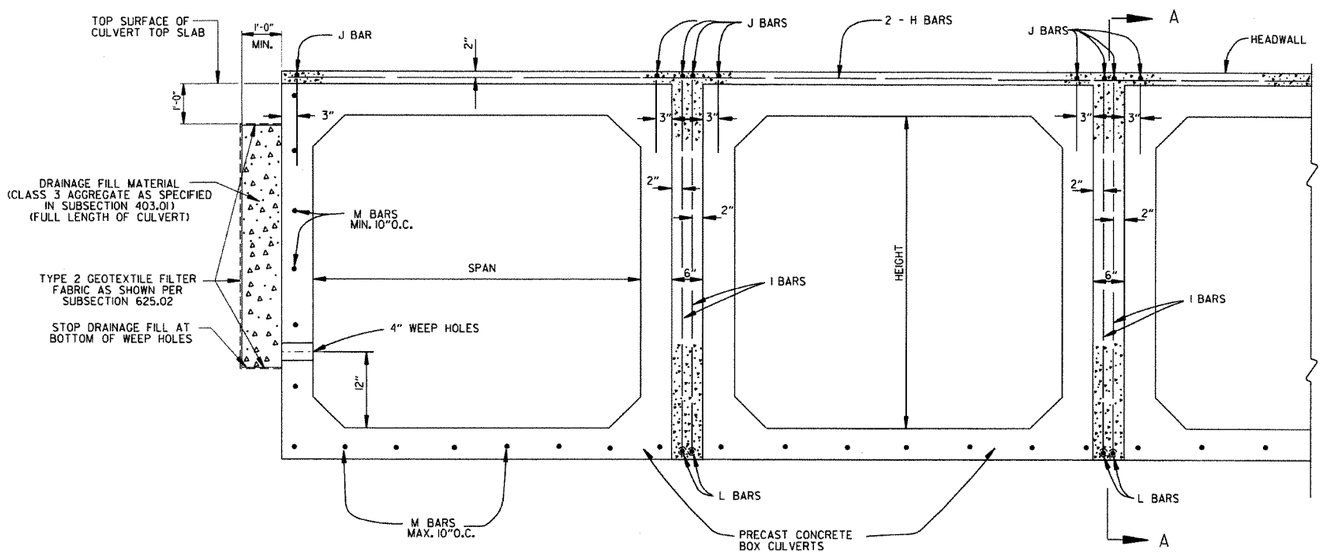
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

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

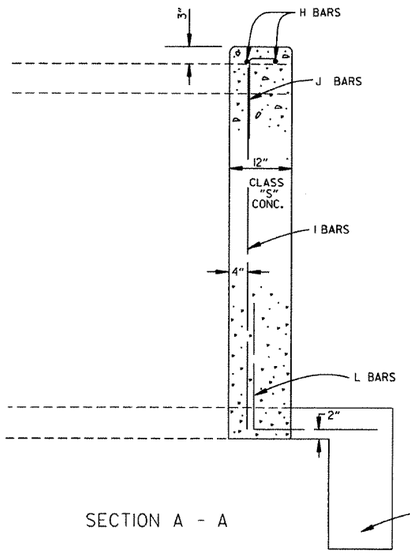
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT. SEE DETAILS ON THIS DRAWING.

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

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



END VIEW



SECTION A - A

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

ARKANSAS STATE HIGHWAY COMMISSION

PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

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

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

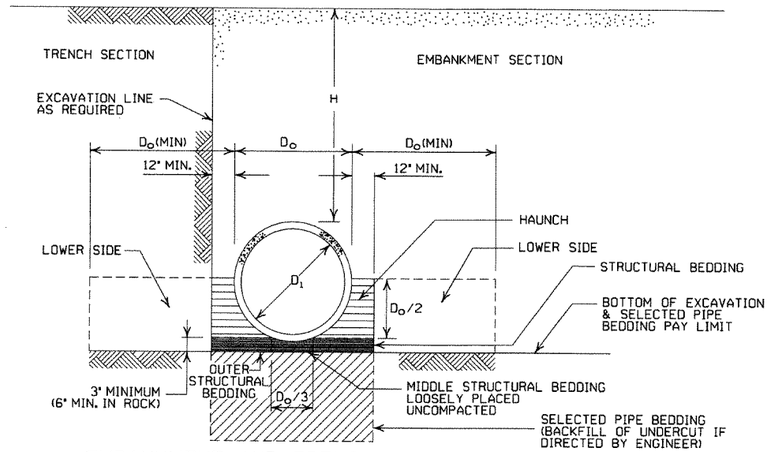
- LEGEND -

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

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

* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

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

CORRUGATED ALUMINUM PIPE (ROUND)

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

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL			ALUMINUM		
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1
			2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			2⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM		
15	17x13	3	0.064	2	15	0.060	2	15
18	21x15	3	0.064	2	15	0.060	2	15
21	24x18	3	0.064	2.25	15	0.060	2.25	15
24	28x20	3	0.064	2.5	15	0.075	2.5	15
30	35x24	3	0.079	3	12	0.075	3	12
36	42x29	3½	0.079	3	12	0.105	3	12
42	49x33	4	0.079	3	12	0.105	3	12
48	57x38	5	0.109	3	13	0.135	3	13
54	64x43	6	0.109	3	14	0.135	3	14
60	71x47	7	0.138	3	15	0.164	3	15
66	77x52	8	0.168	3	15			
72	83x57	9	0.168	3	15			

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL					
			MIN. THICKNESS REQUIRED INCHES	② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				
				INSTALLATION TYPE 2	INSTALLATION TYPE 1	INSTALLATION TYPE 2	INSTALLATION TYPE 1	
36	40x31	5	0.079	3	2	12	15	
42	46x36	6	0.079	3	2	13	15	
48	53x41	7	0.079	3	2	13	15	
54	60x46	8	0.079	3	2	13	15	
60	66x51	9	0.079	3	2	13	15	
66	73x55	12	0.079	3	2	15	15	
72	81x59	14	0.079	3	2	15	15	
78	87x63	14	0.079	3	2	15	15	
84	95x67	16	0.109	3	2	15	15	
90	103x71	16	0.109	3	2	15	15	
96	112x75	18	0.109	3	2	15	15	
102	117x79	18	0.109	3	2	15	15	
108	128x83	18	0.138	3	2	15	15	

CONSTRUCTION SEQUENCE

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

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

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

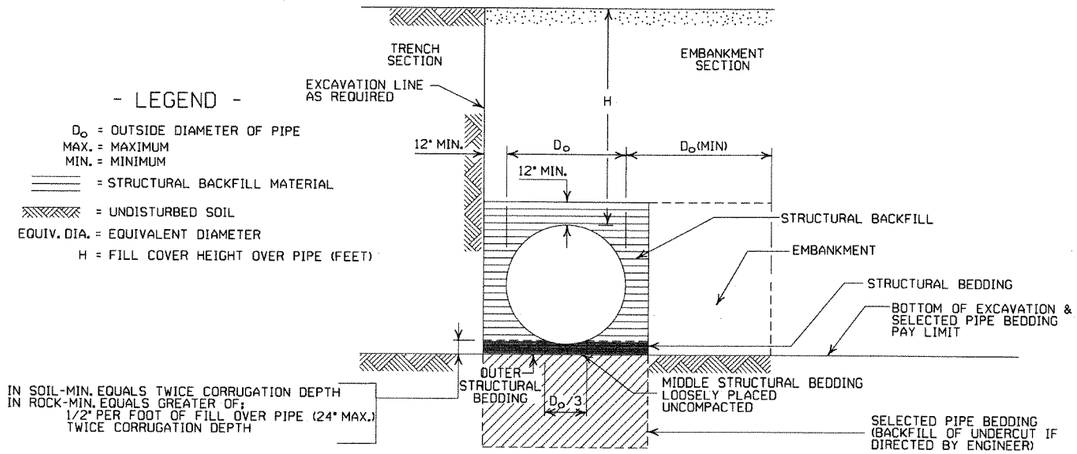
③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

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

- LEGEND -

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

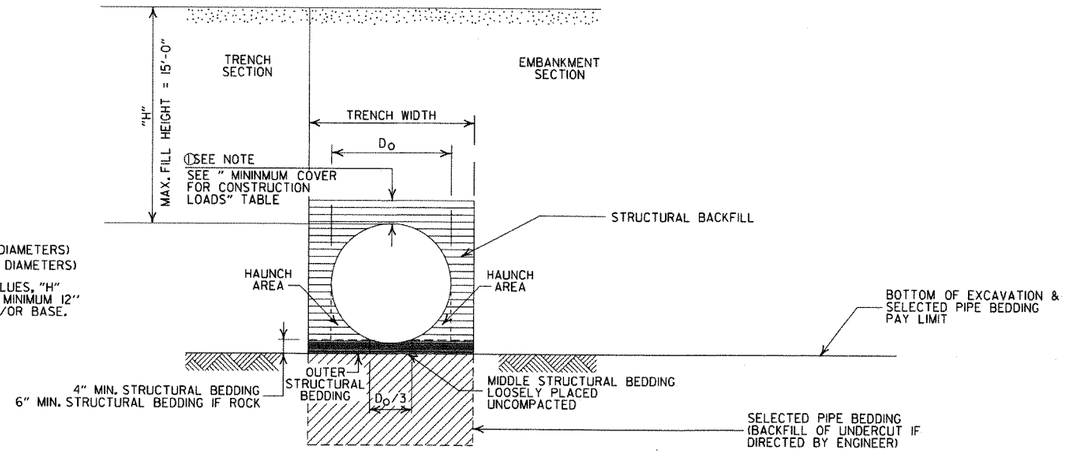
PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

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

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



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.

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

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

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

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

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

MULTIPLE INSTALLATION OF PVC PIPES

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

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

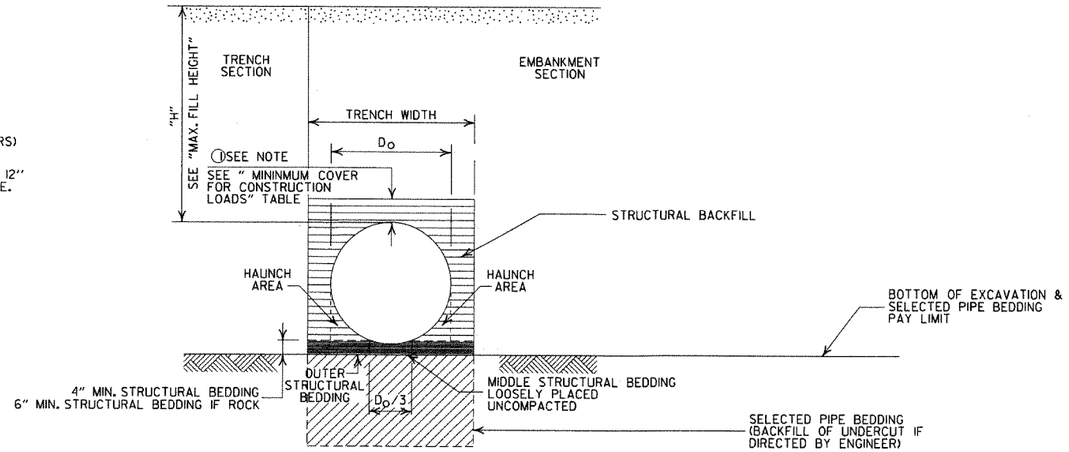
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

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

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

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

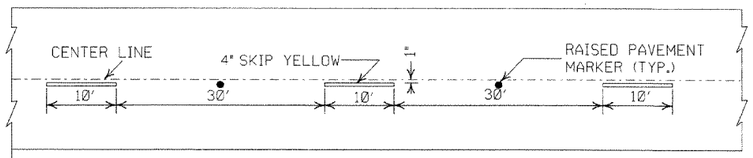
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

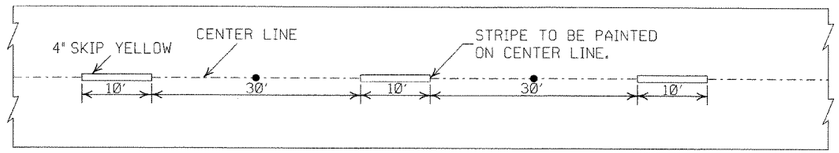
STANDARD DRAWING PCP-2

NOTES:

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

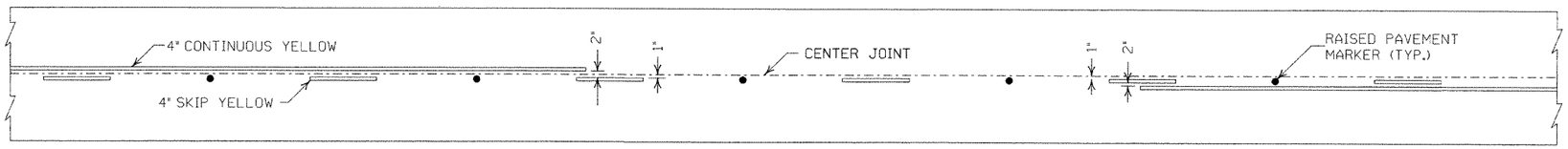


CONCRETE PAVEMENT

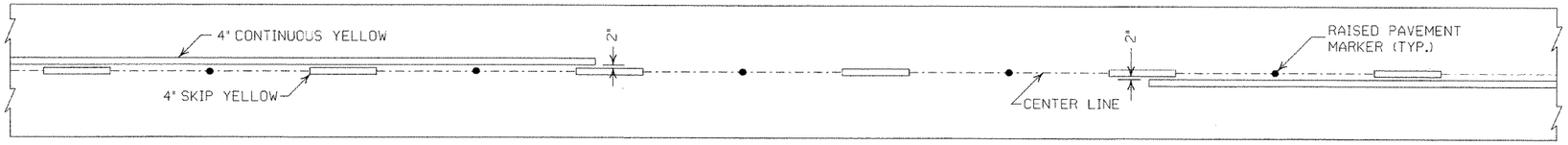


ASPHALT PAVEMENT

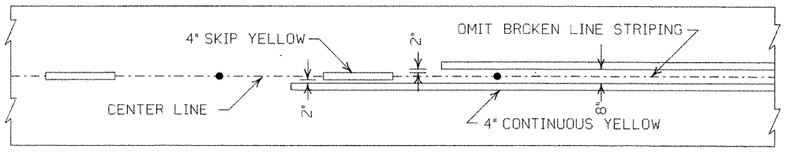
BROKEN LINE STRIPING



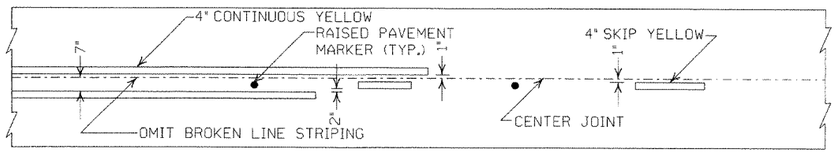
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT



ASPHALT PAVEMENT



CONCRETE PAVEMENT

GENERAL NOTES:

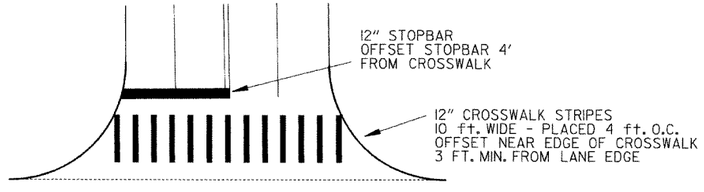
THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

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

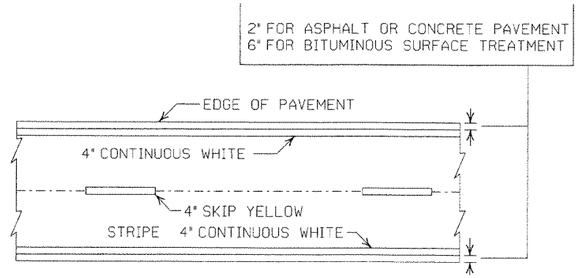
NOTE:

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.

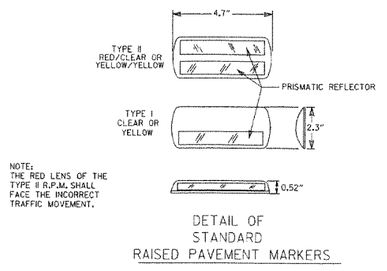
STRIPING AT ADJACENT NO PASSING LANES



CROSSWALK AND STOPBAR DETAILS



PAVEMENT EDGE LINE MARKING



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

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

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

ARKANSAS STATE HIGHWAY COMMISSION

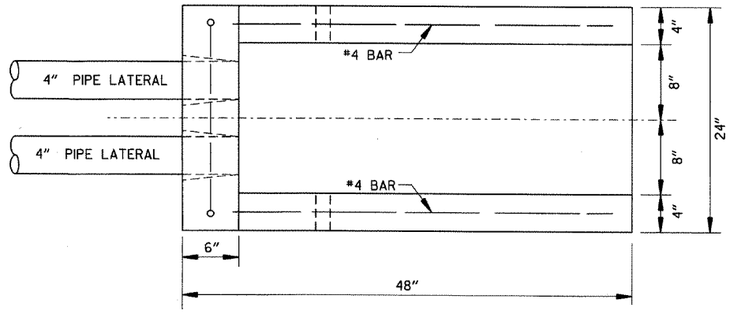
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

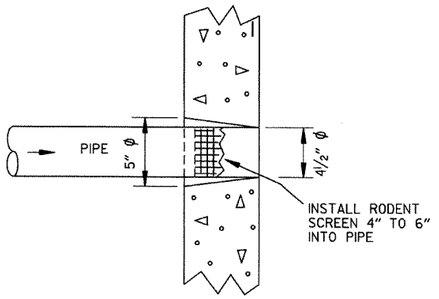
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

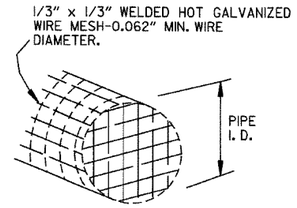
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



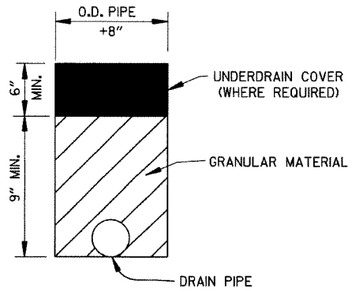
PLAN VIEW

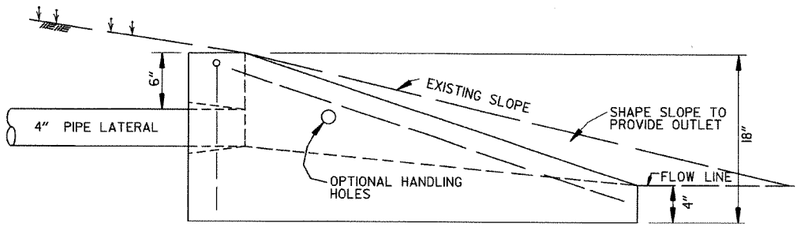


DETAIL OF HOLE FOR 4" PIPE

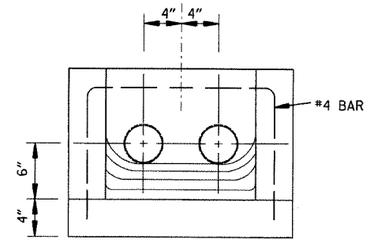


DETAIL OF RODENT SCREEN

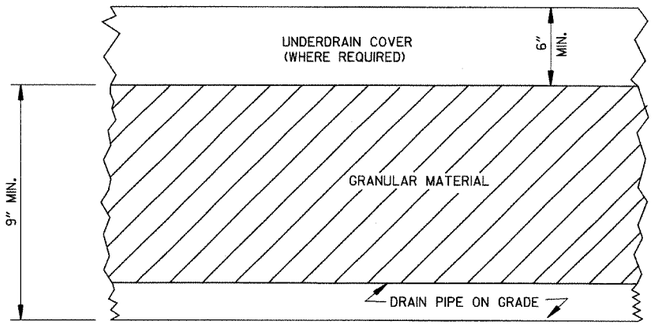




SIDE VIEW

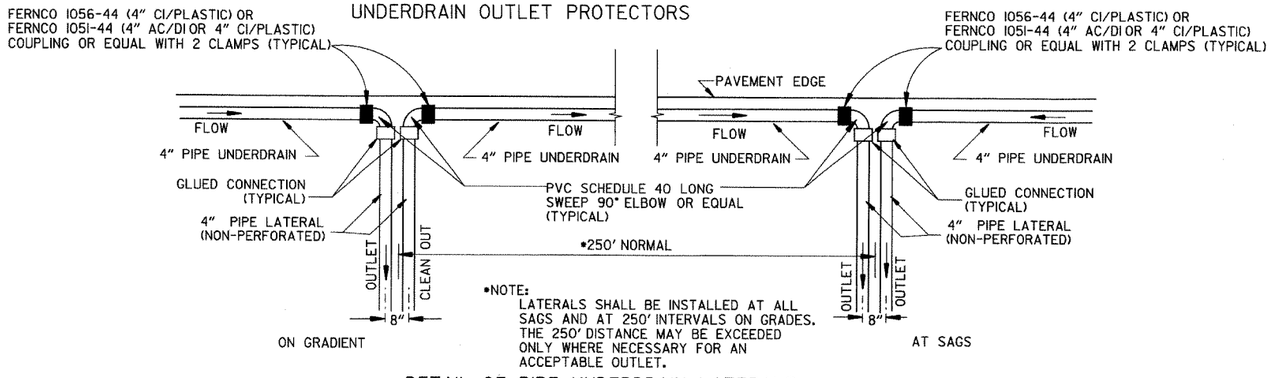


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



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

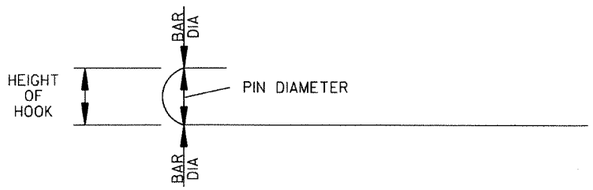
STANDARD DRAWING PU-1

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

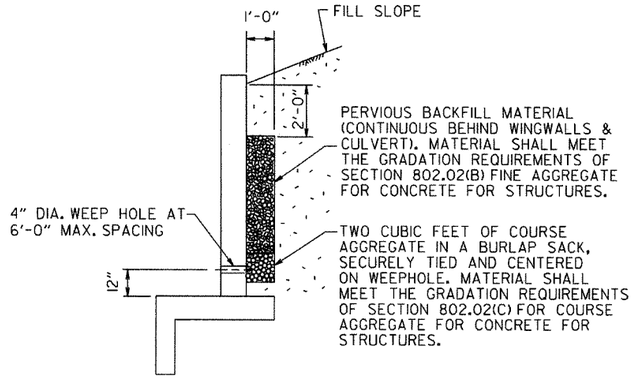
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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 & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.

REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".

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

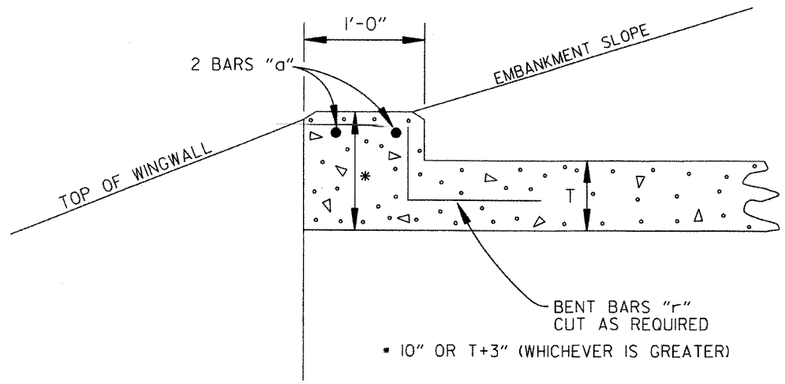
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS ½ INCH.

WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO (2) WEEP HOLES IN EACH WINGWALL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINGWALL FOOTING.

THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.



* 10" OR T+3" (WHICHEVER IS GREATER)

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.

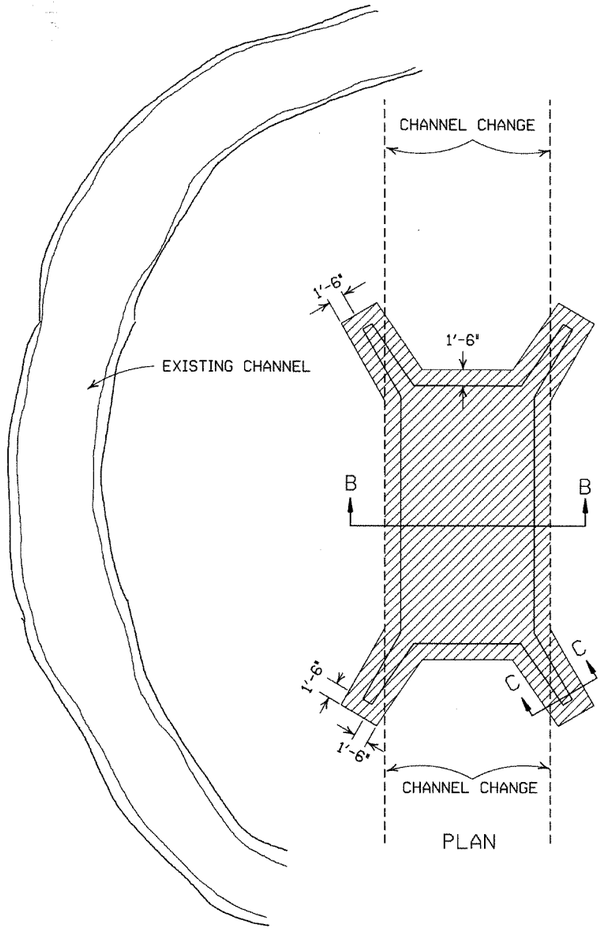
R.C. BOX CULVERT HEADWALL MODIFICATIONS

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

ARKANSAS STATE HIGHWAY COMMISSION

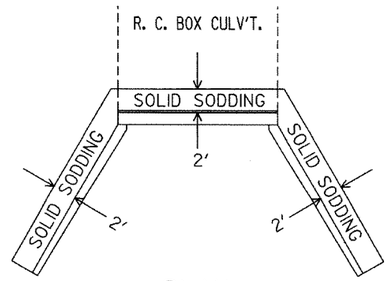
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

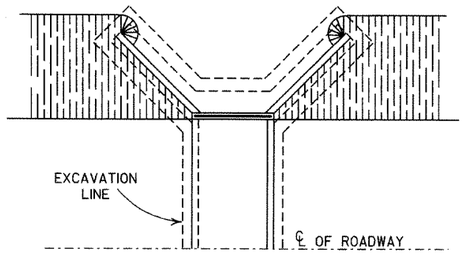
SOLID SODDING



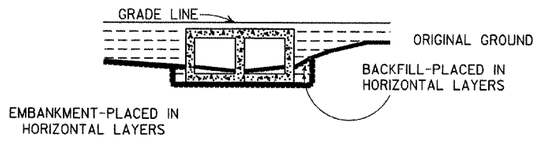
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

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

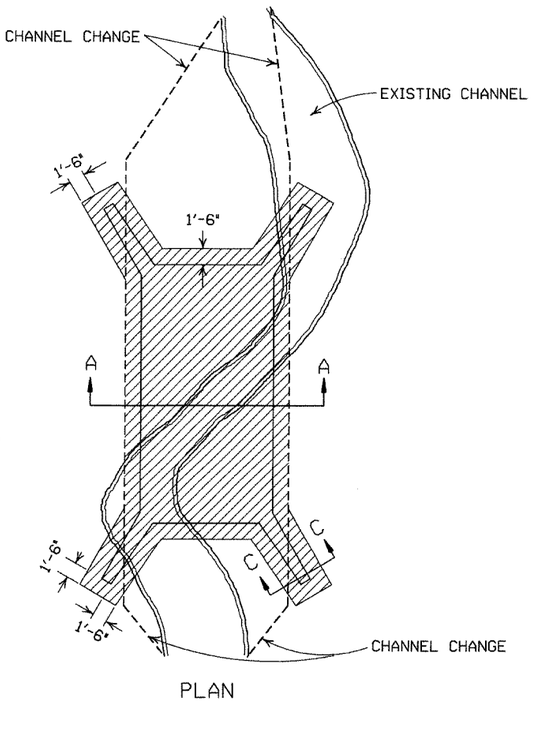


PLAN

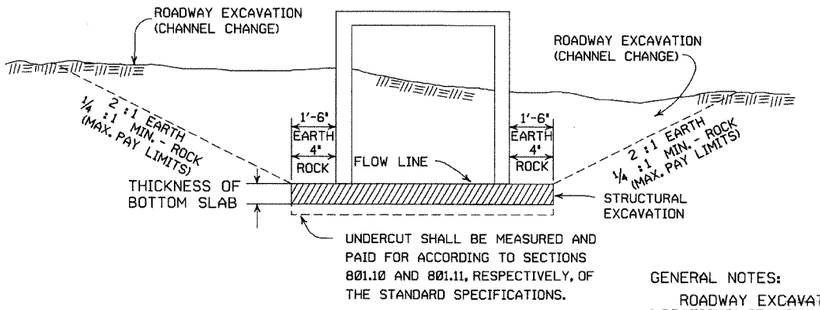


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

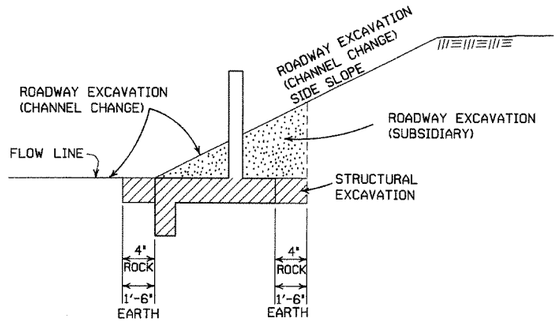


PLAN

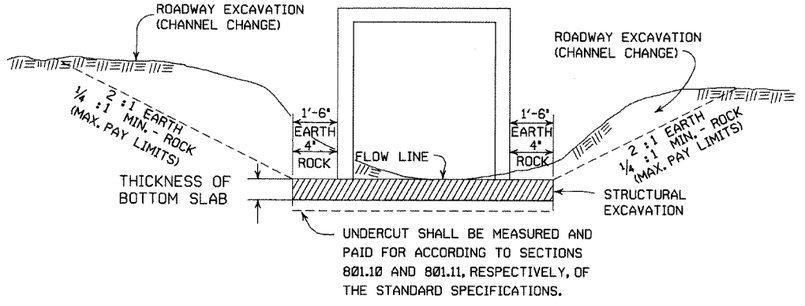


SECTION B-B

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.

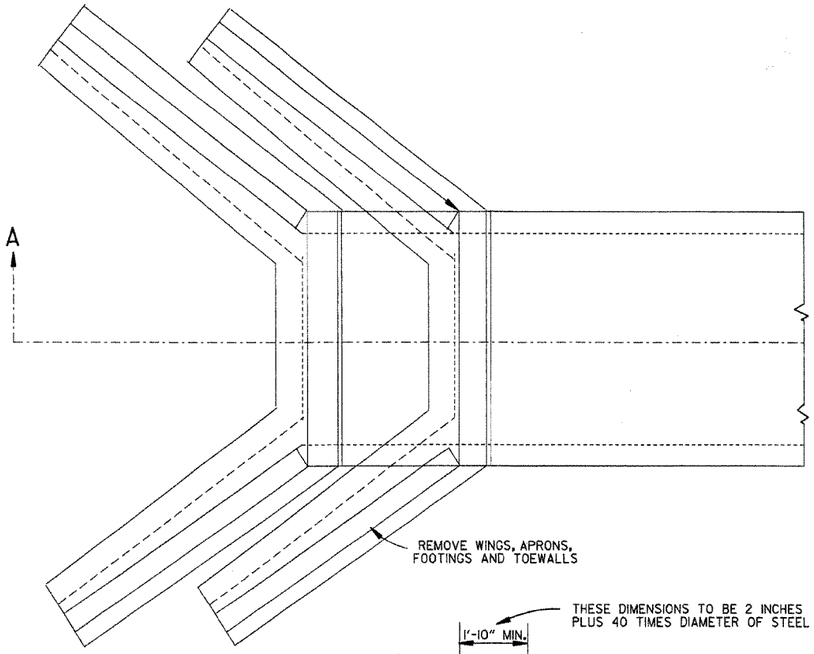
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

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

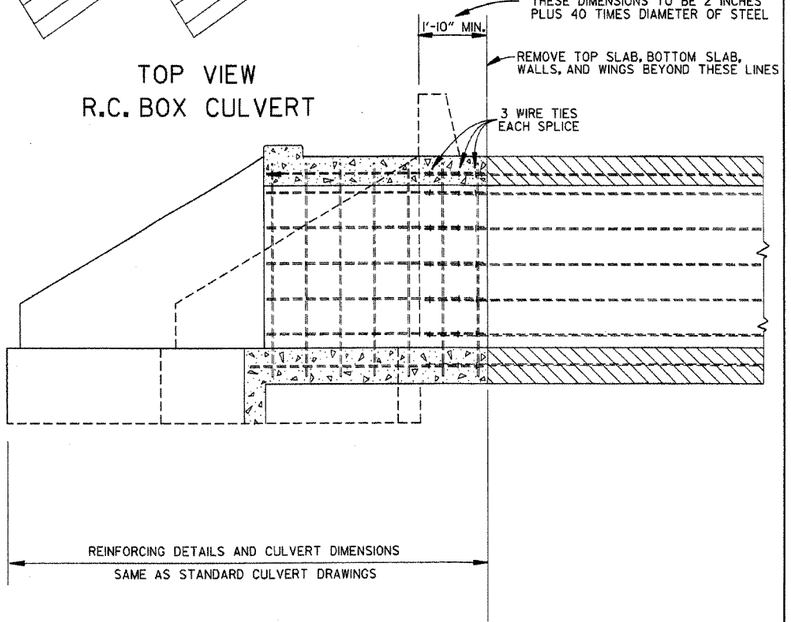
ARKANSAS STATE HIGHWAY COMMISSION

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

STANDARD DRAWING RCB-2

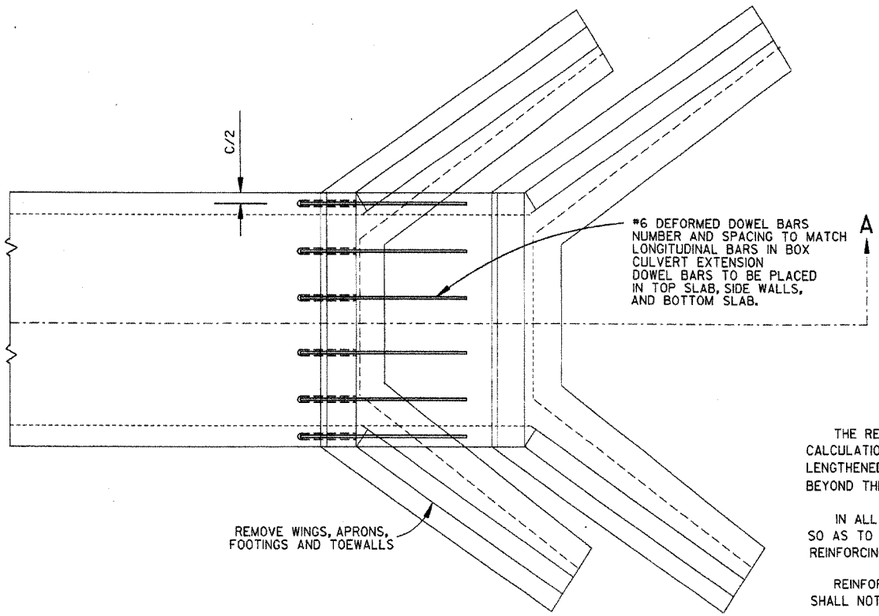


TOP VIEW
R.C. BOX CULVERT

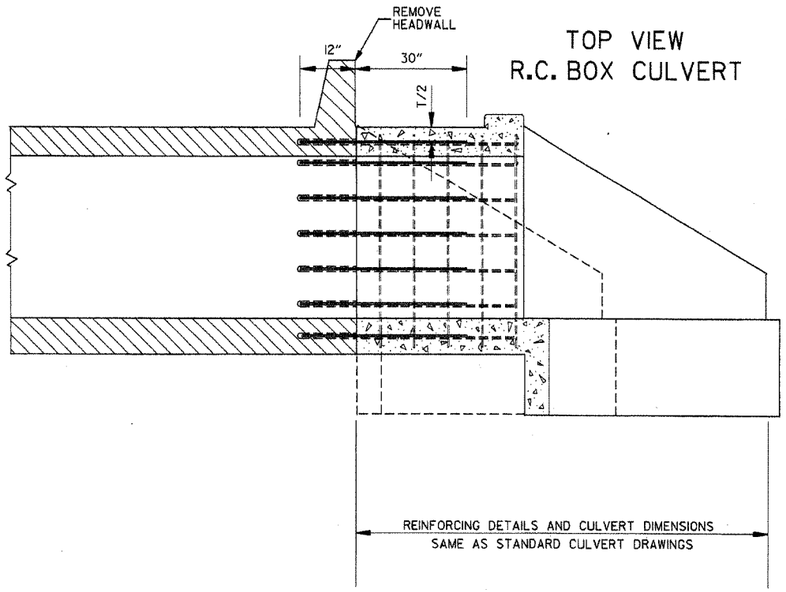


SECTION A-A

METHOD 1



TOP VIEW
R.C. BOX CULVERT



SECTION A-A

METHOD 2

GENERAL NOTES

	USE FOR METHOD
THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.	1
IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.	1
REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.	1&2
ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON; THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.	1&2
MATERIALS FOR SECURING DOWEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.02 OF THE STANDARD SPECIFICATIONS.	2
DOWEL BARS SHALL BE INSTALLED AS FOLLOWS: THE DRILLING PROCEDURE SHALL BE APPROVED BY THE ENGINEER, THE FILLING SYSTEM SHALL BE APPROVED BY THE ENGINEER, AND SHALL BE AN INJECTION-TYPE SYSTEM WHICH WILL INSURE THAT SUFFICIENT MATERIAL IS INJECTED SO IT COMPLETELY SURROUNDS THE BARS AND FILLS THE HOLES.	2
THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2, REGARDLESS OF WHICH METHOD IS USED, PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.	1&2

NOTE:
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.

SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

DATE	REVISION	DATE FILM
10-12-95	CHANGED DRAWING # FROM 144-A	
4-1-93	ADDED GENERAL NOTE	
10-1-92	ADDED ALT. METHOD OF EXTENSION	
11-30-89	REDRAWN	
1-4-83	ELIMINATED CONCRETE CLASS	
12-20-56	RETRACED	

ARKANSAS STATE HIGHWAY COMMISSION

METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS

STANDARD DRAWING RCB-3

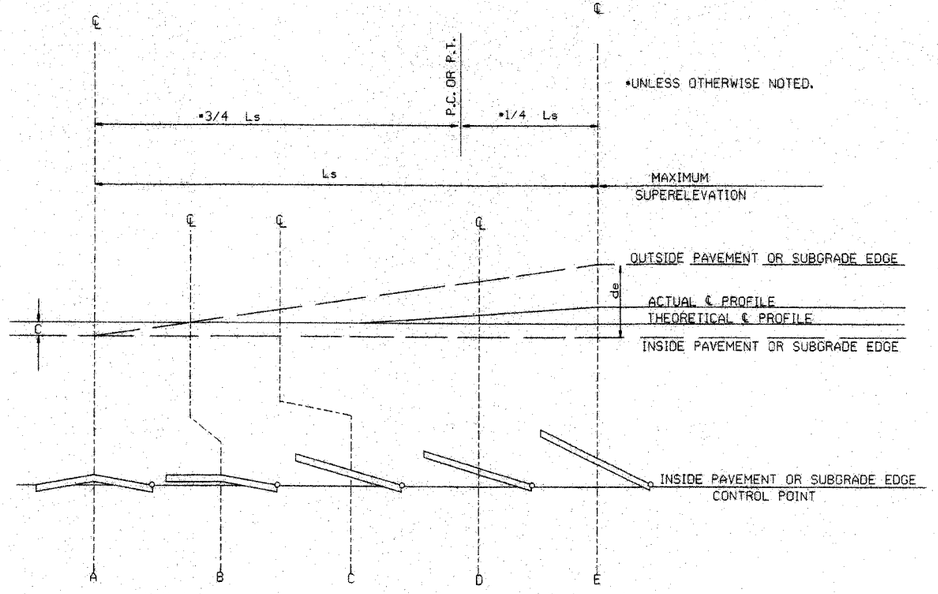
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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

ABBREVIATIONS

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



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

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

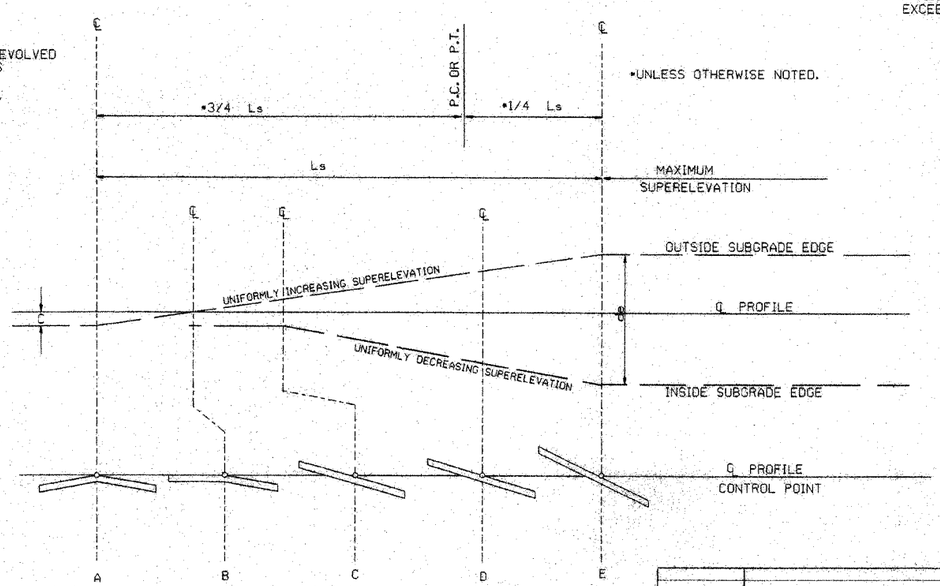
GENERAL NOTES

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

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

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

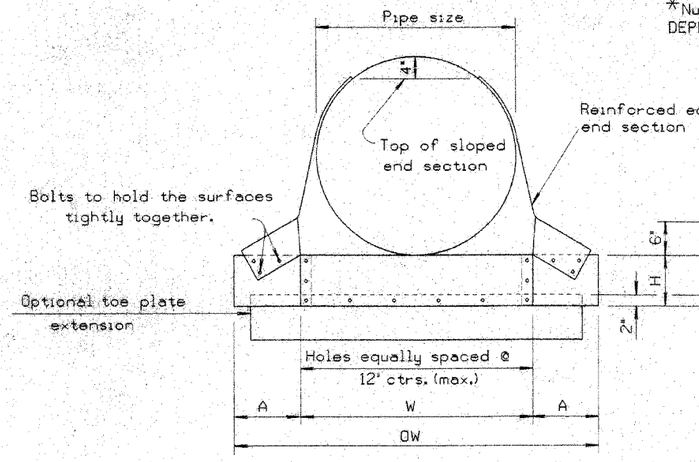
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

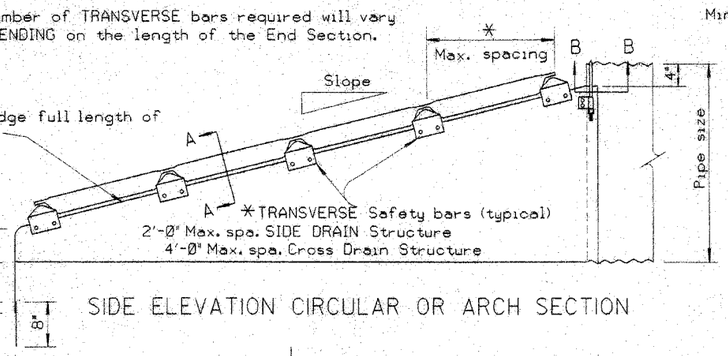
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

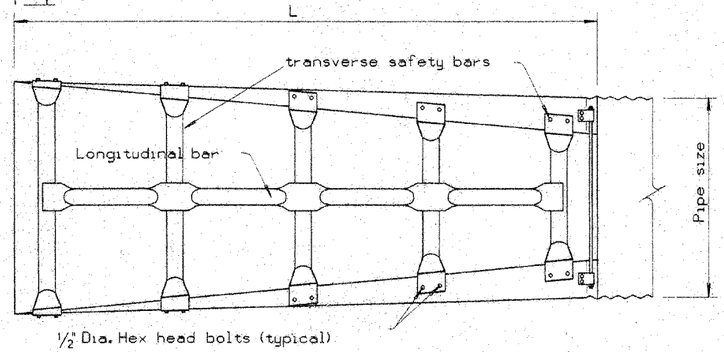
FILE STDSE2.DGN



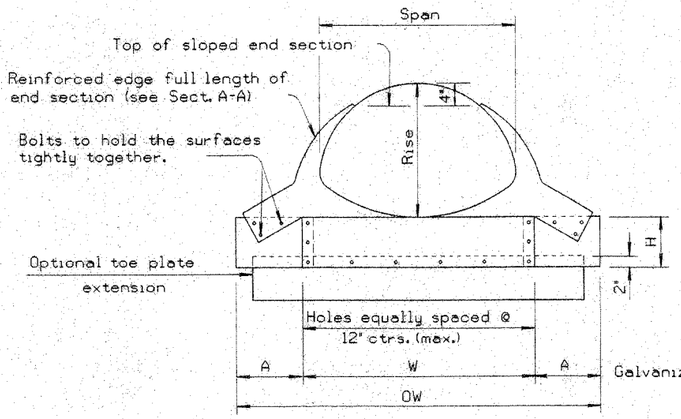
FRONT VIEW CIRCULAR PIPE



SIDE ELEVATION CIRCULAR OR ARCH SECTION



TOP VIEW CIRCULAR OR ARCH SECTION

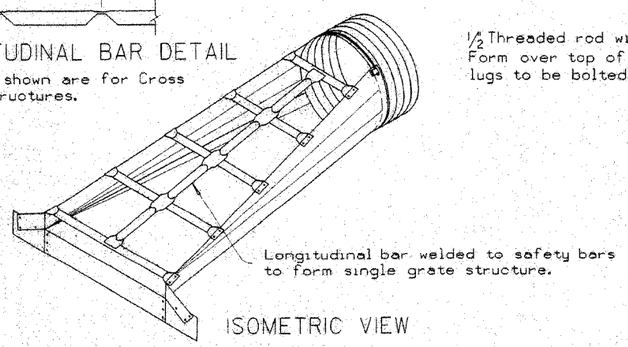


FRONT VIEW ARCH PIPE

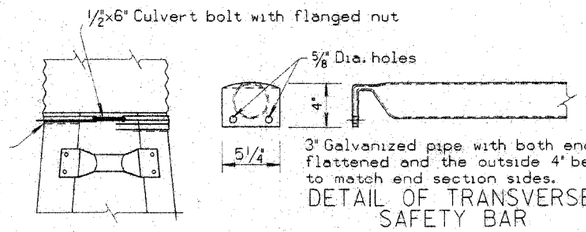


LONGITUDINAL BAR DETAIL

Note: Bars shown are for Cross Drain Stuotures.

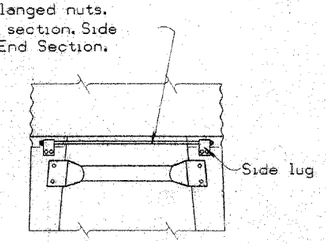


ISOMETRIC VIEW



TYPE #1 CONNECTOR DETAIL

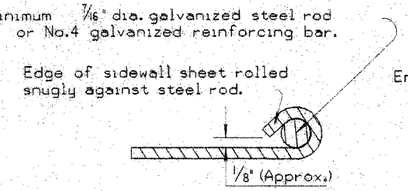
For 15" thru 24" pipe



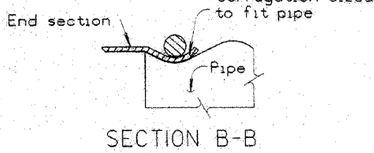
TYPE #2 CONNECTOR DETAIL

For 30" and larger round pipes & 21"x15" thru 64"x43" arch pipes

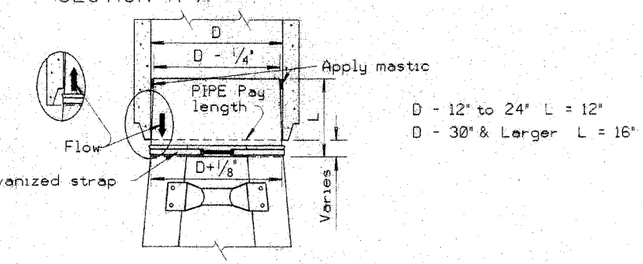
DETAIL OF TRANSVERSE SAFETY BAR



SECTION A-A



SECTION B-B



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)

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

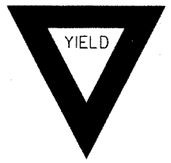
FILE stdses1.dgn

R1-1



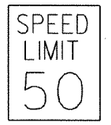
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

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



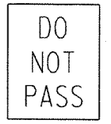
STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

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



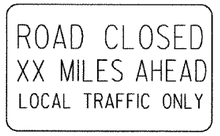
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

R11-2



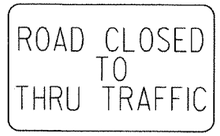
48"X30"

R11-3A



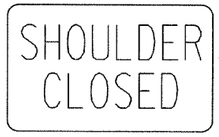
60"X30"

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



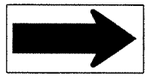
STD. 48"X48"

W1-4



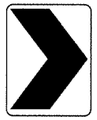
STD. 48"X48"

W1-6



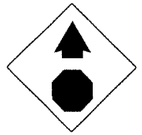
STD. 48"X24"
SPECIAL 60"X30"

W1-8



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

W3-1



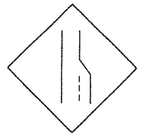
STD. 36"X36"
SPECIAL 48"X48"

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



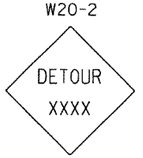
STD. 24"X24"

W20-1



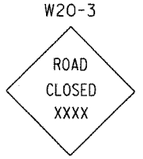
STD. 48"X48"

W20-2



STD. 48"X48"

W20-3



STD. 48"X48"

W20-4



STD. 48"X48"

W20-5



STD. 48"X48"

W20-7a



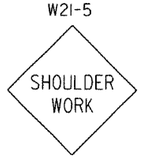
STD. 36"X36"
FWY. 48"X48"

W21-2



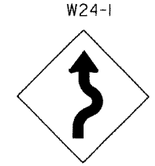
STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

W1-4b



STD. 48"X48"

R56-1



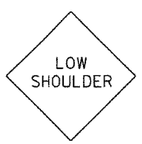
STD. 18"X18"

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

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.

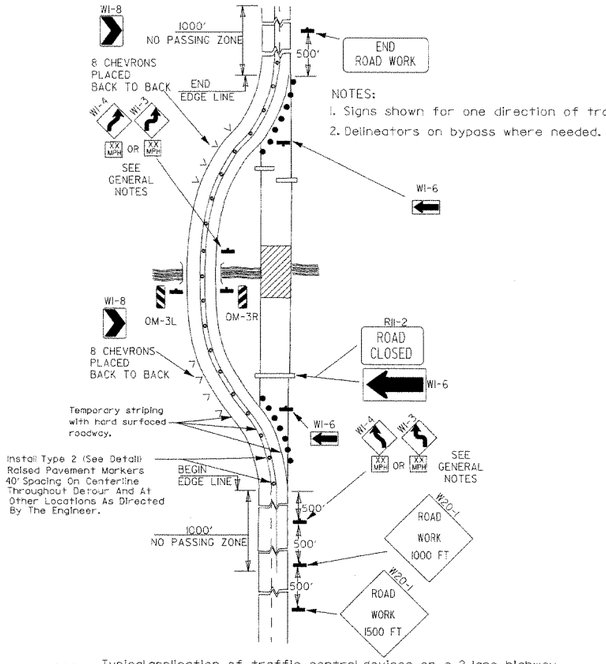
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

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

ARKANSAS STATE HIGHWAY COMMISSION

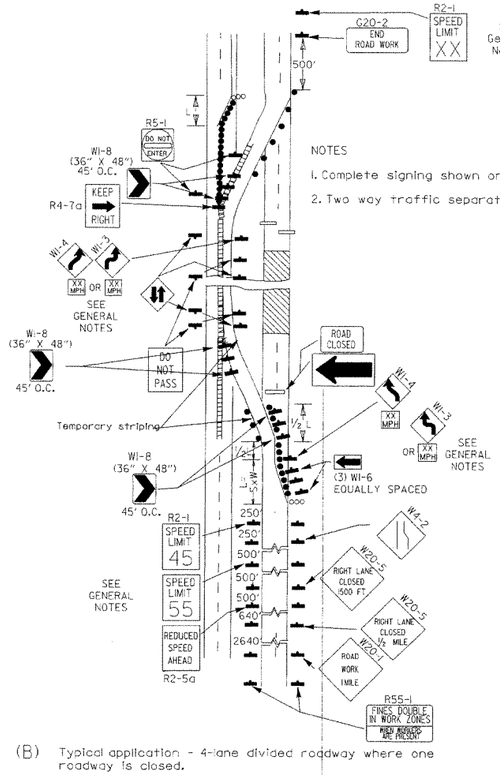
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



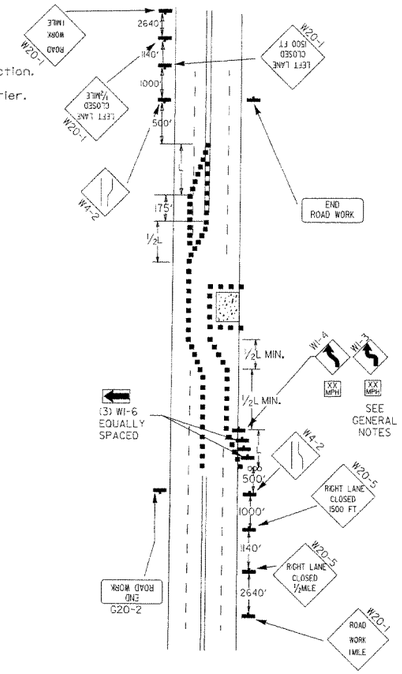
NOTES:
1. Signs shown for one direction of travel only.
2. Delineators on bypass where needed.

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

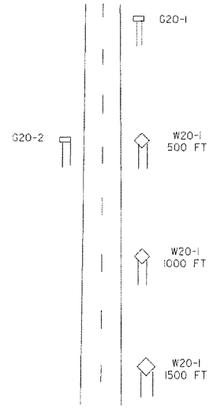


NOTES
1. Complete signing shown only in crossover direction.
2. Two way traffic separated with positive barrier.

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

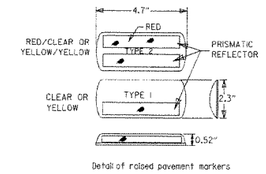


(C) Typical application - 4-lane undivided roadway where half of the roadway is closed.

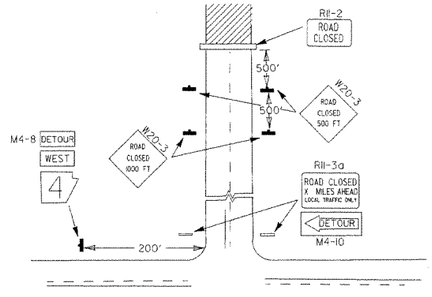


Typical advance warning sign placement

KEY:
- Flagger
- Positive Barrier
- Arrow Panel(If Required)
- Type III Barricade
- Channelizing Device
- Traffic Drum
- Raised Pavement Marker

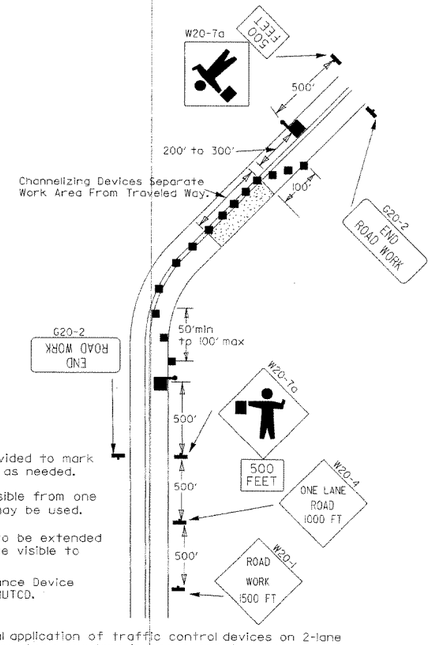


Detail of raised pavement markers



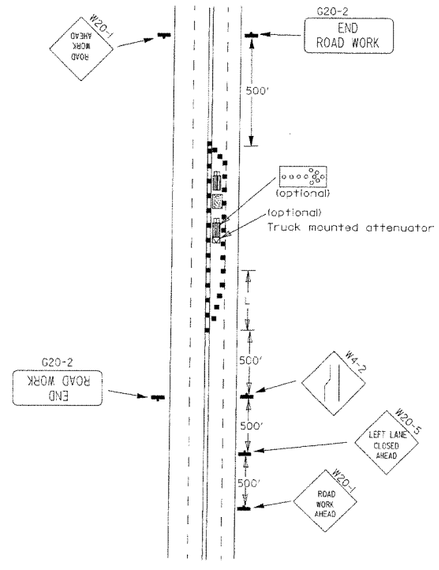
NOTES:
1. Regulatory traffic control devices to be modified as needed for the duration of the detour.
2. Street names may be used when desirable for directing detoured traffic.

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



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

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



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

Taper formulae:

L=SxW for speeds of 45mph or more.

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

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

GENERAL NOTES:

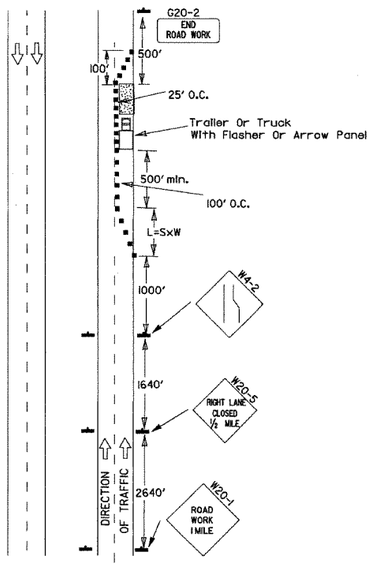
1. Advisory speed posted on W1-3 or W1-4 curve warning signs to be determined at site. Use W1-4 when speed is greater than 30mph and W1-3 when 30mph or less.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed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

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

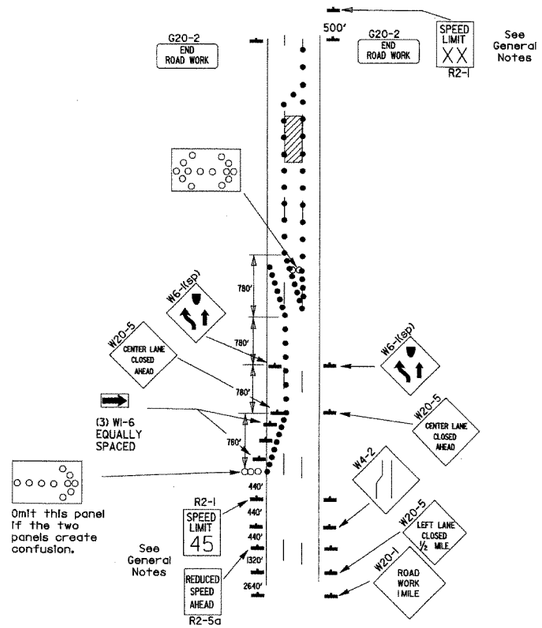
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

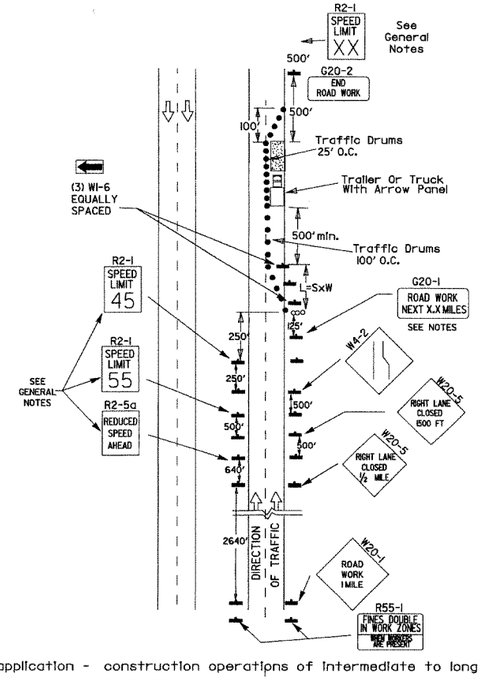
STANDARD DRAWING TC-2



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



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



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

KEY:

○○○ Arrow Panel (If Required)

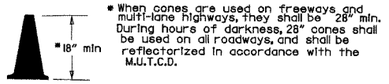
■ Channelizing Device

● Traffic drum

GENERAL NOTES:

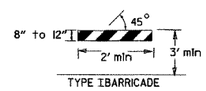
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional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

Channelizing devices



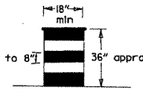
* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

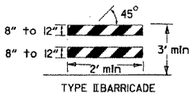
CONES



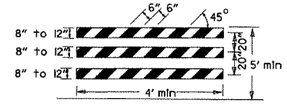
TYPE I BARRICADE

PLASTIC DRUM

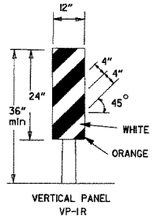




TYPE II BARRICADE



TYPE III BARRICADE



VERTICAL PANEL
VP-1R

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

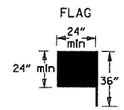
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

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.

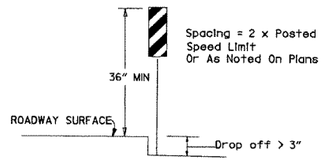
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

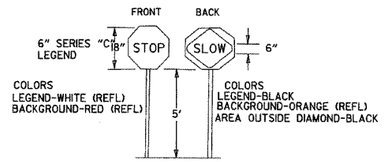


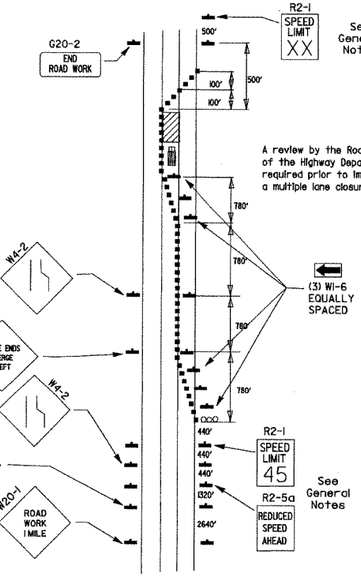
Flag shall be of good grade red material

VERTICAL PANEL PLACEMENT



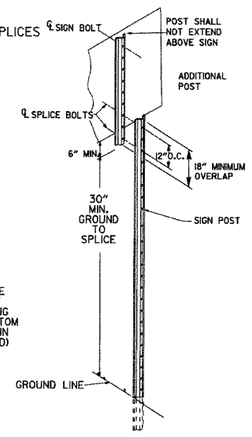
STOP SLOW PADDLE





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

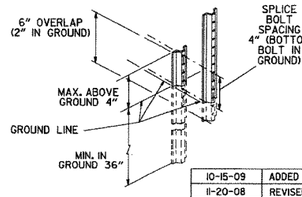
DETAIL OF SPLICES



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

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

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



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

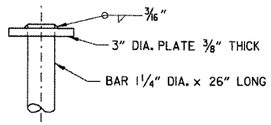
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

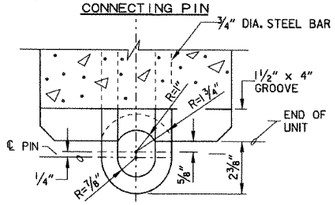
STANDARD DRAWING TC-3

REINFORCING BAR TABLE PER BARRIER UNIT

MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", 90°, 3 3/8" R, LIFTING HOLE
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS	#4	(2)	1 1/2" R, SLOTS, 7", 1'-6", 1" MIN. CLEAR TO BAR; 5'-1" BAR W/(4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP
V-1	VERTICAL IN BARRIER(3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)	TOTAL LENGTH 4'-9"; 2 3/16" R; 12°; 9 1/2"; 2'-1 3/8"; 4 3/8"

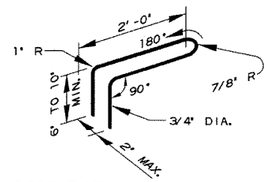


CONNECTING PIN

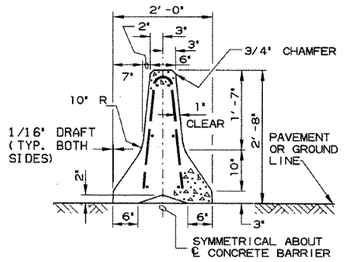


SECTION E-E

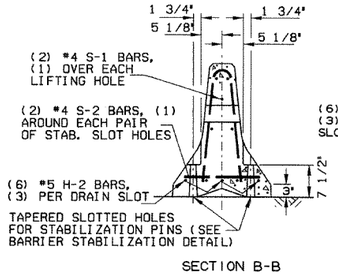
CONNECTION DETAILS



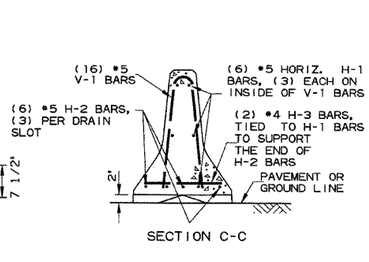
CONNECTION LOOP



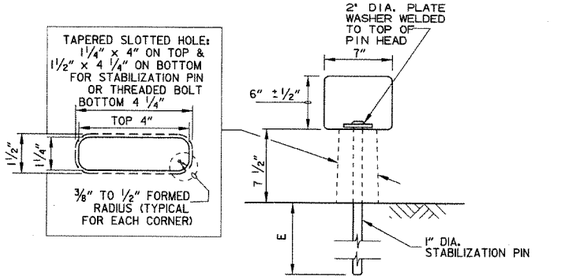
SECTION A-A



SECTION B-B



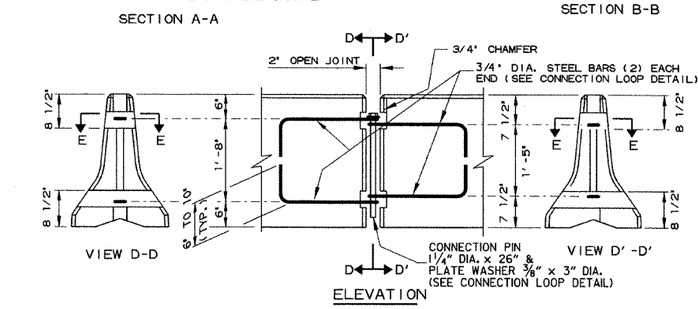
SECTION C-C



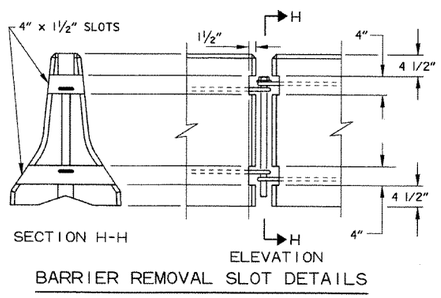
BARRIER STABILIZATION DETAIL

ROADWAY SECTION

Ⓔ 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



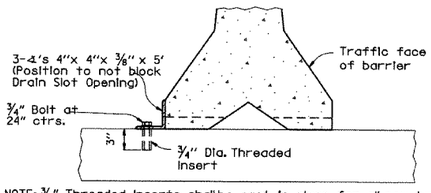
ELEVATION



SECTION H-H

ELEVATION

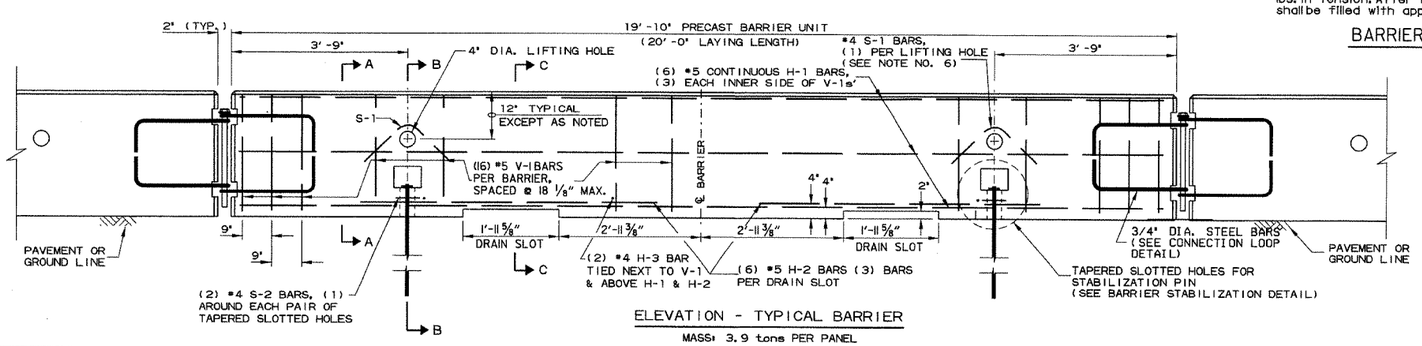
BARRIER REMOVAL SLOT DETAILS



NOTE: 3/4" Threaded Inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks to be retained. Inserts shall have a minimum ultimate load capacity of 8000 lbs. in tension. After removal of barrier, bolts, and angles, the inserts shall be filled with approved non-shrink epoxy.

BARRIER STABILIZATION DETAIL

BRIDGE DECKS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

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

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

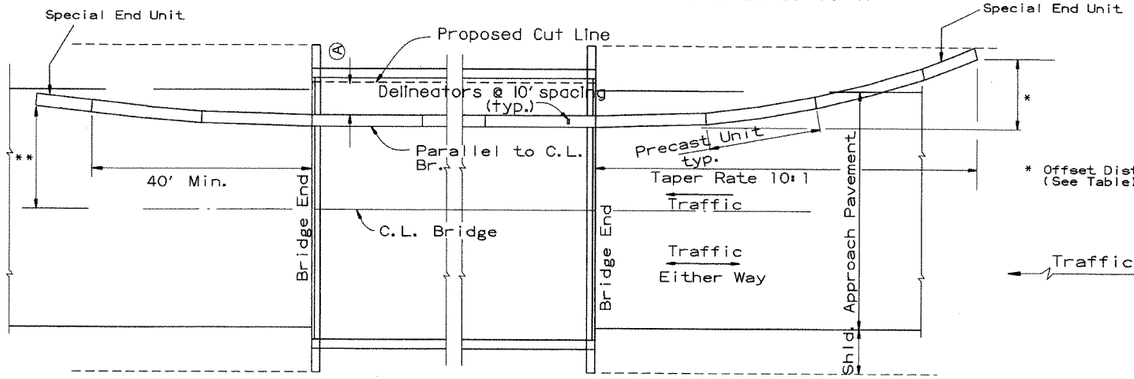
DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

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

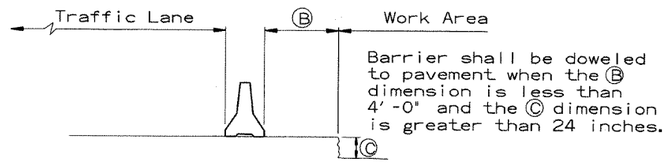


BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

* Offset Distance (See Table)

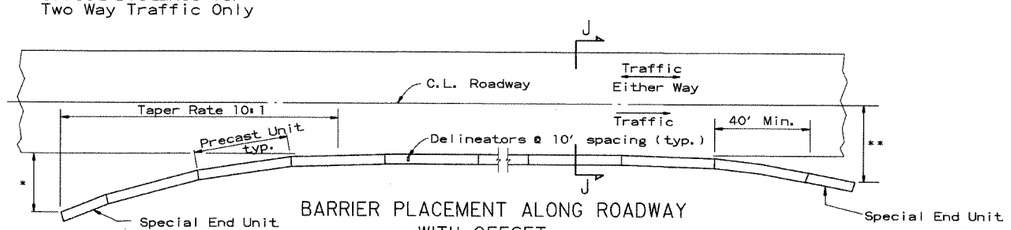
** Offset Distance for Two Way Traffic Only



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

SECTION J-J

No Scale



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

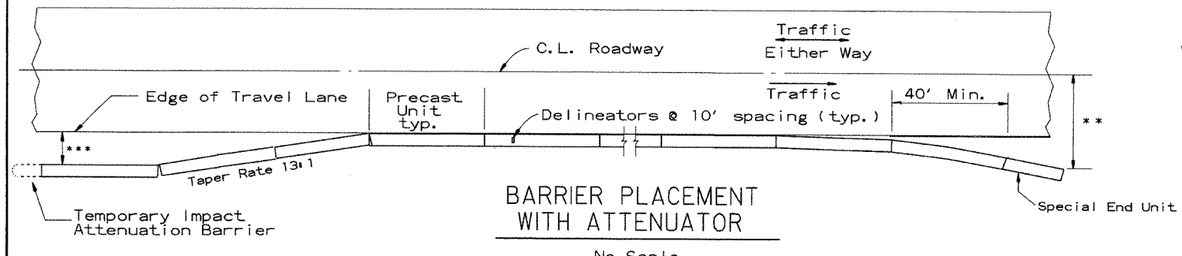
* Offset Distance (See Table)

** Offset Distance For Two Way Traffic Only

Offset Distance Table

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

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

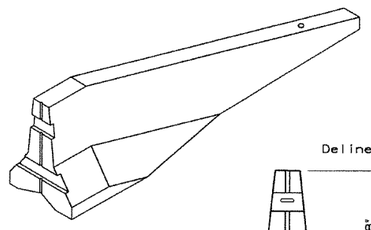


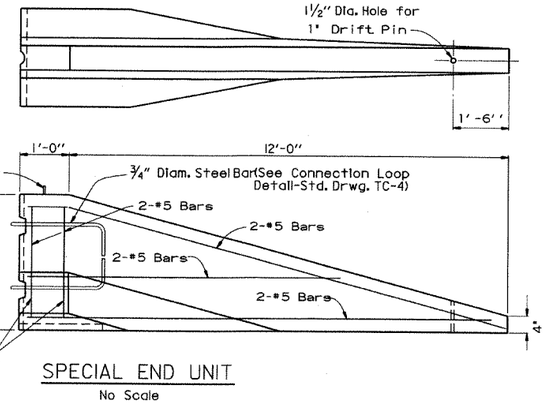
BARRIER PLACEMENT WITH ATTENUATOR

No Scale

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

** Offset Distance For Two Way Traffic Only





SPECIAL END UNIT

No Scale

General Notes

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

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

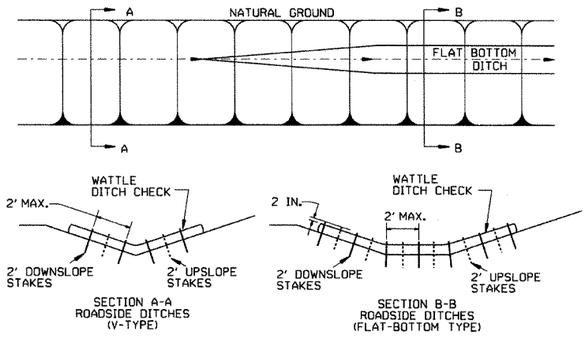
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

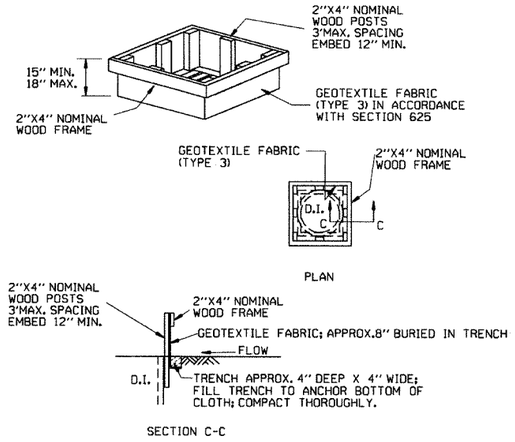
STANDARD DRAWING TC-5

GENERAL NOTES

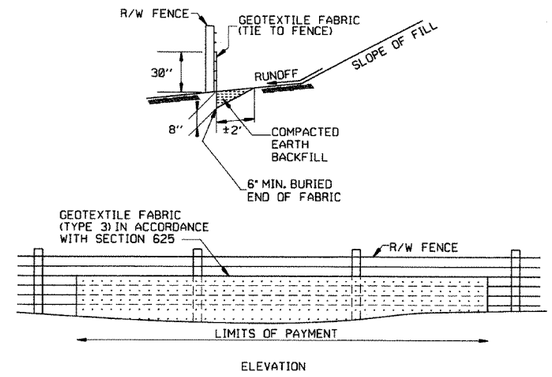
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

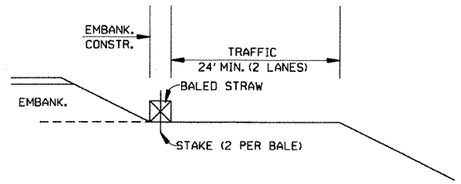
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

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

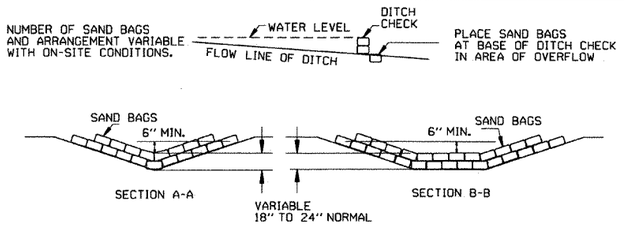
2. NO GAPS SHALL BE LEFT BETWEEN BALES.

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

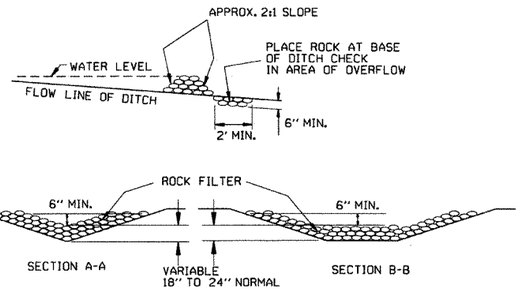


BALED STRAW FILTER BARRIER (E-2)

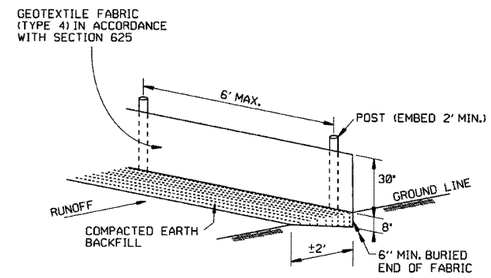
NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS.



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

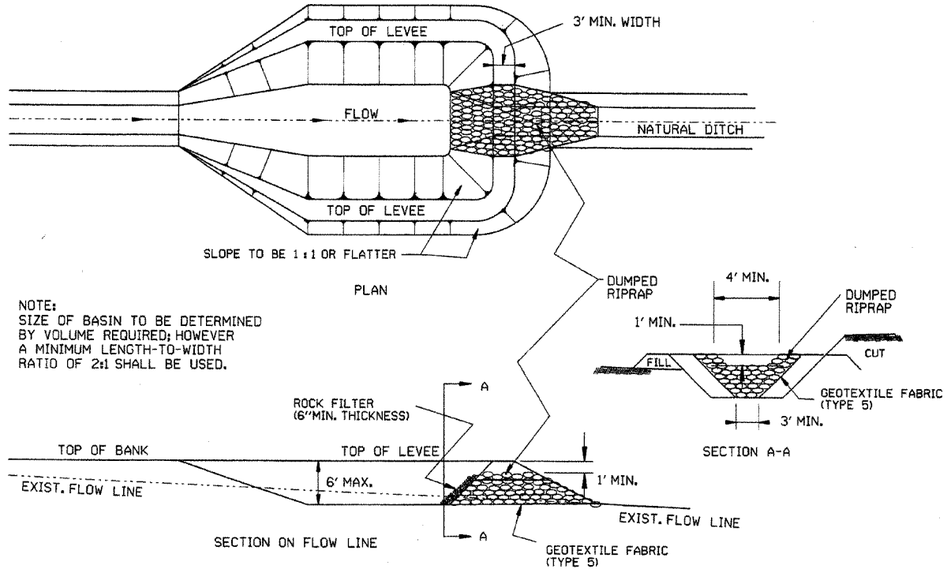
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

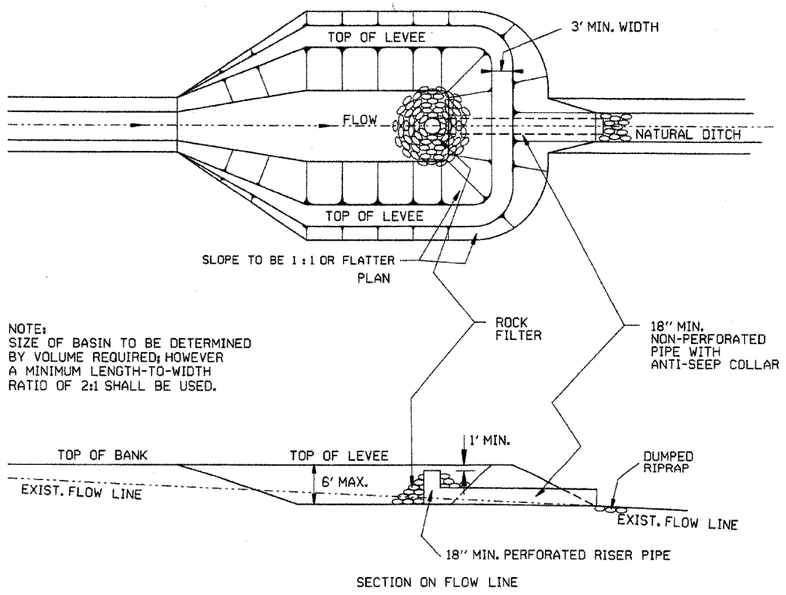
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

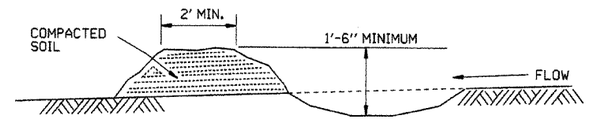
STANDARD DRAWING TEC-1



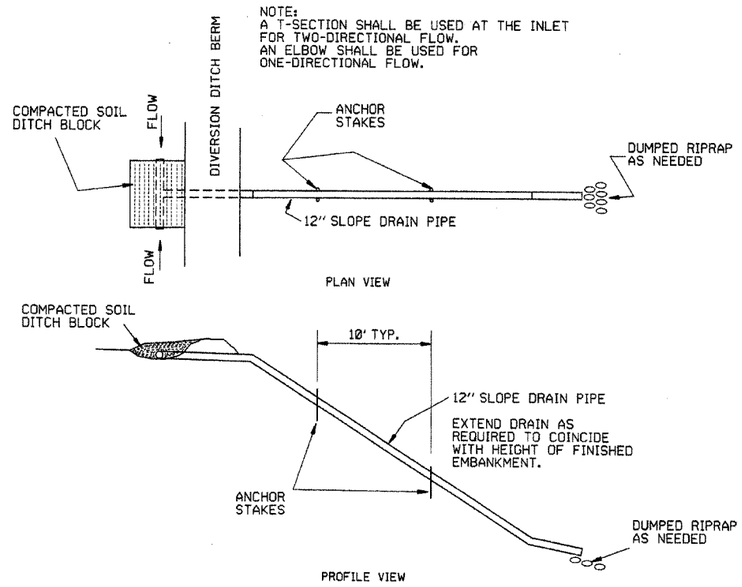
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



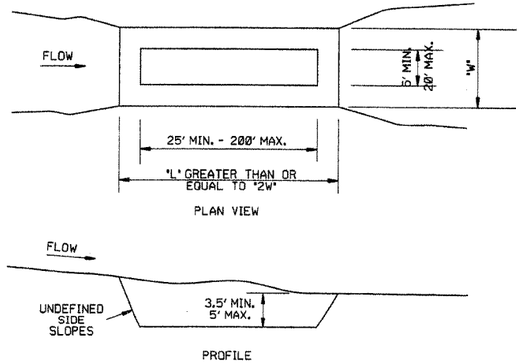
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

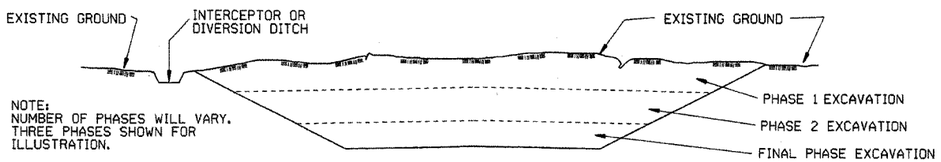
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



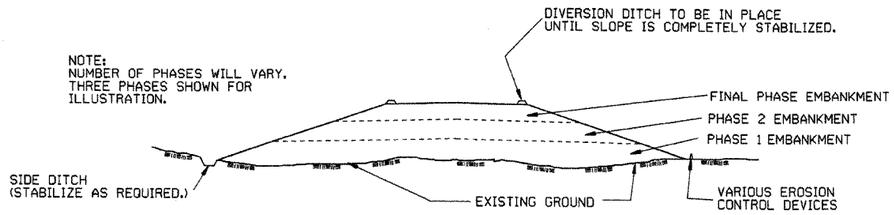
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

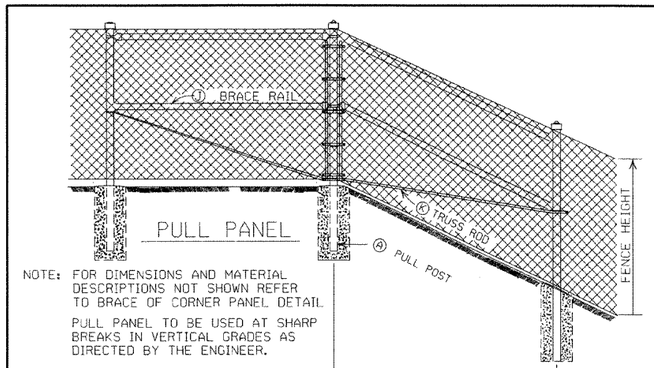
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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

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

ARKANSAS STATE HIGHWAY COMMISSION

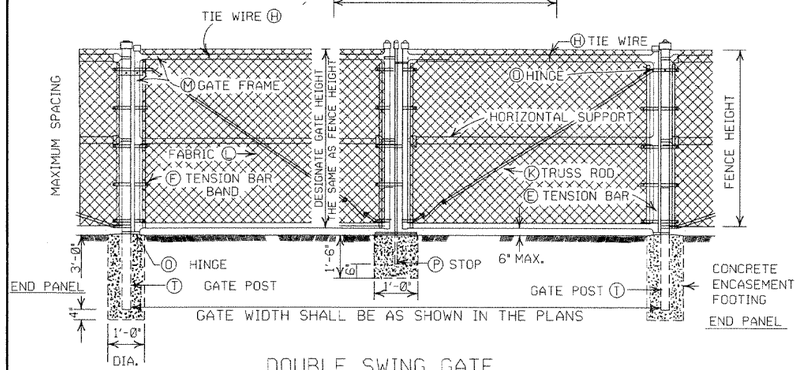
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3



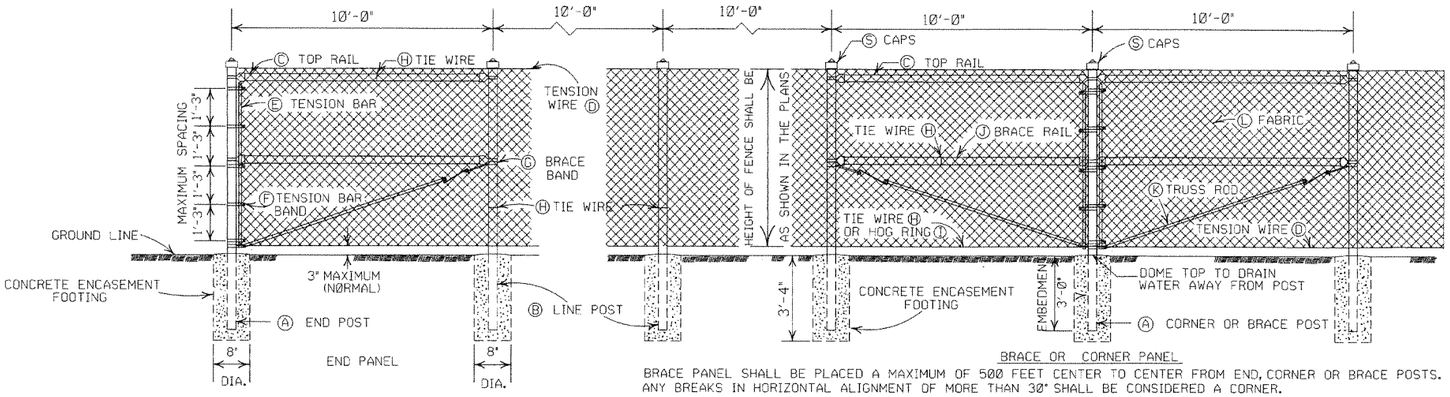
NOTE: FOR DIMENSIONS AND MATERIAL DESCRIPTIONS NOT SHOWN REFER TO BRACE OF CORNER PANEL DETAIL.

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

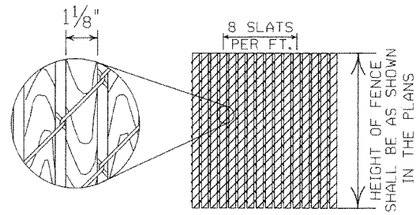


DOUBLE SWING GATE

POST SPACING DETAIL



BRACE 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.

(O) HINGES: SHALL BE OF HEAVY PATTERN, OF ADEQUATE STRENGTH FOR GATE, AND WITH LARGE BEARING SURFACES FOR CLAMPING IN POSITION. THE HINGE SHALL BE OF THE PROPER TYPE TO ALLOW FOR THE DESIGNATED DEGREE OF SWING. THE HINGE SHALL NOT TWIST OR TURN UNDER THE ACTION OF THE GATE. THE GATES SHALL BE CAPABLE OF BEING OPENED AND CLOSED EASILY BY ONE PERSON.

(P) LATCHES AND STOPS: SHALL BE PROVIDED FOR ALL GATES. GATES SHALL HAVE A DROP BAR LATCH. LATCHES SHALL BE ARRANGED FOR LOCKING. THE STOP FOR DROP BAR LATCHES SHALL BE SET IN CONCRETE AND ENGAGE THE PLUNGER OF THE BAR LATCH.

(S) CAPS: ALL POSTS, EXCEPT ROLL FORMED POSTS AND "T" POSTS SHALL BE CAPPED OVER THE EXTERIOR OF THE POST, AND SHALL CONFORM TO ASTM F626.

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
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
OVER 6' TO 12' INCL.	3 " O.D.	2½" O.D.								

HEIGHT OF FENCE FABRIC	Ⓕ TENSION BAND SIZE	Ⓕ TENSION BAND BOLT SIZE	Ⓕ TENSION BAND SPACING	Ⓖ BRACE BAND SIZE	Ⓖ BRACE BAND BOLT SIZE
6' AND LESS	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.					

HEIGHT OF FENCE FABRIC	Ⓗ TIE WIRE	Ⓘ HOG RING	Ⓙ BRACE RAIL SIZE	Ⓙ BRACE RAIL TIE SPACING	Ⓚ TRUSS ROD	Ⓛ FABRIC SIZE	Ⓛ FABRIC MESH	Ⓛ FABRIC SELVAGE
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
OVER 6' TO 12' INCL.								

HEIGHT OF FENCE FABRIC	Ⓜ 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	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.

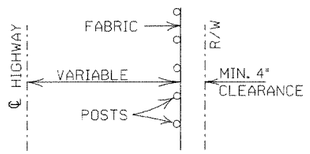
OTHER DETAILS APPLY TO BOTH STEEL AND ALUMINUM FENCE.

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.

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



INSTALLATION MAY BE MODIFIED AS SHOWN IN THE PLANS

TYPICAL INSTALLATION DIAGRAM

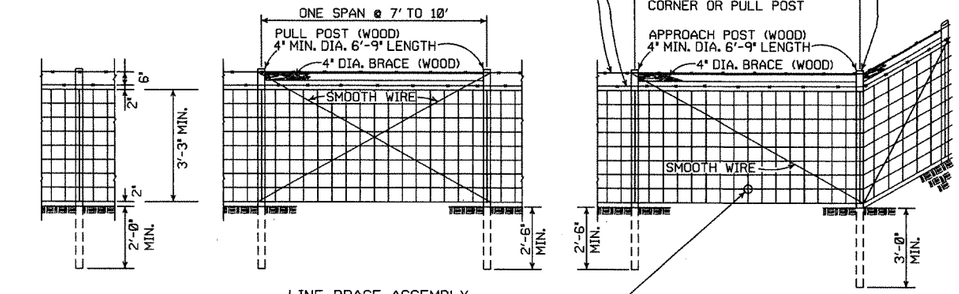
DATE	REVISION	FILMED
11-17-10	REVISED TRUSS ROD	
12-10-09	REVISED POSTS & RAILS TABLE	
5-21-09	ADDED TABLE & GEN. NOTE (C)	
8-22-02	REVISED NOTES, REMOVED TABLE, & REMOVED FENCE ALTERNATE	
4-3-97	REVISED BRACE RAIL NOTE	
10-18-96	REVISED AASHTO & ASTM REF.	
11-3-94	REVISED NOTE (L)	
10-1-92	DELETED ALTERNATE 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

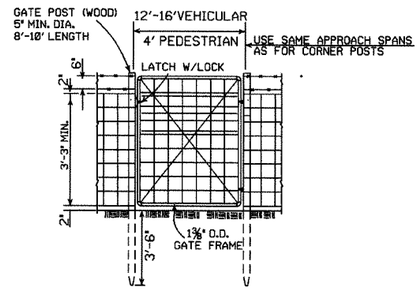
ARKANSAS STATE HIGHWAY COMMISSION

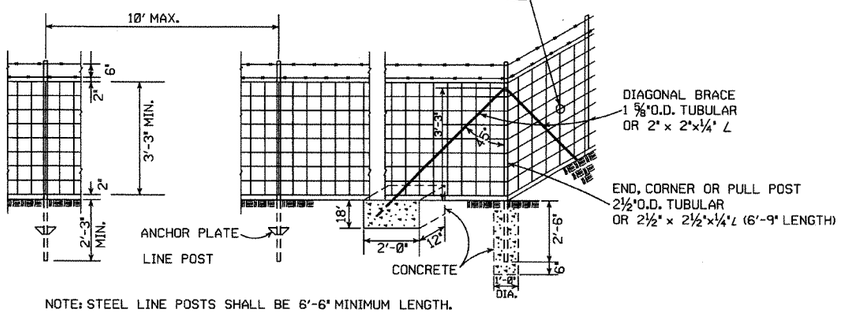
CHAIN LINK FENCE

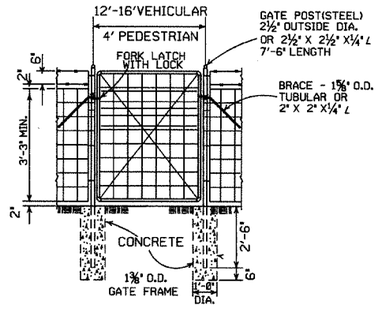
STANDARD DRAWING WF-3

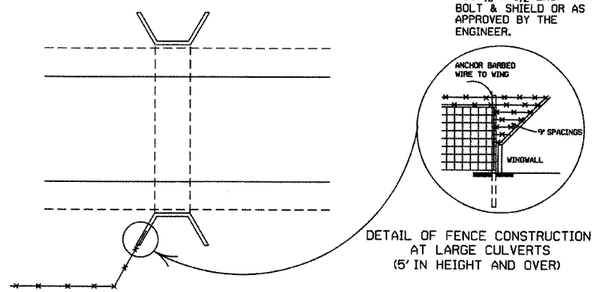
TYPE C FENCE (WOOD POSTS)











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

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

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.

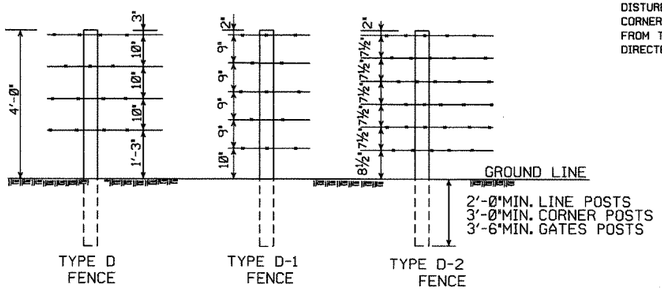
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE 'EYE METHOD' AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF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

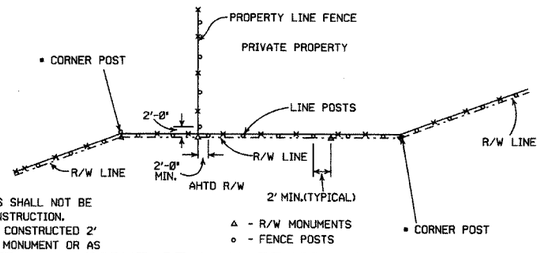
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE C FENCE (STEEL POSTS)

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

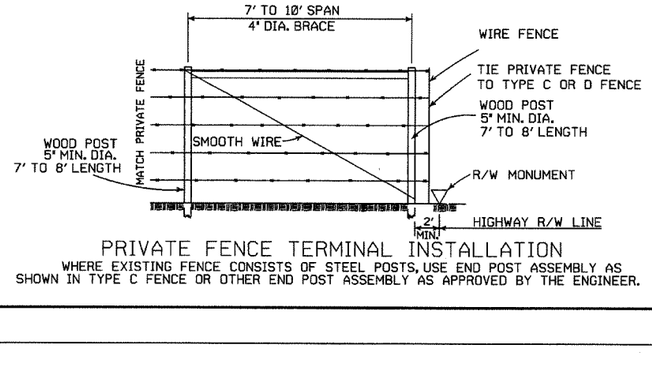


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.

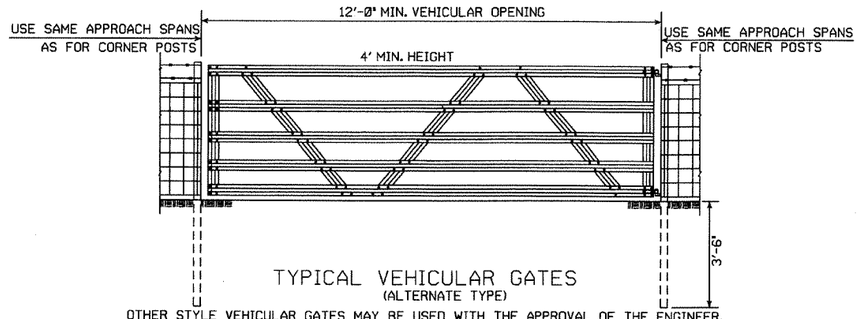


• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

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.

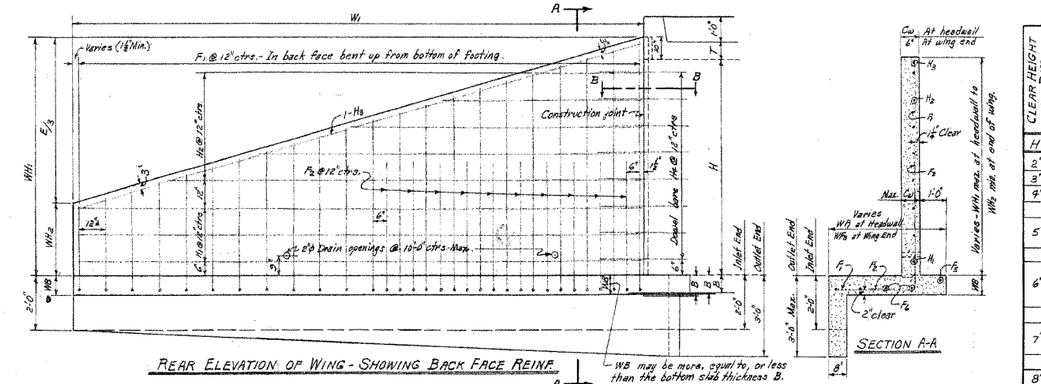
DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	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

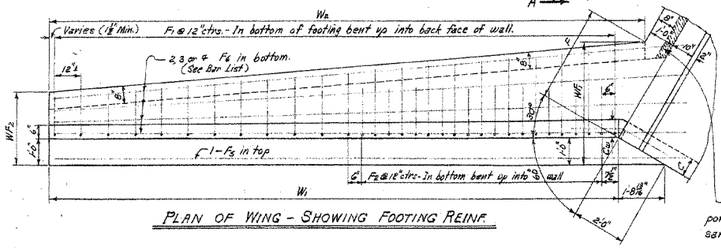
WIRE FENCE TYPE C AND D

STANDARD DRAWING WF-4

FED. ROAD NO.	STATE	FED. AID PROJECT	SHEET NO.	TOTAL SHEETS
8	ARK.		83	
JOB NO.				

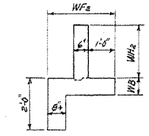


REAR ELEVATION OF WING - SHOWING BACK FACE REINF.



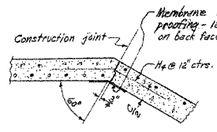
PLAN OF WING - SHOWING FOOTING REINF.

SECTION A-A

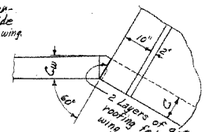


END VIEW OF WING

When B is more than WB, the shaded portion of the apron shall be made the same thickness as the barrel base B.



SECTION B-B THRU CONSTRUCTION JOINT



DETAIL AT TOP OF WING

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

WING DIMENSIONS

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HEADWALL = C	WINGWALL HEIGHTS AT HEADWALL	WINGWALL HEIGHTS AT END OF WING	WIDTHS OF WING FOOTINGS AT HEADWALL	WIDTHS OF WING FOOTINGS AT END OF WING	PERPENDICULAR FOOTING DIMENSION	PERPENDICULAR DIST. FROM HDWL. TO END OF WING	LENGTH OF WING WALLS	INSIDE FOOTING DIMENSION	* QUANTITY PER WING CLASS S CONCRETE INLET END	* QUANTITY PER WING CLASS S CONCRETE OUTLET END
H	WB	Cw	WH1	WH2	WF1	WF2	F	E	W1	W2	CU.YD.	CU.YD.
2'	7"	6"	2'-10"	0'-8"	2'-8"	2'-0"	0'-11⅞"	6'-6"	7'-6"	7'-1½"	0.889	0.986
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1½"	1'-4⅜"	8'-6"	9'-9⅜"	9'-2⅝"	1.338	1.466
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	1'-8"	10'-6"	12'-1⅞"	12'-1⅝"	1.868	2.027
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-1⅜"	12'-6"	14'-5⅝"	14'-1⅞"	2.478	2.668
		7"	5'-10"	1'-8"	3'-5"	2'-4½"	2'-1⅜"	12'-6"	14'-5⅝"	14'-1⅞"	2.582	2.772
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-4⅝"	14'-6"	16'-9⅜"	17'-1⅝"	3.490	3.661
		7½"	6'-10"	2'-0"	3'-8"	2'-6"	2'-4⅝"	14'-6"	16'-9⅜"	17'-1⅝"	3.611	3.732
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-4⅝"	14'-6"	16'-9⅜"	17'-1⅝"	3.582	3.803
7'	8½"	7½"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-1⅜"	16'-6"	19'-0⅝"	19'-3⅝"	4.505	4.758
		8"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-1⅜"	16'-6"	19'-0⅝"	19'-3⅝"	4.597	4.851
8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-5"	18'-6"	21'-4⅝"	22'-1⅝"	5.761	6.097

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W3.

APRON DIMENSION W3

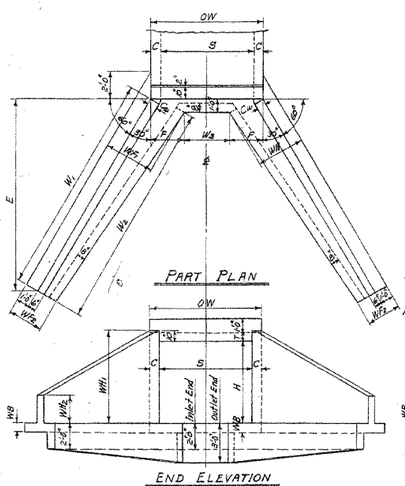
W3 = (OW - 2F)

CLEAR SPAN	CLEAR HEIGHT	2 x FOOTING DIMENSION	SINGLE BARREL CULVERT OW	SINGLE BARREL CULVERT W3	DOUBLE BARREL CULVERT OW	DOUBLE BARREL CULVERT W3	TRIPLE BARREL CULVERT OW	TRIPLE BARREL CULVERT W3	QUADRUPLE BARREL CULVERT OW	QUADRUPLE BARREL CULVERT W3	QUINTUPLE BARREL CULVERT OW	QUINTUPLE BARREL CULVERT W3
S	H	2F	OW	W3	OW	W3	OW	W3	OW	W3	OW	W3
4'	2'	1'-11⅛"	5'-0"	3'-0⅛"	9'-8"	7'-8⅛"	14'-4"	12'-4⅛"	19'-0"	17'-0⅛"	23'-8"	21'-8⅛"
	3'	2'-8⅜"	5'-0"	2'-3⅜"	9'-8"	6'-11⅜"	14'-4"	11'-7⅜"	19'-0"	16'-3⅜"	23'-8"	20'-11⅜"
	4'	3'-5"	5'-0"	1'-7"	9'-8"	6'-5"	14'-4"	10'-10"	19'-0"	16'-6"	23'-8"	26'-2"
	5'	4'-1⅝"	5'-0"	0'-8⅜"	9'-8"	5'-8⅜"	14'-4"	10'-0⅜"	19'-0"	14'-8⅜"	23'-8"	19'-8⅜"
	6'	5'-0⅜"	5'-2"	0'-1½"	9'-11"	4'-10⅛"	14'-8"	9'-7⅛"	19'-5"	14'-4⅛"	24'-2"	19'-1⅛"
5'	3'	2'-8⅜"	6'-0"	3'-3⅛"	11'-8"	8'-10⅛"	17'-4"	14'-0⅛"	23'-0"	19'-6"	28'-8"	25'-2"
	4'	3'-5"	6'-0"	2'-6"	11'-8"	8'-1"	17'-4"	13'-10"	23'-0"	19'-6"	28'-8"	25'-2"
	5'	4'-1⅝"	6'-0"	1'-10⅛"	11'-8"	7'-4⅛"	17'-4"	13'-0⅛"	23'-0"	18'-8⅛"	28'-8"	24'-8⅛"
	6'	5'-0⅜"	6'-2"	1'-1½"	11'-11"	6'-10⅛"	17'-8"	12'-7⅛"	23'-5"	18'-4⅛"	29'-2"	24'-1⅛"
	7'	6'-2⅝"	6'-5"	0'-5½"	12'-1"	5'-10⅝"	17'-11"	11'-8⅝"	23'-9"	17'-8⅝"	29'-7"	23'-4⅝"
6'	3'	2'-8⅜"	7'-0"	4'-3⅛"	13'-8"	10'-1⅛"	20'-4"	17'-2⅛"	27'-0"	24'-3⅛"	33'-8"	30'-1⅛"
	4'	3'-5"	7'-0"	3'-5"	13'-8"	10'-2"	20'-4"	16'-10"	27'-0"	23'-6"	33'-8"	30'-2"
	5'	4'-1⅝"	7'-0"	2'-8⅛"	13'-9"	9'-10⅛"	20'-5"	16'-0⅛"	27'-0"	22'-8⅛"	33'-8"	29'-8⅛"
	6'	5'-0⅜"	7'-2"	2'-1½"	13'-11"	9'-2⅛"	20'-8"	15'-7⅛"	27'-5"	22'-2⅛"	34'-2"	29'-1⅛"
	7'	6'-2⅝"	7'-5"	1'-5½"	14'-1"	7'-10⅝"	20'-11"	14'-8⅝"	27'-8"	21'-4⅝"	34'-7"	28'-4⅝"
	8'	7'-1"	7'-6"	0'-10"	14'-2"	6'-10"	21'-0"	13'-8"	27'-10"	20'-6"	34'-8"	27'-8"
7'	4'	3'-6"	8'-0"	4'-6"	15'-8"	12'-0"	23'-4"	19'-10"	31'-0"	27'-6"	38'-8"	33'-2"
	5'	4'-3⅜"	8'-0"	3'-8⅜"	15'-9"	11'-4⅜"	23'-5"	19'-0⅜"	31'-0"	26'-8⅜"	38'-8"	32'-7⅜"
	6'	5'-0⅝"	8'-2"	3'-1⅛"	15'-11"	10'-10⅝"	23'-8"	18'-7⅛"	31'-5"	26'-2⅛"	39'-2"	32'-1⅛"
	7'	6'-2⅞"	8'-5"	2'-5½"	16'-1"	9'-10⅞"	23'-11"	17'-8½"	31'-8"	25'-4⅞"	39'-7"	31'-4⅞"
	8'	7'-1⅝"	8'-6"	1'-10"	16'-2"	8'-10"	24'-0"	16'-8"	31'-10"	24'-6"	39'-8"	30'-8"
8'	4'	3'-6"	9'-0"	5'-6"	17'-8"	14'-0"	26'-4"	22'-10"	35'-6"	31'-6"	43'-8"	40'-2"
	5'	4'-3⅜"	9'-2"	4'-10⅜"	17'-11"	13'-7⅜"	26'-8"	22'-2⅜"	35'-5"	31'-1⅜"	44'-2"	39'-10⅜"
	6'	5'-0⅝"	9'-5"	4'-3⅛"	17'-11"	12'-10⅝"	26'-8"	21'-2⅛"	35'-5"	30'-1⅛"	44'-2"	38'-11⅛"
	7'	6'-2⅞"	9'-8"	3'-0⅝"	18'-1"	11'-10⅞"	26'-11"	20'-0⅝"	35'-8"	29'-0⅝"	44'-7"	37'-10⅝"
	8'	7'-1⅝"	9'-9"	2'-0"	18'-2"	10'-10"	27'-0"	19'-0"	35'-10"	28'-0"	44'-8"	37'-0"
9'	5'	4'-3⅜"	10'-2"	5'-10⅜"	19'-11"	15'-7⅜"	29'-8"	25'-4⅜"	39'-5"	35'-1⅜"	49'-2"	44'-10⅜"
	6'	5'-0⅝"	10'-3"	5'-2⅛"	20'-1"	15'-0⅝"	29'-11"	24'-4⅛"	39'-8"	34'-5⅛"	49'-7"	44'-1⅛"
	7'	6'-2⅞"	10'-5"	4'-0⅝"	20'-1"	13'-10⅞"	29'-11"	23'-0⅝"	39'-8"	33'-0⅝"	49'-7"	43'-0⅝"
	8'	7'-1⅝"	10'-6"	3'-0"	20'-2"	12'-10"	30'-0"	22'-0"	39'-10"	32'-0"	49'-8"	42'-0"
10'	5'	4'-3⅜"	11'-2"	6'-10⅜"	21'-11"	17'-7⅜"	32'-8"	28'-4⅜"	43'-5"	39'-1⅜"	54'-2"	49'-10⅜"
	6'	5'-0⅝"	11'-3"	6'-2⅛"	22'-1"	17'-0⅝"	32'-11"	27'-10⅛"	43'-8"	38'-5⅛"	54'-7"	49'-1⅛"
	7'	6'-2⅞"	11'-5"	5'-0⅝"	22'-1"	15'-10⅞"	32'-11"	26'-0⅝"	43'-8"	37'-0⅝"	54'-7"	47'-0⅝"
	8'	7'-1⅝"	11'-6"	4'-0"	22'-2"	14'-10"	33'-0"	25'-0"	43'-10"	36'-0"	54'-8"	45'-8"
11'	6'	5'-0⅜"	12'-6"	7'-3⅛"	24'-2"	19'-1⅛"	36'-0"	30'-11"	47'-10"	42'-9⅛"		
	7'	6'-2⅝"	12'-8"	6'-1⅝"	24'-2"	17'-11⅝"	36'-0"	29'-1⅝"	47'-10"	41'-1⅝"		
	8'	7'-1⅝"	12'-8"	5'-0"	24'-3"	16'-10"	36'-0"	28'-0"	47'-10"	40'-0"		
12'	6'	5'-0⅜"	13'-8"	8'-3⅛"	26'-5"	21'-1⅛"	39'-0"	33'-11⅛"	51'-10"	46'-9⅛"		
	7'	6'-2⅝"	13'-8"	7'-1⅝"	26'-5"	19'-11⅝"	39'-0"	32'-1⅝"	51'-10"	45'-1⅝"		
	8'	7'-1⅝"	13'-8"	6'-0"	26'-6"	18'-10"	39'-0"	31'-0"	51'-10"	44'-0"		

QUANTITIES

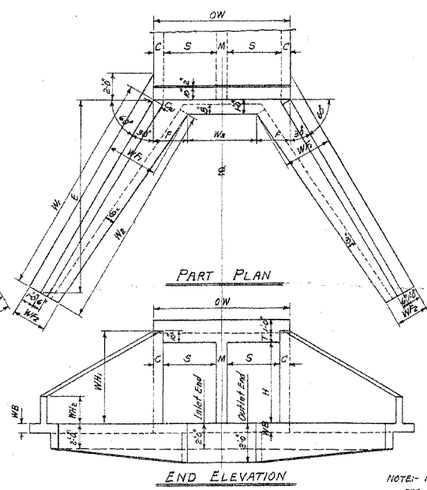
CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING STEEL - FOR 4 WINGS ®	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
4'	2'	6"	7"	108.0	4.50	5.96	6.42	7.38	8.34
	3'	6"	7"	164.9	6.26	7.81	8.17	9.13	10.09
	4'	6"	7"	254.6	8.33	9.28	10.24	11.20	12.16
	5'	6"	7"	357.8	10.72	11.68	12.64	13.60	14.56
	6'	7"	8"	583.1	14.55	15.53	16.52	17.51	18.49
5'	3'	6"	7"	164.9	6.97	7.43	8.79	9.36	11.12
	4'	6"	7"	254.6	8.34	9.70	10.87	10.03	12.20
	5'	6"	7"	357.8	10.34	12.10	13.26	14.43	15.59
	6'	7"	8"	583.1	14.77	15.96	17.15	18.34	19.54
	7'	7½"	8½"	1139.6	18.94	20.16	21.37	22.59	23.80
6'	3'	6"	7"	164.9	6.68	8.06	9.42	10.80	12.18
	4'	6"	7"	254.6	8.95	10.15	11.49	12.87	14.25
	5'	6"	7"	357.8	11.15	12.53	13.89	15.27	16.65
	6'	7"	8"	583.1	14.99	16.39	17.78	19.18	20.59
	7'	7½"	8½"	1139.6	19.15	20.58	22.00	23.43	24.86
	8'	8"	9"	1425.6	24.08	25.53	26.96	28.39	29.83
7'	4'	6"	7"	254.6	8.97	10.58	12.15	13.76	15.36
	5'	6"	7"	357.8	11.36	12.97	14.58	16.15	17.75
	6'	7"	8"	583.1	15.20	16.82	18.42	20.06	21.66
	7'	7½"	8½"	1139.6	19.38	21.02	22.69	24.28	25.92
	8'	8"	9"	1425.6	24.32	25.97	27.60	29.25	30.89
8'	4'	6"	7"	254.6	9.19	11.03	12.82	14.65	16.45
	5'	7"	7"	357.8	12.03	13.89	15.70	17.55	19.36
	6'	7"	8"	583.1	15.92	17.87	19.09	20.93	22.75
	7'	7½"	8½"	1139.6	19.59	21.96	23.30	25.16	26.99
	8'	8"	9"	1425.6	24.54	26.97	28.27	30.11	31.96
9'	5'	7"	7"	357.8	12.36	14.39	16.87	18.95	20.97
	6'	7½"	8"	583.1	15.99	18.04	20.09	22.19	24.23
	7'	7½"	8½"	1139.6	19.81	21.91	23.96	26.06	28.10
	8'	8"	9"	1425.6	24.76	26.86	28.91	31.00	33.05
10'	5'	7"	7"	357.8	12.49	14.80	17.05	19.26	21.52
	6'	7½"	8"	583.1	16.17	18.50	20.77	22.99	25.28
	7'	7½"	8½"	1139.6	20.05	22.37	24.64	26.87	29.15
	8'	8"	9"	1425.6	24.98	27.31	29.58	31.81	34.10
11'	6'	8"	8"	583.1	16.69	19.27	21.76	24.23	
	7'	8"	8½"	1139.6	20.64	23.22	25.71	28.18	
	8'	8"	9"	1425.6	25.19	27.77	30.27	32.74	
12'	6'	8"	8"	583.1	16.92	19.75	22.45	25.18	
	7'	8"	8½"	1139.6	20.87	23.69	26.40	29.13	
	8'	8"	9"	1425.6	25.42	28.25	30.96	33.69	

® For reinforcing steel in Headwalls and Aprons, See Details of Standard Barrel Sections for R.C. Box Culverts for the desired Span and Height.



PART PLAN — END ELEVATION

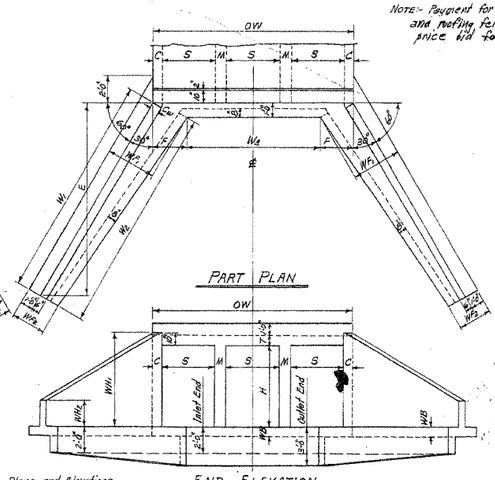
SINGLE BARREL CULVERT



PART PLAN — END ELEVATION

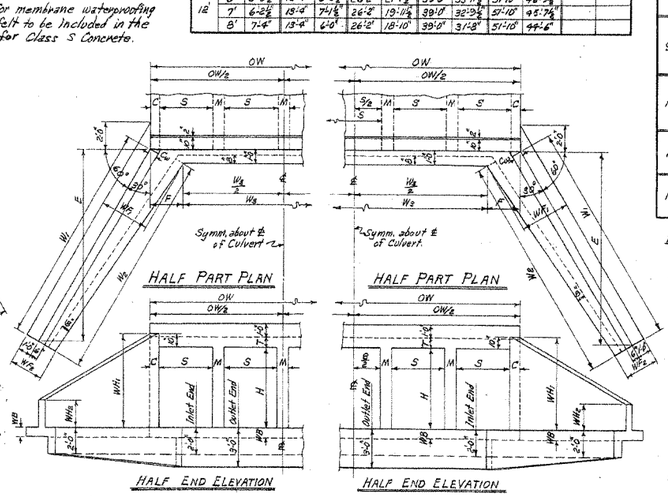
DOUBLE BARREL CULVERT

NOTE:- Plans and Elevations are not to scale.



PART PLAN — END ELEVATION

TRIPLE BARREL CULVERT



HALF PART PLAN — HALF END ELEVATION

QUADRUPLE BARREL CULVERT

HALF PART PLAN — HALF END ELEVATION

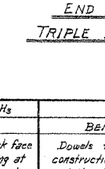
QUINTUPLE BARREL CULVERT

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three mopings 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.

BAR LIST FOR ONE WING - 4 REQUIRED

CLEAR HEIGHT	F1 Bent: In bottom of footing, bent up into back face of wing. One bar of each length. SIZE	SPACING	NO. REQ'D	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	F2 Bent: In bottom of footing, bent up into back face of wing. Alt. with F1 bars. SIZE	SPACING	NO. REQ'D	LENGTH	X	Y	F5 Straight: Longitudinal in top of wing footing heel. SIZE	NO. REQ'D	LENGTH	F4 Straight: Longitudinal in bottom of wing footing toe. SIZE	NO. REQ'D	LENGTH	H1 Straight: Horizontal in back face of wing. SIZE	SPACING	NO. REQ'D	LENGTH	H2 Straight: Horizontal in back face of wing. One bar of each length. SIZE	SPACING	NO. REQ'D	LENGTHS VARY MAX.	LENGTHS VARY MIN.	H3 Straight: In back face of wing at top - on slope. SIZE	NO. REQ'D	LENGTH	H4 Bent: Dowels thru construction joint at headwall. SIZE	SPACING	NO. REQ'D	LENGTH	X	QUANTITY REINFORCING STEEL PER WING LB.
H																																								
2'	#3	12"	8	1'-6"	3'-10"	0'-8"	1'-0"	0'-11"	2'-11"	#3	12"	1	3'-8"	—	—	#3	1	8'-6"	#3	2	8'-6"	#3	12"	1	7'-2"	#3	12"	1	——	4'-0"	#3	1	7'-9"	#3	12"	2	2'-8"	1'-4"	27.0
3'	#3	12"	10	2'-2"	5'-2"	0'-8"	1'-3"	1'-5"	4'-5"	#3	12"	1	12'-0"	—	—	#3	2	11'-0"	#3	2	11'-0"	#3	12"	1	9'-6"	#3	12"	2	7'-6"	4'-0"	#3	1	9'-9"	#3	12"	3	2'-8"	1'-4"	41.1
4'	#3	12"	13	2'-9"	6'-6"	0'-11"	1'-7"	1'-6"	5'-0"	#3	12"	1	14'-6"	—	—	#3	3	13'-6"	#3	3	13'-6"	#8	12"	1	11'-10"	#3	12"	3	10'-11"	4'-0"	#3	1	12'-2"	#3	12"	4	2'-8"	1'-4"	63.7
5'	#3	12"	15	2'-11"	7'-10"	1'-1"	1'-11"	1'-11"	6'-0"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	16'-8"	#3	3	16'-0"	#8	12"	2	14'-2"	#3	12"	2	14'-2"	4'-0"	#3	1	14'-7"	#3	12"	5	2'-8"	1'-4"	89.5
6'	#4	12"	17	3'-6"	9'-3"	1'-2"	2'-3"	2'-5"	7'-1"	#3	12"	4	4'-6"	1'-4"	3'-3"	#3	1	19'-8"	#3	3	18'-6"	#3	12"	2	16'-4"	#3	12"	4	14'-4"	4'-0"	#3	1	17'-0"	#3	12"	6	2'-8"	1'-4"	145.8
7'	#4	12"	20	3'-9"	10'-9"	1'-3"	2'-9"	2'-7"	8'-1"	#4	12"	7	5'-6"	1'-7"	4'-0"	#4	1	21'-6"	#4	4	21'-0"	#4	12"	2	18'-9"	#4	12"	5	17'-9"	4'-0"	#4	1	19'-5"	#4	12"	7	3'-6"	1'-9"	283.7
8'	#4	12"	22	4'-4"	12'-3"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	23'-8"	#4	4	23'-9"	#4	12"	3	21'-1"	#4	12"	5	17'-9"	4'-0"	#4	1	21'-10"	#4	12"	8	3'-6"	1'-9"	356.4

BAR BENDING DIAGRAMS



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

Designed By:- W.C.H. 8-20-62. Checked By:- EMS - 1-9-63
Drawn By:- W.C.H. 12-9-62. Checked By:- EMS - 1-31-63
Quantities By:- W.C.H. 12-14-62. Checked By:- EMS - 3-22-63
Reviewed By:-

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. as listed below.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-100X-0	R-200X-0	R-300X-0	R-400X-0	R-500X-0
R-100X-X1	R-200X-X1	R-300X-X1	R-400X-X1	R-500X-X1
R-100X-X2	R-200X-X2	R-300X-X2	R-400X-X2	
	R-200X-X3	R-300X-X3		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS

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

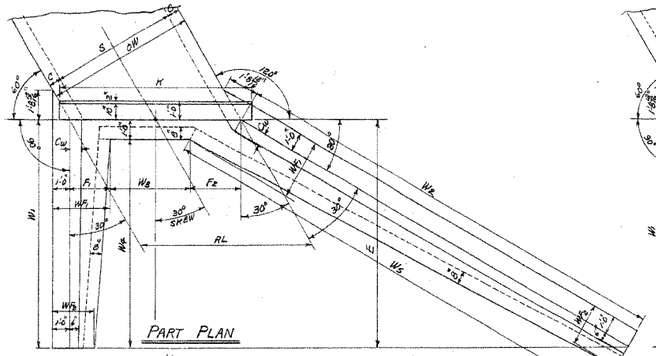
STANDARD DRAWING NO. W-X003-1

M.V.I.B. (3)

Reshot 3-8-93

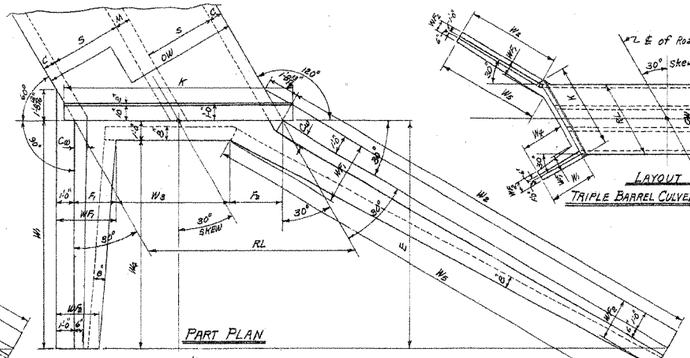
171

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			89	
JOB No.					



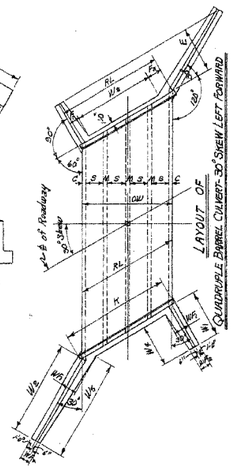
SINGLE BARREL CULVERT-30°SKEW RIGHT FORWARD

Details of Culvert with 90°Skew Left Forward is reversed, see Layout below.

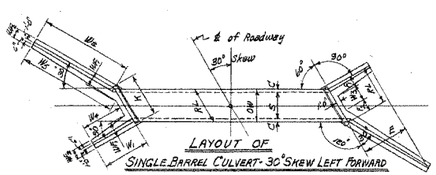


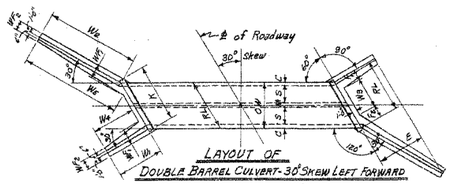
DOUBLE BARREL CULVERT-30°SKEW RIGHT FORWARD

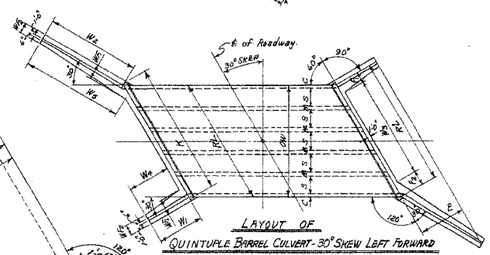
Details of Culvert with 90°Skew Left Forward is reversed, see Layout below.

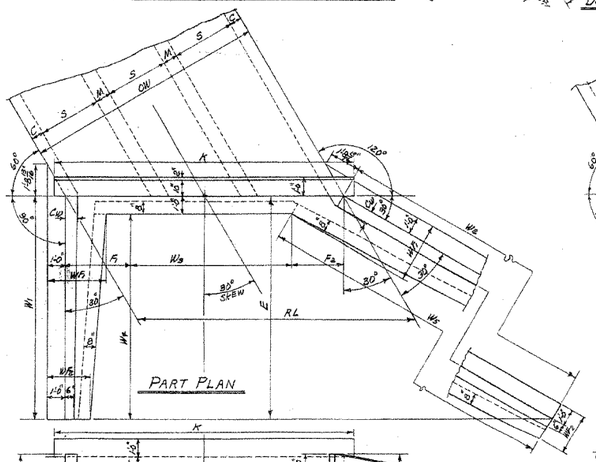


NOTE:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.



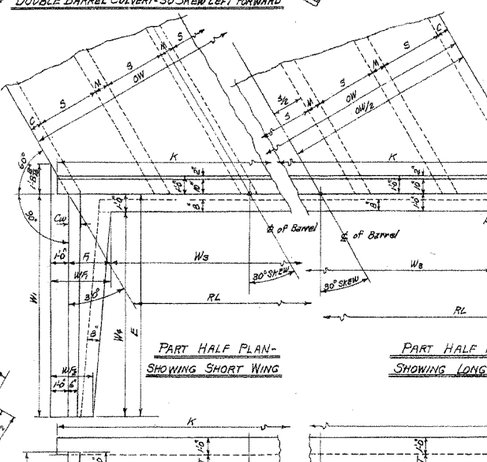






TRIPLE BARREL CULVERT-30°SKEW RIGHT FORWARD

Details of Culvert with 90°Skew Left Forward is reversed, see Layout at top center of sheet.



QUADRUPLE BARREL CULVERT-30°SKEW RT. FWD.

Details of Culvert with 90°Skew Left Forward is reversed, see Layout at above center.

QUINTUPLE BARREL CULVERT-30°SKEW RT. FWD.

Details of Culvert with 90°Skew Left Forward is reversed, see Layout above.

Designed by:- W.C.H. 5-16-63 Checked by:-
Drawn by:- W.C.H. 7-15-63 Checked by:- Rev. 8-27-63
Quantities by:- Checked by:-

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION W_3

$RL = OW \times 1.1547$ — $K = RL + (F_1 + F_2)$ — $W_3 = RL - (F_1 + F_2)$

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-X302-1, W-X305-1 or W-X304-1. (FOR H=8'0" OR LESS)	4'	2'	8'-3⅜"	5'-0"	5'-9⅝"	6'-11⅝"	3'-6"	9'-8"	11'-2"	12'-3⅜"	5'-10⅜"	14'-4"	16'-6⅝"	17'-8⅝"	14'-3⅝"	19'-0"	21'-11⅝"	23'-1"	19'-8"	23'-8"	27'-4"	28'-5⅝"	25'-0⅜"
		3'	8'-3⅜"	5'-0"	"	"	2'-6"	9'-8"	"	"	7'-10⅜"	14'-9"	"	"	13'-3⅜"	19'-0"	"	"	18'-8"	23'-8"	"	"	29'-0⅜"
		4'	9'-3⅜"	5'-0"	"	"	1'-6"	9'-8"	"	"	6'-10⅜"	14'-9"	"	"	12'-3⅜"	19'-0"	"	"	17'-8"	23'-8"	"	"	23'-0⅜"
		5'	5'-3⅜"	5'-0"	5'-9⅝"	6'-11⅝"	0'-6"	9'-8"	11'-2"	12'-3⅜"	5'-10⅜"	14'-4"	16'-6⅝"	17'-8⅝"	11'-3⅜"	18'-6"	21'-10⅝"	23'-1"	16'-8"	23'-8"	27'-4"	28'-5⅝"	22'-0⅜"
		6'	6'-3⅜"	5'-2"	5'-11⅝"	7'-1⅝"	Ⓐ 0"	9'-11"	11'-5¼"	12'-7⅛"	5'-2⅝"	14'-8"	16'-11⅝"	18'-1"	10'-8"	18'-5"	22'-5"	23'-7"	16'-7⅝"	24'-2"	27'-10⅝"	29'-0⅝"	21'-7⅝"
	5'	3'	3'-3⅝"	6'-0"	6'-11⅝"	8'-1"	3'-7⅞"	11'-8"	13'-5⅝"	14'-7½"	10'-2⅝"	17'-4"	20'-0⅝"	21'-2"	16'-9"	23'-0"	26'-6⅝"	27'-8⅝"	23'-3⅜"	28'-8"	33'-1⅛"	34'-3"	29'-10"
		4'	4'-3⅜"	6'-0"	"	"	2'-7⅝"	11'-8"	"	"	9'-2⅝"	17'-4"	"	"	15'-3"	23'-0"	"	"	22'-3⅜"	28'-8"	"	"	28'-10"
		5'	5'-3⅜"	6'-0"	6'-11⅝"	8'-1"	1'-7⅝"	11'-8"	13'-5⅝"	14'-7½"	8'-2⅝"	17'-4"	20'-0⅝"	21'-2"	14'-9"	23'-0"	26'-6⅝"	27'-8⅝"	21'-3⅜"	28'-8"	33'-1⅛"	34'-3"	27'-10"
		6'	6'-3⅜"	6'-2"	7'-1⅝"	8'-3⅝"	0'-10⅛"	11'-11"	13'-8⅝"	14'-11"	7'-5⅜"	17'-8"	20'-4⅜"	21'-6⅜"	14'-1⅝"	23'-5"	27'-0⅛"	28'-2⅛"	20'-10⅛"	29'-2"	33'-8⅛"	34'-10"	27'-5"
		7'	7'-3⅝"	6'-3"	7'-2⅝"	8'-4⅝"	Ⓐ 0"	12'-1"	13'-11⅛"	15'-1⅛"	6'-2⅜"	17'-11"	20'-8⅝"	21'-10"	12'-11"	23'-9"	27'-5⅝"	28'-7"	19'-8"	29'-7"	34'-2"	35'-3⅝"	26'-9⅝"
	6'	3'	3'-3⅝"	7'-0"	8'-1"	9'-2⅛"	4'-9⅝"	13'-8"	15'-9⅜"	16'-11⅝"	12'-6⅝"	20'-4"	23'-5⅜"	24'-7⅝"	20'-2"	27'-0"	31'-2⅛"	32'-4"	27'-1"	33'-8"	38'-10⅝"	40'-0⅛"	35'-0⅜"
		4'	4'-3⅜"	7'-0"	"	"	3'-9⅜"	13'-8"	"	"	11'-4⅝"	20'-4"	"	"	19'-2⅝"	27'-0"	"	"	26'-1"	33'-8"	"	"	34'-2½"
		5'	5'-3⅜"	7'-0"	8'-1"	9'-2⅛"	2'-9⅜"	13'-8"	15'-9⅜"	16'-11⅝"	10'-4⅝"	20'-4"	23'-5⅜"	24'-7⅝"	18'-2⅝"	27'-0"	31'-2⅛"	32'-4"	25'-1"	33'-8"	38'-10⅝"	40'-0⅛"	33'-2⅝"
		6'	6'-3⅜"	7'-2"	8'-3⅝"	9'-5¼"	2'-0"	13'-11"	16'-0⅝"	17'-2⅝"	9'-9⅝"	20'-8"	23'-10⅝"	25'-0⅝"	17'-2⅝"	27'-5"	31'-7⅞"	32'-9⅝"	25'-0⅜"	34'-2"	39'-5⅝"	40'-7⅝"	33'-2⅝"
		7'	7'-3⅝"	7'-3"	8'-4⅝"	9'-6⅜"	0'-7⅝"	14'-1"	16'-3⅝"	17'-5"	8'-6"	20'-11"	24'-1⅛"	25'-3⅜"	16'-3⅛"	27'-9"	32'-0⅛"	33'-2⅝"	24'-3⅜"	34'-7"	39'-11"	41'-1"	32'-1"
		8'	9'-3⅜"	7'-4"	8'-5⅝"	9'-7½"	Ⓐ 0"	14'-2"	16'-4⅝"	17'-6¼"	7'-1"	21'-0"	24'-3"	25'-5"	14'-11⅜"	27'-10"	32'-1⅛"	33'-3⅝"	22'-10⅛"	34'-10"	40'-0⅜"	41'-2⅝"	30'-9⅝"
	7'	4'	4'-3⅜"	8'-0"	9'-2⅝"	10'-4⅝"	4'-1⅝"	15'-8"	18'-1⅛"	19'-5"	13'-0⅝"	23'-4"	26'-11⅝"	28'-1⅛"	22'-8"	31'-0"	35'-8⅝"	36'-11⅛"	31'-6"	38'-8"	44'-7⅛"	45'-9⅝"	40'-4½"
		5'	5'-3⅜"	8'-0"	9'-2⅝"	10'-4⅝"	3'-1⅝"	15'-8"	18'-1⅛"	19'-5"	12'-9⅝"	23'-4"	26'-11⅝"	28'-1⅛"	21'-8"	31'-0"	35'-8⅝"	36'-11⅛"	30'-6"	38'-8"	44'-7⅛"	45'-9⅝"	39'-4½"
		6'	6'-3⅜"	8'-2"	9'-5⅝"	10'-7"	3'-2"	15'-11"	18'-4½"	19'-8½"	12'-1⅝"	23'-8"	27'-3"	28'-5"	21'-0⅝"	31'-5"	36'-1⅜"	37'-5⅝"	30'-0"	39'-2"	45'-2⅝"	46'-4⅝"	38'-11⅝"
		7'	7'-3⅝"	8'-3"	9'-6⅝"	10'-8⅝"	2'-1"	16'-1"	18'-6⅝"	19'-8⅝"	10'-3⅝"	23'-11"	27'-5⅜"	28'-9⅛"	19'-10⅛"	31'-9"	36'-5⅝"	37'-10"	29'-5⅜"	39'-7"	45'-8⅛"	46'-10⅝"	37'-11⅜"
		8'	9'-3⅜"	8'-4"	9'-7½"	10'-9⅝"	0'-9⅝"	16'-2"	18'-8"	19'-9⅝"	9'-4⅝"	24'-0"	27'-8⅝"	28'-10⅝"	18'-5⅝"	31'-11"	36'-9⅛"	37'-11"	27'-4"	39'-8"	45'-9⅝"	46'-11⅝"	36'-6⅝"
	8'	4'	4'-3⅜"	9'-0"	10'-4⅝"	11'-6⅝"	6'-1⅛"	17'-8"	20'-4⅜"	21'-6⅜"	16'-1⅛"	26'-4"	30'-4⅛"	31'-6⅝"	26'-1⅜"	35'-0"	40'-5"	41'-6⅝"	36'-1⅛"	43'-8"	50'-3⅝"	51'-5"	44'-1⅝"
		5'	5'-3⅜"	9'-2"	10'-7"	11'-8⅝"	5'-3⅜"	17'-11"	20'-8⅜"	21'-10"	15'-5"	26'-8"	30'-9½"	31'-11⅝"	25'-6⅜"	35'-5"	40'-10⅝"	42'-0⅛"	35'-7½"	43'-11"	51'-0"	52'-1⅜"	45'-0⅜"
		6'	6'-3⅜"	9'-2"	10'-7"	11'-8⅝"	4'-3⅜"	17'-11"	20'-8⅜"	21'-10"	14'-5"	26'-8"	30'-9½"	31'-11⅝"	24'-6⅜"	35'-5"	40'-10⅝"	42'-0⅛"	34'-7½"	43'-11"	51'-0"	52'-1⅜"	44'-0⅜"
		7'	7'-3⅝"	9'-3"	10'-8⅝"	11'-10⅝"	2'-11"	18'-1"	20'-10⅛"	22'-0⅛"	13'-1⅛"	26'-11"	31'-1"	32'-3⅜"	23'-3⅜"	35'-10"	41'-3⅝"	42'-5⅝"	33'-8⅛"	44'-3"	51'-5⅜"	52'-7½"	43'-3⅛"
		8'	9'-3⅜"	9'-4"	10'-9⅝"	11'-11⅝"	1'-6⅜"	18'-2"	20'-11⅜"	22'-1⅛"	11'-8⅜"	27'-0"	31'-2⅜"	32'-4⅞"	21'-11"	36'-0"	41'-7½"	42'-9⅛"	32'-11⅛"	44'-6"	51'-7⅞"	52'-10⅝"	42'-3⅜"
	9'	5'	5'-3⅜"	10'-2"	11'-8⅝"	12'-10⅝"	6'-5⅜"	19'-11"	23'-0"	24'-2⅛"	17'-0⅜"	29'-0"	34'-3⅜"	35'-5"	28'-1⅜"	39'-5"	45'-6⅜"	46'-8"	40'-3"	49'-2"	56'-9⅛"	57'-11⅝"	51'-6"
		6'	6'-3⅜"	10'-3"	11'-10"	13'-0"	5'-6⅜"	20'-1"	23'-2⅛"	24'-4⅝"	16'-11"	29'-3"	34'-6⅛"	35'-8⅝"	28'-3⅝"	39'-10"	45'-11⅝"	47'-1⅜"	39'-10⅝"	49'-7"	57'-3"	58'-5"	50'-11⅝"
		7'	7'-3⅝"	10'-3"	11'-10"	13'-0"	4'-0⅜"	20'-1"	23'-2⅛"	24'-4⅝"	15'-5"	29'-11"	34'-6⅛"	35'-8⅝"	26'-9⅜"	39'-11"	45'-10⅜"	47'-0⅛"	38'-1½"	49'-7"	57'-3"	58'-5"	49'-5⅜"
		8'	9'-3⅜"	10'-4"	11'-11⅝"	13'-1"	2'-6"	20'-2"	23'-3⅜"	24'-5⅝"	14'-0⅝"	30'-0"	34'-7⅜"	35'-9⅝"	25'-4"	39'-10"	46'-0"	47'-1⅝"	36'-3⅝"	49'-8"	57'-4⅜"	58'-6"	48'-1"
	10'	5'	5'-3⅜"	11'-2"	13'-0⅝"	14'-2⅝"	7'-7⅜"	21'-10"	25'-3⅜"	26'-5½"	20'-0⅝"	32'-8"	37'-9⅝"	38'-11⅝"	32'-5½"	43'-5"	50'-1⅜"	51'-3⅝"	44'-10⅝"	54'-2"	62'-6⅜"	63'-8½"	57'-3⅜"
		6'	6'-3⅜"	11'-3"	13'-1⅛"	14'-3⅝"	6'-8⅜"	22'-1"	25'-6"	26'-7⅜"	19'-2⅜"	32'-11"	38'-0⅝"	39'-2⅝"	31'-9"	43'-9"	50'-6⅝"	51'-8"	44'-3"	54'-7"	63'-0⅝"	64'-2⅝"	56'-9"
		7'	7'-3⅝"	11'-3"	13'-1⅛"	14'-3⅝"	5'-7⅜"	22'-1"	25'-6"	26'-7⅜"	17'-10⅜"	32'-11"	38'-0⅝"	39'-2⅝"	30'-5"	43'-9"	50'-6⅝"	51'-8"	42'-9"	54'-7"	63'-0⅝"	64'-2⅝"	55'-8"
		8'	9'-3⅜"	11'-4"	13'-2"	14'-4"	3'-9⅜"	22'-2"	25'-7⅛"	26'-8⅝"	16'-4"	33'-0"	38'-1⅛"	39'-3"	28'-10"	43'-10"	50'-7⅝"	51'-9⅛"	41'-2⅛"	54'-8"	63'-1⅛"	64'-3⅜"	53'-10⅛"
	11'	6'	6'-3⅜"	12'-4"	14'-2⅝"	15'-6⅛"	7'-11⅝"	24'-2"	27'-10⅝"	29'-0⅝"	21'-7⅛"	36'-0"	41'-6⅝"	42'-8⅝"	35'-3⅝"	47'-10"	55'-2⅝"	56'-6⅝"	48'-11⅝"	—	—	—	—
		7'	7'-3⅝"	12'-4"	"	"	6'-5⅜"	24'-2"	"	"	20'-1⅝"	36'-0"	"	"	33'-9⅝"	47'-10"	"	"	47'-1⅝"	—	—	—	—
		8'	9'-3⅜"	12'-4"	"	"	4'-11⅝"	24'-2"	"	"	18'-7⅝"	36'-0"	"	"	32'-3⅝"	47'-10"	"	"	45'-11⅝"	—	—	—	—
	12'	6'	6'-3⅜"	13'-4"	15'-2⅝"	16'-6⅝"	9'-1⅛"	26'-2"	30'-2⅝"	31'-4⅝"	23'-1⅛"	39'-0"	45'-0⅜"	46'-2⅝"	38'-9⅜"	51'-10"	59'-10⅝"	61'-0"	53'-7"	—	—	—	—
		7'	7'-3⅝"	13'-4"	"	"	7'-7⅜"	26'-2"	"	"	22'-5⅛"	39'-0"	"	"	37'-3⅜"	51'-10"	"	"	52'-1"	—	—	—	—
		8'	9'-3⅜"	13'-4"	"	"	6'-1⅝"	26'-2"	"	"	20'-11⅛"	39'-0"	"	"	35'-9⅜"	51'-10"	"	"	50'-7"	—	—	—	—
	13'	7'	7'-3⅝"	14'-4"	16'-2⅝"	17'-6⅛"	8'-3⅜"	28'-2"	32'-6⅝"	33'-8⅝"	24'-9⅛"	42'-0"	48'-4⅜"	49'-6⅝"	41'-1⅜"	55'-10"	64'-2⅝"	65'-4⅝"	57'-1"	—	—	—	—
		8'	9'-3⅜"	14'-4"	"	"	7'-1⅝"	28'-2"	"	"	23'-1⅛"	42'-0"	"	"	39'-3⅜"	55'-10"	"	"	54'-7"	—	—	—	—
	14'	8'	9'-3⅜"	15'-4"	17'-2⅝"	18'-6⅛"	8'-3⅜"	30'-2"	34'-6⅝"	35'-8⅝"	25'-9⅛"	45'-0"	51'-4⅜"	52'-6⅝"	42'-9⅜"	59'-10"	68'-2⅝"	69'-4⅝"	59'-5"	—	—	—	—

Ⓐ Special case for these boxes, See Detail 'A' and Table 'A' for revised values of F_1, F_2, W_4 and W_5, when apron width is more than 1'-0" and W_5=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-X304-1, 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-X304-1 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

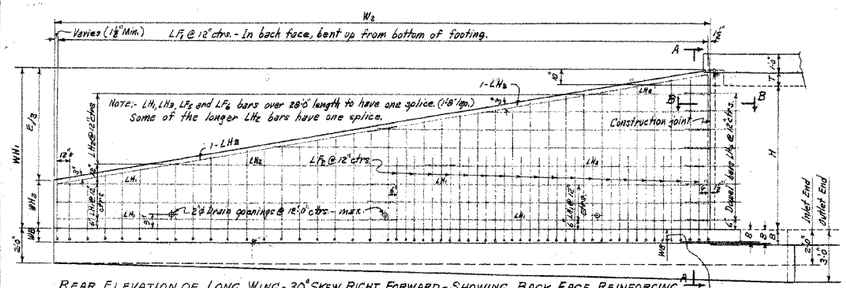
4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 & 4:1 SLOPES

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

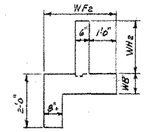
STANDARD DRAWING NO. W-X30

Reshot 3-8-93

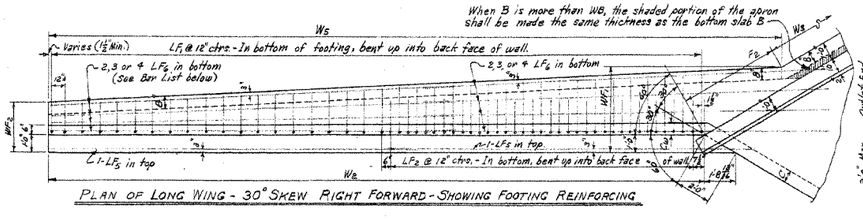
FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			45	
JOB No.					



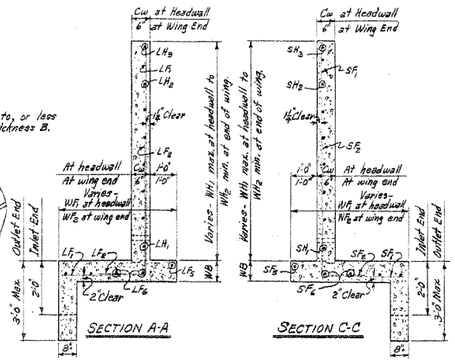
REAR ELEVATION OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING



TYPICAL END VIEW OF WING

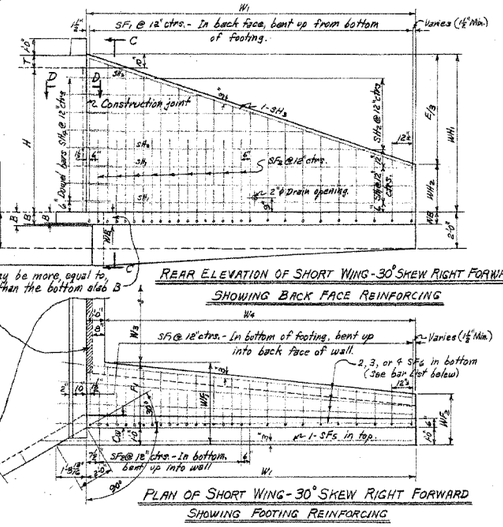


PLAN OF LONG WING - 30° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING



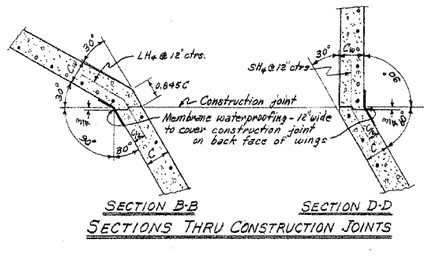
SECTION A-A

SECTION C-C



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

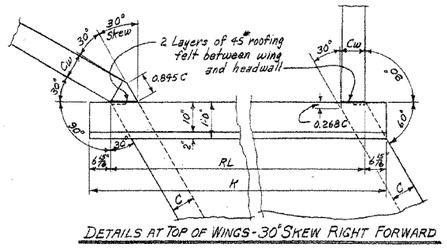
PLAN OF SHORT WING - 30° SKEW RIGHT FORWARD SHOWING FOOTING REINFORCING



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

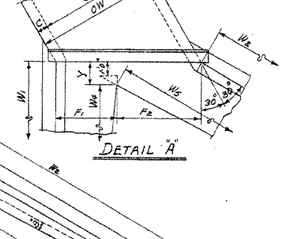
REGULAR WING DIMENSIONS - 3:1 SLOPES

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	WING WALL HEIGHTS		WIDTHS OF WING FOOTINGS		FOOTING DIMENSION PARALLEL WITH HEADWALL		PERPENDICULAR DIST. FROM HEAD TO END OF WING	LENGTHS OF WINGWALLS		INSIDE FOOTING DIMENSION		* QUANTITY PER WING CLASS S CONCRETE			
		AT HEADWALL	AT END OF WING	AT HEADWALL	AT END OF WING	SHORT WING	LONG WING		SHORT WING	LONG WING	SHORT WING	LONG WING	INLET END SHORT WING	INLET 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'-6"	2'-0"	1'-6"	0'-11½"	6'-6"	6'-6"	13'-0"	5'-6"	13'-3½"	0.752	1.599	0.836	1.717
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1½"	1'-8"	1'-7½"	9'-6"	9'-6"	17'-0"	7'-6"	17'-10½"	1.130	2.390	1.239	2.565
4'	7"	6"	4'-10"	1'-0"	3'-0"	2'-5"	2'-0"	2'-3⅜"	10'-6"	10'-6"	21'-0"	8'-6"	22'-5½"	1.577	3.270	1.711	3.552
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-11½"	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'-6½"	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	6.026	3.082	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'-6"	4'-2"	2'-7½"	3'-2"	4'-7½"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5⅜"	3.811	7.895	4.019	8.350
		8"	7'-10"	2'-6"	4'-2"	2'-7½"	3'-2"	4'-7½"	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'-7½"	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 W_5.
@ See Table 'A' for special values of F_1 & F_2 and W_4 & W_5 for Simple 4'6, 5'x7 and 6'x8 Box Culverts.

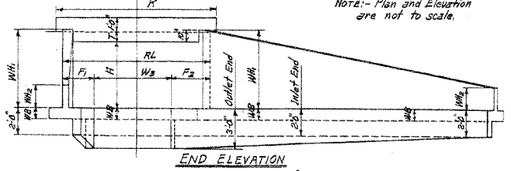
TABLE 'A' - DIMENSIONS FOR DETAIL 'A'

S	H	F1	F2	W3	Y	W4	W5
4'	6'	2'-7½"	3'-2⅝"	0"	1'-1⅜"	18'-9⅝"	31'-3⅜"
5'	7'	3'-1⅝"	4'-1"	0"	1'-3⅜"	15'-2⅜"	35'-10⅜"
6'	8'	3'-7½"	4'-10⅝"	0"	1'-6⅜"	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-X30.

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 W_3 for each box, see above Std. also.

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three mappings 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 of wings.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING STEEL - LB. @	CLASS S CONCRETE - 4 WINGS				
					HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS				
S	H	Cw	WB	LB.	SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
					CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
4'	2'	6"	7"	141	5.80	6.90	8.01	9.12	10.23
	3'	6"	7"	213	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"	213	8.33	9.67	11.01	12.36	13.70
	4'	6"	7"	327	11.03	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	20.98	21.86	23.24	24.62
	7'	7½"	8½"	1474	24.51	26.34	27.35	28.75	30.16
6'	3'	6"	7"	213	8.57	10.17	11.73	13.33	14.92
	4'	6"	7"	327	11.27	12.86	14.93	16.03	17.62
	5'	6"	7"	460	14.38	15.90	17.55	19.15	20.73
	6'	7"	8"	762	19.35	20.98	22.59	24.21	25.83
	7'	7½"	8"	1474	24.79	26.99	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	23.32	25.20	27.04
	7'	7½"	8½"	1474	25.05	26.94	28.82	30.71	32.59
	8'	8"	9"	1870	31.97	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	20.47	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	30.34	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	26.42
	6'	7½"	8"	762	20.74	23.45	26.07	28.64	31.28
	7'	7½"	8½"	1474	25.81	28.50	31.12	33.70	36.84
	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	32.47	35.95	38.89	41.19	——
12'	6'	8"	8"	762	21.66	24.93	28.05	31.20	——
	7'	8"	8½"	1474	26.81	30.08	33.21	36.36	——
	8'	8"	9"	1870	32.73	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 wingwalls, 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 #/sq in
Reinforcing Steel 20,000 #/sq in

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		

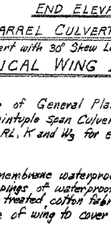
CLASS S CONCRETE

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.						SF5 & LF5 STRAIGHT: Longitudinal in top of wing footing heel.			SF6 & LF6 STRAIGHT: Longitudinal in bottom of wing footing toe.			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 LONG	SIZE	SPACING	NO. REQD	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y 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.	LENGTHS VARY 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"	1'-0"	3'-0"	—	—	—	—	—	—	#3	1	9'-0"	#3	2	8'-6"	#3	12"	1	6'-8"	#3	12"	1	6'-7"	3'-3"	#3	1	6'-7"	#3	12"	2	2'-8"	1'-4"		24.7	45.6
	Long	#3	12"	19	1'-5"	3'-11"	0'-8"	1'-0"	0'-10"	3'-0"	—	—	—	—	—	—	#3	1	15'-6"	#3	2	15'-6"	#3	12"	1	12'-8"	#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"	1'-4"	4'-0"	—	—	—	—	—	—	#3	1	11'-0"	#3	2	10'-4"	#3	12"	1	8'-3"	#3	12"	2	6'-3"	3'-3"	#3	1	8'-8"	#3	12"	3	"	"		37.0	69.5
	Long	#3	12"	18	1'-11"	5'-3"	0'-10"	1'-4"	1'-2"	4'-0"	—	—	—	—	—	—	#3	1	19'-6"	#3	2	20'-2"	#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"	1'-8"	5'-0"	—	—	—	—	—	—	#3	1	13'-0"	#3	3	12'-6"	#3	12"	1	10'-3"	#3	12"	3	9'-3"	3'-3"	#3	1	10'-3"	#3	12"	4	"	"		56.2	107.2
	Long	#3	12"	22	2'-6"	6'-6"	0'-11"	1'-7"	1'-5"	5'-0"	#3	12"	1	23'-6"	#3	8	24'-0"	#3	12"	1	20'-8"	#3	12"	3	19'-6"	6'-6"	#3	1	21'-0"	#3	12"	4	"	"							
5'	Short	#3	12"	13	2'-11"	7'-11"	1'-0"	2'-0"	2'-0"	6'-0"	#3	12"	3	31'-6"	1'-1"	2'-6"	#3	1	15'-0"	#3	3	14'-0"	#3	12"	2	12'-3"	3'-3"	#3	1	13'-3"	#3	12"	5	"	"		78.0	152.2				
	Long	#3	12"	26	2'-9"	7'-10"	1'-0"	1'-11"	1'-10"	6'-0"	#3	12"	6	31'-6"	1'-1"	2'-6"	#3	1	27'-6"	#3	3	15'-7"	#3	12"	2	24'-9"	#3	12"	3	19'-6"	6'-6"	#3	1	25'-1"	#3	12"	5	"	"				
6'	Short	#4	12"	15	3'-6"	9'-4"	1'-2"	2'-4"	2'-5"	7'-1"	#3	12"	3	41'-6"	1'-4"	3'-3"	#3	1	17'-0"	#3	3	16'-10"	#3	12"	2	14'-3"	#3	12"	4	12'-3"	3'-3"	#3	1	15'-0"	#3	12"	6	"	"		127.8	253.1			
	Long	#4	12"	30	3'-4"	9'-3"	1'-2"	2'-3"	2'-3"	7'-1"	#3	12"	6	41'-6"	1'-4"	3'-3"	#3	2	16'8"	#3	6	18'-0"	#3	12"	4	15'2"	#3	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"	2'-9"	8'-1"	#4	12"	6	51'-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'-8"		267.0	489.8			
	Long	#4	12"	34	3'-9"	10'-9"	1'-3"	2'-8"	2'-7"	8'-1"	#4	12"	12	51'-6"	1'-7"	4'-0"	#4	2	18'-8"	#4	8	20'-6"	#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'-2"	9'-2"	#4	12"	9	61'-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'-3"	#4	12"	8	"	"		312.9	622.3			
	Long	#4	12"	38	4'-4"	12'-3"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	18	61'-6"	1'-10"	4'-9"	#4	2	20'-8"	#4	8	22'-0"	#4	12"	5	*30'-6"	6'-6"	#4	2	19'-6"	#4	12"	8	3'-6"	1'-9"							

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).



REVISIONS:- Membrane added. 5-10-66 W.G.H.

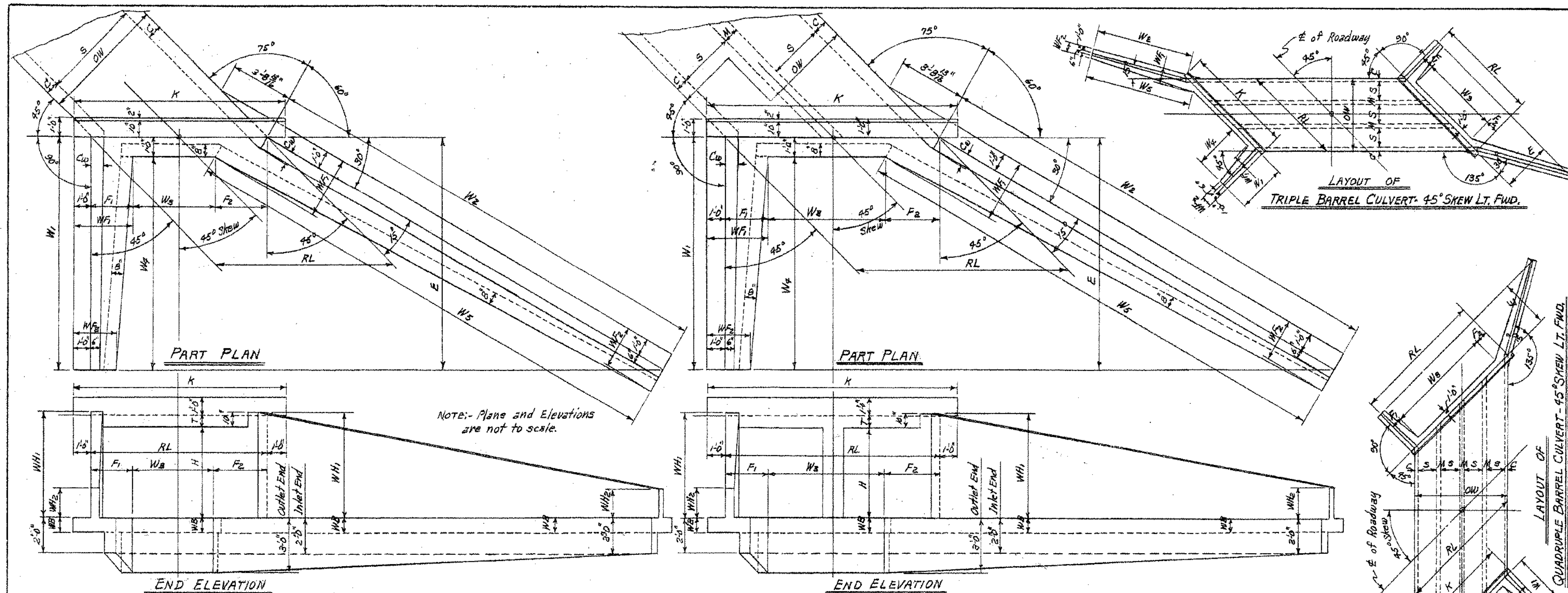
ARKANSAS STATE HIGHWAY COMMISSION

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

Designed By:- W.G.H. 5-13-63 Checked By:- 2-19-63
Drawn By:- W.G.H. 7-26-63 Checked By:- DMT 7-15-63
Quantities By:- W.G.H. 1-7-64 Checked By:- DMT 2-19-64



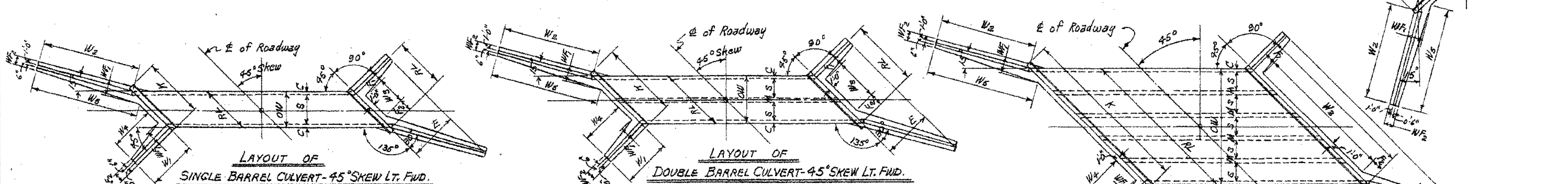
Note:- Plans and Elevations are not to scale.

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.

LAYOUT OF TRIPLE BARREL CULVERT - 45° SKEW LT. FWD.

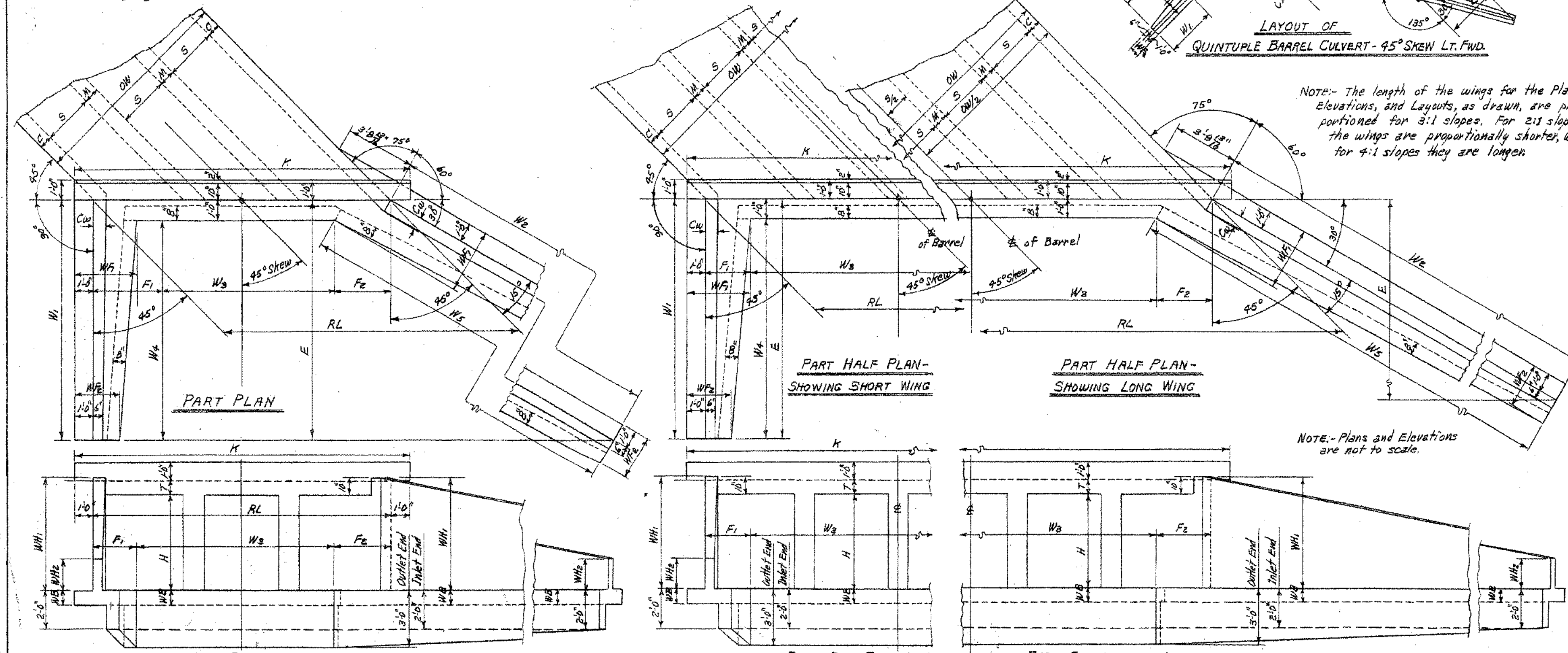
LAYOUT OF QUADRUPLE BARREL CULVERT - 45° SKEW LT. FWD.



LAYOUT OF SINGLE BARREL CULVERT - 45° SKEW LT. FWD.

LAYOUT OF DOUBLE BARREL CULVERT - 45° SKEW LT. FWD.

LAYOUT OF QUINTUPLE BARREL CULVERT - 45° SKEW LT. FWD.



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.

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.

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION W_3

$RL = OW \times 1.41421$ — $K = RL + (2'\text{-}0")$ — $W_3 = RL - (F_1 + F_2)$

Use with Drawing No.	Clear Span S	Clear Height H	Sum of Footing Dimensions F_1 & F_2	Single OW	Single RL	Single K	Single W_3	Double OW	Double RL	Double K	Double W_3	Triple OW	Triple RL	Triple K	Triple W_3	Quadruple OW	Quadruple RL	Quadruple K	Quadruple W_3	Quintuple OW	Quintuple RL	Quintuple K	Quintuple W_3
W-X452-1, W-X453-1 or W-X454-1. (For H=8'-0" or less)	4'	2'	2'-3¼"	5'-0"	7'-0⅞"	9'-0⅞"	4'-9⅝"	9'-8"	13'-8"	15'-8"	11'-4⅞"	14'-4"	20'-3¼"	22'-3¼"	18'-8"	19'-0"	26'-10½"	28'-10½"	24'-7¼"	23'-8"	33'-5⅝"	35'-5¾"	31'-2½"
		3'	3'-3¼"	5'-0"	"	"	3'-9⅝"	9'-8"	"	"	10'-4⅞"	14'-4"	"	"	17'-0"	19'-0"	"	"	23'-7¼"	23'-8"	"	"	30'-2½"
		4'	4'-3¼"	5'-0"	"	"	2'-9⅝"	9'-8"	"	"	9'-4⅞"	14'-4"	"	"	16'-0"	19'-0"	"	"	22'-7¼"	23'-8"	"	"	29'-2½"
		5'	5'-3¼"	5'-0"	7'-0⅞"	9'-0⅞"	1'-9⅝"	9'-8"	13'-8"	15'-8"	8'-4⅞"	14'-4"	20'-3¼"	22'-3¼"	15'-0"	19'-0"	26'-10½"	28'-10½"	21'-7¼"	23'-8"	33'-5⅝"	35'-5¾"	28'-2½"
		6'	6'-3¼"	5'-2"	7'-3⅝"	9'-3⅝"	1'-0⅜"	9'-11"	14'-0¼"	16'-0¼"	7'-9⅛"	14'-8"	20'-8⅞"	22'-9"	14'-5¾"	18'-5"	27'-5½"	29'-5½"	21'-2¼"	24'-2"	34'-2⅛"	36'-2"	27'-10¾"
	5'	3'	3'-3¼"	6'-0"	8'-5⅞"	10'-5⅞"	5'-2⅝"	11'-8"	16'-6"	18'-6"	13'-2¾"	17'-4"	24'-6⅛"	26'-6⅛"	21'-3"	23'-0"	32'-6⅜"	34'-6⅜"	29'-3"	28'-8"	40'-6½"	42'-6½"	37'-3½"
		4'	4'-3¼"	6'-0"	"	"	4'-2⅝"	11'-8"	"	"	12'-2¾"	17'-4"	"	"	20'-3"	23'-0"	"	"	28'-3"	28'-8"	"	"	36'-3½"
		5'	5'-3¼"	6'-0"	8'-5⅞"	10'-5⅞"	3'-2⅝"	11'-8"	16'-6"	18'-6"	11'-2¾"	17'-4"	24'-6⅛"	26'-6⅛"	19'-3"	23'-0"	32'-6⅜"	34'-6⅜"	27'-3"	28'-8"	40'-6½"	42'-6½"	35'-3½"
		6'	6'-3¼"	6'-2"	8'-8¾"	10'-8¾"	2'-5¾"	11'-11"	16'-10¼"	18'-10¼"	10'-7"	17'-8"	24'-11⅜"	27'-0"	18'-8¾"	23'-5"	33'-1⅜"	35'-1½"	26'-10⅛"	29'-2"	41'-3"	43'-3"	34'-11¾"
		7'	7'-9¼"	6'-3"	8'-10⅛"	10'-10⅛"	1'-0⅞"	12'-1"	17'-1"	19'-1"	9'-3⅜"	17'-11"	25'-4"	27'-4"	17'-6¾"	23'-9"	33'-7"	35'-7"	26'-9⅜"	29'-7"	41'-10"	43'-10"	34'-0¾"
	6'	3'	3'-3¼"	7'-0"	9'-10¾"	11'-10¾"	6'-7⅝"	13'-8"	19'-3⅞"	21'-4"	16'-0¾"	20'-4"	28'-9⅛"	30'-9"	25'-5¾"	27'-0"	38'-2¼"	40'-2¼"	34'-11"	33'-8"	47'-7⅝"	49'-7⅝"	44'-4"
		4'	4'-3¼"	7'-0"	"	"	5'-7⅝"	13'-8"	"	"	15'-0¾"	20'-4"	"	"	24'-5¾"	27'-0"	"	"	33'-11"	33'-8"	"	"	43'-4"
		5'	5'-3¼"	7'-0"	9'-10¾"	11'-10¾"	4'-7⅝"	13'-8"	19'-3⅞"	21'-4"	14'-0¾"	20'-4"	28'-9⅛"	30'-9"	23'-5¾"	27'-0"	38'-2¼"	40'-2¼"	32'-11"	33'-8"	47'-7⅝"	49'-7⅝"	42'-4"
		6'	6'-3¼"	7'-2"	10'-1⅝"	12'-1½"	3'-10⅜"	13'-11"	19'-8⅛"	21'-8¼"	13'-5"	20'-8"	29'-2¾"	31'-2¾"	22'-11½"	27'-5"	38'-9¼"	40'-9¼"	32'-6"	34'-2"	48'-3⅞"	50'-3⅞"	42'-0½"
		7'	7'-9¼"	7'-3"	10'-3"	12'-3"	2'-5⅞"	14'-1"	19'-11"	21'-11"	12'-1¾"	20'-11"	29'-7"	31'-7"	21'-9¾"	27'-9"	39'-3"	41'-3"	31'-5⅜"	34'-7"	48'-10⅞"	50'-11"	41'-1¾"
		8'	9'-3¼"	7'-4"	10'-4⅛"	12'-4¼"	1'-1¼"	14'-2"	20'-0⅜"	22'-0¼"	10'-9¼"	21'-0"	29'-8⅛"	31'-8½"	20'-5¼"	27'-10"	39'-4⅜"	41'-4¼"	30'-1"	34'-8"	49'-0¼"	51'-0¼"	39'-9"
	7'	4'	4'-3¼"	8'-0"	11'-3¾"	13'-3¾"	7'-0½"	15'-8"	22'-1⅞"	24'-1¾"	17'-10½"	23'-4"	33'-0"	35'-0"	28'-8¾"	31'-0"	43'-10⅛"	45'-10"	39'-6¾"	38'-8"	54'-8¼"	56'-8¼"	50'-5"
		5'	5'-3¼"	8'-0"	11'-3¾"	13'-3¾"	6'-0½"	15'-8"	22'-1⅞"	24'-1¾"	16'-10½"	23'-4"	33'-0"	35'-0"	27'-8¾"	31'-0"	43'-10⅛"	45'-10"	38'-6¾"	38'-8"	54'-8¼"	56'-8¼"	49'-5"
		6'	6'-3¼"	8'-2"	11'-6⅝"	13'-6⅝"	5'-3⅜"	15'-11"	22'-6⅛"	24'-6"	16'-2¾"	23'-8"	33'-5⅝"	35'-5½"	27'-2¼"	31'-5"	44'-5⅛"	46'-5⅛"	38'-2"	39'-2"	55'-4⅝"	57'-4⅝"	49'-1⅛"
		7'	7'-9¼"	8'-3"	11'-8"	13'-8"	3'-10⅜"	16'-1"	22'-9"	24'-9"	14'-11¾"	23'-11"	33'-9⅞"	35'-10"	26'-0⅜"	31'-9"	44'-10⅛"	46'-10⅛"	37'-1⅛"	39'-7"	55'-11¾"	57'-11¾"	48'-2½"
		8'	9'-3¼"	8'-4"	11'-9⅜"	13'-9½"	2'-6¼"	16'-2"	22'-10⅜"	24'-10½"	13'-7"	24'-0"	33'-11⅛"	35'-11⅛"	24'-8"	31'-10"	45'-0¼"	47'-0¼"	35'-9"	39'-8"	56'-1⅛"	58'-1⅛"	46'-10"
	8'	4'	4'-3¼"	9'-0"	12'-8¾"	14'-8¾"	8'-5⅛"	17'-8"	24'-11⅞"	26'-11⅞"	20'-8½"	26'-4"	37'-2⅞"	39'-3"	32'-11¾"	35'-0"	49'-6"	51'-6"	45'-2¾"	43'-8"	61'-9"	63'-9"	57'-5¾"
		5'	5'-3¼"	9'-2"	12'-11⅝"	14'-11⅝"	7'-8⅜"	17'-11"	25'-4"	27'-4"	20'-0¾"	26'-8"	37'-8½"	39'-8½"	32'-5¼"	35'-5"	50'-1"	52'-1"	44'-9¾"	44'-2"	62'-5½"	64'-5½"	57'-2¼"
		6'	6'-3¼"	9'-2"	12'-11⅝"	14'-11⅝"	6'-8⅜"	17'-11"	25'-4"	27'-4"	19'-0¾"	26'-8"	37'-8½"	39'-8½"	31'-5¼"	35'-5"	50'-1"	52'-1"	43'-9¾"	44'-2"	62'-5½"	64'-5½"	56'-2¼"
		7'	7'-9¼"	9'-3"	13'-1"	15'-1"	5'-3¾"	18'-1"	25'-6⅞"	27'-7"	17'-9¾"	26'-11"	38'-0¾"	40'-0¾"	30'-3½"	35'-9"	50'-6⅜"	52'-6⅜"	42'-9½"	44'-7"	63'-0⅝"	65'-0½"	55'-3⅜"
		8'	9'-3¼"	9'-4"	13'-2½"	15'-2½"	3'-11⅜"	18'-2"	25'-8¼"	27'-8¼"	16'-5"	27'-0"	38'-2¼"	40'-2¼"	28'-11"	35'-10"	50'-8"	52'-8"	41'-5"	44'-8"	63'-2"	65'-2"	53'-10¾"
	9'	5'	5'-3¼"	10'-2"	14'-4⅛"	16'-4⅛"	9'-1⅜"	19'-11"	28'-2"	30'-2"	22'-10¾"	29'-8"	41'-11⅛"	43'-11⅛"	36'-8⅛"	39'-5"	55'-8⅜"	57'-9"	50'-5¾"	49'-2"	69'-6⅜"	71'-6½"	64'-3½"
		6'	6'-3¼"	10'-3"	14'-6"	16'-6"	8'-2¾"	20'-1"	28'-4⅞"	30'-4⅞"	22'-1½"	29'-11"	42'-3¾"	44'-3¾"	36'-0½"	39'-9"	56'-2⅝"	58'-2⅝"	49'-11½"	49'-7"	70'-1½"	72'-1½"	63'-10¼"
		7'	7'-9¼"	10'-3"	14'-6"	16'-6"	6'-8¾"	20'-1"	28'-4⅞"	30'-4⅞"	20'-7½"	29'-11"	42'-3¾"	44'-3¾"	34'-6½"	39'-9"	56'-2⅝"	58'-2⅝"	48'-5½"	49'-7"	70'-1½"	72'-1½"	62'-4¼"
		8'	9'-3¼"	10'-4"	14'-7⅜"	16'-7¼"	5'-4⅛"	20'-2"	28'-6¼"	30'-6¼"	19'-3"	30'-0"	42'-5⅛"	44'-5"	33'-2"	39'-10"	56'-4"	58'-4"	47'-0¾"	49'-8"	70'-2⅞"	72'-3"	60'-11¾"
	10'	5'	5'-3¼"	11'-2"	15'-9½"	17'-9½"	10'-6¼"	21'-11"	31'-0"	33'-0"	25'-8¾"	32'-8"	46'-2⅜"	48'-2¼"	40'-11"	43'-5"	61'-4⅜"	63'-4⅜"	56'-1½"	54'-2"	76'-7⅛"	78'-7¼"	71'-4"
		6'	6'-3¼"	11'-3"	15'-11"	17'-11"	9'-7¾"	22'-1"	31'-2¾"	33'-2¾"	24'-11½"	32'-11"	46'-6⅝"	48'-6½"	40'-3½"	43'-9"	61'-10½"	63'-10½"	55'-7¼"	54'-7"	77'-2¼"	79'-2¼"	70'-11"
		7'	7'-9¼"	11'-3"	15'-11"	17'-11"	8'-1¾"	22'-1"	31'-2¾"	33'-2¾"	23'-5½"	32'-11"	46'-6⅝"	48'-6½"	38'-9½"	43'-9"	61'-10½"	63'-10½"	54'-1¼"	54'-7"	77'-2¼"	79'-2¼"	69'-5"
		8'	9'-3¼"	11'-4"	16'-0⅜"	18'-0¼"	6'-9¼"	22'-2"	31'-4⅛"	33'-4¼"	22'-1"	33'-0"	46'-8"	48'-8"	37'-4¾"	43'-10"	61'-11⅞"	64'-0"	52'-8¾"	54'-8"	77'-3⅜"	79'-3¾"	68'-0½"
	11'	6'	6'-3¼"	12'-4"	17'-5¼"	19'-5¼"	11'-2⅛"	24'-2"	34'-2⅛"	36'-2"	27'-11"	36'-0"	50'-11"	52'-11"	44'-7¾"	47'-10"	67'-7¾"	69'-7¾"	61'-4½"	—	—	—	—
		7'	7'-9¼"	12'-4"	"	"	9'-8⅛"	24'-2"	"	"	26'-5"	36'-0"	"	"	43'-1¾"	47'-10"	"	"	59'-10½"	—	—	—	—
		8'	9'-3¼"	12'-4"	"	"	8'-2⅛"	24'-2"	"	"	24'-11"	36'-0"	"	"	41'-7¾"	47'-10"	"	"	58'-4½"	—	—	—	—
	12'	6'	6'-3¼"	13'-4"	18'-10¼"	20'-10¼"	12'-7¼"	26'-2"	37'-0⅛"	39'-0"	30'-8¾"	39'-0"	55'-1⅞"	57'-1⅞"	49'-10¾"	51'-10"	73'-3⅝"	75'-3¾"	67'-0½"	—	—	—	—
		7'	7'-9¼"	13'-4"	"	"	11'-1⅛"	26'-2"	"	"	29'-2¾"	39'-0"	"	"	47'-4¾"	51'-10"	"	"	65'-6½"	—	—	—	—
		8'	9'-3¼"	13'-4"	"	"	9'-7⅛"	26'-2"	"	"	27'-8¾"	39'-0"	"	"	45'-10¾"	51'-10"	"	"	64'-0½"	—	—	—	—
W-X452-2, W-X453-2 or W-X454-2. (For H=9'-0" & over)	7'																						
		9'	10'-9¼"	8'-6"	12'-0¼"	14'-0¼"	1'-3"	16'-5"	23'-2⅞"	25'-2¾"	12'-5⅞"	24'-4"	34'-5"	36'-5"	23'-7¾"	32'-3"	45'-7¼"	47'-7¼"	34'-10"	40'-2"	56'-9⅜"	58'-9⅜"	46'-0½"
	8'	9'	10'-9¼"	9'-6"	13'-5¼"	15'-5¼"	2'-8"	18'-5"	26'-0½"	28'-0½"	15'-3⅛"	27'-4"	38'-7⅞"	40'-8"	27'-10⅜"	36'-3"	51'-3½"	53'-3½"	40'-6"	45'-2"	63'-10½"	65'-10½"	53'-1⅛"
		10'	12'-3¼"	9'-8"	13'-8"	15'-8"	1'-4⅞"	18'-8"	26'-4¾"	28'-4¾"	14'-1½"	27'-8"	39'-1⅛"	41'-1½"	26'-10¼"	36'-8"	51'-10¼"	53'-10¼"	39'-7"	45'-8"	64'-7"	66'-7"	52'-3¾"
	9'	9'	10'-9¼"	10'-6"	14'-10¼"	16'-10¼"	4'-1"	20'-5"	28'-10½"	30'-10½"	18'-1⅛"	30'-4"	42'-10⅜"	44'-10⅜"	32'-1⅛"	40'-3"	56'-11⅛"	58'-11"	46'-1⅜"	50'-2"	70'-11⅜"	72'-11½"	60'-2¼"
		10'	12'-3¼"	10'-8"	15'-1"	17'-1"	2'-9¾"	20'-8"	29'-2⅜"	31'-2¾"	16'-11⅛"	30'-8"	43'-4⅜"	45'-4½"	31'-1⅛"	40'-8"	57'-6⅛"	59'-6⅛"	45'-3"	50'-8"	71'-7⅞"	73'-7⅞"	59'-4½"
		11'	13'-9¼"	10'-10"	15'-3⅞"	17'-3¾"	1'-6⅝"	20'-10"	29'-5½"	31'-5½"	15'-8½"	30'-10"	43'-7¼"	45'-7¼"	29'-10"	40'-10"	57'-9"	59'-9"	43'-11⅜"	50'-10"	71'-10⅝"	73'-10⅝"	58'-1½"
	10'	9'	10'-9¼"	11'-6"	16'-3⅛"	18'-3¼"	5'-6"	22'-5"	31'-8¾"	33'-8¼"	20'-11⅛"	33'-4"	47'-1⅝"	49'-1¾"	36'-4½"	44'-3"	62'-7"	64'-7"	51'-9¾"	55'-2"	78'-0⅛"	80'-0½"	67'-3"
		10'	12'-3¼"	11'-8"	16'-6"	18'-6"	4'-2¾"	22'-8"	32'-0⅜"	34'-0¾"	19'-9½"	33'-8"	47'-7⅝"	49'-7¼"	35'-4½"	44'-8"	63'-2"	65'-2"	50'-10¾"	55'-8"	78'-8⅜"	80'-8¾"	66'-5½"
		11'	13'-9¼"	11'-10"	16'-8⅜"	18'-8¾"	2'-11⅝"	22'-10"	32'-3½"	34'-3½"	18'-6¼"	33'-10"	47'-10⅛"	49'-10⅛"	34'-1"	44'-10"	63'-4⅞"	65'-5"	49'-7⅜"	55'-10"	78'-11½"	80'-11½"	65'-2¼"
		12'	15'-3¼"	12'-0"	16'-11⅜"	18'-11⅜"	1'-8⅜"	23'-0"	32'-6⅜"	34'-6⅜"	17'-3"	34'-0"	48'-1"	50'-1"	32'-9¾"	45'-0"	63'-7⅝"	65'-7¾"	48'-4½"	56'-0"	79'-2⅜"	81'-2½"	68'-11½"
	11'	9'	10'-9¼"	12'-6"	17'-8⅛"	19'-8⅛"	6'-10⅜"	24'-5"	34'-6⅜"	36'-6⅛"	23'-9¼"	36'-4"	51'-4⅝"	53'-4½"	40'-7½"	48'-3"	68'-2⅞"	70'-2⅞"	57'-5½"	—	—	—	—
		10'	12'-3¼"	12'-8"	17'-11"	19'-11"	5'-7⅜"	24'-8"	34'-10⅜"	36'-10⅛"	22'-7½"	36'-8"	51'-10⅛"	53'-10⅛"	39'-7"	48'-8"	68'-9⅞"	70'-10"	56'-6⅜"	—	—	—	—
		11'	13'-9¼"	12'-10"	18'-1⅞"	20'-1⅞"	4'-4½"	24'-10"	35'-1⅛"	37'-1½"	21'-4⅞"	36'-10"	52'-1⅛"	54'-1"	38'-3¾"	48'-10"	69'-0⅞"	71'-0⅞"	55'-3½"	—	—	—	—
		12'	15'-3¼"	13'-0"	18'-4⅝"	20'-4⅝"	3'-1⅜"	25'-0"	35'-4¼"	37'-4¼"	20'-1"	37'-0"	52'-3⅞"	54'-4"	37'-0¾"	49'-0"	69'-3½"	71'-3½"	54'-0¼"	—	—	—	—
	12'	9'	10'-9¼"	13'-6"	19'-1⅛"	21'-1"	8'-3⅜"	26'-5"	37'-4½"	39'-4½"	26'-7"	39'-4"	55'-7⅛"	57'-7⅛"	44'-8⅛"	52'-3"	73'-10⅜"	75'-10⅜"	63'-1⅛"	—	—	—	—
		10'	12'-3¼"	13'-8"	19'-3⅞"	21'-4"	7'-0⅝"	26'-8"	37'-8⅝"	39'-8½"	25'-5½"	39'-8"	56'-1⅛"	58'-1"	43'-10"	52'-8"	74'-5⅜"	76'-5⅜"	62'-2½"	—	—	—	—
		11'	13'-9¼"	13'-10"	19'-6⅜"	21'-6⅜"	5'-9½"	26'-10"	37'-11⅜"	39'-11⅛"	24'-2½"	39'-10"	56'-4"	58'-4"	42'-6⅜"	52'-10"	74'-8⅝"	76'-8½"	60'-11¼"	—	—	—	—
		12'	15'-3¼"	14'-0"	19'-9⅝"	21'-9½"	4'-6⅜"	27'-0"	38'-2½"	40'-2½"	22'-11"	40'-0"	56'-6⅞"	58'-6⅞"	41'-3½"	53'-0"	74'-11½"	76'-11½"	59'-8¼"	—	—	—	—

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

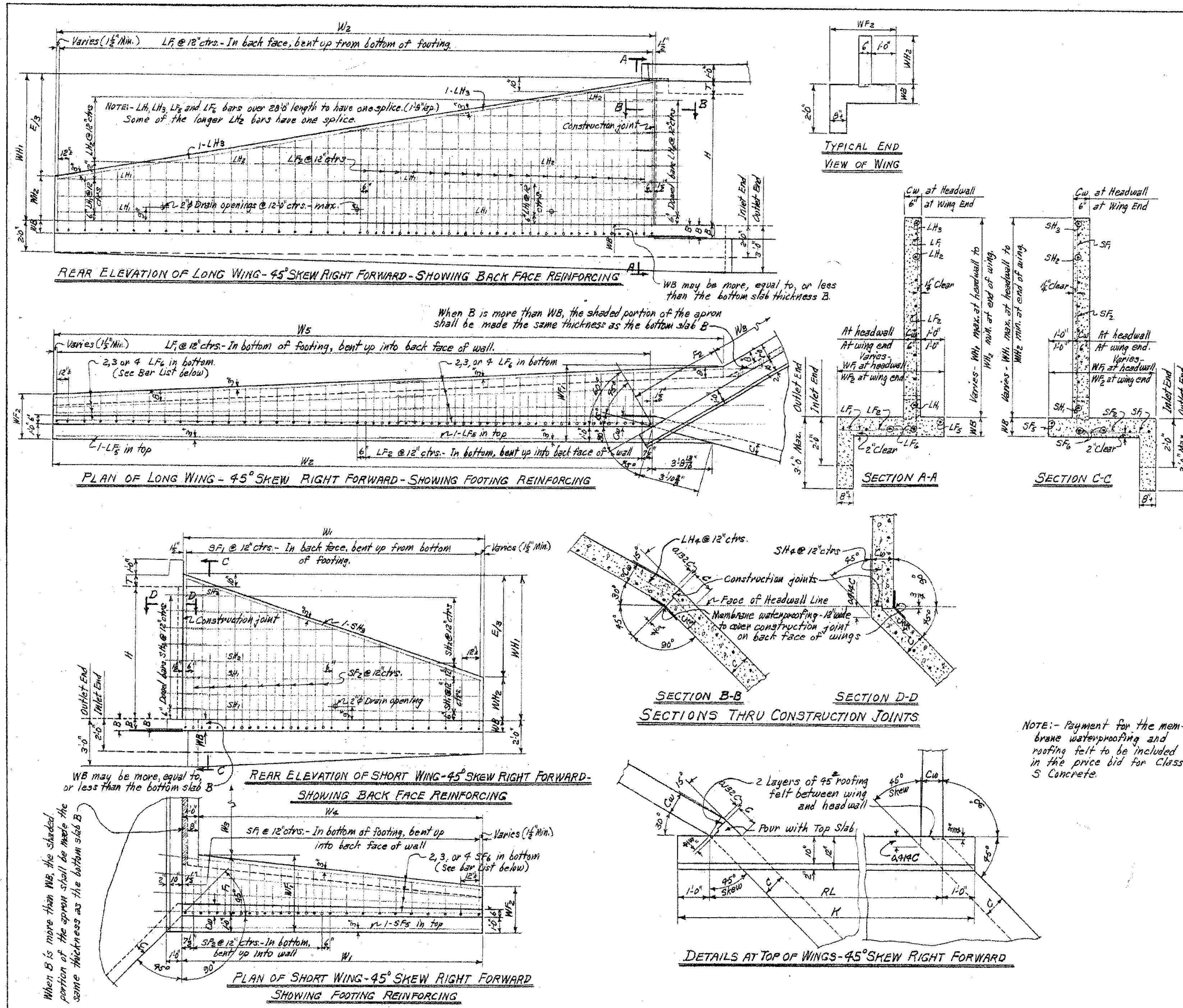
DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 45° SKEW

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

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			87	
JOB No.					



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

REGULAR WING DIMENSIONS - 3:1 SLOPES

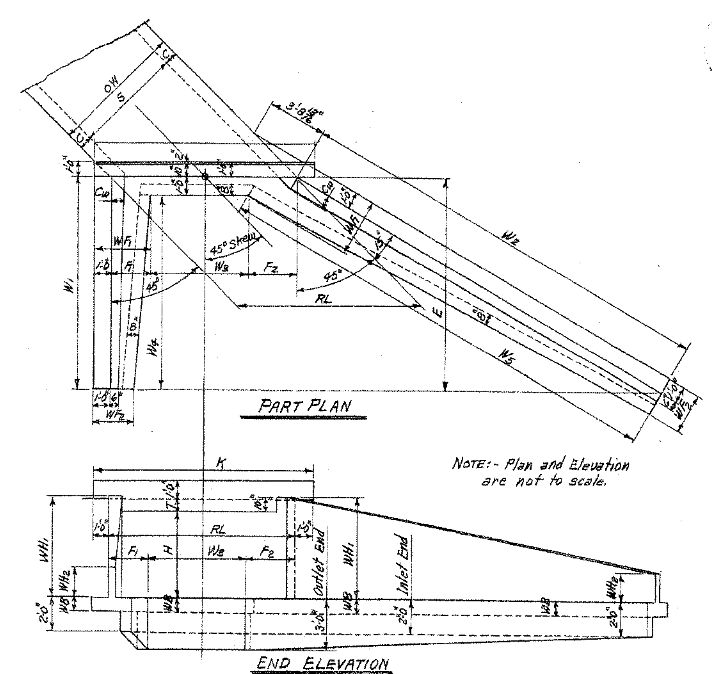
Clear Height of Box	Thickness of Wing Footing	Thickness of Wing at Hdwl = C	Wingwall Heights: At Headwall	Wingwall Heights: At End of Wing	Widths of Wing Footings: At Headwall	Widths of Wing Footings: At End of Wing	Footing Dimension Parallel with Headwall: Short Wing	Footing Dimension Parallel with Headwall: 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, Inlet End: Short Wing	Inlet End: Long Wing	Outlet End: Short Wing	Outlet End: Long Wing
H	WB	Cw	WH_1	WH_2	WF_1	WF_2	F_1	F_2	E	W_1	W_2	W_4	W_5	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
2'	7"	6"	2'-10"	0'-8"	2'-4"	2'-0"	1'-4"	0'-11¼"	6'-6"	6'-6"	13'-0"	5'-6"	13'-3¾"	0.793	1.572	0.827	1.741
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1½"	1'-8"	1'-7¾"	8'-6"	8'-6"	17'-0"	7'-6"	17'-10¾"	1.120	2.364	1.229	2.590
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	2'-0"	2'-3¼"	10'-6"	10'-6"	21'-0"	9'-6"	22'-5½"	1.567	3.295	1.700	3.577
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-4"	2'-11¼"	12'-6"	12'-6"	25'-0"	11'-6"	27'-0½"	2.082	4.367	2.241	4.705
		7"	5'-10"	1'-8"	3'-4"	2'-4½"	2'-4"	2'-11¼"	12'-6"	12'-6"	25'-0"	11'-6"	27'-0½"	2.166	4.551	2.325	4.889
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-7¼"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	2.894	6.055	3.078	6.450
		7½"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-7¼"	14'-6"	14'-6"	29'-0"	13'-6"	31'-7½"	2.952	6.180	3.135	6.575
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-8"	3'-7¼"	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'-2"	4'-7¼"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5¾"	3.794	7.930	4.003	8.385
		8"	7'-10"	2'-4"	4'-2"	2'-7½"	3'-2"	4'-7¼"	16'-6"	16'-6"	33'-0"	15'-6"	36'-5¾"	3.870	8.093	4.078	8.598
8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-8"	5'-7¼"	18'-6"	18'-6"	37'-0"	17'-6"	41'-4½"	4.855	10.186	5.088	10.651

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W_3.

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	12.48	13.84	15.20	16.56
	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"	463	14.55	16.19	17.84	19.49	21.14
	6'	7"	8"	763	19.53	21.21	22.90	24.59	26.28
	7'	7½"	8½"	1475	24.98	26.69	28.41	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"	463	14.85	16.80	18.72	20.68	22.60
	6'	7"	8"	763	19.93	21.82	23.79	25.78	27.76
	7'	7½"	8½"	1475	25.28	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"	463	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"	1475	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	14.95	17.49	20.08	22.57
	5'	7"	7"	463	16.05	18.67	21.24	23.86	26.37
	6'	7"	8"	763	20.95	23.07	25.64	28.26	30.77
	7'	7½"	8½"	1475	25.90	28.54	31.18	33.78	36.32
	8'	8"	9"	1872	32.33	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"	1475	26.21	29.18	32.08	34.94	37.86
	8'	8"	9"	1872	32.63	35.61	38.51	41.37	44.29
10'	5'	7"	7"	463	16.69	19.96	23.14	26.27	29.47
	6'	7½"	8"	763	21.48	24.77	27.99	31.13	34.36
	7'	7½"	8½"	1475	26.53	29.82	33.04	36.19	39.42
	8'	8"	9"	1872	32.95	36.25	39.46	42.62	45.85
11'	6'	8"	8"	763	22.18	25.83	29.35	32.84	—
	7'	8"	8½"	1475	27.39	30.99	34.51	38.01	—
	8'	8"	9"	1872	33.26	36.91	40.43	43.93	—
12'	6'	8"	8"	763	22.50	26.51	30.83	34.19	—
	7'	8"	8½"	1475	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.



SINGLE BARREL CULVERT - 45° SKEW RIGHT FORWARD

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

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.

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 in wings.

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

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.
SF5 & LF5 — Straight — Longitudinal in top of wing footing heel.
SF6 & LF6 — Straight — Longitudinal in bottom of wing footing toe.
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.

Clear Height H	Wing Location (Short or Long)	SF1&LF1 Size	SF1&LF1 Spacing	SF1&LF1 No. Req'd	SF1&LF1 Lengths Vary Min.	SF1&LF1 Lengths Vary Max.	SF1&LF1 X Min.	SF1&LF1 X Max.	SF1&LF1 Y Min.	SF1&LF1 Y Max.	SF2&LF2 Size	SF2&LF2 Spacing	SF2&LF2 No. Req'd	SF2&LF2 Length	SF2&LF2 X	SF2&LF2 Y	SF5&LF5 Size	SF5&LF5 No. Req'd	SF5&LF5 Length	SF6&LF6 Size	SF6&LF6 No. Req'd	SF6&LF6 Length	SH1&LH1 Size	SH1&LH1 Spacing	SH1&LH1 No. Req'd	SH1&LH1 Length	SH2&LH2 Size	SH2&LH2 Spacing	SH2&LH2 No. Req'd	SH2&LH2 Lengths Vary Max.	SH2&LH2 Lengths Vary Min.	SH3&LH3 Size	SH3&LH3 No. Req'd	SH3&LH3 Length	SH4&LH4 Size	SH4&LH4 Spacing	SH4&LH4 No. Req'd	SH4&LH4 Length	SH4&LH4 X	Reinforcing Steel per Wing - Lbs. Short Wing	Reinforcing Steel per Wing - Lbs. Long Wing
2'	Short	#3	12"	7	1'-7"	3'-11"	0'-8"	1'-0"	1'-0"	3'-0"	—	—	—	—	—	—	#3	1	8'-4"	#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"	29.4	46.3
	Long	#3	12"	14	1'-5"	3'-11"	0'-8"	1'-0"	0'-10"	3'-0"	—	—	—	—	—	—	#3	1	17'-6"	#3	2	15'-6"	#3	12"	1	12'-9"	#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"	1'-4"	4'-0"	—	—	—	—	—	—	#3	1	10'-4"	#3	2	10'-0"	#3	12"	1	8'-3"	#3	12"	2	6'-3"	3'-3"	#3	1	8'-8"	#3	12"	3	"	"	36.8	70.3
	Long	#3	12"	18	1'-11"	5'-3"	0'-10"	1'-4"	1'-2"	4'-0"	—	—	—	—	—	—	#3	1	21'-6"	#3	2	20'-2"	#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"	1'-8"	5'-0"	—	—	—	—	—	—	#3	1	12'-4"	#3	3	12'-0"	#3	12"	1	10'-3"	#3	12"	3	9'-3"	3'-3"	#3	1	10'-9"	#3	12"	4	"	"	56.9	107.9
	Long	#3	12"	22	2'-4"	6'-6"	0'-11"	1'-7"	1'-6"	5'-0"	—	—	—	—	—	—	#3	1	25'-6"	#3	3	24'-10"	#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"	2'-0"	6'-0"	#3	12"	3	3'-6"	1'-1"	2'-6"	#3	1	14'-4"	#3	3	14'-0"	#3	12"	2	12'-3"	#3	12"	3	9'-3"	3'-3"	#3	1	12'-11"	#3	12"	5	"	"	77.7	153.7
	Long	#3	12"	26	2'-9"	7'-10"	1'-0"	1'-11"	1'-10"	6'-0"	#3	12"	6	3'-6"	1'-1"	2'-6"	#3	2	15'-8"	#3	6	15'-7"	#3	12"	2	24'-8"	#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"	2'-5"	7'-1"	#3	12"	3	4'-6"	1'-4"	3'-3"	#3	1	16'-4"	#3	3	16'-0"	#3	12"	2	14'-3"	#3	12"	4	12'-3"	3'-3"	#3	1	15'-0"	#3	12"	6	"	"	127.6	253.9
	Long	#4	12"	30	3'-4"	9'-3"	1'-2"	2'-3"	2'-3"	7'-1"	#3	12"	6	4'-6"	1'-4"	3'-3"	#3	2	17'-8"	#3	6	18'-0"	#3	12"	4	15'-2"	#3	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"	2'-9"	8'-1"	#4	12"	6	5'-6"	1'-7"	4'-0"	#4	1	18'-4"	#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'-9"	246.5	491.1
	Long	#4	12"	34	3'-9"	10'-8"	1'-3"	2'-8"	2'-7"	8'-1"	#4	12"	12	5'-6"	1'-7"	4'-0"	#4	2	19'-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'-2"	9'-2"	#4	12"	9	6'-6"	1'-10"	4'-9"	#4	1	20'-4"	#4	4	20'-0"	#4	12"	3	18'-3"	#4	12"	5	15'-3"	3'-3"	#4	1	19'-3"	#4	12"	8	"	"	312.5	623.6
	Long	#4	12"	38	4'-4"	12'-3"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	18	6'-6"	1'-10"	4'-9"	#4	2	21'-8"	#4	8	22'-9"	#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: SF1 & SF2, LF1 & LF2 (3" Pin); SH_4; LH_4. NOTE:- Dimensions are to bar centers.

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)

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

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

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

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

KESHOT 3-4-93

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			88	
JOB No.					

BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH

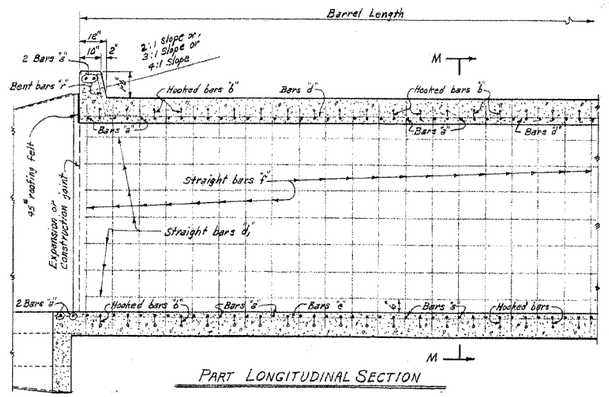
DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	'a' bars STRAIGHT In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall- Each.					'b' bars BENT - See Diagram below. In Top and Bottom Slabs of Barrel. Alternate with 'a' bars.						'd' bars STRAIGHT Longitudinal in Top Slab of Barrel			'd1' bars STRAIGHT Longitudinal in Sidewalls			'e' bars. STRAIGHT Longitudinal in Bottom Slab of Barrel			'f' bars STRAIGHT Verticals in Side walls				
					NUMBER REQ'D					NUMBER REQ'D														NUMBER REQ'D		
D	S	H	SIZE	SPACING	3:1	4:1	LENGTH	SIZE	SPACING	3:1	4:1	LENGTH	X	SIZE	SPACING	No. REQ'D	SIZE	SPACING	No. REQ'D	LENGTH	SIZE	SPACING	No. REQ'D	LENGTH	SIZE	SPACING	3:1	4:1	LENGTH
0'-0" TO 5'-0" MAXIMUM.	1 @ 4'	2'	#5	13"	120	120	4'-9"	#6	13"	110	110	5'-10"	4'-8"	#5	10½"	6	#4	12"	4	2 @ 30'-6" for 60'-0" Length Barrel. (1'-3" Lap)	#4	12"	5	2 @ 31'-6" for 60'-0" Length Barrel. (1'-3" Lap)	#4	12"	120	120	2'-11"
		3'			120	120	4'-9"			110	110	5'-10"	4'-8"			6			6				5				120	120	3'-11"
		4'			120	120	4'-9"			110	110	5'-10"	4'-8"			8			8				5				120	120	4'-11"
		5'			120	120	4'-9"			110	110	5'-10"	4'-8"			10			10				5				120	120	5'-11"
		6'			120	120	4'-11"			110	110	6'-0"	4'-10"			12			12				5				120	120	6'-11"
	1 @ 5'	3'			120	120	5'-9"			110	110	6'-10"	5'-8"			7			6				6				120	120	4'-0"
		4'			120	120	5'-9"			110	110	6'-10"	5'-8"			8			8				6				120	120	5'-0"
		5'	#6	13"	120	120	5'-9"	#6	13"	110	110	6'-10"	5'-8"	#5	10½"	7	#4	12"	10		#4	12"	6		#4	12"	120	120	6'-0"
		6'			120	120	5'-11"			110	110	7'-0"	5'-10"			7			12				6				120	120	7'-0"
		7'			120	120	6'-0"			110	110	7'-1"	5'-11"			7			14				6				120	120	8'-0"
		3'			128	128	6'-9"			118	118	7'-10"	6'-8"			8			6				7				120	120	4'-1"
		4'			128	128	6'-9"			118	118	7'-10"	6'-8"			8			8				7				120	120	5'-1"
	1 @ 6'	5'	#6	12"	128	128	6'-9"	#6	12"	118	118	7'-10"	6'-8"	#5	10½"	8	#4	12"	10		#4	12"	7		#4	12"	120	120	6'-1"
		6'			128	128	6'-11"			118	118	8'-0"	6'-10"			10			12				7				120	120	7'-1"
		7'			128	128	7'-0"			118	118	8'-1"	6'-11"			12			14				7				120	120	8'-1"
		8'			128	128	7'-1"			118	118	8'-2"	7'-0"			14			16				7				120	120	9'-1"
		4'			140	140	7'-9"			130	130	8'-10"	7'-8"			9			8				8				120	120	5'-2"
		5'			140	140	7'-9"			130	130	8'-10"	7'-8"			10			10				8				120	120	6'-2"
	1 @ 7'	6'	#6	11"	140	140	7'-11"	#6	11"	130	130	8'-10"	7'-10"	#5	10½"	9	#4	12"	12		#4	12"	8		#4	12"	120	120	7'-2"
		7'			140	140	8'-0"			130	130	9'-1"	7'-11"			11			14				8				120	120	8'-2"
		8'			140	140	8'-1"			130	130	9'-2"	8'-0"			12			16				8				10"	144	9'-2"
		9'			140	140	8'-3"			130	130	9'-4"	8'-2"			14			18				8				10"	144	10'-2"
		4'			128	128	8'-9"			118	118	9'-10"	8'-8"			8			9				9				120	120	5'-9"
		5'			128	128	8'-11"			118	118	10'-0"	8'-10"			10			10				9				120	120	6'-9"
	1 @ 8'	6'			128	128	8'-11"			118	118	10'-0"	8'-10"			12			12				9				120	120	7'-9"
		7'	#7	12"	128	128	9'-0"	#6	12"	118	118	10'-1"	8'-11"	#5	10"	11	#4	12"	14		#4	12"	9		#4	12"	120	120	8'-9"
		8'			128	128	9'-1"			118	118	10'-2"	9'-0"			11			16				9				120	120	9'-9"
		9'			128	128	9'-3"			118	118	10'-4"	9'-2"			11			18				9				10"	144	9'-9"
		10'			128	128	9'-5"			118	118	10'-6"	9'-4"			11			20				9				11"	132	10'-4"
		5'			140	140	9'-11"			130	130	11'-0"	9'-10"			12			10				10				120	120	6'-5"
		6'			140	140	10'-0"			130	130	11'-1"	9'-11"			12			12				10				120	120	7'-5"
	1 @ 9'	7'			140	140	10'-0"			130	130	11'-1"	9'-11"			14			14				10				120	120	8'-5"
		8'	#7	11"	140	140	10'-1"	#6	11"	130	130	11'-2"	10'-0"	#5	10"	12	#4	12"	16		#4	12"	10		#4	12"	120	120	9'-5"
		9'			140	140	10'-3"			130	130	11'-4"	10'-2"			12			18				10				10"	144	9'-5"
		10'			140	140	10'-5"			130	130	11'-6"	10'-4"			12			20				10				11"	132	11'-5"
		11'			140	140	10'-7"			130	130	11'-8"	10'-6"			12			22				10				10"	144	12'-5"
		5'			128	128	10'-11"			118	118	12'-2"	10'-10"			13			10				11				120	120	6'-6"
		6'			128	128	11'-0"			118	118	12'-3"	10'-11"			13			12				11				120	120	7'-6"
	1 @ 10'	7'			128	128	11'-0"			118	118	12'-3"	10'-11"			13			14				11				120	120	8'-6"
		8'	#7	12"	128	128	11'-1"	#7	12"	118	118	12'-3"	11'-0"	#5	10"	13	#4	12"	16		#4	12"	11		#4	12"	10"	144	9'-6"
		9'			128	128	11'-3"			118	118	12'-6"	11'-2"			13			18				11				120	120	10'-6"
		10'			128	128	11'-5"			118	118	12'-8"	11'-4"			13			20				11				11"	132	11'-5"
		11'			128	128	11'-7"			118	118	12'-10"	11'-6"			13			22				11				10"	144	12'-5"
		12'			128	128	11'-9"			118	118	13'-0"	11'-8"			13			24				11				#6	18"	120	120	13'-6"
		6'			140	140	12'-1"			130	130	13'-4"	12'-0"			15			12				12				#4	18"	120	120	7'-7"
		7'			140	140	12'-1"			130	130	13'-5"	12'-0"			15			14				12						120	120	8'-7"
	1 @ 11'	8'			140	140	12'-1"			130	130	13'-6"	12'-0"			15			16				12				10"	144	144	9'-7"
		9'	#7	11"	140	140	12'-3"	#7	11"	130	130	13'-6"	12'-2"	#5	9½"	15	#4	12"	18		#4	12"	12		#5	18"	120	120	10'-7"
		10'			140	140	12'-5"			130	130	13'-8"	12'-4"			15			20				12				11"	132	132	11'-7"
		11'			140	140	12'-7"			130	130	13'-10"	12'-6"			15			22				12				10"	144	144	12'-7"
		12'			140	140	12'-9"			130	130	14'-0"	12'-8"			15			24				12				#6	18"	120	120	13'-7"
		6'			128	128	13'-1"			118	118	14'-4"	13'-0"			16			12				13				#4	18"	120	120	7'-9"
		7'			128	128	13'-1"			118	118	14'-5"	13'-0"			16			14				13						120	120	8'-9"
	1 @ 12'	8'			128	128	13'-1"			118	118	14'-6"	13'-0"			16			16				13				10"	144	144	9'-9"
		9'	#8	12"	128	128	13'-3"	#7	12"	118	118	14'-6"	13'-2"	#5	9½"	16	#4	12"	18		#4	12"	13		#5	11"	132	132	11'9"
		10'			128	128	13'-5"			118	118	14'-8"	13'-4"			16			20				13				10"	144	144	12'-9"
		11'			128	128	13'-7"			118	118	14'-10"	13'-6"			16			22				13								
		12'			128	128	13'-9"			118	118	15'-0"	13'-8"			16			24				13				#6	18"	120	120	13'-9"

DIMENSIONS — QUANTITIES

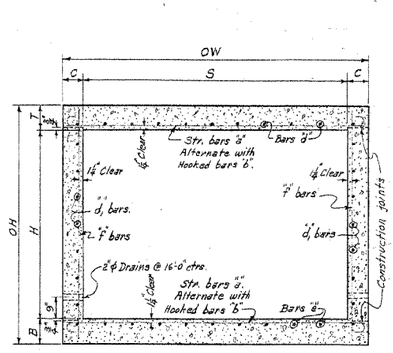
MAX. DESIGN DEPTH OF COVER	CLEAR SPAN	BARREL DIMENSIONS: CLEAR HEIGHT	SQ. FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	UNIT QUANTITIES: CLASS S CONC. PER LIN. FT. OF BARREL	REINFORCING STEEL PER LIN. FT. OF BARREL	ADDITIONAL PER LAP	ADDITIONAL TWO HEADWALLS & APRONS
D	S	H	A	OW	T	C	B	OH	CU YD	LB.	LB.	LB.
5'-0"	1 @ 4'	2'	8	5'-0"	7"	6"	6½"	3'-1½"	0.282	41.49	17.95	66.35
		3'	12	5'-0"		6"		4'-1½"	0.319	44.16	19.62	66.35
		4'	16	5'-0"		6"		5'-1½"	0.356	46.83	21.29	66.35
		5'	20	5'-0"		6"		6'-1½"	0.394	49.50	22.96	66.35
		6'	24	5'-2"		7"		7'-1½"	0.474	52.96	24.63	67.75
	1 @ 5'	3'	15	6'-0"	7½"	6"	7"	4'-2½"	0.380	55.55	22.19	101.27
		4'	20	6'-0"		6"		5'-2½"	0.417	58.23	23.86	101.27
		5'	25	6'-0"		6"		6'-2½"	0.454	60.90	25.53	101.27
		6'	30	6'-2"		7"		7'-2½"	0.535	64.99	27.20	103.27
		7'	35	6'-3"		7½"		8'-2½"	0.604	67.63	28.87	104.27
	1 @ 6'	3'	18	7'-0"	8"	6"	7½"	4'-3½"	0.446	66.23	24.76	119.94
		4'	24	7'-0"		6"		5'-3½"	0.483	68.96	26.93	118.96
		5'	30	7'-0"		6"		6'-3½"	0.520	71.68	28.10	118.96
		6'	36	7'-3"		7"		7'-3½"	0.602	75.31	29.77	120.96
		7'	42	7'-3"		7½"		8'-3½"	0.671	78.98	31.44	121.97
		8'	48	7'-4"		8"		9'-3½"	0.746	88.47	83.11	122.97
	1 @ 7'	4'	28	8'-0"	8½"	6"	8½"	5'-5"	0.568	81.32	29.01	136.88
		5'	35	8'-0"		6"		6'-5"	0.605	84.00	30.68	136.88
		6'	42	8'-2"		7"		7'-5"	0.688	87.76	32.35	138.88
		7'	49	8'-3"		7½"		8'-5"	0.757	90.98	34.02	139.88
		8'	56	8'-4"		8"		9'-5"	0.832	96.65	35.69	140.88
		9'	63	8'-6"		9"		10'-5"	0.996	105.59	37.36	142.89
	1 @ 8'	4'	32	9'-0"	9½"	6"	9½"	5'-7"	0.676	95.26	33.32	194.07
		5'	40	9'-2"		7"		6'-7"	0.754	99.12	34.99	196.80
		6'	48	9'-8"		7"		7'-7"	0.797	101.79	36.66	196.80
		7'	56	9'-9"		7½"		8'-7"	0.867	105.05	38.33	198.16
		8'	64	9'-9"		8"		9'-7"	0.992	110.81	40.00	199.52
		9'	72	9'-6"		9"		10'-7"	1.057	119.92	41.67	202.25
		10'	80	9'-8"		10"		11'-7"	1.189	126.67	43.34	204.97
	1 @ 9'	5'	45	10'-2"	10"	7"	10"	6'-8"	0.844	119.72	37.56	219.61
		6'	54	10'-3"		7½"		7'-8"	0.910	118.04	39.23	220.97
		7'	63	10'-3"		7½"		8'-8"	0.957	120.71	40.90	220.97
		8'	72	10'-4"		8"		9'-8"	1.033	126.54	42.57	222.33
		9'	81	10'-6"		9"		10'-8"	1.148	135.80	44.24	223.06
		10'	90	10'-8"		10"		11'-8"	1.276	142.68	45.91	223.78
		11'	99	10'-10"		11"		12'-8"	1.416	150.40	47.58	224.51
	1 @ 10'	5'	50	11'-0"	10½"	7"	11"	6'-9½"	0.957	130.64	40.13	242.69
		6'	60	11'-3"		7½"		7'-9½"	1.026	133.99	41.80	244.00
		7'	70	11'-3"		7½"		8'-9½"	1.071	136.66	43.47	244.00
		8'	80	11'-4"		8"		9'-9½"	1.147	142.55	45.14	245.36
		9'	90	11'-6"		9"		10'-9½"	1.263	151.92	46.81	248.09
		10'	100	11'-8"		10"		11'-9½"	1.391	158.89	48.98	250.81
		11'	110	11'-10"		11"		12'-9½"	1.532	164.71	50.15	253.54
		12'	120	12'-0"		12"		13'-9½"	1.685	178.67	51.82	256.26
	1 @ 11'	6'	66	12'-4"	11½"	8"	12½"	7'-10⅝"	1.159	156.16	46.12	268.62
		7'	77	12'-4"		8"		8'-10⅝"	1.202	157.88	47.79	268.62
		8'	88	12'-4"		8"		9'-10⅝"	1.258	162.06	49.46	268.62
		9'	99	12'-6"		9"		10'-10⅝"	1.368	172.60	51.13	271.34
		10'	110	12'-8"		10"		11'-10⅝"	1.497	179.70	52.80	274.07
		11'	121	12'-8"		11"		12'-10⅝"	1.638	187.67	54.47	276.79
		12'	132	13'-0"		12"		13'-10⅝"	1.792	193.79	56.14	279.52
	1 @ 12'	6'	72	13'-2"	12"	8"	13"	8'-0"	1.284	172.20	48.69	357.62
		7'	84	13'-2"		8"		9'-0"	1.333	174.87	50.36	357.62
		8'	96	13'-3"		8"		10'-0"	1.383	180.15	52.03	357.62
		9'	108	13'-6"	12½"	9"	13½"	11'-0"	1.500	189.85	58.70	361.18
		10'	120	13'-8"		10"		12'-0"	1.630	197.07	55.37	364.74
		11'	132	13'-10"		11"		13'-0"	1.772	205.16	57.04	368.30
		12'	144	14'-0"		12"		14'-0"	1.926	217.95	58.71	371.86

W-X002-1, W-X003-1 & W-X003-1 or W-X004-1 and W-X002-2, W-X003-2 & W-X004-2.

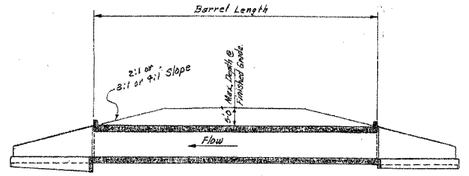
Note:- For details of wings and bar data, see Drawing Nos.



PART LONGITUDINAL SECTION



TYPICAL SECTION M-M



LONGITUDINAL SECTION

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 to be deformed bars of intermediate or hard grade.

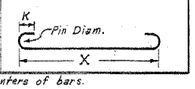
BAR LAP:- In computing the quantities of steel from the tables add one lap for each additional 33'-0" length of barrel over 32'-0". Lap longitudinal bars 30 diameters.

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

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

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS
#6	3"	5"	1'-2"
#7	3½"	5¾"	1'-4"

BENDING DIAGRAM Bars 'b'.

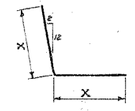


NOTE:- Dimensions are to centers of bars.

DOWEL BARS FOR TWO HEADWALLS

SPAN	SIZE	SPACING	No. REQD	LENGTH	X
4'	#4	11⅛"	12	2'-6"	1'-3"
5'	#4	11⅛"	14	2'-7"	1'-3½"
6'	#4	11⅛"	16	2'-8"	1'-4"
7'	#4	11⅛"	18	2'-9"	1'-4½"
8'	#4	11⅛"	20	2'-11"	1'-5½"
9'	#4	11⅛"	22	3'-0"	1'-6"
10'	#4	11⅛"	24	3'-1"	1'-6½"
11'	#4	12"	26	3'-2"	1'-7"
12'	#4	12"	28	3'-3"	1'-7½"

Bars 'f' Dowel bars in Headwalls.



DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961
AND
SPECIAL MILITARY LOADING
Two 29,000 Lb. Axles @ 9'-0" ctrs.

UNIT STRESSES:-
Class S Concrete (n=10) 1800 #/□"
Reinforcing Steel 20,000 #/□"

NOTE:- This drawing to be used in conjunction with Standard Drawing Nos. W-X003-1 or W-X003-2 and W-X004-1 or W-X004-2. Also Drawing Nos. W-X002-1 or W-X002-2.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS

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

SINGLES — UNDER 5'-0" COVER

STANDARD DRAWING NO. R-100X-0

Designed By:- W.C.H. 1-23-63. Checked By:- RBMS-5-24-63
Drawn By:- W.C.H. 2-8-63. Checked By:- RBMS-5-24-63
Quantities By:- W.C.H. 2-12-63. Checked By:- RBMS-5-24-63

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			89	
JOB No.					

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

"a" bars: STRAIGHT – In Top and Bottom Slab of Barrel. "a1" bars (▼): STRAIGHT – In Top and Bottom Slab of Barrel - (Four of each Length).

D (Depth of Cover)	S (Clear Span)	H (Clear Height)	"a" Size	"a" Spacing	"a" No. Req'd	"a" Length	"a1" Size	"a1" Spacing	"a1" No. Req'd	"a1" Length Max.	"a1" Length Min.
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#5	12"	112	9'-5"	#5	12"	16	7'-8"	2'-5"
		3'			112	9'-5"			16	"	"
		4'			112	9'-5"			16	"	"
		5'			112	9'-5"			16	"	"
		6'			112	9'-8"			16	7'-11"	2'-8"
	2 @ 5'	3'	#6	12"	110	11'-5"	#6	12"	20	9'-8"	2'-8"
		4'			110	11'-5"			20	"	"
		5'			110	11'-5"			20	"	"
		6'			110	11'-8"			20	9'-11"	2'-11"
		7'			110	11'-10"			20	10'-1"	3'-1"
	2 @ 6'	3'	#6	11"	118	13'-5"	#6	11"	24	11'-10"	3'-1"
		4'			118	13'-5"			24	"	"
		5'			118	13'-5"			24	"	"
		6'			118	13'-8"			28	12'-1"	2'-7"
		7'			118	13'-10"			28	12'-3"	2'-9"
		8'			118	13'-11"			28	12'-9"	2'-10"
	2 @ 7'	4'	#6	12"	106	15'-5"	#6	12"	28	13'-8"	3'-2"
		5'			106	15'-5"			28	"	"
		6'			106	15'-8"			28	13'-11"	3'-5"
		7'			106	15'-10"			28	14'-1"	3'-7"
		8'			106	15'-11"			28	14'-2"	3'-8"
		9'			106	16'-2"			28	14'-5"	3'-11"
	2 @ 8'	4'	#6	11"	112	17'-5"	#6	11"	36	15'-10"	3'-2"
		5'			112	17'-8"			36	16'-1"	3'-5"
		6'			112	17'-8"			36	"	"
		7'			112	17'-10"			36	16'-3"	3'-7"
		8'			112	17'-11"			36	16'-4"	3'-8"
		9'			112	18'-2"			36	16'-7"	3'-11"
		10'			112	18'-5"			36	16'-10"	4'-2"

"b" bars: BENT - See Diagrams below. In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars. "b1" bars (▼): In Bottom of Top Slab - some bent up over Division Wall - one end hooked. (2 of Each Length) Alternate with "a1" and "c" or "c1" bars.

D	S	H	"b" Size	"b" Spacing	"b" No. Req'd	"b" Length	"b" X	"b" Y	"b" Z	"b1" Size	"b1" Spacing	"b1" No. Req'd	"b1" Length Max.	"b1" Length Min.	"b1" L Max.	"b1" L Min.
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#5	12"	54	10'-6"	0'-3"	2'-2½"	3'-4"	#5	12"	6	9'-2"	3'-6"	8'-6"	3'-0"
		3'			54	10'-6"	"	"	"			6	"	"	"	"
		4'			54	10'-6"	"	"	"			6	"	"	"	"
		5'			54	10'-6"	"	"	"			6	"	"	"	"
		6'			54	10'-9"	0'-3"	2'-3½"	3'-5"			6	9'-5"	3'-9"	8'-9"	3'-3"
	2 @ 5'	3'	#5	12"	53	12'-7"	0'-3½"	2'-7½"	4'-1"	#5	12"	10	11'-2"	4'-0"	10'-6"	3'-6"
		4'			53	12'-7"	"	"	"			10	"	"	"	"
		5'			53	12'-7"	"	"	"			10	"	"	"	"
		6'			53	12'-10"	"	2'-8½"	4'-2"			10	11'-5"	4'-3"	10'-9"	3'-9"
		7'			53	13'-0"	0'-3½"	2'-9½"	4'-2½"			10	11'-7"	4'-5"	10'-11"	3'-11"
	2 @ 6'	3'	#5	11"	56	14'-7"	0'-4"	3'-0½"	4'-10"	#5	11"	14	13'-4"	3'-7"	12'-7"	3'-1"
		4'			56	14'-7"	"	"	"			14	"	"	"	"
		5'			56	14'-7"	"	"	"			14	"	"	"	"
		6'			56	14'-10"	"	3'-1½"	4'-11"			14	13'-7"	3'-10"	12'-10"	3'-4"
		7'			56	15'-0"	"	3'-2½"	4'-11½"			14	13'-9"	4'-0"	13'-0"	3'-6"
		8'			56	15'-1"	0'-4"	"	5'-0"			14	13'-10"	4'-1"	13'-1"	3'-7"
	2 @ 7'	4'	#6	12"	50	16'-9"	0'-4½"	3'-5"	5'-7"	#6	12"	14	15'-4"	4'-7"	14'-6"	4'-0"
		5'			50	"	"	"	"			14	"	"	"	"
		6'			50	17'-0"	"	3'-6"	5'-8"			16	15'-7"	3'-1"	14'-9"	2'-6"
		7'			50	17'-2"	"	3'-7"	5'-8½"			16	15'-9"	3'-3"	14'-11"	2'-8"
		8'			50	17'-3"	"	"	5'-9"			16	15'-10"	3'-4"	15'-0"	2'-9"
		9'			50	17'-6"	0'-4½"	3'-8"	5'-10"			16	16'-1"	3'-7"	15'-3"	3'-0"
	2 @ 8'	4'	#6	11"	54	18'-10"	0'-5"	3'-10"	6'-4"	#6	11"	18	17'-6"	4'-6"	16'-7"	3'-11"
		5'			54	19'-1"	"	3'-11"	6'-5"			20	17'-9"	3'-2"	16'-10"	2'-7"
		6'			54	19'-1"	"	"	"			20	"	"	"	"
		7'			54	19'-3"	"	4'-0"	6'-5½"			20	17'-11"	3'-4"	17'-0"	2'-9"
		8'			54	19'-4"	"	"	6'-6"			20	18'-0"	3'-5"	17'-1"	2'-10"
		9'			53	19'-7"	"	4'-1"	6'-7"			20	18'-3"	3'-8"	17'-4"	3'-1"
		10'			53	19'-10"	0'-5"	4'-2"	6'-8"			20	18'-6"	3'-11"	17'-7"	3'-4"

"b2" bars: BENT - See Diagrams below. In Top of Bottom Slab - bent down under Division Wall - hooked. Alternate with "a" and "c" bars. "b3" bars (▼): In Top of Bottom Slab - some bent down under Division Wall - one end hooked. (2 of Each Length) Alternate with "a1" and "c" or "c1" bars.

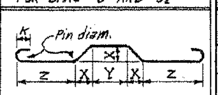
D	S	H	"b2" Size	"b2" Spacing	"b2" No. Req'd	"b2" Length	"b2" X	"b2" Y	"b2" Z	"b3" Size	"b3" Spacing	"b3" No. Req'd	"b3" Length Max.	"b3" Length Min.	"b3" L Max.	"b3" L Min.
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#5	12"	56	10'-6"	0'-2½"	2'-3½"	3'-4"	#5	12"	6	9'-2"	3'-6"	8'-6"	3'-0"
		3'			56	10'-6"	"	"	"			6	"	"	"	"
		4'			56	10'-6"	"	"	"			6	"	"	"	"
		5'			56	10'-6"	"	"	"			6	"	"	"	"
		6'			56	10'-9"	0'-2½"	2'-4½"	3'-5"			6	9'-3"	3'-9"	8'-9"	3'-3"
	2 @ 5'	3'	#5	12"	55	12'-6"	0'-3"	2'-8½"	4'-1"	#5	12"	10	11'-2"	4'-0"	10'-6"	3'-6"
		4'			55	12'-6"	"	"	"			10	"	"	"	"
		5'			55	12'-6"	"	"	"			10	"	"	"	"
		6'			55	12'-9"	"	2'-9½"	4'-2"			10	11'-5"	4'-3"	10'-9"	3'-9"
		7'			55	12'-11"	0'-3"	2'-10½"	4'-2½"			10	11'-7"	4'-5"	10'-11"	3'-11"
	2 @ 6'	3'	#5	11"	58	14'-7"	0'-4"	3'-0½"	4'-10"	#5	11"	14	13'-4"	3'-7"	12'-7"	3'-1"
		4'			58	14'-7"	"	"	"			14	"	"	"	"
		5'			58	14'-7"	"	"	"			14	"	"	"	"
		6'			58	14'-10"	"	3'-1½"	4'-11"			14	13'-7"	3'-10"	12'-10"	3'-4"
		7'			58	15'-0"	"	3'-2½"	4'-11½"			14	13'-9"	4'-0"	13'-0"	3'-6"
		8'			58	15'-1"	0'-4"	"	5'-0"			14	13'-10"	4'-1"	13'-1"	3'-7"
	2 @ 7'	4'	#6	12"	52	16'-9"	0'-4½"	3'-5"	5'-7"	#6	12"	14	15'-4"	4'-7"	14'-6"	4'-0"
		5'			52	"	"	"	"			14	"	"	"	"
		6'			52	17'-0"	"	3'-6"	5'-8"			16	15'-7"	3'-1"	14'-9"	2'-6"
		7'			52	17'-2"	"	3'-7"	5'-8½"			16	15'-9"	3'-3"	14'-11"	2'-8"
		8'			52	17'-3"	"	"	5'-9"			16	15'-10"	3'-4"	15'-0"	2'-9"
		9'			52	17'-6"	0'-4½"	3'-8"	5'-10"			16	16'-1"	3'-7"	15'-3"	3'-0"
	2 @ 8'	4'	#6	11"	56	18'-10"	0'-5"	3'-10"	6'-4"	#6	11"	18	17'-6"	4'-6"	16'-7"	3'-11"
		5'			56	19'-1"	"	3'-11"	6'-5"			20	17'-9"	3'-2"	16'-10"	2'-7"
		6'			56	"	"	"	"			20	"	"	"	"
		7'			56	19'-3"	"	4'-0"	6'-5½"			20	17'-11"	3'-4"	17'-0"	2'-9"
		8'			56	19'-4"	"	"	6'-6"			20	18'-0"	3'-5"	17'-1"	2'-10"
		9'			55	19'-7"	"	4'-1"	6'-7"			20	18'-3"	3'-8"	17'-4"	3'-1"
		10'			55	19'-10"	0'-5"	4'-2"	6'-8"			20	18'-6"	3'-11"	17'-7"	3'-4"

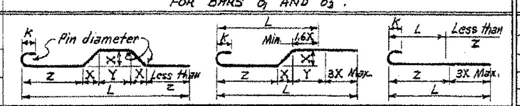
"c" bars: STRAIGHT – In Top and Bottom Slab of Barrel. Alternate with "b" and "b2" bars. "c1" bars (▼): In Top and Bottom Slab of Barrel. Alt. with "b1" & "b3" bars. (Four of each Length). "d" bars: STRAIGHT – Longitudinal in Top Slab of Barrel.

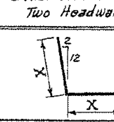
D	S	H	"c" Size	"c" Spacing	"c" No. Req'd	"c" Length	"c1" Size	"c1" Spacing	"c1" No. Req'd	"c1" Length Max.	"c1" Length Min.	"d" Size	"d" Spacing	"d" No. Req'd	"d" Length
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#5	12"	116	4'-8"	#5	12"	4	3'-7"	—	#5	12"	14	2 @ 30'-8" for 60'-0" Length Barrel (1'-8" Lap).
		3'			116	4'-8"			4	"	—			14	
		4'			116	4'-8"			4	"	—			14	
		5'			116	4'-8"			4	"	—			14	
		6'			116	4'-9"			4	3'-9"	—			14	
	2 @ 5'	3'	#6	12"	114	5'-8"	#6	12"	8	5'-1"	3'-4"	#5	11½"	16	
		4'			114	5'-8"			8	"	"			16	
		5'			114	5'-8"			8	"	"			16	
		6'			114	5'-9"			8	5'-3"	3'-6"			16	
		7'			114	5'-10"			8	5'-4"	3'-7"			16	
	2 @ 6'	3'	#6	11"	126	6'-8"	#6	11"	8	5'-4"	3'-9"	#5	11½"	18	
		4'			126	6'-8"			8	"	"			18	
		5'			126	6'-8"			8	"	"			18	
		6'			126	6'-9"			8	5'-6"	3'-11"			18	
		7'			126	6'-10"			8	5'-7"	4'-0"			18	
		8'			126	6'-10"			8	5'-8"	4'-1"			18	
	2 @ 7'	4'	#6	12"	114	7'-8"	#6	12"	12	6'-4"	2'-10"	#5	11½"	20	
		5'			114	7'-8"			12	"	"			20	
		6'			114	7'-9"			12	6'-6"	3'-0"			20	
		7'			114	7'-10"			12	6'-7"	3'-1"			20	
		8'			114	7'-10"			12	6'-8"	3'-2"			20	
		9'			114	7'-11"			12	6'-10"	3'-4"			20	
	2 @ 8'	4'	#6	11"	120	8'-8"	#6	11"	16	8'-4"	3'-7"	#5	11½"	23	
		5'			120	8'-9"			16	8'-6"	3'-9"			23	
		6'			120	8'-9"			16	"	"			23	
		7'			120	8'-10"			16	8'-7"	3'-10"			23	
		8'			120	8'-10"			16	8'-8"	3'-11"			23	
		9'			120	8'-11"			16	8'-10"	4'-1"			23	
		10'			124	9'-0"			16	7'-5"	2'-8"			23	

"d1" bars: STRAIGHT – Longitudinal in Sidewalls and Division Wall. "e" bars: STRAIGHT – Longitudinal in Bottom Slab of Barrel. "f" bars: STRAIGHT – Verticals in Sidewalls and Division Wall. "k1" bars (▼): STRAIGHT – In Bottom of Headwalls. "k2" bars (▼): In Top of Headwalls and Aprons (2 Each).

D	S	H	"d1" Size	"d1" Spacing	"d1" No. Req'd	"d1" Length	"e" Size	"e" Spacing	"e" No. Req'd	"e" Length	"f" Size	"f" Spacing	"f" No. Req'd	"f" Length	"k1" Size	"k1" No. Req'd	"k1" Length	"k2" Size	"k2" No. Req'd	"k2" Length
0'-0" TO 5'-0" MAXIMUM	2 @ 4'	2'	#4	12"	8	2 @ 30'-6" for 60'-0" Length Barrel (1'-3" Lap).	#4	12"	14	2 @ 31'-8" for 60'-0" Length Barrel (1'-3" Lap).	#4	12"	240	2'-10"	#5	6	10'-11"	#5	8	12'-0"
		3'			12				14				240	3'-10"		6	"		8	"
		4'			16				14				240	4'-10"		6	"		8	"
		5'			20				14				240	5'-10"		6	"		8	"
		6'			24				14				240	6'-10"		6	11'-2"		8	12'-4"
	2 @ 5'	3'	#4	12"	12		#4	12"	16		#4	12"	240	3'-11"	#6	6	13'-2"	#6	8	14'-4"
		4'			16				16				240	4'-11"		6	"		8	"
		5'			20				16				240	5'-11"		6	"		8	"
		6'			24				16				240	6'-11"		6	13'-6"		8	14'-8"
		7'			28				16				240	7'-11"		6	13'-8"		8	14'-10"
	2 @ 6'	3'	#4	12"	12		#4	12"	18		#4	12"	240	4'-0"	#6	6	15'-6"	#6	8	16'-8"
		4'			16				18				240	5'-0"		6	"		8	"
		5'			20				18				240	6'-0"		6	"		8	"
		6'			24				18				240	7'-0"		6	15'-9"		8	16'-11"
		7'			28				18				240	8'-0"		6	16'-0"		8	17'-2"
		8'			32				18			10"	288	9'-0"		6	16'-1"		8	17'-3"
	2 @ 7'	4'	#4	12"	16		#4	12"	20		#4	12"	240	5'-1"	#6	6	17'-10"	#6	8	19'-0"
		5'			20				20				240	6'-1"		6	"		8	"
		6'			24				20				240	7'-1"		6	18'-1"		8	19'-3"
		7'			28				20				240	8'-1"		6	18'-3"		8	19'-5"
		8'			32				20			10"	288	9'-1"		6	18'-5"		8	19'-6"
		9'			36				20		#5	12"	240	10'-1"		6	18'-8"		8	19'-10"
	2 @ 8'	4'	#4	12"	16		#4	12"	22		#4	12"	240	5'-2"	#6	6	20'-1"	#6	8	21'-3"
		5'			20				22				240	6'-2"		6	20'-5"		8	21'-7"
		6'			24				22				240	7'-2"		6	"		8	"
		7'			28				22				240	8'-2"		6	20'-7"		8	21'-9"
		8'			32				22			10"	288	9'-2"		6	20'-8"		8	21'-10"
		9'			36				22		#5	12"	240	10'-2"		6	21'-0"		8	22'-2"
		10'			40				22			11"	264	11'-2"		6	21'-3"		8	22'-5"

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM FOR BARS "b" AND "b2"
#5	2½"	4¼"	0'-11½"	
#6	3"	5"	1'-2"	

BAR SIZE	PIN DIAM.	K	ADD FOR 1 HOOK	BENDING DIAGRAM FOR BARS "b1" AND "b3"
#5	2½"	4¼"	0'-5¾"	
#6	3"	5"	0'-7"	

SPAN	SIZE	SPACING	No. REQ'D	LENGTH	X	Dowel bars "r" in Two Headwalls.
4'	#4	12"±	24	2'-5"	1'-2½"	
5'	#4	12"±	28	2'-6"	1'-3"	
6'	#4	12"±	32	2'-7"	1'-3½"	
7'	#4	12"±	36	2'-8"	1'-4"	
8'	#4	12"±	42	2'-9"	1'-4½"	

NOTE:- Dimensions are to centers of bars (b, b1, b2, & b3). The X, Y & Z values for "b1" bars are same as for "b" bars and for "b3" bars same as for "b2" bars.

▼ These bars are in the skewed portion of barrel only. The length of "a1" and "c1" bars and overall length L of "b1" and "b3" bars vary by 1'-9" for 12" spacing and 1'-7" for 11" spacing.

In the regular portion of the barrel begin and end with a set of "a" & "c" bars. If the spacing is such that the last set of bars would be "b" & "b2" bars, use a set of "a" & "c" bars instead.

D (Max. Design Depth of Cover)	S (Clear Spans)	H (Clear Height)	A (Sq. Ft. Opening)	OW (Overall Width)	T (Thickness of Top Slab)	C (Thickness of Sidewalls)	M (Thickness of Division Wall)	B (Thickness of Bottom Slab)	OH (Overall Height)	RL (Roadway Length)	K (Length of Headwalls)	Class S Conc. per Lin. Ft. of Barrel (Cu.Yd.)	Reinforcing Steel: Total for 60'-0" Length of Barrel (LB.)	Reinforcing Steel: Per Lin. Ft. of Barrel (LB.)	Reinforcing Steel: Additional per Lap (LB.)
5'-0"	2 @ 4'	2'	16	9'-8"	6½"	6"	8"	6"	3'-0½"	11'-2"	12'-3¾"	0.496	5523	88.15	42.71
		3'	24	9'-8"		6"	8"		4'-0½"	"	"	0.558	5846	93.49	46.05
		4'	32	9'-8"		6"	8"		5'-0½"	"	"	0.620	6170	98.84	49.39
		5'	40	9'-8"		6"	8"		6'-0½"	"	"	0.682	6483	104.18	52.73
		6'	48	9'-11"		7"	9"		7'-0½"	11'-5½"	12'-7½"	0.809	6897	110.74	56.07
	2 @ 5'	3'	30	11'-8"	7"	6"	8"	6½"	4'-1½"	13'-5¾"	14'-7½"	0.671	7818	123.34	51.19
		4'	40	11'-8"		6"	8"		5'-1½"	"	"	0.733	8142	128.68	54.53
		5'	50	11'-8"		6"	8"		6'-1½"	"	"	0.795	8465	134.03	57.87
		6'	60	11'-11"		7"	9"		7'-1½"	13'-9⅛"	14'-11"	0.922	8894	140.89	61.21
		7'	70	12'-1"		7½"	10"		8'-1½"	13'-11½"	15'-1½"	1.044	9291	147.34	64.55
	2 @ 6'	3'	36	13'-8"	7½"	6"	8"	7½"	4'-3"	15'-9⅜"	16'-11¼"	0.818	9398	148.50	56.34
		4'	48	13'-8"		6"	8"		5'-3"	"	"	0.880	9721	153.85	59.68
		5'	60	13'-8"		6"	8"		6'-3"	"	"	0.941	10,044	159.19	63.02
		6'	72	13'-11"		7"	9"		7'-3"	16'-0⅞"	17'-2¾"	1.070	10,496	166.20	66.36
		7'	84	14'-1"		7½"	10"		8'-3"	16'-3¼"	17'-5"	1.192	10,903	172.74	69.70
		8'	96	14'-2"		8"	10"		9'-3"	16'-4½"	17'-6¼"	1.298	11,598	183.36	73.04
	2 @ 7'	4'	56	15'-8"	8"	6"	8"	8"	5'-4"	18'-1⅛"	19'-3"	1.021	11,081	178.15	64.83
		5'	70	15'-8"		6"	8"		6'-4"	"	"	1.082	11,405	183.49	68.17
		6'	84	15'-11"		7"	9"		7'-4"	18'-4½"	19'-6½"	1.212	12,069	190.59	71.51
		7'	98	16'-1"		7½"	10"		8'-4"	18'-6⅞"	19'-8¾"	1.334	12,479	197.19	74.85
		8'	112	16'-2"		8"	10"		9'-4"	18'-8"	19'-9¾"	1.440	13,084	207.89	78.19
		9'	126	16'-5"		9"	11"		10'-4"	18'-11½"	20'-1¼"	1.616	14,148	225.25	81.53
	2 @ 8'	4'	64	17'-8"	8½"	6"	8"	8½"	5'-5"	20'-4⅜"	21'-6¾"	1.174	13,251	210.37	71.71
		5'	80	17'-11"		7"	9"		6'-5"	20'-8½"	21'-10"	1.295	13,731	217.63	75.05
		6'	96	17'-11"		7"	9"		7'-5"	"	"	1.366	14,054	222.97	78.39
		7'	112	18'-1"		7½"	10"		8'-5"	20'-10⅝"	22'-0½"	1.489	14,402	229.68	81.73
		8'	128	18'-2"		8"	10"		9'-5"	20'-11¾"	22'-1½"	1.595	15,131	240.47	85.07
		9'	144	18'-5"		9"	11"		10'-5"	21'-3¼"	22'-5"	1.772	16,154	258.08	88.41
		10'	160	18'-8"		10"	12"		11'-5"	21'-6¾"	22'-8½"	1.967	16,999	271.07	91.75

* For quanities in wings see Standard Wing Drawings listed below. Total steel quantities listed above include one lap of longitudinal bars.

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 to be deformed bars of intermediate or hard grade.

BAR LAP:- In computing the quantities of steel from the tables add one lap for each add'l 33'-0" length of barrel over 32'-0". Lap longitudinal bars 30 diam. min.

CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls, division wall and slabs shall be only where shown on plans.

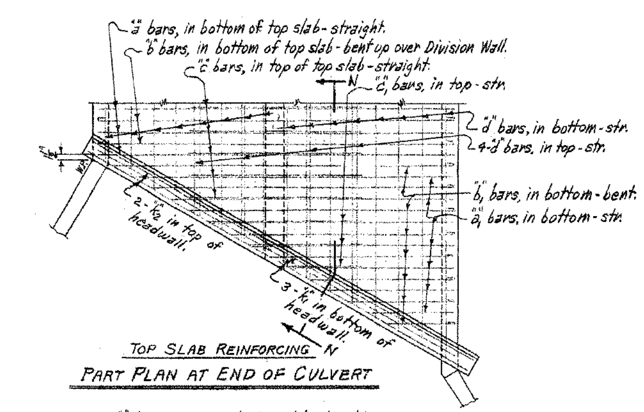
SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

DESIGN LIVE LOAD

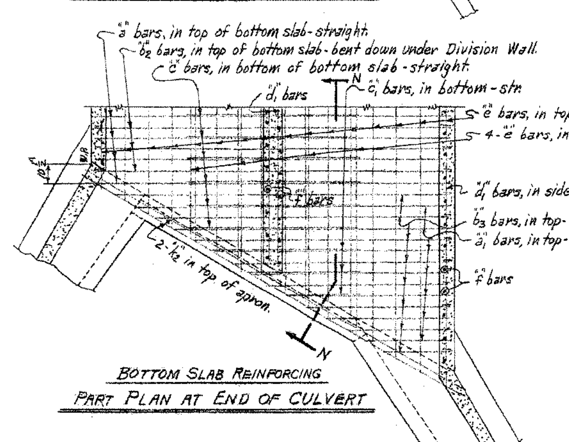
H20-S16 LOADING A.A.S.H.O. 1961
AND
SPECIAL MILITARY LOADING
Two 24,000 Lb. Axles @ 4'-0" ctrs.

UNIT STRESSES:-
Class S Concrete (n=10) 1200#/□"
Reinforcing steel 20,000#/□"

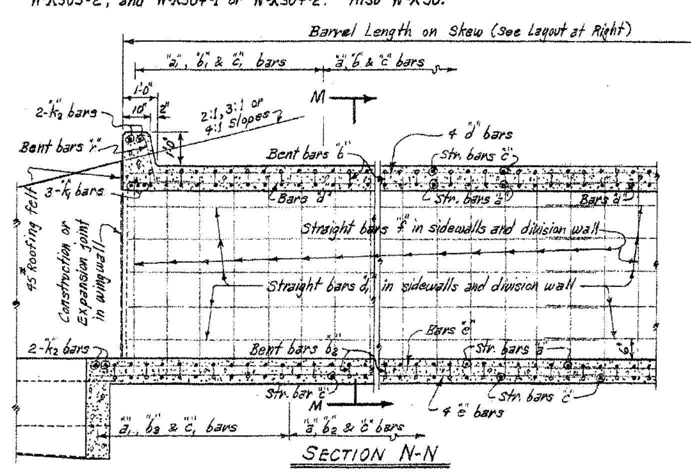
NOTE:- For Details of Standard Wings and bar lists, see Drawing No. W-X302-1 or W-X302-2; W-X303-1 or W-X303-2, and W-X304-1 or W-X304-2. Also W-X30.



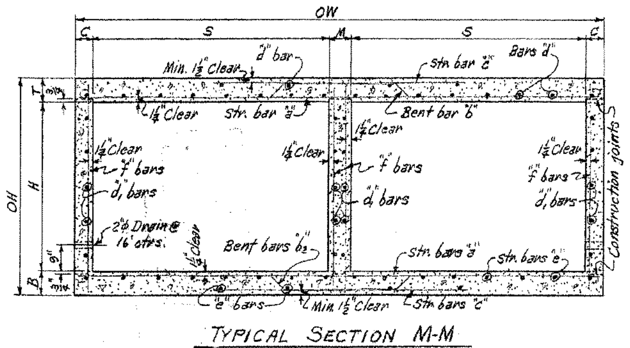
TOP SLAB REINFORCING
PART PLAN AT END OF CULVERT



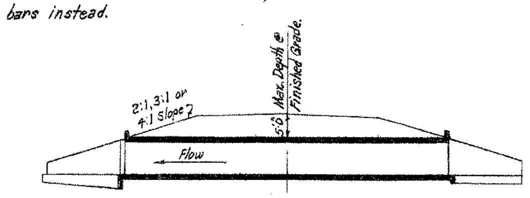
BOTTOM SLAB REINFORCING
PART PLAN AT END OF CULVERT



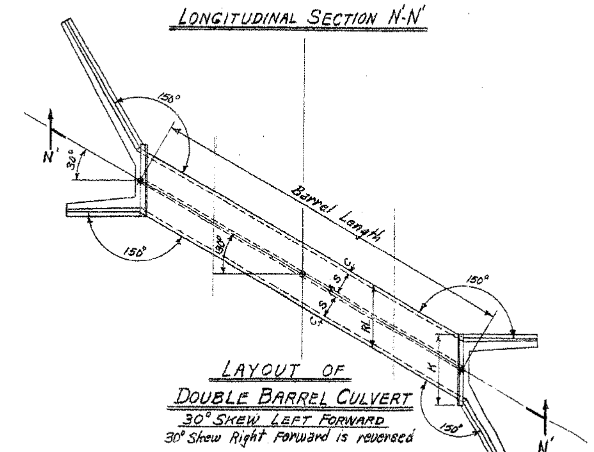
SECTION N-N



TYPICAL SECTION M-M



LONGITUDINAL SECTION N-N



LAYOUT OF DOUBLE BARREL CULVERT
30° SKEW LEFT FORWARD
30° Skew Right Forward is reversed

NOTE:- This drawing to be used in conjunction with Standard Wing Drawing Nos. 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.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS 30° SKEW

4', 5', 6', 7' AND 8' SPANS DOUBLES — 2:1, 3:1 OR 4:1 SLOPES UNDER 5'-0" COVER

STANDARD DRAWING No. R-230X-01

Designed by:- W.C.H. 1-17-63. Checked by:- R.H.S. 5-14-63
Drawn by:- W.C.H. 2-26-64 Checked by:-
Quantities by:- W.C.H. 4-3-64 Checked by:-

KESHOT 3-9-93 386 [redacted]

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			90	
JOB No.					

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

"a" bars – STRAIGHT – In Top and Bottom Slab of Barrel. ▼"a₁" bars – STRAIGHT – In Top and Bottom Slab of Barrel. (Four of each Length). "b" bars – BENT – See Diagrams below. In Bottom of Top Slab bent up over Division Wall – hooked. Alternate with "a" and "c" bars. ▼"b₁" bars – In Bottom of Top Slab – some bent up over Division Wall – one end hooked. (2 of Each Length) Alternate with "a₁" and "c" or "c₁" bars.

D (Depth of Cover)	S (Clear Span)	H (Clear Height)	"a" Size	"a" Spacing	"a" No. Req'd	"a" Length	"a₁" Size	"a₁" Spacing	"a₁" No. Req'd	"a₁" Length Max.	"a₁" Length Min.	"b" Size	"b" Spacing	"b" No. Req'd	"b" Length	"b" X	"b" Y	"b" Z
0'-0" TO 5'-0" MAXIMUM	2@4'	2'	#5	12"	104	9'-5"	#5	12"	28	8'-5"	2'-5"	#5	12"	50	10'-6"	0'-3"	2'-2⅝"	3'-4"
		3'			104	9'-5"			28	"	"			50	10'-6"	"	"	"
		4'			104	9'-5"			28	"	"			50	10'-6"	"	"	"
		5'			104	9'-5"			28	"	"			50	10'-6"	"	"	"
		6'			104	9'-8"			28	8'-11"	2'-8"			50	10'-9"	0'-3"	2'-3⅝"	3'-5"
	2@5'	3'	#6	12"	100	11'-5"	#6	12"	36	10'-5"	2'-5"	#5	12"	48	12'-7"	0'-3½"	2'-7½"	4'-1"
		4'			100	11'-5"			36	"	"			48	12'-7"	"	"	"
		5'			100	11'-5"			36	"	"			48	12'-7"	"	"	"
		6'			100	11'-8"			36	10'-8"	2'-8"			48	12'-10"	"	2'-8½"	4'-2"
		7'			100	11'-10"			36	10'-10"	2'-10"			48	13'-0"	0'-3½"	2'-9½"	4'-2½"
	2@6'	3'	#6	11"	106	13'-5"	#6	11"	48	12'-6"	2'-5"	#5	11"	50	14'-7"	0'-4"	3'-0½"	4'-10"
		4'			106	13'-5"			48	"	"			50	14'-7"	"	"	"
		5'			106	13'-5"			48	"	"			50	14'-7"	"	"	"
		6'			104	13'-8"			48	12'-9"	2'-8"			50	14'-10"	"	3'-1½"	4'-11"
		7'			104	13'-10"			48	12'-11"	2'-10"			50	15'-0"	"	3'-2½"	4'-11½"
		8'			104	13'-11"			48	13'-0"	2'-11"			50	15'-1"	0'-4"	"	5'-0"
	2@7'	4'	#6	12"	92	15'-5"	#6	12"	52	14'-5"	2'-5"	#6	12"	44	16'-9"	0'-4½"	3'-5"	5'-7"
		5'			92	15'-5"			52	"	"			44	"	"	"	"
		6'			92	15'-8"			52	14'-8"	2'-8"			44	17'-0"	"	3'-6"	5'-8"
		7'			92	15'-10"			52	14'-10"	2'-10"			44	17'-2"	"	3'-7"	5'-8½"
		8'			92	15'-11"			52	14'-11"	2'-11"			44	17'-3"	"	"	5'-9"
		9'			92	16'-2"			52	15'-2"	3'-2"			43	17'-6"	0'-4½"	3'-8"	5'-10"
	2@8'	4'	#6	11"	96	17'-5"	#6	11"	64	16'-6"	2'-9"	#6	11"	46	18'-10"	0'-5"	3'-10"	6'-4"
		5'			96	17'-8"			64	16'-9"	3'-0"			46	19'-1"	"	3'-11"	6'-5"
		6'			96	17'-8"			64	"	"			46	19'-1"	"	"	"
		7'			96	17'-10"			64	16'-11"	3'-2"			45	19'-3"	"	4'-0"	6'-5½"
		8'			96	17'-11"			68	17'-0"	2'-4"			45	19'-4"	"	"	6'-6"
		9'			94	18'-2"			68	17'-3"	2'-7"			45	19'-7"	"	4'-1"	6'-7"
		10'			94	18'-5"			68	17'-6"	2'-10"			45	19'-10"	0'-5"	4'-2"	6'-8"

"b₂" bars – BENT – See Diagrams below. In Top of Bottom Slab – bent down under Division Wall – hooked. Alternate with "a" and "c" bars. ▼"b₃" bars – In Top of Bottom Slab – some bent down under Division Wall – one end hooked. (2 of Each Length) Alternate with "a₁" and "c" or "c₁" bars.

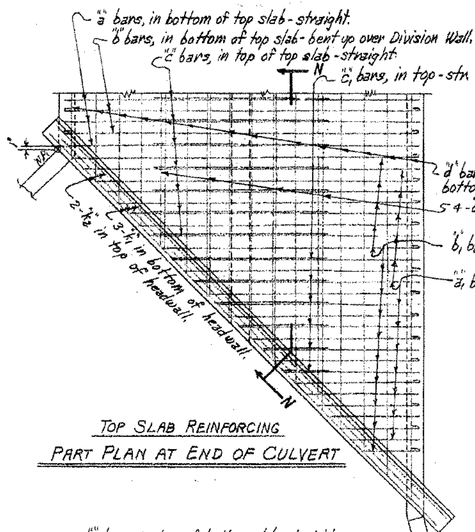
S	H	"b₁" Size	"b₁" Spacing	"b₁" No. Req'd	"b₁" Length Max.	"b₁" Length Min.	"b₁" L Max.	"b₁" L Min.	"b₂" Size	"b₂" Spacing	"b₂" No. Req'd	"b₂" Length	"b₂" X	"b₂" Y	"b₂" Z
2@4'	2'	#5	12"	14	9'-6"	3'-4"	8'-10"	2'-10"	#5	12"	52	10'-6"	0'-2⅝"	2'-3⅝"	3'-4"
	3'			14	"	"	"	"			52	10'-6"	"	"	"
	4'			14	"	"	"	"			52	10'-6"	"	"	"
	5'			14	"	"	"	"			52	10'-6"	"	"	"
	6'			14	9'-9"	3'-7"	9'-1"	3'-1"			52	10'-9"	0'-2⅝"	2'-4½"	3'-5"
2@5'	3'	#5	12"	18	11'-6"	3'-4"	10'-10"	2'-10"	#5	12"	50	12'-6"	0'-3"	2'-8½"	4'-1"
	4'			18	"	"	"	"			50	12'-6"	"	"	"
	5'			18	"	"	"	"			50	12'-6"	"	"	"
	6'			18	11'-9"	3'-7"	11'-1"	3'-1"			50	12'-9"	"	2'-9½"	4'-2"
	7'			18	11'-11"	3'-9"	11'-3"	3'-3"			50	12'-11"	0'-3"	2'-10½"	4'-2½"
2@6'	3'	#5	11"	24	13'-8"	3'-4"	12'-11"	2'-10"	#5	11"	52	14'-7"	0'-4"	3'-0½"	4'-10"
	4'			24	"	"	"	"			52	14'-7"	"	"	"
	5'			24	"	"	"	"			52	14'-7"	"	"	"
	6'			24	13'-11"	3'-7"	13'-2"	3'-1"			52	14'-10"	"	3'-1½"	4'-11"
	7'			26	14'-1"	2'-10"	13'-4"	2'-4"			52	15'-0"	"	3'-2½"	4'-11½"
	8'			26	14'-2"	2'-11"	13'-5"	2'-5"			52	15'-1"	0'-4"	"	5'-0"
2@7'	4'	#6	12"	26	15'-8"	3'-5"	14'-10"	2'-10"	#6	12"	46	16'-9"	0'-4½"	3'-5"	5'-7"
	5'			26	"	"	"	"			46	"	"	"	"
	6'			26	15'-11"	3'-8"	15'-4"	3'-1"			46	17'-0"	"	3'-6"	5'-8"
	7'			26	16'-1"	3'-10"	15'-3"	3'-3"			46	17'-2"	"	3'-7"	5'-8½"
	8'			28	16'-2"	2'-11"	15'-4"	2'-4"			46	17'-3"	"	"	5'-9"
	9'			28	16'-5"	3'-2"	15'-7"	2'-7"			45	17'-6"	0'-4½"	3'-8"	5'-10"
2@8'	4'	#6	11"	32	17'-10"	3'-9"	16'-11"	3'-2"	#6	11"	48	18'-10"	0'-5"	3'-10"	6'-4"
	5'			34	18'-1"	3'-1"	17'-2"	2'-6"			48	19'-1"	"	3'-11"	6'-5"
	6'			34	"	"	"	"			48	"	"	"	"
	7'			34	18'-3"	3'-3"	17'-4"	2'-8"			47	19'-3"	"	4'-0"	6'-5½"
	8'			34	18'-4"	3'-4"	17'-5"	2'-9"			47	19'-4"	"	"	6'-6"
	9'			34	18'-7"	3'-7"	17'-8"	3'-0"			47	19'-7"	"	4'-1"	6'-7"
	10'			34	18'-10"	3'-10"	17'-11"	3'-3"			47	19'-10"	0'-5"	4'-2"	6'-8"

"c" bars – STRAIGHT – In Top and Bottom Slab of Barrel. Alternate with "b" and "b₂" bars. ▼"c₁" bars – In Top and Bottom Slab of Barrel. Alt. with "b₁" & "b₃" bars. (Four of each Length.)

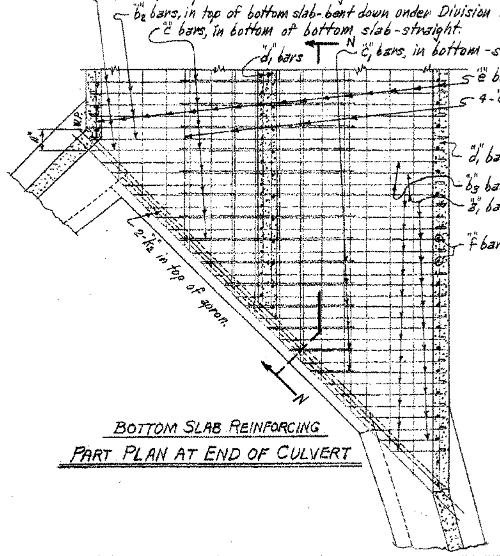
S	H	"b₃" Size	"b₃" Spacing	"b₃" No. Req'd	"b₃" Length Max.	"b₃" Length Min.	"b₃" L Max.	"b₃" L Min.	"c" Size	"c" Spacing	"c" No. Req'd	"c" Length	"c₁" Size	"c₁" Spacing	"c₁" No. Req'd	"c₁" Length Max.	"c₁" Length Min.
2@4'	2'	#5	12"	14	9'-6"	3'-4"	8'-10"	2'-10"	#5	12"	112	4'-8"	#5	12"	8	4'-1"	3'-1"
	3'			14	"	"	"	"			112	4'-8"			8	"	"
	4'			14	"	"	"	"			112	4'-8"			8	"	"
	5'			14	"	"	"	"			112	4'-8"			8	"	"
	6'			14	9'-9"	3'-7"	9'-1"	3'-1"			112	4'-9"			8	4'-3"	3'-3"
2@5'	3'	#5	12"	18	11'-6"	3'-4"	10'-10"	2'-10"	#6	12"	112	5'-8"	#6	12"	12	4'-7"	2'-7"
	4'			18	"	"	"	"			112	5'-8"			12	"	"
	5'			18	"	"	"	"			112	5'-8"			12	"	"
	6'			18	11'-9"	3'-7"	11'-1"	3'-1"			112	5'-9"			12	4'-9"	2'-9"
	7'			18	11'-11"	3'-9"	11'-3"	3'-3"			112	5'-10"			12	4'-10"	2'-10"
2@6'	3'	#5	11"	24	13'-8"	3'-4"	12'-11"	2'-10"	#6	11"	118	6'-8"	#6	11"	16	6'-5"	2'-9"
	4'			24	"	"	"	"			118	6'-8"			16	"	"
	5'			24	"	"	"	"			118	6'-8"			16	"	"
	6'			24	13'-11"	3'-7"	13'-2"	3'-1"			118	6'-9"			16	6'-6"	2'-10"
	7'			26	14'-1"	2'-10"	13'-4"	2'-4"			118	6'-10"			16	6'-8"	3'-0"
	8'			26	14'-2"	2'-11"	13'-5"	2'-5"			118	6'-10"			16	6'-9"	3'-1"
2@7'	4'	#6	12"	26	15'-8"	3'-5"	14'-10"	2'-10"	#6	12"	108	7'-8"	#6	12"	20	6'-7"	2'-7"
	5'			26	"	"	"	"			108	7'-8"			20	"	"
	6'			26	15'-11"	3'-8"	15'-1"	3'-1"			108	7'-9"			20	6'-9"	2'-9"
	7'			26	16'-1"	3'-10"	15'-3"	3'-3"			108	7'-10"			20	6'-10"	2'-10"
	8'			28	16'-2"	2'-11"	15'-4"	2'-4"			108	7'-10"			20	6'-11"	2'-11"
	9'			28	16'-5"	3'-2"	15'-7"	2'-7"			108	7'-11"			20	7'-1"	3'-1"
2@8'	4'	#6	11"	32	17'-10"	3'-9"	16'-11"	3'-2"	#6	11"	112	8'-8"	#6	11"	28	8'-6"	3'-1"
	5'			34	18'-1"	3'-1"	17'-2"	2'-6"			112	8'-9"			28	8'-8"	3'-2"
	6'			34	"	"	"	"			112	8'-9"			28	"	"
	7'			34	18'-3"	3'-3"	17'-4"	2'-8"			116	8'-10"			28	7'-10"	2'-4"
	8'			34	18'-4"	3'-4"	17'-5"	2'-9"			116	8'-10"			28	7'-11"	2'-5"
	9'			34	18'-7"	3'-7"	17'-8"	3'-0"			114	8'-11"			28	8'-1"	2'-7"
	10'			34	18'-10"	3'-10"	17'-11"	3'-3"			114	9'-0"			28	8'-3"	2'-9"

"d" bars – STRAIGHT – Longitudinal in Top Slab of Barrel. "d₁" bars – Longitudinal in Sidewalls and Division Wall. "e" bars – Longitudinal in Bottom Slab of Barrel. "f" bars – STRAIGHT – Verticals in Sidewalls and Division Wall. ▼"k₁" bars – STRAIGHT – In Bottom of Headwalls. ▼"k₂" bars – In Top of Headwalls and Aprons (2 Each).

S	H	"d" Size	"d" Spacing	"d" No. Req'd	"d" Length	"d₁" Size	"d₁" Spacing	"d₁" No. Req'd	"d₁" Length	"e" Size	"e" Spacing	"e" No. Req'd	"e" Length	"f" Size	"f" Spacing	"f" No. Req'd	"f" Length	"k₁" Size	"k₁" No. Req'd	"k₁" Length	"k₂" Size	"k₂" No. Req'd	"k₂" Length
2@4'	2'	#5	12"	14	2@30'-8" for 60'-0" Length Barrel (1'-8" Lap)	#4	12"	8	2@30'-6" for 60'-0" Length Barrel (1'-3" Lap)	#4	12"	14	2@31'-10" for 60'-0" Length Barrel (1'-3" Lap)	#4	12"	240	2'-10"	#5	6	13'-3"	#5	8	15'-5"
	3'			14				12				14				240	3'-10"		6	"		8	"
	4'			14				16				14				240	4'-10"		6	"		8	"
	5'			14				20				14				240	5'-10"		6	"		8	"
	6'			14				24				14				240	6'-10"		6	13'-7"		8	15'-9"
2@5'	3'	#5	11½"	16		#4	12"	12		#4	12"	16		#4	12"	240	3'-11"	#6	6	16'-1"	#6	8	18'-3"
	4'			16				16				16				240	4'-11"		6	"		8	"
	5'			16				20				16				240	5'-11"		6	"		8	"
	6'			16				24				16				240	6'-11"		6	16'-5"		8	18'-7"
	7'			16				28				16				240	7'-11"		6	16'-8"		8	18'-10"
2@6'	3'	#5	11½"	18		#4	12"	12		#4	12"	18		#4	12"	240	4'-0"	#6	6	18'-11"	#6	8	21'-1"
	4'			18				16				18				240	5'-0"		6	"		8	"
	5'			18				20				18				240	6'-0"		6	"		8	"
	6'			18				24				18				240	7'-0"		6	19'-3"		8	21'-5"
	7'			18				28				18				240	8'-0"		6	19'-6"		8	21'-8"
	8'			18				32				18			10"	288	9'-0"		6	19'-7"		8	21'-9"
2@7'	4'	#5	11½"	20		#4	12"	16		#4	12"	20		#4	12"	240	5'-1"	#7	6	21'-9"	#7	8	23'-10"
	5'			20				20				20				240	6'-1"		6	"		8	"
	6'			20				24				20				240	7'-1"		6	22'-1"		8	24'-3"
	7'			20				28				20				240	8'-1"		6	22'-4"		8	24'-6"
	8'			20				32				20			10"	288	9'-1"		6	22'-5"		8	24'-7"
	9'			20				36				20		#5	12"	240	10'-1"		6	22'-10"		8	24'-11"
2@8'	4'	#5	11½"	23		#4	12"	16		#4	12"	22		#4	12"	240	5'-2"	#7	6	24'-7"	#7	8	26'-8"
	5'			23				20				22				240	6'-2"		6	24'-11"		8	27'-1"
	6'			23				24				22				240	7'-2"		6	"		8	"
	7'			23				28				22				240	8'-2"		6	25'-2"		8	27'-4"
	8'			23				32				22			10"	288	9'-2"		6	25'-3"		8	27'-5"
	9'			23				36				22		#5	12"	240	10'-2"		6	25'-8"		8	27'-9"
	10'			23				40				22			11"	264	11'-2"		6	26'-0"		8	28'-1"



TOP SLAB REINFORCING
PART PLAN AT END OF CULVERT



BOTTOM SLAB REINFORCING
PART PLAN AT END OF CULVERT

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM FOR BARS "b" AND "b₂"
#5	2½"	4¼"	0'-11½"	
#6	3"	5"	1'-2"	

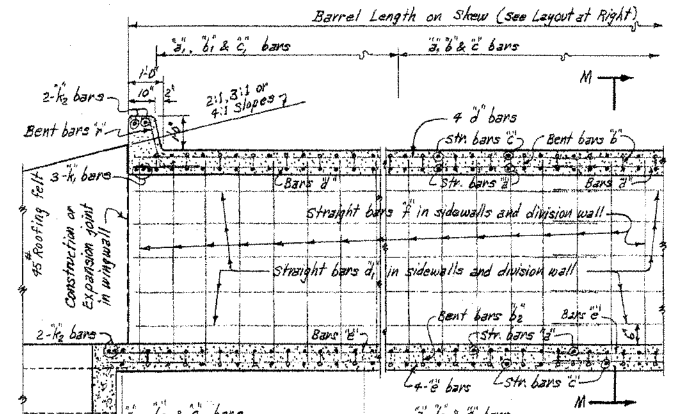
BAR SIZE	PIN DIAM.	K	ADD FOR 1 HOOK	BENDING DIAGRAM FOR BARS "b₁" AND "b₃"
#5	2½"	4¼"	0'-5¾"	
#6	3"	5"	0'-7"	

SPAN	SIZE	SPACING	No. REQ'D	LENGTH	X	Dowel bars "f" in Two Headwalls
4'	#4	12"±	28	2'-5"	1'-2½"	
5'	#4	12"±	34	2'-6"	1'-3"	
6'	#4	12"±	40	2'-7"	1'-3½"	
7'	#4	12"±	46	2'-8"	1'-4"	
8'	#4	12"±	52	2'-9"	1'-4½"	

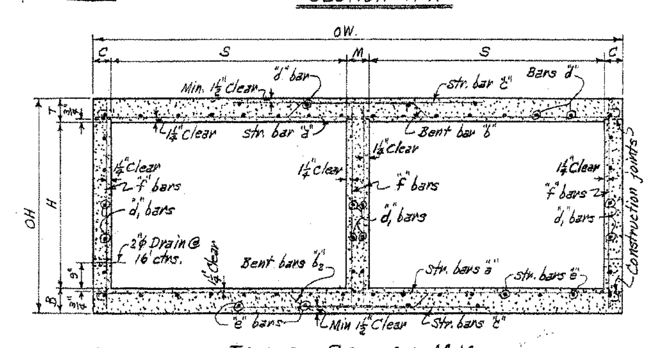
NOTE:- Dimensions are to centers of bars (b, b₁, b₂, & b₃). The X, Y & Z values for "b₁" bars are same as for "b" bars and for "b₃" bars same as for "b₂" bars.

NOTE:- For Details of Standard Wings and bar lists, see Drawing No. W-X452-1 or W-X452-2; W-X453-1 or W-X453-2, and W-X454-1 or W-X454-2. Also W-X45.

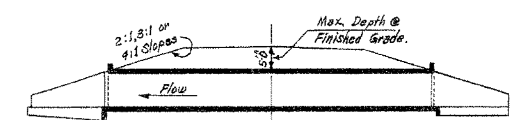
▼ These bars are in the skewed portion of barrel only.
The length of "a₁" and "c₁" bars and overall length "L" of "b₁" and "b₃" bars vary by 1'-0" for 12" spacing and 0'-11" for 11" spacing.
In the regular portion of the barrel begin and end with a set of "a" and "c" bars. If the spacing is such that the last set of bars would be "b" & "b₂" bars, use a set of "a" & "c" bars instead.



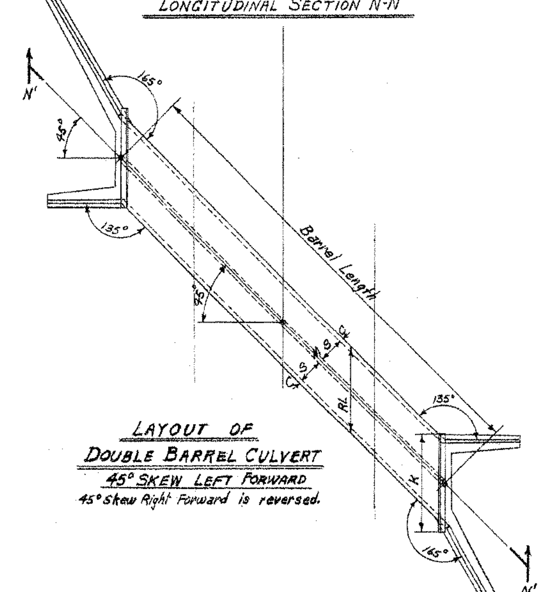
SECTION N-N



TYPICAL SECTION M-M



LONGITUDINAL SECTION N-N'



LAYOUT OF DOUBLE BARREL CULVERT
45° SKEW LEFT FORWARD
45° Skew Right Forward is reversed.

D (Max. Design Depth of Cover)	S (Clear Spans)	H (Clear Height)	A (Sq. Ft. Opening)	OW (Overall Width)	T (Thickness of Top Slab)	C (Thickness of Sidewalls)	M (Thickness of Division Wall)	B (Thickness of Bottom Slab)	OH (Overall Height)	RL (Roadway Length)	K (Length of Headwall)	* Class S Conc. per Lin. Ft. of Barrel (Cu. Yd.)	Reinforcing Steel Total for 60'-0" Length of Barrel (Lb.)	Per Lin. Ft. of Barrel (Lb.)	Additional per Lap (Lb.)
5'-0"	2@4'	2'	16	9'-8"	6½"	6"	8"	6"	3'-0½"	13'-8"	15'-8"	0.496	5,587	88.15	42.71
		3'	24	9'-8"		6"	8"		4'-0½"	"	"	0.558	5,910	93.49	46.05
		4'	32	9'-8"		6"	8"		5'-0½"	"	"	0.620	6,234	98.84	49.39
		5'	40	9'-8"		6"	8"		6'-0½"	"	"	0.682	6,557	104.18	52.73
		6'	48	9'-11"		7"	9"		7'-0½"	14'-0½"	16'-0½"	0.809	6,965	110.74	56.07
	2@5'	3'	30	11'-8"	7"	6"	8"	6½"	4'-1½"	16'-6"	18'-6"	0.671	7,882	123.34	51.19
		4'	40	11'-8"		6"	8"		5'-1½"	"	"	0.733	8,205	128.68	54.53
		5'	50	11'-8"		6"	8"		6'-1½"	"	"	0.795	8,529	134.03	57.87
		6'	60	11'-11"		7"	9"		7'-1½"	16'-10¼"	18'-10¼"	0.922	8,962	140.89	61.21
		7'	70	12'-1"		7½"	10"		8'-1½"	17'-1"	19'-1"	1.044	9,363	147.34	64.55
	2@6'	3'	36	13'-8"	7½"	6"	8"	7½"	4'-3"	19'-3⅞"	21'-4"	0.818	9,483	148.50	56.34
		4'	48	13'-8"		6"	8"		5'-3"	"	"	0.880	9,806	153.85	59.68
		5'	60	13'-8"		6"	8"		6'-3"	"	"	0.941	10,129	159.19	63.02
		6'	72	13'-11"		7"	9"		7'-3"	19'-8⅛"	21'-8¼"	1.070	10,532	166.20	66.36
		7'	84	14'-1"		7½"	10"		8'-3"	19'-11"	21'-11"	1.192	10,956	172.74	69.70
		8'	96	14'-2"		8"	10"		9'-3"	20'-0⅜"	22'-0½"	1.298	11,316	183.36	73.04
	2@7'	4'	56	15'-8"	8"	6"	8"	8"	5'-4"	22'-1⅞"	24'-1¾"	1.021	11,514	178.15	64.83
		5'	70	15'-8"		6"	8"		6'-4"	"	"	1.082	11,837	183.49	68.17
		6'	84	15'-11"		7"	9"		7'-4"	22'-6⅝"	24'-6"	1.212	12,297	190.59	71.51
		7'	98	16'-1"		7½"	10"		8'-4"	22'-9"	24'-9"	1.334	12,716	197.19	74.85
		8'	112	16'-2"		8"	10"		9'-4"	22'-10⅜"	24'-10¼"	1.440	13,389	207.89	78.19
		9'	126	16'-5"		9"	11"		10'-4"	23'-2⅝"	25'-2½"	1.616	14,414	225.25	81.53
	2@8'	4'	64	17'-8"	8½"	6"	8"	8½"	5'-5"	24'-11⅞"	26'-11¾"	1.174	13,555	210.87	71.71
		5'	80	17'-11"		7"	9"		6'-5"	25'-4"	27'-4"	1.295	14,047	217.63	75.05
		6'	96	17'-11"		7"	9"		7'-5"	"	"	1.366	14,371	222.97	78.39
		7'	112	18'-1"		7½"	10"		8'-5"	25'-6⅝"	27'-7"	1.489	14,756	229.68	81.73
		8'	128	18'-2"		8"	10"		9'-5"	25'-8½"	27'-8¼"	1.595	15,414	240.47	85.07
		9'	144	18'-5"		9"	11"		10'-5"	26'-0⅛"	28'-0⅛"	1.772	16,932	258.08	88.41
		10'	160	18'-8"		10"	12"		11'-5"	26'-4¾"	28'-4¾"	1.967	17,276	271.07	91.75

* For quanities in wings see Standard Wing Drawings listed below.
Total steel quantities listed above include one lap of longitudinal bars.

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 to be deformed bars of intermediate or hard grade.
BAR LAP:- In computing the quantities of steel from the tables add one lap for each add'l 33'-0" length of barrel over 32'-0". Lap longitudinal bars 30 diam. min.
CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls, division wall and slabs shall be only where shown on plans.
SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961
AND
SPECIAL MILITARY LOADING
Two 24000 Lb. Axles @ 4'-0" ctrs.

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

NOTE:- This drawing to be used in conjunction with Standard Wing Drawing Nos. W-X452-1 or W-X452-2, W-X453-1 or W-X453-2, and W-X454-1 or W-X454-2. Also W-X45.

CLASS S CONCRETE

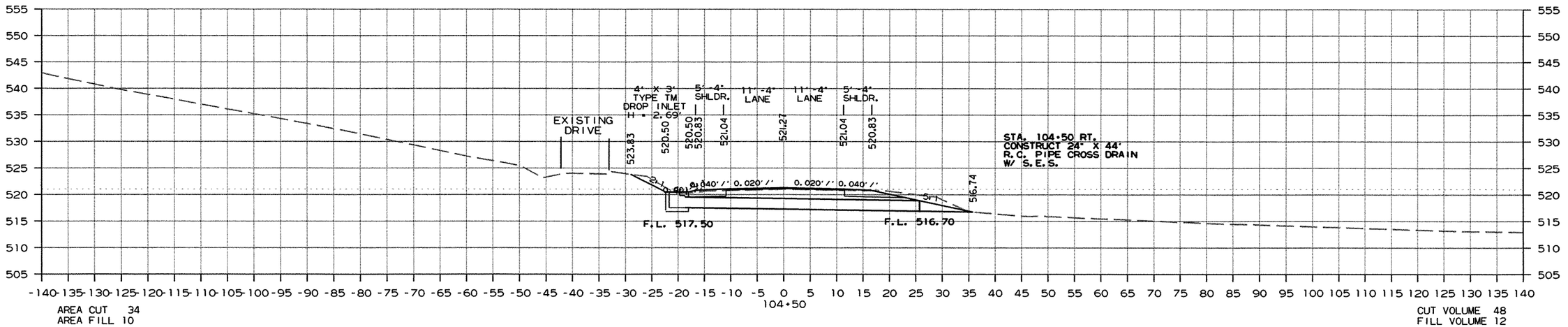
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF STANDARD BARREL SECTIONS
FOR
REINFORCED CONCRETE BOX CULVERTS
45° SKEW
4', 5', 6', 7' AND 8' SPANS DOUBLES
2:1, 3:1 OR 4:1 SLOPES UNDER 5'-0" COVER
STANDARD DRAWING No. R-245X-01

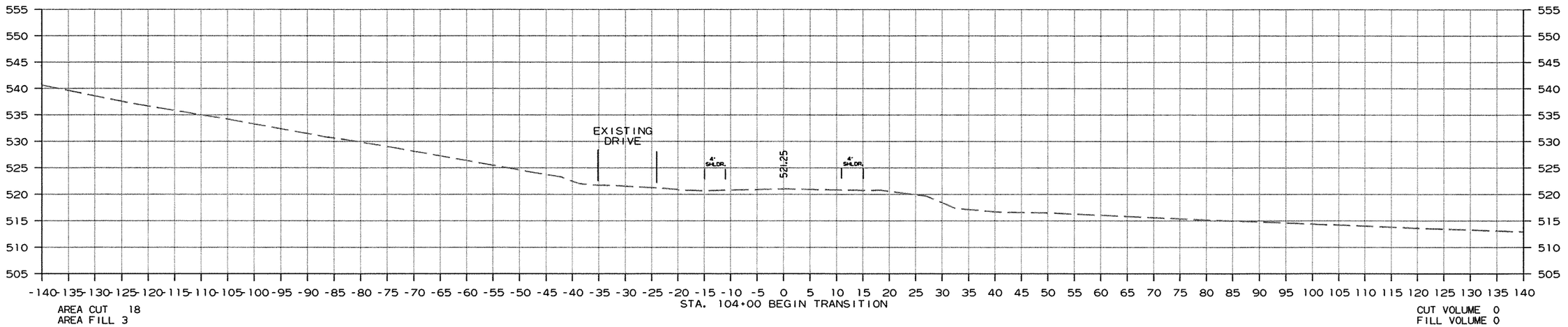
Designed by:- W.C.H. 1-17-63. Checked by:- R.H.S. 5-14-63
Drawn by:- W.C.H. 7-19-69. Checked by:-
Quantities by:- W.C.H. 10-1-69. Checked by:-

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.		061259	91	157

(2) CROSS SECTIONS

STA. 104+50 CONST.
D.I. ON LT. H = 3'-0"
TYPE TM (4' X 3')
24" X 44" PIPE OUTLET
TO RT. W/ F.E.S.

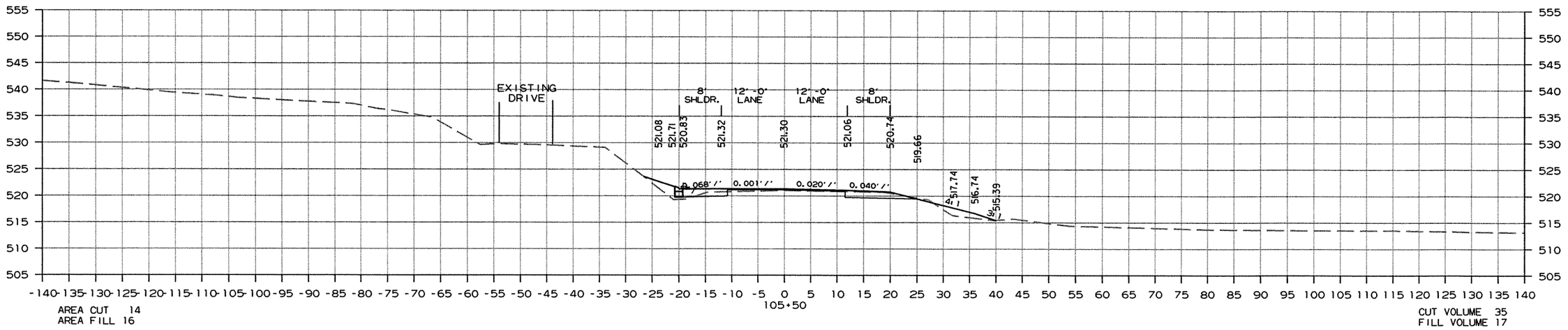


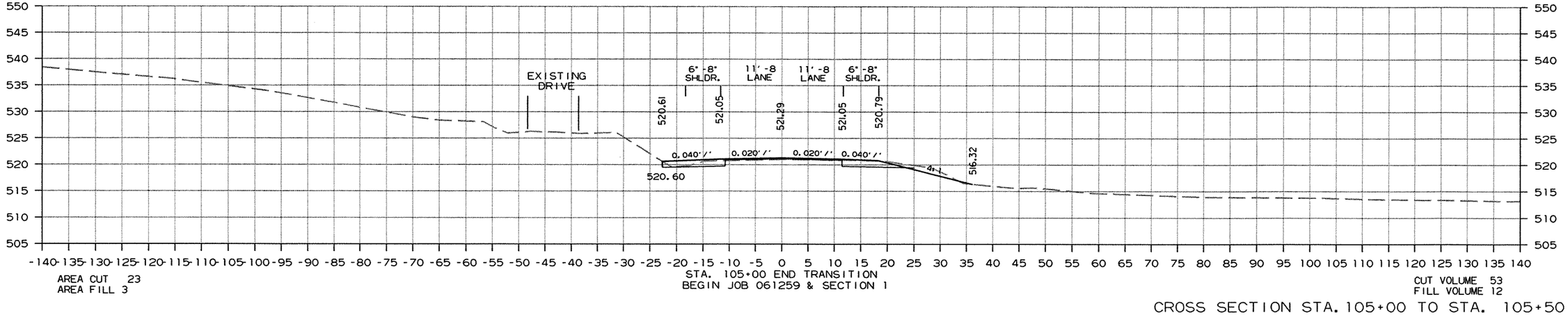


CROSS SECTION STA. 104+00 TO STA. 104+50

r061259.dgn 6/7/2010

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.		061259	92	157
				(2) CROSS SECTIONS				



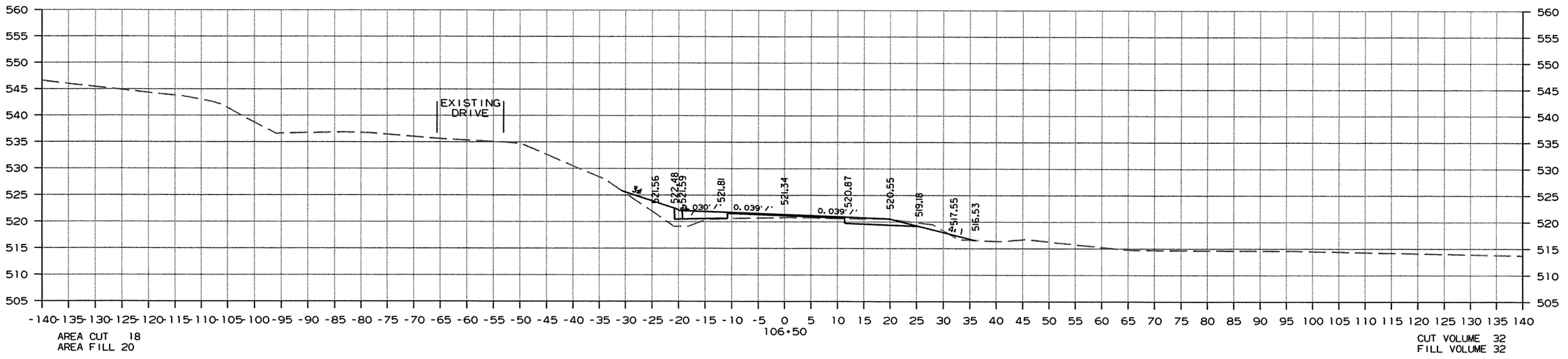


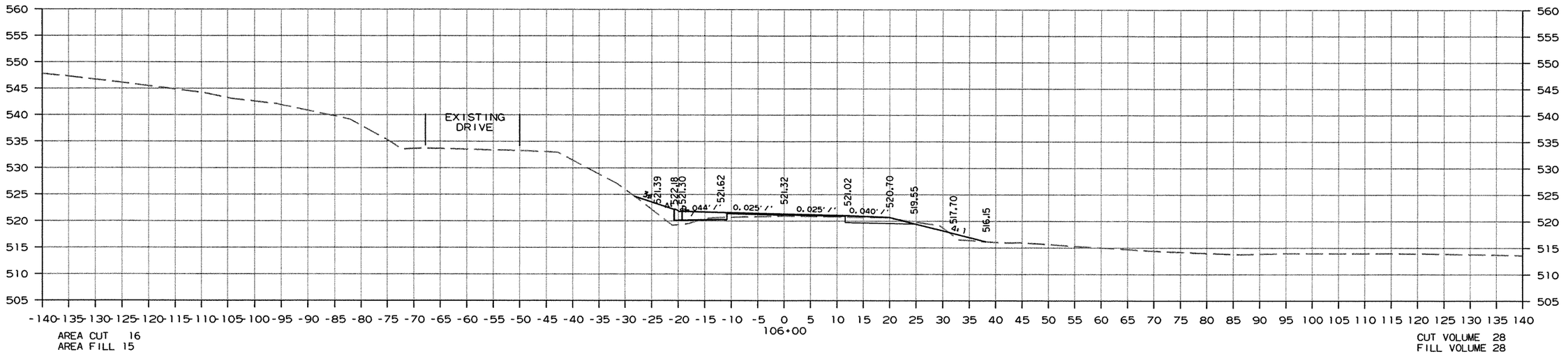
CROSS SECTION STA. 105+00 TO STA. 105+50

r061259.dgn 6/7/2010

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.		061259	93	157

(2) CROSS SECTIONS



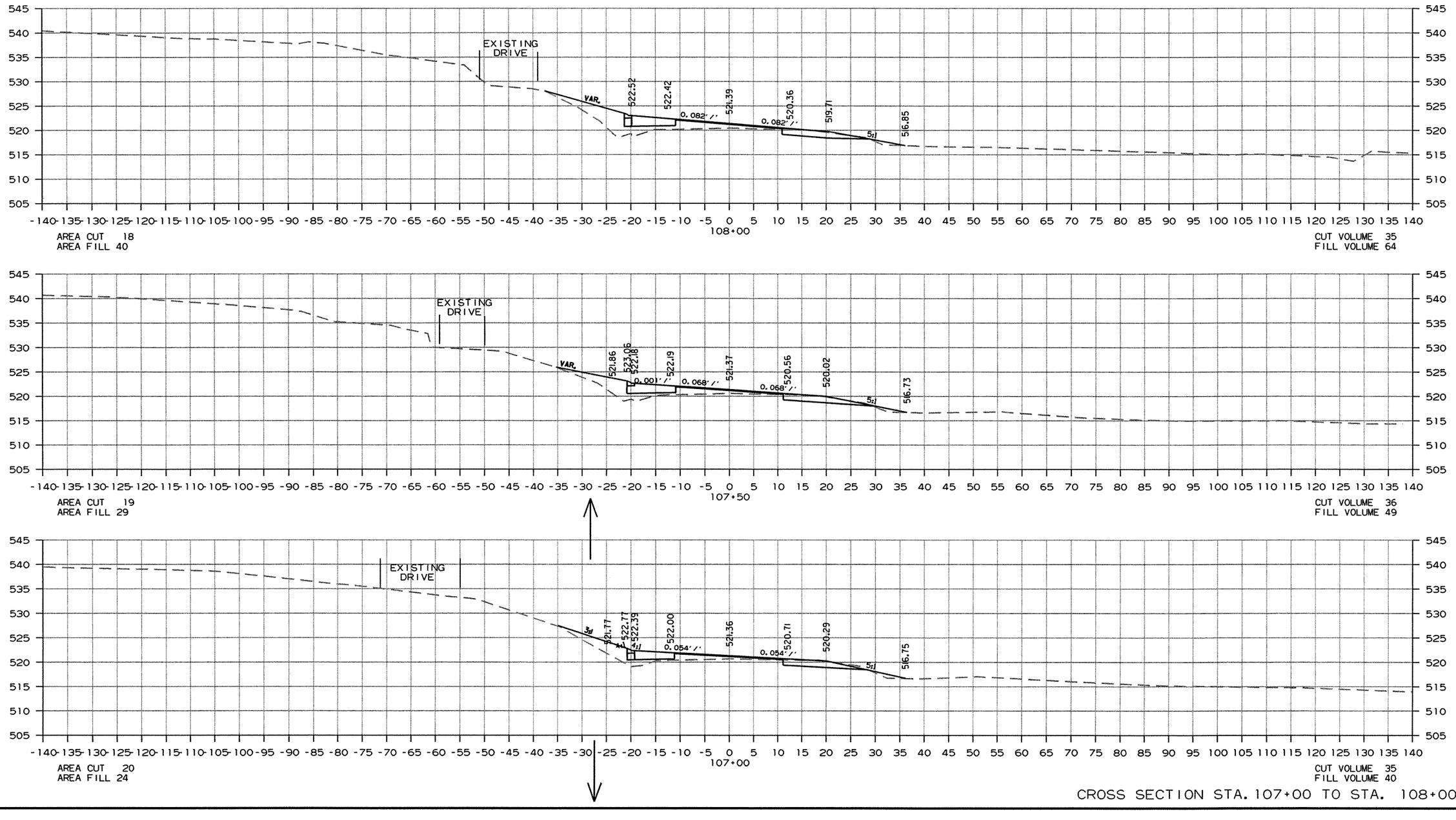


CROSS SECTION STA. 106+00 TO STA. 106+50

r061259.dgn 6/7/2010

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.		061259	94	157

(2) CROSS SECTIONS

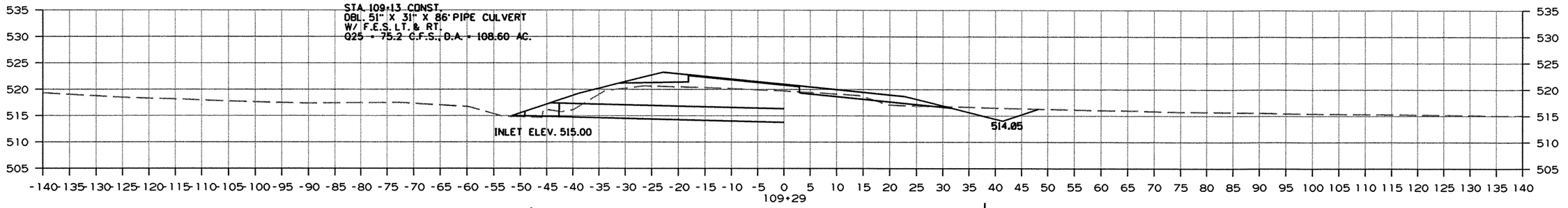


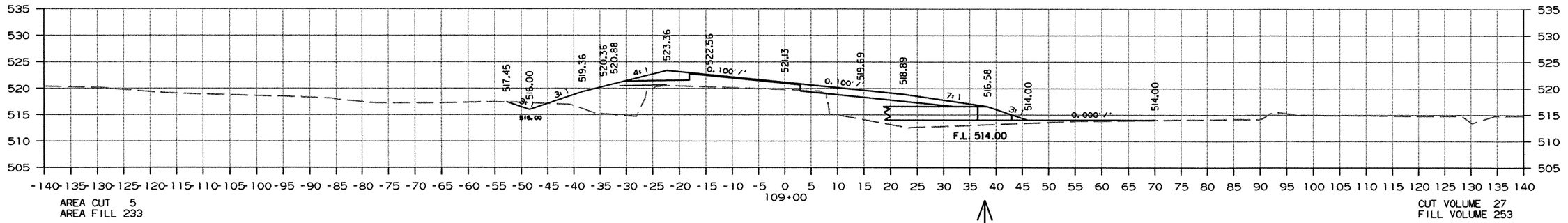
CROSS SECTION STA. 107+00 TO STA. 108+00

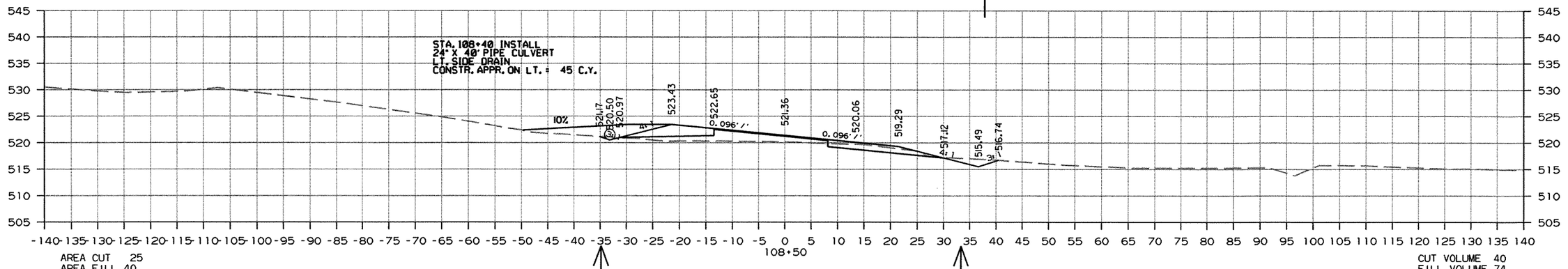
r061259.dgn 6/7/2010

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.		061259	95	157

(2) CROSS SECTIONS





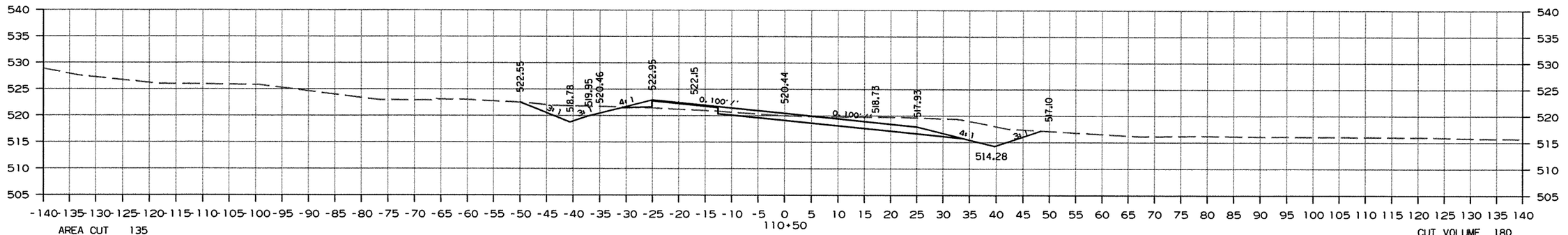


CROSS SECTION STA. 108+50 TO STA. 109+29

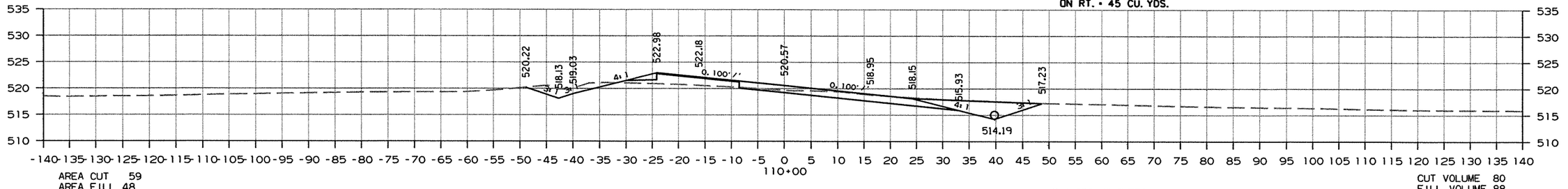
r061259.dgn 6/7/2010

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.		061259	96	157

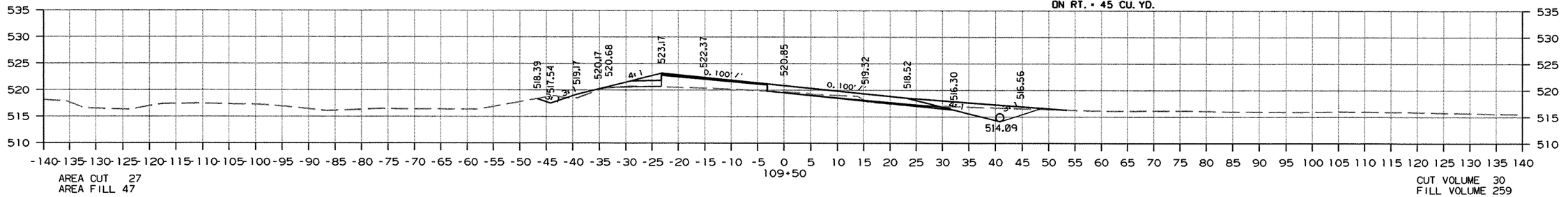
(2) CROSS SECTIONS



STA. 110+10 INSTALL
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH
ON RT. = 45 CU. YDS.



STA. 109+75 INSTALL
18" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPROACH
ON RT. = 45 CU. YD.

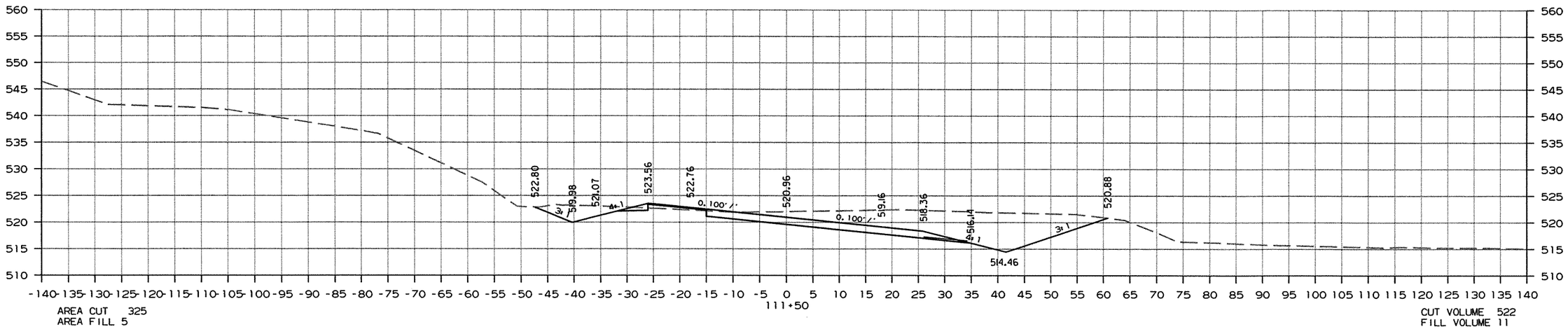


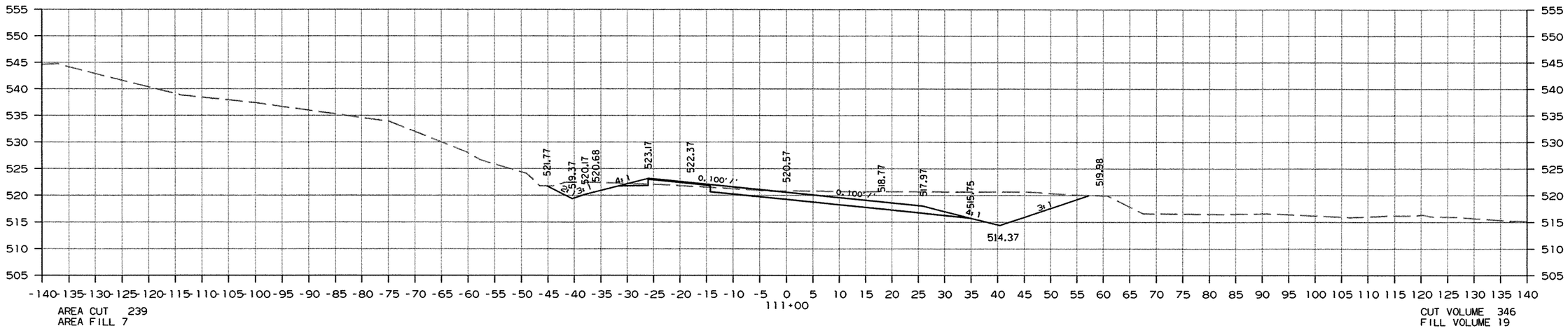
CROSS SECTION STA. 109+50 TO STA. 110+50

r061259.dgn 6/7/2010

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.		061259	97	157

(2) CROSS SECTIONS



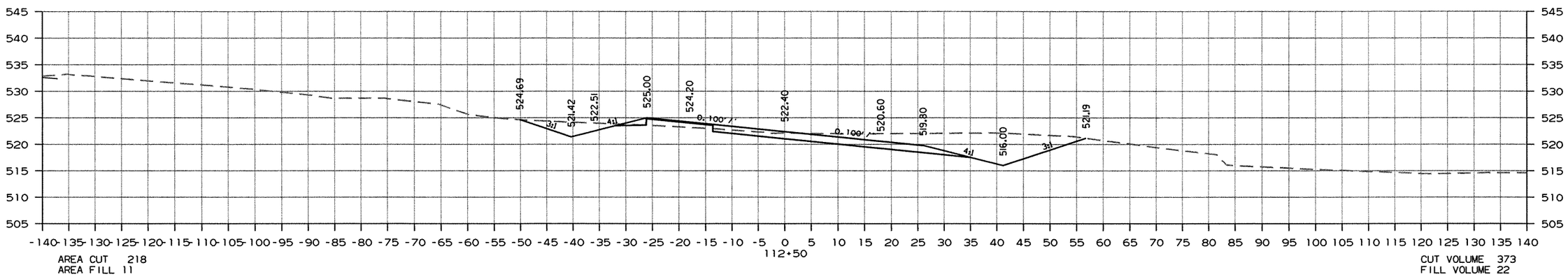


CROSS SECTION STA. 111+00 TO STA. 111+50

r061259.dgn 6/7/2010

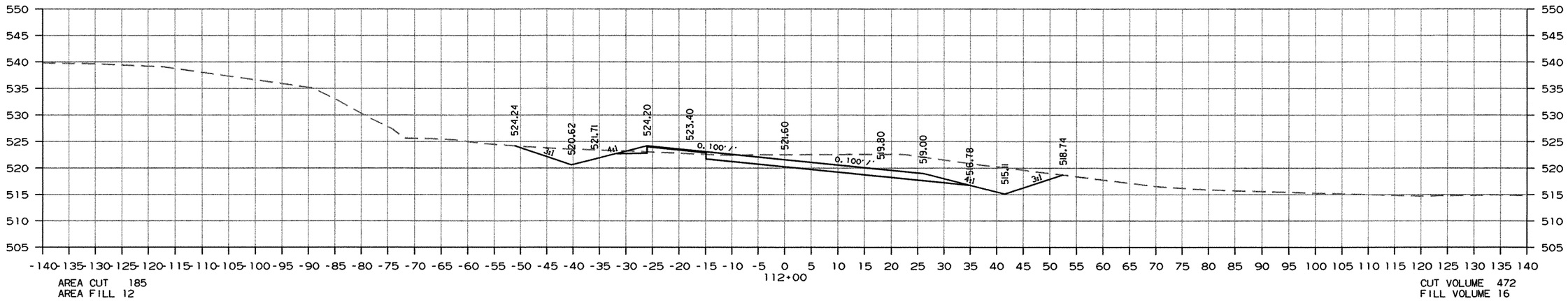
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	98	157

(2) CROSS SECTIONS



AREA CUT 218
AREA FILL 11

CUT VOLUME 373
FILL VOLUME 22



AREA CUT 185
AREA FILL 12

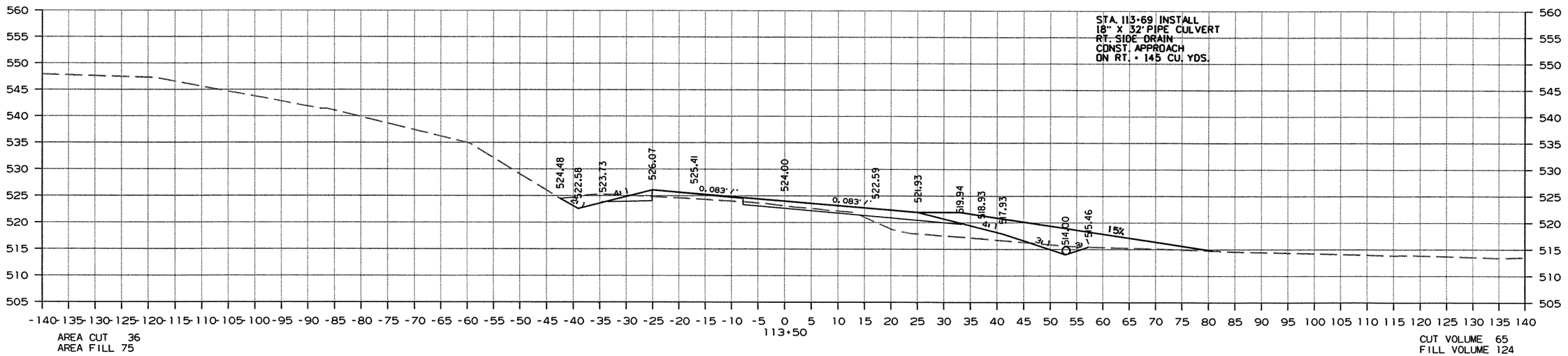
CUT VOLUME 472
FILL VOLUME 16

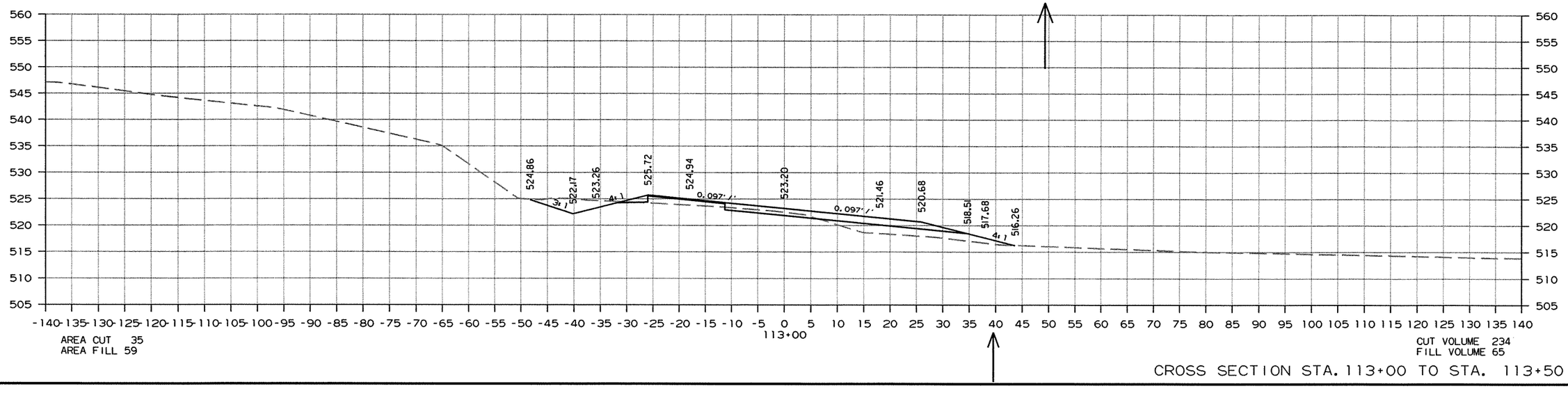
CROSS SECTION STA. 112+00 TO STA. 112+50

r061259.dgn 6/7/2010

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.		061259	99	157

(2) CROSS SECTIONS



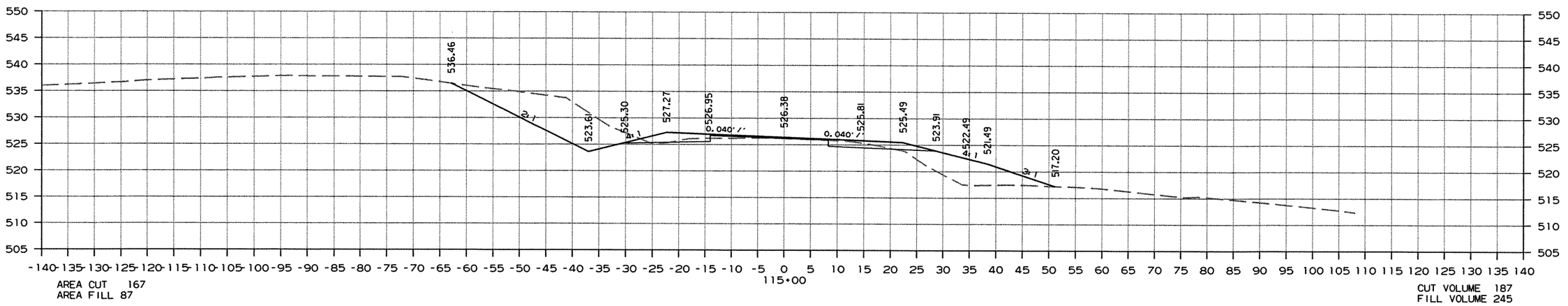


CROSS SECTION STA. 113+00 TO STA. 113+50

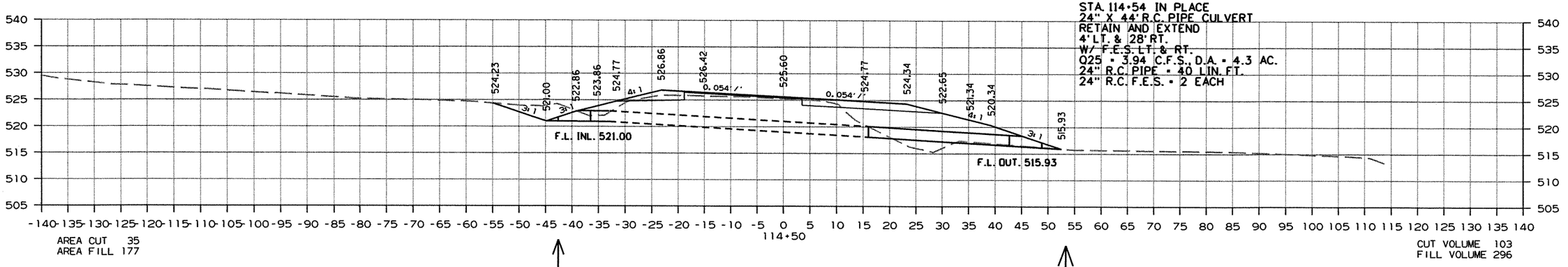
r061259.dgn 6/7/2010

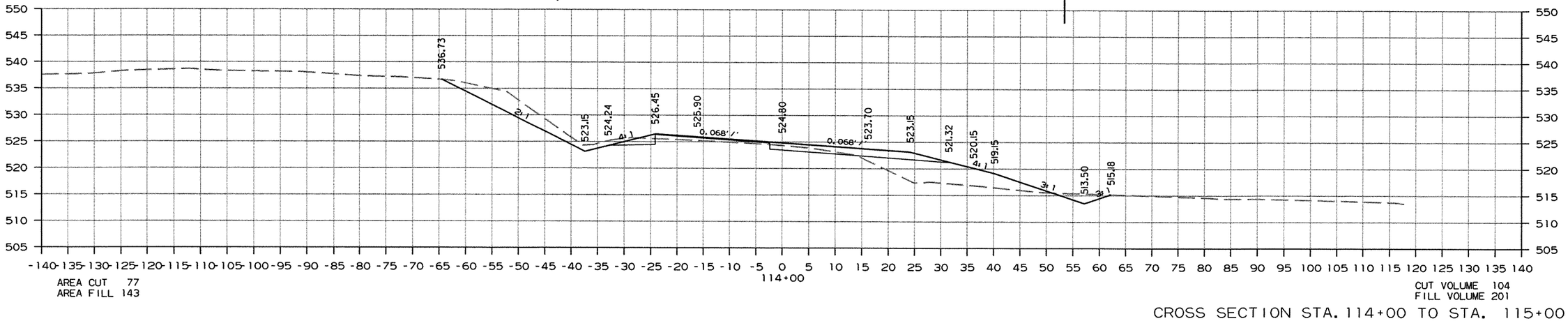
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	100	157

(2) CROSS SECTIONS



STA. 114+54 IN PLACE
24" X 44' R.C. PIPE CULVERT
RETAIN AND EXTEND
4' LT. & 28' RT.
W/ F.E.S. LT. & RT.
Q25 = 3.94 C.F.S., D.A. = 4.3 AC.
24" R.C. PIPE = 40 LIN. FT.
24" R.C. F.E.S. = 2 EACH





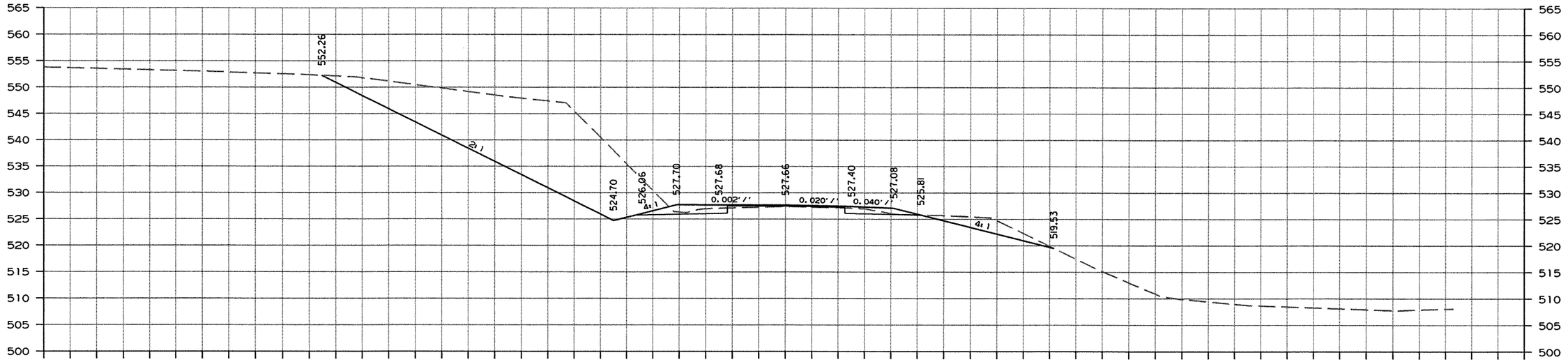
CROSS SECTION STA. 114+00 TO STA. 115+00

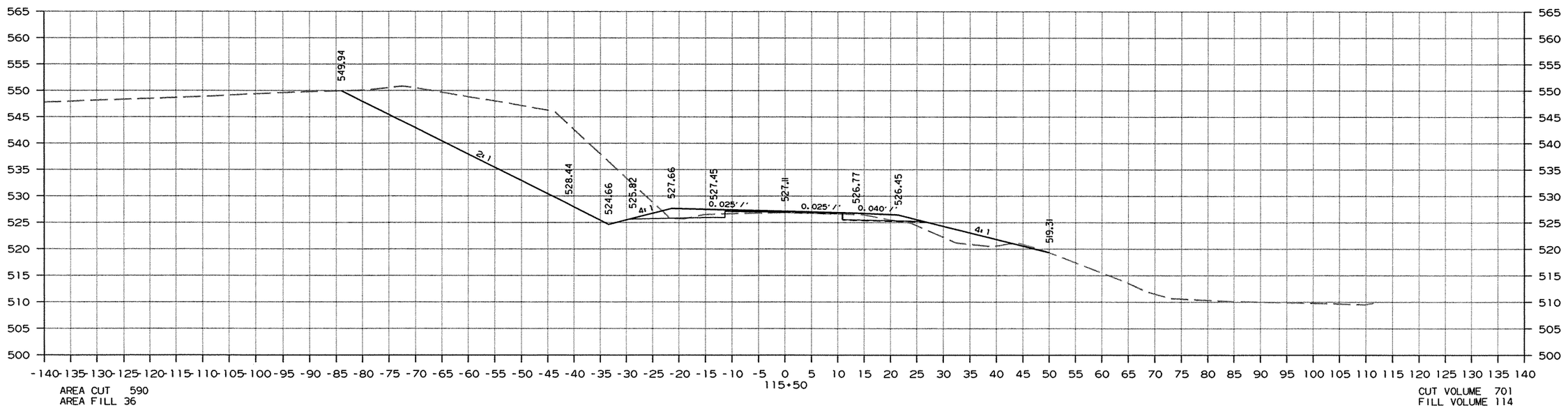
r061259.dgn 6/7/2010

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.		061259	101	157

(2) CROSS SECTIONS

STA. 116+30 END SECTION 1
& BEGIN TRANSITION



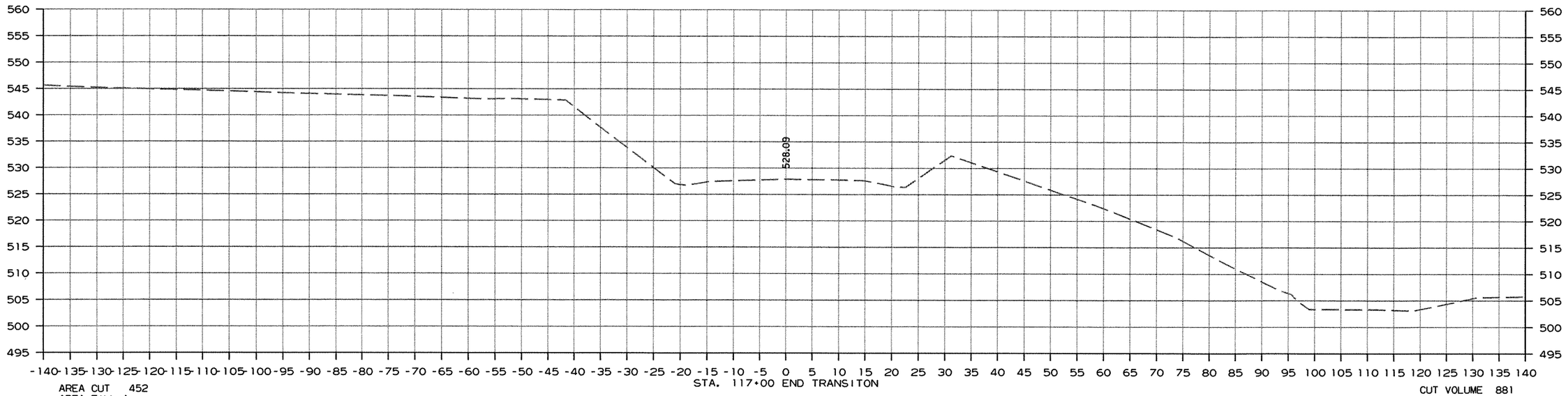


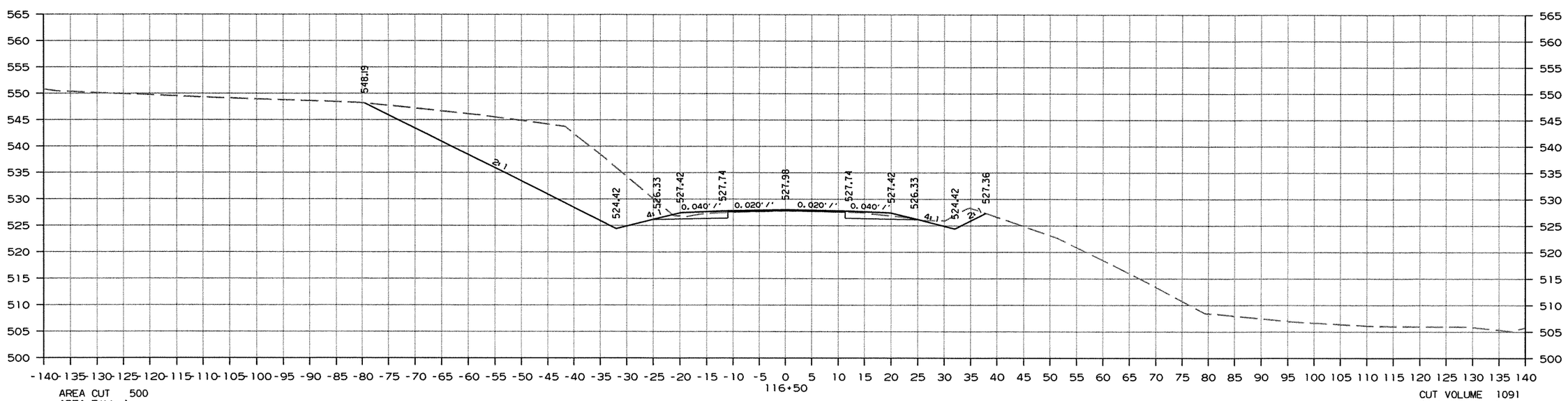
CROSS SECTION STA. 115+50 TO STA. 116+00

r061259.dgn 6/7/2010

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.		061259	102	157

(2) CROSS SECTIONS



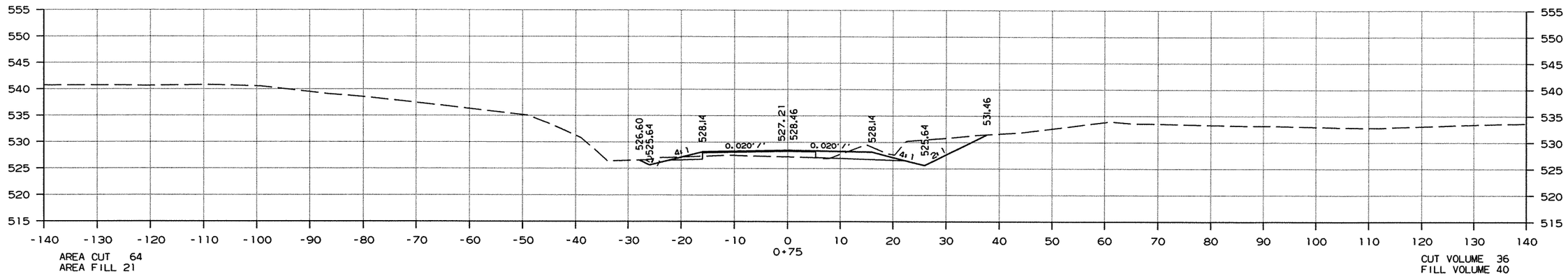


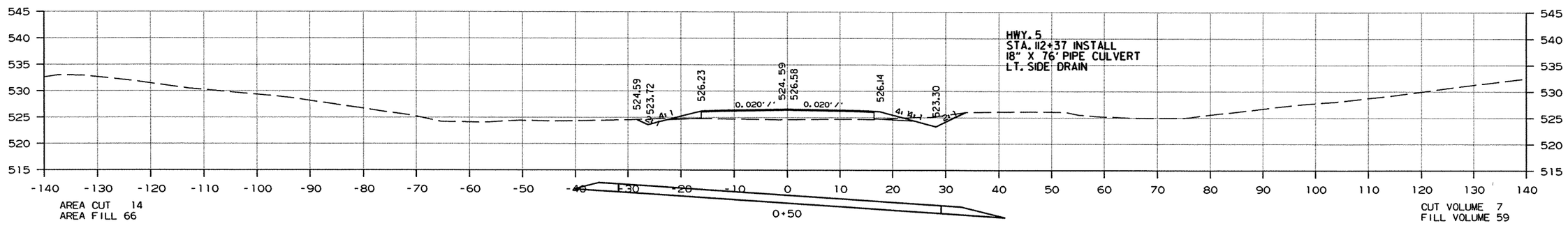
CROSS SECTION STA. 116+50 TO STA. 117+00

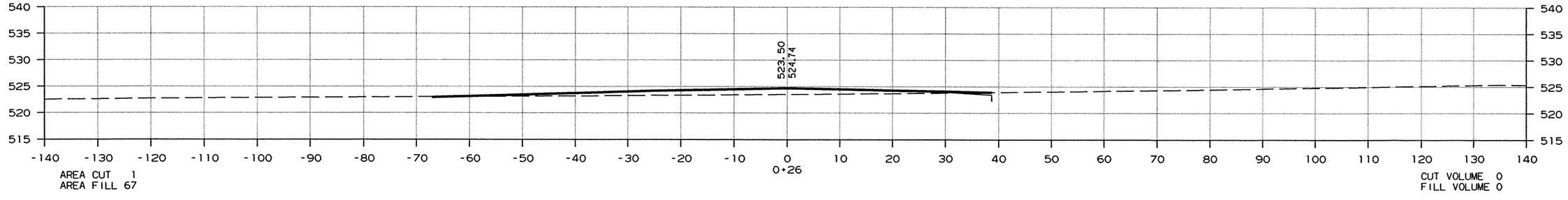
r061259.dgn 6/7/2010

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.		061259	103	157

(2) CROSS SECTIONS







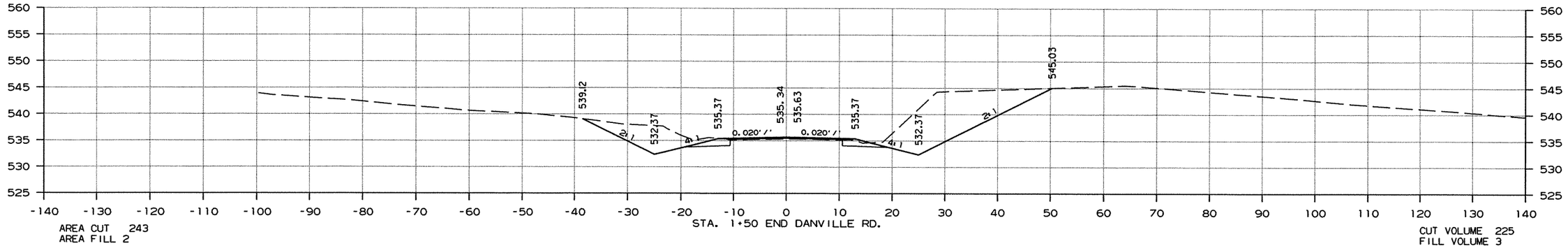
STA. 0+18 BEING DANVILLE RD.

CROSS SECTION STA. 0+26 TO STA. 0+75

r061259.dgn 6/7/2010

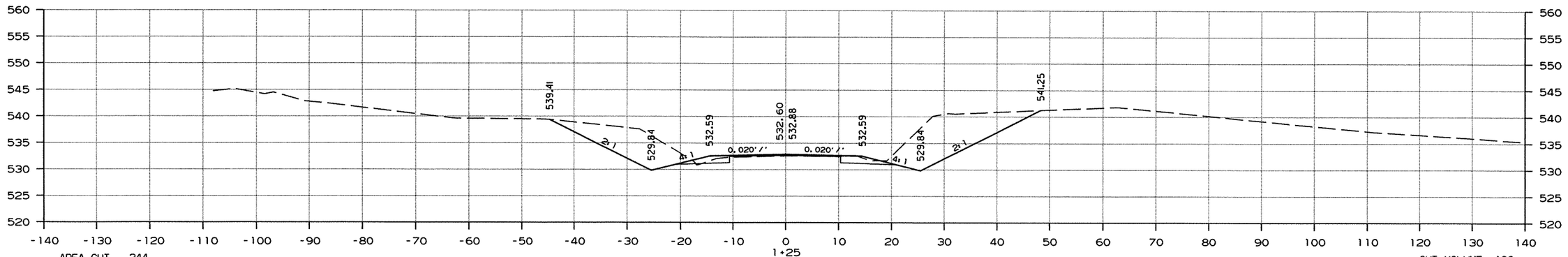
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	104	157

(2) CROSS SECTIONS



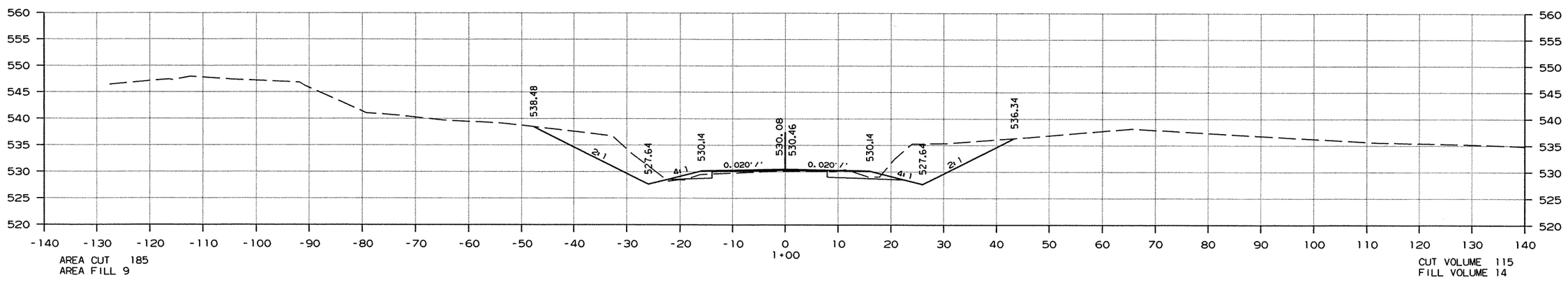
AREA CUT 243
AREA FILL 2

CUT VOLUME 225
FILL VOLUME 3



AREA CUT 244
AREA FILL 4

CUT VOLUME 198
FILL VOLUME 6



AREA CUT 185
AREA FILL 9

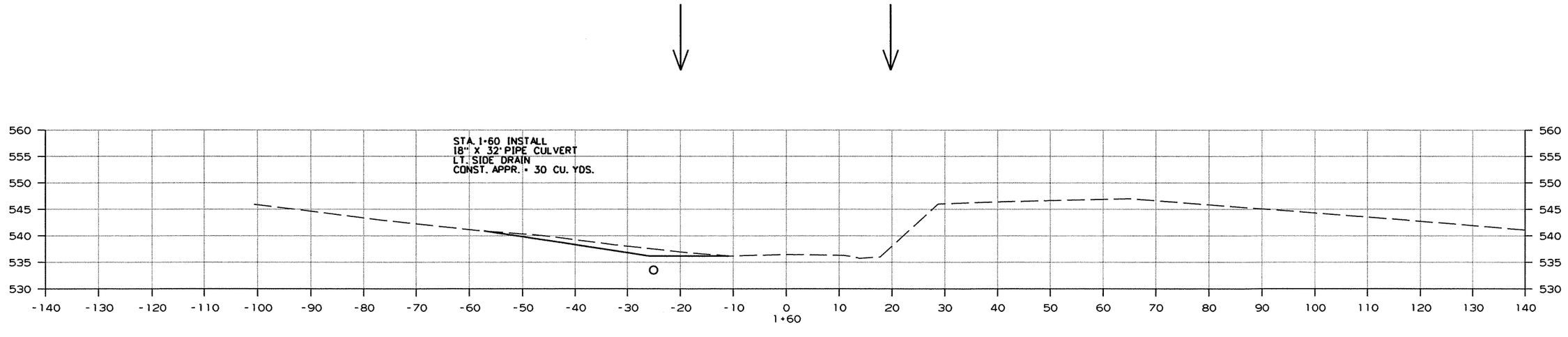
CUT VOLUME 115
FILL VOLUME 14

CROSS SECTION STA. 1+00 TO STA. 1+50

r061259.dgn 6/7/2010

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.		061259	105	157

(2) CROSS SECTIONS

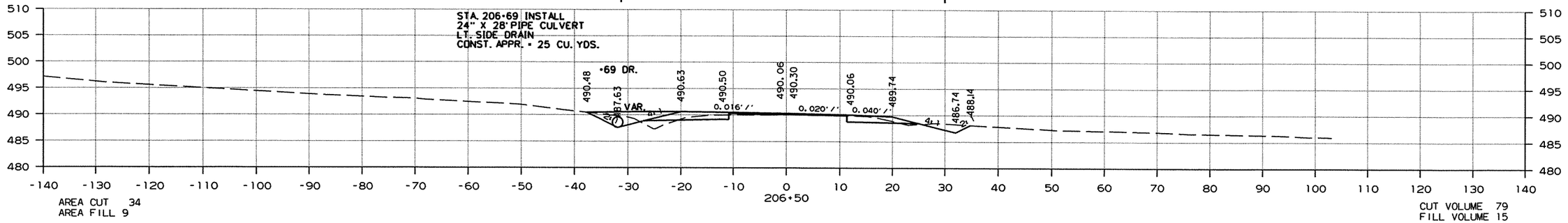


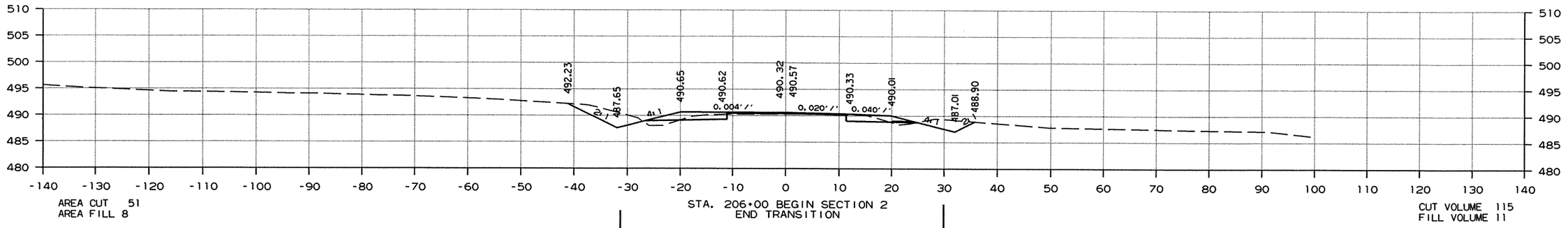
CROSS SECTION STA. 1+60 TO STA. 1+60

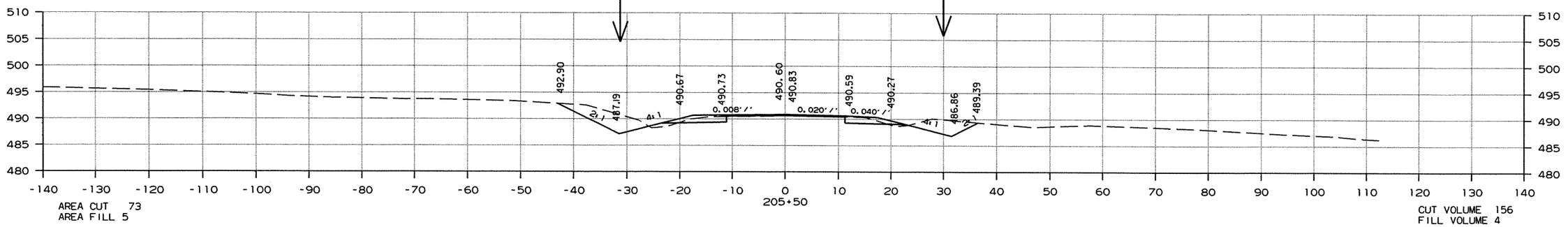
r061259.dgn 6/7/2010

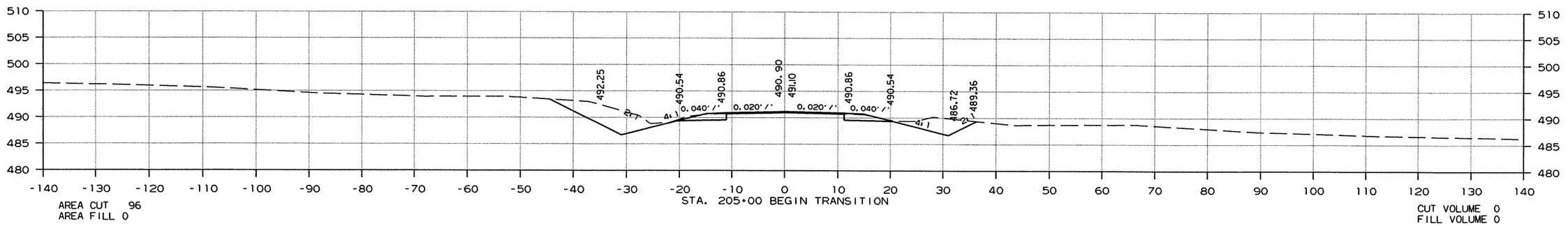
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	106	157

(2) CROSS SECTIONS







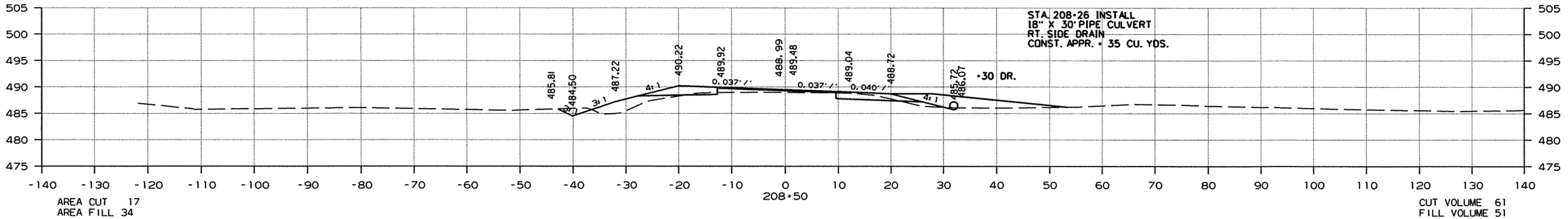


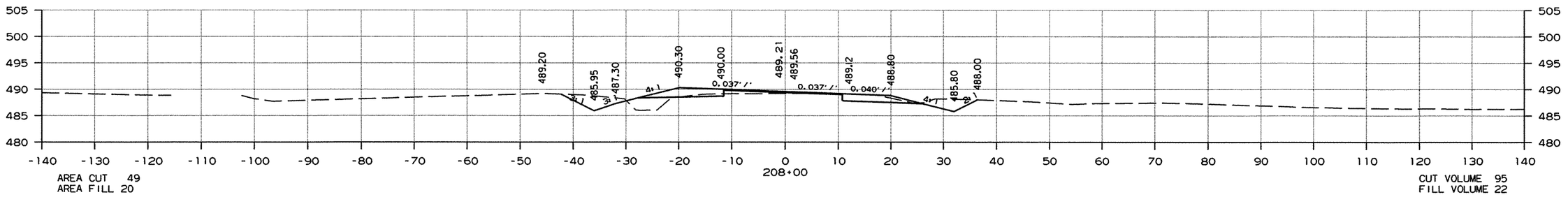
CROSS SECTION STA. 205+00 TO STA. 206+50

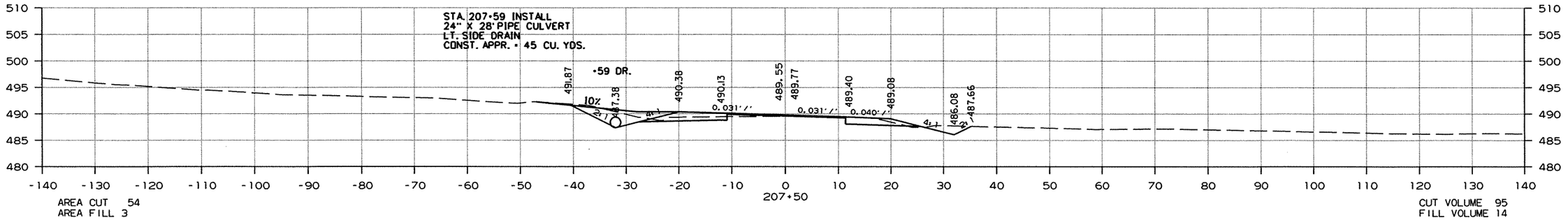
r061259.dgn 8/11/2010

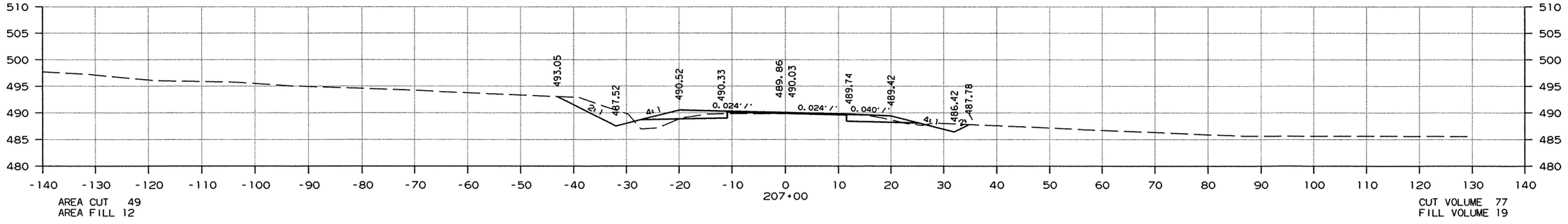
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	107	157

(2) CROSS SECTIONS







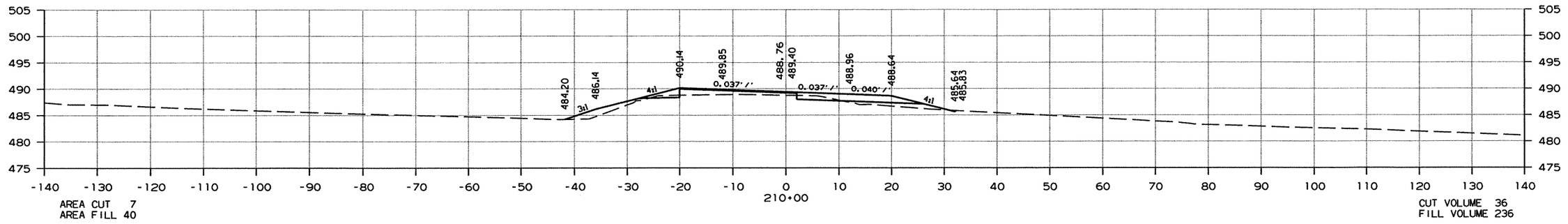


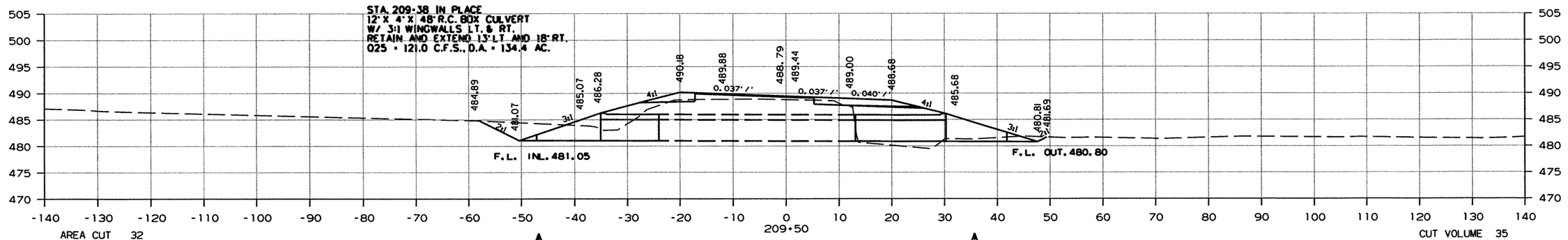
CROSS SECTION STA. 207+00 TO STA. 208+50

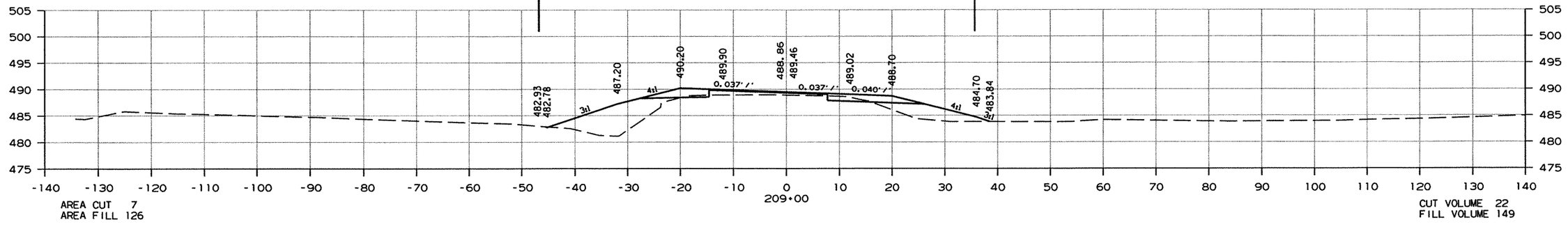
r061259.dgn 6/11/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
2-1-12				6	ARK.			
				JOB NO.		061259	108	157

(2) CROSS SECTIONS





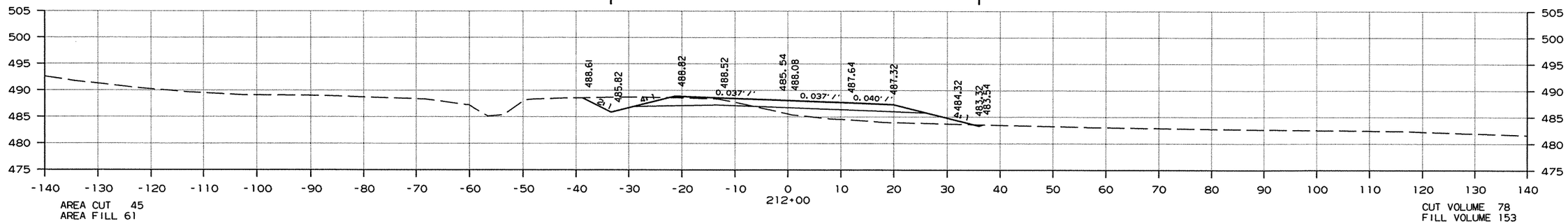


CROSS SECTION STA. 209+00 TO STA. 210+00

r061259.dgn 6/1/2010

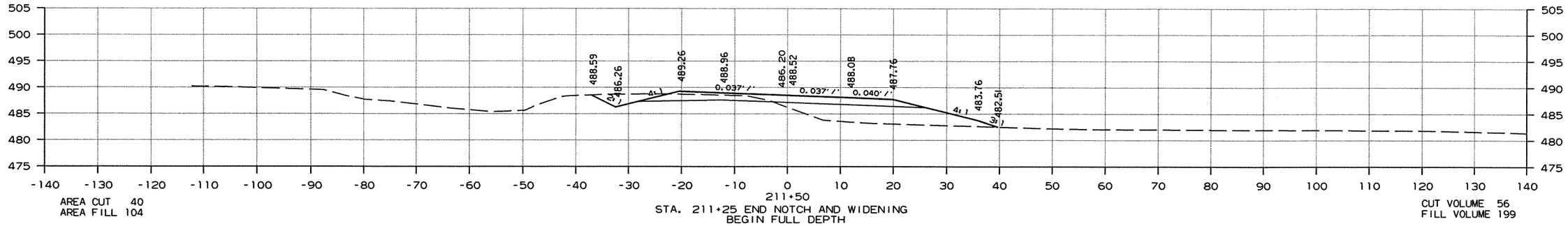
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	109	157

(2) CROSS SECTIONS



AREA CUT 45
AREA FILL 61

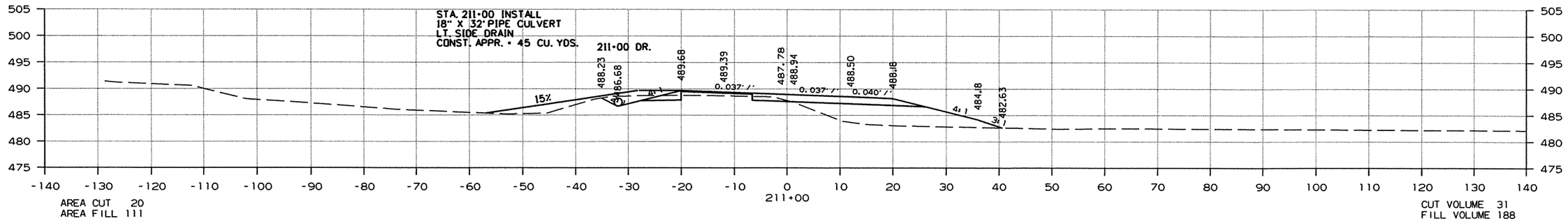
CUT VOLUME 78
FILL VOLUME 153



AREA CUT 40
AREA FILL 104

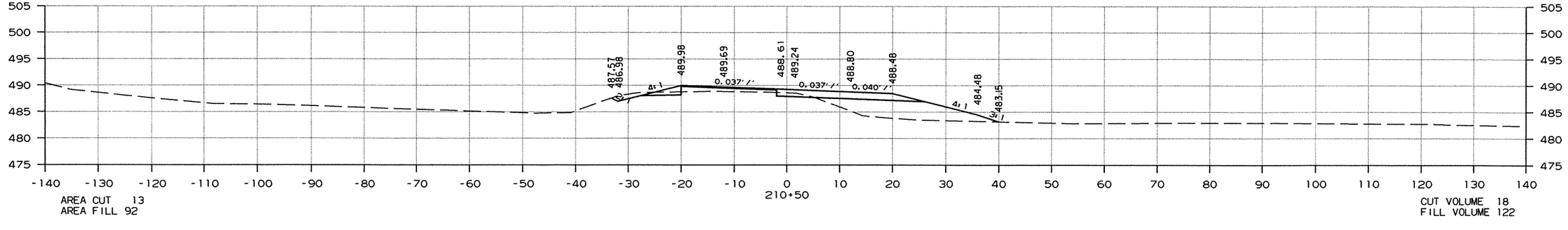
STA. 211+25 END NOTCH AND WIDENING
BEGIN FULL DEPTH

CUT VOLUME 56
FILL VOLUME 199



AREA CUT 20
AREA FILL 111

CUT VOLUME 31
FILL VOLUME 188



AREA CUT 13
AREA FILL 92

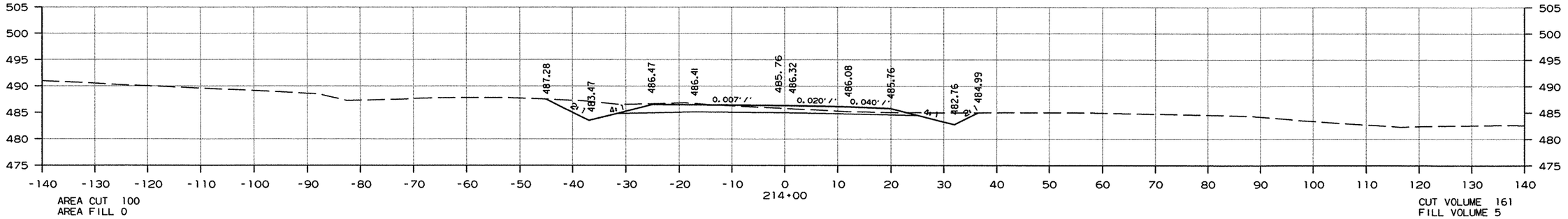
CUT VOLUME 18
FILL VOLUME 122

CROSS SECTION STA. 210+50 TO STA. 212+00

r061259.dgn 6/11/2010

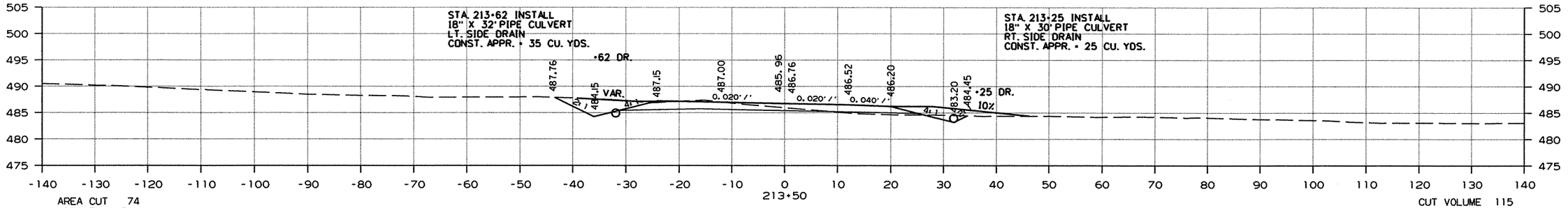
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	110	157

(2) CROSS SECTIONS



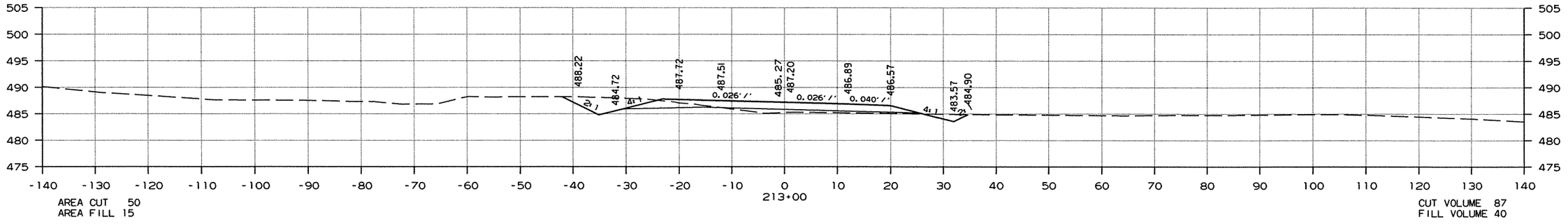
AREA CUT 100
AREA FILL 0

CUT VOLUME 161
FILL VOLUME 5



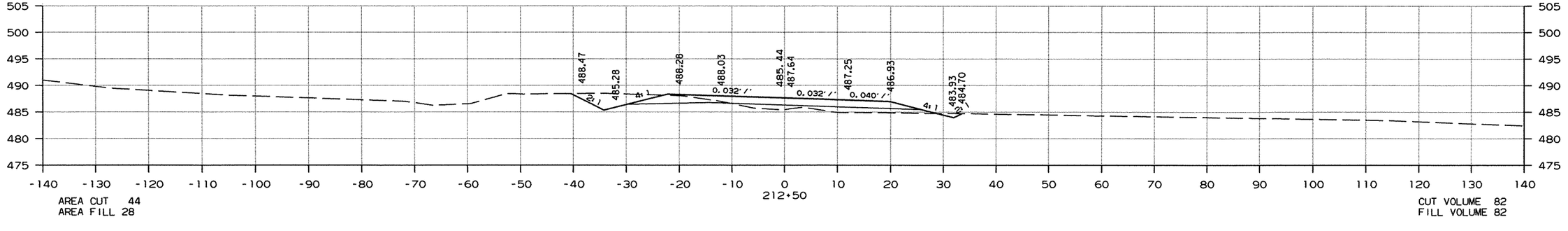
AREA CUT 74
AREA FILL 5

CUT VOLUME 115
FILL VOLUME 19



AREA CUT 50
AREA FILL 15

CUT VOLUME 87
FILL VOLUME 40



AREA CUT 44
AREA FILL 28

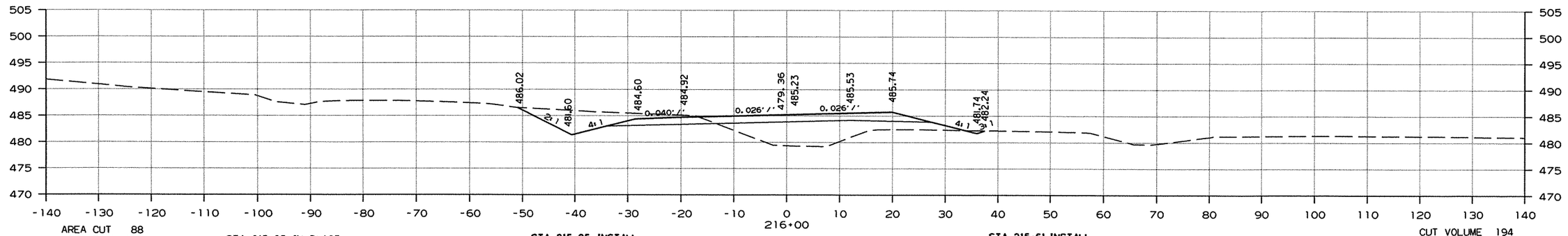
CUT VOLUME 82
FILL VOLUME 82

CROSS SECTION STA. 212+50 TO STA. 214+00

r061259.dgn 6/17/2010

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.		061259	111	157

(2) CROSS SECTIONS



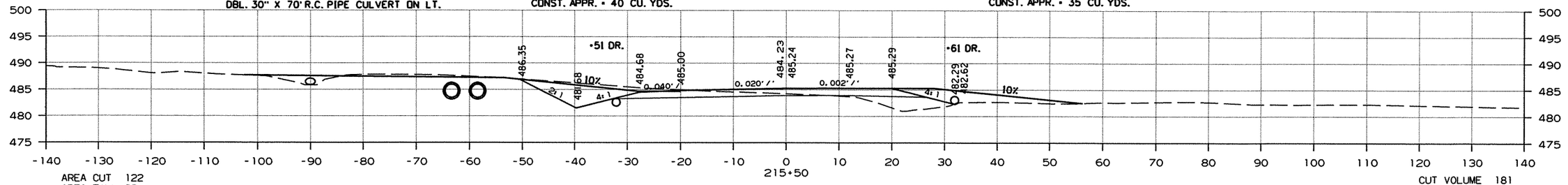
AREA CUT 88
AREA FILL 122

STA. 215+25 IN PLACE
DBL. 30" X 82' RC. PIPE CULVERT ON LT.
REMOVE AND INSTALL
DBL. 30" X 70' R.C. PIPE CULVERT ON LT.

STA. 215+25 INSTALL
21" X 15" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 40 CU. YDS.

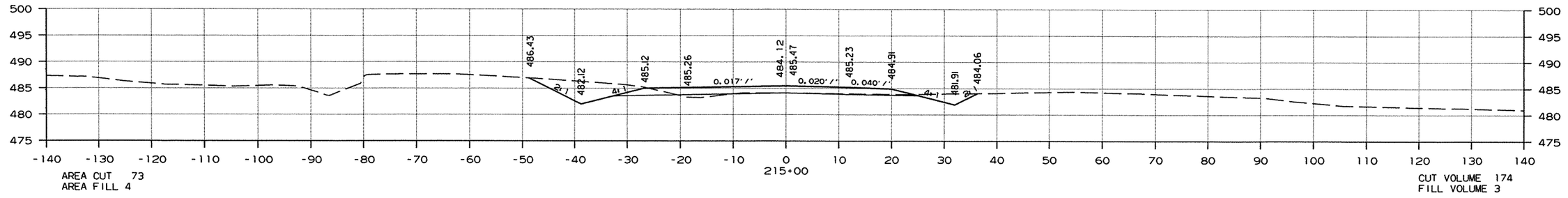
STA. 215+61 INSTALL
18" X 30' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 35 CU. YDS.

CUT VOLUME 194
FILL VOLUME 142



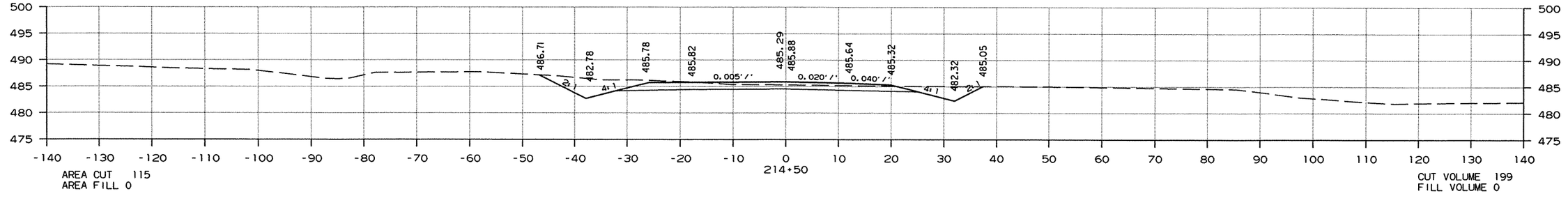
AREA CUT 122
AREA FILL 32

CUT VOLUME 181
FILL VOLUME 33



AREA CUT 73
AREA FILL 4

CUT VOLUME 174
FILL VOLUME 3



AREA CUT 115
AREA FILL 0

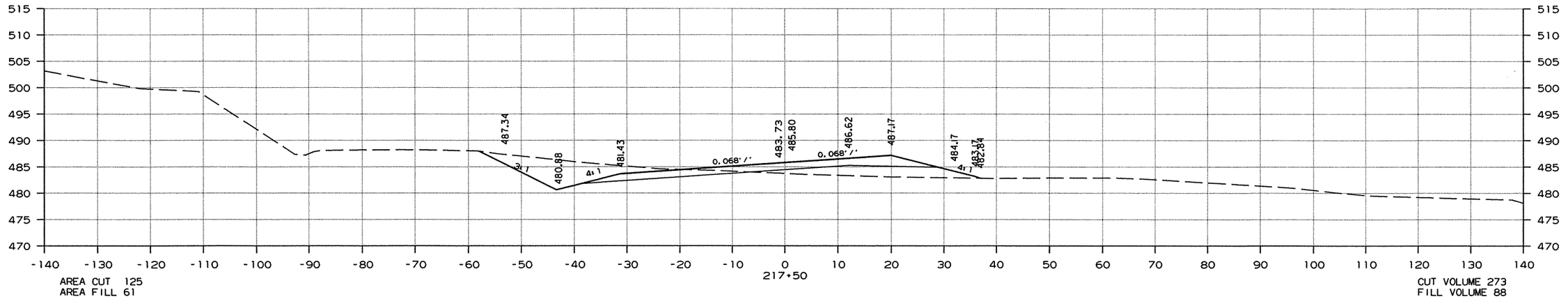
CUT VOLUME 199
FILL VOLUME 0

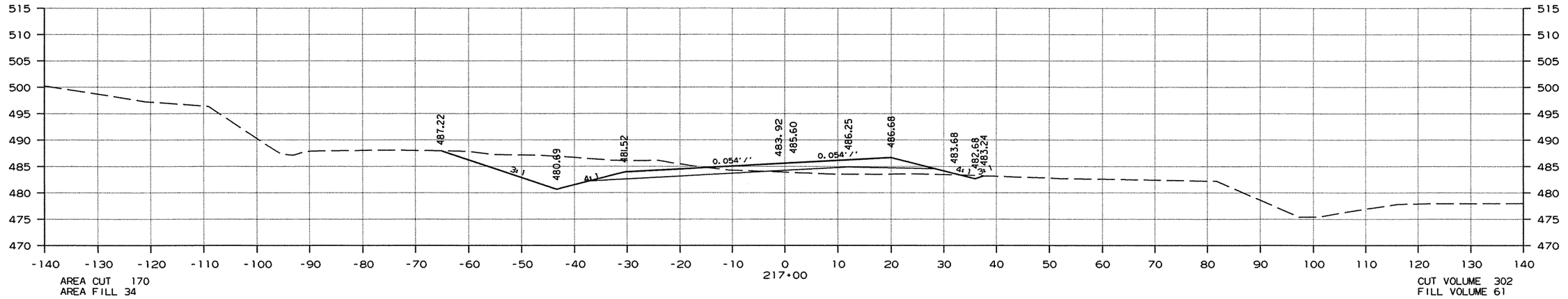
CROSS SECTION STA. 214+50 TO STA. 216+00

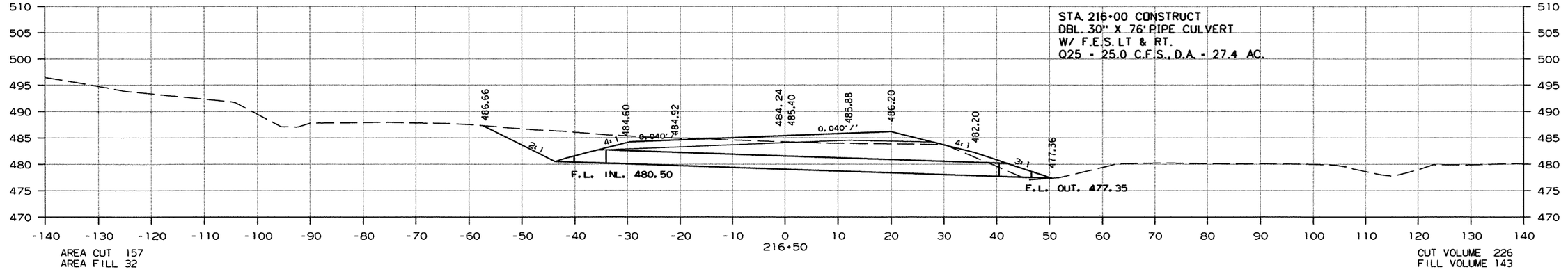
r061259.dgn 6/11/2010

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.		061259	112	157

(2) CROSS SECTIONS





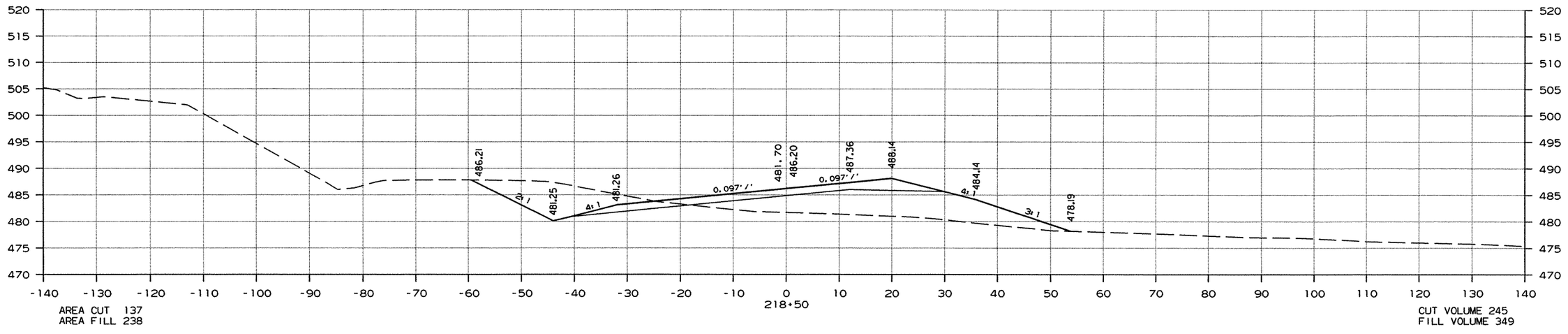


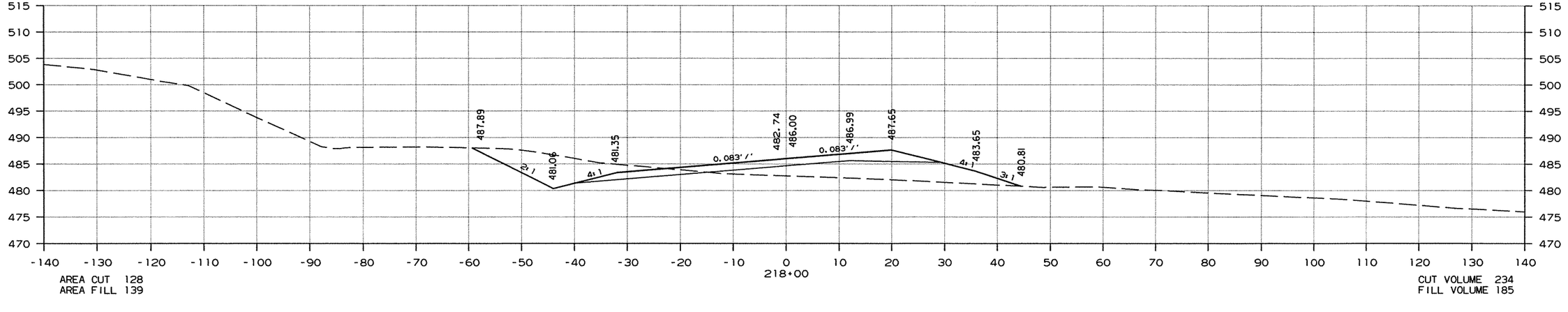
CROSS SECTION STA. 216+50 TO STA. 217+50

r061259.dgn 6/11/2010

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.		061259	113	157

(2) CROSS SECTIONS

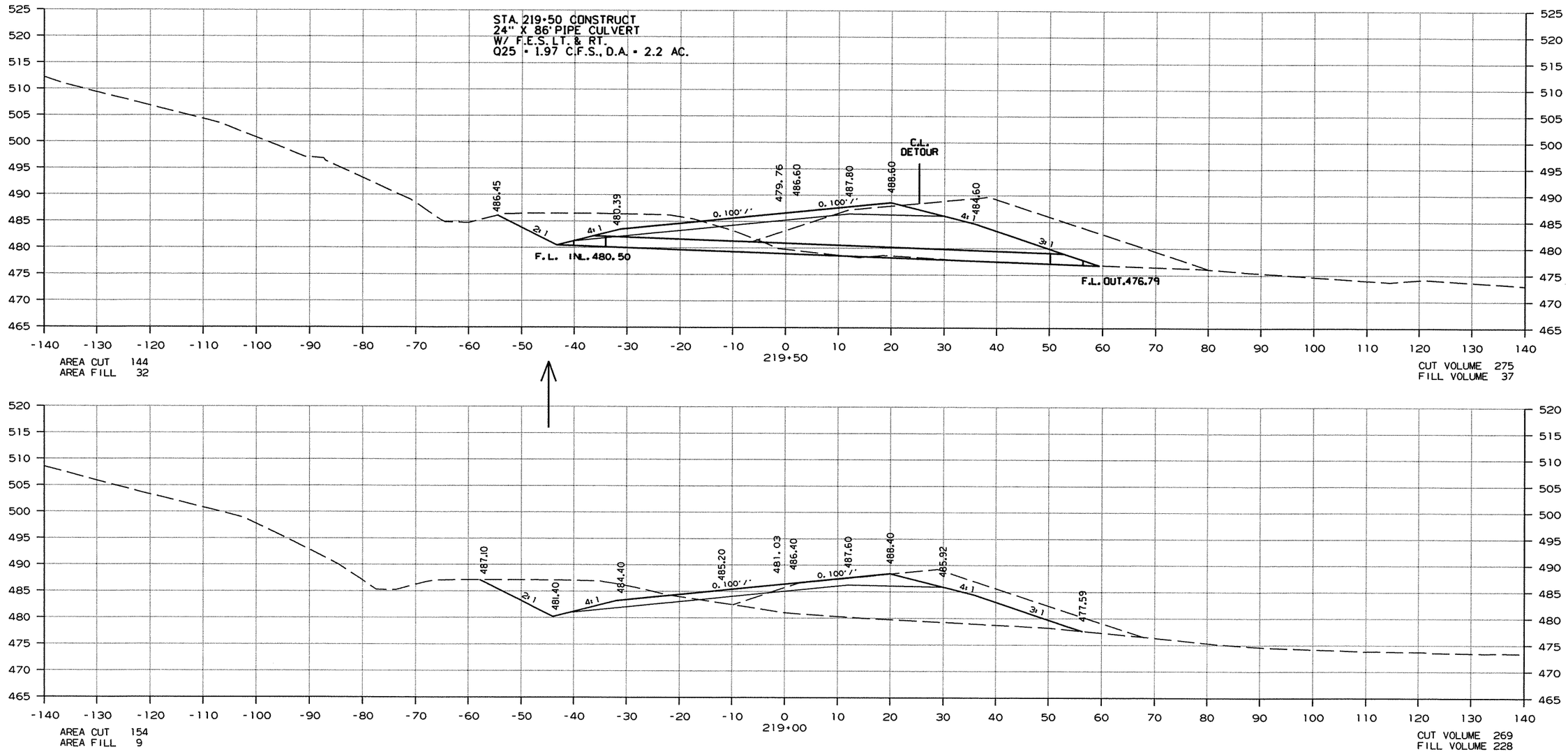




CROSS SECTION STA. 218+00 TO STA. 218+50

r061259.dgn 8/11/2010

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.		061259	114	157
				(2)	CROSS SECTIONS			

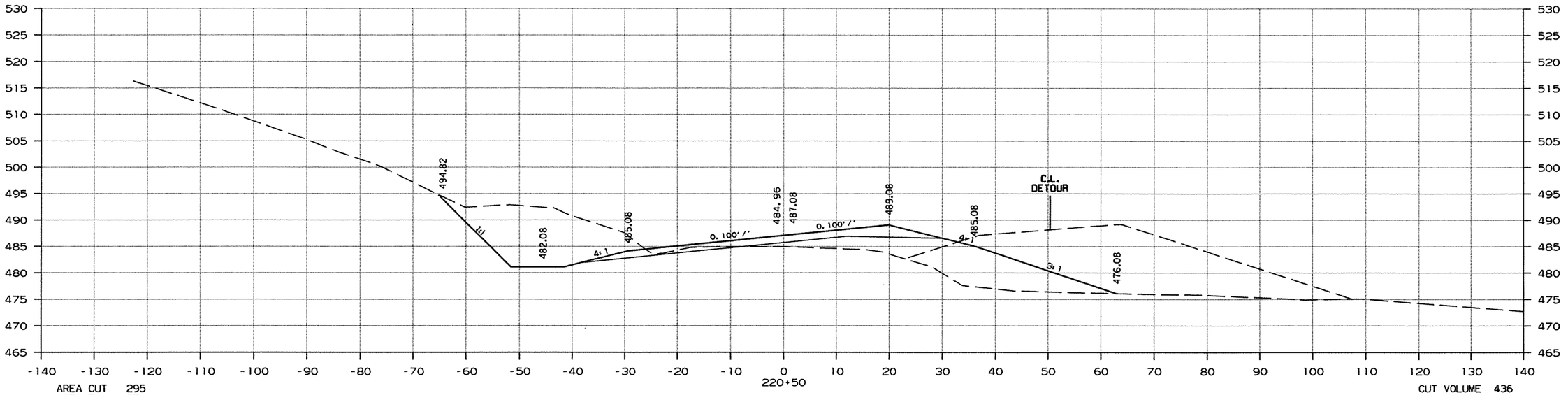


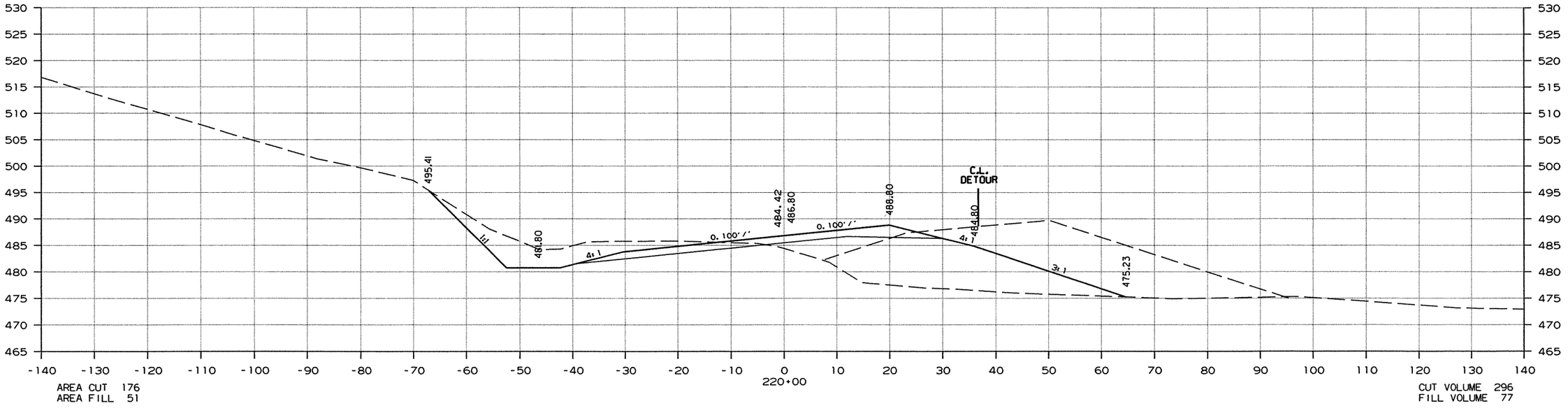
CROSS SECTION STA. 219+00 TO STA. 219+50

r061259.dgn 6/11/2010

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.		061259	115	157

(2) CROSS SECTIONS



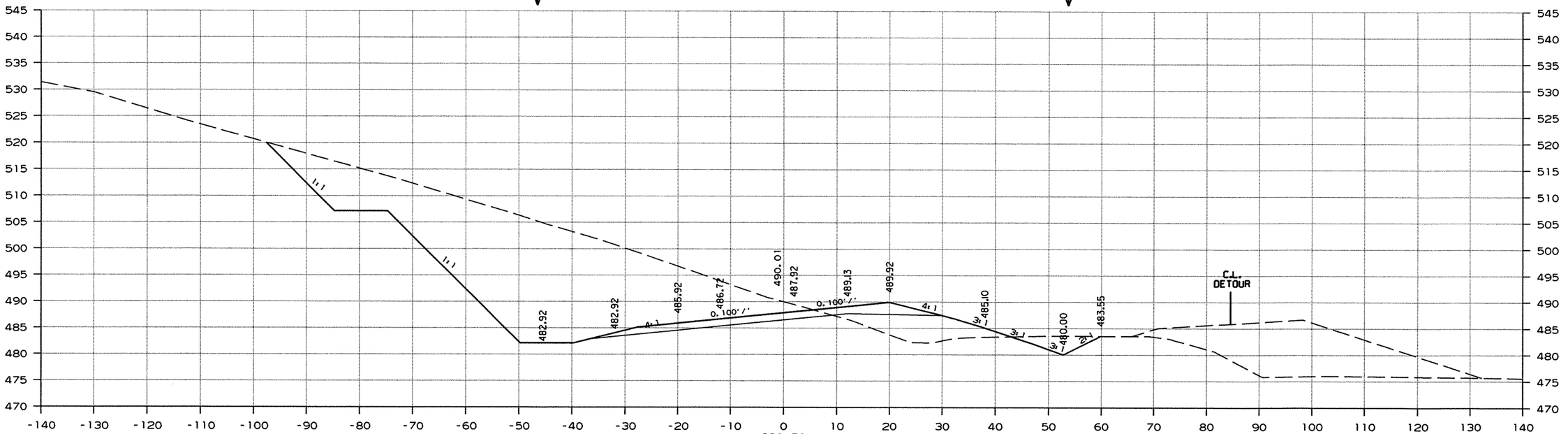


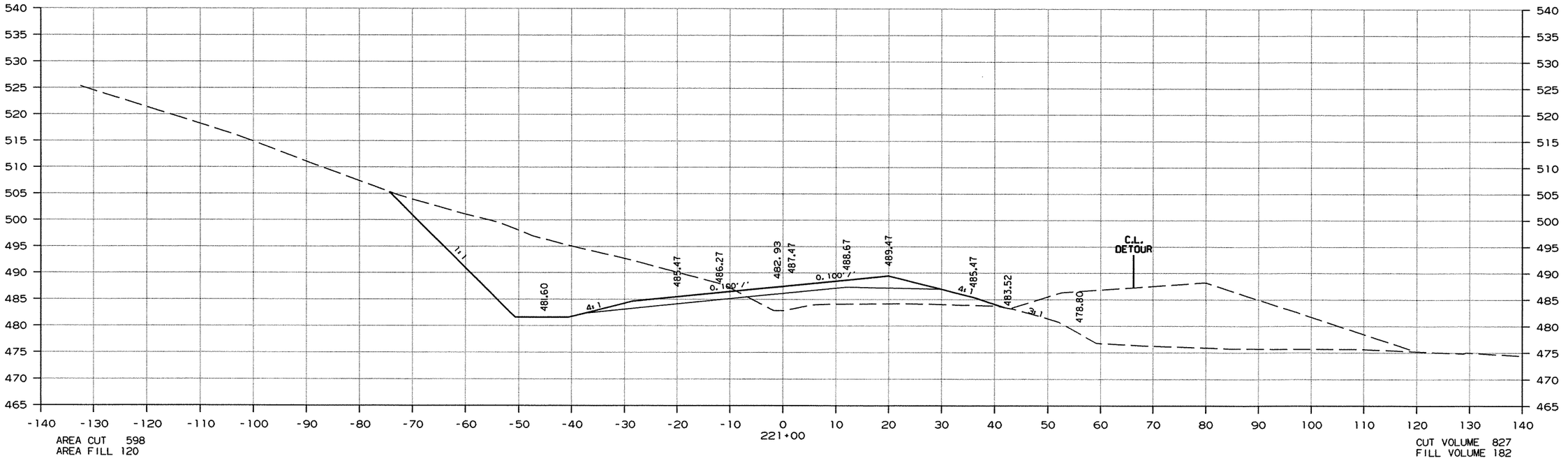
CROSS SECTION STA. 220+00 TO STA. 220+50

r061259.dgn 6/11/2010

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.		061259	116	157

(2) CROSS SECTIONS



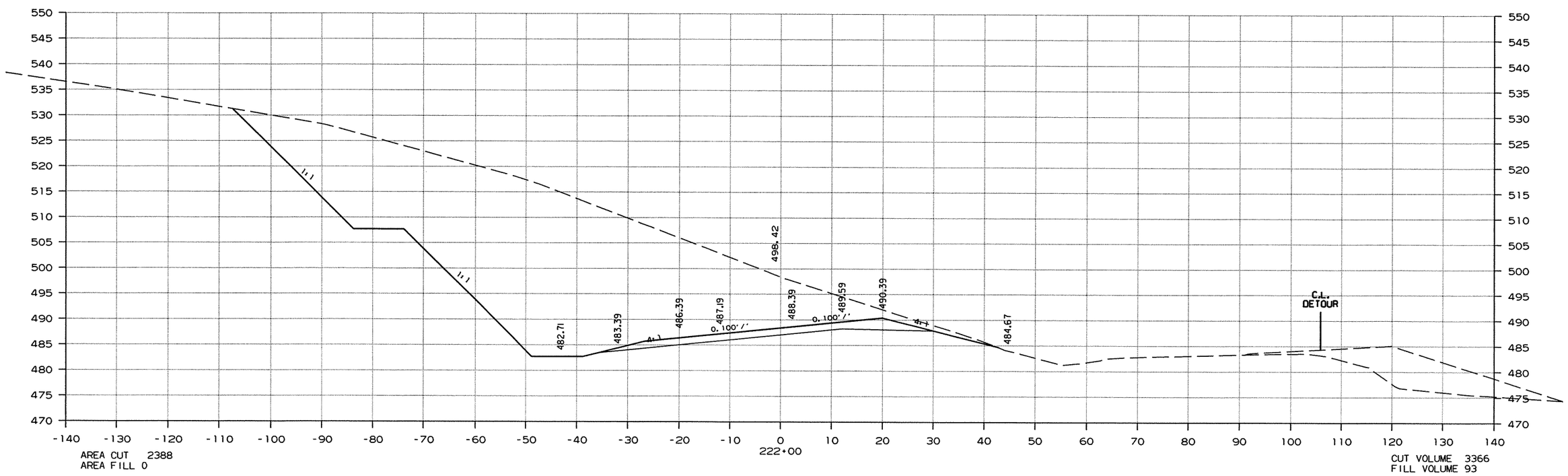


CROSS SECTION STA. 221+00 TO STA. 221+50

r061259.dgn 8/19/2010

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.		061259	117	157

(2) CROSS SECTIONS

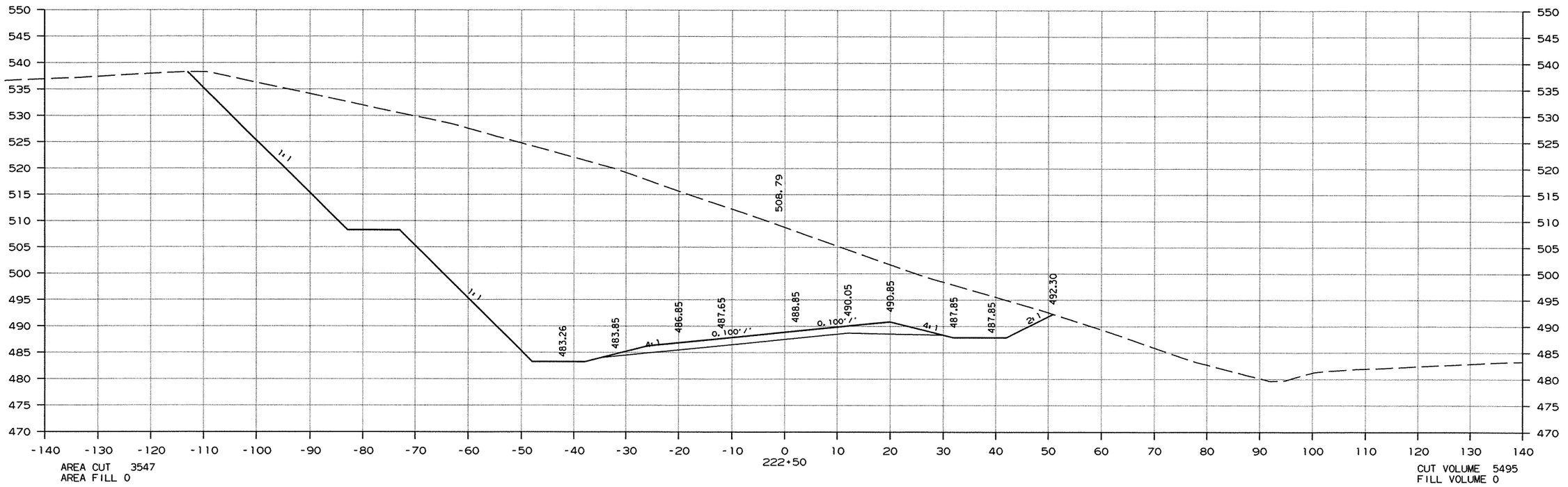


CROSS SECTION STA. 222+00 TO STA. 222+00

r061259.dgn 8/17/2010

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.		061259	118	157

(2) CROSS SECTIONS

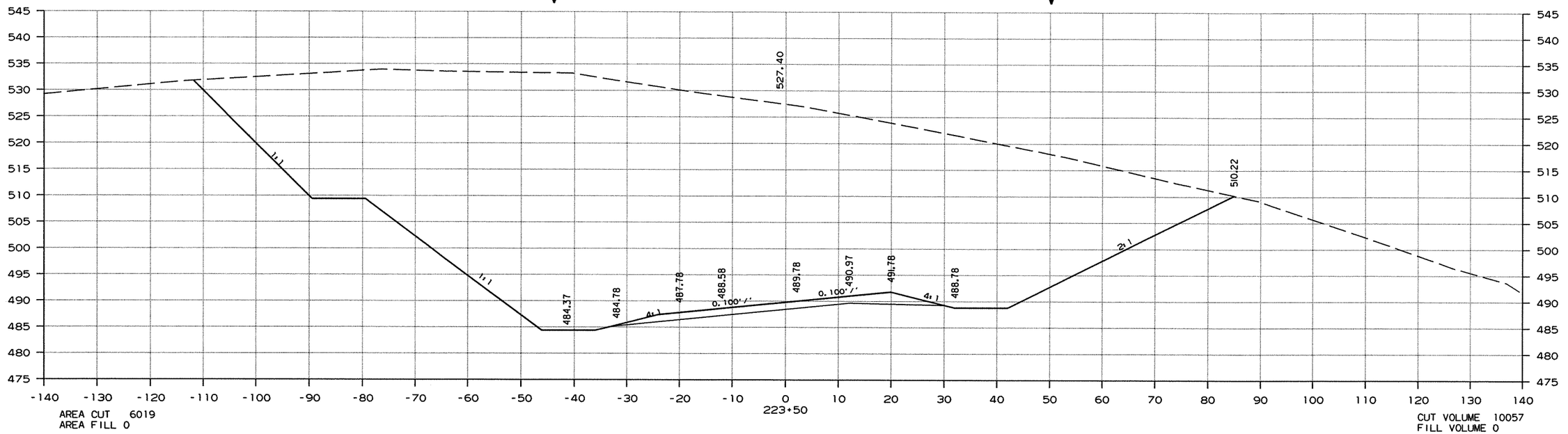


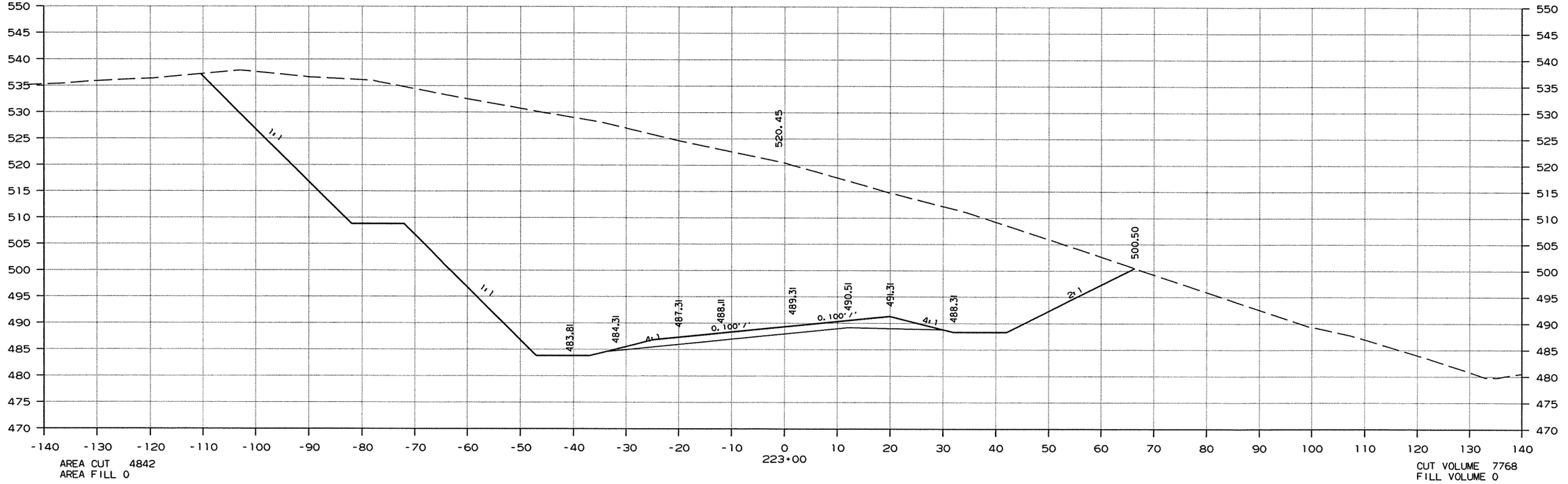
CROSS SECTION STA. 222+50 TO STA. 222+50

r061259.dgn 6/17/2010

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.		061259	119	157

(2) CROSS SECTIONS



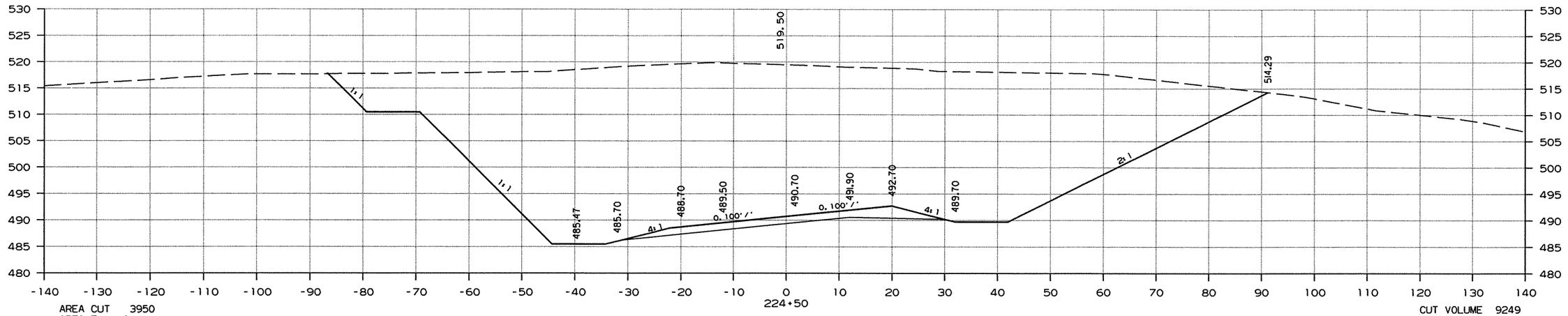


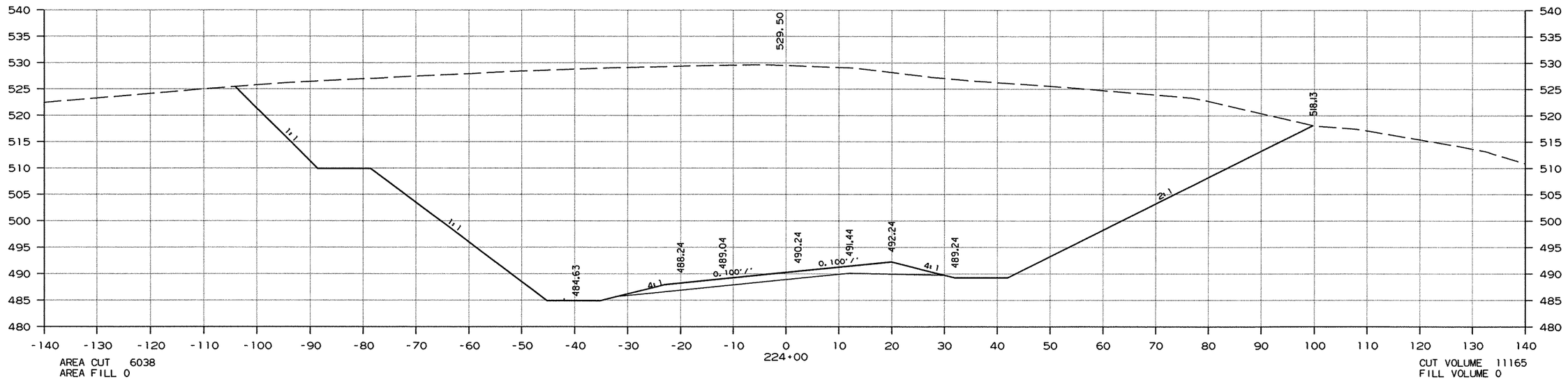
CROSS SECTION STA. 223+00 TO STA. 223+50

r061259.dgn 8/14/2000

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.		061259	120	157

(2) CROSS SECTIONS



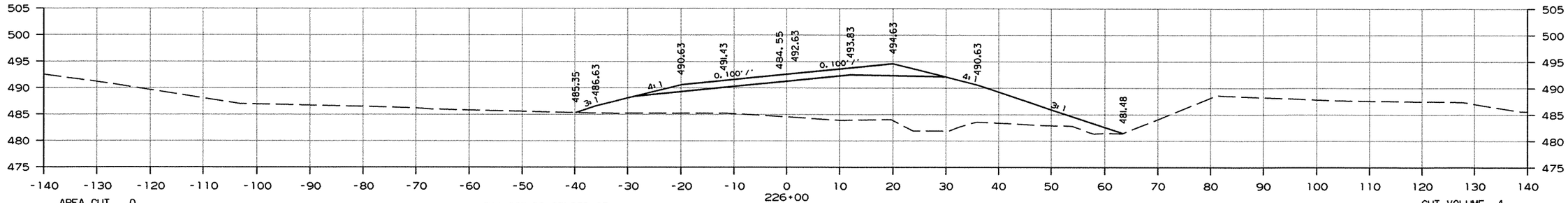


CROSS SECTION STA. 224+00 TO STA. 224+50

r061259.dgn 6/14/2010

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.		061259	121	157

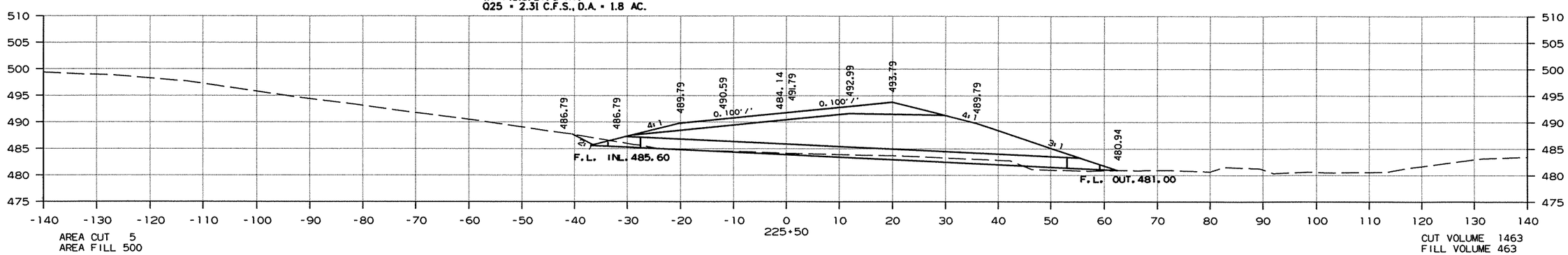
(2) CROSS SECTIONS



AREA CUT 0
AREA FILL 561

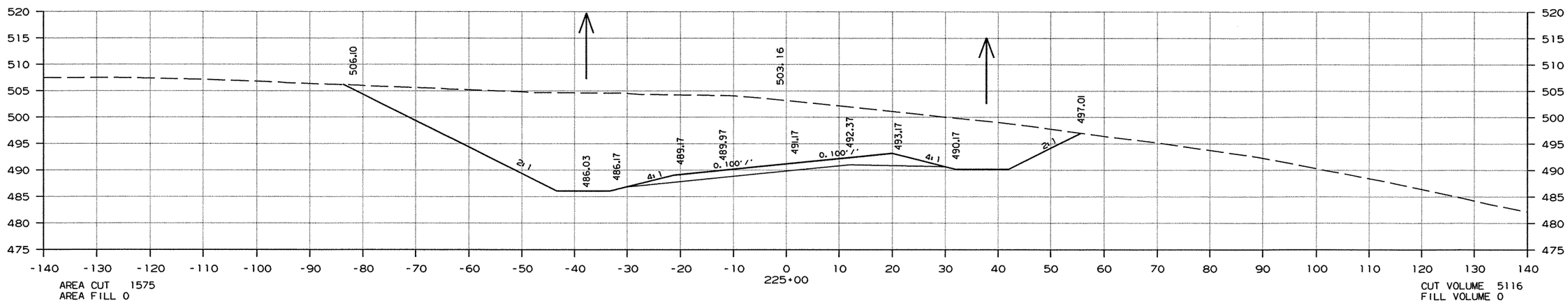
STA. 225+50 CONSTRUCT
24" X 80' PIPE CULVERT
W/ F.E.S. LT. & RT.
Q25 = 2.31 C.F.S., D.A. = 1.8 AC.

CUT VOLUME 4
FILL VOLUME 982



AREA CUT 5
AREA FILL 500

CUT VOLUME 1463
FILL VOLUME 463



AREA CUT 1575
AREA FILL 0

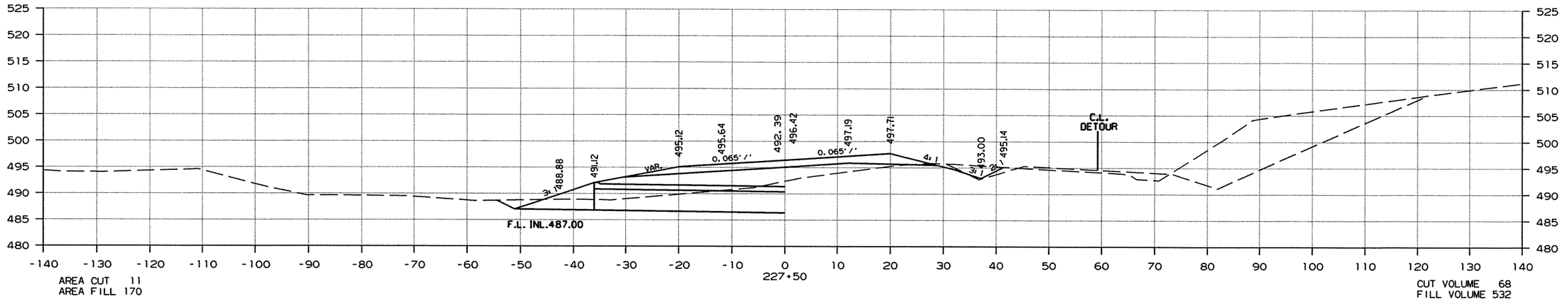
CUT VOLUME 5116
FILL VOLUME 0

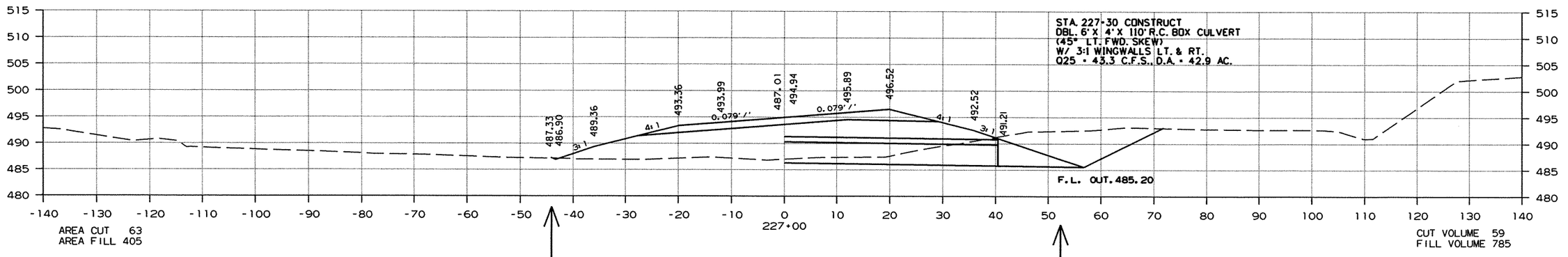
CROSS SECTION STA. 225+00 TO STA. 226+00

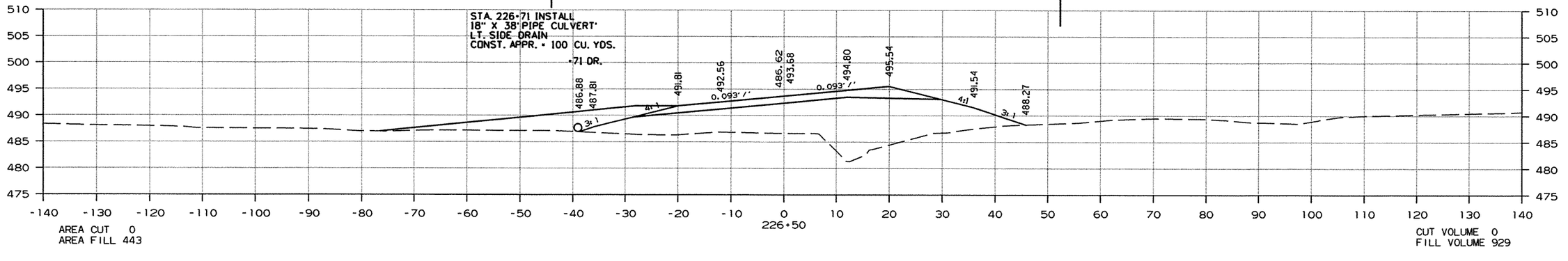
r061259.dgn 8/11/2010

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.		061259	122	157

(2) CROSS SECTIONS





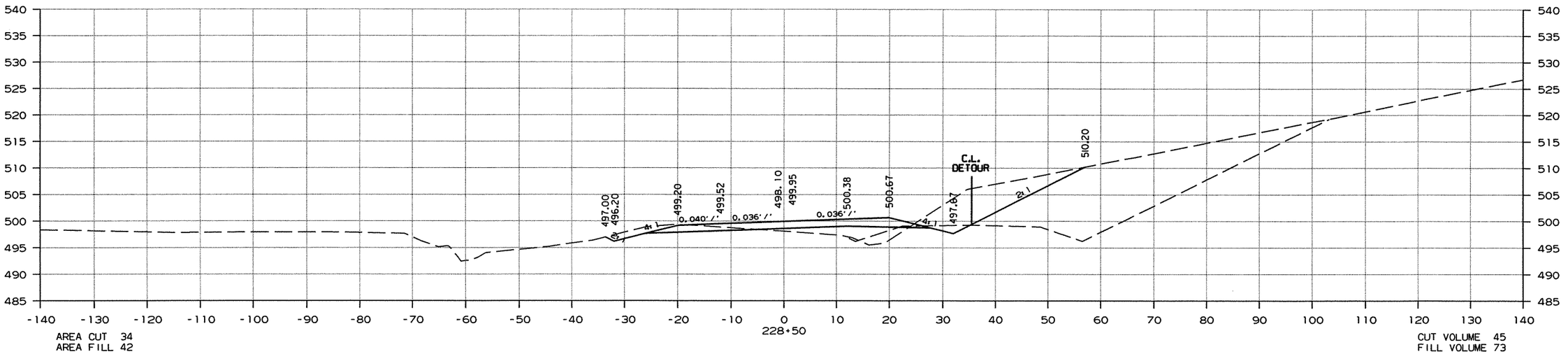


CROSS SECTION STA. 226+50 TO STA. 227+50

r061259.dgn 6/11/2010

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.		061259	123	157

(2) CROSS SECTIONS

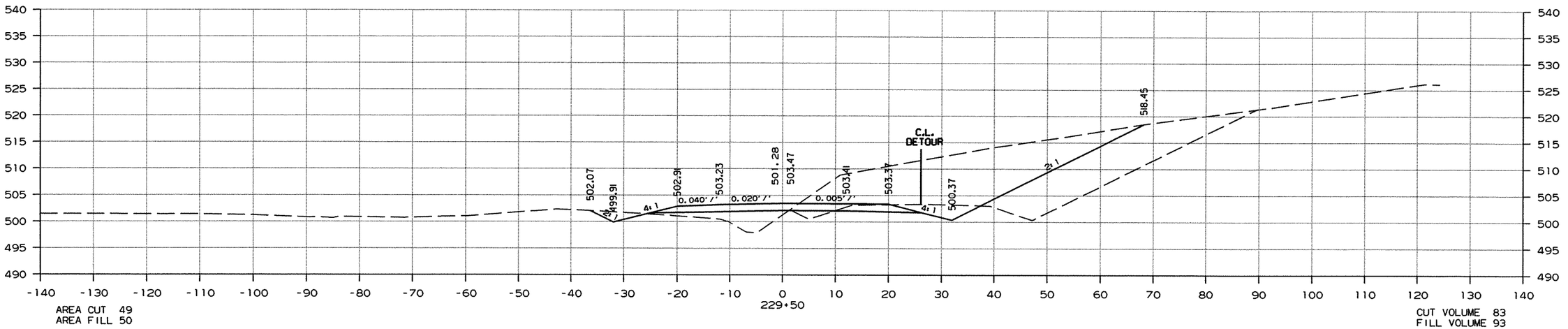


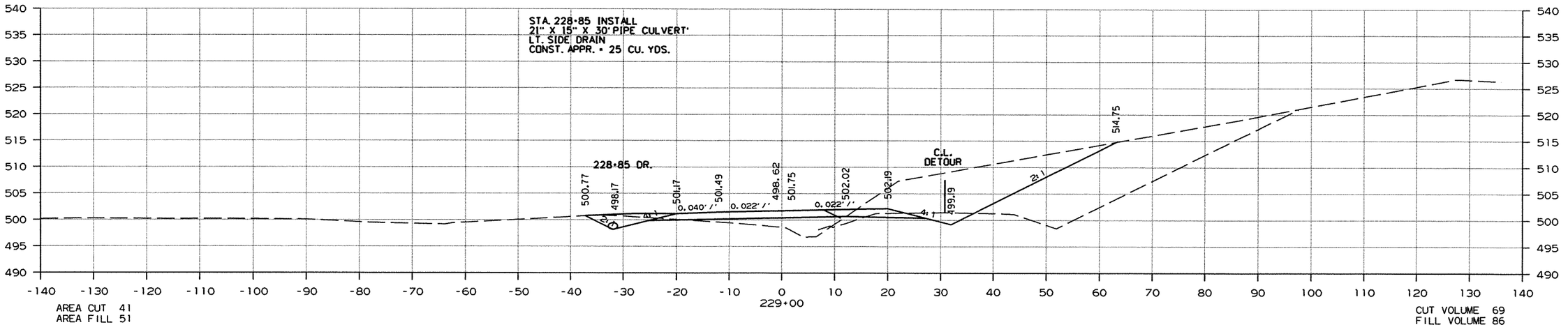
CROSS SECTION STA. 228+00 TO STA. 228+50

r061259.dgn 6/11/2010

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.		061259	124	157

(2) CROSS SECTIONS



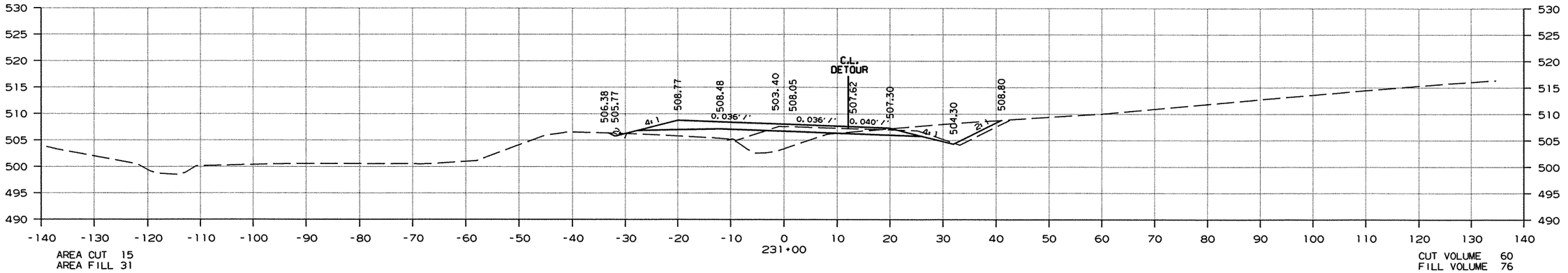


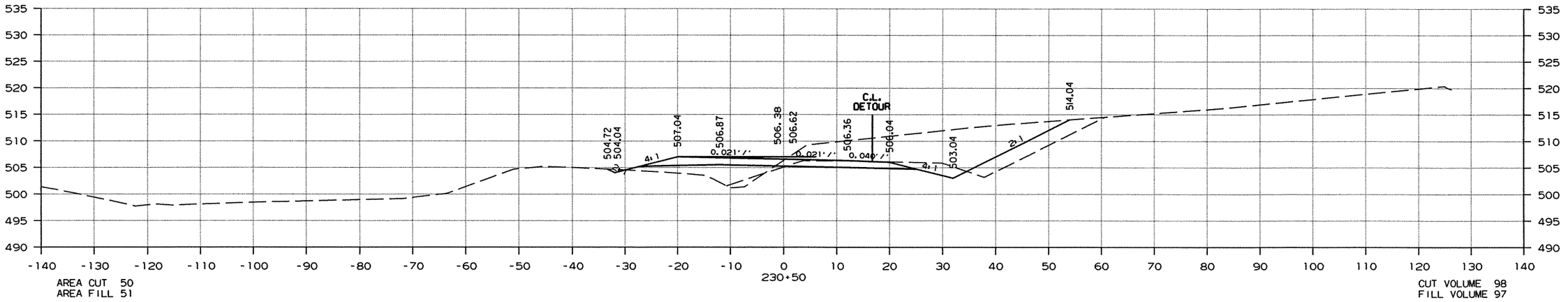
CROSS SECTION STA. 229+00 TO STA. 229+50

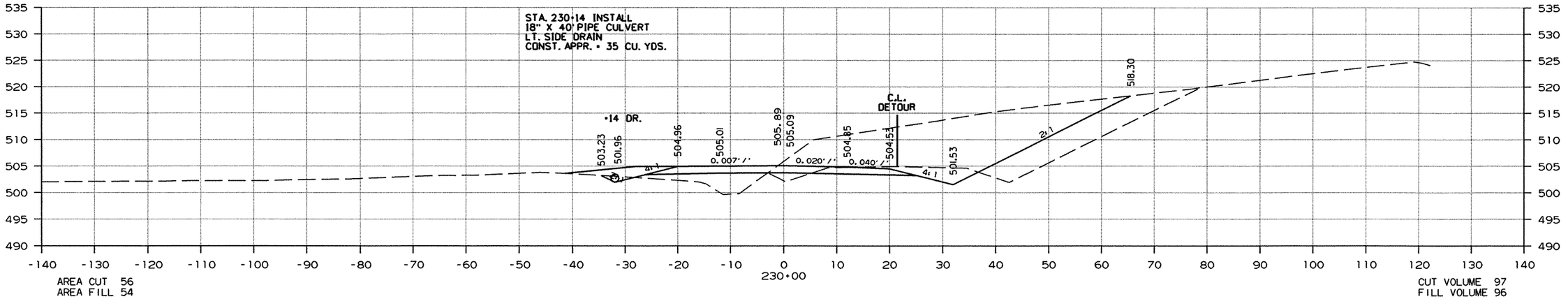
r061259.dgn 6/W/2010

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.		061259	125	157

(2) CROSS SECTIONS





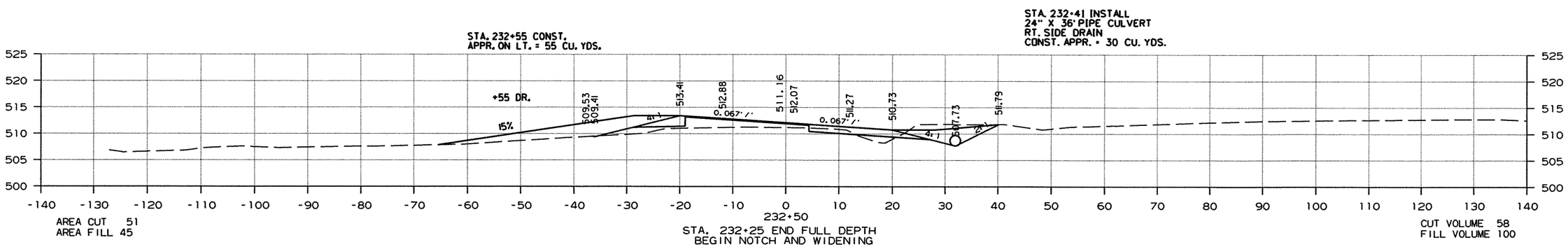


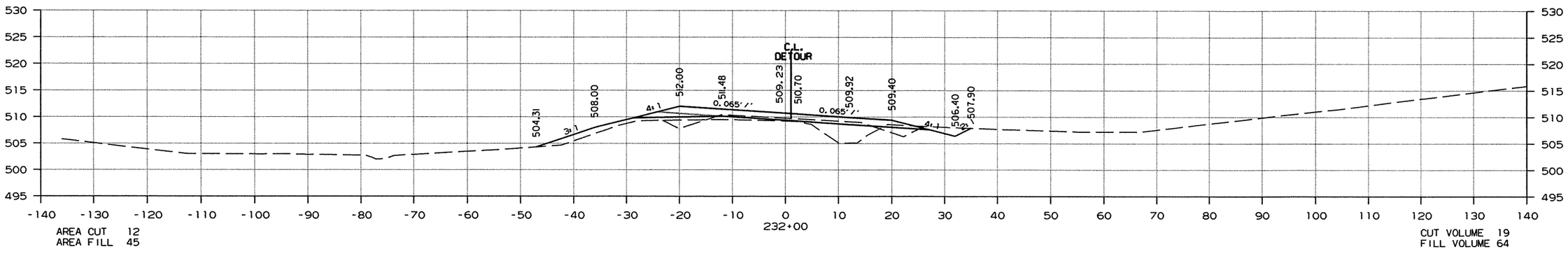
CROSS SECTION STA. 230+00 TO STA. 231+00

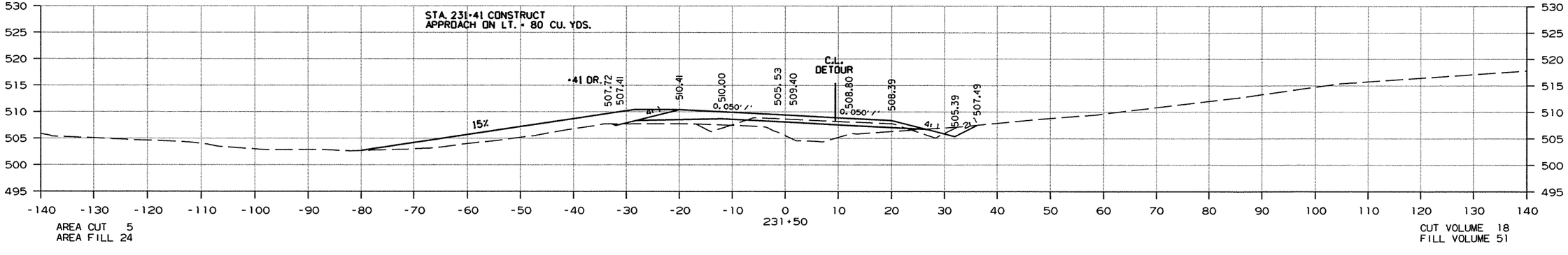
r061259.dgn 6/11/2010

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.		061259	126	157

(2) CROSS SECTIONS





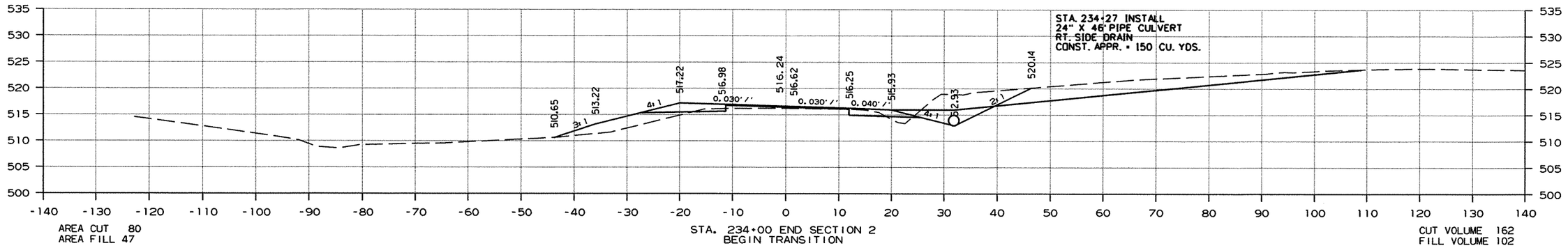


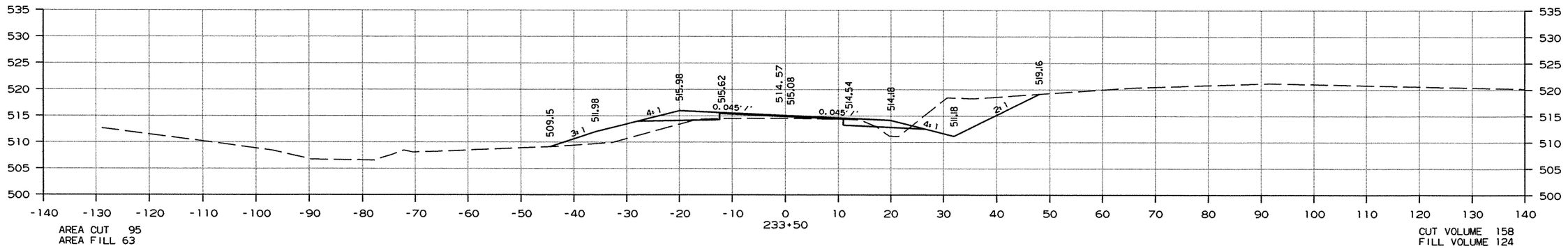
CROSS SECTION STA. 231+50 TO STA. 232+50

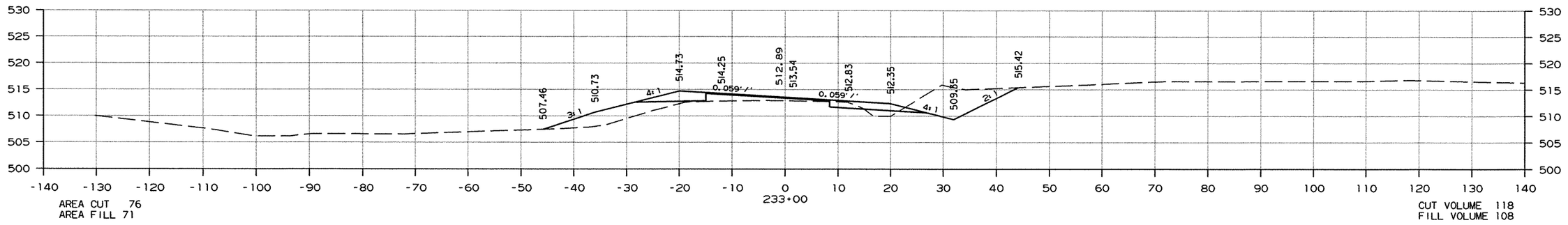
r061259.dgn 6/11/2010

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.		061259	127	157

(2) CROSS SECTIONS







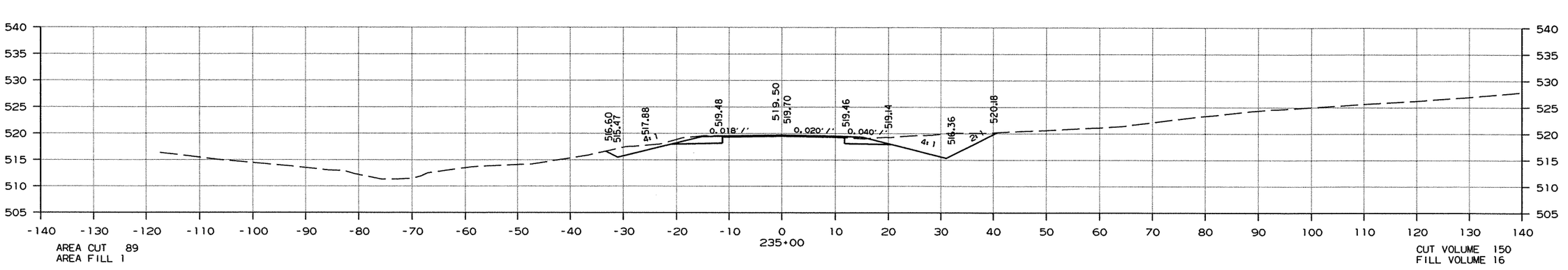
CROSS SECTION STA. 233+00 TO STA. 234+00

r061259.dgn 6/14/2010

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.		061259	128	157

(2) CROSS SECTIONS

STA. 235+05 END TRANSITION

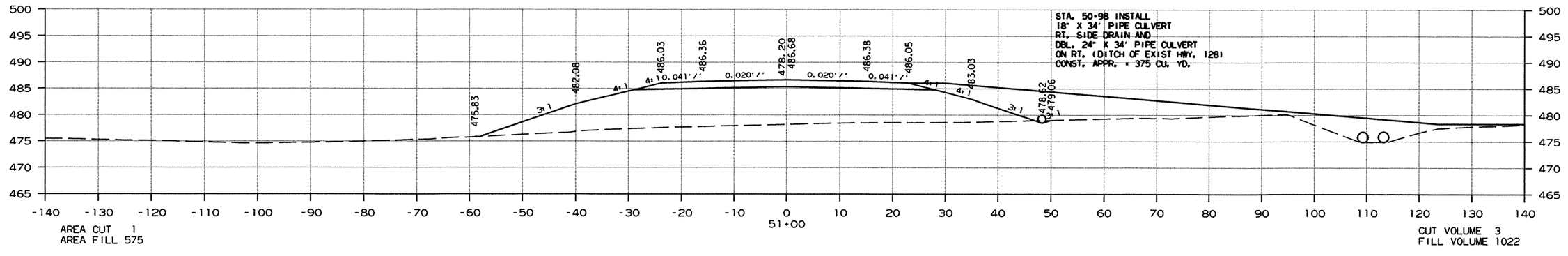


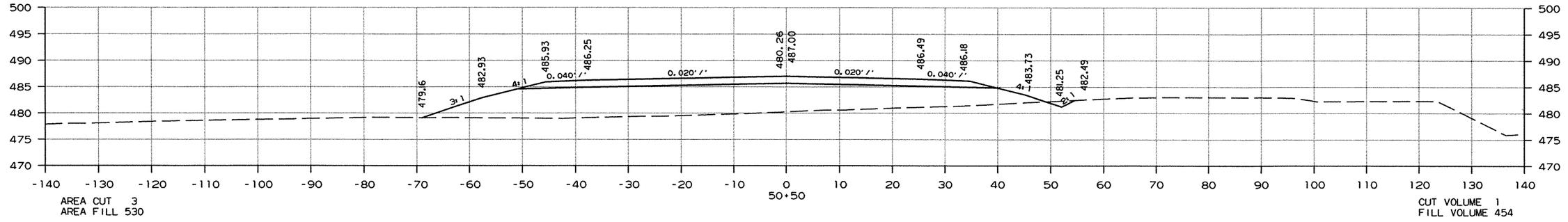
CROSS SECTION STA. 234+50 TO STA. 235+00

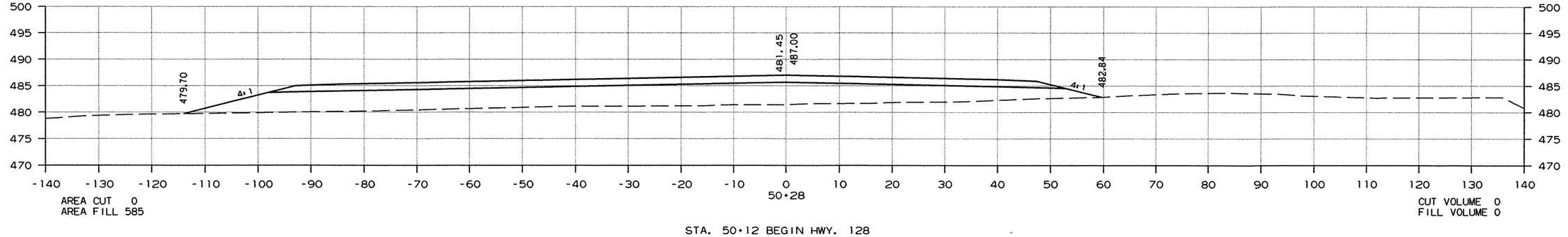
r061259.dgn 6/11/2010

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.		061259	129	157

(2) CROSS SECTIONS







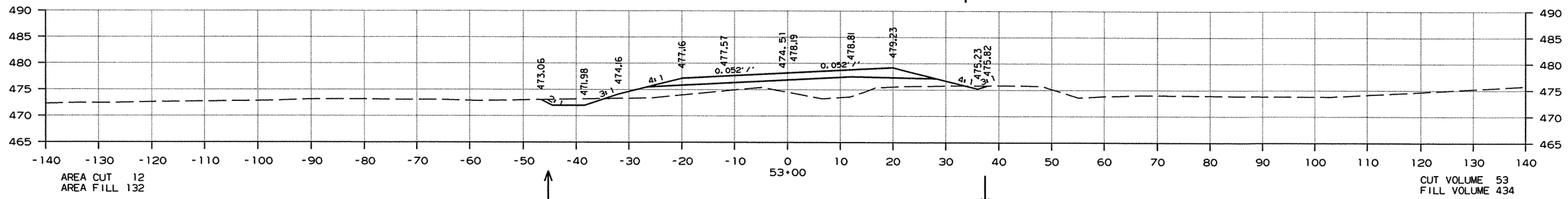
STA. 50+12 BEGIN HWY. 128

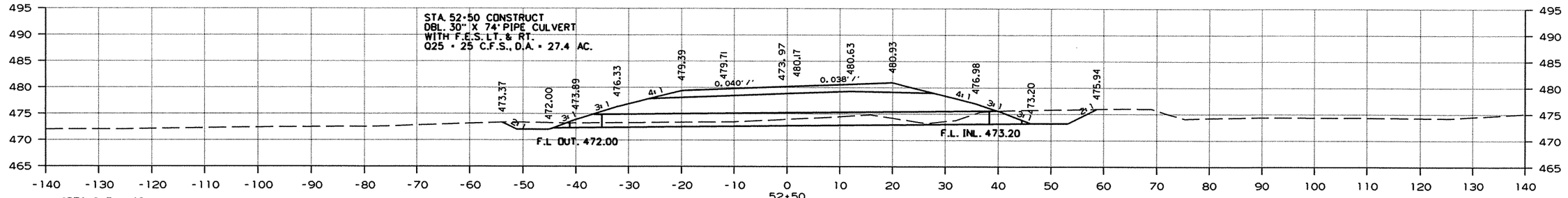
CROSS SECTION STA. 50+28 TO STA. 51+00

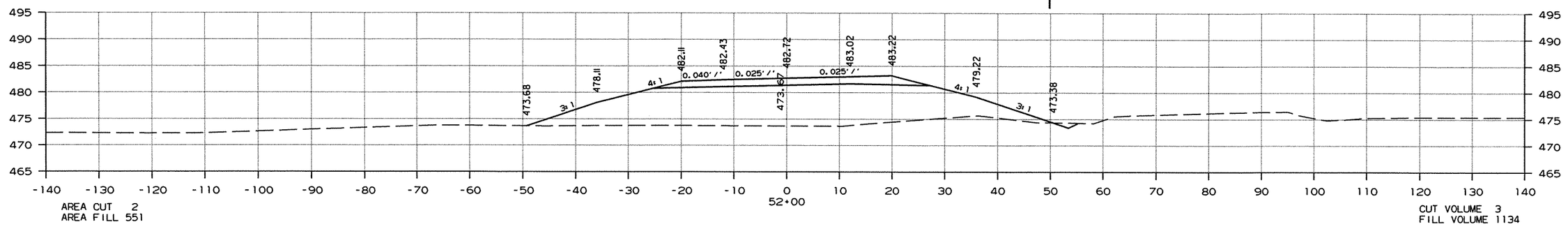
r061259.dgn 6/11/2010

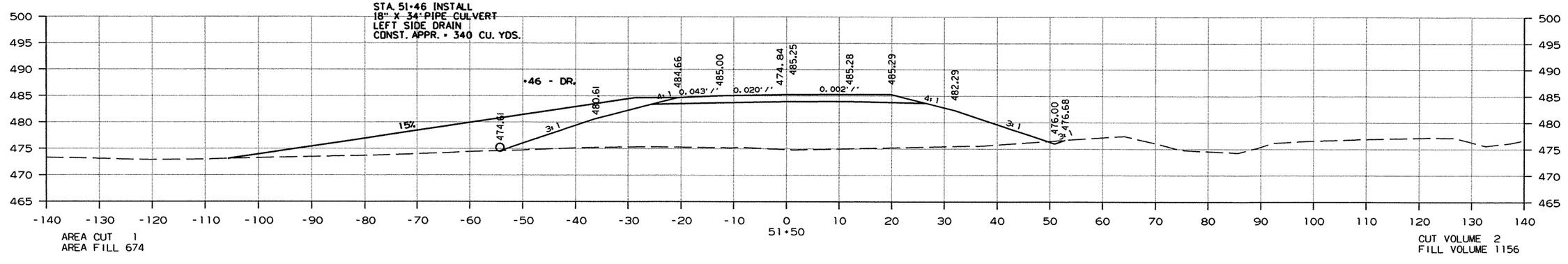
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	130	157

(2) CROSS SECTIONS







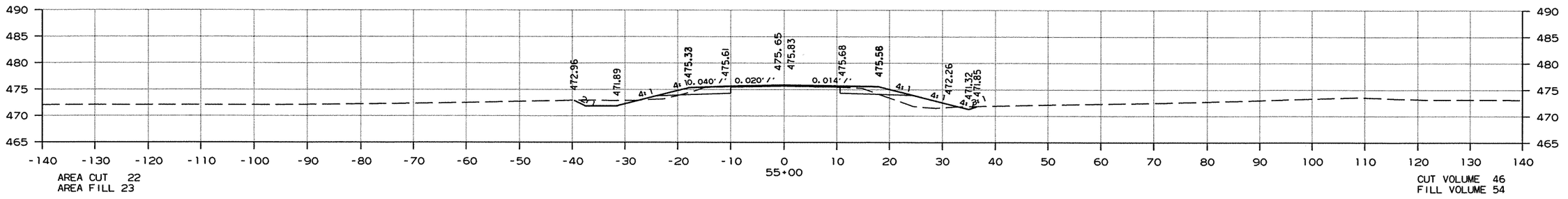


CROSS SECTION STA. 51+50 TO STA. 53+00

r061259.dgn 8/11/2010

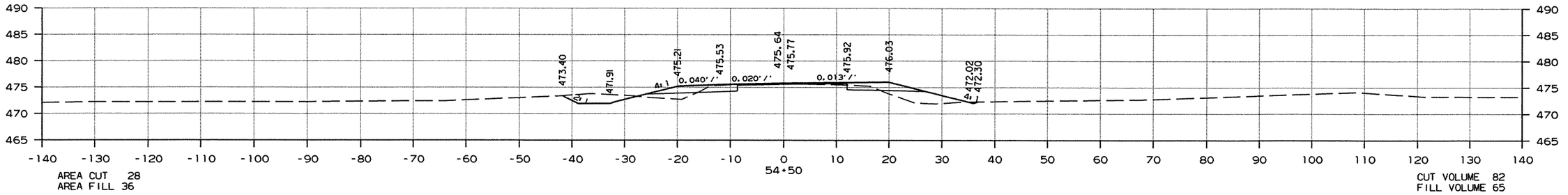
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	131	157

(2) CROSS SECTIONS



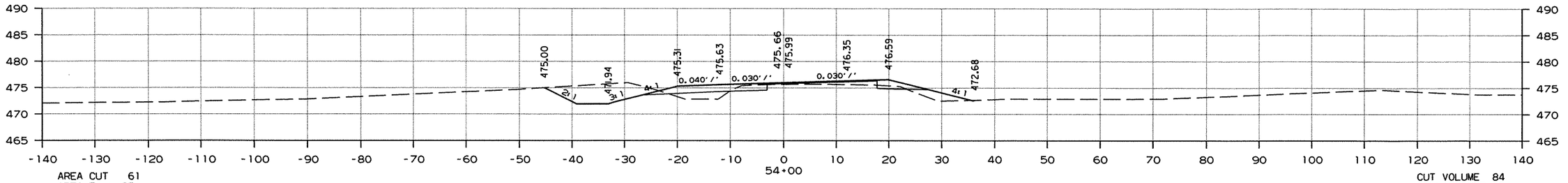
AREA CUT 22
AREA FILL 23

CUT VOLUME 46
FILL VOLUME 54



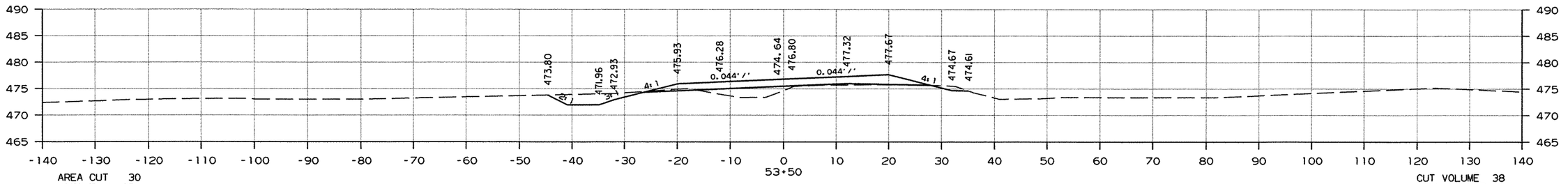
AREA CUT 28
AREA FILL 36

CUT VOLUME 82
FILL VOLUME 65



AREA CUT 61
AREA FILL 35

CUT VOLUME 84
FILL VOLUME 55



AREA CUT 30
AREA FILL 25

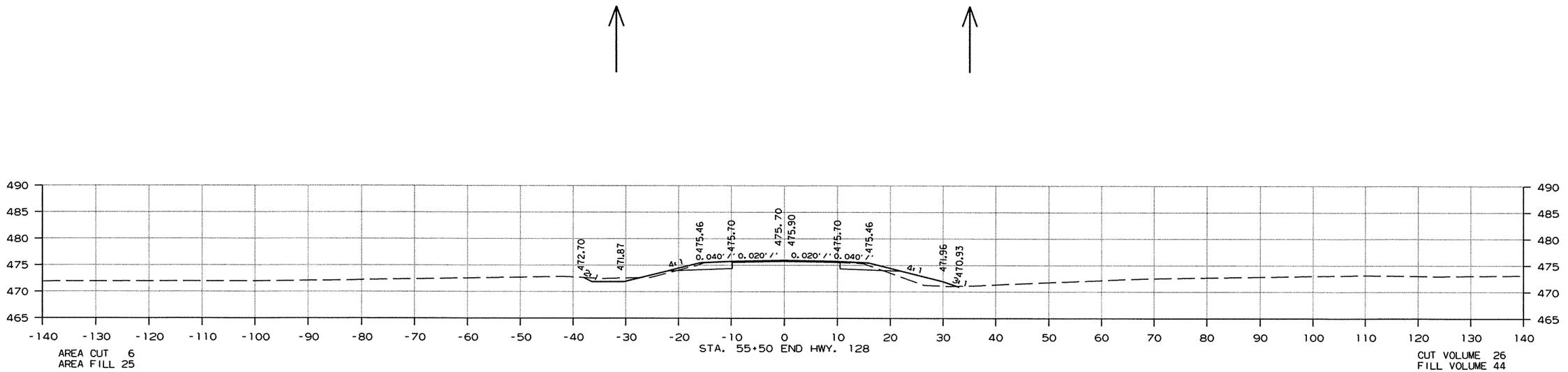
CUT VOLUME 38
FILL VOLUME 145

CROSS SECTION STA. 53+50 TO STA. 55+00

r061259.dgn 6/19/2008

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.		061259	132	157

(2) CROSS SECTIONS

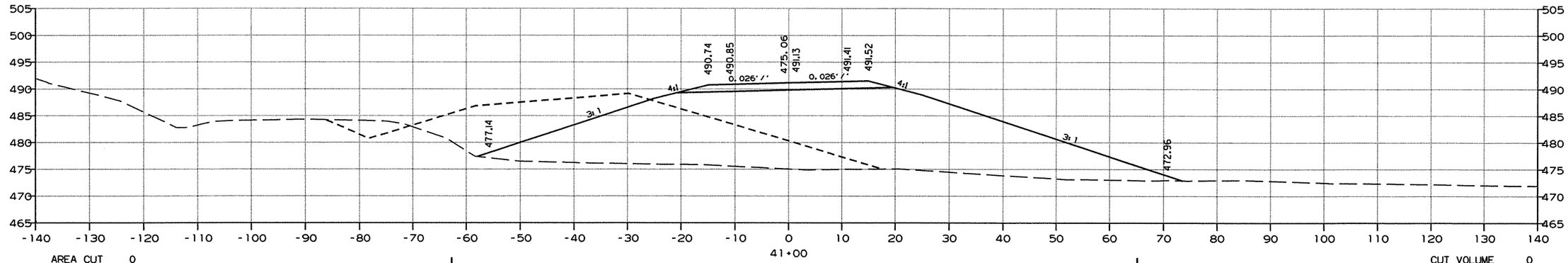


CROSS SECTION STA. 55+50 TO STA. 55+50

r061259.dgn 6/11/2010

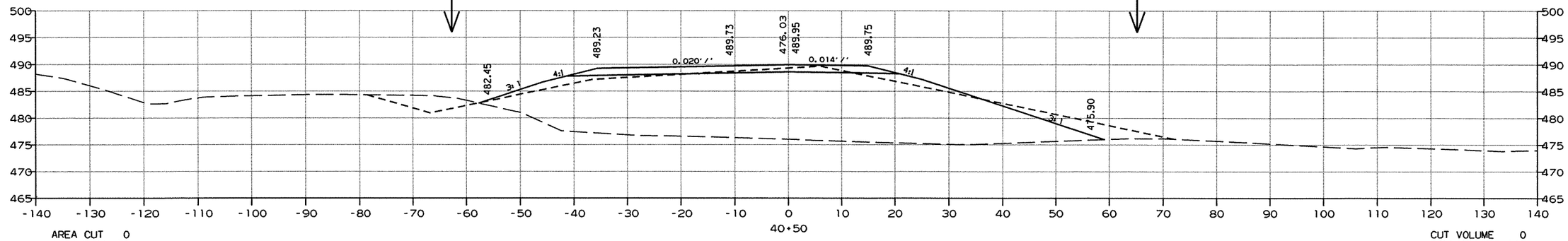
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	133	157

(2) CROSS SECTIONS



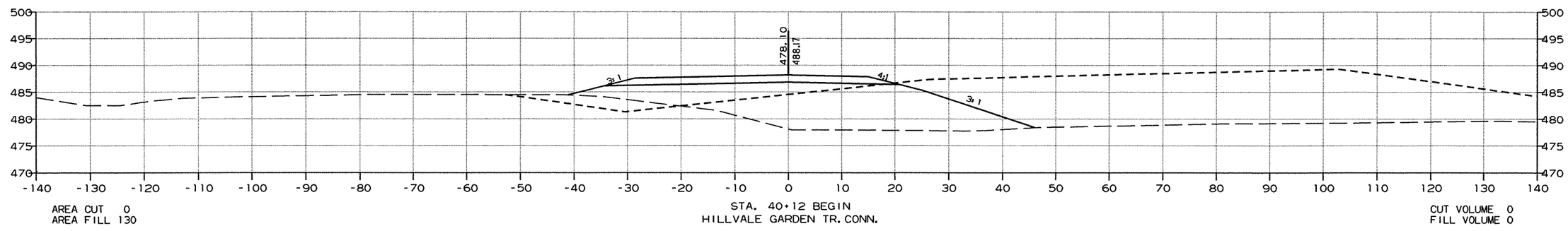
AREA CUT 0
AREA FILL 782

CUT VOLUME 0
FILL VOLUME 750



AREA CUT 0
AREA FILL 28

CUT VOLUME 0
FILL VOLUME 146



AREA CUT 0
AREA FILL 130

STA. 40+12 BEGIN
HILLVALE GARDEN TR. CONN.

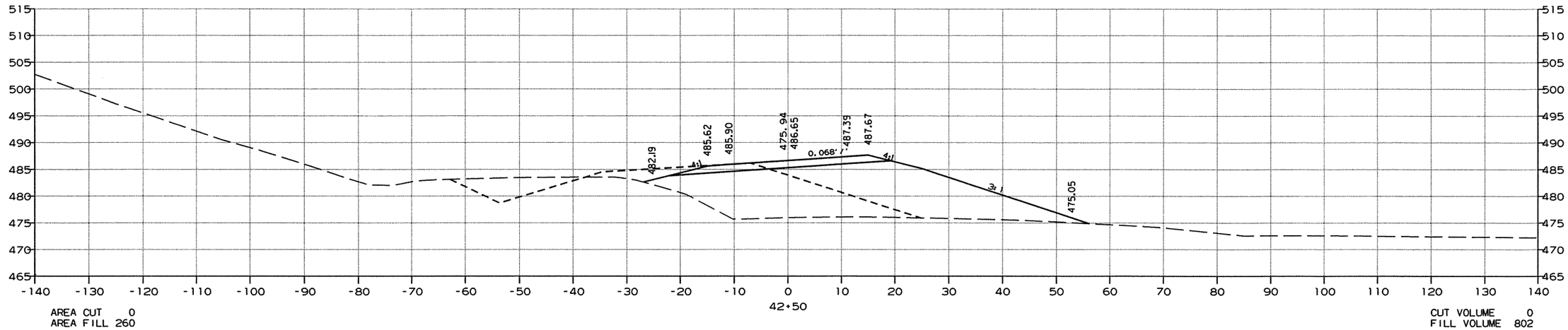
CUT VOLUME 0
FILL VOLUME 0

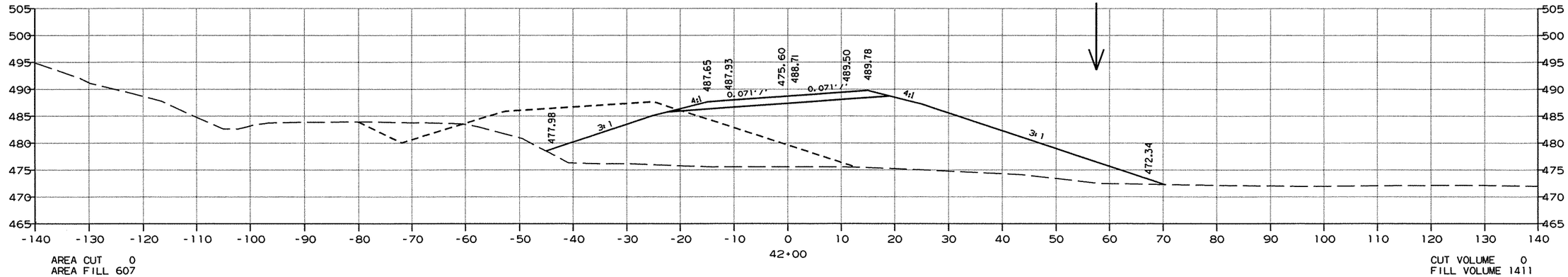
CROSS SECTION STA.40+12 TO STA. 41+00

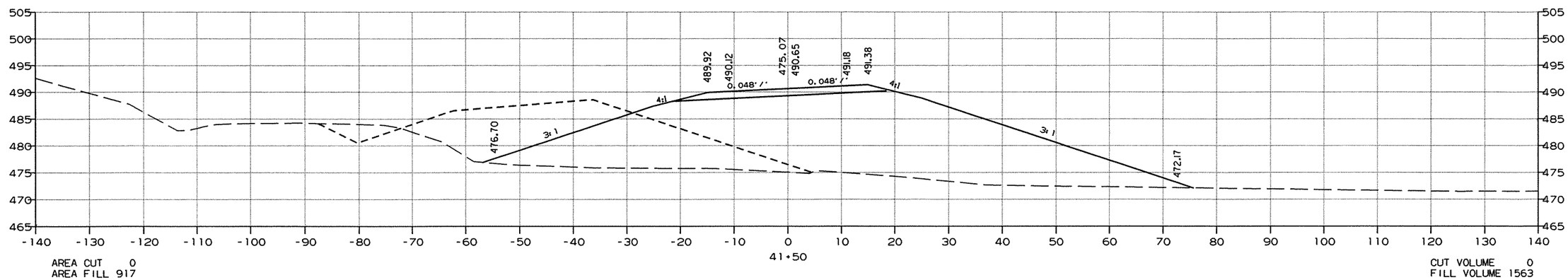
r061259.dgn 6/7/2010

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.		061259	134	157

(2) CROSS SECTIONS





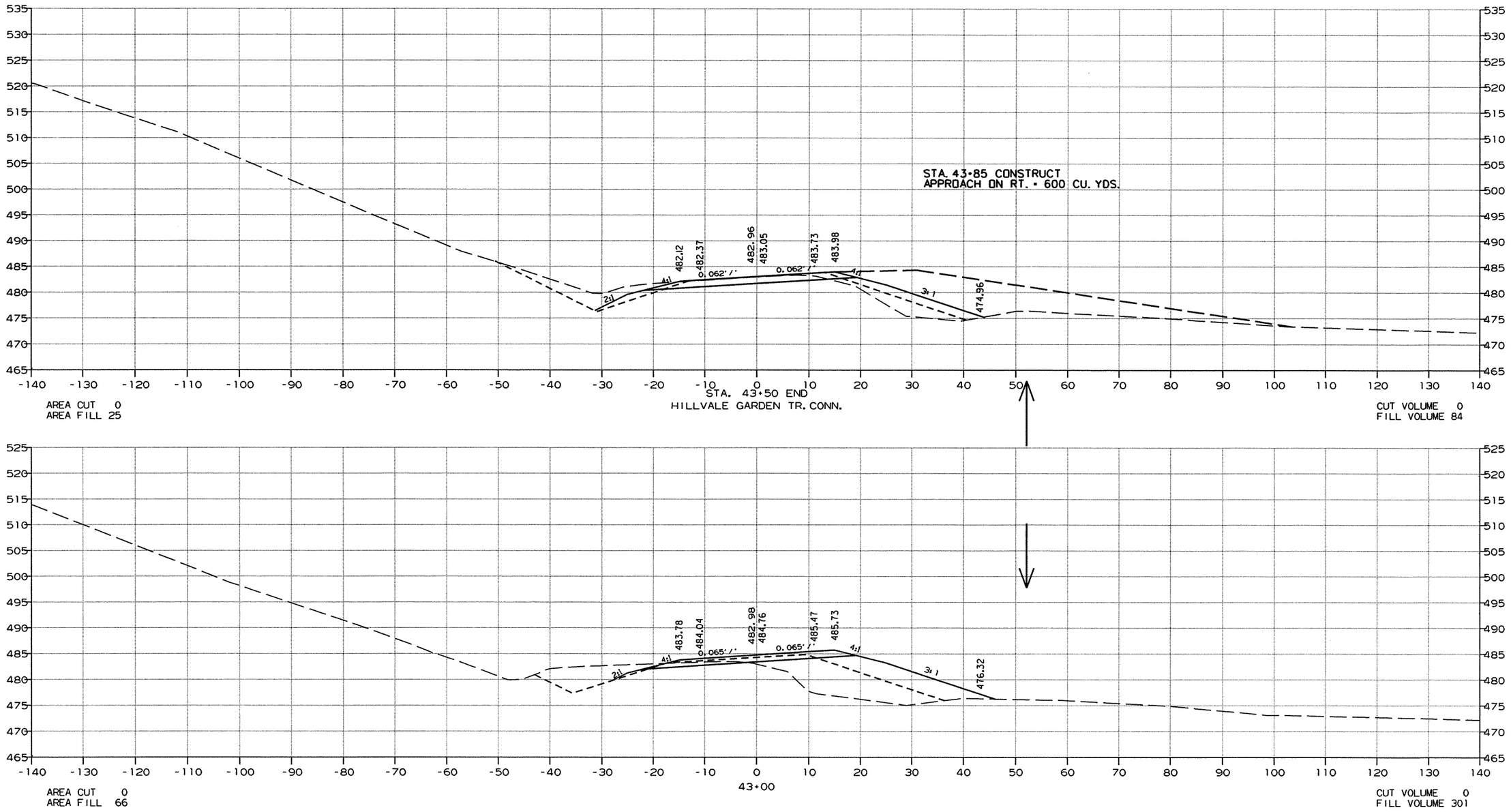


CROSS SECTION STA.41+50 TO STA. 42+50

r061259.dgn 6/7/2010

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.		061259	135	157

(2) CROSS SECTIONS

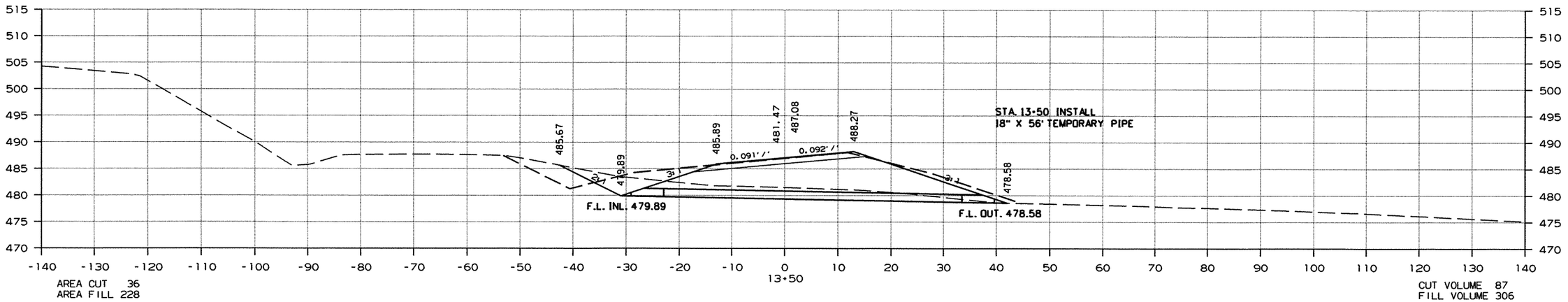


CROSS SECTION STA.43+00 TO STA. 43+50

r061259.dgn 6/7/2010

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.		061259	136	157

(2) CROSS SECTIONS



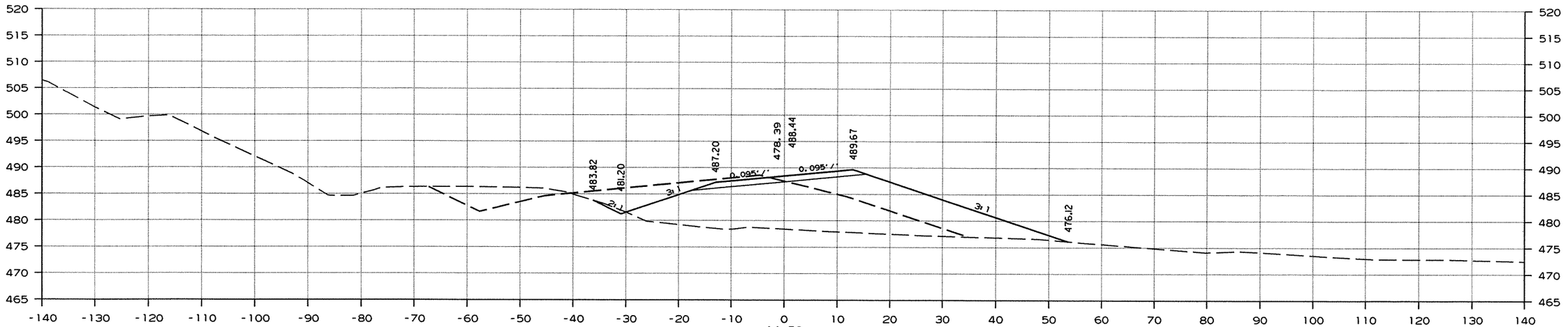
CROSS SECTION STA. 13+00 TO STA. 13+50

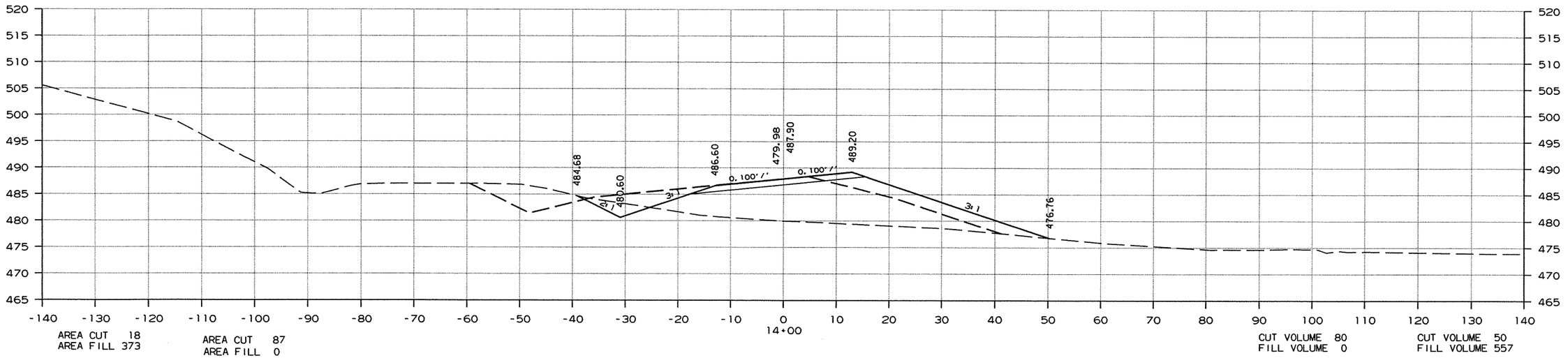
r061259.dgn 8/11/2010

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.		061259	137	157

(2) CROSS SECTIONS

DETOUR DETOUR REMOVAL





DETOUR REMOVAL DETOUR

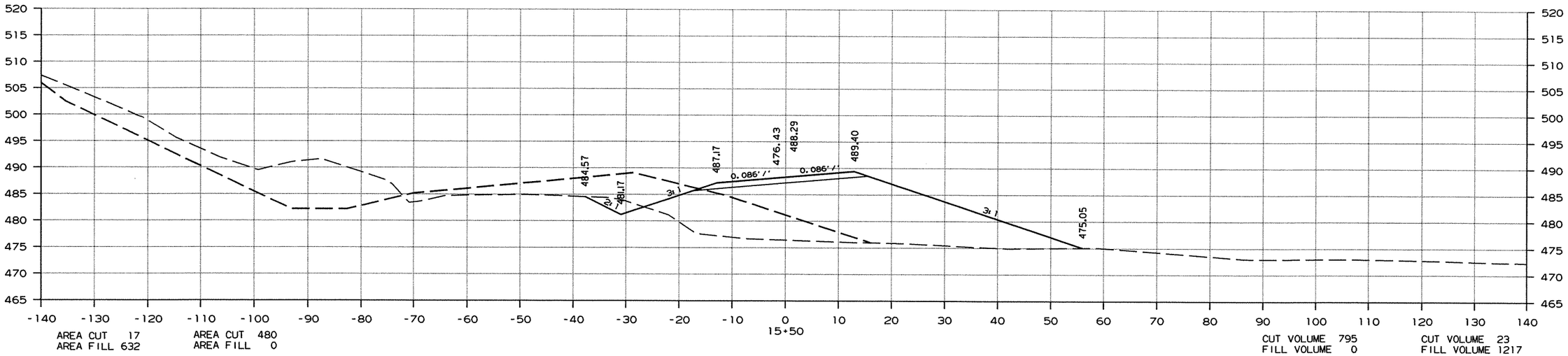
CROSS SECTION STA. 14+00 TO STA. 14+50

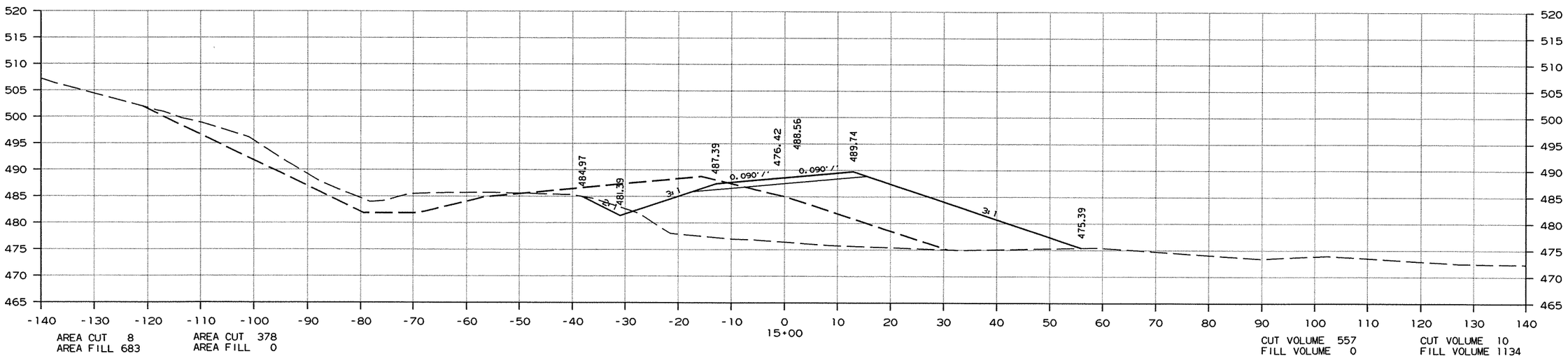
r061259.dgn 6/11/2010

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.		061259	138	157

(2) CROSS SECTIONS

DETOUR DETOUR REMOVAL DETOUR REMOVAL DETOUR





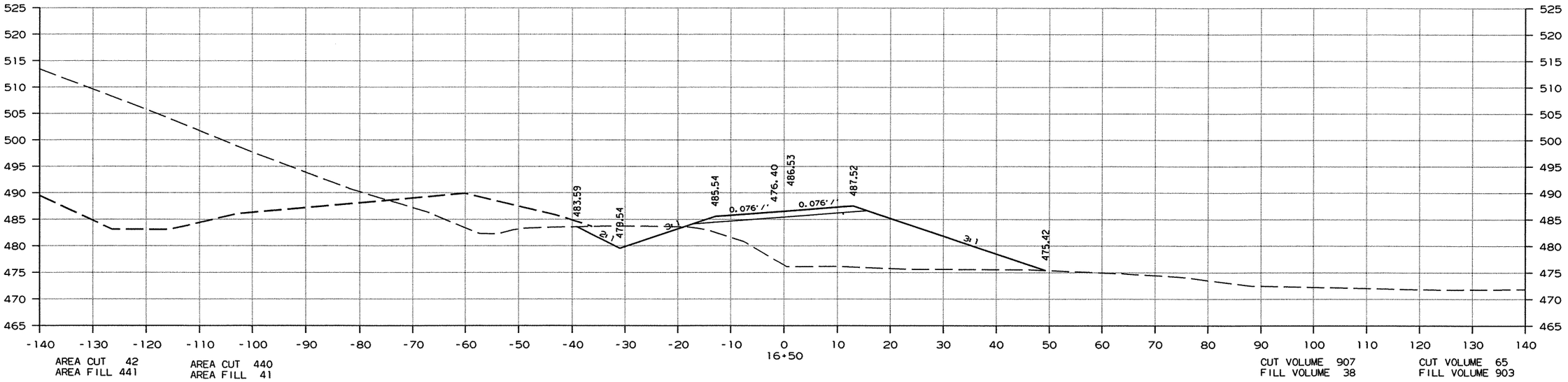
CROSS SECTION STA. 15+00 TO STA. 15+50

r061259.dgn 8/17/2010

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.		061259	139	157

(2) CROSS SECTIONS

DETOUR DETOUR REMOVAL

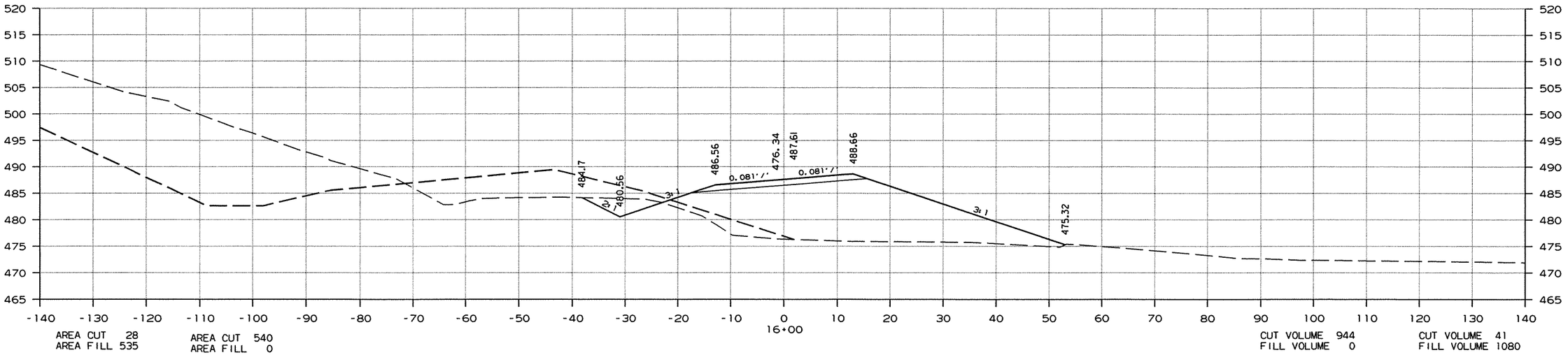


AREA CUT 42
AREA FILL 441

AREA CUT 440
AREA FILL 41

CUT VOLUME 907
FILL VOLUME 38

CUT VOLUME 65
FILL VOLUME 903



AREA CUT 28
AREA FILL 535

AREA CUT 540
AREA FILL 0

CUT VOLUME 944
FILL VOLUME 0

CUT VOLUME 41
FILL VOLUME 1080

CROSS SECTION STA. 16+00 TO STA. 16+50

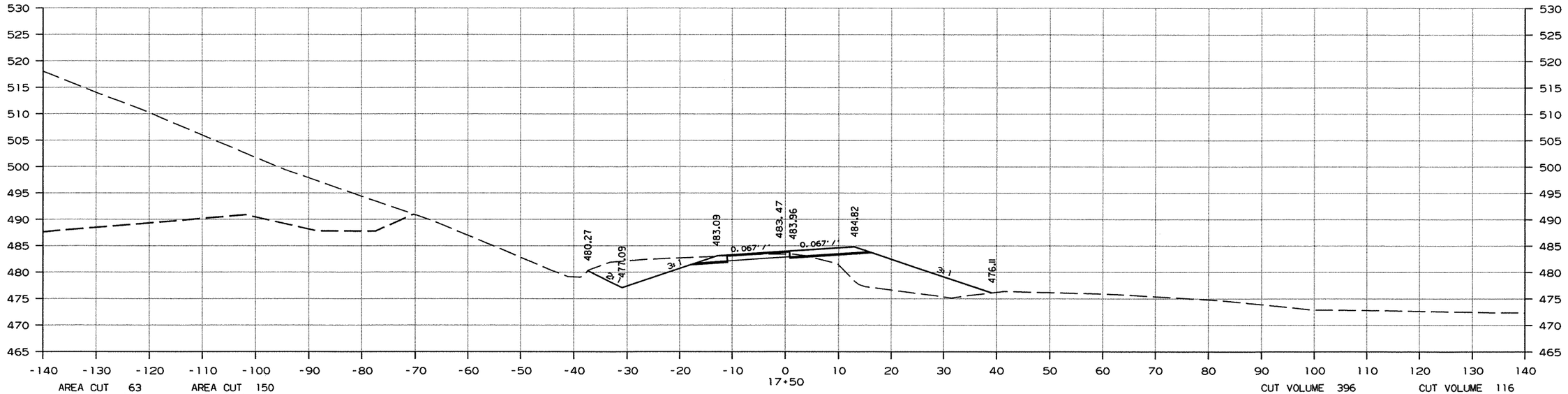
r061259.dgn 6/11/2010

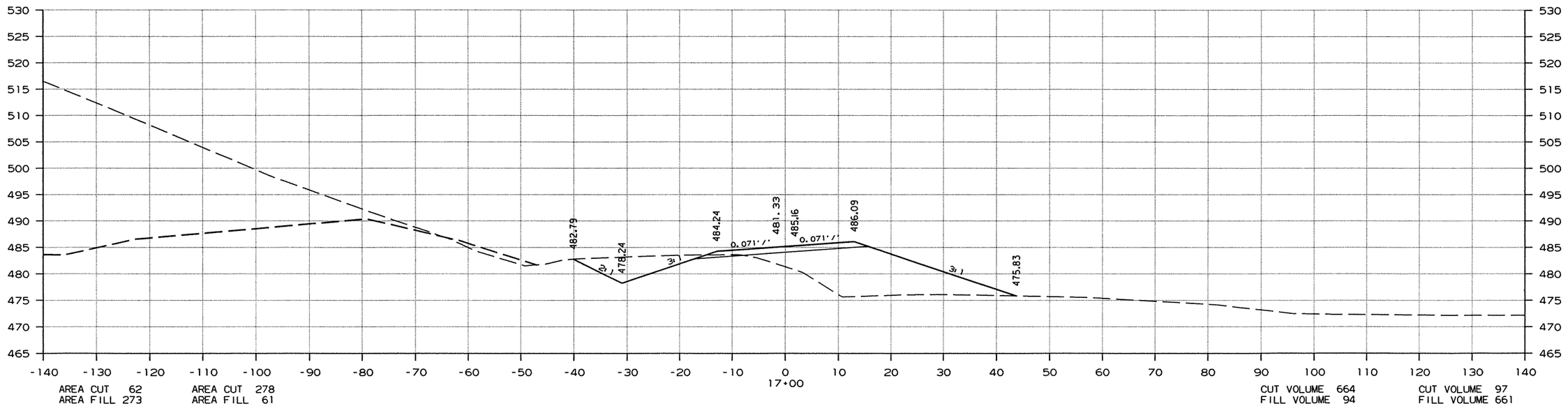
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	140	157

(2) CROSS SECTIONS

DETOUR DETOUR REMOVAL

DETOUR REMOVAL DETOUR



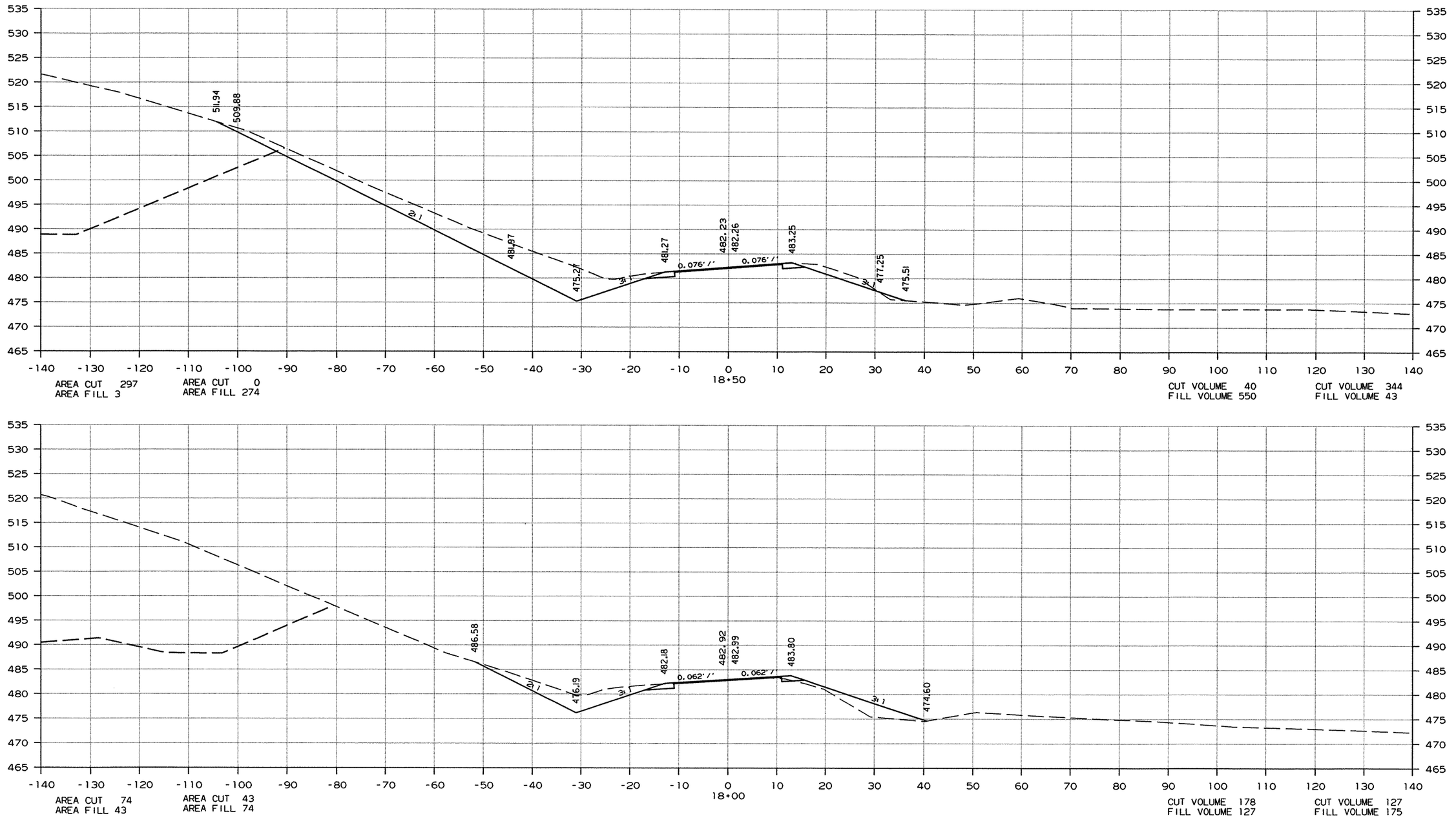


CROSS SECTION STA. 17+00 TO STA. 17+50

r061259.dgn 6/11/2010

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.		061259	141	157

(2) CROSS SECTIONS



CROSS SECTION STA. 18+00 TO STA. 18+50

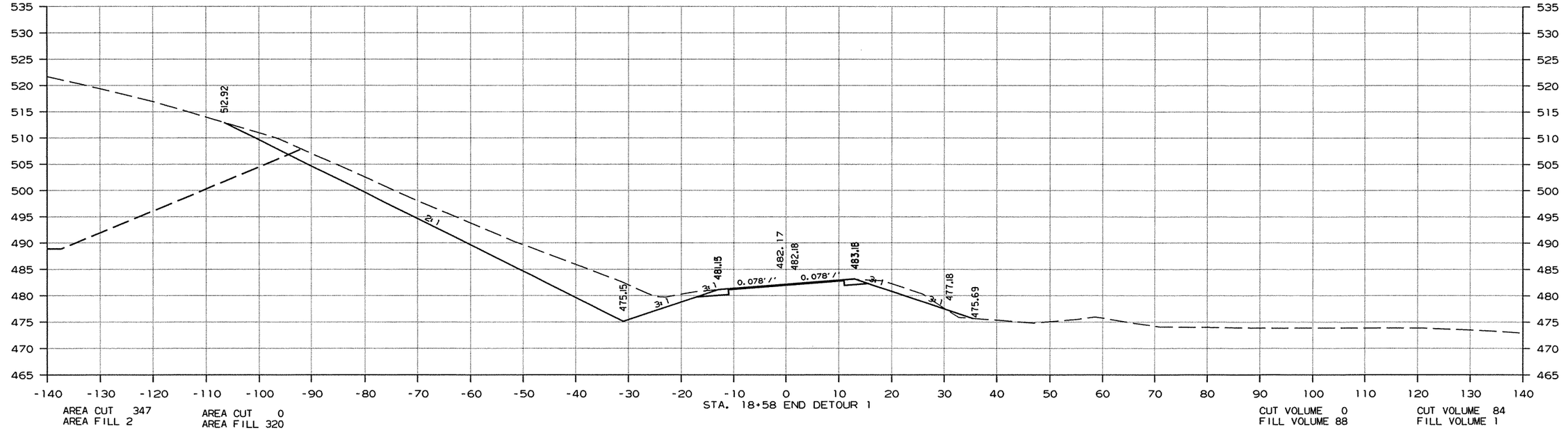
r061259.dgn 6/19/2010

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.		061259	142	157

(2) CROSS SECTIONS

DETOUR DETOUR REMOVAL

DETOUR REMOVAL DETOUR



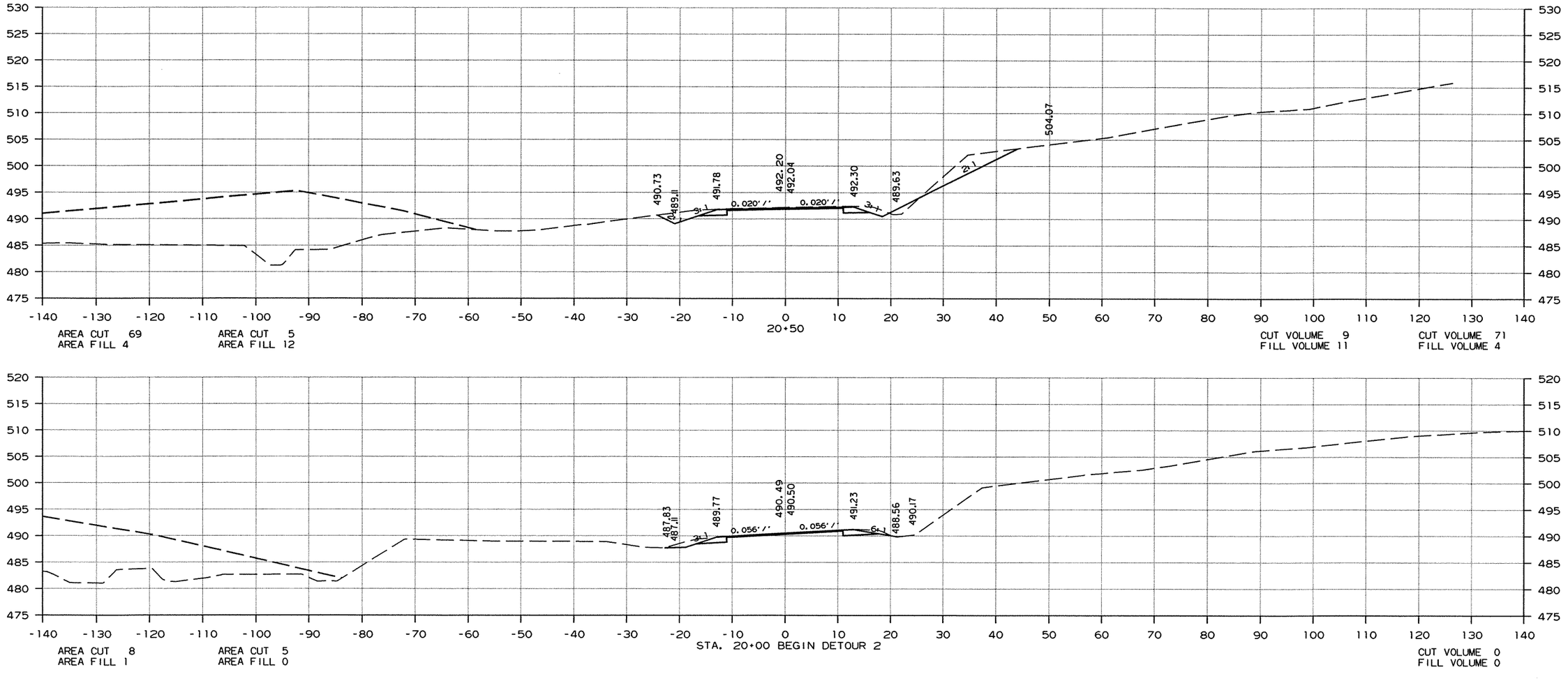
CROSS SECTION STA. 18+58

r061259.dgn 6/17/2010

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.		061259	143	157

(2) CROSS SECTIONS

DETOUR DETOUR REMOVAL DETOUR REMOVAL DETOUR



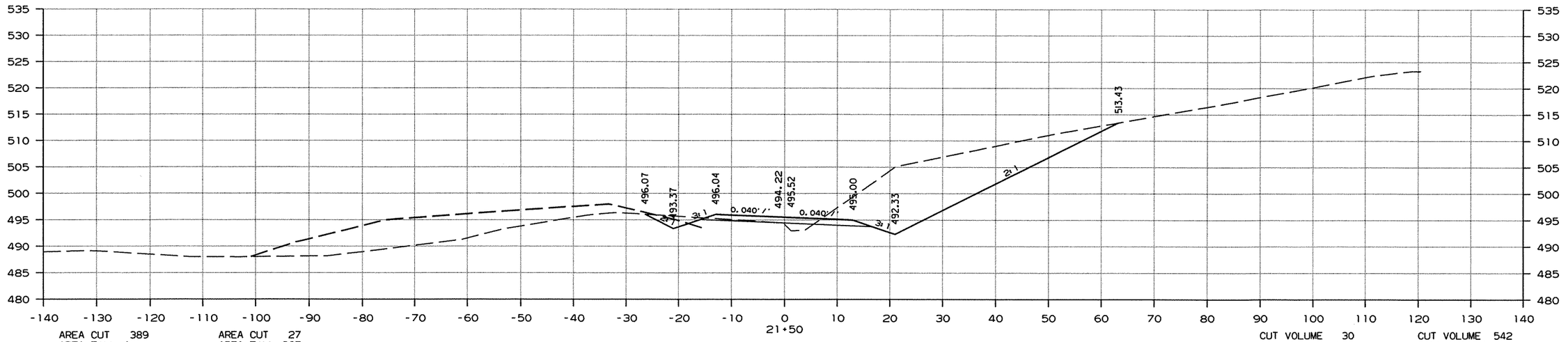
CROSS SECTION STA. 20+00 TO STA. 20+50

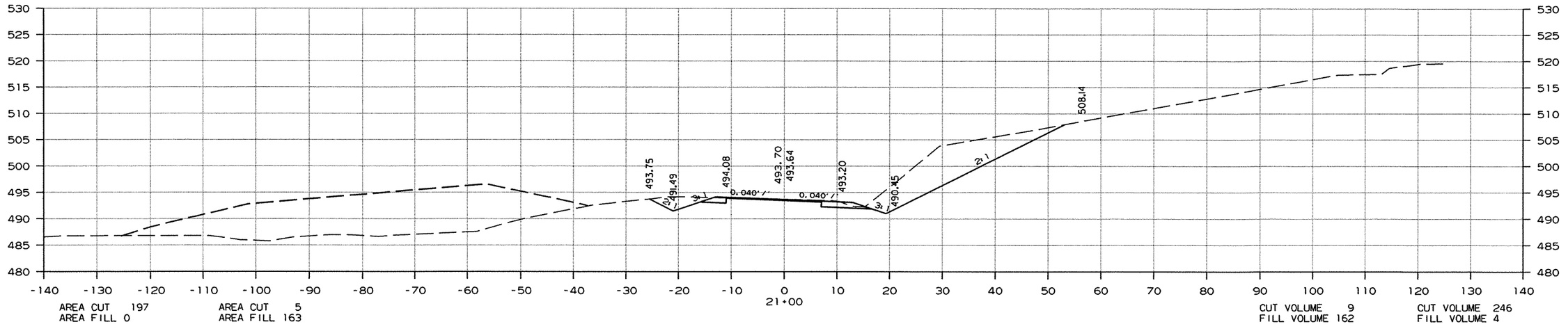
r061259.dgn 6/11/2010

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.		061259	144	157

(2) CROSS SECTIONS

DETOUR DETOUR REMOVAL DETOUR REMOVAL DETOUR





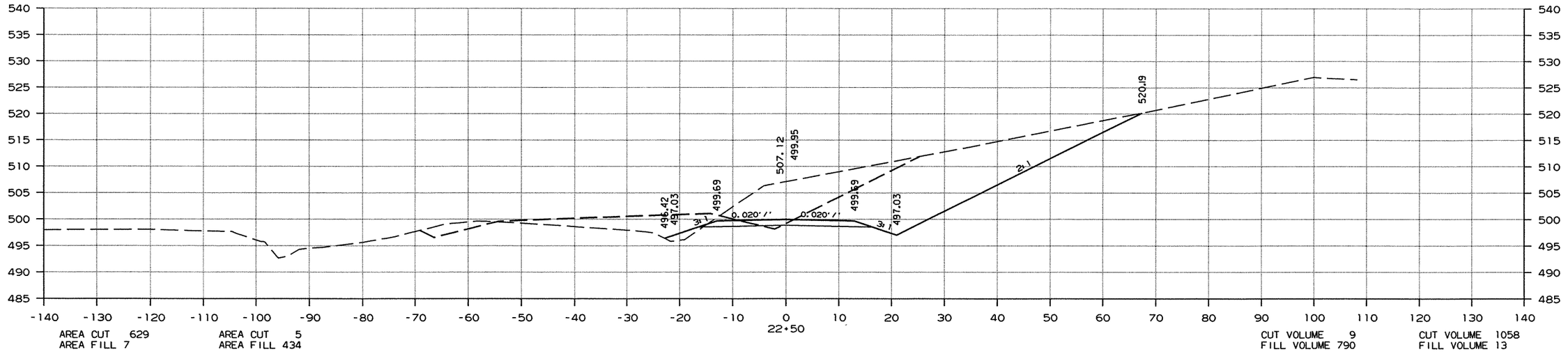
CROSS SECTION STA. 21+00 TO STA. 21+50

r061259.dgn 6/11/2010

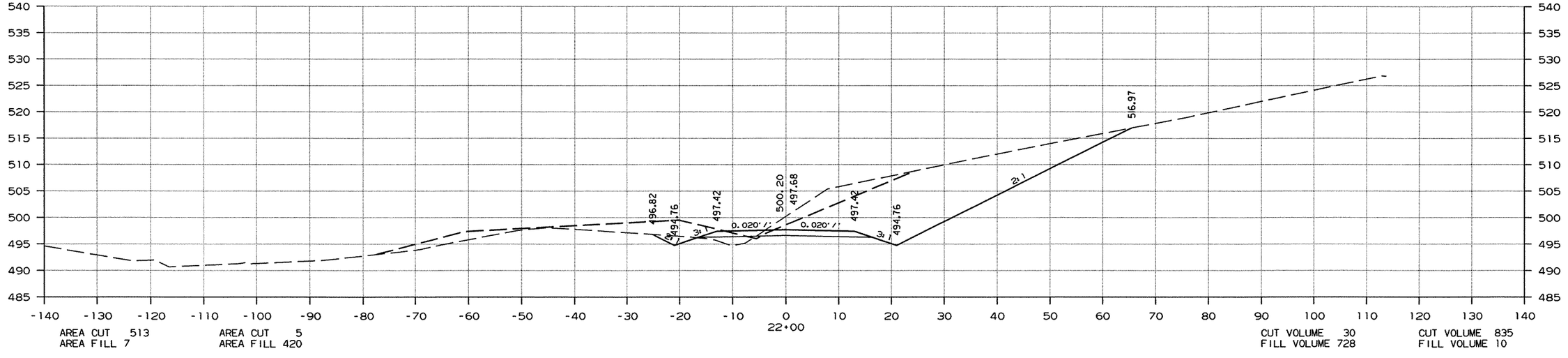
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	145	157

(2) CROSS SECTIONS

DETOUR DETOUR REMOVAL



DETOUR REMOVAL DETOUR



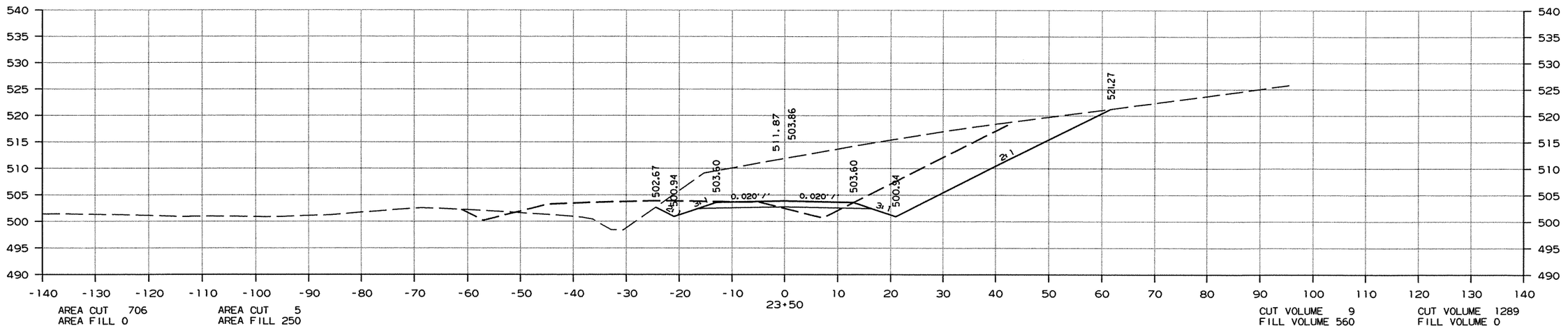
CROSS SECTION STA. 22+00 TO STA. 22+50

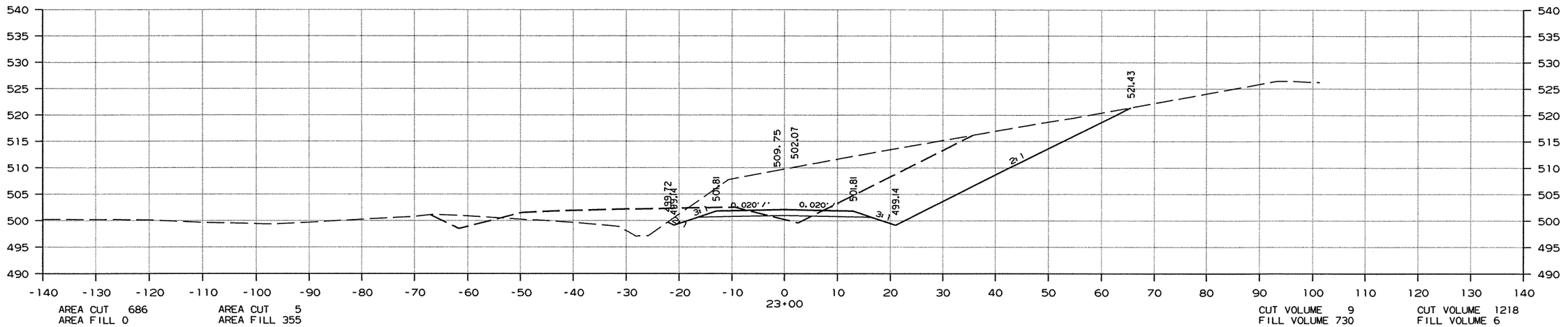
r061259.dgn 8/19/2010

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.		061259	146	157

(2) CROSS SECTIONS

DETOUR DETOUR REMOVAL DETOUR REMOVAL DETOUR





CROSS SECTION STA. 23+00 TO STA. 23+50

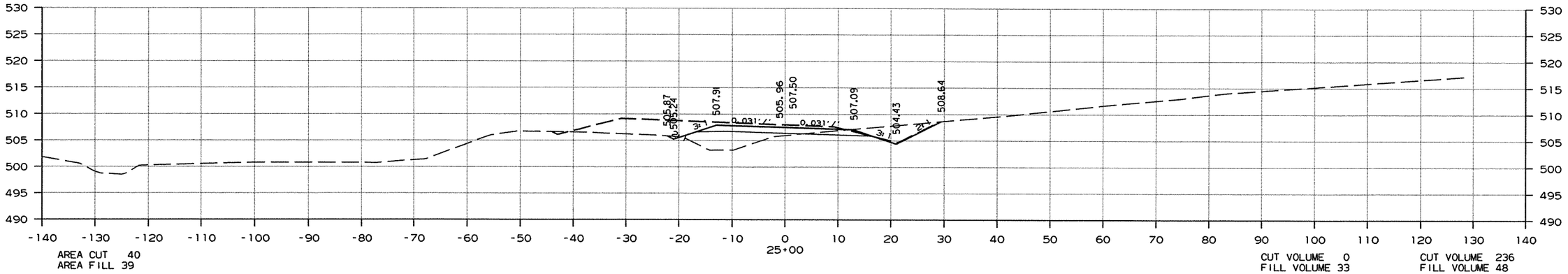
r061259.dgn 6/11/2010

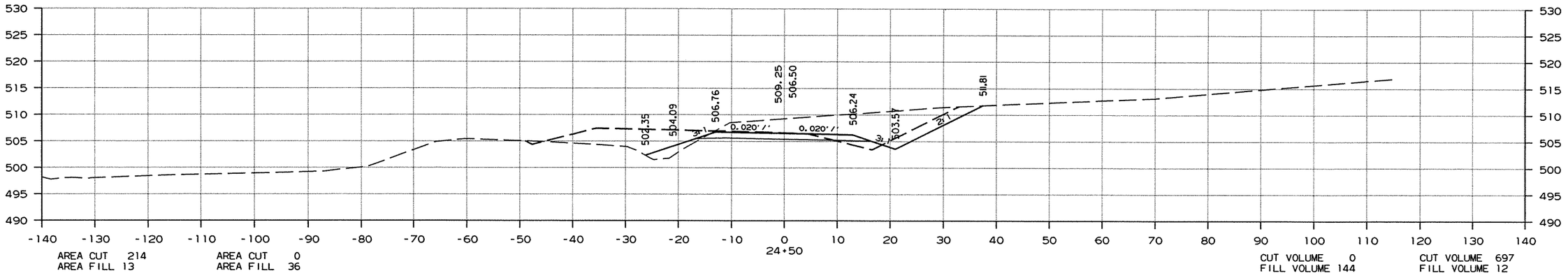
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	147	157

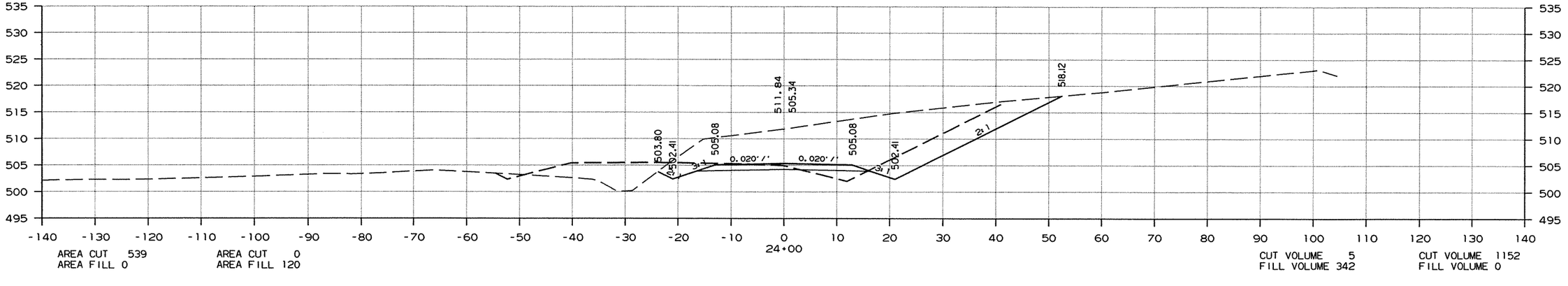
(2) CROSS SECTIONS

DETOUR DETOUR REMOVAL

DETOUR REMOVAL DETOUR





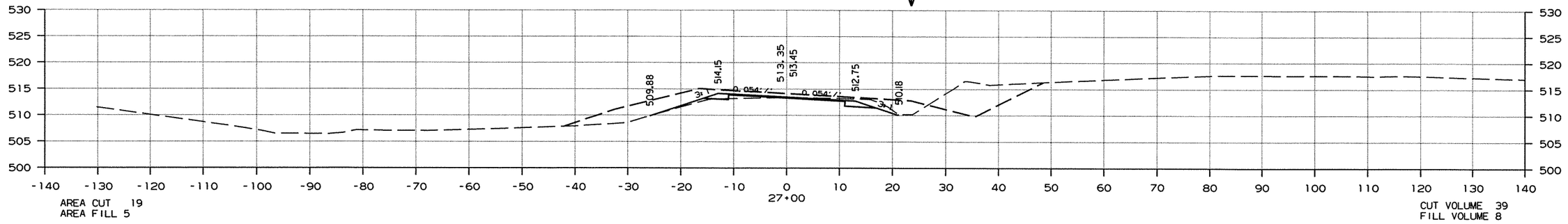


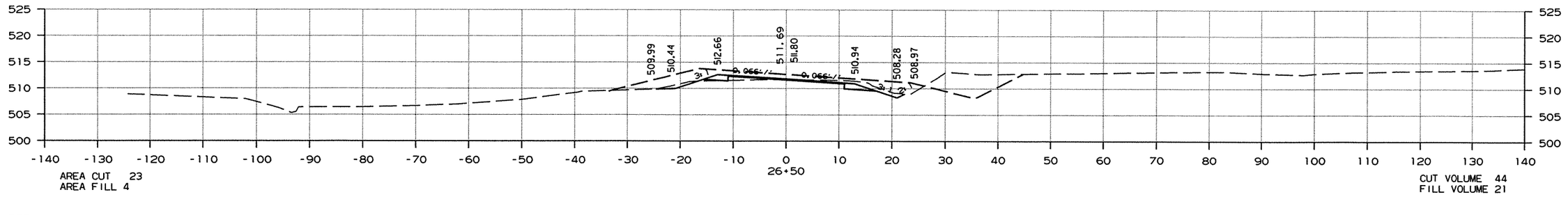
CROSS SECTION STA. 24+00 TO STA. 25+00

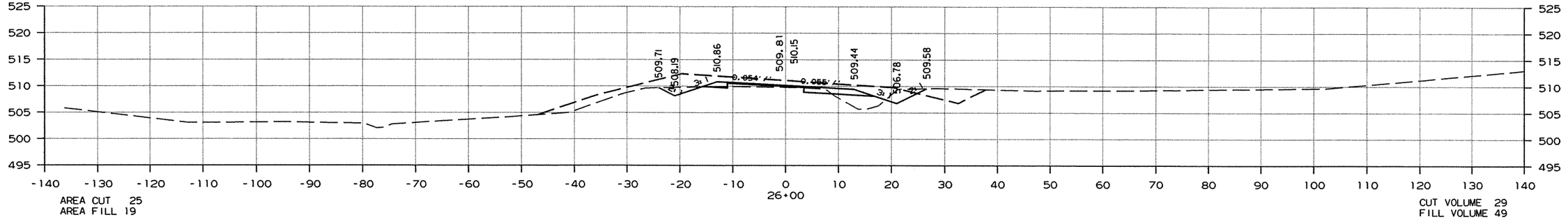
r061259.dgn 6/11/2010

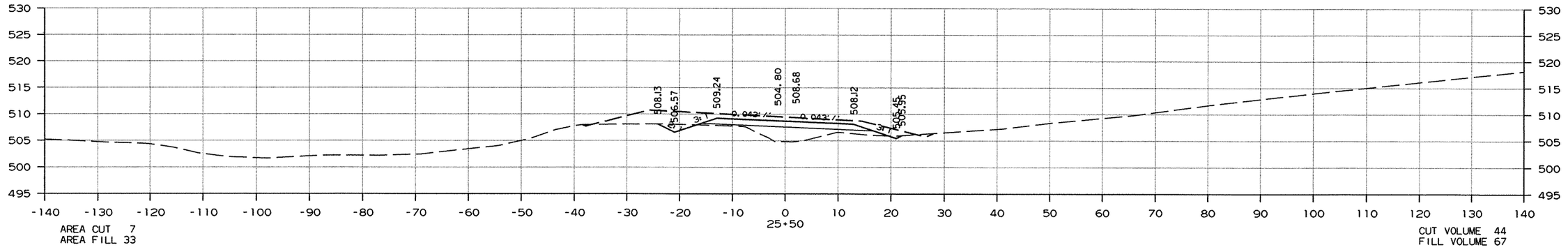
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	148	157

(2) CROSS SECTIONS







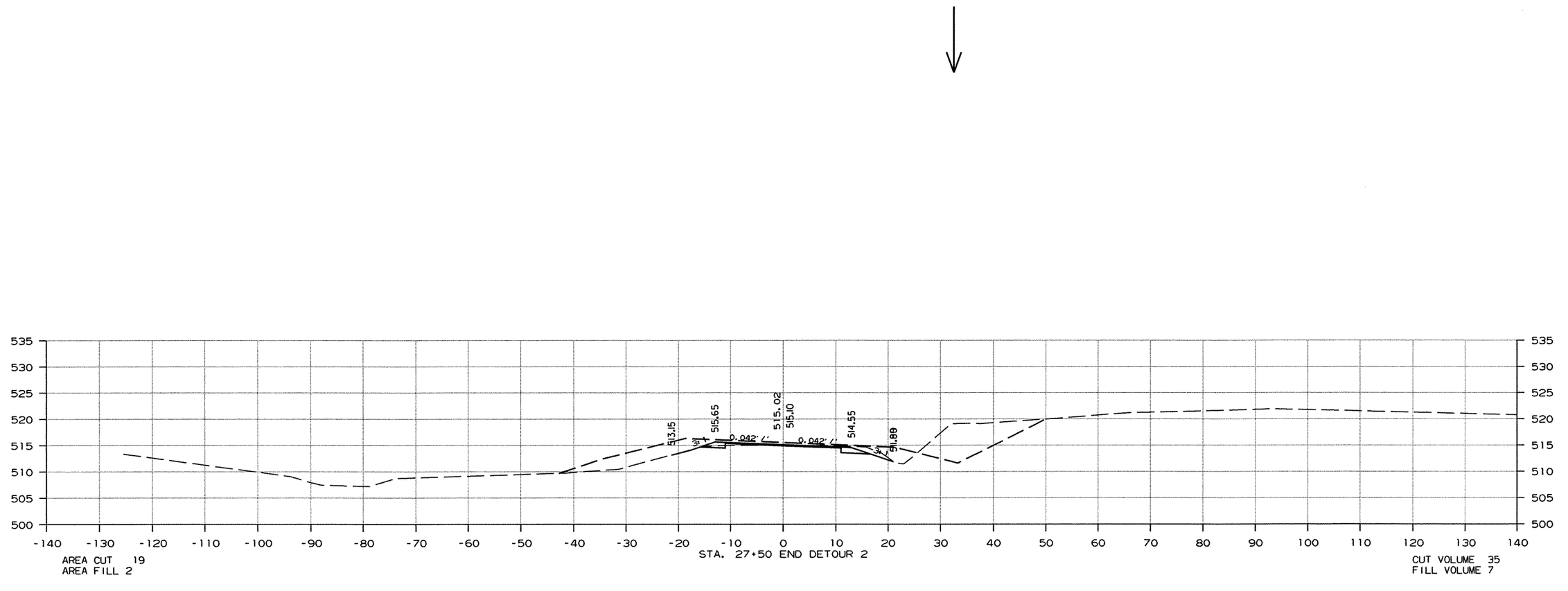


CROSS SECTION STA. 25+50 TO STA. 27+00

r061259.dgn 8/11/2010

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.		061259	149	157

(2) CROSS SECTIONS

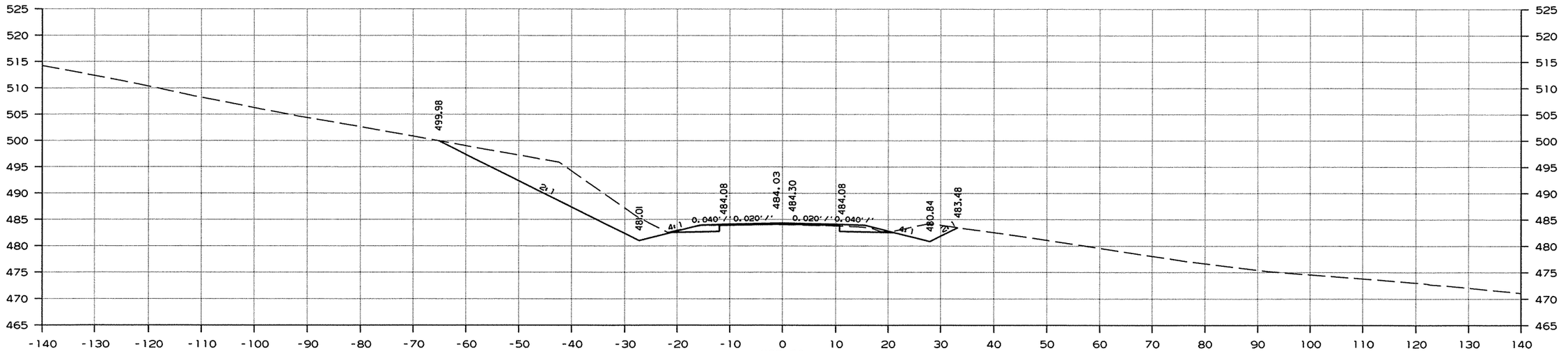


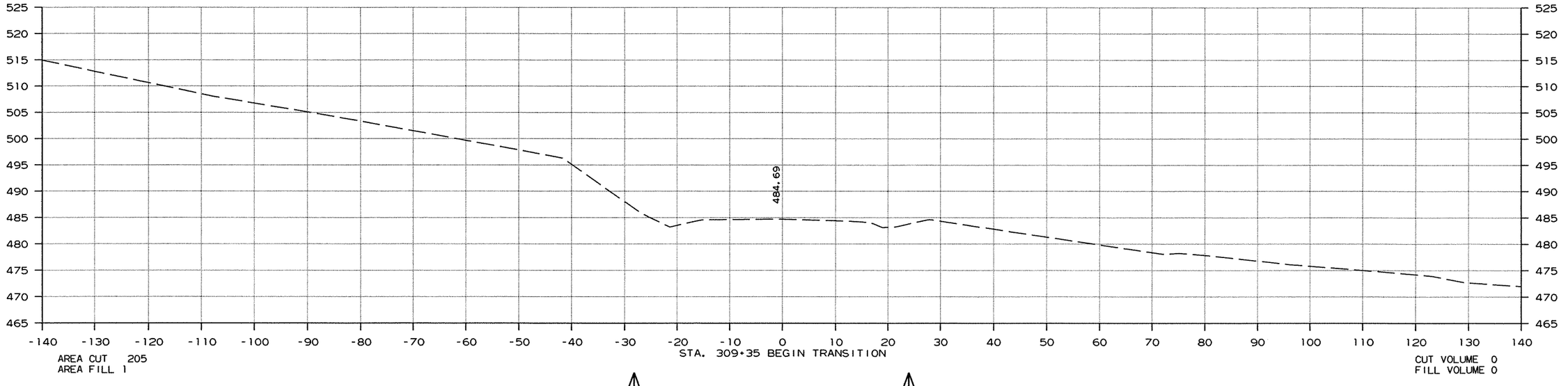
CROSS SECTION STA. 27+50 TO STA. 27+50

r061259.dgn 6/14/2010

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.		061259	150	157

(2) CROSS SECTIONS



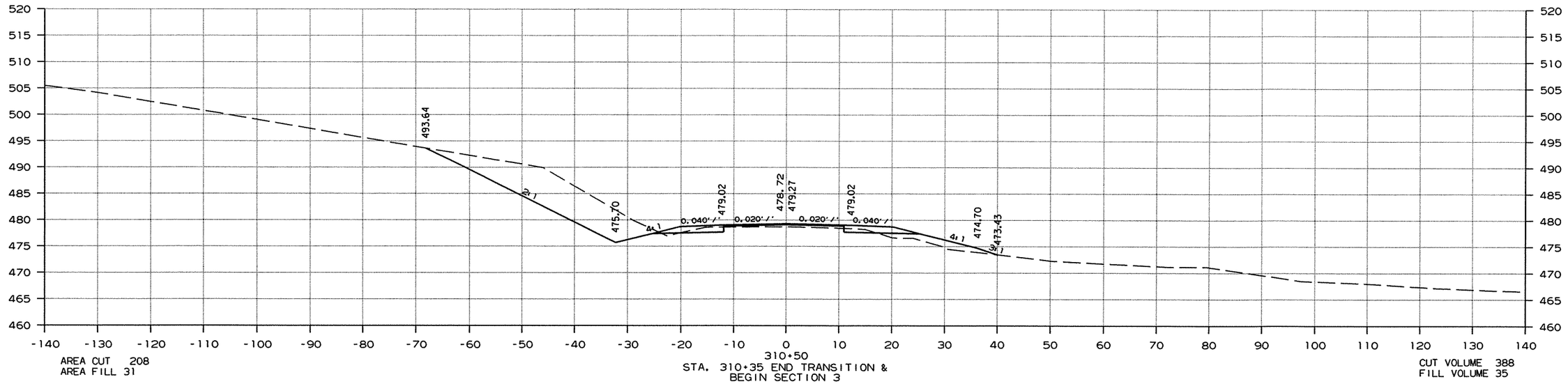


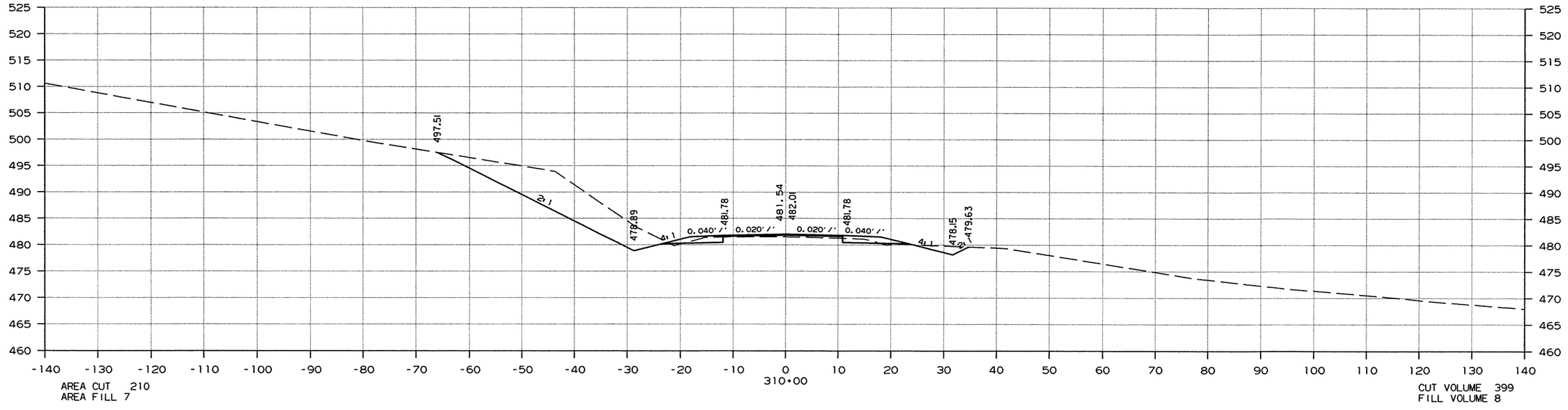
CROSS SECTION STA. 309+35 TO STA. 309+50

r061259.dgn 6/17/2010

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.		061259	151	157

(2) CROSS SECTIONS



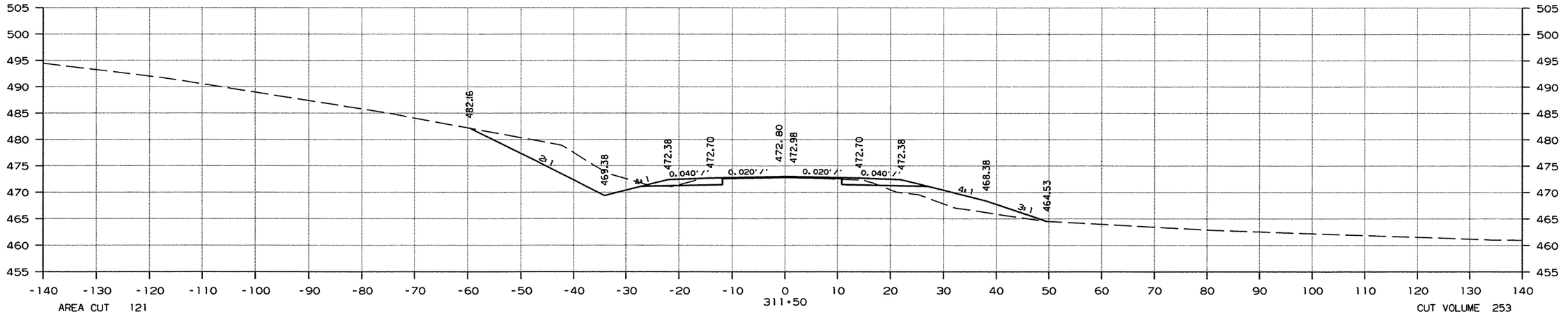


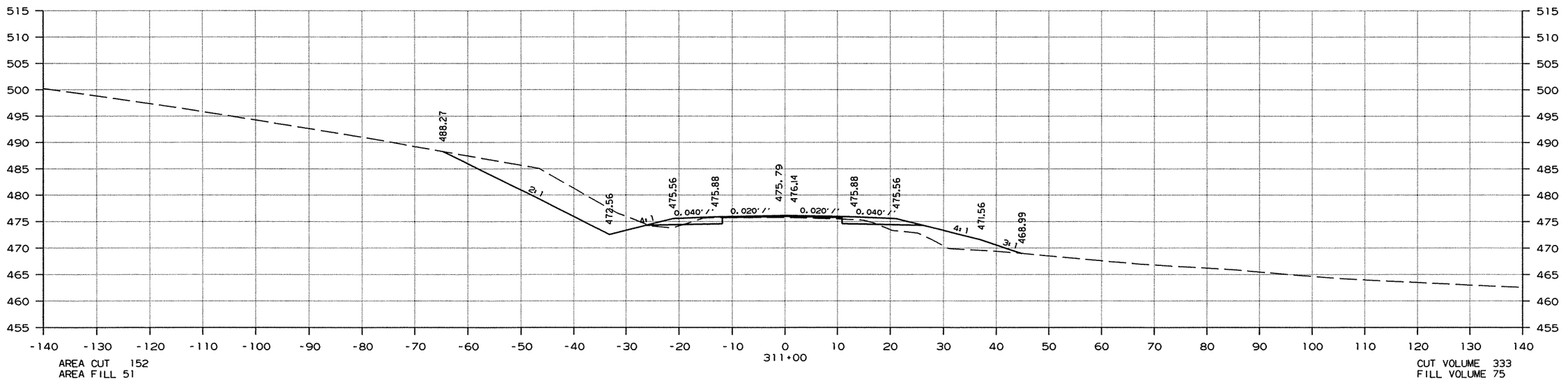
CROSS SECTION STA. 310+00 TO STA. 310+50

r061259.dgn 6/7/2010

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.		061259	152	157

(2) CROSS SECTIONS



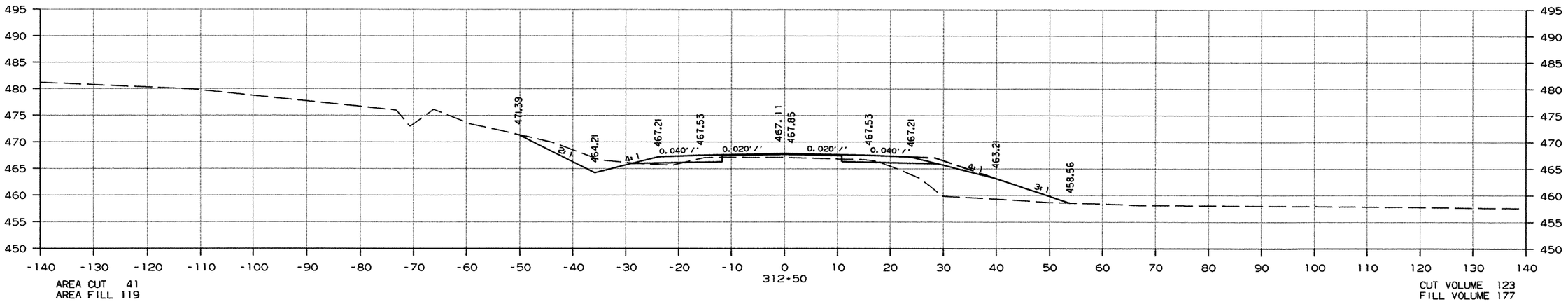


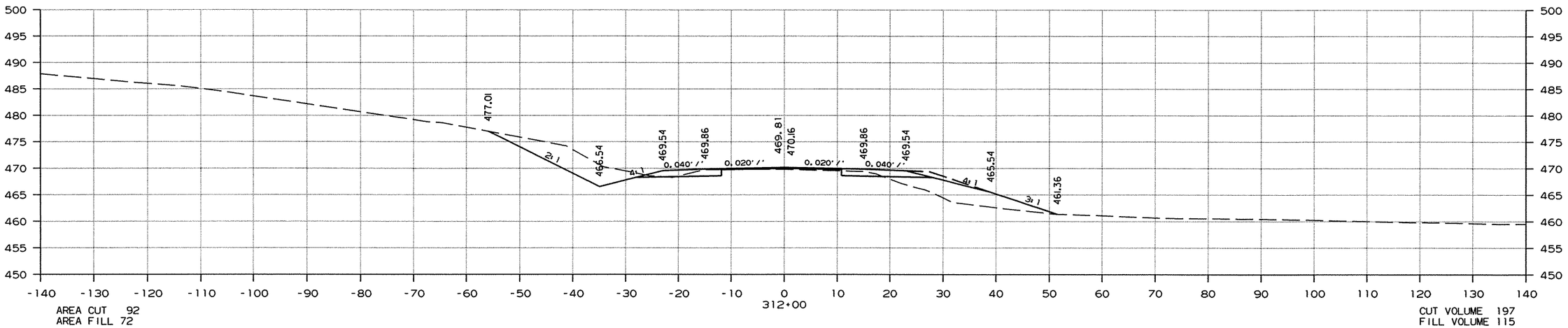
CROSS SECTION STA. 311+00 TO STA. 311+50

r061259.dgn 8/14/2010

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.		061259	153	157

(2) CROSS SECTIONS



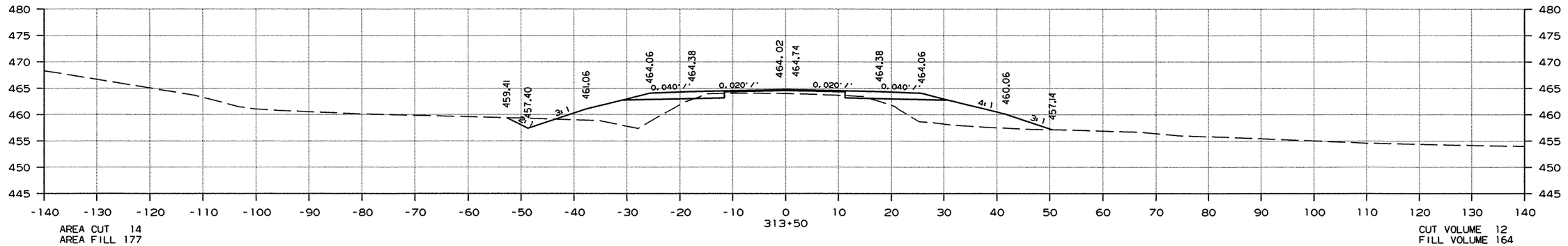


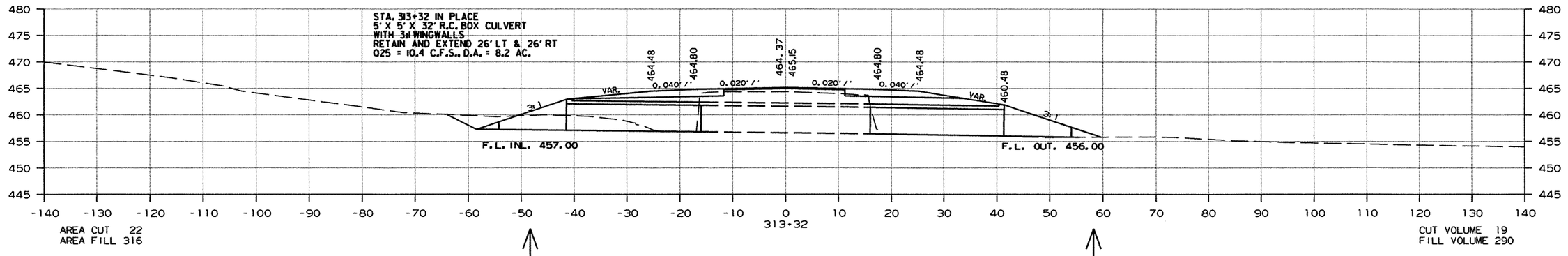
CROSS SECTION STA. 312+00 TO STA. 312+50

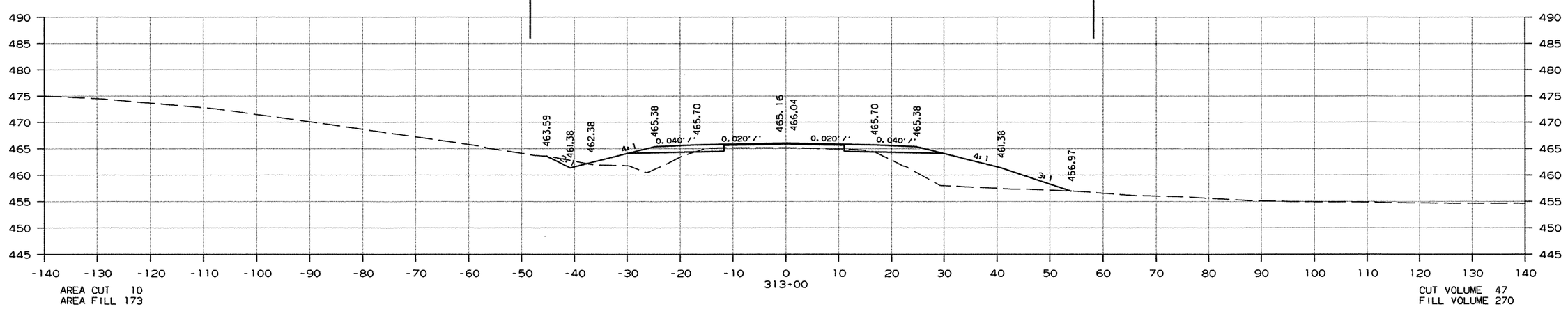
r061259.dgn 8/11/2010

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.		061259	154	157

(2) CROSS SECTIONS





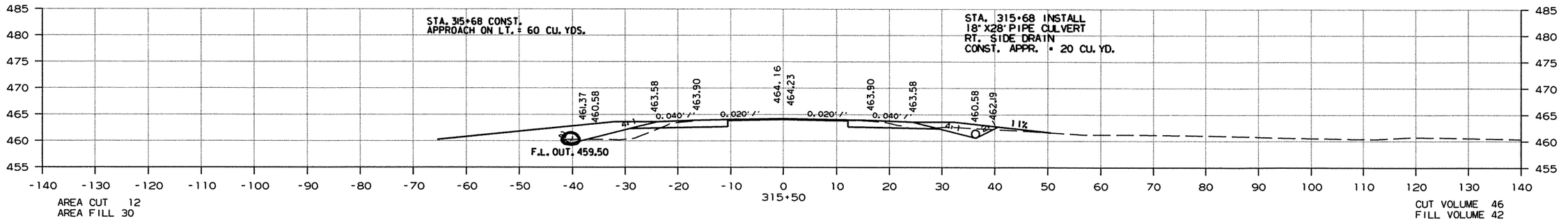


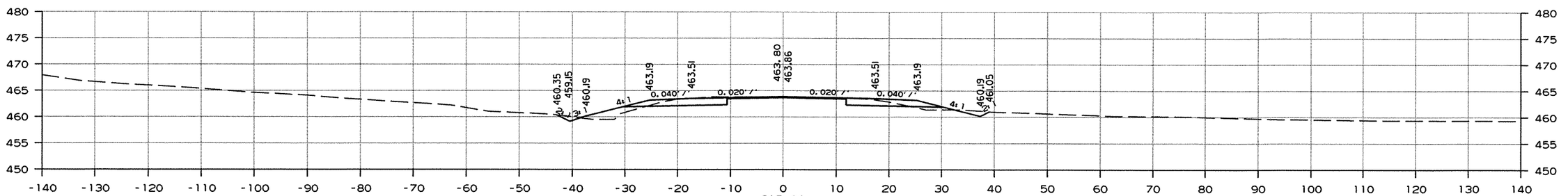
CROSS SECTION STA. 313+00 TO STA. 313+50

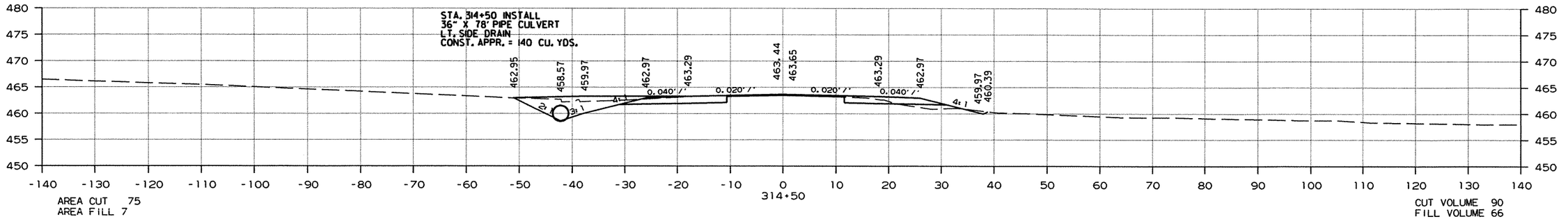
r061259.dgn 6/17/2010

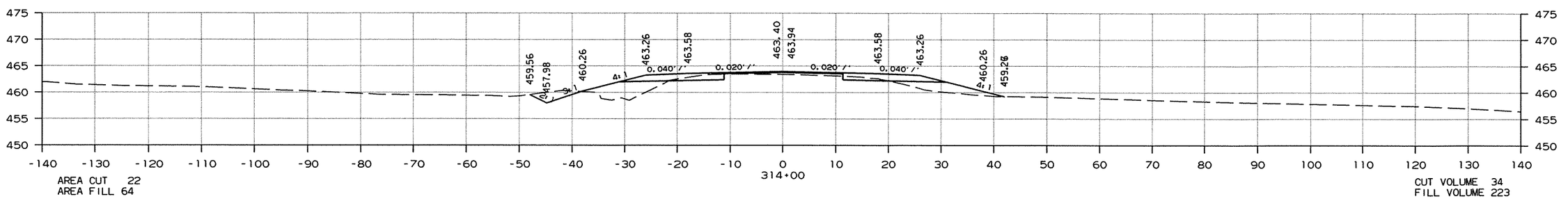
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061259	155	157

(2) CROSS SECTIONS







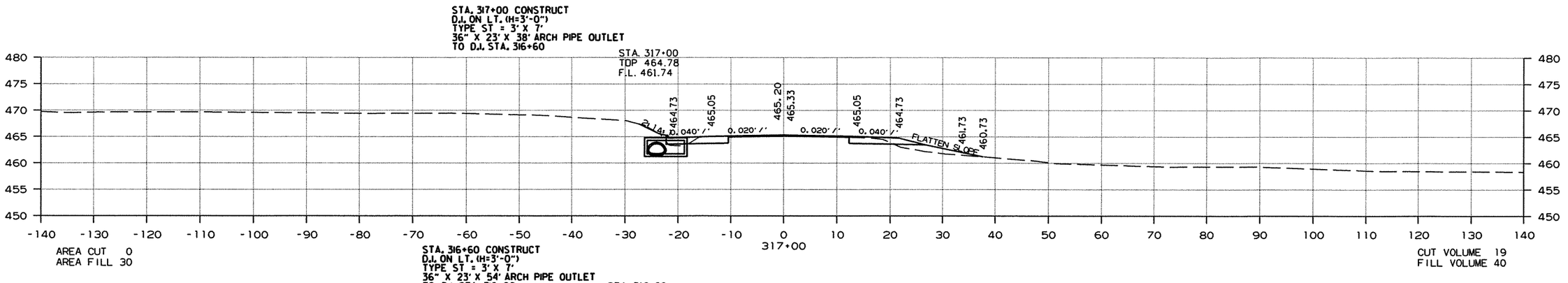


CROSS SECTION STA. 314+00 TO STA. 315+50

r061259.dgn 6/14/2010

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.		061259	156	157

(2) CROSS SECTIONS

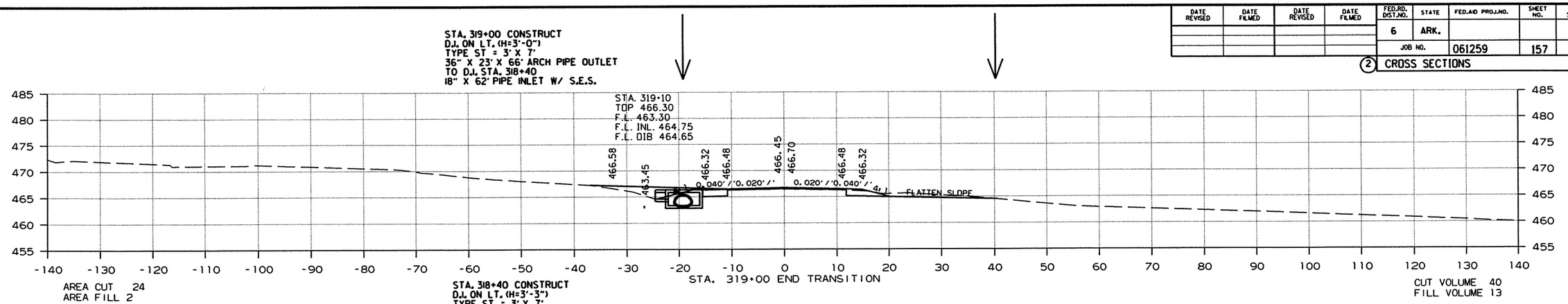


CROSS SECTION STA. 316+00 TO STA. 317+00

r061259.dgn 8/11/2010

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.		061259	157	157

(2) CROSS SECTIONS



CROSS SECTION STA. 317+50 TO STA. 319+00

r061259.dgn 8/17/2010