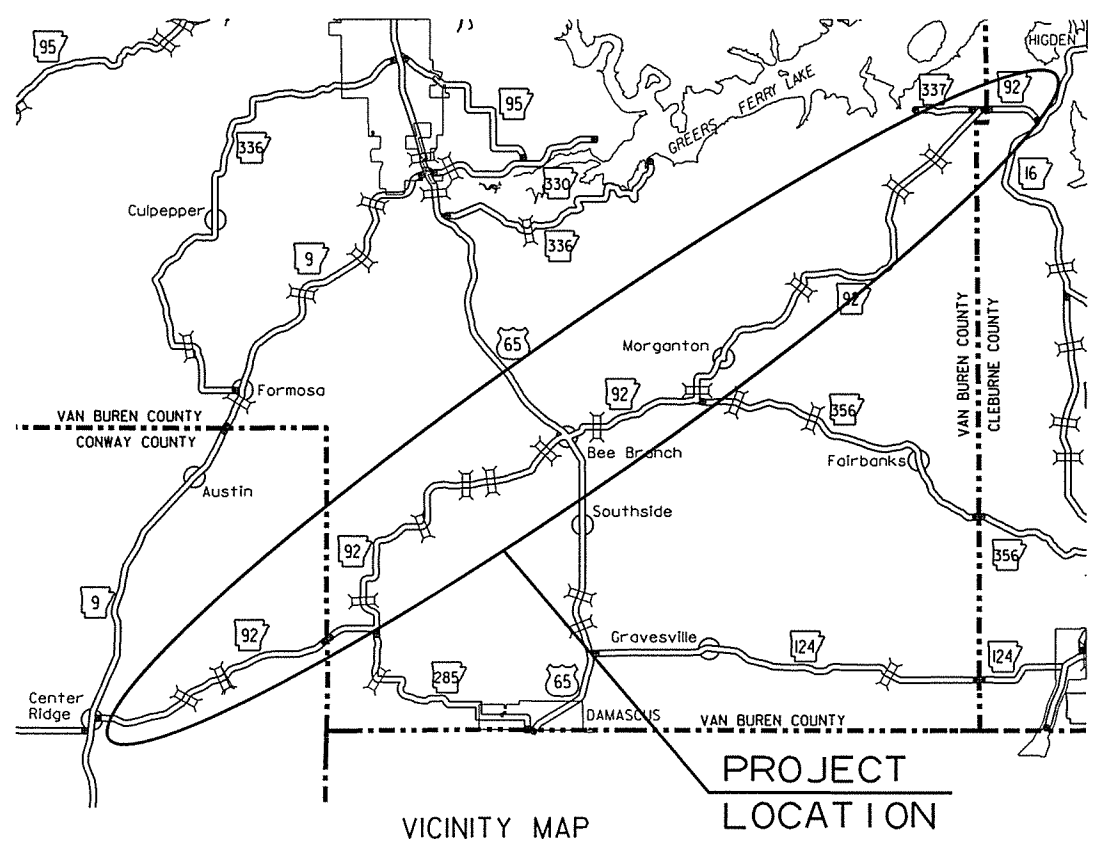


ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT  
CONSTRUCTION PLANS FOR STATE HIGHWAY

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	FSX005		1	67
				② HWY. 9 - HWY. 16 (REHAB.) (F)				



# HWY. 9 - HWY. 16 (REHAB.) (F)

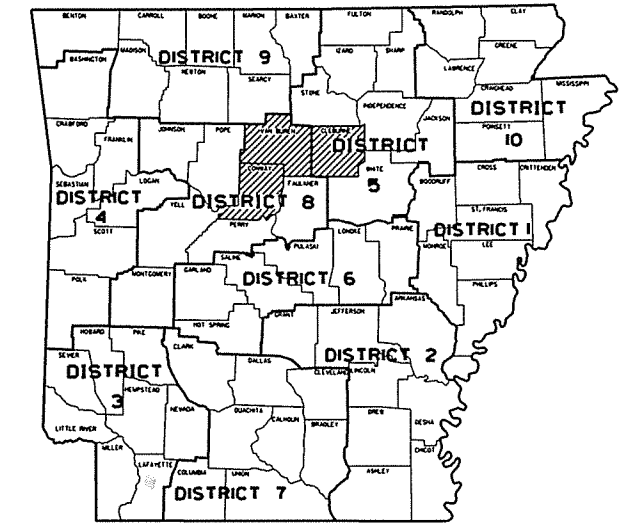
CONWAY, VAN BUREN,  
& CLEBURNE COUNTIES

ROUTE 92 SECTIONS 2, 3, & 4

## JOB FSX005

FAP STMA-TDG5(I)

NOT TO SCALE



ARK. HWY. DIST. NO. 5 & 8

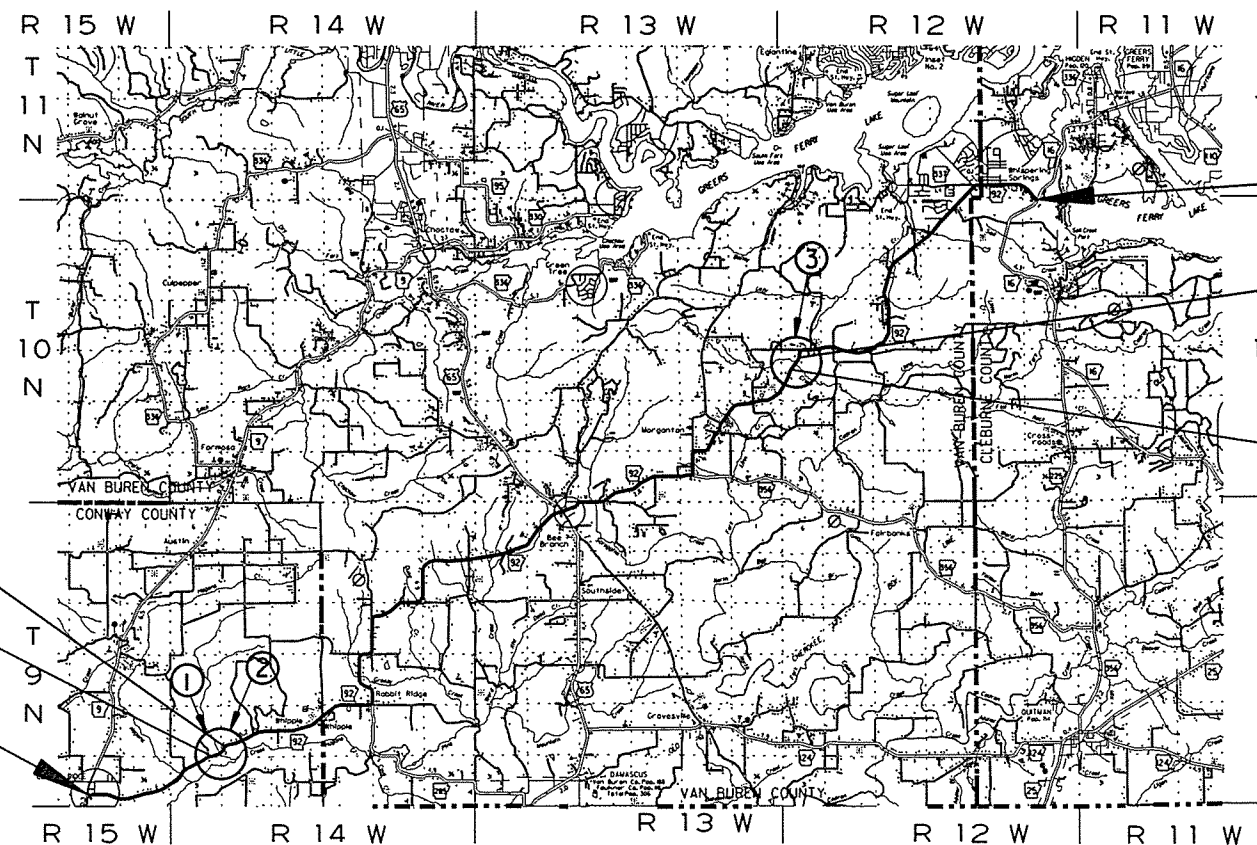
DESIGN TRAFFIC DATA	SECTION		
	2	3	4
• SITE 1	SITE 2		
DESIGN YEAR	2034	2034	2034
2014 ADT	2500	2100	2300
2034 ADT	3500	3000	3200
2034 DHV	385	330	352
DIRECTIONAL DISTRIBUTION	60%	60%	60%
TRUCKS	37%	33%	12%
DESIGN SPEED	55 MPH	55 MPH	55 MPH

STRUCTURES OVER 20' - 0" SPAN

- ① STA. 105+33 CONST.  
QUAD. 10' X 6' X 74'  
R. C. BOX CULVERT  
W/3:1 WINGS LT. & RT.  
ROADWAY SPAN = 43'-0"  
Q25 = 1940 CFS, DA = 3.2 SQ. MI.
- ② STA. 105+97 IN PLACE  
DBL. 10' X 6' X 30'  
R. C. BOX CULVERT  
W/3:1 WINGS LT. & RT.  
EXTEND 18' LT. & 17' RT.  
ROADWAY SPAN = 22'-1"  
Q25 = 1940 CFS, DA = 3.4 SQ. MI.
- ③ STA. 207+73 CONST.  
TRP. 12' X 8' X 74'  
R. C. BOX CULVERT  
W/3:1 WINGS LT. & RT.  
ROADWAY SPAN = 38'-7"  
Q25 = 1920 CFS, DA = 3.4 SQ. MI.

BEGINNING  
LAT. = N 35°22' 24"  
LONG. = W 92°33' 49"  
MID POINT  
LAT. = N 35°27' 06"  
LONG. = W 92°23' 33"  
ENDING  
LAT. = N 35°32' 13"  
LONG. = W 92°13' 32"

- STA. 111+20.23 -  
JOB FSX005  
END SITE 1
- STA. 103+00.00 -  
JOB FSX005  
BEGIN SITE 1 -  
SEC. 2, L. M. 2.85
- BEGIN JOB FSX005  
SEC. 2, L. M. 0.00

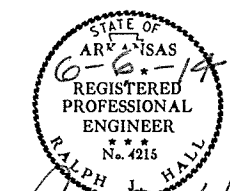


GROSS LENGTH OF PROJECT	139920.00	FEET OR	26.500	MILES
NET " " ROADWAY	139816.34	" "	26.480	"
NET " " BRIDGES	103.66	" "	0.020	"
NET " " PROJECT	139920.00	" "	26.500	"



- END JOB FSX005  
SEC. 4, L. M. 1.23
- STA. 208+50.00 - JOB FSX005  
END SITE 2, SEC. 3
- STA. 207+00.00 - JOB FSX005  
BEGIN SITE 2, SEC. 3, L. M. 14.14

APPROVED



*Ralph J. Hall*  
DEPUTY DIRECTOR  
AND CHIEF ENGINEER

6/6/2014

RF SX005.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. FSX005	2	67

INDEX OF SHEETS

SHEET NO.	TITLE	BRIDGE NO.	DRAWING NO.	DATE
1	TITLE SHEET			
2	INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES			
3-5	TYPICAL SECTIONS OF IMPROVEMENT			
6-16	SPECIAL DETAILS			
17-18	TEMPORARY EROSION CONTROL DETAILS			
19-24	MAINTENANCE OF TRAFFIC DETAILS			
25	PERMANENT PAVEMENT MARKING DETAILS			
26-29	QUANTITIES			
30	SUMMARY OF QUANTITIES AND REVISIONS			
31-33	SURVEY CONTROL DETAILS			
34-37	PLAN AND PROFILE SHEETS			
38	MAILBOX DETAILS		MB-1	11/18/04
39	PRECAST CONCRETE BOX CULVERTS		PBC-1	12/15/11
40	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING		PCC-1	2/27/14
41	METAL PIPE CULVERT FILL HEIGHTS & BEDDING		PCM-1	2/27/14
42	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)		PCP-1	2/27/14
43	PLASTIC PIPE CULVERT (PVC F949)		PCP-2	2/27/14
44	PAVEMENT MARKING DETAILS		PM-1	9/12/13
45	DETAILS OF PIPE UNDERDRAIN		PU-1	4/10/03
46	REINFORCED CONCRETE BOX CULVERT DETAILS		RCB-1	7/26/12
47	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS		RCB-2	11/20/03
48	METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS		RCB-3	10/12/95
49	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC		SE-2	10/18/96
50	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-1	12/15/11
51	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-2	9/12/13
52	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-3	10/15/09
53	TEMPORARY EROSION CONTROL DEVICES		TEC-1	12/15/11
54	TEMPORARY EROSION CONTROL DEVICES		TEC-2	6/2/94
55	TEMPORARY EROSION CONTROL DEVICES		TEC-3	11/3/94
56	WIRE FENCE WATER GAPS		WF-2	4/20/79
57	WIRE FENCE TYPE C AND D		WF-4	8/22/02
58	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS		W-X003-1	5/10/66
59	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS		R-200X-0	2/15/63
60-67	CROSS SECTIONS			

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

2 INDEX OF SHEETS, GOV. SPECS. & GEN. NOTES

GOVERNING SPECIFICATIONS  
 ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY  
 CONSTRUCTION, EDITION OF 2014, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
108-1	LIQUIDATED DAMAGES
410-1	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
620-1	MULCH COVER
JOB FSX005	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB FSX005	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB FSX005	DOCUMENTATION OF PAYMENTS MADE TO DISADVANTAGED BUSINESS ENTERPRISES
JOB FSX005	MANDATORY USE OF INTERNET BIDDING
JOB FSX005	NESTING SITES OF MIGRATORY BIRDS
JOB FSX005	PARTNERING REQUIREMENTS
JOB FSX005	PLASTIC PIPE
JOB FSX005	RUMBLE STRIPES
JOB FSX005	SAFETY EDGE
JOB FSX005	SOIL STABILIZATION
JOB FSX005	STORM WATER POLLUTION PREVENTION PLAN
JOB FSX005	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB FSX005	SUBMISSION OF CONTRACTOR MATERIALS TEST RESULTS
JOB FSX005	UTILITY ADJUSTMENTS
JOB FSX005	VALUE ENGINEERING
JOB FSX005	WARM MIX ASPHALT

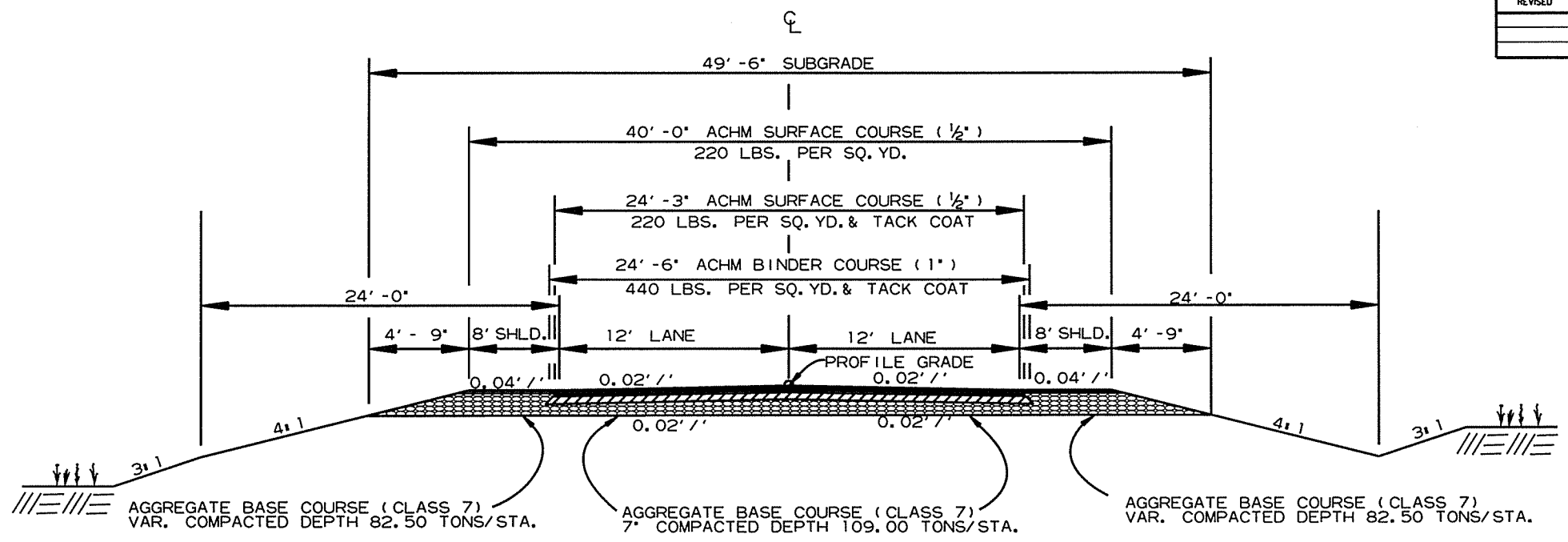
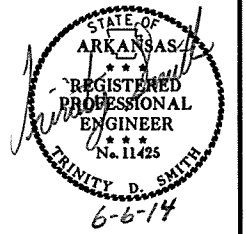


GENERAL NOTES

- GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
- ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
- ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U.S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
- ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
- ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
- THIS PROJECT IS COVERED UNDER A NATIONWIDE 14 SECTION 404 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.
- ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 UNCLASSIFIED EXCAVATION.
- THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

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				6	ARK.			
				JOB NO.	FSX005		3	67

② TYPICAL SECTIONS OF IMPROVEMENT



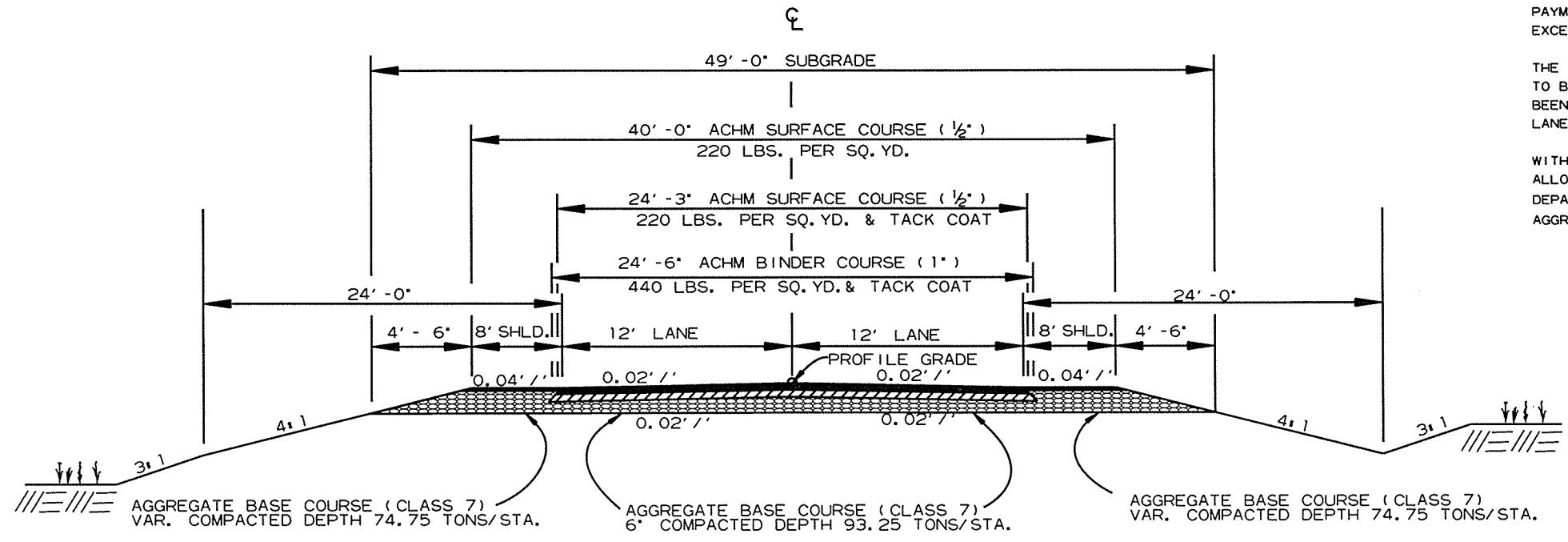
TYPICAL SECTION OF IMPROVEMENT - SITE 1  
FULL DEPTH  
STA. 103+00 TO STA. 110+59.90

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

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

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

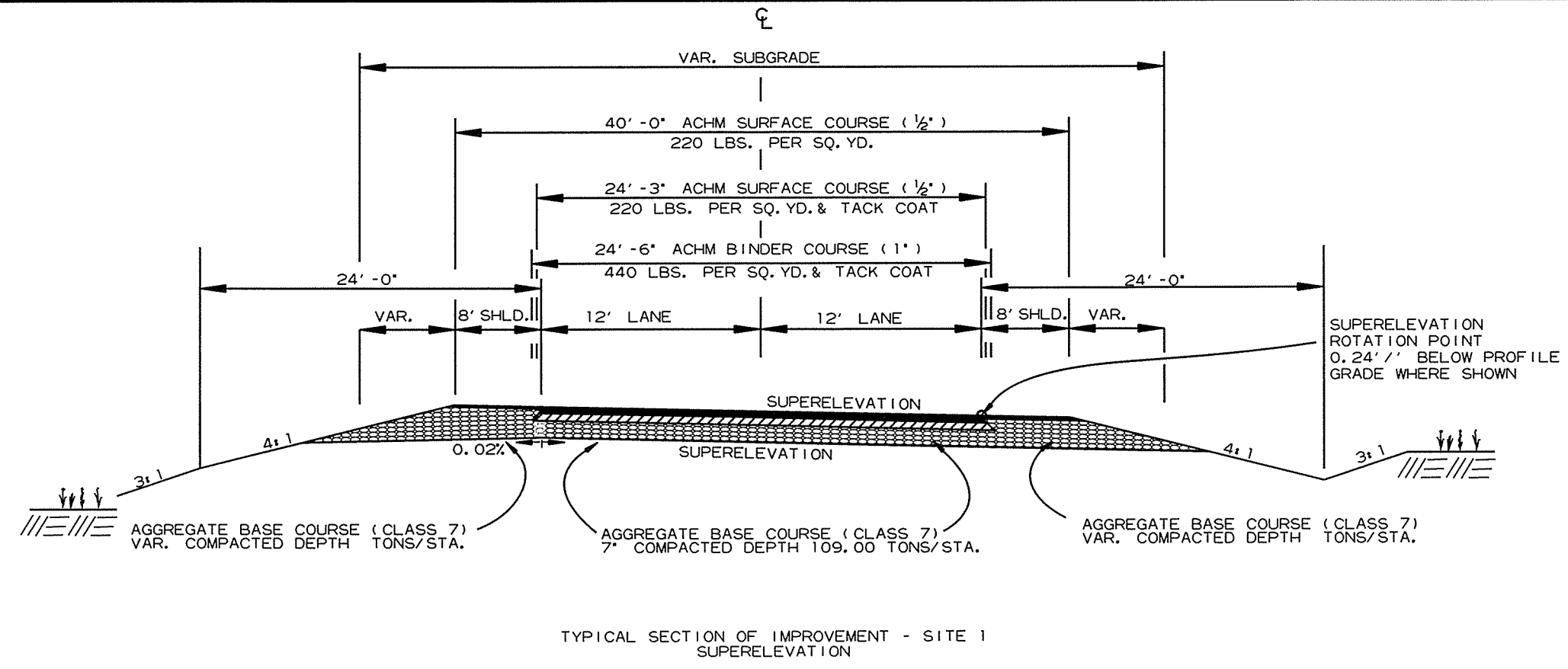
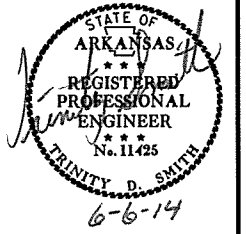
WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.



TYPICAL SECTION OF IMPROVEMENT - SITE 2  
FULL DEPTH  
STA. 207+00 TO STA. 208+50.00

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				6	ARK.		4	67
				JOB NO. FSX005				

② TYPICAL SECTIONS OF IMPROVEMENT



NOTES:

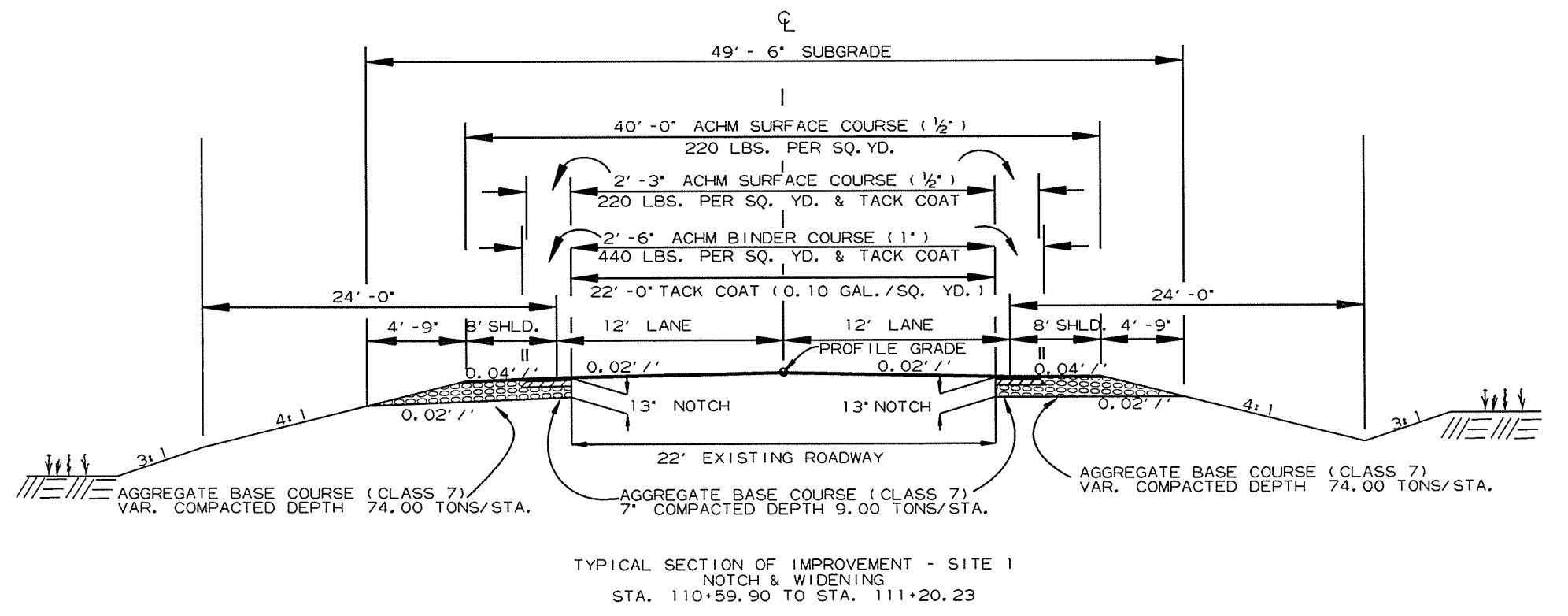
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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

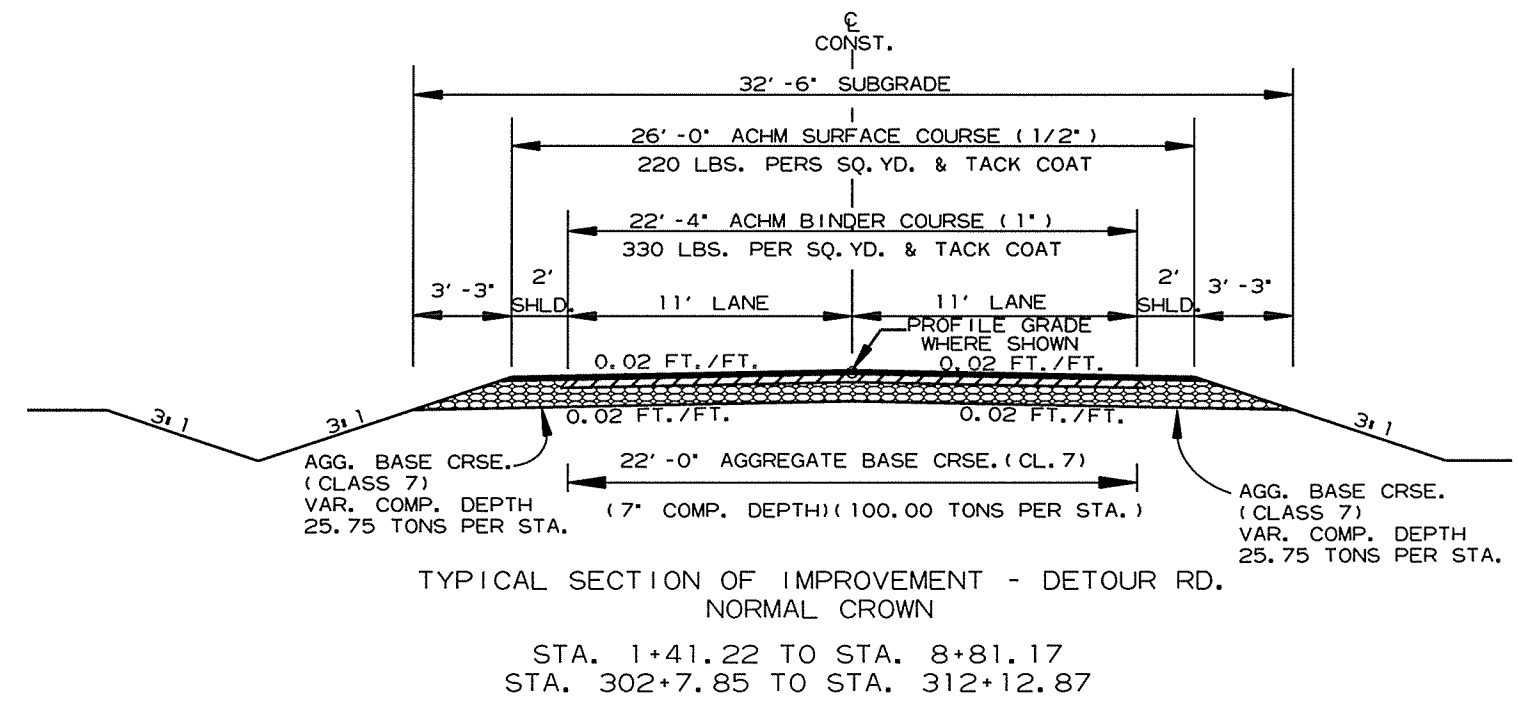
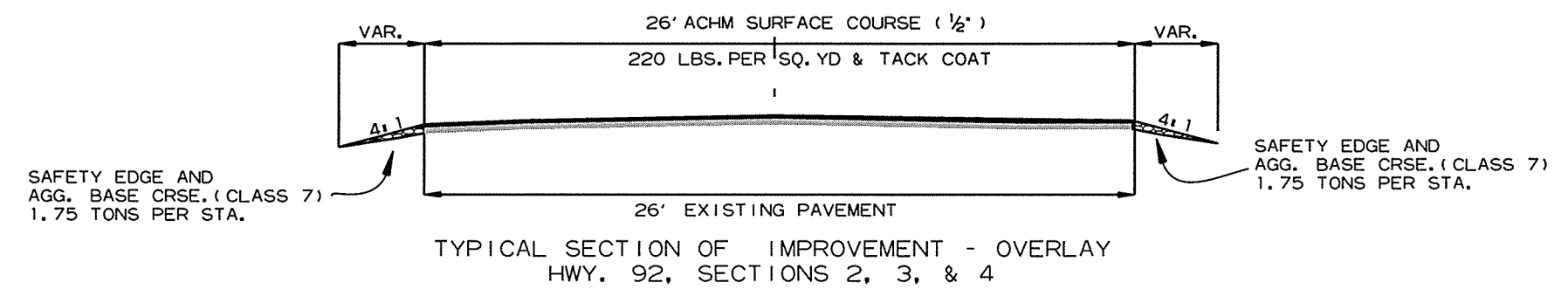


6/6/2014  
RF SX005.DGN



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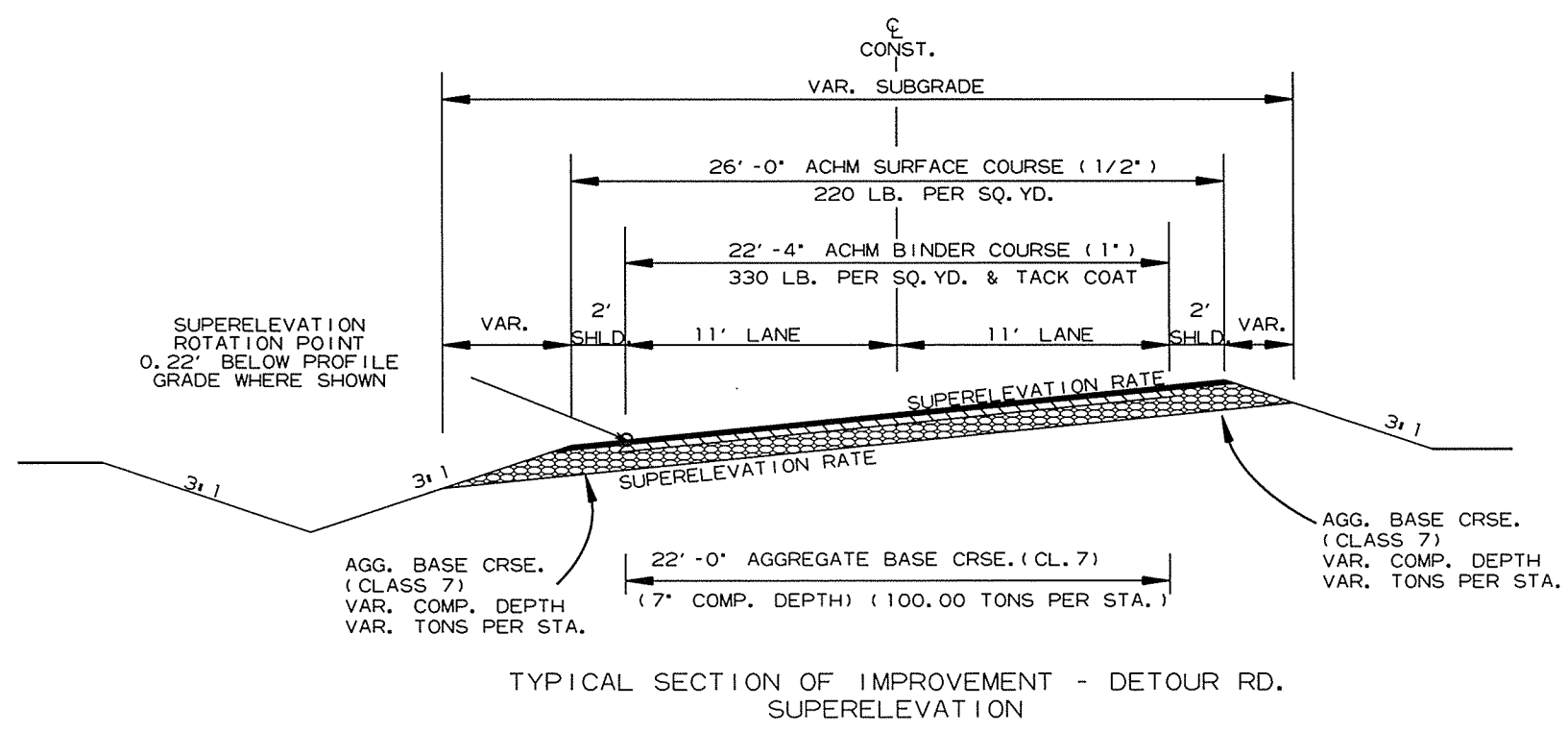
② TYPICAL SECTIONS OF IMPROVEMENT



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

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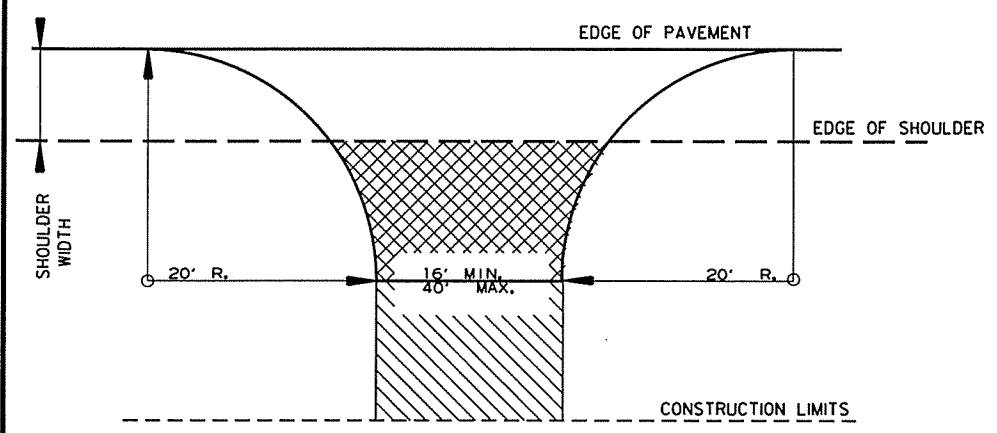



5/22/2014  
RF SX005.DGN


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				6	ARK.		6	67
				JOB NO. FSX005				

NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

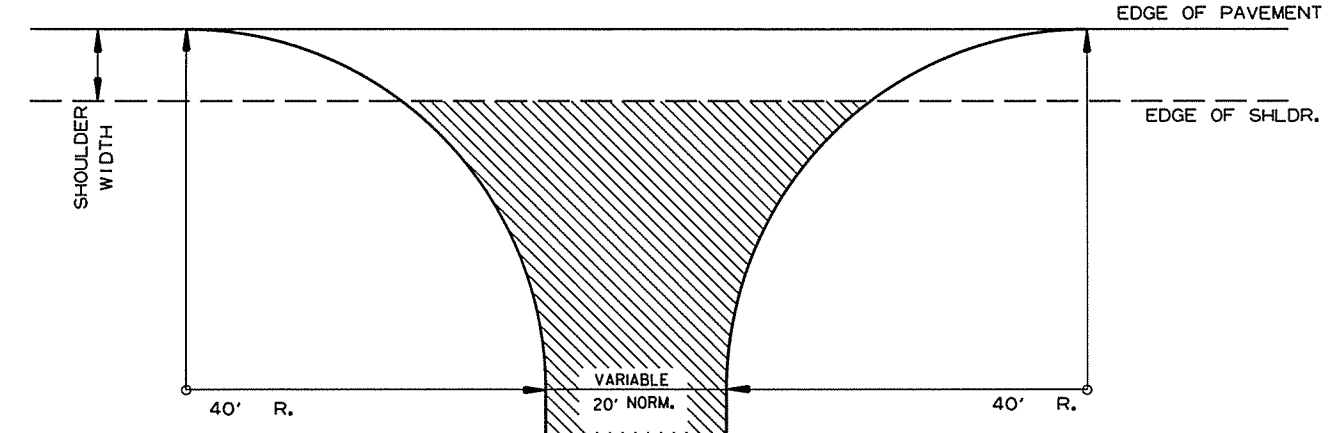
2 SPECIAL DETAILS




 ASPHALT CONCRETE HOT MIX SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) (7" COMP. DEPTH) IF ASPHALT DRIVE EXISTS.

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

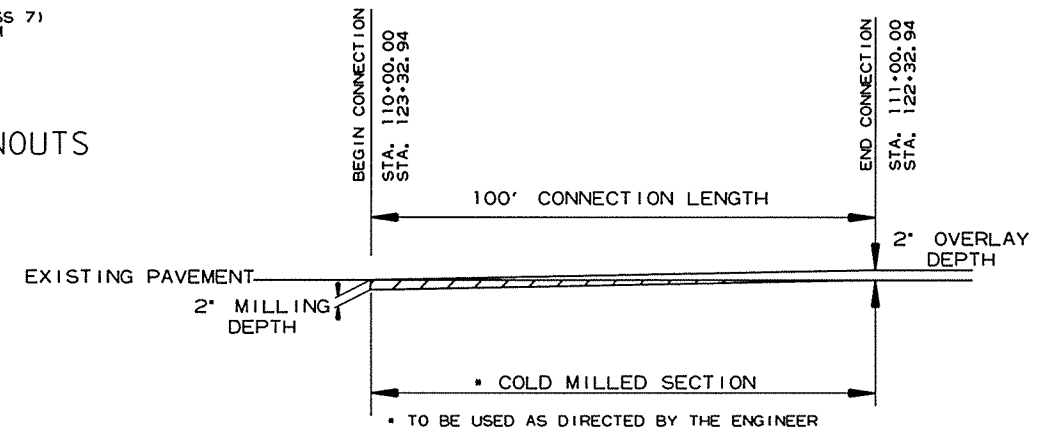
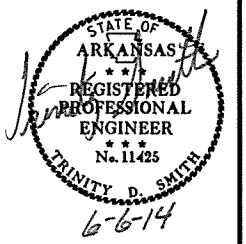
DETAIL FOR DRIVEWAY TURNOUTS (COLLECTORS)



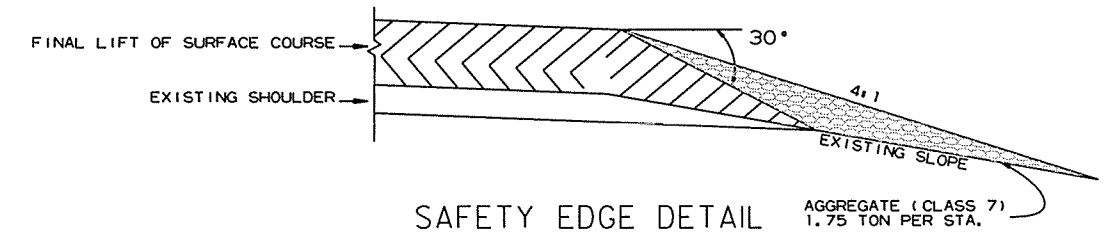
 ASPHALT CONCRETE HOT MIX SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) (7" COMP. DEPTH)

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

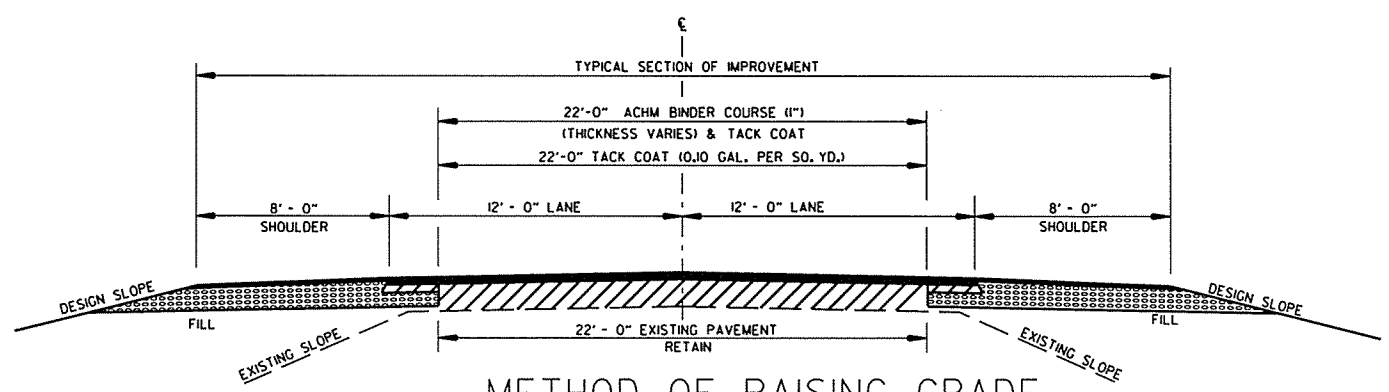
DETAIL FOR COUNTY ROAD TURNOUTS



DETAIL SHOWING TAPER TO EXISTING PAVEMENT

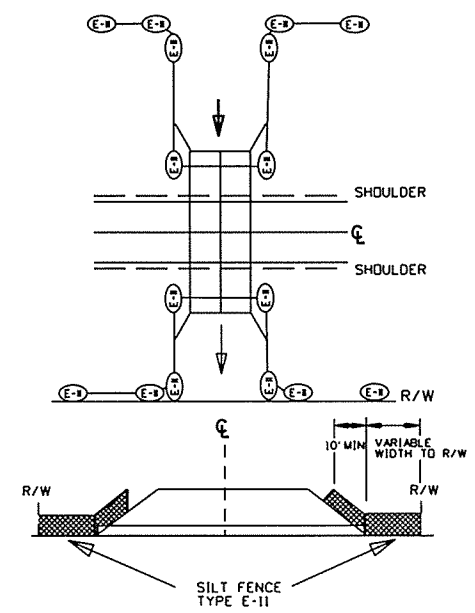


SAFETY EDGE DETAIL



METHOD OF RAISING GRADE

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



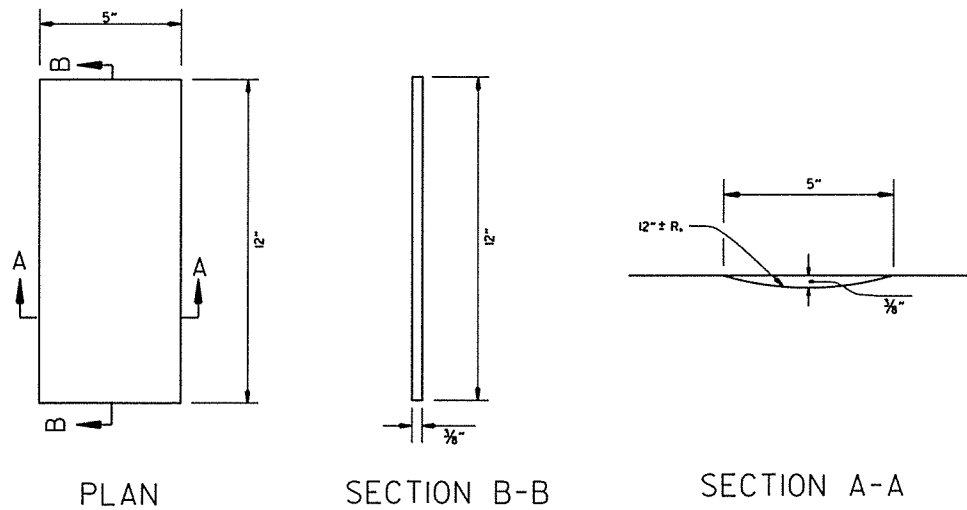
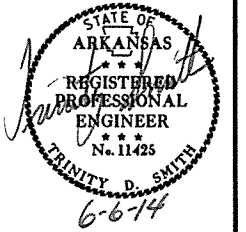
DETAIL OF SILT FENCE AT CROSS DRAINS

SPECIAL DETAILS

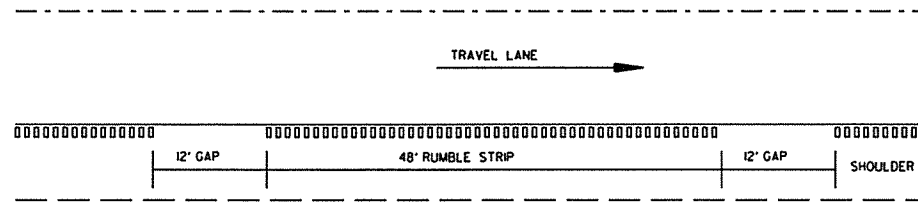
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RF5X005.DGN

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2 SPECIAL DETAILS

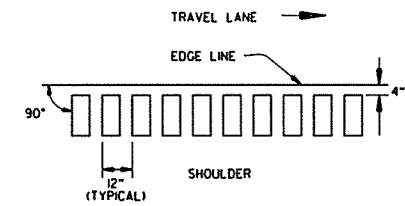


DETAILS OF RUMBLE STRIPS

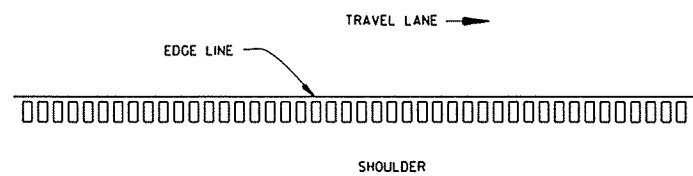
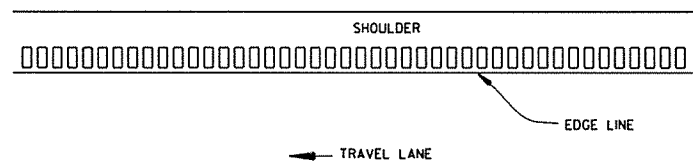


DETAIL FOR GAP PATTERN RUMBLE STRIP

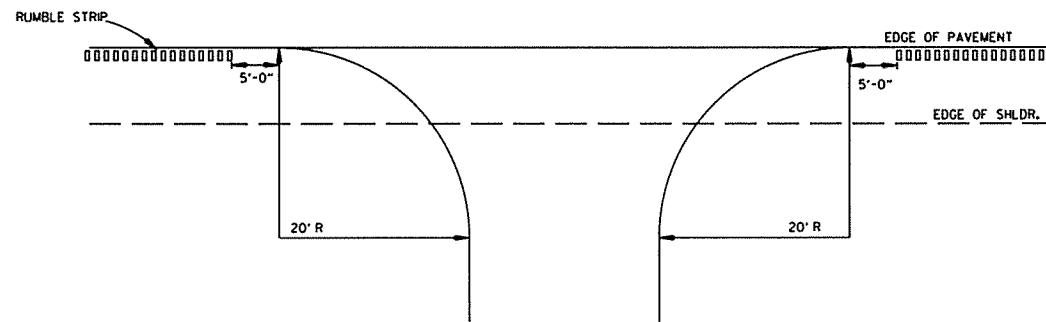
NOTE: GAP PATTERN SHALL BE ADJUSTED BY THE ENGINEER IN THE FIELD ALLOWING FOR DRIVEWAYS TO SERVE AS THE GAP.



LOCATION PLAN OF RUMBLE STRIPS LEFT OR RIGHT SHOULDER



PLAN VIEW



DETAIL FOR RUMBLE STRIP GAP AT DRIVEWAY TURNOUTS

GENERAL NOTES

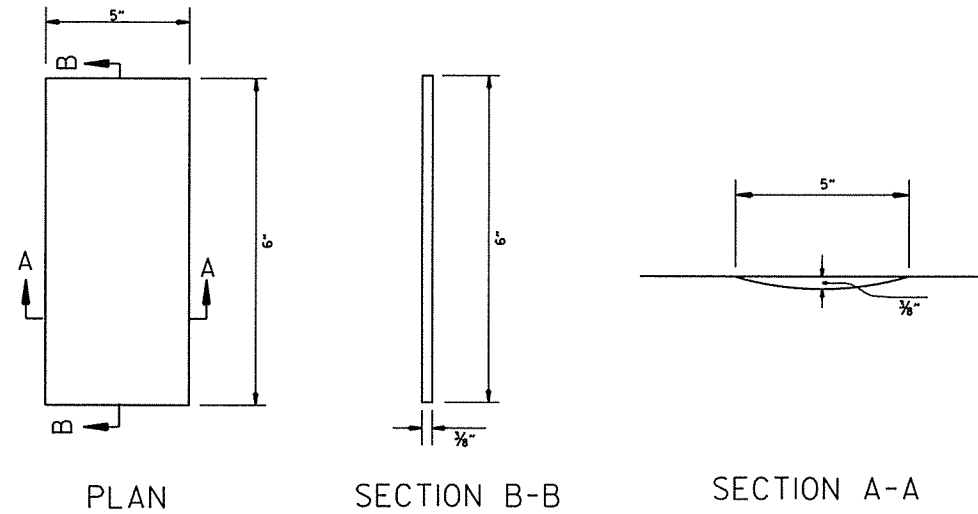
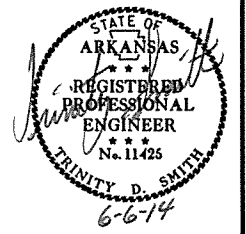
1. RUMBLE STRIPS SHALL NOT BE INSTALLED ON CURB SECTIONS, BRIDGE DECKS, APPROACH SLABS, INTERSECTING STREETS OR ROADWAYS, RESIDENTIAL OR COMMERCIAL DRIVEWAYS OR ACROSS TRANSVERSE JOINTS OF CONCRETE SHOULDERS.
2. RUMBLE STRIPS SHALL NOT BE INSTALLED ON A PAVED SHOULDER THAT IS USED AS A DECELERATION LANE FOR THE LENGTH DEEMED APPROPRIATE BY THE ENGINEER.
3. THE 4" OFFSET FROM THE EDGE LINE MAY BE INCREASED TO AVOID LONGITUDINAL JOINTS. IN ALL CASES, THE LATERAL DEVIATION FROM THE PLANNED OFFSET SHOULD BE KEPT TO A MINIMUM.
4. RUMBLE STRIPS SHALL BE MEASURED BY THE LINEAR FOOT LONGITUDINALLY ALONG THE SHOULDER. PAYMENT SHALL ONLY INCLUDE THAT PORTION OF THE SHOULDER ON WHICH RUMBLE STRIPS HAVE BEEN CONSTRUCTED. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR GAPS, DRIVEWAYS, TURNOUTS, OR OTHER PUBLIC ROAD INTERSECTIONS WHERE RUMBLE STRIPS HAVE NOT BEEN CONSTRUCTED.
5. THE 3/8" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 12" LENGTH. SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.

5/20/2014

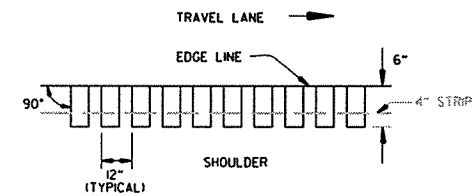
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		8	67
				JOB NO.	FSX005			

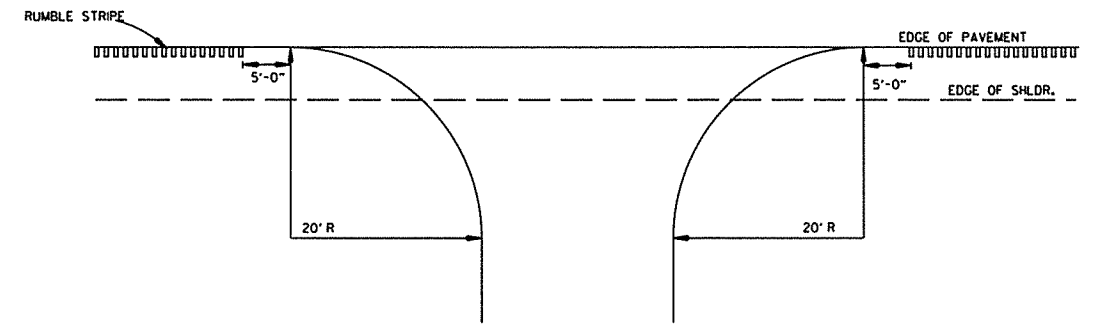
2 SPECIAL DETAILS



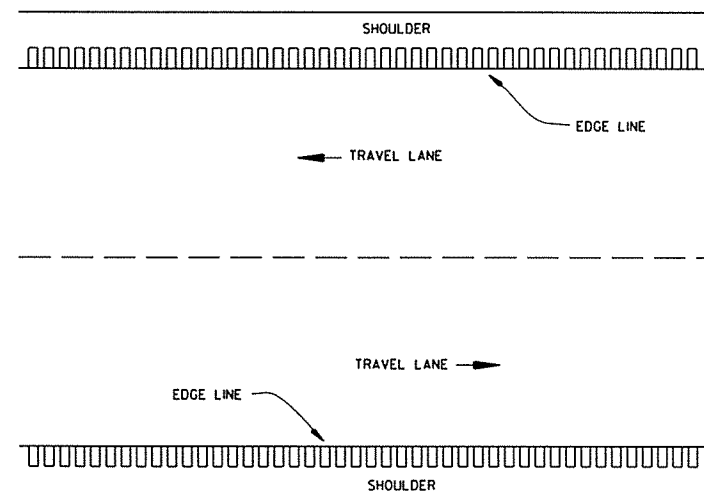
DETAILS OF RUMBLE STRIPE



LOCATION PLAN OF RUMBLE STRIPE  
LEFT OR RIGHT SHOULDER



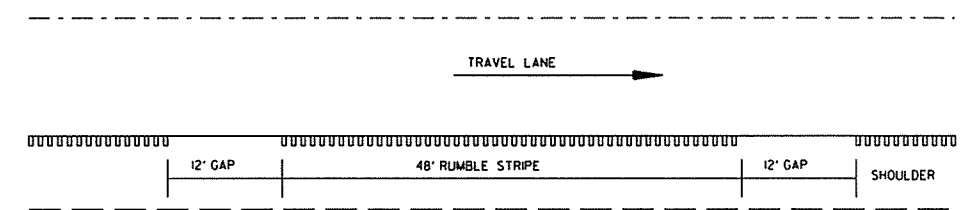
DETAIL FOR RUMBLE STRIPE GAP  
AT DRIVEWAY TURNOUTS



PLAN VIEW

GENERAL NOTES

1. RUMBLE STRIPES SHALL NOT BE INSTALLED ON BRIDGE DECKS, APPROACH SLABS, INTERSECTING STREETS OR ROADWAYS, RESIDENTIAL OR COMMERCIAL DRIVEWAYS.
2. RUMBLE STRIPES SHALL NOT BE INSTALLED ON A PAVED SHOULDER THAT IS USED AS A DECELERATION LANE FOR THE LENGTH DEEMED APPROPRIATE BY THE ENGINEER.
3. RUMBLE STRIPES SHALL BE MEASURED BY THE LINEAR FOOT LONGITUDINALLY ALONG THE SHOULDER. PAYMENT SHALL ONLY INCLUDE THAT PORTION OF THE SHOULDER ON WHICH RUMBLE STRIPES HAVE BEEN CONSTRUCTED. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR GAPS, DRIVEWAYS, TURNOUTS, OR OTHER PUBLIC ROAD INTERSECTIONS WHERE RUMBLE STRIPES HAVE NOT BEEN CONSTRUCTED.
4. THE 3/8" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 6" LENGTH. SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.



DETAIL FOR GAP PATTERN RUMBLE STRIPE

NOTE: GAP PATTERN SHALL BE ADJUSTED BY THE ENGINEER IN THE FIELD ALLOWING FOR DRIVEWAYS TO SERVE AS THE GAP.

MID-SECTION

R.C. BOX SECTION		DESIGN FILL DEPTH (FT.)		CLEAR SPAN (FT.)		CLEAR HEIGHT (FT.)		TOP SLAB THK.		BOTTOM SLAB THK.		SIDE WALL THK.		INTERIOR WALL THK.		OVER ALL WIDTH		OVER ALL HEIGHT		SECTION LENGTH (FT.)		TOP SLAB REINFORCING STEEL				BOTTOM SLAB REINFORCING STEEL				SIDE WALL REINFORCING STEEL		INTERIOR WALL REINFORCING STEEL		TOP SLAB DISTRIBUTION REINF. STEEL		BOTTOM SLAB DISTRIBUTION REINF. STEEL		SIDE WALL DISTRIBUTION REINF. STEEL		INTERIOR WALL DISTRIBUTION REINF. STEEL						
D	S	H	T	B	C	W	OW	OH	SL	a	Bent b	c	SPACING	NO. REQ'D	d	Bent b1	f	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH			
A	2	10	6	13	13	6	8	43'-0"	8'-2"	74	4	42'-8"	8	43'-10"	6	42'-8"	9	98	4	42'-8"	4	43'-10"	4	42'-8"	16	55	4	4.5	394	7'-10"	4	12	444	7'-10"	4	8.5	127	4	8.5	127	4	12	12	4	12	36

R.C. BOX SECTION		DESIGN FILL DEPTH (FT.)		CLEAR SPAN (FT.)		CLEAR HEIGHT (FT.)		TOP SLAB THK.		BOTTOM SLAB THK.		SIDE WALL THK.		INTERIOR WALL THK.		OVER ALL WIDTH		OVER ALL HEIGHT		SECTION LENGTH (FT.)		TOP SLAB REINFORCING STEEL				BOTTOM SLAB REINFORCING STEEL				SIDE WALL REINFORCING STEEL		INTERIOR WALL REINFORCING STEEL		TOP SLAB DISTRIBUTION REINF. STEEL		BOTTOM SLAB DISTRIBUTION REINF. STEEL		SIDE WALL DISTRIBUTION REINF. STEEL		INTERIOR WALL DISTRIBUTION REINF. STEEL					
D	S	H	T	B	C	W	OW	OH	SL	a	Bent b	c	SPACING	NO. REQ'D	d	Bent b1	f	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH		
	2	10	6																																										

SK	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINFORCING STEEL				BOTTOM SLAB REINFORCING STEEL				SIDE WALL REINFORCING STEEL		INTERIOR WALL REINFORCING STEEL		TOP SLAB DISTRIBUTION REINFORCING STEEL		BOTTOM SLAB DISTRIBUTION REINFORCING STEEL		SIDE WALL DISTRIBUTION REINFORCING STEEL		INTERIOR WALL DISTRIBUTION REINFORCING STEEL													
													SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	
					0'-0"																																							

INLET SKEWED END SECTION

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT		WINGWALL ANGLE (DEGREE)	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL		FOOTING DIMENSION PARALLEL WITH HDWL		LENGTH OF WINGWALLS		LENGTH OF FOOTING HEEL		CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)	
								AT HDWL	AT WING END			WING A	WING B	WING A	WING B	WING A	WING B	WING A	WING B			
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WF1	WF2	G1	G2	W1	W2	W3	W4	CU.YD	LBS.	
43'-0"	6'-0"	0'-9"	0'-8"	0	3:1	42'-0"	2'-0"	6'-10"	2'-0"	30	30	3'-2"	3'-4 7/8"	3'-4 7/8"	0'-3 1/4"	0'-3 1/4"	16'-6"	16'-6"	20'-1 3/8"	20'-1 3/8"	10.22	836

MID-SECTION BAR LAP TABLE

# of Long. Laps Req'd.	SL = Section Length
0	< 40.0 ft
1	>40.0 ft - 78.0 ft
2	>78.0 ft - 116.0 ft
3	>116.0 ft - 154.0 ft
4	>154.0 ft - 192.0 ft
5	>192.0 ft - 230.0 ft
6	>230.0 ft - 268.0 ft
7	>268.0 ft - 306.0 ft
8	>306.0 ft - 344.0 ft

Mn. Bar Lap Length
#4 1'-9"
#5 2'-2"
#6 2'-7"
#7 3'-6"
#8 4'-7"

Bar Pin Dia. Table
#4 3"
#5 3 3/4"
#6 4 1/2"
#7 5 1/4"
#8 6"

TABULAR DATA BY: CSL DATE 04/02/2014  
CHECKED BY: CMW DATE 4/14/14



This drawing to be used in conjunction with SHEET 1 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", "GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE", SHEET 3 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", "DETAILS OF MULTI-BARREL R.C. BOX CULVERT", SHEET 4 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", "DETAILS OF WINGWALLS", and STANDARD DRAWING RCB-2.

For additional information and outlet sections, see Sheet 2 of 2.

CLASS "S" CONCRETE (Includes HDWL)	REINFORCING STEEL (GR 60) (Includes HDWL)
CU. YDS.	LBS.

Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Gr. 60)."

CLASS "S" CONCRETE	REINFORCING STEEL (GR. 60)	ADTL. REINF. PER LONG. LAP LOCATION (S)	ADTL. REINF. FOR TRANS. LAP	ADDITIONAL CONCRETE FOR HDWL	TOTAL ADTL. REINF. FOR HDWL
CU. YDS. PER LIN. FT.	LBS. PER LIN. FT.	LBS.	LBS. PER LIN. FT.	CU. YDS.	LBS.
				0.40	116

Bar Lap - Add one long lap for each Slope Section, and one additional long lap for Slope Sections greater than 40'-0" in length.

Design Fill Depth	Range of Actual Fill Depth
2	0.0 ft - 2.0 ft
5	>2.0 ft - 5.0 ft
10	>5.0 ft - 10.0 ft
15	>10.0 ft - 15.0 ft
20	>15.0 ft - 20.0 ft
25	>20.0 ft - 25.0 ft
30	>25.0 ft - 30.0 ft
35	>30.0 ft - 35.0 ft
40	>35.0 ft - 40.0 ft

Data shown for Mid-Section, Slope Sections, and Skewed End Section is based on the design fill depth shown in the table, see PLAN AND PROFILE SHEETS for actual fill depth.

SHEET 1 OF 2  
DETAILS OF R.C. BOX CULVERT  
QUADRUPLE BARREL BOX CULVERT  
Sta. 105+33  
SPECIAL DETAILS



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		10	67
				JOB NO.	FSX005		SPECIAL DETAILS	



TABULAR DATA BY: CSL DATE: 04/02/2014  
 CHECKED BY: *cmw* DATE: 4/11/14

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT		WINGWALL ANGLE (DEGREE)		FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL		FOOTING DIMENSION PARALLEL WITH HDWL		LENGTH OF WINGWALLS		LENGTH OF FOOTING HEEL		CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
								AT HDWL	AT WING END	WING A	WING B		WING A	WING B	WING A	WING B	WING A	WING B	WING A	WING B		
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4	CU.YD	LBS.
43'-0"	6'-0"	0'-9"	0'-8"	0	3:1	42'-0"	2'-0"	6'-10"	2'-0"	30	30	3'-2"	3'-4 7/8"	3'-4 7/8"	0'-3 1/4"	0'-3 1/4"	16'-6"	16'-6"	20'-1 3/8"	20'-1 3/8"	11.63	836

Min. Bar Lap Length

#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table

#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Gr. 60)."

OUTLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINFORCING STEEL				BOTTOM SLAB REINFORCING STEEL				SIDE WALL REINFORCING STEEL		INTERIOR WALL REINFORCING STEEL		TOP SLAB DISTRIBUTION REINFORCING STEEL		BOTTOM SLAB DISTRIBUTION REINFORCING STEEL		SIDE WALL DISTRIBUTION REINFORCING STEEL		INTERIOR WALL DISTRIBUTION REINFORCING STEEL					
													a	c	d	f	f0	f1	g	e	d1	d2														
SK	SL	D	S	H	L	T	HW	B	C	W	OW	OH	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	
					0'-0"																															

CLASS "S" CONCRETE (Includes HDWL)	REINFORCING STEEL (GR 60) (Includes HDWL)
CU. YDS.	LBS.

OUTLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (FT.)	TOP SLAB REINFORCING STEEL				BOTTOM SLAB REINFORCING STEEL				SIDE WALL REINFORCING STEEL "f0"		INTERIOR WALL REINFORCING STEEL "f1"		TOP SLAB DISTRIBUTION REINF. STEEL "g"		BOTTOM SLAB DISTRIBUTION REINF. STEEL "e"		SIDE WALL DISTRIBUTION REINF. STEEL "d1"		INTERIOR WALL DISTRIBUTION REINF. STEEL "d2"						
											a	Bent b	c	SPACING	NO. REQ'D	d	Bent b1	f	SPACING	NO. REQ'D	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D
	2	10	6																																

CLASS "S" CONCRETE	REINFORCING STEEL (GR. 60)	ADTL. REINF. PER LONG LAP LOCATION (S)	ADTL. REINF. FOR TRANS. LAP	ADDITIONAL CONCRETE FOR HDWL	TOTAL ADTL. REINF. FOR HDWL
CU. YDS. PER LIN. FT.	LBS. PER LIN. FT.	LBS.	LBS. PER LIN. FT.	CU. YDS.	LBS.
				0.40	116

Bar Lap - Add one long lap for each Slope Section, and one additional long lap for Slope Sections greater than 40'-0" in length.

The required number of bars and lengths shown are for estimating purpose only. The actual number and length required shall be determined in field.  
 Unless otherwise noted, all dimensions are in inches.



MID-SECTION

Table with columns for R.C. BOX SECTION, DESIGN FILL DEPTH, CLEAR SPAN, CLEAR HEIGHT, TOP SLAB THK., BOTTOM SLAB THK., SIDE WALL THK., INTERIOR WALL THK., OVER ALL WIDTH, OVER ALL HEIGHT, SECTION LENGTH, TOP SLAB REINFORCING STEEL, BOTTOM SLAB REINFORCING STEEL, SIDE WALL REINFORCING STEEL, INTERIOR WALL REINFORCING STEEL, TOP SLAB DISTRIBUTION REINF. STEEL, BOTTOM SLAB DISTRIBUTION REINF. STEEL, SIDE WALL DISTRIBUTION REINF. STEEL, INTERIOR WALL DISTRIBUTION REINF. STEEL, CU. YDS., REINFORCING STEEL (GR. 60), ADTL. REINF. PER LONG. LAP PER LONG. LAP LOCATION, ADDITIONAL CONCRETE FOR HDWL, TOTAL ADTL. REINF. FOR HDWL.

Table with columns: CLASS 'S' CONCRETE, REINFORCING STEEL (GR. 60), ADTL. REINF. PER LONG. LAP PER LONG. LAP LOCATION, ADDITIONAL CONCRETE FOR HDWL, TOTAL ADTL. REINF. FOR HDWL.

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
TRIPLE BARREL BOX CULVERT
Sta. 207+73
SPECIAL DETAILS

Data shown for Mid-Section, Slope Section(s), and Skewed End Section is based on the design fill depth shown in the table, see PLAN AND PROFILE SHEETS for actual fill depth.

Table with columns: Design Fill Depth, Range of Actual Fill Depth.

INLET SLOPE SECTION(S)

Table with columns for R.C. BOX SECTION, DESIGN FILL DEPTH, CLEAR SPAN, CLEAR HEIGHT, TOP SLAB THK., BOTTOM SLAB THK., SIDE WALL THK., INTERIOR WALL THK., OVER ALL WIDTH, OVER ALL HEIGHT, SECTION LENGTH, TOP SLAB REINFORCING STEEL, BOTTOM SLAB REINFORCING STEEL, SIDE WALL REINFORCING STEEL, INTERIOR WALL REINFORCING STEEL, TOP SLAB DISTRIBUTION REINF. STEEL, BOTTOM SLAB DISTRIBUTION REINF. STEEL, SIDE WALL DISTRIBUTION REINF. STEEL, INTERIOR WALL DISTRIBUTION REINF. STEEL, CU. YDS., REINFORCING STEEL (GR. 60), ADTL. REINF. PER LONG. LAP PER LONG. LAP LOCATION, ADDITIONAL CONCRETE FOR HDWL, TOTAL ADTL. REINF. FOR HDWL.

Table with columns: CLASS 'S' CONCRETE, REINFORCING STEEL (GR. 60), ADTL. REINF. PER LONG. LAP PER LONG. LAP LOCATION, ADDITIONAL CONCRETE FOR HDWL, TOTAL ADTL. REINF. FOR HDWL.

Bar Lap - Add one long lap for each Slope Section, and one additional long lap for Slope Sections greater than 40'-0" in length.

INLET SKEWED END SECTION

Table with columns for SKEW (DEGREE), SLOPE, DESIGN FILL DEPTH, CLEAR SPAN, CLEAR HEIGHT, SECTION LENGTH, TOP SLAB THK., HDWL THK., BOTTOM SLAB THK., SIDE WALL THK., INTERIOR WALL THK., OVER ALL WIDTH, OVER ALL HEIGHT, TOP SLAB REINFORCING STEEL, BOTTOM SLAB REINFORCING STEEL, SIDE WALL REINFORCING STEEL, INTERIOR WALL REINFORCING STEEL, TOP SLAB DISTRIBUTION REINFORCING STEEL, BOTTOM SLAB DISTRIBUTION REINFORCING STEEL, SIDE WALL DISTRIBUTION REINFORCING STEEL, INTERIOR WALL DISTRIBUTION REINFORCING STEEL, CU. YDS., REINFORCING STEEL (GR. 60).

Table with columns: CLASS 'S' CONCRETE (includes HDWL), REINFORCING STEEL (GR. 60) (includes HDWL), CU. YDS., LBS.

Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Gr. 60)."

INLET WINGWALL TABLE

Large table with columns for OVER ALL WIDTH, CLEAR HEIGHT, FOOTING THK., WING WALL THK., BOX SKEW (DEG.), SLOPE, HDWL LENGTH, HEEL, WALL HEIGHT, WINGWALL ANGLE (DEGREE), WING WALL AT HDWL, WING WALL AT WING END, WIDTH OF WING FOOTINGS AT HDWL, FOOTING DIMENSION PARALLEL WITH HDWL, LENGTH OF WINGWALLS, LENGTH OF FOOTING HEEL, CLASS 'S' CONCRETE, REINFORCING STEEL.

MID-SECTION BAR LAP TABLE

Table with columns: # of Long. Laps Req'd., Section Length, REINF. STEEL QTY. PER WING (LBS).

Table with columns: Min. Bar Lap Length, #, Length.

Table with columns: Bar Pin Dia. Table, #, Size.

TABULAR DATA BY: CSL DATE: 03/14/2014
CHECKED BY: C.M.W. DATE: 4/4/14

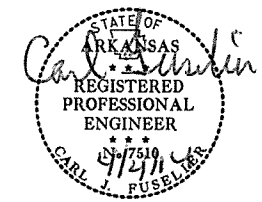


Table with columns: DATE REVISED, DATE FILMED, FED. ROAD DIST. NO., STATE, FED. AID PROJ. NO., SHEET NO., TOTAL SHEETS.



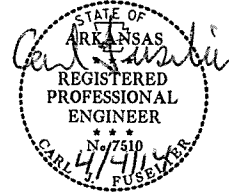
OUTLET WINGWALL TABLE

Main table for Outlet Wingwall details, including columns for Wing A and Wing B, bar sizes, spacings, and lengths.

Min. Bar Lap Length table with columns for bar size (#4-#8) and length (1'-9" to 4'-7").

Bar Pin Dia. Table with columns for bar size (#4-#8) and pin diameter (3" to 6").

TABULAR DATA BY: CSL DATE: 03/14/2014 CHECKED BY: CMW DATE: 4/9/14



Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Gr. 60)."

OUTLET SKEWED END SECTION

Table for Outlet Skewed End Section detailing reinforcing steel requirements for top slab, bottom slab, side wall, and interior wall.

Summary table for Class "S" Concrete and Reinforcing Steel, showing quantities in cubic yards and pounds.

OUTLET SLOPE SECTION(S)

Table for Outlet Slope Section(S) detailing reinforcing steel requirements for top slab, bottom slab, side wall, and interior wall.

Summary table for Class "S" Concrete and Reinforcing Steel for slope sections, showing quantities in cubic yards and pounds.

Bar Lap - Add one long. lap for each Slope Section, and one additional long. lap for Slope Sections greater than 40'-0" in length.



The required number of bars and lengths shown are for estimating purpose only. The actual number and length required shall be determined in field.

Unless otherwise noted, all dimensions are in inches.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	FSX005	13	67	

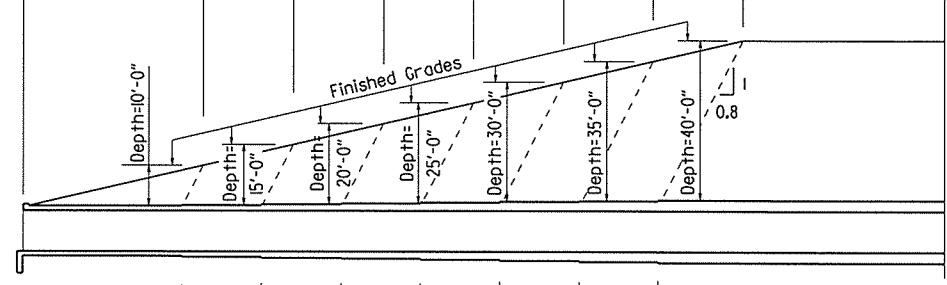
① SPECIAL DETAILS



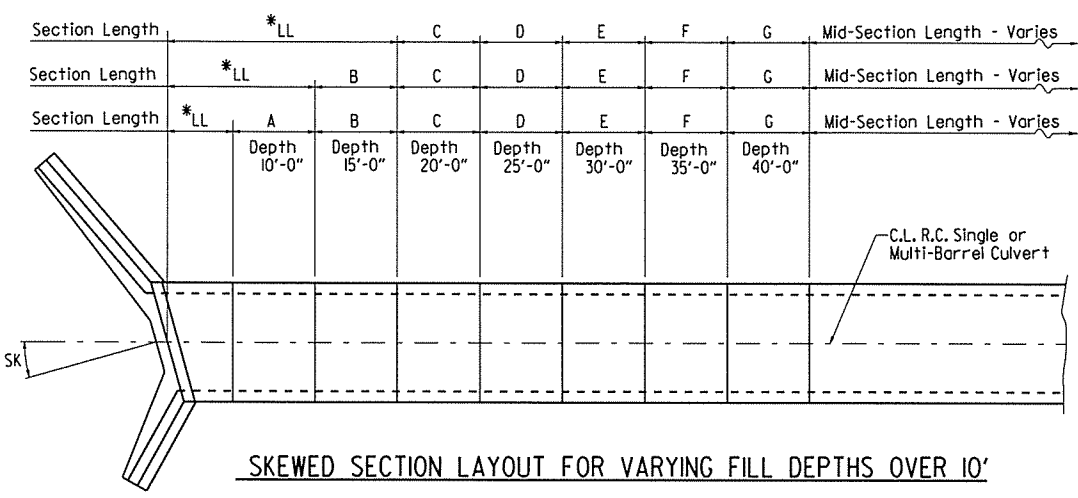
2:1 Slope	20'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
3:1 Slope	30'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"
4:1 Slope	40'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"

Note: For fill depths 10' and under, use Mid-Section full length of box culvert.

\* LL = Skewed End Section Length - See "Skewed End Section Details" Length LL varies with skew angle, overall box width and fill depth and may eliminate the need for some slope section lengths as shown.



Slope Section Length @ 2:1 Slope	A=12'-0"	B=6'-0"	C=6'-0"	D=6'-0"	E=6'-0"	F=6'-0"	G=6'-0"	Mid-Section Length - Varies
Slope Section Length @ 3:1 Slope	A=22'-0"	B=11'-0"	C=11'-0"	D=11'-0"	E=11'-0"	F=11'-0"	G=11'-0"	Mid-Section Length - Varies
Slope Section Length @ 4:1 Slope	A=32'-0"	B=16'-0"	C=16'-0"	D=16'-0"	E=16'-0"	F=16'-0"	G=16'-0"	Mid-Section Length - Varies



**LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'**

Lengths for Non-Skewed Boxes

**SKEWEED SECTION LAYOUT FOR VARYING FILL DEPTHS OVER 10'**

**GENERAL NOTES:**

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 edition) with applicable Supplemental Specifications and Special Provisions. Section and Subsection refer to the Standard Construction Specifications unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fifth Edition (2010) with 2010 interim revisions.

LIVE LOADING: HL-93

All concrete shall be Class 5 with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have 3/4" chamfers.

Reinforcing Steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

Reinforcing Steel Tolerances: The tolerances for reinforcing steel shall meet those listed in 'Manual of Standard Practice' published by Concrete Reinforcing Steel Institute (CRSI) except that the tolerance for truss bars such as Figure 3 on page 7-4 of the CRSI Manual shall be minus zero to plus 1/2 inch.

Excavation and backfilling shall be in accordance with the requirements of Section 801.

Membrane Waterproofing shall conform to the requirements of Section 815. Membrane Waterproofing shall be Type C and as directed by the Engineer applied to all construction joints in the top slab and the sidewalls of R.C. Box culverts and to the construction joint between wingwalls and R.C. Box culvert walls.

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.

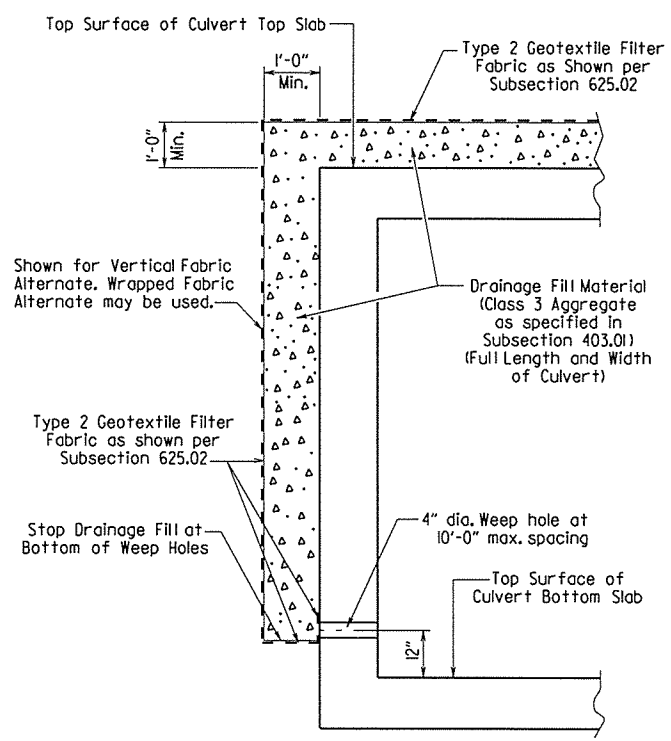
Weep Holes in wingwalls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to clear all reinforcing steel. There shall be a minimum of two (2) weep holes in each wingwall. The drain opening shall be 4" diameter and shall be placed 12" above the top of the wingwall footing.

The barrel components of the culvert may be constructed using continuous pours. For longer culvert construction, the Contractor may use multiple pours with transverse construction joints spaced a minimum of 50 feet apart unless superseded by stage construction or site constraints as approved by the Engineer. Construction joints between footings and walls shall be made only where shown in the Plans. Joints shall be normal to the centerline of barrel and shall be keyed. Longitudinal reinforcing shall be continuous through joints unless shown otherwise. All longitudinal construction joints shall be submitted to the Engineer for approval.

Membrane Waterproofing, Weep Holes, Geotextile Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered subsidiary to Class 5 Concrete.

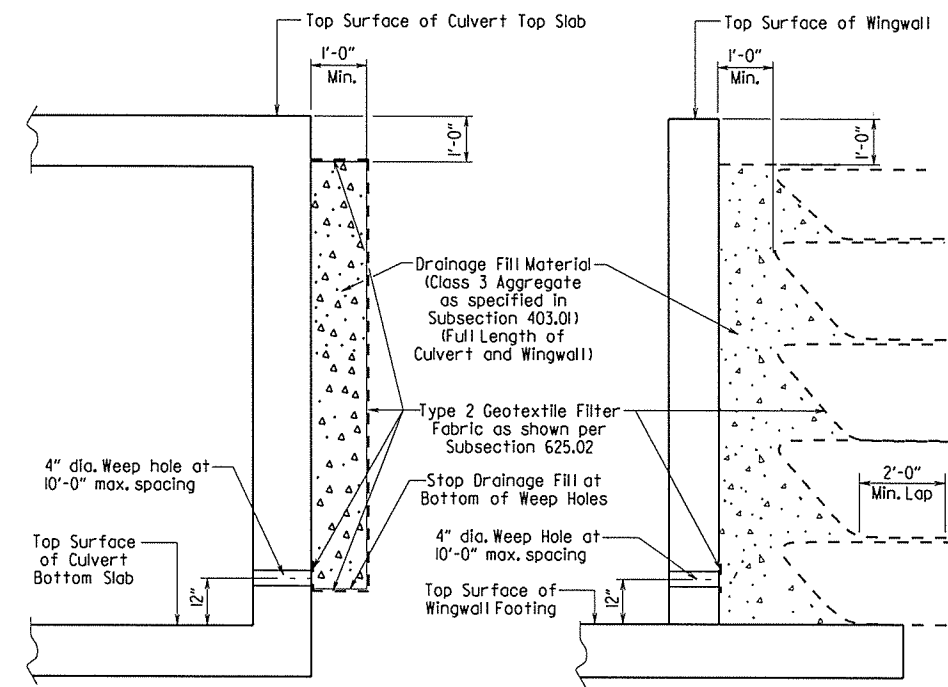
When the top slab of the box culvert serves as finished roadway surface, curing and finishing shall be in accordance with subsections 802.17 and 802.20 for bridge roadway surface and a tine finish shall be applied in accordance with subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Curing and finishing shall not be paid for directly, but shall be considered incidental to the item "Class 5 Concrete-Roadway". Class 1 Protective Surface Treatment shall be applied to the roadway surface and this work shall be paid for under the unit price bid for "Class 1 Protective Surface Treatment".

When precast reinforced concrete box culverts are substituted for cast in place box culverts, they shall be manufactured according to ASTM C 1577 and meet the requirements of Section 607. When the top slab of the box culvert serves as the finished roadway surface, a precast reinforced concrete box culvert substitution is not allowed.



**CULVERT DRAINAGE DETAIL FOR ROCK FILL**

This detail shall be used when rock fill is specified for embankment construction.



**VERTICAL FABRIC ALTERNATE**

(Shown for Culvert, Similar for Wingwall)

**WRAPPED FABRIC ALTERNATE**

(Shown for Wingwall, Similar for Culvert)

For Details of Excavation and Pay Limits, see Standard Drawing RCB-2.

**WINGWALL & CULVERT DRAINAGE DETAIL**

SHEET 1 OF 4  
**GENERAL DETAILS OF R.C. BOX CULVERT**  
 GENERAL NOTES &  
 LONGITUDINAL SECTION LENGTH SCHEDULE  
 SPECIAL DETAILS

V 1.114 bfsx005\_culvert.dgn

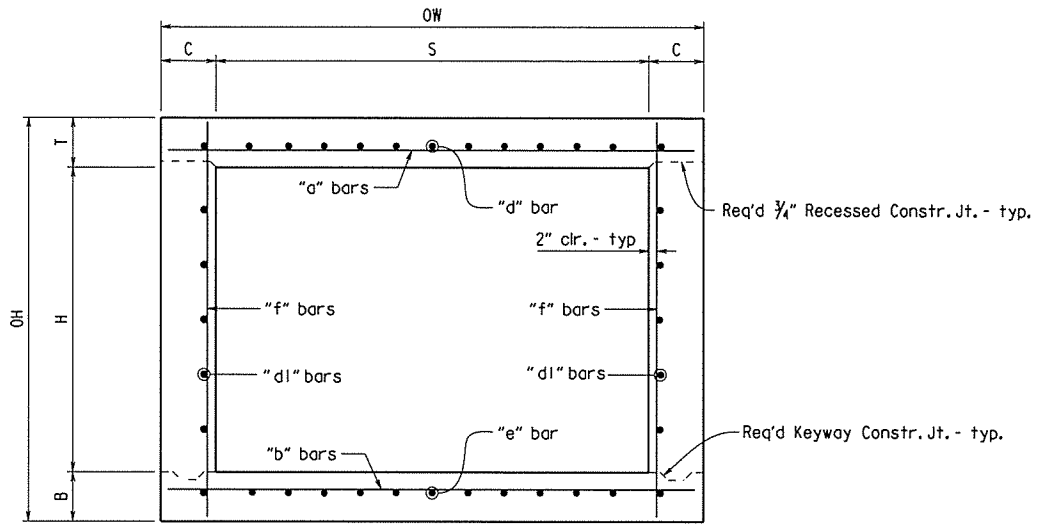


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO.	FSX005	14 of 67

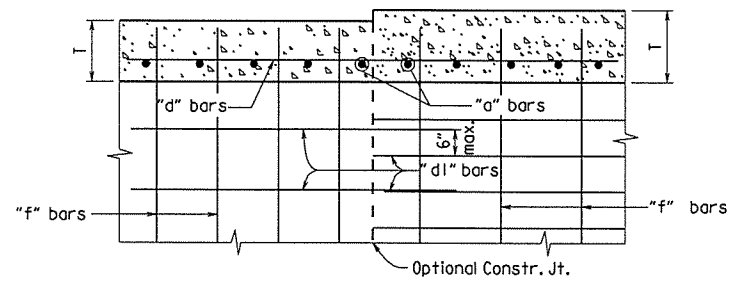
① SPECIAL DETAILS



Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.

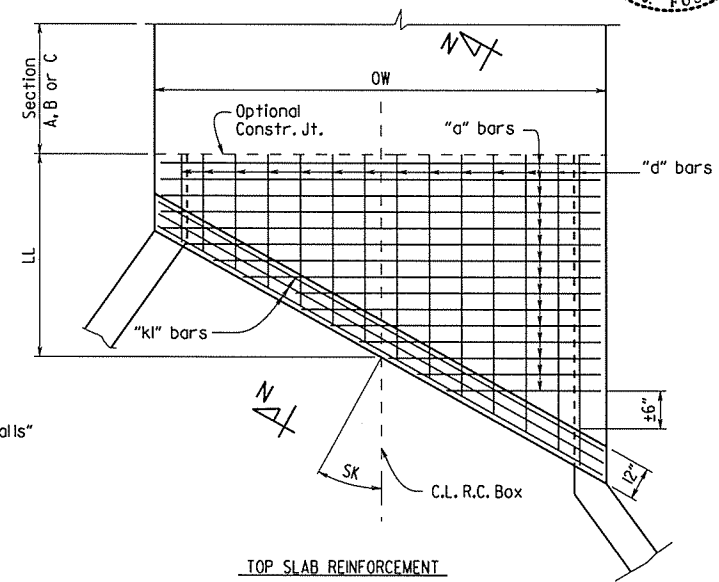


TYPICAL SECTION M-M

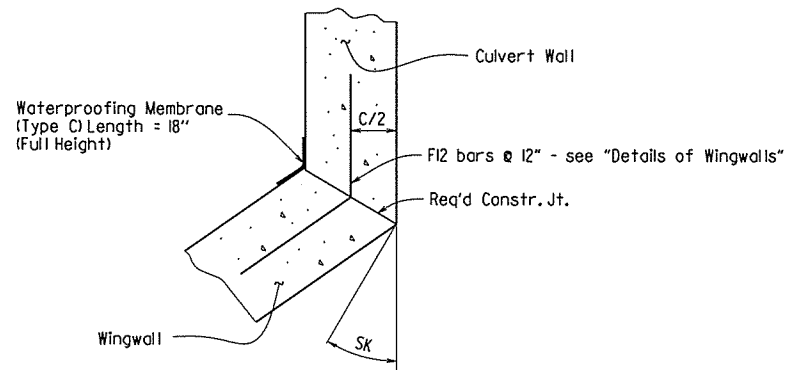


LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR

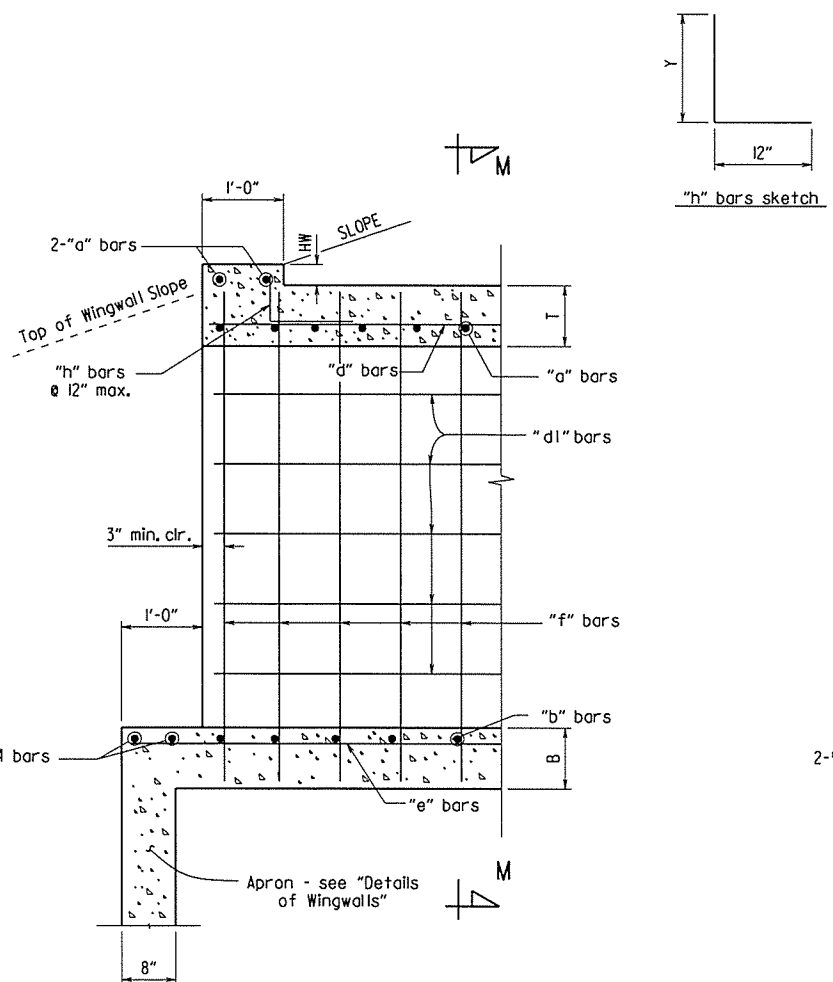


TOP SLAB REINFORCEMENT



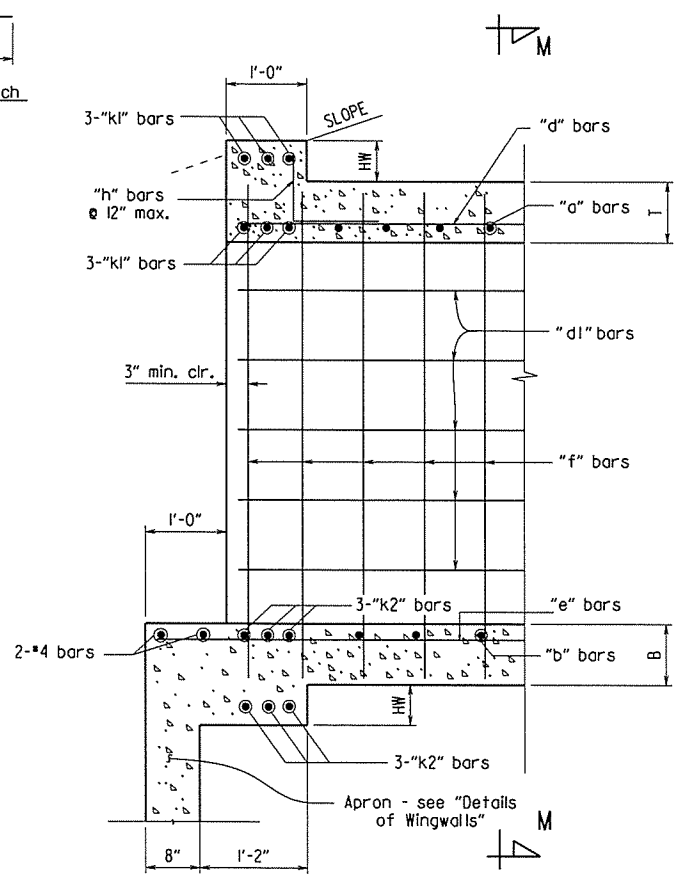
WINGWALL ATTACHMENT

See "Details of Wingwalls" for additional information and wingwall details.



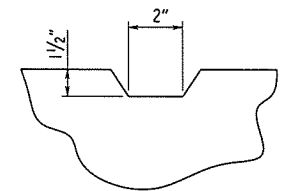
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



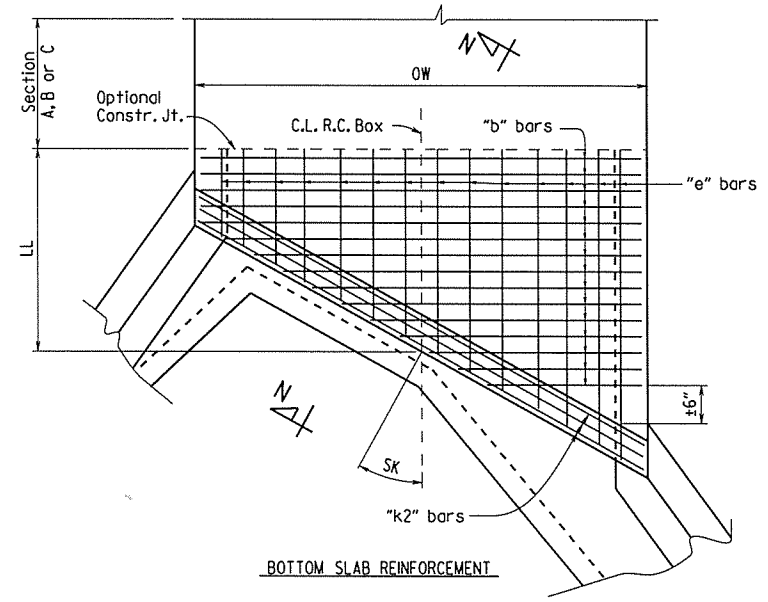
PART LONGITUDINAL SECTION N-N

(Skewed Ends)



TYPICAL KEYWAY DETAIL

(All Construction Joints)



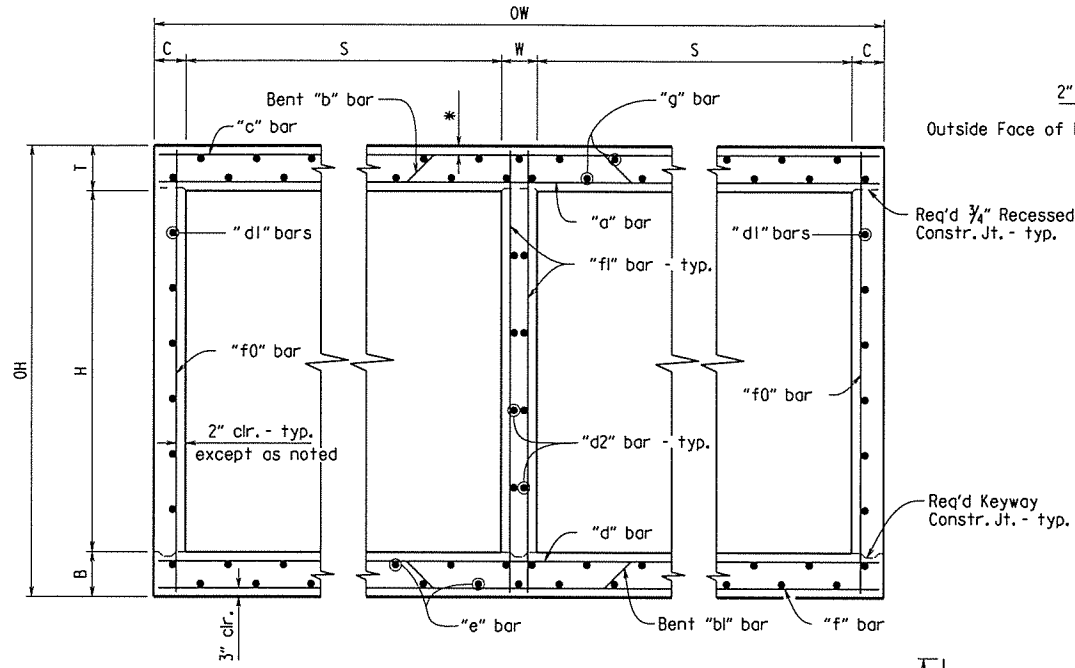
BOTTOM SLAB REINFORCEMENT

SKewed END SECTION DETAILS

SHEET 2 OF 4  
GENERAL DETAILS OF R.C. BOX CULVERT  
DETAILS OF SINGLE BARREL  
R.C. BOX CULVERT  
SPECIAL DETAILS

\*2" clr. for fill depth (D) greater than 2 ft.  
 2 1/2" clr. for fill depth (D) equal to or less than 2 ft.

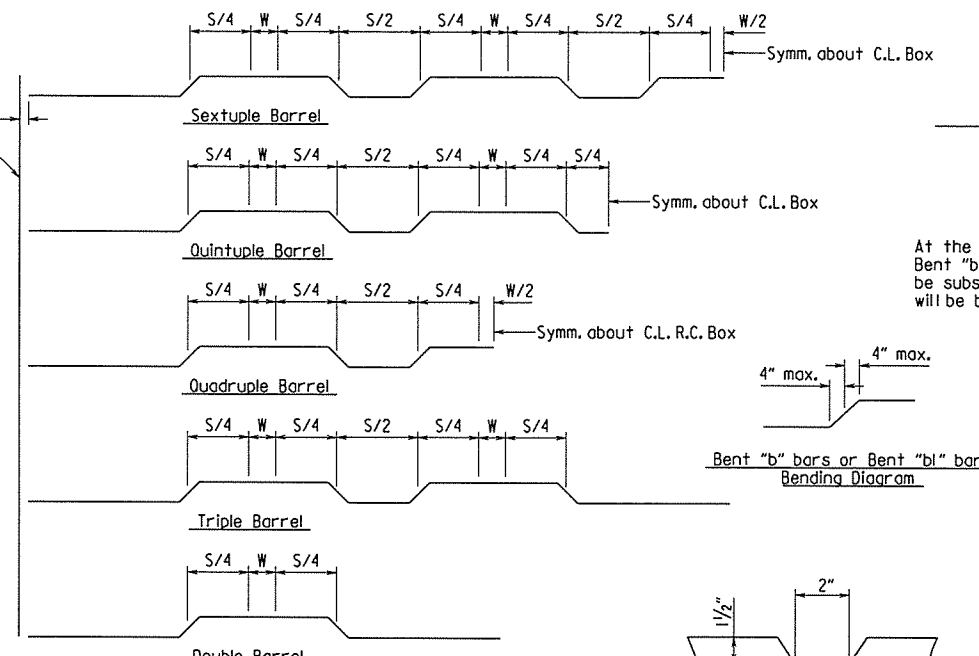
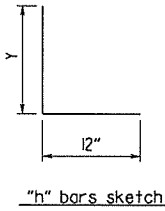
Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



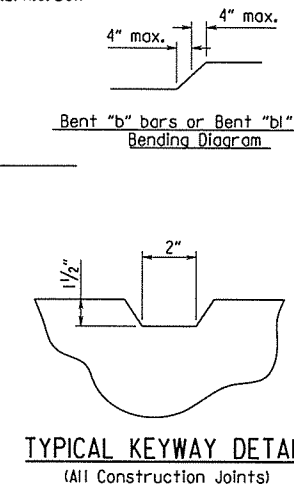
TYPICAL SECTION M-M

Top Slab  
 Straight "c" bars shall alternate with Bent "b" bars in top.  
 Straight "a" bars shall alternate with Bent "b" bars in bottom.

Bottom Slab  
 Straight "d" bars shall alternate with Bent "bl" bars in top.  
 Straight "f" bars shall alternate with Bent "bl" bars in bottom.



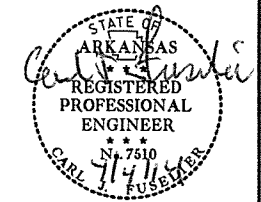
Bent "b" bars or Bent "bl" bars sketch



TYPICAL KEYWAY DETAIL  
 (All Construction Joints)

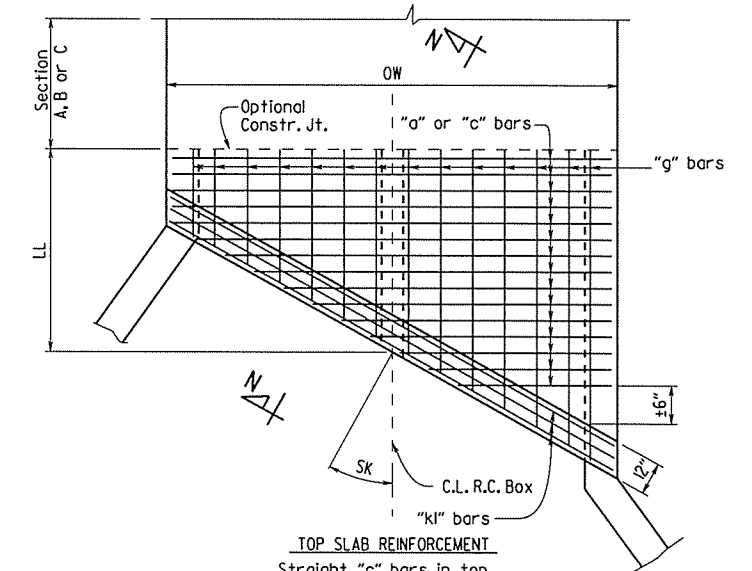
DATE REVISION	DATE FILMED	REVISION	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	FSX005	15	69	

SPECIAL DETAILS

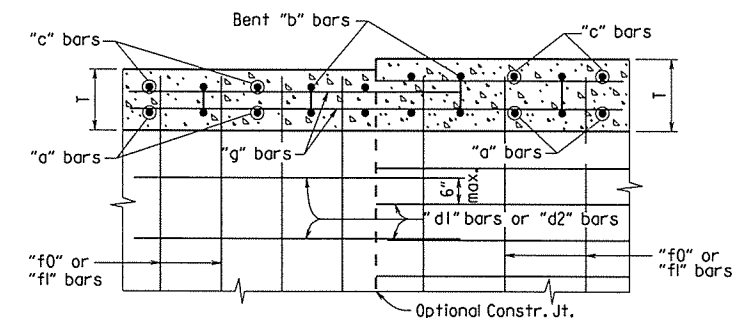


Lap Detail  
 For Bent "b" bars and Bent "bl" bars

At the Contractor's option in lieu of providing Bent "b" or Bent "bl" bars, one bar top and bottom of equivalent size may be substituted for each bent bar. Payment for the reinforcing will be based on the weight of the "b" or "bl" bar.

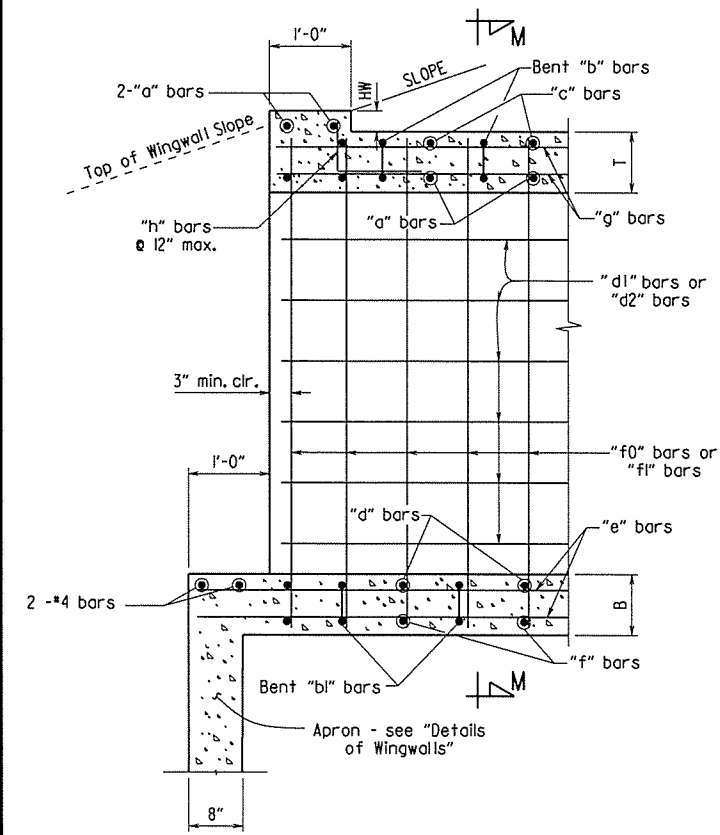


TOP SLAB REINFORCEMENT  
 Straight "c" bars in top.  
 Straight "a" bars in bottom.

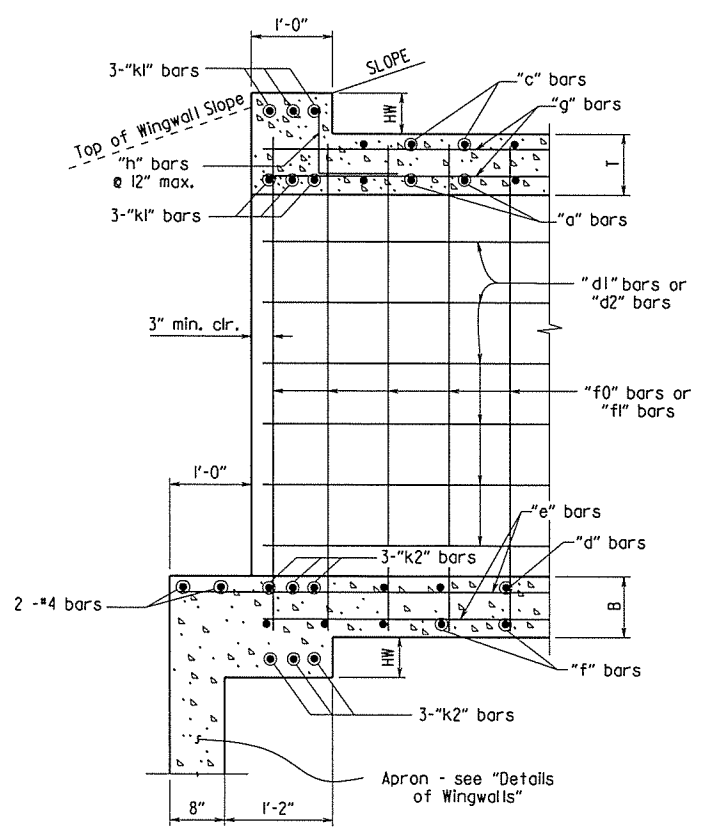


LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS  
 TOP SLAB SHOWN, BOTTOM SLAB SIMILAR

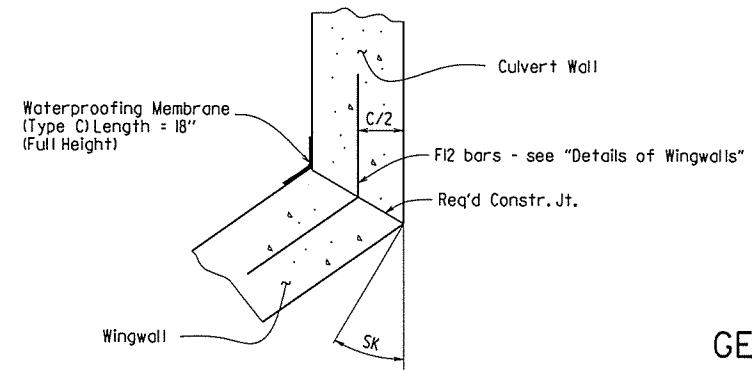
Longitudinal Bar Spacing at individual sections shall be maintained, which may result in noncontact bar laps.



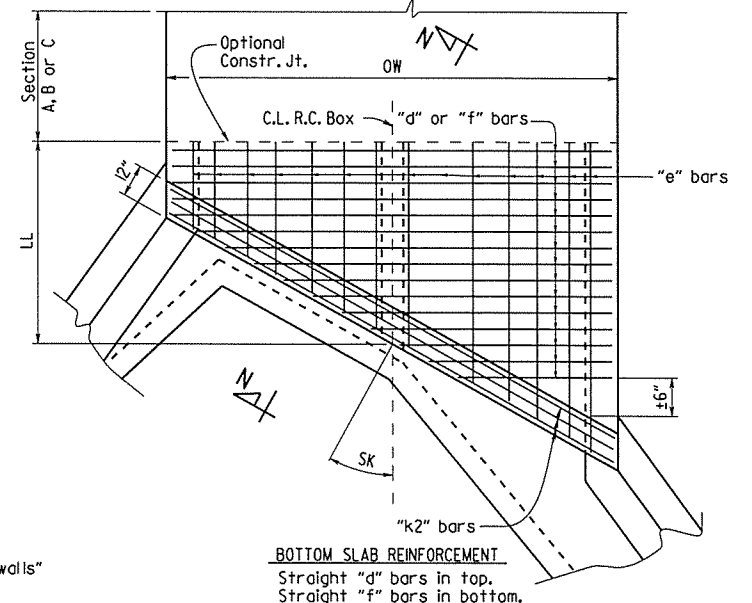
PART LONGITUDINAL SECTION  
 (Non-Skewed Ends)



PART LONGITUDINAL SECTION N-N  
 (Skewed Ends)



WINGWALL ATTACHMENT  
 See "Details of Wingwalls" for additional information and wingwall details.



BOTTOM SLAB REINFORCEMENT  
 Straight "d" bars in top.  
 Straight "f" bars in bottom.

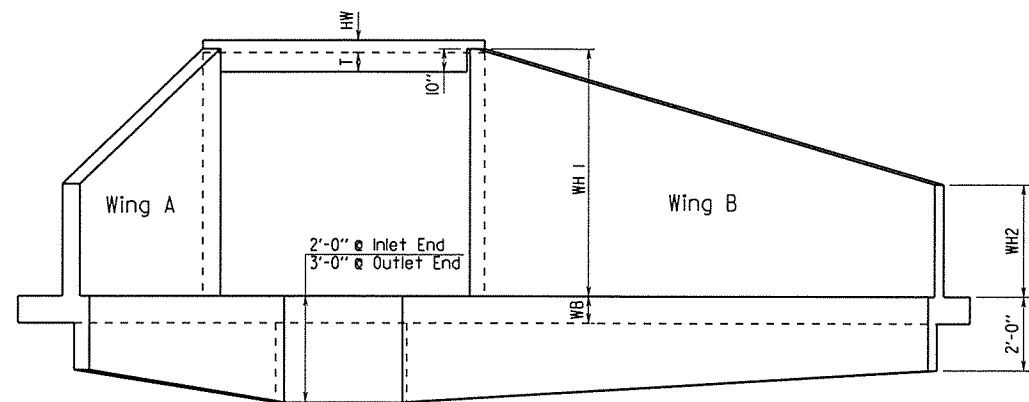
SKewed END SECTION DETAILS

SHEET 3 OF 4  
 GENERAL DETAILS OF R.C. BOX CULVERT  
 DETAILS OF MULTI-BARREL  
 R.C. BOX CULVERT  
 SPECIAL DETAILS

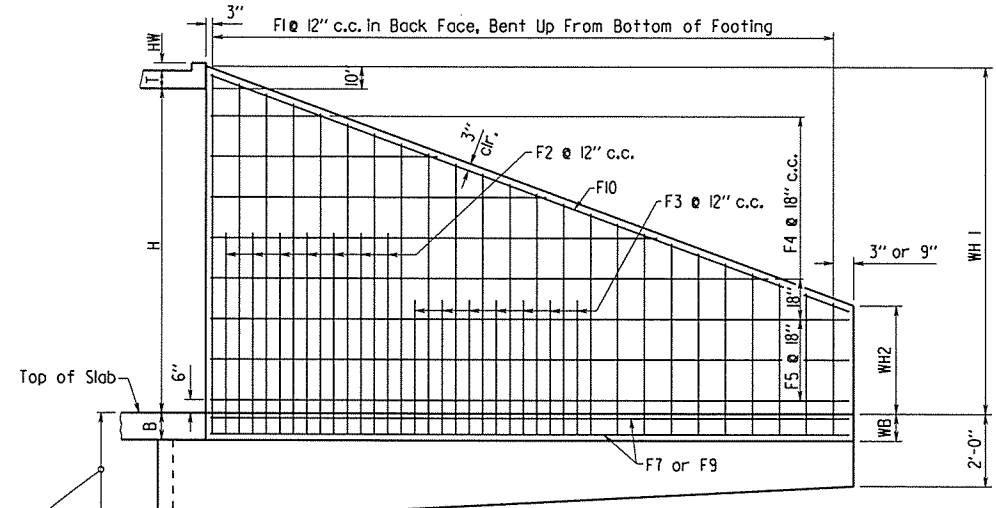
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DATE REVISION	DATE FILMED	DATE REVISION	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	FSX005	10	67	

**SPECIAL DETAILS**

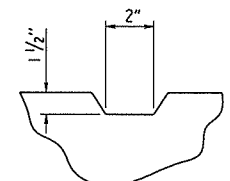


**END ELEVATION**  
Flared Wingwalls Shown

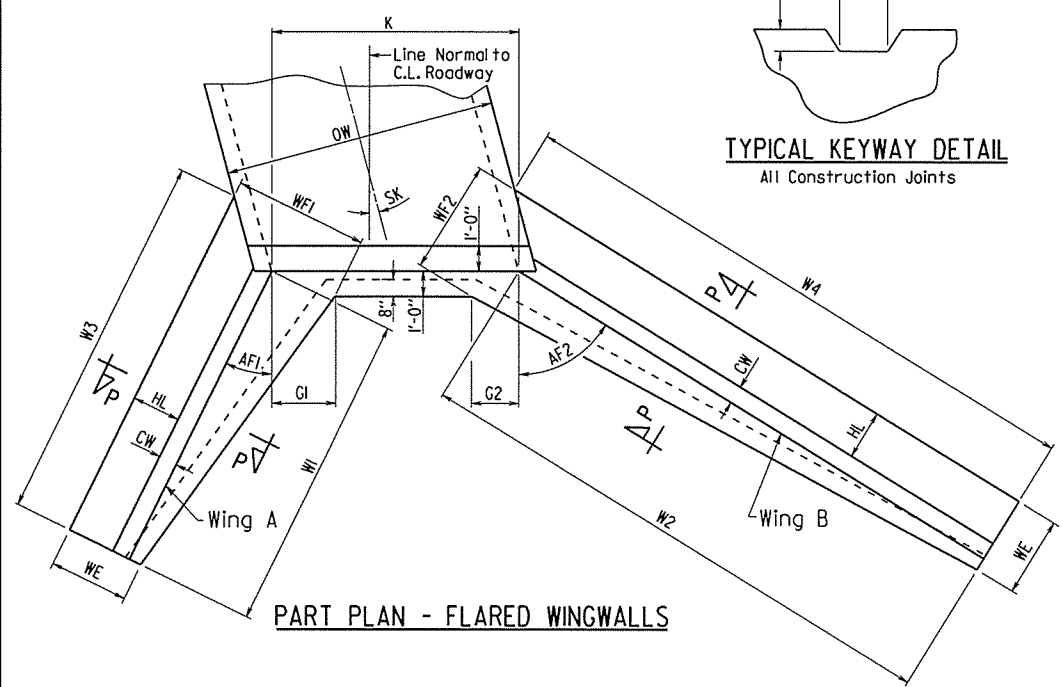


**WINGWALL ELEVATION**  
Showing Back Face Reinforcement

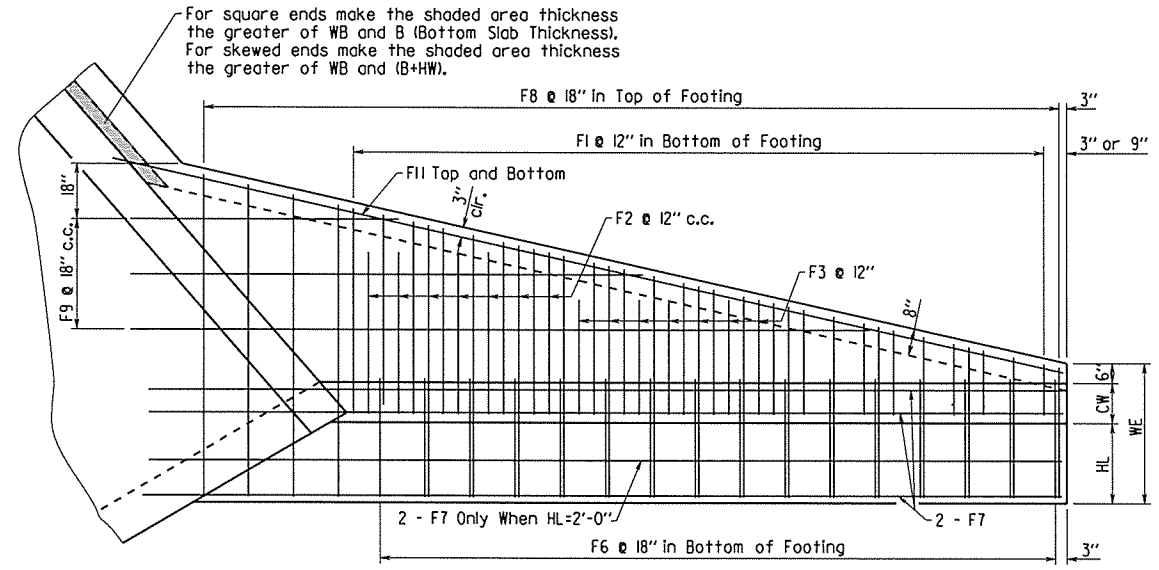
Note: See "Wingwall Cross-Section" for additional details and reinforcing



**TYPICAL KEYWAY DETAIL**  
All Construction Joints

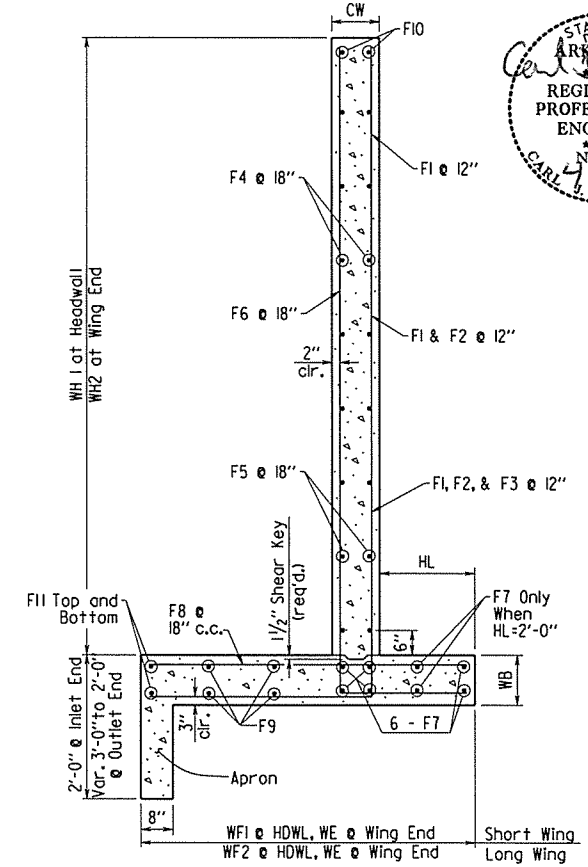


**PART PLAN - FLARED WINGWALLS**

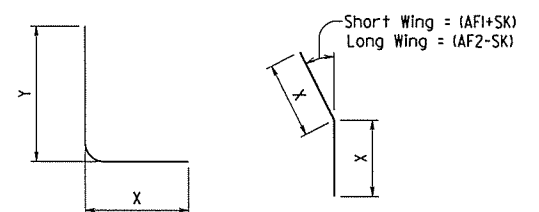


**PLAN - FLARED WINGWALLS**  
Showing Footing Reinforcement

For square ends make the shaded area thickness the greater of WB and B (Bottom Slab Thickness). For skewed ends make the shaded area thickness the greater of WB and (B+HW).

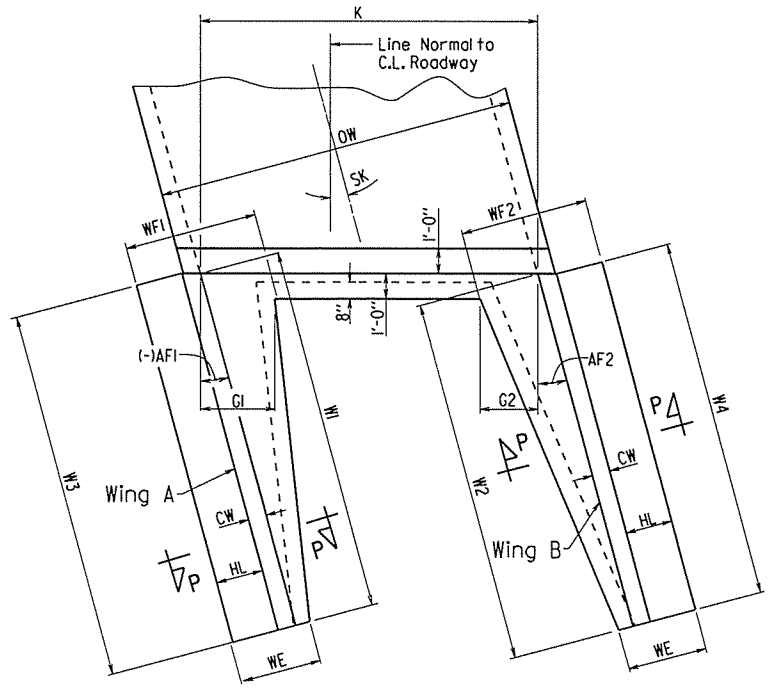


**WINGWALL SECTION P-P**

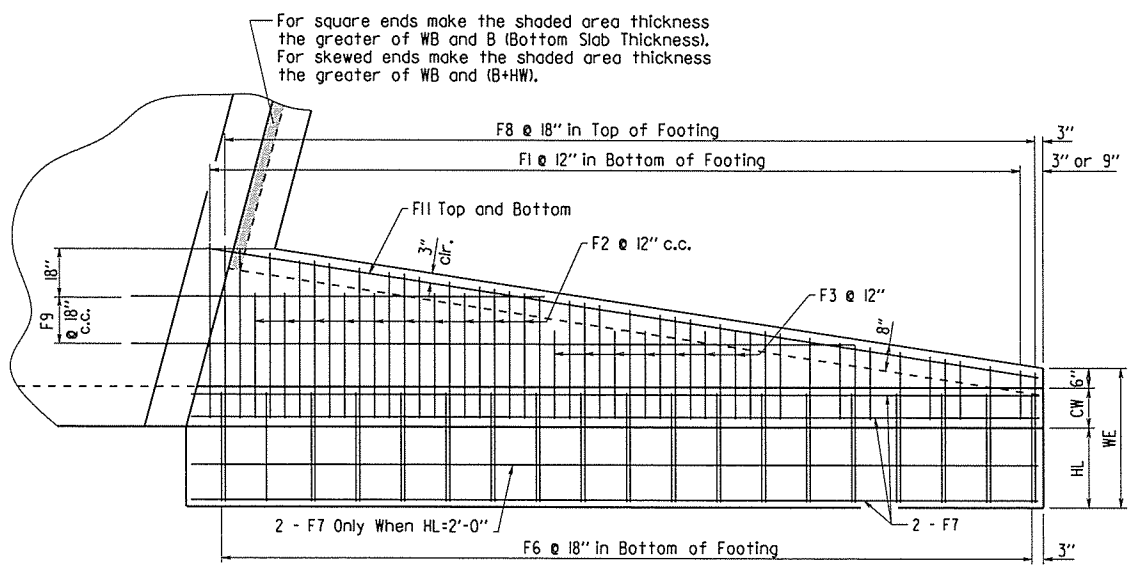


**F1, F2, F3, & F6 BARS**      **\*F12 BAR**

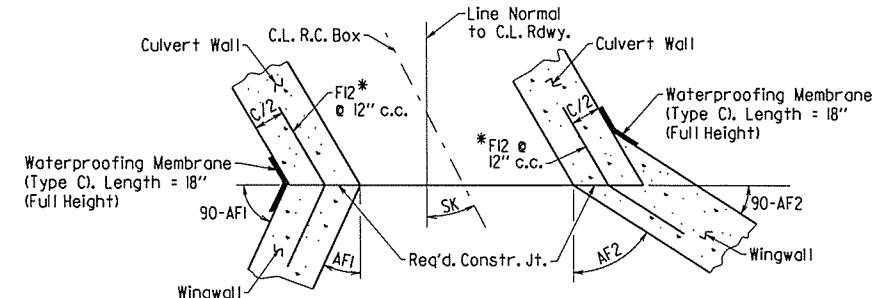
\*F12 is a straight bar for parallel wingwalls



**PART PLAN - PARALLEL WINGWALLS**



**PLAN - PARALLEL WINGWALLS**  
Showing Footing Reinforcement



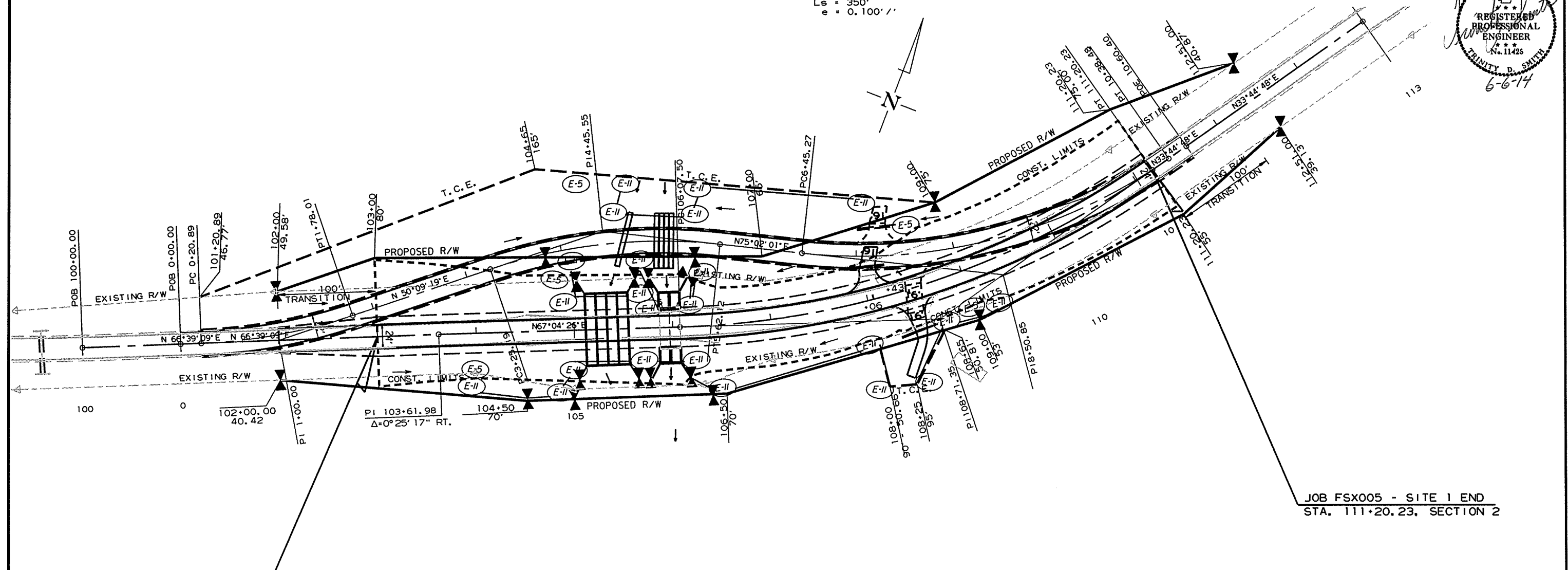
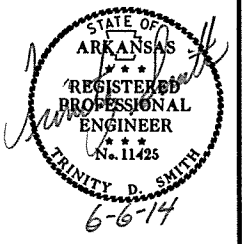
**CONSTRUCTION JOINTS**  
Flared Wingwalls Shown

**SHEET 4 OF 4**  
**GENERAL DETAILS OF R.C. BOX CULVERT**  
**DETAILS OF WINGWALLS**  
**SPECIAL 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.	FSX005		17	67

CURVE DATA  
 PI = 108+71.35  
 $\Delta$  = 33°19'38" LT.  
 D = 6°30'00"  
 T = 263.85'  
 L = 512.73'  
 PC = 106+07.50  
 PT = 111+20.23  
 Ls = 350'  
 e = 0.100' /'

② TEMPORARY EROSION CONTROL DETAILS



JOB FSX005 - SITE 1 BEGIN  
 STA. 103+00, SECTION 2, L.M. 2.85

JOB FSX005 - SITE 1 END  
 STA. 111+20.23, SECTION 2

REVISION BOX

DATE	REVISIONS

TEMPORARY EROSION CONTROL ITEMS

STA.	STA.	SIDE	E=11 SILT FENCE LIN. FT.	E=5 SAND BAG EA.	STAGE
103+80	105+00	RT.	50		1,2
104+00		RT.		18	1,2
104+80		LT.		18	1,2
105+00	108+00	LT.	400		1,2
105+10		LT.		18	1,2
106+15	108+00	RT.	300		1,2
108+25	109+35	RT.	140		1,2
108+40		LT.		18	1,2
108+95		RT.		18	1,2

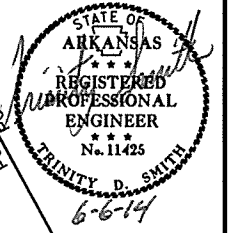
SITE 1 - ALL STAGES  
 TEMPORARY EROSION CONTROL DETAILS

6/3/2014

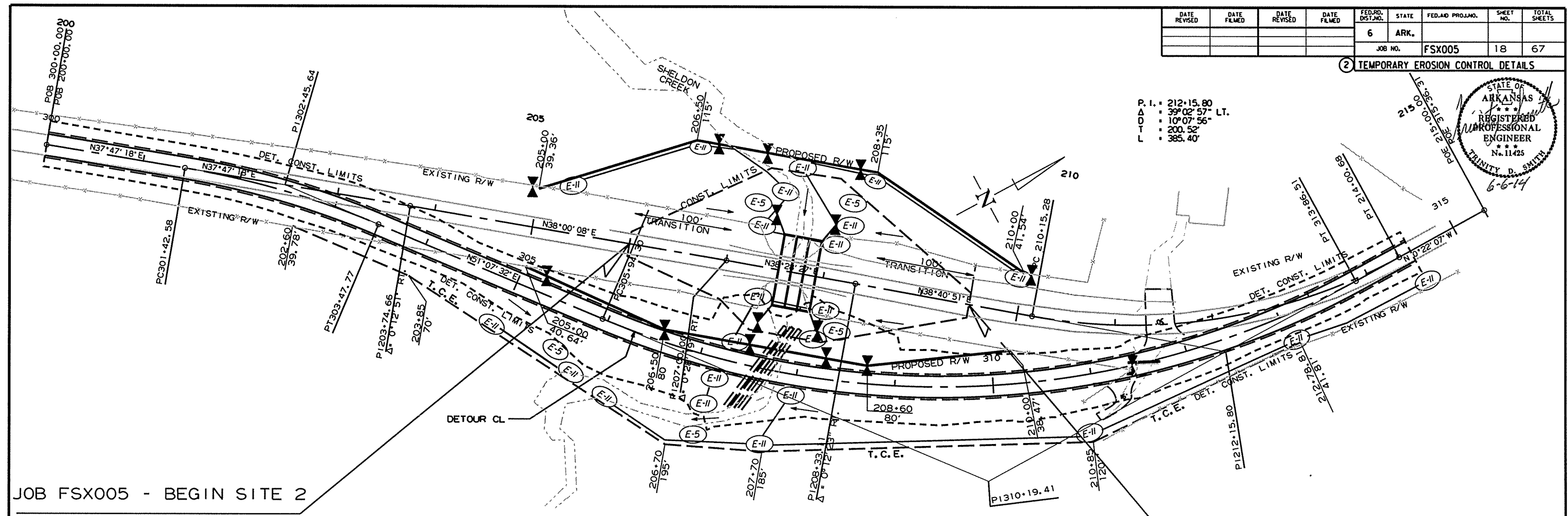
RFX005.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AD PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		FSX005	18	67

2 TEMPORARY EROSION CONTROL DETAILS



P. I. = 212+15.80  
 Δ = 39° 02' 57" LT.  
 D = 10° 07' 56"  
 T = 200.52'  
 L = 385.40'



JOB FSX005 - BEGIN SITE 2

STA. 206+00.00  
 SEC. 3, L.M. 14.14

JOB FSX005 - END SITE 2  
 STA. 209+50.00, SEC. 3,

TEMPORARY EROSION CONTROL ITEMS

STA.	STA.	SIDE	E=11 SILT FENCE LIN. FT.	E=5 SAND BAG EA.	STAGE
204+75	205+60	RT.	150		1,2
205+50		RT.		18	1,2
205+25	207+42	LT.	280		1,2
206+95		RT.		18	1,2
206+05	214+13	RT.	885		1,2
207+20		LT.		18	1,2
206+65	207+73	LT.	125		1,2
207+70	210+00	LT.	250		1,2
208+20		LT.		18	1,2
208+25		RT.		18	1,2

REVISION BOX

DATE	REVISIONS

SITE 2- ALL STAGES  
 TEMPORARY EROSION CONTROL DETAILS

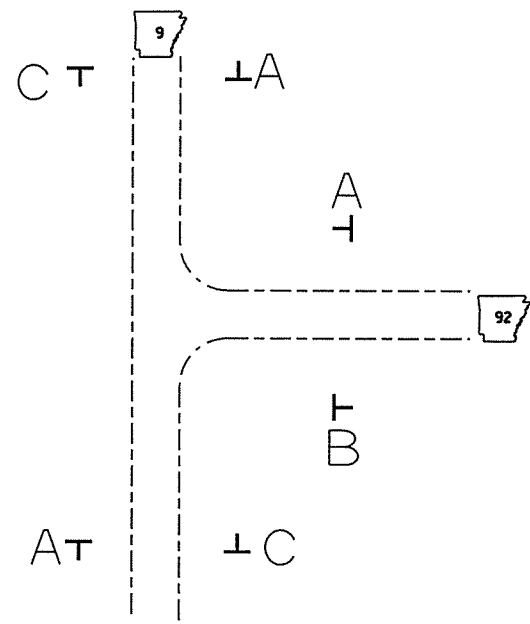
6/3/2014

RF SX005.DGN

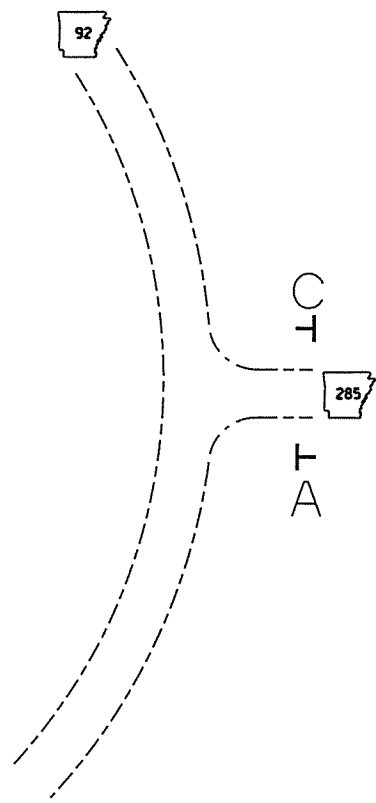


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. FSX005							19	67

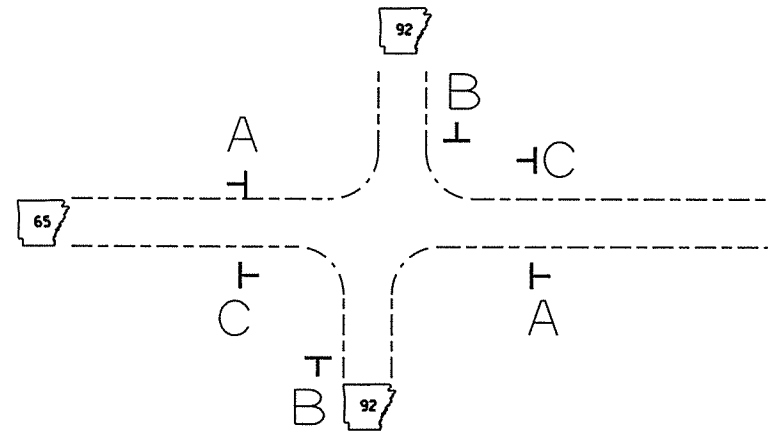
② MAINTENANCE OF TRAFFIC DETAILS



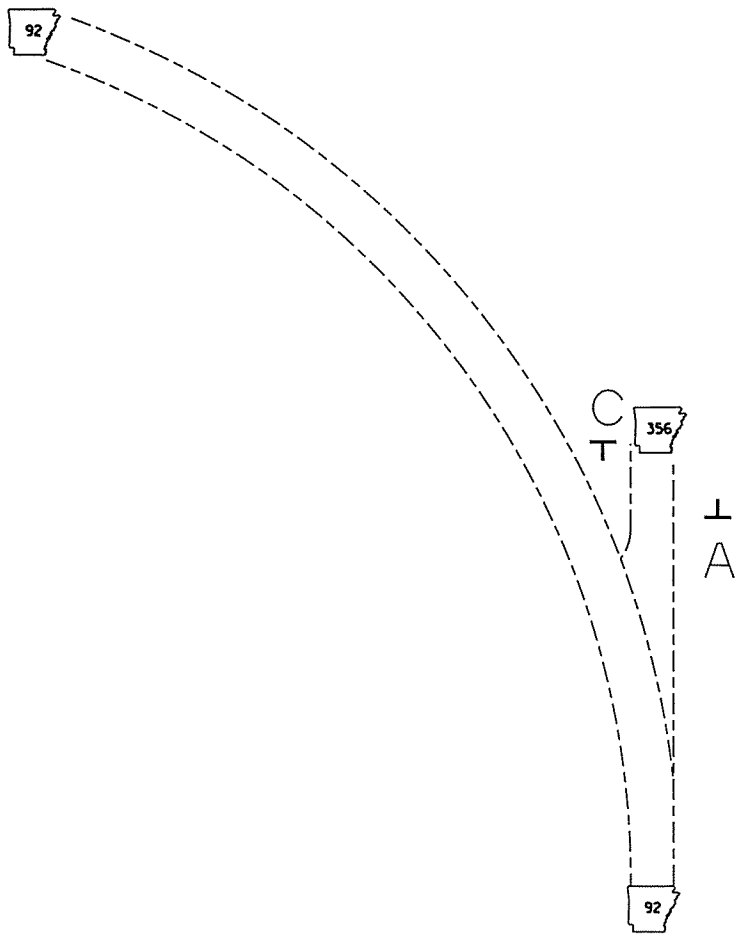
HWY. 9 / HWY. 92



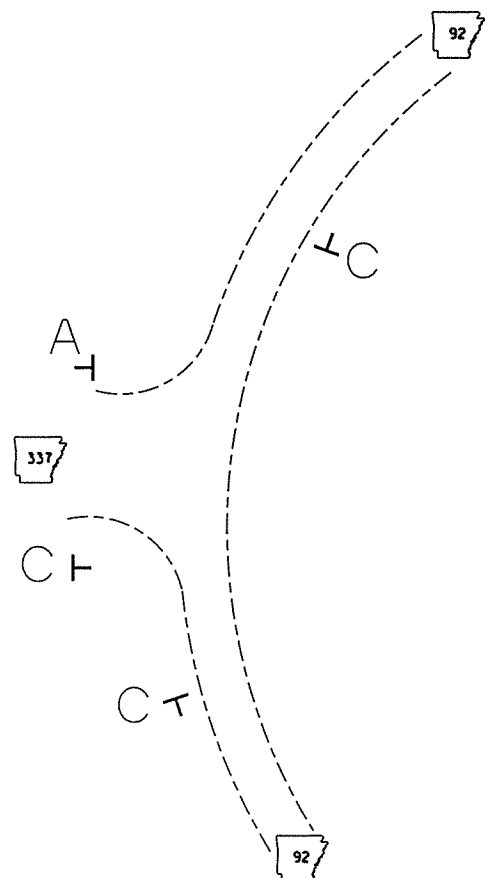
HWY. 92 / HWY. 285



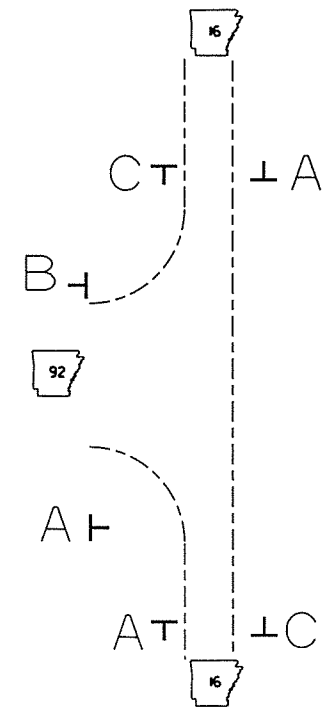
HWY. 92 / HWY. 65



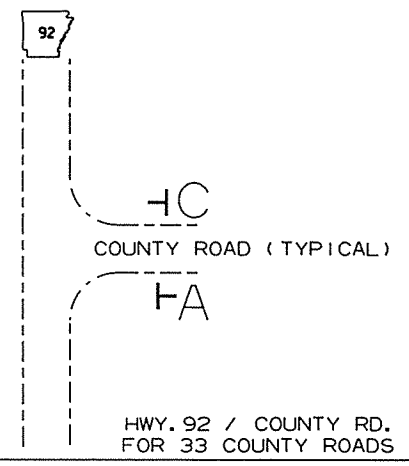
HWY. 92 / HWY. 356



HWY. 92 / HWY. 337



HWY. 92 / HWY. 16



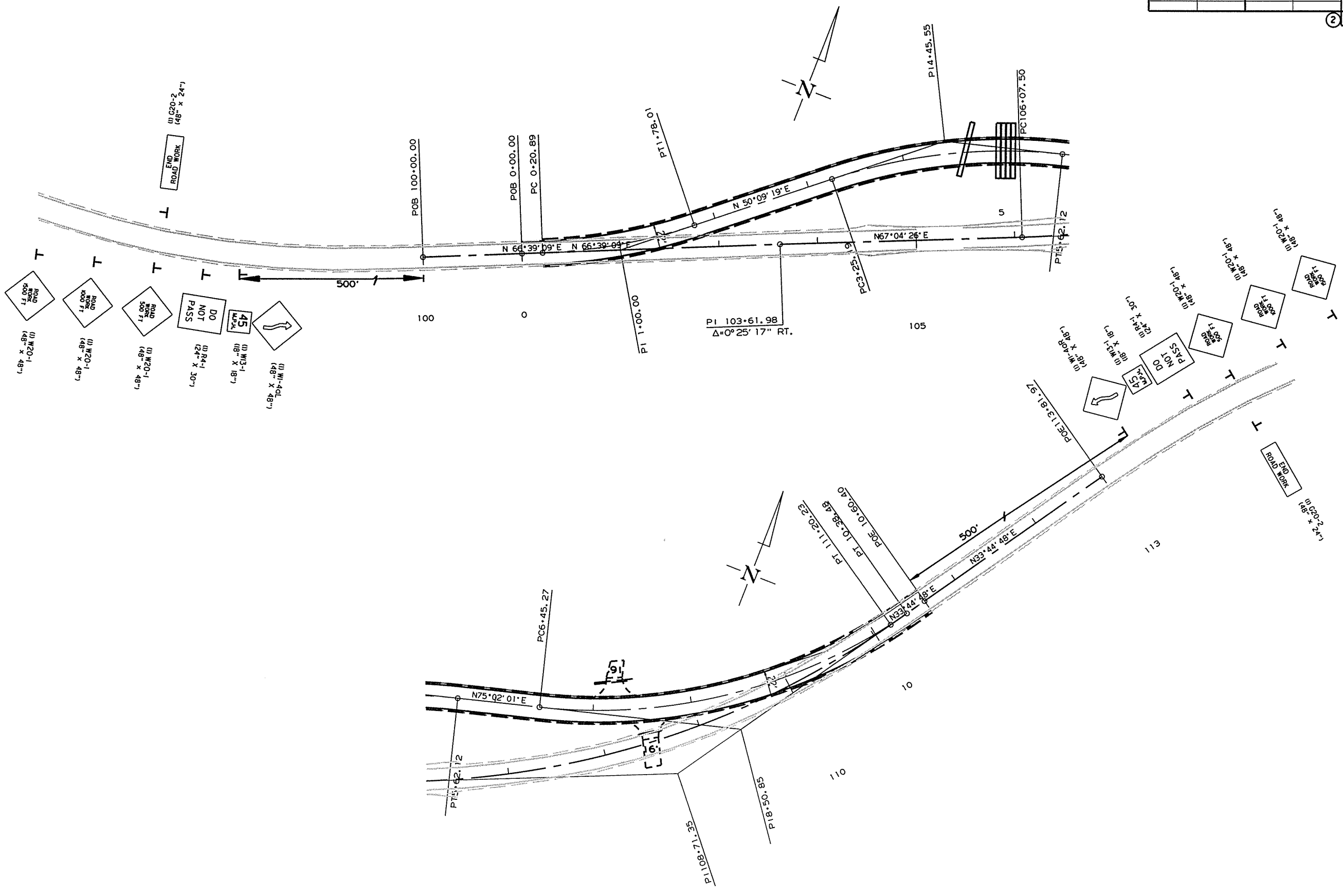
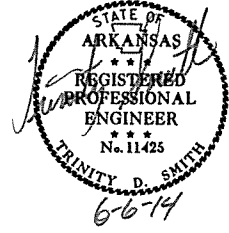
HWY. 92 / COUNTY RD. FOR 33 COUNTY ROADS

- A (I) G20-2 (48" X 24")
- B (I) G20-1 (60" X 24")
- C (I) W20-1 (48" X 48")

ADVANCE WARNING SIGNS  
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. FSX005							20	67

② MAINTENANCE OF TRAFFIC DETAILS



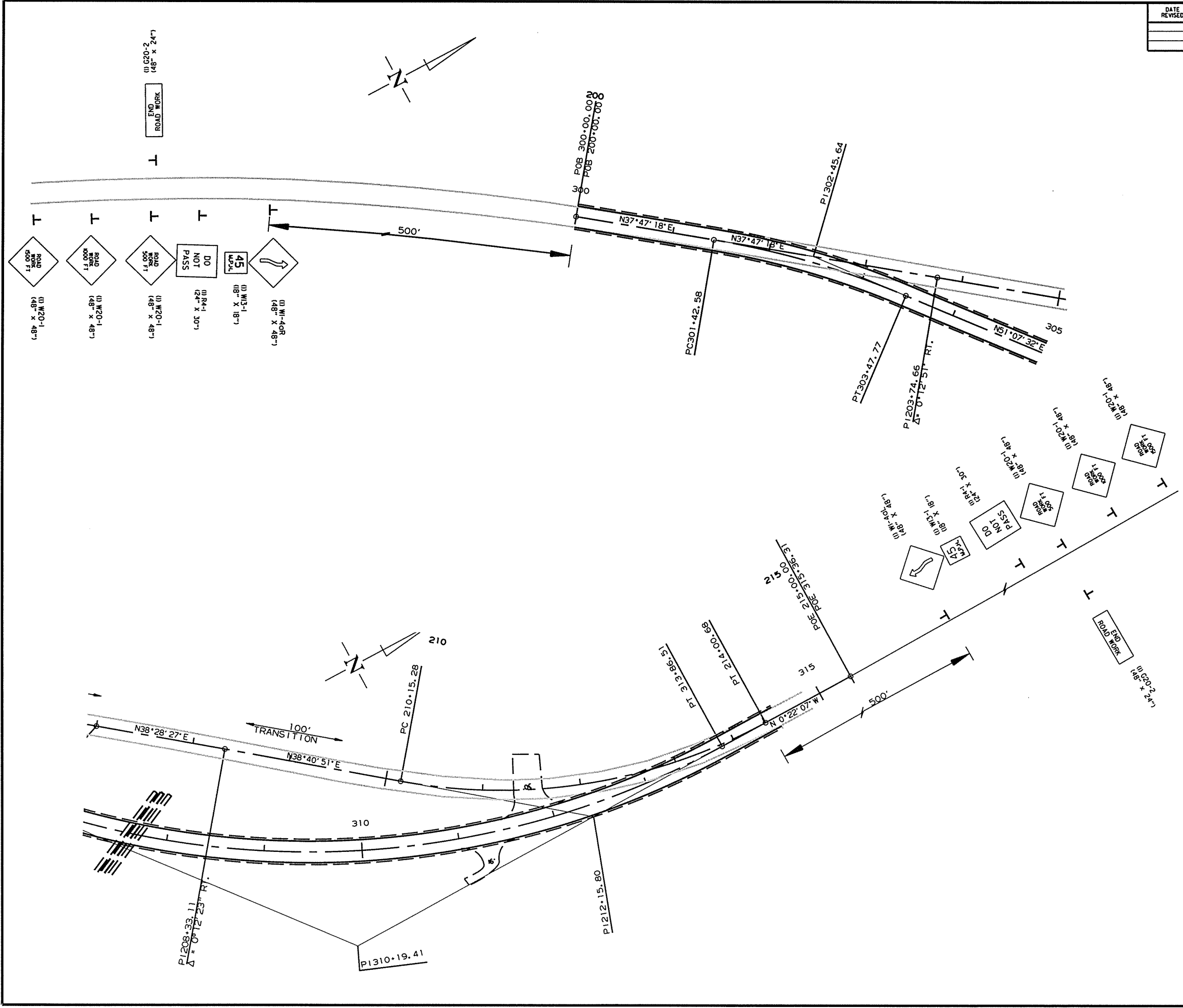
SITE I- ADVANCE WARNING SIGNS  
MAINTENANCE OF TRAFFIC DETAILS

6/2/2014

RF SX005.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		21	67
				JOB NO.		FSX005		

② MAINTENANCE OF TRAFFIC DETAILS



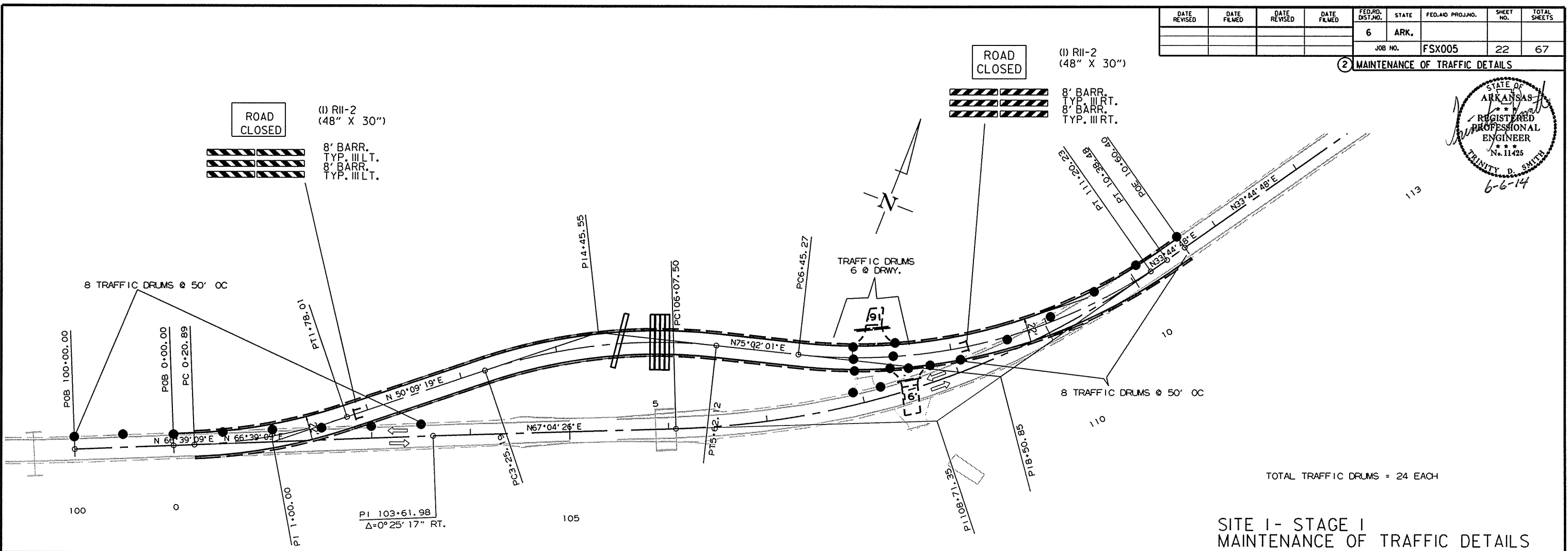
SITE 2- ADVANCE WARNING SIGNS  
MAINTENANCE OF TRAFFIC DETAILS

6/3/2014

RF SX005.DGN

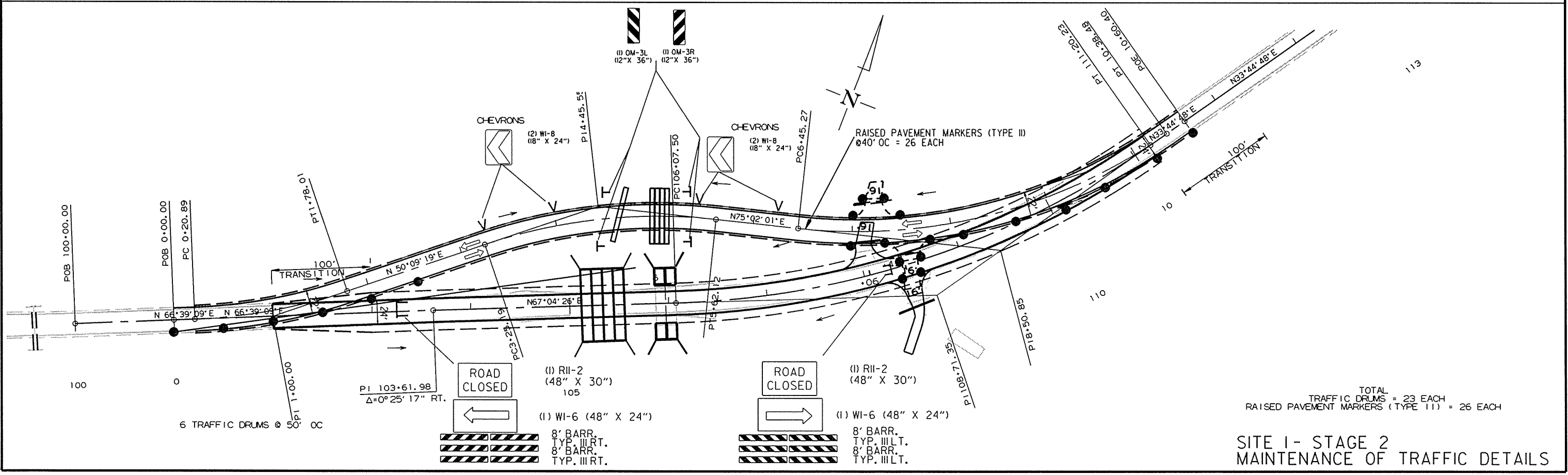
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. FSX005							22	67

② MAINTENANCE OF TRAFFIC DETAILS



SITE I- STAGE I  
MAINTENANCE OF TRAFFIC DETAILS

TOTAL TRAFFIC DRUMS = 24 EACH



SITE I- STAGE 2  
MAINTENANCE OF TRAFFIC DETAILS

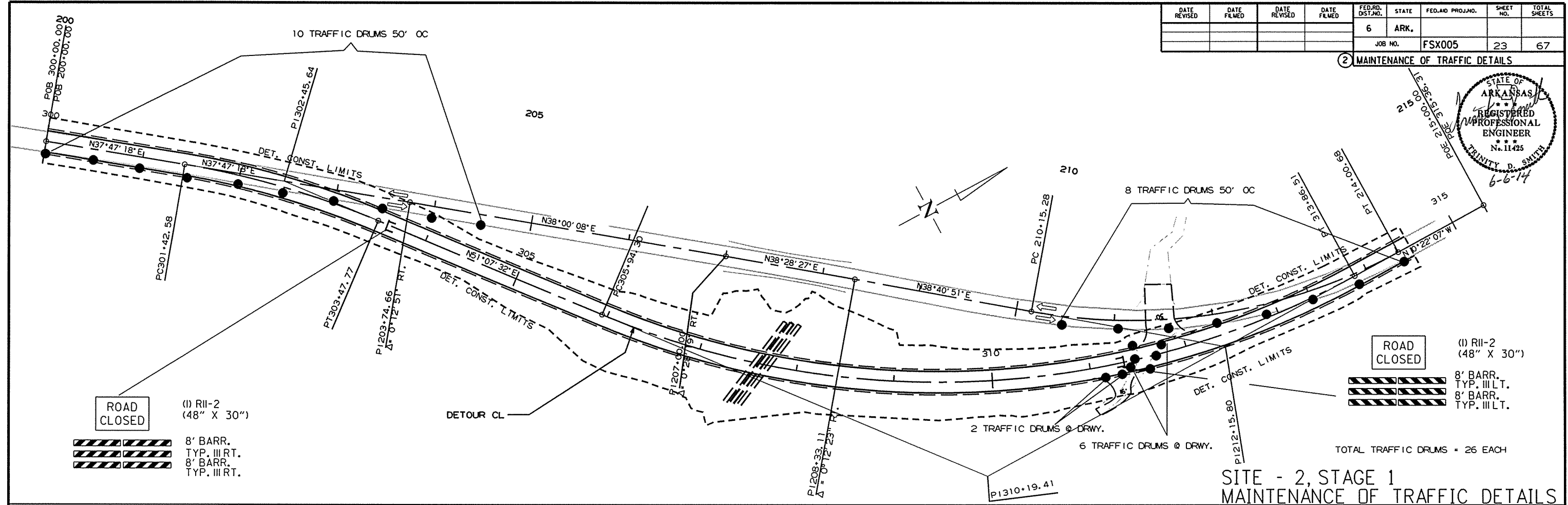
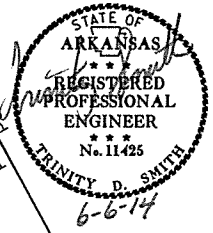
TOTAL TRAFFIC DRUMS = 23 EACH  
RAISED PAVEMENT MARKERS (TYPE II) = 26 EACH

6/6/2014

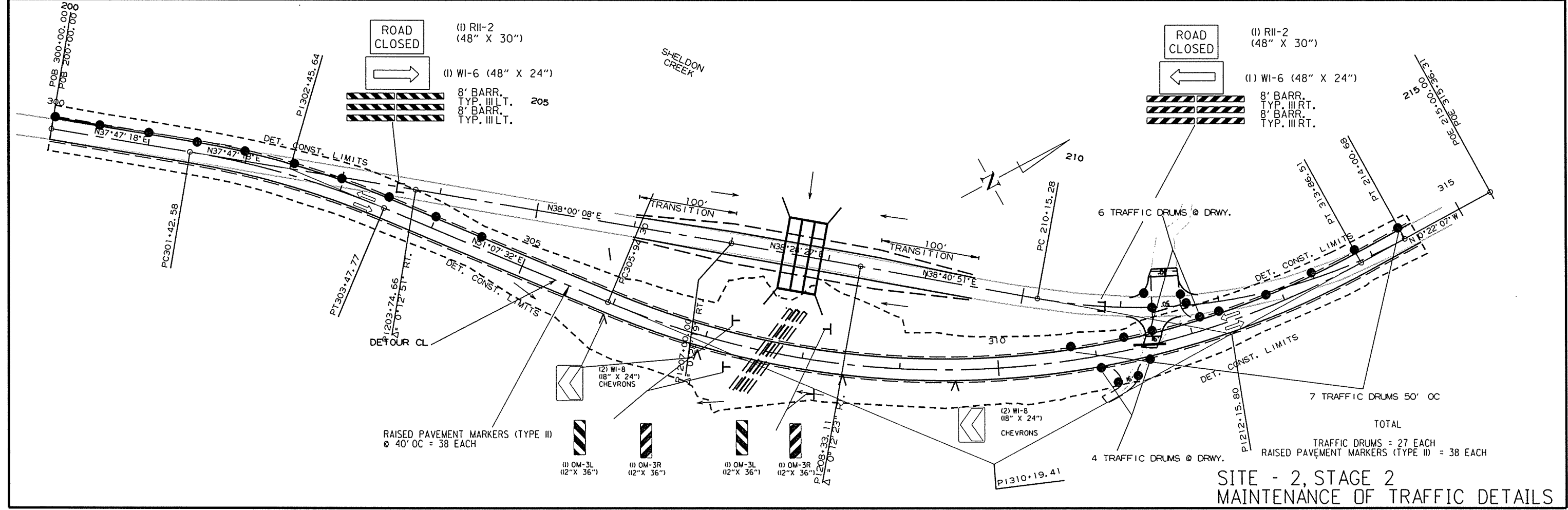
RFSX005.DGN

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.	FSX005		23	67

2 MAINTENANCE OF TRAFFIC DETAILS



SITE - 2, STAGE 1  
MAINTENANCE OF TRAFFIC DETAILS



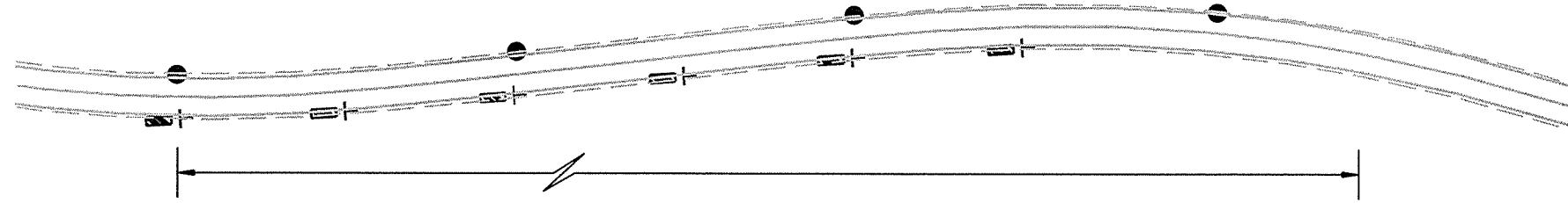
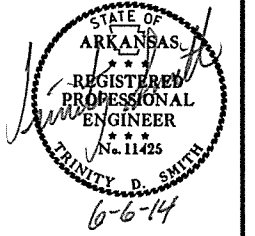
SITE - 2, STAGE 2  
MAINTENANCE OF TRAFFIC DETAILS

6/6/2014

RF SX005.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.	FSX005		24	67

② MAINTENANCE OF TRAFFIC DETAILS

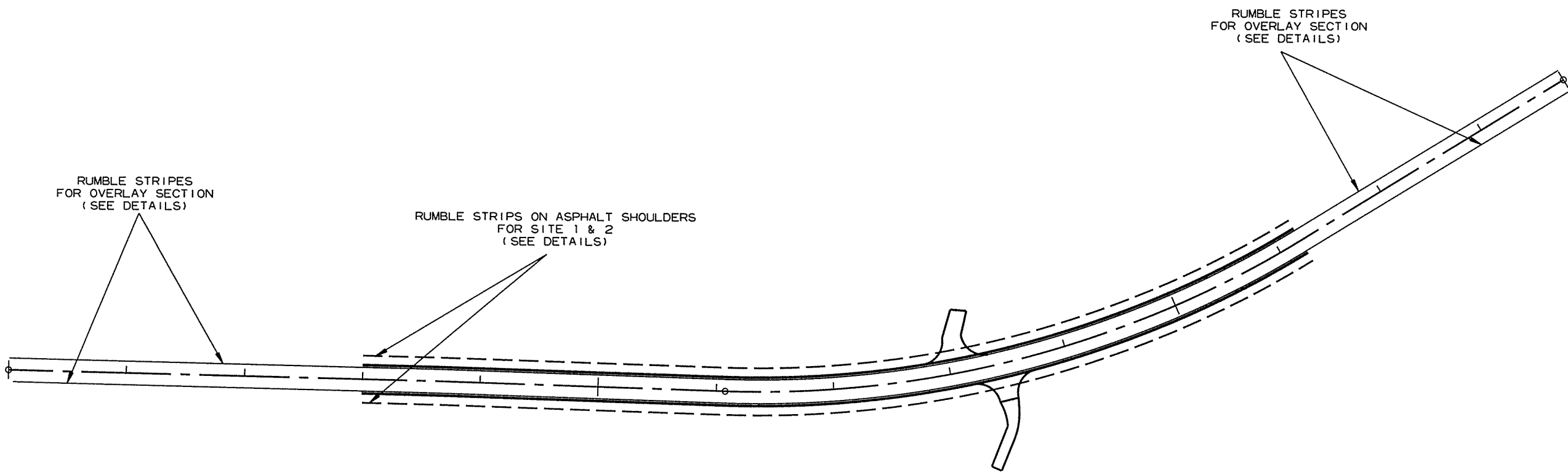
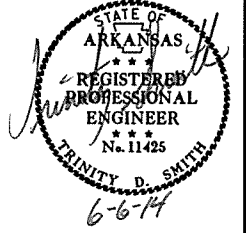


5280' APPROX.

VERTICAL PANELS NOTCH @ 50' OC = 106 EACH  
 TRAFFIC DRUMS @ 100' OC OFF SIDE = 53 EACH  
 DO NOT PASS SIGNS @ 2640' BOTH SIDES = 26 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. FSX005							25	67

② PERMANENT PAVEMENT MARKING DETAIL



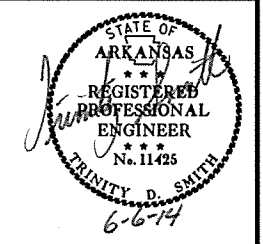
FINAL STRIPING  
 THERMOPLASTIC PAVEMENT MARKINGS:  
 RT. AND LT. EDGE LINES 4" (WHITE) = 274963  
 DBL. CENTERLINE 4" (YELLOW) = 275743  
 RUMBLE STRIPS ON ASPHALT SHOULDERS = 1478 LIN. FT.  
 RUMBLE STRIPES = 222858 LIN. FT.

5/29/2014  
 RFSX005.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.	FSX005	26	67	

② QUANTITIES



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

SIGN NUMBER	DESCRIPTION	STAGE 1	STAGE 2	END JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		REMOVAL OF PERMANENT PAVEMENT MARKING	CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS (TYPE II)	THERMOPLASTIC PAVEMENT MARKINGS				
						NO.	SQ.FT.			EACH	RIGHT				LEFT	LIN.FT.	EACH	LIN.FT.	
																		WHITE (4")	YELLOW (4")
W20-1	ROAD WORK 1500 FT.	4	4	4	4	4	64.0												
W20-1	ROAD WORK 1000 FT.	4	4	4	4	4	64.0												
W20-1	ROAD WORK 500 FT.	4	4	4	4	4	64.0												
W20-1	ROAD WORK AHEAD	45	45	45	45	45	720.0												
W1-4aL	REVERSE CURVE		2	2	2	2	32.0												
W1-4aR	REVERSE CURVE		2	2	2	2	32.0												
W13-1	SPEED ADVISORY		4	4	4	4	9.0												
W1-6	ARROW		4	4	4	4	32.0												
W1-8	CHEVRON		16	16	16	16	48.0												
G20-1	ROAD WORK NEXT XX MILES	4	4	4	4	4	40.0												
G20-2	END ROAD WORK	45	45	45	45	45	360.0												
R4-1	DO NOT PASS	30	30	30	30	30	150.0												
R11-2	ROAD CLOSED	2	8		8	8	80.0												
OM-3R	OBJECT MARKER		4	4	4	4	12.0												
OM-3L	OBJECT MARKER		4	4	4	4	12.0												
R4-1	DO NOT PASS	4	4	4	4	4	20.0												
	VERTICAL PANELS							106											
	TRAFFIC DRUMS	50	50						103										
	TYPE III BARRICADE-RT. (8')	4	4	4	4					32									
	TYPE III BARRICADE-LT. (8')	4	4		4						32								
	REMOVAL OF PERMANENT PAVEMENT MARKING											2620							
	CONSTRUCTION PAVEMENT MARKINGS-DETOUR												10064						
	RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)-DETOUR													64					
	THERMOPLASTIC PAVEMENT MARKINGS-WHITE(4")														274963				
	THERMOPLASTIC PAVEMENT MARKINGS-YELLOW(4")															275743			
<b>TOTALS:</b>							1739.0	106	103	32	32	2620	10064	64	274963	275743			

THIS IS A HIGH TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2014 EDITION.

6/6/2014

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	FSX005		27	67

2 QUANTITIES

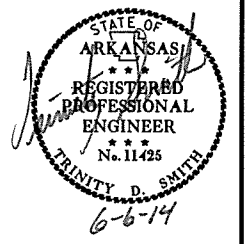
STATION	SIDE	LOCATION	DESCRIPTION	WIDTH	ACHM EXTENSION LENGTH	TURNOUT AREA	TOTAL DRIVEWAY AREA	AGGREGATE BASE COURSE (CLASS 7)	ACHM SURFACE COURSE (1/2")	18" SIDE DRAIN	12" TEMPORARY PIPE CULVERT	18" TEMPORARY PIPE CULVERT	48" TEMPORARY PIPE CULVERT	54" TEMPORARY PIPE CULVERT
				LIN. FT.	LENGTH	AREA SQ. YD.	AREA SQ. YD.	7" COMP. DEPTH TON	(220 LB./SQ. YD.) TON	LIN. FT.	LIN. FT.			
108+06	LT.	MAIN LANES	DRIVEWAY	16	22	55	94	38	6	30				
108+43	RT.	MAIN LANES	DRIVEWAY	16	18	55	87	35	6	40				
211+32	RT.	MAIN LANES	DRIVEWAY	16	12	55	76	31	6	32				
211+45	LT.	MAIN LANES	DRIVEWAY	30		86	86	35	9					
4+65		DETOUR LANES	DETOUR CROSS DRAIN											58
5+06		DETOUR LANES	DETOUR CROSS DRAIN											256
7+22	LT.	DETOUR LANES	TEMP. DRIVEWAY	16	17	55	85	35				28		
7+54	RT.	DETOUR LANES	TEMP. DRIVEWAY	16	29	55	107	43			24			
307+82		DETOUR LANES	DETOUR CROSS DRAIN										339	
311+27	RT.	DETOUR LANES	TEMP. DRIVEWAY	16	32	55	112	45				48		
311+80	LT.	DETOUR LANES	TEMP. DRIVEWAY	30	42	86	226	92						
		ENTIRE PROJECT	DRIVEWAY TRANSITION						30					
<b>TOTALS:</b>								354	57	102	24	76	339	314

VOLUME CONTROL: ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.9%, ASPHALT BINDER (PG 64-22) 5.1%  
 Nmax= 115 GYRATIONS

COLD MILLING ASPHALT PAVEMENT

LOCATION	COLD MILLING SQ. YD.
STA. 102+00 - STA. 103+00	244
STA. 111+20.23 - STA. 112+20.23	244
STA. 206+00 - STA. 207+00	244
STA. 208+50 - STA. 209+50	244
<b>TOTAL:</b>	<b>976</b>

\* QUANTITY ESTIMATED.  
 SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.  
 NOTE: AVERAGE MILLING DEPTH 1".



BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)			TACK COAT			ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")				
				TONS/STA.	TON	TON	AVERAGE WIDTH	SQ. YD.	GAL. PER SQ. YD.	GALLON	AVERAGE WIDTH	SQ. YD.	LBS. PER SQ. YD.	TON	AVG. WIDTH	SQ. YD.	LBS. PER SQ. YD.	TON
			LIN. FT.				LIN. FT.											
102+00.00	103+00.00	MAIN LANES - TRANSITION SITE 1	100.00											22.00	244.44	220	26.89	
103+00.00	110+59.90	MAIN LANES - SITE 1	759.90	274.00	2082.13		48.75	4116.13	0.03	123.48	24.50	2068.62	440	455.10	64.25	5424.84	220	596.73
110+59.90	111+20.23	MAIN LANES - SITE 1 NOTCH & WIDEN	60.33	166.00	100.15		8.34	55.91	0.03	1.68	5.00	33.52	440	7.37	44.50	298.30	220	32.81
111+20.23	112+20.23	MAIN LANES - TRANSITION SITE 1	100.00												22.00	244.44	220	26.89
206+00.00	207+00.00	MAIN LANES - TRANSITION SITE 2	100.00												22.00	244.44	220	26.89
207+00.00	208+50.00	MAIN LANES - SITE 2	150.00	242.75	364.13		48.75	812.50	0.03	24.38	24.50	408.33	440	89.83	64.25	1070.83	220	117.79
208+50.00	209+50.00	MAIN LANES - TRANSITION SITE 2	100.00												22.00	244.44	220	26.89
1+41.22	8+81.17	DETOUR LANES - SITE 1	739.95	151.50	1121.02		22.33	1835.90	0.03	55.08	22.33	1835.90	330	302.92	26.00	2137.63	220	235.14
302+75.85	313+12.87	DETOUR LANES - SITE 2	1037.02	151.50	1571.09		22.33	2572.96	0.03	77.19	22.33	2572.96	330	424.54	26.00	2995.84	220	329.54
ENTIRE PROJECT	OVERLAY MAIN LANES HWY. 92, SEC. 2, 3, & 4		136901.14				26.00	395492.18	0.10	39549.22					26.00	395492.18	220	43504.14
ENTIRE PROJECT	LEVELING - SITE 1		60.00				22.00	146.67	0.10	14.67	22.00	146.67	220	16.13				
ENTIRE PROJECT	ADDITIONAL FOR SHOULDER EDGE HWY. 92, SEC. 2, 3, & 4		136901.14	3.50	4791.54													
ENTIRE PROJECT	ADDITIONAL FOR SUPERELEVATION				250.00													
<b>TOTALS:</b>				10280.06			405032.25			39845.70				7066.00		1295.89	408397.38	44923.71

VOLUME CONTROL: ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.9%, ASPHALT BINDER (PG 70-22) 5.1%  
 ACHM BINDER COURSE (1"): MIN. AGGR. 95.6%, ASPHALT BINDER (PG 70-22) 4.4%  
 Nmax= 160 GYRATIONS

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING CU. YD.
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	50
<b>TOTAL:</b>	<b>50</b>

\* QUANTITY ESTIMATED.  
 SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	TACK COAT
	TON	GALLON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	50	100
<b>TOTALS:</b>	<b>50</b>	<b>100</b>

QUANTITIES ESTIMATED.  
 SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

ACHM PATCHING OF EXISTING ROADWAY

LOCATION	ACHM PATCHING OF EXISTING ROADWAY	TACK COAT
	TON	GALLON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	100	200
<b>TOTALS:</b>	<b>100</b>	<b>200</b>

QUANTITIES ESTIMATED.  
 SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

RUMBLE STRIPS AND RUMBLE STRIPES IN ASPHALT SHOULDER

LOCATION	RUMBLE STRIPS IN ASPHALT SHOULDER	RUMBLE STRIPES
	LIN. FT.	LIN. FT.
SITE - 1	1238	
SITE - 2	240	
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.		222858
<b>TOTALS:</b>	<b>1478</b>	<b>222858</b>

QUANTITIES ESTIMATED.  
 SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

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7-02-14				6	ARK.			
				JOB NO.		FSX005	28	67

**2 QUANTITIES**

**4" PIPE UNDERDRAINS**

LOCATION	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
	LIN. FT.	EACH
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER	500	4
<b>TOTALS:</b>	<b>500</b>	<b>4</b>

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

**SOIL STABILIZATION**

LOCATION	SOIL STABILIZATION
	TON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER	100
<b>TOTAL:</b>	<b>100</b>

\* QUANTITY ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

**CLEARING AND GRUBBING**

STATION	STATION	CLEARING	GRUBBING
		STATION	STATION
101+00	112+51	12	12
201+00	213+00	12	12
<b>TOTALS:</b>		<b>24</b>	<b>24</b>

**SOIL LOG**

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO SOIL CLASS	COLOR
101+00	5' LT.	0-5	24	6	A-(1)	BROWN
101+00	20' LT.	0-5	27	9	A-4(2)	BROWN
108+00	20' RT.	0-2Z	31	11	A-6(4)	BR/GR
114+00	25' RT.	0-1.5Z	ND	NP	A-4(0)	BROWN
119+00	5 RT.	0-5	29	11	A-6(4)	BROWN
119+00	20' RT.	0-5	27	12	A-6(4)	BROWN
204+00	5 RT.	0-5	19	4	A-4(0)	BR/GR
204+00	20' RT.	0-5	34	17	A-6(11)	BR/GR
212+00	5' LT.	0-5	49	31	A-7-6(24)	BR/GR
212+00	23' LT.	0-5	36	18	A-6(12)	BROWN
119+00	20' RT.	0-5	23	8	A-4(1)	BROWN
204+00	20' RT.	0-5	26	10	A-4(3)	BR/GR

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

Z-AUGER REFUSAL  
NP-NON-PLASTIC  
ND-NOT DETERMINABLE

**MAILBOXES**

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)
	EACH	EACH
ENTIRE PROJECT	2	2
<b>TOTALS:</b>	<b>2</b>	<b>2</b>

**BENCH MARKS**

LOCATION	BENCH MARKS
	EACH
SITE 1 - RC BOX HEADWALL	1
SITE 2 - RC BOX HEADWALL	1
<b>TOTALS:</b>	

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

**FENCING ITEMS**

STATION	STATION	SIDE	REMOVAL AND DISPOSAL OF FENCE	WIRE FENCE	GATES	
			LIN. FT.	(TYPE D)	14'	16'
					EACH	EACH
102+00	104+98	RT.	333			
102+00	105+03	RT.		315		
101+20	104+98	LT.	380			
101+20	105+03	LT.		410		
105+49	108+05	LT.	246			
106+16	108+34	RT.		245		
106+17	108+21	LT.		115		
106+76	108+40	RT.	179			
108+43		RT.				1
108+50	112+51	RT.		420		
108+55	112+51	RT.	409			
108+11		LT.			1	
108+19	112+51	LT.	419			
108+36	112+51	LT.		135		
202+60	204+09	RT.	149			
204+19	207+44	RT.	346			
205+00	207+48	LT.	257			
207+78	210+00	LT.	238			
207+73	211+15	RT.	418			
211+19	212+50	RT.	149			
202+60	207+43	RT.		500		
208+03	211+15	RT.		125		
211+40	212+79	RT.		155		
<b>TOTALS:</b>			<b>3523</b>	<b>2420</b>	<b>1</b>	<b>1</b>

\* PROPERTY OWNER WAS COMPENSATED FOR FENCING - REMOVAL AND DISPOSAL ONLY - DO NOT REPLACE.

**EROSION CONTROL ITEMS - PERMANENT**

STATION	STATION	LOCATION	SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION
			ACRE	TON	ACRE	M. GAL.	ACRE
103+00	112+00	MAIN LANES	0.94	2	0.94	95.9	0.94
203+00	209+00	MAIN LANES	0.29	1	0.29	29.6	0.29
<b>TOTALS:</b>			<b>1.23</b>	<b>3</b>	<b>1.23</b>	<b>125.5</b>	<b>1.23</b>

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

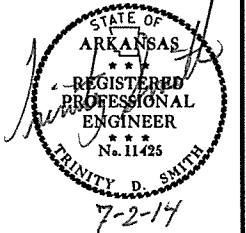
**TEMPORARY EROSION CONTROL**

LOCATION	SAND BAG DITCH CHECKS (E-5)	SILT FENCE (E-11)	SEDIMENT BASINS (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL AND DISPOSAL	TEMPORARY SEEDING	MULCH	WATER	*EROSION CONTROL MATTING (CLASS 1)
	BAGS	LIN. FT.	CU. YD.	CU. YD.	CU. YD.	ACRE	ACRE	M.GAL.	SQ. YD.
MAIN LANES - SITE 1	90	890	16	16	50	0.27	1.65	5.5	
MAIN LANES - SITE 2	90	1690	16	16	50	0.94	2.55	19.2	
ENTIRE PROJECT									250
<b>TOTALS:</b>	<b>180</b>	<b>2580</b>	<b>32</b>	<b>32</b>	<b>100</b>	<b>1.21</b>	<b>4.20</b>	<b>24.7</b>	<b>250</b>

BASIS OF ESTIMATE:  
WATER ..... 20.4 M.G. / ACRE OF TEMPORARY SEEDING  
SAND BAG DITCH CHECKS ..... 18 BAGS / LOCATION  
ROCK DITCH CHECKS ..... 10 CU. YD. / LOCATION

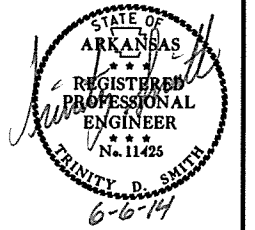
TEMPORARY EROSION CONTROL DEVICES SHOWN ABOVE AND ON THE PLANS SHALL BE INSTALLED IN SUCH A SEQUENCE AS TO DETER EROSION AND SEDIMENTATION OF U.S. WATERWAYS AS EXPLAINED BY THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT.

\*QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	FSX005		29	67

2 QUANTITIES



REMOVAL AND DISPOSAL OF EXISTING BRIDGE STRUCTURES

STATION	STATION	DESCRIPTION	LUMP SUM
105+00	105+47	34' X 47' 3 SPAN WOOD BEAM BRIDGE (SITE NO. 1)	1.00
207+48	207+78	28' X 32 STEEL GIRDER BRIDGE (SITE NO. 2)	1.00

REMOVAL AND DISPOSAL ITEMS

STATION	STATION	DESCRIPTION	SIDE	*PIPE CULVERTS	GUARDRAIL	GATES
				EACH	LIN. FT.	EACH
104+50	105+00	EXISTING GUARDRAIL	RT.		50	
104+51	105+01	EXISTING GUARDRAIL	LT.		50	
105+46	106+46	EXISTING GUARDRAIL	RT.		100	
105+46	106+46	EXISTING GUARDRAIL	LT.		100	
108+06		24" X 12" X 20' CM ARCH PIPE SIDE DRAIN	LT.	1		
108+11			LT.			1
108+45		18" X 24' CM PIPE SIDE DRAIN	RT.	1		
108+47		16' METAL	LT.			1
204+13						1
207+00	207+47	EXISTING GUARDRAIL	RT.		47	
207+00	207+55	EXISTING GUARDRAIL			55	
207+73	208+26	EXISTING GUARDRAIL			53	
207+73	208+26	EXISTING GUARDRAIL			53	
211+32		18' X 23' CM PIPE SIDE DRAIN	RT.	1		
TOTALS:				3	508	3

\*NOTE: INCLUDING HEADWALLS AND / OR FLARED END SECTIONS.

EARTHWORK

STATION	STATION	LOCATION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU. YD.	
103+00	112+00	MAIN LANES - SITE 1	2941	3759
201+00	213+00	MAIN LANES - SITE 2	1386	577
103+00	112+00	DETOUR LANES - SITE 1	5450	4267
201+00	213+00	DETOUR LANES - SITE 2	12373	13512
105+33		R.C. BOX CULVERT CHANNEL EXCAVATION	125	
105+97		R.C. BOX CULVERT CHANNEL EXCAVATION	43	
207+73		R.C. BOX CULVERT CHANNEL EXCAVATION	138	
ENTIRE PROJECT		DRIVEWAYS		380
TOTALS:			22456	22495

NOTE: EARTHWORK QUANTITIES TO BE PAID AS PLAN QUANTITY.

STRUCTURES OVER 20'-0" SPAN

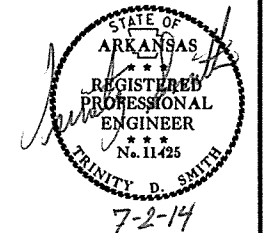
STATION	DESCRIPTION	SPAN	HEIGHT	LENGTH	CLASS "S" CONCRETE - ROADWAY	REINFORCING STEEL ROADWAY - (GRADE 60)	UNCLASSIFIED EXCAVATION FOR STRUCTURES - ROADWAY	SOLID SODDING	WATER	STANDARD DRAWINGS NUMBERS
					CU. YD.	POUND	CU. YD.	SQ. YD.	M. GAL.	
105+33	CONST. QUAD. R.C. BOX CULVERT W/ 3:1 WINGS	10	6	74	327.53	47406	125	36	0.5	SPECIAL DETAILS, RCB-1, RCB-2, PBC-1
105+97	EXTEND DBL. R.C. BOX CULVERT W/3:1 WINGS	10	6	35	81.22	11276	43	26	0.3	R-200X-0, W-X003-1, RCB-1, RCB-2, RCB-3, PBC-1
207+73	CONST. TRP. R.C. BOX CULVERT W/3:1 WINGS	12	8	74	324.33	38560	138	38	0.5	SPECIAL DETAILS, RCB-1, RCB-2, PBC-1
TOTALS:					733.08	97242	306	100	1.3	

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

**SUMMARY OF QUANTITIES**

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
7-02-14				6	ARK.			
						JOB NO. FSX005	30	67

② SUMMARY OF QUANTITIES AND REVISIONS



ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	24	STATION
201	GRUBBING	24	STATION
202	REMOVAL AND DISPOSAL OF FENCE	3523	LIN.FT.
202	REMOVAL AND DISPOSAL OF GUARDRAIL	508	LIN.FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	3	EACH
202	REMOVAL AND DISPOSAL OF GATES	3	EACH
210	UNCLASSIFIED EXCAVATION	22456	CU.YD.
210	COMPACTED EMBANKMENT	22495	CU.YD.
SP& 210	SOIL STABILIZATION	100	TON
303	AGGREGATE BASE COURSE (CLASS 7)	10634	TON
401	TACK COAT	40146	GALLON
SP,SS&406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	1239	TON
SP,SS&406	ASPHALT BINDER (PG 70-22) IN ACHM BINDER COURSE (1")	57	TON
SP,SS&407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	42687	TON
SP,SS&407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	3	TON
SP,SS&407	ASPHALT BINDER (PG 70-22) IN ACHM SURFACE COURSE (1/2")	2291	TON
412	COLD MILLING ASPHALT PAVEMENT	976	SQ.YD.
SP& 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	50	TON
SP& 415	ACHM PATCHING OF EXISTING ROADWAY	100	TON
601	MOBILIZATION	1.00	LUMP SUM
SP& 602	FURNISHING FIELD OFFICE	1	EACH
603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
603	12" TEMPORARY CULVERT	24	LIN.FT.
603	18" TEMPORARY CULVERT	76	LIN.FT.
603	48" TEMPORARY CULVERT	339	LIN.FT.
603	54" TEMPORARY CULVERT	314	LIN.FT.
604	SIGNS	1739	SQ.FT.
604	BARRICADES	64	LIN.FT.
604	TRAFFIC DRUMS	103	EACH
604	VERTICAL PANELS	106	EACH
604	CONSTRUCTION PAVEMENT MARKINGS	10064	LIN.FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	2620	LIN.FT.
SP& 606	18" SIDE DRAIN	102	LIN.FT.
606	SELECTED PIPE BEDDING	50	CU. YD.
611	4" PIPE UNDERDRAINS	500	LIN.FT.
611	UNDERDRAIN OUTLET PROTECTORS	4	EACH
619	WIRE FENCE (TYPE D)	2420	LIN.FT.
619	14' STEEL GATES (ALTERNATE NO. 1)	1	EACH
619	14' ALUMINUM GATES (ALTERNATE NO. 2)	1	EACH
619	16' STEEL GATES (ALTERNATE NO. 1)	1	EACH
619	16' ALUMINUM GATES (ALTERNATE NO. 2)	1	EACH
620	LIME	3	TON
620	SEEDING	1.23	ACRE
SS& 620	MULCH COVER	5.43	ACRE
620	WATER	151.5	M.GAL.
621	TEMPORARY SEEDING	1.21	ACRE
621	SILT FENCE	2580	LIN.FT.
621	SAND BAG DITCH CHECKS	180	BAG
621	SEDIMENT BASINS	32	CU.YD.
621	OBLITERATION OF SEDIMENT BASINS	32	CU.YD.
621	SEDIMENT REMOVAL AND DISPOSAL	100	CU.YD.
623	SECOND SEEDING APPLICATION	1.23	ACRE
624	SOLID SODDING	100	SQ.YD.
626	EROSION CONTROL MATTING (CLASS 1)	250	SQ.YD.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
637	MAILBOXES	2	EACH
637	MAILBOX SUPPORTS (SINGLE)	2	EACH
642	RUMBLE STRIPS IN ASPHALT SHOULDERS	1478	LIN.FT.
SP	RUMBLE STRIPES	222858	LIN.FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	274963	LIN.FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	275743	LIN.FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	64	EACH
<b>STRUCTURES OVER 20' SPAN</b>			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	306	CU. YD.
802	CLASS S CONCRETE-ROADWAY	733.08	CU. YD.
804	REINFORCING STEEL-ROADWAY (GRADE 60)	97242	POUND

\* DENOTES ALTERNATE BID ITEMS.

**REVISIONS**

DATE	REVISIONS	SHEET NUMBER(S)
7/2/14	REVISED FENCING QUANTITY. PROPERTY OWNER WAS COMPENSATED TO REPLACE FENCE AND CONSTRUCT WATER GATE.	28, 30, 35

6/6/2014

RF SX005.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. PROJ. NO.	STATE	FED. PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						F5X005	31	67

② SURVEY CONTROL DETAILS



SURVEY CONTROL COORDINATES  
 Project Name: fsx005  
 Date: 11/19/2013  
 Coordinate System: Arkansas State Plane Coordinates  
 Based on AHTD GPS PTS: 710018 - 710018A 150010 - 150010A  
 Projected to Ground Coordinates  
 Units: U.S. Survey Foot

COORDINATES LISTED BELOW ARE GROUND (Localized) COORDINATES !!!!

Point No.	Northing	SY	Eastng	SX	Elevation	SZ	Feature Code	Point Description
1	382678.7933	0.0075	1156928.427	0.0061	555.762	0.0058	CTL	PD:AHTD STD. CTL MON. STAMPED PN:1
2	382727.7086	0.0084	1157508.6965	0.0067	548.09	0.007	CTL	PD:AHTD STD. CTL MON. STAMPED PN:2
3	382856.5164	0.0091	1157814.4367	0.0074	538.91	0.008	CTL	PD:AHTD STD. CTL MON. STAMPED PN:3
4	383044.6539	0.0107	1158239.7250	0.0088	529.46	0.008	CTL	PD:AHTD STD. CTL MON. STAMPED PN:4
5	383056.6862	0.0103	1158374.9209	0.0086	528.34	0.009	CTL	PD:AHTD STD. CTL MON. STAMPED PN:5
6	383201.8680	0.0110	1158603.0949	0.0091	534.58	0.009	CTL	PD:AHTD STD. CTL MON. STAMPED PN:6
7	383427.7446	0.0108	1158789.8746	0.0091	545.44	0.009	CTL	PD:AHTD STD. CTL MON. STAMPED PN:7
8	383807.3334	0.0123	1159029.4979	0.0105	560.93	0.009	CTL	PD:AHTD STD. CTL MON. STAMPED PN:8
9	420663.3440	0.0119	1218808.6386	0.0134	715.55	0.010	CTL	PD:AHTD STD. CTL MON. STAMPED PN:9
10	421187.8404	0.0110	1219049.0761	0.0119	694.77	0.010	CTL	PD:AHTD STD. CTL MON. STAMPED PN:10
11	421663.3267	0.0104	1219428.2426	0.0111	688.13	0.010	CTL	PD:AHTD STD. CTL MON. STAMPED PN:11
12	422101.0624	0.0097	1219732.5865	0.0108	689.09	0.010	CTL	PD:AHTD STD. CTL MON. STAMPED PN:12
13	422352.5675	0.0090	1219953.2332	0.0091	695.03	0.009	CTL	PD:AHTD STD. CTL MON. STAMPED PN:13
14	422719.5503	0.0087	1219965.8509	0.0088	703.25	0.009	CTL	PD:AHTD STD. CTL MON. STAMPED PN:14
100	381567.8788	0.0001	1154619.1548	0.0001	579.98	0.006	GPS	PD:AHTD GPS #150010
101	382133.0097	0.0001	1156143.3285	0.0001	553.52	0.000	GPS	PD:AHTD GPS #150010A
102	423223.1857	0.0001	1220101.8098	0.0001	726.63	0.008	GPS	PD:AHTD GPS #710018
103	423391.2610	0.0001	1222840.7398	0.0001	728.87	0.007	GPS	PD:AHTD GPS #710018A
900	422989.3178	30.0000	1225121.4415	30.0000	704.71	0.005	TBM	PD:CHISEL SQ IN CENTER HDWL
990	422638.3140	30.0000	1227576.4026	30.0000	788.43	0.000	BM	PD:U.S.G.S. 3RD ORDER BM

\*Standard Primary Control Monument - Rebar and Cap - Standard - 5/8" x 24" Rebar with 2" Aluminum Cap stamped: "(include all common information here)" plus other markings indicated in the point description of the individual point. AHTD monuments will be stamped "Arkansas Hwy & Trans Dept" with "PN:####" & "Job#####". Monuments that are set by Consultants will be stamped "Ark. State Hwy Trans. Dept" with "PN:####", "Job#####", & "PS#####". The consultant Professional Surveyor in charge will stamp his/her PS license number on the cap.

\*\*Standard GPS Control Point Monument - 5/8" x 48" Rebar with 2.5" Aluminum Cap stamped: "(include all common information here)" plus other markings indicated in the point description of the individual point. These monuments will be stamped "Ark. State Hwy Trans. Dept.", "GPS Survey", & "Point No. #####".

SX, SY, SZ - Represents the standard error estimate of the coordinate values of each point at the 67% confidence level (one sigma) based on the least squares analysis of the control network. See the AASHTO SDMS Technical Data Guide data tag definition for SX, SY, and SZ for additional information. These values shall be used when control points are added and the entire network is reprocessed using least square analysis. A value of 0.001 is defined as fixed (no adjustment) in the least square analysis process. A value of 30 is defined as location by handheld GPS device or scaled from USGS Quadmap.

Reference Control points (1500 series) shall be used to re-establish horizontal datum if the primary control has been destroyed. These reference control points shall not be used for vertical control unless the elevation has been established from the project datum with 3-wire level techniques.

All additional project control shall be occupied, measured, and adjusted with direct survey ties to at least two of the control points listed in the table above. New survey control shall not be independent of the survey control listed above. This includes horizontal coordinates and elevations.

Positional Accuracy:	Horizontal - GPS (1.0 cm ± 1PPM)	PN: 100-103 (in the above example)
	Horizontal - Primary (2.0 cm ± 20PPM):	PN: 1-14 (in the above example)
	Horizontal - Secondary (3 cm ± 50PPM):	PN: ##### (in the above example)
	Vertical - NGS 1st Order (±4mm x Vdist in km)	PN: ##### (in the above example)
	Vertical - NGS 2nd Order (±6mm x Vdist in km)	PN: #### (in the above example)
	Vertical - NGS 3rd Order (±8mm x Vdist in km)	PN: 990 (in the above example)

Horizontal Datum: NAD 1983 (1997) State Plane Zone: 0301 - North Zone  
 The adjustment year is based on metadata in the SDMS Control file  
 A project CAF of: 0.999915232 has been used to compute the above coordinates.  
 The project CAF shall have a minimum precision of 9 digits right of the decimal.  
 This CAF is intended for use within the project limits only.  
 Grid Distance = Ground Distance X CAF  
 If Coordinates are listed as Ground:  
 To compute Grid Coordinates, multiply the Ground Coordinates by CAF about the origin of X=0 & Y=0  
 If Coordinates are listed as Grid:  
 To compute Ground Coordinates, divide the Grid Coordinates by CAF about the origin of X=0 & Y=0

Vertical Datum: NAVD 1988 based NGS BM:  
 A project Elevation Factor of: 0.9999698434 has been computed and incorporated in the above CAF.  
 This is based on the average elevation of the project: 630.47 Feet  
 3-Wire Leveling techniques have been used to establish elevations on  
 Points: 1-14, 100-103, 900-990 From NGS BM: H 210

Basis of Bearing: Grid Bearings based on AHTD GPS points: 710018 - 710018A 150010 - 150010A  
 EAST BRIDGE LT: 35-29-28.71 N LG: 092-18-44.79 W WEST BRIDGE LT: 35-23-04.23 N LG: 092-31-02.25 W  
 Grid Azimuth = Astronomical Azimuth - Convergence Angle

Note: Information in Italics is for clarification only. It is not to be part of the actual Control Table or Control Detail Sheets.

SITE 1

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	100+00.00	382832.9660	1157797.3241
8001	PI	103+61.98	382976.4225	1158129.6670
8002	PC	106+07.50	383072.0627	1158355.7927
8003	PT	111+20.23	383394.2292	1158745.3683
8004	POE	113+81.97	383611.8652	1158890.7699

SITE 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8200	POB	200+00.00	421437.9678	1219233.8240
8201	PI	203+74.66	421734.0514	1219463.3929
8202	PI	207+00.00	421990.4183	1219663.7054
8203	PI	208+33.11	422094.6239	1219746.5179
8204	PC	210+15.28	422236.8385	1219860.3748
8205	PT	214+00.68	422593.8885	1219984.4063
8206	POE	215+00.00	422693.2093	1219983.7675

DETOUR SITE 1

POINT NO.	TYPE	STATION	NORTHING	EASTING
8100	POB	0+00.00	382872.5967	1157889.1359
8101	PC	0+20.89	382880.8772	1157908.3192
8102	PT	1+78.01	382962.9115	1158041.6838
8103	PC	3+25.19	383057.2074	1158154.6813
8104	PT	5+62.12	383165.4121	1158363.3794
8105	PC	6+45.27	383186.8856	1158443.7084
8106	PT	10+38.48	383410.9150	1158756.5160
8107	POE	10+60.40	383429.1427	1158768.6938

DETOUR SITE 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8200	POB	300+00.00	421437.9678	1219233.8240
8300	PC	301+42.58	421550.6442	1219321.1878
8301	PT	303+47.77	421696.7731	1219464.5724
8302	PC	305+94.30	421851.4995	1219656.5022
8303	PT	313+86.51	422543.4163	1219984.7309
8206	POE	315+36.31	422693.2093	1219983.7675

6/2/2014

RF SX005.DCN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						F5X005	32	67

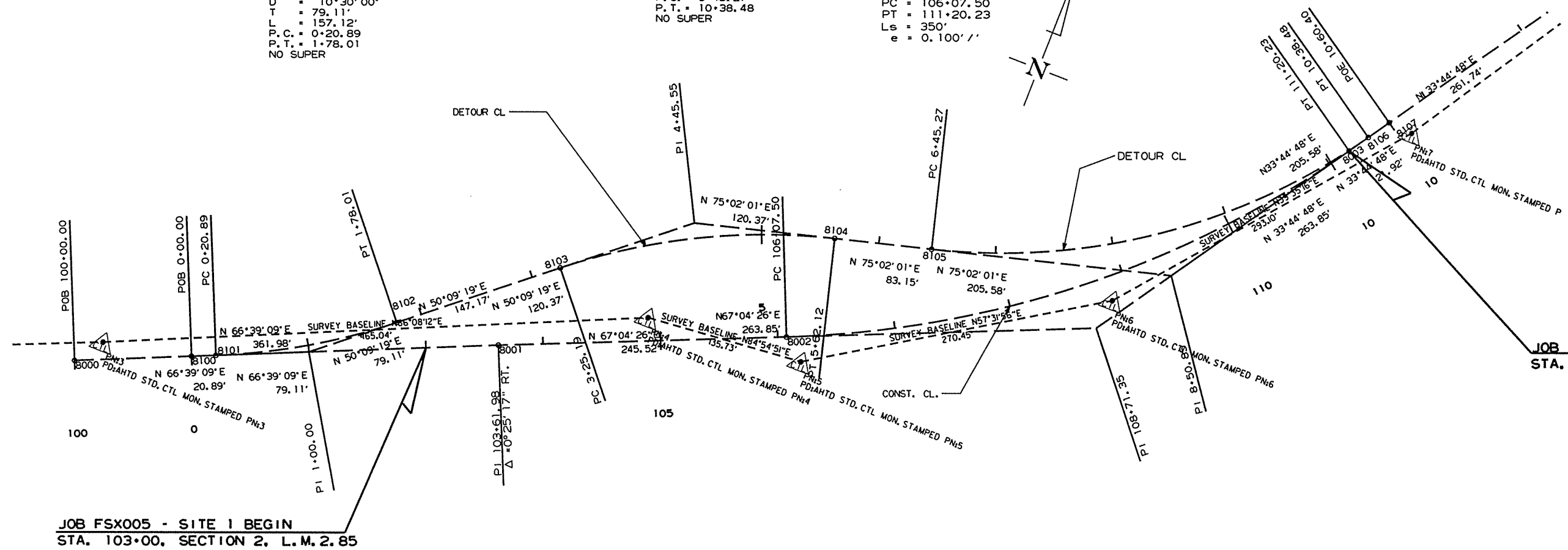
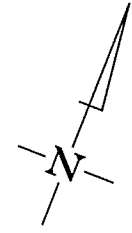
② SURVEY CONTROL DETAILS-SITE 1



DETOUR  
 P. I. = 1+00.00  
 $\Delta$  = 16°29'50" LT.  
 D = 10°30'00"  
 T = 79.11'  
 L = 157.12'  
 P. C. = 0+20.89  
 P. T. = 1+78.01  
 NO SUPER

DETOUR  
 P. I. = 8+50.85  
 $\Delta$  = 41°17'13" LT.  
 D = 10°30'00"  
 T = 205.58'  
 L = 393.21'  
 P. C. = 6+45.27  
 P. T. = 10+38.48  
 NO SUPER

CURVE DATA  
 P I = 108+71.35  
 $\Delta$  = 33°19'38" LT.  
 D = 6°30'00"  
 T = 263.85'  
 L = 512.73'  
 P C = 106+07.50  
 P T = 111+20.23  
 Ls = 350'  
 e = 0.100' /'



DETOUR  
 P. I. = 4+45.55  
 $\Delta$  = 24°52'43" RT.  
 D = 10°30'00"  
 T = 120.37'  
 L = 236.94'  
 P. C. = 3+25.19  
 P. T. = 5+62.12  
 Ls = 275'  
 e = 0.100' /'

6/2/2014

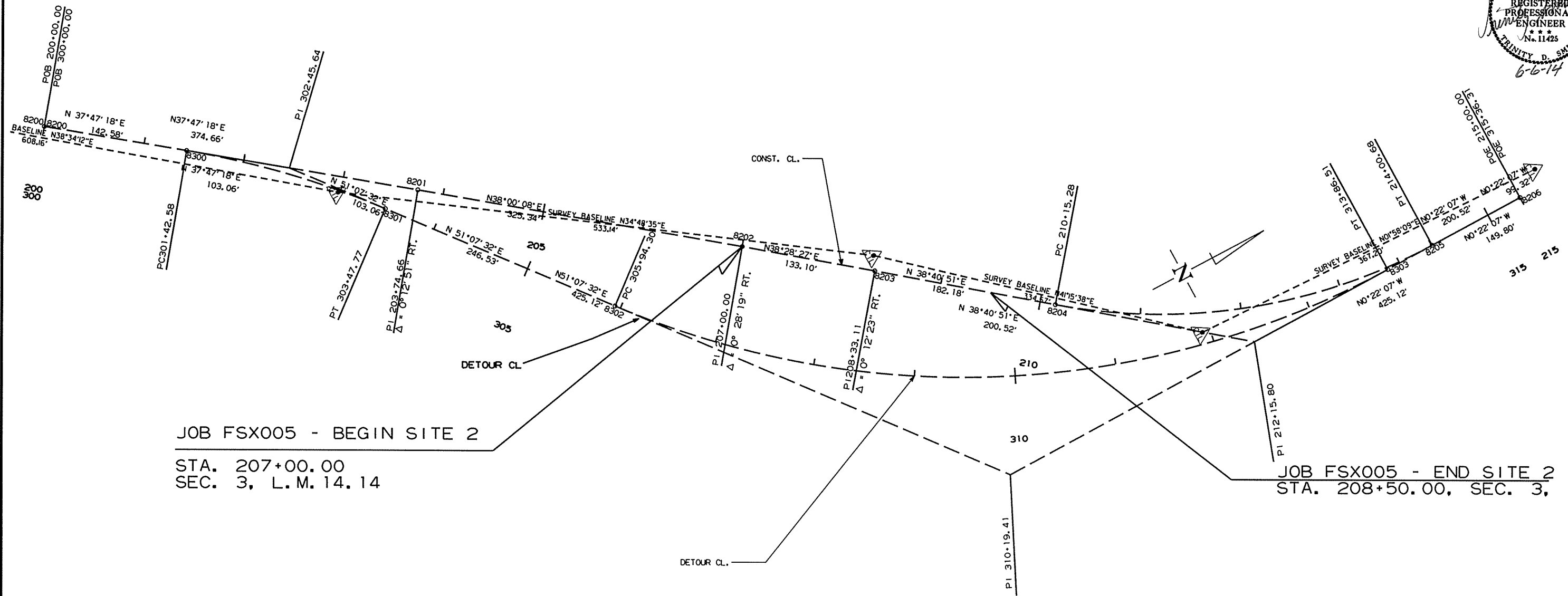
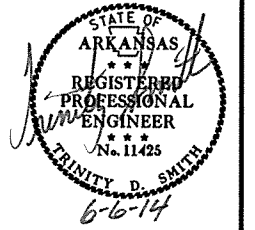
RF5X005.DGN

SITE 1  
 SURVEY CONTROL DETAILS



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	FSX005		33	67

2 SURVEY CONTROL DETAILS- SITE 2



JOB FSX005 - BEGIN SITE 2

STA. 207+00.00  
SEC. 3, L. M. 14.14

JOB FSX005 - END SITE 2  
STA. 208+50.00, SEC. 3,

6/3/2014

RFSX005.DGN

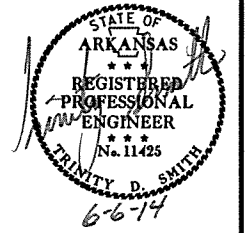
SITE - 2  
SURVERY CONTROL DETAILS

STA. 105+33 CONSTRUCT  
 QAD. 10' X 6' X 74' R.C.  
 BOX CULVERT, W/ 3:1 WINGS  
 LT. & RT.  
 Q25 = 1940 CFS, D.A. = 3.2 SQ. MI.

STA. 105+97 IN PLACE  
 DBL. 10' X 6' X 30' R.C. BOX  
 CULVERT, W/ 3:1 WINGS LT. & RT.  
 RETAIN AND EXTEND 18' LT. & 17' RT.  
 Q25 = 1940 CFS, 3.2 SQ. MI.

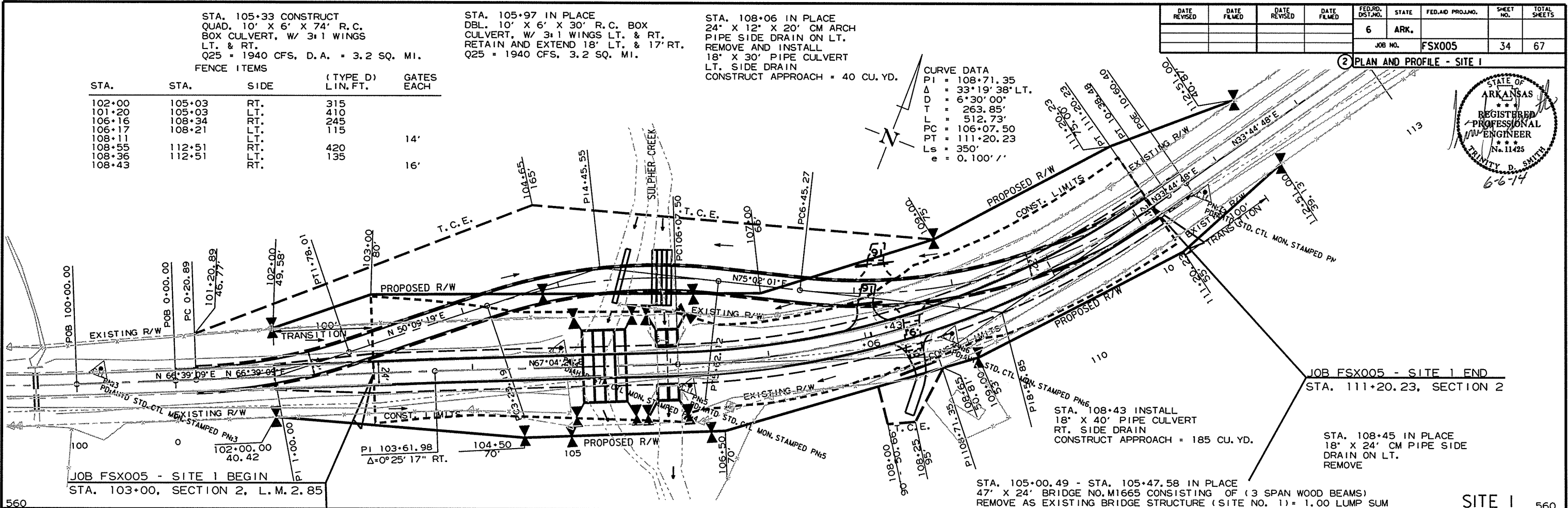
STA. 108+06 IN PLACE  
 24' X 12' X 20' CM ARCH  
 PIPE SIDE DRAIN ON LT.  
 REMOVE AND INSTALL  
 18' X 30' PIPE CULVERT  
 LT. SIDE DRAIN  
 CONSTRUCT APPROACH = 40 CU. YD.

DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED. DIST. NO.	STATE	FED. AD PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. FSX005							34	67



STA.	STA.	SIDE	(TYPE D) LIN. FT.	GATES EACH
102+00	105+03	RT.	315	
101+20	105+03	RT.	410	
106+16	108+34	RT.	245	
106+17	108+21	RT.	115	
108+11		RT.		14'
108+55	112+51	RT.	420	
108+36	112+51	RT.	135	
108+43		RT.		16'

CURVE DATA  
 PI = 108+71.35  
 Δ = 33°19'38" LT.  
 D = 6°30'00"  
 T = 263.85'  
 L = 512.73'  
 PC = 106+07.50  
 PT = 111+20.23  
 Ls = 350'  
 e = 0.100'

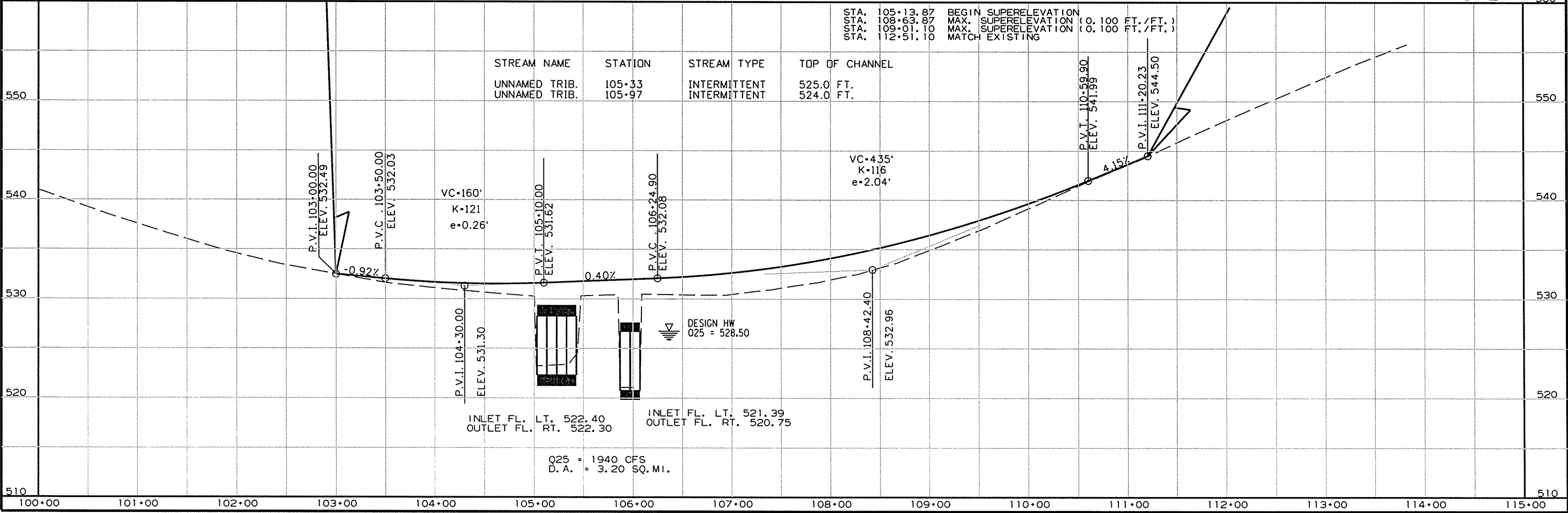


JOB FSX005 - SITE 1 END  
 STA. 111+20.23, SECTION 2

STA. 108+43 INSTALL  
 18' X 40' PIPE CULVERT  
 RT. SIDE DRAIN  
 CONSTRUCT APPROACH = 185 CU. YD.

STA. 108+45 IN PLACE  
 18' X 24' CM PIPE SIDE  
 DRAIN ON LT.  
 REMOVE

STA. 105+00.49 - STA. 105+47.58 IN PLACE  
 47' X 24' BRIDGE NO. M1665 CONSISTING OF (3 SPAN WOOD BEAMS)  
 REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1) = 1.00 LUMP SUM



STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL
UNNAMED TRIB.	105+33	INTERMITTENT	525.0 FT.
UNNAMED TRIB.	105+97	INTERMITTENT	524.0 FT.

STA. 105+13.97 BEGIN SUPERELEVATION  
 STA. 108+63.97 MAX. SUPERELEVATION (0.100 FT./FT.)  
 STA. 109+01.10 MAX. SUPERELEVATION (0.100 FT./FT.)  
 STA. 112+51.10 MATCH EXISTING

INLET FL. LT. 522.40  
 OUTLET FL. RT. 522.30

INLET FL. LT. 521.39  
 OUTLET FL. RT. 520.75

Q25 = 1940 CFS  
 D.A. = 3.20 SQ. MI.

STA. 207+48 - STA. 207+78  
 32' X 26' BRIDGE NO. M1673 CONSISTING OF  
 STEEL GIRDER BEAM  
 REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 2) = 1.00 LUMP SUM

STA. 207+73 CONSTRUCT  
 TRP. 12' X 8' X 74' R.C.  
 BOX CULVERT W/ 3:1 WINGS LT. & RT.  
 D.A. = 3.4 SQ. MI., Q50 = 1920 C.F.S.

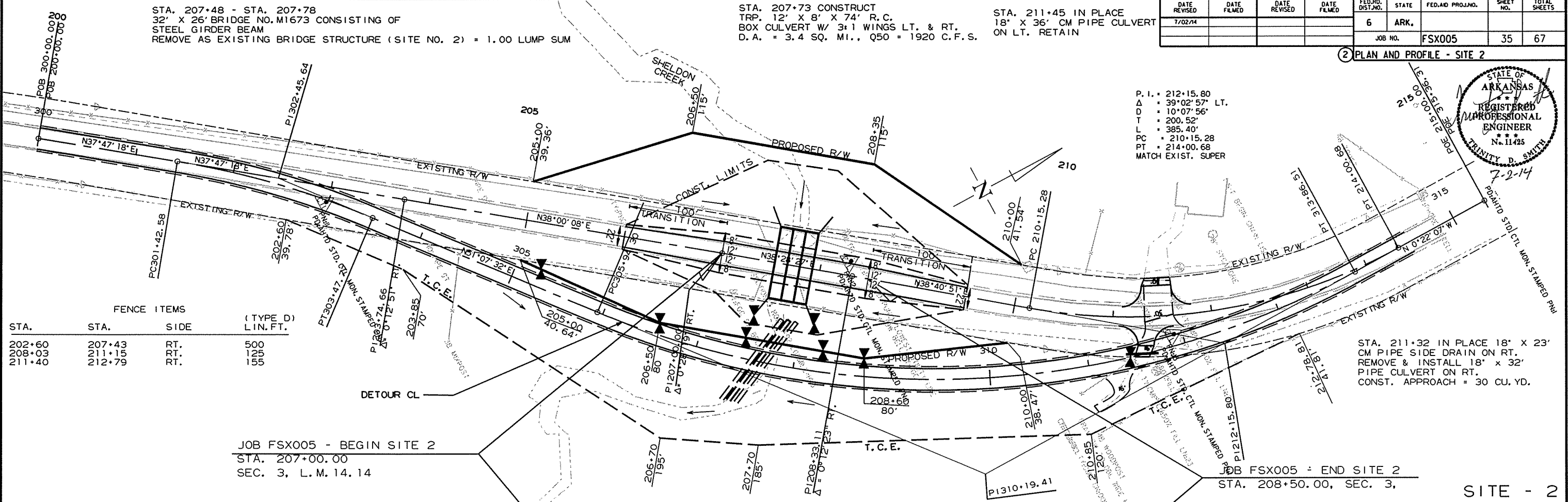
STA. 211+45 IN PLACE  
 18' X 36' CM PIPE CULVERT  
 ON LT. RETAIN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
7/02/14				6	ARK.			
				JOB NO. FSX005			35	67

2 PLAN AND PROFILE - SITE 2



P. I. = 212+15.80  
 Δ = 39°02'57" LT.  
 D = 10°07'56"  
 T = 200.52'  
 L = 385.40'  
 PC = 210+15.28  
 PT = 214+00.68  
 MATCH EXIST. SUPER

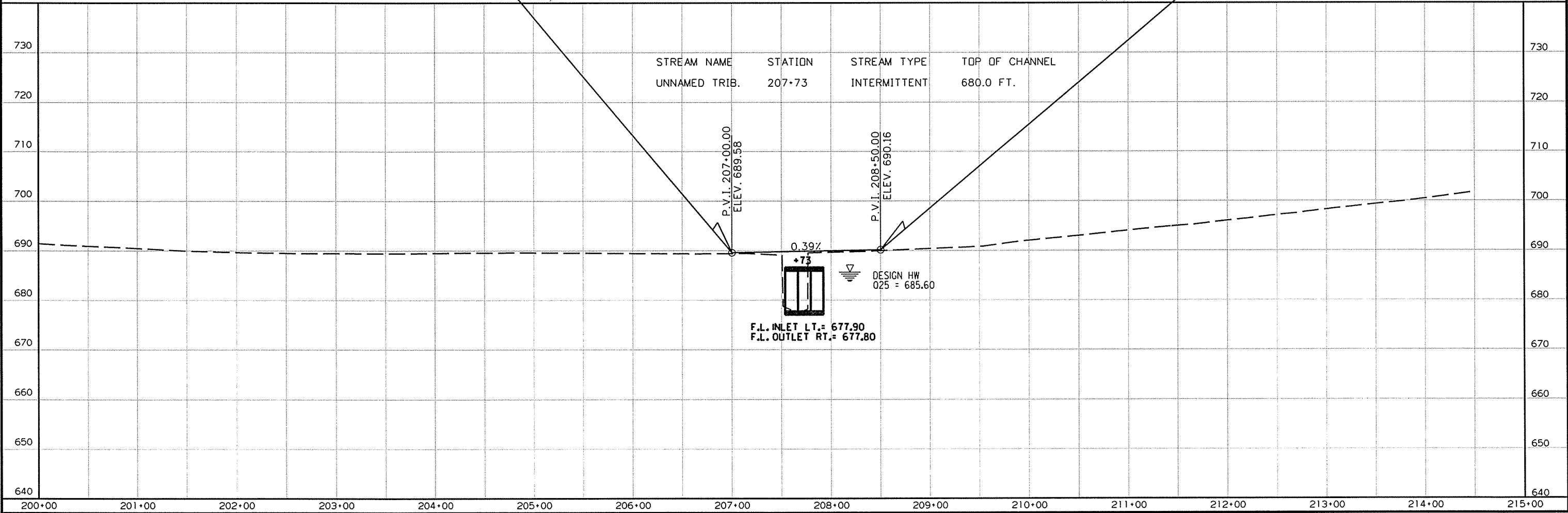


STA.	STA.	SIDE	(TYPE D) LIN. FT.
202+60	207+43	RT.	500
208+03	211+15	RT.	125
211+40	212+79	RT.	155

JOB FSX005 - BEGIN SITE 2  
 STA. 207+00.00  
 SEC. 3, L.M. 14.14

JOB FSX005 - END SITE 2  
 STA. 208+50.00, SEC. 3,

SITE - 2



CL DETOUR  
 STA. 4+65 INSTALL  
 54" X 58" ON 15" LT.  
 FWD. SKEW TEMP.  
 PIPE CULVERT

CL DETOUR  
 STA. 5+06 INSTALL  
 QUAD. 54" X 64"  
 TEMP. PIPE CULVERT

CL DETOUR  
 STA. 7+22 INSTALL  
 18" X 28" TEMPORARY PIPE  
 CULVERT LT. SIDE DRAIN  
 CONSTRUCT APPROACH = 15 CU. YD.

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. FSX005							36	67

DETOUR  
 P. I. = 1+00.00  
 Δ = 16°29'50" LT.  
 D = 10°30'00"  
 T = 79.11'  
 L = 157.12'  
 P. C. = 0+20.89  
 P. T. = 1+78.01  
 NO SUPER

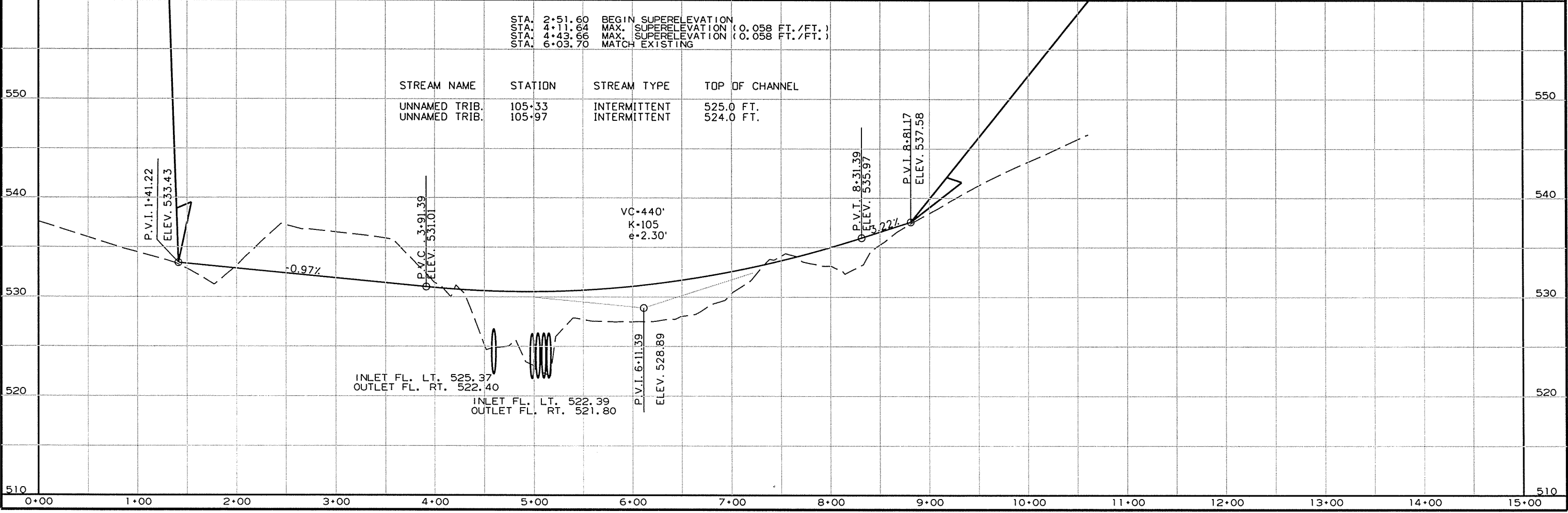
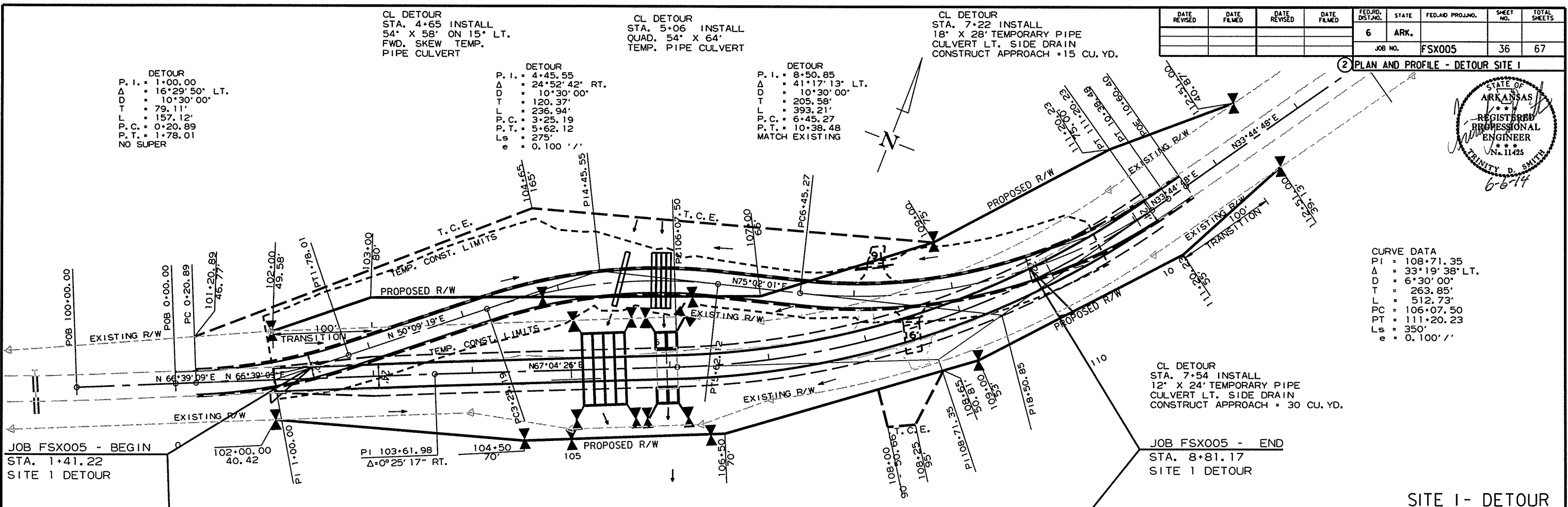
DETOUR  
 P. I. = 4+45.55  
 Δ = 24°52'42" RT.  
 D = 10°30'00"  
 T = 120.37'  
 L = 236.94'  
 P. C. = 3+25.19  
 P. T. = 5+62.12  
 Ls = 275'  
 e = 0.100'

DETOUR  
 P. I. = 8+50.85  
 Δ = 41°17'13" LT.  
 D = 10°30'00"  
 T = 205.58'  
 L = 393.21'  
 P. C. = 6+45.27  
 P. T. = 10+38.48  
 MATCH EXISTING

2 PLAN AND PROFILE - DETOUR SITE 1



CURVE DATA  
 PI = 108+71.35  
 Δ = 33°19'38" LT.  
 D = 6°30'00"  
 T = 263.85'  
 L = 512.73'  
 PC = 106+07.50  
 PT = 111+20.23  
 Ls = 350'  
 e = 0.100'



STA. 2+51.60 BEGIN SUPERELEVATION  
 STA. 4+11.64 MAX. SUPERELEVATION (0.058 FT./FT.)  
 STA. 4+43.66 MAX. SUPERELEVATION (0.058 FT./FT.)  
 STA. 6+03.70 MATCH EXISTING

STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL
UNNAMED TRIB.	105+33	INTERMITTENT	525.0 FT.
UNNAMED TRIB.	105+97	INTERMITTENT	524.0 FT.

INLET FL. LT. 525.37  
 OUTLET FL. RT. 522.40  
 INLET FL. LT. 522.39  
 OUTLET FL. RT. 521.80

6/3/2014  
 RFSX005.DGN

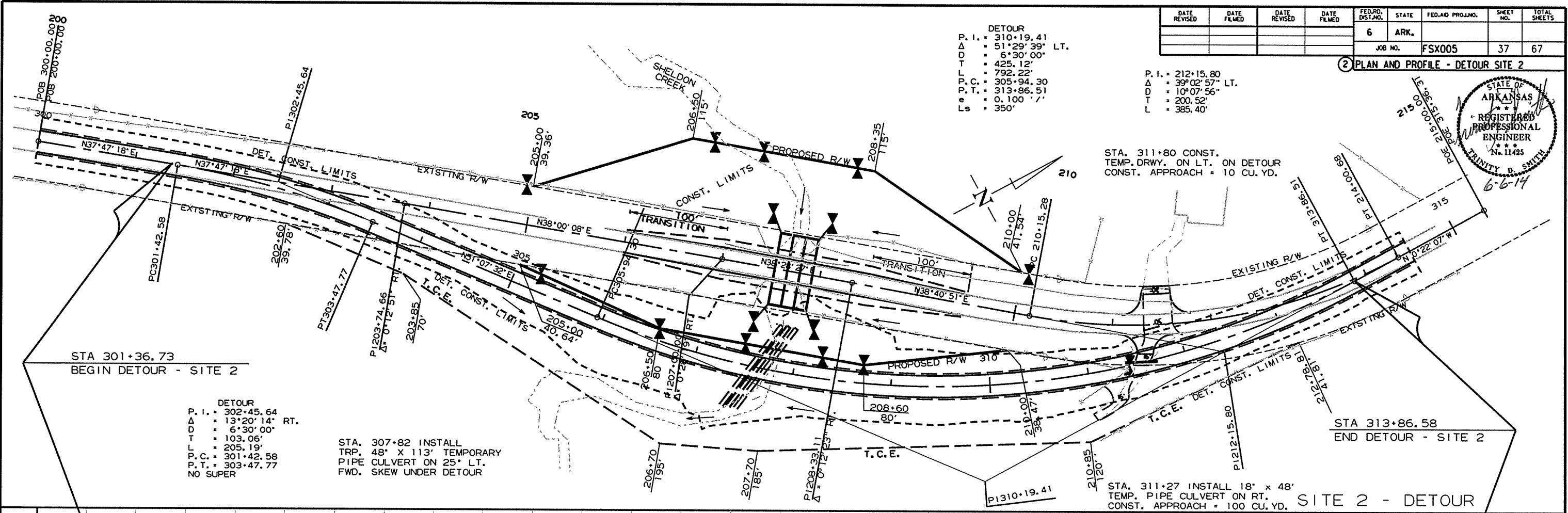
SITE 1 - DETOUR

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. FSX005							37	67

2 PLAN AND PROFILE - DETOUR SITE 2

DETOUR  
P. I. = 310+19.41  
Δ = 51°29'39" LT.  
D = 6°30'00"  
T = 425.12'  
L = 792.22'  
P. C. = 305+94.30  
P. T. = 313+86.51  
e = 0.100 %  
Ls = 350'

P. I. = 212+15.80  
Δ = 39°02'57" LT.  
D = 10°07'56"  
T = 200.52'  
L = 385.40'



STA 301+36.73  
BEGIN DETOUR - SITE 2

DETOUR  
P. I. = 302+45.64  
Δ = 13°20'14" RT.  
D = 6°30'00"  
T = 103.06'  
L = 205.19'  
P. C. = 301+42.58  
P. T. = 303+47.77  
NO SUPER

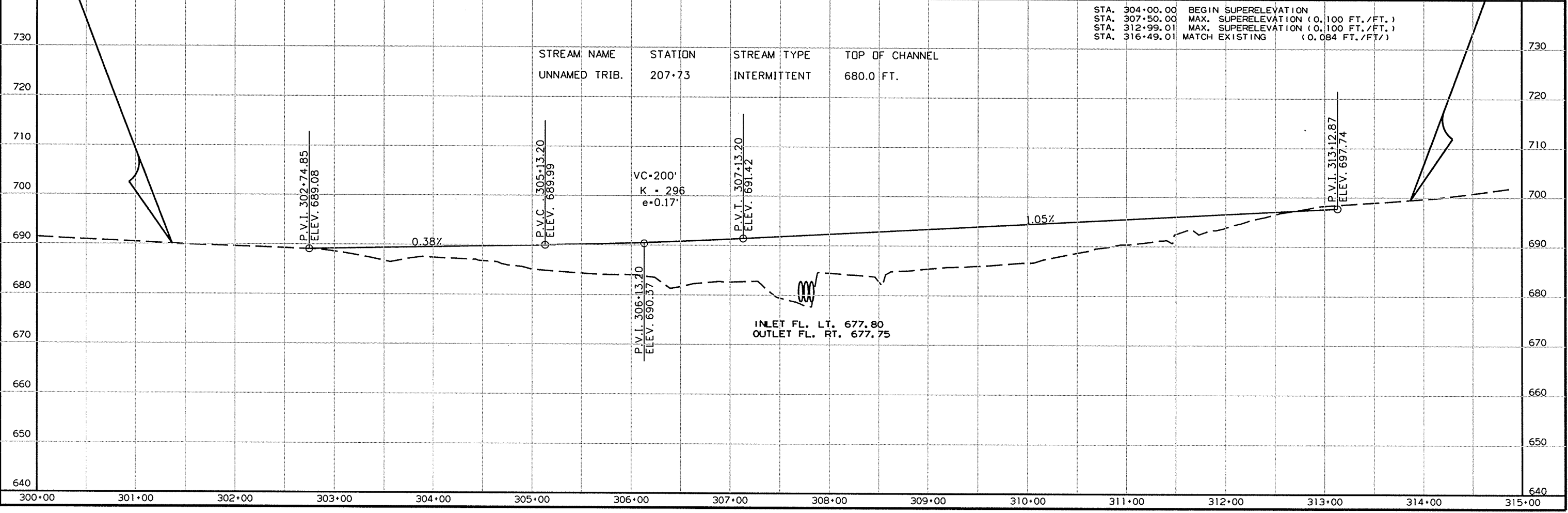
STA. 307+82 INSTALL  
TRP. 48" X 113' TEMPORARY  
PIPE CULVERT ON 25° LT.  
FWD. SKEW UNDER DETOUR

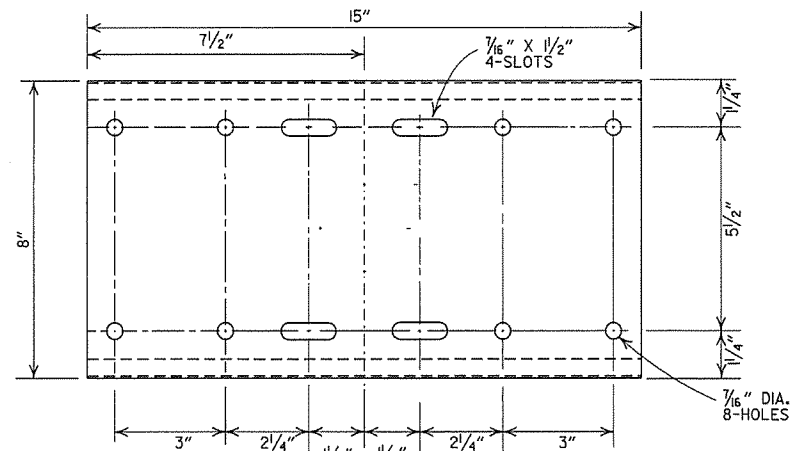
STA. 311+80 CONST.  
TEMP. DRWY. ON LT. ON DETOUR  
CONST. APPROACH = 10 CU. YD.

STA 313+86.58  
END DETOUR - SITE 2

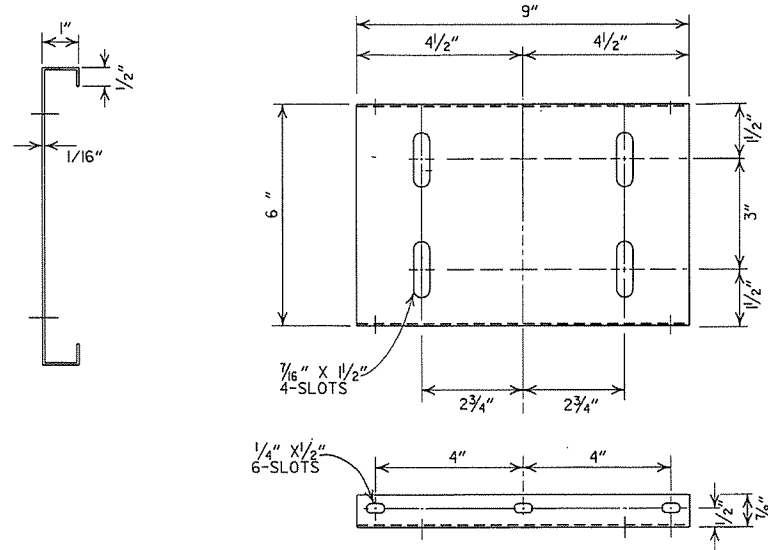
STA. 311+27 INSTALL 18" x 48'  
TEMP. PIPE CULVERT ON RT.  
CONST. APPROACH = 100 CU. YD. SITE 2 - DETOUR

STA. 304+00.00 BEGIN SUPERELEVATION  
STA. 307+50.00 MAX. SUPERELEVATION (0.100 FT./FT.)  
STA. 312+99.01 MAX. SUPERELEVATION (0.100 FT./FT.)  
STA. 316+49.01 MATCH EXISTING (0.084 FT./FT.)

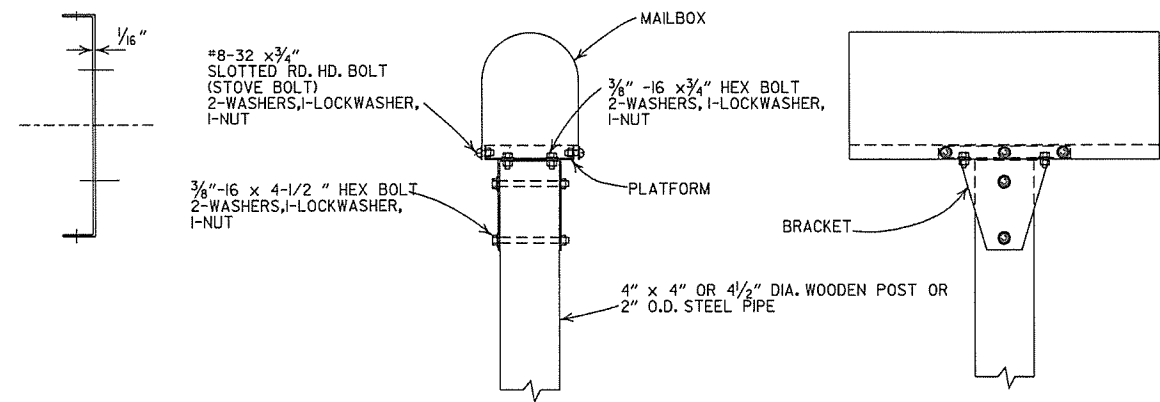




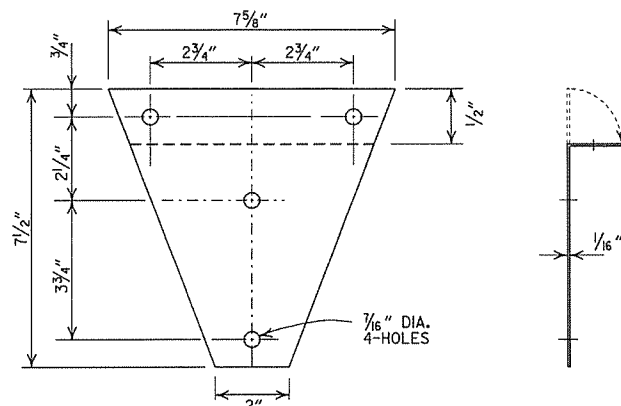
SHELF



PLATFORM

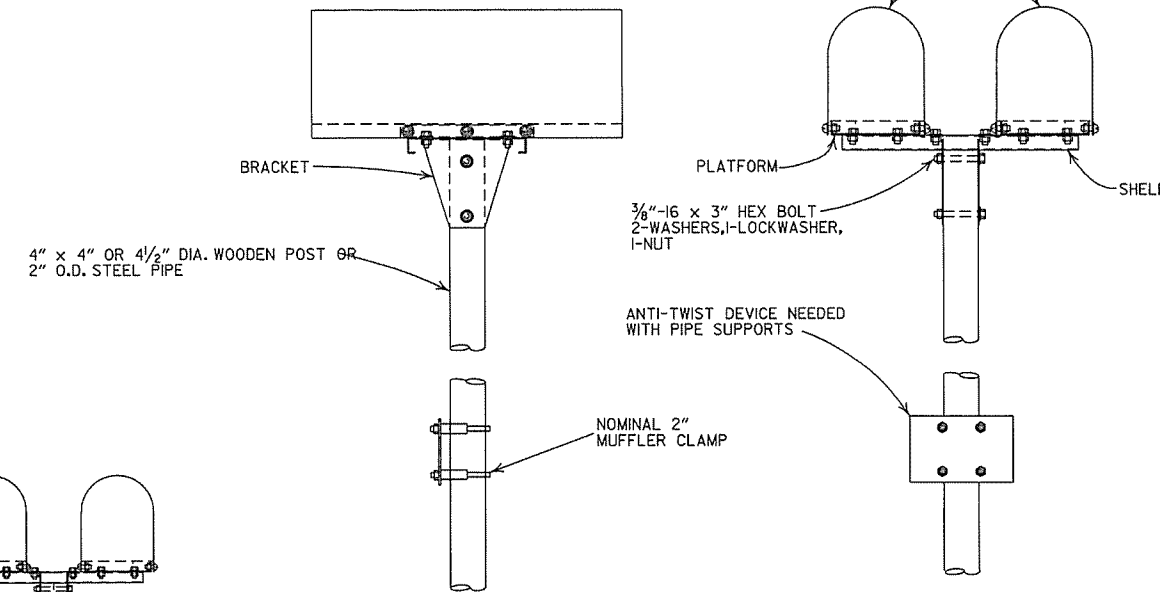


SINGLE INSTALLATION

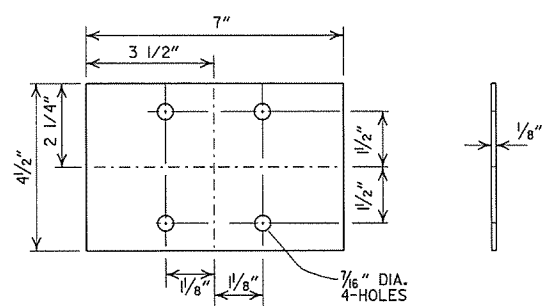


BRACKET

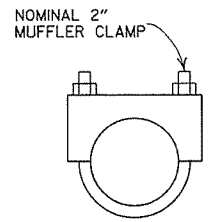
- GENERAL NOTES**
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
  2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
  3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED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



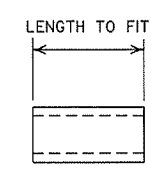
DOUBLE INSTALLATION



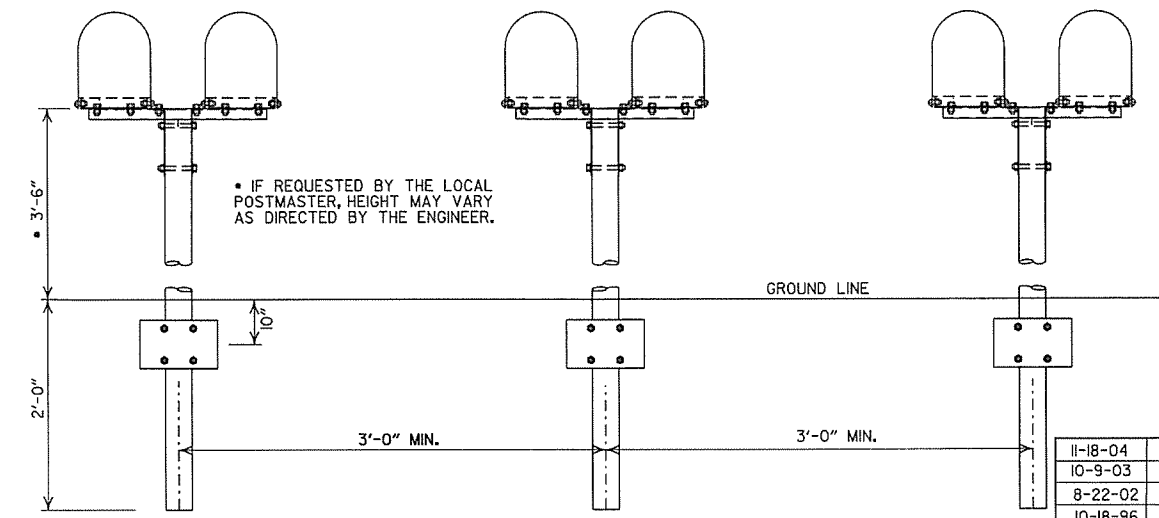
ANTI-TWIST PLATE



CLAMP



SPACER



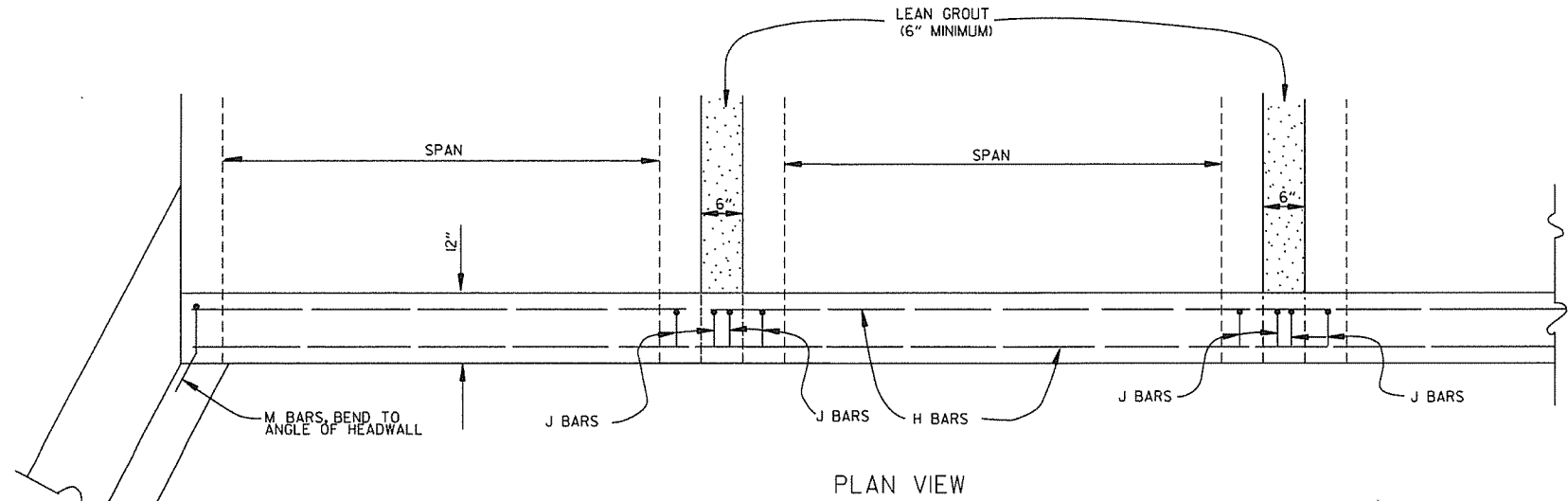
SPACING FOR MULTIPLE POST INSTALLATION

DATE	FILMED	ISSUED	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	120-7-15-88		ISSUED

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

STANDARD DRAWING MB-1



BAR LIST

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

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

GENERAL NOTES

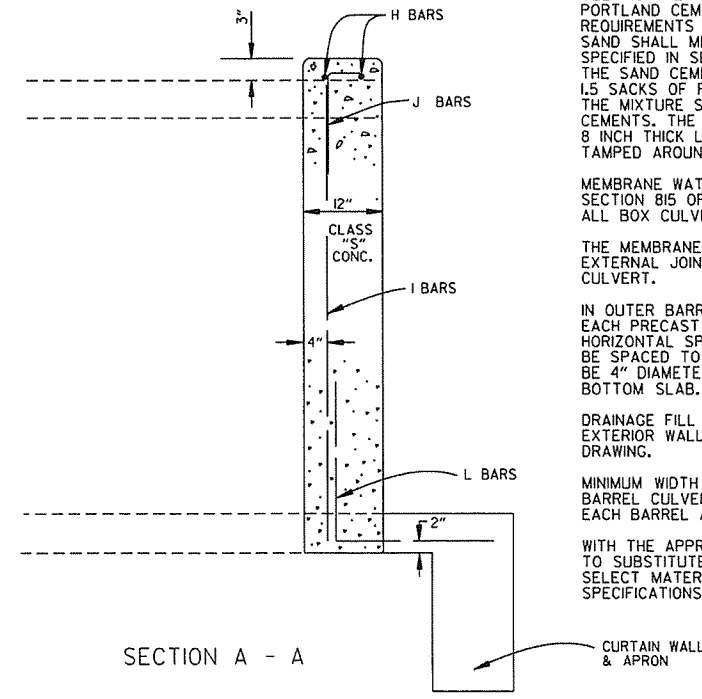
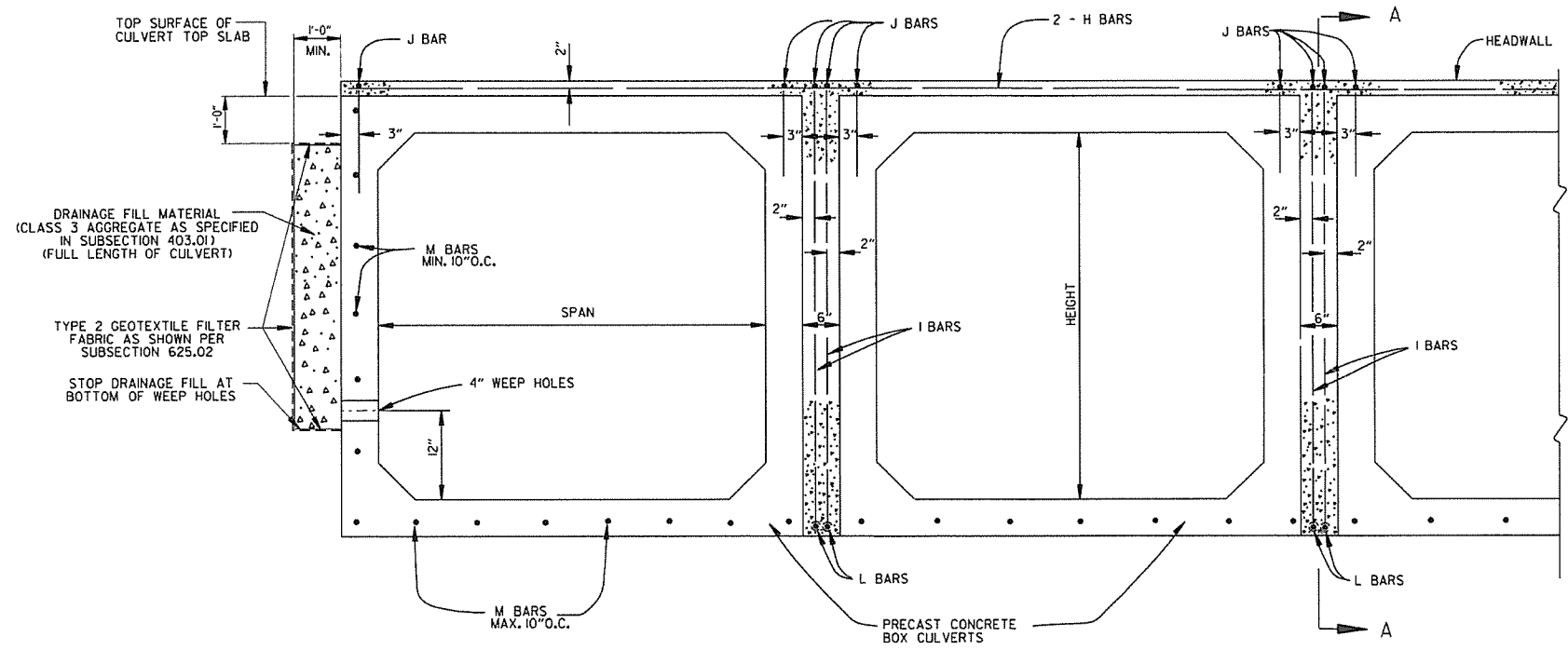
WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

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

ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFERS.

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

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



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

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. INCHES	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43¾	44	26¾	27
42	51½	51	31¾	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	87½	87
120	154	154	96¾	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. INCHES	AASHTO M 207	
	SPAN INCHES	RISE 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)(II).

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

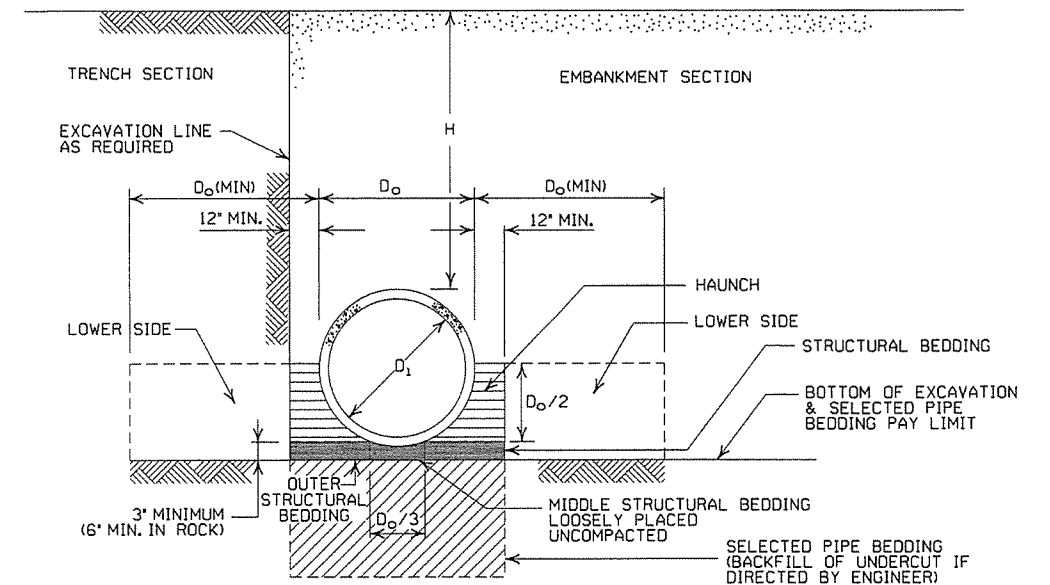
- LEGEND -

- D<sub>1</sub> = NORMAL INSIDE DIAMETER OF PIPE
- D<sub>o</sub> = OUTSIDE DIAMETER OF PIPE
- H = FILL COVER HEIGHT OVER PIPE (FEET)
- MIN. = MINIMUM
- UNDISTURBED SOIL

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

\* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

INSTALLATION TYPE	CLASS OF PIPE			
	CLASS III	CLASS IV	CLASS V	CLASS V
PIPE ID (IN.)	TYPE 1 OR 2	TYPE 3	ALL	ALL
	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
2-27-14	REVISED GENERAL NOTE 1	
12-15-11	REVISED FOR LRFD DESIGN SPECIFICATIONS	
5-18-00	REVISED TYPE 3 BEDDING & ADDED NOTE	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1





CORRUGATED STEEL PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS (INCHES)				
		0.064	0.079	0.109	0.138	0.168
2 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	34	36	47		
36	2		30	39	41	
42	2		43	67	70	73
48	2		37	58	61	64
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM						
36	1	48	60	88	111	118
42	1	41	51	72	90	102
48	1	36	45	64	77	85
54	2	32	40	59	71	79
60	2	29	36	53	64	71
66	2	26	33	47	58	64
72	2	24	30	44	53	59
78	2		28	41	49	54
84	2		26	38	45	51
90	2		24	35	43	45
96	2		22	33	40	44
102	2			31	38	42
108	2			30	35	39
114	2			28	34	37
120	2			27	32	35

CONSTRUCTION SEQUENCE

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

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

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

③ SM-3 WILL NOT BE ALLOWED.

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
2 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM						
12	1	45	45	52		
18	2	30	30	39		
24	2	22	22	31	41	34
30	2		18	26	27	28
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

EQUIVALENT METAL THICKNESSES AND GAUGES

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

CORRUGATED METAL PIPE ARCHES

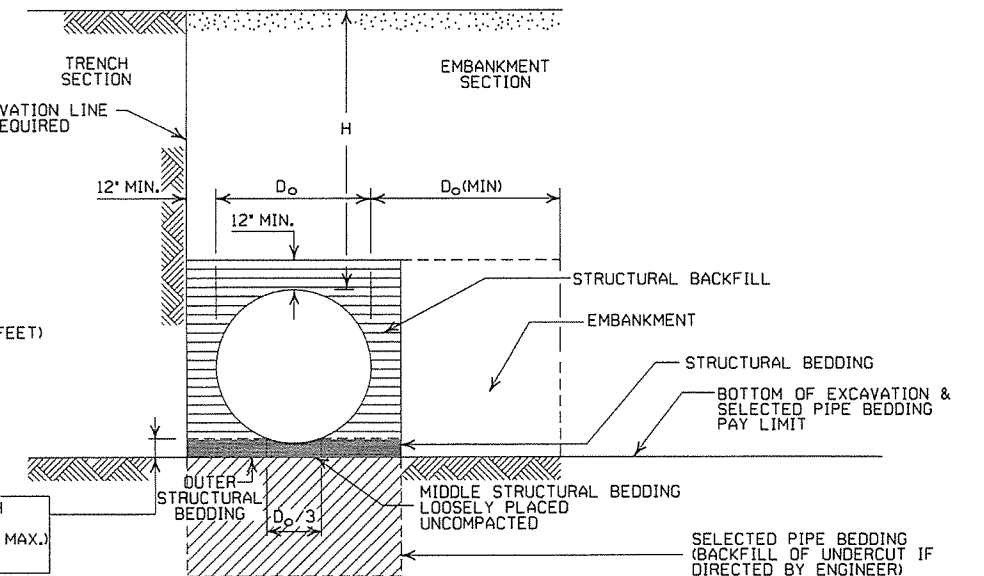
EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINIMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM		
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		
				INSTALLATION			INSTALLATION		
				TYPE 1	TYPE 1		TYPE 1	TYPE 1	
2 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM									
15	17x13	3	0.064	2	15	0.060	2	15	
18	21x15	3	0.064	2	15	0.060	2	15	
21	24x18	3	0.064	2,25	15	0.060	2,25	15	
24	28x20	3	0.064	2,5	15	0.075	2,5	15	
30	35x24	3	0.079	3	12	0.075	3	12	
36	42x29	3 1/2	0.079	3	12	0.105	3	12	
42	49x33	4	0.079	3	12	0.105	3	12	
48	57x38	5	0.109	3	13	0.135	3	13	
54	64x43	6	0.109	3	14	0.135	3	14	
60	71x47	7	0.138	3	15	0.135	3	15	
66	77x52	8	0.168	3	15	0.164	3	15	
72	83x57	9	0.168	3	15				
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM									
			INSTALLATION		INSTALLATION				
			TYPE 2	TYPE 1	TYPE 2	TYPE 1			
36	40x31	5	0.079	3	2	12	15		
42	46x36	6	0.079	3	2	13	15		
48	53x41	7	0.079	3	2	13	15		
54	60x46	8	0.079	3	2	13	15		
60	66x51	9	0.079	3	2	13	15		
66	73x55	12	0.079	3	2	15	15		
72	81x59	14	0.079	3	2	15	15		
78	87x63	14	0.079	3	2	15	15		
84	95x67	16	0.109	3	2	15	15		
90	103x71	16	0.109	3	2	15	15		
96	112x75	18	0.109	3	2	15	15		
102	117x79	18	0.109	3	2	15	15		
108	128x83	18	0.138	3	2	15	15		

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

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

- LEGEND -

- D<sub>o</sub> = OUTSIDE DIAMETER OF PIPE
- MAX. = MAXIMUM
- MIN. = MINIMUM
- [Symbol] = STRUCTURAL BACKFILL MATERIAL
- [Symbol] = UNDISTURBED SOIL
- [Symbol] = EQUIVALENT DIAMETER
- H = FILL COVER HEIGHT OVER PIPE (FEET)



EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE (ROUND).
3. INSTALLATION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2 3/8" x 1/2" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" x 1" OR 5" x 1" CORRUGATION.

GENERAL NOTES

1. METAL PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT 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."

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1	
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



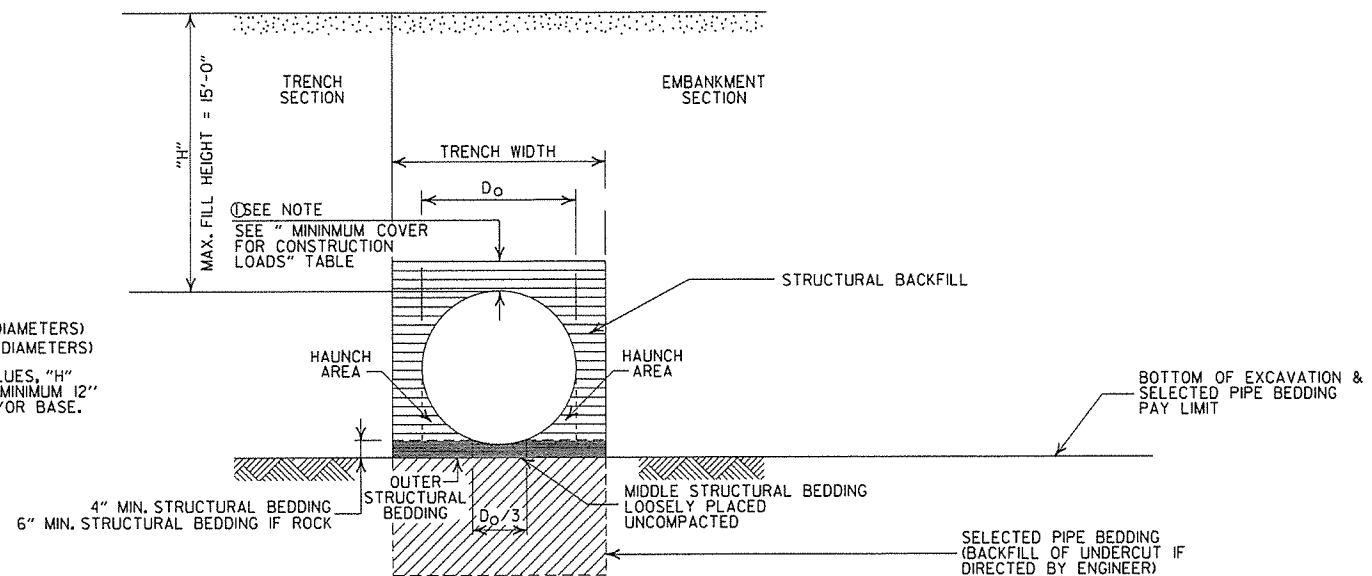
INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4)

- 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 1/4 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.
- STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

NOTE:  
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.

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	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"

MINIMUM 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.

- LEGEND -

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT 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 AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED GENERAL NOTES & MINIMUM COVER NOTE	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT  
(HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.  
SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1/4 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

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"

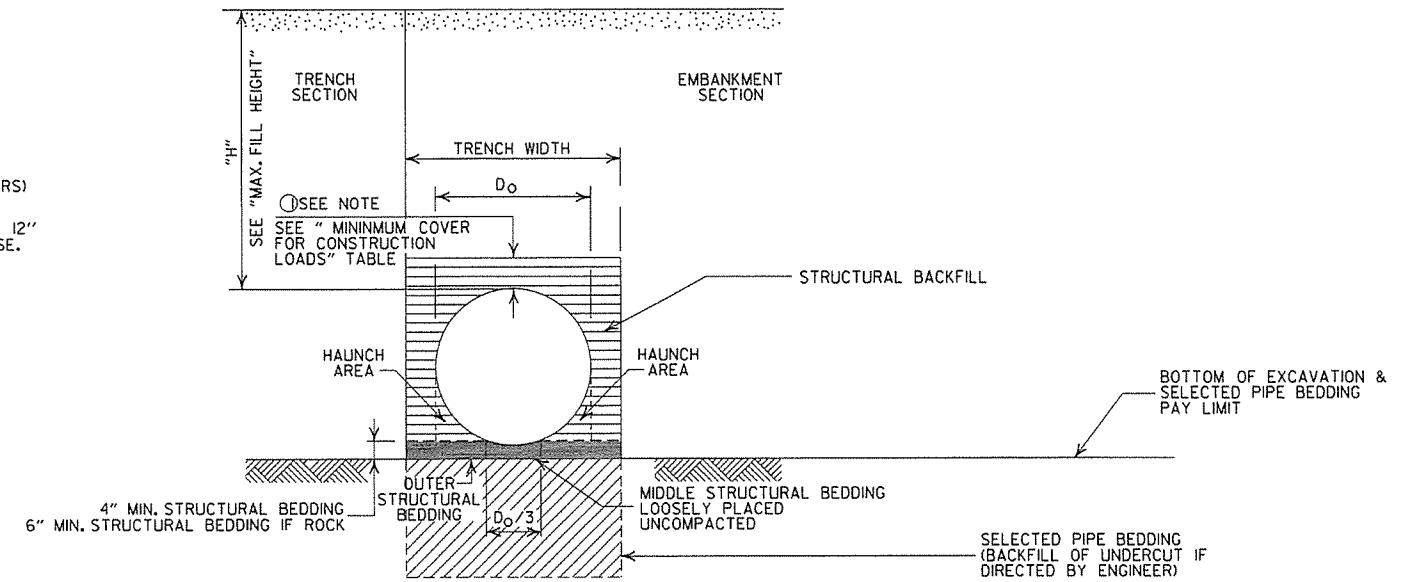
MULTIPLE INSTALLATION OF PVC PIPES

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.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

- LEGEND -

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

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS I2454. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT 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 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.

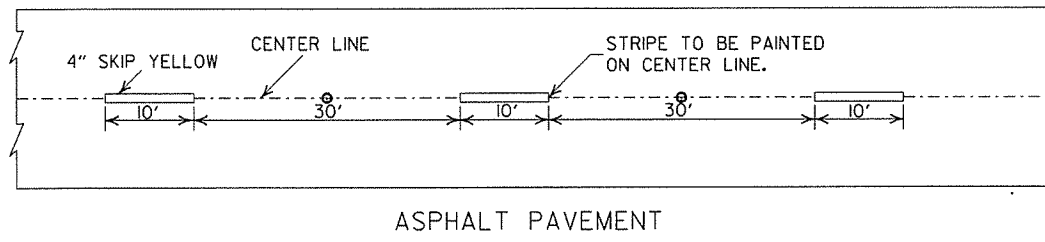
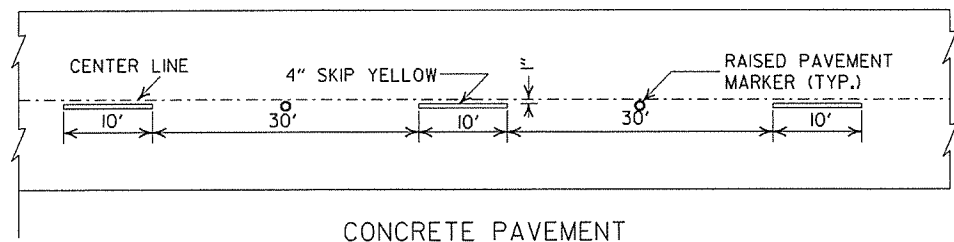
DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1	
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

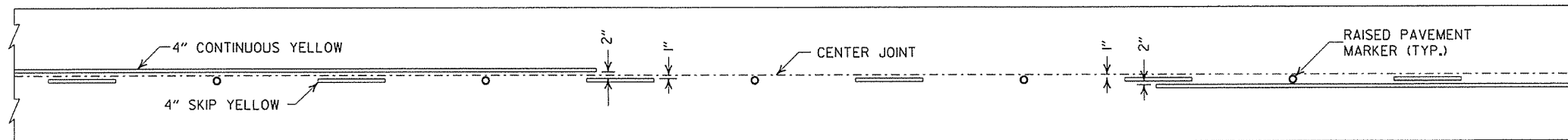




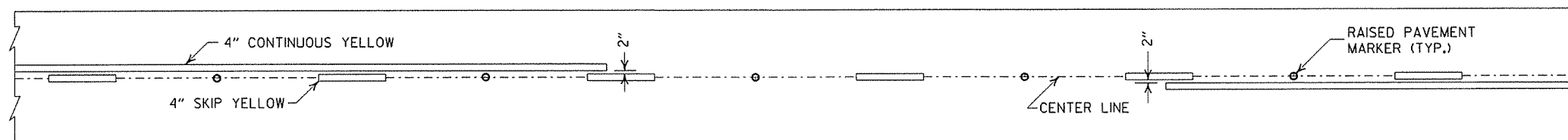
CONCRETE PAVEMENT

ASPHALT PAVEMENT

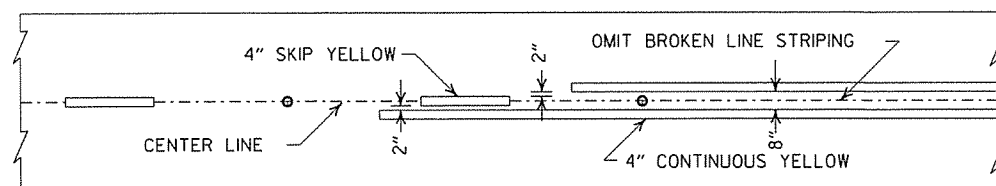
BROKEN LINE STRIPING



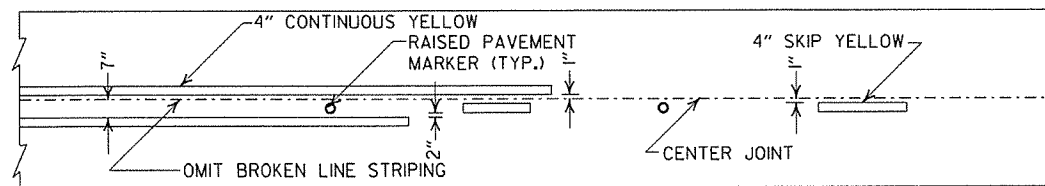
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT



ASPHALT PAVEMENT



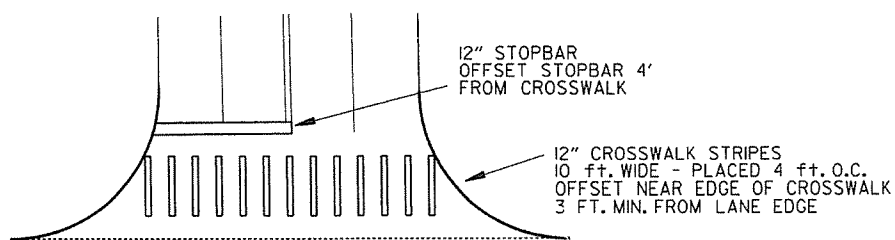
CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

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.

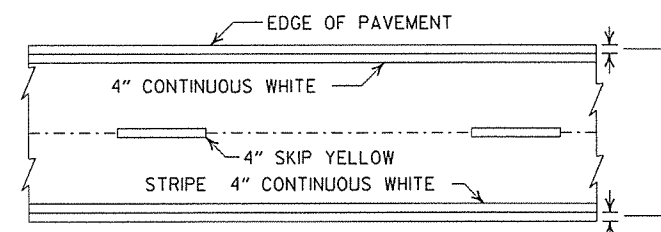


CROSSWALK AND STOPBAR DETAILS

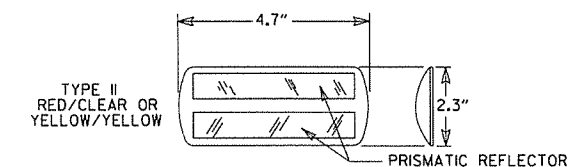
NOTES:

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

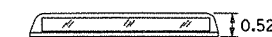
2" FOR ASPHALT OR CONCRETE PAVEMENT  
6" FOR BITUMINOUS SURFACE TREATMENT



PAVEMENT EDGE LINE MARKING



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



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

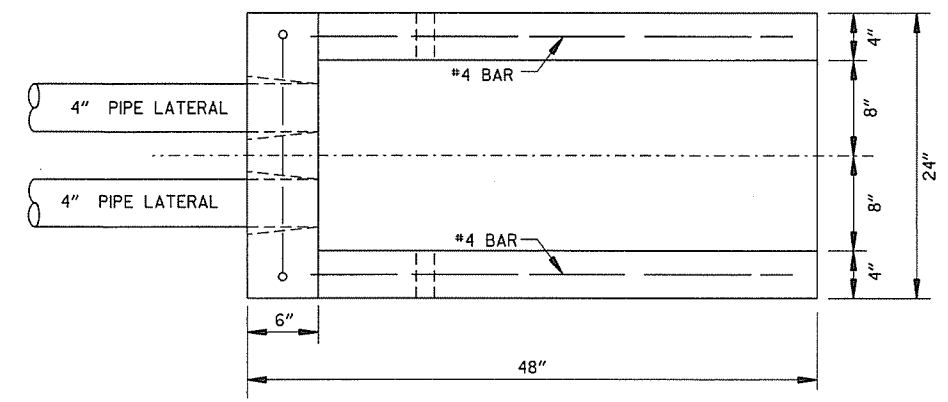
DATE	REVISION	FILMED
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4;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

ARKANSAS STATE HIGHWAY COMMISSION

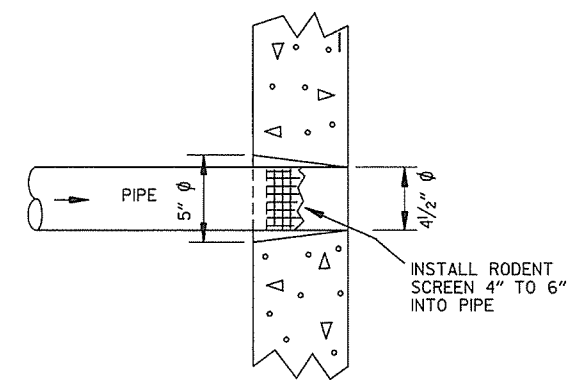
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

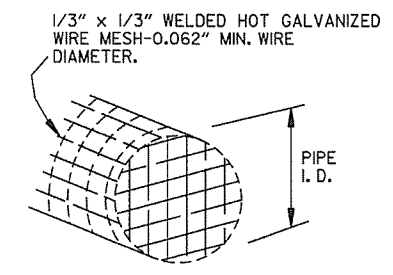
NOTE:  
 1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.  
 2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.  
 3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE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



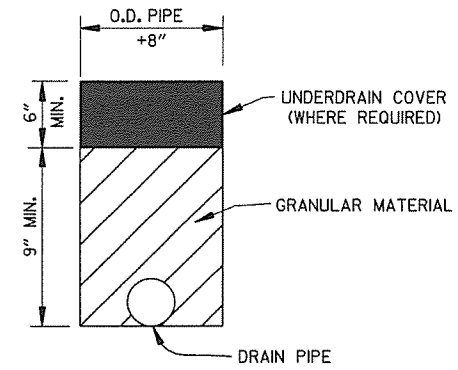
PLAN VIEW



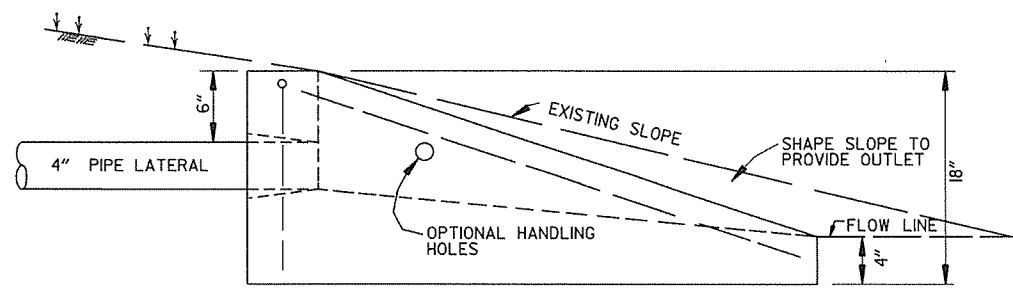
DETAIL OF HOLE FOR 4" PIPE



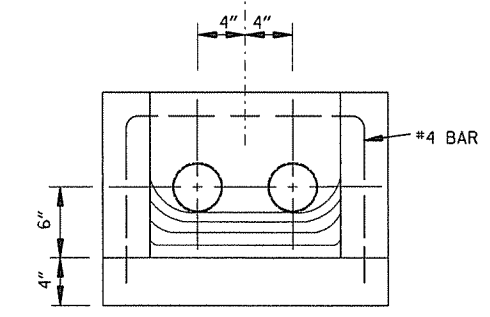
DETAIL OF RODENT SCREEN



DETAILS OF PIPE UNDERDRAIN



SIDE VIEW

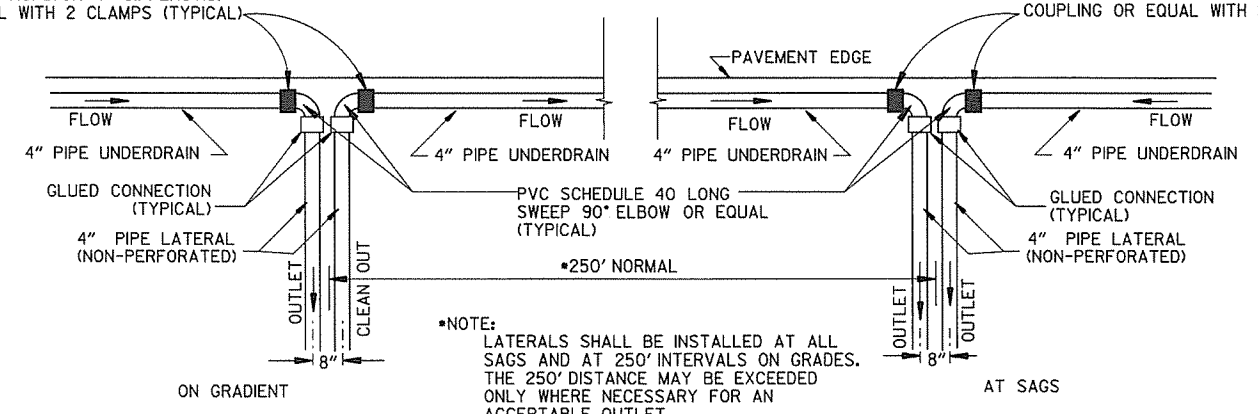


FRONT VIEW

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

UNDERDRAIN OUTLET PROTECTORS

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



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

DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

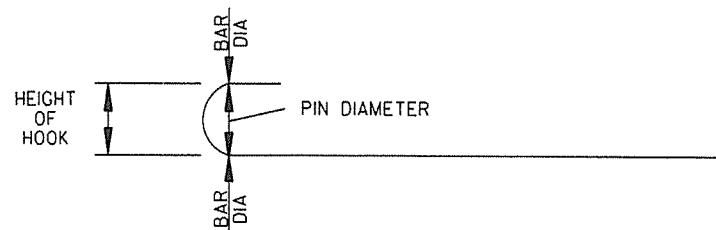
DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

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

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

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



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

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

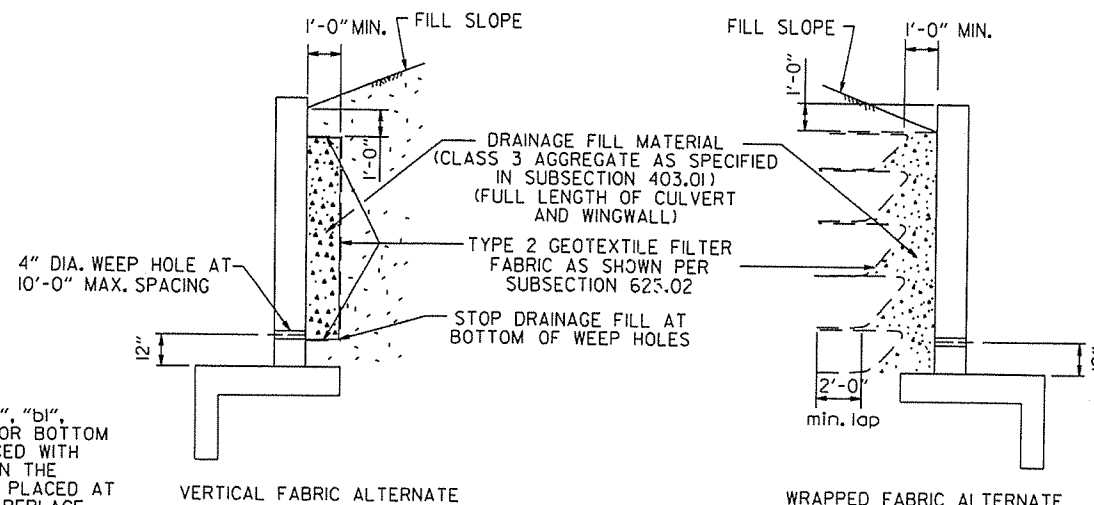
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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

REPLACEMENT BAR LENGTHS TABLE

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

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI. REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.

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

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

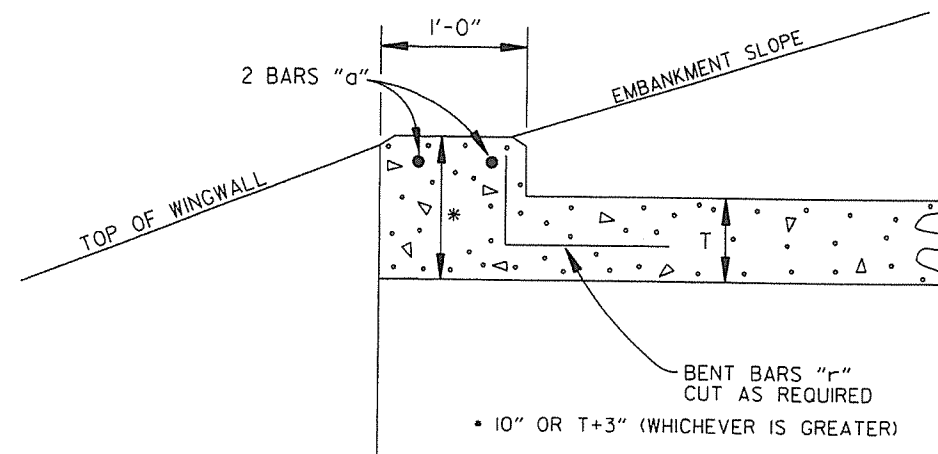
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS 1/2 INCH.

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

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

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



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

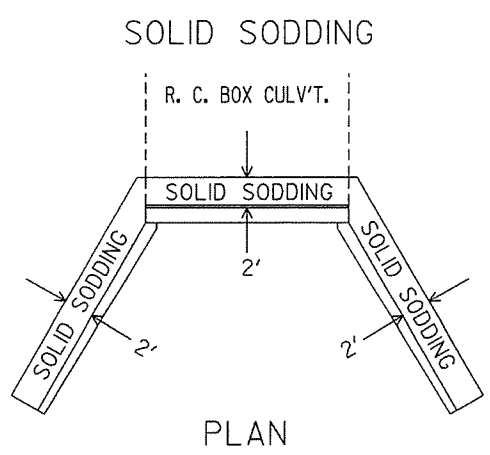
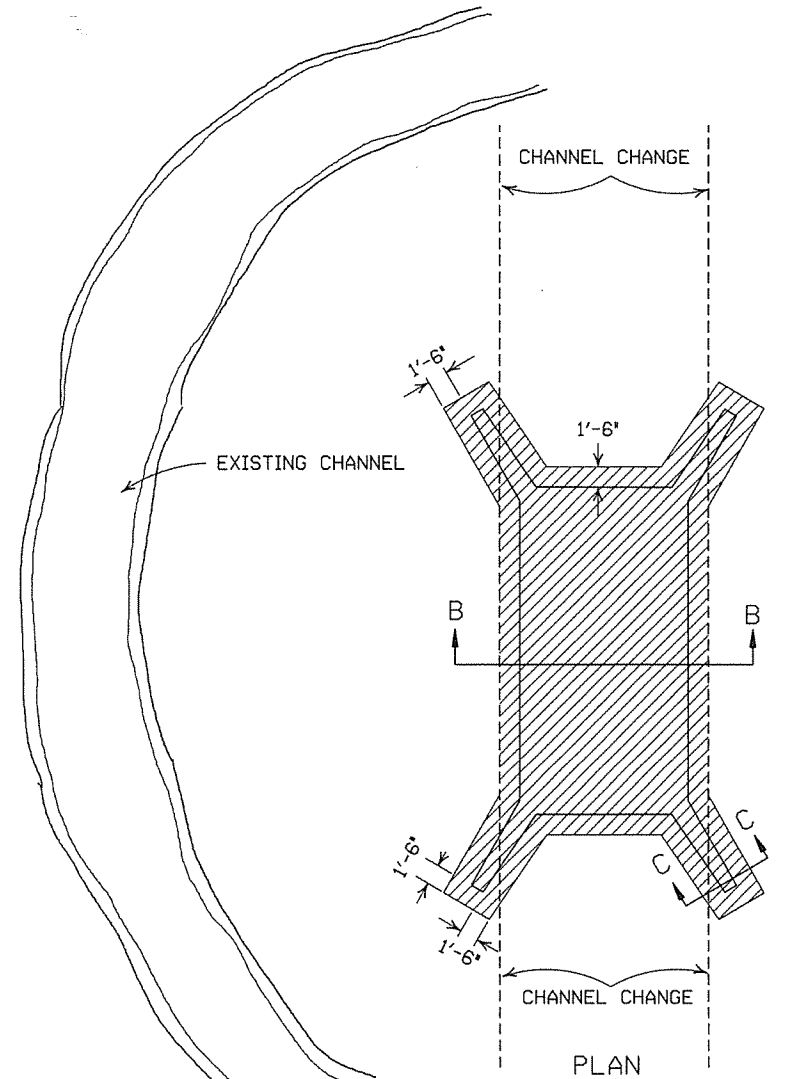
R.C. BOX CULVERT HEADWALL MODIFICATIONS

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

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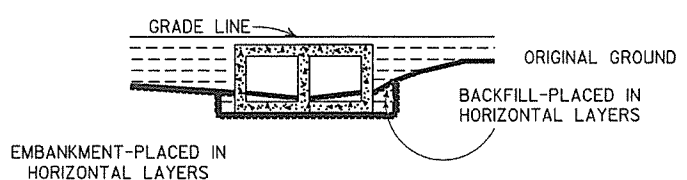
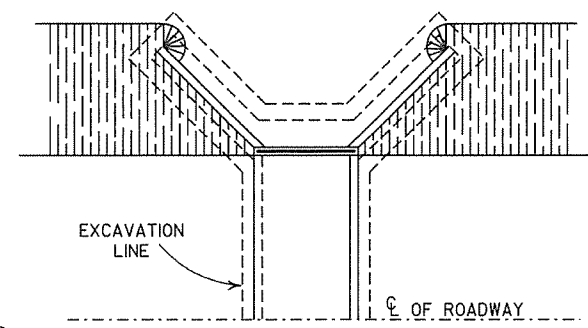
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1

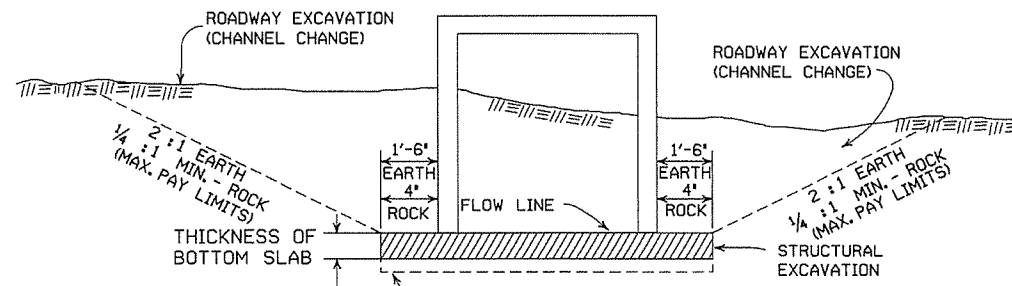
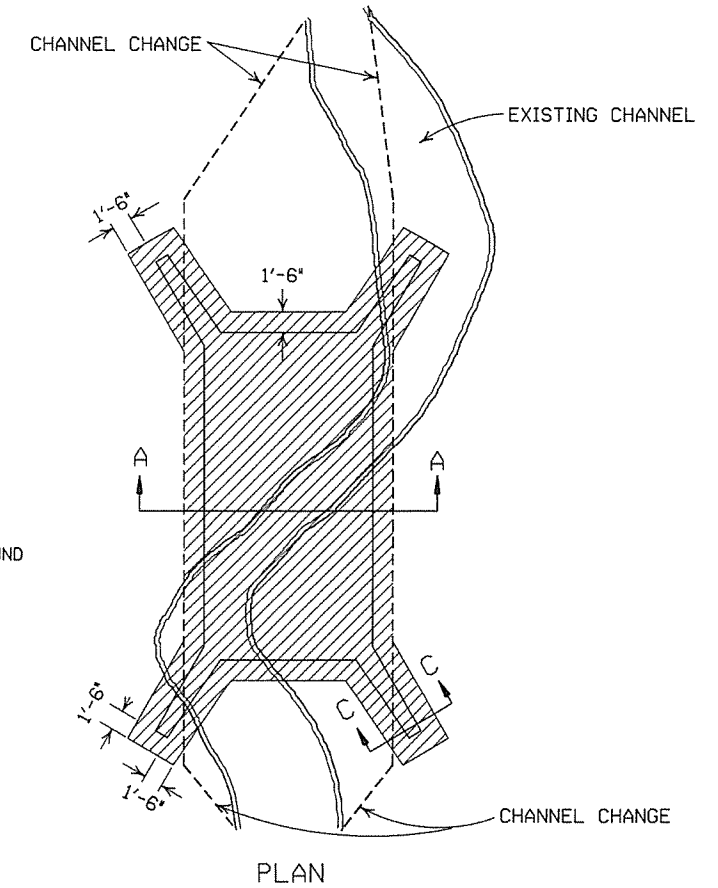


PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

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

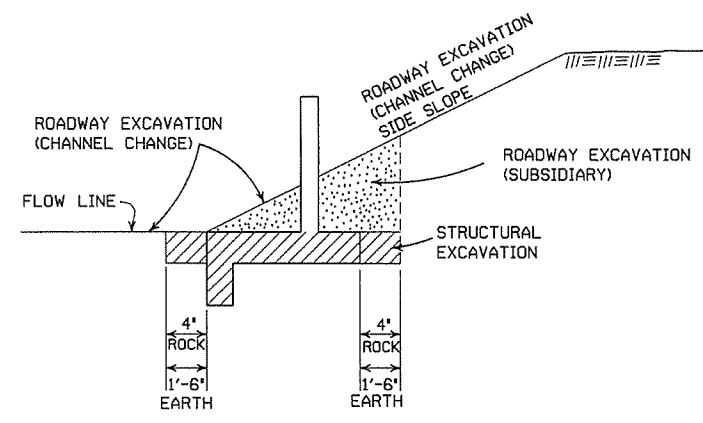


LONGITUDINAL SECTION  
BACKFILL DETAILS FOR BOX CULVERT



SECTION B-B  
DETAILS FOR NEW CHANNELS

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



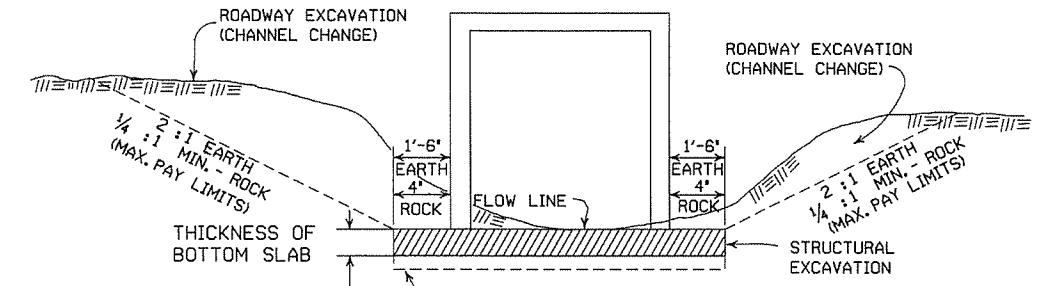
SECTION C-C

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.



SECTION A-A  
DETAILS THROUGH EXISTING CHANNELS

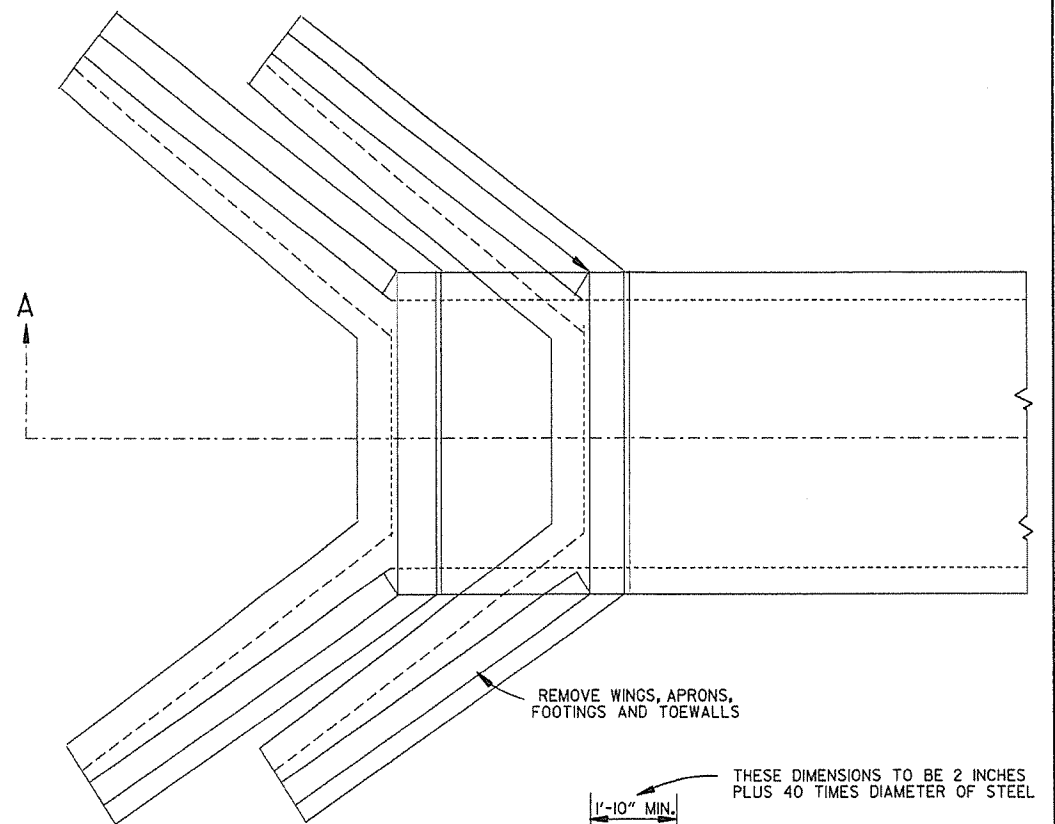
11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES AND ADDED MAXIMUM PAY LIMIT NOTES.	674-1-4-83
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

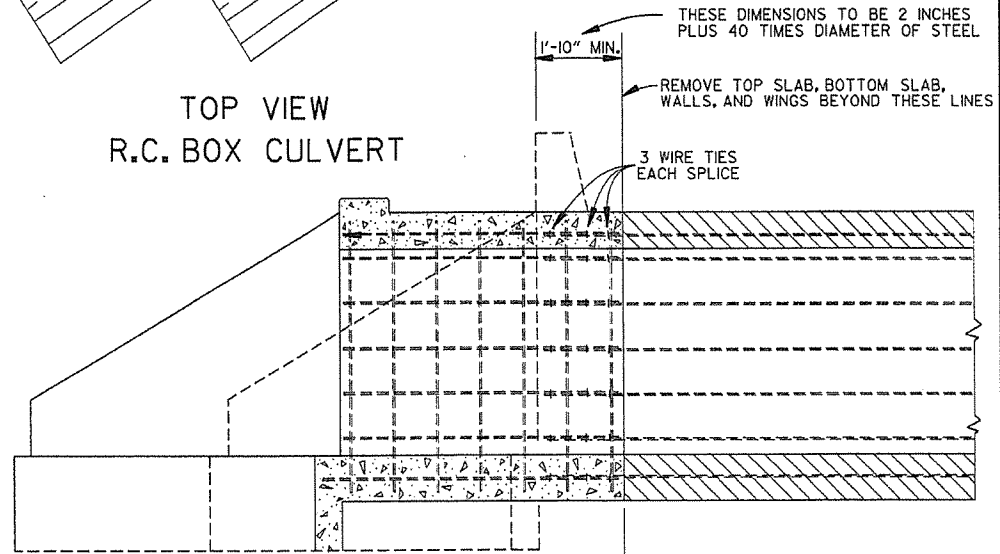
EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

STANDARD DRAWING RCB-2

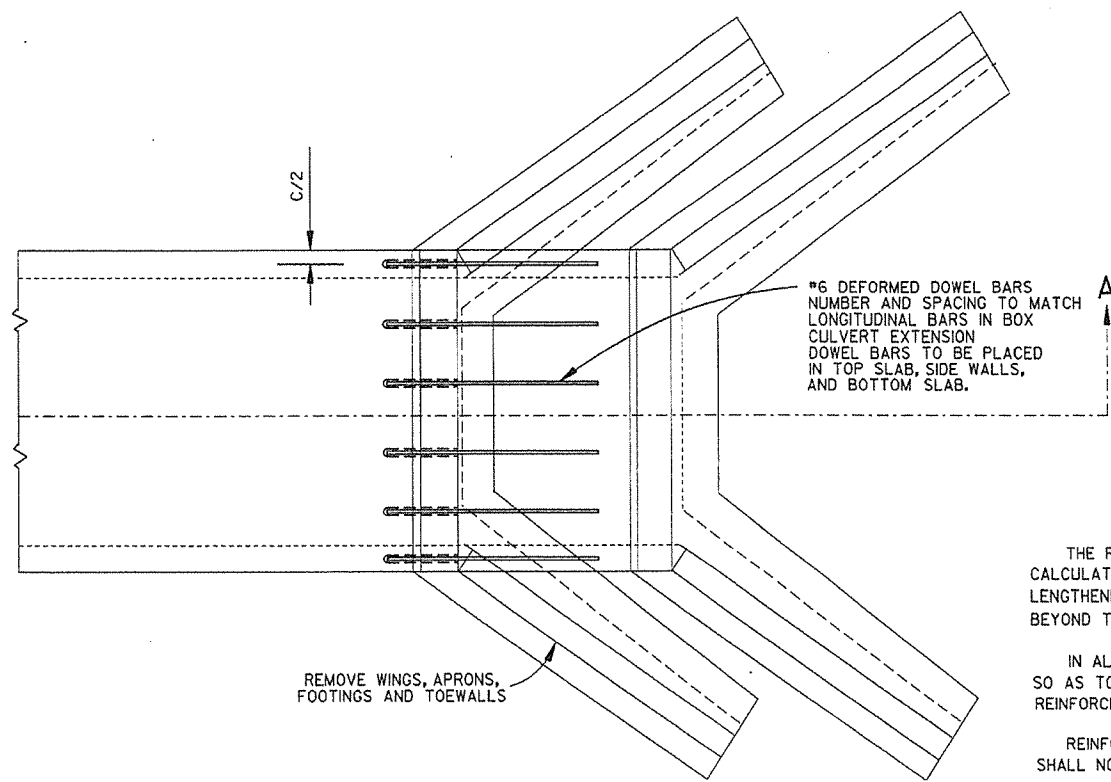




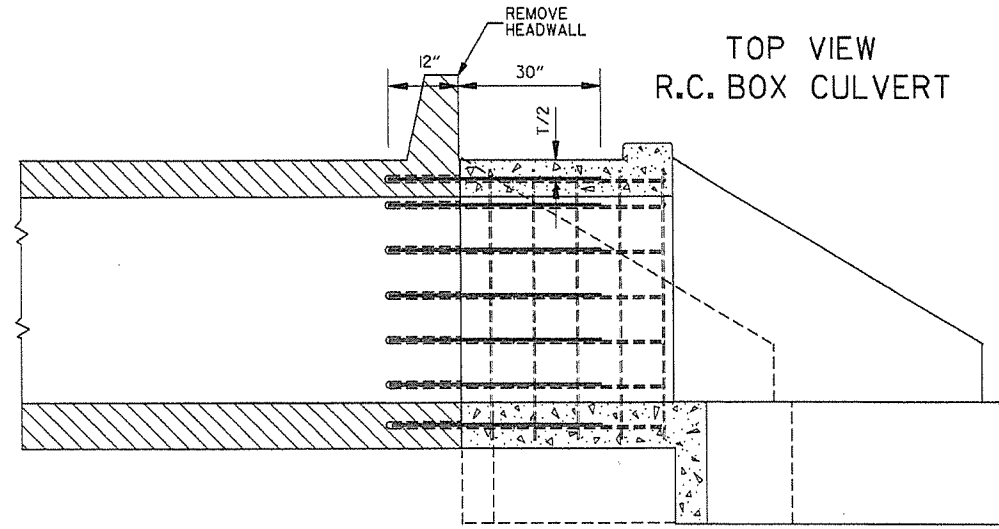
TOP VIEW  
R.C. BOX CULVERT



SECTION A-A  
METHOD 1



TOP VIEW  
R.C. BOX CULVERT



SECTION A-A  
METHOD 2

- GENERAL NOTES
- |   |                |     |
|---|----------------|-----|
| THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.   | USE FOR METHOD | 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 |

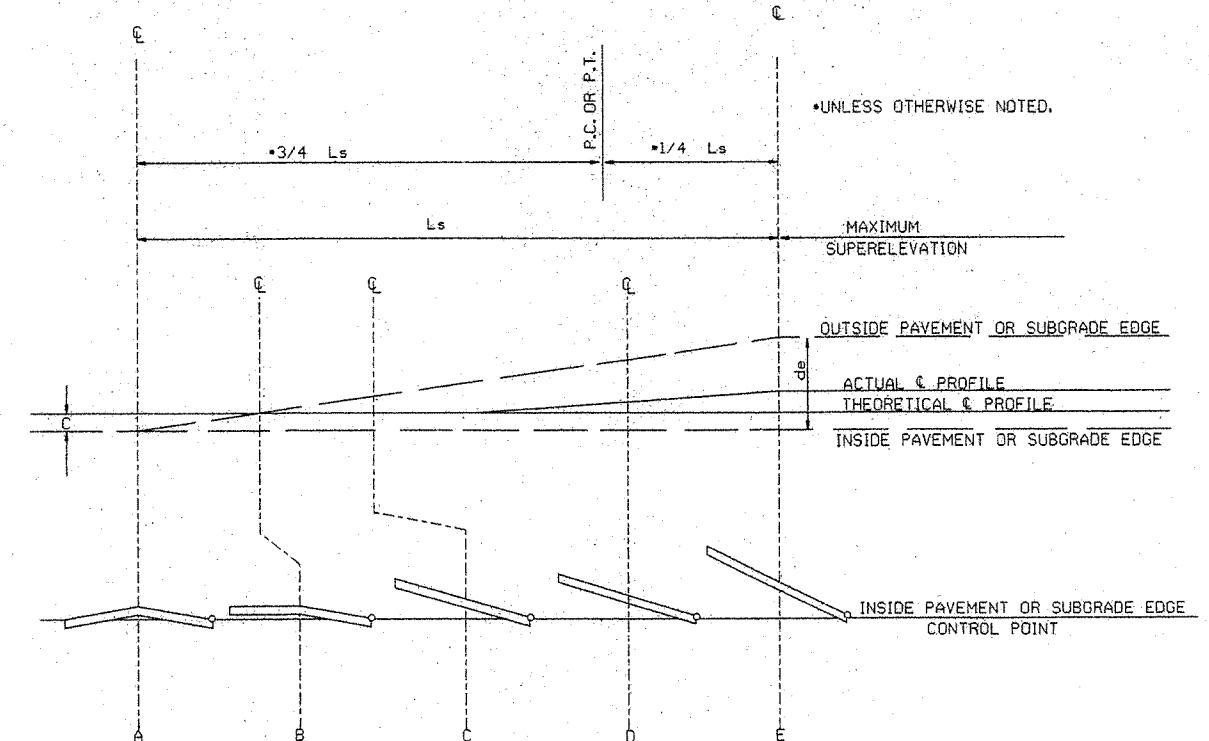
NOTE:  
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.  
SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

ARKANSAS STATE HIGHWAY COMMISSION		
METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS		
STANDARD DRAWING RCB-3		
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	
DATE	REVISION	DATE FILM



SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH		40 MPH		50 MPH		55 MPH		60 MPH		70 MPH	
	Ls (FT)		Ls (FT)		Ls (FT)		Ls (FT)		Ls (FT)		Ls (FT)	
	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	DESIRABLE	MINIMUM	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.		N.C.		N.C.		N.C.		N.C.	
1° 00'	N.C.		N.C.		0.021		0.022		0.023		0.028	
1° 15'	N.C.		N.C.		0.026		0.026		0.030		0.037	
1° 30'	N.C.		N.C.		0.031		0.032		0.037		0.046	
1° 45'	N.C.		0.021		0.031	200	0.037	225	0.043	250	0.054	300
2° 00'	N.C.		0.025		0.036		0.043		0.049		0.062	
2° 15'	N.C.		0.028	175	0.040		0.048	300	0.055		0.070	
2° 30'	N.C.		0.031		0.045		0.053		0.061		0.078	300
2° 45'	N.C.		0.034		0.049		0.058		0.067		0.085	350
3° 00'	N.C.		0.037		0.053		0.063		0.072		0.091	375
3° 15'	N.C.		0.040		0.057		0.067	230	0.077	260	0.096	350
3° 30'	N.C.		0.043		0.061		0.072	245	0.082	275	0.098	400
3° 45'	N.C.		0.046		0.065	205	0.076	255	0.086	285	0.100	360
4° 00'	N.C.		0.049		0.069	215	0.080	265	0.090	295		
4° 15'	N.C.		0.051		0.072	225	0.083	270	0.093	305		
4° 30'	N.C.		0.056		0.078	240	0.087	280	0.096	315		
4° 45'	N.C.		0.061		0.083	250	0.091	295	0.098	320		
5° 00'	N.C.		0.066	185	0.088	260	0.094	300	0.098	325		
5° 15'	N.C.		0.070	190	0.092	270	0.096	305				
5° 30'	N.C.		0.074	200	0.095	280	0.100	315				
5° 45'	N.C.		0.078	210	0.098	285						
6° 00'	N.C.		0.081	215	0.099	290						
6° 15'	N.C.		0.084	220	0.100	290						
6° 30'	N.C.		0.087	225								
6° 45'	N.C.		0.089	230								
7° 00'	N.C.		0.094	235								
7° 15'	N.C.		0.097	250								
7° 30'	N.C.		0.099	250								
7° 45'	N.C.		0.100	250								
8° 00'	N.C.											
8° 15'	N.C.											
8° 30'	N.C.											
8° 45'	N.C.											
9° 00'	N.C.											
9° 15'	N.C.											
9° 30'	N.C.											
9° 45'	N.C.											
10° 00'	N.C.											
10° 15'	N.C.											
10° 30'	N.C.											
10° 45'	N.C.											
11° 00'	N.C.											
11° 15'	N.C.											
11° 30'	N.C.											
11° 45'	N.C.											
12° 00'	N.C.											
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14° 15'	N.C.											
14° 30'	N.C.											
14° 45'	N.C.											
15° 00'	N.C.											
15° 15'	N.C.											
15° 30'	N.C.											
15° 45'	N.C.											
16° 00'	N.C.											
16° 15'	N.C.											
16° 30'	N.C.											
16° 45'	N.C.											
17° 00'	N.C.											
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18° 45'	N.C.											
19° 00'	N.C.											
19° 15'	N.C.											
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21° 30'	N.C.											
21° 45'	N.C.											
22° 00'	N.C.											
22° 15'	N.C.											
22° 30'	N.C.											
22° 45'	N.C.											
23° 00'	N.C.											
23° 15'	N.C.											
23° 30'	N.C.											
23° 45'	N.C.											
24° 00'	N.C.											



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

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

ABBREVIATIONS

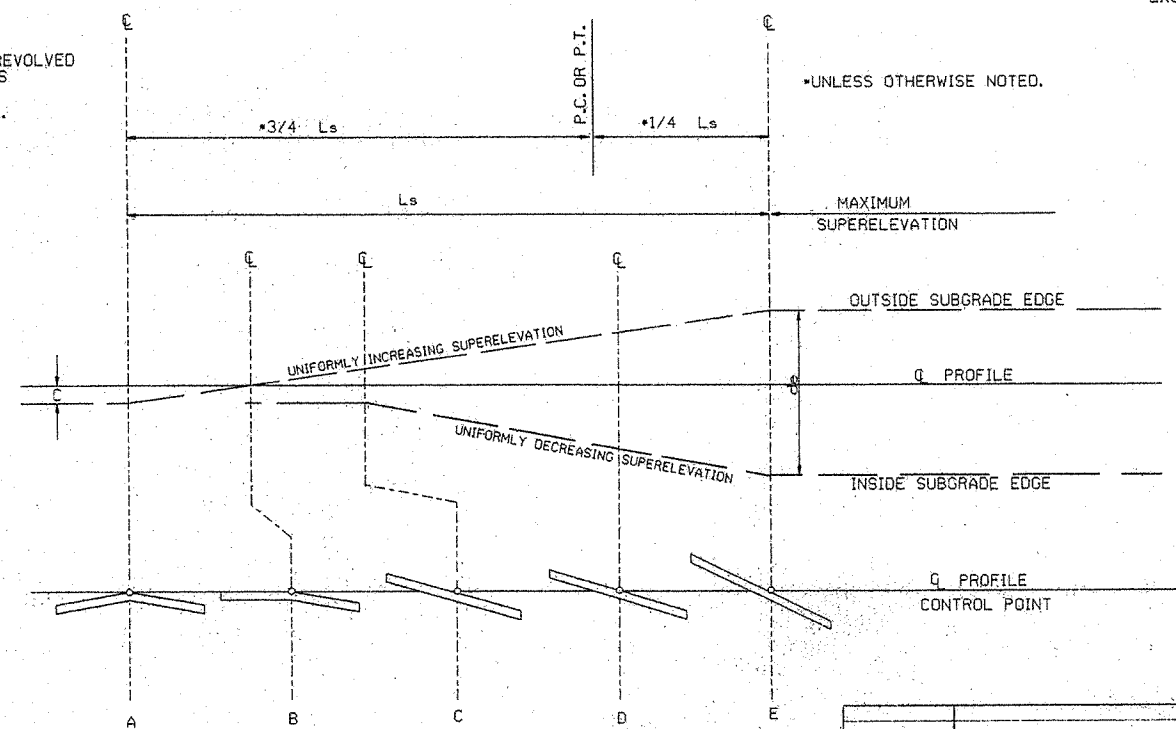
- NC - NORMAL CROWN
- RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
- e - RATE OF SUPERELEVATION (FT. PER FT.)
- Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
- L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
- d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)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

GENERAL NOTES

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

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

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


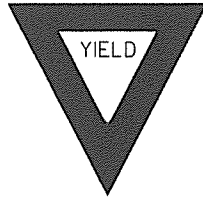
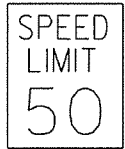


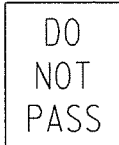



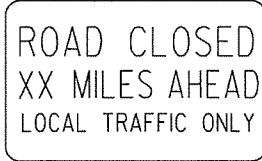
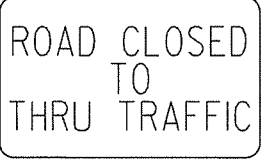

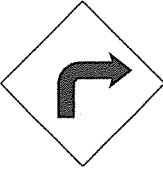
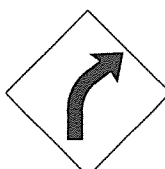


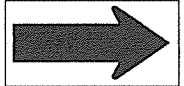

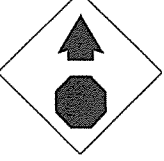
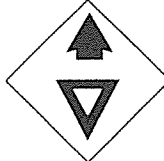
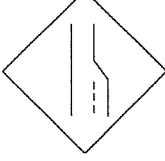

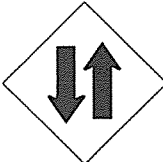

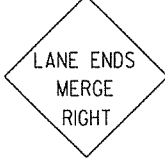






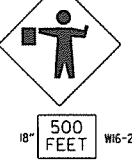


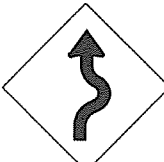



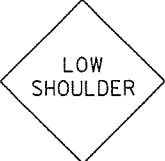
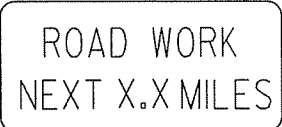
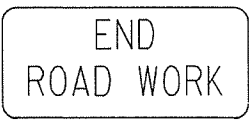
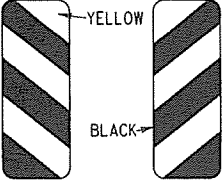


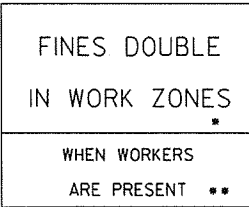


STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

ARKANSAS STATE HIGHWAY COMMISSION	
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	
STANDARD DRAWING SE-2	

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

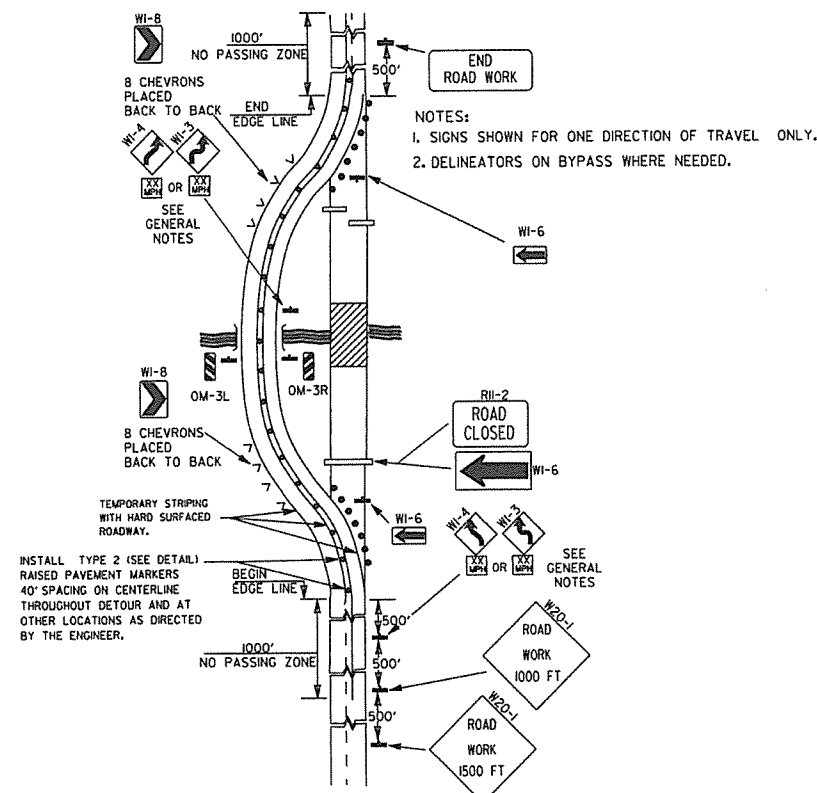
							ADVANCE DISTANCES (XXXX)	50
<p>RI-1</p>  <p>STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"</p>	<p>RI-2</p>  <p>STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"</p>	<p>R2-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R2-5A</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R2-5C</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-2</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>500 FT 1/2 MILE 1000 FT 3/4 MILE 1500 FT 1 MILE AHEAD</p>	
<p>R5-1</p>  <p>STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>R11-2</p>  <p>48"x30"</p>	<p>R11-3A</p>  <p>60"x30"</p>	<p>R11-4</p>  <p>60"x30"</p>	<p>RSP-1</p>  <p>48"x30"</p>	<p>W1-1</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W1-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>		
<p>W1-3</p>  <p>STD. 48"x48"</p>	<p>W1-4</p>  <p>STD. 48"x48"</p>	<p>W1-6</p>  <p>STD. 48"x24" SPECIAL 60"x30"</p>	<p>W1-8</p>  <p>STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"</p>	<p>W3-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W3-2</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W4-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>		
<p>W5-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W6-3</p>  <p>EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>W8-7</p>  <p>EXPWY. 36"x36" FWY. 48"x48"</p>	<p>W9-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W13-1</p>  <p>STD. 24"x24"</p>	<p>W20-1</p>  <p>STD. 48"x48"</p>	<p>W20-2</p>  <p>STD. 48"x48"</p>	<p>W20-3</p>  <p>STD. 48"x48"</p>	
<p>W20-4</p>  <p>STD. 48"x48"</p>	<p>W20-5</p>  <p>STD. 48"x48"</p>	<p>W20-7a</p>  <p>500 FEET 18" 24" W16-2</p> <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W21-2</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W21-5</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W24-1</p>  <p>STD. 36"x36"</p>	<p>W1-4b</p>  <p>STD. 48"x48"</p>	<p>R56-1</p>  <p>STD. 18"x18"</p>	
<p>W8-11</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W8-9</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>G20-1</p>  <p>60"x24"</p>	<p>G20-2</p>  <p>48"x24"</p>	<p>OM-3L OM-3R</p>  <p>12"x36"</p>	<p>M4-9</p>  <p>STD. 30"x24" SPECIAL 48"x36" SPECIAL 60"x48"</p>	<p>M4-10</p>  <p>48"x18"</p>	<p>R55-1</p>  <p>36"x60"</p> <p>* USE 6" C LETTERS ** USE 4" D LETTERS</p>	

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

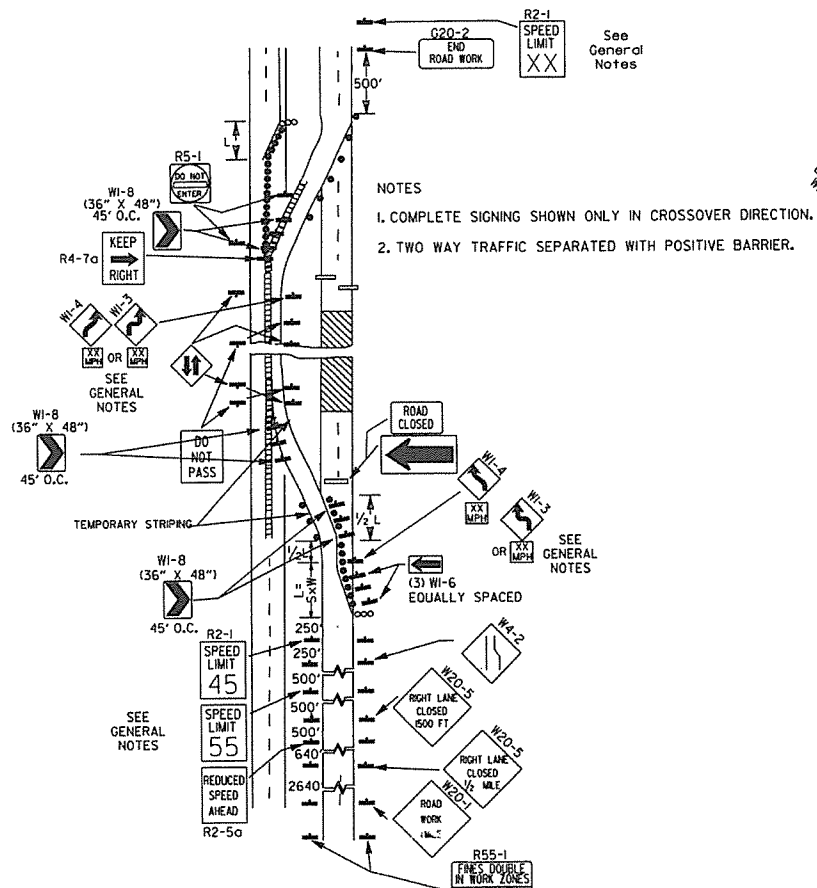
- FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
- MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER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

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

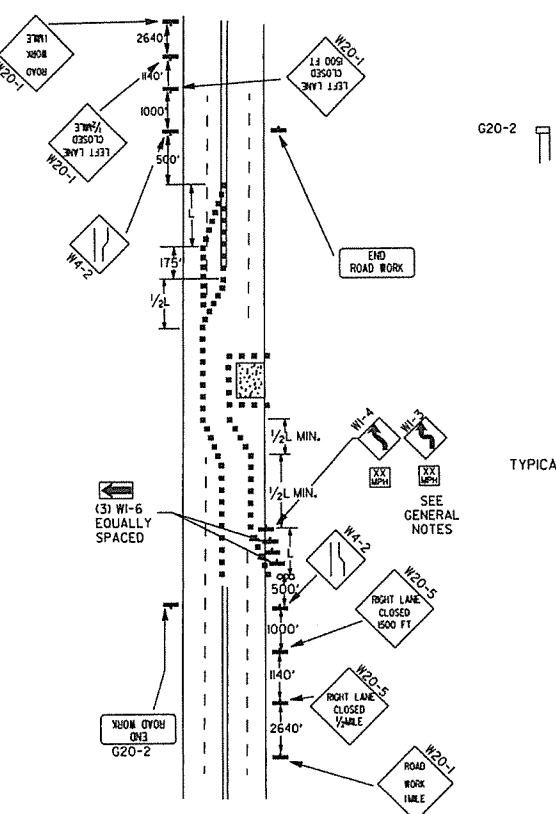
DATE	REVISION	FILMED
12-15-8	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-95	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	



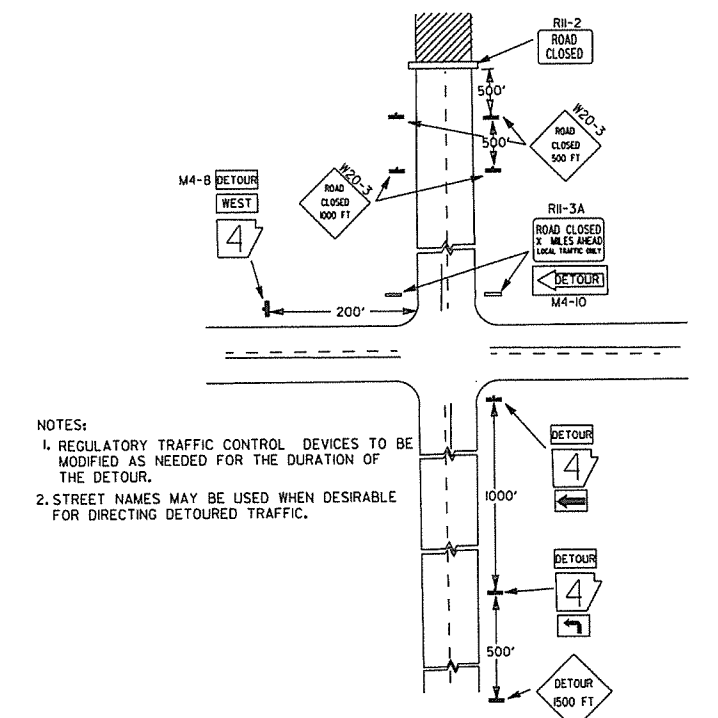
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



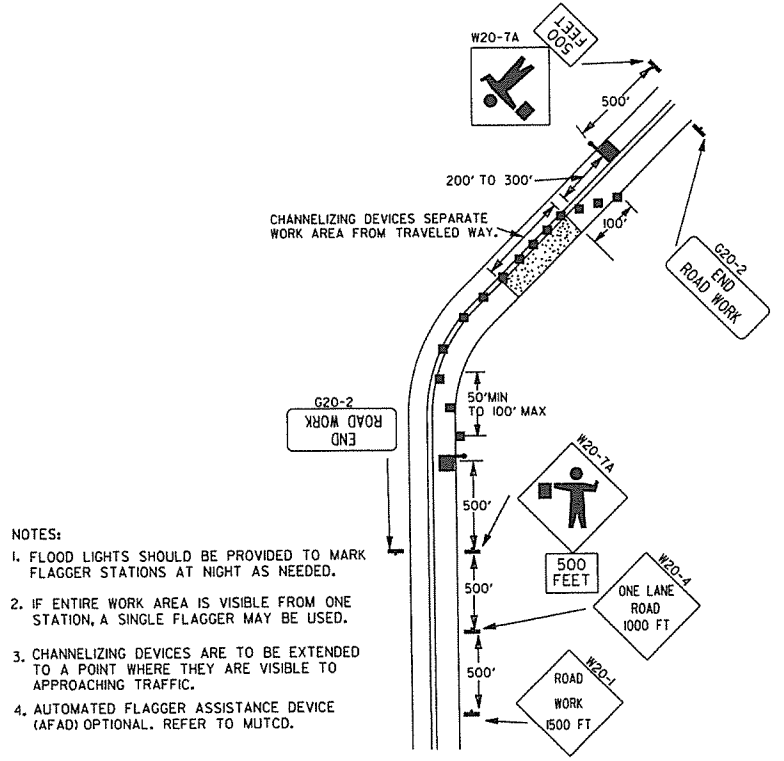
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



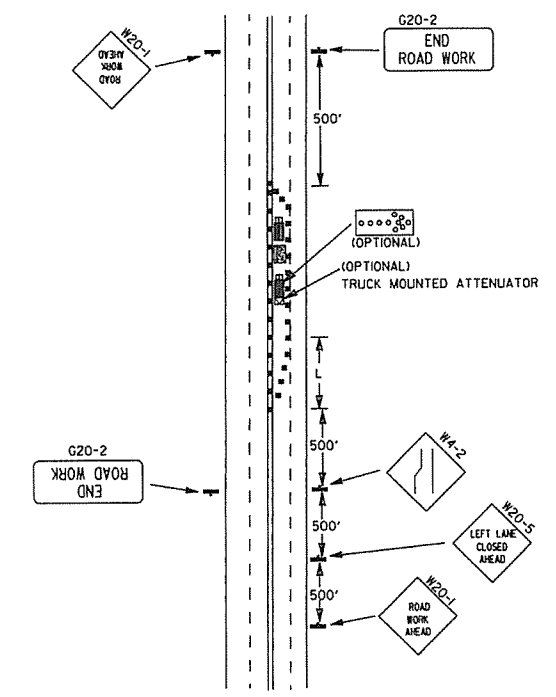
(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



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

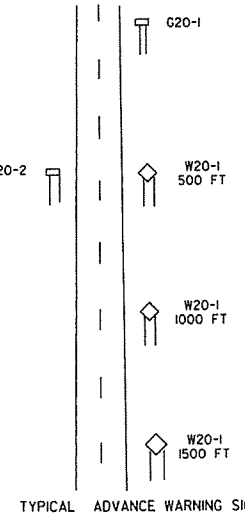
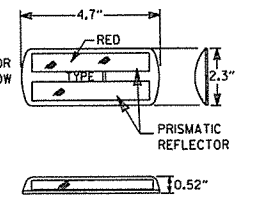


(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.



(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

- KEY:
- FLAGGER
  - POSITIVE BARRIER
  - ARROW PANEL (IF REQUIRED)
  - TYPE III BARRICADE
  - CHANNELIZING DEVICE
  - TRAFFIC DRUM
  - RAISED PAVEMENT MARKER

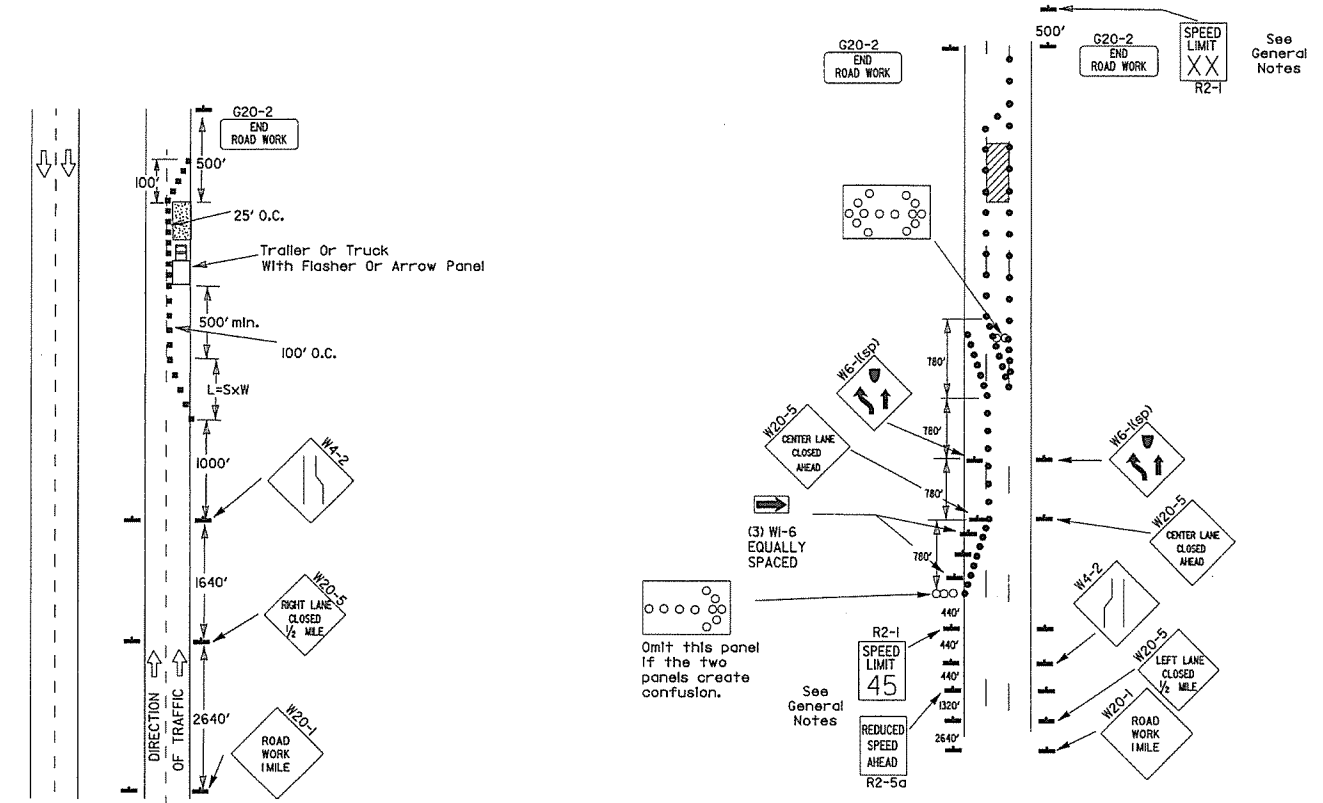


TAPER FORMULAE:  
 $L = SXW$  FOR SPEEDS OF 45MPH OR MORE.  
 $L = \frac{WS^2}{60}$  FOR SPEEDS OF 40MPH OR LESS.  
 WHERE:  
 L = MINIMUM LENGTH OF TAPER.  
 S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.  
 W = WIDTH OF OFFSET.

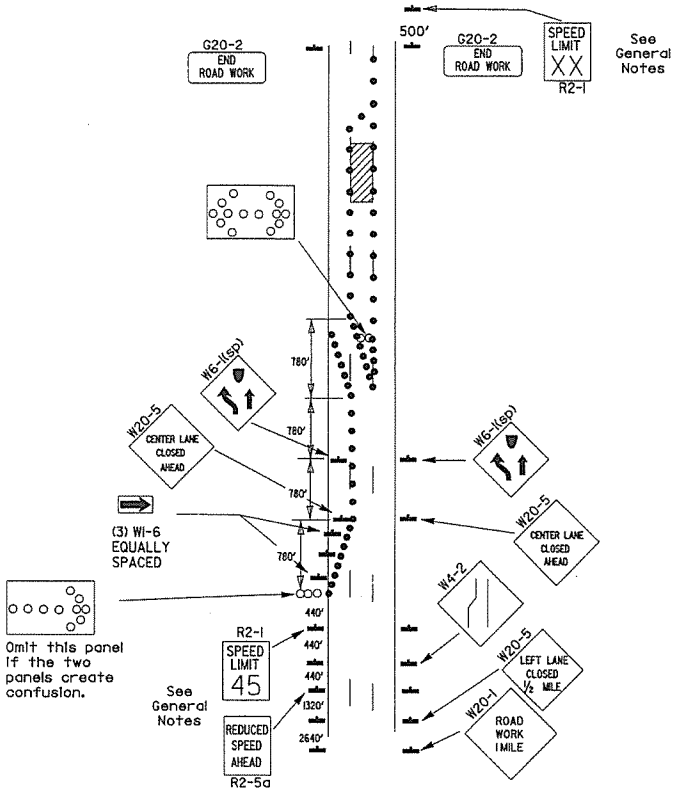
- GENERAL NOTES:
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
  2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-(45) SHALL BE OMITTED AND THE R2-5A SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-145MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(KXX) 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-(45) SHALL BE OMITTED. ADDITIONAL R2-155MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(KXX) 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	FILED
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (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	

Channelizing devices

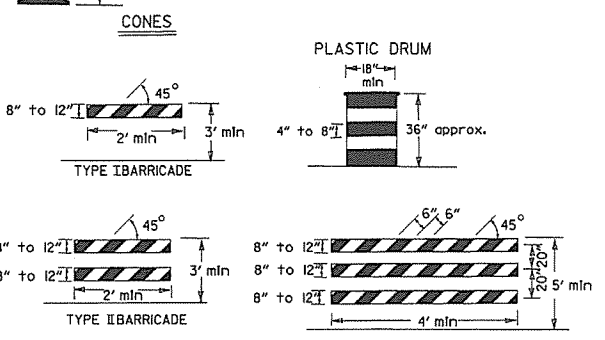


(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.

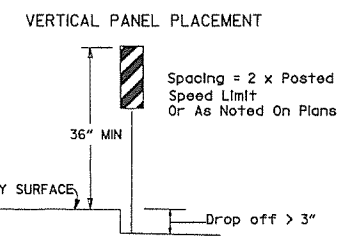
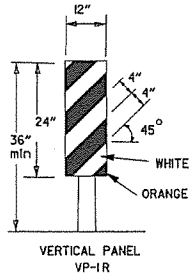


(B) Typical application - 3-lane oneway roadway where center lane is closed.

\* 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.



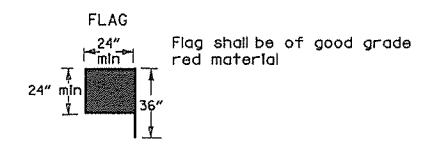
NOTE: For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.



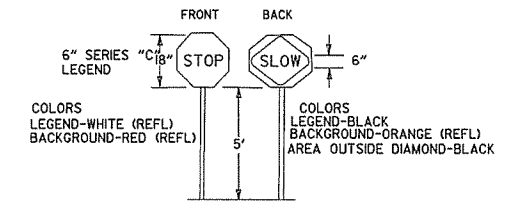
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

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

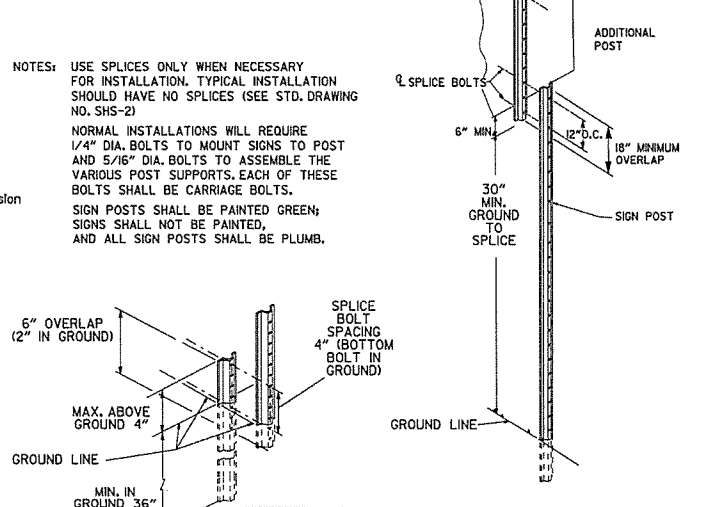
\* When shown on the plans concrete barrier will be used. When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.



STOP SLOW PADDLE



DETAIL OF SPLICES

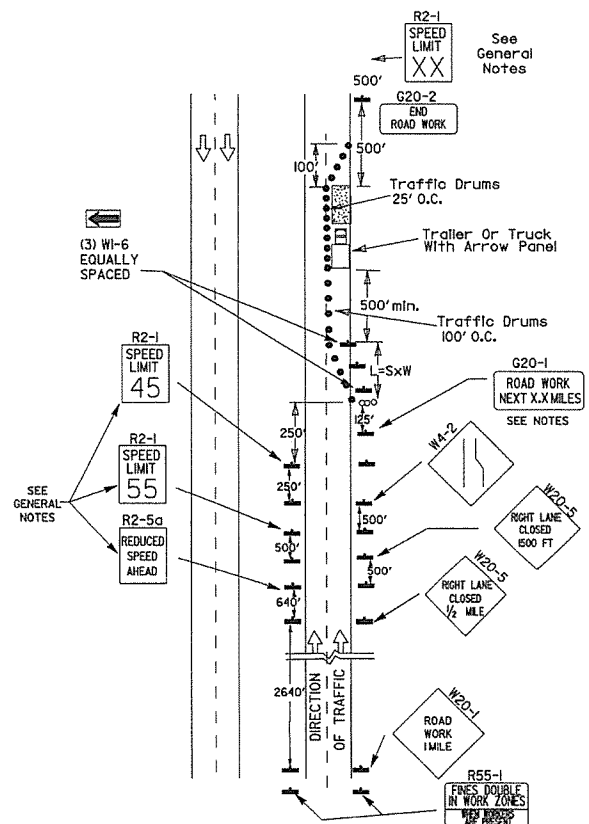


NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2). NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE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

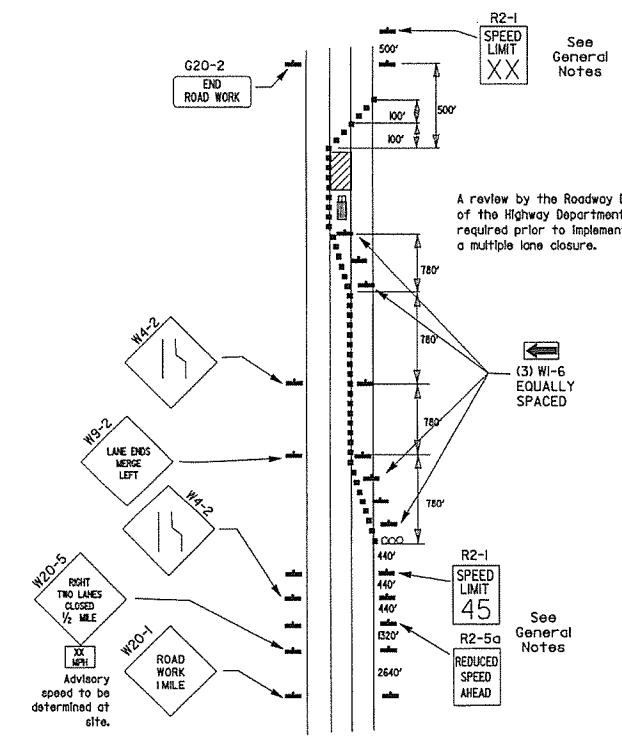
- KEY:
- Arrow Panel (if Required)
  - Channelizing Device
  - Traffic drum

GENERAL NOTES:

- A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
- When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-145mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
- When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-155mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
- The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
- Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
- Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
- The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1(1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
- Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
- All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
- Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.



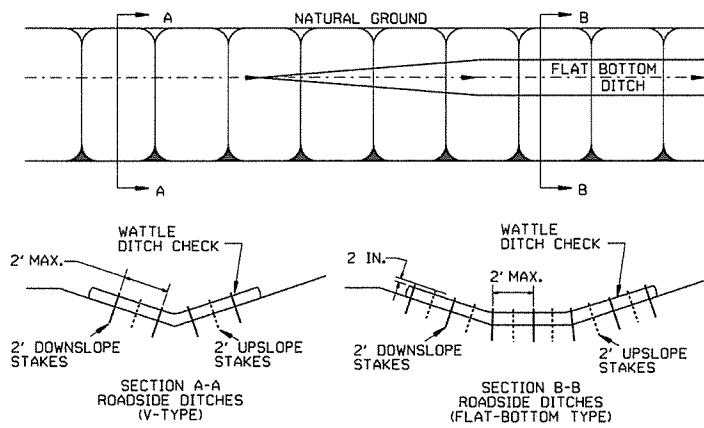
(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.



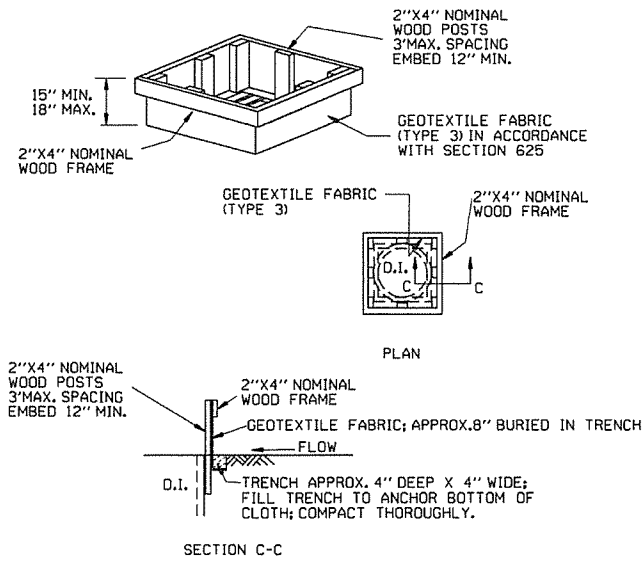
(D) Typical application - closing multiple lanes of a multilane highway.

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

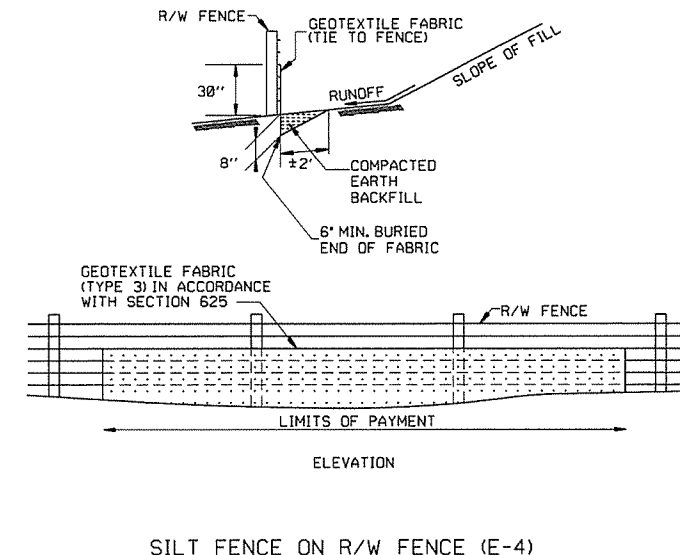
GENERAL NOTES  
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



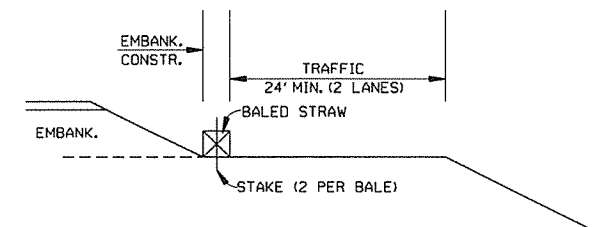
DROP INLET SILT FENCE (E-7)



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

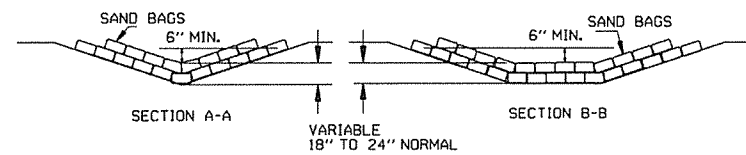
GENERAL NOTES  
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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.

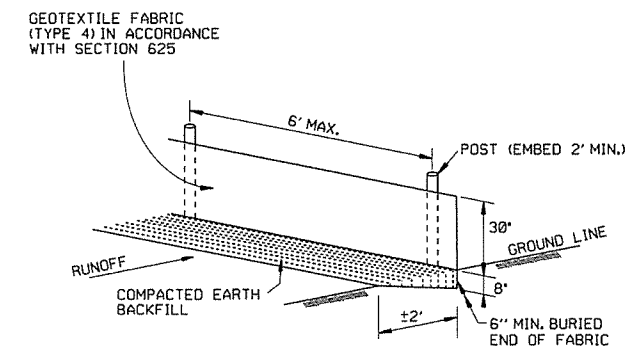


BALED STRAW FILTER BARRIER (E-2)

NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS. PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW.

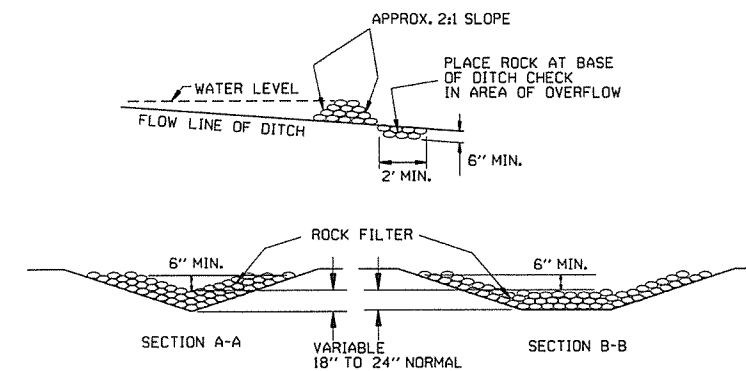


SAND BAG DITCH CHECK (E-5)



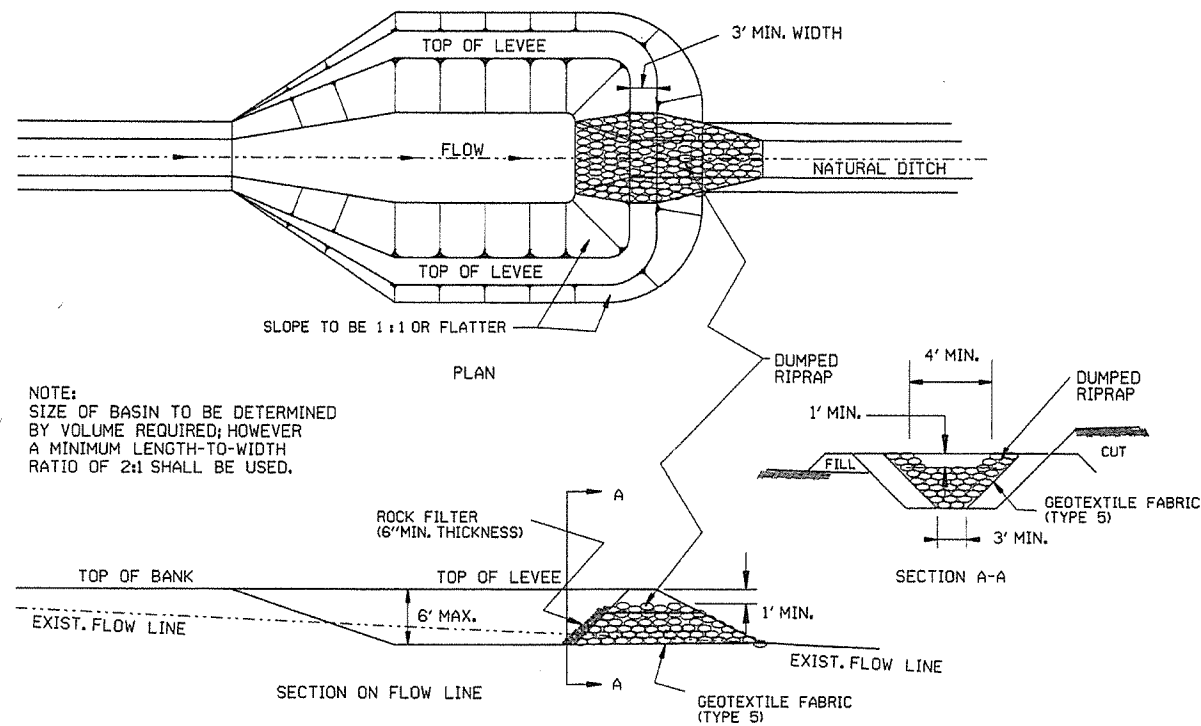
SILT FENCE (E-11)

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.

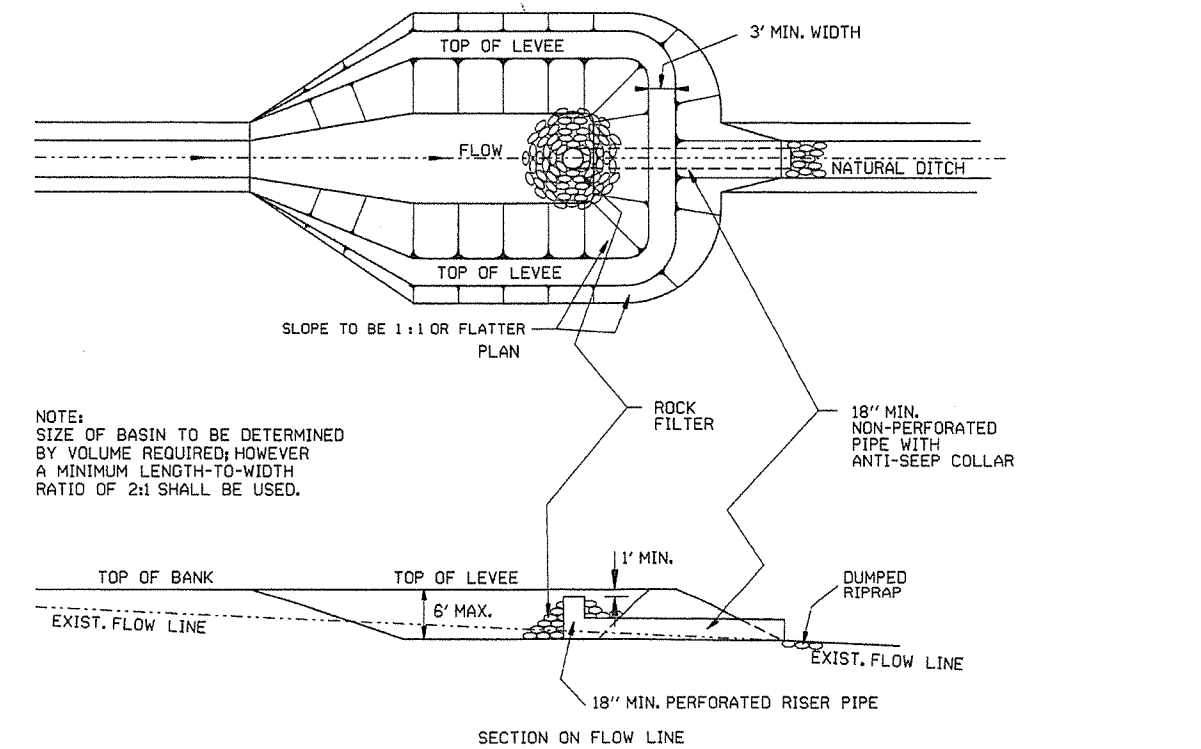


ROCK DITCH CHECK (E-6)

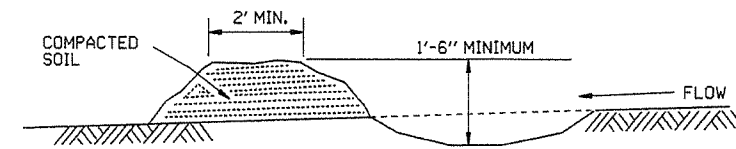
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK		ARKANSAS STATE HIGHWAY COMMISSION
11-18-98	ADDED NOTES		TEMPORARY EROSION CONTROL DEVICES
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)		
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95	STANDARD DRAWING TEC-1
7-15-94	REV. E-4 & E-11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



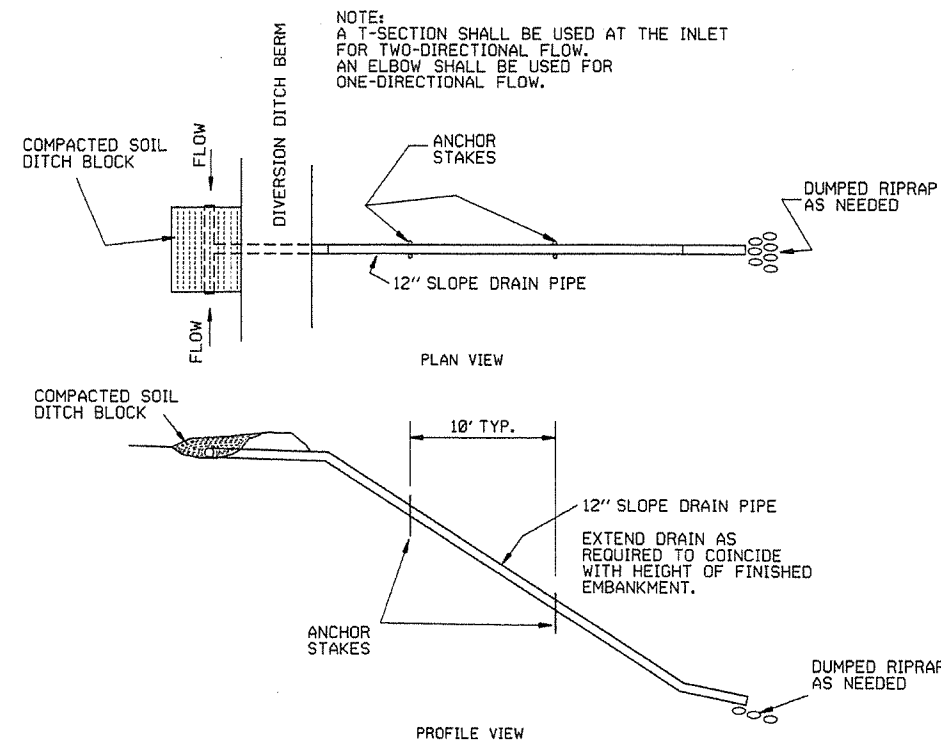
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



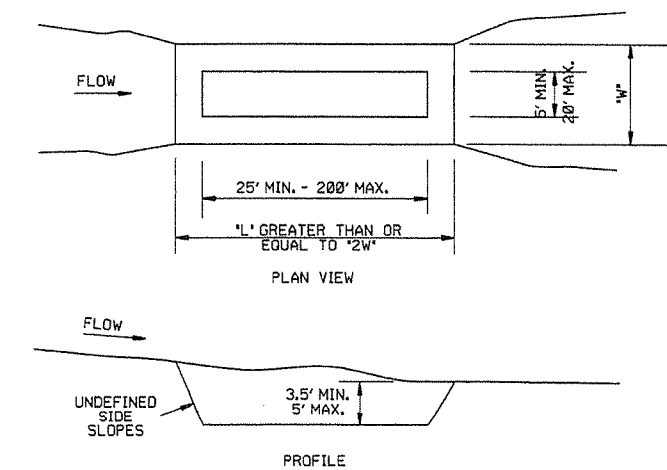
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

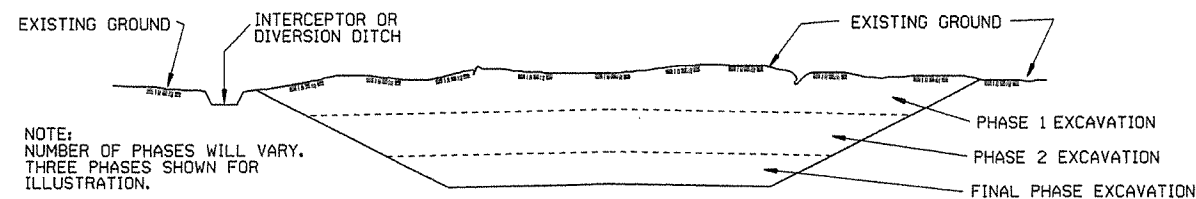


### CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

### EXCAVATION



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

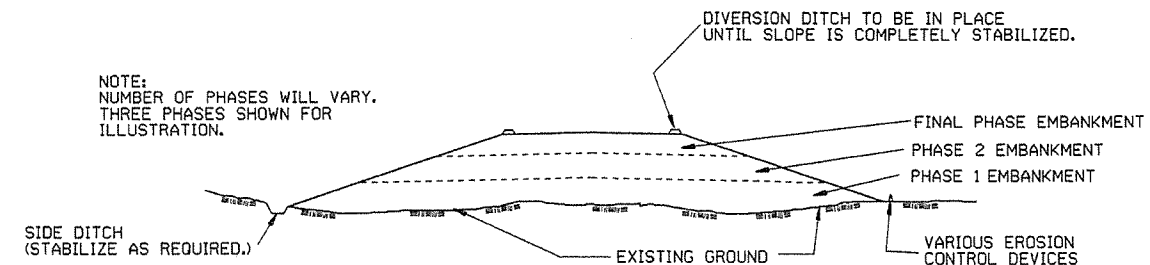
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

### EMBANKMENT



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

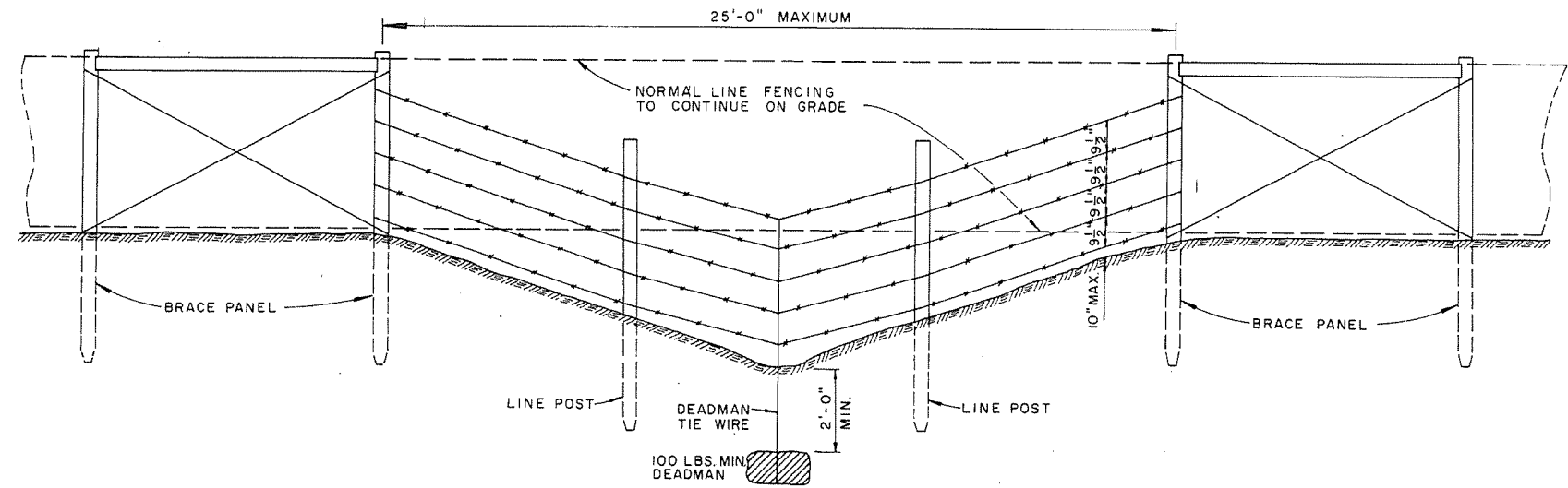
GENERAL NOTE

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

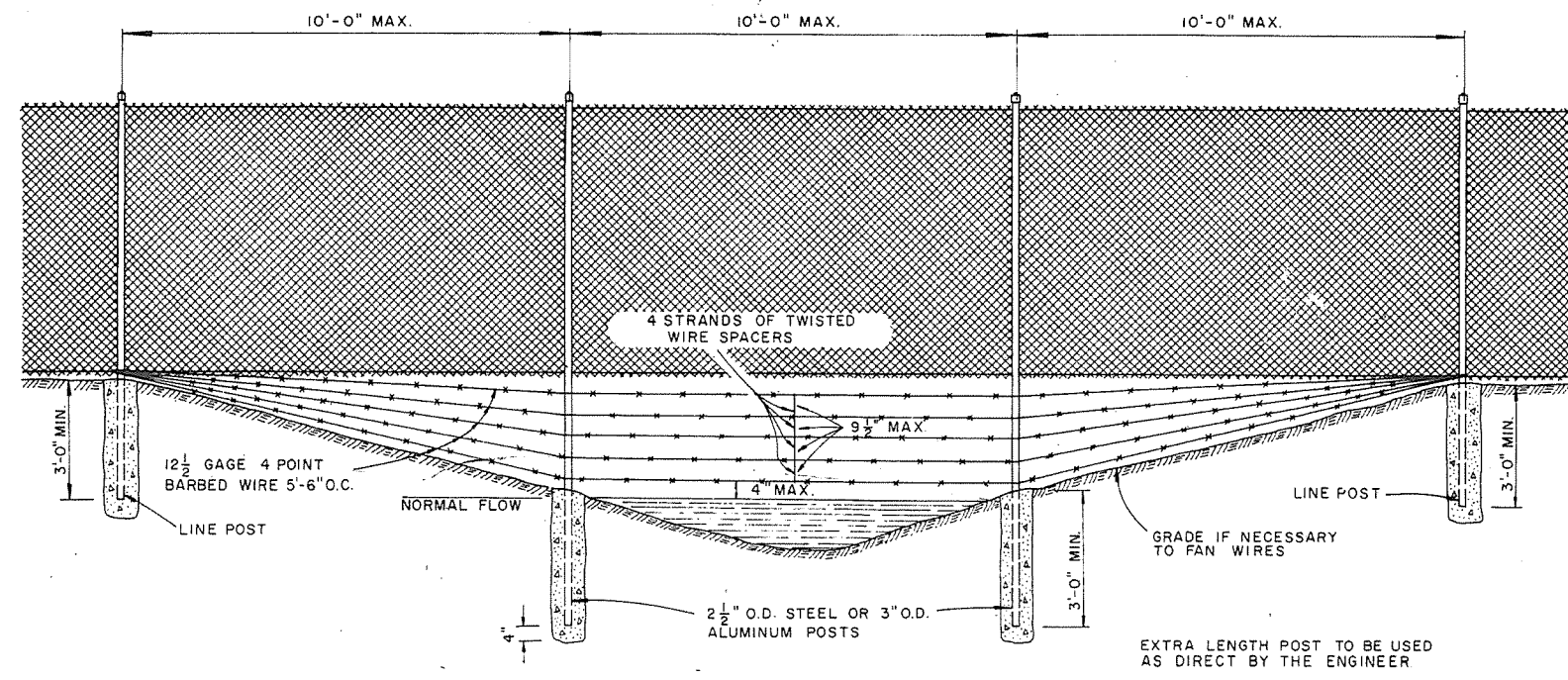
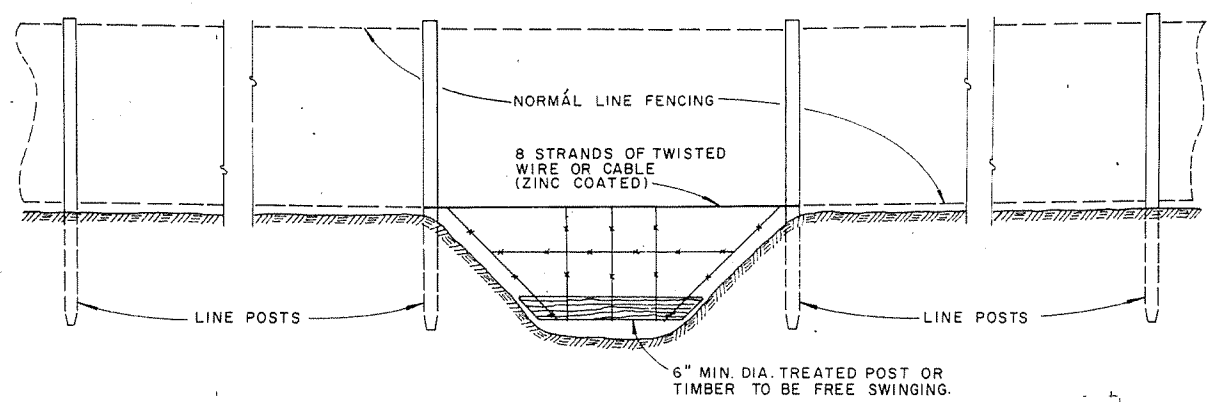
CONSTRUCTION SEQUENCE

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

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

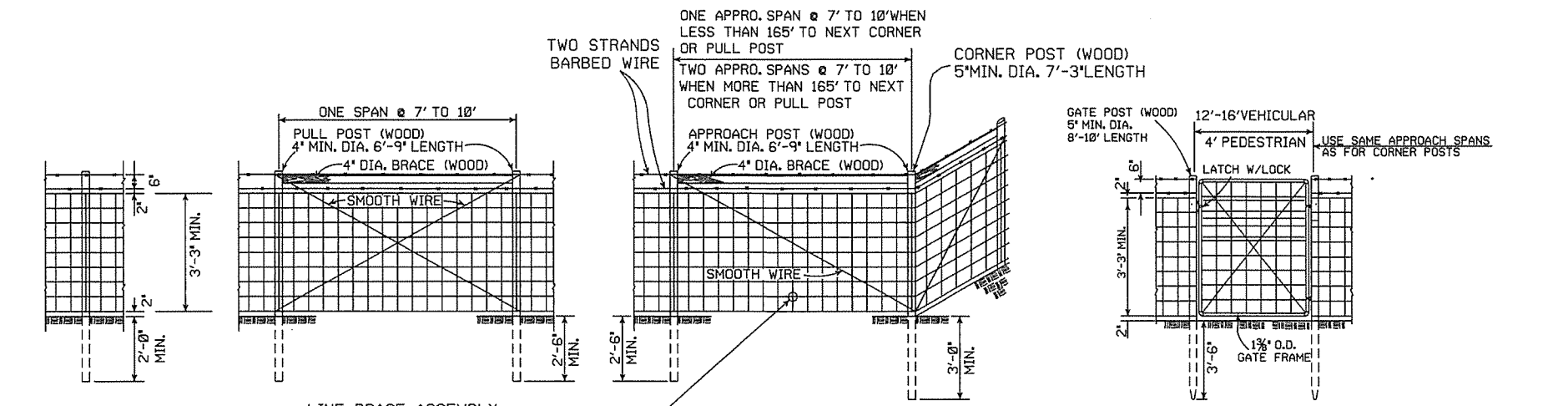


GENERAL NOTES:  
 THESE INSTALLATIONS TO BE USED WHERE NORMAL FENCING INSTALLATION WOULD CAUSE THE COLLECTING OF DRIFT IN THE CHANNEL OR THE DEPRESSION WILL NOT PERMIT NORMAL INSTALLATION. INSTALLATIONS WILL BE MADE ONLY WHERE DIRECTED BY THE ENGINEER.  
 WHEN A FENCE LINE APPROACHES A DITCH, GULLY OR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



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





**GENERAL NOTES:**

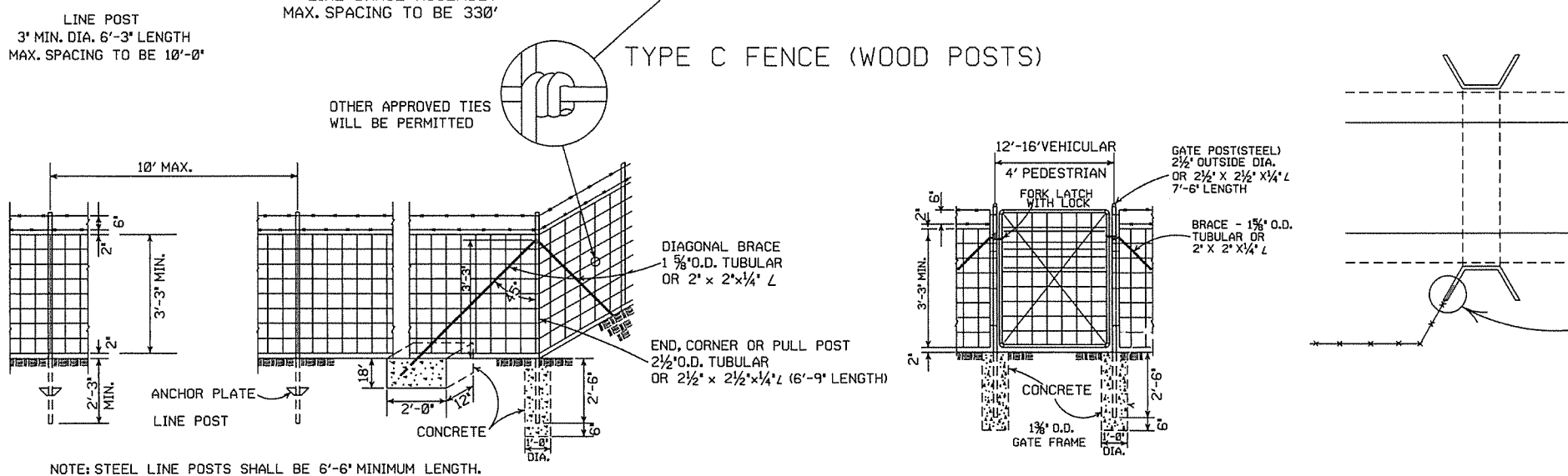
STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED. TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.

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.

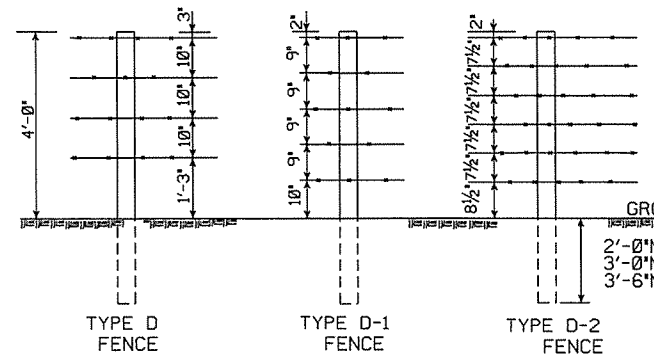
DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED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

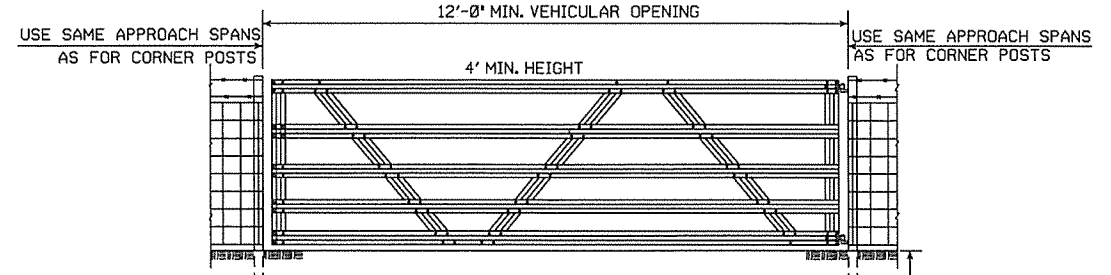
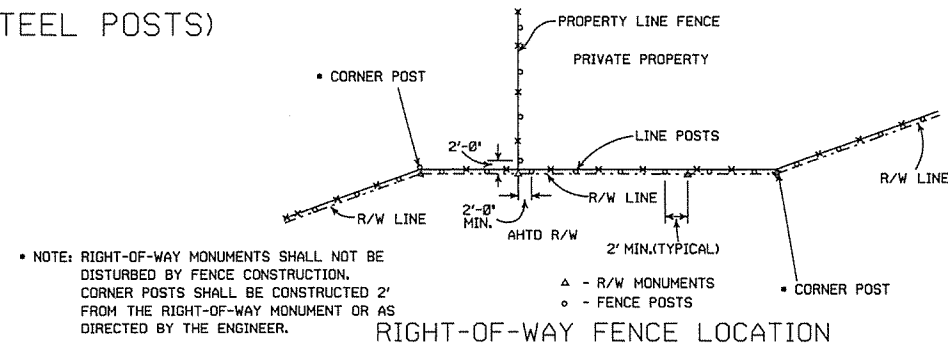


**TYPE C FENCE (STEEL POSTS)**

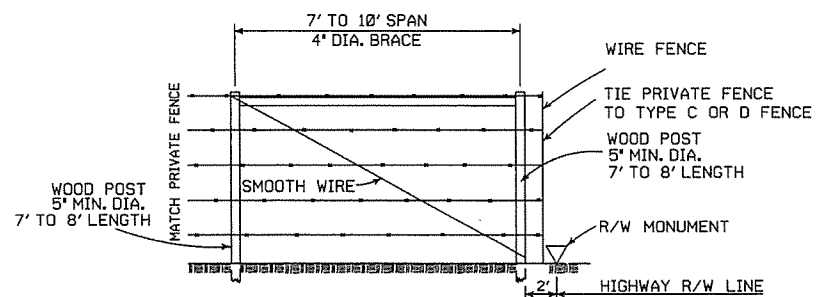
- 4 STRANDS BARBED WIRE (D)
- 5 STRANDS BARBED WIRE (D-1)
- 6 STRANDS BARBED WIRE (D-2)



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.



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.



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.

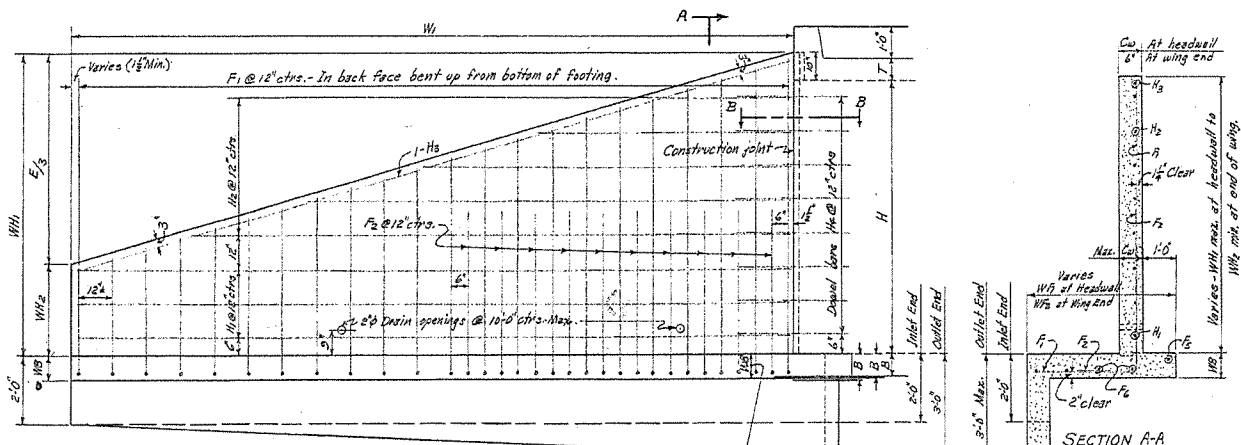
DATE	REVISION	FILMED
8-22-82	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	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

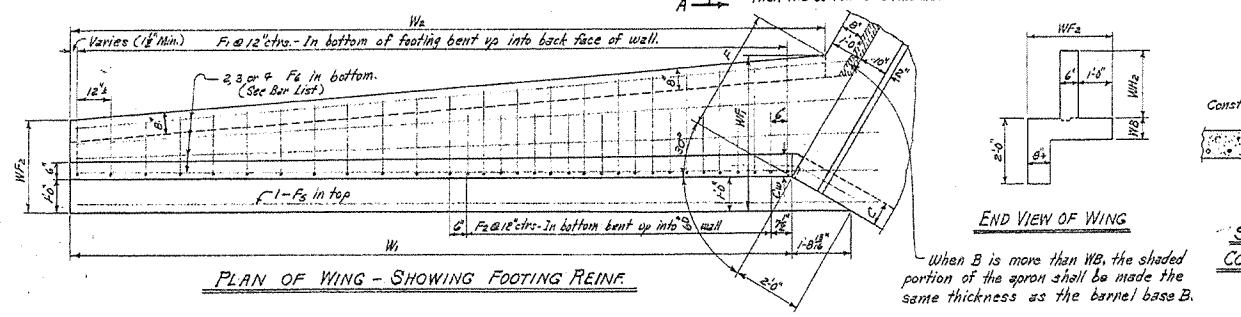
**WIRE FENCE TYPE C AND D**

STANDARD DRAWING WF-4

DESIGNED BY	CHECKED BY	DATE
W.C.H.	W.C.H.	1-9-63
DRAWN BY	CHECKED BY	DATE
W.C.H.	W.C.H.	1-31-63
QUANTITIES BY	CHECKED BY	DATE
W.C.H.	W.C.H.	3-22-63



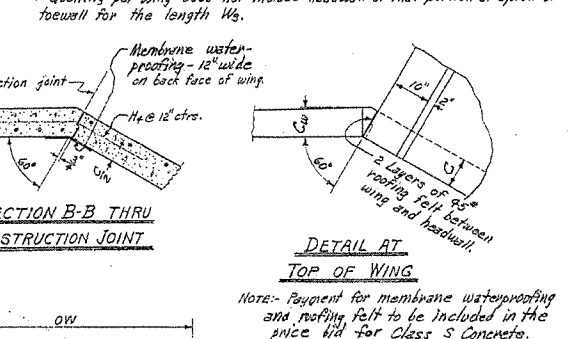
REAR ELEVATION OF WING - SHOWING BACK FACE REIN.



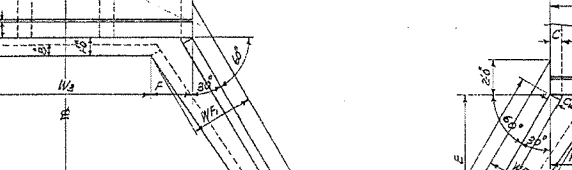
PLAN OF WING - SHOWING FOOTING REIN.

WING DIMENSIONS

CLEAR HEIGHT OF BOX	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING AT END OF WING	WING WALL HEIGHTS		WIDTHS OF WING FOOTINGS		PERPENDICULAR FOOTING DIMENSION	PERPENDICULAR DIST. FROM HEADWALL TO END OF WING	LENGTH OF WING WALLS	INSIDE FOOTING DIMENSION	* QUANTITY PER WING	
			AT HEADWALL	AT END OF WING	AT HEADWALL	AT END OF WING					INLET END	OUTLET END
2'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	0.889	0.996
3'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	1.338	1.466
4'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	1.868	2.027
5'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	2.478	2.668
6'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	3.111	3.322
7'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	3.802	4.033
8'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	4.550	4.798
9'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	5.357	5.621
10'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	6.222	6.502
11'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	7.144	7.444
12'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	8.122	8.442



SECTION B-B THRU CONSTRUCTION JOINT



DETAIL AT TOP OF WING

APRON DIMENSION W3 = (OW - 2F)

CLEAR SPAN	CLEAR HEIGHT	SINGLE BARREL CULVERT					DOUBLE BARREL CULVERT					TRIPLE BARREL CULVERT					QUADRUPLE BARREL CULVERT					QUINTUPLE BARREL CULVERT					
		H	WF	OW	W3	W4	H	WF	OW	W3	W4	H	WF	OW	W3	W4	H	WF	OW	W3	W4	H	WF	OW	W3	W4	
2'	2'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
3'	3'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
4'	4'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
5'	5'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
6'	6'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
7'	7'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
8'	8'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
9'	9'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
10'	10'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
11'	11'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
12'	12'	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"

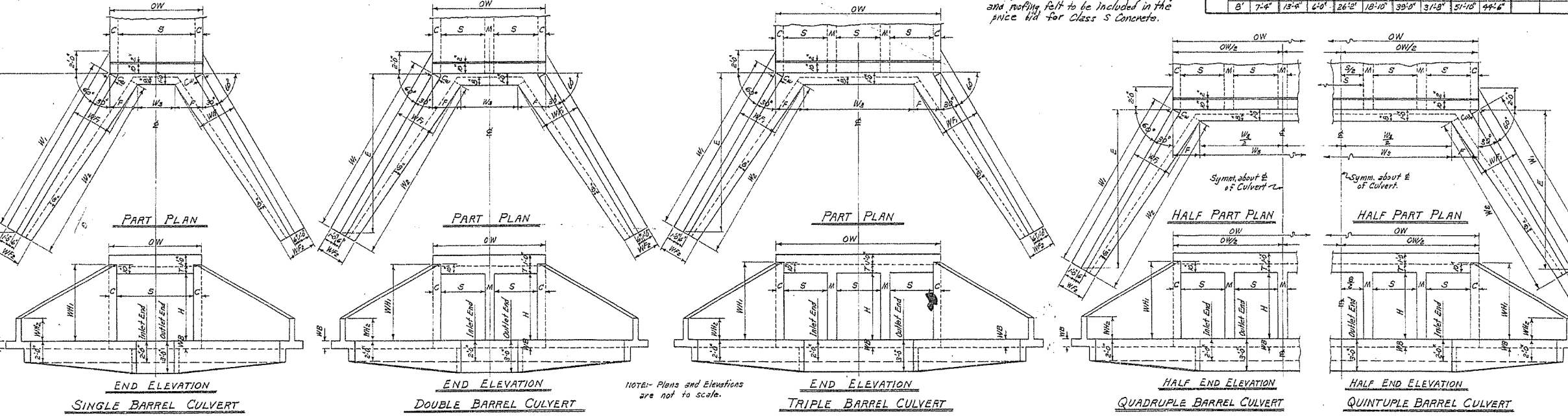
QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING AT END OF WING	CLASS S CONCRETE - 4 WINGS					
				REINFORCING STEEL FOR 4 WINGS	HEADWALLS, WING WALLS, FOOTINGS, SIDEWALLS AND APRONS	SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT
2'	2'	12"	12"	128.0	9.50	5.94	6.92	7.35	8.34
3'	3'	12"	12"	169.4	6.26	7.21	8.17	9.13	10.09
4'	4'	12"	12"	254.6	8.33	9.28	10.24	11.20	12.16
5'	5'	12"	12"	353.1	10.72	11.68	12.64	13.60	14.56
6'	6'	12"	12"	583.1	14.55	15.51	16.47	17.43	18.39
7'	7'	12"	12"	837.8	19.84	20.80	21.76	22.72	23.68
8'	8'	12"	12"	1124.6	26.63	27.59	28.55	29.51	30.47
9'	9'	12"	12"	1454.6	34.92	35.88	36.84	37.80	38.76
10'	10'	12"	12"	1828.0	44.71	45.67	46.63	47.59	48.55
11'	11'	12"	12"	2244.8	56.00	56.96	57.92	58.88	59.84
12'	12'	12"	12"	2715.0	68.79	69.75	70.71	71.67	72.63

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

GENERAL NOTES:-  
 CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have 3/4 chamfers.  
 REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.  
 CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and side walls 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<sup>psi</sup>/<sub>4</sub>  
 Reinforcing Steel 20,000<sup>psi</sup>/<sub>4</sub>

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-1    R-200X-1    R-300X-1    R-400X-1    R-500X-1  
 R-100X-2    R-200X-2    R-300X-2    R-400X-2



BAR LIST FOR ONE WING - 4 REQUIRED

CLEAR HEIGHT	F1		F2		F3		F4		H1		H2		H3		H4		QUANTITY REINFORCING STEEL PER WING	BAR BENDING DIAGRAMS
	BENT		BENT		STRAIGHT		STRAIGHT		STRAIGHT		STRAIGHT		BENT					
	SIZE	SPACING	SIZE	SPACING	SIZE	SPACING	SIZE	SPACING	SIZE	SPACING	SIZE	SPACING	SIZE	SPACING				
2'	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	27.0	
3'	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	41.1	
4'	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	63.7	
5'	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	89.5	
6'	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	145.8	
7'	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	203.7	
8'	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	#3	12"	263.4	

NOTE:- Dimensions are to bar centers.

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

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,      ALL DEPTHS OF COVER  
 QUADRUPLES & QUINTUPLES.      FOR H=8'-0" OR LESS  
 STANDARD DRAWING NO. W-X003-1

Designed By: W.C.H. 5-20-62. Checked By: R.H.S. 1-9-63  
 Drawn By: W.C.H. 4-4-62. Checked By: R.H.S. 1-31-63  
 Quantities By: W.C.H. 12-11-62. Checked By: R.H.S. 3-22-63

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

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH																							
			a bars			b bars			b2 bars			c bars			d bars			e bars			f bars					
			SIZE	SPACING	NO. REB.	SIZE	SPACING	NO. REB.	SIZE	SPACING	NO. REB.	SIZE	SPACING	NO. REB.	SIZE	SPACING	NO. REB.	SIZE	SPACING	NO. REB.	SIZE	SPACING	NO. REB.			
0'-0" TO 5'-0" MAXIMUM	4 @ 2'	12"	128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"
			128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"
			128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"
	5 @ 2'	12"	128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"
			128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"
			128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"
	6 @ 2'	12"	128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"
			128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"
			128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"
	7 @ 2'	12"	128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"
			128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"
			128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"
8 @ 2'	12"	128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
		128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
		128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
9 @ 2'	12"	128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
		128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
		128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
10 @ 2'	12"	128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
		128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
		128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
11 @ 2'	12"	128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
		128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
		128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
12 @ 2'	12"	128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
		128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	
		128	128	9'-5"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	59	59	10'-6"	0'-3"	2'-2"	3'-4"	120	120	4'-8"	14	14	14	290	290	2'-0"	

MAX. DESIGN DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	DIMENSIONS												QUANTITIES																	
			BARREL DIMENSIONS						UNIT QUANTITIES						REINFORCING STEEL						ADDITIONAL											
			D	S	H	A	OW	T	C	M	B	OH	CLYD.	LB.	PER LIN. FT. OF BARREL	PER LIN. FT. OF BARREL	PER LAP	NO. HANDWELDS @ JOINTS	PER LIN. FT. OF BARREL	PER LIN. FT. OF BARREL	PER LAP	NO. HANDWELDS @ JOINTS										
5'-0"	4 @ 2'	12"	2	16	9'-8"	6"	8"	3'-0"	0.996	88.15	42.71	129.56	3	24	9'-8"	6"	8"	4'-0"	0.558	93.49	46.05	129.56	4	32	9'-8"	6"	8"	5'-0"	0.620	98.84	49.39	129.56
			4	20	9'-8"	6"	8"	4'-0"	0.682	104.18	52.73	139.36	5	40	9'-8"	6"	8"	6'-0"	0.809	110.74	56.07	139.36	6	48	9'-8"	6"	8"	7'-0"	0.671	123.34	51.19	139.36
			5	24	9'-8"	6"	8"	5'-0"	0.733	124.68	55.53	139.64	6	48	9'-8"	6"	8"	6'-0"	0.795	134.08	57.87	139.64	7	56	9'-8"	6"	8"	7'-0"	0.922	140.89	61.21	139.64
	5 @ 2'	12"	3	30	11'-8"	6"	8"	4'-0"	0.818	148.50	56.39	233.58	4	36	11'-8"	6"	8"	5'-0"	0.880	153.85	59.68	233.58	5	42	11'-8"	6"	8"	6'-0"	0.941	159.19	63.02	233.58
			4	36	11'-8"	6"	8"	5'-0"	0.941	166.20	66.36	236.59	5	42	11'-8"	6"	8"	6'-0"	1.021	172.74	69.70	236.59	6	48	11'-8"	6"	8"	7'-0"	1.094	177.94	73.04	236.59
			5	42	11'-8"	6"	8"	6'-0"	1.174	183.36	73.04	236.59	6	48	11'-8"	6"	8"	7'-0"	1.212	190.59	76.51	236.59	7	54	11'-8"	6"	8"	8'-0"	1.250	197.79	79.85	236.59
	6 @ 2'	12"	4	48	13'-8"	6"	8"	5'-0"	1.250	207.89	78.19	274.98	5	48	13'-8"	6"	8"	6'-0"	1.394	215.25	81.53	274.98	6	54	13'-8"	6"	8"	7'-0"	1.440	222.89	84.87	274.98
			5	54	13'-8"	6"	8"	6'-0"	1.440	222.89	84.87	274.98	6	54	13'-8"	6"	8"	7'-0"	1.584	230.26	88.21	274.98	7	60	13'-8"	6"	8"	8'-0"	1.630	237.89	91.55	274.98
			6	60	13'-8"	6"	8"	7'-0"	1.630	237.89	91.55	274.98	7	60	13'-8"	6"	8"	8'-0"	1.774	245.26	94.89	274.98	8	66	13'-8"	6"	8"	9'-0"	1.820	252.89	98.23	274.98
	7 @ 2'	12"	5	60	15'-8"	6"	8"	6'-0"	1.774	245.26	94.89	313.82	6	60	15'-8"	6"	8"	7'-0"	1.918	252.64	98.23	313.82	7	66	15'-8"	6"	8"	8'-0"	2.062	259.42	101.57	313.82
			6	66	15'-8"	6"	8"	7'-0"	2.062	259.42	101.57	313.82	7	66	15'-8"	6"	8"	8'-0"	2.206	266.80	104.91	313.82	8	72	15'-8"	6"	8"	9'-0"	2.252	274.19	108.25	313.82
			7	72	15'-8"	6"	8"	8'-0"	2.252	274.19	108.25	313.82	8	72	15'-8"	6"	8"	9'-0"	2.396	281.57	111.59	313.82	9	78	15'-8"	6"	8"	10'-0"	2.442	288.96	114.93	313.82
8 @ 2'	12"	6	72	17'-8"	6"	8"	7'-0"	2.442	288.96	114.93	352.66	7	72	17'-8"	6"	8"	8'-0"	2.586	296.34	118.27	352.66	8	78	17'-8"	6"	8"	9'-0"	2.730	303.72	121.61	352.66	
		7	78	17'-8"	6"	8"	8'-0"	2.730	303.72	121.61	352.66	8	78	17'-8"	6"	8"	9'-0"	2.874	311.10	124.95	352.66	9	84	17'-8"	6"	8"	10'-0"	3.018	318.48	128.29	352.66	
		8	84	17'-8"	6"	8"	9'-0"	3.018	318.48	128.29	352.66	9	84	17'-8"	6"	8"	10'-0"	3.162	325.86	131.63	352.66	10	90	17'-8"	6"	8"	11'-0"	3.206	333.24	134.97	352.66	
9 @ 2'	12"	7	84	19'-8"	6"	8"	8'-0"	3.206	333.24	134.97	391.50	8	84	19'-8"	6"	8"	9'-0"	3.350	340.62	138.31	391.50	9	90	19'-8"	6"	8"	10'-0"	3.494	347.99	141.65	391.50	
		8	90	19'-8"	6"	8"	9'-0"	3.494	347.99	141.65	391.50	9	90	19'-8"	6"	8"	10'-0"	3.638	355.37	144.99	391.50	10	96	19'-8"	6"	8"	11'-0"	3.782	362.74	148.33	391.50	
		9	96	19'-8"	6"	8"	10'-0"	3.782	362.74	148.33	391.50	10	96	19'-8"	6"	8"	11'-0"	3.926	370.12	151.67	391.50	11	102	19'-8"	6"	8"	12'-0"	4.070	377.49	155.01	391.50	
10 @ 2'	12"	8	96	21'-8"	6"	8"	9'-0"	4.070	377.49	155.01	430.34	9	96	21'-8"	6"	8"	10'-0"	4.214	384.87	158.35	430.34	10	102	21'-8"	6"	8"	11'-0"	4.358	392.25	161.69	430.34	
		9	102	21'-8"	6"	8"	10'-0"	4.358	392.25	161.69	430.34	10	102	21'-8"	6"	8"	11'-0"	4.502	400.62	165.03	430.34	11	108	21'-8"	6"	8"	12'-0"	4.646	407.99	168.37	430.34	
		10	108	21'-8"	6"	8"	11'-0"	4.646	407.99	168.37	430.34	11																				



MAIN LANES DET. CONST. DET. REMOVAL

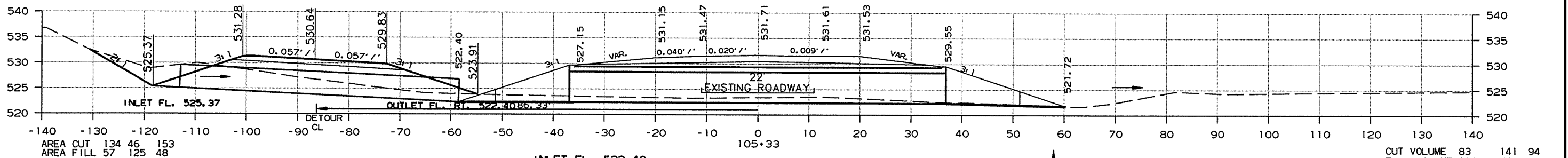
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	FSX005		60	67

2 CROSS SECTIONS-SITE 1

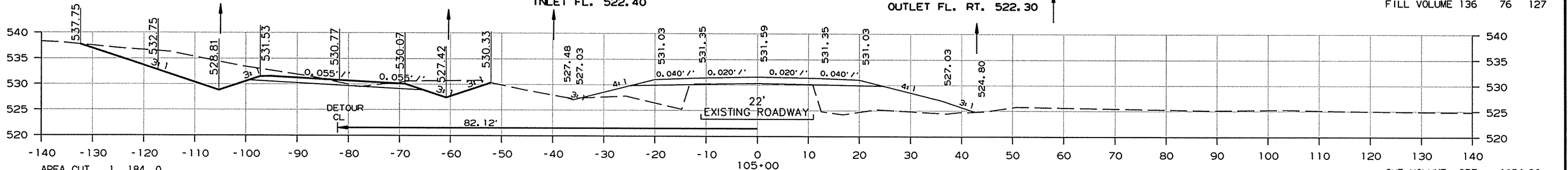
MAIN LANES DET. CONST. DET. REMOVAL

STA. 105+33 CONSTRUCT  
 QUAD. 10' X 6' X 74' R.C.  
 BOX CULVERT, W/ 3:1 WINGS  
 LT. & RT.  
 Q25 = 1940 CFS, D.A. = 3.2 SQ. MI.

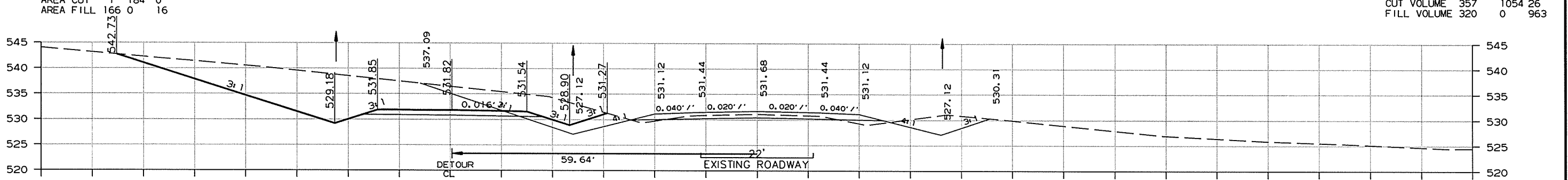
STA. 4+65 INSTALL  
 54" X 58" ON 15° LT. FWD SKEW  
 TEMP. PIPE CULVERT



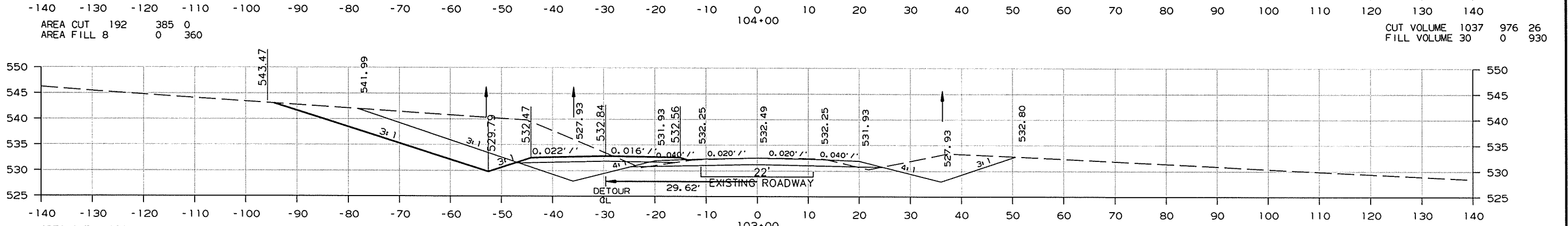
CUT VOLUME	83	141	94
FILL VOLUME	136	76	127



CUT VOLUME	357	1054	26
FILL VOLUME	320	0	963



CUT VOLUME	1037	976	26
FILL VOLUME	30	0	930



CUT VOLUME	0		
FILL VOLUME	0		

BEGIN JOB FSX005 - SITE 1  
 STA. 103+00.00 & BEGIN TRANSITION STA. 102+00

CROSS SECTION STA. 103+00 TO STA. 105+33

5/29/2014

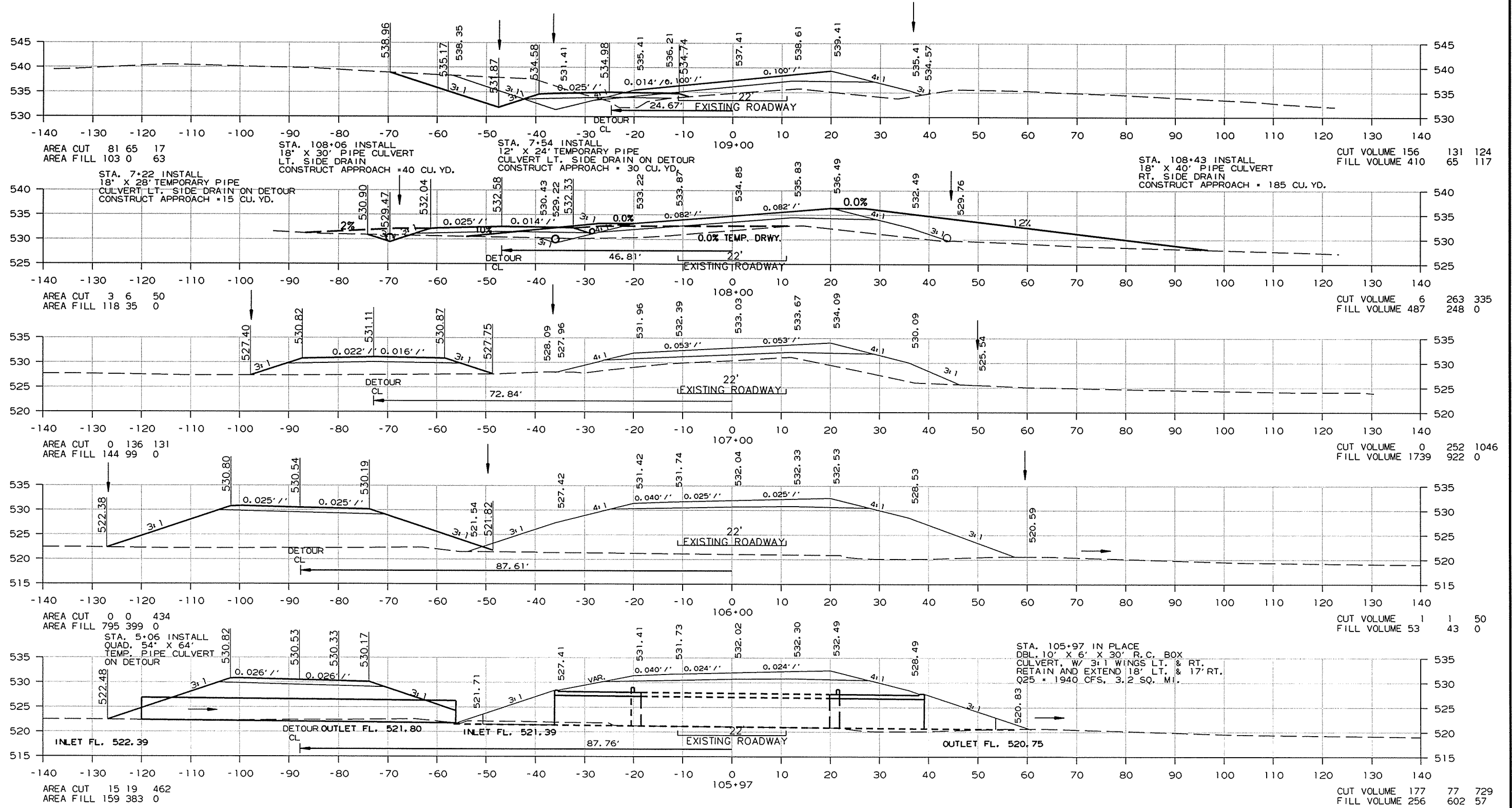
RF SX005.DGN

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.	FSX005		61	67

MAIN LANES DET. CONST. DET. REMOVAL

② CROSS SECTIONS-SITE I

MAIN LANES DET. CONST. DET. REMOVAL



CROSS SECTION STA. 105+97 TO STA. 109+00

6/4/2014

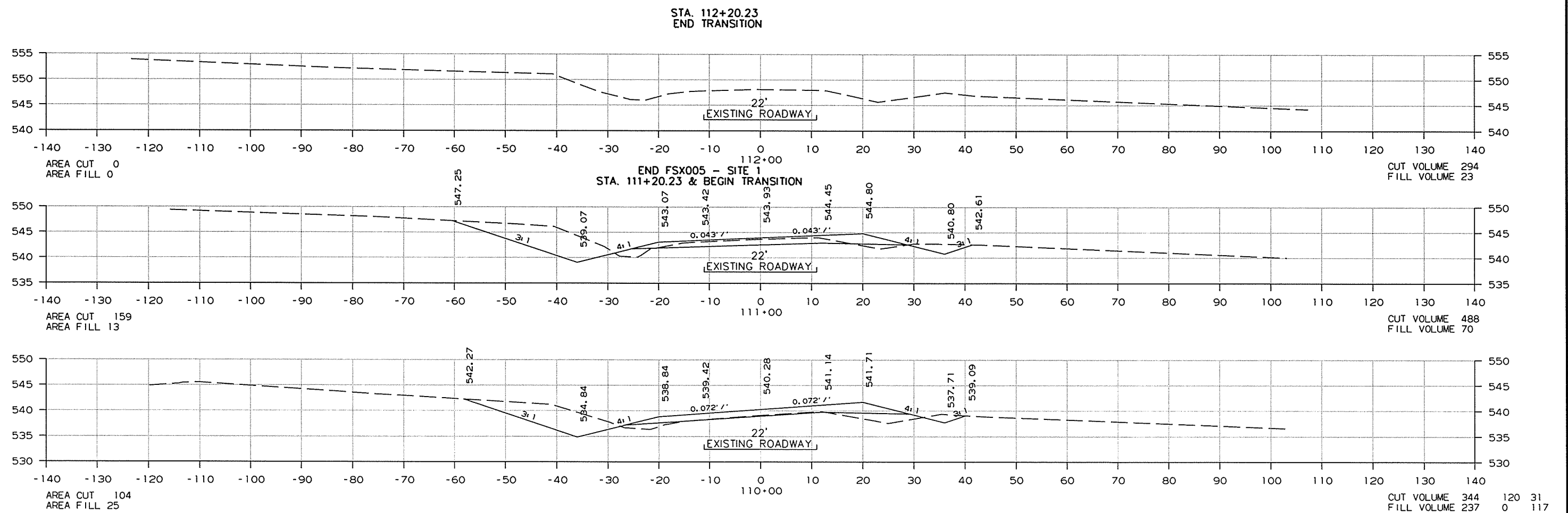
RF SX005.DGN

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.		FSX005	62	67

② CROSS SECTIONS-SITE 1

MAIN LANES    DET. CONST.    DET. REMOVAL

MAIN LANES    DET. CONST.    DET. REMOVAL



CROSS SECTION STA. 110+00 TO STA. 112+00

5/29/2014

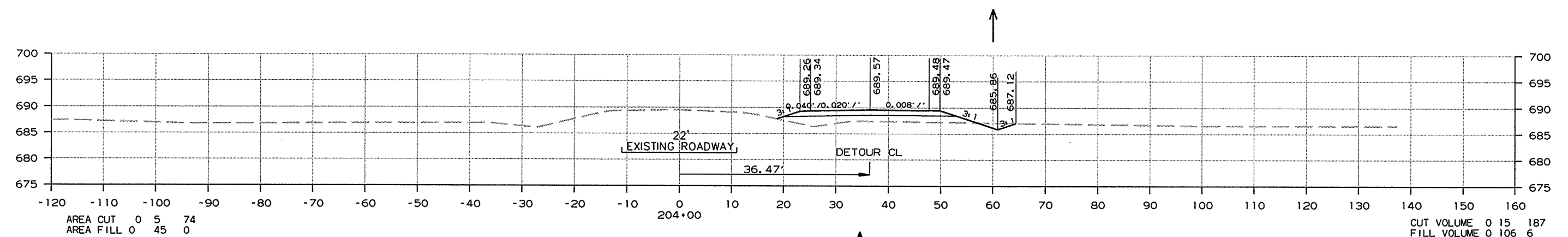
RF5X005.DGN

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.	FSX005		63	67

2 CROSS SECTIONS-SITE 2

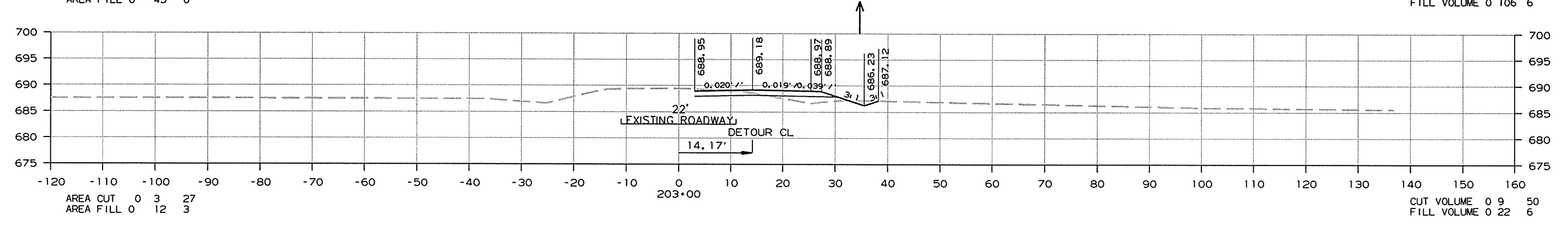
MAIN LANES    DET. CONST.    DET. REMOVAL

MAIN LANES    DET. CONST.    DET. REMOVAL



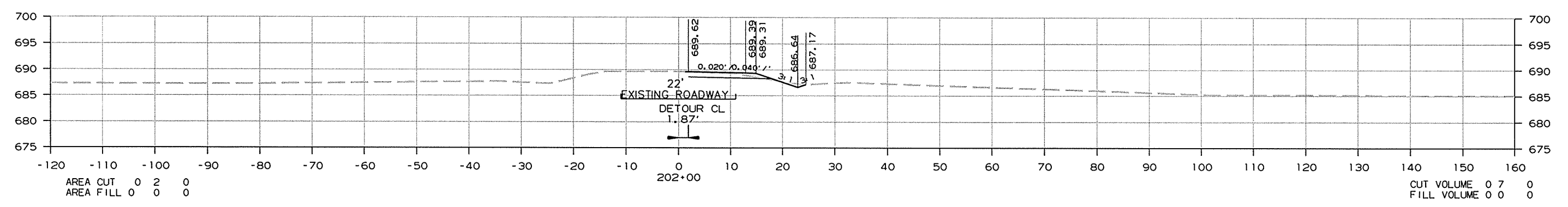
AREA CUT 0 5 74  
AREA FILL 0 45 0

CUT VOLUME 0 15 187  
FILL VOLUME 0 106 6



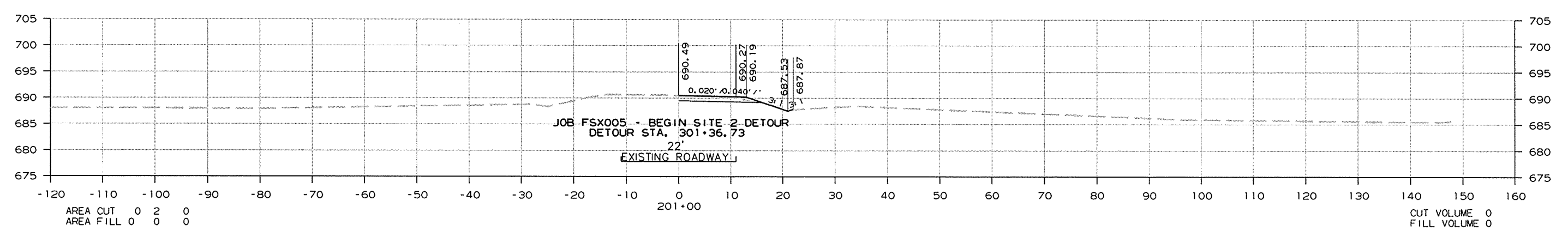
AREA CUT 0 3 27  
AREA FILL 0 12 3

CUT VOLUME 0 9 50  
FILL VOLUME 0 22 6



AREA CUT 0 2 0  
AREA FILL 0 0 0

CUT VOLUME 0 7 0  
FILL VOLUME 0 0 0



AREA CUT 0 2 0  
AREA FILL 0 0 0

CUT VOLUME 0  
FILL VOLUME 0

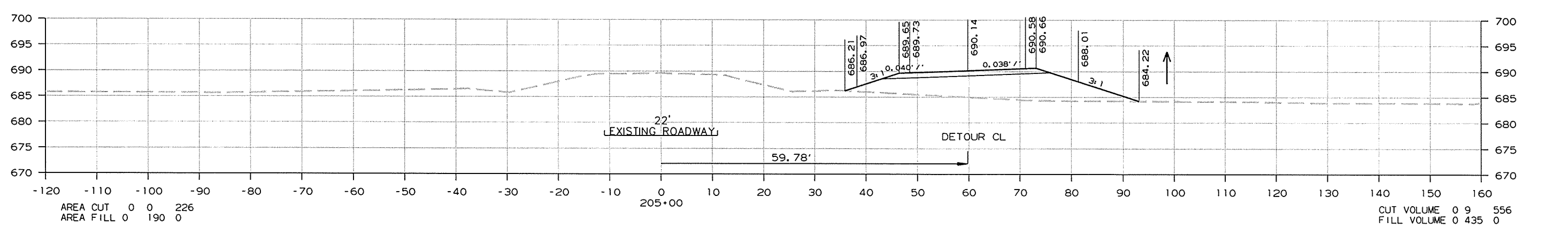
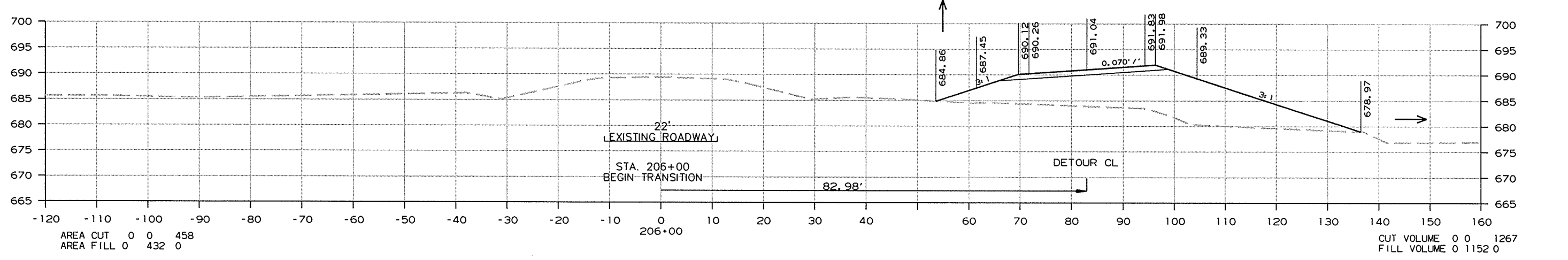
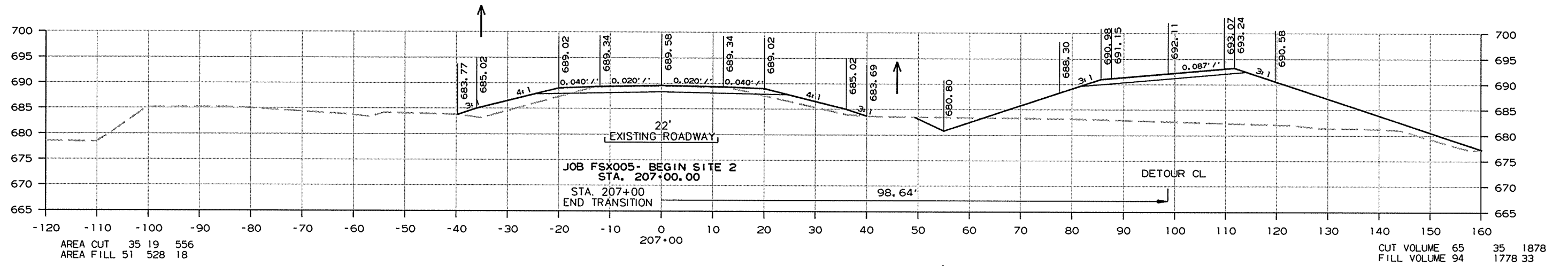
CROSS SECTION STA. 201+00 TO STA. 204+00

5/29/2014

RFSX005.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.	FSX005		64	67

2 CROSS SECTIONS-SITE 2



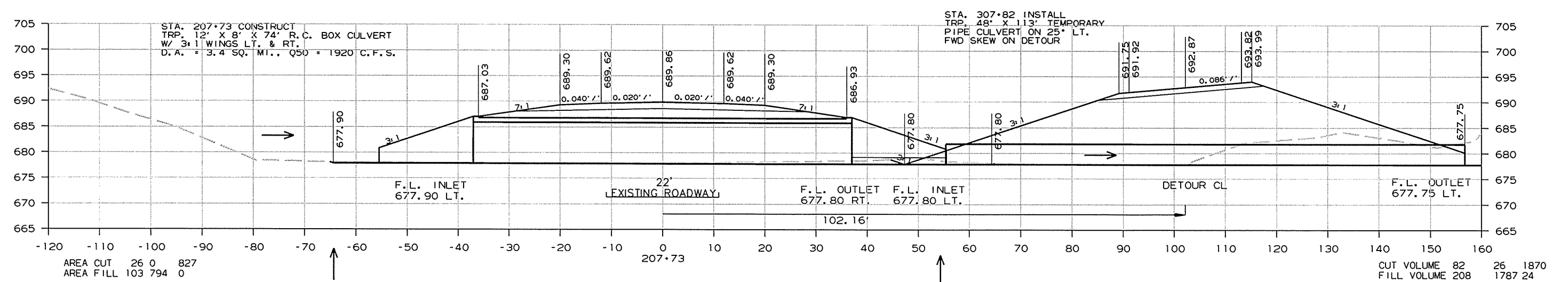
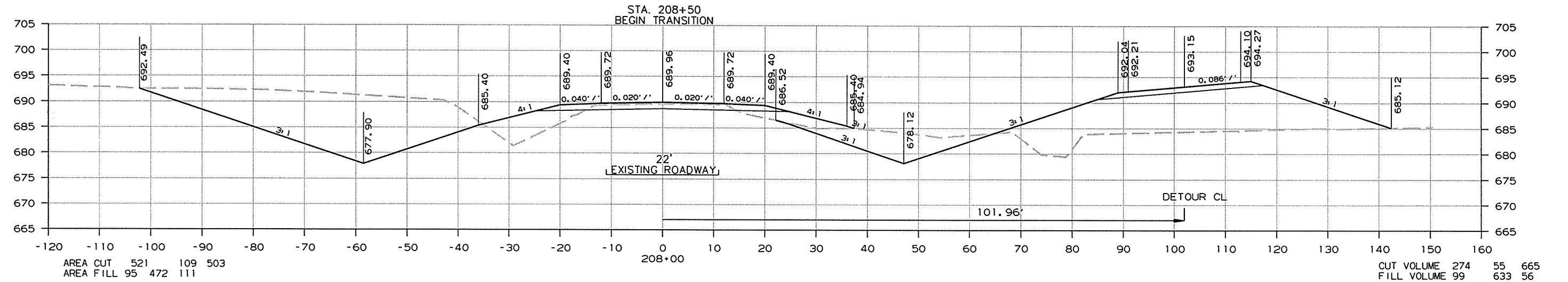
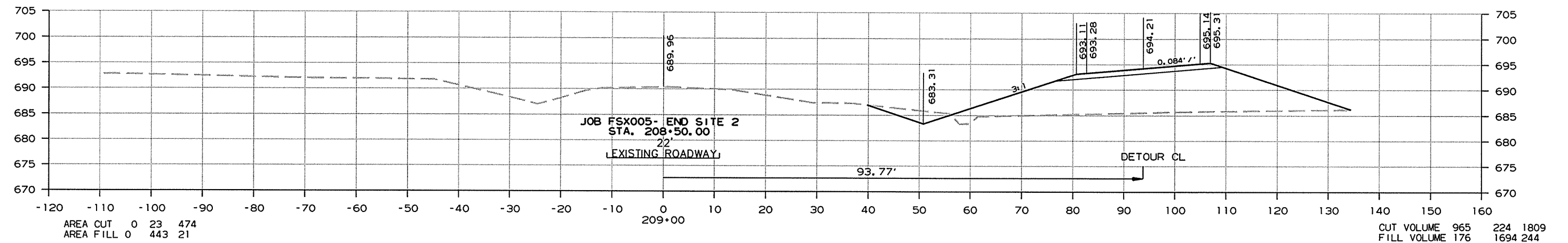
CROSS SECTION STA. 205+00 TO STA. 207+00

5/29/2014 RFSX005.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.		FSX005	65	67

2 CROSS SECTIONS-SITE 2

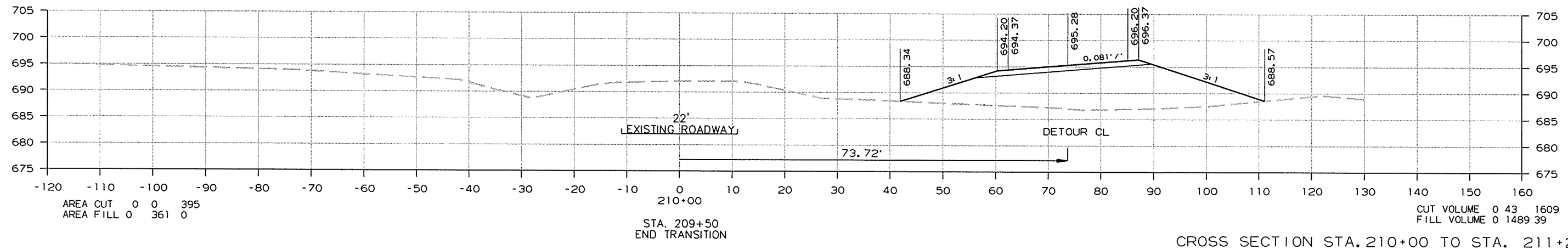
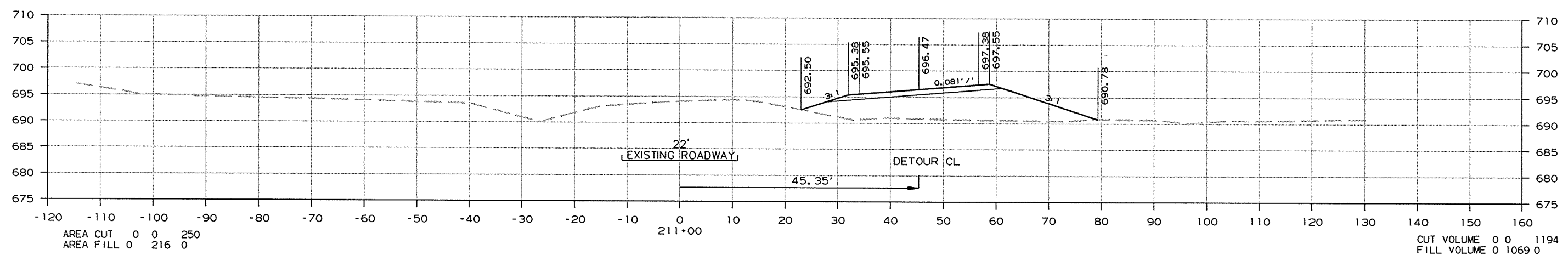
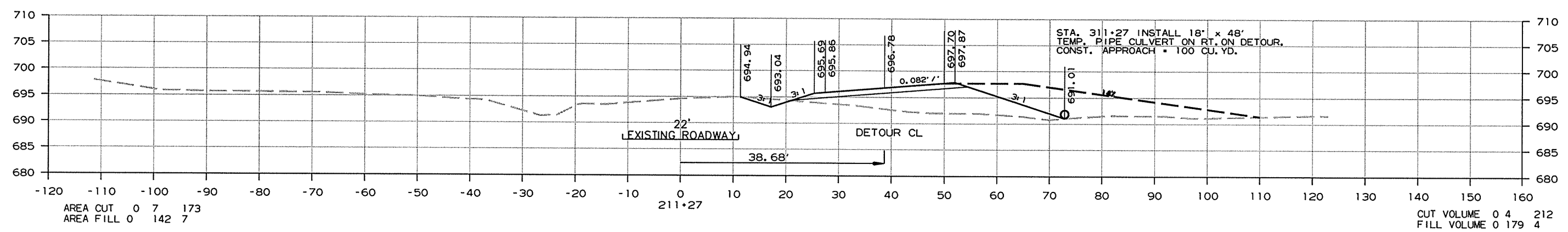


CROSS SECTION STA. 207+73 TO STA. 209+00

5/29/2014 RFSX005.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.	FSX005		66	67

2 CROSS SECTIONS-SITE 2



CROSS SECTION STA. 210+00 TO STA. 211+27

5/29/2014 RFSX005.DGN

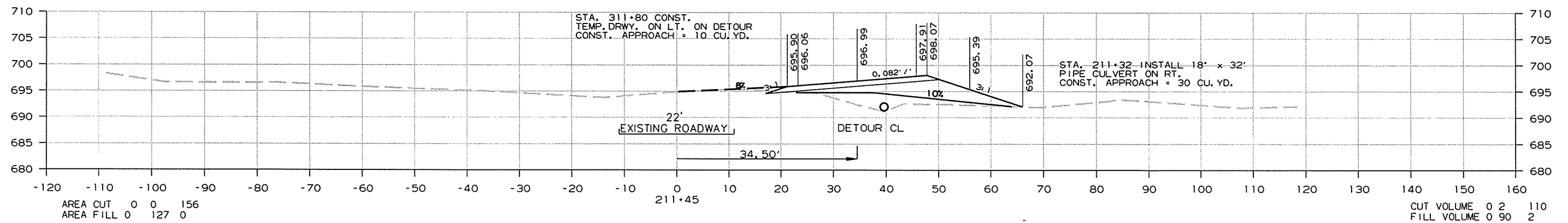
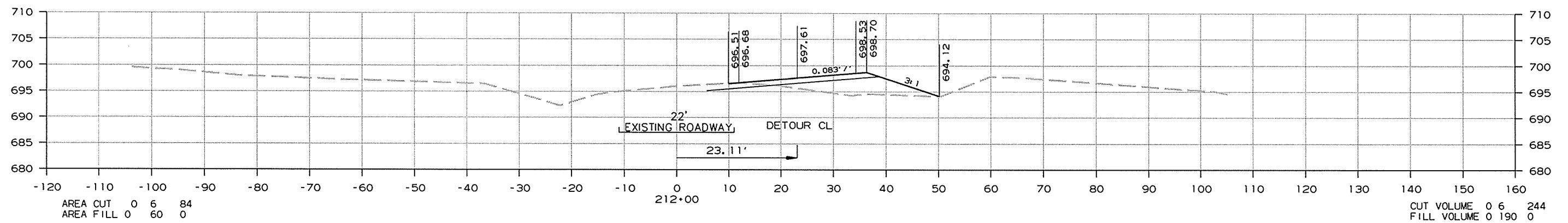
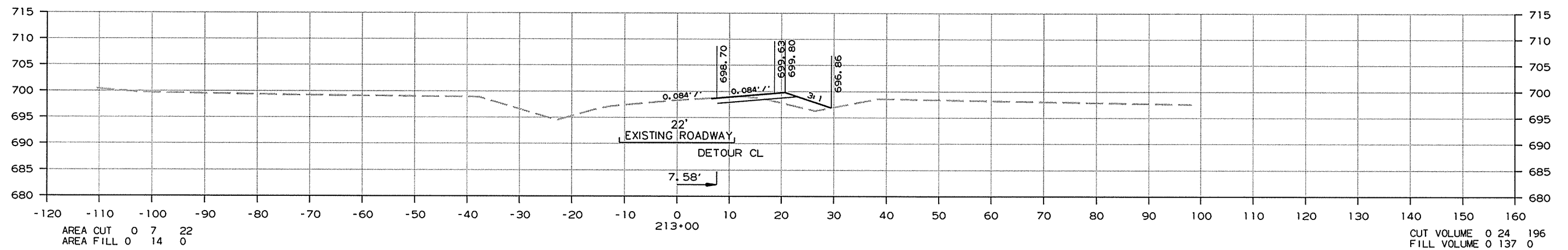
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	FSX005		67	67

2 CROSS SECTIONS-SITE 2

AREA CUT 0 7 22  
AREA FILL 0 14 0

CUT VOLUME 0 13 41  
FILL VOLUME 0 26 0

JOB FSX005 - END SITE 2 DETOUR  
DETOUR STA. 8+81.17



CROSS SECTION STA. 211+45 TO STA. 213+00