JOB 061102

"A FULLY CONTROLLED ACCESS FACILITY"

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

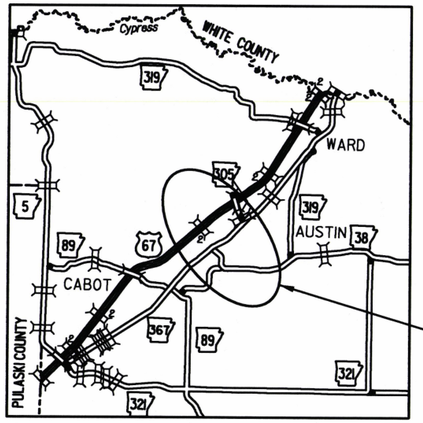
CONSTRUCTION PLANS

HWY. 67 INTERCHANGE (N. OF CABOT) (S)

LONOKE COUNTY
ROUTE 67 SECTION 11
F.A.P. NHPP-0043(28)

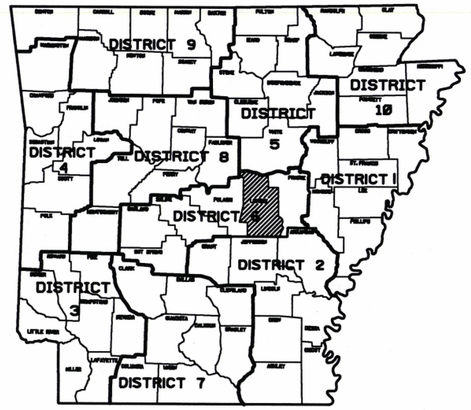
JOB 061102

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/25/2016				6	ARK.			
				JOB NO.		061102	1	400
				②	HWY. 67 INTERCHANGE (N. OF CABOT) (S)			



PROJECT LOCATION

VICINITY MAP



ARK. HWY. DIST. NO. 6

BRIDGE STRUCTURES

① STA. 107+88.11 ℄ CONST. HWY. 38 BRIDGE END
273'-0" CONTINUOUS COMP. PLATE GIRDER UNIT
BRIDGE NO. 07401
58'-0" CLEAR ROADWAY WIDTH
275'-2" BRIDGE LENGTH
STA. 110+63.27 ℄ CONST. HWY. 38 BRIDGE END

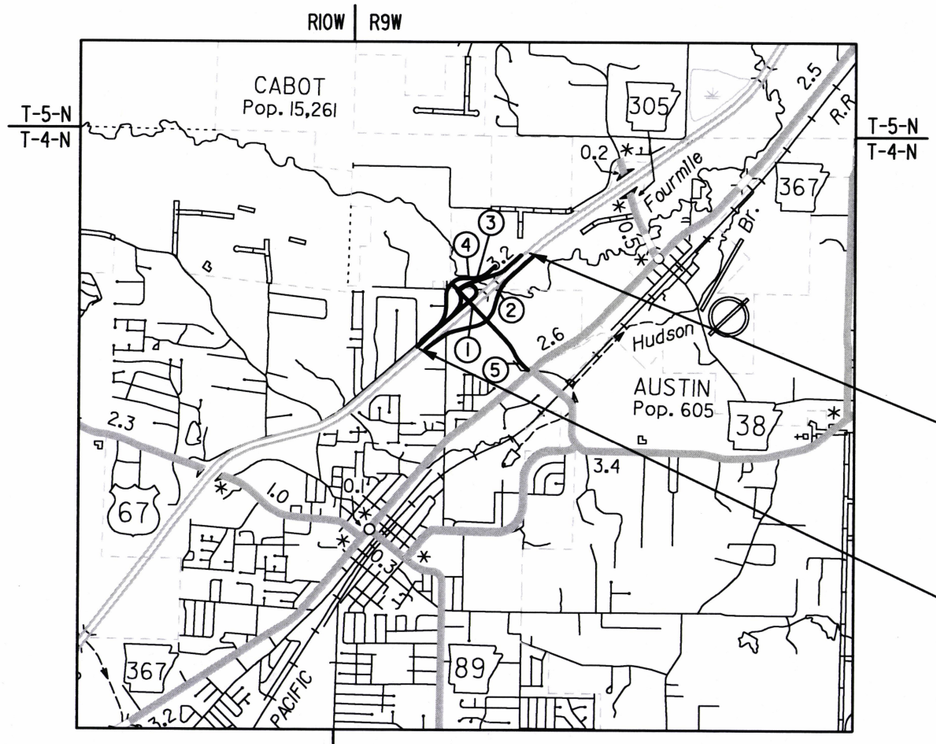
② STA. 729+84.92 ℄ CONST. RAMP 2 BRIDGE END
270'-0" CONTINUOUS COMP. W-BEAM UNIT
BRIDGE NO. 07402
25'-0" CLEAR ROADWAY WIDTH
272'-2" BRIDGE LENGTH
STA. 732+57.08 ℄ CONST. RAMP 2 BRIDGE END

③ STA. 725+23.97 ℄ CONST. RAMP 3A BRIDGE END
260'-0" CONTINUOUS COMP. W-BEAM UNIT
BRIDGE NO. 07403
25'-0" CLEAR ROADWAY WIDTH
263'-0¾" BRIDGE LENGTH
STA. 727+87.03 ℄ CONST. RAMP 3A BRIDGE END

④ STA. 520+24.45 ℄ CONST. WILLIE RAY DR. BRIDGE END
180'-0" INTEGRAL W-BEAM UNIT
BRIDGE NO. 07404
40'-0" CLEAR ROADWAY WIDTH
181'-1¼" BRIDGE LENGTH
STA. 522+05.55 ℄ CONST. WILLIE RAY DR. BRIDGE END

STRUCTURES OVER 20'-0" SPAN

⑤ STA. 133+80 ℄ CONST. HWY. 38 CONSTRUCT
DBL. 10' X 6' X 142' R.C. BOX CULVERT
AT 15° RT. FWD. SKEW WITH (3#) WINGS LT. & RT.
Q50 = 700 CFS D.A. = 476 ACRES
SPAN = 22.78'



NOT TO SCALE

NO PROJECT LENGTH INVOLVED

N

DESIGN TRAFFIC DATA - HWY. 67

DESIGN YEAR	2036
2016 ADT	33,000
2036 ADT	46,500
2036 DHV	5,115
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	10%
DESIGN SPEED	70 MPH

STA. 746+31.95 ℄ MED. HWY. 67
END JOB 061102
LOG MILE= 5.90

STA. 691+43.12 ℄ MED. HWY. 67
BEGIN JOB 061102
LOG MILE= 4.86

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 34°59'24"	N 34°59'42"	N 35°00'00"
LONGITUDE	W 92°00'46"	W 92°00'21"	W 91°59'55"

CERTIFICATE OF AUTHORIZATION
ICA ENGINEERING, INC.
No. 120
ARKANSAS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/25/16

SHEET NO.	TITLE	BRIDGE NO.	DRWG.NO.	DATE
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NOTE: CROSS SECTIONS NOT NORMALLY INCLUDED IN PLANS SOLD TO PROSPECTIVE BIDDERS, BUT MAY BE HAD UPON REQUEST.

INDEX OF SHEETS



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.ROAD DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
#1472696				6	ARK.	0610(2)	2	400

INDEX OF SHEETS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/25/2016				6	ARK.			
				JOB NO.		061102	3	400
				(2)	GOVERNING SPECIFICATIONS AND GENERAL 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 - TRAINING PROGRAM - JOB 061102
FHWA-1273__ SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__ SUPPLEMENT - WAGE RATE DETERMINATION
100-3_____ CONTRACTOR'S LICENSE
102-2_____ ISSUANCE OF PROPOSALS
108-1_____ LIQUIDATED DAMAGES
108-2_____ WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
303-1_____ AGGREGATE BASE COURSE
400-1_____ TACK COATS
410-1_____ CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
604-1_____ RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1_____ PIPE CULVERTS FOR SIDE DRAINS
620-1_____ MULCH COVER
JOB 061102__ AIRPORT CLEARANCE REQUIREMENTS
JOB 061102__ ARCHITECTURAL FINISH
JOB 061102__ ASSESSMENT OF WORKING DAYS - MAINTENANCE OF TRAFFIC
JOB 061102__ BIDDING REQUIREMENTS AND CONDITIONS
JOB 061102__ BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 061102__ BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 061102__ CABINET DRAWER ASSEMBLY
JOB 061102__ CARGO PREFERENCE ACT REQUIREMENTS
JOB 061102__ CHANNEL POST SIGN SUPPORT
JOB 061102__ CONCRETE BARRIER WALL
JOB 061102__ CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 061102__ DELAY IN RIGHT OF WAY OCCUPANCY
JOB 061102__ DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 061102__ DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 061102__ DRILLED SHAFT FOUNDATIONS
JOB 061102__ ELECTRICAL CONDUCTORS-IN-CONDUIT
JOB 061102__ EMBANKMENT CONSTRUCTION
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JOB 061102__ FLEXIBLE BEGINNING OF WORK
JOB 061102__ GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
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JOB 061102__ LED COUNTDOWN PEDESTRIAN SIGNAL HEAD
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JOB 061102__ MANDATORY ELECTRONIC CONTRACT
JOB 061102__ MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 061102__ MOBILE SPEED NOTIFICATION SYSTEM
JOB 061102__ MSE RETAINING WALLS
JOB 061102__ NESTING SITES OF MIGRATORY BIRDS
JOB 061102__ NONDESTRUCTIVE TESTING OF DRILLED SHAFTS
JOB 061102__ OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORT
JOB 061102__ PARTNERING REQUIREMENTS
JOB 061102__ PERCENT WITHIN LIMITS
JOB 061102__ PLASTIC PIPE
JOB 061102__ PROSECUTION AND PROGRESS - CALENDAR DAY CONTRACT WITH CPM
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JOB 061102__ SECTION 404 NATIONWIDE 23 PERMIT REQUIREMENTS
JOB 061102__ SHORING FOR CULVERTS
JOB 061102__ SIGN PANEL MATERIALS AND FABRICATION
JOB 061102__ SITE USE (A+C METHOD) - CALENDAR DAY CONTRACT
JOB 061102__ SOIL STABILIZATION
JOB 061102__ SPECIAL SAFETY REQUIREMENTS FOR BRIDGES
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JOB 061102__ TEXTURED COATING FINISH
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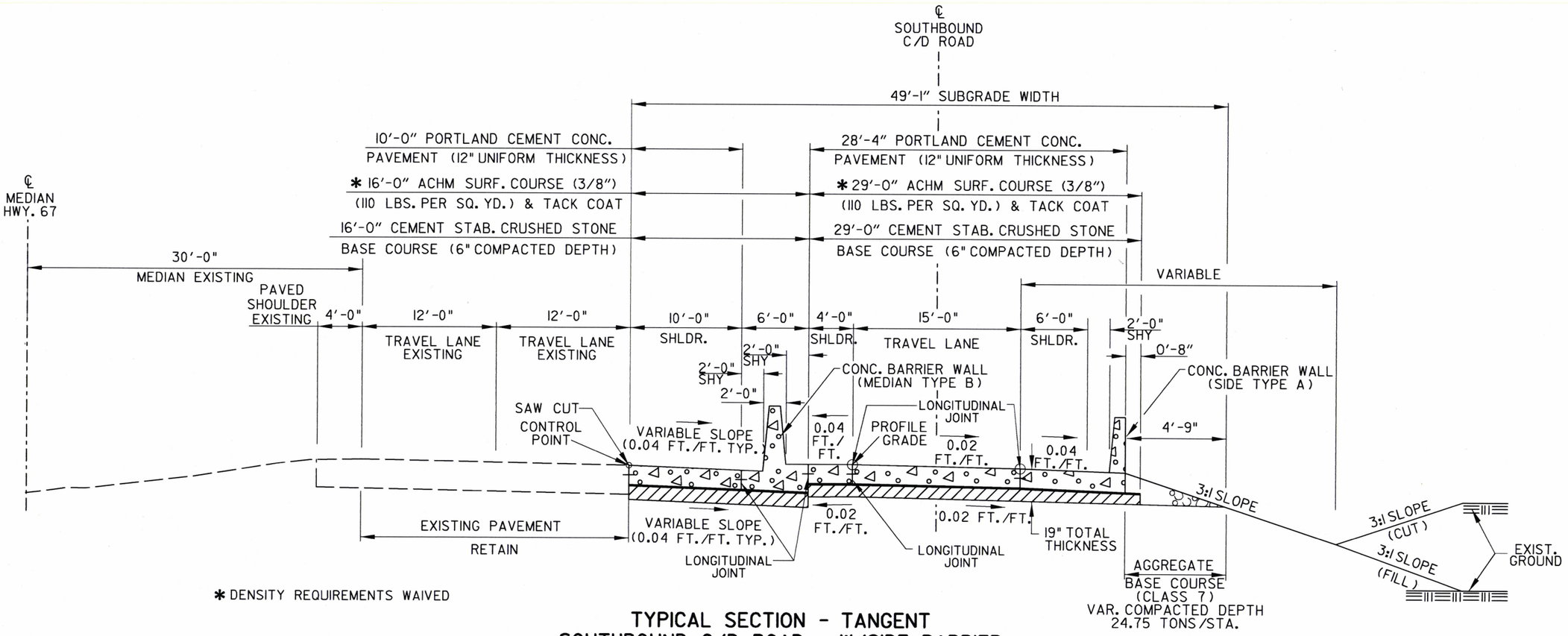
JOB 061102__ UTILITY ADJUSTMENTS
JOB 061102__ VALUE ENGINEERING
JOB 061102__ VIDEO DETECTOR (COLOR)
JOB 061102__ VIDEO DETECTOR ROTATION
JOB 061102__ WARM MIX ASPHALT

GENERAL NOTES

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/25/16

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.		061102	4	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			



* DENSITY REQUIREMENTS WAIVED

TYPICAL SECTION - TANGENT
SOUTHBOUND C/D ROAD - W/SIDE BARRIER

(SHOWN IN DIRECTION OF TRAFFIC)
STA. 701+42.87 TO STA. 709+15.59
STA. 716+40.00 TO STA. 719+25.00

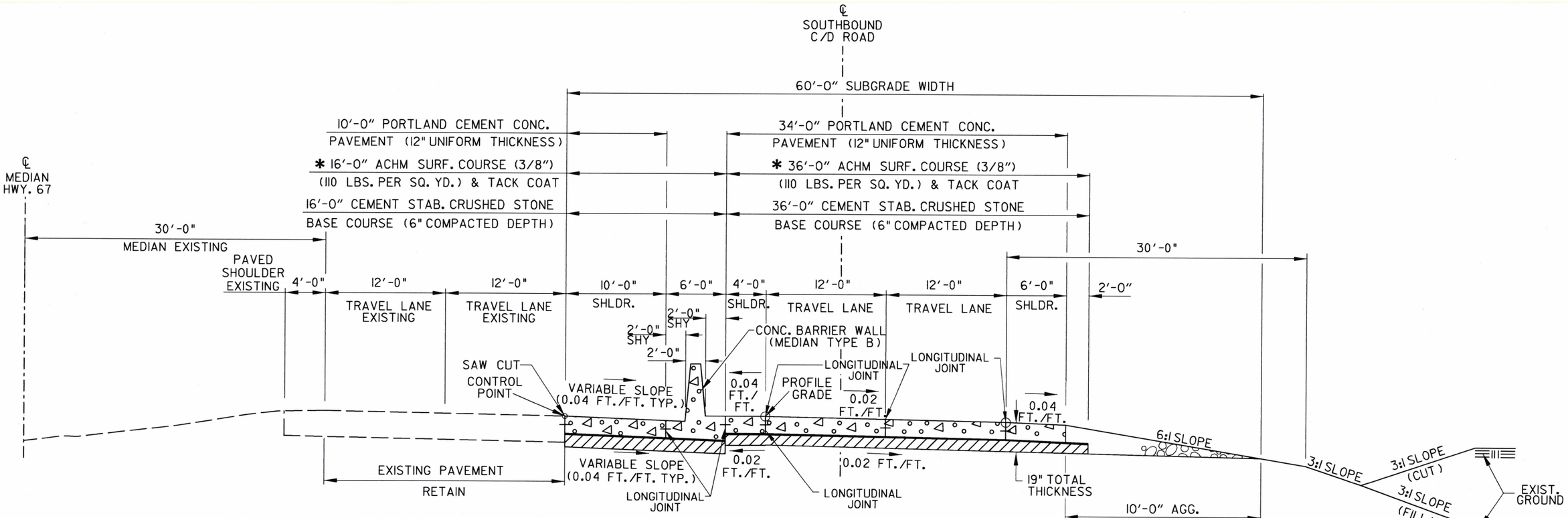
NOTES:

1. 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.
2. REFER TO SPECIAL DETAILS FOR ADDITIONAL INFORMATION.
3. ANY EXISTING PAVEMENT TO BE REMOVED SHALL BE SEPARATED FROM THE REMAINING PAVEMENT BY SAWING ALONG A NEAT LINE.
4. ALL PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT TO REMAIN IN PLACE. DAMAGED PAVEMENT SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
5. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF 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.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR
10/10/12

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.		06I102	5	400

(2) TYPICAL SECTIONS OF IMPROVEMENT



* DENSITY REQUIREMENTS WAIVED

TYPICAL SECTION - TANGENT SOUTHBOUND C/D ROAD - 2 LANES

(SHOWN IN DIRECTION OF TRAFFIC)

STA. 709+15.59 TO STA. 714+15.58

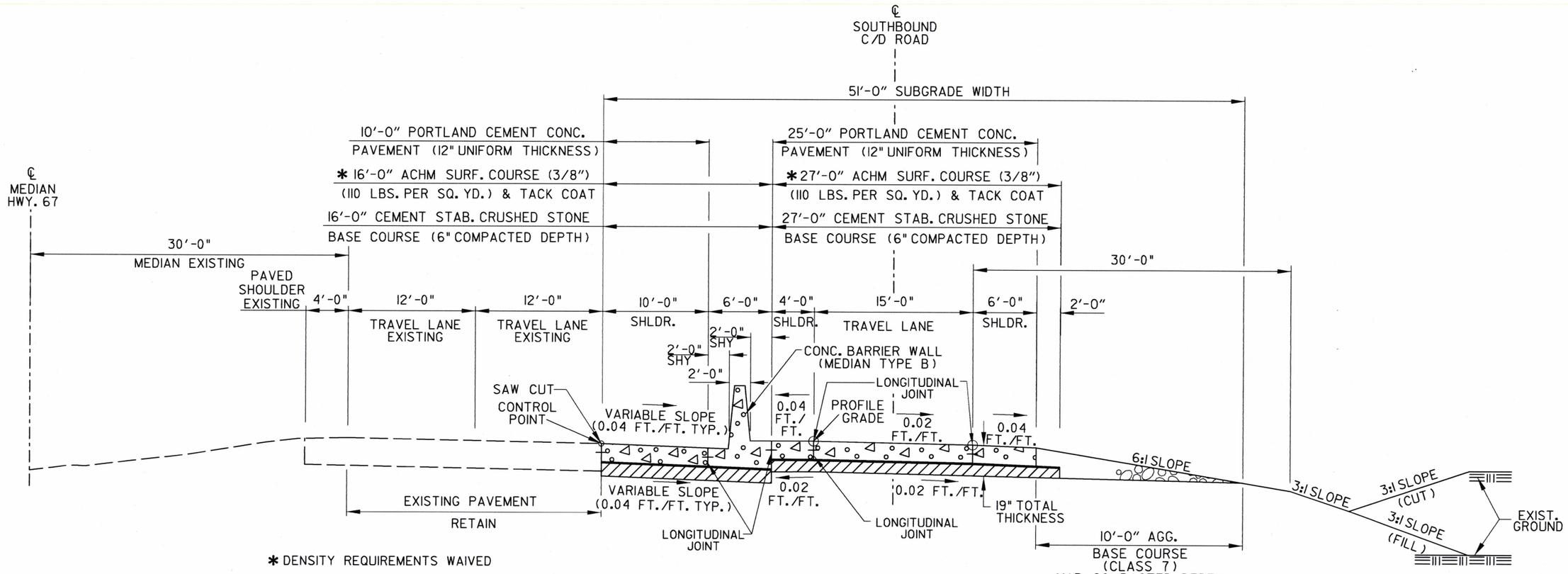
NOTES:

1. 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.
2. REFER TO SPECIAL DETAILS FOR ADDITIONAL INFORMATION.
3. ANY EXISTING PAVEMENT TO BE REMOVED SHALL BE SEPARATED FROM THE REMAINING PAVEMENT BY SAWING ALONG A NEAT LINE.
4. ALL PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT TO REMAIN IN PLACE. DAMAGED PAVEMENT SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
5. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF 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.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR

TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	6	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			



* DENSITY REQUIREMENTS WAIVED

TYPICAL SECTION - TANGENT SOUTHBOUND C/D ROAD

(SHOWN IN DIRECTION OF TRAFFIC)
STA. 714+15.58 TO STA. 716+40.00
STA. 719+25.00 TO STA. 721+94+40

NOTES:

(1) 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.

(2) REFER TO SPECIAL DETAILS FOR ADDITIONAL INFORMATION.

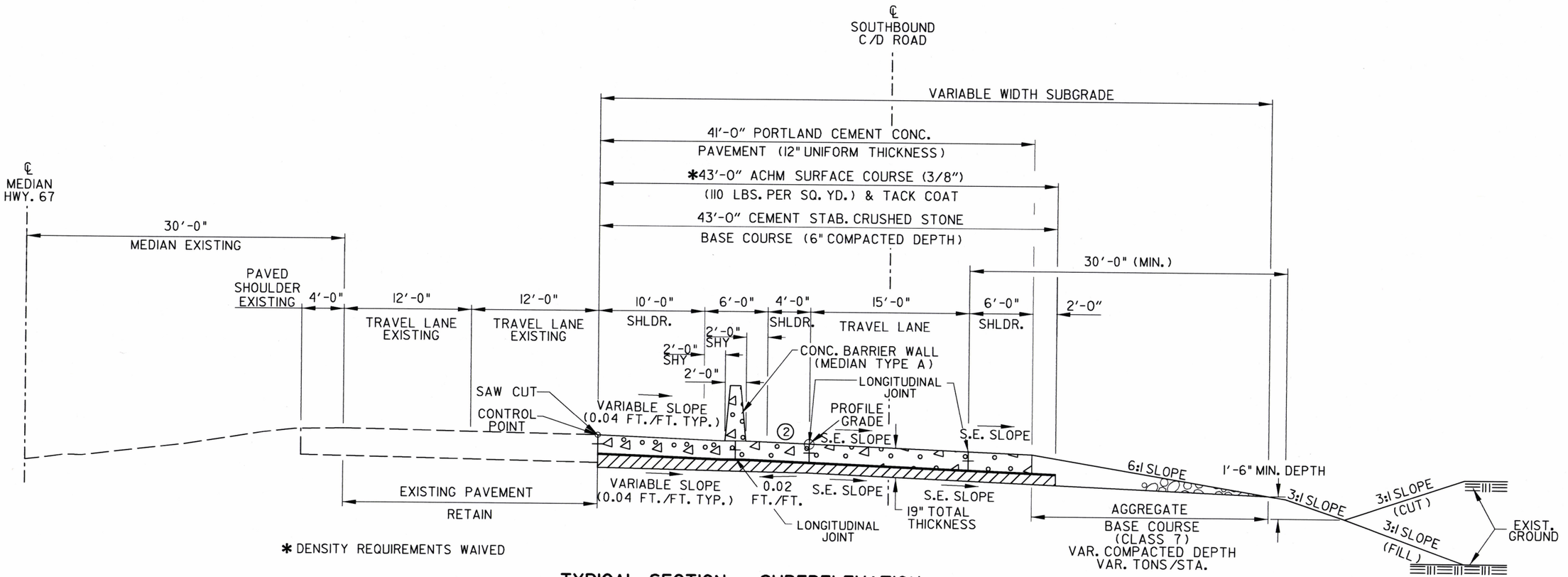
(3) ANY EXISTING PAVEMENT TO BE REMOVED SHALL BE SEPARATED FROM THE REMAINING PAVEMENT BY SAWING ALONG A NEAT LINE.

(4) ALL PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT TO REMAIN IN PLACE. DAMAGED PAVEMENT SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE.

(5) THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF 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.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 6/10/11

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.		061102	7	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			



* DENSITY REQUIREMENTS WAIVED

TYPICAL SECTION - SUPERELEVATION SOUTHBOUND C/D ROAD

(SHOWN IN DIRECTION OF TRAFFIC)
STA. 721+94+40 TO STA. 723+42.32

NOTES:

(1) 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.

(2) ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATED TRANSITIONS (Ls), ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SHALL NOT EXCEED 0.08 FT./FT.

(3) REFER TO SPECIAL DETAILS FOR ADDITIONAL INFORMATION.

(4) ANY EXISTING PAVEMENT TO BE REMOVED SHALL BE SEPARATED FROM THE REMAINING PAVEMENT BY SAWING ALONG A NEAT LINE.

(5) ALL PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT TO REMAIN IN PLACE. DAMAGED PAVEMENT SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10-6-06

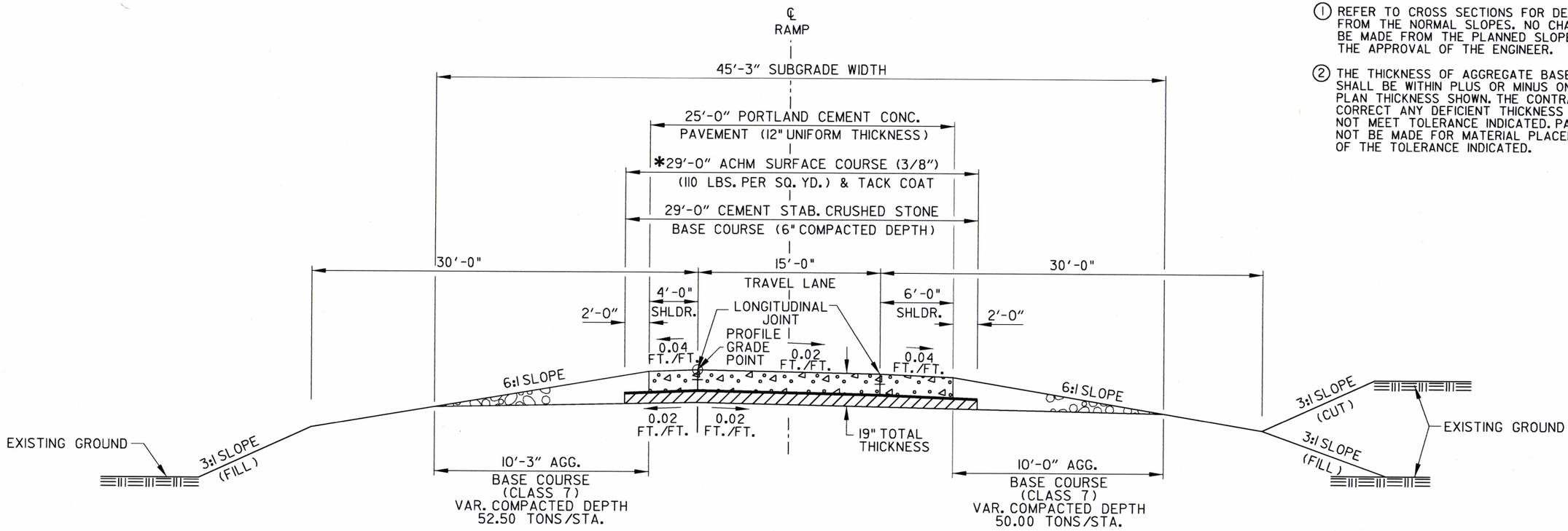
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	8	400

(2) TYPICAL SECTIONS OF IMPROVEMENT

NOTES:

(1) 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.

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



TYPICAL SECTION - TANGENT INTERCHANGE RAMP

(SHOWN IN DIRECTION OF TRAFFIC)

RAMP 1
STA. 704+69.46 TO STA. 705+11.36
STA. 713+98.07 TO STA. 718+37.99
STA. 722+00.00 TO STA. 722+52.60

RAMP 2
STA. 720+58.38 TO STA. 721+10.00
STA. 725+90.58 TO STA. 726+21.08

RAMP 3A
STA. 720+44.34 TO STA. 721+24.12
STA. 724+74.60 TO STA. 731+07.28
STA. 738+90.47 TO STA. 739+30.40

RAMP 3B
STA. 732+02.77 TO STA. 732+79.36

* DENSITY REQUIREMENTS WAIVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/12

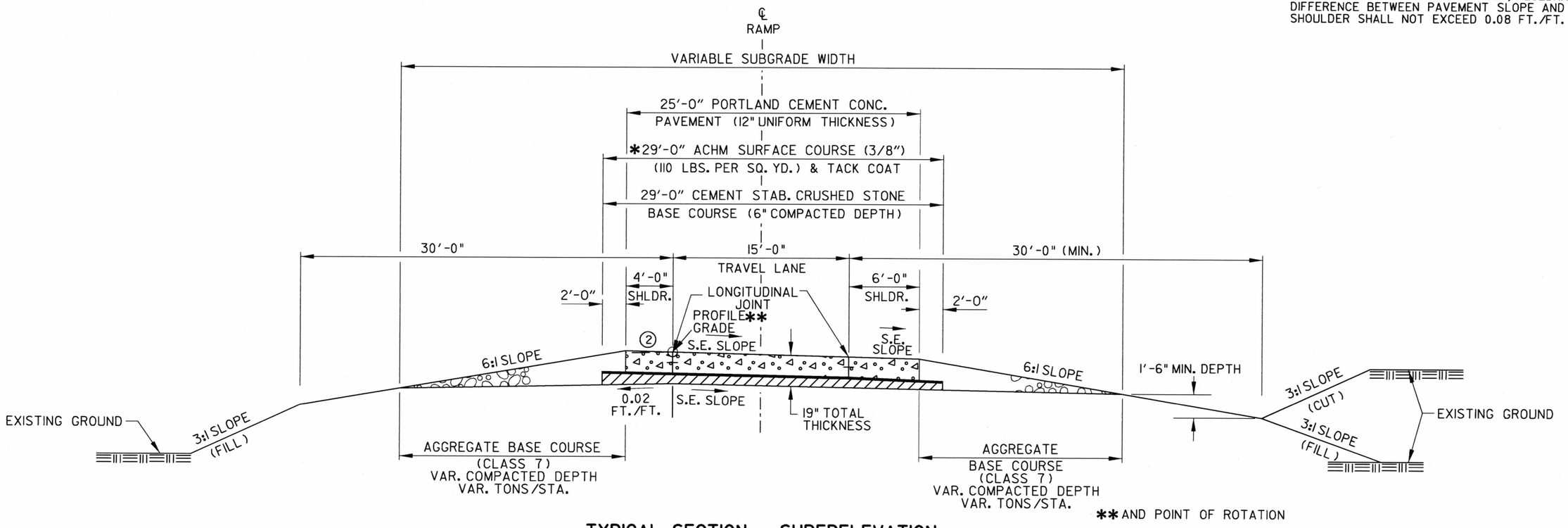
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		06II02	9	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			

NOTES:

(1) 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.

(2) ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATED TRANSITIONS (Ls), ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SHALL NOT EXCEED 0.08 FT./FT.



** AND POINT OF ROTATION

TYPICAL SECTION - SUPERELEVATION INTERCHANGE RAMP

(SHOWN IN DIRECTION OF TRAFFIC)

* DENSITY REQUIREMENTS WAIVED

RAMP 1
STA. 705+11.36 TO STA. 713+98.07
STA. 718+37.99 TO STA. 722+00.00

RAMP 2
STA. 721+10.00 TO STA. 725+90.58
STA. 726+21.08 TO STA. 736+31.90

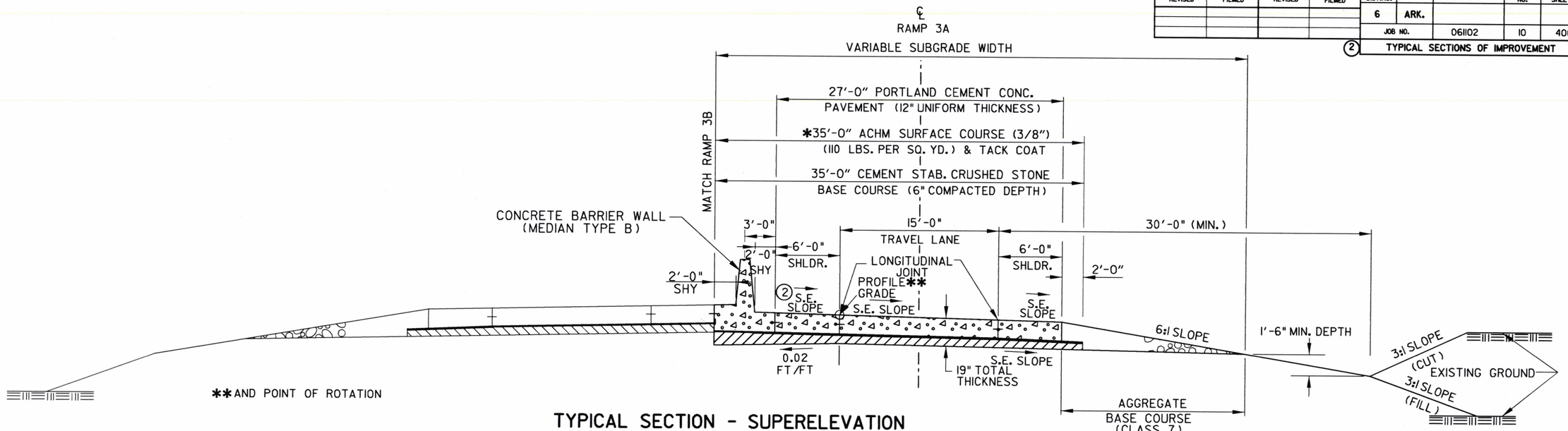
RAMP 3A
STA. 723+30.03 TO STA. 724+74.60
STA. 731+07.28 TO STA. 738+90.47

RAMP 3B
STA. 723+42.32 TO STA. 729+00.00

RAMP 4
STA. 714+15.11 TO STA. 722+49.03

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10.06.16

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.		061102	10	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			

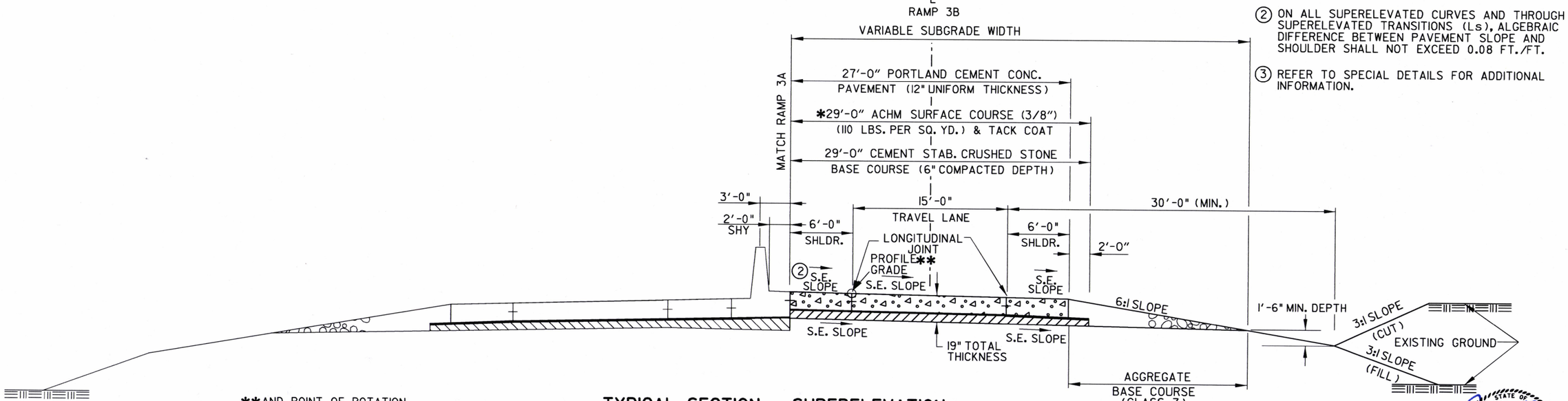


TYPICAL SECTION - SUPERELEVATION INTERCHANGE RAMP

(SHOWN IN DIRECTION OF TRAFFIC)

RAMP 3A

STA. 721+24.12 TO 723+30.03



TYPICAL SECTION - SUPERELEVATION INTERCHANGE RAMP

(SHOWN IN DIRECTION OF TRAFFIC)

RAMP 3B

STA. 729+00.00 TO STA. 732+02.77

NOTES:

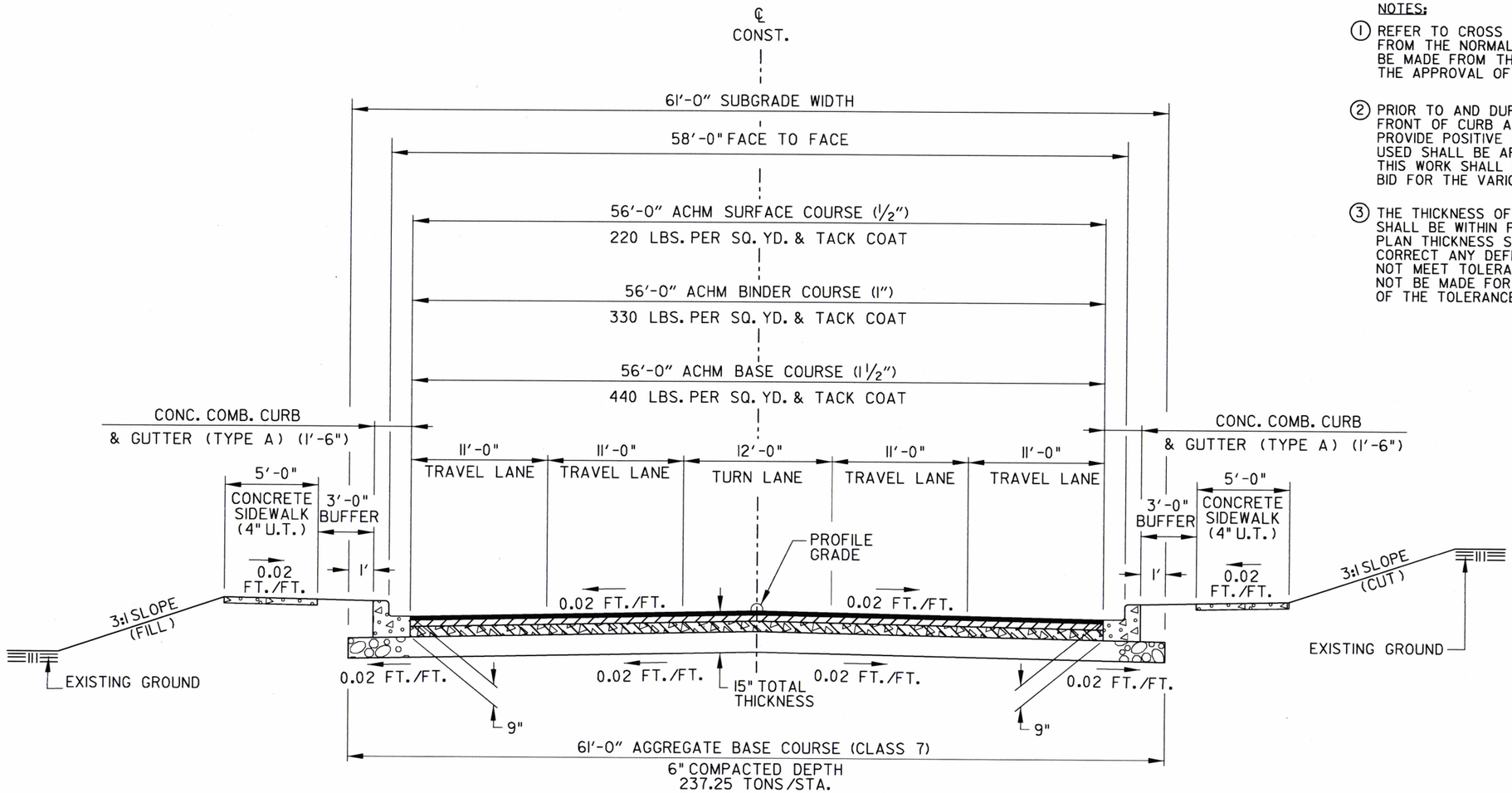
(1) REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

(2) ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATED TRANSITIONS (Ls), ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SHALL NOT EXCEED 0.08 FT./FT.

(3) REFER TO SPECIAL DETAILS FOR ADDITIONAL INFORMATION.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

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.		061102	11	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			



NOTES:

(1) 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.

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

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

TYPICAL SECTION - TANGENT
HWY. 38

STA. 100+12.00 TO STA. 104+21.59
STA. 107+39.38 TO STA. 125+11.08
STA. 131+26.88 TO STA. 132+23.90
STA. 138+16.60 TO STA. 139+06.90

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/10

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.		061102	12	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			

NOTES:

(1) 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.

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

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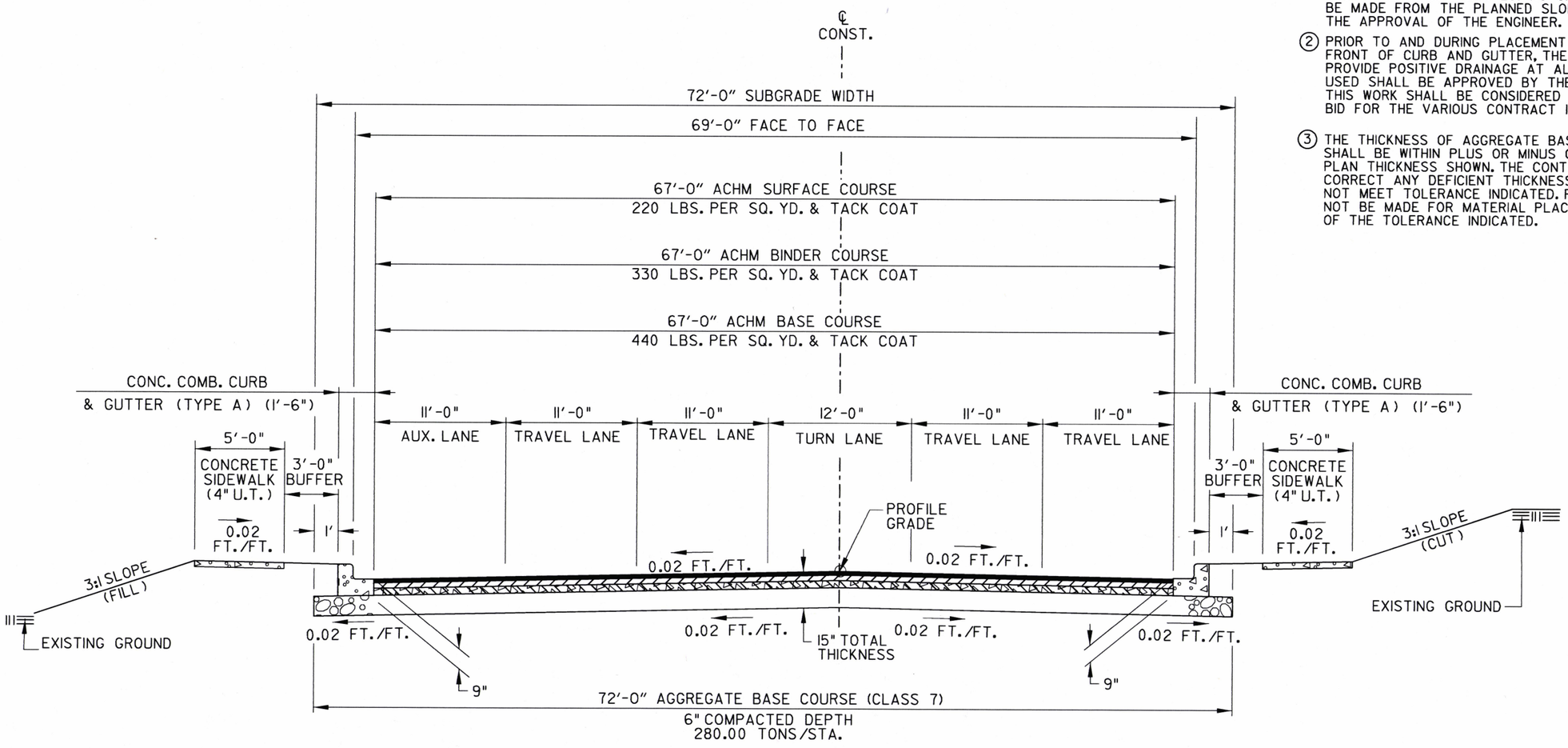

TYPICAL SECTION - TANGENT
HWY. 38

STA. 104+21.59 TO STA. 107+39.38

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
7/10/12

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/2/16				6	ARK.			
				JOB NO.		061102	13	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			

NOTES:

(1) 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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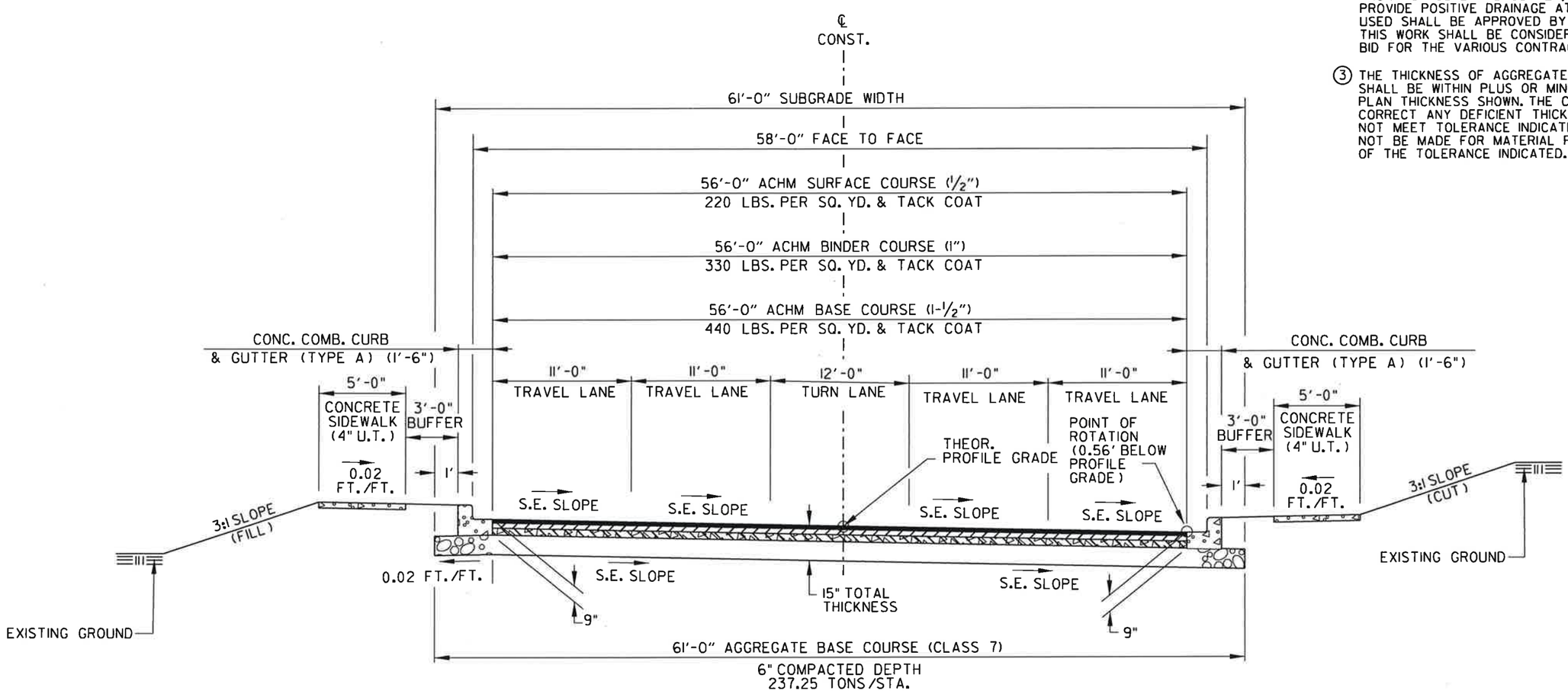


TYPICAL SECTION - SUPERELEVATION
HWY. 38

(CURVE TO THE RIGHT SHOWN, SIMILAR FOR CURVE TO THE LEFT)

STA. 125+11.08 TO STA. 131+26.88

STA. 132+23.90 TO STA. 138+16.60

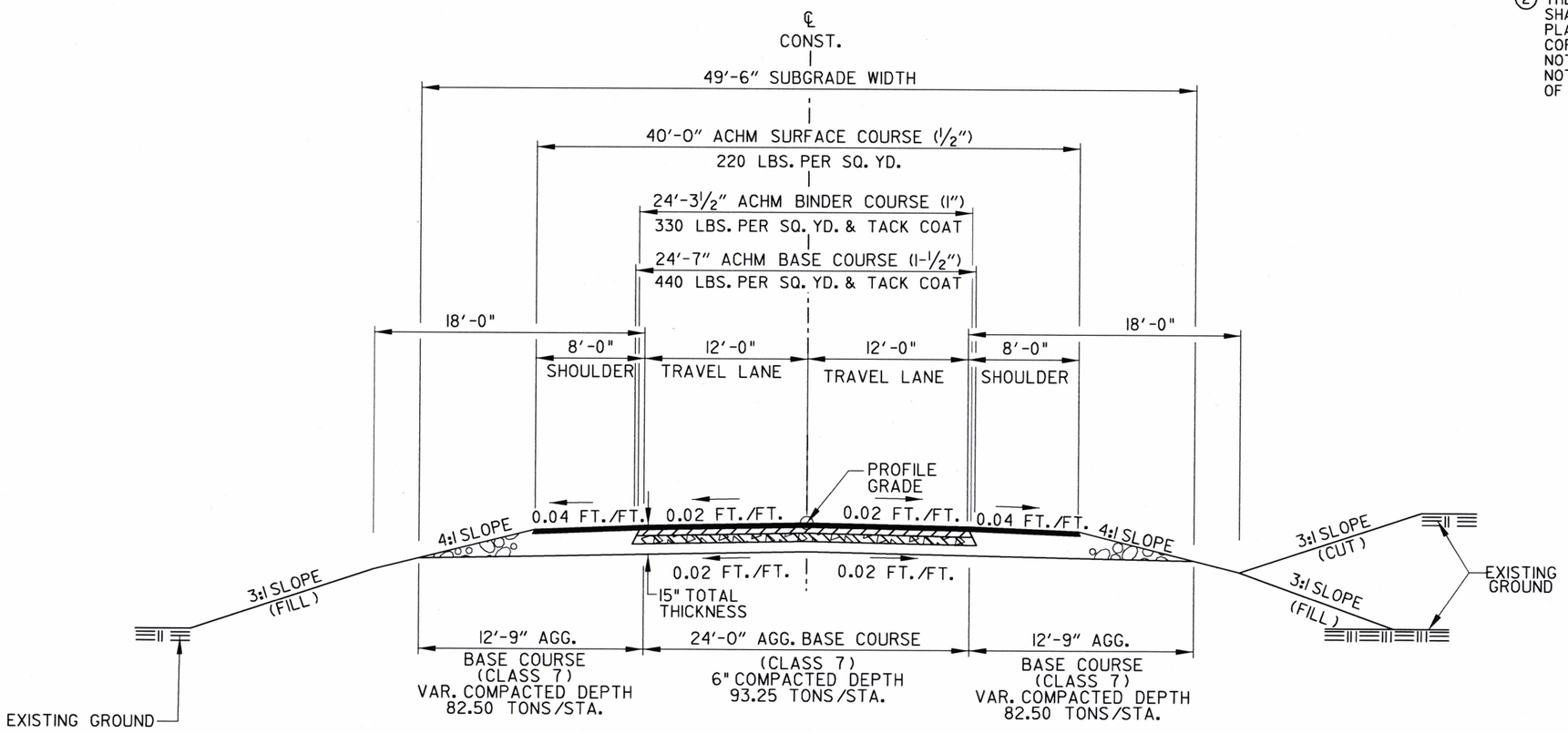
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/2/16

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.		061102	14	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			

NOTES:

(1) 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.

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



TYPICAL SECTION - TANGENT
WILLIE RAY DRIVE

STA. 492+00.00 TO STA. 497+02.75
STA. 508+06.49 TO STA. 510+07.34
STA. 519+38.06 TO STA. 522+50.00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 9808
JAMES L. BARR
10/10/16

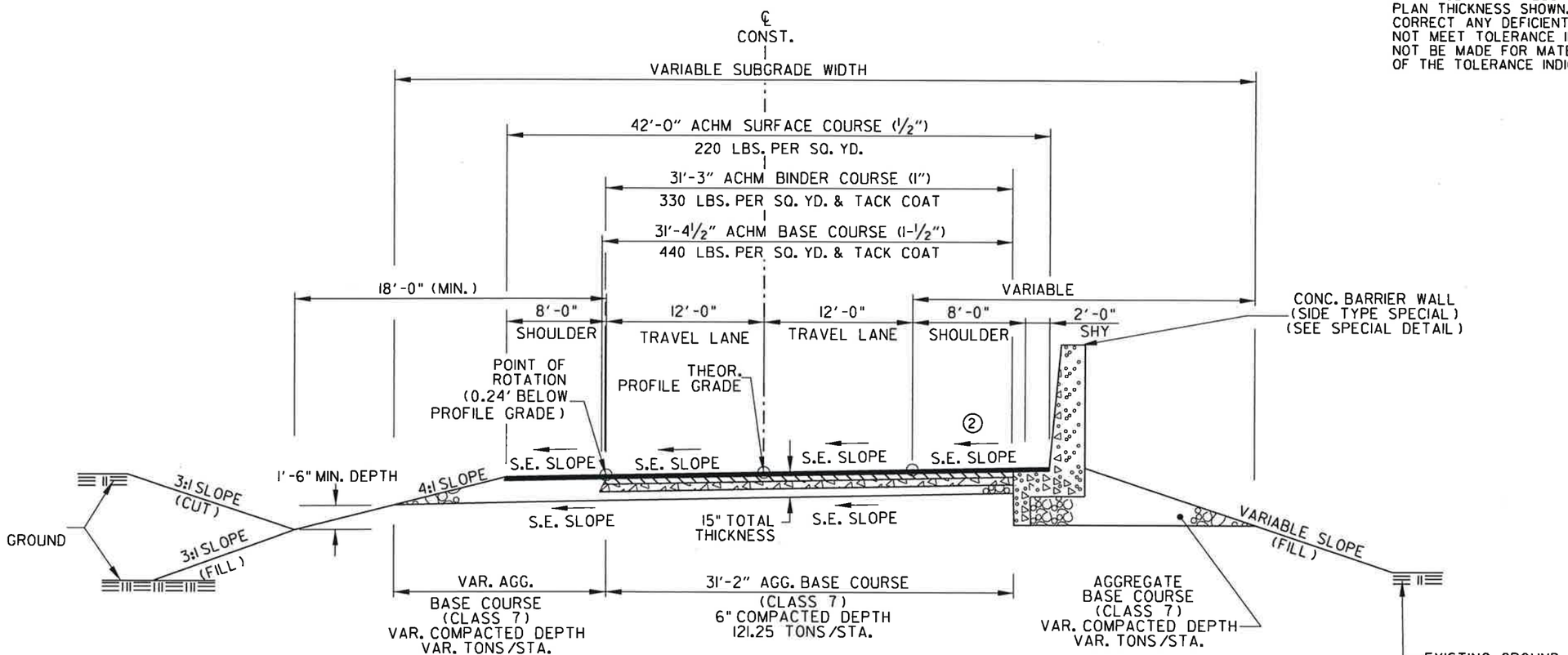
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/2/16				6	ARK.			
				JOB NO.		061102	15	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			

NOTES;

(1) 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.

(2) ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATED TRANSITIONS (Ls), ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SHALL NOT EXCEED 0.08 FT./FT.

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

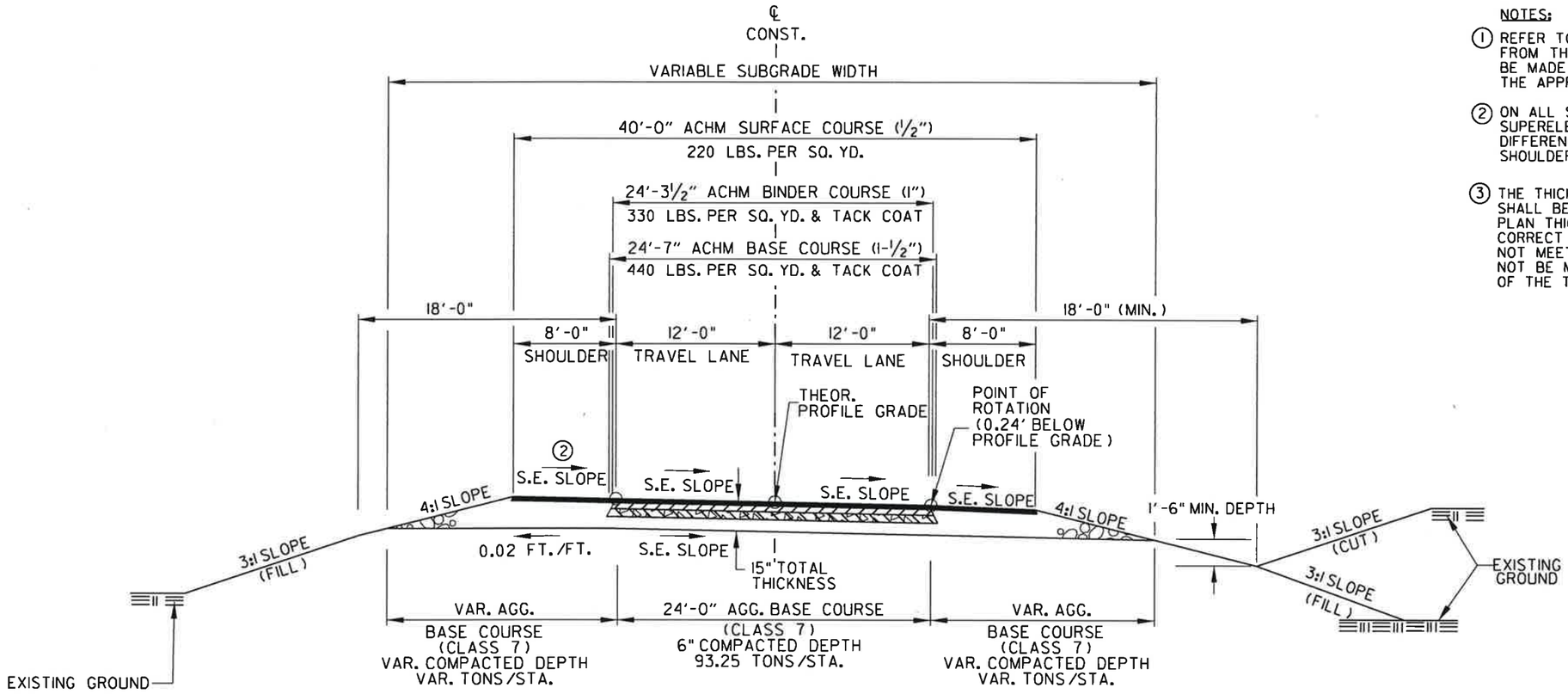


TYPICAL SECTION - SUPERELEVATION
WILLIE RAY DRIVE - BARRIER WALL RT. AND CURB AND GUTTER LT.
STA. 497+50.00 TO STA. 501+00.00

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 11/2/16

TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/2/16				6	ARK.			
				JOB NO.		061102	16	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			



TYPICAL SECTION - SUPERELEVATION
WILLIE RAY DRIVE

(CURVE TO THE RIGHT SHOWN, SIMILAR FOR CURVE TO THE LEFT)

STA. 497+02.75 TO STA. 497+50.00
STA. 501+00.00 TO STA. 508+06.49
STA. 510+07.34 TO STA. 510+83.26
STA. 519+31.55 TO STA. 519+38.06
STA. 522+50.00 TO STA. 527+96.09

NOTES:

(1) 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.

(2) ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATED TRANSITIONS (Ls), ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SHALL NOT EXCEED 0.08 FT./FT.

(3) THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF 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.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/2/16

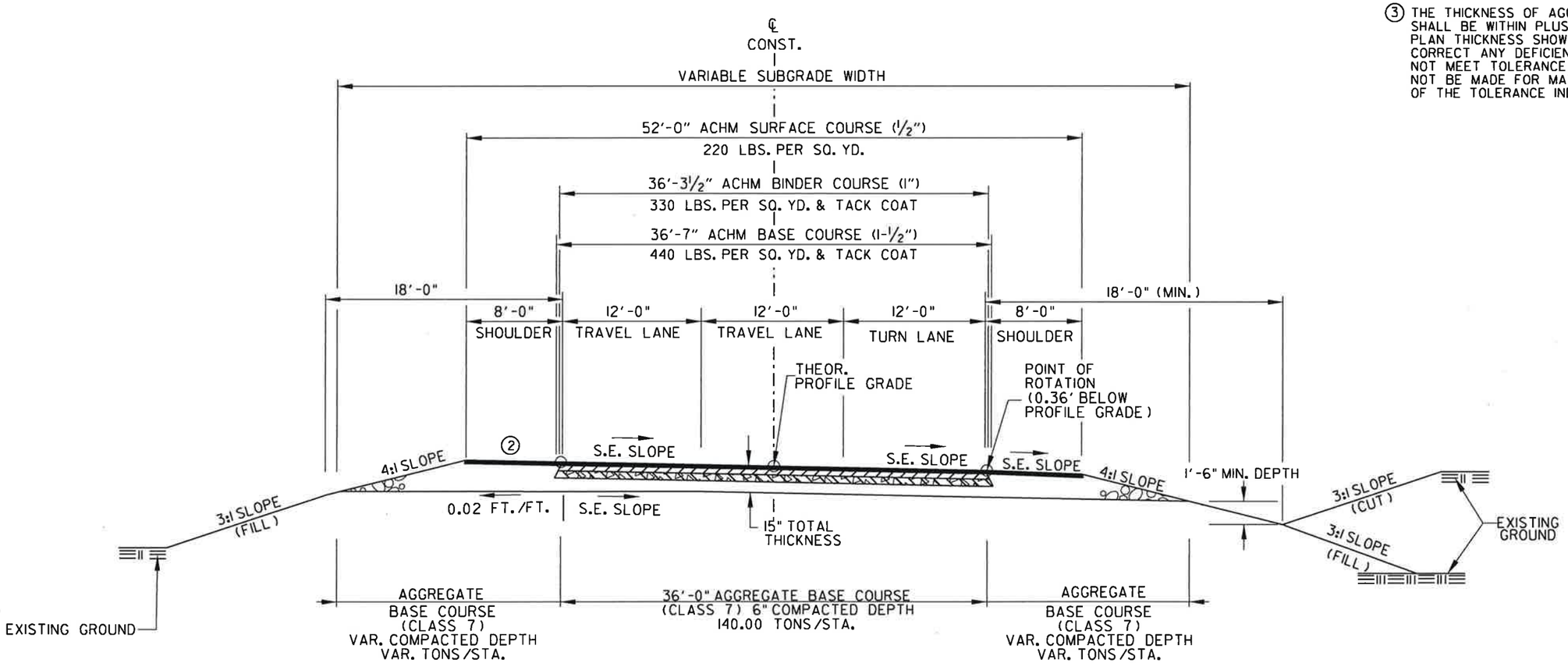
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/2/16				6	ARK.			
				JOB NO.		061102	17	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			

NOTES:

(1) 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.

(2) ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATED TRANSITIONS (Ls), ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SHALL NOT EXCEED 0.08 FT./FT.

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



TYPICAL SECTION - SUPERELEVATION
WILLIE RAY DRIVE - 3 LANES

(CURVE TO THE RIGHT SHOWN, SIMILAR FOR CURVE TO THE LEFT)

STA. 510+83.26 TO STA. 519+31.55

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 11/2/16

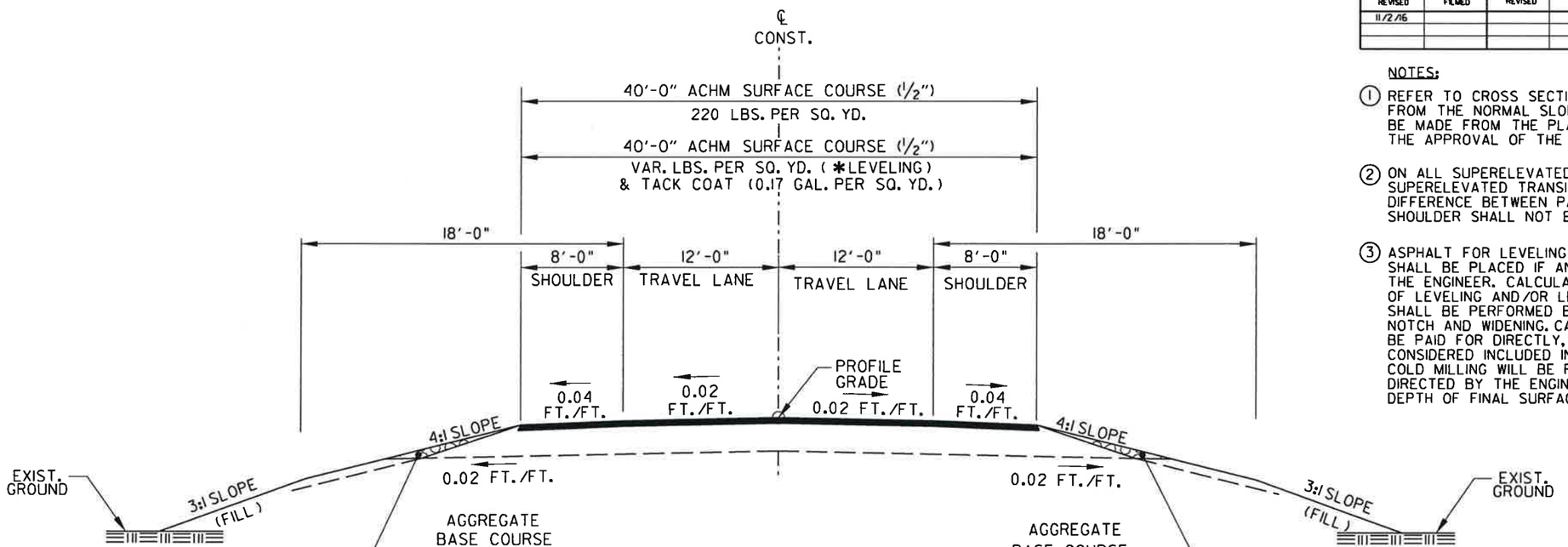
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/2/16				6	ARK.			
				JOB NO.		06I102	18	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			

NOTES:

(1) 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.

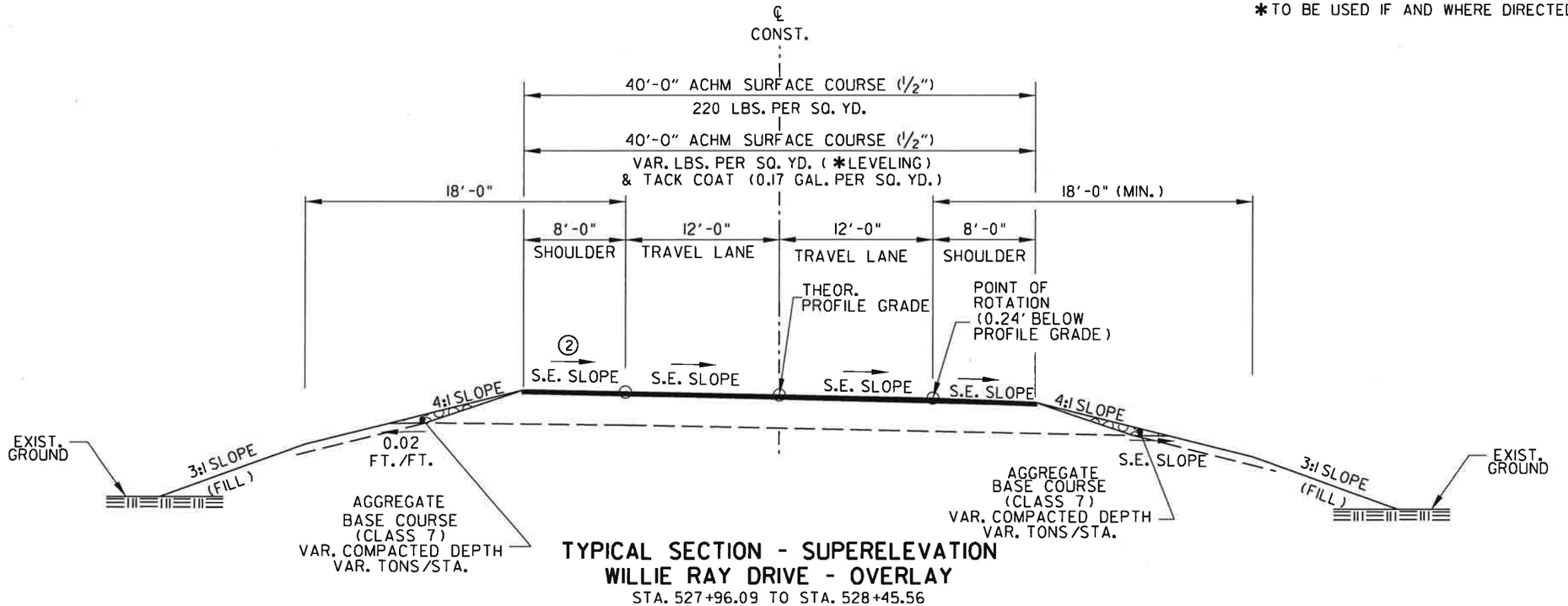
(2) ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATED TRANSITIONS (Ls), ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SHALL NOT EXCEED 0.08 FT./FT.

(3) ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS. COLD MILLING WILL BE REQUIRED IF AND WHERE DIRECTED BY THE ENGINEER TO ACHIEVE REQUIRED DEPTH OF FINAL SURFACE COURSE.



TYPICAL SECTION - TANGENT
WILLIE RAY DRIVE - OVERLAY
STA. 528+45.56 TO STA. 531+00.00

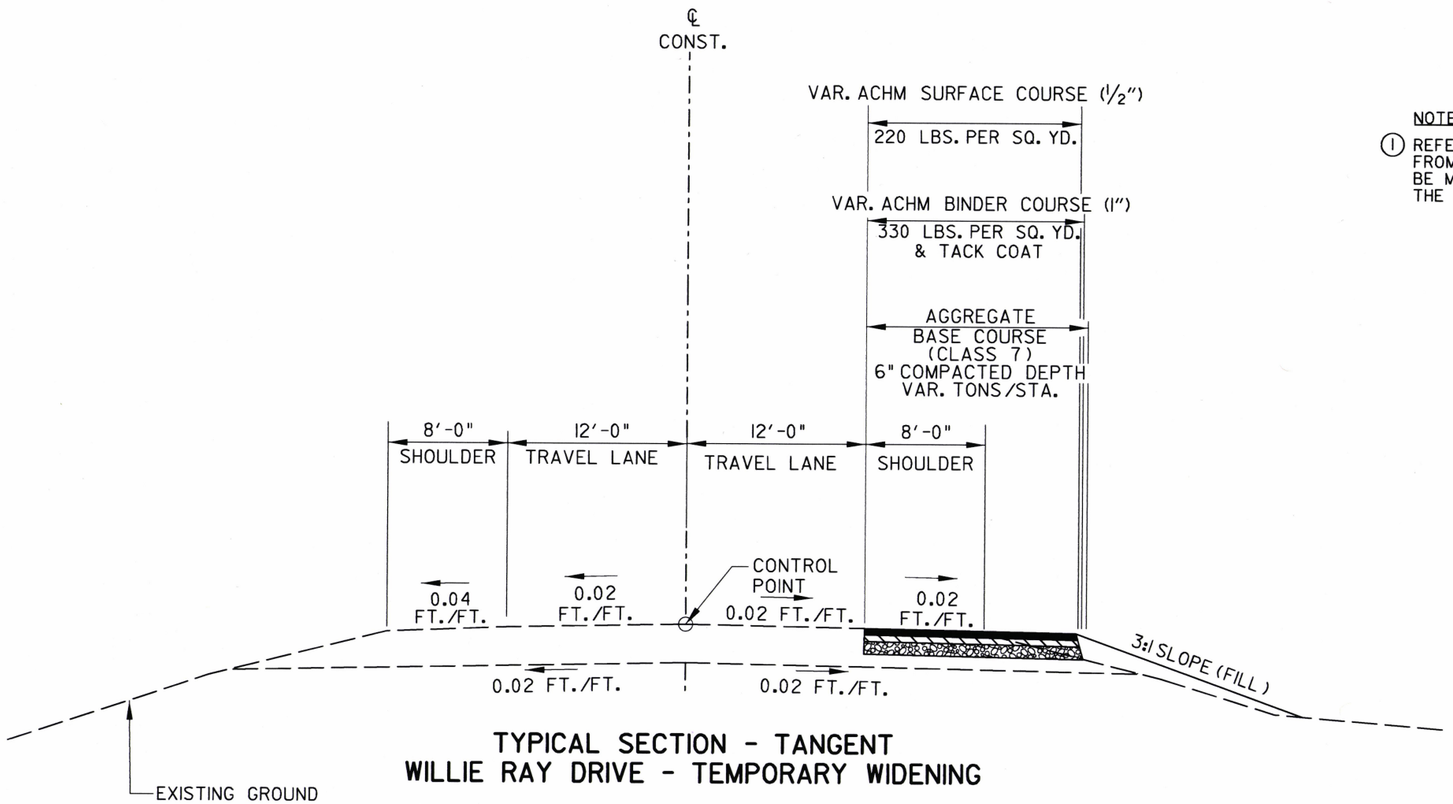
*TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER



TYPICAL SECTION - SUPERELEVATION
WILLIE RAY DRIVE - OVERLAY
STA. 527+96.09 TO STA. 528+45.56

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/2/16

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.		061102	19	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			



TYPICAL SECTION - TANGENT
WILLIE RAY DRIVE - TEMPORARY WIDENING

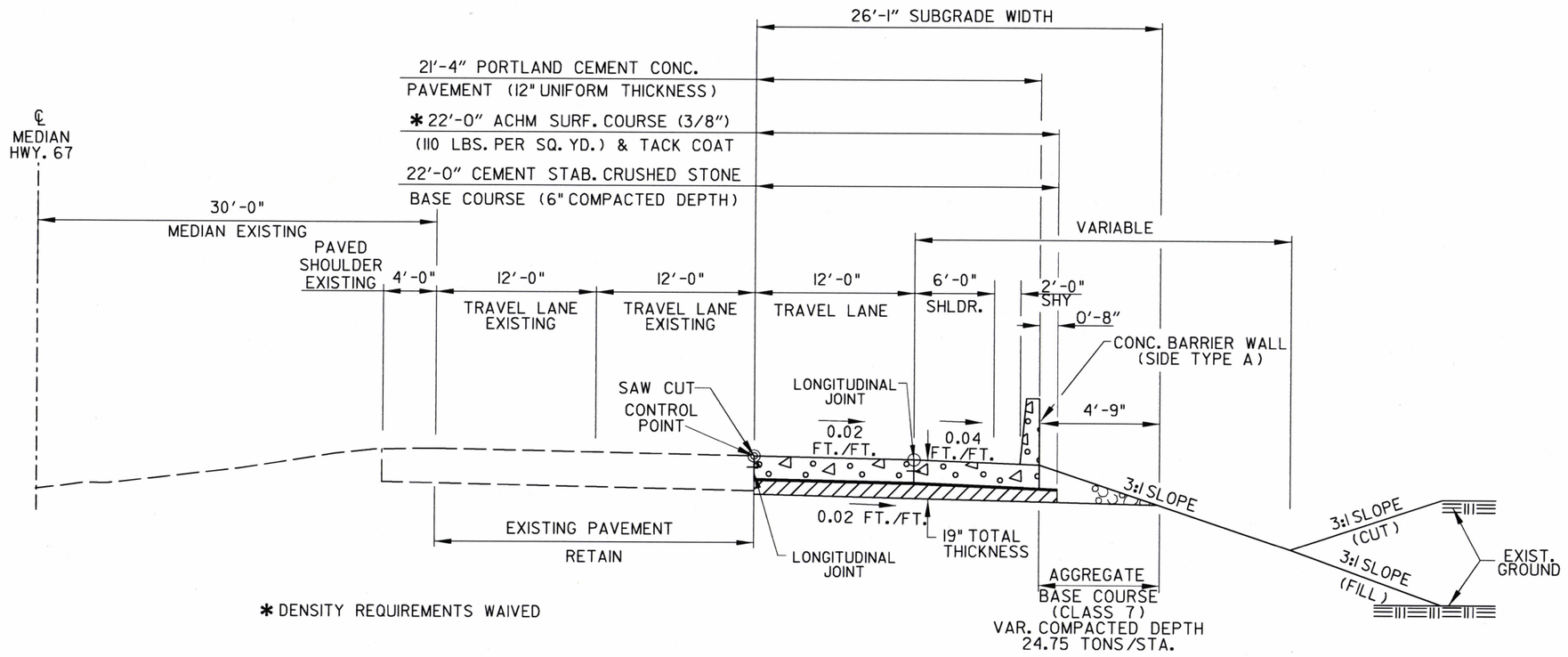
STA. 528+45.56 TO STA. 531+00.00

NOTES:

(1) 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.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10.6.16

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.		061102	20	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			



* DENSITY REQUIREMENTS WAIVED

TYPICAL SECTION - TANGENT
HWY. 67 ACCEL. LANE - W/SIDE BARRIER

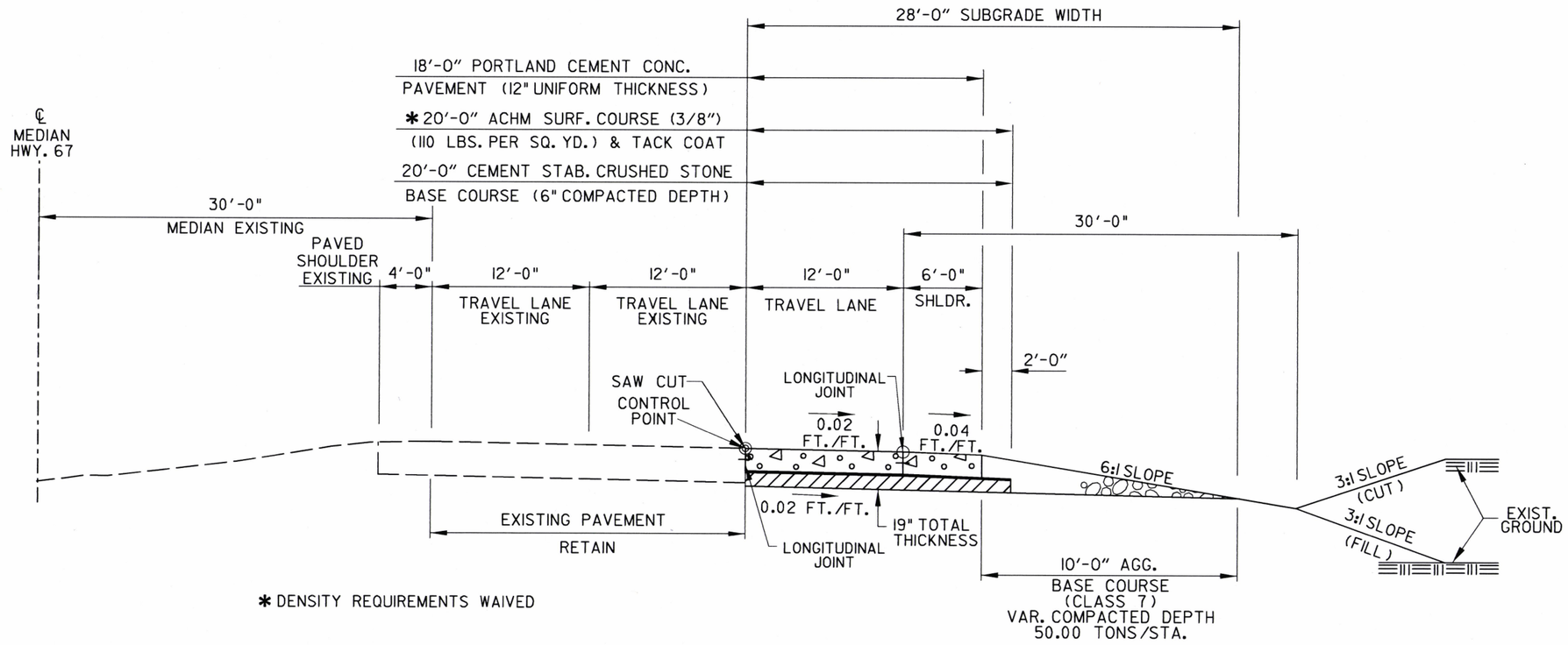
(SHOWN IN DIRECTION OF TRAFFIC)
STA. 694+73.12 TO STA. 701+42.87

NOTES:

1. 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.
2. REFER TO SPECIAL DETAILS FOR ADDITIONAL INFORMATION.
3. ANY EXISTING PAVEMENT TO BE REMOVED SHALL BE SEPARATED FROM THE REMAINING PAVEMENT BY SAWING ALONG A NEAT LINE.
4. ALL PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT TO REMAIN IN PLACE. DAMAGED PAVEMENT SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
5. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF 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.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

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.		061102	21	400
				(2)	TYPICAL SECTIONS OF IMPROVEMENT			



*DENSITY REQUIREMENTS WAIVED

TYPICAL SECTION - TANGENT
HWY. 67 ACCEL. LANE

(SHOWN IN DIRECTION OF TRAFFIC)
STA. 736+31.95 TO STA. 743+31.95

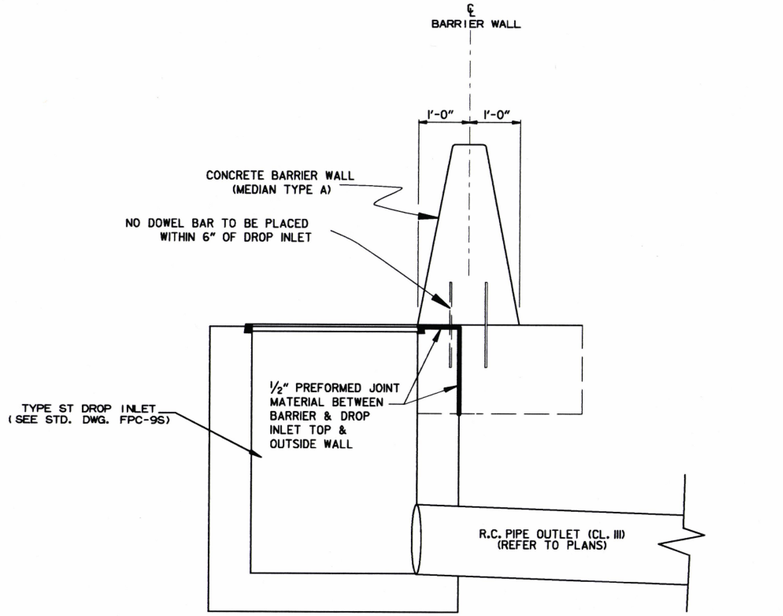
NOTES:

1. 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.
2. ANY EXISTING PAVEMENT TO BE REMOVED SHALL BE SEPARATED FROM THE REMAINING PAVEMENT BY SAWING ALONG A NEAT LINE.
3. ALL PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT TO REMAIN IN PLACE. DAMAGED PAVEMENT SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
4. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF 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.

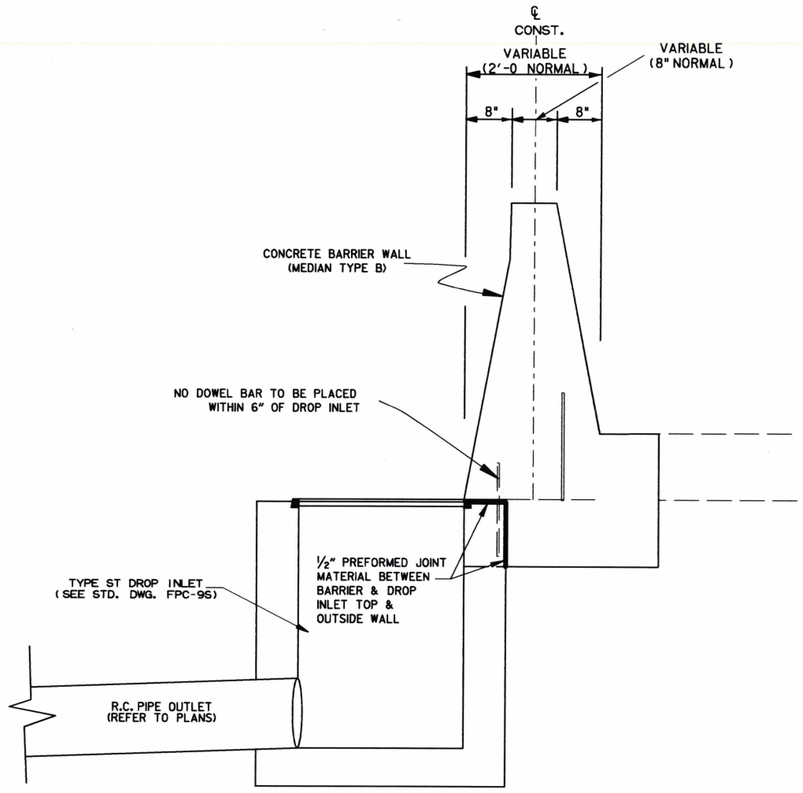
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10.10.16

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.		061102	22	400

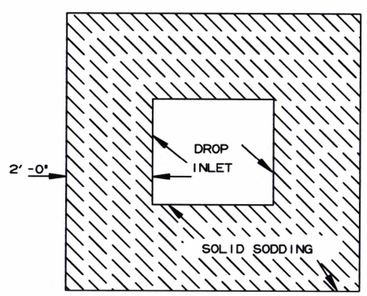
(2) SPECIAL DETAILS



ADJACENT TO CONCRETE BARRIER WALL (MEDIAN TYPE A)
TRANSVERSE SECTION OF TYPE ST DROP INLET



ADJACENT TO CONCRETE BARRIER WALL (MEDIAN TYPE B)
TRANSVERSE SECTION OF TYPE ST DROP INLET

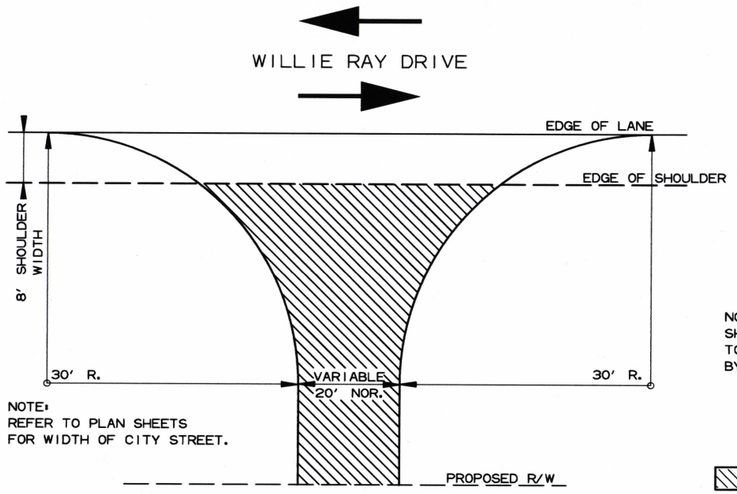


DETAIL FOR SOLID SODDING
AROUND DROP INLETS

STATE OF ARKANSAS
REGISTERED
PROFESSIONAL
ENGINEER
No. 9808
JAMES L. BARR
10/10/16

SPECIAL DETAILS

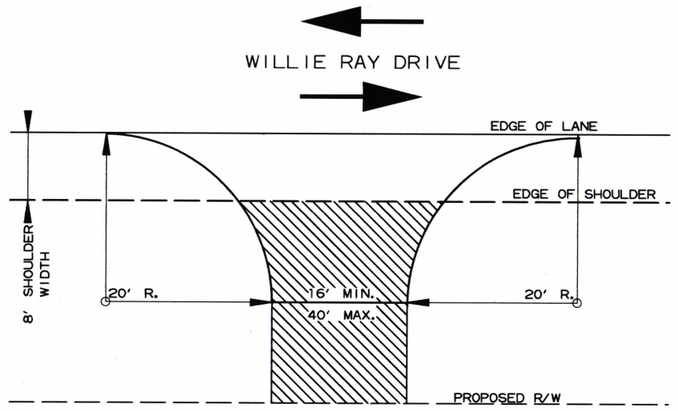
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	23	400
				(2)	SPECIAL DETAILS			



DETAIL FOR CITY STREET TURNOUTS
OPEN SHOULDER SECTION
(WILLIE RAY DRIVE & CAROL COVE)

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

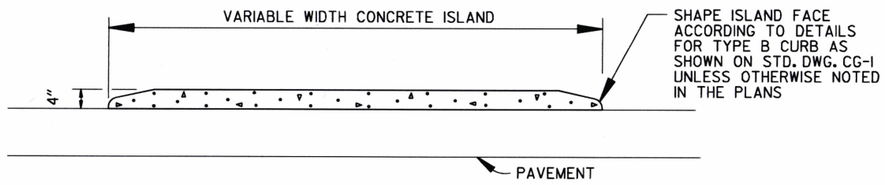
ACHM SURFACE COURSE (1/2")
(220 LBS. PER SQ. YD.) AND
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH IF ASPHALT OR
GRAVEL DRIVE EXISTING, OR 6" CONCRETE
IF CONCRETE DRIVE EXISTING.



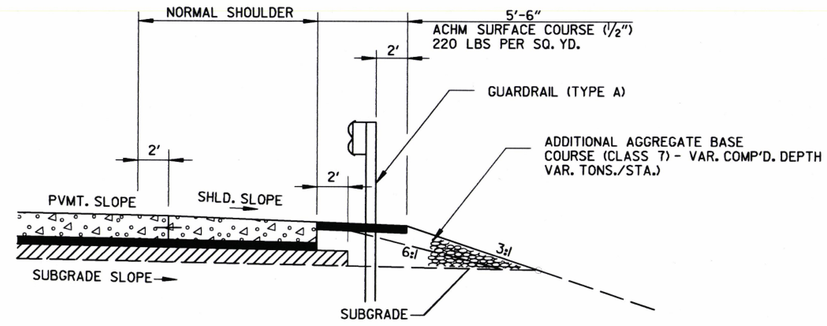
DETAIL FOR DRIVEWAY TURNOUTS
OPEN SHOULDER SECTION
(ALONG WILLIE RAY DRIVE)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10.10.16

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.		061102	24	400
				(2)	SPECIAL DETAILS			



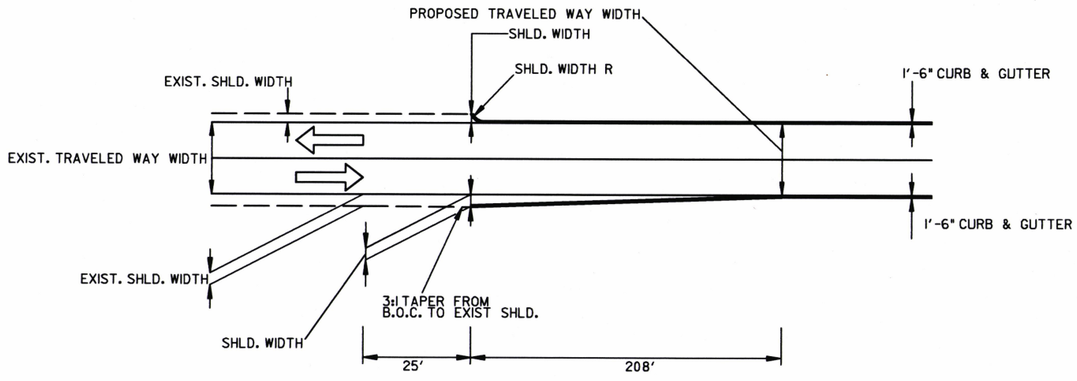
DETAILS OF ISLAND ON PAVEMENT



DETAILS OF WIDENING FOR GUARDRAIL

NOTE:

REFER TO STD. DWG. GR-8, GR-8A, GR-9, GR-9A, GR-10, AND GR-10A FOR ADDITIONAL INFORMATION

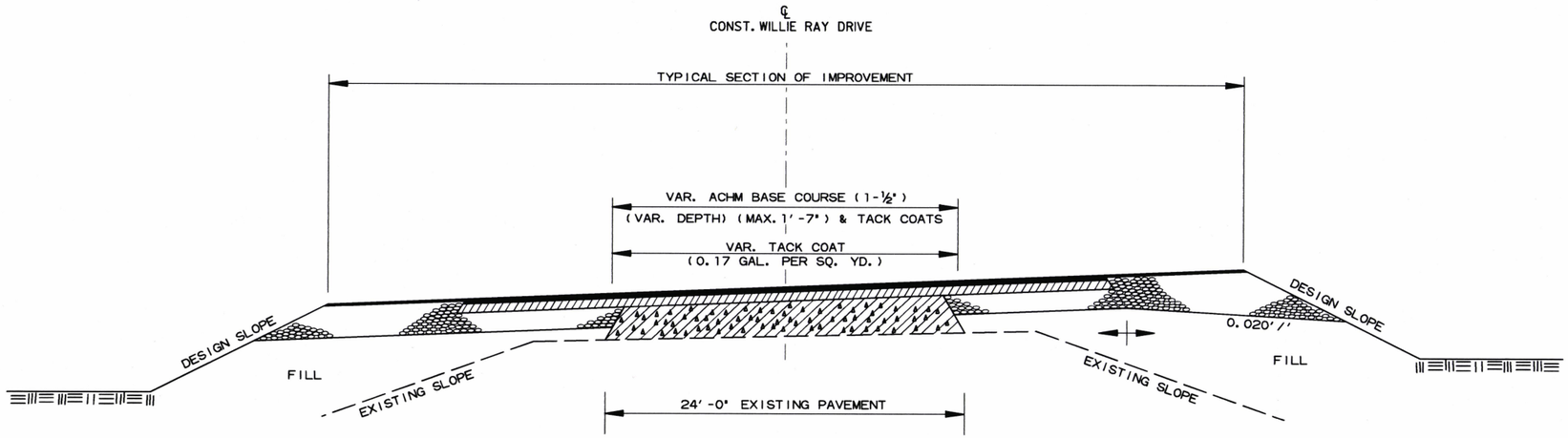


TRANSITION FROM OPEN SHOULDER
TO CURB & GUTTER SECTION
HWY. 38 & HWY. 367

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
2/10/12

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.		061102	25	400
				(2)	SPECIAL DETAILS			



7" AGGREGATE BASE COURSE (CLASS 7)
TO BE REPLACED WITH ACHM BASE COURSE (1-½")

METHOD OF RAISING GRADE

NOTES:

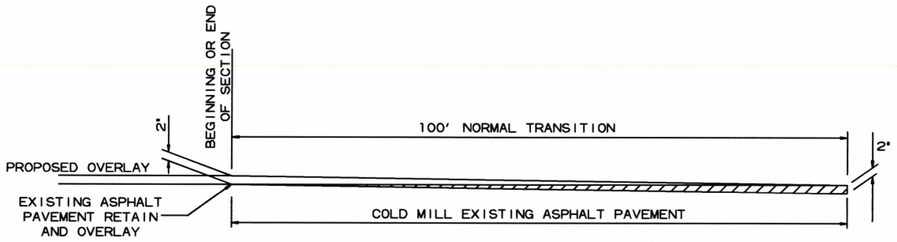
(1) THIS DETAIL TO BE USED ONLY WHERE DIRECTED BY THE ENGINEER.

(2) QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.

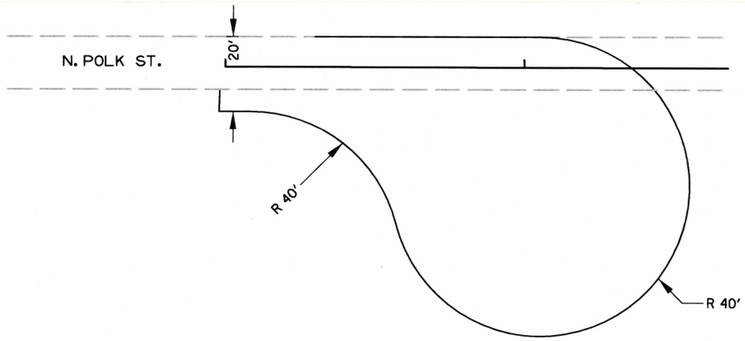
(3) IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09, OF THE STANDARD SPECIFICATIONS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10.06

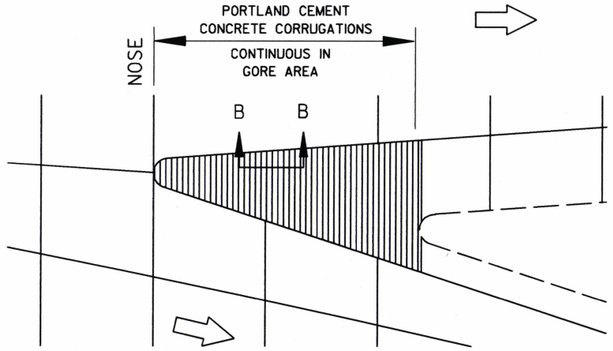
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	26	400
				(2)	SPECIAL DETAILS			



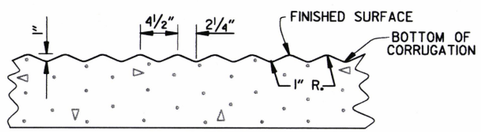
DETAIL FOR TRANSITIONS



CUL-DE-SAC DETAIL
N. POLK ST.



LAYOUT OF SHOULDER CORRUGATIONS
IN EXIT GORE AREAS

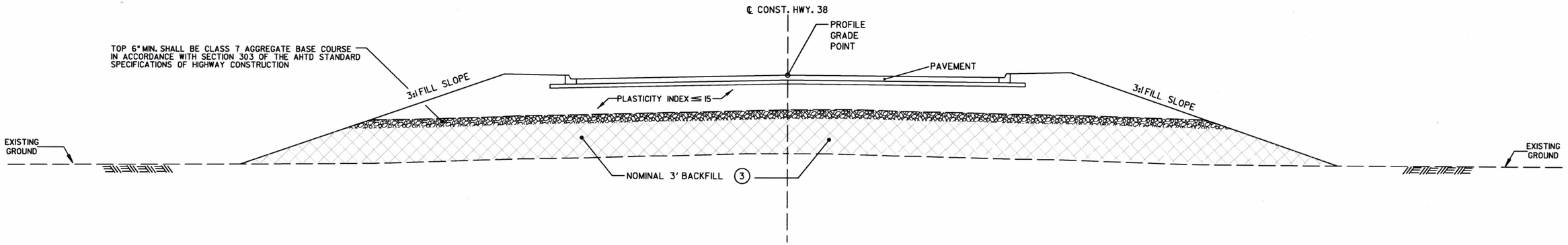


SECTION B-B

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/14

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.		061102	27	400
				(2)	SPECIAL DETAILS			

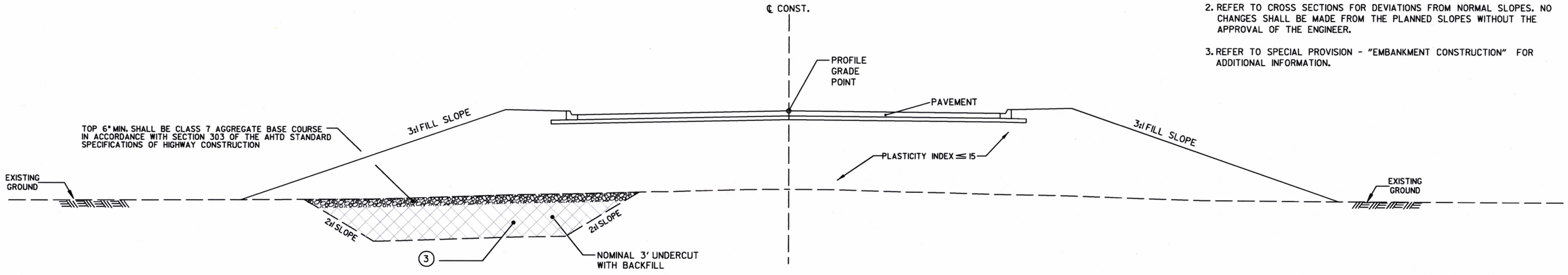


TYPICAL EMBANKMENT SECTION
WITH BACKFILL
HWY. 38
STA. 132+00 TO STA. 138+00

NOTE: AREA MAY NEED TO BE INCREASED DEPENDING UPON SEASONAL CONDITIONS IF AND WHERE DIRECTED BY THE ENGINEER.

NOTES:

1. SOIL CHARACTERISTICS SHOWN IN SOIL BORINGS AND PRESENTED IN THESE PLANS AND CROSS SECTIONS ARE REPRESENTATIVE AT THE LOCATIONS OF THE VARIOUS SAMPLES AND FROM SURFACE INDICATIONS ARE TYPICAL FOR THE LIMITS SHOWN. THE STATE WILL NOT BE RESPONSIBLE FOR VARIATIONS IN THE SOIL CHARACTERISTICS.
2. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
3. REFER TO SPECIAL PROVISION - "EMBANKMENT CONSTRUCTION" FOR ADDITIONAL INFORMATION.



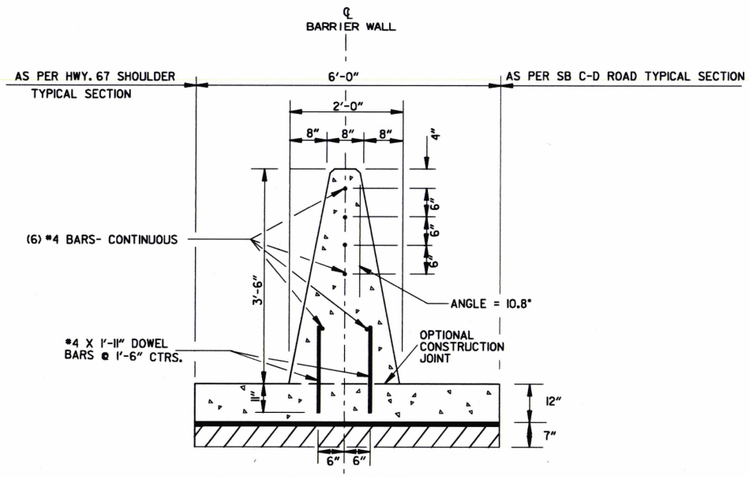
TYPICAL EMBANKMENT SECTION
WITH UNDERCUT AND BACKFILL
IF AND WHERE DIRECTED BY THE ENGINEER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

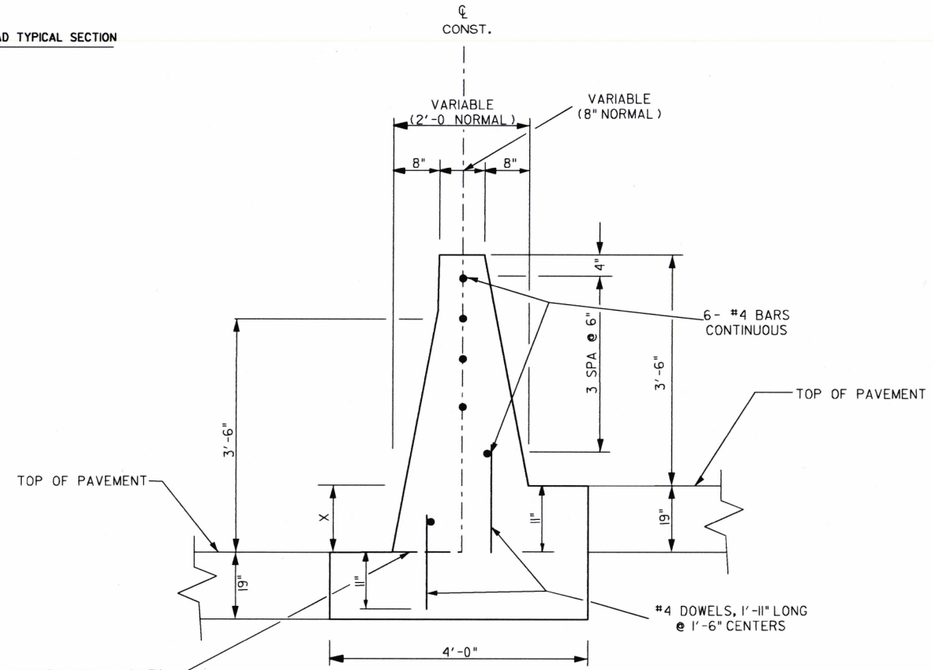
SPECIAL DETAILS

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.		061102	28	400

(2) SPECIAL DETAILS



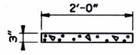
CONCRETE BARRIER WALL
(MEDIAN TYPE A)
(SECTION B-B)
(SHOWN IN THE DIRECTION OF TRAFFIC)



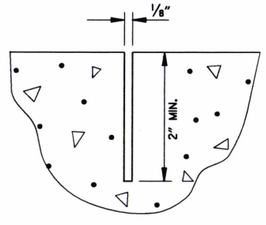
CONCRETE BARRIER WALL
(MEDIAN TYPE B)
X = 0'-0" TO 1'-0" MAX

PLAN VIEW
CONCRETE BARRIER WALL (MEDIAN TYPE A) TRANSITION

NOTE: TRANSITION TO BE CONSTRUCTED AT EXIT END OF BARRIER WALL.

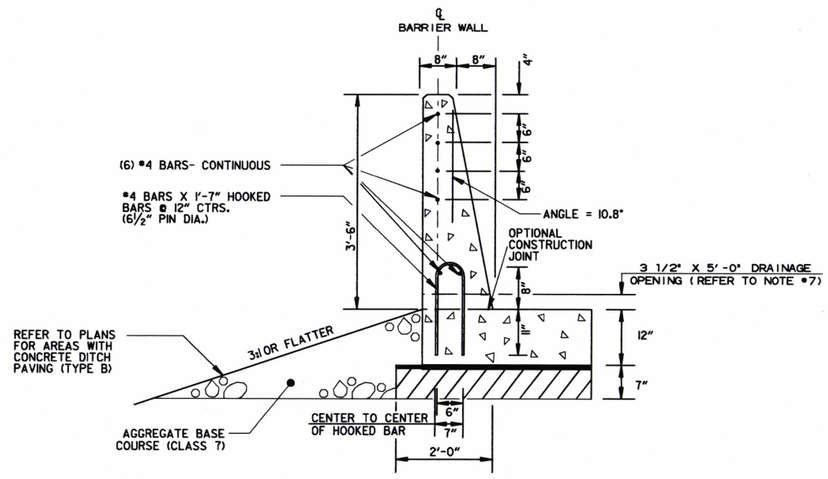


CONCRETE BARRIER WALL
(MEDIAN TYPE A)
(SECTION A-A)



CONTRACTION JOINT DETAIL

NOTES FOR CONCRETE BARRIER WALL:
1. ALL EXPOSED EDGES SHALL HAVE ¾" CHAMFERS.
2. CONTRACTION JOINTS SHALL BE CONSTRUCTED AT 15'-0" MAXIMUM SPACING IN TOP AND SIDES OF MEDIAN BARRIER AND SHALL BE FORMED IN FRESH CONCRETE.
3. CONTRACTION JOINTS ARE NOT PERMITTED AT THE DOWEL BAR LOCATIONS.
4. ALL REINFORCING BARS SHALL HAVE 2" MINIMUM COVER.
5. DOWEL BARS WILL NOT BE REQUIRED IF BARRIER AND BASE ARE CAST AS A COMPLETE UNIT.
6. MEDIAN BARRIER TRANSITIONS WILL BE MEASURED AND PAID FOR AS "CONCRETE BARRIER WALL (MEDIAN TYPE A)".
7. DRAINAGE OPENINGS TO BE CONSTRUCTED IN CONCRETE BARRIER WALL (SIDE TYPE A) AT EVERY 100' O.C. AND AT SAG LOCATIONS UNLESS OTHERWISE SPECIFIED ON THE PLANS. DOWEL BARS SHALL NOT BE PLACED WITHIN 3" OF DRAINAGE OPENINGS.
8. SPACING BETWEEN EXPANSION JOINTS SHALL NOT EXCEED 400 FT. EXPANSION JOINTS SHALL BE FORMED USING 1" PREFORMED JOINT FILLER. CONTINUOUS REINFORCEMENT SHALL BE CUT 2" CLEAR OF EXPANSION JOINTS.



CONCRETE BARRIER WALL
(SIDE TYPE A)

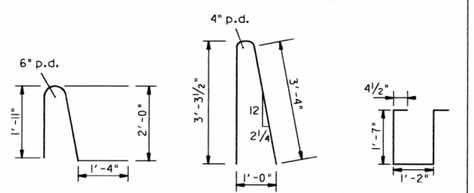
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/01/16

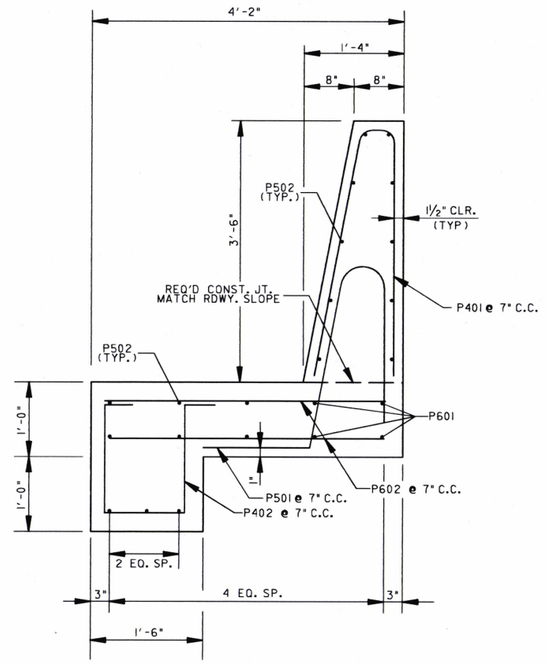
SPECIAL DETAILS

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.		06I102	29	400
				(2)	SPECIAL DETAILS			

MARK	P.D.
P401	2"
P402	STR.
P501	3¾"
P502	STR.
P601	STR.
P602	STR.

BENDING DIAGRAMS
(DIMENSIONS ARE OUT TO OUT OF BARS)





CONCRETE BARRIER WALL
(SIDE TYPE SPECIAL) (ASPHALT)
REBAR DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/12

SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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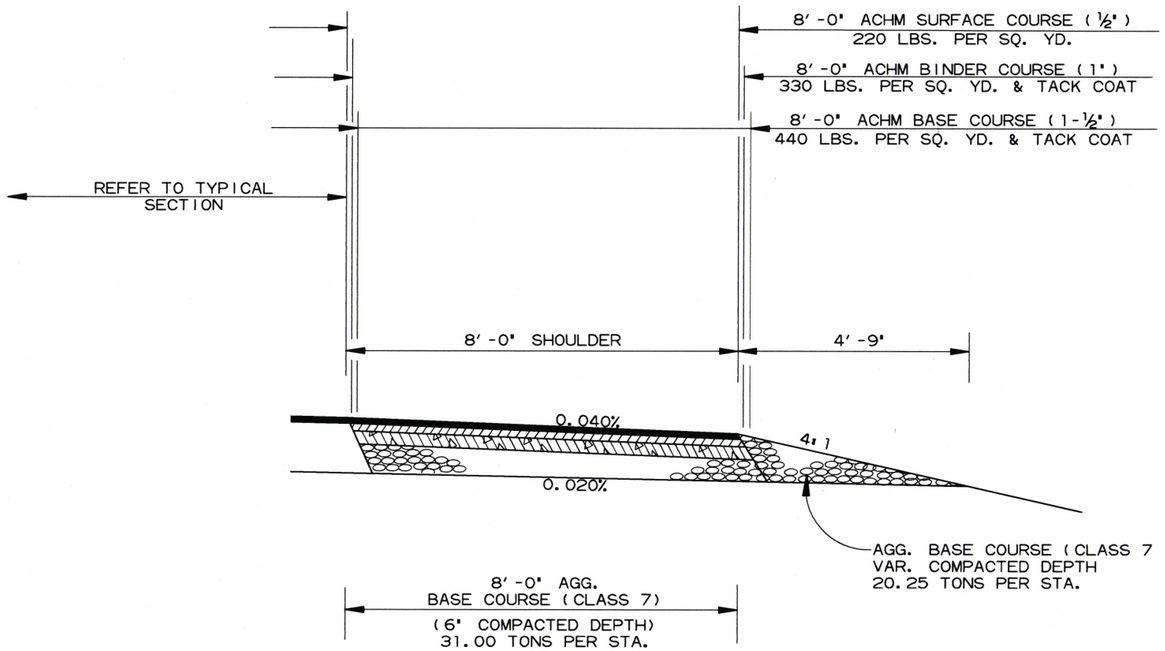
				JOB NO.		061102	30	400
				(2)	SPECIAL DETAILS			



FULL DEPTH SHOULDER
FOR MAINTENANCE OF TRAFFIC

WILLIE RAY DR. - STA. 523+20.00 LT. TO 529+30.00 LT.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/06

SPECIAL DETAILS

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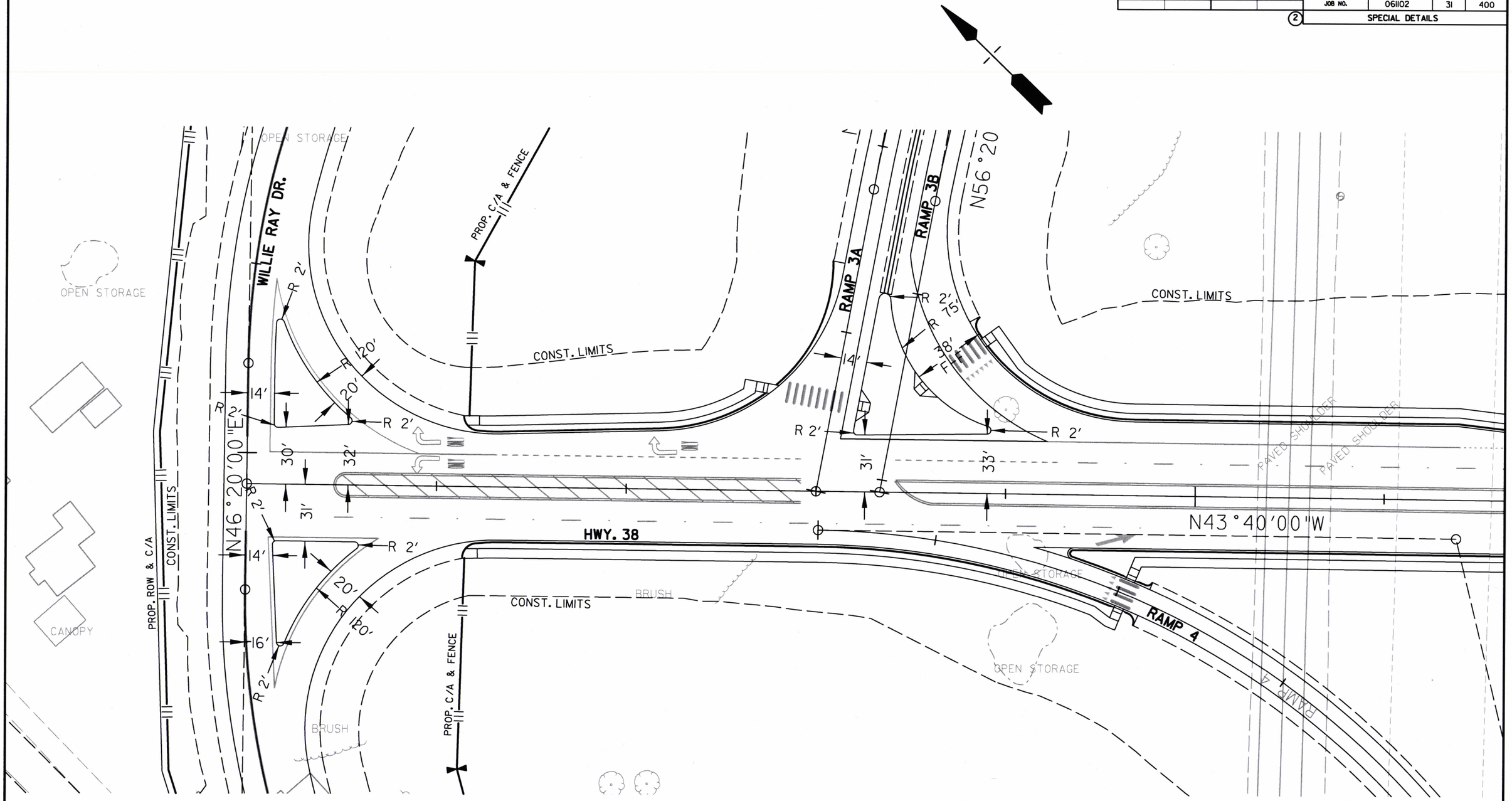

CONCRETE ISLAND DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/12

SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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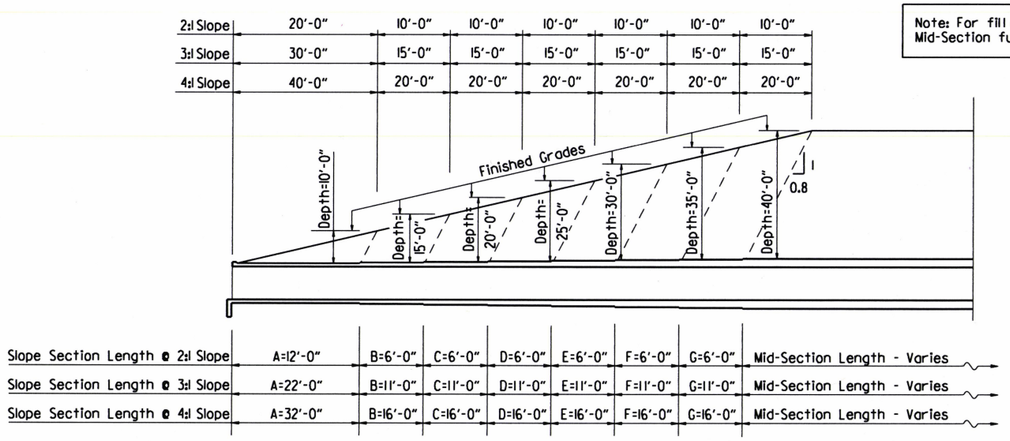
				JOB NO.		061102	32	400

(1) SPECIAL DETAILS

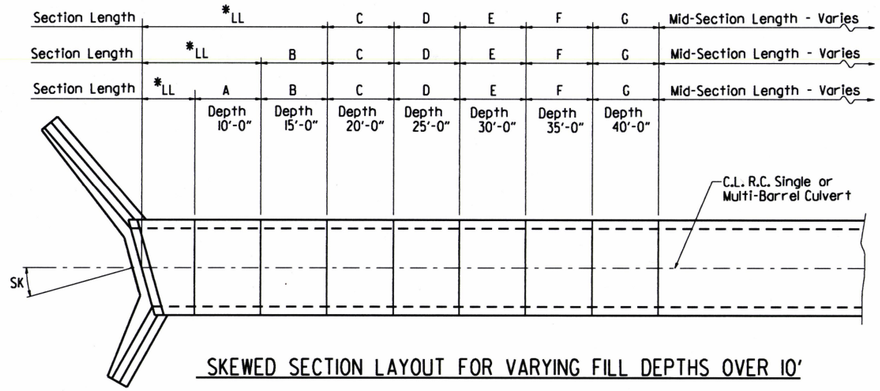


Note: For fill depths 10' and under, use Mid-Section full length of box culvert.

LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

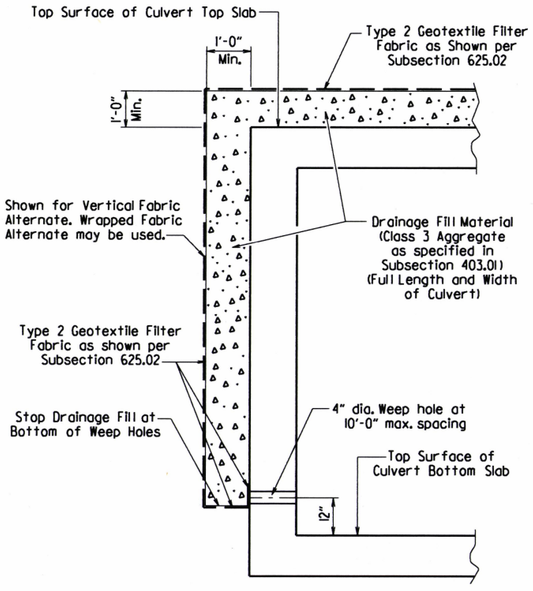
Lengths for Non-Skewed Boxes

*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.



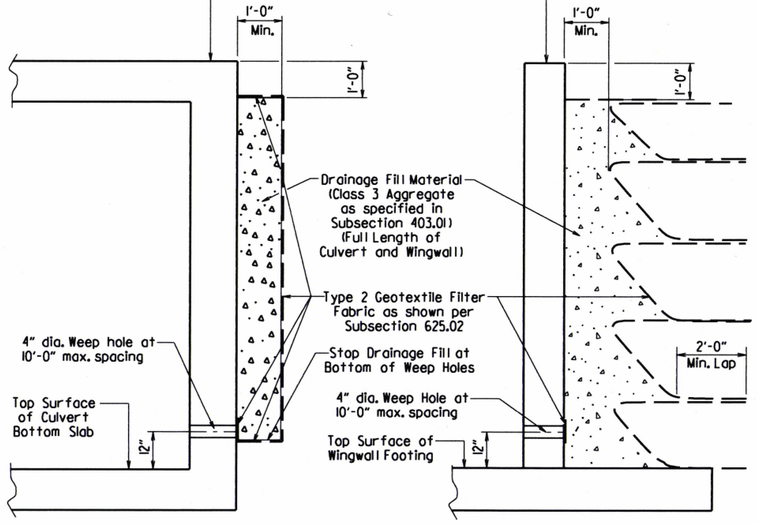
SKEWED SECTION LAYOUT FOR VARYING FILL DEPTHS OVER 10'

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10/10/16



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

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 S with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have ¾" 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 S 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 S 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.

SHEET 1 OF 4

GENERAL DETAILS OF R.C. BOX CULVERT

GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE

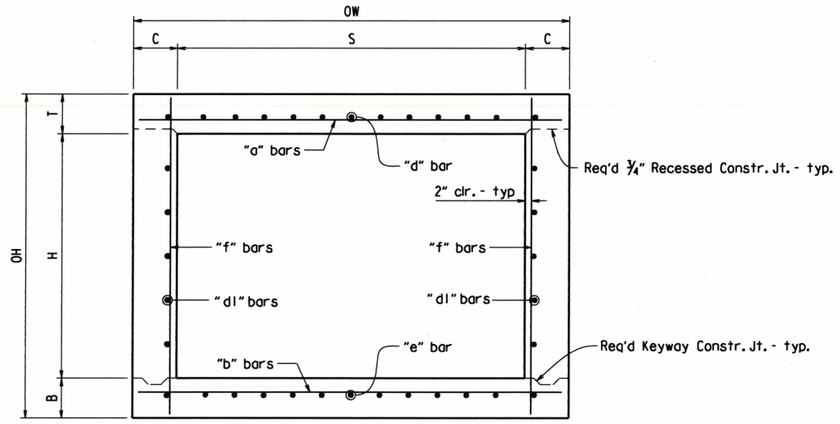
SPECIAL DETAILS

V 1.1.4 FILENAME

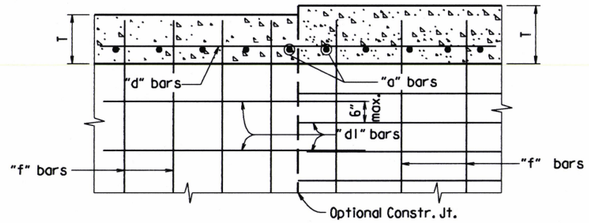
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	33	400

(1) SPECIAL DETAILS

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



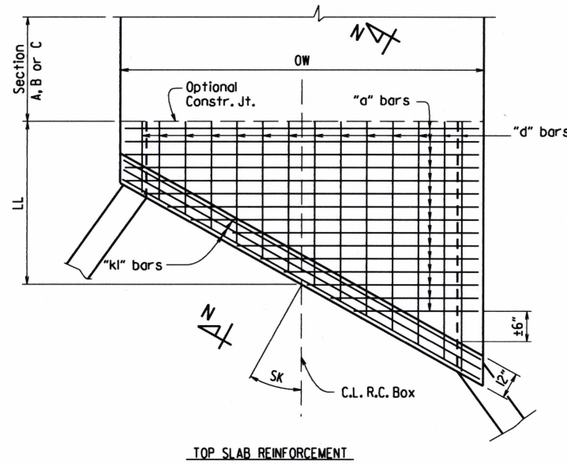
TYPICAL SECTION M-M



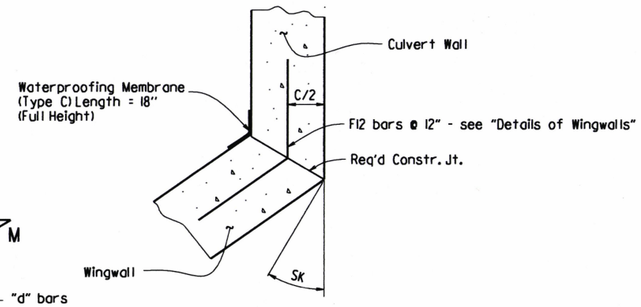
Longitudinal Bar Spacing at individual sections shall be maintained, which may result in noncontact bar laps.

LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR

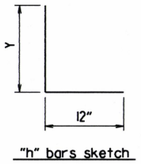


TOP SLAB REINFORCEMENT

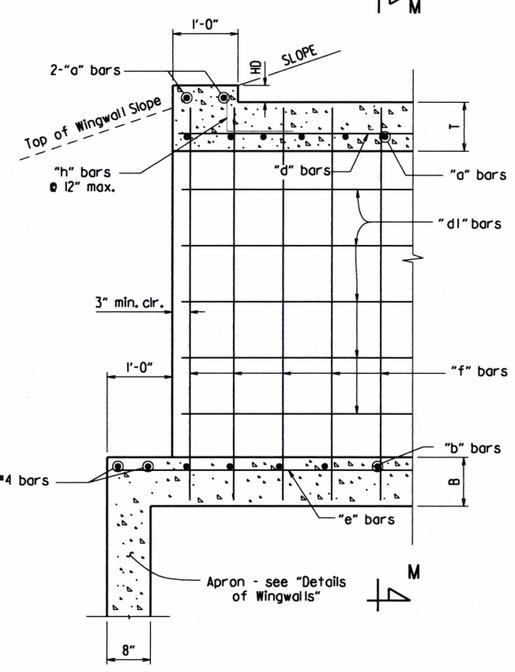


WINGWALL ATTACHMENT

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

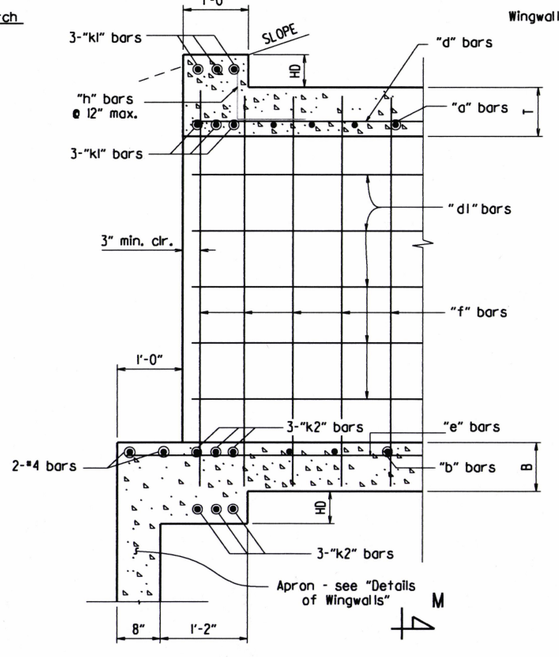


"h" bars sketch



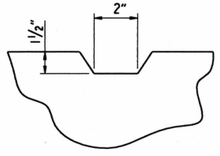
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



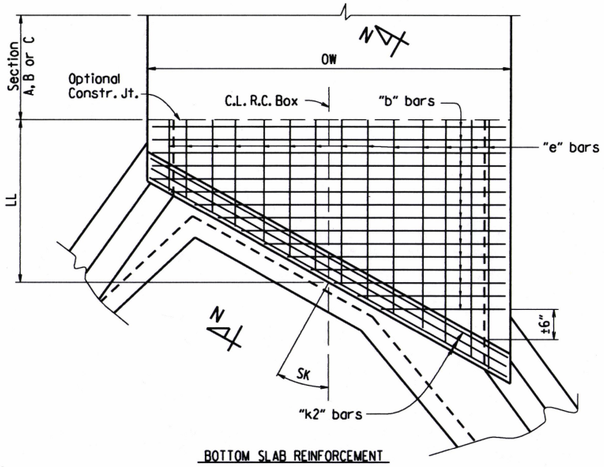
PART LONGITUDINAL SECTION N-N

(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

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 06/06/16

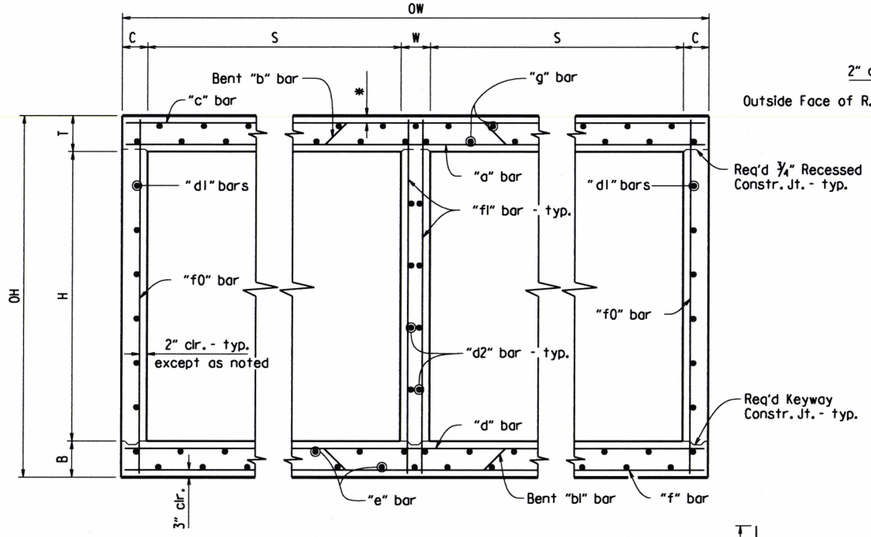
FILENAME

DATE REVISED	DATE FILMED	REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	34	400

SPECIAL DETAILS

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

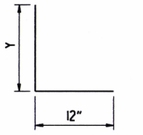
Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



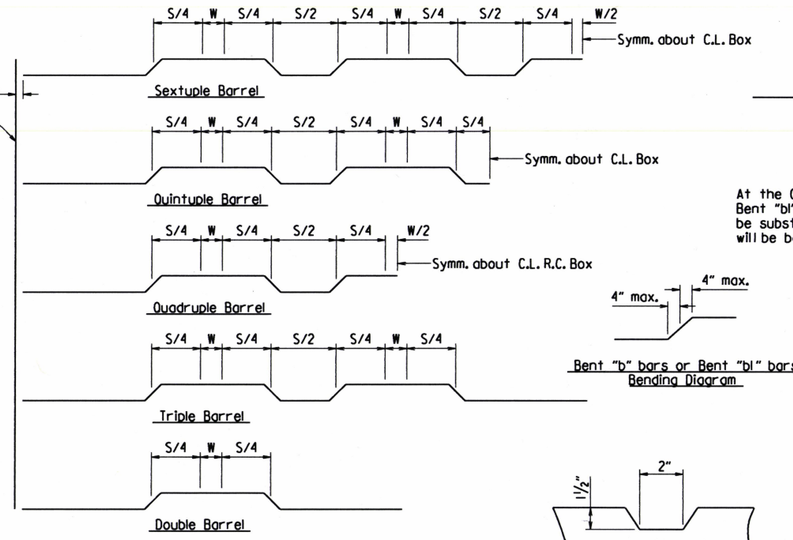
TYPICAL SECTION M-M

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

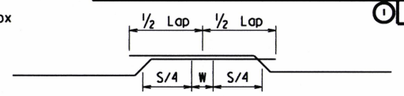
Bottom Slab
Straight "d" bars shall alternate with Bent "b1" bars in top.
Straight "f" bars shall alternate with Bent "b1" bars in bottom.



"h" bars sketch



Bent "b" bars or Bent "b1" bars sketch



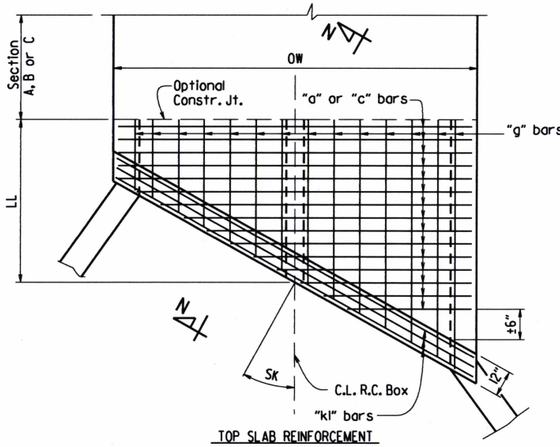
Lap Detail
For Bent "b" bars and Bent "b1" bars

At the Contractor's option in lieu of providing Bent "b" or Bent "b1" 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 "b1" bar.

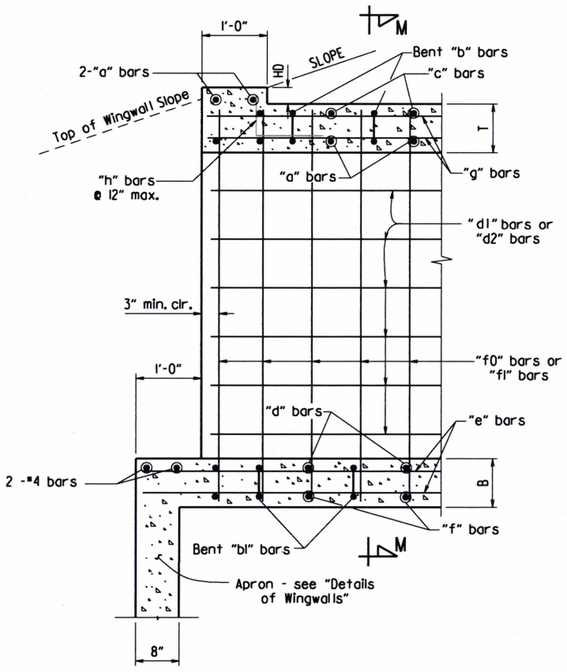
Bent "b" bars or Bent "b1" bars Bending Diagram

TYPICAL KEYWAY DETAIL

(All Construction Joints)

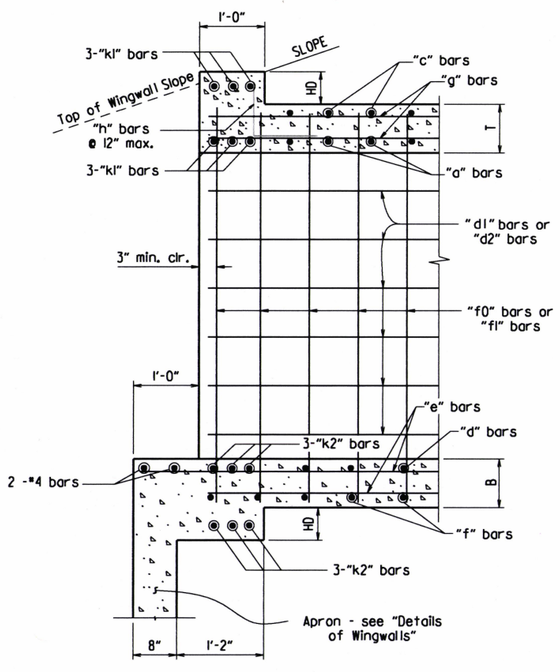


TOP SLAB REINFORCEMENT
Straight "c" bars in top.
Straight "a" bars in bottom.



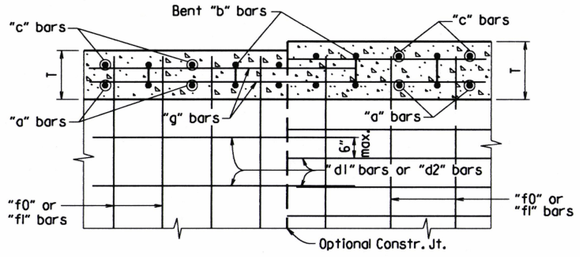
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



PART LONGITUDINAL SECTION N-N

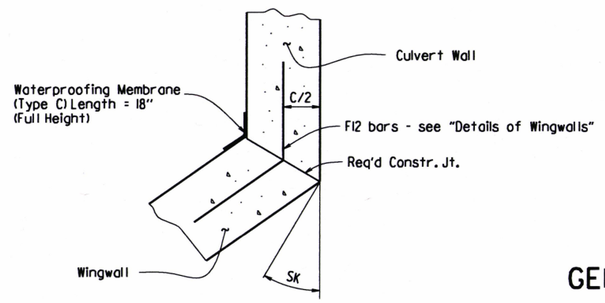
(Skewed Ends)



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

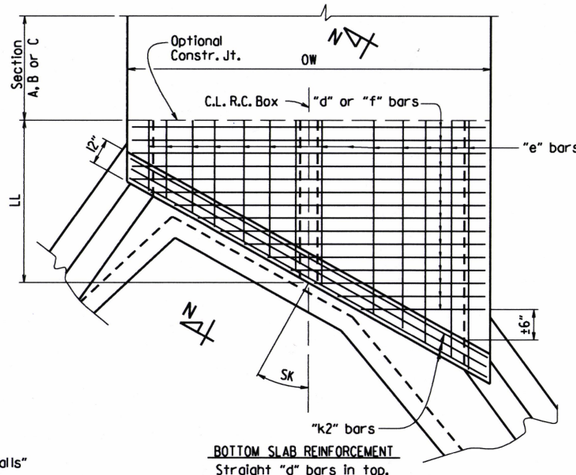
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR



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

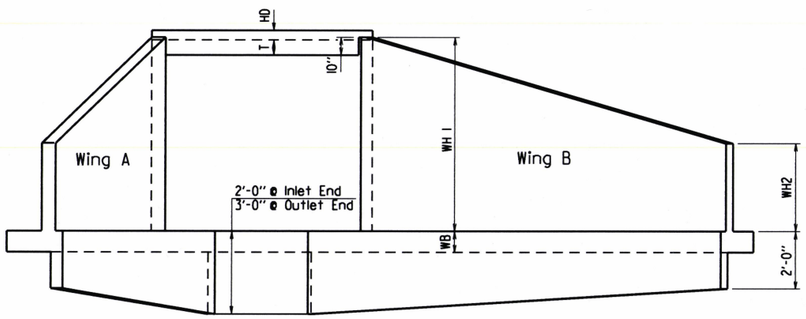
SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

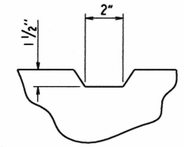
FILENAME

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.		061102	35	400

SPECIAL DETAILS

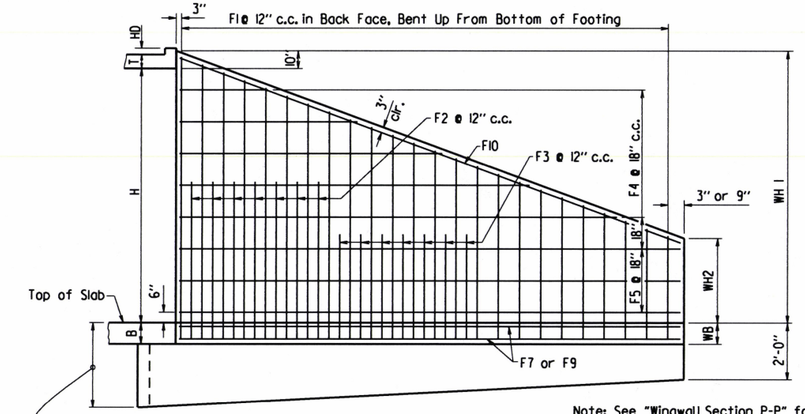


END ELEVATION
Flared Wingwalls Shown



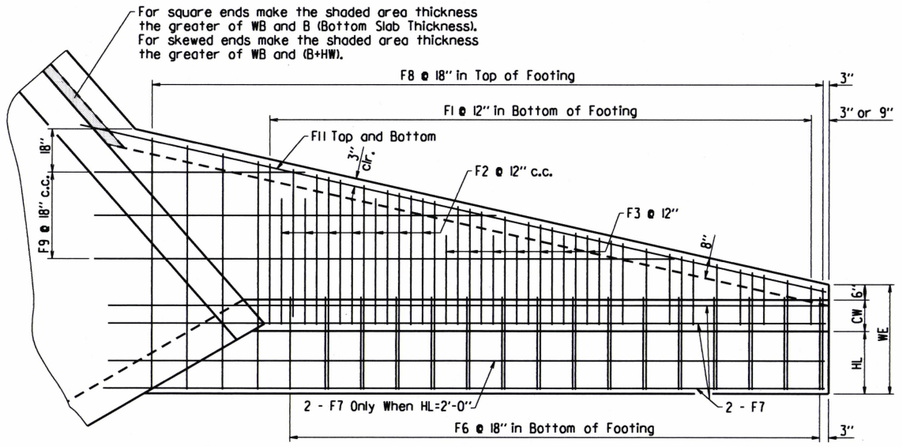
TYPICAL KEYWAY DETAIL
All Construction Joints

PART PLAN - FLARED WINGWALLS

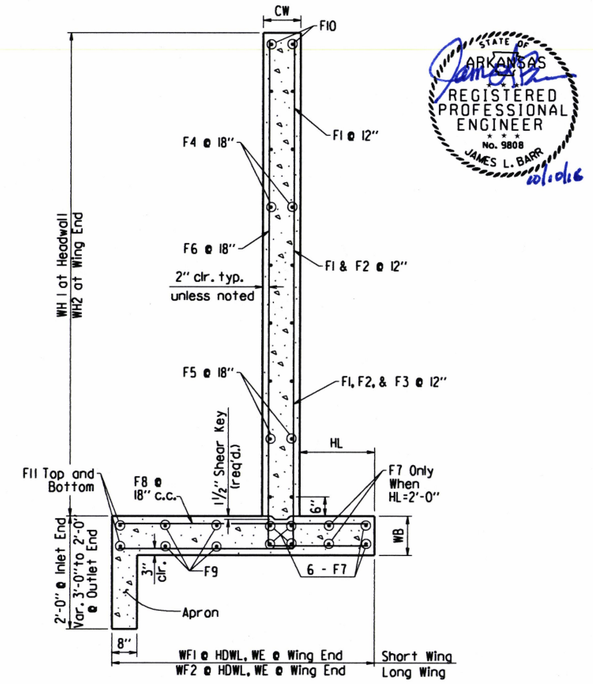


WINGWALL ELEVATION
Showing Back Face Reinforcement

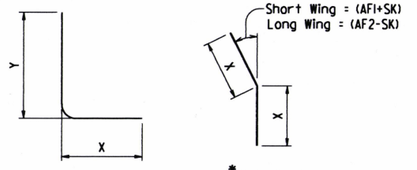
Note: See "Wingwall Section P-P" for additional details and reinforcing.



PLAN - FLARED WINGWALLS
Showing Footing Reinforcement



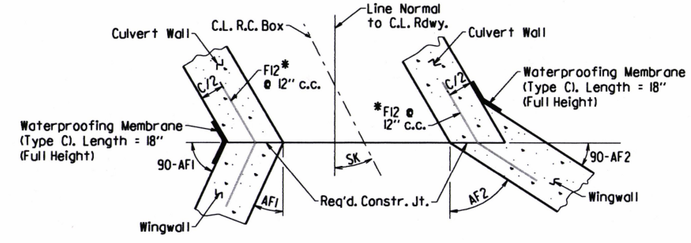
WINGWALL SECTION P-P



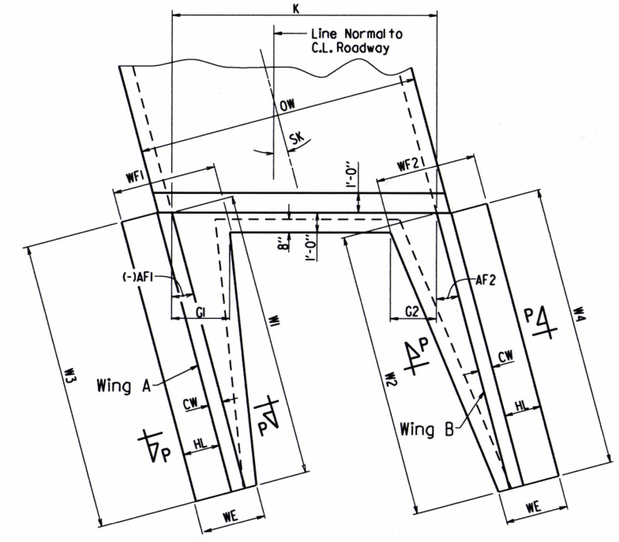
F1, F2, F3, & F6 BARS

*F12 BAR

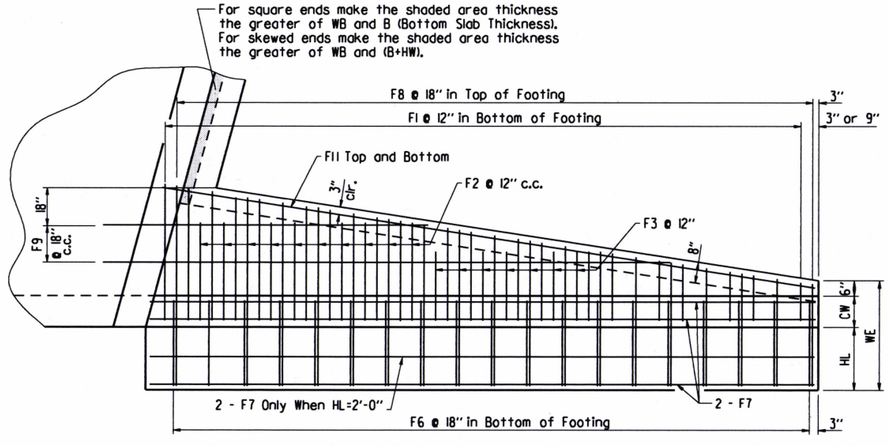
*F12 is a straight bar for parallel wingwalls



CONSTRUCTION JOINTS
Flared Wingwalls Shown



PART PLAN - PARALLEL WINGWALLS



PLAN - PARALLEL WINGWALLS
Showing Footing Reinforcement

SHEET 4 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT
DETAILS OF WINGWALLS
SPECIAL DETAILS

FILENAME

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.		061102	36	400

SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B	CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4	INLET	INLET
17'-8"	4'-0"	0'-9"	0'-8"	25	3:1	18'-4 5/8"	1'-0"	4'-10"	1'-4"	5	55	2'-2"	2'-4 3/4"	2'-7 7/8"	0'-7 3/4"	0'-3 5/8"	10'-6"	18'-0"	12'-4 5/8"	19'-10 5/8"	5.96	526

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY			F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY			F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	11	X	L	Min	2'-4"	-	-	-	L	-	-	-	L	-	-	-	4	18	4	Min	4	18	2	10'-2"	4	18	7	Min	3'-3"	4	6	13'-3"	4	18	7	Min	-	-	-	4	2	10'-7"	4	2	11'-5"	6	12	4	L	3'-4"	205
						Max	5'-11"															3'-4"								6'-3"					1'-8"															X	1'-8"	
					Y	Min	0'-9"											Max				Max								1'-4"					Max																
						Max	1'-0"											7'-10"												1'-4"					1'-8"																
						Min	1'-8"																								2'-0"																				
						Max	5'-0"																								5'-0"																				
WING B	4	12	18	X	L	Min	2'-5"	-	-	-	L	-	-	-	L	-	-	-	4	18	4	Min	4	18	2	17'-8"	4	18	12	Min	3'-1"	4	6	20'-9"	4	18	12	Min	-	-	-	4	2	17'-10"	4	2	20'-4"	6	12	4	L	3'-4"	321
						Max	6'-2"											5'-10"												6'-3"					1'-8"															X	1'-8"	
					Y	Min	0'-9"											Max				Max								1'-4"					Max																
						Max	1'-3"											13'-7"												1'-4"					2'-2"																
						Min	1'-9"																								1'-10"																				
						Max	5'-0"																								5'-0"																				

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

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"

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10/14/16

TABULAR DATA BY: JPJ DATE: 8/1/16
CHECKED BY: PAR DATE: 8/23/16

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.

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

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH
25	3:1	10	8	4	6'-1"	8	3	9.5	6	8	17'-8"	5'-5 1/2"

TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" LENGTH	"a" NO. REQ'D	"c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" LENGTH	"c" NO. REQ'D
4	5.5	Max	17'-4"	14	6	7	Max	17'-4"	11
		Min	3'-7"				Min	3'-7"	
			17'-4"	5				17'-4"	4

BOTTOM SLAB REINFORCING STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" LENGTH	"d" NO. REQ'D	"f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" LENGTH	"f" NO. REQ'D
4	4	Max	17'-4"	20	4	7	Max	17'-4"	11
		Min	3'-7"				Min	3'-7"	
			17'-4"	6				17'-4"	4

SIDE WALL REINFORCING STEEL "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH
4	9	17	5'-2"

INTERIOR WALL REINFORCING STEEL "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH
4	12	14	5'-2"

TOP SLAB DISTRIBUTION REINFORCING STEEL "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY
4	12	35	Max
			10'-1"
			Min
			1'-10"

BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY
4	11	39	Max
			10'-1"
			Min
			1'-10"

SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH
4	12	4	LONG
			9'-11"
		4	SHORT
			2'-0"

INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTH
4	12	8	5'-11"

"k1" HDWL BARS SIZE	"k1" LENGTH	"k1" NO. REQ'D
4	18'-10"	6

"k2" HDWL BARS SIZE	"k2" LENGTH	"k2" NO. REQ'D
4	18'-10"	6

"h" HDWL BARS SIZE	"h" LENGTH	"h" Y	"h" NO. REQ'D
4	1'-7"	0'-7"	21

CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	(1) REINFORCING STEEL (GR 60) (Includes HDWL) LBS.
7.74	1403

INLET 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.)
	D	S	H	T	B	C	W	OW	OH	SL

TOP SLAB REINFORCING STEEL — LENGTH = OW - 4" + BENDS

"a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D

BOTTOM SLAB REINFORCING STEEL — LENGTH = OW - 4" + BENDS

"d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D

BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D

SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D

INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS.	"h" HDWL BARS SIZE	"h" Y	"h" LENGTH	"h" NO. REQ'D

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

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 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.

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.)
	D	S	H	T	B	C	W	OW	OH	SL
A	10	8	4	9.0	10	6.0	8	17'-8"	5'-7"	128.83

TOP SLAB REINFORCING STEEL — LENGTH = OW - 4" + BENDS

"a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D
4	17'-4"	6	17'-6"	5	17'-4"	15	103

BOTTOM SLAB REINFORCING STEEL — LENGTH = OW - 4" + BENDS

"d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D
4	17'-4"	5	17'-7"	4	17'-4"	9	171

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH
4	7.5	412	5'-3"

INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH
4	12	256	5'-3"

TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D
4	12	35

BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D
4	11	39

SIDE WALL DISTRIBUTION STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D
4	12	8

INTERIOR WALL DISTRIBUTION STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D
4	12	8

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
165.28	23304

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
DOUBLE BARREL BOX CULVERT
STA. 119+35 (HWY. 38)

SPECIAL DETAILS

Ver. LJ14 FILENAME

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.		061102	37	400
				①		SPECIAL DETAILS		

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER JAMES L. BARR NO. 9808 8/10/16

TABULAR DATA BY: JPJ DATE: 8/1/16
CHECKED BY: PAR DATE: 8/23/16

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
17'-8"	4'-0"	0'-9"	0'-8"	25	3:1	18'-4 5/8"	1'-0"	4'-10"	1'-4"	5	55	2'-2"	2'-4 3/4"	2'-7 7/8"	0'-7 3/4"	0'-3 5/8"	10'-6"	18'-0"	12'-4 5/8"	19'-10 5/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OUTLET	OUTLET
CU.YD	LBS.
6.73	526

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	11	L Min 2'-4" / Max 5'-11"; X Min 0'-9" / Max 1'-0"; Y Min 1'-8" / Max 5'-0"	-	-	-	L - / X - / Y -	-	-	-	L - / X - / Y -	4	18	4	Min 3'-4" / Max 7'-10"	4	18	2	10'-2"	4	18	7	L Min 3'-3" / Max 6'-3"; X Min 1'-4" / Max 1'-4"; Y Min 2'-0" / Max 5'-0"	4	6	13'-3"	4	18	7	Min 1'-8" / Max 1'-11"	-	-	-	Min - / Max -	4	2	10'-7"	4	2	11'-5"	6	12	4	L 3'-4" / X 1'-8"	205
WING B	4	12	18	L Min 2'-5" / Max 6'-2"; X Min 0'-9" / Max 1'-3"; Y Min 1'-9" / Max 5'-0"	-	-	-	L - / X - / Y -	-	-	-	L - / X - / Y -	4	18	4	Min 5'-10" / Max 13'-7"	4	18	2	17'-8"	4	18	12	L Min 3'-1" / Max 6'-3"; X Min 1'-4" / Max 1'-4"; Y Min 1'-10" / Max 5'-0"	4	6	20'-9"	4	18	12	Min 1'-8" / Max 2'-2"	-	-	-	Min - / Max -	4	2	17'-10"	4	2	20'-4"	6	12	4	L 3'-4" / X 1'-8"	321

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"

① 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) SK	SLOPE SL	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	SECTION LENGTH LL	TOP SLAB THK. T	HDWL DEPTH HD	BOTTOM SLAB THK. B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH
25	3:1	10	8	4	6'-1"	8	3	9.5	6	8	17'-8"	5'-5 1/2"

TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	"c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D
4	5.5	Max 17'-4" / Min 3'-7" / 17'-4"	14 / 5	6	7	Max 17'-4" / Min 3'-7" / 17'-4"	11 / 4

BOTTOM SLAB REINFORCING STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	"f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D
4	4	Max 17'-4" / Min 3'-7" / 17'-4"	20 / 6	4	7	Max 17'-4" / Min 3'-7" / 17'-4"	11 / 4

SIDE WALL REINFORCING STEEL "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH
4	9	17	5'-2"

INTERIOR WALL REINFORCING STEEL "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH
4	12	14	5'-2"

TOP SLAB DISTRIBUTION REINFORCING STEEL "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY
4	12	35	Max 10'-1" / Min 1'-10"

BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY
4	11	39	Max 10'-1" / Min 1'-10"

SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH
4	12	4	LONG 9'-11"
		4	SHORT 2'-0"

INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTH
4	12	8	5'-11"

CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	① REINFORCING STEEL (GR 60) (Includes HDWL) LBS.
7.74	1403

"k1" HDWL BARS SIZE	"k1" LENGTH	"k1" NO. REQ'D	"k2" HDWL BARS SIZE	"k2" LENGTH	"k2" NO. REQ'D	"h" HDWL BARS SIZE	"h" LENGTH	"h" Y	"h" NO. REQ'D
4	18'-10"	6	4	18'-10"	6	4	1'-7"	0'-7"	21

OUTLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK. B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL

TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D

BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D

BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D

SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D

INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS.	"h" HDWL BARS SIZE	Y	LENGTH	NO. REQ'D

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

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.

SHEET 2 OF 2
DETAILS OF R.C. BOX CULVERT

DOUBLE BARREL BOX CULVERT
STA. 119+35 (HWY. 38)

SPECIAL DETAILS

Ver. LJ14 FILENAME

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.		061102	38	400

① SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
21'-9"	6'-0"	0'-9"	0'-8"	15	3:1	21'-4 3/4"	2'-0"	6'-10"	2'-0"	15	45	3'-2"	3'-3 7/8"	3'-6 7/8"	0'-5"	0'-3 3/8"	15'-0"	20'-6"	18'-6 3/8"	24'-0 3/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
INLET	INLET
CU.YD	LBS.
9.61	856

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY			F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY			F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	15	L	Min	3'-2"	-	-	-	-	-	-	-	-	4	18	4	Min	4	18	4	14'-8"	4	18	10	L	Min	4'-11"	4	8	19'-4"	4	18	10	Min	-	-	-	-	4	2	15'-3"	4	2	16'-0"	6	12	6	L	3'-4"	370
					Max	7'-10"												5'-0"									Min	9'-3"							2'-8"														
				X	Min	0'-9"												Max								X	Min	2'-4"							Max												X	1'-8"	
					Max	0'-11"												9'-8"									Max	2'-4"							2'-10"														
				Y	Min	2'-6"																				Y	Min	2'-8"																				
					Max	7'-0"																					Max	7'-0"																				
WING B	4	12	21	L	Min	3'-0"	-	-	-	-	-	-	-	-	4	18	4	Min	4	18	4	20'-2"	4	18	14	L	Min	4'-8"	4	8	24'-10"	4	18	14	Min	-	-	-	-	4	2	20'-7"	4	2	22'-3"	6	12	6	L	3'-4"	486
					Max	8'-1"												6'-11"									Max	9'-3"							2'-8"														
				X	Min	0'-9"												Max								X	Min	2'-4"							Max												X	1'-8"	
					Max	1'-2"												13'-3"									Max	2'-4"							3'-1"														
				Y	Min	2'-4"																				Y	Min	2'-5"																				
					Max	7'-0"																					Max	7'-0"																				

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

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"

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 20/10/16

TABULAR DATA BY: JPJ DATE: 8/1/16
CHECKED BY: PAR DATE: 8/23/16

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.

① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Gr. 60)."

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH
15	3:1	10	10	6	4'-11"	9.5	3	11	6.5	8	21'-9"	7'-8 1/2"

TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	"c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D
5	7.5	Max 21'-5" / Min 5'-11" / 21'-5"	7	7	7	Max 21'-5" / Min 5'-11" / 21'-5"	8

BOTTOM SLAB REINFORCING STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	"f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D
5	5	Max 21'-5" / Min 5'-11" / 21'-5"	10	4	5.5	Max 21'-5" / Min 5'-11" / 21'-5"	10

SIDE WALL REINFORCING STEEL "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH
4	4	30	7'-5"

INTERIOR WALL REINFORCING STEEL "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH
4	12	10	7'-5"

TOP SLAB DISTRIBUTION REINFORCING STEEL "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY
4	11	47	Max 7'-8" / Min 1'-10"

BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY
4	10	51	Max 7'-8" / Min 1'-10"

SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH
4	12	6	LONG 7'-7"
		6	SHORT 1'-11"

INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTH
4	12	12	4'-9"

"k1" HDWL BARS SIZE	"k1" LENGTH	"k1" NO. REQ'D
4	22'-1"	6

"k2" HDWL BARS SIZE	"k2" LENGTH	"k2" NO. REQ'D
4	22'-1"	6

"h" HDWL BARS SIZE	"h" LENGTH	"h" Y	"h" NO. REQ'D
4	1'-8"	0'-8"	24

CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	① REINFORCING STEEL (GR 60) (Includes HDWL) LBS.
9.13	1794

INLET 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.)
	D	S	H	T	B	C	W	OW	OH	SL

TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D

BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D

BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D

SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D

INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS.	"h" HDWL BARS SIZE	Y	LENGTH	NO. REQ'D

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

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 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.

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.)
	D	S	H	T	B	C	W	OW	OH	SL
B	15	10	6	13.0	14	8.0	8	22'-0"	8'-3"	132.167

TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D
4	21'-8"	8	22'-1"	8	21'-8"	15	105

BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D
4	21'-8"	7	22'-1"	7	21'-8"	10	158

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH
6	7.5	422	7'-11"

INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH
4	12	264	7'-11"

TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D
4	8.5	63

BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D
5	12	43

SIDE WALL DISTRIBUTION STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D
4	12	12

INTERIOR WALL DISTRIBUTION STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D
4	12	12

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
301.05	50992

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
DOUBLE BARREL BOX CULVERT
STA. 133+80 (HWY. 38)

SPECIAL DETAILS

Ver. 1.14 FILENAME

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.		061102	39	400

① SPECIAL DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10/1/16

TABULAR DATA BY: JPJ DATE: 8/1/16
CHECKED BY: PAR DATE: 8/23/16

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
21'-9"	6'-0"	0'-9"	0'-8"	15	3:1	21'-4 3/4"	2'-0"	6'-10"	2'-0"	15	45	3'-2"	3'-3 7/8"	3'-6 7/8"	0'-5"	0'-3 3/8"	15'-0"	20'-6"	18'-6 3/8"	24'-0 3/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OUTLET	OUTLET
CU.YD	LBS.
10.54	856

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY			F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS
WING A	4	12	15	L	Min	3'-2"	-	-	-	L -	-	-	-	L -	4	18	4	Min	4	18	4	14'-8"
					Max	7'-10"												5'-0"				
				X	Min	0'-9"				X -				X -				Max				
					Max	0'-11"												9'-8"				
				Y	Min	2'-6"				Y -				Y -								
					Max	7'-0"																
WING B	4	12	21	L	Min	3'-0"	-	-	-	L -	-	-	-	L -	4	18	4	Min	4	18	4	20'-2"
					Max	8'-1"												6'-11"				
				X	Min	0'-9"				X -				X -				Max				
					Max	1'-2"												13'-3"				
				Y	Min	2'-4"				Y -				Y -								
					Max	7'-0"																

WING	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY			F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	18	10	L	Min	4'-11"	4	8	19'-4"	4	18	10	Min	-	-	-	Min	4	2	15'-3"	4	2	16'-0"	6	12	6	L	3'-4"	370
					Max	9'-3"							2'-8"																
				X	Min	2'-4"							Max				Max										X	1'-8"	
					Max	2'-4"							2'-10"				-											
				Y	Min	2'-8"																						
					Max	7'-0"																						
WING B	4	18	14	L	Min	4'-8"	4	8	24'-10"	4	18	14	Min	-	-	-	Min	4	2	20'-7"	4	2	22'-3"	6	12	6	L	3'-4"	486
					Max	9'-3"							2'-8"															
				X	Min	2'-4"							Max				Max										X	1'-8"	
					Max	2'-4"							3'-1"				-											
				Y	Min	2'-5"																						
					Max	7'-0"																						

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"

① 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 DEPTH | BOTTOM SLAB THK. | SIDE WALL THK. | INTERIOR WALL THK. | OVER ALL WIDTH | OVER ALL HEIGHT | TOP SLAB REINF. STEEL "a" SIZE | "a" SPACING | "a" LENGTHS VARY | "a" NO. REQ'D | "c" SIZE | "c" SPACING | "c" LENGTHS VARY | "c" NO. REQ'D | BOTTOM SLAB REINF. STEEL "d" SIZE | "d" SPACING | "d" LENGTHS VARY | "d" NO. REQ'D | "f" SIZE | "f" SPACING | "f" LENGTHS VARY | "f" NO. REQ'D | SIDE WALL REINF. STEEL "f0" SIZE | "f0" SPACING | "f0" NO. REQ'D | "f0" LENGTH | INTERIOR WALL REINF. STEEL "f1" SIZE | "f1" SPACING | "f1" NO. REQ'D | "f1" LENGTH | TOP SLAB DISTRIBUTION REINF. STEEL "g" SIZE | "g" SPACING | "g" NO. REQ'D | "g" LENGTHS VARY | BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" SIZE | "e" SPACING | "e" NO. REQ'D | "e" LENGTHS VARY | SIDE WALL DISTRIBUTION REINF. STEEL "d1" SIZE | "d1" SPACING | "d1" NO. REQ'D | "d1" LENGTH | INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" SIZE | "d2" SPACING | "d2" NO. REQ'D | "d2" LENGTH | CLASS "S" CONCRETE (Includes HDWL) CU. YDS. | ① REINFORCING STEEL (GR 60) (Includes HDWL) LBS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---

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.		061102	40	400

① SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
13'-8"	4'-0"	0'-9"	0'-8"	37	3:1	15'-10 3/8"	1'-0"	4'-10"	1'-4"	0	60	2'-2"	2'-3 3/4"	2'-7 7/8"	0'-7 3/4"	0'-3"	10'-6"	21'-0"	11'-10 5/8"	23'-7 3/4"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
INLET	INLET
CU.YD	LBS.
6.33	569

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F8	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F9	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	F12	REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	11	L	Min 2'-4"	-	-	-	L -	-	-	-	L -	4	18	4	Min	4	18	2	10'-2"	4	18	7	X	Min 3'-3"	4	6	12'-9"	4	18	7	Min	1'-8"	-	-	-	Min -	4	2	10'-7"	4	2	11'-4"	6	12	4	L	3'-4"	201
					Max 5'-10"												3'-4"								Max 6'-3"								Max																
				X	Min 0'-9"				X -				X -				Max								Min 1'-4"								1'-10"																
					Max 0'-11"												7'-10"								Max 1'-4"																								
				Y	Min 1'-8"				Y -				Y -												Min 2'-0"								Min																
					Max 5'-0"																				Max 5'-0"								Max																
WING B	4	12	21	L	Min 2'-4"	-	-	-	L -	-	-	-	L -	4	18	4	Min	4	18	2	20'-8"	4	18	14	X	Min 3'-1"	4	6	24'-6"	4	18	14	Min	1'-8"	-	-	-	Min -	4	2	20'-10"	4	2	23'-7"	6	12	4	L	3'-4"	368
					Max 6'-2"												6'-10"								Max 6'-3"								Max																
				X	Min 0'-9"				X -				X -				Max								Min 1'-4"								2'-2"																
					Max 1'-3"												15'-10"								Max 1'-4"																								
				Y	Min 1'-8"				Y -				Y -												Min 1'-10"								Min																
					Max 5'-0"																				Max 5'-0"								Max																

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

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"

STATE OF ARKANSAS JAMES L. BARR REGISTERED PROFESSIONAL ENGINEER No. 9808 — 10/16/16

TABULAR DATA BY: JPJ DATE: 8/1/16
CHECKED BY: PAR DATE: 8/23/16

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.

① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Gr. 60)."

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINFORCING STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	TOP SLAB REINFORCING STEEL "c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D	BOTTOM SLAB REINFORCING STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	BOTTOM SLAB REINFORCING STEEL "f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D	SIDE WALL REINFORCING STEEL "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINFORCING STEEL "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY	SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH	INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTH
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTHS VARY	SIZE	SPACING	NO. REQ'D	LENGTHS VARY	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH
37	3:1	5	6	4	7'-2"	8	3	9	6	8	13'-8"	5'-5"	5	7.5	Max 13'-4" / Min 2'-6" / 13'-4"	14 / 4	7	10	Max 13'-4" / Min 2'-6" / 13'-4"	10 / 3	4	6.5	Max 13'-4" / Min 2'-6" / 13'-4"	16 / 4	4	11	Max 13'-4" / Min 2'-6" / 13'-4"	9 / 3	4	8.5	21	5'-1"	4	12	16	5'-1"	4	12	27	Max 12'-2" / Min 1'-10"	4	12	27	Max 12'-2" / Min 1'-10"	4	12	4	LONG 11'-11" / SHORT 2'-1"	4	12	8	7'-0"

"k1" HDWL BARS SIZE	"k1" HDWL BARS LENGTH	"k1" HDWL BARS NO. REQ'D	"k2" HDWL BARS SIZE	"k2" HDWL BARS LENGTH	"k2" HDWL BARS NO. REQ'D	"h" HDWL BARS SIZE	"h" HDWL BARS LENGTH	"h" HDWL BARS Y	"h" HDWL BARS NO. REQ'D
4	16'-4"	6	4	16'-4"	6	4	1'-7"	0'-7"	19

CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	① REINFORCING STEEL (GR 60) (Includes HDWL) LBS.
7.24	1213

INLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK. B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL	TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	"c" SPACING	"c" NO. REQ'D	BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	"f" SPACING	"f" NO. REQ'D	SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	"g" SPACING	"g" NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	"e" SPACING	"e" NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	"d1" SPACING	"d1" NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	"d2" SPACING	"d2" NO. REQ'D

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS.	"h" HDWL BARS SIZE	"h" HDWL BARS Y	"h" HDWL BARS LENGTH	"h" HDWL BARS NO. REQ'D

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

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 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.

MID-SECTION

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK. B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL	TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	"c" SPACING	"c" NO. REQ'D	BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	"f" SPACING	"f" NO. REQ'D	SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	"g" SPACING	"g" NO. REQ'D	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	"e" SPACING	"e" NO. REQ'D	SIDE WALL DISTRIBUTION STEEL "d1" LENGTH = SL SIZE	"d1" SPACING	"d1" NO. REQ'D	INTERIOR WALL DISTRIBUTION STEEL "d2" LENGTH = SL SIZE	"d2" SPACING	"d2" NO. REQ'D
A	5	6	4	8.0	9	6.0	8	13'-8"	5'-5"	79.6667	4	13'-4"	7	13'-6"	6	13'-4"	17	56	4	13'-4"	4	13'-6"	4	13'-4"	13	73	4	8.5	224	5'-1"	4	12	158	5'-1"	4	12	27	4	12	27	4	12	8	4	12	8

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
76.80	10346

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
DOUBLE BARREL BOX CULVERT
STA. 713+54 (RAMP 1)

SPECIAL DETAILS

Ver. LJ14 FILENAME

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.		061102	41	400

① SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
8/16/16

TABULAR DATA BY: JPJ DATE: 8/1/16
CHECKED BY: PAR DATE: 8/23/16

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
13'-8"	4'-0"	0'-9"	0'-8"	37	3:1	15'-10 3/8"	1'-0"	4'-10"	1'-4"	0	60	2'-2"	2'-3 3/4"	2'-7 7/8"	0'-7 3/4"	0'-3"	10'-6"	21'-0"	11'-10 5/8"	23'-7 3/4"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OUTLET	OUTLET
CU.YD	LBS.
7.07	569

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY			F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS			F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS			F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY
WING A	4	12	11	L	Min	2'-4"	-	-	-	L	-		-	-	-	L	-		4	18	4	Min
					Max	5'-10"																3'-4"
				X	Min	0'-9"				X	-					X	-					Max
					Max	0'-11"																7'-10"
				Y	Min	1'-8"				Y	-					Y	-					
					Max	5'-0"																
WING B	4	12	21	L	Min	2'-4"	-	-	-	L	-		-	-	-	L	-		4	18	4	Min
					Max	6'-2"																6'-10"
				X	Min	0'-9"				X	-					X	-					Max
					Max	1'-3"																15'-10"
				Y	Min	1'-8"				Y	-					Y	-					
					Max	5'-0"																

WING	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY			F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	18	2	10'-2"	4	18	7	L	Min	3'-3"	4	6	12'-9"	4	18	7	Min	-	-	-	Min	4	2	10'-7"	4	2	11'-4"	6	12	4	L	3'-4"	201
									Max	6'-3"							1'-8"				-										X	1'-8"	
								X	Min	1'-4"							Max				Max												
									Max	1'-4"							1'-10"				-												
								Y	Min	2'-0"																							
									Max	5'-0"																							
WING B	4	18	2	20'-8"	4	18	14	L	Min	3'-1"	4	6	24'-6"	4	18	14	Min	-	-	-	Min	4	2	20'-10"	4	2	23'-7"	6	12	4	L	3'-4"	368
									Max	6'-3"							1'-8"				-										X	1'-8"	
								X	Min	1'-4"							Max				Max												
									Max	1'-4"							2'-2"				-												
								Y	Min	1'-10"																							
									Max	5'-0"																							

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"

① 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 DEPTH | BOTTOM SLAB THK. | SIDE WALL THK. | INTERIOR WALL THK. | OVER ALL WIDTH | OVER ALL HEIGHT | TOP SLAB REINFORCING STEEL "a" SIZE | "a" SPACING | "a" LENGTHS VARY | "a" NO. REQ'D | TOP SLAB REINFORCING STEEL "c" SIZE | "c" SPACING | "c" LENGTHS VARY | "c" NO. REQ'D | BOTTOM SLAB REINFORCING STEEL "d" SIZE | "d" SPACING | "d" LENGTHS VARY | "d" NO. REQ'D | BOTTOM SLAB REINFORCING STEEL "f" SIZE | "f" SPACING | "f" LENGTHS VARY | "f" NO. REQ'D | SIDE WALL REINFORCING STEEL "f0" SIZE | "f0" SPACING | "f0" NO. REQ'D | "f0" LENGTH | INTERIOR WALL REINFORCING STEEL "f1" SIZE | "f1" SPACING | "f1" NO. REQ'D | "f1" LENGTH | TOP SLAB DISTRIBUTION REINFORCING STEEL "g" SIZE | "g" SPACING | "g" NO. REQ'D | "g" LENGTHS VARY | BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE | "e" SPACING | "e" NO. REQ'D | "e" LENGTHS VARY | SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE | "d1" SPACING | "d1" NO. REQ'D | "d1" LENGTH | INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" SIZE | "d2" SPACING | "d2" NO. REQ'D | "d2" LENGTH | CLASS "S" CONCRETE (Includes HDWL) | ① REINFORCING STEEL (GR 60) (Includes HDWL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/29/2016				6	ARK.			
				JOB NO.		060802	42	400

① SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B	CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4	INLET	INLET
11'-8"	3'-0"	0'-9"	0'-8"	0	3:1	10'-8"	1'-0"	3'-10"	1'-0"	30	30	2'-2"	2'-2"	2'-2"	0'-0"	0'-0"	9'-6"	9'-6"	11'-4 5/8"	11'-4 5/8"	CU.YD	LBS.
																					3.48	330

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY			F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY			F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	10	L	Min	2'-0"	-	-	-	-	-	-	-	-	4	18	2	Min	4	18	2	9'-2"	4	18	7	Min	2'-7"	L	4	6	12'-3"	4	18	6	Min	1'-8"	-	-	-	Min	-	4	2	9'-5"	4	2	10'-7"	6	12	3	L	3'-4"	165
					Max	4'-8"												Max									Max	5'-3"																						
				X	Min	0'-9"												5'-5"									Min	1'-4"																				X	1'-8"	
					Max	0'-9"																					Max	1'-4"																						
				Y	Min	1'-4"												Max									Min	1'-4"																						
					Max	4'-0"																					Max	4'-0"																						
WING B	4	12	10	L	Min	2'-0"	-	-	-	-	-	-	-	-	4	18	2	Min	4	18	2	9'-2"	4	18	7	Min	2'-7"	L	4	6	12'-3"	4	18	6	Min	1'-8"	-	-	-	Min	-	4	2	9'-5"	4	2	10'-7"	6	12	3	L	3'-4"	165
					Max	4'-8"												Max									Max	5'-3"																						
				X	Min	0'-9"												5'-5"									Min	1'-4"																				X	1'-8"	
					Max	0'-9"																					Max	1'-4"																						
				Y	Min	1'-4"												Max									Min	1'-4"																						
					Max	4'-0"																					Max	4'-0"																						

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

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"

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 11/30/16

TABULAR DATA BY: JPJ DATE: 11/28/16
CHECKED BY: PAR DATE: 11/30/16

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.

① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Gr. 60)."

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINF. STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	TOP SLAB REINF. STEEL "c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D	BOTTOM SLAB REINF. STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	BOTTOM SLAB REINF. STEEL "f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D	SIDE WALL REINF. STEEL "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINF. STEEL "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIB. REINF. STEEL "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY	BOTTOM SLAB DISTRIB. REINF. STEEL "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY	SIDE WALL DISTRIB. REINF. STEEL "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH	INTERIOR WALL DISTRIB. REINF. STEEL "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTH	CLASS "S" CONCRETE (Includes HDWL.)	①REINFORCING STEEL (GR 60) (Includes HDWL.)
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	LENGTHS VARY	NO. REQ'D	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTHS VARY	SIZE	SPACING	NO. REQ'D	LENGTHS VARY	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	CU. YDS.	LBS.
															Max				Max				Max																										LONG					
															Min				Min				Min																										SHORT					

"k1" HDWL BARS			"k2" HDWL BARS			"h" HDWL BARS			
SIZE	LENGTH	NO. REQ'D	SIZE	LENGTH	NO. REQ'D	SIZE	LENGTH	Y	NO. REQ'D

INLET 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 REINF. STEEL LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	"a" SPACING	"a" NO. REQ'D	BOTTOM SLAB REINF. STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	"d" SPACING	"d" NO. REQ'D	SIDE WALL REINF. STEEL "f0" LENGTH = OH - 4" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINF. STEEL "f1" LENGTH = OH - 4" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIB. REINF. STEEL "g" LENGTH = SL SIZE	"g" SPACING	"g" NO. REQ'D	BOTTOM SLAB DISTRIB. REINF. STEEL "e" LENGTH = SL SIZE	"e" SPACING	"e" NO. REQ'D	SIDE WALL DISTRIB. REINF. STEEL "d1" LENGTH = SL SIZE	"d1" SPACING	"d1" NO. REQ'D	INTERIOR WALL DISTRIB. REINF. STEEL "d2" LENGTH = SL SIZE	"d2" SPACING	"d2" NO. REQ'D	CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
D	S	H	T	B	C	W	OW	OH	SL																		

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/28/2016				6	ARK.			
				JOB NO.		060102	43	400

SPECIAL DETAILS

ARKANSAS REGISTERED PROFESSIONAL ENGINEER JAMES L. BAIR No. 9808 11/30/16

TABULAR DATA BY: JPJ DATE: 11/28/16
CHECKED BY: PAR DATE: 11/30/16

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
11'-8"	3'-0"	0'-9"	0'-8"	0	3:1	10'-8"	1'-0"	3'-10"	1'-0"	30	30	2'-2"	2'-2"	2'-2"	0'-0"	0'-0"	9'-6"	9'-6"	11'-4 5/8"	11'-4 5/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OUTLET	OUTLET
CU.YD	LBS.
3.95	330

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1 LENGTHS	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS
WING A	4	12	10	L Min	2'-0"									4	18	2	Min	4	18	2	9'-2"
				L Max	4'-8"												5'-5"				
				X Min	0'-9"	-	-	-	X -	-	-	-	X -				Max				
				X Max	0'-9"												5'-5"				
				Y Min	1'-4"				Y -				Y -								
				Y Max	4'-0"																
WING B	4	12	10	L Min	2'-0"									4	18	2	Min	4	18	2	9'-2"
				L Max	4'-8"												5'-5"				
				X Min	0'-9"	-	-	-	X -	-	-	-	X -				Max				
				X Max	0'-9"												5'-5"				
				Y Min	1'-4"				Y -				Y -								
				Y Max	4'-0"																

WING	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6 LENGTHS	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	18	7	L Min	2'-7"	4	6	12'-3"	4	18	6	Min	-	-	-	Min -	4	2	9'-5"	4	2	10'-7"	6	12	3	L 3'-4"	165
				L Max	5'-3"							1'-8"															
				X Min	1'-4"							Max				Max -										X 1'-8"	
				X Max	1'-4"							1'-8"															
				Y Min	1'-4"																						
				Y Max	4'-0"																						
WING B	4	18	7	L Min	2'-7"	4	6	12'-3"	4	18	6	Min	-	-	-	Min -	4	2	9'-5"	4	2	10'-7"	6	12	3	L 3'-4"	165
				L Max	5'-3"							1'-8"															
				X Min	1'-4"							Max				Max -										X 1'-8"	
				X Max	1'-4"							1'-8"															
				Y Min	1'-4"																						
				Y Max	4'-0"																						

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"

① 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 DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINF. STEEL "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	TOP SLAB REINF. STEEL "c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D	BOTTOM SLAB REINF. STEEL "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	BOTTOM SLAB REINF. STEEL "f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D	SIDE WALL REINF. STEEL "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH			Max / Min				Max / Min				Max / Min				Max / Min						

INTERIOR WALL REINF. STEEL "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY	BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY	SIDE WALL DISTRIBUTION REINF. STEEL "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTH
							Max / Min				Max / Min				LONG / SHORT				

CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	① REINFORCING STEEL (GR 60) (Includes HDWL) LBS.

"k1" HDWL BARS SIZE	"k1" HDWL BARS LENGTH	"k1" HDWL BARS NO. REQ'D	"k2" HDWL BARS SIZE	"k2" HDWL BARS LENGTH	"k2" HDWL BARS NO. REQ'D	"h" HDWL BARS SIZE	"h" HDWL BARS LENGTH	"h" HDWL BARS Y	"h" HDWL BARS NO. REQ'D

OUTLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK. B	SIDE WALL THK. C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL

TOP SLAB REINFORCING STEEL — LENGTH = OW - 4" + BENDS

"a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D

BOTTOM SLAB REINFORCING STEEL — LENGTH = OW - 4" + BENDS

"d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D

SIDE WALL REINF. STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

INTERIOR WALL REINF. STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D

BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D

SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D

INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS.	"h" HDWL BARS SIZE	"h" HDWL BARS Y	"h" HDWL BARS LENGTH	"h" HDWL BARS NO. REQ'D

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

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.

SHEET 2 OF 2
DETAILS OF R.C. BOX CULVERT
DOUBLE BARREL BOX CULVERT
STA. 503+45 (WILLIE RAY DR.)

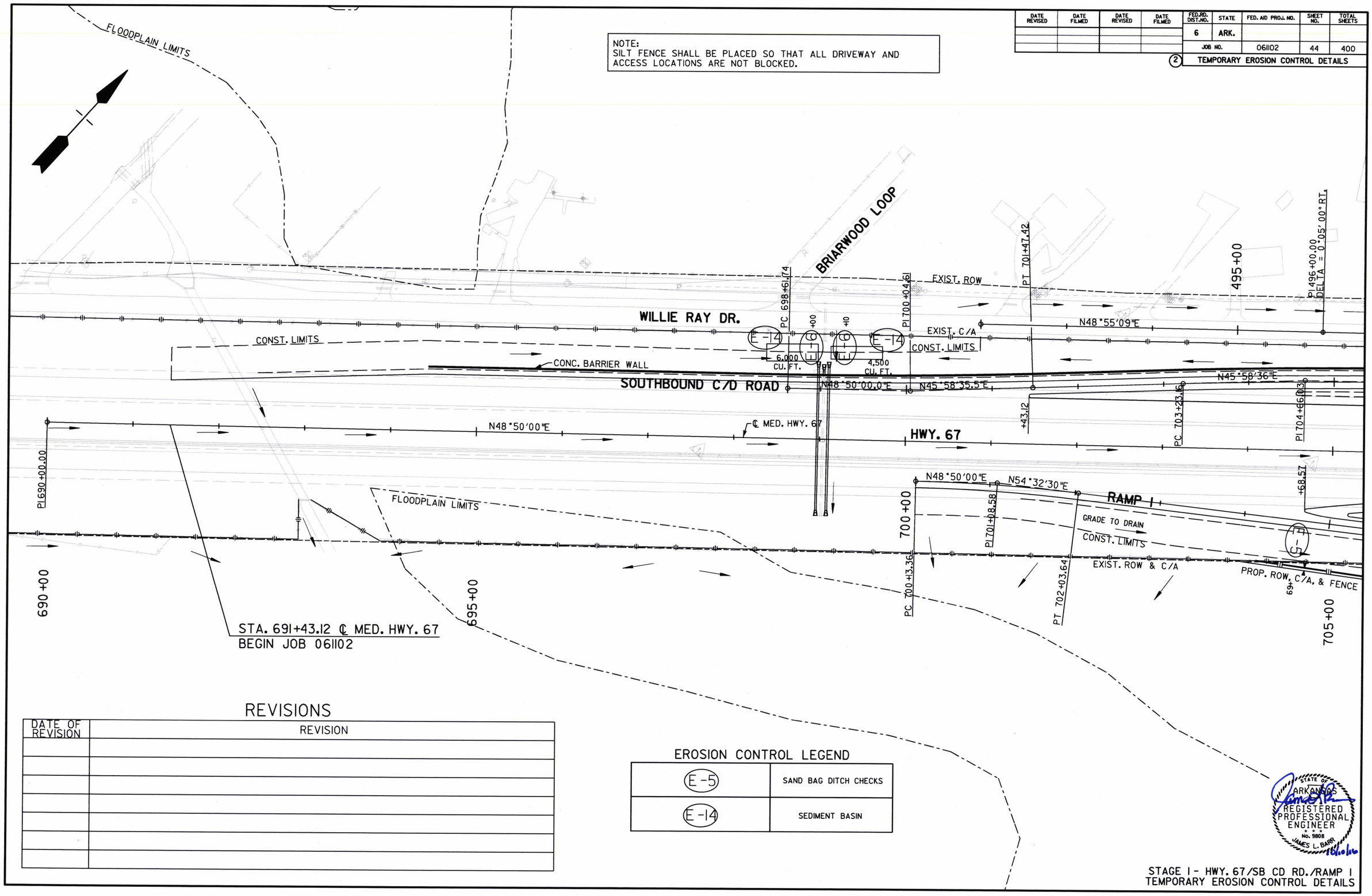
SPECIAL DETAILS

Ver. LI4 FILENAME

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.		061102	44	400

(2) TEMPORARY EROSION CONTROL DETAILS

NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.



REVISIONS

DATE OF REVISION	REVISION

EROSION CONTROL LEGEND

E-5	SAND BAG DITCH CHECKS
E-14	SEDIMENT BASIN

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10-6-16

STAGE I - HWY. 67/SB CD RD./RAMP I
TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE OF REVISION	REVISION

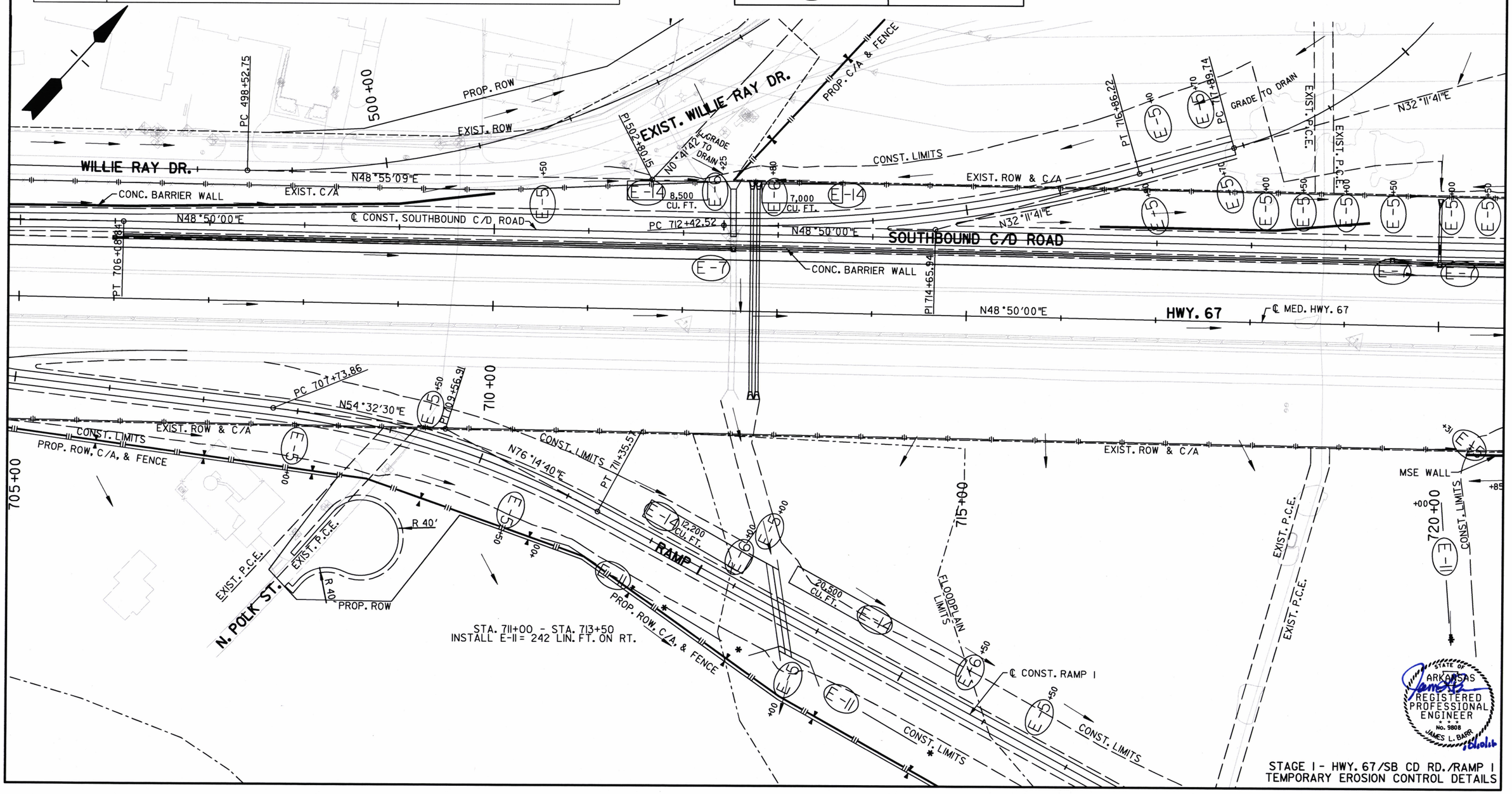
EROSION CONTROL LEGEND

(E-5)	SAND BAG DITCH CHECKS
(E-7)	DROP INLET SILT FENCE
* — (E-11) — *	SILT FENCE
(E-14)	SEDIMENT BASIN

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.		061102	45	400

(2) TEMPORARY EROSION CONTROL DETAILS

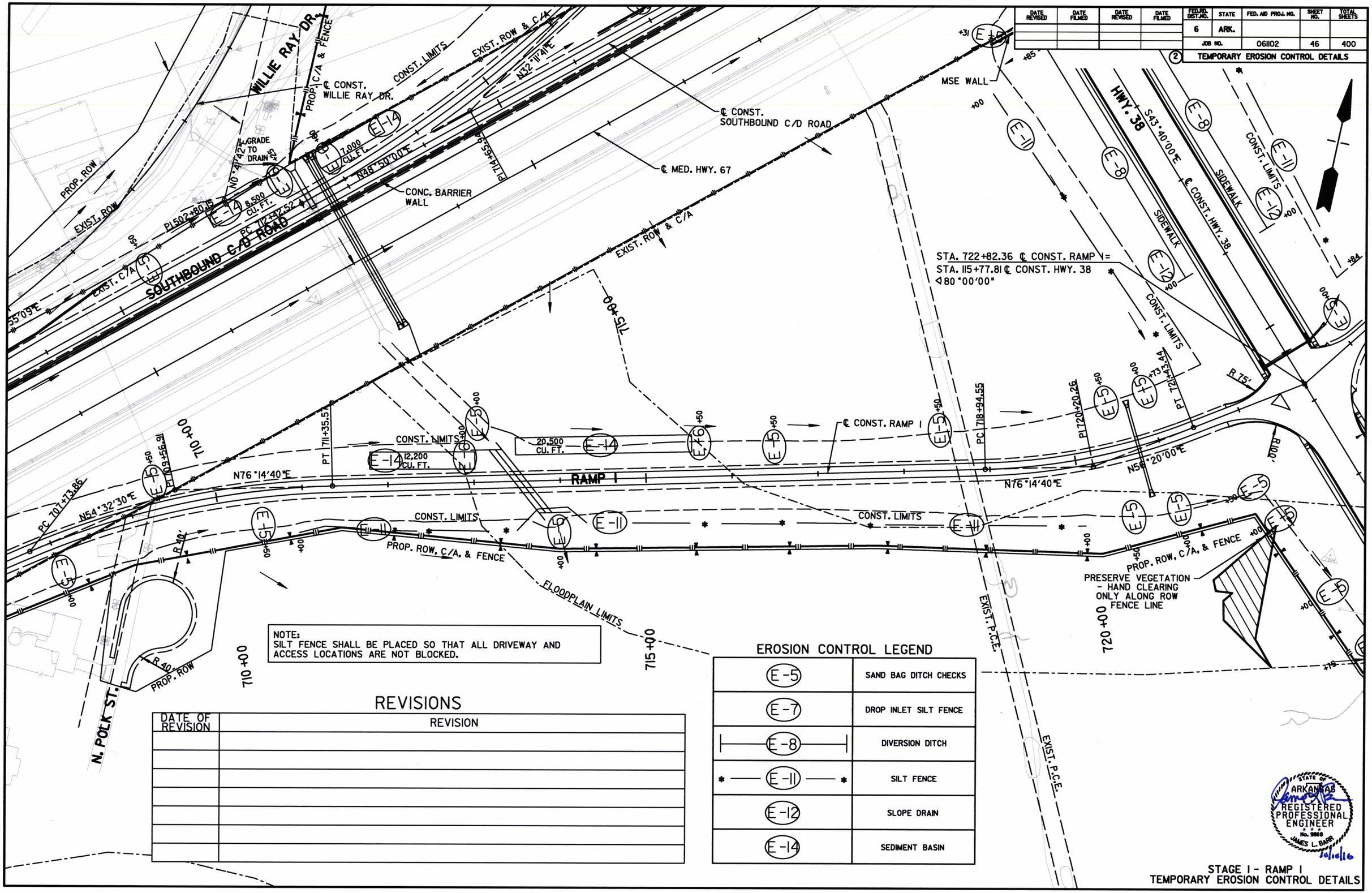
NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.



STAGE I - HWY. 67/SB CD RD./RAMP I
TEMPORARY EROSION 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.		061102	46	400

(2) TEMPORARY EROSION CONTROL DETAILS



NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.

REVISIONS

DATE OF REVISION	REVISION

EROSION CONTROL LEGEND

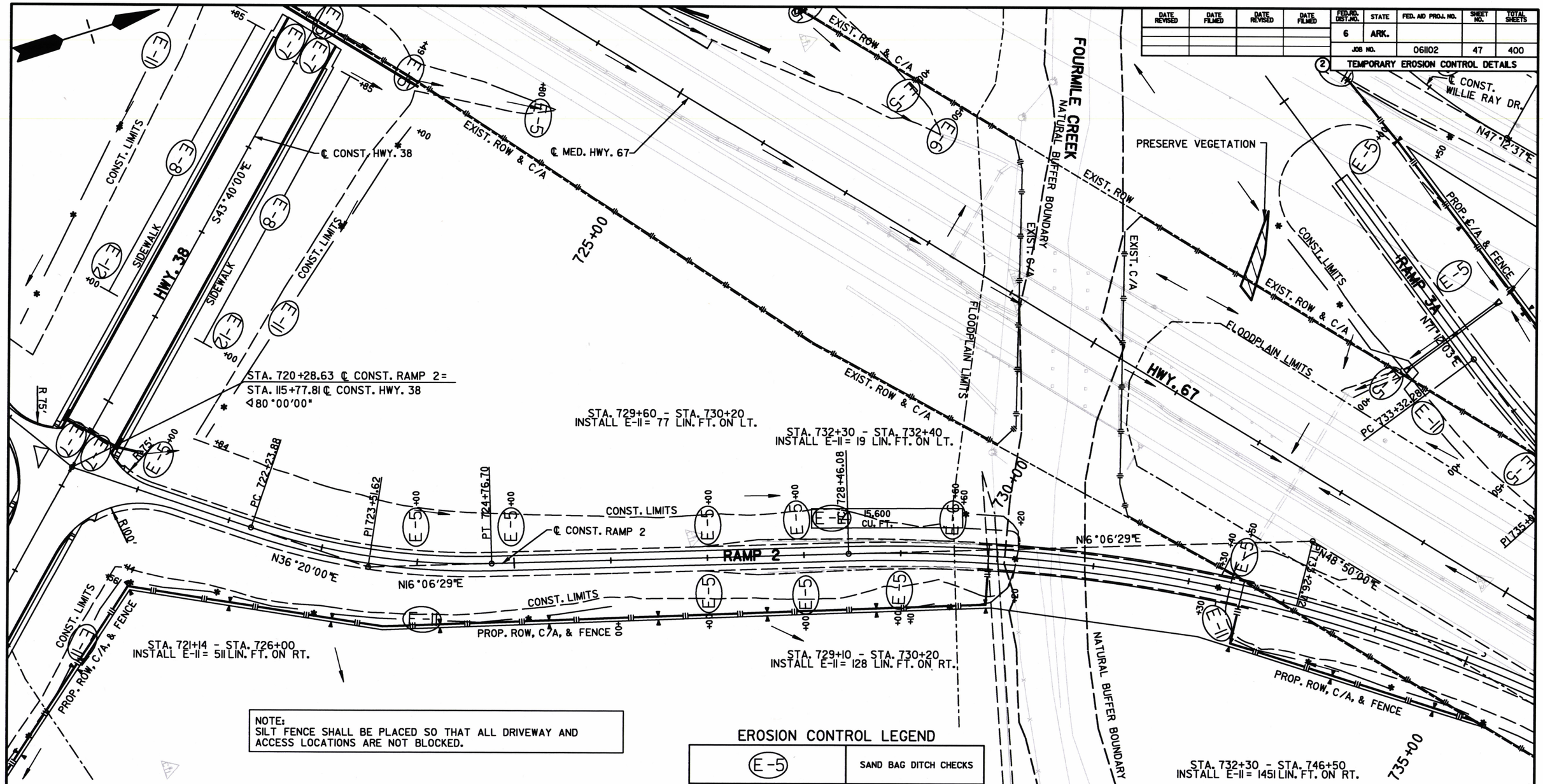
E-5	SAND BAG DITCH CHECKS
E-7	DROP INLET SILT FENCE
E-8	DIVERSION DITCH
E-11	SILT FENCE
E-12	SLOPE DRAIN
E-14	SEDIMENT BASIN

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10/10/16

STAGE I - RAMP I
TEMPORARY EROSION 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.		061102	47	400

2 TEMPORARY EROSION CONTROL DETAILS



NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.

REVISIONS

DATE OF REVISION	REVISION

EROSION CONTROL LEGEND

E-5	SAND BAG DITCH CHECKS
E-7	DROP INLET SILT FENCE
E-8	DIVERSION DITCH
E-11	SILT FENCE
E-12	SLOPE DRAIN
E-14	SEDIMENT BASIN

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

STAGE I - RAMP 2/RAMP 3A
TEMPORARY EROSION CONTROL DETAILS

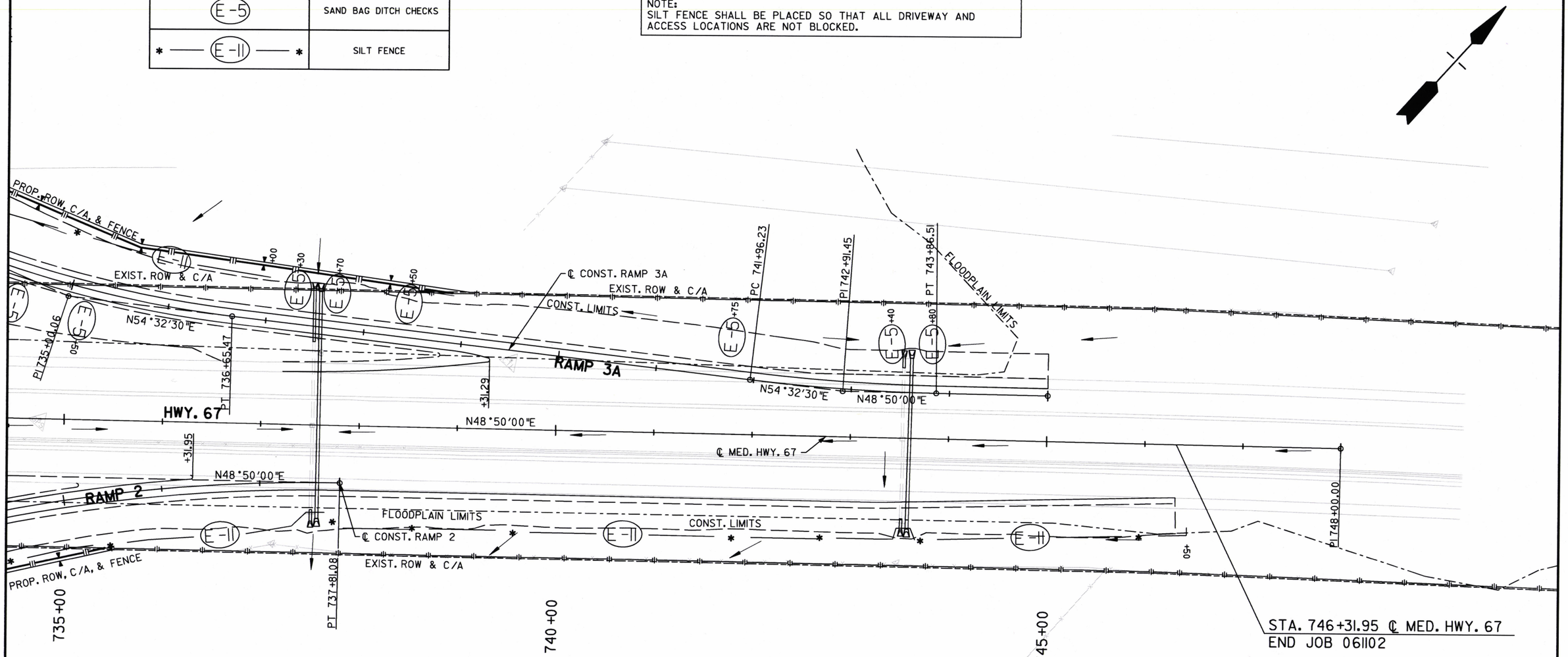
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	48	400

(2) TEMPORARY EROSION CONTROL DETAILS

EROSION CONTROL LEGEND

(E-5)	SAND BAG DITCH CHECKS
* —— (E-11) —— *	SILT FENCE

NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.



REVISIONS

DATE OF REVISION	REVISION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
7/31/06

STAGE I - RAMP 2/RAMP 3A
TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE OF REVISION	REVISION

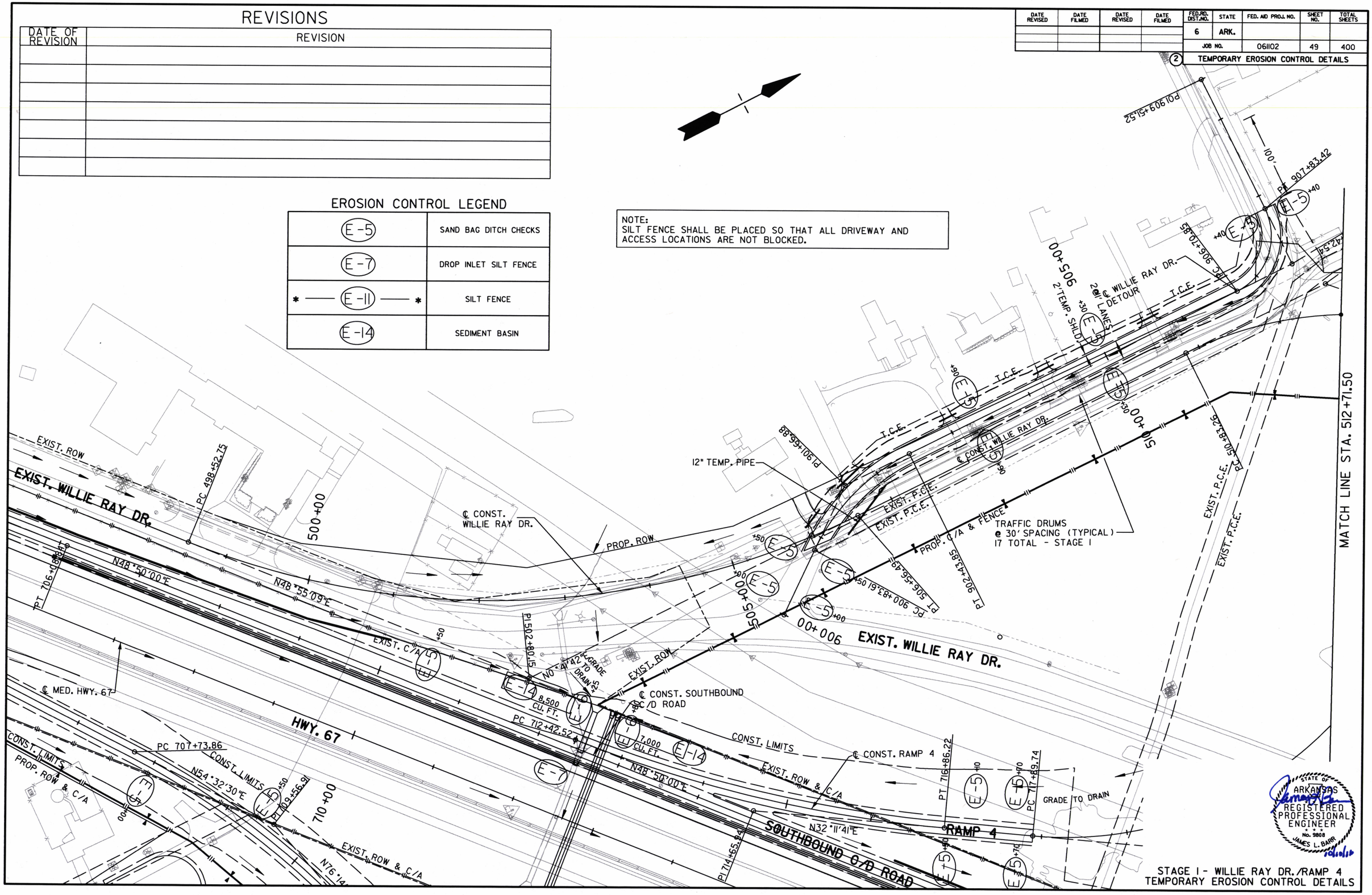
EROSION CONTROL LEGEND

E-5	SAND BAG DITCH CHECKS
E-7	DROP INLET SILT FENCE
* — E-11 — *	SILT FENCE
E-14	SEDIMENT BASIN

NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.

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.		061102	49	400

(2) TEMPORARY EROSION CONTROL DETAILS



STAGE 1 - WILLIE RAY DR./RAMP 4
TEMPORARY EROSION 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.		061102	50	400

(2) TEMPORARY EROSION CONTROL DETAILS

STA. 516+20 - STA. 520+50
INSTALL E-11 = 582 LIN. FT. ON LT./RT.

NATURAL BUFFER BOUNDARY

NATURAL BUFFER BOUNDARY

℄ CONST. WILLIE RAY DR.

PROP. ROW

CONST. LIMITS

20,000 CU. FT.

STA. 524+00

MATCH LINE STA. 524+00

STA. 514+83.62 ℄ CONST. WILLIE RAY DR. =
STA. 100+00.00 ℄ CONST. HWY. 38
◁ 90°00'00"

PI 517+01.78

WILLIE RAY DR.

N86°56'23"E

PROP. ROW & C/A

PC 515+41.33

PT 514+22.10

N46°20'00"E

HWY. 38

EXIST. P.C.E.

EXIST. P.C.E.

PI 512+65.20

PI 901

CONST. LIMITS

515+00

MATCH LINE STA. 512+71.50

PT 518+53.78

20,600 CU. FT.

CONST. LIMITS

PROP. C/A & FENCE

FOURMILE CREEK

PC 522+88.47

CONST. LIMITS

FLOODPLAIN LIMITS

PI 724+24.60

℄ CONST. RAMP 3A

PI 723+04.41

N71°12'03"E

PC 721+76.81

N56°20'00"E

+30.78

℄ CONST. RAMP 3B

S65°31'34"W

PI 730+16.27

PCC 730+02.45

N56°20'00"E

PT 731+50.07

EXIST. WILLIE RAY DR.

GRADE TO DRAIN

GRADE TO DRAIN

CONST. LIMITS

RAMP 3B

PT 723+

N43°40'00"W

℄ CONST. HWY. 38

EROSION CONTROL LEGEND

E-5	SAND BAG DITCH CHECKS
E-7	DROP INLET SILT FENCE
E-8	DIVERSION DITCH
E-11	SILT FENCE
E-12	SLOPE DRAIN
E-14	SEDIMENT BASIN

STA. 521+50 - STA. 523+70
INSTALL E-11 = 338 LIN. FT. ON LT./RT.

REVISIONS

DATE OF REVISION	REVISION

NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
12/21/16

STAGE I - WILLIE RAY DR./RAMP 3B
TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE OF REVISION	REVISION

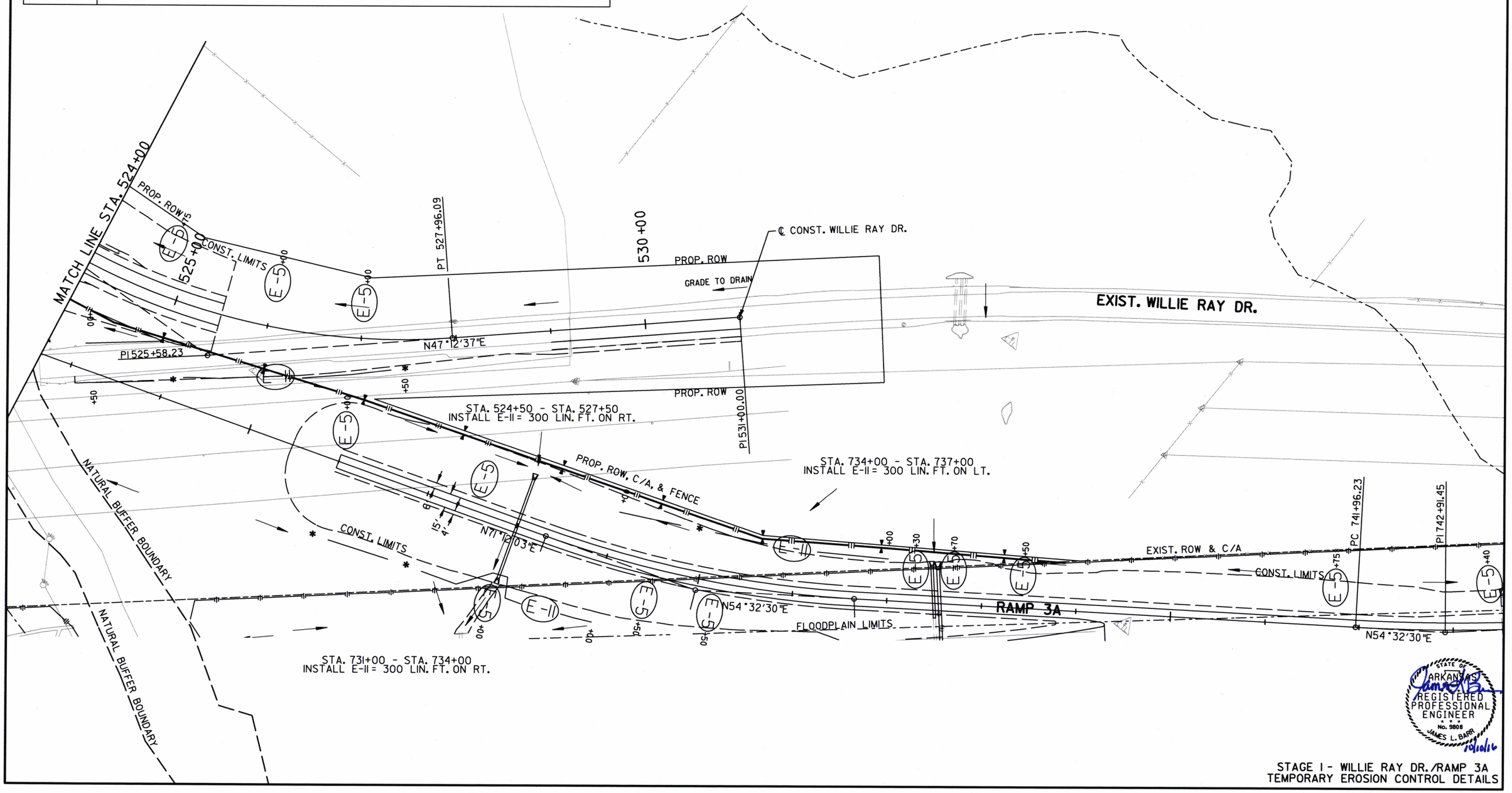
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	51	400

(2) TEMPORARY EROSION CONTROL DETAILS

EROSION CONTROL LEGEND

E-5	SAND BAG DITCH CHECKS
* — E-11 — *	SILT FENCE

NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

STAGE I - WILLIE RAY DR./RAMP 3A
TEMPORARY EROSION 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.		061102	52	400

(2) TEMPORARY EROSION CONTROL DETAILS

EROSION CONTROL LEGEND

E-5	SAND BAG DITCH CHECKS
E-7	DROP INLET SILT FENCE
E-8	DIVERSION DITCH
* E-11 *	SILT FENCE
E-12	SLOPE DRAIN

NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.

EXIST. ROW & C/A

725+00

RAMP 2

PT 724+76.70

PI 723+43.62

PC 722+23.88

N16°06'29"E

N36°20'00"E

CONST. LIMITS

PROP. ROW, C/A, & FENCE

℄ CONST. RAMP 2

STA. 720+28.63 ℄ CONST.RAMP 2=
STA. 115+77.81 ℄ CONST. HWY. 38
◁80°00'00"

STA. 116+56 - STA. 120+40
INSTALL E-11 = 409 LIN. FT. ON LT.

STA. 111+00 - STA. 114+84
INSTALL E-11 = 384 LIN. FT. ON LT.

FLOODPLAIN LIMITS

STA. 120+80 - STA. 133+00
INSTALL E-11 = 1340 LIN. FT. ON LT.

℄ CONST. HWY. 38

PROP. ROW, C/A, & FENCE

CONST. LIMITS

SIDEWALK

HWY. 38

S43°40'00"E

R100'

R75'

PRESERVE VEGETATION - HAND CLEARING ONLY ALONG ROW FENCE LINE

RAMP 1

720+00

STA. 722+82.36 ℄ CONST. RAMP 1=
STA. 115+77.81 ℄ CONST. HWY. 38
◁80°00'00"

PI 721+43.44

STA. 111+00 - STA. 114+73
INSTALL E-11 = 373 LIN. FT. ON RT.

PI 120+20.26

N58°20'00"E

N76°14'40"E

PC 718+94.55

EXIST. P.C.E.

EXIST. P.C.E.

℄ CONST. RAMP 1

STA. 119+50 - STA. 125+30
INSTALL E-11 = 588 LIN. FT.

110+00

115+00

120+00

125+00

REVISIONS

DATE OF REVISION	REVISION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10.1.16

STAGE I - HWY. 38
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
10/25/2016			

FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	53	400

(2) TEMPORARY EROSION CONTROL DETAILS

NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.

EROSION CONTROL LEGEND

E-5	SAND BAG DITCH CHECKS
E-7	DROP INLET SILT FENCE
* — E-11 — *	SILT FENCE

PROP. ROW, C/A. & FENCE
CONST. LIMITS
PI 128+20.51
S43°40'00"E
S26°47'47"E
PROP. ROW & FENCE
SIDEWALK
HWY. 38
PC 132+23.90
STA. 134+40 - STA. 135+10
INSTALL E-11 = 67 LIN. FT. ON LT.
℄ CONST. HWY. 38
CONST. LIMITS
PC 126+08.10
PROP. ROW, C/A, & FENCE
SIDEWALK
PT 130+29.86
CONST. LIMITS
PROP. ROW & FENCE
S47°32'28"E
STA. 138+50 - STA. 139+50
INSTALL E-11 = 248 LIN. FT. ON LT.
PT 138+16.60
PI 113+06.01
N64°10'11"E
EXIST. ROW
HWY. 367
EXIST. ROW
EXIST. HWY. 38
EXIST. ROW
STA. 110+65.64 ℄ HWY. 367 =
STA. 139+31.38 ℄ CONST. HWY. 38
◁ 78°36'52"
130+00
STA. 131+19 - STA. 132+60
INSTALL E-11 = 258 LIN. FT. ON RT.
T.C.E.
EXIST. P.C.E.
PI 135+23.53
W. BERRY LN.
T.C.E.
T.C.E.
STA. 131+28 - STA. 133+50
INSTALL E-11 = 318 LIN. FT. ON RT.
135+00
FLOODPLAIN LIMITS
EXIST. P.C.E.
FLOODPLAIN LIMITS
EXIST. P.C.E.
CONST. LIMITS
PROP. ROW FENCE
T.C.E.
N48°13'22"E
EXIST. ROW
EXIST. ROW
STA. 137+53 - STA. 138+50
INSTALL E-11 = 223 LIN. FT. ON RT.
HWY. 367
℄ EXIST. HWY. 367

REVISIONS

DATE OF REVISION	REVISION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/25/16

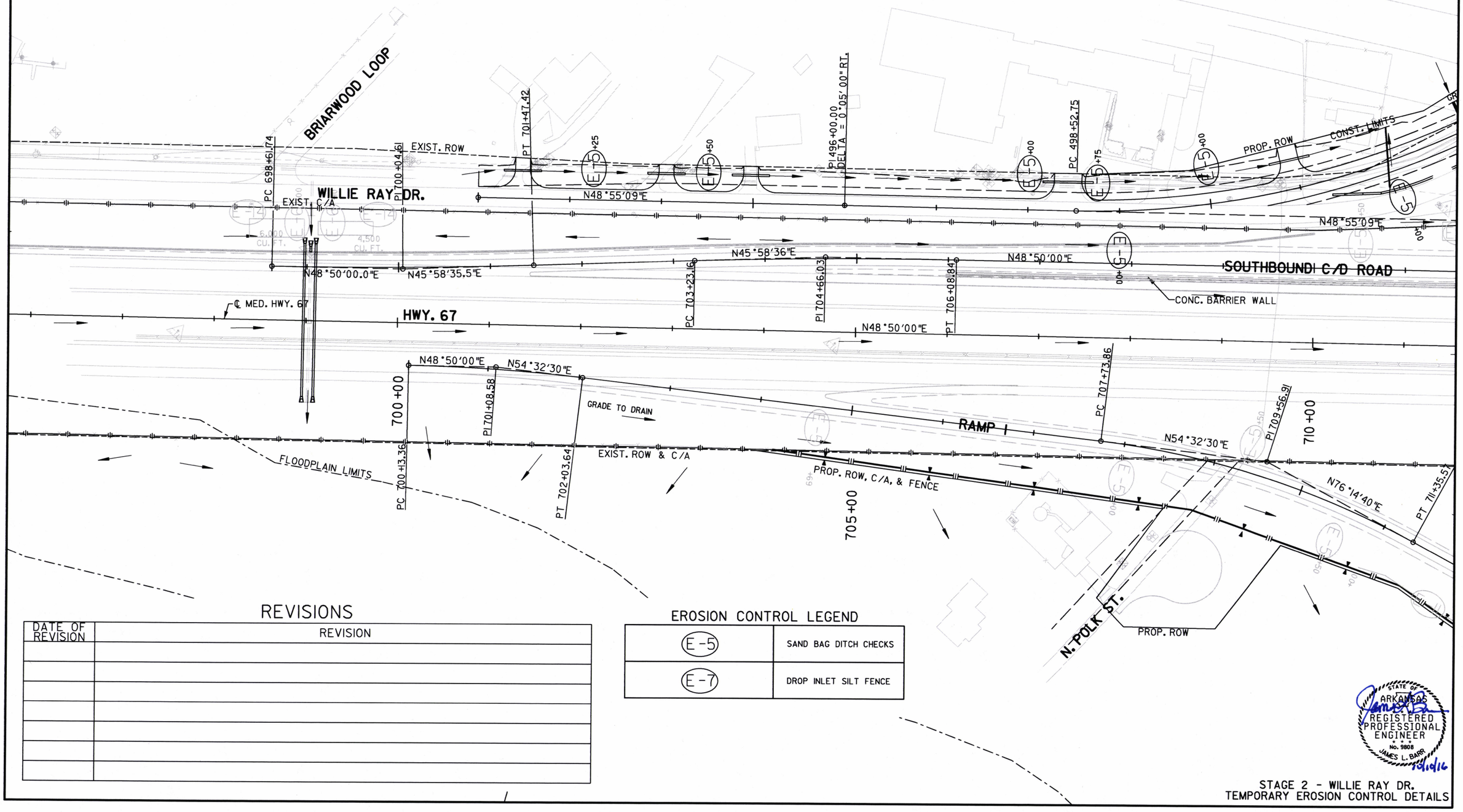
STAGE I - HWY. 38
TEMPORARY EROSION CONTROL DETAILS

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.		061102	54	400

(2) TEMPORARY EROSION CONTROL DETAILS

NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.

NOTE:
RETAIN EROSION CONTROL ITEMS FROM STAGE I IF AND WHERE DIRECTED BY THE ENGINEER



REVISIONS

DATE OF REVISION	REVISION

EROSION CONTROL LEGEND

(E-5)	SAND BAG DITCH CHECKS
(E-7)	DROP INLET SILT FENCE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
9.1.16

STAGE 2 - WILLIE RAY DR.
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.AID DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/28/2016				6	ARK.			
				JOB NO.		061102	55	400

(2) TEMPORARY EROSION CONTROL DETAILS

REVISIONS

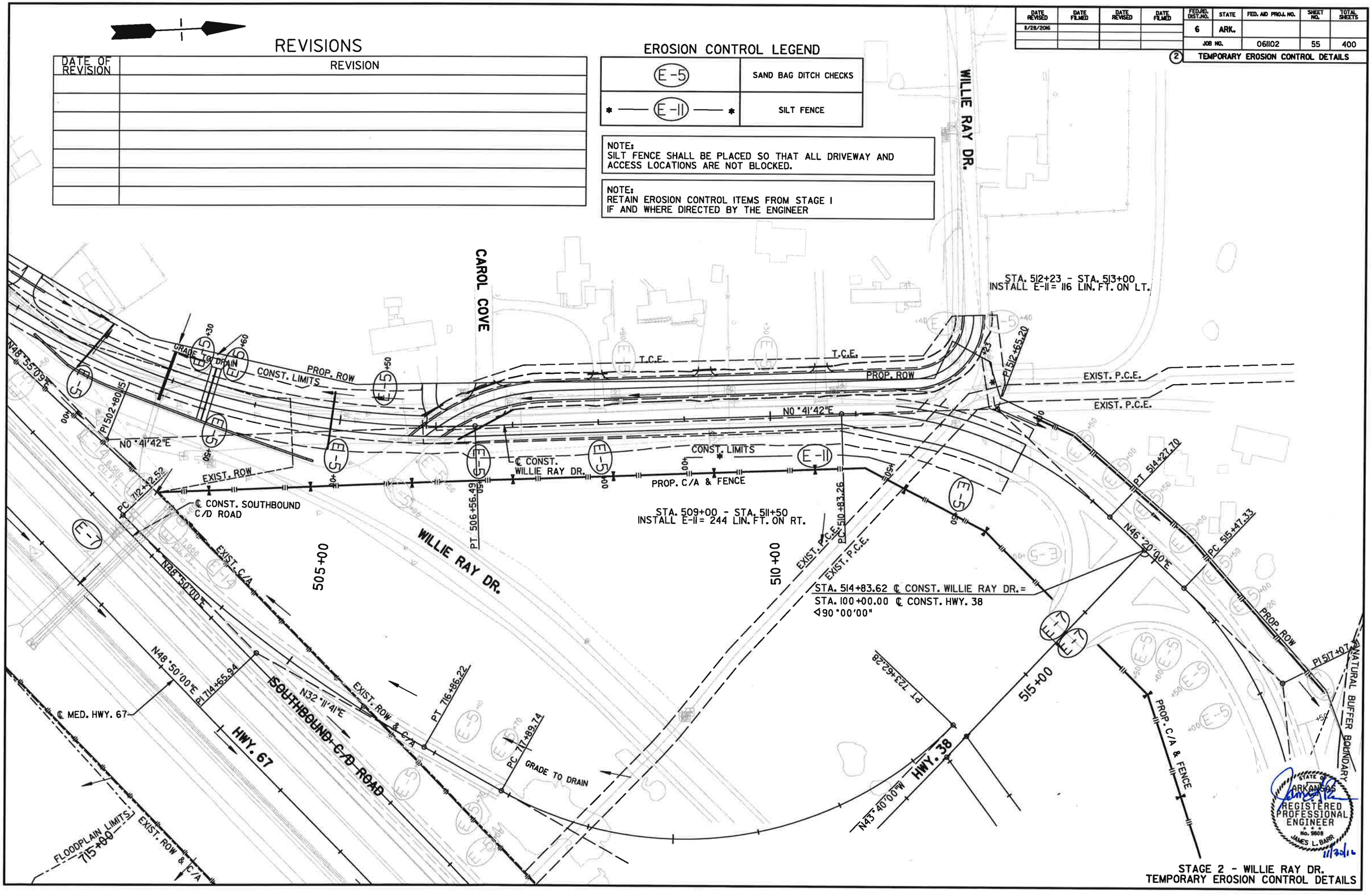
DATE OF REVISION	REVISION

EROSION CONTROL LEGEND

E-5	SAND BAG DITCH CHECKS
* — E-11 — *	SILT FENCE

NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.

NOTE:
RETAIN EROSION CONTROL ITEMS FROM STAGE I IF AND WHERE DIRECTED BY THE ENGINEER



STAGE 2 - WILLIE RAY DR.
TEMPORARY EROSION 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.		06I102	56	400

(2) TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE OF REVISION	REVISION

EROSION CONTROL LEGEND

E-5	SAND BAG DITCH CHECKS

NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.

NOTE:
RETAIN EROSION CONTROL ITEMS FROM STAGE I IF AND WHERE DIRECTED BY THE ENGINEER

PI 517+01.41
NATURAL BUFFER BOUNDARY
PROP. ROW
N86°56'23"E
PT 518+53.79
20.600 CU.FT.
PROP. C/A & FENCE
PI 523+01.41
520+00
N71°12'03"E
PT 724+24.60
WILLIE RAY DR.
N86°56'23"E
PROP. ROW
FLOODPLAIN LIMITS
S65°31'34"W
PI 730+16.27
PCC 730+02.45
PC 522+98.47
FLOODPLAIN LIMITS
NATURAL BUFFER BOUNDARY
PT 527+96.09
℄ CONST. WILLIE RAY DR.
CONST. LIMITS
PROP. ROW
EXIST. WILLIE RAY DR.
N47°12'37"E
PI 525+58.23
525+00
FOURMILE CREEK
PI 531+00.00
℄ CONST. RAMP 3A
PROP. C/A & FENCE
530+00
PROP. ROW, C/A, & FENCE
GRADE TO DRAIN
GRADE TO DRAIN
℄ CONST. RAMP 3B
EXIST. ROW & C/A
EXIST. ROW
PRESERVE VEGETATION
EXIST. ROW & C/A
N71°12'03"E
PC 733+32.28
N54°32'30"E
PI 735+00.06
PT 736+66.47
EXIST. C/A
EXIST. C/A
FLOODPLAIN LIMITS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10.04.16

STAGE 2 - WILLIE RAY DR.
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/28/2016				6	ARK.			
				JOB NO.		061102	57	400

(2) TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE OF REVISION	REVISION

EROSION CONTROL LEGEND

E-5	SAND BAG DITCH CHECKS
E-7	DROP INLET SILT FENCE
E-8	DIVERSION DITCH
* E-11 *	SILT FENCE

NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.

NOTE:
RETAIN EROSION CONTROL ITEMS FROM STAGE I AND 2 IF AND WHERE DIRECTED BY THE ENGINEER

CAROL COVE
WILLIE RAY DR.
EXIST. WILLIE RAY DR.
SOUTHBOUND C/D ROAD
RAMP 4
HWY. 67
HWY. 38
PROP. ROW
80' TAPER
CONST. LIMITS
T.C.E.
EXIST. P.C.E.
EXIST. ROW
EXIST. ROW & C/A
PROP. ROW & C/A
PROP. C/A & FENCE
℄ CONST. WILLIE RAY DR
℄ CONST. SOUTHBOUND C/D ROAD
℄ CONST. RAMP 4
℄ CONST. HWY. 38
℄ CONST. RAMP 3A
℄ CONST. RAMP 3B
℄ MED. HWY. 67
CONC. BARRIER WALL
FLOODPLAIN LIMITS
PC 712+42.52
PI 502+80.15
PT 506+56.49
PC 510+83.26
PT 514+27.10
PC 515+47.33
PI 517+07.47
PT 716+86.22
PC 717+89.74
PT 723+62.28
PC 721+19.81
PI 512+65.20
PI 714+65.94
505+00
510+00
515+00
715+00
N48°55'09"E
N0°41'42"E
N48°50'00"E
N32°11'41"E
N43°40'00"W
N46°20'00"E

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

STAGE 3 - WILLIE RAY DR.
TEMPORARY EROSION 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.		061102	58	400

(2) TEMPORARY EROSION CONTROL DETAILS

REVISIONS

DATE OF REVISION	REVISION

HWY. 38
STA. 101+32 - STA. 103+50
INSTALL E-11 = 204 LIN. FT. ON RT.

HWY. 38
STA. 101+31 - STA. 102+29
INSTALL E-11 = 98 LIN. FT. ON LT.

EROSION CONTROL LEGEND

E-5	SAND BAG DITCH CHECKS
E-7	DROP INLET SILT FENCE
E-8	DIVERSION DITCH
* E-11 *	SILT FENCE
E-12	SLOPE DRAIN

PROP. C/A & FENCE
PT 518+53.79
N86°56'23"E
PROP. ROW
STA. 720+14.59 ℄ CONST. RAMP 3A =
STA. 103+00.00 ℄ CONST. HWY. 38
◁ 80°00'00"
R100'
PC 721+76.81
CONST. LIMITS
PI 723+90.41
PT 723+62.28
N56°20'00"E
CONC. BARRIER WALL
N71°12'03"E
PT 724+24.60
WILLIE RAY DR.
℄ CONST. WILLIE RAY DR.
230' SHIFT
PROP. ROW
PC 522+98.47
PROP. C/A & FENCE
PI 525+58.23
105+00
CONST. LIMITS
N43°40'00"W
R100'
PT 731+50.02
N56°20'00"E
S65°31'34"W
PC 730+18.27
PC 730+02.45
STA. 733+06.47 ℄ CONST. RAMP 3B =
STA. 103+33.51 ℄ CONST. HWY. 38
◁ 80°00'00"
RAMP 3A
STA. 720+88 - STA. 724+00
INSTALL E-11 = 410 LIN. FT. ON LT.
RAMP 4
PI 721+26.74
HWY. 38
RAMP 3B
RAMP 3B
STA. 730+00 - STA. 731+70
INSTALL E-11 = 141 LIN. FT. ON LT.
HWY. 38
STA. 104+41 - STA. 107+50
INSTALL E-11 = 387 LIN. FT. ON LT.
PC 717+89.74
N32°11'41"E
S43°40'00.0"E
CONST. LIMITS
℄ CONST. HWY. 38
725+00
CONST. LIMITS
FLOODPLAIN LIMITS
NATURAL BUFFER BOUNDARY
FOURMILE CREEK
RAMP 3B
STA. 726+55 - STA. 728+50
INSTALL E-11 = 325 LIN. FT. ON RT.
℄ CONST. RAMP 3A
CONST. LIMITS
℄ CONST. RAMP 3B
EXIST. ROW & C/A
EXIST. ROW
730+00
PRESERVE VEGETATION
EXIST. ROW & C/A
RAMP 3A
STA. 727+10 - STA. 731+00
INSTALL E-11 = 472 LIN. FT. ON RT.
FLOODPLAIN LIMITS
SB C/D ROAD
℄ CONST. SOUTHBOUND C/D ROAD
STA. 723+42.32 ℄ CONST. RAMP 3B =
STA. 723+42.32 ℄ CONST. SOUTHBOUND C/D ROAD
◁ 00°00'00"
N48°50'00"E
HWY. 67
℄ MED. HWY. 67
EXIST. C/A
STA. 721+34.39 ℄ MED. HWY. 67 =
STA. 109+20.19 ℄ CONST. HWY. 38
◁ 87°30'00"
110+00
EXIST. ROW & C/A

NOTE:
SILT FENCE SHALL BE PLACED SO THAT ALL DRIVEWAY AND ACCESS LOCATIONS ARE NOT BLOCKED.

NOTE:
RETAIN EROSION CONTROL ITEMS FROM STAGE I AND 2 IF AND WHERE DIRECTED BY THE ENGINEER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
6/6/06

STAGE 3 - RAMP 3A/3B/HWY. 38
TEMPORARY EROSION 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.		061102	59	400
				(2)	MAINTENANCE OF TRAFFIC DETAILS			

STAGE 1:

HWY. 67
INSTALL TEMPORARY PRECAST CONCRETE BARRIER WALL AND STRIPE EXISTING PAVEMENT AS SHOWN.
CONSTRUCT ACCELERATION AND DECELERATION LANES AND EXTEND CROSS DRAINS AT STA. 699+04, STA. 712+63, STA. 737+50, AND 743+53.
INSTALL ALL NEW CROSS DRAINS AS SHOWN.
EXTEND R.C. BOX CULVERT AT STA. 712+53.
CONSTRUCT OUTSIDE SHOULDER AND INSTALL STORM SEWER AS SHOWN.

SOUTHBOUND C/D ROAD
CONSTRUCT C/D ROAD PAVEMENT.
INSTALL STORM SEWER AND CONCRETE BARRIER WALL.

WILLIE RAY DR.
CONSTRUCT NEW PAVEMENT FROM STA. 513+00 TO STA. 525+50 AS SHOWN IN THE PLANS, INCLUDING INTERSECTION WITH HWY. 38.
CONSTRUCT WILLIE RAY DR. DETOUR 1.
CONSTRUCT TEMPORARY WIDENING ON EXISTING WILLIE RAY DRIVE AS SHOWN IN PLANS.
CONSTRUCT BRIDGE OVER FOURMILE CREEK.

HWY. 38
CONSTRUCT HWY. 38 FROM STA. 110+63.127 TO STA. 139+31.38 AS SHOWN IN PLANS.
CONSTRUCT M.S.E. WALL AT STA. 110+55.00.
CONSTRUCT R.C. BOX CULVERTS AT STA. 119+35 AND STA. 133+80.
INSTALL STORM SEWER SYSTEM.
INSTALL TRAFFIC SIGNAL MODIFICATIONS AT THE INTERSECTION OF HWY. 367 AND HWY. 38.

RAMP 1
CONSTRUCT RAMP 1PAVEMENT.
CONSTRUCT R.C. BOX CULVERT AT STA. 713+50.

RAMP 2
CONSTRUCT RAMP 2 PAVEMENT.
CONSTRUCT BRIDGE OVER FOURMILE CREEK.

RAMP 3A
CONSTRUCT RAMP 3A PAVEMENT AS SHOWN IN PLANS FROM STA. 731+00 TO HWY. 67.

RAMP 3B
CONSTRUCT RAMP 3B PAVEMENT AS SHOWN IN PLANS FROM STA. 723+42.32 TO STA. 726+00.00.
GRADE ADJACENT AREAS TO DRAIN TO RAMP 3B STRUCTURES.

RAMP. 4
CONSTRUCT RAMP 4 PAVEMENT FROM C/D ROAD TO STA. 717+89.74.
GRADE ADJACENT AREAS TO DRAIN TO RAMP 4 STRUCTURES.

STAGE 2:

WILLIE RAY DR.
STRIPE DETOUR 1AND TEMPORARY WIDENING AS SHOWN.
SHIFT TRAFFIC ONTO DETOUR AND TEMPORARY WIDENING.
CONSTRUCT WILLIE RAY DR. AS SHOWN IN PLANS FROM STA. 492+00 TO STA. 513+00 AND STA. 525+50 TO STA. 531+00.
STA. 492+00 TO STA. 500+50 WILL BE CONSTRUCTED UNDER TRAFFIC USING ONE LANE OPERATION WITH FLAGGERS.
CONSTRUCT PART OF R.C. BOX CULVERT AT STA. 503+45.

STAGE 3A:

WILLIE RAY DR.
STRIPE PAVEMENT AS SHOWN.
CONSTRUCT DRIVEWAYS AND SIDE STREETS ON WILLIE RAY DR. AS SHOWN ON PLANS.
DEMOLISH DETOUR AND COMPLETE LEFT SIDE OF WILLIE RAY DR. FROM STA. 506+13 TO STA. 511+64.
DEMOLISH TEMPORARY WIDENING AND COMPLETE RIGHT SIDE OF WILLIE RAY DR. FROM STA. 525+50 TO STA. 527+00.
COMPLETE R.C. BOX CULVERT AT STA. 503+45.

HWY. 38
CONSTRUCT NEW PAVEMENT FROM STA. 139+31.38 TO STA. 101+32.54.
CONSTRUCT OVERPASS BRIDGE OVER HWY. 67 AND M.S.E. WALL AT STA. 107+96.
INSTALL STORM SEWER SYSTEM.

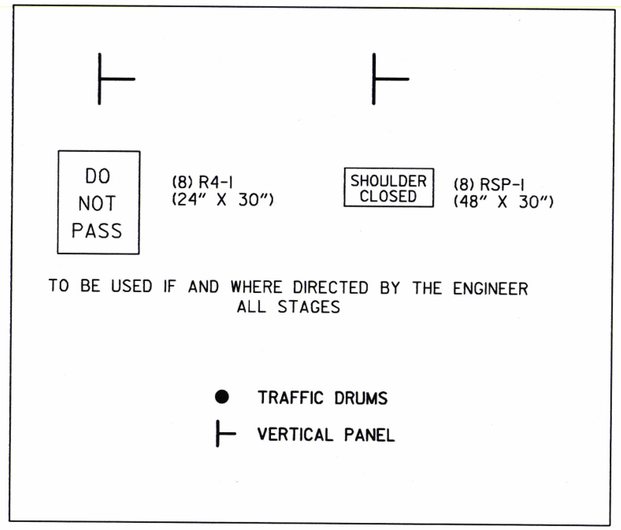
COMPLETE REMAINDER OF RAMPS 3A, 3B, AND 4.
CONSTRUCT RAMP 3A BRIDGE OVER FOURMILE CREEK.

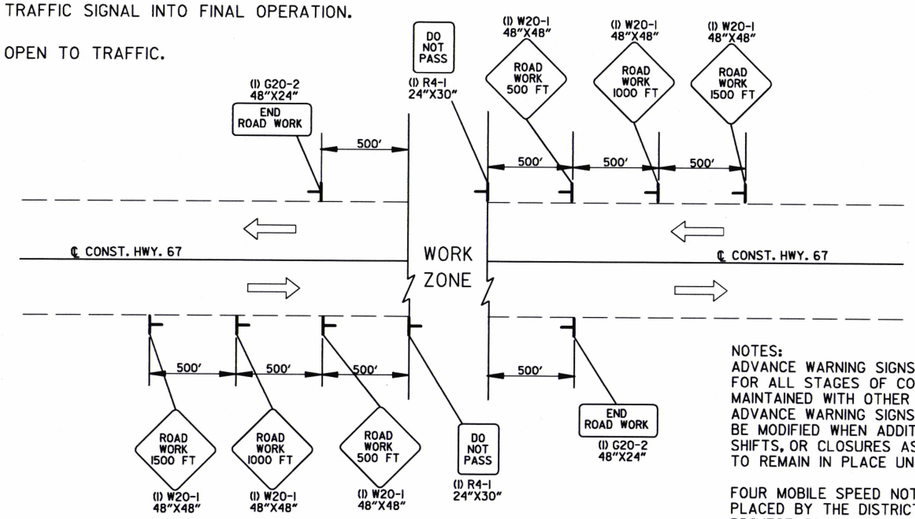
STAGE 3B:

PLACE PERMANENT PAVEMENT MARKINGS AFTER ALL WORK HAS BEEN COMPLETED.

ADJUST TRAFFIC SIGNAL EQUIPMENT AS SHOWN IN PLANS AND PLACE TRAFFIC SIGNAL INTO FINAL OPERATION.

OPEN TO TRAFFIC.





ADVANCE WARNING SIGNS AT BEGIN AND END WORK ZONES (HWY. 67)

NOTES:
ADVANCE WARNING SIGNS AND DEVICES SHOWN ARE TYPICAL FOR ALL STAGES OF CONSTRUCTION. COORDINATION MUST BE MAINTAINED WITH OTHER CONSTRUCTION ACTIVITIES REQUIRING ADVANCE WARNING SIGNS. SIGN LOCATIONS AND TYPES ARE TO BE MODIFIED WHEN ADDITIONAL SIGNS ARE REQUIRED FOR CHANNELIZATION, SHIFTS, OR CLOSURES AS REQUIRED FOR VARIOUS STAGES. SIGNS TO REMAIN IN PLACE UNTIL ALL STAGES ARE COMPLETE.

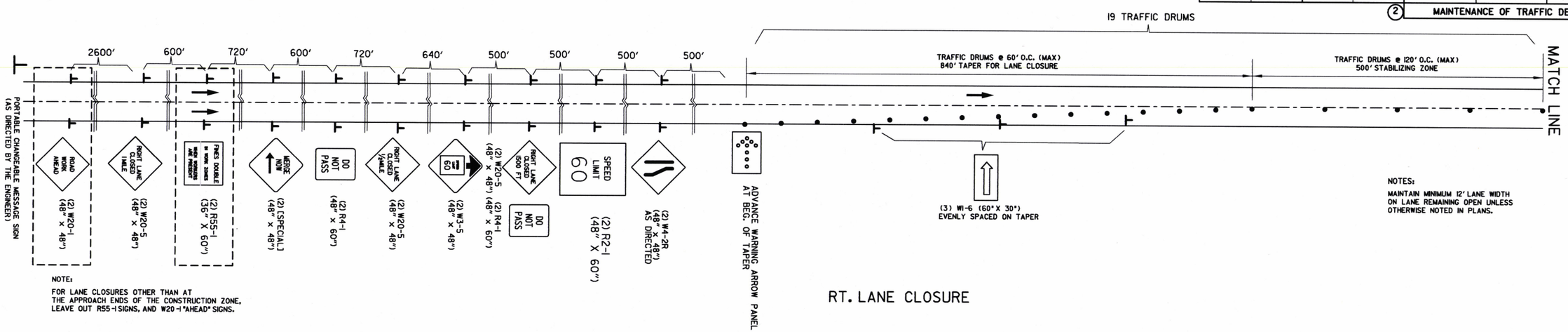
FOUR MOBILE SPEED NOTIFICATION UNITS ARE INCLUDED. DEVICES ARE TO BE PLACED BY THE DISTRICT AND RETAINED BY AHTD UPON PROJECT COMPLETION.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

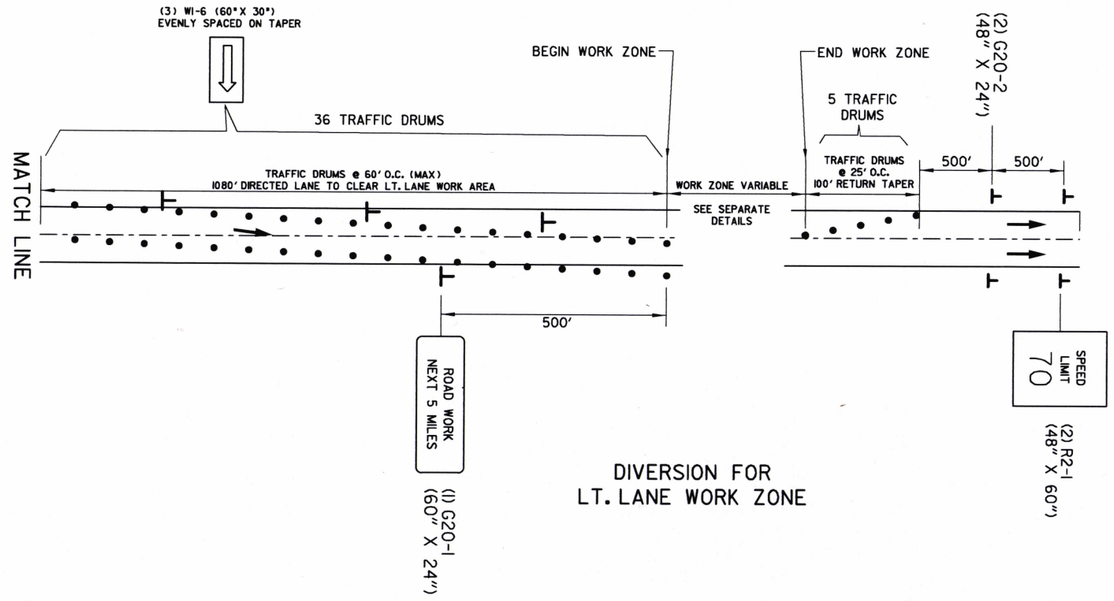
ALL STAGES
MAINTENANCE OF TRAFFIC DETAILS

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.		061102	60	400

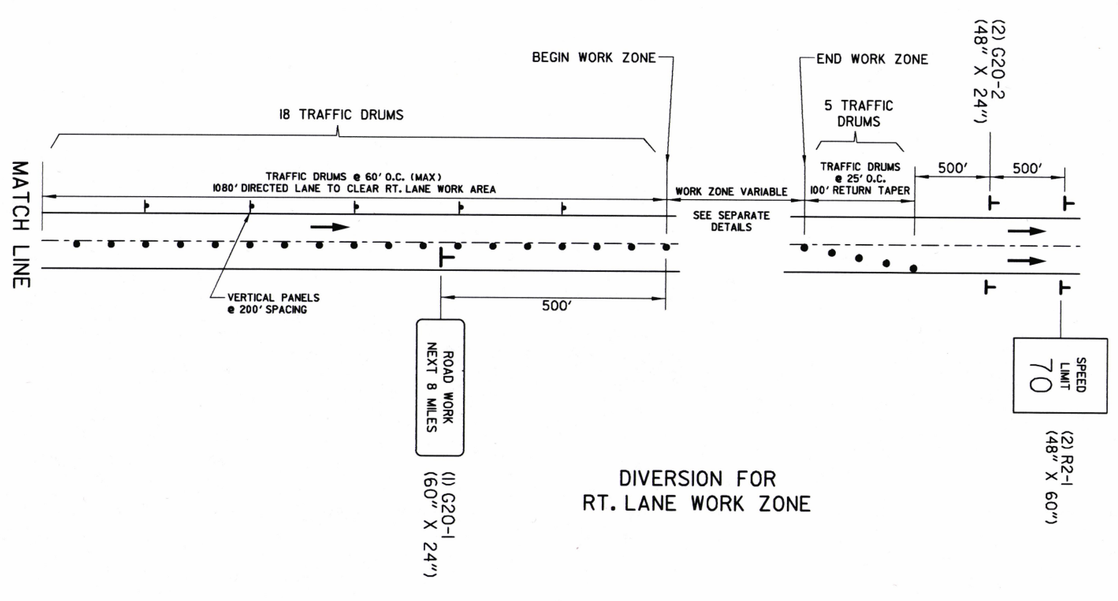
(2) MAINTENANCE OF TRAFFIC DETAILS



RT. LANE CLOSURE



DIVERSION FOR
LT. LANE WORK ZONE



DIVERSION FOR
RT. LANE WORK ZONE

ADVANCE SIGNS AND LANE CLOSURES
ALL STAGES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

ALL STAGES
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.		061102	61	400

(2) MAINTENANCE OF TRAFFIC DETAILS

STAGE 1:

HWY. 67
INSTALL TEMPORARY PRECAST CONCRETE BARRIER WALL AND STRIPE EXISTING PAVEMENT AS SHOWN.
CONSTRUCT ACCELERATION AND DECELERATION LANES AND EXTEND CROSS DRAINS AT STA. 699+04, STA. 712+63, STA. 737+50, AND 743+53.
INSTALL ALL NEW CROSS DRAINS AS SHOWN.
EXTEND R.C. BOX CULVERT AT STA. 712+53.
CONSTRUCT OUTSIDE SHOULDER AND INSTALL STORM SEWER AS SHOWN.

SOUTHBOUND C/D ROAD
CONSTRUCT C/D ROAD PAVEMENT.
INSTALL STORM SEWER AND CONCRETE BARRIER WALL.

WILLIE RAY DR.
CONSTRUCT NEW PAVEMENT FROM STA. 513+00 TO STA. 525+50 AS SHOWN IN THE PLANS, INCLUDING INTERSECTION WITH HWY. 38.
CONSTRUCT WILLIE RAY DR. DETOUR 1.
CONSTRUCT TEMPORARY WIDENING ON EXISTING WILLIE RAY DRIVE AS SHOWN IN PLANS.
CONSTRUCT BRIDGE OVER FOURMILE CREEK.

HWY. 38
CONSTRUCT HWY. 38 FROM STA. 110+63.127 TO STA. 139+31.38 AS SHOWN IN PLANS.
CONSTRUCT M.S.E. WALL AT STA. 110+55.00.
CONSTRUCT R.C. BOX CULVERTS AT STA. 119+35 AND STA. 133+80.
INSTALL STORM SEWER SYSTEM.
INSTALL TRAFFIC SIGNAL MODIFICATIONS AT THE INTERSECTION OF HWY. 367 AND HWY. 38.

RAMP 1
CONSTRUCT RAMP 1PAVEMENT.
CONSTRUCT R.C. BOX CULVERT AT STA. 713+50.

RAMP 2
CONSTRUCT RAMP 2 PAVEMENT.
CONSTRUCT BRIDGE OVER FOURMILE CREEK.

RAMP 3A
CONSTRUCT RAMP 3A PAVEMENT AS SHOWN IN PLANS FROM STA. 731+00 TO HWY. 67.

RAMP 3B
CONSTRUCT RAMP 3B PAVEMENT AS SHOWN IN PLANS FROM STA. 723+42.32 TO STA. 726+00.00.
GRADE ADJACENT AREAS TO DRAIN TO RAMP 3B STRUCTURES.

RAMP. 4
CONSTRUCT RAMP 4 PAVEMENT FROM C/D ROAD TO STA. 717+89.74.
GRADE ADJACENT AREAS TO DRAIN TO RAMP 4 STRUCTURES.

STAGE 2:

WILLIE RAY DR.
STRIPE DETOUR 1 AND TEMPORARY WIDENING AS SHOWN.
SHIFT TRAFFIC ONTO DETOUR AND TEMPORARY WIDENING.
CONSTRUCT WILLIE RAY DR. AS SHOWN IN PLANS FROM STA. 492+00 TO STA. 513+00 AND STA. 525+50 TO STA. 531+00.
STA. 492+00 TO STA. 500+50 WILL BE CONSTRUCTED UNDER TRAFFIC USING ONE LANE OPERATION WITH FLAGGERS.
CONSTRUCT PART OF R.C. BOX CULVERT AT STA. 503+45.

STAGE 3A:

WILLIE RAY DR.
STRIPE PAVEMENT AS SHOWN.
CONSTRUCT DRIVEWAYS AND SIDE STREETS ON WILLIE RAY DR. AS SHOWN ON PLANS.
DEMOLISH DETOUR AND COMPLETE LEFT SIDE OF WILLIE RAY DR. FROM STA. 506+13 TO STA. 511+64.
DEMOLISH TEMPORARY WIDENING AND COMPLETE RIGHT SIDE OF WILLIE RAY DR. FROM STA. 525+50 TO STA. 527+00.
COMPLETE R.C. BOX CULVERT AT STA. 503+45.

HWY. 38
CONSTRUCT NEW PAVEMENT FROM STA. 139+31.38 TO STA. 101+32.54.
CONSTRUCT OVERPASS BRIDGE OVER HWY. 67 AND M.S.E. WALL AT STA. 107+96.
INSTALL STORM SEWER SYSTEM.

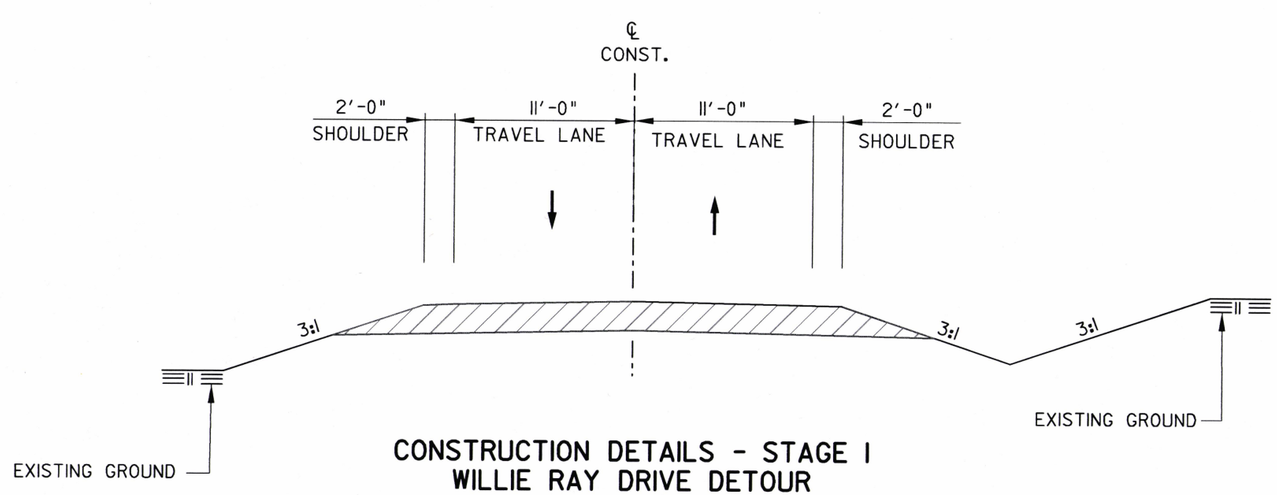
COMPLETE REMAINDER OF RAMPS 3A, 3B, AND 4.
CONSTRUCT RAMP 3A BRIDGE OVER FOURMILE CREEK.

STAGE 3B:

PLACE PERMANENT PAVEMENT MARKINGS AFTER ALL WORK HAS BEEN COMPLETED.

ADJUST TRAFFIC SIGNAL EQUIPMENT AS SHOWN IN PLANS AND PLACE TRAFFIC SIGNAL INTO FINAL OPERATION.

OPEN TO TRAFFIC.



CONSTRUCTION DETAILS - STAGE 1
WILLIE RAY DRIVE DETOUR

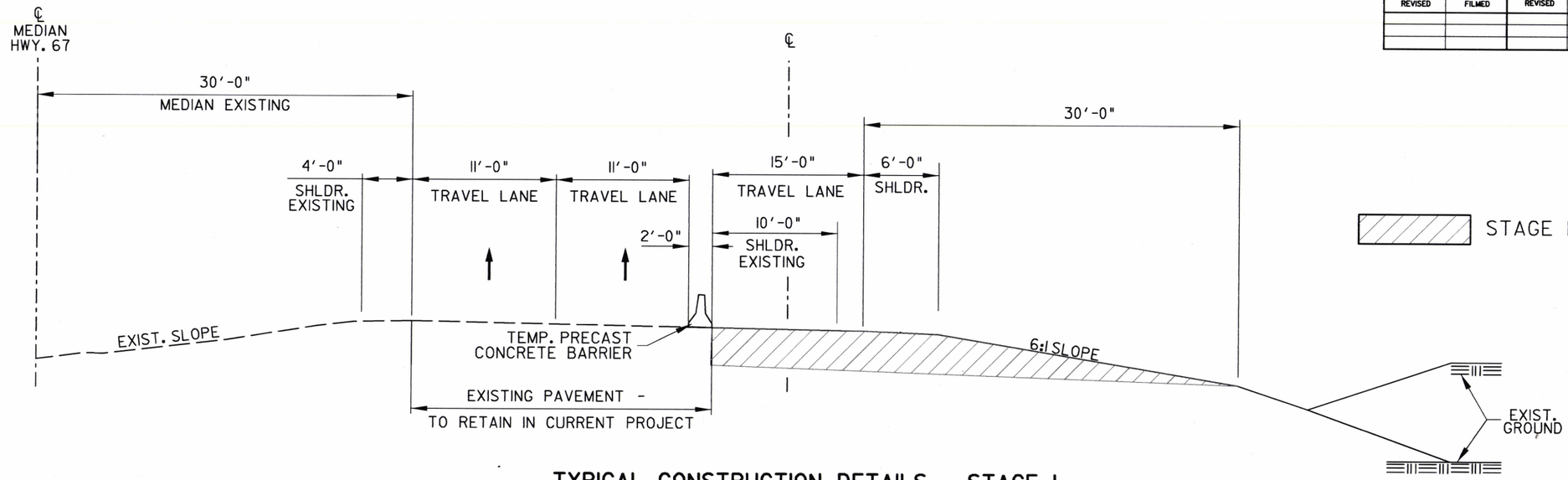
STA. 901+02.60 - STA. 907+83.42

STAGE 1 CONST.

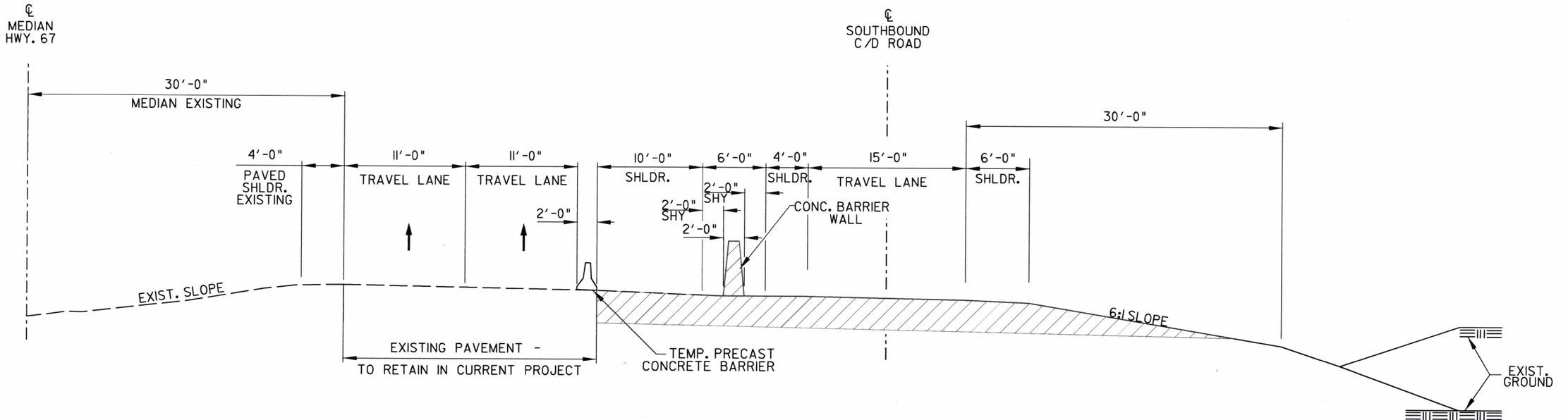
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

STAGE 1
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.		061102	62	400
				(2)	MAINTENANCE OF TRAFFIC DETAILS			



TYPICAL CONSTRUCTION DETAILS - STAGE I
RAMP 1/RAMP 2/RAMP 3A
(SHOWN IN DIRECTION OF TRAFFIC)
STA. 700+00 - STA. 747+00



TYPICAL CONSTRUCTION DETAILS - STAGE I
SOUTHBOUND C/D ROAD
(SHOWN IN DIRECTION OF TRAFFIC)
STA. 691+43.12 - STA. 723+42.32

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10.01.10

STAGE I
MAINTENANCE OF TRAFFIC DETAILS

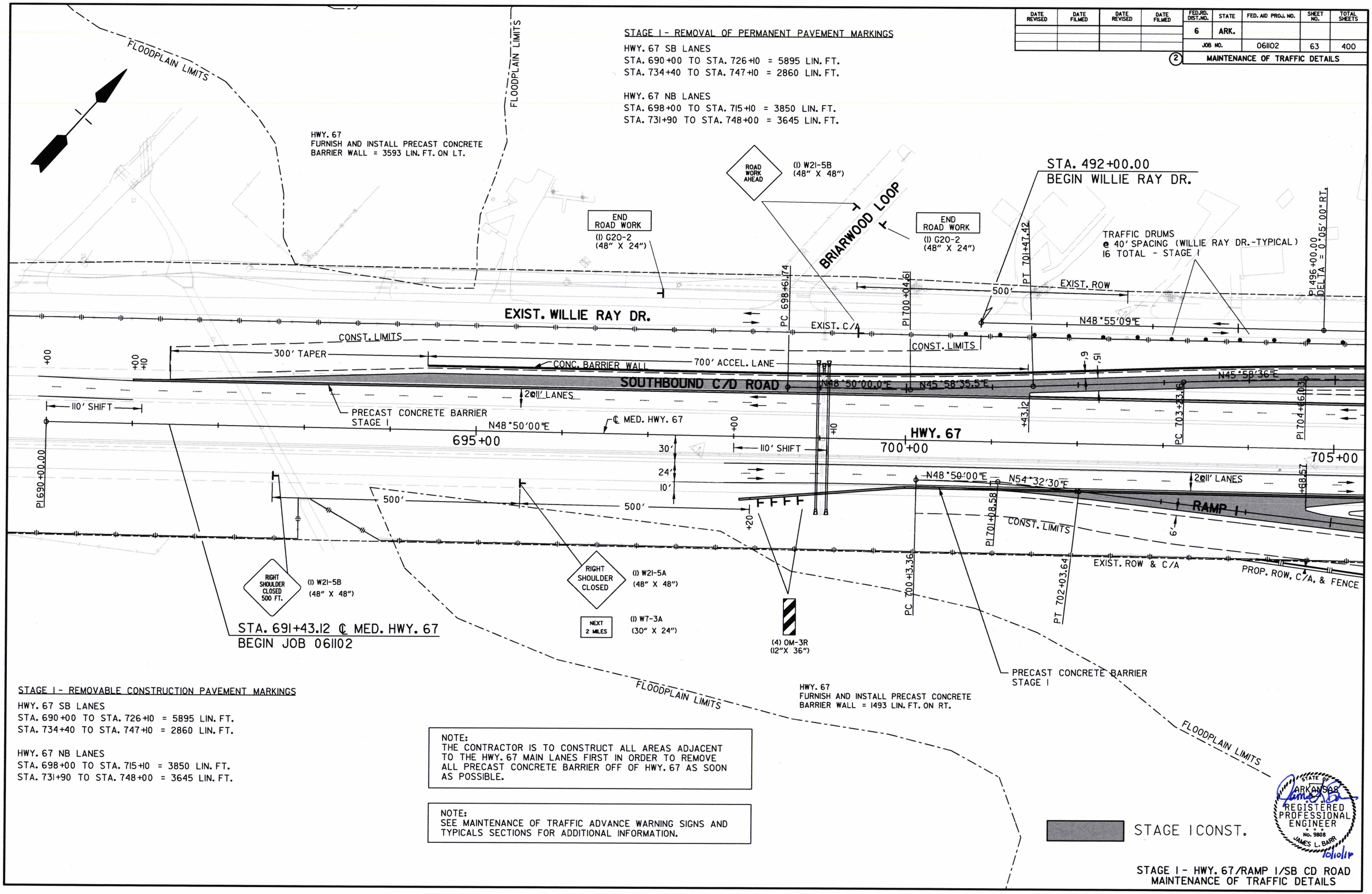
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	63	400

(2) MAINTENANCE OF TRAFFIC DETAILS

STAGE I - REMOVAL OF PERMANENT PAVEMENT MARKINGS

HWY. 67 SB LANES
STA. 690+00 TO STA. 726+10 = 5895 LIN. FT.
STA. 734+40 TO STA. 747+10 = 2860 LIN. FT.

HWY. 67 NB LANES
STA. 698+00 TO STA. 715+10 = 3850 LIN. FT.
STA. 731+90 TO STA. 748+00 = 3645 LIN. FT.



STAGE I - REMOVABLE CONSTRUCTION PAVEMENT MARKINGS

HWY. 67 SB LANES
STA. 690+00 TO STA. 726+10 = 5895 LIN. FT.
STA. 734+40 TO STA. 747+10 = 2860 LIN. FT.

HWY. 67 NB LANES
STA. 698+00 TO STA. 715+10 = 3850 LIN. FT.
STA. 731+90 TO STA. 748+00 = 3645 LIN. FT.

NOTE:
THE CONTRACTOR IS TO CONSTRUCT ALL AREAS ADJACENT TO THE HWY. 67 MAIN LANES FIRST IN ORDER TO REMOVE ALL PRECAST CONCRETE BARRIER OFF OF HWY. 67 AS SOON AS POSSIBLE.

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STAGE I CONST.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10/10/14

STAGE I - HWY. 67/RAMP I/SB CD ROAD
MAINTENANCE OF TRAFFIC DETAILS

NOTE:
THE CONTRACTOR IS TO CONSTRUCT ALL AREAS ADJACENT TO THE HWY. 67 MAIN LANES FIRST IN ORDER TO REMOVE ALL PRECAST CONCRETE BARRIER OFF OF HWY. 67 AS SOON AS POSSIBLE.

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

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.		061102	64	400

(2) MAINTENANCE OF TRAFFIC DETAILS

C.L. CONST. WILLIE RAY DR.
FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 546 LIN. FT. ON RT.

SPECIAL END UNIT
(3) OM-3L (12"X 36")
℄ CONST. WILLIE RAY DR.
PROP. ROW
PROP. C/A & FENCE
(4) OM-3R (12"X 36")
SPECIAL END UNIT
PC 498+52.75
EXIST. ROW
WILLIE RAY DR.
N48°55'09"E
PRECAST CONC. BARR.
CONC. BARRIER WALL
PI 502+80.15
PC 502+42.35
NO. 4 AT 42" TO DRAIN
GRADE TO DRAIN
CONST. LIMITS
EXIST. ROW & C/A
℄ CONST. RAMP 4
RAMP 4
PT 716+86.22
PC 717+89.74
GRADE TO DRAIN
EXIST. P.C.E.
EXIST. P.C.E.
N32°11'41"E
℄ CONST. SOUTHBOUND C/D ROAD
CONC. BARRIER WALL
SOUTHBOUND C/D ROAD
N48°50'00"E
N32°11'41"E
CONC. BARRIER WALL
PRECAST CONCRETE BARRIER STAGE I
PT 706+80.14
2@11' LANES
705+00
710+00
715+00
720+00
HWY. 67
℄ MED. HWY. 67
PRECAST CONCRETE BARRIER STAGE I
2@11' LANES
PC 707+73.86
N54°32'30"E
PI 709+56.91
PT 711+35.5
N76°14'40"E
EXIST. ROW & C/A
CONST. LIMITS
PROP. ROW, C/A, & FENCE
EXIST. P.C.E.
PROP. ROW
R40'
CONST. LIMITS
PROP. ROW
EXIST. P.C.E.
100'
N. POLK ST.
PI 711+65.84
N48°50'00"E
110' SHIFT
TRAFFIC DRUMS @ 120' SPACING (HWY. 67-TYPICAL) 14 TOTAL - STAGE I
TRAFFIC DRUMS @ 30' SPACING 4 TOTAL - STAGE I
EXIST. ROW & C/A
MSE WALL
CONST. LIMITS
EXIST. P.C.E.
EXIST. P.C.E.
CONST. LIMITS
RAMP 1
FLOODPLAIN LIMITS
℄ CONST. RAMP 1
CONST. LIMITS
CONST. LIMITS
PROP. ROW, C/A, & FENCE
ROAD CLOSED
(1) R11-2 (48" X 30")
(1) 8' BARR. TYP. III LT.
ROAD WORK AHEAD
(1) W21-5B (48" X 48")
STAGE I CONST.

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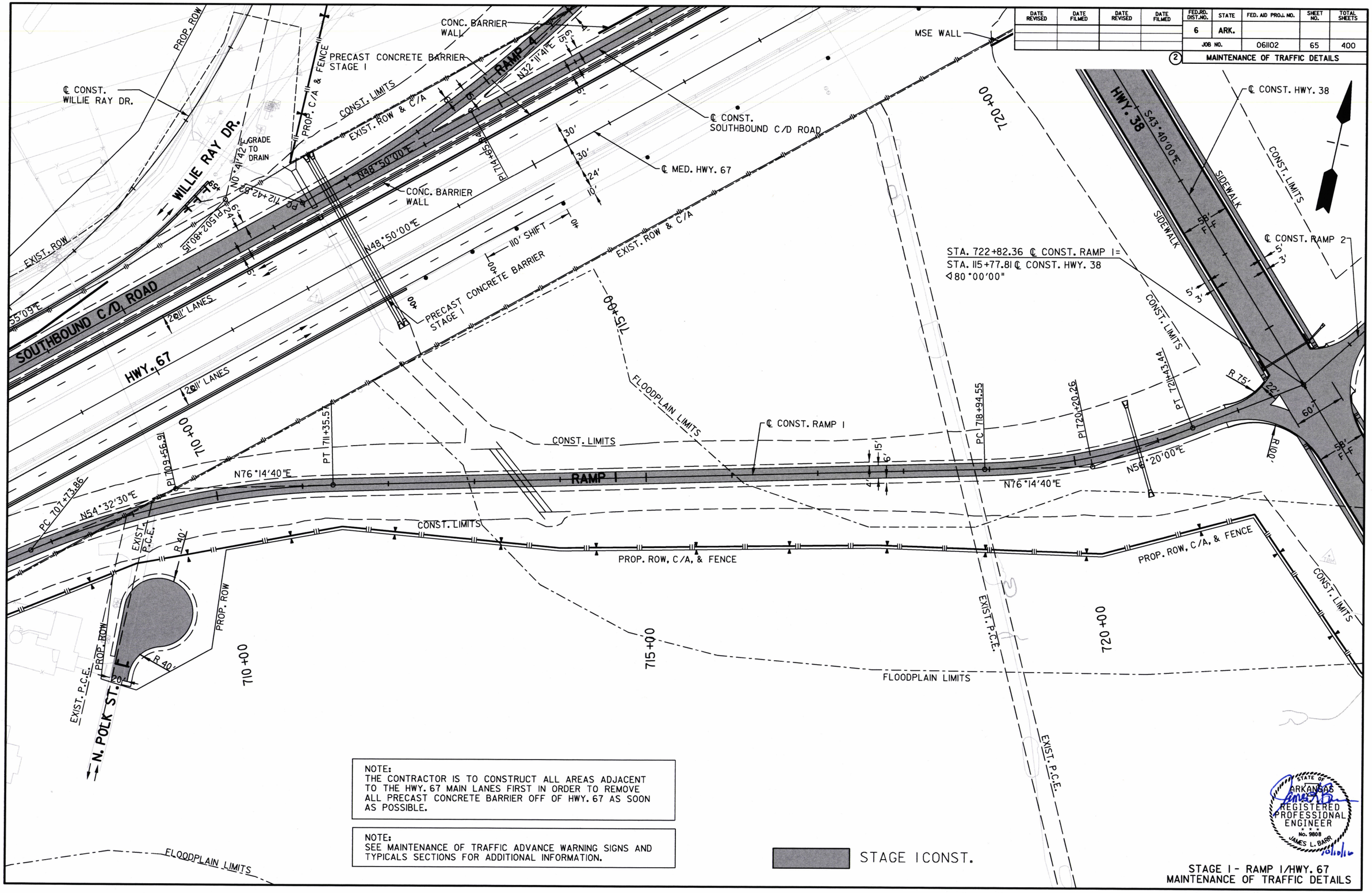
STAGE I - HWY. 67/RAMP 1/RAMP 4 SB. CD RD.
MAINTENANCE OF TRAFFIC DETAILS

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.		061102	65	400

(2) MAINTENANCE OF TRAFFIC DETAILS



NOTE:
THE CONTRACTOR IS TO CONSTRUCT ALL AREAS ADJACENT TO THE HWY. 67 MAIN LANES FIRST IN ORDER TO REMOVE ALL PRECAST CONCRETE BARRIER OFF OF HWY. 67 AS SOON AS POSSIBLE.

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STAGE I CONST.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

STAGE I - RAMP I/HWY. 67
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.		061102	66	400

(2) MAINTENANCE OF TRAFFIC DETAILS

720

CONST. LIMITS

SIDEWALK

HWY. 38

SIDEWALK

CONST. LIMITS

5'
3'
7.58'
S43°40'00"E
5'
3'

℄ CONST. HWY. 38

STA. 720+28.63 ℄ CONST. RAMP 2=
STA. 115+77.81 ℄ CONST. HWY. 38
◁80°00'00"

R 75'

22'

R75'

R100'

PC 722+23.88

PI 723+51.62

PT 724+76.70

PC 728+46.08

℄ MED. HWY. 67

CONST. LIMITS

2@11' LANES

60'

110' SHIFT

10'
24'
30'
30'
24'
10'

(4) OM-3R
(12"X 36")

SPECIAL END UNIT

EXIST. ROW & C/A

EXIST. ROW

N48°50'00"E

PRECAST CONC. BARR.
STAGE I

725+00

EXIST. ROW & C/A

HWY. 67

EXIST. ROW & C/A

FOURMILE CREEK

ROAD CLOSED

(1) RII-2
(48" X 30")

(1) 8' BARR.
TYP. III LT.

TRAFFIC DRUMS
@ 120' SPACING (HWY. 67-TYPICAL)
7 TOTAL - STAGE I

EXIST. C/A

EXIST. C/A

℄ CONST. RAMP 3A

EXIST. ROW & C/A

CONST. LIMITS

8'
15'
4'

RAMP 3A

N71°12'03"E

PROP. C/A & FENCE

TRAFFIC DRUMS
@ 30' SPACING
4 TOTAL - STAGE I

PC 1733+32.28

FLOODPLAIN LIMITS

110' SHIFT

+20

+80

F F F F

PI 1735+80

110' SHIFT

+80

2@11' LANES

N48°50'00"E

1737+92.12

730+00

℄ CONST. RAMP 2

RAMP 2

N16°06'29"E

N36°20'00"E

N16°06'29"E

CONST. LIMITS

CONST. LIMITS

PROP. ROW, C/A, & FENCE

PROP. ROW

PROP. ROW, C/A, & FENCE

CONST. LIMITS

725+00

730+00

735+00

NOTE:
THE CONTRACTOR IS TO CONSTRUCT ALL AREAS ADJACENT TO THE HWY. 67 MAIN LANES FIRST IN ORDER TO REMOVE ALL PRECAST CONCRETE BARRIER OFF OF HWY. 67 AS SOON AS POSSIBLE.

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

(4) OM-3R
(12"X 36")

PRECAST CONCRETE BARRIER
STAGE I

HWY. 67
FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 1593 LIN. FT. ON RT.

FLOODPLAIN LIMITS

EXIST. P.C.E.

EXIST. P.C.E.

STAGE I CONST.

STAGE I NOTES:

1. REMOVE HWY. 67 C.L. PAVEMENT MARKINGS NB & SB.
2. PLACE CONSTRUCTION MARKINGS ON HWY. 67 C.L. NB & SB.
3. PLACE PRECAST BARRIER WALL ON OUTSIDE EDGE OF LANE OF HWY. 67 NB & SB.
4. REMOVE EXISTING HWY. 67 SHOULDER.
5. CONSTRUCT TEMP. PAVEMENT SECTIONS FOR WILLIE RAY DR.
6. PLACE WILLIE RAY DRIVE TRAFFIC ON TEMPORARY PAVEMENT NORTH OF HWY. 38.
7. CONSTRUCT RAMP 1.
8. CONSTRUCT HWY. 38 SHADED AREAS AS SHOWN IN PLANS.
9. CONSTRUCT RAMP 2.
10. CONSTRUCT WILLIE RAY DR. SHADED AREAS AS SHOWN IN PLANS.
11. CONSTRUCT SB CD ROAD.
12. CONSTRUCT RAMP 4 SHADED AREAS AS SHOWN IN PLANS.
13. CONSTRUCT RAMP 3A SHADED AREAS AS SHOWN IN PLANS.

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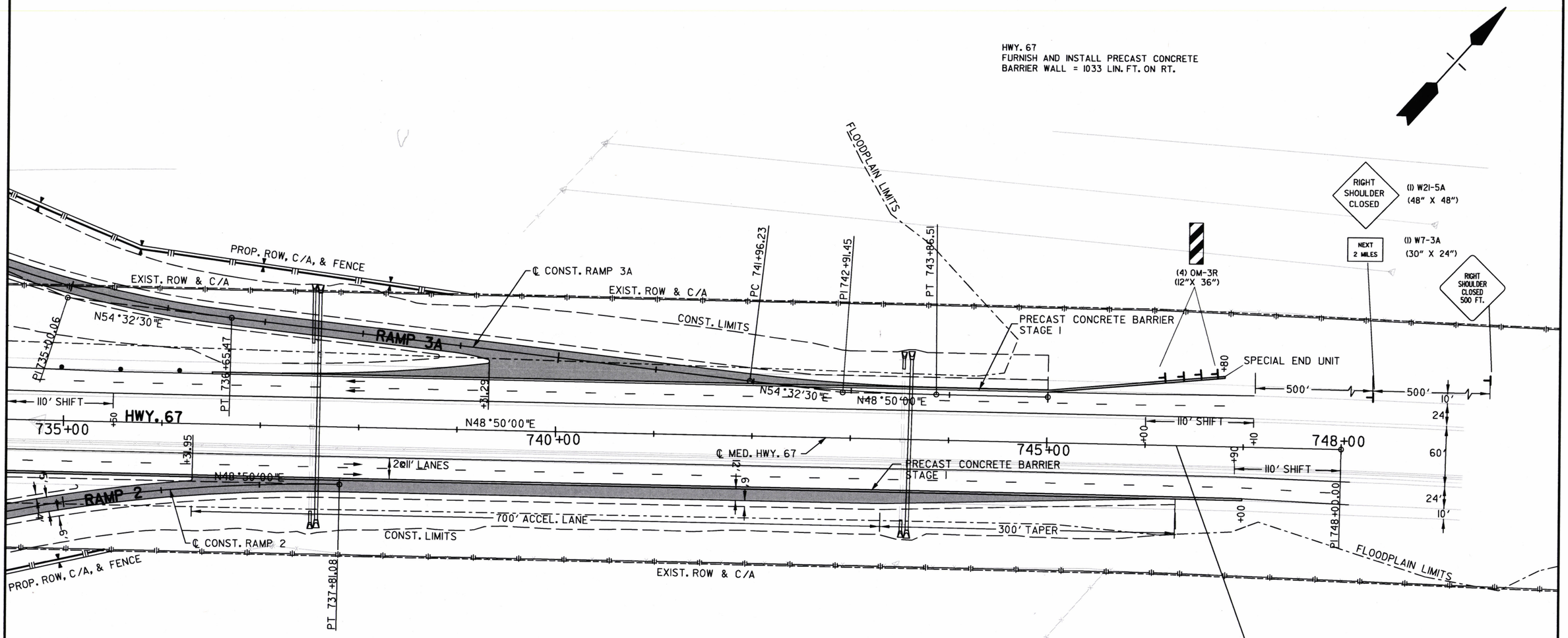
7/10/12

STAGE I - RAMP 2/RAMP 3A/HWY. 67
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.		06I102	67	400

(2) MAINTENANCE OF TRAFFIC DETAILS

HWY. 67
FURNISH AND INSTALL PRECAST CONCRETE
BARRIER WALL = 1033 LIN. FT. ON RT.



NOTE:
THE CONTRACTOR IS TO CONSTRUCT ALL AREAS ADJACENT TO THE HWY. 67 MAIN LANES FIRST IN ORDER TO REMOVE ALL PRECAST CONCRETE BARRIER OFF OF HWY. 67 AS SOON AS POSSIBLE.

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STA. 746+31.95 ℄ MED. HWY. 67
END JOB 06I102

STAGE I CONST.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
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JAMES L. BARR
10.10.16

STAGE I - RAMP 2/RAMP 3A/HWY. 67
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.		061102	68	400

(2) MAINTENANCE OF TRAFFIC DETAILS

EXIST. ROW & C/A

725+00

CONST. LIMITS

RAMP 2

PT 724+76.70

N16°06'29"E

PROP. ROW, C/A, & FENCE

PI 723+51.62

N36°20'00"E

FLOODPLAIN LIMITS

(1) R11-2 (48" X 30")

ROAD CLOSED

(1) 16' BARR. TYP. III LT.

(1) 16' BARR. TYP. III RT.

℄ CONST. RAMP 2

PC 722+23.88

15'

4'

MSE WALL

CONST. LIMITS

STA. 720+28.63 ℄ CONST.RAMP 2 =
STA. 115+77.81 ℄ CONST. HWY. 38
◁80°00'00"

℄ CONST. HWY. 38

PROP. ROW, C/A, & FENCE

CONST. LIMITS

R100'

R 75'

SIDEWALK

5'

3'

58' F-F

HWY. 38

S43°40'00"E

22'

STA. 722+82.36 ℄ CONST. RAMP 1 =
STA. 115+77.81 ℄ CONST. HWY. 38
◁80°00'00"

CONST. LIMITS

PT 721+43.44

720+00

115+00

RAMP 1

N56°20'00"E

PI 720+20.26

EXIST. P.C.E.

EXIST. P.C.E.

PC 718+94.55

N76°14'40"E

CONST. LIMITS

PROP. ROW, C/A, & FENCE

FLOODPLAIN LIMITS

120+00

125+00

PC 126+08.10

℄ CONST. RAMP 1

15'

6'

4'

CONST. LIMITS

NOTE:
THE CONTRACTOR IS TO CONSTRUCT ALL AREAS ADJACENT TO THE HWY. 67 MAIN LANES FIRST IN ORDER TO REMOVE ALL PRECAST CONCRETE BARRIER OFF OF HWY. 67 AS SOON AS POSSIBLE.

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STAGE I CONST.

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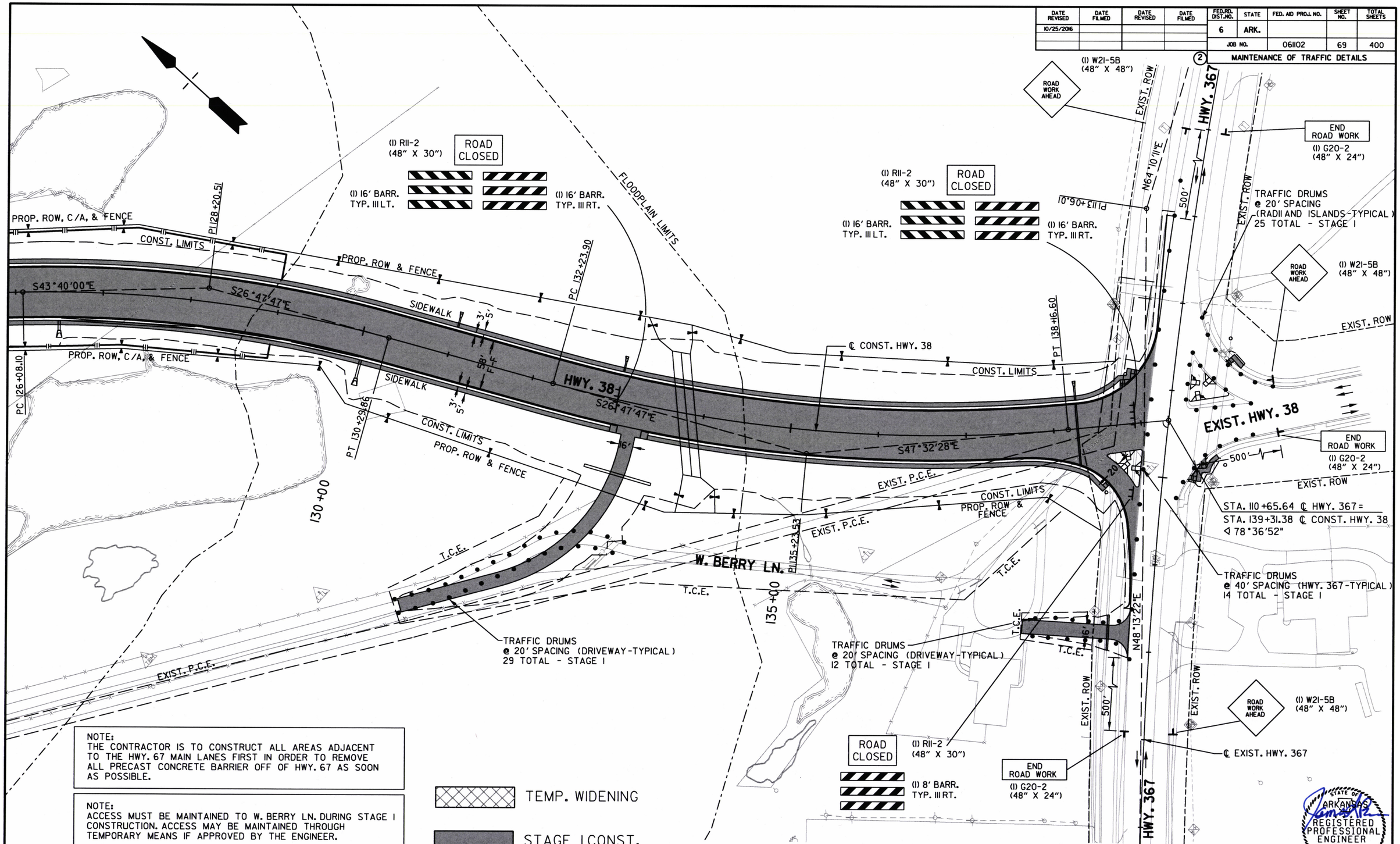
STAGE I - HWY. 38
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/25/2016				6	ARK.			
				JOB NO.		061102	69	400

2 MAINTENANCE OF TRAFFIC DETAILS



NOTE:
THE CONTRACTOR IS TO CONSTRUCT ALL AREAS ADJACENT TO THE HWY. 67 MAIN LANES FIRST IN ORDER TO REMOVE ALL PRECAST CONCRETE BARRIER OFF OF HWY. 67 AS SOON AS POSSIBLE.

NOTE:
ACCESS MUST BE MAINTAINED TO W. BERRY LN. DURING STAGE I CONSTRUCTION. ACCESS MAY BE MAINTAINED THROUGH TEMPORARY MEANS IF APPROVED BY THE ENGINEER.

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

TEMP. WIDENING

STAGE I CONST.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10/25/16

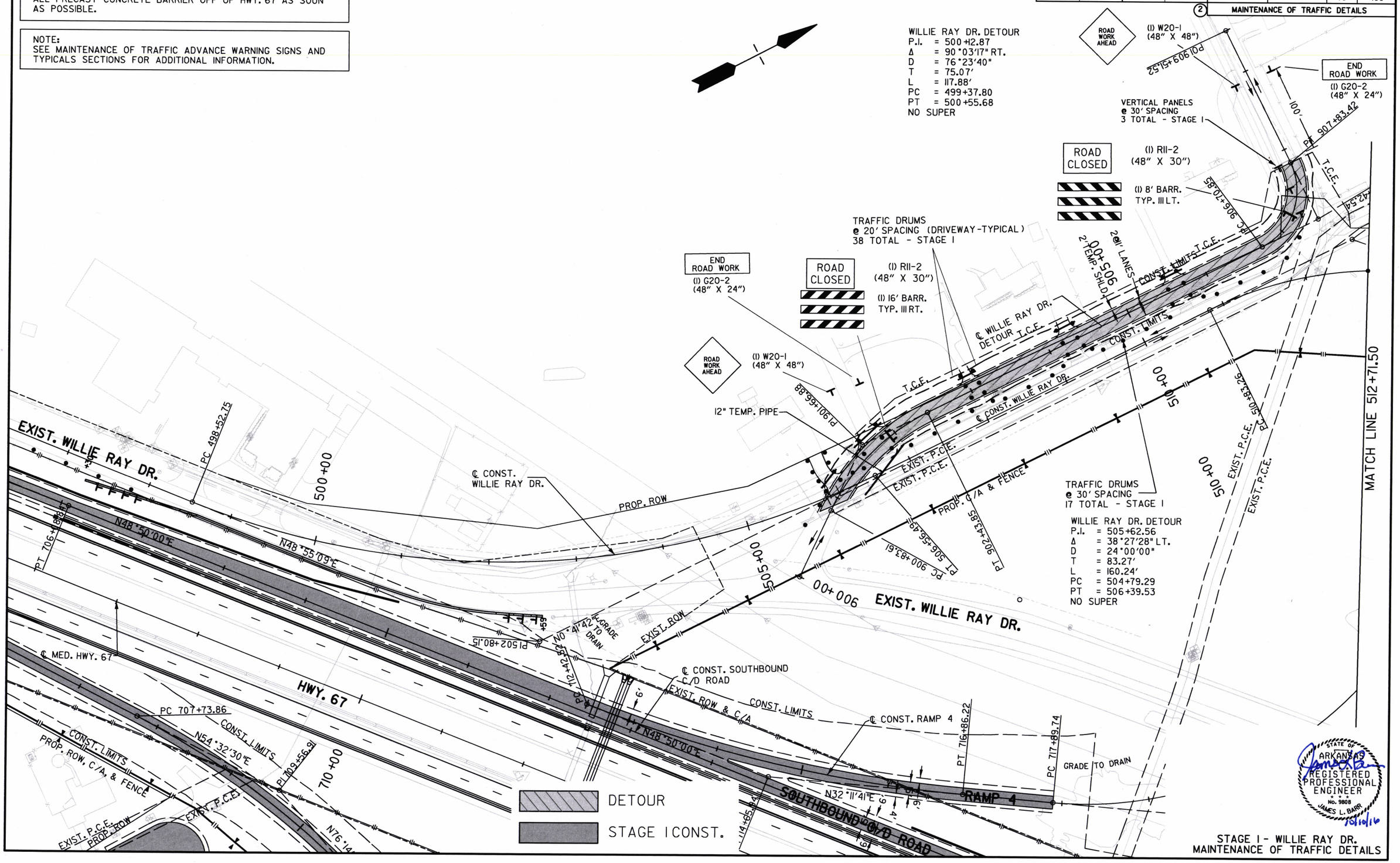
STAGE I - HWY. 38
MAINTENANCE OF TRAFFIC DETAILS

NOTE:
THE CONTRACTOR IS TO CONSTRUCT ALL AREAS ADJACENT TO THE HWY. 67 MAIN LANES FIRST IN ORDER TO REMOVE ALL PRECAST CONCRETE BARRIER OFF OF HWY. 67 AS SOON AS POSSIBLE.

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

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.		061102	70	400

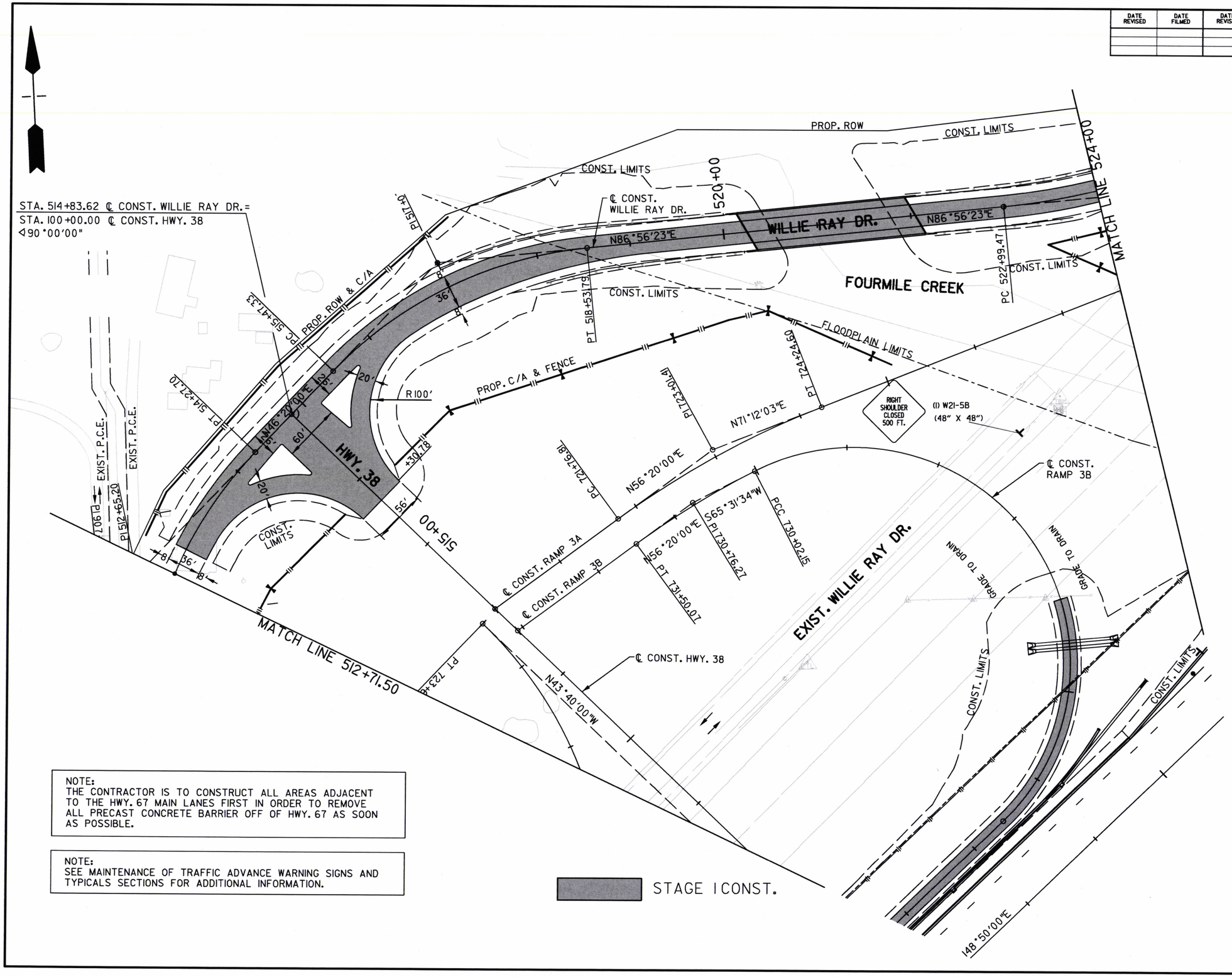
2 MAINTENANCE OF TRAFFIC DETAILS



STAGE 1 - WILLIE RAY DR.
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.		061102	71	400

(2) MAINTENANCE OF TRAFFIC DETAILS



NOTE:
THE CONTRACTOR IS TO CONSTRUCT ALL AREAS ADJACENT TO THE HWY. 67 MAIN LANES FIRST IN ORDER TO REMOVE ALL PRECAST CONCRETE BARRIER OFF OF HWY. 67 AS SOON AS POSSIBLE.

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10/10/16

STAGE I - WILLIE RAY DR./RAMP 3B
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.		061102	72	400

(2) MAINTENANCE OF TRAFFIC DETAILS

FLOODPLAIN LIMITS

MATCH LINE 524+00

PROP. ROW

CONST. LIMITS

525+00

24'

8'

PI 525+58.23

9.4'

9.4'

N47°12'37"E

CONST. LIMITS

235' TEMP. WIDENING TAPER

34'

235' TEMP. WIDENING TAPER

TEMPORARY WIDENING
C.L. CONST. WILLIE RAY DR.
STA. 523+37 - STA. 529+00
MAX 9.4' OFFSET FROM
RT. EXIST. LANE EDGE

PT 527+96.09

530+00

VERTICAL PANELS
@ 40' SPACING (WILLIE RAY DR.-TYPICAL)
18 TOTAL - STAGE I

PROP. ROW

2@11' LANES ℄ CONST. WILLIE RAY DR.

PROP. ROW

PI 531+00.00

ROAD WORK AHEAD

(1) W20-1
(48" X 48")

500'

EXIST. WILLIE RAY DR.

END ROAD WORK

(1) G20-2
(48" X 24")

PROP. ROW, C/A, & FENCE

6'

15.4'

N71°12'03"E

CONST. LIMITS

733+32.28

90.06

N54°32'30"E

5.47

RAMP 3A

FLOODPLAIN LIMITS

EXIST. ROW & C/A

PC 741+96.23

PI 742+91.45

CONST. LIMITS

N54°32'30"E

N48°50'

NOTE:
THE CONTRACTOR IS TO CONSTRUCT ALL AREAS ADJACENT TO THE HWY. 67 MAIN LANES FIRST IN ORDER TO REMOVE ALL PRECAST CONCRETE BARRIER OFF OF HWY. 67 AS SOON AS POSSIBLE.

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STAGE I CONST.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/22

STAGE I - WILLIE RAY DR.
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.		061102	73	400
				(2)	MAINTENANCE OF TRAFFIC DETAILS			

STAGE 1:

HWY. 67
INSTALL TEMPORARY PRECAST CONCRETE BARRIER WALL AND STRIPE EXISTING PAVEMENT AS SHOWN.
CONSTRUCT ACCELERATION AND DECELERATION LANES AND EXTEND CROSS DRAINS AT STA. 699+04, STA. 712+63, STA. 737+50, AND 743+53.
INSTALL ALL NEW CROSS DRAINS AS SHOWN.
EXTEND R.C. BOX CULVERT AT STA. 712+53.
CONSTRUCT OUTSIDE SHOULDER AND INSTALL STORM SEWER AS SHOWN.

SOUTHBOUND C/D ROAD
CONSTRUCT C/D ROAD PAVEMENT.
INSTALL STORM SEWER AND CONCRETE BARRIER WALL.

WILLIE RAY DR.
CONSTRUCT NEW PAVEMENT FROM STA. 513+00 TO STA. 525+50 AS SHOWN IN THE PLANS, INCLUDING INTERSECTION WITH HWY. 38.
CONSTRUCT WILLIE RAY DR. DETOUR 1.
CONSTRUCT TEMPORARY WIDENING ON EXISTING WILLIE RAY DRIVE AS SHOWN IN PLANS.
CONSTRUCT BRIDGE OVER FOURMILE CREEK.

HWY. 38
CONSTRUCT HWY. 38 FROM STA. 110+63.127 TO STA. 139+31.38 AS SHOWN IN PLANS.
CONSTRUCT M.S.E. WALL AT STA. 110+55.00.
CONSTRUCT R.C. BOX CULVERTS AT STA. 119+35 AND STA. 133+80.
INSTALL STORM SEWER SYSTEM.
INSTALL TRAFFIC SIGNAL MODIFICATIONS AT THE INTERSECTION OF HWY. 367 AND HWY. 38.

RAMP 1
CONSTRUCT RAMP 1PAVEMENT.
CONSTRUCT R.C. BOX CULVERT AT STA. 713+50.

RAMP 2
CONSTRUCT RAMP 2 PAVEMENT.
CONSTRUCT BRIDGE OVER FOURMILE CREEK.

RAMP 3A
CONSTRUCT RAMP 3A PAVEMENT AS SHOWN IN PLANS FROM STA. 731+00 TO HWY. 67.

RAMP 3B
CONSTRUCT RAMP 3B PAVEMENT AS SHOWN IN PLANS FROM STA. 723+42.32 TO STA. 726+00.00.
GRADE ADJACENT AREAS TO DRAIN TO RAMP 3B STRUCTURES.

RAMP. 4
CONSTRUCT RAMP 4 PAVEMENT FROM C/D ROAD TO STA. 717+89.74.
GRADE ADJACENT AREAS TO DRAIN TO RAMP 4 STRUCTURES.

STAGE 2:

WILLIE RAY DR.
STRIPE DETOUR 1 AND TEMPORARY WIDENING AS SHOWN.
SHIFT TRAFFIC ONTO DETOUR AND TEMPORARY WIDENING.
CONSTRUCT WILLIE RAY DR. AS SHOWN IN PLANS FROM STA. 492+00 TO STA. 513+00 AND STA. 525+50 TO STA. 531+00.
STA. 492+00 TO STA. 500+50 WILL BE CONSTRUCTED UNDER TRAFFIC USING ONE LANE OPERATION WITH FLAGGERS.
CONSTRUCT PART OF R.C. BOX CULVERT AT STA. 503+45.

STAGE 3A:

WILLIE RAY DR.
STRIPE PAVEMENT AS SHOWN.
CONSTRUCT DRIVEWAYS AND SIDE STREETS ON WILLIE RAY DR. AS SHOWN ON PLANS.
DEMOLISH DETOUR AND COMPLETE LEFT SIDE OF WILLIE RAY DR. FROM STA. 506+13 TO STA. 511+64.
DEMOLISH TEMPORARY WIDENING AND COMPLETE RIGHT SIDE OF WILLIE RAY DR. FROM STA. 525+50 TO STA. 527+00.
COMPLETE R.C. BOX CULVERT AT STA. 503+45.

HWY. 38
CONSTRUCT NEW PAVEMENT FROM STA. 139+31.38 TO STA. 101+32.54.
CONSTRUCT OVERPASS BRIDGE OVER HWY. 67 AND M.S.E. WALL AT STA. 107+96.
INSTALL STORM SEWER SYSTEM.

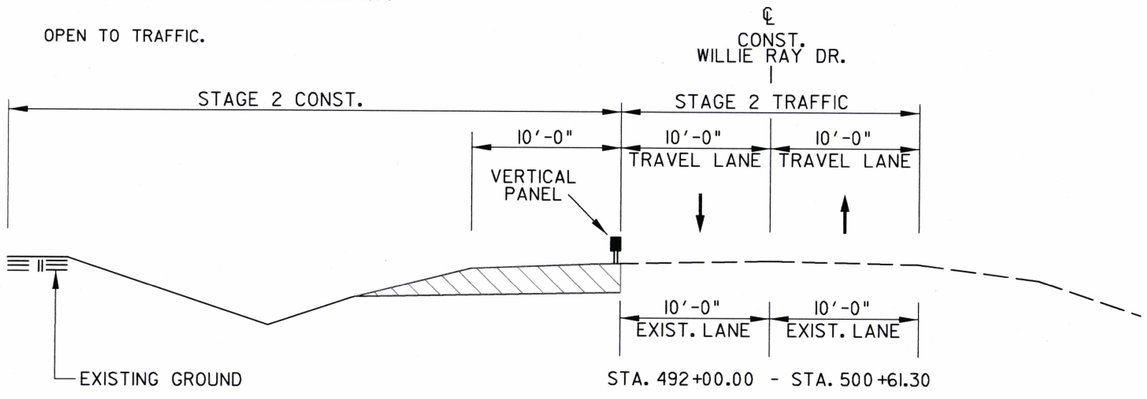
COMPLETE REMAINDER OF RAMPS 3A, 3B, AND 4.
CONSTRUCT RAMP 3A BRIDGE OVER FOURMILE CREEK.

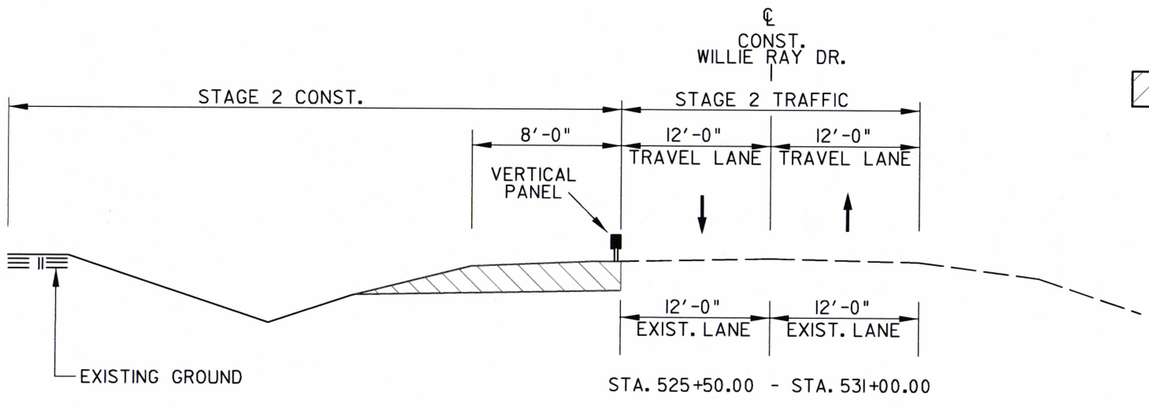
STAGE 3B:

PLACE PERMANENT PAVEMENT MARKINGS AFTER ALL WORK HAS BEEN COMPLETED.

ADJUST TRAFFIC SIGNAL EQUIPMENT AS SHOWN IN PLANS AND PLACE TRAFFIC SIGNAL INTO FINAL OPERATION.

OPEN TO TRAFFIC.





STAGE 2 CONST.

CONSTRUCTION DETAILS - STAGE 2
WILLIE RAY DRIVE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

STAGE 2
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.		061102	74	400

(2) MAINTENANCE OF TRAFFIC DETAILS

NOTE:
SEE STD. DRAWING TC-2 FOR FLAGGING OPERATIONS ON WILLIE RAY DR.

ROAD WORK AHEAD
(I) W21-5B
(48" X 48")

END ROAD WORK
(I) G20-2
(48" X 24")

BRIARWOOD LOOP

TRAFFIC DRUMS
@ 20' SPACING (DRIVEWAY-TYPICAL)
42 TOTAL - STAGE 2

TRAFFIC DRUMS
@ 40' SPACING (WILLIE RAY DR.-TYPICAL)
11 TOTAL - STAGE 2

PT 701+47.42
PC 698+61.74
PT 700+04.61
PI 496+00.00
DELTA = 0°05'00" RT.
PC 498+52.75

EXIST. ROW
CONST. LIMITS
500'
200' TRANS.
WILLIE RAY DR.
EXIST. C/A
N48°55'09"E
PROP. ROW
CONC. BARRIER WALL

N48°50'00.0"E
N45°58'35.5"E
N45°58'36"E
N48°50'00"E
SOUTHBOUND C/D ROAD
TRAFFIC DRUMS
@ 40' SPACING (HWY. 67-TYPICAL)
34 TOTAL - STAGE 2
CONC. BARRIER WALL

℄ MED. HWY. 67
HWY. 67
PC 703+23.66
PI 704+66.03
PT 706+08.84

N48°50'00"E
N54°32'30"E
℄ CONST. RAMP I
PC 707+73.86
PI 709+56.91
700+00
710+00
RAMP I
PI 701+08.58
PC 700+13.36
PT 702+03.64
EXIST. ROW & C/A
PROP. ROW, C/A, & FENCE
705+00
EXIST. P.C.E.
N76°14'40"E
PT 711+35.5

FLOODPLAIN LIMITS
FLOODPLAIN LIMITS

R 40'
PROP. ROW
EXIST. P.C.E.
PROP. ROW
100'
N. POLK ST.
R 40
PROP. ROW
PROP. ROW, C/A, & FENCE

ROAD WORK AHEAD
(I) W21-5B
(48" X 48")

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STAGE 2 CONST.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

STAGE 2 - HWY. 67
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED./NO. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/28/2016				6	ARK.			
				JOB NO.		061102	75	400
				(2) MAINTENANCE OF TRAFFIC DETAILS				

NOTE:
SEE STD. DRAWING TC-2 FOR FLAGGING OPERATIONS ON WILLIE RAY DR.

C.L. CONST. WILLIE RAY DR.
RELOCATED PRECAST CONCRETE
BARRIER WALL = 353 LIN. FT. ON RT. WITH
TEMPORARY IMPACT ATTENUATION BARRIER

STA. 502+00 INSTALL
12" X 65' TEMP. PIPE CULVERT

STA. 502+92 INSTALL
DBL. 12" X 60' TEMP. PIPE CULVERT

STA. 504+90 INSTALL
12" X 68' TEMP. PIPE CULVERT

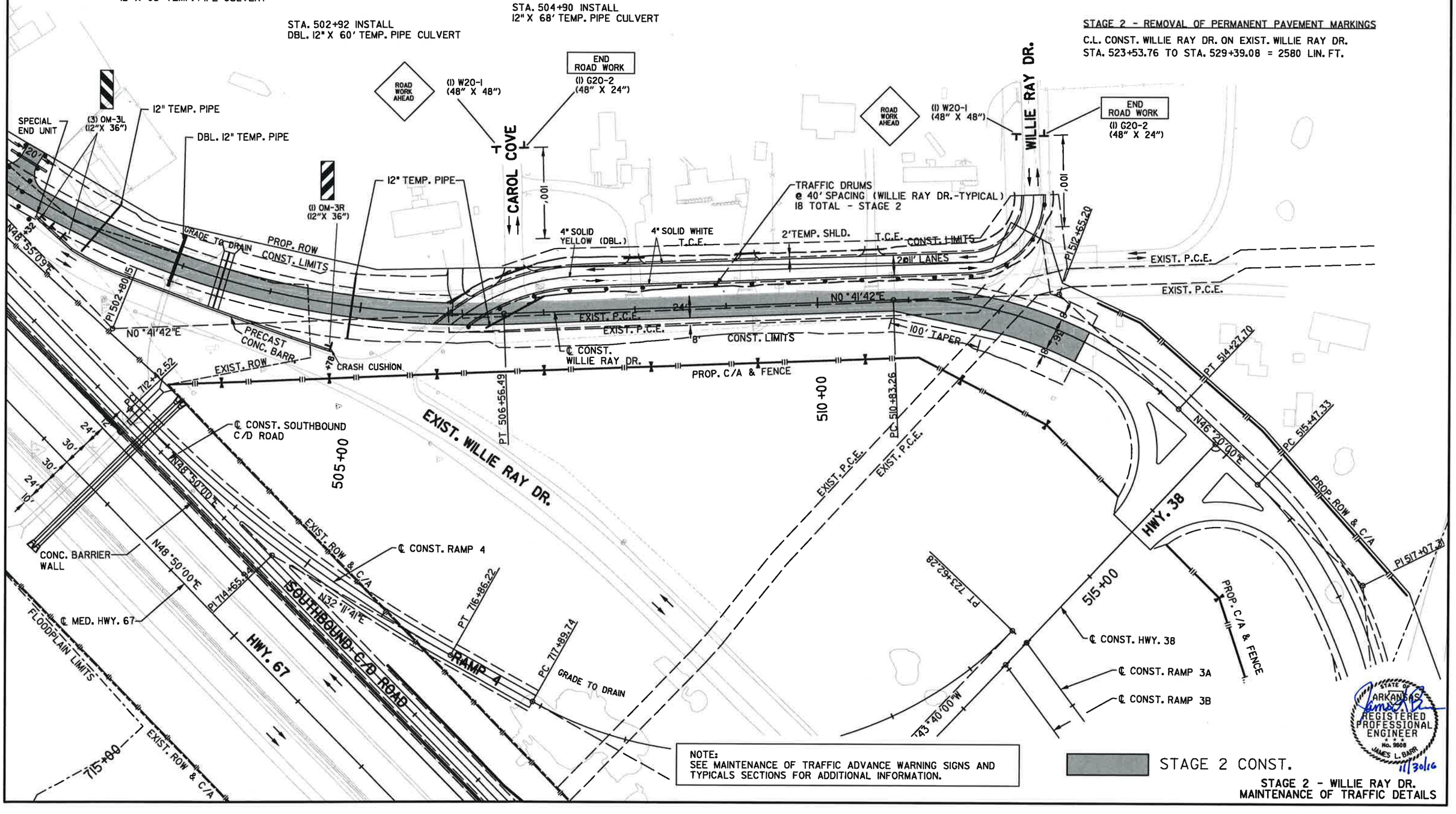
STAGE 2 - CONSTRUCTION PAVEMENT MARKINGS

WILLIE RAY DR. DETOUR 1
4" SOLID WHITE - STA. 900+89.66 TO 907+83.42 = 695 LIN. FT.
4" SOLID YELLOW (DBL.) - STA. 900+89.66 TO 907+83.42 = 1390 LIN. FT.

C.L. CONST. WILLIE RAY DR. ON EXIST. WILLIE RAY DR.
4" SOLID WHITE - STA. 523+53.76 TO 529+39.08 = 1150 LIN. FT.
4" SOLID YELLOW (DBL.) - STA. 523+53.76 TO 529+22.12 = 1255 LIN. FT.

STAGE 2 - REMOVAL OF PERMANENT PAVEMENT MARKINGS

C.L. CONST. WILLIE RAY DR. ON EXIST. WILLIE RAY DR.
STA. 523+53.76 TO STA. 529+39.08 = 2580 LIN. FT.



NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STAGE 2 CONST.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/30/16

STAGE 2 - WILLIE RAY DR.
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.		061102	76	400

(2) MAINTENANCE OF TRAFFIC DETAILS

PI 517+07.37

PROP. ROW

N86°56'23"E

PT 518+53.79

520+00

FLOODPLAIN LIMITS

PROP. C/A & FENCE

WILLIE RAY DR.

PI 523+01.41

520+00

S 20'00"E

N71°12'03"E

PT 524+24.60

S65°31'34"W

PI 730+76.21

PCC 730+02.15

PC 522+99.47

N86°56'23"E

PROP. ROW

525+00

PROP. C/A & FENCE

℄ CONST. WILLIE RAY DR.

CONST. LIMITS

PT 527+96.09

TRAFFIC DRUMS
@ 40' SPACING (WILLIE RAY DR.-TYPICAL)
17 TOTAL - STAGE 2

530+00

VERTICAL PANELS
@ 40' SPACING (TYPICAL)
4 TOTAL - STAGE 2

PROP. ROW

4" SOLID YELLOW (DBL.)

4" SOLID WHITE

N47°12'37"E

2@11' LANES

100' TRANS. TO EXIST. LANE WIDTHS

CONST. LIMITS

PROP. ROW

PI 525+58.23

525+00

PI 531+00.00

530+00

ROAD CLOSED

(1) R11-2
(48" X 30")

(1) 8' BARR. TYP. III LT.

ROAD WORK AHEAD

(1) W20-1
(48" X 48")

EXIST. WILLIE RAY DR.

END ROAD WORK

(1) G20-2
(48" X 24")

FLOODPLAIN LIMITS

GRADE TO DRAIN

GRADE TO DRAIN

℄ CONST. RAMP 3B

℄ CONST. RAMP 3A

RAMP 3A

PROP. ROW, C/A, & FENCE

EXIST. ROW & C/A

EXIST. ROW

EXIST. ROW & C/A

N71°12'03"E

2.28

N54°32'30"E

EXIST. C/A

EXIST. C/A

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STAGE 2 CONST.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

STAGE 2 - WILLIE RAY DR.
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.		061102	77	400

(2) MAINTENANCE OF TRAFFIC DETAILS

℄ CONST. WILLIE RAY DR.

PROP. ROW

500'

CONST. LIMITS

PROP. ROW

PI 731+00.00

ROAD WORK AHEAD

(I) W20-1 (48" X 48")

WILLIE RAY DR.

END ROAD WORK

(I) G20-2 (48" X 24")

ROAD CLOSED

(I) R11-2 (48" X 30")

(I) 8' BARR. TYP. III LT.

FLOOD PLAIN LIMITS

PROP. ROW, C/A, & FENCE

℄ CONST. RAMP 3A

EXIST. ROW & C/A

EXIST. ROW & C/A

PC 741+96.23

PI 742+91.45

PT 743+86.51

RAMP 3A

N54°32'30"E

PI 735+00.06

PT 736+65.47

735+00

FLOOD PLAIN LIMITS

N54°32'30"E

N48°50'00"E

TRAFFIC DRUMS @ 40' SPACING (HWY. 67-TYPICAL) 17 TOTAL - STAGE 2

HWY. 67

N48°50'00"E

℄ MED. HWY. 67

N48°50'00"E

RAMP 2

EXIST. ROW & C/A

℄ CONST. RAMP 2

PROP. ROW & C/A

735+00

PT 737+81.08

740+00

TRAFFIC DRUMS @ 40' SPACING (HWY. 67-TYPICAL) 25 TOTAL - STAGE 2

FLOOD PLAIN LIMITS

EXIST. ROW & C/A

740+00

745+00

PI 748+00.00

748+00

STA. 746+31.95 ℄ MED. HWY. 67

END JOB 061102

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS, AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STAGE 2 CONST.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
07/10/16

STAGE 2
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.		061102	78	400

(2) MAINTENANCE OF TRAFFIC DETAILS

EXIST. ROW & C/A

725+00

RAMP 2

PT 724+76.70

N16°06'29"E

PROP. ROW, C/A, & FENCE

FLOODPLAIN LIMITS

ROAD CLOSED

(1) R11-2 (48" X 30")

(1) 16' BARR. TYP. III RT.

(1) R11-2 (48" X 30")

ROAD CLOSED

(1) 16' BARR. TYP. III LT.

(1) 16' BARR. TYP. III RT.

PI 723+51.62

N36°20'00"E

PC 722+23.88

15'

4'

℄ CONST. RAMP 2

STA. 720+28.63 ℄ CONST.RAMP 2 =
STA. 115+77.81 ℄ CONST. HWY. 38
◁ 80°00'00"

MSE WALL

R100'

R 75'

PROP. ROW, C/A, & FENCE

SIDEWALK

5'

3'

58' F-F

HWY. 38

℄ CONST. HWY. 38

S43°40'00"E

SIDEWALK

22'

R 75'

R100'

SIDEWALK

PROP. ROW, C/A, & FENCE

PC 126+08.10

STA. 722+82.36 ℄ CONST. RAMP 1 =
STA. 115+77.81 ℄ CONST. HWY. 38
◁ 80°00'00"

PT 721+43.44

720+00

ROAD CLOSED

(1) R11-2 (48" X 30")

(1) 16' BARR. TYP. III RT.

115+00

RAMP 1

N56°20'00"E

PROP. ROW, C/A, & FENCE

120+00

125+00

PI 720+20.26

FLOODPLAIN LIMITS

EXIST. P.C.E.

EXIST. P.C.E.

PC 718+94.55

N76°14'40"E

15'

6'

4'

℄ CONST. RAMP 1

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
7/10/16

STAGE 2 - HWY. 38
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.		061102	79	400

(2) MAINTENANCE OF TRAFFIC DETAILS

STAGE 1:

HWY. 67
INSTALL TEMPORARY PRECAST CONCRETE BARRIER WALL AND STRIPE EXISTING PAVEMENT AS SHOWN.
CONSTRUCT ACCELERATION AND DECELERATION LANES AND EXTEND CROSS DRAINS AT STA. 699+04, STA. 712+63, STA. 737+50, AND 743+53.
INSTALL ALL NEW CROSS DRAINS AS SHOWN.
EXTEND R.C. BOX CULVERT AT STA. 712+53.
CONSTRUCT OUTSIDE SHOULDER AND INSTALL STORM SEWER AS SHOWN.

SOUTHBOUND C/D ROAD
CONSTRUCT C/D ROAD PAVEMENT.
INSTALL STORM SEWER AND CONCRETE BARRIER WALL.

WILLIE RAY DR.
CONSTRUCT NEW PAVEMENT FROM STA. 513+00 TO STA. 525+50 AS SHOWN IN THE PLANS, INCLUDING INTERSECTION WITH HWY. 38.
CONSTRUCT WILLIE RAY DR. DETOUR 1.
CONSTRUCT TEMPORARY WIDENING ON EXISTING WILLIE RAY DRIVE AS SHOWN IN PLANS.
CONSTRUCT BRIDGE OVER FOURMILE CREEK.

HWY. 38
CONSTRUCT HWY. 38 FROM STA. 110+63.127 TO STA. 139+31.38 AS SHOWN IN PLANS.
CONSTRUCT M.S.E. WALL AT STA. 110+55.00.
CONSTRUCT R.C. BOX CULVERTS AT STA. 119+35 AND STA. 133+80.
INSTALL STORM SEWER SYSTEM.
INSTALL TRAFFIC SIGNAL MODIFICATIONS AT THE INTERSECTION OF HWY. 367 AND HWY. 38.

RAMP 1
CONSTRUCT RAMP 1PAVEMENT.
CONSTRUCT R.C. BOX CULVERT AT STA. 713+50.

RAMP 2
CONSTRUCT RAMP 2 PAVEMENT.
CONSTRUCT BRIDGE OVER FOURMILE CREEK.

RAMP 3A
CONSTRUCT RAMP 3A PAVEMENT AS SHOWN IN PLANS FROM STA. 731+00 TO HWY. 67.

RAMP 3B
CONSTRUCT RAMP 3B PAVEMENT AS SHOWN IN PLANS FROM STA. 723+42.32 TO STA. 726+00.00.
GRADE ADJACENT AREAS TO DRAIN TO RAMP 3B STRUCTURES.

RAMP. 4
CONSTRUCT RAMP 4 PAVEMENT FROM C/D ROAD TO STA. 717+89.74.
GRADE ADJACENT AREAS TO DRAIN TO RAMP 4 STRUCTURES.

STAGE 2:

WILLIE RAY DR.
STRIPE DETOUR 1AND TEMPORARY WIDENING AS SHOWN.
SHIFT TRAFFIC ONTO DETOUR AND TEMPORARY WIDENING.
CONSTRUCT WILLIE RAY DR. AS SHOWN IN PLANS FROM STA. 492+00 TO STA. 513+00 AND STA. 525+50 TO STA. 531+00.
STA. 492+00 TO STA. 500+50 WILL BE CONSTRUCTED UNDER TRAFFIC USING ONE LANE OPERATION WITH FLAGGERS.
CONSTRUCT PART OF R.C. BOX CULVERT AT STA. 503+45.

STAGE 3A:

WILLIE RAY DR.
STRIPE PAVEMENT AS SHOWN.
CONSTRUCT DRIVEWAYS AND SIDE STREETS ON WILLIE RAY DR. AS SHOWN ON PLANS.
DEMOLISH DETOUR AND COMPLETE LEFT SIDE OF WILLIE RAY DR. FROM STA. 506+13 TO STA. 511+64.
DEMOLISH TEMPORARY WIDENING AND COMPLETE RIGHT SIDE OF WILLIE RAY DR. FROM STA. 525+50 TO STA. 527+00.
COMPLETE R.C. BOX CULVERT AT STA. 503+45.

HWY. 38
CONSTRUCT NEW PAVEMENT FROM STA. 139+31.38 TO STA. 101+32.54.
CONSTRUCT OVERPASS BRIDGE OVER HWY. 67 AND M.S.E. WALL AT STA. 107+96.
INSTALL STORM SEWER SYSTEM.

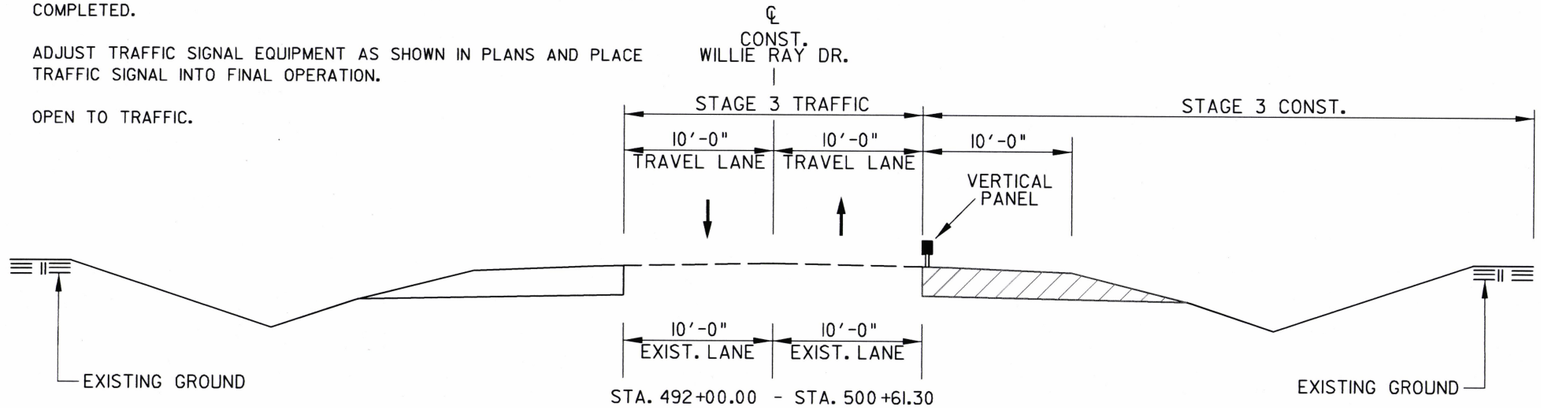
COMPLETE REMAINDER OF RAMPS 3A, 3B, AND 4.
CONSTRUCT RAMP 3A BRIDGE OVER FOURMILE CREEK.

STAGE 3B:

PLACE PERMANENT PAVEMENT MARKINGS AFTER ALL WORK HAS BEEN COMPLETED.

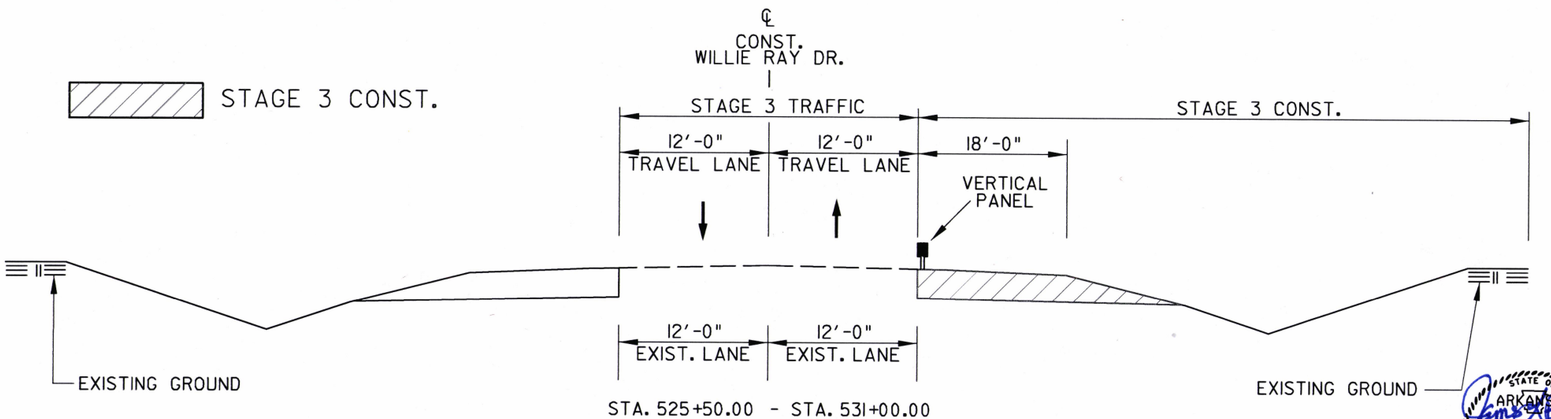
ADJUST TRAFFIC SIGNAL EQUIPMENT AS SHOWN IN PLANS AND PLACE TRAFFIC SIGNAL INTO FINAL OPERATION.

OPEN TO TRAFFIC.



STA. 492+00.00 - STA. 500+61.30

STAGE 3 CONST.



STA. 525+50.00 - STA. 531+00.00

CONSTRUCTION DETAILS - STAGE 2
WILLIE RAY DRIVE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

STAGE 3
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.		061102	80	400

(2) MAINTENANCE OF TRAFFIC DETAILS

ROAD WORK AHEAD
(I) W21-5B
(48" X 48")

END ROAD WORK
(I) G20-2
(48" X 24")

BRIARWOOD LOOP

ROAD WORK AHEAD
(I) W21-5B
(48" X 48")

END ROAD WORK
(I) G20-2
(48" X 24")

VERTICAL PANELS
@ 40' SPACING (TYPICAL)
19 TOTAL - STAGE 3

WILLIE RAY DR.

PC 698+61.74
PI 700+04.61
PT 701+47.42
PI 496+00.00
DELTA = 0°05'00" RT.
PC 498+52.75
EXIST. ROW
EXIST. C/A
500'
16'
8'
24'
30'
20'
PROP. ROW
CONST. LIMITS
N48°55'09"E
CRASH CUSHION
CONC. BARRIER WALL
N45°58'36"E
N48°50'00"E
SOUTHBOUND C/D ROAD
N48°50'00.0"E
N45°58'35.5"E
PC 703+23.66
PI 704+60.03
PT 706+08.84
℄ MED. HWY. 67
HWY. 67
30'
24'
10'
N48°50'00"E
N54°32'30"E
℄ CONST. RAMP 1
PC 707+73.86
PI 709+56.91
700+00
710+00
RAMP 1
N54°32'30"E
PI 701+08.58
PC 700+13.36
PT 702+03.64
EXIST. ROW & C/A
PROP. ROW, C/A, & FENCE
705+00
EXIST. P.C.E.
N76°14'40"E
PT 711+35.51
R 40'
PROP. ROW
PROP. ROW, C/A, & FENCE
EXIST. P.C.E.
100'
N. POLK ST.
R 40'
PROP. ROW
TRAFFIC DRUMS
@ 40' SPACING (HWY. 67-TYPICAL)
34 TOTAL - STAGE 3
FLOODPLAIN LIMITS
FLOODPLAIN LIMITS
ROAD WORK AHEAD
(I) W21-5B
(48" X 48")

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STAGE 3 CONST.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
9/10/16

STAGE 3 - HWY. 67/WILLIE RAY DR.
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
8/28/2016				6	ARK.			
				JOB NO.		061102	81	400

(2) MAINTENANCE OF TRAFFIC DETAILS

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

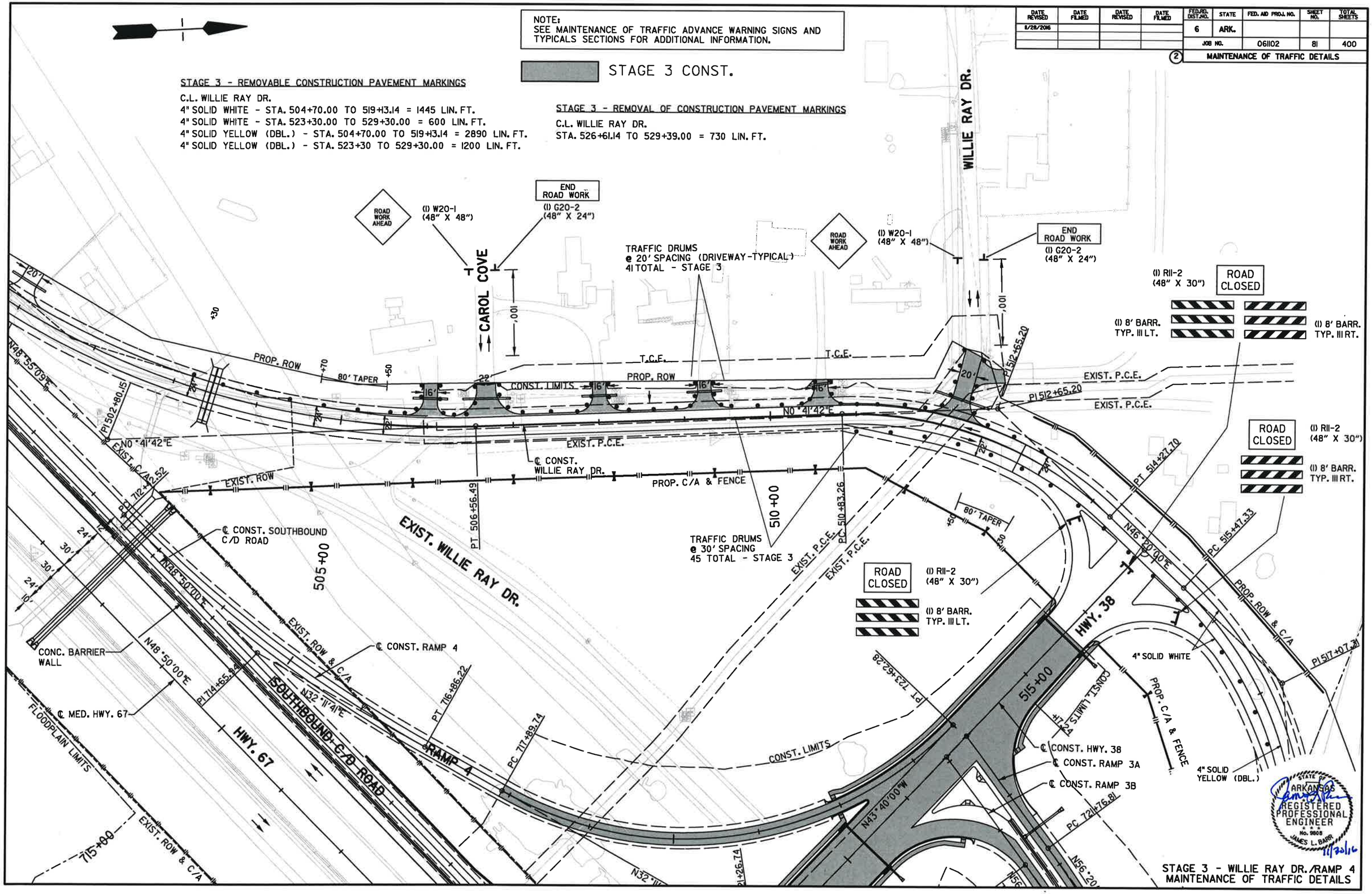
STAGE 3 CONST.

STAGE 3 - REMOVABLE CONSTRUCTION PAVEMENT MARKINGS

C.L. WILLIE RAY DR.
4" SOLID WHITE - STA. 504+70.00 TO 519+13.14 = 1445 LIN. FT.
4" SOLID WHITE - STA. 523+30.00 TO 529+30.00 = 600 LIN. FT.
4" SOLID YELLOW (DBL.) - STA. 504+70.00 TO 519+13.14 = 2890 LIN. FT.
4" SOLID YELLOW (DBL.) - STA. 523+30 TO 529+30.00 = 1200 LIN. FT.

STAGE 3 - REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS

C.L. WILLIE RAY DR.
STA. 526+61.14 TO 529+39.00 = 730 LIN. FT.



STAGE 3 - WILLIE RAY DR./RAMP 4
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.		061102	82	400

(2) MAINTENANCE OF TRAFFIC DETAILS

PROP. C/A & FENCE
PT 518+53.79
FLOODPLAIN LIMITS
N86°56'23"E
PROP. ROW
HWY. 67
RELOCATED PRECAST CONCRETE
BARRIER WALL = 493 LIN. FT. ON LT.
WILLIE RAY DR.
℄ CONST.
WILLIE RAY DR.
4" SOLID
YELLOW (DBL.)
N86°56'23"E
+20
230' SHIFT
+50
PC 522+99.47
PROP. C/A & FENCE
4" SOLID WHITE
+00
PT 527+96.09
TRAFFIC DRUMS
@ 40' SPACING
(WILLIE RAY DR.-TYPICAL)
28 TOTAL - STAGE 3
PROP. ROW
+30
230' SHIFT
N47°12'37"E
CONST. LIMITS
PROP. ROW
PROP. ROW, C/A, & FENCE
℄ CONST.
RAMP 3A
N71°12'03"E
ROAD CLOSED
(1) R11-2
(48" X 30")
( ) W1-6 (48" X 24")
(1) 16' BARR.
TYP. III RT.
STA. 720+14.59 ℄ CONST. RAMP 3A =
STA. 103+00.00 ℄ CONST. HWY. 38
◁80°00'00"
+17.24
CONST. LIMITS
R100'
PC 721+76.81
PI 723+01.41
PT 723+62.28
℄ CONST.
RAMP 4
N56°20'00"E
N71°12'03"E
PT 724+24.60
20'
R 75'
R100'
N56°20'00"E
PT 731+50.07
PI 730+76.27
S65°31'34"W
PCC 730+02.45
CONST. LIMITS
N43°40'00"W
56'
CONC. BARRIER
WALL
RAMP 3A
105+00
RAMP 4
SIDEWALK
HWY. 38
SIDEWALK
5'
3'
5'
3'
STA. 733+06.47 ℄ CONST. RAMP 3B =
STA. 103+33.51 ℄ CONST. HWY. 38
◁80°00'00"
RAMP 3B
725+00
6'
4'
15'
CONST. LIMITS
PI 525+58.23
15'
6'
4'
PI 721+26.14
5'
6'
4'
N32°11'41"E
℄ CONST. HWY. 38
69' F-F
+39.38
100' TAPER
CONST. LIMITS
+39.38
S43°40'00.0"E
STA. 721+31.30 ℄ CONST. SOUTHBOUND C/D ROAD =
STA. 108+38.61 ℄ CONST. HWY. 38
◁87°30'00"
FOURMILE CREEK
CONST. LIMITS
CONST. LIMITS
℄ CONST.
RAMP 3B
MSE WALL
EXIST. ROW & C/A
℄ CONST. SOUTHBOUND C/D ROAD
730+00
EXIST. ROW
EXIST. ROW & C/A
N71°12'03"E
CONC. BARRIER WALL
SOUTHBOUND C/D ROAD
FLOODPLAIN LIMITS
PC 733+32.28
58' F-F
PRECAST CONCRETE BARRIER
STAGE 3
STA. 723+42.32 ℄ CONST. RAMP 3B =
STA. 723+42.32 ℄ CONST. SOUTHBOUND C/D ROAD
◁00°00'00"
EXIST. C/A
EXIST. C/A
10'
24'
30'
30'
24'
10'
N48°50'00"E
HWY. 67
℄ MED. HWY. 67
PRECAST CONCRETE BARRIER
STAGE 3
TEMP. IMPACT
ATTENUATION BARRIER
110+00
MSE WALL
STA. 721+34.39 ℄ MED. HWY. 67 =
STA. 109+20.19 ℄ CONST. HWY. 38
◁87°30'00"
N48°50'00"E
PI 733+26
FLOODPLAIN LIMITS
EXIST. ROW & C/A
120+00
725+00
HWY. 67
RELOCATED PRECAST CONCRETE
BARRIER WALL = 300 LIN. FT. ON RT. WITH
TEMPORARY IMPACT ATTENUATION BARRIER

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/06/16

STAGE 3 CONST.

STAGE 3 - RAMP 3A/3B
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.		061102	83	400

(2) MAINTENANCE OF TRAFFIC DETAILS

℄ CONST. WILLIE RAY DR.
PROP. ROW
500'
CONST. LIMITS
PROP. ROW
PI 531+00.00
ROAD WORK AHEAD
(I) W20-1 (48" X 48")
WILLIE RAY DR.
END ROAD WORK
(I) G20-2 (48" X 24")
ROAD CLOSED
(I) R11-2 (48" X 30")
(I) 8' BARR. TYP. III LT.
FLOODPLAIN LIMITS
PROP. ROW, C/A, & FENCE
℄ CONST. RAMP 3A
EXIST. ROW & C/A
EXIST. ROW & C/A
PC 741+96.23
PI 742+91.45
PT 743+86.51
RAMP 3A
N54°32'30"E
PI 735+00.06
735+00
PT 736+65.47
FLOODPLAIN LIMITS
N54°32'30"E
N48°50'00"E
TRAFFIC DRUMS
@ 40' SPACING (HWY. 67-TYPICAL)
17 TOTAL - STAGE 3
HWY. 67
N48°50'00"E
℄ MED. HWY. 67
N48°50'00"E
RAMP 2
EXIST. ROW & C/A
℄ CONST. RAMP 2
PROP. ROW & C/A
735+00
PT 737+81.08
740+00
TRAFFIC DRUMS
@ 40' SPACING (HWY. 67-TYPICAL)
25 TOTAL - STAGE 3
FLOODPLAIN LIMITS
EXIST. ROW & C/A
740+00
745+00
PI 748+00.00
748+00
STA. 746+31.95 ℄ MED. HWY. 67
END JOB 061102

NOTE:
SEE MAINTENANCE OF TRAFFIC ADVANCE WARNING SIGNS AND TYPICALS SECTIONS FOR ADDITIONAL INFORMATION.

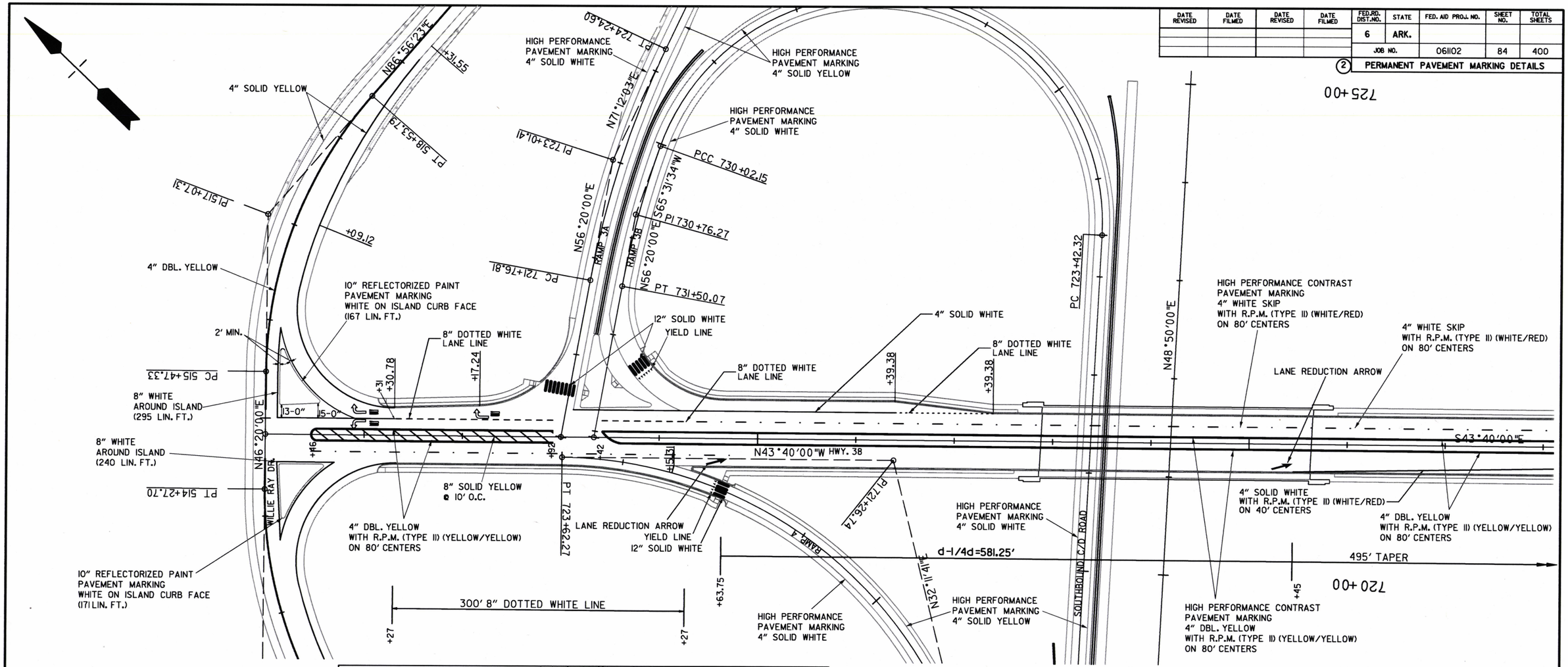
STAGE 3 CONST.

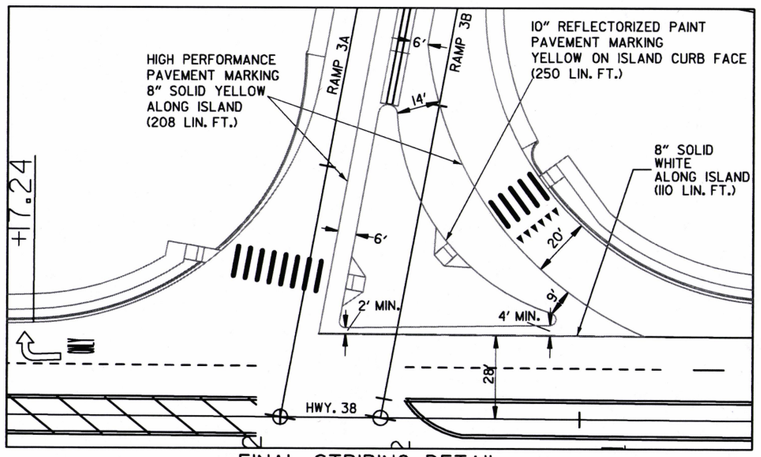
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

STAGE 3
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.		061102	84	400

(2) PERMANENT PAVEMENT MARKING DETAILS





FINAL STRIPING DETAIL
FOR CONCRETE ISLANDS
(HWY. 38/RAMP 3A & RAMP 3B)
FOR ISLAND DIMENSIONS SEE SHEET 31

PERMANENT PAVEMENT MARKING DETAILS QUANTITIES

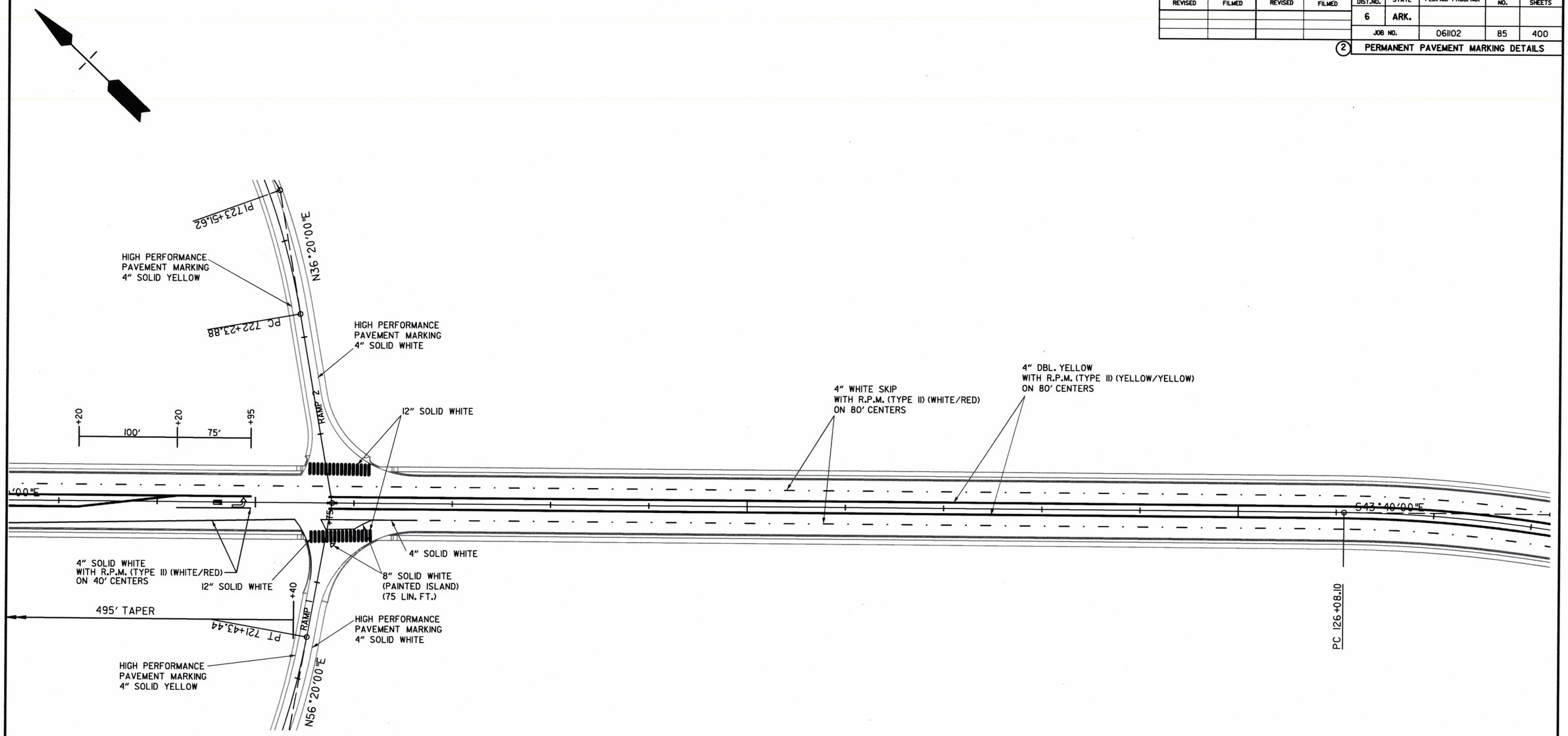
THERMOPLASTIC PAVEMENT MARKING WHITE (4") = 2988 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (4") = 19132 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (8") = 1481 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (8") = 208 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKINGS WHITE (10") = 628 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKINGS YELLOW (10") = 250 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (12") = 1228 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (YIELD LINE) = 120 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING (ARROW) = 11 EACH
THERMOPLASTIC PAVEMENT MARKING (WORD) = 9 EACH
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (4") = 69 LIN. FT.
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4") = 1100 LIN. FT.
HIGH PERFORMANCE PAVEMENT MARKING WHITE (4") = 9417 LIN. FT.
HIGH PERFORMANCE PAVEMENT MARKING YELLOW (4") = 7946 LIN. FT.
HIGH PERFORMANCE PAVEMENT MARKING WHITE (8") = 1840 LIN. FT.
RAISED PAVEMENT MARKERS (TYPE II)(WHITE/RED) = 421 EACH
RAISED PAVEMENT MARKERS (TYPE II)(YELLOW/YELLOW) = 131 EACH

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/06/16

HWY. 38
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	85	400

(2) PERMANENT PAVEMENT MARKING DETAILS



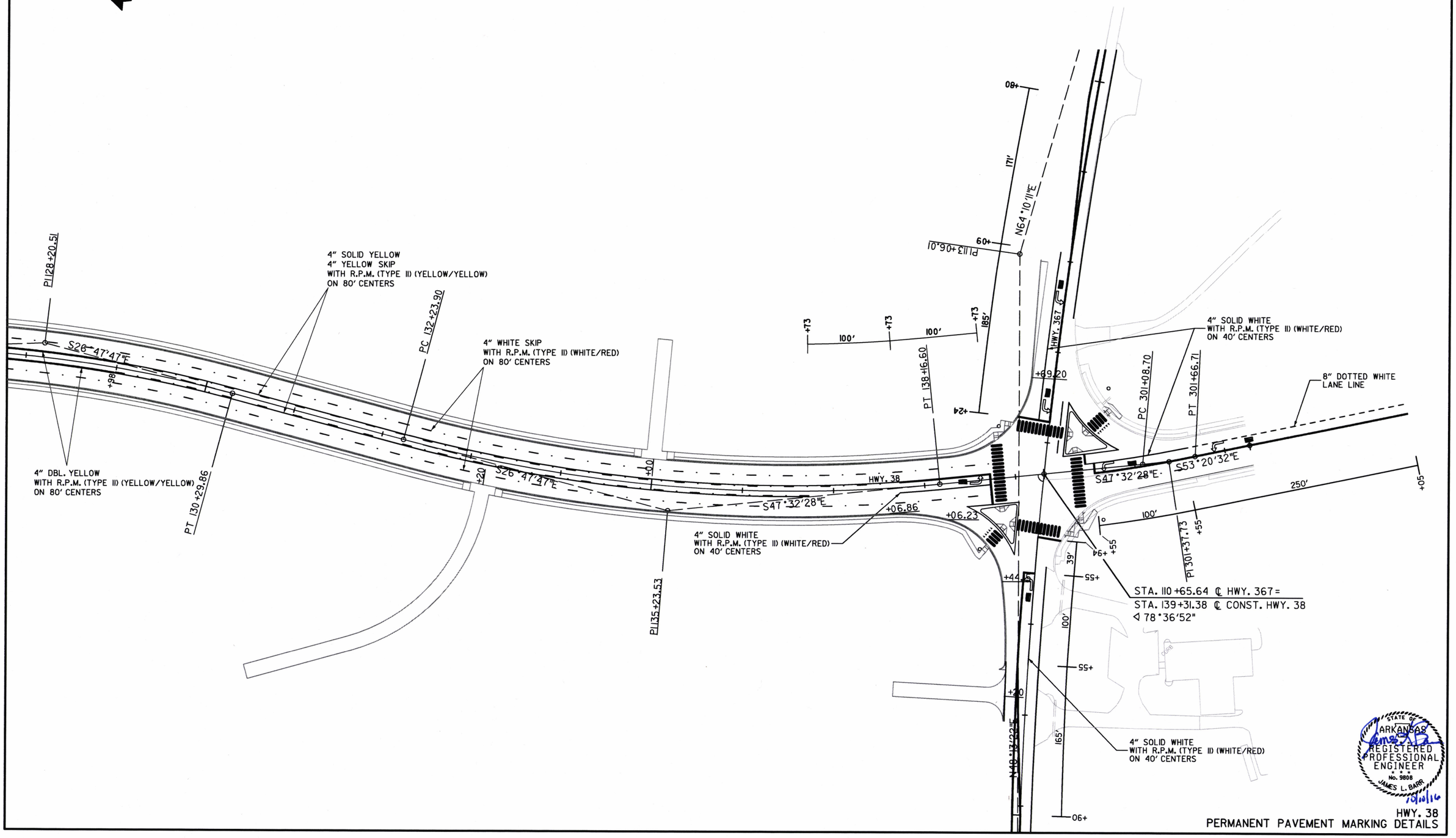
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

HWY. 38
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	86	400

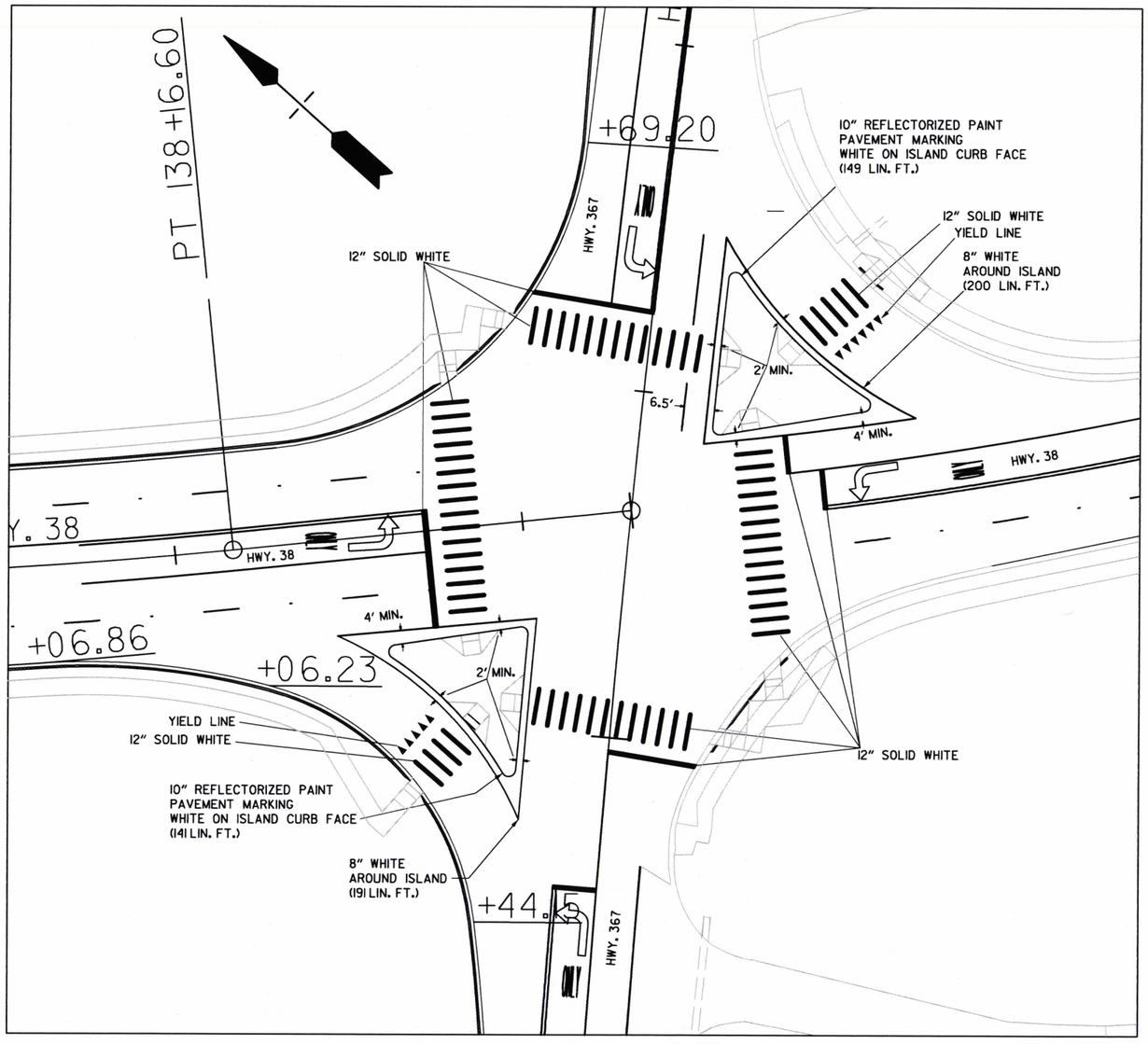
(2) PERMANENT PAVEMENT MARKING DETAILS



HWY. 38
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	87	400

(2) PERMANENT PAVEMENT MARKING DETAILS



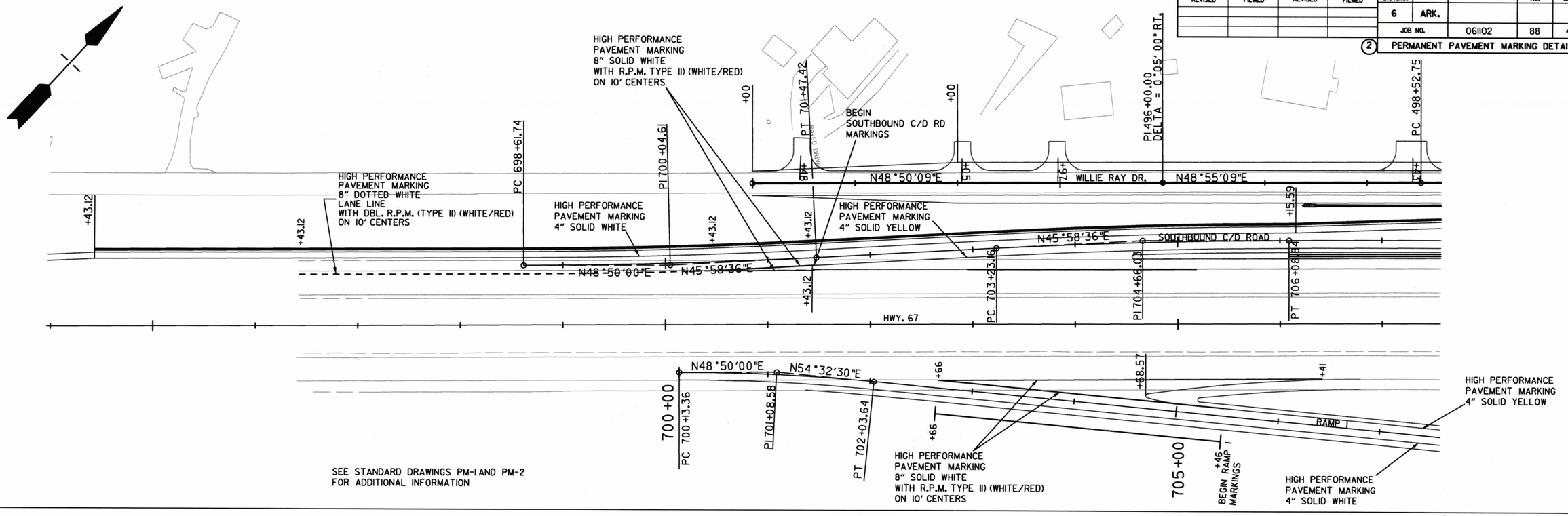
FINAL STRIPING DETAIL
FOR CONCRETE ISLANDS
(HWY. 38/HWY. 367)
FOR ISLAND DIMENSIONS SEE SHEET 167

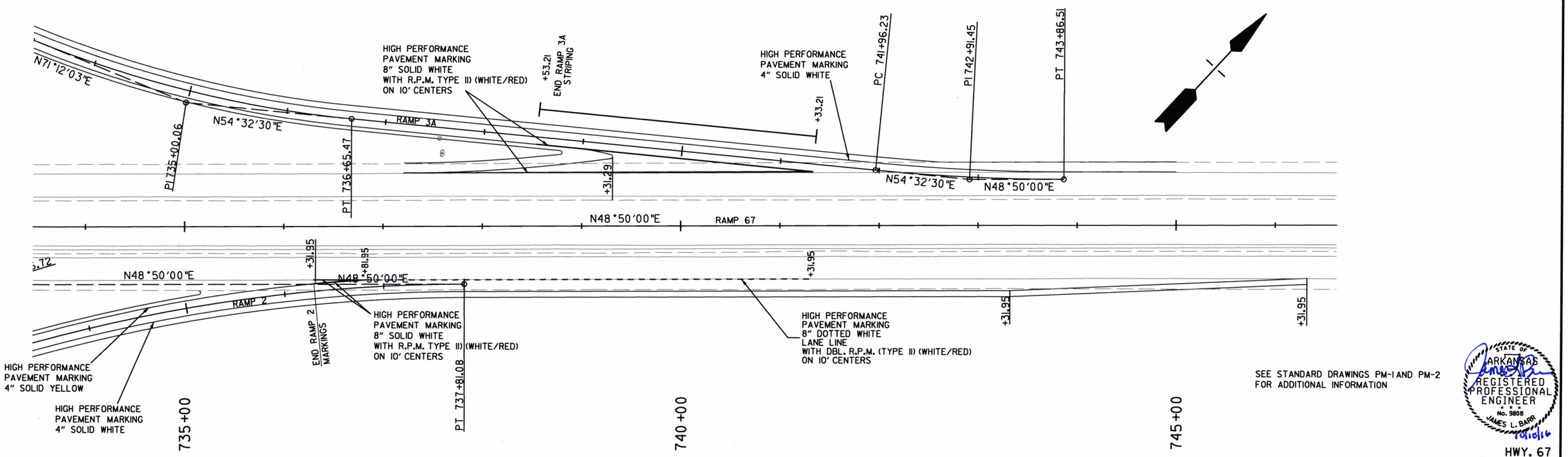
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

HWY. 38
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	88	400

(2) PERMANENT PAVEMENT MARKING DETAILS





SEE STANDARD DRAWINGS PM-1 AND PM-2 FOR ADDITIONAL INFORMATION

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARRY 10/10/16

HWY. 67
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	89	400

(2) SUMMARY OF SIGNING QUANTITIES

SIGNING SUMMARY OF QUANTITIES			
ITEM NUMBER	ITEM	TOTAL	UNIT
SP	OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORTS (TYPE G-1)	1	EACH
SP	OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORTS (TYPE G2-1)	27	EACH
SP & 725	GUIDE SIGN ROADSIDE MOUNTED (DEMOUNTABLE LEGEND)	762	SQ.FT.
SP & 726	STANDARD SIGN	955	SQ.FT.
SP & 727	EXIT NUMBER PANEL (TYPE A)	120	SQ.FT.
SP & 728	CHANNEL POST SIGN SUPPORT (TYPE U-1)	43	EACH
SP & 729	CHANNEL POST SIGN SUPPORT (TYPE U-2)	7	EACH
730	BREAKAWAY SIGN SUPPORT (TYPE G-2)	8797	POUND

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
7/6/16

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.		061102	90	400
				(2)	SIGNING QUANTITIES			

GUIDE SIGNING QUANTITIES

SIGN NO.		GUIDE SIGN			BREAKAWAY SIGN SUPPORT											EXIT NUMBER PANEL			
					STEEL SECT. A-572		SIGN POST LENGTH			STUB POST			FOOTING			SIGN POST AND STUB	LEGEND	TYPE		
	G-2	LENGTH	HEIGHT	SQ.FT.			H-1	H-2	H-3	H-1	H-2	H-3	DIA.	DEPTH	EMBED.			A	B	C
		LIN. FT.			BEAM	LBS.	LIN. FT.			LIN. FT.			LIN. FT.			POUND		SQ.FT.		
GM-067-43-STA647+54NB	1	8.50	10.00	85.00	W8	21	20.35	21.98		5.94	5.94		3	8.5	5.61	1138.41	21	20.00		
GM-067-43-STA663+54SB	1	8.50	10.00	85.00	W8	21	20.35	21.98		5.94	5.94		3	8.5	5.61	1138.41	19	20.00		
GM-067-43-STA700+30NB	1	12.00	8.00	96.00	W8	15	18.35	20.56		5.94	5.94		3	8.5	5.61	761.85	21	20.00		
EX-067-RAMP-43-STA705+39NB	1	6.50	5.00	32.50	W6	9	13.41	14.72		4.62	4.62		1.5	6.5	4.29	336.33				
SS-038-43-STA721+53WB	1	6.50	2.50	16.25	W6	8	10.91	12.22		3.30	3.30		1.5	4.5	2.97	237.84				
GM-067-43-STA717+13NB	1	10.00	10.00	100.00	W8	21	20.08	22.09		5.94	5.94		3	8.5	5.61	1135.05	22	20.00		
SS-038-43-STA107+02WB	1	6.50	1.50	9.75	W6	7	9.91	11.22		3.30	3.30		1.5	4.5	2.97	194.11				
SS-038-43-STA114+00EB	1	5.00	1.50	7.50	W6	7	9.92	10.91		3.30	3.30		1.5	4.5	2.97	192.01				
SS-038-43-STA117+16WB	1	6.50	2.50	16.25	W6	7	10.91	12.22		3.30	3.30		1.5	4.5	2.97	208.11				
SS-067-RAMP-43-STA723+93SB	1	5.00	2.50	12.50	W6	7	10.92	11.91		3.30	3.30		1.5	4.5	2.97	206.01				
SS-038-43-STA135+00EB	1	5.00	2.50	12.50	W6	7	10.92	11.91		3.30	3.30		1.5	4.5	2.97	206.01				
SS-038-43-STA306+00WB	1	5.00	2.50	12.50	W6	7	10.92	11.91		3.30	3.30		1.5	4.5	2.97	206.01				
EX-067-RAMP-43-STA738+62SB	1	6.50	5.00	32.50	W6	9	13.41	14.72		4.62	4.62		1.5	6.5	4.29	336.33				
GM-067-43-STA743+04SB	1	12.00	8.00	96.00	W8	18	18.35	20.56		5.94	5.94		3	8.5	5.61	914.22	21	20.00		
GM-067-43-STA753+87SB	1	11.50	5.00	57.50	W8	10	15.35	17.56		5.94	5.94		3	8.5	5.61	447.9				
GM-067-43-STA762+37SB	1	9.00	10.00	90.00	W8	21	20.35	21.98		5.94	5.94		3	8.5	5.61	1138.41	19	20.00		
TOTALS (ROADSIDE MOUNTED)	**16**			**761.75**												**8797.01**		**120.00**		

STANDARD ROADSIDE SIGNS SHEET ALUMINUM 0.125" THICKNESS (GREATER THAN 5 SQ.FT.)

SIGN NO.	SIZE OF SIGN	UNIT AREA (SQ.FT.)	QUANTITY REQUIRED	TOTAL SIGN AREA (SQ.FT.)	LEGENG/ BACKGROUND
R1-1	36"x36"	9.00	2	18.00	RED/WHITE
R1-1	48"x48"	16.00	5	80.00	RED/WHITE
R1-2	48"x48"x48"	14.00	4	56.00	RED/WHITE
R5-1	36"x36"	9.00	8	72.00	RED/WHITE
R5-1A	42"x30"	8.75	4	35.00	RED/WHITE
R3-7R	36"x36"	9.00	1	9.00	BLACK/WHITE
W1-7	48"x24"	8.00	2	16.00	BLACK/YELLOW
W3-1A	48"x48"	16.00	4	64.00	BLACK/YELLOW
W3-3	48"x48"	16.00	4	64.00	BLACK/YELLOW
W4-1R	48"x48"	16.00	3	48.00	BLACK/YELLOW
W8-13	36"x36"	9.00	7	63.00	BLACK/YELLOW
W13-2	48"x60"	20.00	2	40.00	BLACK/YELLOW
W13-7	36"x60"	15.00	1	15.00	BLACK/YELLOW
TOTAL 0.125" THICKNESS				**580.00**	

STANDARD ROADSIDE SIGNS SHEET ALUMINUM 0.100" THICKNESS (5 SQ.FT. OR LESS)

SIGN NO.	SIZE OF SIGN	UNIT AREA (SQ.FT.)	QUANTITY REQUIRED	TOTAL SIGN AREA (SQ.FT.)	LEGENG/ BACKGROUND
M1-4	24"x24"	4.00	11	44.00	BLACK/WHITE
M1-4	30"x24"	5.00	11	55.00	BLACK/WHITE
M1-6	24"x24"	4.00	12	48.00	BLACK/WHITE
M1-6	30"x24"	5.00	6	30.00	BLACK/WHITE
M2-1	21"x15"	2.19	5	10.95	BLACK/WHITE
M3-1	24"x12"	2.00	6	12.00	BLACK/WHITE
M3-2	24"x12"	2.00	6	12.00	BLACK/WHITE
M3-3	24"x12"	2.00	6	12.00	BLACK/WHITE
M3-4	24"x12"	2.00	4	8.00	BLACK/WHITE
M4-5	24"x12"	2.00	2	4.00	BLACK/WHITE
M5-1L	21"x15"	2.19	2	4.38	BLACK/WHITE
M5-1R	21"x15"	2.19	1	2.19	BLACK/WHITE
M6-1L	21"x15"	2.19	6	13.14	BLACK/WHITE
M6-1R	21"x15"	2.19	8	17.52	BLACK/WHITE
M6-2R	21"x15"	2.19	3	6.57	BLACK/WHITE
M6-3	21"x15"	2.19	2	4.38	BLACK/WHITE
OM-3L	12"x36"	3.00	6	18.00	BLACK/WHITE
OM-3R	12"x36"	3.00	6	18.00	BLACK/WHITE
OM4-3	18"x18"	2.25	4	9.00	RED
R2-1	24"x30"	5.00	2	10.00	BLACK/WHITE
R6-1L	36"x12"	3.00	2	6.00	BLACK/WHITE
R6-1R	36"x12"	3.00	2	6.00	BLACK/WHITE
W1-8R	18"x24"	3.00	8	24.00	BLACK/YELLOW
TOTAL 0.100" THICKNESS				**375.13**	

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

STANDARD SIGNS FLAT SHEET

SIGN NO.	STANDARD SIGNS FLAT SHEET I-BEAM SIGN SUPPORTS				STANDARD SIGN TO BE MOUNTED	COMMENT
	CHANNEL POST/OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORT					
	EACH					
	TYPE					
LOCATION	U-1	U-2	G-1	G2-1	SIGN NO.	
EX-067-RAMP-43-STA701+38NB				1	W13-2	
SS-067-43-STA703+50SB				1	W4-1R	
SS-067-RAMP-43-STA710+90NB				1	W3-1A	
SS-067-RAMP-43-STA711+09NB				1	W3-1A	
SS-067-FR-67-43-STA714+27NB				1	R1-1	
SS-067-43-STA715+62SB				1	W4-1R	
SS-067-FR-43-STA718+06NB				1	R1-1	
SS-067-RAMP-43-STA718+77NB				1	R5-1A	
SS-067-RAMP-43-STA718+91NB				1	R5-1A	
SS-067-RAMP-43-STA720+68WB					M3-3,M1-4,M1-4,M6-1R	ATTACHED TO GUIDE SIGN ASSEMBLY
SS-038-43-STA720+24NB		1			M4-5,M1-4,M1-4,M6-1R,M3-2,M1-6,M6-1R	
SS-038-43-STA721+04WB	4	1			OM4-3,OM4-3,W1-7,OM4-3,OM4-3	TYPE A SUPPORT ASSEMBLY
SS-067-RAMP-43-STA721+17NB			1		R1-1,R5-1,R6-1L,R6-1L	
SS-067-FR-43-STA721+45SB		1			M3-2,M1-6,M6-1L,M4-5,M1-4,M1-4,M6-1L	
SS-038-43-STA721+53WB					M3-3,M1-4,M1-4,M6-3,M3-1,M1-4,M1-4,M6-2R	ATTACHED TO GUIDE SIGN ASSEMBLY
SS-067-RAMP-43-STA721+60SB				1	R1-1,R5-1	
SS-067-RAMP-43-STA721+66SB				1	R1-1,R5-1	
SS-038-43-STA100+19WB				1	R1-1	
SS-038-43-STA100+83EB				1	R1-2, R5-1	
SS-038-43-STA102+25WB	1				R3-7R	TYPE A SUPPORT ASSEMBLY
SS-038-43-STA102+94SB		1			W1-7	
SS-067-038-43-STA104+63WB				1	W13-7	
SS-038-43-STA106+11EB	1				W8-13	TYPE A SUPPORT ASSEMBLY
SS-038-43-STA107+02WB					M3-3,M1-4,M1-4,M6-2R	ATTACHED TO GUIDE SIGN ASSEMBLY
SS-038-43-STA107+66EB	1				OM-3R	TYPE C SUPPORT ASSEMBLY
SS-038-43-STA107+70EB	1				OM-3L	TYPE C SUPPORT ASSEMBLY
SS-038-43-STA110+82WB	1				OM-3L	TYPE C SUPPORT ASSEMBLY
SS-038-43-STA110+85WB	1				OM-3R	TYPE C SUPPORT ASSEMBLY
SS-038-43-STA112+40WB	1				W8-13	TYPE A SUPPORT ASSEMBLY
SS-038-43-STA114+00EB					M3-1,M1-4,M1-4,M5-1L	ATTACHED TO GUIDE SIGN ASSEMBLY
SS-067-RAMP-43-STA115+47NB				1	R1-1,R5-1,R6-1L,R6-1L	
SS-067-RAMP-43-STA722+18NB	1				M3-1,M1-4,M1-4,M6-1R	TYPE A SUPPORT ASSEMBLY
SS-067-FR-43-STA722+14NB				1	R1-2, R5-1	
SS-067-FR-43-STA723+51NB	1				W8-13	TYPE A SUPPORT ASSEMBLY
SS-067-RAMP-43-STA723+93SB				1	R5-1A,M3-2,M1-6,M5-1L,M3-4,M1-6,M5-1R	
SS-067-RAMP-43-STA724+45SB	1				W1-8	TYPE A SUPPORT ASSEMBLY
SS-067-RAMP-43-STA724+50SB	1				W1-8	TYPE A SUPPORT ASSEMBLY
SS-067-RAMP-43-STA725+11SB	1				W1-8	TYPE A SUPPORT ASSEMBLY
SS-067-RAMP-43-STA725+15SB	1				W1-8	TYPE A SUPPORT ASSEMBLY
SS-067-RAMP-43-STA725+60SB	1				W1-8	TYPE A SUPPORT ASSEMBLY
SS-067-FR-43-STA725+62NB	1				OM-3R	TYPE C SUPPORT ASSEMBLY
SS-067-RAMP-43-STA725+63SB	1				W1-8	TYPE A SUPPORT ASSEMBLY
SS-067-RAMP-43-STA725+73NB	1				OM-3L	TYPE C SUPPORT ASSEMBLY
SS-067-RAMP-43-STA725+86SB	1				W1-8	TYPE A SUPPORT ASSEMBLY
SS-067-RAMP-43-STA725+87SB	1				W1-8	TYPE A SUPPORT ASSEMBLY
SS-067-43-STA727+21SB	1				OM-3L	TYPE C SUPPORT ASSEMBLY
SS-067-43-STA727+32SB	1				OM-3R	TYPE C SUPPORT ASSEMBLY
SS-067-RAMP-43-STA727+66NB	1				W8-13	TYPE A SUPPORT ASSEMBLY
SS-067-RAMP-43-STA727+88NB	1				W8-13	TYPE A SUPPORT ASSEMBLY
SS-067-RAMP-43-STA728+45SB	1				OM-3L	TYPE C SUPPORT ASSEMBLY
SS-067-RAMP-43-STA728+58SB	1				OM-3R	TYPE C SUPPORT ASSEMBLY
SS-067-FR-43-STA729+36SB	1				W8-13	TYPE A SUPPORT ASSEMBLY
SS-067-RAMP-43-STA730+03NB	1				OM-3L	TYPE C SUPPORT ASSEMBLY
SS-067-RAMP-43-STA730+15NB	1				OM-3R	TYPE C SUPPORT ASSEMBLY
SS-067-RAMP-43-STA730+27SB				1	W3-1A	
SS-067-RAMP-43-STA730+39SB				1	W3-1A	
SS-067-RAMP-43-STA733+18SB	1				W8-13	TYPE A SUPPORT ASSEMBLY
SS-067-43-STA734+51NB				1	W4-1R	
SS-038-43-STA117+16WB					M3-3,M1-4,M1-4,M6-3,M3-1,M1-4,M1-4,M6-2R	ATTACHED TO GUIDE SIGN ASSEMBLY
SS-038-43-STA117+99EB	1				R2-1	TYPE A SUPPORT ASSEMBLY
SS-038-43-STA122+00EB	1				M3-2,M1-6	TYPE A SUPPORT ASSEMBLY
SS-038-43-STA123+00WB	1				M2-1,M1-4,M1-4	TYPE A SUPPORT ASSEMBLY
SS-038-43-STA131+11WB	1				M3-4,M1-6	TYPE A SUPPORT ASSEMBLY
SS-038-43-STA131+50EB				1	W3-3	
SS-038-43-STA132+42WB	1				R2-1	TYPE A SUPPORT ASSEMBLY
SS-038-43-STA135+00EB					M2-1,M1-6	ATTACHED TO GUIDE SIGN ASSEMBLY
SS-038-43-STA138+71EB	1				M3-1,M1-6,M6-1R,M3-3,M1-6,M6-1L	TYPE A SUPPORT ASSEMBLY
SS-038-43-STA111+77WB				1	R1-2, R5-1	
SS-038-43-STA300+55WB		1			M3-3,M1-6,M6-1L,M3-1,M1-6,M6-1R	
SS-038-43-STA305+07WB	1				M2-1,M1-6	TYPE A SUPPORT ASSEMBLY
SS-038-43-STA309+00WB				1	W3-3	
SS-367-43-STA101+72NB				1	W3-3	
SS-367-43-STA104+00NB	1				M2-1,M1-6	TYPE A SUPPORT ASSEMBLY
SS-038-43-STA139+55EB				1	R1-2,R5-1	
SS-367-43-STA109+66WB		1			M3-4,M1-6,M6-1L,M3-2,M1-6,M6-1R	
SS-038-43-STA111+26WB		1			M3-2,M1-6,M6-1L,M3-4,M1-6,M6-1R	
SS-038-43-STA306+00WB	1				M2-1,M1-6	TYPE A SUPPORT ASSEMBLY
SS-367-43-STA117+00SB	1				M2-1,M1-6	TYPE A SUPPORT ASSEMBLY
SS-367-43-STA121+00SB				1	W3-3	
EX-067-RAMP-43-STA738+62SB				1	W13-2	
TOTAL TYPE A	**31**					
TOTAL TYPE C	**12**					
TOTAL	**43**	**7**	**1**	**27**		

SIGNING QUANTITIES



DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		91	400
				JOB NO.		061102		

SIGNING QUANTITIES

2

NOTES:

THE CONTRACTOR WILL VERIFY SIGN PLACEMENT AND MAKE ANY ADJUSTMENTS NECESSARY TO ALIGN SIGNS OVER INTENDED LANES.

ALL EXISTING GUIDE SIGNS SHALL BE MAINTAINED IN SUCH A MANNER THAT THE SIGNS ARE FULLY VISIBLE, INTACT, AND ERECT FOR THE DURATION OF THE PROJECT, AND SHALL BE REMOVED WHEN THEIR USE IS NO LONGER REQUIRED. REMOVAL AND DISPOSAL OF SIGNS, SUPPORTS, AND FOUNDATIONS SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED SUBSIDIARY TO OTHER ITEMS IN THE CONTRACT.

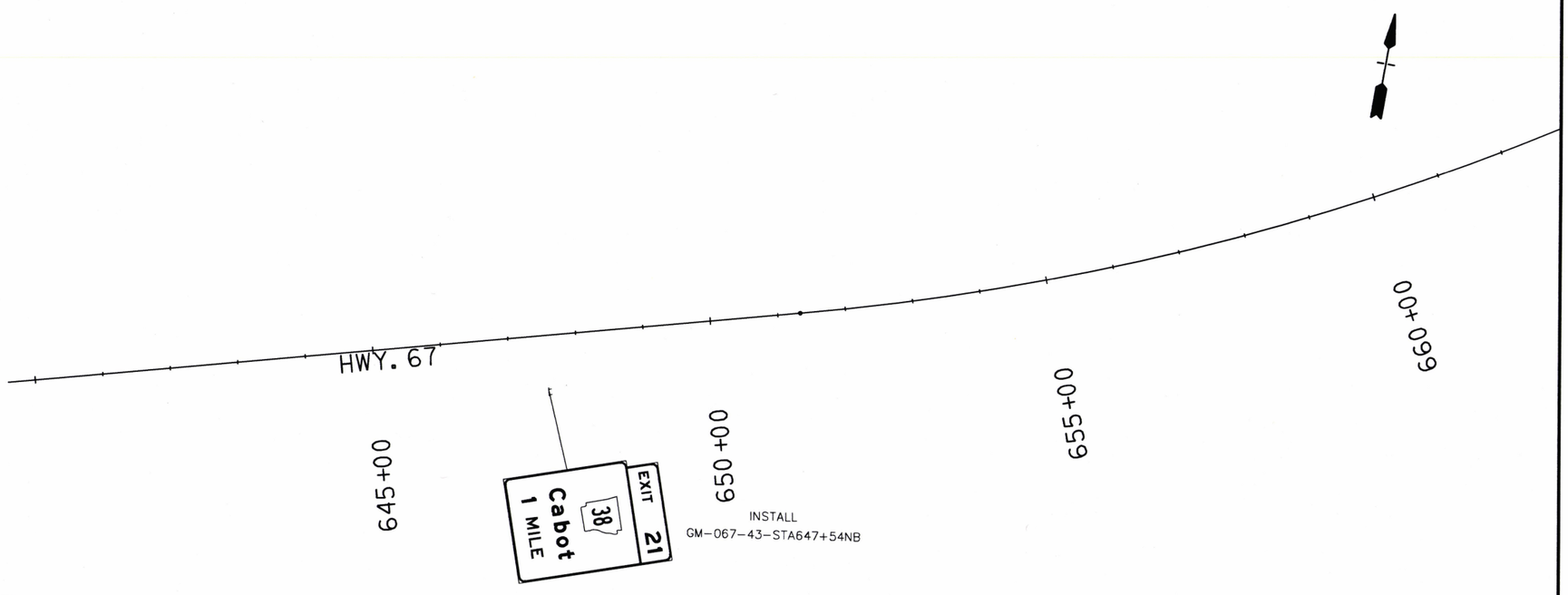
THE EXISTING SIGNS AND SUPPORTS SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE EXISTING FOOTINGS SHALL BE REMOVED AND THE HOLES FILLED WITH A SUITABLE MATERIAL AND COMPACTED.

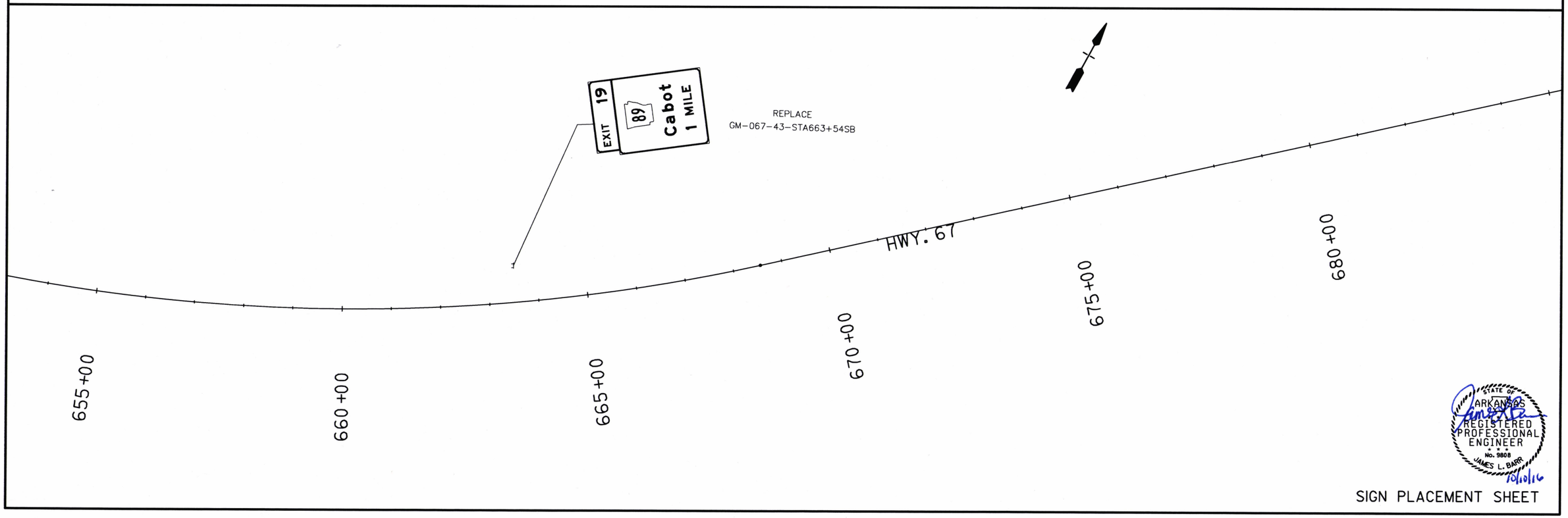
EXISTING LOGOS WILL BE RELOCATED TO THE NEW LOGO SIGN BY THE CONTRACTOR. THE EXISTING FOOTINGS SHALL BE REMOVED AND THE HOLES FILLED WITH A SUITABLE MATERIAL AND COMPACTED.

EXISTING LOGOS WILL BE RELOCATED TO THE NEW LOGO SIGN BY THE CONTRACTOR. THE LOGO INSTALLATION SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED SUBSIDIARY TO OTHER ITEMS IN THE CONTRACT.

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.		061102	92	400

(2) SIGN PLACEMENT SHEET





STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

SIGN PLACEMENT SHEET

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.		061102	93	400
				(2)	SIGN PLACEMENT SHEET			

INSTALL
SS-067-43-STA703+50SB

HWY. 67

680+00

685+00

690+00

695+00

700+00

705+00

710+00

Cabot 38 EXIT 21

INSTALL
GM-067-43-STA700+30NB

EXIT 21

INSTALL
EX-067-RAMP-43-STA705+39NB

XX MPH EXIT

INSTALL
EX-067-RAMP-43-STA701+38NB

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/14/16

SIGN PLACEMENT SHEET

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.		061102	94	400

(2) SIGN PLACEMENT SHEET

WILLIE RAY DR.

HWY. 67

HWY. 38

100+00 105+00 110+00 115+00 710+00 715+00 720+00 725+00 730+00 735+00

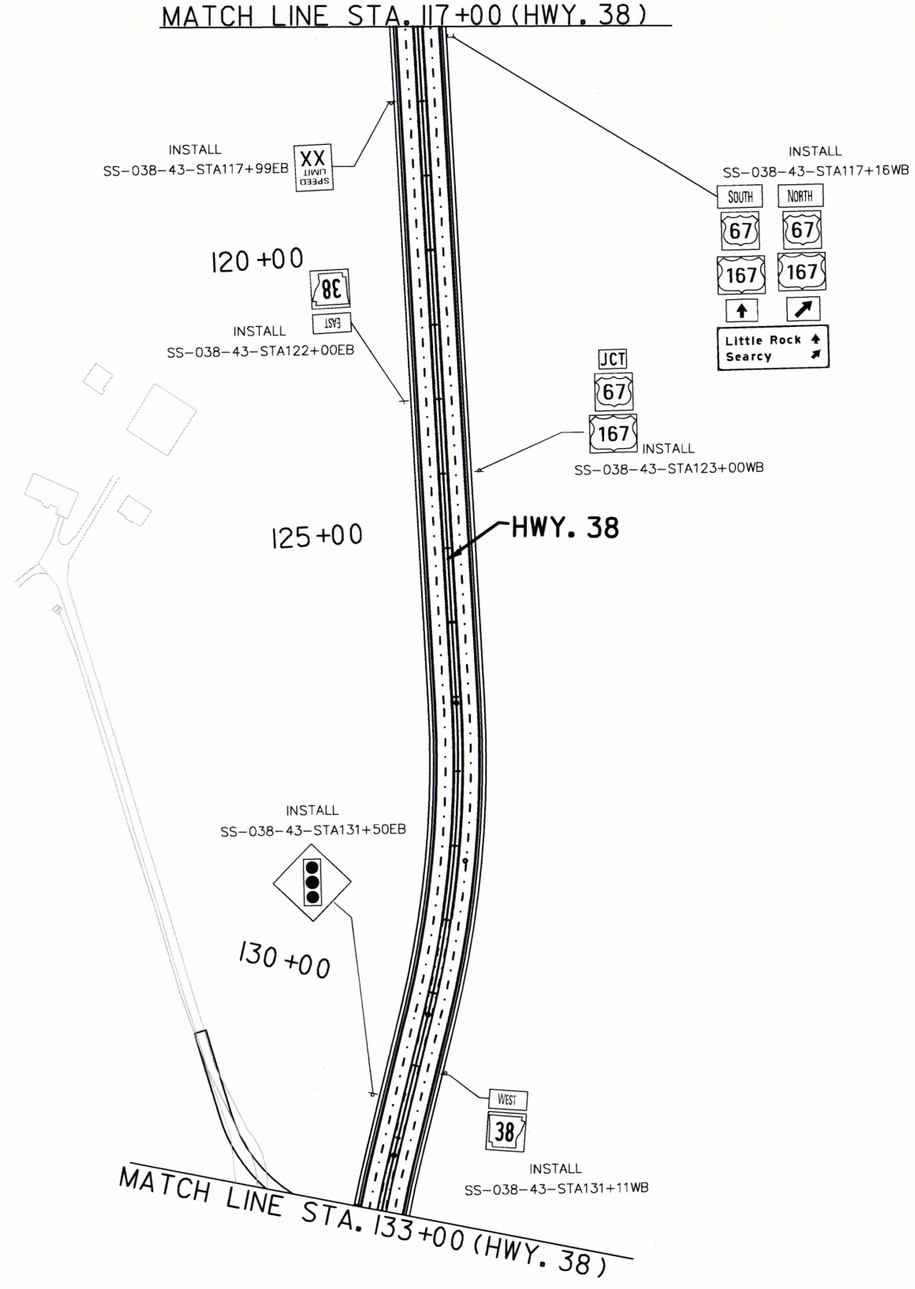
MATCH LINE STA. 117+00 (HWY. 38.)

INSTALL SS-067-FR-43-STA718+06NB
INSTALL SS-038-43-STA100+83EB
INSTALL SS-038-43-STA102+94SB
INSTALL SS-038-43-STA721+53WB
INSTALL SS-038-43-STA720+24NB
INSTALL SS-038-43-STA721+04WB
INSTALL SS-038-43-STA100+19WB
INSTALL SS-067-FR-43-STA721+45SB
INSTALL SS-067-FR-43-STA722+14NB
INSTALL SS-067-FR-43-STA723+51NB
INSTALL SS-067-43-STA725+73NB
INSTALL SS-067-43-STA725+62NB
INSTALL SS-067-RAMP-43-STA723+93SB
INSTALL SS-067-43-STA727+32SB
INSTALL SS-067-FR-43-STA729+36SB
INSTALL SS-067-43-STA727+21SB
INSTALL SS-067-RAMP-43-STA728+45SB
INSTALL SS-067-RAMP-43-STA730+39SB
INSTALL SS-067-RAMP-43-STA733+18SB
INSTALL SS-067-RAMP-43-STA730+27SB
INSTALL SS-067-RAMP-43-STA728+58SB
INSTALL SS-067-RAMP-43-STA724+50SB
INSTALL SS-067-RAMP-43-STA725+15SB
INSTALL SS-067-RAMP-43-STA725+63SB
INSTALL SS-067-RAMP-43-STA725+87SB
INSTALL SS-067-RAMP-43-STA725+86SB
INSTALL SS-067-RAMP-43-STA725+60SB
INSTALL SS-067-RAMP-43-STA725+11SB
INSTALL SS-067-RAMP-43-STA724+45SB
INSTALL SS-038-43-STA102+25WB
INSTALL SS-067-RAMP-43-STA721+60SB
INSTALL SS-067-RAMP-43-STA721+66SB
INSTALL SS-067-RAMP-43-STA720+68WB
INSTALL SS-067-038-43-STA104+63WB
INSTALL SS-038-43-STA107+02WB
INSTALL SS-038-43-STA106+11EB
INSTALL SS-067-43-STA715+62SB
INSTALL SS-067-FR-67-43-STA714+27NB
(TO BE REMOVED) GM-067-43-STA713+56SB
INSTALL SS-038-43-STA107+66EB
INSTALL SS-038-43-STA107+70EB
REPLACE GM-067-43-STA717+13NB
INSTALL SS-067-RAMP-43-STA711+09NB
INSTALL SS-038-43-STA110+82WB
INSTALL SS-038-43-STA110+85WB
INSTALL SS-038-43-STA112+40WB
INSTALL SS-038-43-STA114+00EB
INSTALL SS-067-RAMP-43-STA718+91NB
INSTALL SS-067-RAMP-43-STA115+47NB
INSTALL SS-067-RAMP-43-STA710+90NB
INSTALL SS-067-RAMP-43-STA718+77NB
INSTALL SS-067-RAMP-43-STA721+17NB
INSTALL SS-067-RAMP-43-STA727+66NB
INSTALL SS-067-43-STA734+51NB
INSTALL SS-067-RAMP-43-STA730+15NB
INSTALL SS-067-RAMP-43-STA727+88NB
INSTALL SS-067-RAMP-43-STA722+18NB

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10/10/16

SIGN PLACEMENT SHEET

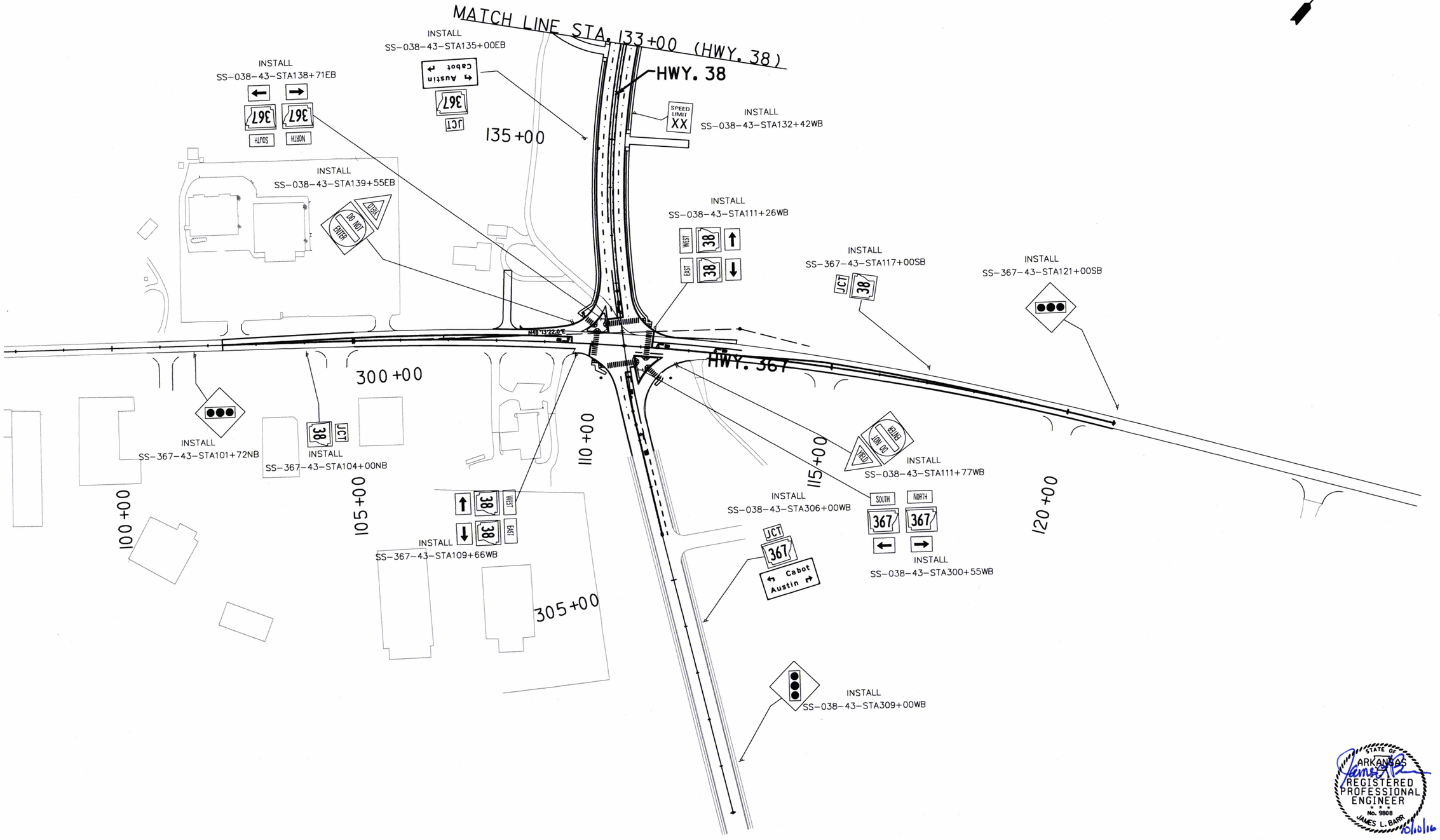
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	95	400
				(2)	SIGN PLACEMENT SHEET			



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

SIGN PLACEMENT SHEET

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.		061102	96	400
				(2)	SIGN PLACEMENT SHEET			



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

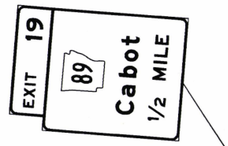
SIGN PLACEMENT SHEET

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.		061102	97	400
				(2)	SIGN PLACEMENT SHEET			

INSTALL
EX-067-RAMP-43-STA738+62SB







HWY. 67

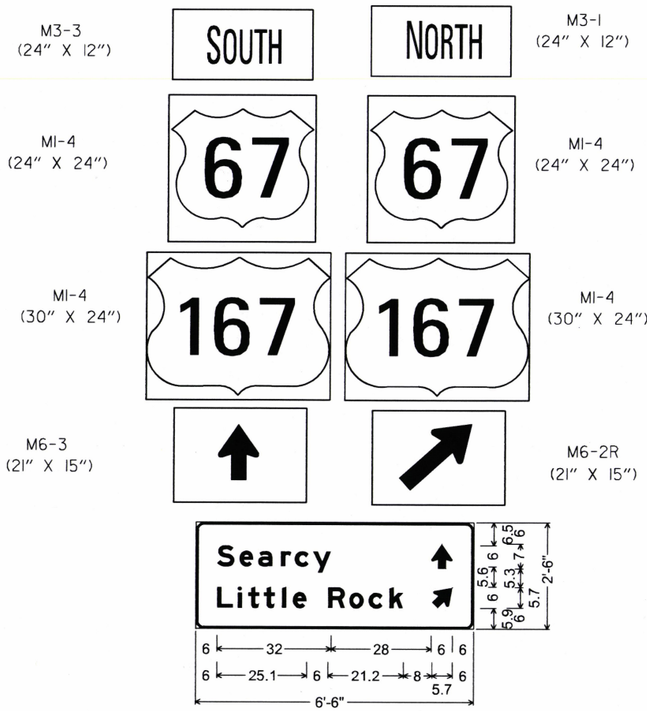
735+00 740+00 745+00 750+00 755+00 760+00 765+00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
2/10/16

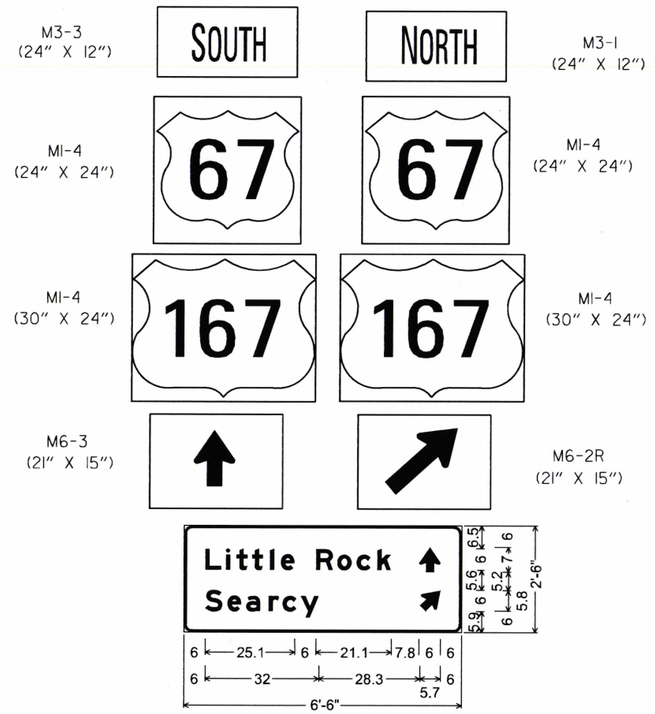
SIGN PLACEMENT SHEET

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.		061102	98	400

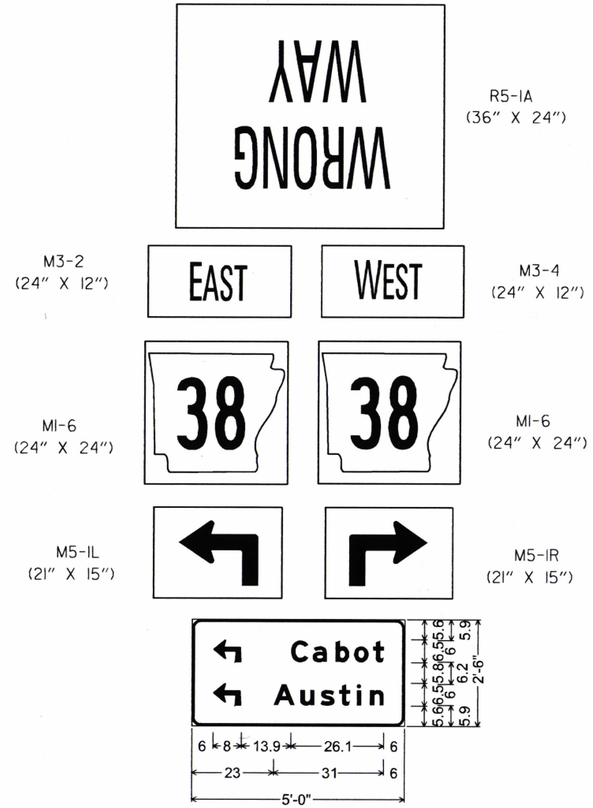
(2) SIGN LAYOUT SHEET



2.25" Radius, 0.75" Border, White on Green;
[Searcy] E Mod 2K;
Standard Arrow Custom 7.0" X 6.0" 90°;
[Little Rock] E Mod 2K;
Standard Arrow Custom 7.0" X 6.0" 45°;
SS-038-43-STA721+53WB



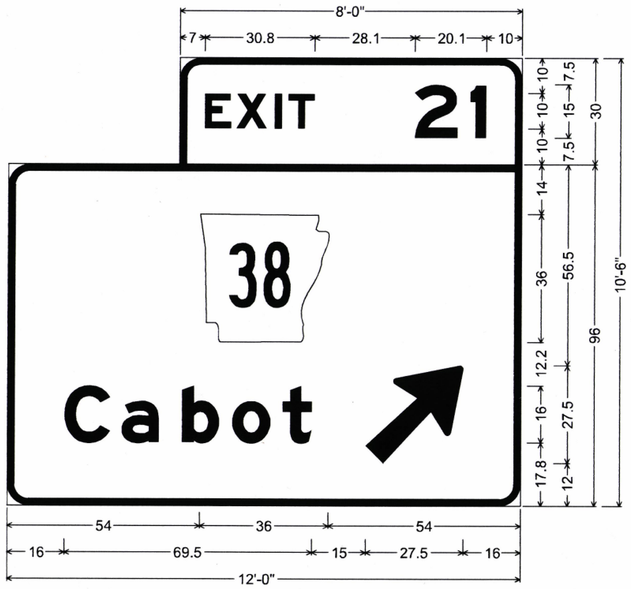
2.25" Radius, 0.75" Border, White on Green;
[Little Rock] E Mod 2K;
Standard Arrow Custom 7.0" X 6.0" 90°;
[Searcy] E Mod 2K;
Standard Arrow Custom 7.0" X 6.0" 45°;
SS-038-43-STA117+16WB



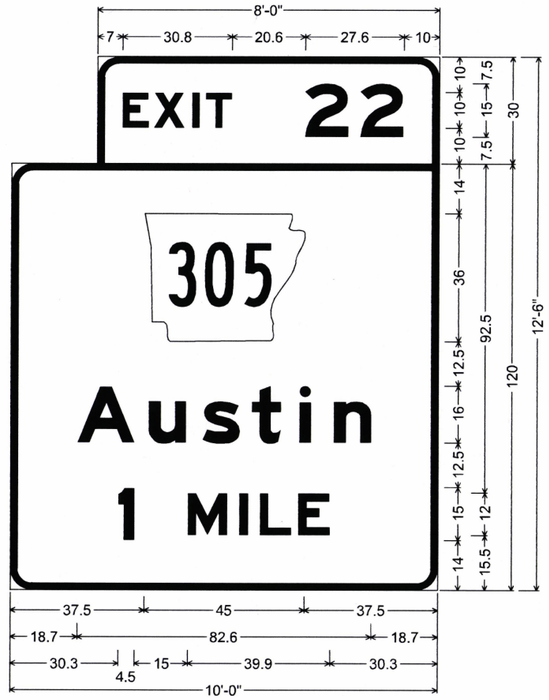
2.25" Radius, 0.75" Border, White on Green;
90 Deg Advance Turn Arrow Custom 8.0" X 6.5";
[Cabot] E Mod 2K;
90 Deg Advance Turn Arrow Custom 8.0" X 6.5";
[Austin] E Mod 2K;
SS-067-RAMP-43-STA723+93SB

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BAKER
10.01.16

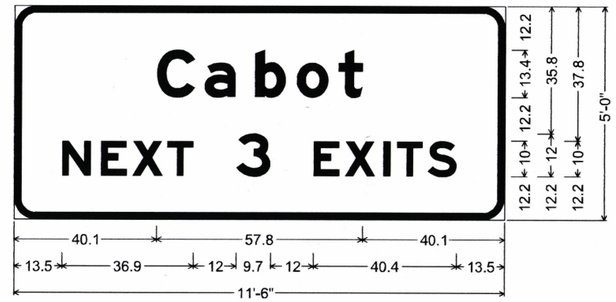
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	99	400
				(2)	SIGN LAYOUT SHEET			



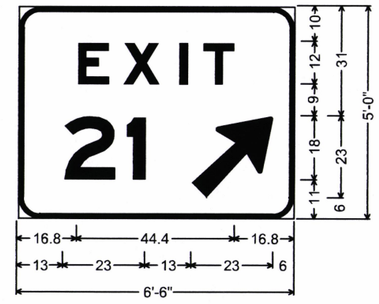
6.0" Radius, 2.0" Border, White on Green;
[EXIT] E Mod 2K; [21] E Mod 2K;
6.0" Radius, 2.0" Border, White on Green;
M6-1; [Cabot] E Mod 2K; Arrow 160 - 35.0" 45°;
GM-067-43-STA700+30NB
GM-067-43-STA743+04SB



6.0" Radius, 2.0" Border, White on Green;
[EXIT] E Mod 2K; [22] E Mod 2K;
6.0" Radius, 2.0" Border, White on Green;
M6-1; [Austin] E Mod 2K; [1 MILE] E Mod 2K;
GM-067-43-STA717+13NB



6.0" Radius, 2.0" Border, White on Green;
[Cabot] E Mod 2K; [NEXT 3 EXITS] E Mod 2K;
GM-067-43-STA753+87SB



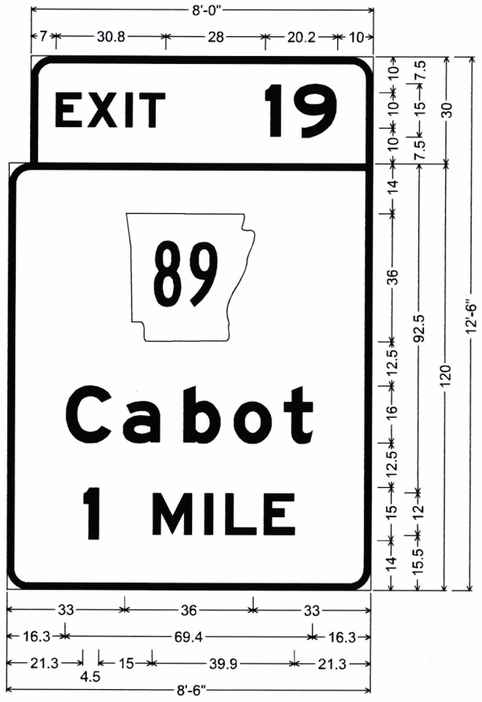
6.0" Radius, 1.5" Border, White on Green;
[EXIT] E 2K 225% spacing;
[21] E 2K; Arrow Custom - 29.3" 45°;
EX-067-RAMP-43-STA705+39NB
EX-067-RAMP-43-STA738+62SB

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BAKER
10.10.06

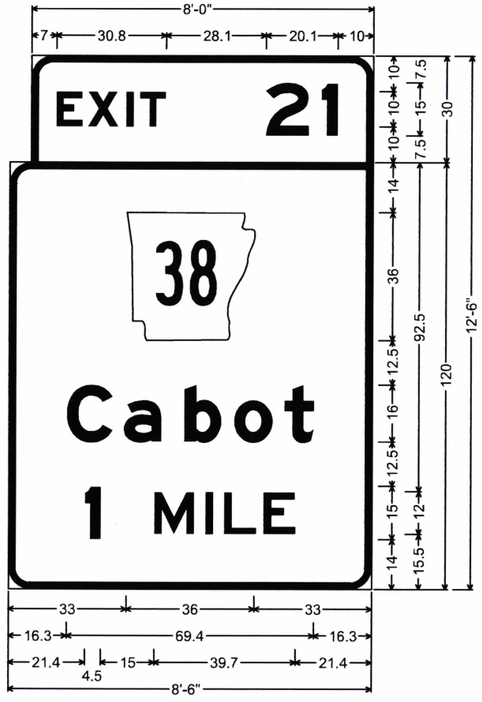
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	100	400

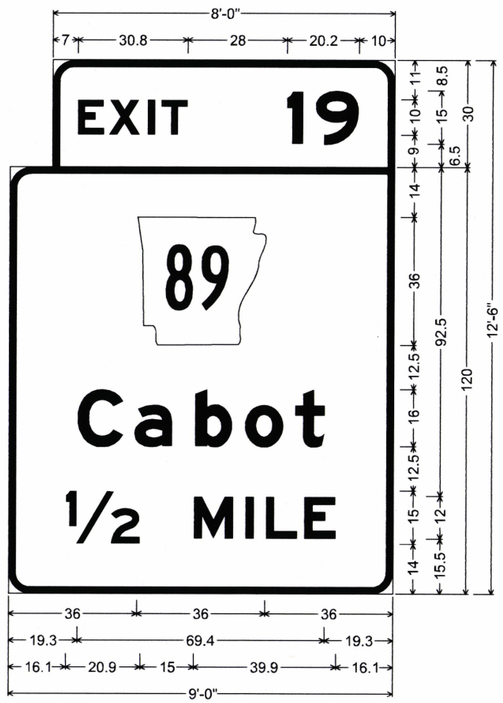
(2) SIGN LAYOUT SHEET



6.0" Radius, 2.0" Border, White on Green;
[EXIT] E Mod 2K; [19] E Mod 2K;
6.0" Radius, 2.0" Border, White on Green;
M6-1; [Cabot] E Mod 2K; [1 MILE] E Mod 2K;
GM-067-43-STA663+54SB



6.0" Radius, 2.0" Border, White on Green;
[EXIT] E Mod 2K; [21] E Mod 2K;
6.0" Radius, 2.0" Border, White on Green;
M6-1; [Cabot] E Mod 2K; [1] E Mod 2K [MILE] E 2K;
GM-067-43-STA647+54NB

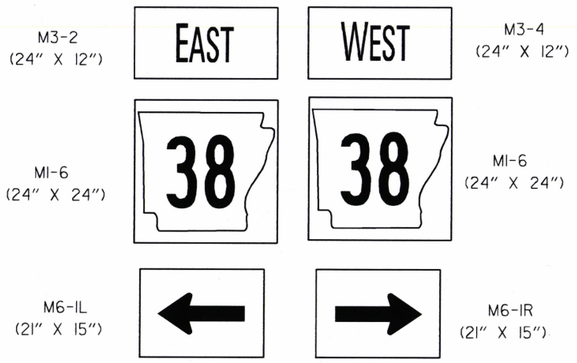


6.0" Radius, 2.0" Border, White on Green;
[EXIT] E Mod 2K; [19] E Mod 2K;
6.0" Radius, 2.0" Border, White on Green;
M6-1; [Cabot] E Mod 2K; [½ MILE] E Mod 2K;
GM-067-43-STA762+37SB

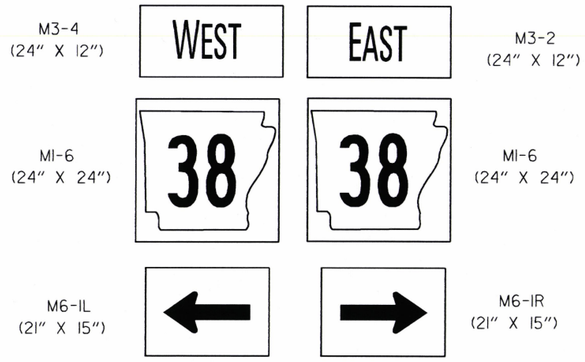
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
1/5/16

SIGN LAYOUT SHEET

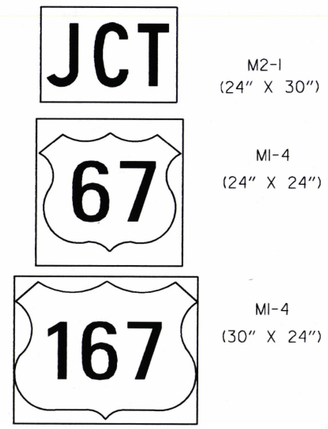
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	101	400
				(2)	SIGN LAYOUT SHEET			



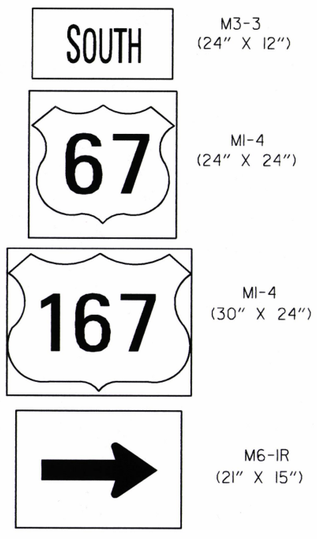
SS-038-43-STAIII+26WB



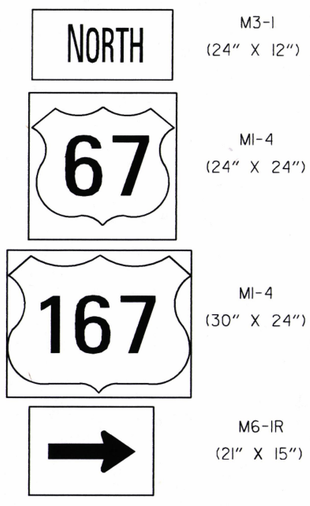
SS-367-43-STAI09+66WB



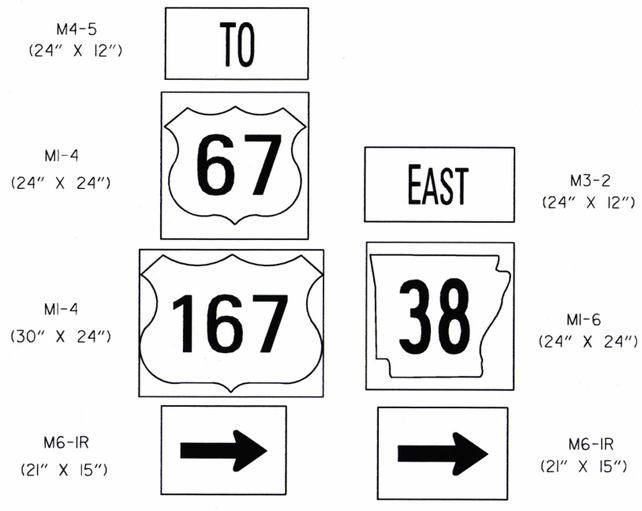
SS-038-43-STAI23+00WB



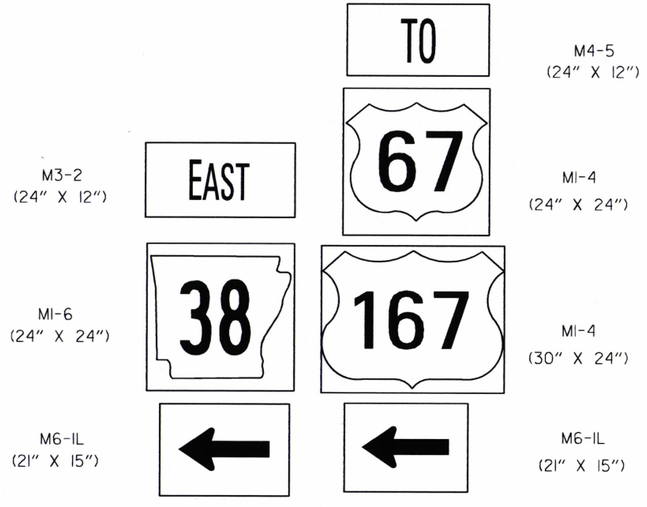
SS-067-RAMP-43-STA720+68WB



SS-067-RAMP-43-STA722+18NB



SS-038-FR-43-STA720+24NB



SS-067-FR-43-STA721+45SB

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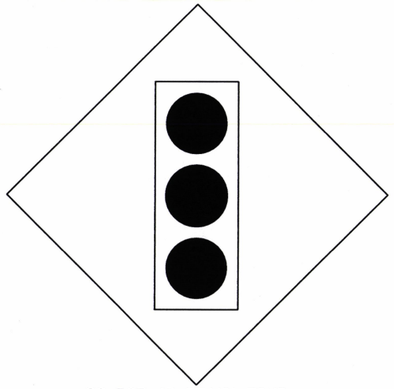
				6	ARK.			
				JOB NO.		061102	102	400

(2) SIGN LAYOUT SHEET



W8-13
(36" X 36")

SS-067-RAMP-43-STA733+18SB
SS-067-RAMP-43-STA727+66NB
SS-067-RAMP-43-STA727+88NB
SS-067-FR-43-STA723+51NB
SS-067-FR-43-STA729+36SB
SS-038-43-STA106+11EB
SS-038-43-STA112+40WB



W3-3
(48" X 48")

SS-367-43-STA101+72NB
SS-367-43-STA121+00SB
SS-038-43-STA131+50EB
SS-038-43-STA309+00WB



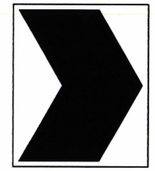
OM-3L
(12" X 36")

SS-038-43-STA107+70EB
SS-038-43-STA110+82WB
SS-067-FR-43-STA725+73NB
SS-067-RAMP-43-STA730+03NB
SS-067-FR-43-STA727+21SB
SS-067-RAMP-43-STA728+45SB



OM-3R
(12" X 36")

SS-038-43-STA107+66EB
SS-038-43-STA110+85WB
SS-067-FR-43-STA725+62NB
SS-067-FR-43-STA727+32SB
SS-067-RAMP-43-STA728+58SB
SS-067-RAMP-43-STA730+15NB



W1-8R
(18" X 24")

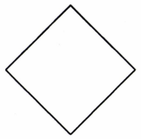
SS-067-RAMP-43-STA724+50SB
SS-067-RAMP-43-STA725+15SB
SS-067-RAMP-43-STA725+63SB
SS-067-RAMP-43-STA725+87SB
SS-067-RAMP-43-STA725+86SB
SS-067-RAMP-43-STA725+60SB
SS-067-RAMP-43-STA725+11SB
SS-067-RAMP-43-STA724+45SB



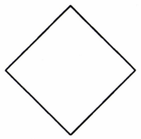
R3-7R
(36" X 36")

SS-038-43-STA102+25WB

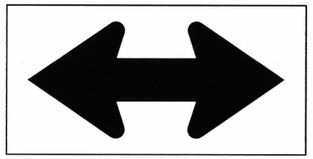
SS-067-038-43-STA721+04WB



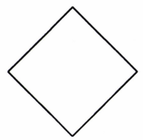
OM4-3
(18" X 18")



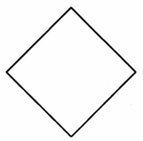
OM4-3
(18" X 18")



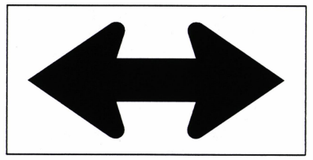
W1-7
(48" X 24")



OM4-3
(18" X 18")



OM4-3
(18" X 18")

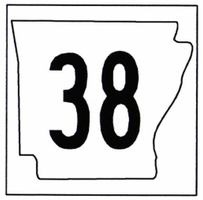


W1-7
(48" X 24")

SS-038-43-STA102+94SB



M3-4
(24" X 12")

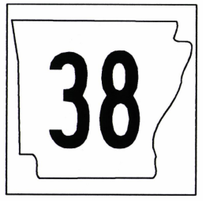


MI-6
(24" X 24")

SS-038-43-STA131+11WB

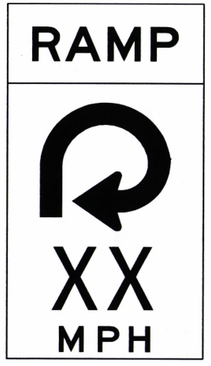


M3-2
(24" X 12")



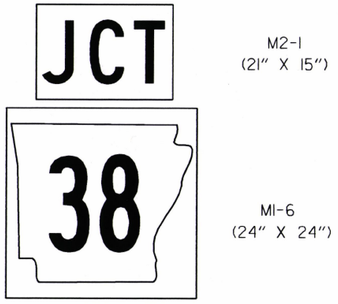
MI-6
(24" X 24")

SS-038-43-STA122+00EB



WI3-7
(36" X 60")

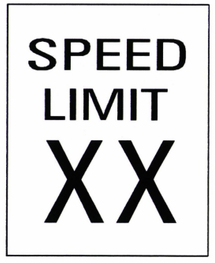
INSTALL
SS-067-038-43-STA104+63WB



M2-1
(21" X 15")

MI-6
(24" X 24")

SS-367-43-STA104+00NB
SS-367-43-STA117+00SB



R2-1
(24" X 30")

SS-038-43-STA117+99EB
SS-038-43-STA132+42WB

STATE OF ARKANSAS
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JAMES L. BARR

SIGN LAYOUT SHEET

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				6	ARK.			
				JOB NO.		061102	103	400

(2) SIGN LAYOUT SHEET

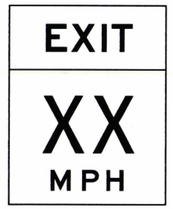


R5-1
(36" X 36")



R1-1
(48" X 48")

SS-067-RAMP-43-STA721+60SB
SS-067-RAMP-43-STA721+66SB



W13-2
(48" X 60")

EX-067-RAMP-43-STA738+62SB
EX-067-RAMP-43-STA701+38NB



R1-1
(36" X 36")

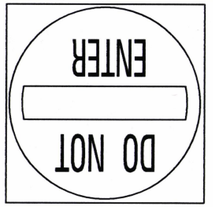
SS-067-FR-43-STA718+06NB
SS-067-FR-43-STA714+27NB

R6-1L
(36" X 12")



R6-1R
(36" X 12")



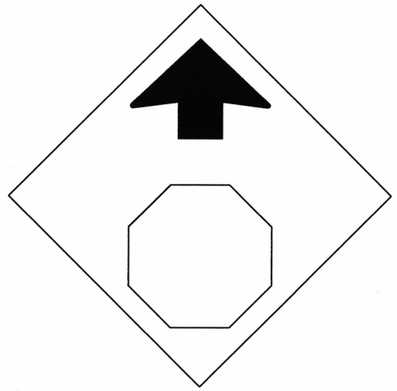


R5-1
(36" X 36")



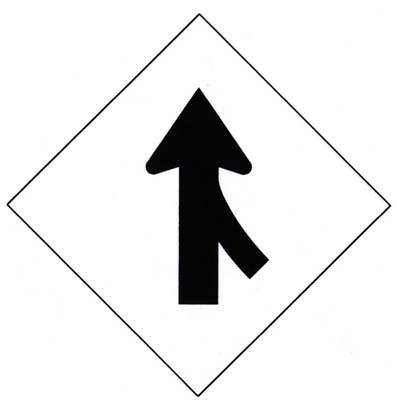
R1-1
(48" X 48")

SS-067-RAMP-43-STA721+17NB
SS-067-RAMP-43-STA1115+47NB



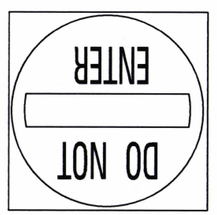
W3-1A
(48" X 48")

SS-067-RAMP-43-STA730+27SB
SS-067-RAMP-43-STA730+39SB
SS-067-RAMP-43-STA710+90NB
SS-067-RAMP-43-STA711+09NB



W4-1R
(48" X 48")

SS-067-43-STA703+50SB
SS-067-43-STA715+62SB
SS-067-43-STA734+51NB

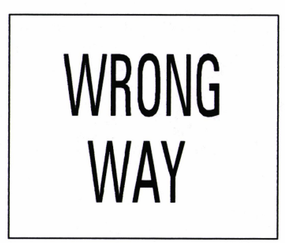


R5-1
(36" X 36")



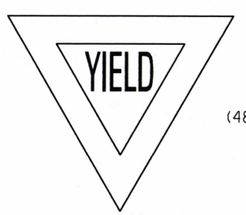
R1-1
(48" X 48")

SS-038-43-STA100+19WB



R5-1A
(42" X 30")

SS-067-RAMP-43-STA718+77NB
SS-067-RAMP-43-STA718+91NB
SS-067-RAMP-43-STA723+93SB



R1-2
(48" X 48" X 48")

SS-038-43-STA100+83EB
SS-038-43-STA111+77WB
SS-067-FR-STA-722+14NB
SS-038-43-STA139+55EB

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
12.06.16

SIGN LAYOUT SHEET

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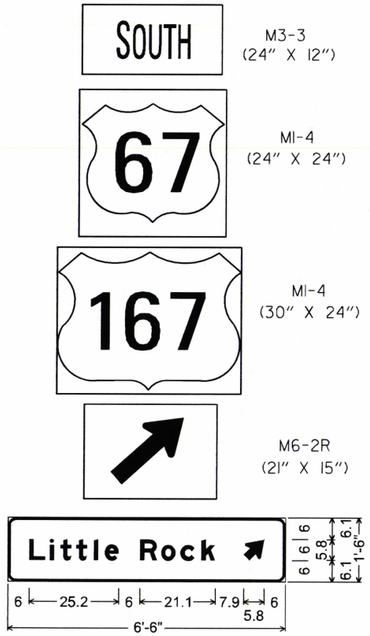
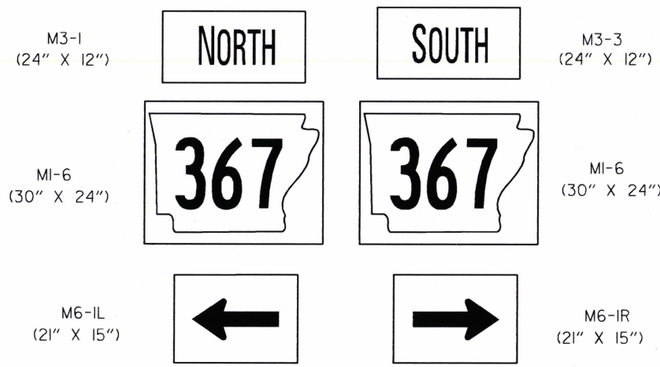
				6	ARK.			
				JOB NO.		061102	104	400

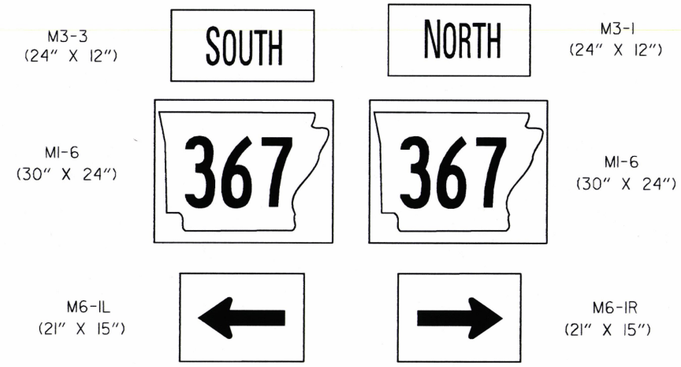
(2) SIGN LAYOUT SHEET



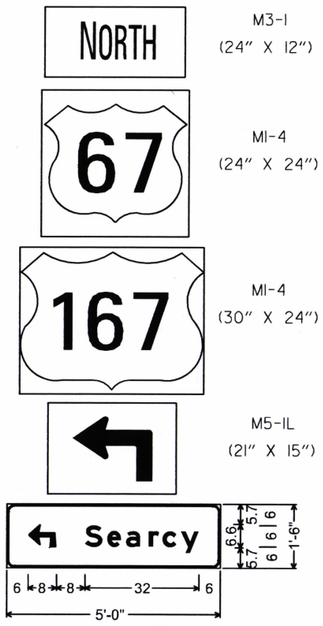
2.25" Radius, 0.75" Border, White on Green;
[Little Rock] E Mod 2K;
Standard Arrow Custom 7.0" X 6.0" 45°;
SS-038-43-STA107+02WB



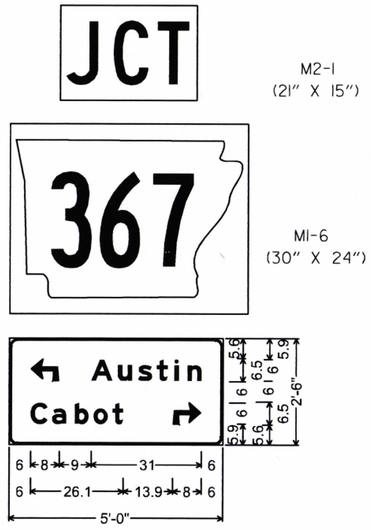
SS-038-43-STA138+71EB



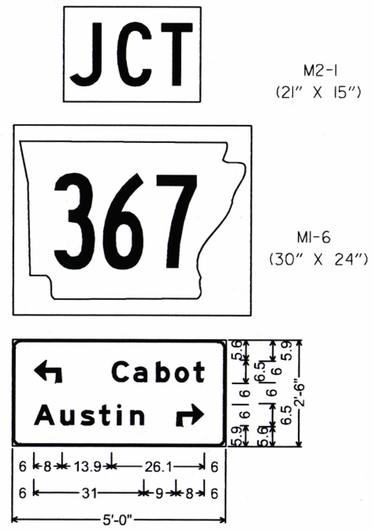
SS-038-43-STA300+55WB



2.25" Radius, 0.75" Border, White on Green;
90 Deg Advance Turn Arrow Custom 8.0" X 6.6";
[Searcy] E Mod 2K;
SS-038-43-STA114+00EB



2.25" Radius, 0.75" Border, White on Green;
90 Deg Advance Turn Arrow Custom 8.0" X 6.5";
[Austin] E Mod 2K;
[Cabot] E Mod 2K;
90 Deg Advance Turn Arrow Custom 8.0" X 6.5";
SS-038-43-STA135+00EB



2.25" Radius, 0.75" Border, White on Green;
90 Deg Advance Turn Arrow Custom 8.0" X 6.5";
[Cabot] E Mod 2K;
[Austin] E Mod 2K;
90 Deg Advance Turn Arrow Custom 8.0" X 6.5";
SS-038-43-STA306+00WB

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JAMES L. BARR
10/4/16

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				6	ARK.			
				JOB NO.		061102	105	400

(2) QUANTITIES

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS		THERMOPLASTIC PAVEMENT MARKING								REFLECTORIZED PAINT PAVEMENT MARKING		HIGH PERFORMANCE CONTRAST PAVEMENT MARKING		HIGH PERFORMANCE PAVEMENT MARKING		
									TYPE II (WHITE/RED)	TYPE II (YEL/YEL)	4"		8"		12"	YIELD LINE	WORDS	ARROWS	10"		4"		4"		8"
	LIN. FT. - EACH				LIN. FT.		LIN. FT.		EACH		LIN. FT.						EACH		LIN. FT.		LIN. FT.		LIN. FT.		
											WHITE	YELLOW	WHITE	YELLOW	WHITE				WHITE	YELLOW	WHITE	YELLOW	WHITE	YELLOW	WHITE
REMOVAL OF PERMANENT PAVEMENT MARKINGS	16250	2580			18830																			
CONSTRUCTION PAVEMENT MARKINGS		4490	7125			11615																		
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS			730				730																	
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	16250		6135					22385																
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)				421					421															
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)				131						131														
THERMOPLASTIC PAVEMENT MARKING WHITE (4")				2988							2988													
THERMOPLASTIC PAVEMENT MARKING YELLOW (4")				19132								19132												
THERMOPLASTIC PAVEMENT MARKING WHITE (8")				1431									1431											
THERMOPLASTIC PAVEMENT MARKING YELLOW (8")				208										208										
THERMOPLASTIC PAVEMENT MARKING WHITE (12")				1298											1298									
THERMOPLASTIC PAVEMENT MARKING (YIELD LINE)				120												120								
THERMOPLASTIC PAVEMENT MARKING WORDS				9													9							
THERMOPLASTIC PAVEMENT MARKING ARROWS				11														11						
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")				628															628					
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10")				250																250				
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (4")				69																	69			
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")				1100																		1100		
HIGH PERFORMANCE PAVEMENT MARKING WHITE (4")				9417																			9417	
HIGH PERFORMANCE PAVEMENT MARKING YELLOW (4")				7946																				7946
HIGH PERFORMANCE PAVEMENT MARKING WHITE (8")				1840																				
TOTALS:					**18830**	**11615**	**730**	**22385**	**421**	**131**	**2988**	**19132**	**1431**	**208**	**1298**	**120**	**9**	**11**	**628**	**250**	**69**	**1100**	**9417**	**7946**	**1840**

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

NOTE: NO PERMANENT PAVEMENT MARKINGS SHALL BE PLACED UNTIL A MINIMUM OF 3 DAYS AFTER ALL MAIN LANE PAVING HAS BEEN COMPLETED. IN ADDITION, NO PERMANENT PAVEMENT MARKINGS SHALL BE PLACED DURING THE TIME PERIOD FROM DECEMBER 21 TO MARCH 15, INCLUSIVE.

NOTE: THERMOPLASTIC PAVEMENT MARKINGS MAY BE SUBSTITUTED FOR INVERTED PROFILE PAVEMENT MARKINGS AT INTERSECTIONS, ISLANDS, TURNOUTS, AND OTHER SIMILAR LOCATIONS AS DIRECTED BY THE ENGINEER.

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	ADVANCE WARNING ARROW PANEL	MOBILE SPEED NOTIFICATION SYSTEM	PORTABLE CHANGEABLE MESSAGE SIGN	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMP. IMPACT ATTEN. BARR. (REPAIR)
														RIGHT	LEFT				
			LIN. FT. - EACH				NO.	SQ. FT.	EACH		DAY	EACH	WEEK			LIN. FT.		EACH	
W20-5	RIGHT LANE CLOSED 1 MILE	48"x48"	4	4	4	4	4	64.0											
W20-5	RIGHT LANE CLOSED 1/2 MILE	48"x48"	4	4	4	4	4	64.0											
W20-5	RIGHT LANE CLOSED 1500 FT.	48"x48"	4	4	4	4	4	64.0											
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	32.0											
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0											
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0											
W20-1	ROAD WORK AHEAD	48"x48"	11	12	12	12	12	192.0											
R55-1	FINES DOUBLE IN WORK ZONES WHEN WORKERS ARE PRESENT	36"x60"	4	4	4	4	4	60.0											
G20-1	ROAD WORK NEXT 1 MILES	60"x24"	2	2	2	2	2	20.0											
G20-2	END ROAD WORK	48"x24"	11	11	11	11	11	88.0											
R11-2	ROAD CLOSED	48"x30"	6	1	5	6	6	60.0											
W1-6	LEFT ARROW	60"x30"	12	12	13	13	13	162.5											
OM-3L	OBJECT MARKER	12"x36"	3	3		3	3	9.0											
OM-3R	OBJECT MARKER	12"x36"	20	1		20	20	60.0											
W4-2R	MERGE SYMBOL	48"x48"	4	4	4	4	4	64.0											
SPECIAL	MERGE NOW LEFT ARROW	48"x48"	4	4	4	4	4	64.0											
W7-3A	NEXT XX MILES	30"x24"	2			2	2	10.0											
W16-2P	500 FEET	24"x18"		2		2	2	6.0											
W20-A	ONE LANE ROAD 1000 FT.	36"x36"		2		2	2	18.0											
W20-7A	FLAGGER	48"x48"		2		2	2	32.0											
W21-5A	LEFT/RIGHT SHOULDER CLOSED	48"x48"	2			2	2	32.0											
W21-5B	LT/RT SHOULDER CLOSED, 500 FT.	48"x48"	2			2	2	32.0											
R2-1	SPEED LIMIT	48"x60"	8	8	8	8	8	160.0											
R4-1	DO NOT PASS	48"x60"	18	18	18	18	18	360.0											
W3-5	REDUCED SPEED LIMIT AHEAD	48"x48"	4	4	4	4	4	64.0											
RSP-1	SHOULDER CLOSED	48"x30"	8	8	8	8	8	80.0											
	VERTICAL PANELS		21	4	19	21			21										
	TRAFFIC DRUMS		263	247	273	273				273									
	ADVANCE WARNING ARROW PANEL		2	2	2	2					1460								
	MOBILE SPEED NOTIFICATION SYSTEM		4	4	4	4						4							
	PORTABLE CHANGEABLE MESSAGE SIGN		2	2	2	2							208						
	TYPE III BARRICADE-RT. (8')		4		3	4								32					
	TYPE III BARRICADE-LT. (8')		5	1	3	5									40				
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		8258			8258										8258			
	RELOCATING PRECAST CONCRETE BARRIER			353	793	1146											1146		
	TEMPORARY IMPACT ATTENUATION BARRIER			1	1	2												2	
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)			1	1	2													2
TOTALS:								**1861.5**	**21**	**273**	**1460**	**4**	**208**	**32**	**40**	**8258**	**1146**	**2**	**2**

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

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.		061102	106	400
				(2)	QUANTITIES			

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
702+00	722+52	C.L. RAMP 1	21	21
720+62	721+59	C.L. RAMP 2	1	1
728+50	736+00	C.L. RAMP 2	8	8
720+44	727+70	C.L. RAMP 3A	8	8
732+40	739+30	C.L. RAMP 3A	7	7
728+00	732+70	C.L. RAMP 3B	5	5
713+92	716+27	C.L. RAMP 4	3	3
511+00	526+80	WILLIE RAY DR.	16	16
100+15	102+85	HWY. 38 C.L. CONST.	3	3
110+10	116+60	HWY. 38 C.L. CONST.	7	7
131+80	139+25	HWY. 38 C.L. CONST.	8	8
TOTALS:			87	87

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	CONCRETE ISLANDS	WALKS	BUILDINGS	STORM CELLAR	SEPTIC SYSTEM	GUARDRAIL
			SQ. YD.	SQ. YD.	EACH			LIN. FT.
109+98	110+31	RT. C.L. HWY. 367		23				
110+85	111+05	RT. C.L. HWY. 367	31					
111+37	111+49	RT. C.L. HWY. 367		12				
502+71	503+67	RT. C.L. CONST. WILLIE RAY DR.						96
502+77	503+30	RT. C.L. CONST. WILLIE RAY DR.						53
699+04	699+04	C.L. MED. HWY. 67						
707+75		RT. C.L. MED. HWY. 67			1			
710+45		LT. C.L. MED. HWY. 67			1			
719+20		LT. C.L. MED. HWY. 67			1	1	1	
722+53	722+53	LT. C.L. MED. HWY. 67						
726+18	728+10	RT. C.L. CONST. RAMP 3A						150
737+50	737+50	C.L. MED. HWY. 67						
743+53	743+53	RT. C.L. MED. HWY. 67						
TOTALS:			31	35	3	1	1	299

NOTE: THE QUANTITY SHOWN ABOVE FOR THE REMOVAL AND DISPOSAL OF GUARDRAIL SHALL INCLUDE THE REMOVAL AND DISPOSAL OF ALL GUARDRAIL TERMINALS AND TERMINAL ANCHOR POSTS.

DUMPED RIPRAP AND FILTER BLANKET

STATION	LOCATION	DUMPED RIPRAP	FILTER BLANKET
		CU. YD.	SQ. YD.
518+00 TO 520+24.45	LT. C.L. CONST. WILLIE RAY DR. (TOE OF 2:1 SLOPE)	88	175
TOTALS:		88	175

SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS

NOTE: FILTER BLANKET SHALL BE GEOTEXTILE FABRIC (TYPE 5).

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
100+12	104+00	HWY. 38 ON RT.	388.00	344.89
110+63	114+95	HWY. 38 ON RT.	432.00	384.00
112+50	114+50	HWY. 38 ON LT.	200.00	177.78
119+50	121+70	HWY. 38 ON RT.	220.00	195.56
122+50	125+40	HWY. 38 ON RT.	290.00	257.78
126+50	132+80	HWY. 38 ON RT.	630.00	560.00
133+55	134+06	HWY. 38 ON RT.	51.00	45.33
133+60	139+07	HWY. 38 ON LT.	547.00	486.22
135+00	139+07	HWY. 38 ON RT.	407.00	361.78
492+00	514+10	WILLIE RAY DR. ON LT.	2210.00	1964.44
504+00	509+00	WILLIE RAY DR. ON RT.	500.00	444.44
511+74	517+80	WILLIE RAY DR. ON RT.	606.00	538.67
524+00	526+00	WILLIE RAY DR. ON RT.	200.00	177.78
709+00	715+00	SOUTHBOUND C/D RD. ON LT.	600.00	533.33
705+50	708+50	RAMP 1 ON LT.	300.00	266.67
718+00	721+50	RAMP 1 ON LT.	350.00	311.11
713+78	721+85	RAMP 1 ON RT.	807.00	717.33
726+00	729+85	RAMP 2 ON RT.	385.00	342.22
732+57	735+00	RAMP 2 ON LT.	243.00	216.00
728+00	731+00	RAMP 3A ON LT.	300.00	266.67
736+00	737+00	RAMP 3A ON LT.	100.00	88.89
729+00	738+00	RAMP 3A ON RT.	900.00	800.00
730+00	732+79	RAMP 3B ON LT.	279.00	248.00
✱ ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			200.00	177.78
TOTAL:				9906.67

NOTE: AVERAGE WIDTH = 8'-0"

✱ QUANTITIES ESTIMATED. SEE SECTION 104.03 OF THE STD. SPECS.

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS	BOX CULVERTS
		EACH	EACH
133+12	RT. C.L. CONST. HWY. 38	1	
133+14	RT. C.L. CONST. HWY. 38	1	
133+16	RT. C.L. CONST. HWY. 38	1	
133+25	RT. C.L. CONST. HWY. 38	1	
133+29	RT. C.L. CONST. HWY. 38	1	
492+48	LT. C.L. CONST. WILLIE RAY DR.	1	
494+05	LT. C.L. CONST. WILLIE RAY DR.	1	
494+97	LT. C.L. CONST. WILLIE RAY DR.	1	
498+84	LT. C.L. CONST. WILLIE RAY DR.	1	
500+94	RT. C.L. CONST. WILLIE RAY DR.	1	
502+93	C.L. CONST. WILLIE RAY DR.		1
505+91	RT. C.L. CONST. WILLIE RAY DR.	1	
506+03	LT. C.L. CONST. WILLIE RAY DR.	1	
506+70	LT. C.L. CONST. WILLIE RAY DR.	1	
508+02	LT. C.L. CONST. WILLIE RAY DR.	1	
509+24	LT. C.L. CONST. WILLIE RAY DR.	1	
510+60	LT. C.L. CONST. WILLIE RAY DR.	1	
TOTALS:		16	1

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

REMOVAL AND DISPOSAL OF FENCE & GATES

STATION	STATION	LOCATION	FENCE	GATES
			LIN. FT.	EACH
118+23	120+22	HWY. 38 ON RT.	400	
121+56	121+90	HWY. 38 ON LT. AND RT.	143	
126+82	128+36	HWY. 38 ON LT. AND RT.	206	
691+43	697+53	HWY. 67	610	
697+27	726+28	HWY. 67	2941	
703+95	704+88	HWY. 67	93	
512+50		WILLIE RAY DR.		1
TOTALS:			4393	1

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
107+90	HWY. 38 BRIDGE - NE CORNER	1
133+50	HWY. 38 R.C. BOX CULVERT - NE CORNER	1
521+95	WILLIE RAY DR. BRIDGE - NE CORNER	1
713+35	RAMP 1 R.C. BOX CULVERT - NE CORNER	1
732+56	RAMP 2 BRIDGE - NW CORNER	1
TOTAL:		5

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

WHEELCHAIR RAMPS

STATION	LOCATION	TYPE 3	TYPE 4
		SQ.YD.	
115+47	LT. C.L. CONST. HWY. 38	4.6	
115+48	RT. C.L. CONST. HWY. 38	4.6	
116+41	LT. C.L. CONST. HWY. 38	9.1	
116+41	RT. C.L. CONST. HWY. 38	9.1	
101+18	LT. C.L. CONST. HWY. 38	4.0	
101+18	RT. C.L. CONST. HWY. 38	4.0	
102+71	LT. C.L. CONST. HWY. 38	4.6	
103+25	LT. C.L. CONST. HWY. 38		7.3
103+55	LT. C.L. CONST. HWY. 38		7.3
103+90	LT. C.L. CONST. HWY. 38	3.3	
104+58	RT. C.L. CONST. HWY. 38	3.3	
104+68	RT. C.L. CONST. HWY. 38	3.3	
138+59	RT. C.L. CONST. HWY. 38	3.6	
138+81	RT. C.L. CONST. HWY. 38		7.3
138+82	RT. C.L. CONST. HWY. 38		7.3
138+82	LT. C.L. CONST. HWY. 38	4.2	
138+91	RT. C.L. CONST. HWY. 38		7.3
138+95	LT. C.L. CONST. HWY. 38	4.2	
300+22	EXIST. HWY. 38	4.0	
300+34	EXIST. HWY. 38		7.3
300+36	EXIST. HWY. 38		7.3
300+36	EXIST. HWY. 38	4.7	
300+50	EXIST. HWY. 38		7.3
300+76	EXIST. HWY. 38	3.4	
TOTALS:		74.0	58.4

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL						TEMPORARY EROSION CONTROL								SLOPE DRAIN (E-12)				
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	SOLID SODDING	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	DROP INLET SILT FENCE (E-7)	SILT FENCE (E-11)	DIVERSION DITCH (E-8)	PIPE FOR SLOPE DRAINS	DUMPED RIPRAP	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	✱SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	SQ.YD.	ACRE	ACRE	M.GAL.	BAG	CU.YD.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	CU.YD.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	STAGE 1B	17.54	35.08	17.54	1811.5	17.54	1780	0.36	0.36	7.3	2178	30	575	9439	889	173	4	4256	4256	4736
ENTIRE	PROJECT	STAGE 2	2.13	4.26	2.13	217.3	2.13		0.10	0.10	2.0	352			361						29
ENTIRE	PROJECT	STAGE 3	5.52	11.04	5.52	568.2	5.52	410				660		75	2043	520	179	6			108
✱ ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER									84.00	84.00	1713.6	440	120	100					1000	1000	1064
TOTALS:			25.19	50.38	25.19	2597.0	25.19	2190	84.46	84.46	1722.9	3630	150	750	11843	1409	352	10	5256	5256	5937

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

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

✱ QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/12/16

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/25/2016				6	ARK.			
11/28/2016				JOB NO.		061102	107	400
				②		QUANTITIES		

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	"B"	CONC. DITCH PAVING (TYPE A)	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	FEET	SQ. YD.	SQ. YD.	SQ. YD.	M. GAL.
706+25.00	710+00.00	LT. C.L. CONST. SOUTHBOUND C/D ROAD	375.00	25.00			1041.67	166.67	2.10
712+50.00	712+76.50	LT. C.L. CONST. SOUTHBOUND C/D ROAD	26.50	20.00			58.89	11.78	0.15
716+40.00	717+30.00	LT. C.L. CONST. SOUTHBOUND C/D ROAD	90.00	17.00			170.00	40.00	0.50
720+17.85	722+53.85	LT. C.L. MED HWY. 67 - MSE WALL	236.00	4.00			104.89	104.89	1.32
720+32.85	722+64.17	RT. C.L. MED HWY. 67 - MSE WALL	231.32	4.00			102.81	102.81	1.30
723+00.00	723+42.32	LT. C.L. CONST. SOUTHBOUND C/D ROAD	42.32	15.00			70.53	18.81	0.24
723+42.82	730+00.00	LT. C.L. CONST. RAMP 3B	657.18	23.00			1679.46	292.08	3.68
714+25.00	715+75.00	LT. C.L. CONST. RAMP 4	150.00	13.00			216.67	66.67	0.84
498+05.00	501+25.00	LT. C.L. CONST. WILLIE RAY DR.	320.00	23.00			817.78	142.22	1.79
125+40.00	126+50.00	RT. C.L. CONST. HWY. 38	110.00	9.00	6.00	110.00		48.89	0.62
130+05.00	134+06.14	RT. C.L. CONST. HWY. 38	401.14	28.00			1247.99	178.28	2.25
2+00.00	3+71.13	SPECIAL DITCH HWY. 67 TO RAMP 1	171.13	18.00	12.00	342.26		76.06	0.96
3+00.00	3+63.70	SPECIAL DITCH RAMP 3A TO HWY. 67	63.70	10.00			70.78	28.31	0.36
TOTALS:						452.26	5581.47	1277.47	16.11

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

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)	TERMINAL ANCHOR POST (TYPE 1)
			LIN. FT.	EACH		
723+75.96	724+94.88	LT. C.L. RAMP 3A	75	1		1
727+85.11	730+03.86	LT. C.L. RAMP 3A	150	1	1	
728+10.12	730+28.87	RT. C.L. RAMP 3A	150	1	1	
517+00.00	520+04.23	LT C.L. CONST. WILLIE RAY DR.	210	1	1	
518+04.13	520+22.88	RT C.L. CONST. WILLIE RAY DR.	75	1	1	
522+07.12	524+23.87	LT C.L. CONST. WILLIE RAY DR.	150	1	1	
522+25.77	523+69.52	RT C.L. CONST. WILLIE RAY DR.	75	1	1	
727+57.10	729+75.84	RT. C.L. RAMP 2	150	1	1	
727+57.23	729+75.99	LT. C.L. RAMP 2	150	1	1	
TOTALS:			1185	9	8	1

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	STONE BACKFILL	SELECT GRANULAR BACKFILL	✱ SOIL STABILIZATION
			CU. YD.		TON	CU. YD.	TON
ENTIRE	PROJECT	STAGE 1-MAIN LANES	27212	182983	24234		
ENTIRE	PROJECT	STAGE 2-MAIN LANES	3053	6316			
ENTIRE	PROJECT	STAGE 3-MAIN LANES	7824	111118			
ENTIRE	PROJECT	SPECIAL DITCHES	1686	1048			
ENTIRE	PROJECT	GRADING PLAN	1663	1075			
ENTIRE	PROJECT	APPROACHES		4095			
720+17.85	722+53.85	HWY. 38 OVERPASS MSE WALL LT.				3273	
720+32.85	722+64.17	HWY. 38 OVERPASS MSE WALL RT.				3666	
✱ ENTIRE	PROJECT	TO BE USED IF AND WHERE					100
		DIRECTED BY THE ENGINEER					
TOTALS:			41438	306635	24234	6939	100

✱ QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

CONCRETE ISLAND

STATION	LOCATION	CURB FACE TYPE	CONCRETE ISLAND
			SQ.YD.
100+24	LT. OF C.L. CONST. HWY. 38	C	127
103+44	LT. OF C.L. CONST. HWY. 38	C	238
100+30	RT. OF C.L. CONST. HWY. 38	C	134
115+82	RT. OF C.L. CONST. HWY. 38	C	17
138+63	RT. OF C.L. CONST. HWY. 38	C	96
111+08	RT. OF C.L. CONST. HWY. 367	C	118
TOTAL:			730

CONCRETE WALKS

STATION	STATION	LOCATION	LENGTH	CONCRETE WALKS
			LIN. FT.	SQ.YD.
101+14	102+68	HWY. 38 LT.	154	86
103+91	115+42	HWY. 38 LT.	1151	639
116+44	138+95	HWY. 38 LT.	2251	1251
101+14	104+61	HWY. 38 RT.	347	193
104+67	115+43	HWY. 38 RT.	1076	598
116+44	132+98	HWY. 38 RT.	1654	919
133+42	138+59	HWY. 38 RT.	517	287
109+99	110+32	HWY. 367 RT.	33	18
111+35	111+51	HWY. 367 RT.	16	9
TOTAL:				4000

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
705+11	713+98	RAMP 1 ON RT.	1023	5
125+11	131+27	HWY. 38 ON RT.	712	
132+24	138+17	HWY. 38 ON LT.	689	
497+03	508+06	WILLIE RAY DR. ON LT.	1233	6
510+07	519+38	WILLIE RAY DR. ON RT.	1035	5
522+50	528+46	WILLIE RAY DR. ON LT.	674	4
712+43	716+86	RAMP 4 ON LT.	507	3
717+90	722+49	RAMP 4 ON LT.	523	3
718+38	722+00	RAMP 1 ON LT.	426	3
721+10	725+91	RAMP 2 ON LT.	545	3
721+17	731+50	RAMP 3B ON LT.	1193	6
721+27	724+75	RAMP 3A ON LT.	412	3
726+21	740+06	RAMP 2 ON RT.	1577	7
731+07	738+90	RAMP 3A ON RT.	783	5
TOTALS:			11332	53

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

CRASH CUSHION

STATION	LOCATION	EACH
497+36	WILLIE RAY DRIVE	1
TOTAL:		1

NOTE: THE CRASH CUSHION SHALL BE NON-GATING, REDIRECTIVE, AND COMPATIBLE WITH THE SITE GEOMETRY SHOWN ON THE PLANS.

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	TYPE A (1' 6")
			LIN. FT.
101+14	720+61	LT. C.L. CONST. HWY. 38 TO LT. OF C.L. CONST. RAMP 3A	169
101+14	721+99	RT. OF C.L. CONST. HWY. 38 TO LT. OF C.L. CONST. RAMP 4	353
103+85	103+87	LT. OF C.L. CONST. HWY. 38	13
103+89	115+48	LT. OF C.L. CONST. HWY. 38	1172
104+34	115+49	RT. OF C.L. CONST. HWY. 38	1151
104+69	104+78	RT. OF C.L. CONST. HWY. 38	10
108+48	109+79	LT. OF C.L. CONST HWY. 367	140
111+00	111+14	LT. OF C.L. CONST HWY. 367	18
111+18	112+97	LT. OF C.L. CONST HWY. 367	182
115+49	115+50	LT. OF C.L. CONST. HWY. 38	10
116+16	116+24	LT. OF C.L. CONST. HWY. 38	16
116+38	138+80	LT. OF C.L. CONST. HWY. 38	2243
116+38	133+06	RT. OF C.L. CONST. HWY. 38	1661
133+34	138+61	RT. OF C.L. CONST. HWY. 38	549
720+66	721+36	LT. OF C.L. CONST. RAMP 3A	75
721+82	722+53	RT. OF C.L. CONST. RAMP 1	84
721+85	721+93	LT. OF C.L. CONST. RAMP 4	11
721+87	722+41	LT. OF C.L. CONST. RAMP 1	56
TOTAL:			7913

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)
		EACH
ENTIRE PROJECT	7	7
TOTALS:	7	7

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE A)
			LIN. FT.
732+56	735+35	RAMP 2	309
721+23	729+91	RAMP 2	925
704+19	721+74	RAMP 1	1775
116+78	128+98	HIGHWAY 38	1232
116+58	128+98	HIGHWAY 38	1286
503+25	514+46	WILLIE RAY DRIVE	1091
515+21	521+64	WILLIE RAY DRIVE	580
727+71	738+86	RAMP 3A	1240
TOTAL:			8438

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
527+70.00	531+00.00	C.L. CONST. WILLIE RAY DR.	23.00	843.33
TOTAL:				843.33

NOTE: AVERAGE MILLING DEPTH 1".

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT GALLON
✱ ENTIRE PROJECT - TO BE USED IF AND WHERE	20	40
DIRECTED BY THE ENGINEER		
TOTALS:	20	40

BASIS OF ESTIMATE:
ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC ..... 25 TON/MILE
TACK COAT FOR MAINTENANCE OF TRAFFIC ..... 50 GAL./MILE
✱ QUANTITIES ESTIMATED - SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

STATION	LOCATION	WIDTH	LENGTH	CU.YD.
		FEET		
699+04	C.L. MED. HWY. 67	14.00	75	61.6
712+76	C.L. MED. HWY. 67	17.33	75	76.2
737+59	C.L. MED. HWY. 67	9.67	75	42.5
743+60	C.L. MED. HWY. 67	9.67	75	42.5
TOTAL:				222.8

AVG. DEPTH = 19"

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
✱ ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	440
ENGINEER	
TOTAL:	440

✱ QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/30/16

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
10/25/2016			
11/28/2016			

FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	108	400

(2) QUANTITIES

APPROACH GUTTERS AND SLABS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE A)	APPROACH GUTTER (TYPE C)	APPROACH SLABS	REINFORCING STEEL-RDWY. (GR. 60)	AGGREGATE BASE CRS. (CLASS 7)
			CU.YD.			POUND	TON
107+32.11	107+88.11	HWY. 38 SLAB			114.84	13309	82.2
110+63.27	111+19.27	HWY. 38 SLAB			114.84	13309	82.2
729+48.42	729+84.92	RAMP 2 ON LT.		8.30		445	5.7
729+48.42	729+84.92	RAMP 2 ON RT.		11.55		630	8.5
729+48.42	729+84.92	RAMP 2 SLAB			30.75	3640	51.5
732+57.08	732+93.58	RAMP 2 ON LT.		8.30		445	5.7
732+57.08	732+93.58	RAMP 2 ON RT.		11.55		630	8.5
732+57.08	732+93.58	RAMP 2 SLAB			30.75	3640	51.5
724+74.97	725+11.47	RAMP 3A ON LT.		8.30		445	5.7
724+99.97	725+36.47	RAMP 3A ON RT.		11.55		630	8.5
724+84.97	725+36.47	RAMP 3A SLAB			38.92	4552	77.0
727+74.53	728+11.03	RAMP 3A ON LT.		8.30		445	5.7
727+99.53	728+36.03	RAMP 3A ON RT.		11.55		630	8.5
727+74.53	728+26.03	RAMP 3A SLAB			38.92	4552	77.0
519+85.12	520+15.12	WILLIE RAY DR. ON LT.	7.55			665	9.3
520+03.78	520+33.78	WILLIE RAY DR. ON RT.	7.55			665	9.3
519+92.59	520+33.78	WILLIE RAY DR. SLAB			30.00	2625	99.8
522+05.05	522+35.05	WILLIE RAY DR. ON LT.	7.55			665	9.3
522+23.71	522+53.71	WILLIE RAY DR. ON RT.	7.55			665	9.3
522+05.05	522+46.24	WILLIE RAY DR. SLAB			20.00	2825	99.8
TOTALS:			30.20	79.40	419.02	55612	715.0

NOTE: USE T =15" FOR 8' SHOULDER.

CONCRETE BARRIER WALL

STATION	STATION	LOCATION	SIDE TYPE A	SIDE TYPE SPECIAL	MEDIAN TYPE A	MEDIAN TYPE B
			LIN. FT.			
694+43.00	709+99.00	SOUTHBOUND C/D ROAD/WILLIE RAY DR.	1551			
716+40.00	719+24.00	SOUTHBOUND C/D ROAD	285			
706+08.00	724+83.00	HWY. 67/SOUTHBOUND C/D ROAD			535	1342
706+35.00	709+88.00	WILLIE RAY DR.		356		
722+14.00	725+08.00	RAMP 3A/3B				312
TOTALS:			1836	356	535	1654

NOTE: UNLESS OTHERWISE NOTED ALL STATIONING AND LENGTHS SHOWN ABOVE ARE BASED ON C.L. CONST. HWY. 67.

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
133+50	34	59	25.48	91	59	59.86	31' LT (HWY. 38)	5.7-6.4	22	6	A-4 (0)	TAN/GR
133+50	34	59	25.48	91	59	59.86	31' LT (HWY. 38)	10.1-11.6	31	15	A-2-6 (1)	BR/OR/TAN
133+50	34	59	25.48	91	59	59.86	31' LT (HWY. 38)	14.5-15.9	85	43	A-7-5 (27)	GR/BR
716+00	34	59	42.29	92	0	22.86	38' LT. (SB C/D)	5.0-5.8Z	23	8	A-4 (1)	GR/BR/TAN
724+50	34	59	46.57	92	0	17.39	42' LT. (RAMP 3B)	5.0-6.5Z	NP	NP	A-2-4 (0)	TAN/GR
102+50	34	59	48.37	92	0	24.44	C.L. (HWY. 38)	0.5-3.0	23	6	A-4 (1)	BROWN
102+50	34	59	48.37	92	0	24.44	C.L. (HWY. 38)	3.0-3.8Z	19	1	A-2-4 (0)	RED/GR
117+00	34	59	38.00	92	0	12.42	C.L. (HWY. 38)	0.4-5.0	25	9	A-4 (3)	BR/RED/GR
127+00	34	59	30.84	92	0	4.14	C.L. (HWY. 38)	0.5-5.0	23	8	A-4 (3)	BR/RED/GR
704+50	34	59	31.99	92	0	33.52	C.L. (RAMP 1)	0.5-5.0	46	24	A-7-6 (16)	BR/RED/GR
714+00	34	59	35.99	92	0	23.33	C.L. (RAMP 1)	0.8-3.4	19	4	A-4 (0)	BROWN
714+00	34	59	35.99	92	0	23.33	C.L. (RAMP 1)	3.4-5.0	24	9	A-4 (0)	RED
721+50	34	59	39.84	92	0	12.56	C.L. (RAMP 2)	0.4-5.0	23	6	A-4 (1)	BR/RED/GR
736+00	34	59	52.62	92	0	5.11	C.L. (RAMP 2)	0.6-4.5	40	19	A-2-6 (2)	BR/RED/GR
725+00	34	59	50.24	92	0	18.83	C.L. (RAMP 3A)	0.4-1.8Z	23	4	A-2-4 (0)	BROWN
736+00	34	59	53.92	92	0	6.41	C.L. (RAMP 3A)	0.4-5.0	20	4	A-4 (0)	BROWN
704+50	34	59	33.22	92	0	34.74	C.L. (SB C/D)	0.0-3.7Z	29	12	A-6 (2)	LIGHT BR
713+00	34	59	38.76	92	0	27.07	C.L. (SB C/D)	0.0-5.0	23	7	A-4 (2)	BROWN
718+00	34	59	42.00	92	0	22.57	C.L. (SB C/D)	0.0-5.0	18	3	A-4 (0)	LIGHT BR
724+50	34	59	46.39	92	0	16.92	C.L. (RAMP 3B)	0.6-2.3Z	20	4	A-2-4 (0)	BROWN
505+00	34	59	40.99	92	0	28.84	C.L. (WRD)	0.6-5.0	26	11	A-6 (5)	BROWN
518+00	34	59	51.72	92	0	23.29	C.L. (WRD)	0.3-1.5Z	23	4	A-1-b (0)	BROWN
522+50	34	59	51.86	92	0	17.89	12' RT. (WRD)	4.7-6.2	25	7	A-4 (3)	BROWN
522+50	34	59	51.86	92	0	17.89	12' RT. (WRD)	9.7-11.2	20	2	A-4 (0)	LT/DRK BR
728+00	34	59	51.14	92	0	15.41	8' RT. (RAMP 3A)	11.9-31.4	NP	NP	A-2-4 (0)	BROWN
728+00	34	59	51.14	92	0	15.41	8' RT. (RAMP 3A)	19.2-20.2	33	13	A-2-6 (1)	DARK GR

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

MSE RETAINING WALLS

STATION	STATION	LOCATION	DESIGNATION	LENGTH	SQUARE FOOT
				LIN. FT.	
720+17.85	722+53.85	HWY. 38 OVERPASS MSE WALL LT.	MW-W1	236.00	4313
720+32.85	722+64.17	HWY. 38 OVERPASS MSE WALL RT.	MW-W2	231.33	4100
TOTAL:					8413

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	** MODIFIED CURB		PORTLAND CEMENT CONCRETE DRIVEWAY	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS			STANDARD DRAWINGS
										24"	36"	29"X18"	
			FEET	STATION	STATION	SQ. YD.	SQ. YD.	TON	TON	LIN. FT.			
492+48	LT	WILLIE RAY DR.	16				78.90	8.68	32.22			28	PCC-1, PCM-1, PCP-1, PCP-2
494+05	LT	WILLIE RAY DR.	16				24.73	2.72	29.07			28	PCC-1, PCM-1, PCP-1, PCP-2
494+97	LT	WILLIE RAY DR.	16				24.73	2.72	29.06			28	PCC-1, PCM-1, PCP-1, PCP-2
498+43	LT	WILLIE RAY DR.	30				112.29	12.35	45.85	56			PCC-1, PCM-1, PCP-1, PCP-2
500+94	LT	WILLIE RAY DR.	20				91.78	10.10	37.48	46			PCC-1, PCM-1, PCP-1, PCP-2
506+03	LT	WILLIE RAY DR.	16				24.73	2.72	38.01	30			PCC-1, PCM-1, PCP-1, PCP-2
506+70	LT	WILLIE RAY DR./CAROL COVE	22				141.22	15.53	57.66	36			PCC-1, PCM-1, PCP-1, PCP-2
508+02	LT	WILLIE RAY DR.	16				24.73	2.72	35.14			28	PCC-1, PCM-1, PCP-1, PCP-2
509+24	LT	WILLIE RAY DR.	16				67.38	7.41	27.51			28	PCC-1, PCM-1, PCP-1, PCP-2
510+60	LT	WILLIE RAY DR.	16				24.73	2.72	29.54	30			PCC-1, PCM-1, PCP-1, PCP-2
512+15	LT	WILLIE RAY DR.	18				203.21	22.35	82.98	38			PCC-1, PCM-1, PCP-1, PCP-2
133+20	RT	HIGHWAY 38	16	132+98	133+42	39.11	637.12	70.08	260.16		70		DR-1, PCC-1, PCM-1, PCP-1, PCP-2
108+20	LT	HIGHWAY 367	16				241.81	26.60	98.74	28			PCC-1, PCM-1, PCP-1, PCP-2
* ENTIRE PROJECT TEMPORARY DRIVES									200.00				
TOTALS:						39.11	1697.36	186.70	1003.42	264	70	140	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....95.0% MIN. AGGR.....5.0% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, WILL BE ALLOWED TO SUBSTITUTE A HIGHER PERFORMANCE GRADE ASPHALT SURFACE COURSE FOR DRIVEWAYS AND MINOR SIDE STREET CONSTRUCTION AT NO ADDITIONAL COST TO THE DEPARTMENT.

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

** FOR INFORMATION ONLY

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

IMPACT ATTENUATION BARRIER (TYPE A)

STATION	LOCATION	EACH
720+85	C.L. MED. HWY. 67	1
721+86	C.L. MED. HWY. 67	1
TOTAL:		2

JOINT SUPPORTS

LOCATION	WIDTH OF SUPPORT	NUMBER OF SUPPORTS	CLASS S CONCRETE - ROADWAY
	FEET		CU. YD.
RAMP 1	15.00	3	5.00
RAMP 2	15.00	7	11.67
RAMP 3A	15.00	7	11.67
RAMP 4	15.00	3	5.00
SOUTHBOUND C/D ROAD	15.00	3	5.00
TOTAL:			38.34

NOTE: SEE STD. DRWG. CPTJ-6A FOR LOCATION OF JOINT SUPPORTS AT BRIDGES
SEE STD. DRWG. TR-1A FOR LOCATION OF JOINT SUPPORTS AT ENTRANCE & EXIT RAMPS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BAKER
11/30/16

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8/28/2015				6	ARK.			
				JOB NO.		061102	109	400
				(2)		QUANTITIES		

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III) 18"	(CLASS III) 24"	(CLASS III) 30"	(CLASS III) 36"	(CLASS V) 24"	(CLASS V) 36"	SIDE DRAIN 12"	FLARED END SECTIONS FOR R.C. PIPE CULVERTS 18"	24"	30"	36"	SAFETY END SECTIONS FOR R.C. PIPE CULVERTS (CLASS 2) 30"	TEMPORARY CULVERTS 12"	DROP INLETS TYPE MO	TYPE ST	EXT. 4'	EXT. 8'	YARD DRAINS	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL.EXC. FOR STR.-ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.
		LIN. FT.							EACH					LIN. FT.	EACH					LIN. FT.			CU.YD.	POUND	CU.YD.	SQ.YD.	M.GAL.	
503+45	WILLIE RAY DR. - DBL. R.C. BOX CULVERT																		5	3	67	68.09	7812	70	14	0.18	SPECIAL DETAIL
699+04	C.L. MED. HWY. 67		8			336				5															8	0.10	FES-1, FES-2, PCC-1
706+00	LT. C.L. MED. HWY. 67		650													1											FPC-9S, FPC-9M, PCC-1
712+53	LT. C.L. MED. HWY. 67															1											FPC-9, FPC-9S
712+75	C.L. MED. HWY. 67						432					4													17	0.21	FES-1, FES-2, PCC-1
720+00	LT. C.L. MED. HWY. 67			314							1					1											FPC-9S, PCC-1
722+53	LT. C.L. MED. HWY. 67			158												1											FPC-9S, PCC-1
724+14	LT. C.L. MED. HWY. 67			132									1			1											FPC-9S, PCC-1, SES-1
737+50	C.L. MED. HWY. 67			66			232				2	2													60	0.76	FES-1, FES-2, PCC-1
743+53	C.L. MED. HWY. 67			24			174				2	2													47	0.59	FES-1, FES-2, PCC-1
713+50	C.L. CONST. RAMP 1 - DBL. R.C. BOX CULVERT																		6	4	94	104.68	13910	47	20	0.25	SPECIAL DETAIL
720+75	C.L. CONST. RAMP 1				100							2													34	0.43	FES-1, FES-2, PCC-1
721+50	RT. C.L. CONST. RAMP 3A		48							1						1									8	0.10	FES-1, FES-2, FPC-9S, PCC-1
733+00	C.L. CONST. RAMP 3A			112							2														26	0.33	FES-1, FES-2, PCC-1
712+53	LT. C.L. MED. HWY. 67 R.C. BOX CULVERT EXTEND 52' LT.																		6	3	54	27.54	3820	22	13	0.16	W-X-003-1, R-100X-0, RCB-1, RCB-2, RCB-3
725+50	C.L. CONST. RAMP 3B				82							2													34	0.43	FES-1, FES-2, PCC-1
719+50	RT. C.L. CONST. SOUTHBOUND C/D ROAD		48													1											FPC-9S, PCC-1
101+38	LT. C.L. CONST. HWY. 38	16							1						1		1								5	0.06	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1
101+38	RT. C.L. CONST. HWY. 38	60													1			1									FPC-9E, FPC-9M, PCC-1
104+70	LT. C.L. CONST. HWY. 38	16							1						1			1							5	0.06	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1
104+70	RT. C.L. CONST. HWY. 38	70													1			1									FPC-9E, FPC-9M, PCC-1
115+38	LT. C.L. CONST. HWY. 38	20							1						1			1									FPC-9E, FPC-9M, PCC-2
115+38	RT. C.L. CONST. HWY. 38	60													1			1									FPC-9E, FPC-9M, PCC-3
119+35	C.L. CONST. HWY. 38 - DBL R.C. BOX																		8	4	141	193.45	27162	91	20	0.25	SPECIAL DETAIL
122+00	LT. C.L. CONST. HWY. 38	16							1						1			1							5	0.06	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1
122+00	RT. C.L. CONST. HWY. 38	60													1			1									FPC-9E, FPC-9M, PCC-1
125+10	LT. C.L. CONST. HWY. 38	16							1						1			1							5	0.06	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1
125+10	RT. C.L. CONST. HWY. 38	60													1			1									FPC-9E, FPC-9M, PCC-1
126+50	RT. C.L. CONST. HWY. 38			170							1				1		1								13	0.16	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1
128+15	RT. C.L. CONST. HWY. 38			94											1		1										FPC-9E, FPC-9M, PCC-1
129+15	RT. C.L. CONST. HWY. 38			86											1			1									FPC-9E, FPC-9M, PCC-1
130+05	RT. C.L. CONST. HWY. 38			22							1				1			1									FPC-9E, FPC-9M, PCC-1
131+05	LT. C.L. CONST. HWY. 38	14							1						1		1								13	0.16	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1
133+00	LT. C.L. CONST. HWY. 38	14							1						1			1							5	0.06	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1
138+30	RT. C.L. CONST. HWY. 38	74													1		1								5	0.06	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1
138+30	LT. C.L. CONST. HWY. 38	18							1						1		1										FPC-9E, FPC-9M, PCC-1
																									8	0.10	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1
901+45	RT. C.L. CONST. WILLIE RAY DR. DETOUR 1													72													
✱	ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED							500										5									FPC-9, PCC-1, PCM-1, PCP-1, PCP-2
	BY THE ENGINEER																										
	SUBTOTALS:	**514**	**754**	**1178**	**182**	**336**	**838**	**500**	**8**	**6**	**9**	**12**	**1**	**72**	**18**	**7**	**6**	**12**	**5**				**393.76**	**52704**	**230**	**365**	**4.57**	
	STRUCTURES OVER 20' - 0" SPAN																										
133+80	C.L. CONST. HWY. 38 - DBL R.C. BOX																		10	6	142	339.46	56292	128	25	0.32	SPECIAL DETAIL
	SUBTOTALS:																					**339.46**	**56292**	**128**	**25**	**0.32**	
	TOTALS:	**514**	**754**	**1178**	**182**	**336**	**838**	**500**	**8**	**6**	**9**	**12**	**1**	**72**	**18**	**7**	**6**	**12**	**5**			**733.22**	**108996**	**358**	**390**	**4.89**	

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

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

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

✱QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/30/16

QUANTITIES

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.		061102	110	400

(2) QUANTITIES

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")				
				TON / STATION	TON	AVG. WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	PG 70-22
			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	TON
HWY.38																						
100+12.00	101+13.73	TANGENT - OPEN SHLDR. TRANS.	101.73	VAR.	661.18	VAR.	4409.43	0.05	220.47	VAR.	1409.53	440.00	310.10	VAR.	1409.53	330.00	232.57	VAR.	1590.38	220.0		174.94
101+13.73	101+30.78	TANGENT - C&G TRANS.	17.05	VAR.	41.18	VAR.	324.52	0.05	16.23	VAR.	108.17	440.00	23.80	VAR.	108.17	330.00	17.85	VAR.	108.17	220.0		11.90
101+30.78	102+17.24	TANGENT - C&G - TAPER	86.46	VAR.	210.10	VAR.	1657.15	0.05	82.86	VAR.	552.38	440.00	121.52	VAR.	552.38	330.00	91.14	VAR.	552.38	220.0		60.76
102+17.24	104+21.59	TANGENT - C&G	204.35	237.25	484.82	168.0	3814.53	0.05	190.73	56.0	1271.51	440.00	279.73	56.0	1271.51	330.00	209.80	56.0	1271.51	220.0		139.87
104+21.59	106+39.38	TANGENT - C&G - DECEL. LANE	217.79	280.00	609.81	201.0	4863.98	0.05	243.20	67.0	1621.33	440.00	356.69	67.0	1621.33	330.00	267.52	67.0	1621.33	220.0		178.35
106+39.38	107+32.11	TANGENT - C&G - DECEL. LANE TAPER	92.73	VAR.	239.83	VAR.	1900.97	0.05	95.05	VAR.	633.66	440.00	139.41	VAR.	633.66	330.00	104.55	VAR.	633.66	220.0		69.70
111+19.27	125+11.08	TANGENT - C&G	1391.81	237.25	3302.07	168.0	25980.45	0.05	1299.02	56.0	8660.15	440.00	1905.23	56.0	8660.15	330.00	1428.92	56.0	8660.15	220.0		952.62
125+11.08	131+26.88	SUPER TRANS. - C&G	615.80	237.25	1460.99	168.0	11494.93	0.05	574.75	56.0	3831.64	440.00	842.96	56.0	3831.64	330.00	632.22	56.0	3831.64	220.0		421.48
131+26.88	132+23.90	TANGENT - C&G	97.02	237.25	230.18	168.0	1811.04	0.05	90.55	56.0	603.68	440.00	132.81	56.0	603.68	330.00	99.61	56.0	603.68	220.0		66.40
132+23.90	137+60.23	SUPER TRANS. - C&G	536.33	237.25	1272.44	168.0	10011.49	0.05	500.57	56.0	3337.16	440.00	734.18	56.0	3337.16	330.00	550.63	56.0	3337.16	220.0		367.09
137+60.23	138+16.60	SUPER TRANS. - C&G TRANS.	56.37	VAR.	140.78	VAR.	1112.37	0.05	55.62	VAR.	370.79	440.00	81.57	VAR.	370.79	330.00	61.18	VAR.	370.79	220.0		40.79
138+16.60	139+06.90	TANGENT - C&G TRANS.	90.30	VAR.	412.90	VAR.	3389.26	0.05	169.46	VAR.	1129.75	440.00	248.55	VAR.	1129.75	330.00	186.41	VAR.	1129.75	220.0		124.27
WILLIE RAY DR.																						
491+00.00	492+00.00	OVERLAY - SHLDR. LT.&RT.	100.00			24.0	266.67	0.17	45.33			440.00				330.00		24.0	266.67	220.0	29.33	
492+00.00	494+00.00	TANGENT TAPER - SHLDR. LT.&RT.	200.00	VAR.	350.76	VAR.	1797.78	0.05	89.89	24.6	546.67	440.00	120.27	24.3	540.00	330.00	89.10	VAR.	711.11	220.0	78.22	
494+00.00	497+02.75	TANGENT - SHLDR. LT.&RT.	302.75	258.25	781.85	88.9	2990.50	0.05	149.53	24.6	827.52	440.00	182.05	24.3	817.43	330.00	134.88	40.0	1345.56	220.0	148.01	
497+02.75	497+50.00	SUPER TRANS. - SHLDR. LT.&RT.	47.25	VAR.	129.82	88.9	466.73	0.05	23.34	24.6	129.15	440.00	28.41	24.3	127.58	330.00	21.05	40.0	210.00	220.0	23.10	
497+50.00	499+02.75	SUPER TRANS. - BARRIER RT. & SHLDR. LT.	152.75	VAR.	431.34	104.6	1775.29	0.05	88.76	31.4	532.93	440.00	117.24	31.3	531.23	330.00	87.65	42.0	712.83	220.0	78.41	
499+02.75	501+00.00	MAX. SUPER - BARRIER RT. & SHLDR. LT.	197.25	VAR.	549.10	104.6	2292.48	0.05	114.62	31.4	688.18	440.00	151.40	31.3	685.99	330.00	113.19	42.0	920.50	220.0	101.26	
501+00.00	506+06.49	MAX. SUPER - SHLDR. LT.&RT.	506.49	VAR.	1608.11	88.9	5003.00	0.05	250.15	24.6	1384.41	440.00	304.57	24.3	1367.52	330.00	225.64	40.0	2251.07	220.0	247.62	
506+06.49	508+06.49	SUPER TRANS. - SHLDR. LT. & RT.	200.00	VAR.	612.24	88.9	1975.56	0.05	98.78	24.6	546.67	440.00	120.27	24.3	540.00	330.00	89.10	40.0	888.89	220.0	97.78	
508+06.49	510+07.34	TANGENT - SHLDR. LT. & RT.	200.85	258.25	518.70	88.9	1983.95	0.05	99.20	24.6	548.99	440.00	120.78	24.3	542.30	330.00	89.48	40.0	892.67	220.0	98.19	
510+07.34	510+83.26	SUPER TRANS. - SHLDR. LT. & RT.	75.92	VAR.	230.72	88.9	749.92	0.05	37.50	24.6	207.51	440.00	45.65	24.3	204.98	330.00	33.82	40.0	337.42	220.0	37.12	
510+83.26	511+87.09	SUPER TRANS. TAPER - SHLDR. LT. & RT.	103.83	VAR.	392.42	VAR.	1292.11	0.05	64.61	VAR.	372.63	440.00	81.98	VAR.	369.17	330.00	60.91	VAR.	550.30	220.0	60.53	
511+87.09	512+55.48	SUPER TRANS. - SHLDR. LT. & RT. - RT. TRANS.	68.39	VAR.	291.79	VAR.	933.14	0.05	46.66	VAR.	272.80	440.00	60.02	VAR.	270.52	330.00	44.64	VAR.	389.82	220.0	42.88	
512+55.48	513+25.85	SUPER TRANS. - SHLDR. LT. - RT. TRANS.	70.37	VAR.	217.44	VAR.	960.16	0.05	48.01	VAR.	280.70	440.00	61.75	VAR.	278.35	330.00	45.93	VAR.	401.11	220.0	44.12	
513+25.85	514+53.62	SUPER TRANS. - SHLDR. LT. - RT. TRANS.	127.77	VAR.	330.98	VAR.	1425.35	0.05	71.27	VAR.	438.68	440.00	96.51	VAR.	438.68	330.00	72.38	VAR.	547.99	220.0	60.28	
514+53.62	515+13.62	REVERSE CROWN SUPER- SHLDR. LT.	60.00	VAR.	155.42	VAR.	577.33	0.05	28.87	VAR.	175.33	440.00	38.57	VAR.	175.33	330.00	28.93	VAR.	226.67	220.0	24.93	
515+13.62	515+69.59	SUPER TRANS. - SHLDR. LT. - RT. TRANS.	55.97	VAR.	149.57	VAR.	538.56	0.05	26.93	VAR.	163.56	440.00	35.98	VAR.	163.56	330.00	26.99	VAR.	211.44	220.0	23.26	
515+69.59	516+38.13	SUPER TRANS. - SHLDR. LT. - RT. TRANS.	68.54	VAR.	216.35	VAR.	795.83	0.05	39.79	VAR.	245.98	440.00	54.12	VAR.	245.98	330.00	40.59	VAR.	303.86	220.0	33.42	
516+38.13	517+00.56	SUPER TRANS. - SHLDR. LT. & RT. - RT. TRANS.	62.43	VAR.	263.62	VAR.	852.52	0.05	42.63	VAR.	249.03	440.00	54.79	VAR.	247.64	330.00	40.86	VAR.	355.85	220.0	39.14	
517+00.56	519+31.55	SUPER TRANS. - SHLDR. LT. & RT. - RT. TRANS.	230.99	VAR.	975.38	VAR.	2764.18	0.05	138.21	VAR.	793.07	440.00	174.48	VAR.	785.37	330.00	129.59	VAR.	1185.75	220.0	130.43	
519+31.55	519+38.06	SUPER TRANS. - SHLDR. LT. & RT.	6.51	VAR.	19.93	88.9	64.30	0.05	3.22	24.6	17.79	440.00	3.91	24.3	17.58	330.00	2.90	40.0	28.93	220.0	3.18	
519+38.06	519+92.59	TANGENT - SHLDR. LT. & RT.	54.53	258.25	140.82	88.9	538.64	0.05	26.93	24.6	149.05	440.00	32.79	24.3	147.23	330.00	24.29	40.0	242.36	220.0	26.66	
522+46.24	522+50.00	TANGENT - SHLDR. LT. & RT.	3.76	258.25	9.71	88.9	37.14	0.05	1.86	24.6	10.28	440.00	2.26	24.3	10.15	330.00	1.67	40.0	16.71	220.0	1.84	
522+50.00	525+00.00	SUPER TRANS. - SHLDR. LT. & RT.	250.00	VAR.	909.63	88.9	2469.44	0.05	123.47	24.6	683.33	440.00	150.33	24.3	675.00	330.00	111.38	40.0	1111.11	220.0	122.22	
525+00.00	525+95.56	MAX. SUPER - SHLDR. LT. & RT.	95.56	VAR.	347.70	88.9	943.92	0.05	47.20	24.6	261.20	440.00	57.46	24.3	258.01	330.00	42.57	40.0	424.71	220.0	46.72	
525+95.56	527+00.00	SUPER TRANS. - SHLDR. LT. & RT.	104.44	VAR.	319.71	88.9	1031.64	0.05	51.58	24.6	285.47	440.00	62.80	24.3	281.99	330.00	46.53	40.0	464.18	220.0	51.06	
527+00.00	527+96.09	SUPER TRANS. - SHLDR. LT. & RT. - NOTCH	96.09	VAR.	103.54	40.0	427.07	0.05	21.35	VAR.	72.60	440.00	15.97	VAR.	71.53	330.00	11.80	40.0	427.07	220.0	46.98	
527+96.09	528+45.56	SUPER TRANS. - SHLDR. LT. & RT. - SURFACE OVERLAY/CLASS 7 ONLY	49.47	VAR.	36.17	40.0	219.87	0.17	37.38										219.87	220.0	24.19	
528+45.56	531+00.00	TANGENT - SHLDR. LT. & RT. - SURFACE OVERLAY/CLASS 7 ONLY	254.44	VAR.	43.28	40.0	1130.84	0.17	192.24										1130.84	220.0	124.39	
531+00.00	532+00.00	OVERLAY - SHLDR. LT. & RT.	100.00			40.0	444.44	0.17	75.55										444.44	220.0	48.89	
GUARDRAIL WIDENING																						
727+14.10	729+84.92	RAMP 2	270.82	VAR.	119.38	VAR.	246.75	0.05	12.34									VAR.	246.75	220.00	27.14	
723+33.13	725+23.97	RAMP 3A	190.84	VAR.	87.96	VAR.	74.22	0.05	3.71									VAR.	74.22	220.00	8.16	
727+87.03	730+71.87	RAMP 3A	284.84	VAR.	33.30	VAR.	240.53	0.05	12.03									VAR.	240.53	220.00	26.46	
516+57.00	520+24.45	WILLIE RAY DR.	367.45	VAR.	570.21	VAR.	318.46	0.05	15.92									VAR.	318.46	220.00	35.03	
522+05.55	524+56.87	WILLIE RAY DR.	251.32	VAR.	386.51	VAR.	203.85	0.05	10.19									VAR.	203.85	220.00	22.42	
ADDITIONAL FOR LEVELING																						
526+00.00	532+00.00	SUPER TRANS. - SHLDR. LT. & RT. - SURFACE OVERLAY ONLY	600.00			40.00	2666.67	0.17	453.33									40.00	2666.67	220.00	293.33	
ADDITIONAL FOR TEMPORARY WIDENING																						
524+36.72	526+39.00	EXISTING WILLIE RAY DR. ON RT. - TAPER	202.28	VAR.	66.75	VAR.	131.48	0.05	6.57					VAR.	131.48	330.00	21.69	VAR.	129.01	220.00	14.19	
526+39.00	526+70.00	EXISTING WILLIE RAY DR. ON RT.	31.00	55.00	17.05	VAR.	39.78	0.05	1.99					VAR.	39.78	330.00	6.56	VAR.	39.40	220.00	4.33	
526+70.00	529+00.00	EXISTING WILLIE RAY DR. ON RT. - TAPER	230.00	VAR.	75.90	VAR.	149.50	0.05	7.48					VAR.	149.50	330.00	24.67	VAR.	146.69	220.00	16.14	
ADDITIONAL FOR FULL DEPTH SHOULDER																						
523+20.00	529+30.00	WILLIE RAY DR. ON LT.	610.00			16.00	1084.44	0.05	54.22	8.00	542.22	440.00	119.29	8.00	542.22	330.00	89.47					
ADDITIONAL FOR GRADE RAISE																						
527+00.00	528+10.00	WILLIE RAY DR.	110.00			VAR.	585.00	0.05	29.25	VAR.	293.33	809.90	118.78	VAR.	293.33	168.58	24.72					
TOTALS:					**20559.44**		**113259.16**		**6230.40**		**34248.83**		**7588.98**		**34479.18**		**5666.38**		**44995.91**		**2341.36**	**2608.17**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (PG 70-22) (1/2").....95.2% MIN. AGGR.....4.8% ASPHALT BINDER
ACHM SURFACE COURSE (PG 64-22) (1/2").....95.0% MIN. AGGR.....5.0% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.9% MIN. AGGR.....4.1% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....96.2% MIN. AGGR.....3.8% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10.01.16

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.		061102	III	400
				(2)	QUANTITIES			

CONCRETE BASE

STATION	STATION	LOCATION	LENGTH	CEMENT STABILIZED CRUSHED STONE BASE COURSE (6" COMP'D. DEPTH)				ACHM SURFACE COURSE (3/8") 110 LBS. PER SQ. YD.			TACK COAT 0.05 GAL. PER SQ. YD.			AGGREGATE BASE COURSE (CLASS 7)		PORTLAND CEMENT CONCRETE PAVEMENT	
				AVG. WID.	PROCESSING	CEMENT	AGGREGATE	AVG. WID.	SQ. YD.	PG 64-22	AVG. WID.	SQ. YD.	GAL.	TON/ STATION	TON	AVG. WID.	12" U.T.
			FEET	FEET	SQ. YD.	TON	TON	FEET		TON	FEET					FEET	SQ. YD.
CL CONST. RAMP 1																	
700+00.00	704+69.46	TRANS. - 6:1 RT.	469.46	VAR.	1064.11	22.35	350.09	VAR.	1064.11	58.53	VAR.	1064.11	53.21	50.00	234.73	VAR.	959.78
704+69.46	705+04.98	TRANS. - 6:1 RT.	35.52	VAR.	183.13	3.85	60.25	VAR.	183.13	10.07	VAR.	183.13	9.16	50.00	17.76	VAR.	175.23
705+04.98	705+11.36	TANGENT - 6:1 RT.	6.38	VAR.	33.96	0.71	11.17	VAR.	33.96	1.87	VAR.	33.96	1.70	50.00	3.19	VAR.	32.54
705+11.36	706+83.73	SUPER TRANS. - 6:1 LT. W/GORE SHLDR., 6:1 RT.	172.37	VAR.	821.63	17.25	270.32	VAR.	821.63	45.19	VAR.	821.63	41.08	VAR.	225.17	VAR.	706.72
706+83.73	708+61.36	SUPER TRANS. - 6:1 LT., 6:1 RT.	177.63	29.0	572.36	12.02	188.31	29.0	572.36	31.48	29.0	572.36	28.62	VAR.	363.93	25.0	493.42
708+61.36	710+48.07	MAX. SUPER - 6:1 LT., 6:1 RT.	186.71	29.0	601.62	12.63	197.93	29.0	601.62	33.09	29.0	601.62	30.08	VAR.	468.64	25.0	518.64
710+48.07	713+98.07	SUPER TRANS. - 6:1 LT., 6:1 RT.	350.00	29.0	1127.78	23.68	371.04	29.0	1127.78	62.03	29.0	1127.78	56.39	VAR.	618.63	25.0	972.22
713+98.07	718+37.99	TANGENT - 6:1 LT., 6:1 RT.	439.92	29.0	1417.52	29.77	466.36	29.0	1417.52	77.96	29.0	1417.52	70.88	102.50	450.92	25.0	1222.00
718+37.99	720+19.00	SUPER TRANS. - 6:1 LT., 6:1 RT.	181.01	29.0	583.25	12.25	191.89	29.0	583.25	32.08	29.0	583.25	29.16	VAR.	260.20	25.0	502.81
720+19.00	721+71.34	SUPER TRANS. - 6:1 LT., 6:1 RT.	152.34	29.0	490.87	10.31	161.50	29.0	490.87	27.00	29.0	490.87	24.54	VAR.	227.95	25.0	423.17
721+71.34	721+82.30	SUPER TRANS. RADIUS - 6:1 LT., 6:1 RT.	10.96	VAR.	35.56	0.75	11.70	VAR.	35.56	1.96	VAR.	35.56	1.78	VAR.	9.14	VAR.	30.69
721+82.30	721+87.06	SUPER TRANS. - 6:1 LT., CURB RT.	4.76	VAR.	11.64	0.24	3.83	VAR.	11.64	0.64	VAR.	11.64	0.58	VAR.	2.50	VAR.	10.58
721+87.06	722+00.00	SUPER TRANS. - CURB LT., CURB RT.	12.94	VAR.	25.30	0.53	8.32	VAR.	25.30	1.39	VAR.	25.30	1.27			VAR.	25.30
722+00.00	722+52.60	TRANS. - CURB LT., CURB RT.	52.60	VAR.	274.10	5.76	90.18	VAR.	274.10	15.08	VAR.	274.10	13.71			VAR.	274.10
CL CONST. RAMP 2																	
720+58.38	720+68.80	TRANS. - CURB LT., CURB RT.	10.42	VAR.	120.18	2.52	39.54	VAR.	120.18	6.61	VAR.	120.18	6.01			VAR.	120.18
720+68.80	720+80.16	TRANS. - CURB LT., 6:1 RT.	11.36	VAR.	74.72	1.57	24.58	VAR.	74.72	4.11	VAR.	74.72	3.74	VAR.	10.99	VAR.	72.20
720+80.16	721+10.00	TRANS. - 6:1 LT., 6:1 RT.	29.84	VAR.	143.56	3.01	47.23	VAR.	143.56	7.90	VAR.	143.56	7.18	VAR.	34.95	VAR.	130.30
721+10.00	721+39.65	SUPER TRANS. RADIUS - 6:1 LT., 6:1 RT.	29.65	VAR.	100.81	2.12	33.17	VAR.	100.81	5.54	VAR.	100.81	5.04	VAR.	33.06	VAR.	87.63
721+39.65	723+50.29	SUPER TRANS. - 6:1 LT., 6:1 RT.	210.64	29.0	678.73	14.25	223.30	29.0	678.73	37.33	29.0	678.73	33.94	VAR.	357.84	25.0	585.11
723+50.29	725+90.58	SUPER TRANS. - 6:1 LT., 6:1 RT.	240.29	29.0	774.27	16.26	254.73	29.0	774.27	42.58	29.0	774.27	38.71	VAR.	386.58	25.0	667.47
725+90.58	726+21.08	TANGENT - 6:1 LT., 6:1 RT.	30.50	29.0	98.28	2.06	32.33	29.0	98.28	5.41	29.0	98.28	4.91	102.50	31.26	25.0	84.72
726+21.08	729+21.08	SUPER TRANS. - 6:1 LT., 6:1 RT.	300.00	29.0	966.67	20.30	318.03	29.0	966.67	53.17	29.0	966.67	48.33	VAR.	463.14	25.0	833.33
729+21.08	729+48.42	MAX. SUPER - 6:1 LT., 6:1 RT.	27.34	29.0	88.10	1.85	28.98	29.0	88.10	4.85	29.0	88.10	4.41	VAR.	56.39	25.0	75.94
732+93.58	735+14.57	MAX. SUPER - 6:1 LT., 6:1 RT.	220.99	29.0	712.08	14.95	234.27	29.0	712.08	39.16	29.0	712.08	35.60	VAR.	455.79	25.0	613.86
735+14.57	736+31.90	MAX. SUPER - GORE LT., 6:1 RT.	117.33	VAR.	368.94	7.75	121.38	VAR.	368.94	20.29	VAR.	368.94	18.45	VAR.	176.15	VAR.	342.86
736+31.90	737+06.08	MAX. SUPER - 6:1 RT.	74.18	VAR.	358.54	7.53	117.96	VAR.	358.54	19.72	VAR.	358.54	17.93	VAR.	69.73	VAR.	342.05
737+06.08	740+06.08	SUPER TRANS. - 6:1 LT., 6:1 RT.	300.00	VAR.	670.00	14.07	220.43	VAR.	670.00	36.85	VAR.	670.00	33.50	VAR.	216.00	VAR.	603.33
740+06.08	743+31.95	TANGENT - 6:1 RT.	325.87	VAR.	724.16	15.21	238.25	VAR.	724.16	39.83	VAR.	724.16	36.21	50.00	162.94	VAR.	651.74
743+31.95	746+31.95	TANGENT TAPER - 6:1 RT.	300.00	VAR.	466.67	9.80	153.53	VAR.	466.67	25.67	VAR.	466.67	23.33	50.00	150.00	VAR.	400.00
CL CONST. RAMP 3A																	
720+44.34	721+26.81	TRANS. - CURB LT., BARRIER RT.	82.47	VAR.	372.03	7.81	122.40	VAR.	372.03	20.46	VAR.	372.03	18.60			VAR.	344.54
721+26.81	721+35.75	SUPER TRANS. - CURB LT., BARRIER RT.	8.94	VAR.	31.09	0.65	10.23	VAR.	31.09	1.71	VAR.	31.09	1.55	VAR.	2.64	VAR.	28.11
721+35.75	723+00.71	SUPER TRANS. - 6:1 LT., BARRIER RT.	164.96	VAR.	586.52	12.32	192.97	VAR.	586.52	32.26	VAR.	586.52	29.33	VAR.	135.48	VAR.	494.88
723+00.71	723+30.03	SUPER TRANS. - 6:1 LT., BARRIER RT.	29.32	VAR.	104.25	2.19	34.30	VAR.	104.25	5.73	VAR.	104.25	5.21	VAR.	38.59	VAR.	87.96
723+30.03	724+74.60	SUPER TRANS. - 6:1 LT., 6:1 RT.	144.57	VAR.	493.14	10.36	162.24	VAR.	493.14	27.12	VAR.	493.14	24.66	VAR.	188.30	VAR.	428.89
724+74.60	724+84.97	TANGENT - 6:1 LT., 6:1 RT.	10.37	29.0	33.41	0.70	10.99	29.0	33.41	1.84	29.0	33.41	1.67	102.50	10.63	25.00	28.81
728+26.03	731+07.28	TANGENT - 6:1 LT., 6:1 RT.	281.25	29.0	906.25	19.03	298.16	29.0	906.25	49.84	29.0	906.25	45.31	102.50	288.28	25.00	781.25
725+23.97	734+07.28	SUPER TRANS. - 6:1 LT., 6:1 RT.	883.31	29.0	2846.22	59.77	936.41	29.0	2846.22	156.54	29.0	2846.22	142.31	VAR.	1503.84	25.00	2453.64
734+07.28	735+90.47	MAX. SUPER - 6:1 LT., 6:1 RT.	183.19	29.0	590.28	12.40	194.20	29.0	590.28	32.47	29.0	590.28	29.51	VAR.	435.99	25.00	508.86
735+90.47	737+22.51	SUPER TRANS. - RADIUS - 6:1 LT., 6:1 RT.	132.04	29.0	425.46	8.93	139.98	29.0	425.46	23.40	29.0	425.46	21.27	VAR.	262.27	25.00	366.78
737+22.51	738+90.47	SUPER TRANS. - RADIUS - 6:1 LT., 6:1 RT.	167.96	VAR.	828.60	17.40	272.61	VAR.	828.60	45.57	VAR.	828.60	41.43	VAR.	175.74	VAR.	716.63
738+90.47	739+30.40	TANGENT - 6:1 LT.	39.93	VAR.	206.75	4.34	68.02	VAR.	206.75	11.37	VAR.	206.75	10.34	50.00	19.97	VAR.	197.88
739+30.40	745+00.00	TRANS. - 6:1 LT.	569.60	VAR.	1329.07	27.91	437.26	VAR.	1329.07	73.10	VAR.	1329.07	66.45	50.00	284.80	VAR.	1202.49
CL CONST. RAMP 3B																	
723+42.32	724+73.31	SUPER TRANS. - 6:1 LT., BARRIER RT.	130.99	VAR.	956.23	20.08	314.60	VAR.	956.23	52.59	VAR.	956.23	47.81	VAR.	161.94	VAR.	868.90
724+73.31	724+94.40	SUPER TRANS. - GORE AREA - 6:1 LT., 6:1 RT.	21.09	29.0	67.96	1.43	22.36	29.0	67.96	3.74	29.0	67.96	3.40	VAR.	46.53	25.0	58.58
724+94.40	728+50.07	MAX. SUPER - 6:1 LT., 6:1 RT.	355.67	29.0	1146.05	24.07	377.05	29.0	1146.05	63.03	29.0	1146.05	57.30	VAR.	986.10	25.0	987.97
728+50.07	729+00.00	SUPER TRANS. - 6:1 LT., 6:1 RT.	49.93	30.0	166.43	3.50	54.76	30.0	166.43	9.15	30.0	166.43	8.32	VAR.	99.18	26.0	144.24
729+00.00	730+02.15	SUPER TRANS. - 6:1 LT., BARRIER RT.	102.15	VAR.	400.66	8.41	131.82	VAR.	400.66	22.04	VAR.	400.66	20.03	VAR.	103.82	VAR.	287.16
730+02.15	731+50.07	SUPER TRANS. - 6:1 LT., BARRIER RT.	147.92	VAR.	527.58	11.08	173.57	VAR.	527.58	29.02	VAR.	527.58	26.38	VAR.	98.56	VAR.	445.40
731+50.07	732+09.27	SUPER TRANS. - 6:1 LT., BARRIER RT.	59.20	VAR.	263.11	5.53	86.56	VAR.	263.11	14.47	VAR.	263.11	13.16	VAR.	14.80	VAR.	230.22
732+09.27	732+79.36	TRANS. - CURB LT., BARRIER RT.	70.09	VAR.	617.57	12.97	203.18	VAR.	617.57	33.97	VAR.	617.57	30.88			VAR.	617.57
CL CONST. RAMP 4																	
706+15.59	709+15.59	ACCEL. TAPER - GORE AREA - 6:1 LT.	300.00	VAR.	533.33	11.20	175.47	VAR.	533.33	29.33	VAR.	533.33	26.67	50.00	150.00	VAR.	510.00
709+15.59	712+42.52	ACCEL. TANGENT - 6:1 LT.	326.93	VAR.	726.51	15.26	239.02	VAR.	726.51	39.96	VAR.	726.51	36.33	50.00	163.47	VAR.	653.86
712+42.52	714+15.11	ACCEL. SUPER TRANS. - 6:1 LT.	172.59	VAR.	423.80	8.90	139.43	VAR.	423.80	23.31	VAR.	423.80	21.19	VAR.	112.18	VAR.	385.45
714+15.11	714+64.37	SUPER TRANS. - RADIUS - 6:1 LT., GORE RT.	49.26	VAR.	142.85	3.00	47.00	VAR.	142.85	7.86	VAR.	142.85	7.14	VAR.	66.93	VAR.	131.91
714+64.37	714+88.92	MAX. SUPER - 6:1 LT., GORE RT.	24.55	VAR.	76.38	1.60	25.13	VAR.	76.38	4.20	VAR.	76.38	3.82	VAR.	47.07	VAR.	70.92
714+88.92	719+25.27	MAX. SUPER - 6:1 LT., 6:1 RT.	436.35	29.0	1406.02	29.53	462.58	29.0	1406.02	77.33	29.0	1406.02	70.30	VAR.	836.70	25.0	1212.08
719+25.27	720+19.39	SUPER TRANS. - 6:1 LT., 6:1 RT.	94.12	29.0	303.28	6.37	99.78	29.0	303.28	16.68	29.0	303.28	15.16	VAR.	199.42	25.0	261.44
720+19.39	721+85.00	SUPER TRANS. - RADIUS - 6:1 LT., 6:1 RT.	165.61	29.0	533.63	11.21	175.56	29.0	533.63	29.35	29.0	533.63	26.68	VAR.	192.11	25.0	460.03
721+85.00	722+49.03	SUPER TRANS. - RADIUS - CURB LT., CURB RT.	64.03	VAR.	106.72	2.24	35.11	VAR.	106.72	5.87	VAR.	106.72	5.34			VAR.	106.72
722+49.03	723+62.27	TRANS. - CURB LT.	113.24	VAR.	61.65	1.29	20.28	VAR.	61.65	3.39	VAR.	61.65	3.08			VAR.	61.65
CL CONST. SOUTHBOUND C/D ROADWAY																	
691+43.12	694+43.12	ACCEL. TAPER - 6:1 LT.	300.00	VAR.	166.67	3.50	54.83	VAR.	166.67	9.17	VAR.	166.67	8.33	50.00	150.00	VAR.	100.00
694+43.12	698+61.74	ACCEL. TANGENT - BARRIER RT.	418.62	VAR.	465.13	9.77	153.03	VAR.	465.13	25.58	VAR.	465.13	23.26	24.75	103.61	VAR.	432.57
698+61.74	701+42.87	TRANS. - BARRIER LT.	281.13	VAR.	771.55	16.20	253.84	VAR.	771.55	42.44	VAR.	771.55	38.58	24.75	69.58	VAR.	749.68
701+42.87	706+08.84	TANGENT - GORE	465.97	VAR.	2024.38	42.51	666.02	VAR.	2024.38	111.34	VAR.	2024.38	101.22	24.75	115.33	VAR.	1988.14
706+08.84	712+42.52	TANGENT - BARRIER RT. W/SHLDR.	633.68	35.00	2464.31	51.75	810.76	35.00	2464.31	135.54	35.00	2464.31	123.22			29.00	2041.86
712+42.52	714+15.58	TANGENT - BARRIER RT. W/SHLDR.	173.06	VAR.	636.48	13.37	209.40	VAR.	636.48	35.01	VAR.	636.48	31.82			VAR.	521.10
714+15.58	714+90.02	TANGETN - BARRIER RT. W/SHLDR.	74.44	VAR.	329.19	6.91	108.30	VAR.	329.19	18.11	VAR.	329.19	16.46			VAR.	279.56
714+90.02	716+40.00	TANGETN - BARRIER RT. W/SHLDR.	149.98	43.00	716.57	15.05	235.75	43.00	716.57	39.41	43.00	716.57	35.83	50.00	74.99	35.00	583.26
716+40.00	719+25.00	TANGENT - BARRIER LT., BARRIER RT.	285.00	45.00	1425.00	29.93	468.83	45.00	1425.00	78.38	45.00	1425.00	71.25	24.75	70.54	38.30	1212.83
719+25.00	721+94.40	TANGENT - BARRIER RT. W/SHLDR.	269.40	43.00	1287.13	27.03	423.47	43.00	1287.13	70.79	43.00	1287.13	64.36	50.00	134.70	35.00	1047.67
721+94.40	723+42.32	SUPER TRANS. - BARRIER RT.	147.92	44.00	723.16	15.19	237.92	44.00	723.16	39.77	44.00	723.16	36.16	VAR.	98.56	41.00	673.86
TOTALS:					**41810.94**	**878.04**	**13755.78**		**41810.94**	**2299.63**		**41810.94**	**2090.57**		**12930.23**		**36723.27**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (3/8").....95% MIN. AGGR.....5% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
CEMENT STABILIZED CRUSHED STONE BASE COURSE = 94.0% AGGR. 6.0% CEMENT
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10-25-16				6	ARK.			
				JOB NO.		061102	112	400
				(1) 07401, 07402, 07403, 07404		QUANTITIES		59071

BRIDGE NUMBER	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NUMBER	205	801	802	802	803	804	804	805	805	805	805	806	806	SP & 807	SP & 807	807	808	809	812
			ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. _)	UNCLASSIFIED EXCAVATION FOR STRUCTURES - BRIDGE	CLASS S CONCRETE - BRIDGE	CLASS S(AE) CONCRETE - BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL - BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	STEEL PILING (HP 12 x 53) [1] [3]	STEEL PILING (HP 14 x 73) [1] [4]	PILE ENCASEMENT	PREBORING	METAL BRIDGE RAILING (TYPE H)	TRANSITIONAL APPROACH RAILING	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	STRUCTURAL STEEL IN PLATE GIRDER SPANS (M 270, GRADE 50)	PAINTING STRUCTURAL STEEL [2]	ELASTOMERIC BEARINGS	SILICONE JOINT SEALANT	BRIDGE NAME PLATE (TYPE D)
			UNIT	LUMP SUM	CUBIC YARD	CUBIC YARD	CUBIC YARD	GALLON	POUND	POUND	LINEAR FOOT	LINEAR FOOT	LINEAR FOOT	LINEAR FOOT	LINEAR FOOT	EACH	POUND	POUND	TON	CUBIC INCH	LINEAR FOOT	EACH
07401	HIGHWAY 67	BENT NO. 1				77.00		0.3	7,041			432		144				1,847	0.9	3825.0		
		BENT NO. 2			200	209.08			38,416		468			445						6129.0		
		BENT NO. 3				77.22		0.3	7,043			432		110				1,847	0.9	4779.0		
		273' CONT. COMP. PLATE GIRDER UNIT					673.50	86.1		147,080					530	4		766,706	383.3		150	1
		TOTALS FOR BRIDGE NO. 07401			200	363.30	673.50	86.7	52,500	147,080	468	864		699	530	4		770,400	385.1	14,733.0	150	1
07402	FOURMILE CREEK	BENT NO. 1				24.04		0.1	2,449		60			40			530			1,740.0		
		BENT NO. 2				8.53			1,016			203	42	105						1,980.0		
		BENT NO. 3				8.53			1,016			252	42							1,980.0		
		BENT NO. 4				8.53			1,016			168	42							1,980.0		
		BENT NO. 5				8.53			1,016			189	42							1,980.0		
		BENT NO. 6				24.04		0.1	2,457		104						530			1,740.0		
		270' CONT. COMP. W-BEAM UNIT					234.60	19.3		61,710							168,360				56	1
		TOTALS FOR BRIDGE NO. 07402				82.20	234.60	19.5	8,970	61,710	164	812	168	145			169,420			11,400.0	56	1
07403	FOURMILE CREEK	BENT NO. 1				37.40		0.7	4,020		206						782			1,512.0		
		BENT NO. 2				31.31			5,737											1,996.0		
		BENT NO. 3				31.30			5,737											1,996.0		
		BENT NO. 4				29.32			5,266											1,996.0		
		BENT NO. 5				33.97		0.6	3,680		234						782			1,512.0		
		260' CONT. COMP. W-BEAM UNIT					224.40	37.2		58,970							232,996				70	1
		SITE NO. 1(BRIDGE NO. 23124)		1																		
		TOTALS FOR BRIDGE NO. 07403				163.30	224.40	38.5	24,440	58,970	440						234,560			9,012.0	70	1
07404	FOURMILE CREEK	BENT NO. 1				18.72			1,887	394	132			60								
		BENT NO. 2				30.14			6,563											3,105.0		
		BENT NO. 3				28.96			6,161											3,105.0		
		BENT NO. 4				17.88			1,889	395	162			60								
		180' INTEGRAL W-BEAM UNIT					285.60	19.0		64,511							229,150				95	1
		TOTALS FOR BRIDGE NO. 07404				95.70	285.60	19.0	16,500	65,300	294			120			229,150			6,210.0	95	1
		TOTALS FOR JOB NO. 061102		--	200	704.50	1,418.10	163.7	102,410	333,060	1,366	1,676	168	964	530	4	633,130	770,400	385.1	41,355.0	371	4

[1] Piles shall conform to Std. Dwg. No. 55020.

[2] For Bridge No. 07401, the color of paint shall be Dark Gray and shall match Federal Standard 595B, Color Chip No. 26122.

[3] These steel piles are required to be Grade 50 and to have special tips which will not be paid for directly but will be considered subsidiary to the item STEEL PILING (HP 12x53).

[4] These steel piles are required to be Grade 50 and to have special tips which will not be paid for directly but will be considered subsidiary to the item STEEL PILING (HP 14x73).

The quantities shown for steel piling for Bridges 07401-07404 and preboring for Bridges 07401, 07402, and 07403 are for estimating and bidding purposes only. Actual quantities will be determined in the field.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER

Larry W. Miller 10-25-16

BRIDGE ENGINEER

⚠ Revised job from Federal oversight to State oversight. LWM 10-25-16

SHEET 1 OF 2
SCHEDULE OF BRIDGE QUANTITIES
HWY. 67 INTERCHANGE (N. OF CABOT) (S) ⚠
LONOKE COUNTY
ROUTE 67 SEC. II
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LWM DATE: 7-16 FILENAME: b061102_01.dgn
CHECKED BY: LWM DATE: 07-21-16 SCALE: NONE
DESIGNED BY: Various DATE: 7-16
BRIDGE NO. 07401, 07402, 07403, 07404 DRAWING NO. 59071

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
10-25-16			

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	113	400
(1) 07401, 07402, 07403, 07404		QUANTITIES		59072

BRIDGE NUMBER	NAME PLATE TITLE	UNIT OF STRUCTURE / ITEM	ITEM NUMBER	816	816	SP 061102	SP 061102	SP 061102	SP 061102	SP 061102	SP 061102
		ITEM		FILTER BLANKET	DUMPED RIPRAP	TEXTURED COATING FINISH	ARCHITECTURAL FINISH	DRILLED SHAFT (48" DIA.)	PERMANENT STEEL CASING (54" DIA.)	CROSSHOLE SONIC LOGGING (48" DIA.)	CORING DRILLED SHAFT
		UNIT		SQUARE YARD	CUBIC YARD	SQ. YD.	SQ. FT.	LINEAR FOOT	LINEAR FOOT	EACH	LINEAR FOOT
07401	HIGHWAY 67	BENT NO. 1				498 [1]	3,769 [1]				
		BENT NO. 2				191	588				
		BENT NO. 3				476 [1]	3,580 [1]				
		273' CONT. COMP. PLATE GIRDER UNIT				624	1,229				
		TOTALS FOR BRIDGE NO. 07401				1,789	9,166				
07402	FOURMILE CREEK	BENT NO. 1		77	39						
		BENT NO. 2									
		BENT NO. 3									
		BENT NO. 4									
		BENT NO. 5									
		BENT NO. 6		257	129						
		270' CONT. COMP. W-BEAM UNIT									
		TOTALS FOR BRIDGE NO. 07402		334	168						
07403	FOURMILE CREEK	BENT NO. 1		327	163						
		BENT NO. 2						59	21	2	30
		BENT NO. 3						60	34	2	
		BENT NO. 4						53	27	2	
		BENT NO. 5		523	261						
		260' CONT. COMP. W-BEAM UNIT									
		SITE NO. 1 (BRIDGE NO. 23124)									
		TOTALS FOR BRIDGE NO. 07403		850	424			172	82	6	30
07404	FOURMILE CREEK	BENT NO. 1		395	197						
		BENT NO. 2						83	59	3	
		BENT NO. 3						95	50	3	
		BENT NO. 4		398	199						
		180' INTEGRAL W-BEAM UNIT									
		TOTALS FOR BRIDGE NO. 07404		793	396			178	109	6	
		TOTALS FOR JOB NO. 061102		1,977	988	1,789	9,166	350	191	12	30

[1] Includes quantity applied to retaining walls and transitional approach railing.

SHEET 2 OF 2
SCHEDULE OF BRIDGE QUANTITIES
HWY. 67 INTERCHANGE (N. OF CABOT) (S) ⚠
LONOKE COUNTY
ROUTE 67 SEC. II
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13331 LARRY W. MILLER
Larry W. Miller 10-25-16
BRIDGE ENGINEER

DRAWN BY: LWM DATE: 7-16 FILENAME: b061102_02.dgn
CHECKED BY: LWM DATE: 07-21-16 SCALE: NONE
DESIGNED BY: Various DATE: 7-16
BRIDGE NO. 07401, 07402, 07403, 07404 DRAWING NO. 59072

⚠ Revised job from Federal oversight to State oversight. LWM 10-25-16

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/25/2016				6	ARK.			
11/28/2016				JOB NO.		061102	114	400

(2) SUMMARY OF QUANTITIES

SUMMARY OF QUANTITIES (BOX 1 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	87	STATION
201	GRUBBING	87	STATION
202	REMOVAL AND DISPOSAL OF FENCE	4393	LIN. FT.
202	REMOVAL AND DISPOSAL OF GATES	1	EACH
202	REMOVAL AND DISPOSAL OF SEPTIC SYSTEM	1	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE ISLANDS	31	SQ. YD.
202	REMOVAL AND DISPOSAL OF BUILDINGS	3	EACH
202	REMOVAL AND DISPOSAL OF WALKS	35	SQ. YD.
202	REMOVAL AND DISPOSAL OF STORM CELLAR	1	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	16	EACH
202	REMOVAL AND DISPOSAL OF BOX CULVERTS	1	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL	299	LIN. FT.
SP & 207	STONE BACKFILL	24234	TON
210	UNCLASSIFIED EXCAVATION	41438	CU. YD
SP	SELECT GRANULAR BACKFILL	6939	CU. YD
SP & 210	COMPACTED EMBANKMENT	306635	CU. YD
SP & 210	SOIL STABILIZATION	100	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)	35208	TON
308	AGGREGATE IN CEMENT STABLIZED CRUSHED STONE BASE COURSE	13756	TON
308	CEMENT IN CEMENT STABILIZED CRUSHED STONE BASE COURSE	878	TON
308	PROCESSING CEMENT STABILIZED CRUSHED STONE BASE COURSE	41811	SQ.YD
SS & 401	TACK COAT	8361	GAL.
SP & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")	7301	TON
SP & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2")	288	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	5433	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	232	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (3/8")	2185	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (3/8")	115	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	4885	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	126	TON
SP, SS, & 407	COLD MILLING ASPHALT PAVEMENT	125	TON
SP & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	20	TON
501	PORTLAND CEMENT CONCRETE PAVEMENT (12" UNIFORM THICKNESS)	36723	SQ. YD.
504	APPROACH SLABS	419.02	CU. YD.
504	APPROACH GUTTERS	109.60	CU. YD.
505	PORTLAND CEMENT CONCRETE DRIVEWAY	39.11	SQ. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
SP & 603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
SP & 603	TRAFFIC CONTROL SUPERVISOR	1.00	LUMP SUM
603	12" TEMPORARY CULVERT	72	LIN FT
SS & 604	SIGNS	1862	SQ. FT.
SS & 604	BARRICADES	72	LIN. FT.
SS & 604	TRAFFIC DRUMS	273	EACH
604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	8258	LIN. FT.
SP	MOBILE SPEED NOTIFICATION SYSTEM	4	EACH
604	RELOCATING PRECAST CONCRETE BARRIER	1146	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS	11615	LIN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	22385	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	730	LIN FT
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	18830	LIN. FT.
604	ADVANCE WARNING ARROW PANEL	1460	DAY
SP & 604	PORTABLE CHANGEABLE MESSAGE SIGN	208	WEEK
SS & 604	VERTICAL PANELS	21	EACH
605	CONCRETE DITCH PAVING (TYPE A)	452	SQ. YD.
605	CONCRETE DITCH PAVING (TYPE B)	5581	SQ. YD.
606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	514	LIN. FT.
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	754	LIN. FT.
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS V)	336	LIN FT
606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	1178	LIN. FT.
606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	182	LIN. FT.
606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS V)	838	LIN. FT.
SS & 606	12" SIDE DRAIN	500	LIN. FT.
SP, SS, & 606	24" SIDE DRAIN	264	LIN. FT.
SP, SS, & 606	36" SIDE DRAIN	70	LIN. FT.
SS & 606	29" X 18" SIDE DRAIN	140	LIN. FT.
606	30" SAFETY END SECTIONS FOR CROSS DRAIN PIPE CULVERTS (CLASS 2)	1	EACH
606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	8	EACH
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	6	EACH
606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	9	EACH
606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	12	EACH
606	SELECTED PIPE BEDDING	440	CU YD
609	DROP INLETS (TYPE MO)	18	EACH
609	DROP INLETS (TYPE ST)	7	EACH
609	DROP INLET EXTENSIONS (4')	6	EACH
609	DROP INLET EXTENSIONS (8')	12	EACH
609	YARD DRAINS	5	EACH
611	UNDERDRAIN OUTLET PROTECTORS	53	EACH
611	4" PIPE UNDERDRAINS	11332	LIN.FT
615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)	222.8	CU YD
617	GUARDRAIL (TYPE A)	1185	LIN.FT.
617	TERMINAL ANCHOR POSTS (TYPE 1)	1	EACH
617	GUARDRAIL TERMINAL (TYPE 2)	8	EACH
617	THRIE BEAM GUARDRAIL TERMINAL	9	EACH
619	WIRE FENCE (TYPE A)	8438	LIN.FT
620	LIME	50	TON
620	SEEDING	25.19	ACRE
SS & 620	MULCH COVER	109.65	ACRE
620	WATER	4340.9	M.GAL
621	TEMPORARY SEEDING	84.46	ACRE
621	SILT FENCE	11843	LIN.FT.
621	SAND BAG DITCH CHECKS	3630	BAG
621	DIVERSION DITCH	1409	LIN.FT.
621	DROP INLET SILT FENCE	750	LIN.FT.
621	SEDIMENT BASIN	5256	CU. YD
621	OBLITERATION OF SEDIMENT BASIN	5937	CU. YD
621	SEDIMENT REMOVAL AND DISPOSAL	352	LIN.FT.
621	PIPE FOR SLOPE DRAINS	150	CU YD
621	ROCK DITCH CHECKS	25.19	ACRE
623	SECOND SEEDING APPLICATION	3857	SQ. YD.
624	SOLID SODDING	9907	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)	356	LIN.FT.
SP & 631	CONCRETE BARRIER WALL (SIDE TYPE SPECIAL)	1836	LIN.FT.
SP & 631	CONCRETE BARRIER WALL (SIDE TYPE A)	535	LIN.FT.
631	CONCRETE BARRIER WALL (MEDIAN TYPE A)	1654	LIN.FT.
631	CONCRETE BARRIER WALL (MEDIAN TYPE B)	730	SQ. YD.
632	CONCRETE ISLAND	4000	SQ. YD.
633	CONCRETE WALKS	7913	LIN.FT.
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1'-6")	1.00	LUMP SUM
635	ROADWAY CONSTRUCTION CONTROL	7	EACH
637	MAILBOXES	7	SQ. YD.
637	MAILBOX SUPPORTS (SINGLE)	74	SQ. YD.
641	WHEELCHAIR RAMPS (TYPE 3)	58	SQ. YD.
SP & 706	WHEELCHAIR RAMPS (TYPE 4)	3	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	2	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	4	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	8	EACH
SP & 707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	3223	LIN.FT
708	TRAFFIC SIGNAL CABLE (50/14 AWG.)	452	LIN.FT
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1/C/8 AWG., E.G.C.)	274	LIN. FT.
710	NON-METALLIC CONDUIT (2")	104	LIN. FT.
710	NON-METALLIC CONDUIT (3")	3	EACH
711	CONCRETE PULL BOX (TYPE 1)	2	EACH
711	CONCRETE PULL BOX (TYPE 2)	1	EACH
711	CONCRETE PULL BOX (TYPE 1 HD)	1	EACH
711	CONCRETE PULL BOX (TYPE 2 HD)	6	EACH
715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION	628	LIN.FT
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")	250	LIN.FT
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10")	2988	LIN.FT
719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	1431	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")	19132	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")	208	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	9	EACH
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (8")	11	EACH
719	THERMOPLASTIC PAVEMENT MARKING (WORDS)	120	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	9417	LIN. FT.
SP & 719	THERMOPLASTIC PAVEMENT MARKING (YELD LINE)	9417	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC PAVEMENT MARKING WHITE (4")	1840	LIN. FT.
SP	HIGH PERFORMANCE MARKING TAPE WHITE (4")	1840	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC PAVEMENT MARKING WHITE (8")	7946	LIN. FT.
SP	HIGH PERFORMANCE MARKING TAPE WHITE (8")	7946	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	69	LIN. FT.
SP	HIGH PERFORMANCE MARKING TAPE YELLOW (4")	69	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING WHITE (4")	1100	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE WHITE (4")	1100	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	562	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")		
721	RAISED PAVEMENT MARKERS (TYPE II)		EACH

* DENOTES ALTERNATE BID ITEMS.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 11/30/16

SUMMARY OF QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
10/25/2016		11/16/2016	
11/2/2016		11/28/2016	
11/14/2016			

FED./RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	115	400

(2) SUMMARY OF QUANTITIES AND REVISIONS

SUMMARY OF QUANTITIES (BOX 2 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
SP & 725	GUIDE SIGN-ROADSIDE MOUNTED (DEMOUNTABLE LEGEND)	762	SQ. FT.
SP & 726	STANDARD SIGN	955	SQ. FT.
SP & 727	EXIT NUMBER PANEL (TYPE A)	120	SQ. FT.
SP & 729	CHANNEL POST SIGN SUPPORT (TYPE U-1)	43	EACH
SP & 729	CHANNEL POST SIGN SUPPORT (TYPE U-2)	7	EACH
730	BREAKAWAY SIGN SUPPORT (TYPE G-2)	8797	POUND
SP	OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORTS (TYPE G-1)	1	EACH
SP	OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORTS (TYPE G2-1)	27	EACH
731	IMPACT ATTENUATION BARRIER (TYPE A)	2	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER	2	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	2	EACH
732	CRASH CUSHION	1	EACH
SP	VIDEO DETECTOR ROTATION	2	EACH
SP & 733	VIDEO DETECTOR (CLR)	2	EACH
733	VIDEO CABLE	536	LIN. FT.
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	358	CU. YD.
802	CLASS S CONCRETE-ROADWAY	432.10	CU. YD.
SP	MSE RETAINING WALL	8413	SQ. FT.
804	REINFORCING STEEL-ROADWAY (GRADE 60)	108316	POUND
816	FILTER BLANKET	175	SQ. YD.
816	DUMPED RIPRAP	98	CU. YD.
	STRUCTURES OVER 20' SPAN		
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	200	CU. YD.
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	128	CU. YD.
802	CLASS S CONCRETE-ROADWAY	339.46	CU. YD.
802	CLASS S CONCRETE-BRIDGE	704.50	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE	1418.10	CU. YD.
SP	ARCHITECTURAL FINISH	9166	SQ. FT.
SP	TEXTURED COATING FINISH	1789	SQ. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	163.7	GAL.
804	REINFORCING STEEL-ROADWAY (GRADE 60)	56292	POUND
804	REINFORCING STEEL-BRIDGE (GRADE 60)	102410	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)	333060	POUND
805	STEEL PILING (HP 12X53)	1366	LIN. FT.
805	STEEL PILING (HP 14X73)	1676	LIN. FT.
SP	CORING DRILLED SHAFT	30	LIN. FT.
SP	DRILLED SHAFT (48" DIAMETER)	350	LIN. FT.
SP	PERMANENT STEEL CASING (54" DIAMETER)	191	LIN. FT.
805	PREBORING	964	LIN. FT.
805	PILE ENCASEMENT	168	LIN. FT.
SP	CROSSHOLE SONIC LOGGING (48" DIAMETER)	12	EACH
806	METAL BRIDGE RAILING (TYPE H)	530	LIN. FT.
806	TRANSITIONAL APPROACH RAILING	4	EACH
SP & 807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)	633130	POUND
SP & 807	STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR50)	770400	POUND
807	PAINTING STRUCTURAL STEEL	385.1	TON
808	ELASTOMERIC BEARINGS	41355.0	CU. IN.
809	SILICONE JOINT SEALANT	371	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)	4	EACH
816	FILTER BLANKET	1977	SQ. YD.
816	DUMPED RIPRAP	988	CU. YD.

REVISIONS

DATE	REVISION	SHEET NUMBER
10/25/2016	ADDED SPECIAL PROVISION "AIRPORT CLEARANCE REQUIREMENTS", ADDED SPECIAL PROVISION "FLEXIBLE BEGINNING OF WORK", REVISED JOB FROM FEDERAL OVERSIGHT TO STATE OVERSIGHT, REMOVED DRIVEWAY LT. OF C.L. HWY. 38, REMOVED NOTE FOR PLAN QUANTITY EARTHWORK.	1, 3, 53, 69, 107, 108, 112, 113, 114, 115, 148, 168, 186, 187, 188, 189, 202, 203, 218, 219, 352
11/2/2016	REVISED TYPICAL SECTIONS FOR POINT OF ROTATION AND THEOR. PROFILE GRADE DIMENSIONS	13, 15, 16, 17, 18, 115
11/14/2016	ADDED STANDARD DRAWINGS WF-1 AND WF-2 FOR WIRE FENCE.	2, 115, 279A, 279B
11/16/2016	REVISED CONNECTION MEMBER ON ROADWAY CHANNEL CONNECTION DETAIL.	115, 194, 200
11/28/2016	REVISED R.C. BOX CULVERT ON WILLIE RAY DR. AND SPECIAL DITCH BETWEEN WILLIE RAY DR. AND SB CD RD. ALSO REVISED QUANTITIES FOR "UNCLASSIFIED EXCAVATION FOR STRUCTURES - ROADWAY", "TEXTURED COATING FINISH", AND "ARCHITECTURAL FINISH".	42, 43, 55, 57, 75, 81, 107, 108, 109, 114, 115, 122, 128, 139, 142, 150, 151, 158, 160, 357

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/30/16

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.		061102	116	400

(2) SURVEY CONTROL DETAILS

SURVEY CONTROL COORDINATES
Project Name: 061102
Date: 6/11/2014
Coordinate System: Arkansas State Plane Coordinates
Based on AHTD GPS PTS : *430016-430016A, 430017-430017A*
Projected to Ground Coordinates
Units: U.S. Survey Foot

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

Point No.	Northing	SY	Easting	SX	Elevation	SZ	Feature Code	Point Description
1	238235.3640	0.0240	1312119.7912	0.0230	275.85	0.007	CTL	PD:STD AHTD MON STAMPED PN:1
2	238697.6160	0.0240	1312669.1406	0.0230	263.34	0.005	CTL	PD:STD AHTD MON STAMPED PN:2
3	238300.1948	0.0240	1313303.6756	0.0230	275.18	0.007	CTL	PD:STD AHTD MON STAMPED PN:3
4	239104.5279	0.0240	1313365.8728	0.0230	257.29	0.005	CTL	PD:STD AHTD MON STAMPED PN:4
5	238870.6731	0.0230	1312378.9831	0.0210	256.81	0.006	CTL	PD:STD AHTD MON STAMPED PN:5
6	239299.0036	0.0260	1311927.3826	0.0230	257.65	0.007	CTL	PD:STD AHTD MON STAMPED PN:6
7	239789.7559	0.0250	1311566.4847	0.0240	260.84	0.007	CTL	PD:STD AHTD MON STAMPED PN:7
8	240528.3007	0.0260	1311569.6628	0.0250	261.42	0.006	CTL	PD:STD AHTD MON STAMPED PN:8
9	241116.6791	0.0250	1311505.5226	0.0250	265.28	0.006	CTL	PD:STD AHTD MON STAMPED PN:9
10	241384.2687	0.0280	1311051.8250	0.0260	266.50	0.005	CTL	PD:STD AHTD MON STAMPED PN:10
11	240844.2285	0.0270	1310631.9640	0.0250	276.12	0.007	CTL	PD:STD AHTD MON STAMPED PN:11
12	240379.1055	0.0290	1310095.5538	0.0260	281.61	0.007	CTL	PD:STD AHTD MON STAMPED PN:12
13	239900.3504	0.0280	1309548.4074	0.0260	286.50	0.008	CTL	PD:STD AHTD MON STAMPED PN:13
14	239427.5272	0.0280	1309010.0102	0.0260	286.85	0.008	CTL	PD:STD AHTD MON STAMPED PN:14
15	239878.5327	0.0280	1309269.3472	0.0260	288.59	0.008	CTL	PD:STD AHTD MON STAMPED PN:15
16	240462.7691	0.0270	1309940.4889	0.0250	282.19	0.007	CTL	PD:STD AHTD MON STAMPED PN:16
17	241172.8916	0.0270	1309998.1830	0.0260	288.23	0.008	CTL	PD:STD AHTD MON STAMPED PN:17
18	241491.6618	0.0280	1309507.7307	0.0270	298.61	0.009	CTL	PD:STD AHTD MON STAMPED PN:18
19	241473.4186	0.0290	1308877.9387	0.0280	297.66	0.009	CTL	PD:STD AHTD MON STAMPED PN:19
20	241377.2051	0.0270	1310688.9011	0.0260	274.73	0.006	CTL	PD:STD AHTD MON STAMPED PN:20
21	241889.5389	0.0280	1311230.1133	0.0260	248.66	0.006	CTL	PD:STD AHTD MON STAMPED PN:21
22	242411.8327	0.0280	1311829.0557	0.0260	247.07	0.005	CTL	PD:STD AHTD MON STAMPED PN:22
23	242250.7607	0.0260	1312110.6250	0.0240	252.59	0.004	CTL	PD:STD AHTD MON STAMPED PN:23
24	241511.4777	0.0260	1311374.0261	0.0240	258.03	0.004	CTL	PD:STD AHTD MON STAMPED PN:24
25	239399.2016	0.0250	1313880.5016	0.0230	249.39	0.005	CTL	PD:STD AHTD MON STAMPED PN:25
100	236141.4461	0.0001	1313495.6323	0.0001	259.16	0.009	GPS	PD:AHTD GPS MON. 430017
101	236053.8047	0.0001	1315682.3057	0.0001	285.79	0.011	GPS	PD:AHTD GPS MON. 430017A
102	243753.0548	0.0001	1314139.0265	0.0001	269.12	0.000	GPS	PD:AHTD GPS MON. 430016
103	241883.2797	0.0001	1311797.7591	0.0001	249.20	0.000	GPS	PD:AHTD GPS MON. 430016A
900	239424.3104	30.0000	1314022.3043	30.0000	248.18	0.005	TBM	PD:24" FLARRED RCP
901	238109.8935	30.0000	1312025.3824	30.0000	278.02	0.007	TBM	PD:30" FLARRED RCP
902	239424.2704	30.0000	1311692.5791	30.0000	258.74	0.007	TBM	PD:2" ALM CAP
903	240334.2326	30.0000	1311276.5902	30.0000	264.80	0.006	TBM	PD:2" ALM CAP
904	239626.6622	30.0000	1309030.0586	30.0000	285.49	0.008	TBM	PD:CONC. HDWL
905	240536.5165	30.0000	1310028.5776	30.0000	280.09	0.007	TBM	PD:CONC. HDWL
906	240738.7793	30.0000	1309446.1885	30.0000	298.34	0.009	TBM	PD:CONC. AROUND SSMH
907	241648.6185	30.0000	1310943.8459	30.0000	250.83	0.006	TBM	PD:BRIDGE CORNER
908	241547.4966	30.0000	1311359.8328	30.0000	258.74	0.004	TBM	PD:BRIDGE CORNER
990	240435.5565	30.0000	1316102.2877	30.0000	248.32	0.000	BM	PD:NGS BM RV 135
991	236391.0999	30.0000	1311942.1498	30.0000	263.06	0.008	BM	PD:NGS BM RV137

*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 "Arkansas 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 techiniques.

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*
Horizontal - Primary (2.0cm± 20PPM): *PN:1-25*
Horizontal - Secondary (3 cm ± 50PPM): *PN:N/A*
Vertical - NGS 1st Order (±4mm x Vdist in km) *PN:990, 991*
Vertical - NGS 2nd Order (±6mm x Vdist in km) *PN:N/A*
Vertical - NGS 3rd Order (±8mm x Vdist in km) *PN:N/A*

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: 0.999981041 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: 0.9999871392 has been computed and incorporated in the above CAF.
This is based on the average elevation of the project: 268.87 Feet
3-Wire Leveling techniques have been used to establish elevations on
Points: 1-25, 100-103 From NGS BM: RV 135

Basis of Bearing: Grid Bearings based on AHTD GPS points: *(List AHTD GPS points used)*
Convergence Angle is: 00-00-06 LEFT at PN: 8
LT: 34-59-39 N LG: 092-00-09 W
Grid Azimuth = Astronomical Azimuth - Convergence Angle

CONSTRUCTION C.L.

HORIZONTAL ALIGNMENT — HWY. 67

DESCRIPTION	POINT	STATION	NORTHING	EASTING
POB	8000	690+00.00	238936.9125	1308427.5730
POE	8001	748+00.00	242754.7692	1312793.7984

HORIZONTAL ALIGNMENT — EXIST. HWY. 367

DESCRIPTION	POINT	STATION	NORTHING	EASTING
PC	8003	105+03.48	238362.0990	1312286.3878
PT	8005	120+98.18	239246.4464	1313607.2231

HORIZONTAL ALIGNMENT — EXIST. HWY. 38

DESCRIPTION	POINT	STATION	NORTHING	EASTING
POB	8014	300+00.00	238715.4796	1312723.2997
PC	8076	301+08.70	238642.1013	1312803.4935
PT	8078	301+66.71	238605.1724	1312848.1990
POE	8088	304+03.35	238463.8912	1313038.0335

HORIZONTAL ALIGNMENT — HWY. 38

DESCRIPTION	POINT	STATION	NORTHING	EASTING
POB	8007	100+00.00	241665.7682	1310151.7847
PC	8008	126+08.10	239779.1501	1311952.5775
PT	8010	130+29.86	239435.8917	1312195.0029
PC	8011	132+23.89	239262.6910	1312282.4794
PT	8013	138+16.60	238792.9642	1312638.6182
POE	8014	139+31.38	238715.4796	1312723.2997

HORIZONTAL ALIGNMENT — WILLIE RAY DR.

DESCRIPTION	POINT	STATION	NORTHING	EASTING
POB	8015	492+00.00	239755.2564	1309153.3388
PI	8016	496+00.00	240018.5456	1309454.4716
PC	8017	498+52.75	240184.6310	1309644.9876
PT	8019	506+56.49	240892.8582	1309972.3410
PC	8020	510+83.26	241319.6056	1309977.5178
PT	8022	514+27.70	241627.1604	1310111.3369
PC	8023	515+47.33	241709.7555	1310197.8685
PT	8025	518+53.79	241828.7599	1310473.3525
PC	8026	522+99.47	241852.5540	1310918.3983
PT	8028	527+96.09	242042.1467	1311366.6811
POE	8089	532+30.00	242336.9110	1311685.1130

HORIZONTAL ALIGNMENT — RAMP 1

DESCRIPTION	POINT	STATION	NORTHING	EASTING
PC	8030	700+13.36	239568.9487	1309221.0319
PT	8032	702+03.64	239686.8628	1309370.2700
PC	8033	707+73.86	240017.6520	1309834.7335
PT	8035	711+35.57	240167.3670	1310161.6344
PC	8036	718+94.55	240347.8393	1310898.8509
PT	8038	721+43.44	240447.4212	1311125.5849
POE	8039	722+82.36	240524.4305	1311241.2011

HORIZONTAL ALIGNMENT — RAMP 2

DESCRIPTION	POINT	STATION	NORTHING	EASTING
POB	8039	720+28.63	240524.4305	1311241.2011
PC	8002	722+23.88	240681.7247	1311356.8861
PT	8040	724+76.70	240907.3487	1311468.0084
PC	8041	728+46.08	241262.2302	1311570.4945
PT	8043	737+81.08	242040.3818	1312065.6734

HORIZONTAL ALIGNMENT — RAMP 3A

DESCRIPTION	POINT	STATION	NORTHING	EASTING
POB	8059	720+14.59	241448.7576	1310358.9233
PC	8060	721+76.81	241538.6897	1310493.9408
PT	8061	724+24.60	241647.9124	1310715.5899
PC	8044	733+32.28	241940.4091	1311574.8394
PT	8072	736+65.47	242091.8040	1311870.3261
PC	8073	741+96.23	242399.7050	1312302.6521
PT	8075	743+86.51	242517.6191	1312451.8902

HORIZONTAL ALIGNMENT — SB C/D ROAD

DESCRIPTION	POINT	STATION	NORTHING	EASTING
PC	8047	698+61.74	239548.1904	1309037.7786
PT	8049	701+47.42	239741.5220	1309248.0614
PC	8050	703+23.16	239863.6525	1309374.4276
PT	8052	706+08.84	240056.9841	1309584.7105
POE	8053	723+42.32	241198.0490	1310889.6696

HORIZONTAL ALIGNMENT — RAMP 3B

DESCRIPTION	POINT	STATION	NORTHING	EASTING
PC	8053	723+42.32	241198.0490	1310889.6696
PCC	8055	730+02.15	241583.0186	1310641.3810
PT	8057	731+50.07	241511.2245	1310512.2347
POE	8058	733+06.47	241424.5181	1310382.0600

HORIZONTAL ALIGNMENT — RAMP 4

DESCRIPTION	POINT	STATION	NORTHING	EASTING
PC	8029	712+42.52	240480.8806	1310055.8199
PT	8069	716+86.22	240817.0180	1310343.0502
PC	8070	717+89.74	240904.6179	1310398.2034
PT	8079	723+62.27	241433.5808	1310345.0700

HORIZONTAL ALIGNMENT — WILLIE RAY DR. DETOUR 1

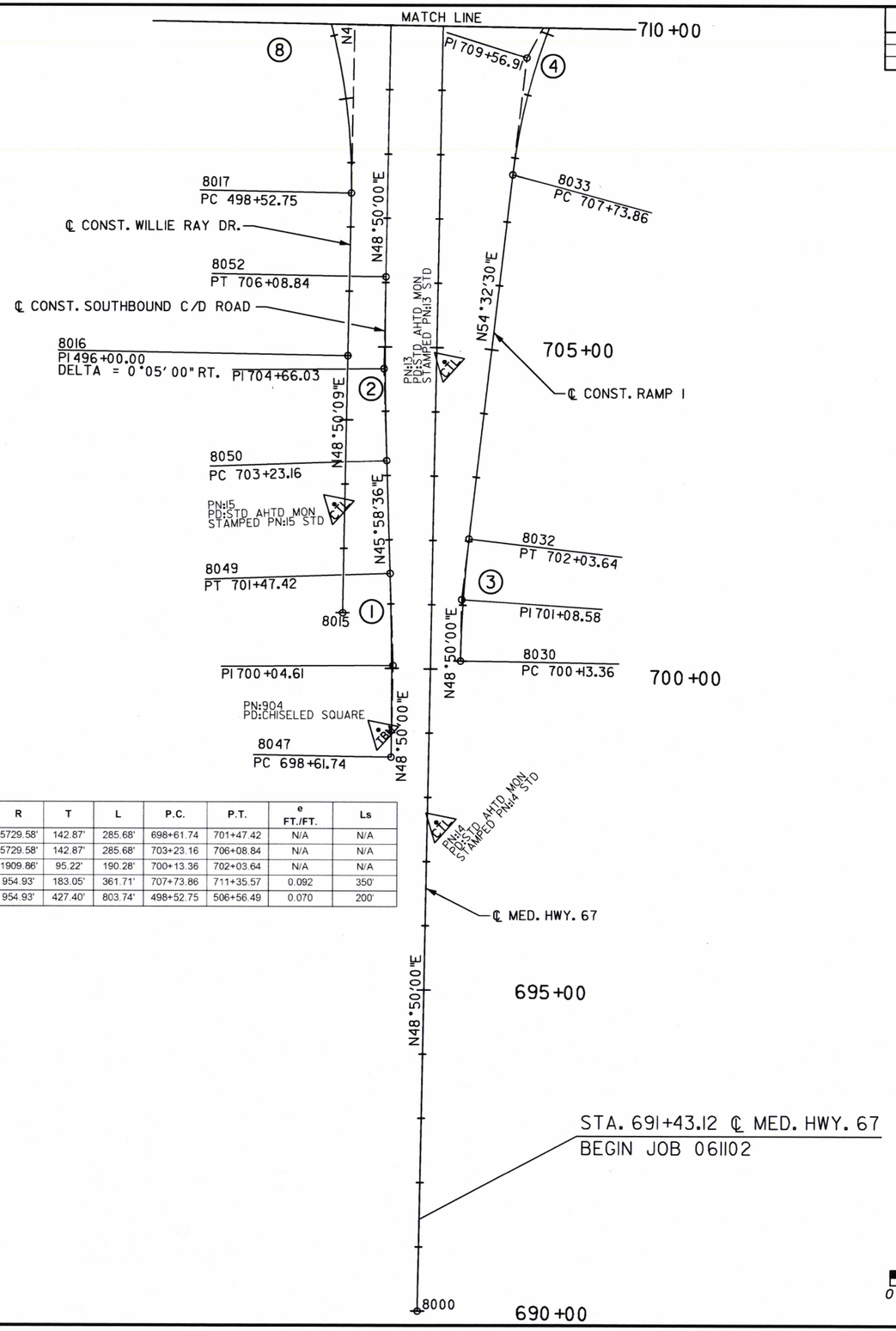
DESCRIPTION	POINT	STATION	NORTHING	EASTING
POB	8090	900+00.00	240763.4908	1310036.568
PC	8092	900+83.61	240829.5916	1309985.3633
PT	8093	902+43.85	240978.6844	1309935.3793
PC	8094	906+70.85	241405.6512	1309940.5588
PT	8095	907+83.42	241478.1352	1309869.7446
POE	8096	909+51.52	241480.0134	1309701.6564

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 10/10/16

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.		061102	117	400
				(2)	SURVEY CONTROL DETAILS			

BASIS FOR BEARING: GRID NORTH FROM AHTD GPS, SEE NOTES



CURVE NUMBER	LOCATION	P.I.	NORTHING	EASTING	Δ	D	R	T	L	P.C.	P.T.	e FT./FT.	Ls
1	SOUTHBOUND C/D ROAD	700+04.61	239642.2345	1309145.3304	2°51'25" LT.	1°00'00"	5729.58'	142.87'	285.68'	698+61.74	701+47.42	N/A	N/A
2	SOUTHBOUND C/D ROAD	704+66.03	239962.9400	1309477.1587	2°51'25" RT.	1°00'00"	5729.58'	142.87'	285.68'	703+23.16	706+08.84	N/A	N/A
3	RAMP 1	701+08.58	239631.6259	1309292.7116	5°42'30" RT.	3°00'00"	1909.86'	95.22'	190.28'	700+13.36	702+03.64	N/A	N/A
4	RAMP 1	709+56.91	240123.8412	1309983.8346	21°42'10" RT.	6°00'00"	954.93'	183.05'	361.71'	707+73.86	711+35.57	0.092	350'
8	WILLIE RAY DR.	502+80.15	240465.4871	1309967.1566	48°13'27" LT.	6°00'00"	954.93'	427.40'	803.74'	498+52.75	506+56.49	0.070	200'

SCALE IN FEET
0 100 200 400
1" = 200'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

SURVEY CONTROL DETAILS

CURVE NUMBER	LOCATION	P.I.	NORTHING	EASTING	Δ	D	R	T	L	P.C.	P.T.	e FT./FT.	Ls
4	RAMP 1	709+56.91	240123.8412	1309983.8346	21°42'10" RT.	6°00'00"	954.93'	183.05'	361.71'	707+73.86	711+35.57	0.092	350'
5	RAMP 1	720+20.26	240377.7313	1311020.9575	19°54'40" LT.	8°00'00"	716.20'	125.71'	248.89'	718+94.55	721+43.44	0.100	350'
6	RAMP 2	723+51.62	240784.6271	1311432.5677	20°13'31" LT.	8°00'00"	716.20'	127.74'	252.82'	722+23.88	724+76.70	0.100	350'
7	RAMP 2	733+26.72	241723.9999	1311703.8488	32°43'31" RT.	3°30'00"	1637.02'	480.64'	935.00'	728+46.08	737+81.08	0.065	300'
8	WILLIE RAY DR.	502+80.15	240465.4871	1309967.1566	48°13'27" LT.	6°00'00"	954.93'	427.40'	803.74'	498+52.75	506+56.49	0.070	200'
9	WILLIE RAY DR.	512+65.20	241501.5355	1309979.7247	45°38'18" RT	13°15'00"	432.42'	181.94'	344.44'	510+83.26	514+27.70	0.100	250'

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.		061102	118	400

2 SURVEY CONTROL DETAILS

MATCH LINE

730+00

725+00

720+00

715+00

710+00

105+00

110+00

115+00

120+00

905+00

900+00

PI 525+58.23

℄ CONST. RAMP 3A

8026
PC 522+99.47

℄ CONST. WILLIE RAY DR.

N86°56'23"E

8025
PT 518+53.79

N71°12'03"E

PN:808
PD:CHISELED SQUARE

PN:824
PD:STD AHTD MON
STAMPED PN:24 STD

℄ CONST. RAMP 2

8041
PC 728+46.08

N16°06'29"E

PN:9
PD:STD AHTD MON
STAMPED PN:9 2" ALM

SURVEY BASELINE
N 59°28'05" W
526.73'

PN:807
PD:CHISELED SQUARE

℄ CONST. RAMP 3B

PN:10
PD:STD AHTD MON
STAMPED PN:10 2" AL

STA. 723+42.32 ℄ RAMP 3B=
STA. 723+42.32 ℄ SOUTHBOUND C/D ROAD
◁ 00°00'00"

SURVEY BASELINE
N 06°13'17" W
591.86'

STA. 720+28.63 ℄ CONST. RAMP 2=
STA. 115+77.81 ℄ CONST. HWY. 38
◁ 80°00'00"

PN:8
PD:STD AHTD MON
STAMPED PN:8 2" ALM

STA. 733+06.47 ℄ CONST. RAMP 3B=
STA. 103+33.51 ℄ CONST. HWY. 38
◁ 80°00'00"

PI 517+07.31

8061
PT 724+24.60

S65°31'34"W

8055
PCC 730+02.15

PI 723+01.47

SURVEY BASELINE
S 88°53'06" W
362.99'

8053
PC 723+42.32

PI 730+76.27

8057
PT 731+50.07

8060
PC 721+76.81

N56°20'00"E

N46°20'00"E

PI 723+51.62

8002
PC 722+23.88

N36°20'00"E

STA. 720+14.59 ℄ CONST. RAMP 3A=
STA. 103+00.00 ℄ CONST. HWY. 38
◁ 80°00'00"

8023
PC 515+47.33

STA. 721+31.30 ℄ CONST. SOUTHBOUND C/D ROAD=
STA. 108+38.61 ℄ CONST. HWY. 38
◁ 87°30'00"

℄ CONST. HWY. 38

N48°50'00"E

S43°40'00"E

8039

STA. 514+83.62 ℄ CONST. WILLIE RAY DR.=
STA. 100+00.00 ℄ CONST. HWY. 38
◁ 90°00'00"

8007

8059

8058

N43°40'00"W

8022
PT 514+27.70

PI 721+26.74

N32°11'41"E

STA. 721+34.39 ℄ MED. HWY. 67=
STA. 109+20.19 ℄ CONST. HWY. 38
◁ 87°30'00"

8038
PT 721+43.44

PN:903
PD:5/8" RBR ALM CAP

MATCH LINE HWY. 38

PI 512+65.20

8079
PT 723+62.28

SURVEY BASELINE
S 73°31'19" W
720.30'

8020
PC 510+83.26

PI 907+42.54

8095
PT 907+83.42

N89°21'35"W

8096

8094
PC 906+70.85

PN:11
PD:STD AHTD MON
STAMPED PN:11 STD

8036
PC 718+94.55

PI 720+20.26

STA. 722+82.36 ℄ CONST. RAMP 1=
STA. 115+77.81 ℄ CONST. HWY. 38
◁ 80°00'00"

℄ CONST. WILLIE RAY DR.

8070
PC 717+89.74

℄ CONST. SOUTHBOUND C/D ROAD

PN:17
PD:STD AHTD MON
STAMPED PN:17 STD

8069
PT 716+86.22

℄ MED. HWY. 67

N0°41'42"E

PN:18
PD:STD AHTD MON
STAMPED PN:18 STD

SURVEY BASELINE N 56°58'41" W
584.94'

8093
PT 902+43.85

℄ CONST. RAMP 4

8019
PT 506+56.49

N32°11'41"E

℄ WILLIE RAY DR. DETOUR 1

PI 714+65.94

℄ CONST. RAMP 1

N76°14'40"E

PN:18
PD:CONC. AROUND
SSMH CONC. AROUND

SURVEY BASELINE
S 88°20'22" W
630.06'

8090

STA. 506+14.09 ℄ CONST. WILLIE RAY DR.=
STA. 901+09.05 ℄ WILLIE RAY DR. DETOUR 1
◁ 30°23'41"

PN:19

PI 901+66.88

8092
PC 900+83.61

8029
PC 712+42.52

PN:806
PD:CHISELED SQUARE

PI 502+80.15

PN:16
PD:STD AHTD MON
STAMPED PN:16 STD

PN:12
PD:STD AHTD MON
STAMPED PN:12 STD

S55°09'E

N48°50'00"E

PT 711+35.57

8035

MATCH LINE

710+00

BASIS FOR BEARING: GRID NORTH FROM AHTD GPS, SEE NOTES

SCALE IN FEET
0 100 200 400
1" = 200'

CURVE NUMBER	LOCATION	P.I.	NORTHING	EASTING	Δ	D	R	T	L	P.C.	P.T.	e FT./FT.	Ls
10	WILLIE RAY DR.	517+07.31	241820.2187	1310313.5962	40°36'23" RT.	13°15'00"	432.42'	159.98'	306.46'	515+47.33	518+53.79	0.100	250'
11	WILLIE RAY DR.	525+58.23	241866.3687	1311176.7893	39°43'45" LT.	8°00'00"	716.20'	258.76'	496.62'	522+99.47	527+96.09	0.084	250'
12	RAMP 3A	723+01.41	241607.7611	1310597.6398	14°52'03" RT.	6°00'00"	954.93'	124.60'	247.79'	721+76.81	724+24.60	0.092	350'
13	RAMP 3B	730+76.27	241552.3129	1310573.9219	9°11'34" LT.	6°12'53"	921.93'	74.12'	147.92'	730+02.15	731+50.07	N/A	N/A
14	RAMP 3B	739+20.23	242236.7133	1312077.5199	163°18'26" LT.	24°45'00"	231.50'	1577.91'	659.83'	723+42.32	730+02.15	0.100	300'
15	RAMP 4	714+65.94	240627.9486	1310224.0116	16°38'19" LT.	3°45'00"	1527.89'	223.42'	443.70'	712+42.52	716+86.22	0.069	300'
16	RAMP 4	721+26.74	241189.8038	1310577.7572	75°51'41" LT.	13°15'00"	432.42'	337.00'	572.54'	717+89.74	723+62.28	0.100	300'
17	WILLIE RAY DR. DETOUR 1	901+66.88	240895.4207	1309934.3693	38°27'28" RT.	24°00'01"	238.73'	83.27'	160.24'	900+83.61	902+43.85	N/A	N/A
18	WILLIE RAY DR. DETOUR 1	907+42.54	241477.3342	1309941.4284	90°03'17" LT.	80°00'00"	71.62'	71.69'	112.57'	906+70.85	907+83.42	N/A	N/A

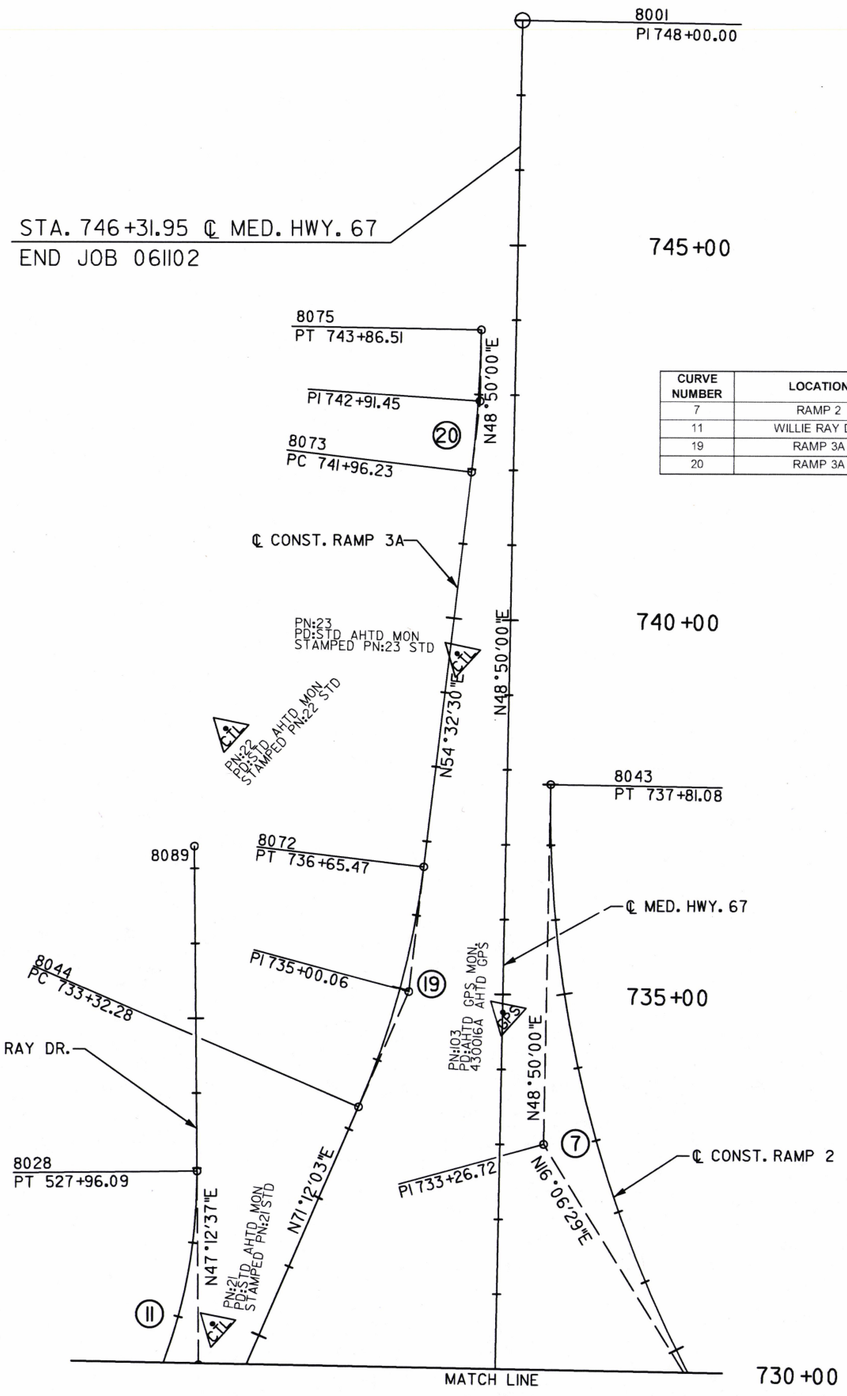
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

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.		061102	119	400

(2) SURVEY CONTROL DETAILS

BASIS FOR BEARING: GRID NORTH FROM AHTD GPS, SEE NOTES



CURVE NUMBER	LOCATION	P.I.	NORTHING	EASTING	Δ	D	R	T	L	P.C.	P.T.	e FT./FT.	Ls
7	RAMP 2	733+26.72	241723.9999	1311703.8488	32°43'31" RT.	3°30'00"	1637.02'	480.64'	935.00'	728+46.08	737+81.08	0.065	300'
11	WILLIE RAY DR.	525+58.23	241866.3687	1311176.7893	39°43'45" LT.	8°00'00"	716.20'	258.76'	496.62'	522+99.47	527+96.09	0.084	250'
19	RAMP 3A	735+00.06	241994.4750	1311733.6658	16°39'33" LT.	5°00'00"	1145.92'	167.78'	333.19'	733+32.28	736+65.47	0.083	300'
20	RAMP 3A	742+91.45	242454.9418	1312380.2105	5°42'30" LT.	3°00'00"	1909.86'	95.22'	190.28'	741+96.23	743+86.51	N/A	N/A

SCALE IN FEET
0 100 200 400
1" = 200'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/1/16

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.		061102	120	400
				(2)	SURVEY CONTROL DETAILS			

BASIS FOR BEARING: GRID NORTH FROM AHTD GPS, SEE NOTES

CURVE NUMBER	LOCATION	P.I.	NORTHING	EASTING	Δ	D	R	T	L	P.C.	P.T.	e FT./FT.	Ls
21	HWY. 38	128+20.51	239625.4959	1312099.2417	16°52'13" RT.	4°00'00"	1432.40'	212.41'	421.76'	126+08.10	130+29.86	0.034	450'
22	HWY. 38	135+23.35	238995.2346	1312417.5605	20°44'41" LT.	3°30'00"	1637.02'	299.63'	592.70'	132+23.90	138+16.60	0.030	450'
23	EXIST. HWY. 38	301+37.73	238622.5043	1312824.9107	5°48'04" LT.	10°00'00"	572.96'	29.03'	58.01'	301+08.70	301+66.71	EXIST.	EXIST.
24	EXIST. HWY. 367	113+06.01	238896.7766	1312884.8707	15°56'49" RT.	1°00'00"	5729.58'	802.53'	1594.70'	105+03.48	120+98.18	EXIST.	EXIST.

8005
PT 120+98.18

PN:4
PD:STD AHTD MON
STAMPED PN:4 STD A

N64°10'11"E

STA. 110+65.64 ℄ EXIST. HWY. 367 =
STA. 139+31.38 ℄ CONST. HWY. 38
◁ 78°36'52"

(24)

PI 113+06.01

8011
PC 132+23.90

℄ CONST. HWY. 38

8013
PT 138+16.60

N48°13'22"E

8076
PC 301+08.70

PN:3
PD:STD AHTD MON
STAMPED PN:3 STD A

S43°40'00"E

(21)

PI 128+20.51

S26°47'47"E

(23)

S53°20'32"E

SURVEY BASELINE N 57°56'25" W
748.72'

8088

(22)

8014

S47°32'28"E

℄ EXIST. HWY. 38

CTL
PN:3

SURVEY BASELINE N 05°04'53" W
2167.27'

GPS
PN:100

MATCH LINE HWY. 38

PN:7
PD:STD AHTD MON
STAMPED PN:7 STD A

125+00

8008
PC 126+08.10

130+00

8010
PT 130+29.86

CTL
PN:7

SURVEY BASELINE N 36°19'50" W
609.17'

CTL
PN:6

PN:6
PD:STD AHTD MON
STAMPED PN:6 STD A

IRF
PN:502
PD:5/8" REBAR
2" ALUM CAP

135+00

PI 135+23.53

CTL
PN:5

PN:5
PD:STD AHTD MON
STAMPED PN:5 STD A

SURVEY BASELINE
N 59°11'14" W
337.85'

SURVEY BASELINE
N 46°30'53" W
622.42'

CTL
PN:2

PN:2
PD:STD AHTD MON
STAMPED PN:2 STD A

PI 301+37.73

8078
PT 301+66.71

℄ EXIST. HWY. 367

8003
PC 105+03.48

CTL
PN:1

PN:1
PD:STD AHTD MON
STAMPED PN:1 STD A

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
7/1/16

SCALE IN FEET
0 100 200 400
1" = 200'

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.		061102	121	400
				(2)	PLAN HWY. 67 STA. 690+00 TO 705+00			

STA. 691+92 ℄ CONST. HWY. 67 IN PLACE
DROP INLET 100' LT. WITH
10' X 5' X 283' R.C. BOX CULVERT
WITH WINGS LT. & RT.
RETAIN

FLOODPLAIN LIMITS

FLOODPLAIN LIMITS

STA. 692+51 ℄ MED. HWY. 67 IN PLACE
DROP INLET IN MEDIAN
TO R.C. BOX CULVERT @ STA. 692+53.90
RETAIN

STA. 699+04 ℄ MED. HWY. 67 IN PLACE
DROP INLET IN MEDIAN
WITH 24" X 81' R.C. PIPE CULVERT
WITH HDWLS. LT. AND RT.
REMOVE HDWL. LT. AND EXTEND R.C. PIPE 8' LT. WITH FES
(CLASS III)(TYPE 3 BEDDING)
JACK AND BORE TWO 24" x 168' R.C. PIPE CULVERTS
(CLASS V)(TYPE 3 BEDDING) WITH FES LT. & RT.
Q50 = 44 CFS D.A. = 8 ACRES
24" R.C. PIPE (CLASS III)= 8 LIN. FT.
24" R.C. PIPE (CLASS V)= 336 LIN. FT.
24" FES = 5 EACH

℄ CONST. HWY. 67
REMOVAL AND DISPOSAL OF FENCE

STA.	STA.	SIDE	LIN. FT.
691+43	697+53	LT.	610
697+27	726+28	LT.	2941
703+95	704+88	RT.	93

TANGLEWOOD DR.

BRIARWOOD LOOP

EXIST. ROW

℄ CONST. WILLIE RAY DR.

PC 698+61.74

PI 700+04.61

PT 701+47.42

200' TRANS.

CONST. LIMITS

GRADE TO DRAIN

PI 496+00.00
DELTA = 0°05'00" RT.

22'

EXIST. C/A

WILLIE RAY DR.

N48°50'09"E

+43.12

+00

300' TAPER

CONST. LIMITS

SP. V.B. DT.

CONC. BARRIER WALL

700' ACCEL. LANE

SOUTHBOUND C/D ROAD

℄ CONST. SOUTHBOUND C/D ROAD

N48°50'00"E

N45°58'36"E

℄ MED. HWY. 67

HWY. 67

695+00

700+00

705+00

℄ CONST. RAMP I

PC 703+23.16

PI 704+66.00

+68.57

RAMP

N48°50'00"E

N54°32'30"E

PI 701+08.58

GRADE TO DRAIN

CONST. LIMITS

PT 702+03.64

PC 700+13.36

EXIST. ROW & C/A

FLOODPLAIN LIMITS

PROP. ROW, C/A, & FENCE

+95.00
131.38'
BEGIN PROP.
C/A

PI 690+00.00

STA. 691+43.12 ℄ MED. HWY. 67
BEGIN JOB 061102

FLOODPLAIN LIMITS

RETAIN
EXIST. GUARD CABLE
LOCATION

LOCATION	GUARD CABLE
STA. 690+00 TO STA. 729+17 ℄ MED. HWY. 67 RT.	3917 LIN. FT.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
7/10/14

PLAN HWY. 67
STA. 690+00 TO 705+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
11/28/2016			

FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	122	400

(2) PLAN HWY. 67 STA. 705+00 TO 720+00

STA. 712+53 ℄ MED. HWY. 67 IN PLACE
6' X 3' X 164' R.C. BOX CULVERT RETAIN
AND EXTEND 52' LT. WITH 3:1 WINGS LT.
CONSTRUCT TYPE ST DROP INLET ON LT. ALONG BARRIER WALL
3'-0" x 3'-0" x H=7'-4"
Q50 = 176 CFS D.A. = 80 ACRES

STA. 706+00 ℄ MED. HWY. 67 CONSTRUCT
TYPE ST DROP INLET ON LT. IN GORE AREA
3'-0" x 3'-0" x H= 5'-3"
WITH 24" x 650' R.C. PIPE CULVERT
TO R.C. BOX CULVERT @ STA. 712+53
(CLASS III) (TY. 3 BEDDING)

STA. 712+75 ℄ MED. HWY. 67 JACK AND BORE
DBL. 36" X 216' R.C. PIPE CULVERT
(CLASS V)(TYPE 3 BEDDING) WITH
FES LT. & RT.
Q50 = 176 CFS D.A. = 80 ACRES

STA. 712+55 ℄ MED. HWY. 67 IN PLACE
DROP INLET IN MEDIAN
RETAIN

BEGIN PROP. C/A

EXIST. WILLIE RAY DR.

WILLIE RAY DR.

RAMP 1

RAMP 4

SOUTHBOUND C/D ROAD

HWY. 67

N. POLK ST.

℄ CONST. WILLIE RAY DR.

℄ CONST. RAMP 1

℄ CONST. RAMP 4

℄ CONST. SOUTHBOUND C/D ROAD

℄ MED. HWY. 67

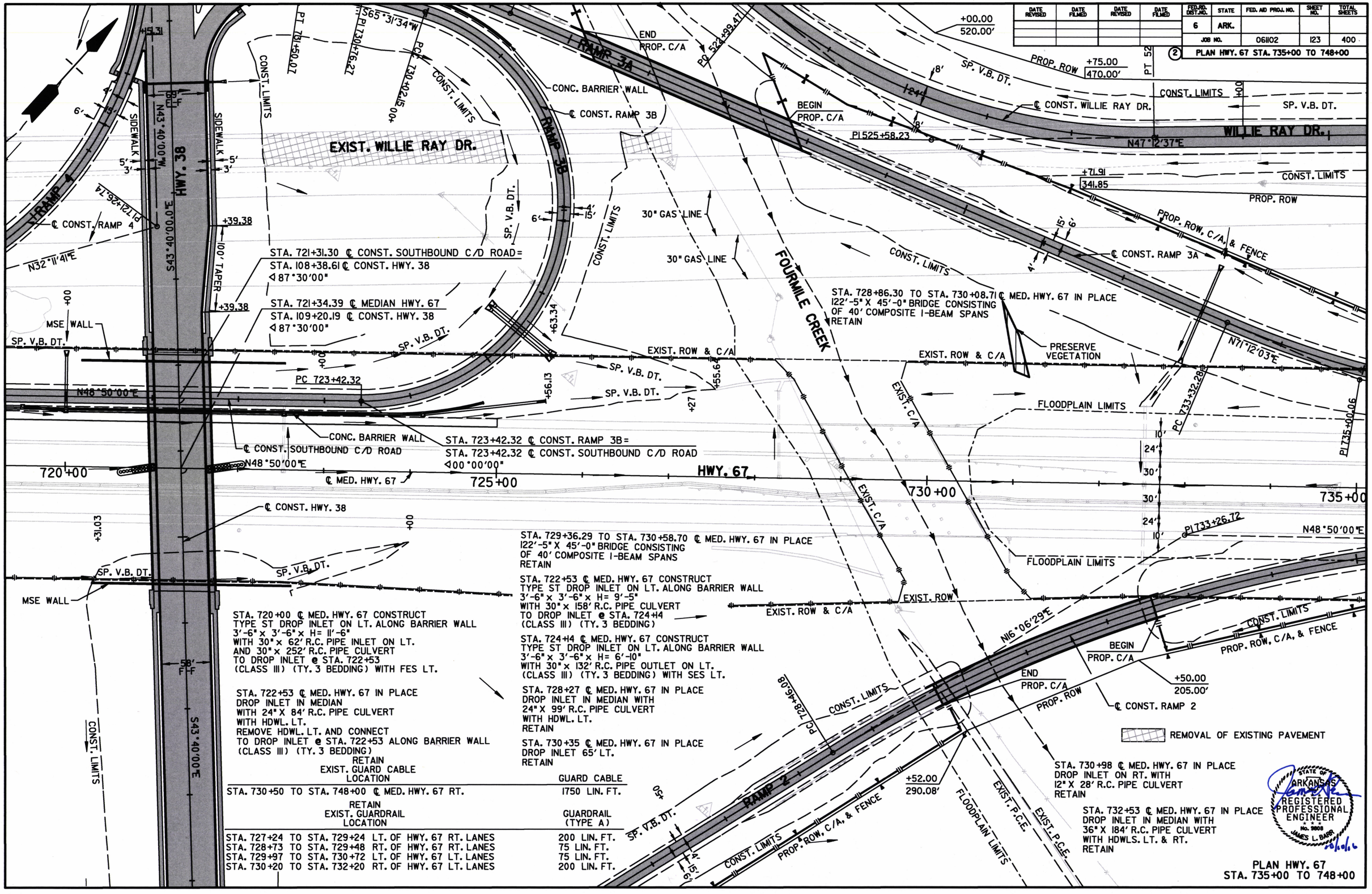
REMOVAL OF EXISTING PAVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/30/16

PLAN HWY. 67
STA. 705+00 TO 720+00

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.		061102	123	400

(2) PLAN HWY. 67 STA. 735+00 TO 748+00



RETAIN
EXIST. GUARD CABLE

LOCATION	GUARD CABLE
STA. 730+50 TO STA. 748+00 ℄ MED. HWY. 67 RT.	1750 LIN. FT.

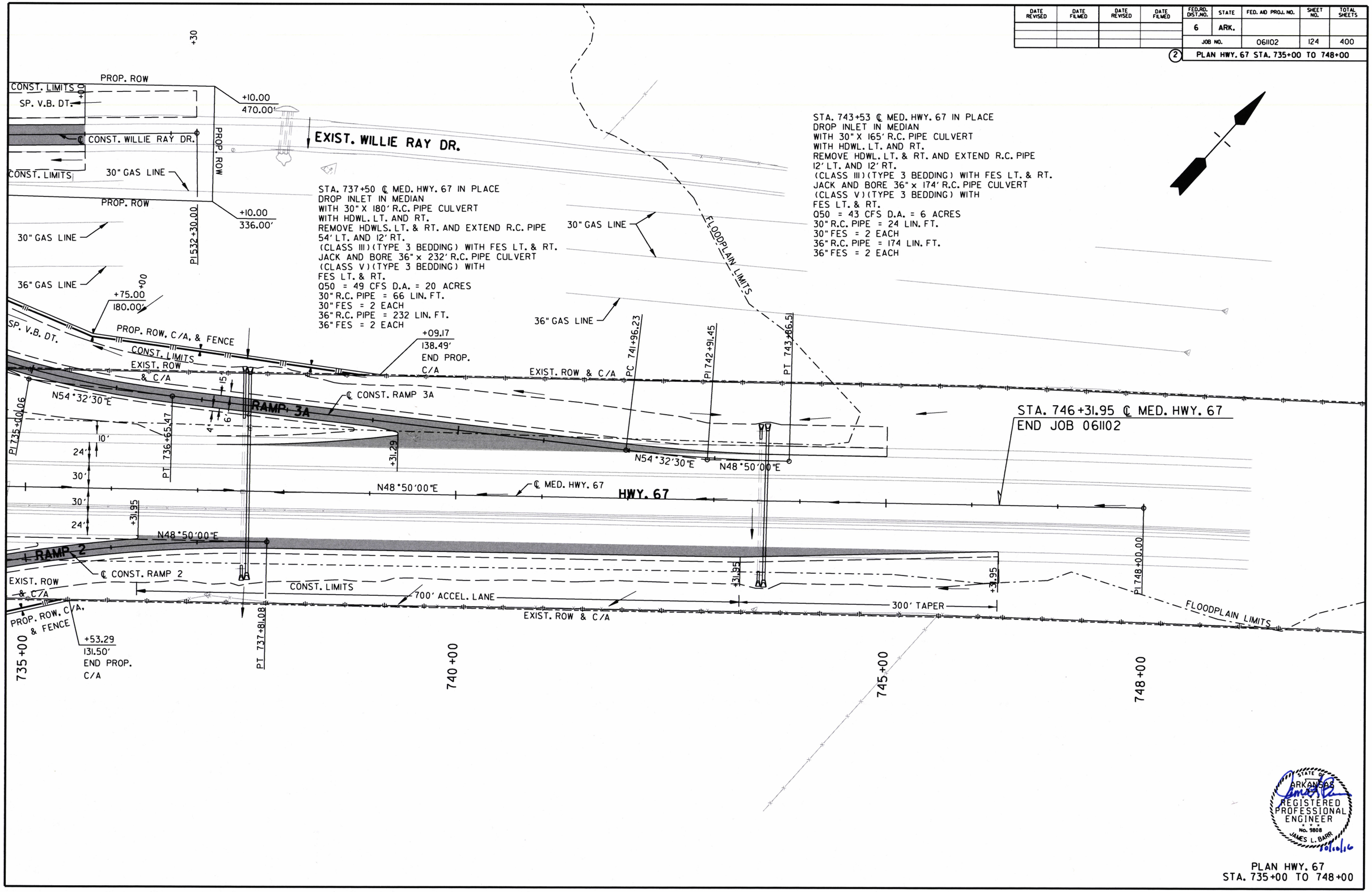
RETAIN
EXIST. GUARDRAIL

LOCATION	GUARDRAIL (TYPE A)
STA. 727+24 TO STA. 729+24 LT. OF HWY. 67 RT. LANES	200 LIN. FT.
STA. 728+73 TO STA. 729+48 RT. OF HWY. 67 RT. LANES	75 LIN. FT.
STA. 729+97 TO STA. 730+72 LT. OF HWY. 67 LT. LANES	75 LIN. FT.
STA. 730+20 TO STA. 732+20 RT. OF HWY. 67 LT. LANES	200 LIN. FT.

PLAN HWY. 67
STA. 735+00 TO 748+00

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.		061102	124	400

(2) PLAN HWY. 67 STA. 735+00 TO 748+00



PLAN HWY. 67
STA. 735+00 TO 748+00

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.		061102	125	400

(2) INTERCHANGE LAYOUT HWY. 67/HWY. 38

STA. 514+83.62 ℄ CONST. WILLIE RAY DR. =
STA. 100+00.00 ℄ CONST. HWY. 38
◁ 90°00'00"

STA. 720+14.59 ℄ CONST. RAMP 3A =
STA. 103+00.00 ℄ CONST. HWY. 38
◁ 80°00'00"

STA. 733+06.47 ℄ CONST. RAMP 3B =
STA. 103+33.51 ℄ CONST. HWY. 38
◁ 80°00'00"

STA. 721+31.30 ℄ CONST. SOUTHBOUND C/D ROAD =
STA. 108+38.61 ℄ CONST. HWY. 38
◁ 87°30'00"

STA. 492+00.00 ℄ CONST. WILLIE RAY DR.
BEGIN CONSTRUCTION

PI DELTA = 0°05'00" RT.

EXIST. ROW
200' TRANS.
EXIST. C/A
WILLIE RAY DR.
N45°58'36"E
N48°50'00"E
N54°32'30"E
N48°55'09"E
N0°41'42"E
N32°11'41"E
N43°40'00"W
N56°20'00"E
S65°31'34"W
N71°12'03"E
N86°56'23"E
S43°40'00"E
N16°06'29"E
N36°20'00"E
N46°20'00"E

PROP. ROW
PROP. C/A & FENCE
EXIST. ROW & C/A
EXIST. P.C.E.
℄ CONST. WILLIE RAY DR.
℄ CONST. RAMP 4
℄ CONST. SB C/D RD.
℄ MED. HWY. 67
℄ CONST. RAMP 1
℄ CONST. RAMP 3A
℄ CONST. RAMP 3B
℄ CONST. RAMP 2
℄ CONST. HWY. 38
EXIST. ROW & C/A
PROP. ROW & C/A
PROP. ROW, C/A, & FENCE
I.C.E.
SIDEWALK
200' TAPER
100' TAPER

CAROL CV.
EXIST. WILLIE RAY DR.
HWY. 67
HWY. 38
RAMP 1
RAMP 2
RAMP 3A
RAMP 3B
RAMP 4
FOURMILE CREEK
N. POLK ST.
MATCH LINE

30" GAS LINE
36" GAS LINE

STA. 721+34.39 ℄ MED. HWY. 67 =
STA. 109+20.19 ℄ CONST. HWY. 38
◁ 87°30'00"

STA. 723+42.32 ℄ RAMP 3B =
STA. 723+42.32 ℄ SOUTHBOUND C/D ROAD
◁ 00°00'00"

STA. 722+82.36 ℄ CONST. RAMP 1 =
STA. 115+77.81 ℄ CONST. HWY. 38
◁ 80°00'00"

STA. 720+28.63 ℄ CONST. RAMP 2 =
STA. 115+77.81 ℄ CONST. HWY. 38
◁ 80°00'00"

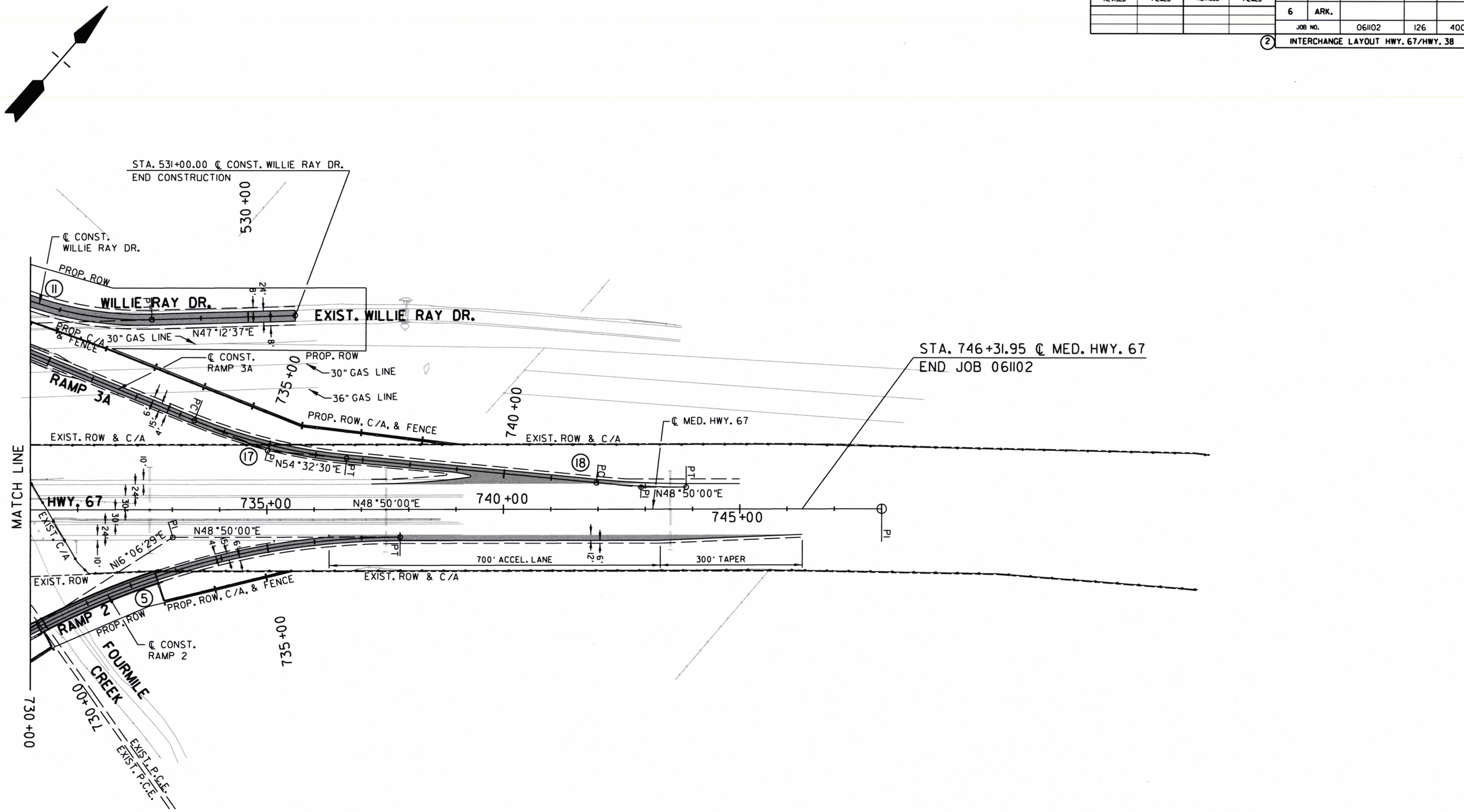
CURVE NUMBER	LOCATION	P.I.	NORTHING	EASTING	Δ	D	R	T	L	P.C.	P.T.	e FT./FT.	Ls
1	RAMP 1	701+08.58	239631.6259	1309292.7116	5°42'30" RT.	3°00'00"	1909.86'	95.22'	190.28'	700+13.36	702+03.64	N/A	N/A
2	RAMP 1	709+56.91	240123.8412	1309983.8346	21°42'10" RT.	6°00'00"	954.93'	183.05'	361.71'	707+73.86	711+35.57	0.092	350'
3	RAMP 1	720+20.26	240377.7313	1311020.9575	19°54'40" LT.	8°00'00"	716.20'	125.71'	248.89'	718+94.55	721+43.44	0.100	350'
4	RAMP 2	723+51.62	240784.6271	1311432.5677	20°13'31" LT.	8°00'00"	716.20'	127.74'	252.82'	722+23.88	724+76.70	0.100	350'
6	SOUTHBOUND C/D ROAD	700+04.61	239642.2345	1309145.3304	2°51'25" LT.	1°00'00"	5729.58'	142.87'	285.68'	698+61.74	701+47.42	N/A	N/A
7	SOUTHBOUND C/D ROAD	704+66.03	239962.9400	1309477.1587	2°51'25" RT.	1°00'00"	5729.58'	142.87'	285.68'	703+23.16	706+08.84	N/A	N/A
8	WILLIE RAY DR.	502+80.15	240465.4871	1309967.1566	48°13'27" LT.	6°00'00"	954.93'	427.40'	803.74'	498+52.75	506+56.49	0.070	200'
9	WILLIE RAY DR.	512+65.20	241501.5355	1309979.7247	45°38'18" RT	13°15'00"	432.42'	181.94'	344.44'	510+83.26	514+27.70	0.100	250'
10	WILLIE RAY DR.	517+07.31	241820.2187	1310313.5962	40°36'23" RT.	13°15'00"	432.42'	159.98'	306.46'	515+47.33	518+53.79	0.100	250'
11	WILLIE RAY DR.	525+58.23	241866.3687	1311176.7893	39°43'45" LT.	8°00'00"	716.20'	258.76'	496.62'	522+99.47	527+96.09	0.084	250'
12	RAMP 3B	739+20.23	242236.7133	1312077.5199	163°18'26" LT.	24°45'00"	231.50'	1577.91'	659.83'	723+42.32	730+02.15	0.100	300'
13	RAMP 3B	730+76.27	241552.3129	1310573.9219	9°11'34" LT.	6°12'53"	921.93'	74.12'	147.92'	730+02.15	731+50.07	N/A	N/A
14	RAMP 3A	723+01.41	241607.7611	1310597.6398	14°52'03" RT.	6°00'00"	954.93'	124.60'	247.79'	721+76.81	724+24.60	0.092	350'
15	RAMP 4	714+65.94	240627.9486	1310224.0116	16°38'19" LT.	3°45'00"	1527.89'	223.42'	443.70'	712+42.52	716+86.22	0.069	300'
16	RAMP 4	721+26.74	241189.8038	1310577.7572	75°51'41" LT.	13°15'00"	432.42'	337.00'	572.54'	717+89.74	723+62.28	0.100	300'

SCALE IN FEET
0 100 200 400

ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/10

INTERCHANGE LAYOUT
HWY. 67/HWY. 38

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.		061102	126	400
				(2)	INTERCHANGE LAYOUT HWY. 67/HWY. 38			



CURVE NUMBER	LOCATION	P.I.	NORTHING	EASTING	Δ	D	R	T	L	P.C.	P.T.	e FT./FT.	Ls
5	RAMP 2	733+26.72	241723.9999	1311703.8488	32°43'31" RT.	3°30'00"	1637.02'	480.64'	935.00'	728+46.08	737+81.08	0.065	300'
11	WILLIE RAY DR.	525+58.23	241866.3687	1311176.7893	39°43'45" LT.	8°00'00"	716.20'	258.76'	496.62'	522+99.47	527+96.09	0.084	250'
17	RAMP 3A	735+00.06	241994.4750	1311733.6658	16°39'33" LT.	5°00'00"	1145.92'	167.78'	333.19'	733+32.28	736+65.47	0.083	300'
18	RAMP 3A	742+91.45	242454.9418	1312380.2105	5°42'30" LT.	3°00'00"	1909.86'	95.22'	190.28'	741+96.23	743+86.51	N/A	N/A

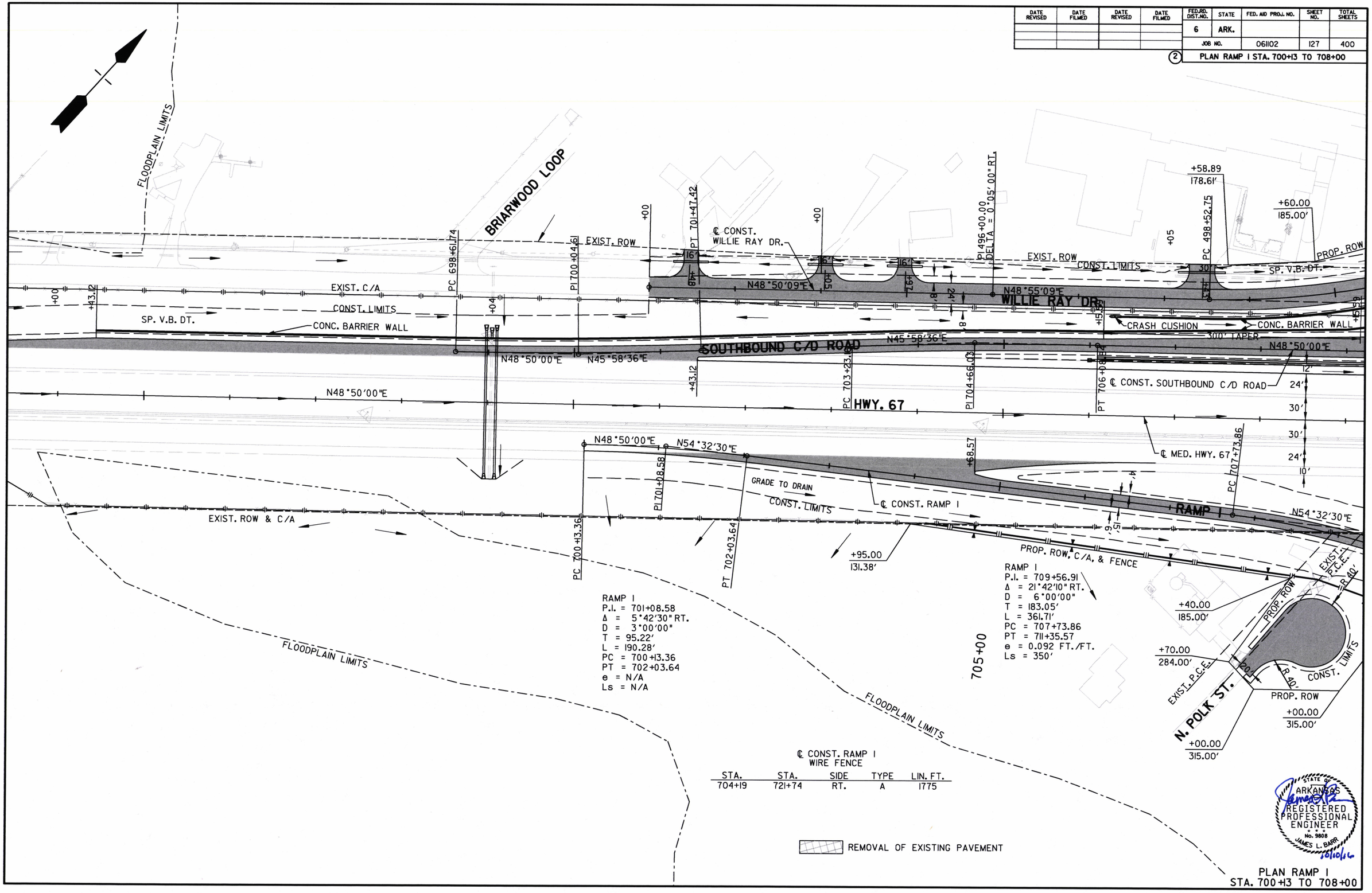
SCALE IN FEET
0 100 200 400

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

INTERCHANGE LAYOUT
HWY. 67/HWY. 38

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.		061102	127	400

(2) PLAN RAMP I STA. 700+13 TO 708+00



RAMP I
P.I. = 701+08.58
Δ = 5°42'30" RT.
D = 3°00'00"
T = 95.22'
L = 190.28'
PC = 700+13.36
PT = 702+03.64
e = N/A
Ls = N/A

RAMP I
P.I. = 709+56.91
Δ = 21°42'10" RT.
D = 6°00'00"
T = 183.05'
L = 361.71'
PC = 707+73.86
PT = 711+35.57
e = 0.092 FT./FT.
Ls = 350'

℄ CONST. RAMP I
WIRE FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.
704+19	721+74	RT.	A	1775

REMOVAL OF EXISTING PAVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

PLAN RAMP I
STA. 700+13 TO 708+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED./FED. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/28/2016				6	ARK.			
				JOB NO.	061102		128	400

2 PLAN RAMP I STA. 708+00 TO 722+82

30" GAS LINE
℄ CONST. WILLIE RAY DR.
36" GAS LINE
+15.00 256.00'
PROP. ROW
CONST. LIMITS
EXIST. ROW
PROP. C/A & FENCE
BEGIN PROP. C/A
EXIST. ROW & C/A
℄ CONST. RAMP 4
SP. V.B. DT.
CONC. BARRIER WALL
℄ CONST. SOUTHBOUND C/D ROAD
MSE WALL
℄ MED. HWY. 67
WILLIE RAY DR.
SOUTHBOUND C/D ROAD
HWY. 67
RAMP 4
N48°55'09"E
N48°50'00"E
N32°11'41"E
N0°41'42"E
P.I. 702+80.15
P.I. 714+65.5
+79.41
12' F.B. DT.
24'
30'
10'
6'
HWY. 38
S43°40'00"E
SIDEWALK
58' F-F
5'
3'
℄ CONST. HWY. 38
CONST. LIMITS
+38.30
STA. 722+82.36 ℄ CONST. RAMP I=
STA. 115+77.81 ℄ CONST. HWY. 38
◁ 80°00'00"
RAMP I
P.I. = 720+20.26
Δ = 19°54'40" LT.
D = 8°00'00"
T = 125.71'
L = 248.89'
PC = 718+94.55
PT = 721+43.44
e = 0.100 FT./FT.
Ls = 350'
P.I. 709+59.91
PT 711+35.57
+71.13
FLOODPLAIN LIMITS
℄ CONST. RAMP I
PC 718+94.55
P.I. 720+20.26
PT 721+43.44
R 75'
22'
20'
30'
R 100'
N76°14'40"E
N54°32'30"E
N56°20'00"E
RAMP I
PRESERVE VEGETATION - HAND CLEARING ONLY ALONG ROW FENCE LINE
EXIST. P.C.E.
R 40'
+00.00 266.04'
+70.00 222.00'
+10.00 410.00'
+35.00 585.00'
+60.00 720.00'
+37.00 765.00'
PROP. ROW, C/A, & FENCE
+40.00 185.00'
+70.00 284.00'
+00.00 315.00'
+00.00 315.00'
N. POLK ST.
20'
710+00
715+00
720+00
RAMP I
P.I. = 709+56.91
Δ = 21°42'10" RT.
D = 6°00'00"
T = 183.05'
L = 361.71'
PC = 707+73.86
PT = 711+35.57
e = 0.092 FT./FT.
Ls = 350'
STA. 720+75 ℄ CONST. RAMP I CONSTRUCT 36" X 100' R.C. PIPE CULVERT (CLASS III)(TYPE 3 BEDDING) WITH FES LT. & RT.
Q50 = 40 CFS D.A. = 8 ACRES
+00.00 120.00'
+00.46
STA. 708+05 ℄ CONST. RAMP I IN PLACE
12" X 21' C.M.
PIPE CULVERT RT. SIDE DRAIN
RETAIN
STA. 713+50 ℄ CONST. RAMP I CONSTRUCT
DBL. 6' X 4' X 94' R.C. BOX CULVERT
AT 37° RT. FWD. SKEW WITH (3:1) WINGS LT. & RT.
Q50 = 176 CFS D.A. = 80 ACRES
REMOVAL OF EXISTING PAVEMENT
FLOODPLAIN LIMITS
EXIST. P.C.E.
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR
PLAN RAMP I STA. 708+00 TO 722+82

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.		061102	129	400

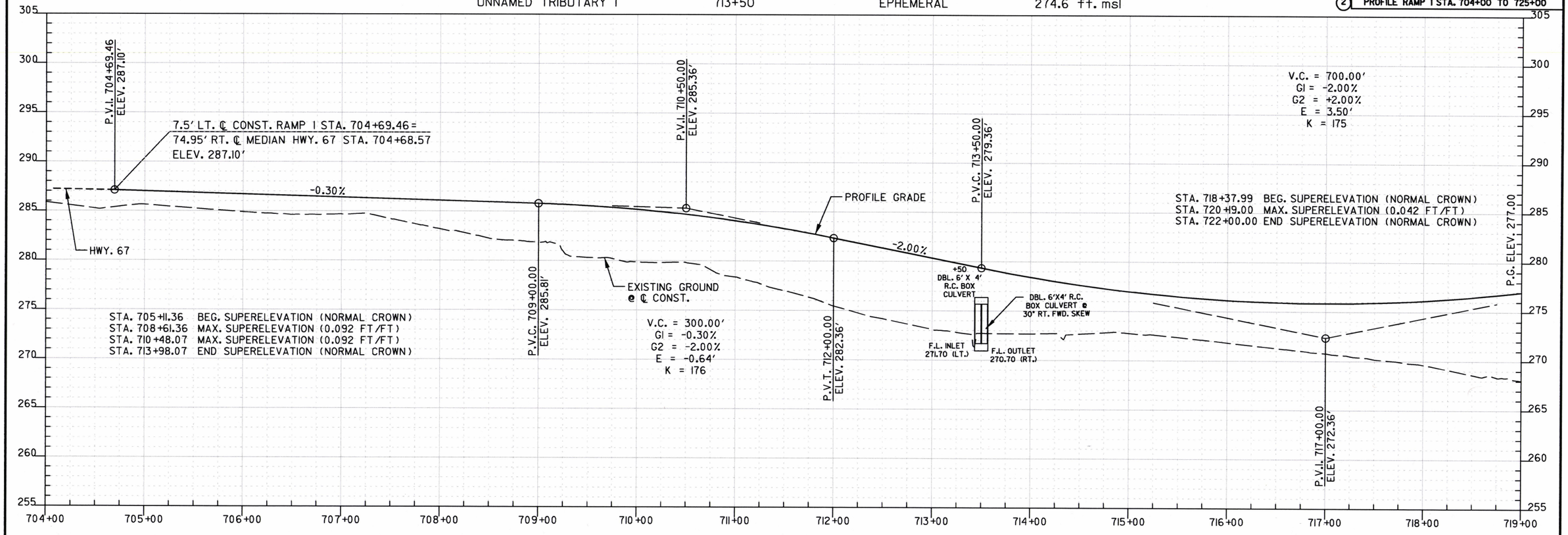
(2) PROFILE RAMP I STA. 704+00 TO 725+00

STREAM NAME
UNNAMED TRIBUTARY I

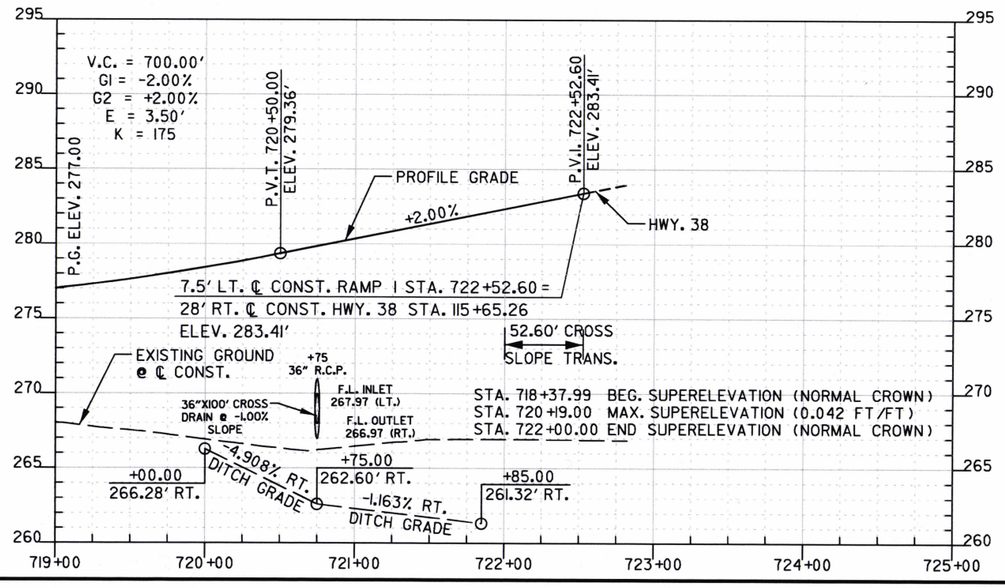
STATION
713+50

STREAM TYPE
EPHEMERAL

TOP OF CHANNEL
274.6 ft. msl



REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

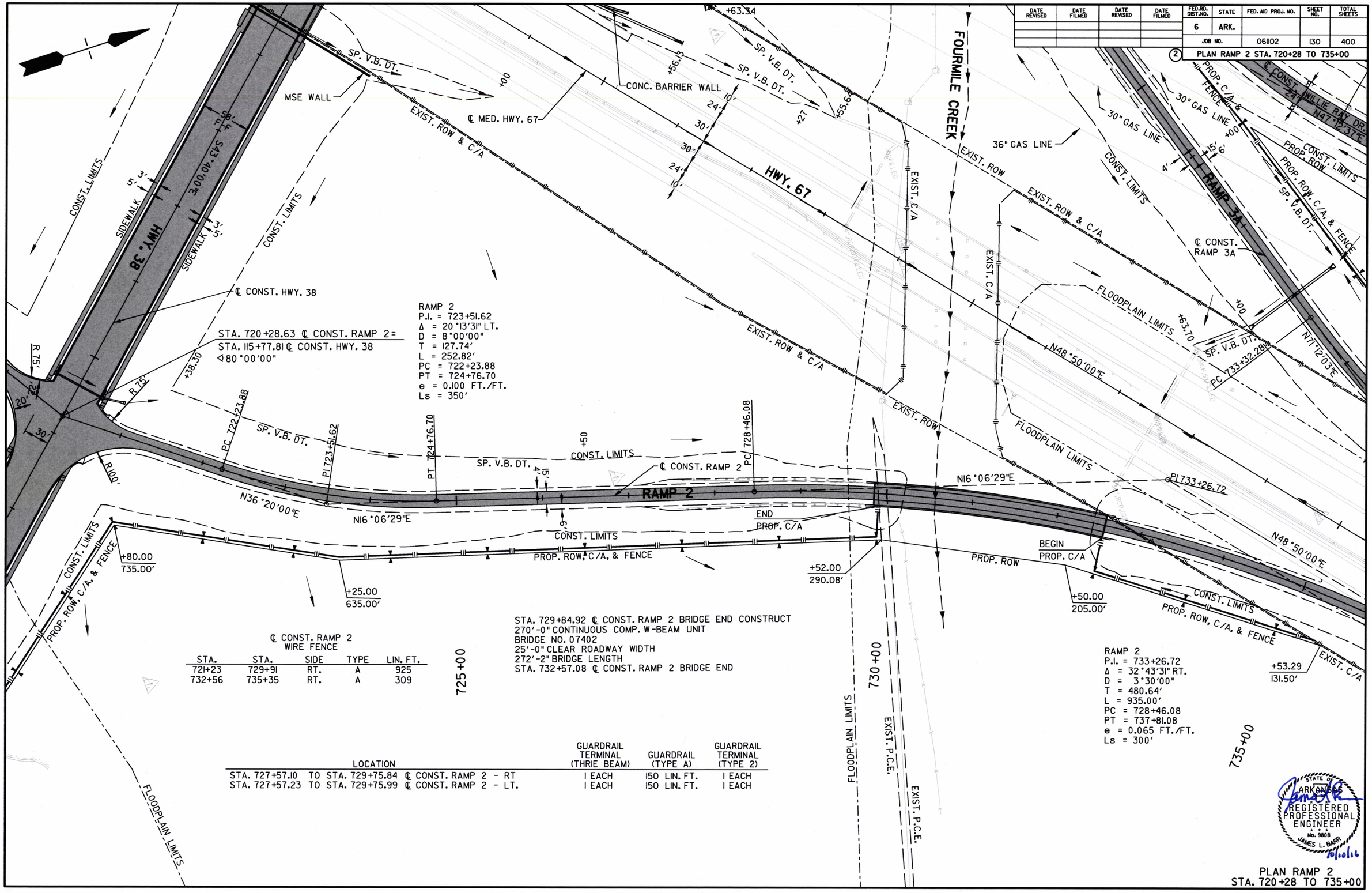


STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

PROFILE RAMP I
STA. 704+00 TO 725+00

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.		061102	130	400

(2) PLAN RAMP 2 STA. 720+28 TO 735+00



STA. 720+28.63 ℄ CONST. RAMP 2 =
STA. 115+77.81 ℄ CONST. HWY. 38
◁80°00'00"

RAMP 2
P.I. = 723+51.62
Δ = 20°13'31" LT.
D = 8°00'00"
T = 127.74'
L = 252.82'
PC = 722+23.88
PT = 724+76.70
e = 0.100 FT./FT.
Ls = 350'

STA. 729+84.92 ℄ CONST. RAMP 2 BRIDGE END CONSTRUCT
270'-0" CONTINUOUS COMP. W-BEAM UNIT
BRIDGE NO. 07402
25'-0" CLEAR ROADWAY WIDTH
272'-2" BRIDGE LENGTH
STA. 732+57.08 ℄ CONST. RAMP 2 BRIDGE END

℄ CONST. RAMP 2
WIRE FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.
721+23	729+91	RT.	A	925
732+56	735+35	RT.	A	309

RAMP 2
P.I. = 733+26.72
Δ = 32°43'31" RT.
D = 3°30'00"
T = 480.64'
L = 935.00'
PC = 728+46.08
PT = 737+81.08
e = 0.065 FT./FT.
Ls = 300'

LOCATION	GUARDRAIL TERMINAL (THRIE BEAM)	GUARDRAIL (TYPE A)	GUARDRAIL TERMINAL (TYPE 2)
STA. 727+57.10 TO STA. 729+75.84 ℄ CONST. RAMP 2 - RT	1 EACH	150 LIN. FT.	1 EACH
STA. 727+57.23 TO STA. 729+75.99 ℄ CONST. RAMP 2 - LT.	1 EACH	150 LIN. FT.	1 EACH

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

PLAN RAMP 2
STA. 720+28 TO 735+00

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.		061102	131	400

(2) PLAN RAMP 2 STA. 735+00 TO 737+81

+00 — +71.91 / 341.85' — 30" GAS LINE — PROP. ROW — +10.00 / 336.00'

SP. V.B. DT. — 36" GAS LINE — PI 732+30.00

+00 — +75.00 / 180.00' — PROP. ROW, C/A, & FENCE

SP. V.B. DT. — N71°12'03"E — EXIST. ROW & C/A

+00 — +63.70 — SP. V.B. DT. — PC 733+32.89

PI 735+00.06 — N54°32'30"E — PT 736+65.47

+09.17 / 138.49' END PROP. C/A

EXIST. ROW & C/A — PC 741+96.23 — PI 742+91.45 — PT 743+86.51

CONST. LIMITS — ℄ CONST. RAMP 3A — RAMP 3A

15' — 4' — 16' — +31.29

N54°32'30"E — N48°50'00"E

10' — 24' — 30' — HWY. 67 — 30' — 24' — 10'

N48°50'00"E — ℄ MED. HWY. 67

+31.95 — PI 733+26.72 — N48°50'00"E — N48°50'00"E

4' — RAMP 2 — 10'

FLOODPLAIN LIMITS — EXIST. ROW & C/A — ℄ CONST. RAMP 2 — CONST. LIMITS — 700' ACCEL. LANE — 300' TAPER

15' — 6' — 12' — 6' — +31.95 — +31.95

EXIST. ROW & C/A

06'29"E — PROP. ROW, C/A, & FENCE

+53.29 / 131.50' END PROP. C/A

RAMP 2
P.I. = 733+26.72
Δ = 32°43'31" RT.
D = 3°30'00"
T = 480.64'
L = 935.00'
PC = 728+46.08
PT = 737+81.08
e = 0.065 FT./FT.
Ls = 300'

PT 737+81.08

BEGIN PROP. C/A — PROP. ROW

735+00

EXIST. P.C.E. — EXIST. P.C.E. — FLOODPLAIN LIMITS

FLOODPLAIN LIMITS

STA. 746+31.95 ℄ MED. HWY. 67
END JOB 061102

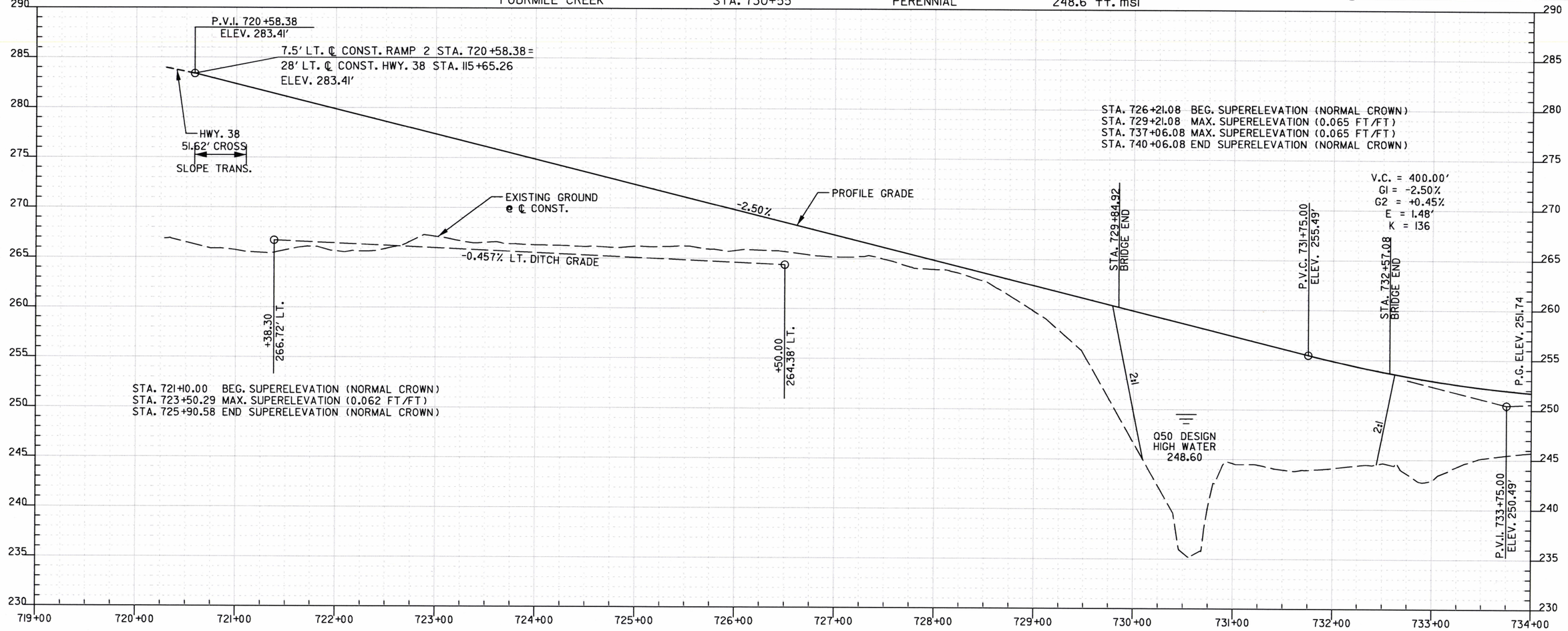
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10.01.10

PLAN RAMP 2
STA. 735+00 TO 737+81

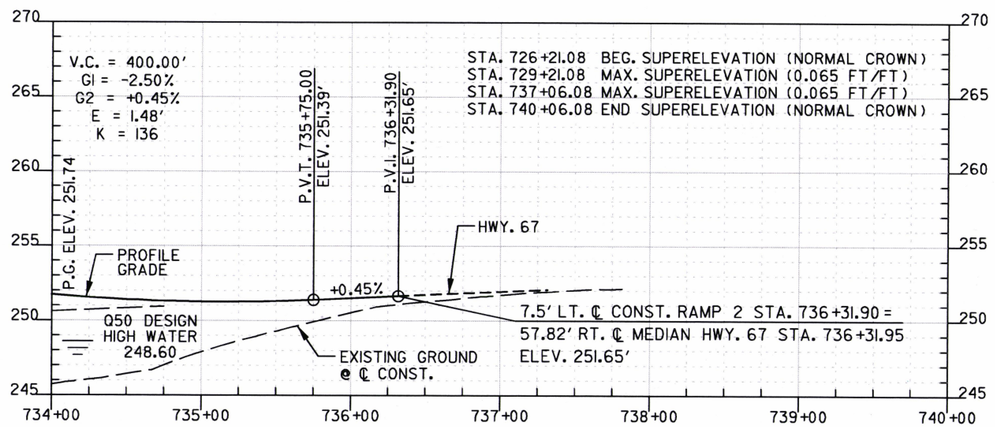
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	132	400

(2) PROFILE RAMP 2 STA. 719+00 TO 740+00

STREAM NAME: FOURMILE CREEK
STATION: STA. 730+55
STREAM TYPE: PERENNIAL
TOP OF CHANNEL: 248.6 ft. msl



REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10.1.16

PROFILE RAMP 2
STA. 719+00 TO 740+00

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.		061102	133	400

(2) PLAN RAMP 3A STA. 720+14 TO 735+00

STA. 721+50 ℄ CONST. RAMP 3A CONSTRUCT
TYPE ST DROP INLET ON RT. ALONG BARRIER WALL
3'-0" x 3'-0" x H= 5'-3"
WITH 24" x 48' R.C. PIPE OUTLET ON LT. WITH FES
(CLASS III) (TYPE 3 BEDDING)

RAMP 3A
P.I. = 723+01.41
Δ = 14°52'03" RT.
D = 6°00'00"
T = 124.60'
L = 247.79'
PC = 721+76.81
PT = 724+24.60
e = 0.092 FT./FT.
Ls = 350'

℄ CONST. RAMP 3A
REMOVAL & DISPOSAL OF GUARDRAIL
STA. 726+17.91 TO STA. 728+09.87 RT. OF ℄ CONST. RAMP 3A - 150 LIN. FT.

STA. 725+23.97 ℄ CONST. RAMP 3A BRIDGE END CONSTRUCT
260'-0" CONTINUOUS COMP. W-BEAM UNIT
BRIDGE NO. 07403
25'-0" CLEAR ROADWAY WIDTH
263'-0¾" BRIDGE LENGTH
STA. 727+87.03 ℄ CONST. RAMP 3A BRIDGE END

℄ CONST. RAMP 3A
WIRE FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.
727+71	738+86	LT.	A	1240

STA. 726+56.62 TO STA. 737+69.55 ℄ CONST. RAMP 3A - IN PLACE
123'-10" X 31'-10" BRIDGE
REMOVE AS EXISTING BRIDGE
STRUCTURE= 1.00 LUMP SUM
SITE NO. 1

STA. 720+14.59 ℄ CONST. RAMP 3A =
STA. 103+00.00 ℄ CONST. HWY. 38
◁ 80°00'00"

STA. 733+06.47 ℄ CONST. RAMP 3B =
STA. 103+33.51 ℄ CONST. HWY. 38
◁ 80°00'00"

STA. 721+31.30 ℄ CONST. SOUTHBOUND C/D ROAD =
STA. 108+38.61 ℄ CONST. HWY. 38
◁ 87°30'00"

STA. 723+42.32 ℄ CONST. RAMP 3B =
STA. 723+42.32 ℄ CONST. SOUTHBOUND C/D ROAD
◁ 00°00'00"

STA. 721+34.39 ℄ MEDIAN HWY. 67
STA. 109+20.19 ℄ CONST. HWY. 38
◁ 87°30'00"

LOCATION			GUARDRAIL TERMINAL (THRIE BEAM)	GUARDRAIL (TYPE A)	GUARDRAIL TERMINAL (TYPE 2)	GUARDRAIL TERMINAL (TYPE I)
STA. 723+75.96	TO STA. 724+94.88	℄ CONST. RAMP 3A - LT.	1 EACH	75 LIN. FT.		1 EACH
STA. 727+85.11	TO STA. 730+03.86	℄ CONST. RAMP 3A - LT.	1 EACH	150 LIN. FT.	1 EACH	
STA. 728+10.12	TO STA. 730+28.87	℄ CONST. RAMP 3A - RT.	1 EACH	150 LIN. FT.	1 EACH	

REMOVAL OF EXISTING PAVEMENT

RAMP 3A
P.I. = 735+00.06
Δ = 16°39'33" LT.
D = 5°00'00"
T = 167.78'
L = 333.19'
PC = 733+32.28
PT = 736+65.47
e = 0.083 FT./FT.
Ls = 300'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

PLAN RAMP 3A
STA. 720+14 TO 735+00

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.		06102	134	400
				(2)	PLAN RAMP 3A STA. 735+00 TO 743+86			

FLOODPLAIN LIMITS

℄ CONST. WILLIE RAY DR.

+10.00
470.00'

+30

PROP. ROW

CONST. LIMITS

SP. V.B. DT.

+00

EXIST. WILLIE RAY DR.

CONST. LIMITS

30" GAS LINE

+10.00
336.00'

PROP. ROW

PROP. ROW

PI 532+30.00

RAMP 3A
P.I. = 735+00.06
Δ = 16°39'33" LT.
D = 5°00'00"
T = 167.78'
L = 333.19'
PC = 733+32.28
PT = 736+65.47
e = 0.083 FT./FT.
Ls = 300'

30" GAS LINE

RAMP 3A
P.I. = 742+91.45
Δ = 5°42'30" LT.
D = 3°00'00"
T = 95.22'
L = 190.28'
PC = 741+96.23
PT = 743+86.51
e = N/A
Ls = N/A

FLOODPLAIN LIMITS

+00

36" GAS LINE

+75.00
180.00'

36" GAS LINE

SP. V.B. DT.

CONST. LIMITS

PROP. ROW, C/A, & FENCE

735+00

EXIST. ROW & C/A

+09.17
138.49'
END PROP.
C/A

PC 741+96.23

PI 742+91.45

PT 743+86.51

EXIST. ROW & C/A

N54°32'30"E

15'

℄ CONST. RAMP 3A

CONST. LIMITS

RAMP 3A

740+00

CONST. LIMITS

PI 735+00.06

PT 736+65.47

+31.29

N54°32'30"E

N48°50'00"E

10'

24'

30'

30'

℄ MED. HWY. 67

N48°50'00"E

HWY. 67

STA. 746+31.95 ℄ MED. HWY. 67
END JOB 06102

+31.95

N48°50'00"E

24'

10'

N48°50'00"E

15'

EXIST. ROW & C/A

℄ CONST. RAMP 2

CONST. LIMITS

FLOODPLAIN LIMITS

+31.95

+31.95

700' ACCEL. LANE

300' TAPER

PI 748+00.00

PROP. ROW, C/A, & FENCE

+53.29 END PROP.
131.50' C/A

EXIST. ROW & C/A

37+81.08

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

PLAN RAMP 3A
STA. 735+00 TO 743+86

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.		061102	135	400

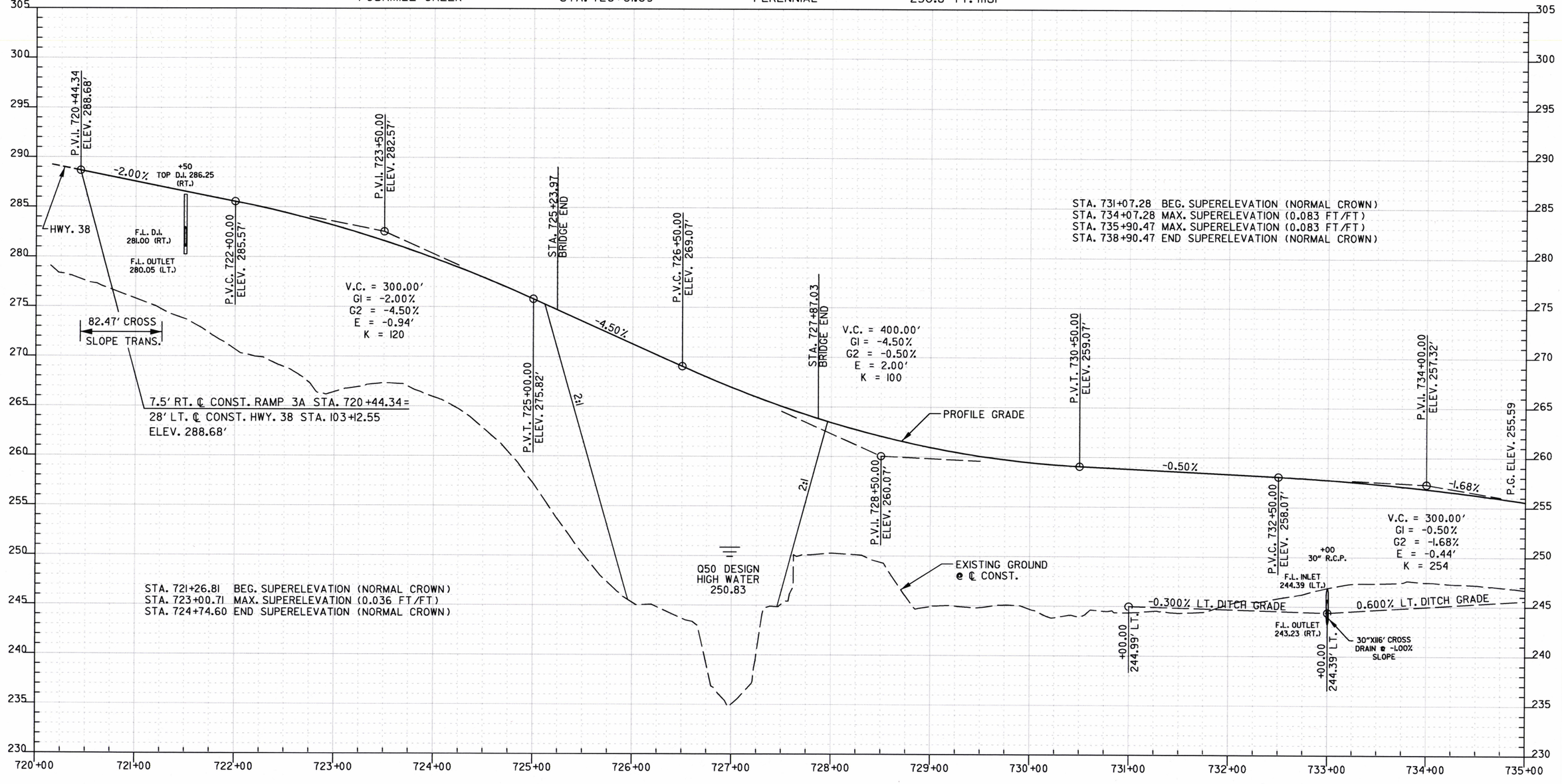
(2) PROFILE RAMP 3A STA. 720+00 TO 735+00

STREAM NAME
FOURMILE CREEK

STATION
STA. 726+01.09

STREAM TYPE
PERENNIAL

TOP OF CHANNEL
250.8 ft. msl



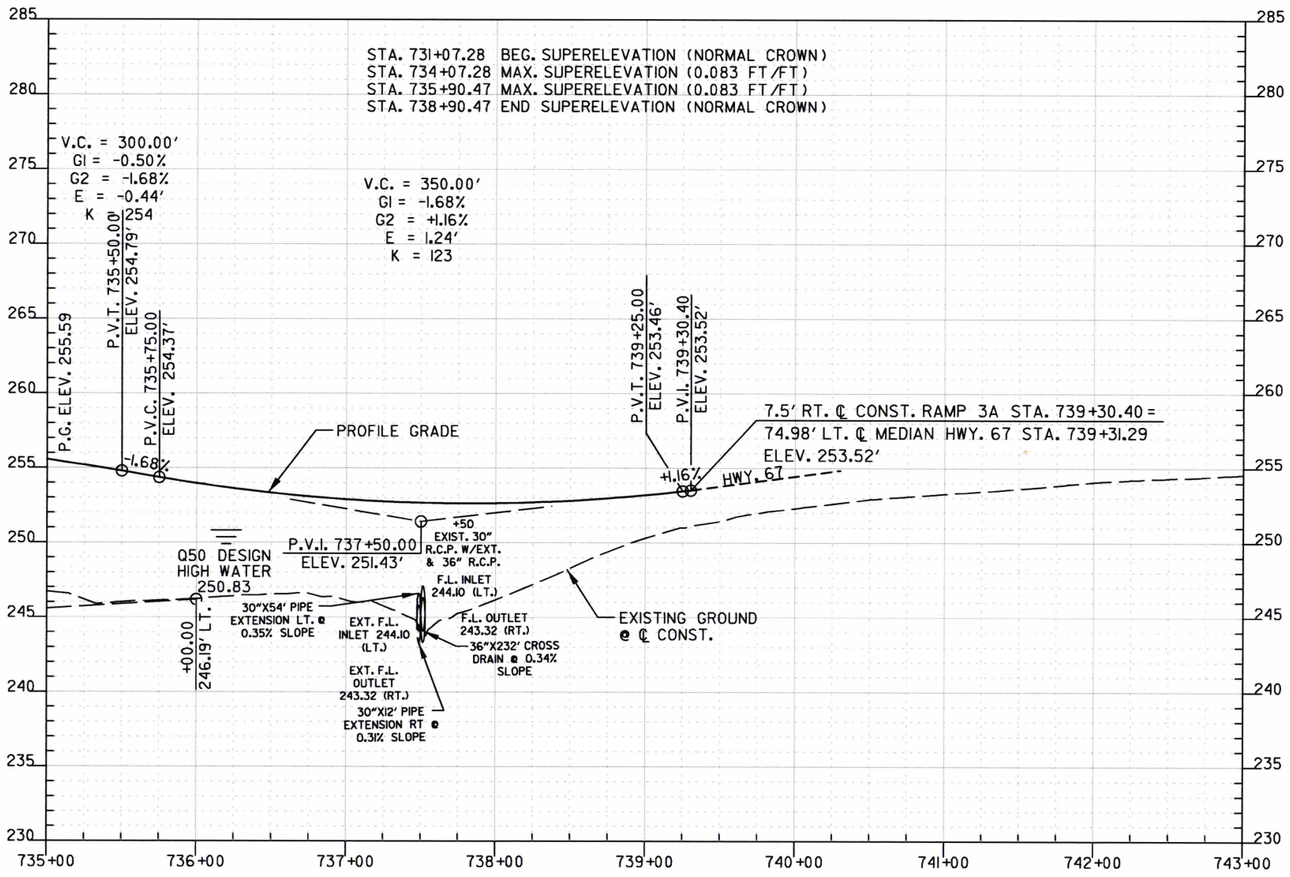
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/04/16

PROFILE RAMP 3A
STA. 720+00 TO 735+00

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.		061102	136	400

(2) PROFILE RAMP 3A STA. 735+00 TO 743+00



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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

PROFILE RAMP 3A
STA. 735+00 TO 743+00

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.		06II02	I37	400

(2) PLAN SOUTHBOUND C/D ROAD/RAMP 3B
STA. 720+00 TO 733+06

℄ CONST. SOUTHBOUND C/D ROAD
CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	LENGTH	SIDE	"W"	SQ. YDS.
723+00.00	723+42.32	42.32′	LT.	15′-0"	70.5

℄ CONST. RAMP 3B
CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	LENGTH	SIDE	"W"	SQ. YDS.
723+42.82	730+00.00	657.18′	LT.	23′-0"	1679.5

RAMP 3B
P.I. = 730+76.27
Δ = 9°11′34" LT.
D = 6°12′53"
T = 74.12′
L = 147.92′
PC = 730+02.15
PT = 731+50.07
e = N/A
Ls = N/A

RAMP 3B
P.I. = 739+20.23
Δ = 163°18′26" LT.
D = 24°45′00"
T = 1577.91′
L = 659.83′
PC = 723+42.32
PT = 730+02.15
e = 0.100 FT./FT.
Ls = 300′

STA. 725+50 ℄ CONST. RAMP 3B CONSTRUCT
DBL. 36" x 82′ R.C. PIPE CULVERT
(CLASS III) (TY. 3 BEDDING) WITH
FES. LT. & RT.
Q50 = 38 CFS D.A. = 4 ACRES
36" R.C. PIPE (CLASS III) = 164 LIN. FT.
36" FES = 4 EACH

STA. 720+14.59 ℄ CONST. RAMP 3A =
STA. 103+00.00 ℄ CONST. HWY. 38
◁ 80°00′00"

STA. 733+06.47 ℄ CONST. RAMP 3B =
STA. 103+33.51 ℄ CONST. HWY. 38
◁ 80°00′00"

STA. 721+31.30 ℄ CONST. SOUTHBOUND C/D ROAD =
STA. 108+38.61 ℄ CONST. HWY. 38
◁ 87°30′00"

STA. 721+34.39 ℄ MEDIAN HWY. 67
STA. 109+20.19 ℄ CONST. HWY. 38
◁ 87°30′00"

STA. 723+42.32 ℄ CONST. RAMP 3B =
STA. 723+42.32 ℄ CONST. SOUTHBOUND C/D ROAD
◁ 00°00′00"

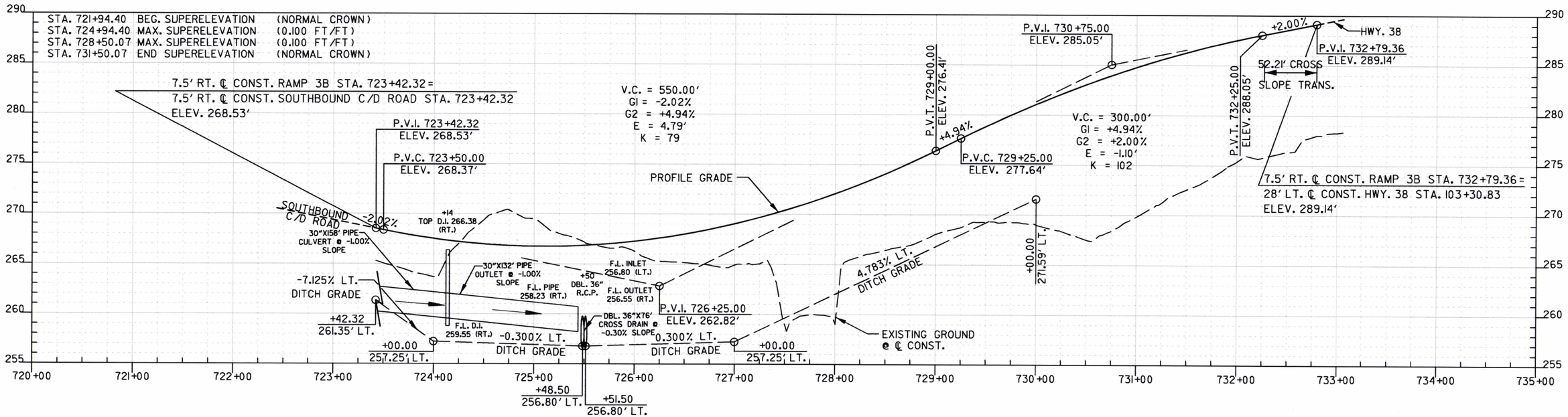
REMOVAL OF EXISTING PAVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

PLAN SOUTHBOUND C/D ROAD/RAMP 3B
STA. 720+00 TO 733+06

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.		061102	138	400

(2) PROFILE RAMP 3B STA. 720+00 TO 735+00



REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
12/01/16

PROFILE RAMP 3B
STA. 720+00 TO 735+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/28/2016				6	ARK.			
				JOB NO.		061102	139	400

(2) PLAN RAMP 4 STA. 712+42 TO 723+62

STA. 720+14.59 ℄ CONST. RAMP 3A =
STA. 103+00.00 ℄ CONST. HWY. 38
◁ 80°00'00"

STA. 733+06.47 ℄ CONST. RAMP 3B =
STA. 103+33.51 ℄ CONST. HWY. 38
◁ 80°00'00"

RAMP 4
P.I. = 721+26.74
Δ = 75°51'41" LT.
D = 13°15'00"
T = 337.00'
L = 572.54'
PC = 717+89.74
PT = 723+62.28
e = 0.100 FT./FT.
Ls = 300'

RAMP 4
P.I. = 714+65.94
Δ = 16°38'19" LT.
D = 3°45'00"
T = 223.42'
L = 443.70'
PC = 712+42.52
PT = 716+86.22
e = 0.069 FT./FT.
Ls = 300'

℄ CONST. RAMP 4
CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	LENGTH	SIDE	"W"	SQ. YDS.
714+25.00	715+75.00	150.00'	LT.	13'-0"	216.7

STA. 721+31.30 ℄ CONST. SOUTHBOUND C/D ROAD =
STA. 108+38.61 ℄ CONST. HWY. 38
◁ 87°30'00"

STA. 723+42.32 ℄ CONST. RAMP 3B =
STA. 723+42.32 ℄ CONST. SOUTHBOUND C/D ROAD
◁ 00°00'00"

STA. 721+34.39 ℄ MEDIAN HWY. 67
STA. 109+20.19 ℄ CONST. HWY. 38
◁ 87°30'00"

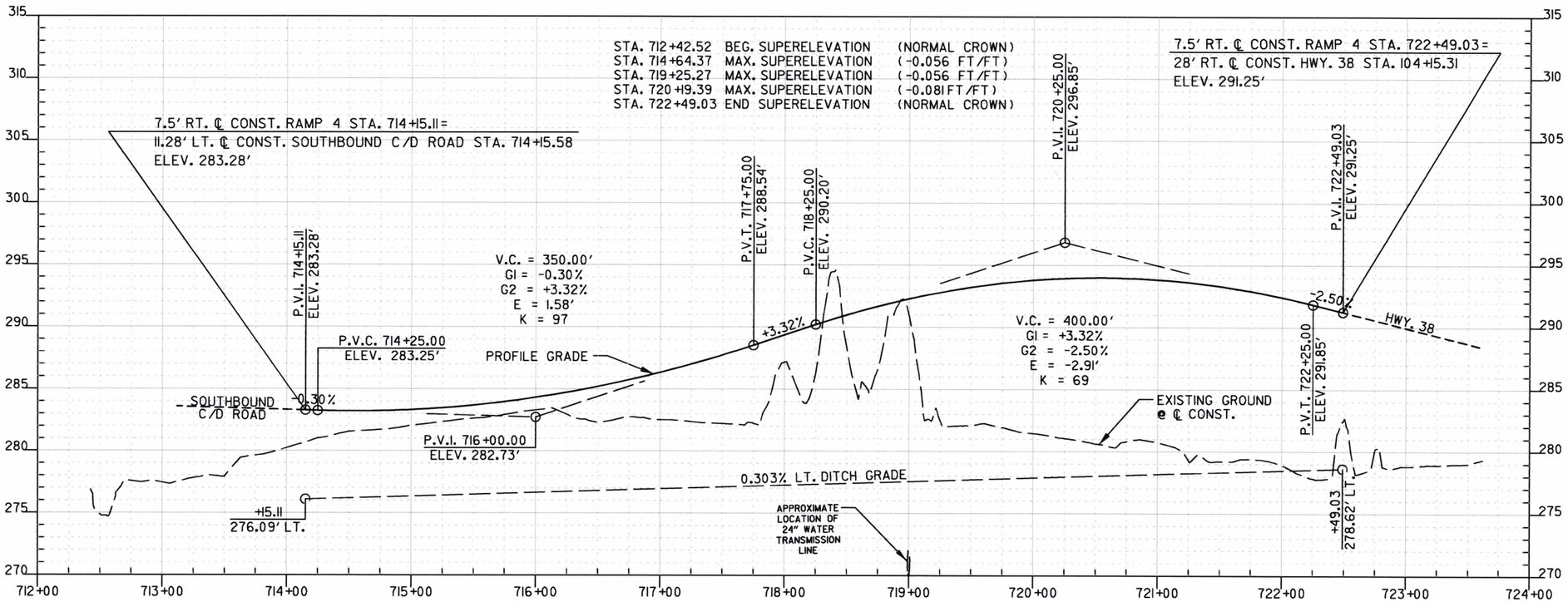
WILLIE RAY DR.
℄ CONST. WILLIE RAY DR.
EXIST. WILLIE RAY DR.
RAMP 3A
RAMP 3B
RAMP 4
SOUTHBOUND C/D ROAD
HWY. 67
HWY. 38
℄ CONST. RAMP 3A
℄ CONST. RAMP 3B
℄ CONST. RAMP 4
℄ CONST. SOUTHBOUND C/D ROAD
℄ MED. HWY. 67
PROP. C/A & FENCE
EXIST. P.C.E.
CONST. LIMITS
PROP. ROW
EXIST. ROW
EXIST. ROW & C/A
SIDEWALK
CONC. BARRIER WALL
MSE WALL
TYPE A ATTENUATOR
30" GAS LINE
36" GAS LINE
SP. V.B. DT.
12' F.B. DT.
100' TAPER
86'-6" TAPER
58' F-F
REMOVAL OF EXISTING PAVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/30/16

PLAN RAMP 4
STA. 712+42 TO 723+62

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.		06II02	140	400

(2) PROFILE RAMP 4 STA. 712+00 TO 724+00



REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10.01.16

PROFILE RAMP 4
STA. 712+00 TO 724+00

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.		061102	141	400

(2) PLAN SOUTHBOUND C/D ROAD STA. 690+00 TO 705+00

FLOODPLAIN LIMITS

FLOODPLAIN LIMITS

TANGLEWOOD DR.

BRIARWOOD LOOP

SOUTHBOUND C/D ROAD
P.I. = 700+04.61
Δ = 2°51'25" LT.
D = 1°00'00"
T = 142.87'
L = 285.68'
PC = 698+61.74
PT = 701+47.42
e = N/A
Ls = N/A

℄ CONST. WILLIE RAY DR.

EXIST. ROW

200' TRANS.

PT 701+47.42

PI 700+04.61

PC 698+61.74

WILLIE RAY DR.

EXIST. C/A

CONST. LIMITS

CONST. LIMITS

CONST. LIMITS

PI 696+00.00
DELTA = 0°05'00" RT.

N48°50'09"E

N48°5

300' TAPER

SP. V.B. DT.

CONC. BARRIER WALL

700' ACCEL. LANE

700+00

SOUTHBOUND C/D ROAD

N48°50'00"E

N45°58'36"E

N45°58'36"E

℄ CONST. SOUTHBOUND C/D ROAD

705+00

PC 703+23.16

PI 704+66.03

℄ MED. HWY. 67

HWY. 67

N48°50'00"E

PI 690+00.00

N48°50'00"E

N54°32'30"E

℄ CONST. RAMP I

RAMP

GRADE TO DRAIN

CONST. LIMITS

PI 701+08.58

EXIST. ROW & C/A

FLOODPLAIN LIMITS

PC 700+13.36

PT 702+03.64

+95.00
131.38'

PROP. ROW, C/A, & FENCE

STA. 691+43.12 ℄ MED. HWY. 67
BEGIN JOB 061102

FLOODPLAIN LIMITS

SOUTHBOUND C/D ROAD
P.I. = 704+66.03
Δ = 2°51'25" RT.
D = 1°00'00"
T = 142.87'
L = 285.68'
PC = 703+23.16
PT = 706+08.84
e = N/A
Ls = N/A

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

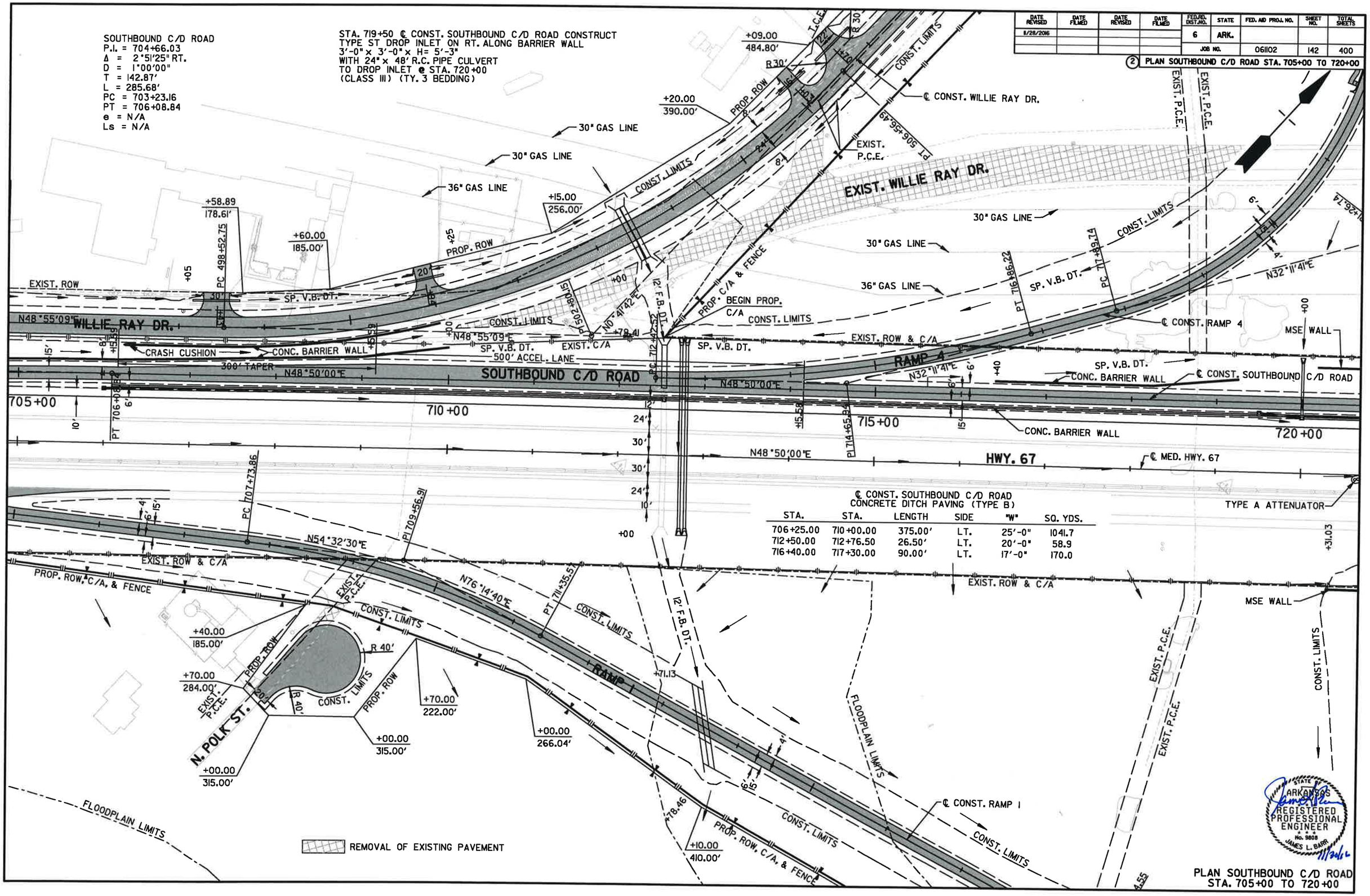
PLAN SOUTHBOUND C/D ROAD
STA. 690+00 TO 705+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/28/2016				6	ARK.			
				JOB NO.		061102	142	400

(2) PLAN SOUTHBOUND C/D ROAD STA. 705+00 TO 720+00

SOUTHBOUND C/D ROAD
P.I. = 704+66.03
Δ = 2°51'25" RT.
D = 1°00'00"
T = 142.87'
L = 285.68'
PC = 703+23.16
PT = 706+08.84
e = N/A
Ls = N/A

STA. 719+50 ℄ CONST. SOUTHBOUND C/D ROAD CONSTRUCT
TYPE ST DROP INLET ON RT. ALONG BARRIER WALL
3'-0" x 3'-0" x H= 5'-3"
WITH 24" x 48' R.C. PIPE CULVERT
TO DROP INLET @ STA. 720+00
(CLASS III) (TY. 3 BEDDING)



℄ CONST. SOUTHBOUND C/D ROAD
CONCRETE DITCH PAVING (TYPE B)

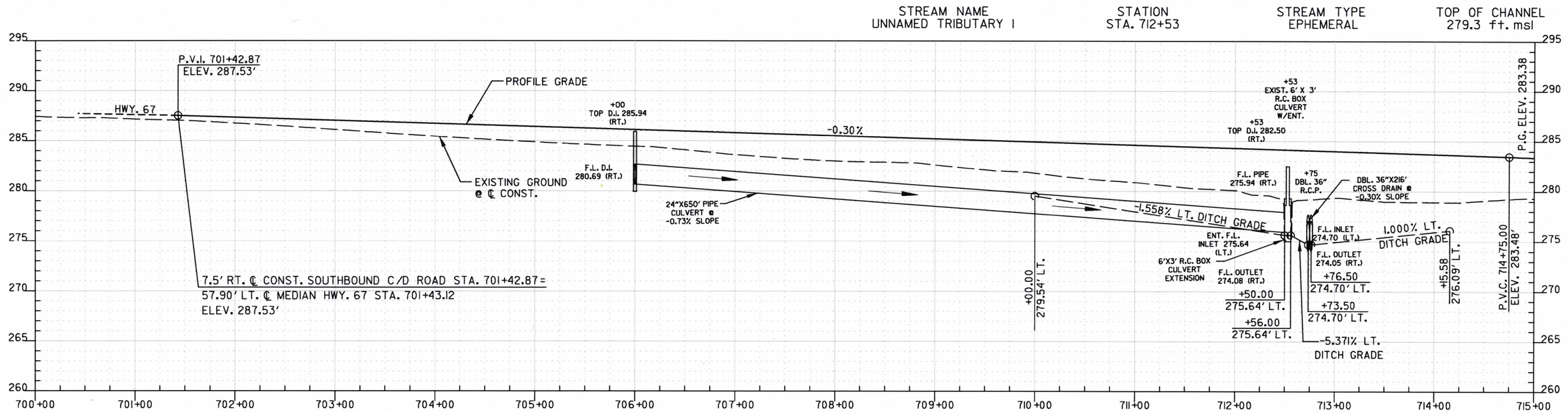
STA.	STA.	LENGTH	SIDE	"W"	SQ. YDS.
706+25.00	710+00.00	375.00'	LT.	25'-0"	1041.7
712+50.00	712+76.50	26.50'	LT.	20'-0"	58.9
716+40.00	717+30.00	90.00'	LT.	17'-0"	170.0

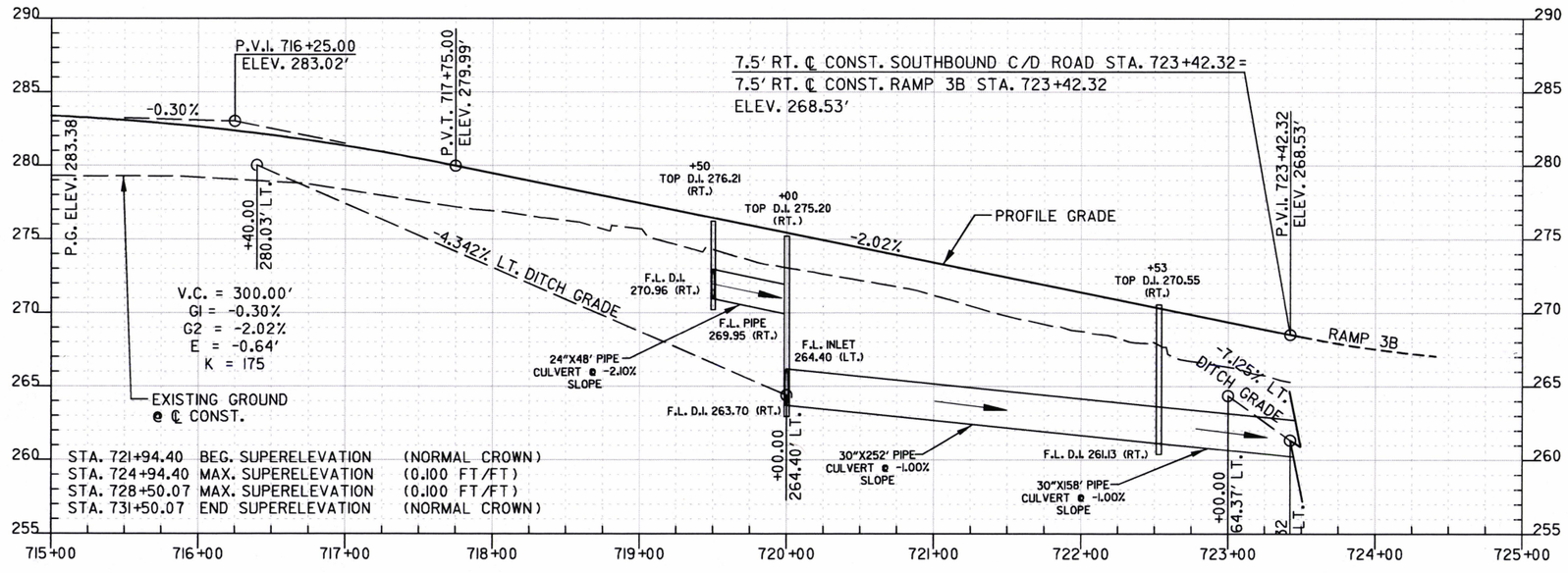
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 11/30/16

PLAN SOUTHBOUND C/D ROAD
STA. 705+00 TO 720+00

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.		061102	143	400

(2) PROFILE SOUTHBOUND C/D ROAD STA. 700+00 TO 725+00





STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

PROFILE SOUTHBOUND C/D ROAD
STA. 700+00 TO 725+00

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.		061102	144	400

(2) PLAN HWY. 38 STA. 100+00 TO 111+50

REMOVAL OF EXISTING PAVEMENT

STA. 101+18 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 4.0 SQ. YDS.

STA. 102+71 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 4.6 SQ. YDS.

STA. 103+90 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 3.3 SQ. YDS.

STA. 101+38 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON LT. WITH 4' EXTENSION H= 5'-10"
AND 18" X 16' R.C. PIPE STUB OUTLET WITH FES
TYPE MO DROP INLET = 4'-0" DIA.
TYPE C DROP INLET = 4'-0" X 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING) = 16 LIN. FT.
18" FES = 1 EACH

STA. 103+25 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON LT. = 7.33 SQ. YDS.

STA. 103+55 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON LT. = 7.33 SQ. YDS.

STA. 514+83.62 ℄ CONST. WILLIE RAY DR. =
STA. 100+00.00 ℄ CONST. HWY. 38
◁ 90°00'00"

STA. 101+38 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON RT. WITH 8' EXTENSION. H= 5'-3"
AND 18" X 60' R.C. PIPE CULVERT
TO D.I. @ STA. 101+38 ON LT.
TYPE MO DROP INLET = 4'-0" DIA.
TYPE C DROP INLET = 4'-0" X 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING) = 60 LIN. FT.

STA. 101+18 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 4.0 SQ. YDS.

STA. 104+58 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 3.3 SQ. YDS.

STA. 104+68 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 3.3 SQ. YDS.

STA. 104+70 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON LT. WITH 8' EXTENSION H= 5'-9"
AND 18" X 16' R.C. STUB PIPE OUTLET WITH FES
TYPE MO DROP INLET = 4'-0" DIA.
TYPE C DROP INLET = 4'-0" X 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING) = 16 LIN. FT.
18" FES = 1 EACH

STA. 104+70 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON RT. WITH 8' EXTENSION H= 5'-3"
AND 18" X 70' PIPE CULVERT
TO D.I. @ STA. 104+70 ON LT.
TYPE MO DROP INLET = 4'-0" DIA.
TYPE C DROP INLET = 4'-0" X 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING) = 70 LIN. FT.

STA. 107+88.11 ℄ CONST. HWY. 38 BRIDGE END CONSTRUCT
273'-0" CONTINUOUS COMP. PLATE GIRDER UNIT
BRIDGE NO. 07401
58'-0" CLEAR ROADWAY WIDTH
275'-2" BRIDGE LENGTH
STA. 110+63.27 ℄ CONST. HWY. 38 BRIDGE END

STA. 733+06.47 ℄ CONST. RAMP 3B =
STA. 103+33.51 ℄ CONST. HWY. 38
◁ 80°00'00"

STA. 720+14.59 ℄ CONST. RAMP 3A =
STA. 103+00.00 ℄ CONST. HWY. 38
◁ 80°00'00"

STA. 721+31.30 ℄ CONST. SOUTHBOUND C/D ROAD =
STA. 108+38.61 ℄ CONST. HWY. 38
◁ 87°30'00"

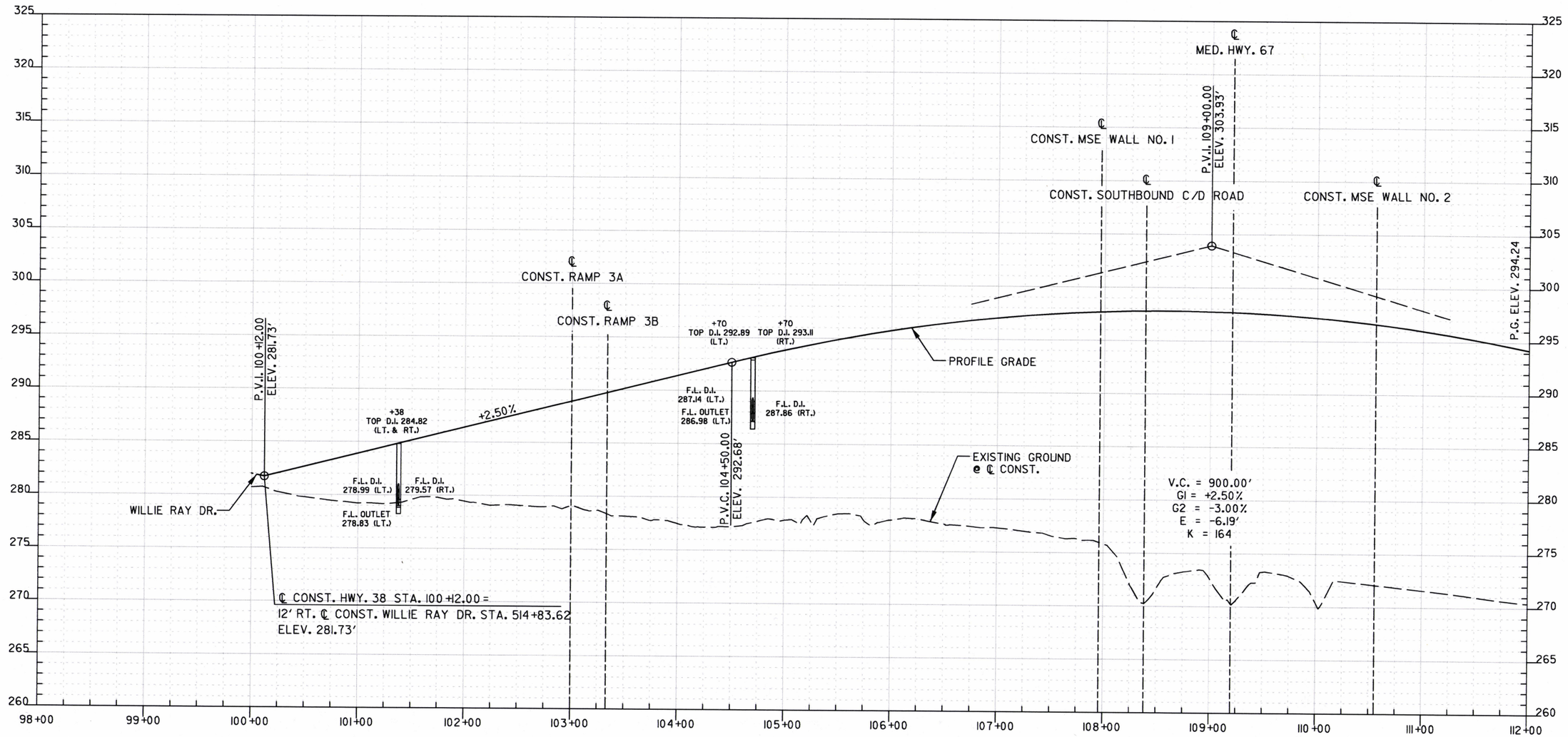
STA. 723+42.32 ℄ RAMP 3B =
STA. 723+42.32 ℄ SOUTHBOUND C/D ROAD
◁ 00°00'00"

STA. 721+34.39 ℄ MED. HWY. 67 =
STA. 109+20.19 ℄ CONST. HWY. 38
◁ 87°30'00"

FOURMILE CREEK
WILLIE RAY DR.
RAMP 3A
RAMP 3B
RAMP 4
HWY. 38
HWY. 67
SOUTHBOUND C/D ROAD
℄ CONST. WILLIE RAY DR.
℄ CONST. RAMP 3A
℄ CONST. RAMP 3B
℄ CONST. RAMP 4
℄ CONST. HWY. 38
℄ CONST. SOUTHBOUND C/D ROAD
℄ MED. HWY. 67
PROP. ROW
CONST. LIMITS
PROP. C/A
PROP. C/A & FENCE
PROP. ROW & C/A
EXIST. ROW & C/A
EXIST. P.C.E.
FLOODPLAIN LIMITS
CONC. BARRIER WALL
MSE WALL
SIDEWALK
SP. V.B. DT.
TYPE A ATTENUATOR
30" GAS LINE
36" GAS LINE
T.C.E.
BEGIN PROP. C/A
END PROP. C/A
86'-6" TAPER
100' TAPER
222' 64 TAPER
CONST. LIMITS
N86°56'23"E
N71°12'03"E
N56°20'00"E
S65°37'34"W
S43°40'00"E
N43°40'00"W
N46°20'00"E
N48°50'00"E
N32°11'41"E
PT 124+24.60
PI 123+01.41
PT 518+53.11
PI 517+01.23
PC 730+02.15
PI 730+76.27
PT 731+50.07
PC 721+76.81
PC 515+47.33
PT 514+27.10
PI 512+65.20
PC 510+83.26
PT 723+62.27
PI 721+26.74
PC 717+89.74
PT 716+86.22
+00.00 855.00'
+58.86 960.00'
+50.00 920.28'
+93.00 BEGIN PROP. 936.87' C/A
+40.00 955.00'
+41.00 936.00'
+77.00 984.00'
+10.00 940.00'
+63.00 925.21'
+41.60 945.00'
+80.00 880.00'
+52.00 889.00'
+63.34
+56.13
+31.03
+49.03
+87.09
+39.38
+53.31
+17.24
+30.78
+00
+40
100+00
105+00
110+00
R100'
R75'
R5.00'
R30'
20'
26'
8'
36'
6'
15'
4'
5'
3'
56'
69' F.F.
58' F.F.
12'
24'
30'
10'
6'
N36°11'41"E
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9808 JAMES L. BARR 4/10/16

PLAN HWY. 38
STA. 100+00 TO 111+50

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.		061102	145	400
				(2)	PROFILE HWY. 38 STA. 98+00 TO 112+00			



REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/26/16

PROFILE HWY. 38
STA. 98+00 TO 112+00

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.		061102	146	400

(2) PLAN HWY. 38 STA. 111+50 TO 127+00

℄ CONST. HWY. 38
REMOVAL AND DISPOSAL OF FENCE

STA.	STA.	SIDE	LIN. FT.
118+23	120+22	RT.	400
121+56	121+90	LT./RT.	143
126+82	128+36	LT./RT.	206

℄ CONST. HWY. 38
WIRE FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.
116+58	128+98	LT.	A	1286
116+78	128+98	RT.	A	1232

STA. 115+47 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 4.6 SQ. YDS.

STA. 115+38 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON LT. WITH 8' EXTENSION H= 5'-10"
AND 18" X 20' R.C. PIPE OUTLET WITH FES
TYPE MO DROP INLET= 4'-0" DIA.
TYPE C DROP INLET= 4'-0" X 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 20 LIN. FT.
18" FES = 1 EACH

STA. 116+41 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 9.1 SQ. YDS.

STA. 122+00 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON LT. WITH 8' EXTENSION H= 5'-10"
AND 18" X 16' R.C. PIPE OUTLET WITH FES
TYPE MO DROP INLET= 4'-0" DIA.
TYPE C DROP INLET= 4'-0" X 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 16 LIN. FT.
18" FES = 1 EACH

STA. 125+10 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON LT. WITH 8' EXTENSION H= 5'-10"
AND 18" X 16' R.C. PIPE OUTLET WITH FES
TYPE MO DROP INLET= 4'-0" DIA.
TYPE C DROP INLET= 4'-0" X 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 16 LIN. FT.
18" FES = 1 EACH

STA. 115+48 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 4.6 SQ. YDS.

STA. 115+38 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON RT. WITH 8' EXTENSION H= 5'-3"
AND 18" X 60' R.C. PIPE CULVERT
TO D.I. @ STA. 115+38 ON LT.
TYPE MO DROP INLET= 4'-0" DIA.
TYPE C DROP INLET= 4'-0" x 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 60 LIN. FT.

STA. 119+35 ℄ CONST. HWY. 38 CONSTRUCT
DBL. 8' X 4' X 141' R.C. BOX CULVERT
AT 25° LT. FWD. SKEW WITH (3:1) WINGS LT. & RT.
Q50 = 225 CFS D.A. = 122 ACRES

STA. 122+00 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON RT. WITH 8' EXTENSION H= 5'-3"
AND 18" X 60' PIPE CULVERT
TO D.I. @ STA. 122+00 ON LT.
TYPE MO DROP INLET= 4'-0" DIA.
TYPE C DROP INLET= 4'-0" x 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 60 LIN. FT.

STA. 125+10 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON RT. WITH 8' EXTENSION H= 5'-3"
AND 18" X 60' PIPE CULVERT
TO D.I. @ STA. 125+10 ON LT.
TYPE MO DROP INLET= 4'-0" DIA.
TYPE C DROP INLET= 4'-0" x 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 60 LIN. FT.

STA. 126+50 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON RT. WITH 4' EXTENSION H= 5'-6"
AND 30" X 12' R.C. PIPE INLET WITH FES
AND 30" X 158' R.C. PIPE CULVERT
TO DROP INLET @ STA. 128+15
TYPE MO DROP INLET= 5'-0" DIA.
TYPE C DROP INLET= 4'-0" X 3'-2"
30" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 170 LIN. FT.
30" FES = 1 EACH

℄ CONST. HWY. 38
CONCRETE DITCH PAVING (TYPE A)

STA.	STA.	LENGTH	SIDE	"B"	"W"	SQ. YDS.
125+40.00	126+50.00	110.00'	RT.	6'-0"	9'-0"	110.0

HIGHWAY 38
P.I. = 128+20.51
Δ = 16°52'13" RT.
D = 4°00'00"
T = 212.41'
L = 421.76'
PC = 126+08.10
PT = 130+29.86
e = 0.034 FT./FT.
Ls = 450'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
7/10/06

PLAN HWY. 38
STA. 111+50 TO 127+00

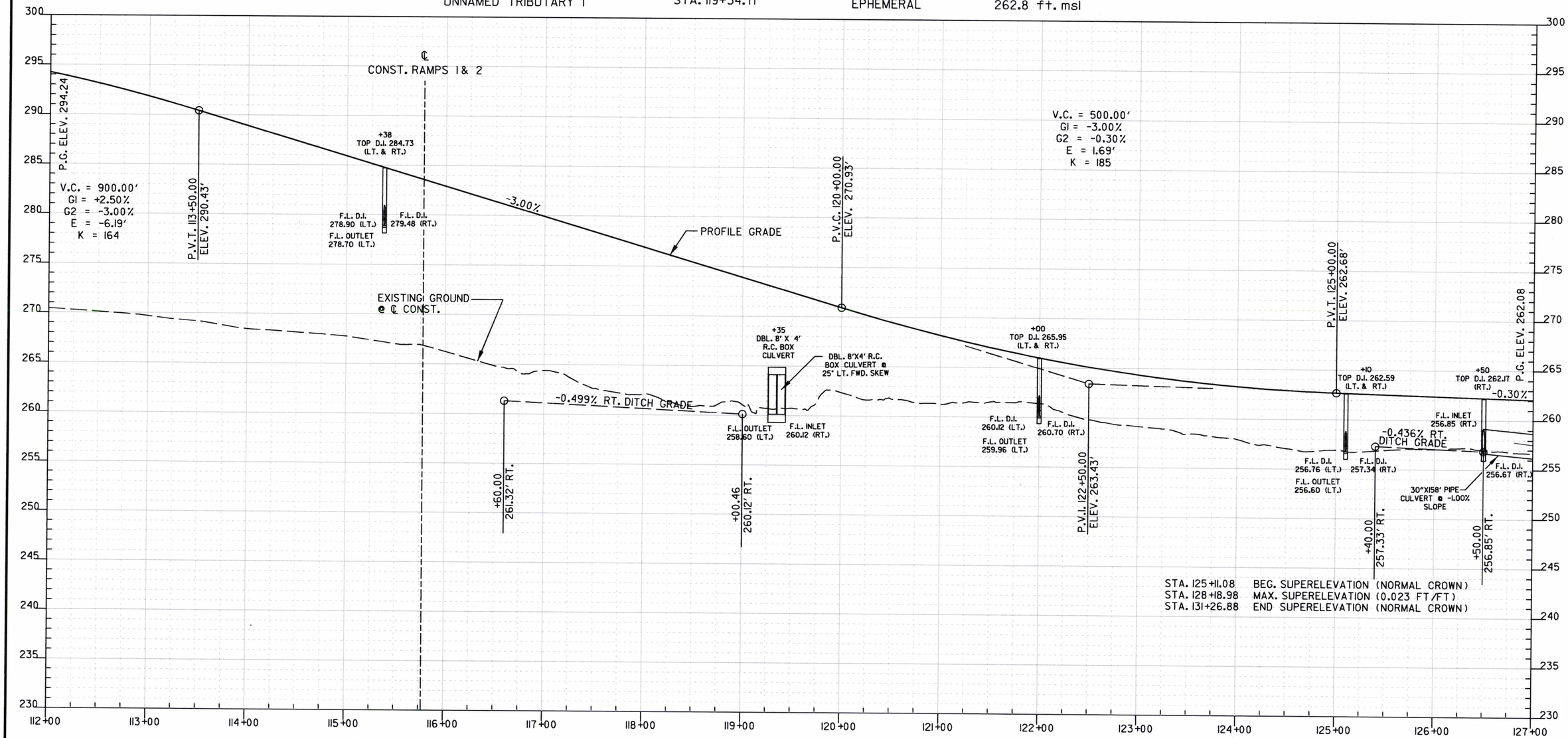
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	147	400
				(2)	PROFILE HWY. 38 STA. 112+00 TO 127+00			

STREAM NAME
UNNAMED TRIBUTARY 1

STATION
STA. 119+34.71

STREAM TYPE
EPHEMERAL

TOP OF CHANNEL
262.8 ft. msl



REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
5/11/16

PROFILE HWY. 38
STA. 112+00 TO 127+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
10/25/2016			

FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.	061102		148	400

PLAN STA. HWY. 38 127+00 TO 139+31

STA. 131+05 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON LT. WITH 4' EXTENSION H= 5'-0"
AND 18" X 14' R.C. PIPE OUTLET WITH FES
TYPE MO DROP INLET= 4'-0" DIA.
TYPE C DROP INLET= 4'-0" X 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 14 LIN. FT.
18" FES = 1 EACH

STA. 133+00 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON LT. WITH 8' EXTENSION H= 5'-0"
AND 18" X 14' R.C. PIPE OUTLET WITH FES
TYPE MO DROP INLET= 4'-0" DIA.
TYPE C DROP INLET= 4'-0" X 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 14 LIN. FT.
18" FES = 1 EACH

STA. 133+80 ℄ CONST. HWY. 38 CONSTRUCT
DBL. 10' X 6' X 142' R.C. BOX CULVERT
AT 15° RT. FWD. SKEW WITH (3:1) WINGS LT. & RT.
Q50 = 700 CFS D.A. = 476 ACRES
SPAN = 22.78'

STA. 138+82 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 4.2 SQ. YDS.

STA. 138+95 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 4.2 SQ. YDS.

STA. 300+76 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 4.7 SQ. YDS.

STA. 138+30 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON LT. WITH 4' EXTENSION H= 6'-3"
AND 18" X 18' R.C. PIPE OUTLET WITH FES
TYPE MO DROP INLET= 4'-0" DIA.
TYPE C DROP INLET= 4'-0" X 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 18 LIN. FT.
18" FES = 1 EACH

HIGHWAY 38
P.I. = 135+23.53
Δ = 20°44'41" LT.
D = 3°30'00"
T = 299.63'
L = 592.70'
PC = 132+23.90
PT = 138+16.60
e = 0.030 FT./FT.
Ls = 450'

HIGHWAY 38
P.I. = 128+20.51
Δ = 16°52'13" RT.
D = 4°00'00"
T = 212.41'
L = 421.76'
PC = 126+08.10
PT = 130+29.86
e = 0.034 FT./FT.
Ls = 450'

HIGHWAY 367
P.I. = 113+06.01
Δ = 15°56'49" RT.
D = 1°00'00"
T = 802.53'
L = 1594.70'
PC = 105+03.48
PT = 120+98.18
e = EXISTING
Ls = EXISTING

HIGHWAY 38
P.I. = 301+37.73
Δ = 5°48'04" LT.
D = 10°00'00"
T = 29.03'
L = 58.01'
PC = 301+08.70
PT = 301+66.71
e = EXISTING
Ls = EXISTING

℄ CONST. HWY. 38
CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	LENGTH	SIDE	"W"	SQ. YDS.
130+05.00	134+06.14	401.14'	RT.	28'-0"	1248.0

STA. 128+15 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON RT. WITH 4' EXTENSION H= 6'-7"
AND 30" X 94' R.C. PIPE CULVERT
TO DROP INLET @ STA. 129+15
TYPE MO DROP INLET= 5'-0" DIA.
TYPE C DROP INLET= 4'-0" X 3'-2"
30" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 94 LIN. FT.

STA. 129+15 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON RT. WITH 8' EXTENSION H= 7'-4"
AND 30" X 86' R.C. PIPE CULVERT
TO DROP INLET @ STA. 130+05
TYPE MO DROP INLET= 5'-0" DIA.
TYPE C DROP INLET= 4'-0" X 3'-2"
30" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 86 LIN. FT.

STA. 130+05 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON RT. WITH 8' EXTENSION H= 8'-5"
AND 30" X 22' R.C. PIPE OUTLET WITH FES
TYPE MO DROP INLET= 5'-0" DIA.
TYPE C DROP INLET= 4'-0" X 3'-2"
30" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 22 LIN. FT.
30" FES = 1 EACH

STA. 133+20 ℄ CONST. HWY. 38 INSTALL
36" X 80' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 3370 CU. YDS.

STA. 133+12 ℄ CONST. HWY. 38 IN PLACE
36" X 27' C.M.
PIPE CULVERT 186' RT.
REMOVE

STA. 133+16 ℄ CONST. HWY. 38 IN PLACE
36" X 25' C.M.
PIPE CULVERT 187' RT.
REMOVE

STA. 133+14 ℄ CONST. HWY. 38 IN PLACE
12" X 26' C.P.
PIPE CULVERT 186' RT.
REMOVE

STA. 133+25 ℄ CONST. HWY. 38 IN PLACE
60" X 22' C.M.
PIPE CULVERT 160' RT.
REMOVE

STA. 133+29 ℄ CONST. HWY. 38 IN PLACE
72" X 22' C.M.
PIPE CULVERT 164' RT.
REMOVE

STA. 135+58 ℄ CONST. HWY. 38 IN PLACE
10" X 33' PLASTIC
PIPE CULVERT 211' RT.
RETAIN

STA. 138+30 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON RT. WITH 4' EXTENSION H= 5'-3"
AND 18" X 74' R.C. PIPE CULVERT
TO D.I. @ STA. 138+30 ON LT.
TYPE MO DROP INLET= 4'-0" DIA.
TYPE C DROP INLET= 4'-0" x 2'-6"
18" R.C. PIPE (CLASS III) (TY. 3 BEDDING)= 74 LIN. FT.

STA. 108+20 ℄ EXIST. HWY. 367 INSTALL
24" X 42' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 195 CU. YDS.

STA. 136+37 ℄ CONST. HWY. 38 IN PLACE
10" X 21' PLASTIC
PIPE CULVERT 163' RT.
RETAIN

STA. 138+59 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 3.6 SQ. YDS.

STA. 138+81 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON RT. = 7.3 SQ. YDS.

STA. 138+82 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON RT. = 7.3 SQ. YDS.

STA. 110+65.64 ℄ EXIST. HWY. 367 =
STA. 139+31.38 ℄ CONST. HWY. 38
◁ 78°36'52"

STA. 300+34 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON LT. = 7.3 SQ. YDS.

STA. 300+36 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON LT. = 7.3 SQ. YDS.

STA. 300+50 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON LT. = 7.3 SQ. YDS.

STA. 138+91 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON RT. = 7.3 SQ. YDS.

STA. 300+22 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 4.7 SQ. YDS.

REMOVAL OF EXISTING PAVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/25/16

PLAN HWY. 38
STA. 127+00 TO 139+31

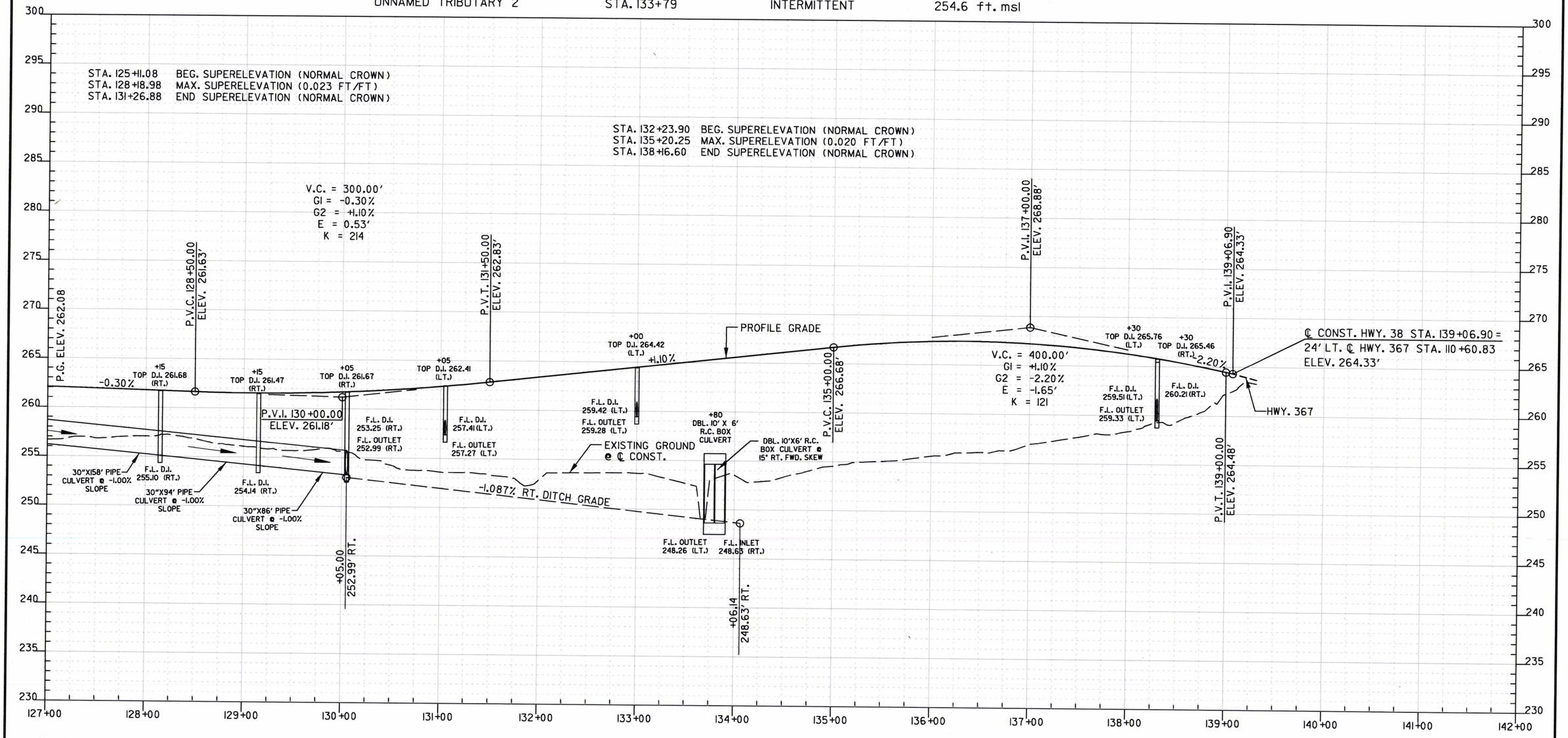
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	149	400
				(2)	PROFILE HWY. 38 STA. 127+00 TO 142+00			

STREAM NAME
UNNAMED TRIBUTARY 2

STATION
STA. 133+79

STREAM TYPE
INTERMITTENT

TOP OF CHANNEL
254.6 ft. msl



REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

PROFILE HWY. 38
STA. 127+00 TO 142+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8/28/2016				6	ARK.			
				JOB NO.		061102	150	400

(2) PLAN WILLIE RAY DR. STA. 492+00 TO 510+00

STA. 492+00 ℄ CONST. WILLIE RAY DR.
BEGIN CONSTRUCTION

STA. 492+48 ℄ CONST. WILLIE RAY DR. IN PLACE
15" X 23' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE AND INSTALL
29" X 18" X 42' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

STA. 494+05 ℄ CONST. WILLIE RAY DR. IN PLACE
10" X 26' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE AND INSTALL
29" X 18" X 42' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

STA. 494+97 ℄ CONST. WILLIE RAY DR. IN PLACE
15" X 21' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE AND INSTALL
29" X 18" X 42' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

STA. 498+43 ℄ CONST. WILLIE RAY DR. INSTALL
24" X 56' PIPE INLET
LT. SIDE DRAIN
CONSTRUCT APPROACH = 50 CU. YDS.

STA. 498+84 ℄ CONST. WILLIE RAY DR. IN PLACE
24" X 142' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE

STA. 500+94 ℄ CONST. WILLIE RAY DR. IN PLACE
24" X 21' C.M.
PIPE CULVERT RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 46' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 35 CU. YDS.

STA. 502+93 ℄ CONST. WILLIE RAY DR. IN PLACE
6' X 3' X 47' R.C. BOX CULVERT
WITH (2:1) WINGS LT. & RT.
REMOVE

STA. 503+45 ℄ CONST. WILLIE RAY DR. CONSTRUCT
DBL. 5' X 3' X 67' R.C. BOX CULVERT
WITH (3:1) WINGS LT. & RT.
Q50 = 176 CFS D.A. = 80 ACRES

STA. 505+91 ℄ CONST. WILLIE RAY DR. IN PLACE
18" X 68' C.M.
PIPE CULVERT RT. SIDE DRAIN
REMOVE

STA. 506+03 ℄ CONST. WILLIE RAY DR. IN PLACE
15" X 25' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 40' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 35 CU. YDS.

STA. 506+70 ℄ CONST. WILLIE RAY DR. IN PLACE
18" X 44' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 56' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 35 CU. YDS.

STA. 508+02 ℄ CONST. WILLIE RAY DR. IN PLACE
12" X 20' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE AND INSTALL
29" X 18" X 42' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

STA. 509+24 ℄ CONST. WILLIE RAY DR. IN PLACE
15" X 21' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE AND INSTALL
29" X 18" X 42' ARCH PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 20 CU. YDS.

℄ CONST. WILLIE RAY DR.
REMOVAL & DISPOSAL OF GUARDRAIL

STA. 502+71 TO STA. 503+67	RT. OF ℄ CONST. WILLIE RAY DR. - 96 LIN. FT.
STA. 502+77 TO STA. 503+30	RT. OF ℄ CONST. WILLIE RAY DR. - 53 LIN. FT.

℄ CONST. WILLIE RAY DR.
CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	LENGTH	SIDE	"W"	SQ. YDS.
498+05.00	501+25.00	320.00'	LT.	23'-0"	817.8

WILLIE RAY DR.
P.I. = 502+80.15
Δ = 48°13'27" LT.
D = 6°00'00"
T = 427.40'
L = 803.74'
PC = 498+52.75
PT = 506+56.49
e = 0.070 FT./FT.
Ls = 200'

℄ CONST. WILLIE RAY DRIVE
WIRE FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.
503+25	514+46	RT.	A	1091

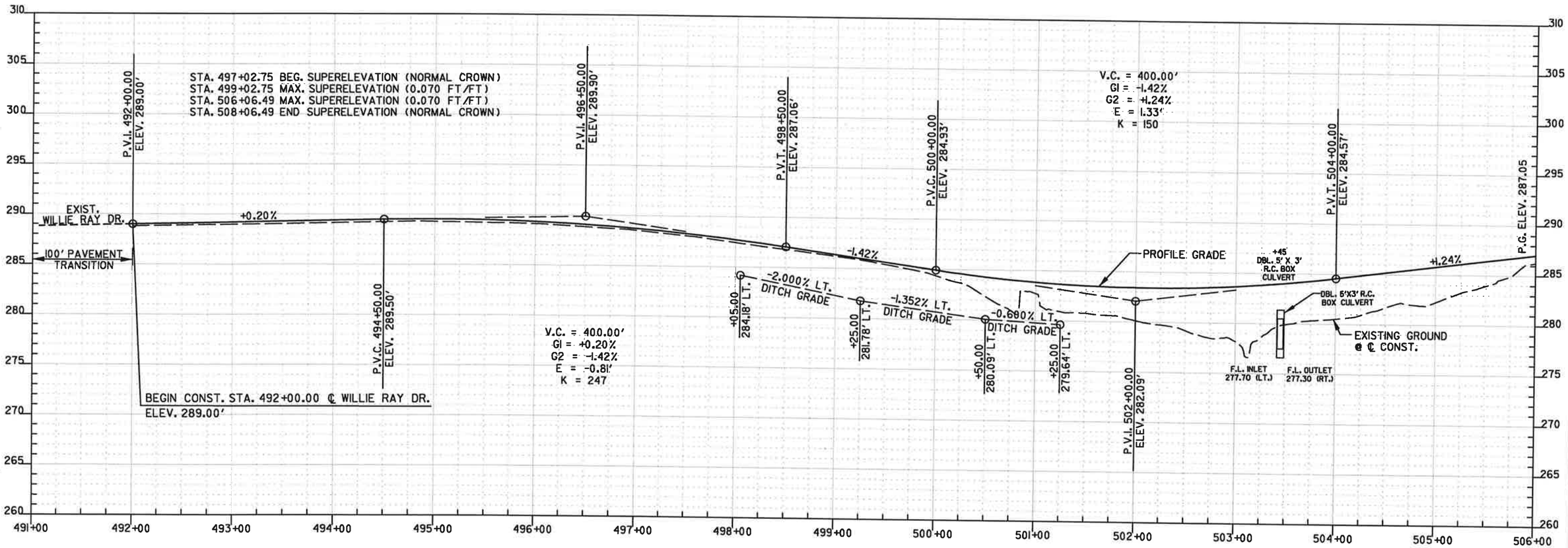
REMOVAL OF EXISTING PAVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/24/16

PLAN WILLIE RAY DR.
STA. 492+00 TO 510+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/28/2016				6	ARK.			
				JOB NO.		061102	151	400

(2) PROFILE WILLIE RAY DR. STA. 491+00 TO 506+00



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/30/16

PROFILE WILLIE RAY DR.
STA. 491+00 TO 506+00

LOCATION			GUARDRAIL TERMINAL (THRIE BEAM)	GUARDRAIL (TYPE A)	GUARDRAIL TERMINAL (TYPE 2)
STA. 517+00.00	TO STA. 520+04.23	℄ CONST. WILLIE RAY DR. - LT.	1 EACH	210 LIN. FT.	1 EACH
STA. 518+04.13	TO STA. 520+22.88	℄ CONST. WILLIE RAY DR. - RT.	1 EACH	75 LIN. FT.	1 EACH
STA. 522+07.12	TO STA. 524+23.87	℄ CONST. WILLIE RAY DR. - LT.	1 EACH	150 LIN. FT.	1 EACH
STA. 522+25.77	TO STA. 523+69.52	℄ CONST. WILLIE RAY DR. - RT.	1 EACH	75 LIN. FT.	1 EACH

REMOVAL OF EXISTING PAVEMENT

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.		061102	152	400

(2) PLAN WILLIE RAY DR. STA. 510+00 TO 526+00

STA. 512+15 ℄ CONST. WILLIE RAY DR. INSTALL
24" X 68' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 170 CU. YDS.

STA. 518+00 TO 520+24.45 ℄ CONST. WILLIE RAY DR. INSTALL
DUMPED RIPRAP
88 CU. YD., L=225 FT.
W=7 FT., 1'-6" U.T.

STA. 520+24.45 ℄ CONST. WILLIE RAY DR. BRIDGE END CONSTRUCT
180'-0" INTEGRAL W-BEAM UNIT
BRIDGE NO. 07404
40'-0" CLEAR ROADWAY WIDTH
181'-1¼" BRIDGE LENGTH
STA. 522+05.55 ℄ WILLIE RAY DR. BRIDGE END

STA. 510+60 ℄ CONST. WILLIE RAY DR. IN PLACE
12" X 18' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 60 CU. YDS.

℄ CONST. WILLIE RAY DRIVE
WIRE FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.
515+21	521+64	RT.	A	580

WILLIE RAY DR.
P.I. = 525+58.23
Δ = 39°43'45" LT.
D = 8°00'00"
T = 258.76'
L = 496.62'
PC = 522+99.47
PT = 527+96.09
e = 0.084 FT./FT.
Ls = 250'

WILLIE RAY DR.
P.I. = 517+07.31
Δ = 40°36'23" RT.
D = 13°15'00"
T = 159.98'
L = 306.46'
PC = 515+47.33
PT = 518+53.79
e = 0.100 FT./FT.
Ls = 250'

WILLIE RAY DR.
P.I. = 512+65.20
Δ = 45°38'18" RT.
D = 13°15'00"
T = 181.94'
L = 344.44'
PC = 510+83.26
PT = 514+27.70
e = 0.100 FT./FT.
Ls = 250'

STA. 514+83.62 ℄ CONST. WILLIE RAY DR. =
STA. 100+00.00 ℄ CONST. HWY. 38
◁90°00'00"

STA. 720+14.59 ℄ CONST. RAMP 3A =
STA. 103+00.00 ℄ CONST. HWY. 38
◁80°00'00"

STA. 733+06.47 ℄ CONST. RAMP 3B =
STA. 103+33.51 ℄ CONST. HWY. 38
◁80°00'00"

STA. 723+42.32 ℄ CONST. RAMP 3B =
STA. 723+42.32 ℄ CONST. SOUTHBOUND C/D ROAD
◁00°00'00"

WILLIE RAY DR.
HWY. 38
HWY. 67
RAMP 3A
RAMP 3B
EXIST. WILLIE RAY DR.
FOURMILE CREEK
PROP. ROW
PROP. ROW & C/A
CONST. LIMITS
EXIST. ROW
EXIST. ROW & C/A
EXIST. C/A
PROP. C/A & FENCE
SP. V.B. DT.
CONC. BARRIER WALL
SIDEWALK
PRESERVE VEGETATION
℄ CONST. WILLIE RAY DR.
℄ CONST. RAMP 3A
℄ CONST. RAMP 3B
℄ CONST. RAMP 4
℄ CONST. HWY. 38
℄ MED. HWY. 67
30" GAS LINE
36" GAS LINE
FLOODPLAIN LIMITS
EXIST. P.C.E.
T.C.E.
BEGIN PROP. C/A
END PROP. C/A
N86°56'23"E
N47°12'37"E
N71°12'03"E
N56°20'00"E
N43°40'00"W
S65°31'34"W
N46°20'00"E
PC 515+47.33
PT 518+53.79
PC 510+83.26
PT 514+27.70
PC 730+42.45
PT 731+50.07
PC 724+16.81
PT 723+30.41
PT 524+24.60
PT 521+41.33
PT 514+27.70
PG 522+99.47
+00.00 855.00'
+60.00 700.00'
+75.00 470.00'
+00.00 520.00'
+58.86 960.00'
+18.79 970.00'
+40.00 955.00'
+93.00 BEGIN PROP 936.87' C/A
+41.00 936.00'
+50.00 920.28'
+10.00 940.00'
+77.00 984.00'
+41.60 945.00'
+63.00 925.21'
+80.00 880.00'
+52.00 889.00'
+87.09
+83.26
+49.03
+39.38
+30.78
+13.55
+17.24
+46
+525
+400
515+00
510+00
520+00
723+42.32
222'-5" TAPER
86'-6" TAPER
103'-10" TAPER
R100'
R75'
R30'
R20'
36'
24'
30'
56'
16'
8'
6'
5'
4'
3'
2'
1'
10'
15'
20'
26'
55.64'
45.34'
55.13'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/12

PLAN WILLIE RAY DR.
STA. 510+00 TO 526+00

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.		061102	153	400

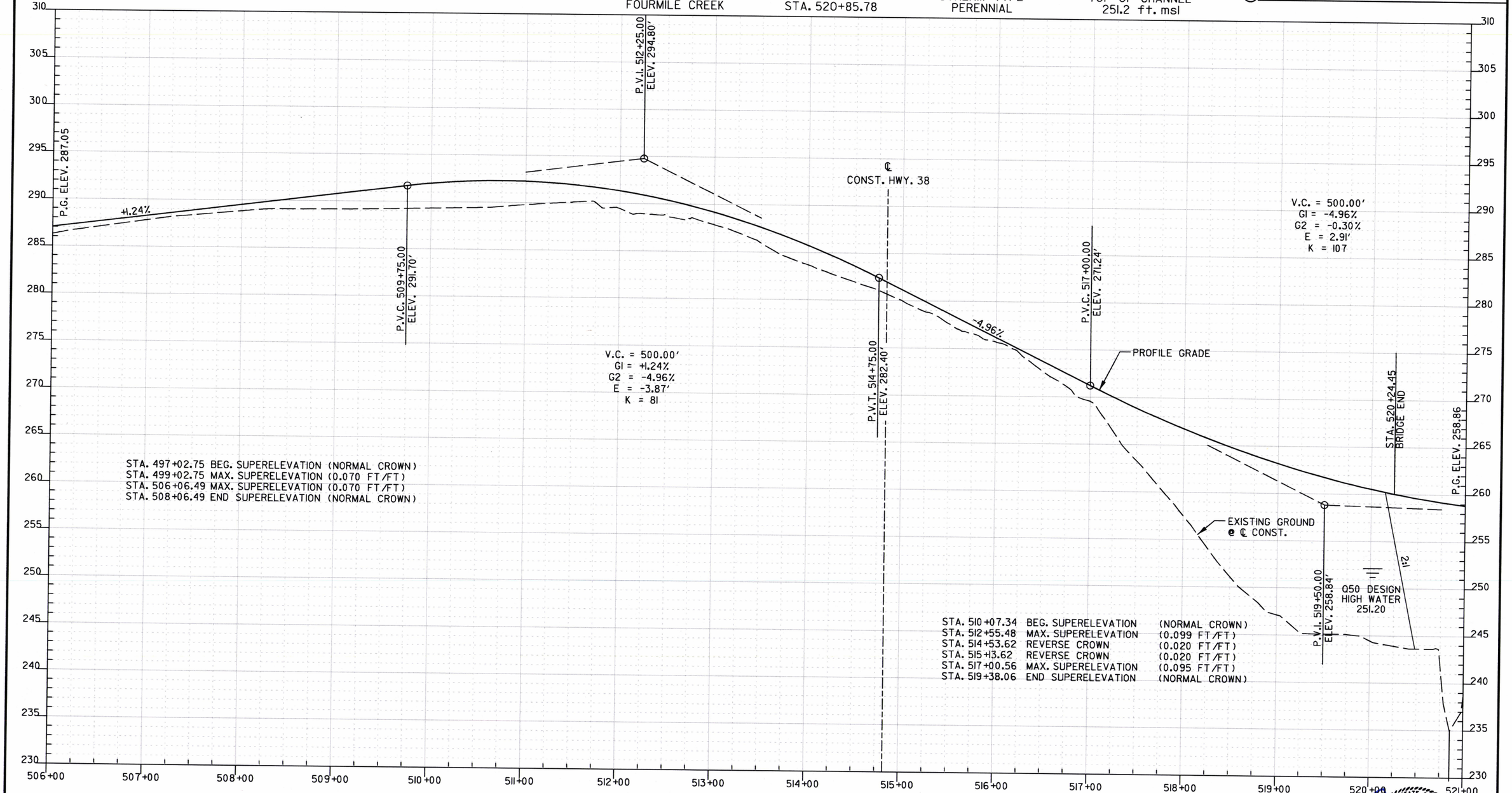
(2) PROFILE WILLIE RAY DR. STA. 506+00 TO 521+00

STREAM NAME
FOURMILE CREEK

STATION
STA. 520+85.78

STREAM TYPE
PERENNIAL

TOP OF CHANNEL
251.2 ft. msl



STA. 497+02.75 BEG. SUPERELEVATION (NORMAL CROWN)
STA. 499+02.75 MAX. SUPERELEVATION (0.070 FT/FT)
STA. 506+06.49 MAX. SUPERELEVATION (0.070 FT/FT)
STA. 508+06.49 END SUPERELEVATION (NORMAL CROWN)

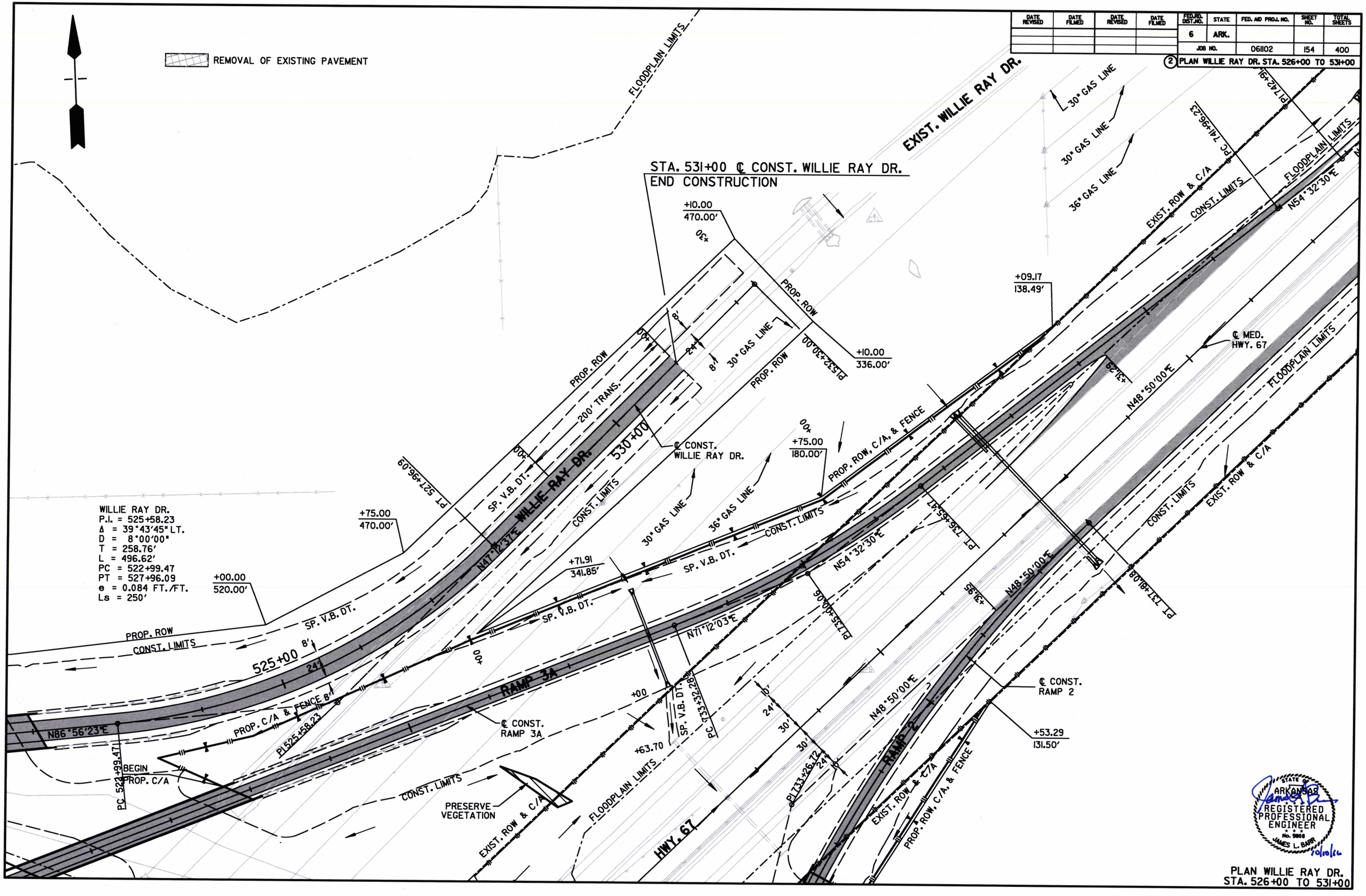
STA. 510+07.34	BEG. SUPERELEVATION	(NORMAL CROWN)
STA. 512+55.48	MAX. SUPERELEVATION	(0.099 FT/FT)
STA. 514+53.62	REVERSE CROWN	(0.020 FT/FT)
STA. 515+13.62	REVERSE CROWN	(0.020 FT/FT)
STA. 517+00.56	MAX. SUPERELEVATION	(0.095 FT/FT)
STA. 519+38.06	END SUPERELEVATION	(NORMAL CROWN)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
5/6/16

PROFILE WILLIE RAY DR.
STA. 506+00 TO 521+00

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.		061102	154	400

(2) PLAN WILLIE RAY DR. STA. 526+00 TO 531+00

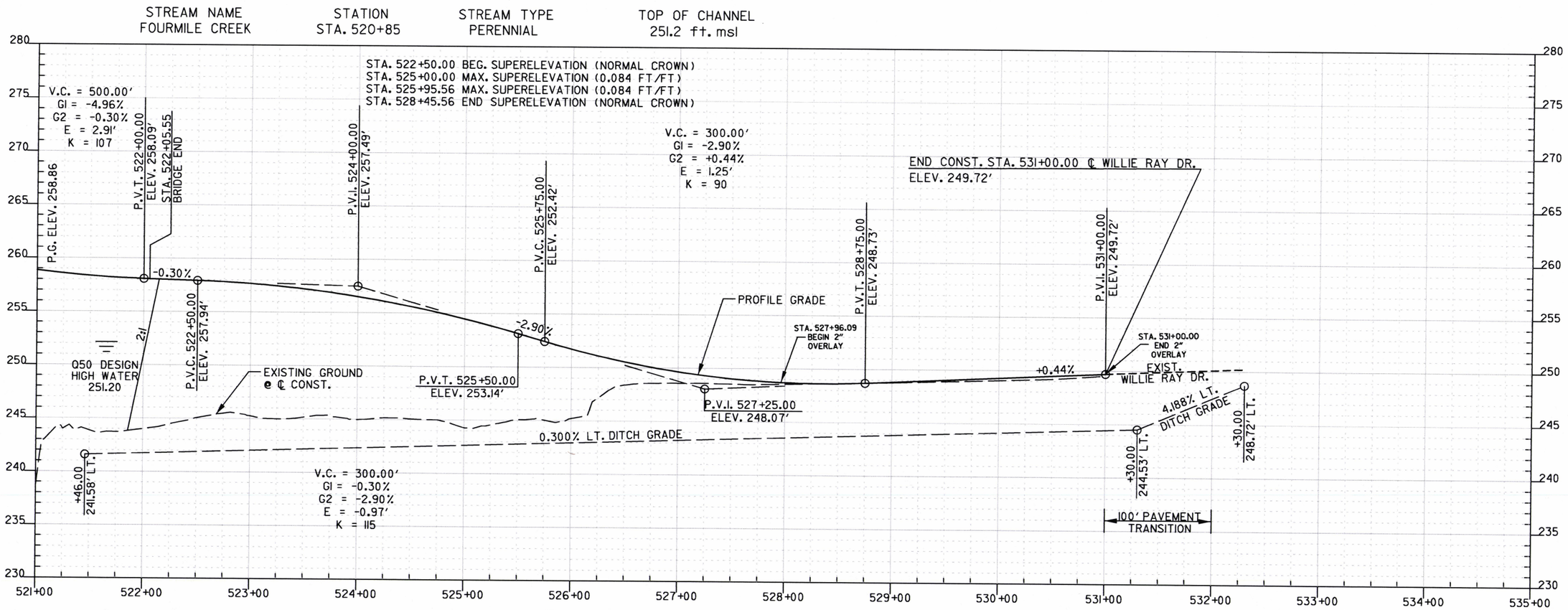


STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

PLAN WILLIE RAY DR.
STA. 526+00 TO 531+00

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.		061102	155	400

(2) PROFILE WILLIE RAY DR. STA. 521+00 TO 535+00

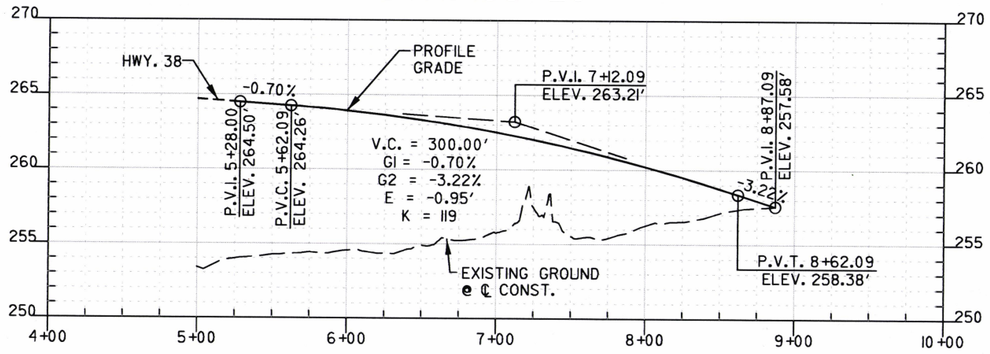


STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
2/16/16

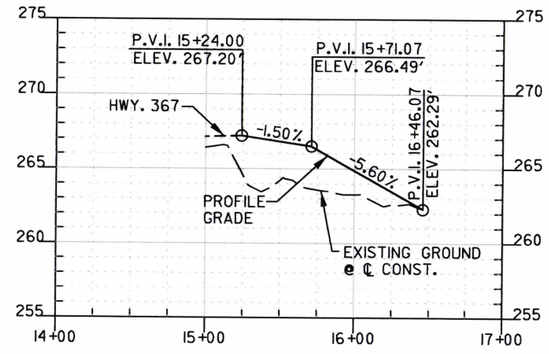
PROFILE WILLIE RAY DR.
STA. 521+00 TO 535+00

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.		061102	156	400
				(2)	PROFILE DRIVEWAYS			

HWY. 38 DRIVEWAY RT.
STA. 133+20



HWY. 367 DRIVEWAY



REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONAL AND VERTICAL CONTROL DATA.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
2/10/16

PROFILE DRIVEWAYS

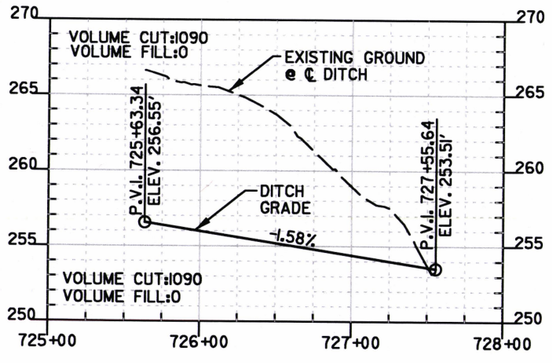
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	157	400
				②	PLAN & PROFILE SPECIAL DITCHES			

EXIST. P.C.E.
SP. V.B. DT.
RAMP 4
PI 721+26.74
N32°11'41"E
℄ CONST. RAMP 4
69' F-F
SIDEWALK
S43°40'00"E
HWY. 38
100' TAPER
+39.38
30" GAS LINE
STA. 721+31.30 ℄ CONST. SOUTHBOUND C/D ROAD =
STA. 108+38.61 ℄ CONST. HWY. 38
◁ 87°30'00"
36" GAS LINE
STA. 721+34.39 ℄ MEDIAN HWY. 67
STA. 109+20.19 ℄ CONST. HWY. 38
◁ 87°30'00"
CONST. LIMITS
RAMP 3B
℄ CONST. RAMP 3B
RAMP 3B TO FOURMILE CREEK
FOURMILE CREEK
+63.34
PI 727+55.64
CONC. BARRIER WALL
MSE WALL
SOUTHBOUND C/D ROAD
℄ CONST. SOUTHBOUND C/D ROAD
PC 723+42.32
N48°50'00"E
PI 725+63.34
PI 725+56.13
+56.13
+27
PI 727+53.32
SOUTHBOUND C/D TO FOURMILE CREEK
STA. 723+42.32 ℄ CONST. RAMP 3B =
STA. 723+42.32 ℄ CONST. SOUTHBOUND C/D ROAD
◁ 00°00'00"
HWY. 67
℄ MED. HWY. 67
TYPE A ATTENUATOR
℄ CONST. HWY. 38
+31.03
EXIST. ROW & C/A
EXIST. C/A
RAMP 3A TO HWY. 67
PI 3+00.00
PI 3+63.70
+63.70
PRESERVE VEGETATION
PC 733+32.28
N71°12'03"
PI 733+26.72
N16°06'29"E
PI 720+31.03
PI 722+49.32
PI 724+00.00
HWY. 38 TO FOURMILE CREEK
PROP. ROW, C/A, & FENCE
PROP. ROW

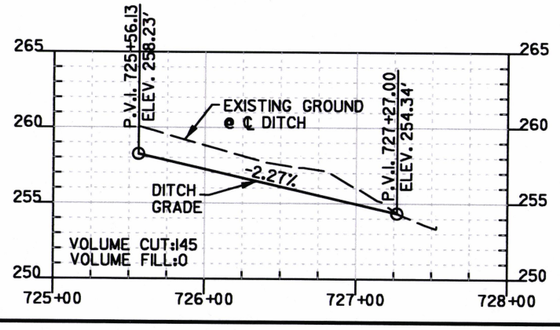
℄ CONST. SPECIAL DITCH
CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	LENGTH	SIDE	"W"	SQ. YDS.
3+00.00	3+63.70	63.70'	LT.	10'-0"	70.8

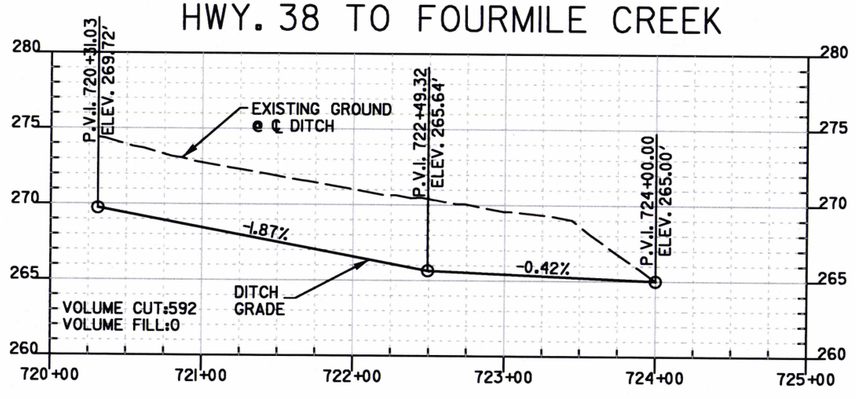
RAMP 3B TO FOURMILE CREEK



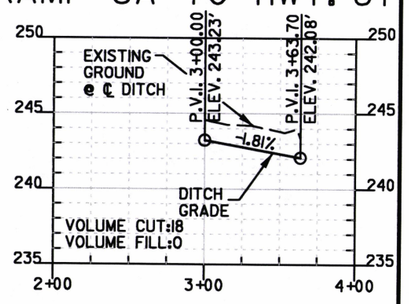
SOUTHBOUND C/D TO FOURMILE CREEK



HWY. 38 TO FOURMILE CREEK



RAMP 3A TO HWY. 67

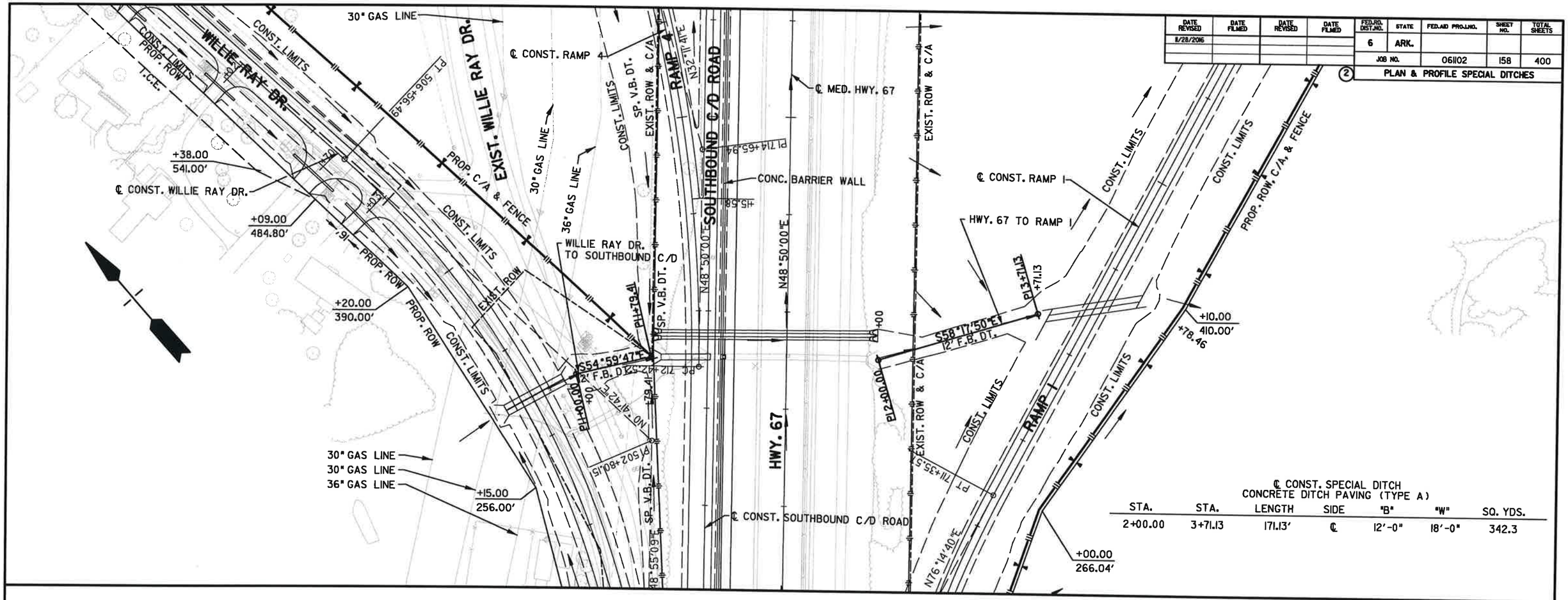


STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BAIR
10/10/16

PLAN & PROFILE SPECIAL DITCHES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
11/28/2016				6	ARK.			
				JOB NO.		061102	158	400

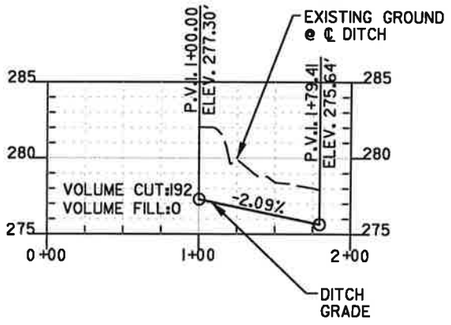
(2) PLAN & PROFILE SPECIAL DITCHES



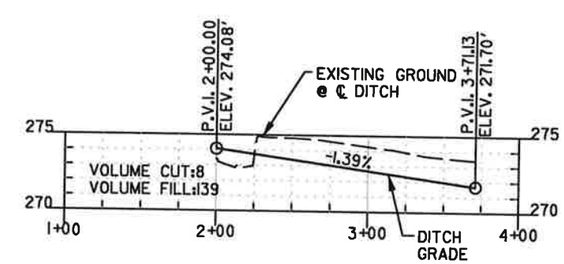
℄ CONST. SPECIAL DITCH
CONCRETE DITCH PAVING (TYPE A)

STA.	STA.	LENGTH	SIDE	"B"	"W"	SQ. YDS.
2+00.00	3+71.13	171.13'	℄	12'-0"	18'-0"	342.3

WILLIE RAY DR. TO SOUTHBOUND C/D



HWY. 67 TO RAMP 1

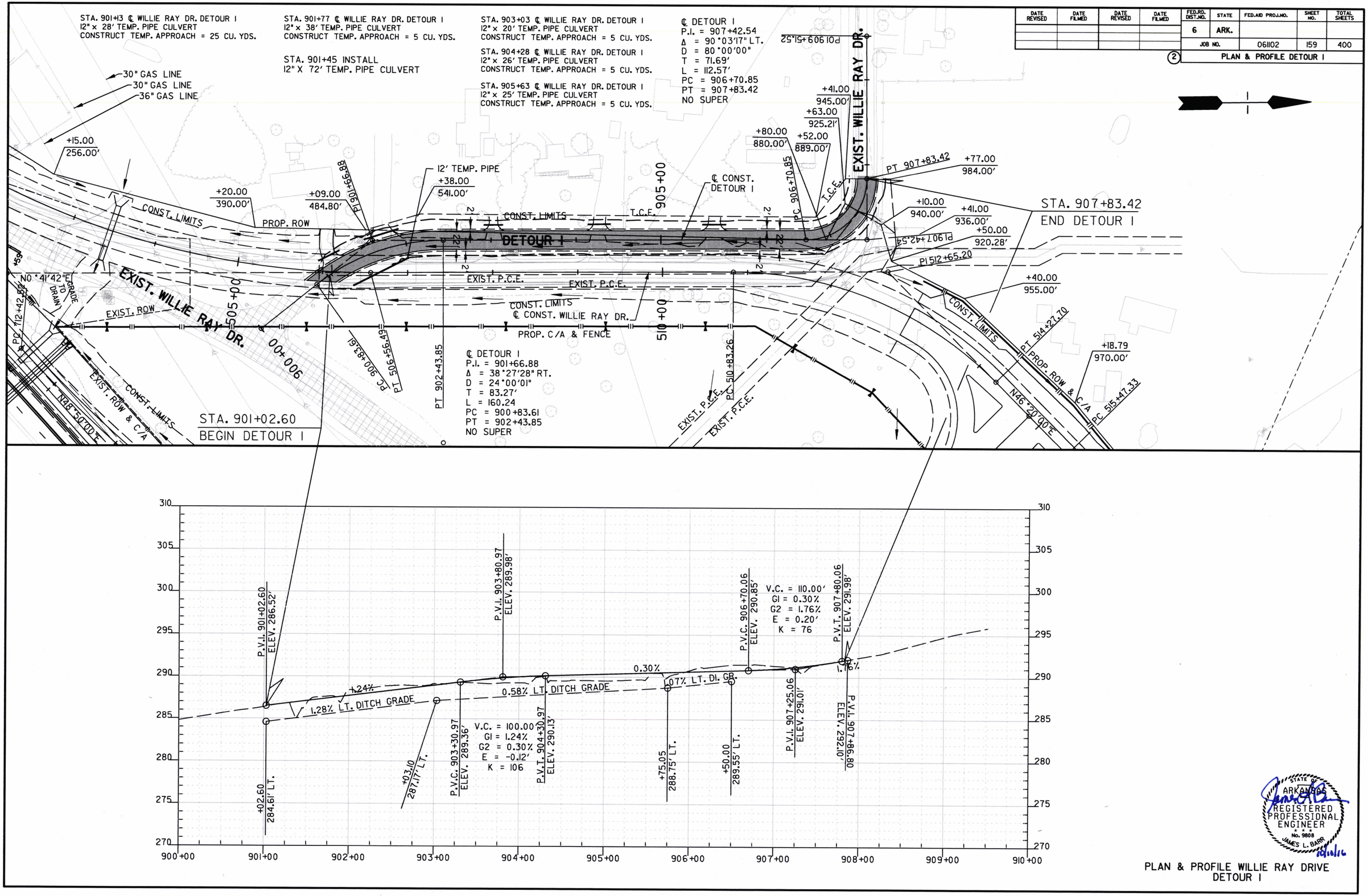


STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/30/16

PLAN & PROFILE SPECIAL DITCHES

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.		061102	159	400

(2) PLAN & PROFILE DETOUR I



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

PLAN & PROFILE WILLIE RAY DRIVE
DETOUR I

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/28/2016				6	ARK.			
				JOB NO.		061102	160	400

2 GRADING PLAN STA. 2020+00 TO 2046+72

EXIST. WILLIE RAY DR. - 1
P.I. = 2021+13.77
Δ = 25°06'29" LT.
D = 13°00'00"
T = 98.14'
L = 193.14'
P.C. = 2020+15.62
P.T. = 2022+08.76
e = N/A
Ls = N/A

EXIST. WILLIE RAY DR. - 2
P.I. = 2026+14.90
Δ = 23°24'32" RT.
D = 6°00'00"
T = 197.83'
L = 390.15'
P.C. = 2024+17.06
P.T. = 2028+07.21
e = N/A
Ls = N/A

STA. 2020+15.62 ℄ EXIST. WILLIE RAY DR. =
137.80' LT. ℄ CONST. HWY. 67 STA. 709+60.91
N 240331.4155
E 1309813.0326
BEGIN CONSTRUCTION

STA. 2046+71.74 ℄ EXIST. WILLIE RAY DR. =
411.56' LT. ℄ CONST. HWY. 67 STA. 735+77.28
N 242259.7351
E 1311602.4330
END CONSTRUCTION

WILLIE RAY DR.
EXIST. WILLIE RAY DR.
RAMP 4
SOUTHBOUND C/D ROAD
RAMP 3B
RAMP 3A
HWY. 38
PROP. ROW
CONST. LIMITS
EXIST. ROW
EXIST. ROW & C/A
EXIST. C/A
PROP. C/A & FENCE
EXIST. P.C.E.
FLOODPLAIN LIMITS
N47°09'51"E
N23°45'19"E
N48°51'48"E
PC 2020+15.62
PI 2021+13.77
PT 2022+08.76
PC 2024+17.06
PI 2026+14.90
PT 2028+07.21
2020+00
2025+00
2030+00
2035+00
2040+00
2045+00

GRADING OF EXISTING GROUND

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
11/22/16

GRADING PLAN (EXIST. WILLIE RAY DR.)
STA. 2020+00 TO 2046+72

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.		061102	161	400

(2) GRADING PLAN 1000+00 TO 1006+92

FLOODPLAIN LIMITS

PROP. ROW, C/A, & FENCE

CONST. LIMITS

HWY. 38

PROP. ROW & FENCE

T.C.E.

STA. 1006+92.35 ℄ EXIST. W. BERRY LN. =
44.50' RT. ℄ CONST. HWY. 38 STA. 138+21.71
N 238756.6786
E 1312612.3504
END CONSTRUCTION

EXIST. ROW

EXIST. P.C.E.

EXIST. HWY. 38

EXIST. W. BERRY LN. - 1
P.I. = 1000+59.47
Δ = 59°26'47" RT.
D = 55°00'08"
T = 59.47'
L = 108.08'
P.C. = 1000+00.00
P.R.C. = 1001+08.08
e = N/A
Ls = N/A

PI 1000+59.47

PT 1001+41.07

S77°50'32"E

S18°23'44"E

S36°32'33"E

S33°02'09"E

S82°49'56"E

PRC 1001+08.08

PI 1001+24.72

PC 1004+44.24

PT 1005+34.78

PI 1003+35.55

PI 1004+92.59

CONST. LIMITS

PROP. ROW & FENCE

W. BERRY LN.

EXIST. W. BERRY LN. - 2
P.I. = 1001+24.72
Δ = 18°08'48" LT.
D = 55°00'08"
T = 16.64'
L = 32.99'
P.R.C. = 1001+08.08
P.T. = 1001+41.07
e = N/A
Ls = N/A

EXIST. W. BERRY LN. - 3
P.I. = 1004+92.59
Δ = 49°47'48" LT.
D = 55°00'00"
T = 48.35'
L = 90.54'
P.C. = 1004+44.24
P.T. = 1005+34.78
e = N/A
Ls = N/A

1000+00

1005+00

STA. 1000+00.00 ℄ EXIST. W. BERRY LN. =
198.73' RT. ℄ CONST. HWY. 38 STA. 132+40.81
N 239156.2139
E 1312113.7298
BEGIN CONSTRUCTION

℄ EXIST. W. BERRY LN.

HWY. 367

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/01/16

GRADING OF EXISTING GROUND

GRADING PLAN (EXIST. W. BERRY LN.)
STA. 1000+00 TO 1006+92

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.		061102	162	400

(2) SUMMARY OF TRAFFIC SIGNAL QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/04/16

SUMMARY OF TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	HWY. 367 / HWY. 38	UNIT
SP & 706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	3	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	2	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	4	EACH
SP & 707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	8	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	3223	LIN. FT.
710	NON-METALLIC CONDUIT (2")	104	LIN. FT.
710	NON-METALLIC CONDUIT (3")	274	LIN. FT.
711	CONCRETE PULL BOX (TYPE 1)	3	EACH
711	CONCRETE PULL BOX (TYPE 1 HD)	1	EACH
711	CONCRETE PULL BOX (TYPE 2)	2	EACH
711	CONCRETE PULL BOX (TYPE 2 HD)	1	EACH
715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION	6	EACH
SP & 733	VIDEO DETECTOR (CLR)	2	EACH
SP	VIDEO DETECTOR ROTATION	2	EACH
733	VIDEO CABLE	536	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., E.G.C.)	452	LIN. FT.

4/6/2016

061102

LOCATION: HWY. 367/HWY. 38
CITY: CABOT
COUNTY: LONOKE
DISTRICT: 6
DRAWN BY: PAR

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.		061102	163	400

(2) TRAFFIC SIGNAL NOTES

TRAFFIC SIGNAL NOTES:

1. PERFORM ELECTRICAL WORK IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NFPA 70 (2014) NATIONAL ELECTRICAL CODE, NFPA 101 (2012) LIFE SAFETY CODE, STATE ELECTRICAL CODE AND LOCAL ELECTRICAL CODE.
2. EXTEND GREEN EQUIPMENT GROUNDING CONDUCTOR (EGC) FROM GROUND BAR AT MAIN BREAKER TO CONTROL PANEL AND TO FIRST POLE. SOLIDLY BOND EGC TO GROUND LUG OF CONTROL CABINET AND TO POLE GROUND. ENSURE THAT ONLY ONE NEUTRAL-TO-GROUND BOND EXISTS IN THE SYSTEM AND THAT IT IS AT THE MAIN BREAKER.
3. ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY TO A SERVICE POLE WITH EXTERNAL RAINTIGHT BREAKER (MAIN BREAKER), GALVANIZED STEEL SERVICE RISER, METER LOOP (IF REQUIRED), AND WEATHERHEAD AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. IF THE SERVICE POINT IS OVER 10 FEET FROM THE CONTROLLER, THE CONTRACTOR SHALL PROVIDE AND INSTALL A SEPARATE TWO CIRCUIT EXTERNAL BREAKER (SECONDARY BREAKER) ON OR NEAR THE TRAFFIC SIGNAL CONTROLLER CABINET AND SHALL INSTALL CONDUIT, ELECTRICAL SERVICE WIRE (2c/#6 USE RATED, WITH GROUND TYPICAL), AND PERFORM WIRING TO TAP TO THE CITY'S MAIN BREAKER AS PART OF THIS CONTRACT. CONDUIT IS PAID FOR AS A SEPARATE ITEM OF THIS CONTRACT. TWO CIRCUIT BREAKERS, CONSIDERED SUBSIDIARY TO THE CONTROL EQUIPMENT, ARE NEEDED WHERE STREET LIGHTING IS INCLUDED. AS PART OF THE SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (2c/#12 AWG UF RATED, TYPICAL) SHALL BE KEPT FROM THE CIRCUIT SERVING THE TRAFFIC SIGNAL CONTROL EQUIPMENT FROM THE POINT OF TIE-IN AT THE SECONDARY BREAKER PROVIDED BY THE CONTRACTOR.
4. CONTRACTOR SHALL CONNECT A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE.
5. TRAFFIC CONTROLLER CABINET AND LAYOUT SHALL BE SUCH THAT IT IS NOT NECESSARY TO SHUT DOWN POWER OR REMOVE LOAD SWITCHES IN ORDER TO EASILY TEST OR MODIFY DETECTOR INPUTS TO THE CONTROLLER.
6. CONTROLLER CABINET SHALL BE WIRED SUCH THAT DURING FLASH OPERATIONS POWER TO THE LOAD SWITCHES CANNOT BACKFEED TO LOAD SWITCH POWER BUSS.
7. ALL PARTS OF THIS INSTALLATION SHALL BE IN ACCORDANCE WITH THE ARKANSAS HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARDS AND DETAILS AND WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITIONS.
8. CONDUIT INSTALLED UNDER ROADWAY SURFACES SHALL BE INSTALLED BY PUSHING OR BORING METHODS. IF THE ENGINEER DETERMINES THIS IS NOT FEASIBLE, THEN A TRENCHING METHOD AS SHOWN IN THE DETAILS MAY BE USED.
9. TRAFFIC SIGNAL POLES SHALL BE GALVANIZED. BACKPLATES SHALL BE SUPPLIED FOR ALL SIGNAL HEADS.
10. PAVEMENT MARKING SHOWN FOR REFERENCE ONLY. SEE PAVEMENT MARKING PLAN SHEETS.
11. FOUNDATION FOR ALL POLES SHALL BE EXTENDED IF NECESSARY TO ACCOMMODATE THE REQUIREMENTS FOR SIGNAL HEAD CLEARANCE ABOVE ROADWAY ONLY AT LOCATIONS WHERE THE GROUND ELEVATION AT THE POLE IS BELOW THE ELEVATION OF THE ROADWAY (SEE NOTES ON SPECIAL DETAILS). PAYMENT WILL BE INCLUDED IN SECTION 714, AHTD STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
12. ALL BOXES SHALL BE (TYPE 2 HD) UNLESS OTHERWISE INDICATED. ALL CONDUIT SHALL BE 3" DIAMETER UNLESS SPECIFIED ON PLANS.
13. CONTRACTOR SHALL NOTIFY ALL EXISTING UTILITY OWNERS BEFORE BEGINNING WORK ON THIS PROJECT.
14. LUMINAIRE ASSEMBLIES SHALL BE OF THE FULL CUTOFF TYPE.
15. HARDWARE INPUTS MAY BE DETERMINED BY SUPPLIER. EACH DETECTOR OUTPUT SHALL INPUT THE CONTROLLER THROUGH A SEPARATE INPUT UNLESS OTHERWISE NOTED AND BE PROGRAMMED TO ACTUATE THE ASSOCIATED PHASE. COMBINATION (COMB.) DETECTORS SHALL ALSO BE PROGRAMMED TO PROVIDE VEHICLE COUNT/OCCUPANCY DATA.
16. TO DETERMINE UTILITY CLEARANCES ABOVE THE TRAFFIC SIGNAL POLE, REFER TO THE POLE SCHEDULE FOR VERTICAL SHAFT HEIGHT. WHERE THE POLE SCHEDULE INDICATES THAT A LUMINAIRE ARM WILL BE USED, 38 FEET SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE LUMINAIRE ARM. WHERE THE POLE SCHEDULE INDICATES A TRAFFIC SIGNAL POLE WITHOUT A LUMINAIRE ARM, A HEIGHT OF 21' SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE TRAFFIC SIGNAL MAST ARM. AN ADDITIONAL 6 FEET SHOULD BE USED DIRECTLY ABOVE "VIDEO DETECTOR" AT LOCATIONS SHOWN ON THE SIGNAL PLANS.
17. THE DESIRABLE MINIMUM DISTANCE FROM THE FACE OF ROADWAY CURB OR SHOULDER EDGE TO THE FACE OF NON-BREAKAWAY POLE OR OBSTRUCTION IS 6 FEET. REFER TO TRAFFIC SIGNAL PLANS FOR SPECIFIC LOCATION OF POLES, CONTROLLER AND ANY OTHER NON-BREAKAWAY OBSTRUCTIONS. REFER TO "DESIGN PARAMETERS, MINIMUM CLEAR ZONE DISTANCE" FOR MINIMUM DISTANCE FROM THE EDGE OF TRAVELED WAY TO THE FACE OF A NON-BREAKAWAY POLE OR OBSTRUCTION. TRAFFIC SIGNAL POLES OR ANY OTHER NON-BREAKAWAY OBSTRUCTION SHALL NOT BE INSTALLED WITHIN THE CLEAR ZONE.
18. AS DETERMINED BY THE ENGINEER, FOUNDATION EMBEDMENT MAY BE DECREASED BY A MAXIMUM OF TWO FEET IF COMPETENT ROCK IS ENCOUNTERED PRIOR TO ACHIEVING PLAN EMBEDMENT AND AT LEAST HALF OF THE REMAINING PLAN EMBEDMENT LENGTH IS KEYED INTO COMPETENT ROCK.
19. CONNECTION OF TRAFFIC SIGNAL DISPLAY TO FIELD WIRING SHALL UTILIZE AN APPROVED TERMINAL STRIP BEHIND HAND-HOLE COVER AT BASE OF POLE. TERMINAL STRIP SHALL PROVIDE PROTECTION TO PREVENT EXPOSURE TO THE PUBLIC IN THE EVENT THAT POLE COVER IS MISSING. PAYMENT FOR TERMINAL STRIPS SHALL BE INCLUDED IN ITEM 714-TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION.
20. CONTROLLER CABINET LAYOUT AND ORIENTATION SHALL CONFORM TO IMSA STANDARDS.
21. ONE VIDEO PROGRAMMNG MODULE SHALL BE PROVIDED FOR AIMING AND SETUP OF DETECTORS IF THE VIDEO SYSTEM CANNOT BE ADJUSTED THROUGH HARDWARE AND SOFTWARE PROVIDED BY ITEMS WITHIN THE JOB.
22. TRAFFIC SIGNAL CONTRACTOR MUST NOTIFY RESIDENT ENGINEER OR ASSIGNED DEPARTMENT PROJECT INSPECTOR EACH DAY PRIOR TO SIGNAL RELATED WORK. NO WORK ON TRAFFIC SIGNALS WILL BE ALLOWED OR APPROVED WITHOUT THIS PRIOR NOTIFICATION.
23. ALL STEEL POLES SHALL BE DESIGNED TO MEET THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.
24. DOOR PANEL TEST PUSH BUTTONS SHALL ACTUATE INDICATED PHASES. DETECTOR ASSIGNMENTS AND/OR SIDE PANEL JUMPERS MAY REQUIRE MODFICATION.
25. ALL SYSTEM DETECTOR RACKS AND ASSOCIATED EQUIPMENT SHALL BE PROTECTED BY THE MAIN CONTROLLER CABINET POWER SURGE PROTECTION.
26. DOOR PANEL TEST PUSH BUTTONS SHALL ACTUATE INDICATED PHASES. DETECTOR ASSIGNMENTS AND/OR SIDE PANEL JUMPERS MAY REQUIRE MODIFICATION.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

LOCATION:	HWY. 367/HWY. 38
CITY:	CABOT
COUNTY:	LONOKE
DISTRICT:	6

DRAWN BY: PAR

4/6/2016

061102

POLE CHART

	POLE	MAST ARM(S) LENGTH	MAST ARM'S ORIENTATION ANGLE FROM HAND HOLE (CLOCKWISE)	VERTICAL SHAFT LENGTH	LUM. ARM LENGTH	LUM. ARM'S ORIENTATION ANGLE FROM HAND HOLE (CLOCKWISE)	HWY. 367 STATION	NORTHING EASTING
*	A	68'	270 DEGREES	50'-0"	25'-0"	270 DEGREES	STA. 111+67.26 59.88' RT.	N 238725.7400 E 1312840.3400
*	B	66'	180 DEGREES	35'-0"	20'-0"	180 DEGREES	STA. 110+21.54 69.91' RT.	N 238633.2000 E 1312729.4700
*	C	58'	180 DEGREES	35'-0"	25'-0"	180 DEGREES	STA. 109+77.31 62.41' LT.	N 238712.6400 E 1312614.7900
*	D	54'	270 DEGREES	35'-0"	25'-0"	270 DEGREES	STA. 111+12.44 54.96' LT.	N 238787.5800 E 1312729.1400
	E	N/A	N/A	15'-0"	N/A	N/A	STA. 111+16.16 27.91' RT.	N 238722.4291 E 1312780.4850
	F	N/A	N/A	15'-0"	N/A	N/A	STA. 111+00.33 33.53' RT.	N 238708.6689 E 1312770.9917
	G	N/A	N/A	15'-0"	N/A	N/A	STA. 110+14.64 50.28' RT.	N 238644.8725 E 1312712.2791
	H	N/A	N/A	15'-0"	N/A	N/A	STA. 109+98.29 40.23' RT.	N 238643.2285 E 1312693.2712
	I	N/A	N/A	15'-0"	N/A	N/A	STA. 110+03.40 33.25' LT.	N 238705.1226 E 1312653.3377
	J	N/A	N/A	15'-0"	N/A	N/A	STA. 110+18.07 44.63' LT.	N 238723.0695 E 1312658.3779

*DENOTES EXIST. TRAFFIC SIGNAL POLE TO BE RETAINED.

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.		061102	164	400

(2) SIGNALIZATION PLAN SHEETS

STATE OF ARKANSAS
JAMES L. BARR
REGISTERED PROFESSIONAL ENGINEER
No. 9808
10/10/16

EXIST. LED SIGNAL FACES

TO BE RETAINED - 12" LENSES

*2-11 *1

NOTES: SIGNAL FACES *4,5,8&9 SHALL BE RELOCATED TO THE POSITIONS AS SHOWN.

VIDEO DETECTORS *4&8 SHALL BE ROTATED TO BE IN ALIGNMENT WITH TRAFFIC.

EXIST. ANTENNA ORIENTATION

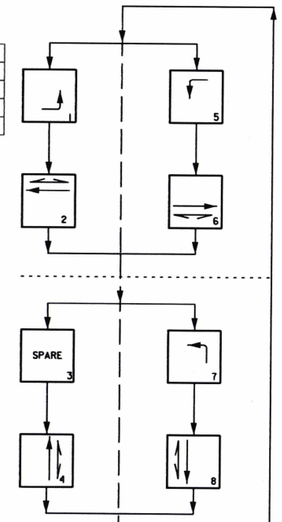
45°56'28"

ANTENNA ORIENTED TO THE MASTER ANTENNA LOCATED AT CABOT CITY HALL 101 N. 2ND. ST. CABOT, AR 72023

DETECTOR SPACING CHART

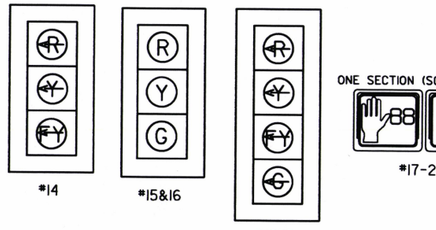
HWY. 367/HWY. 38		
POSTED SPEED	DISTANCE FROM STOP LINE	
	LEAD	LAG
HWY. 367 - 55 MPH	405'/245'	100'
HWY. 38 - 45 MPH	260'	115'

PHASING DIAGRAM



LED SIGNAL FACES

12" LENSES



STA. 110+65.64 ℄ EXIST. HWY. 367 =
STA. 139+31.38 ℄ CONST. HWY. 38
∢ 78°36'52"

NOTE: THE EXISTING TRAFFIC SIGNAL IS TO BE MAINTAINED UNTIL SUCH TIME AS THE NEW SIGNAL EQUIPMENT CAN BE PLACED INTO OPERATION. FLAGGING OPERATIONS MUST BE UTILIZED IF THE SIGNAL IS OFF FOR ANY PERIOD OF TIME DURING CONSTRUCTION ACTIVITIES.

LEGEND

- TYPE I PULL BOX
- TYPE I HD PULL BOX
- TYPE 2 PULL BOX
- TYPE 2 HD PULL BOX
- CONTROL CABINET
- SIGNAL HEAD
- N.M.C.-NON-METALLIC CONDUIT
- VIDEO DETECTOR
- REMOVAL OF EXISTING WALKS

NOTES:
ADDITIONAL 0.5" N.M.C. FROM CONTROLLER TO NEAREST PULL BOX.
(REFER TO STANDARD DRAWING SD-6 HEAVY DUTY PULL BOX)
THE COST OF THE 0.5" N.M.C. IS INCLUDED IN ITEM NO. 701, 714, OR 715, RESPECTIVELY.

SCALE IN FEET
0 30 60 120

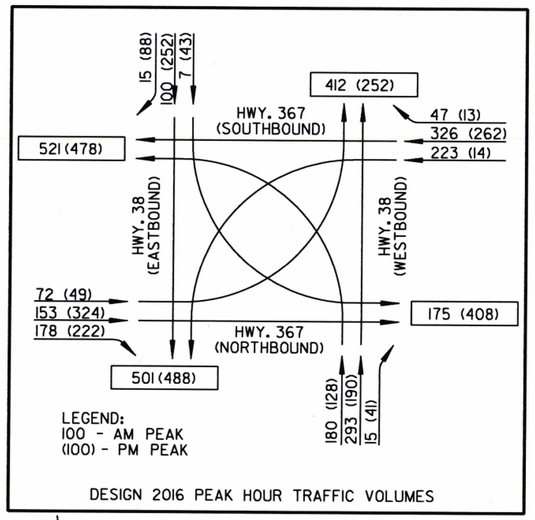
LOCATION:	HWY. 367/HWY. 38
CITY:	CABOT
COUNTY:	LONOKE
DISTRICT:	6

DRAWN BY: PAR

4/6/2016

061102

TRAFFIC FLOW DIAGRAM



DESIGN 2016 PEAK HOUR TRAFFIC VOLUMES

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.		061102	165	400

(2) SIGNALIZATION PLAN SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10/10/16

DESIGN PARAMETERS

POSTED SPEED LIMIT:
55 MPH NORTH AND SOUTH APPROACH (HWY. 367) APPROACH (HWY. 38)
45 MPH EAST AND WEST APPROACH (HWY. 38)
NO BUS STOPS
NO RAILROAD TRACKS
NO EXISTING INTERCONNECTIONS
NO FIRE STATION
NO PARKING
NO SIGHT DISTANCE RESTRICTIONS

LOCATION OF STOP LINES AND CROSSWALKS SHOWN ON PAVEMENT MARKING PLAN. SEE SEPARATE SHEET.

LOCATION:	HWY. 367/HWY. 38
CITY:	CABOT
COUNTY:	LONOKE
DISTRICT:	6

DRAWN BY: PAR

4/6/2016

061102

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.		061102	166	400

(2) SIGNALIZATION PLAN SHEETS

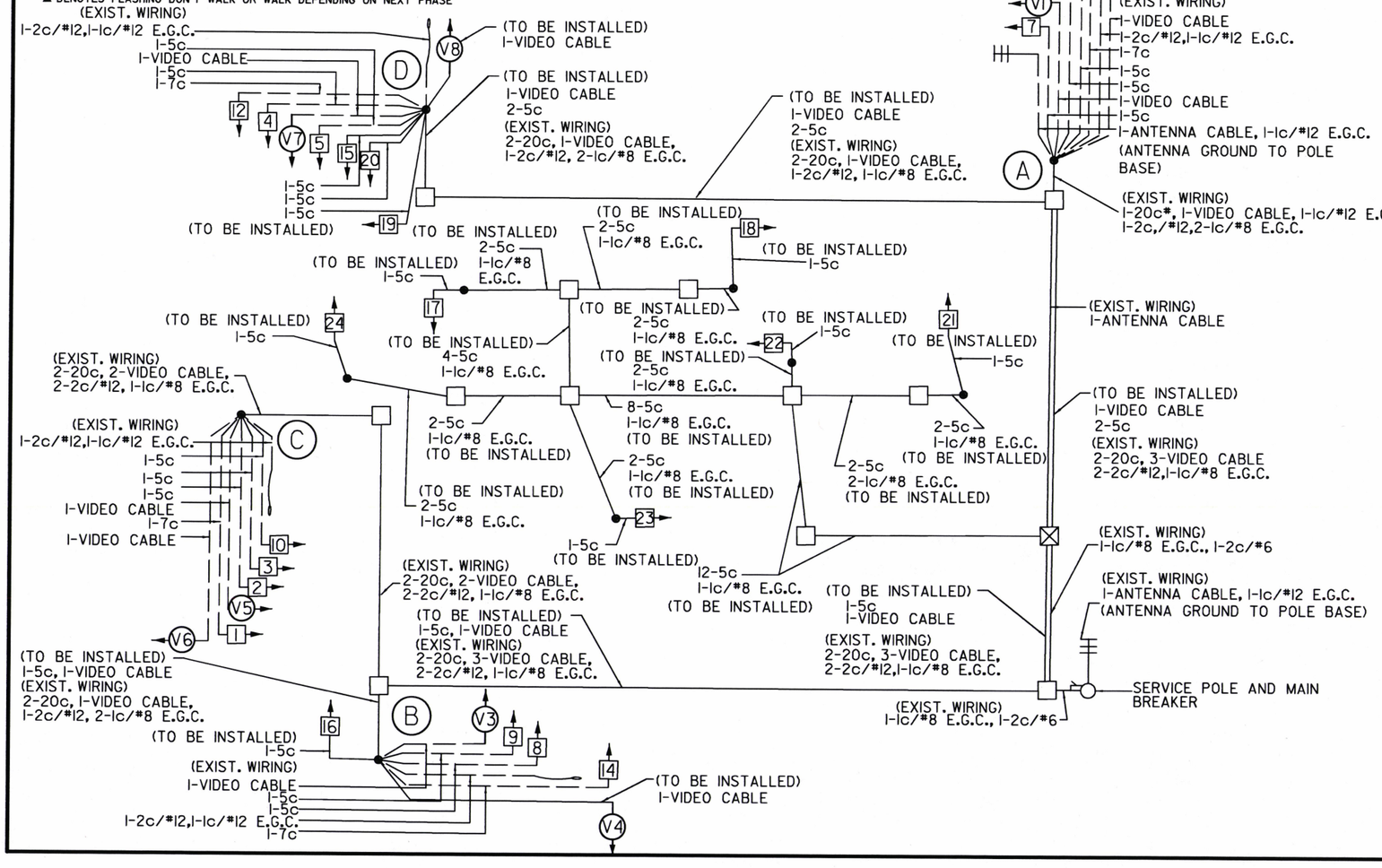
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
5/10/16

INTERVAL CHART

SIGNAL FACES	INTERVALS												FLASH SEQ.
	1+5	CLR.	1+6	CLR.	2+5	CLR.	2+6	CLR.	4+7	CLR.	4+8	CLR.	
1	~~G~~	*	~~FY~~	***	~~G~~	*	~~FY~~	***	~~R~~	~~R~~	~~R~~	~~R~~	~~FR~~
2	R	R	R	R	G	**	G	**	R	R	R	R	R
3	R	R	R	R	G	**	G	**	R	R	R	R	R
4	R	R	R	R	R	R	R	R	G	**	G	**	R
5	R	R	R	R	R	R	R	R	G	**	G	**	R
6	R	R	G	**	R	R	G	**	R	R	R	R	R
7	R	R	G	**	R	R	G	**	R	R	R	R	R
8	R	R	R	R	R	R	R	R	R	R	G	**	R
9	R	R	R	R	R	R	R	R	R	R	G	**	R
10	R	R	R	R	G	**	G	**	R	R	R	R	R
11	R	R	G	**	R	R	G	**	R	R	R	R	R
12	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~G~~	*	~~FY~~	***	~~FR~~
13	~~G~~	*	~~G~~	*	~~FY~~	***	~~FY~~	***	~~R~~	~~R~~	~~R~~	~~R~~	~~FR~~
14	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~FY~~	***	~~FY~~	***	~~FR~~
15	R	R	R	R	R	R	R	R	G	**	G	**	R
16	R	R	R	R	R	R	R	R	R	R	G	**	R
17&24	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	▲		BLANK
18&19	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	BLANK
20&21	DW	DW	DW	DW	DW	DW	DW	DW	W	▲	W	▲	BLANK
22&23	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	BLANK

* DENOTES GREEN ARROW OR FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE
** DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
*** DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE
▲ DENOTES FLASHING DON'T WALK OR WALK DEPENDING ON NEXT PHASE

WIRING DIAGRAM



NOTES:

1. A SEPARATE 5c/#14 A.W.G. SHALL BE PROVIDED FROM EACH 3 SECTION HEAD TO THE BASE OF POLE.
2. A SEPARATE 5c/#14 A.W.G. SHALL BE PROVIDED TO EACH POLE WITH PEDESTRIAN PUSH BUTTONS.
3. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA ON CABINET.
4. ADDITIONAL 1-1c*8E.G.C. IN SEPARATE CONDUIT REQUIRED FROM POLE AND CONTROLLER TO NEAREST PULL BOX. REFER TO STANDARD DRAWING SD-6, HEAVY DUTY PULL BOX AND GROUNDING ARRAY DETAIL. COST OF ADDITIONAL 1-1c*8E.G.C. INCLUDED IN ITEMS 701 AND 714.

DETECTOR CHART

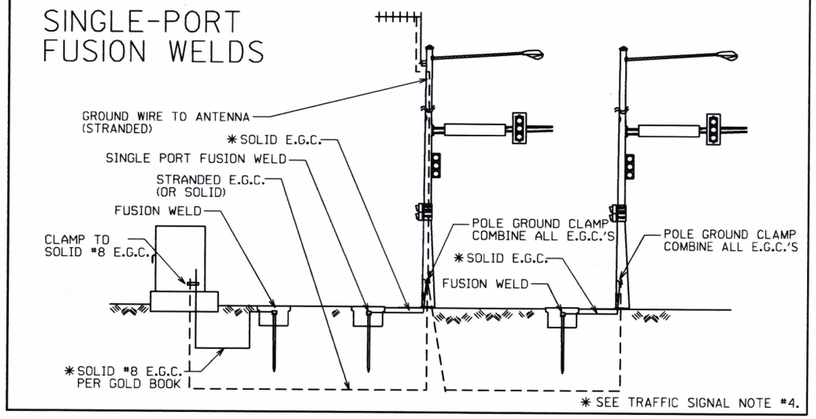
DETECTOR I.D.NUMBER	DIRECTION & LOCATION	TYPE	DET. NUM.	HARDWARE INPUTS: CAB. TER. NUM.	HARDWARE INPUTS: AMP. CHN. NUM.	HARDWARE INPUTS: CON. INP. NUM.	PROGRAM ASSIGNMENTS: LOCAL PHS.	PROGRAM ASSIGNMENTS: LOCAL SYS. DET.	PROGRAM ASSIGNMENTS: MSTR. SYS. DET.	COMMENT	TUBE LENGTH
Vz11	NB NEAR	LOCAL			4	V1	6			VIDEO 1	23'
Vz21	SB ADV	LOCAL			5	V2	2			VIDEO 2	74'
Vz22	SB INTER	LOCAL			6	P3	2			VIDEO 2	74'
Vz23	SB NEAR	COMB.			7	V10	2	2		VIDEO 5	23'
Vz31	EB LT ADV	COMB.			17	V11	3	3		VIDEO 3	23'
Vz32	EB LT PRES	LOCAL			18	V3	3			VIDEO 3	23'
Vz41	WB ADV	LOCAL			13	V4	4	4		VIDEO 4	37'
Vz42	WB NEAR	COMB.			14	V12	4			VIDEO 7	23'
Vz51	SB LT ADV	COMB.			9	V13	5	5		VIDEO 5	23'
Vz52	SB LT PRES	LOCAL			10	V5	5			VIDEO 5	23'
Vz61	NB ADV	LOCAL			1	V6	6			VIDEO 6	23'
Vz62	NB INTER	LOCAL			2	P5	6			VIDEO 6	23'
Vz63	NB NEAR	COMB.			3	V14	6	6		VIDEO 1	23'
Vz71	WB LT ADV	COMB.			15	V15	7	7		VIDEO 7	23'
Vz72	WB LT PRES	LOCAL			16	V7	7			VIDEO 7	23'
Vz81A&B	EB ADV	LOCAL			19	V8	8			VIDEO 8	46'
Vz82A&B	EB NEAR	COMB.			20	V16	8	8		VIDEO 3	23'
PB2	N TO S	PED.				P2	2			HWY. 38	
PB4	W TO E	PED.				P4	4			HWY. 367	
PB6	S TO N	PED.				P6	6			HWY. 38	
PB8	E TO W	PED.				P8	8			HWY. 367	

CONTROLLER INPUT ABBREVIATIONS:
V1 - V8 = VEHICLE INPUT
V9 - V16 = SYSTEM OR AUXILIARY INPUT
P1 - P8 = PEDESTRIAN INPUT

AMP.CHN.NUM.NOT USED: 8,11,12

NOTE: "AMP.CHN." REFERS TO THE DETECTOR RACK OUTPUT POSITION AND IS WIRED TO THE CONTROLLER INPUT DETECTOR NUMBER THAT IS PROGRAMMED TO ACTIVATE THE DESIGNATED PHASE.

GROUNDING ARRAY
SINGLE-PORT FUSION WELDS



* SEE TRAFFIC SIGNAL NOTE #4.

LOCATION:	HWY. 367/HWY. 38
CITY:	CABOT
COUNTY:	LONOKE
DISTRICT:	6

DRAWN BY: PAR

4/6/2016

061102

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.		061102	167	400

(2) SIGNALIZATION PLAN SHEETS

EXIST. ROW
PROP. ROW
CONST. LIMITS
5' SIDEWALK
3'
GRASS
CONSTRUCT TYPE 3 WHEELCHAIR RAMP
R 102'
R 24'
23' F.F.
CONC.
CONC. CURB & GUTTER
EXIST. HWY. 367
HWY 367
R 2'
TYPE A CURB FACE
+79.96
+83.69
+98.33
+01.84
+05.09
+10.07
+28.56 (HWY. 38)
+39.76 (HWY. 38)
31.75'
HWY. 38
139+00
+79.29 (HWY. 38)
+80.38 (HWY. 38)
+84.29 (HWY. 38)
+85.42 (HWY. 38)
+78.75 (HWY. 38)
R 77'
EXIST. P.C.E.
P1 113+06.01
112+00
+13.45
+18.23
+09.66
+14.68
CONSTRUCT TYPE 4 WHEELCHAIR RAMP
19.2'
+00.71
+05.54
+23.06
+28.10
+32.24
+33.97 (HWY. 38)
+38.96 (HWY. 38)
SAW-CUT & REMOVE EXIST. WALKS
SAW-CUT
CONST. LIMITS
5.25'
21.7'
+16.88
+19.99
+34.59
+36.79
+39.75
CONSTRUCT TYPE 3 WHEELCHAIR RAMP
PC 301+08.70
CONCRETE PARKING
CURB
WALL
STA. 110+65.64 ℄ EXIST. HWY. 367 =
STA. 139+31.38 ℄ CONST. HWY. 38
◁ 78°36'52"
REMOVAL OF EXISTING WALKS AND ISLANDS
NOTE: ALL STATIONING IS FROM EXIST. HWY. 367 ALIGNMENT UNLESS NOTED OTHERWISE.

INTERSECTION DETAIL FOR
HWY. 367/HWY. 38

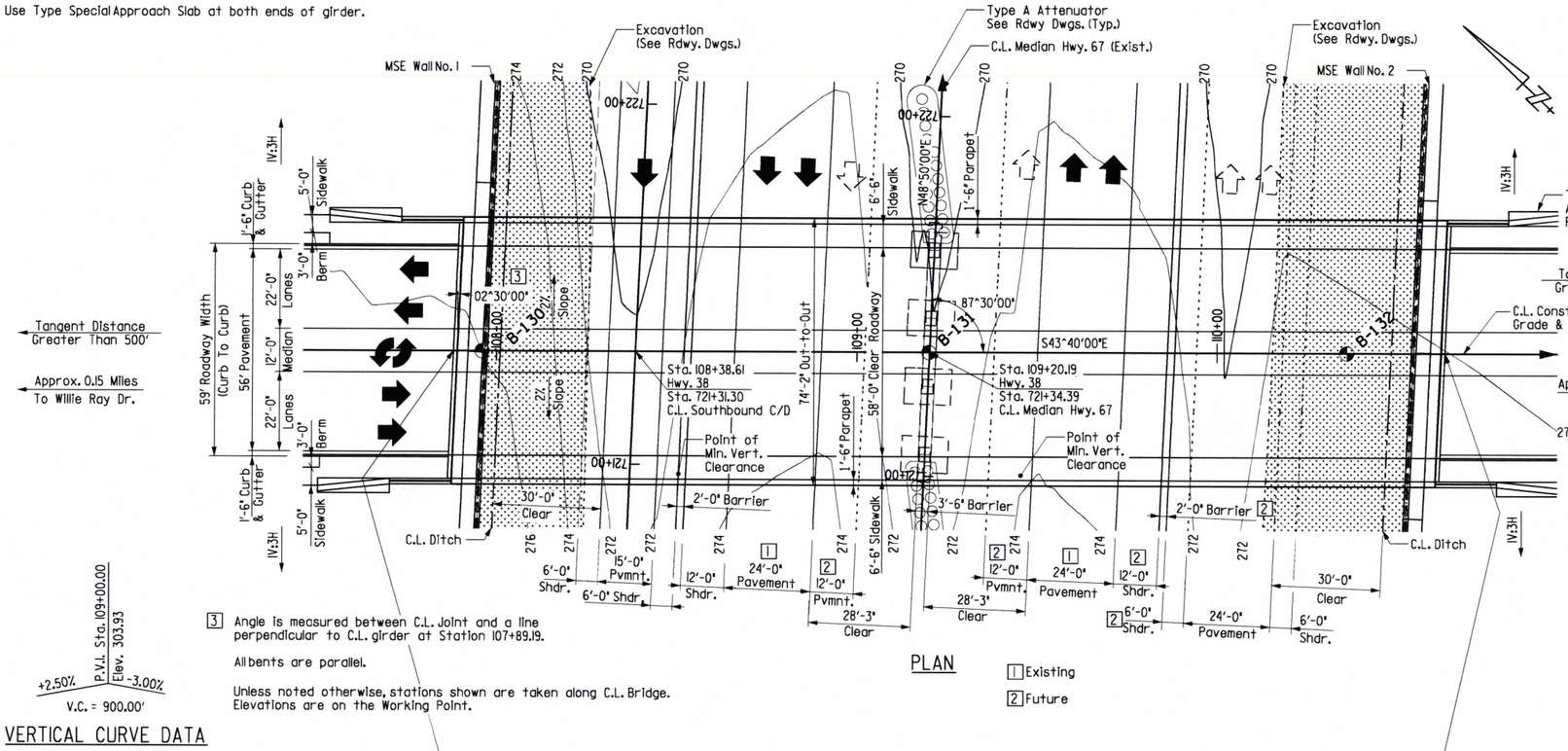
SCALE IN FEET
0 10 30 60

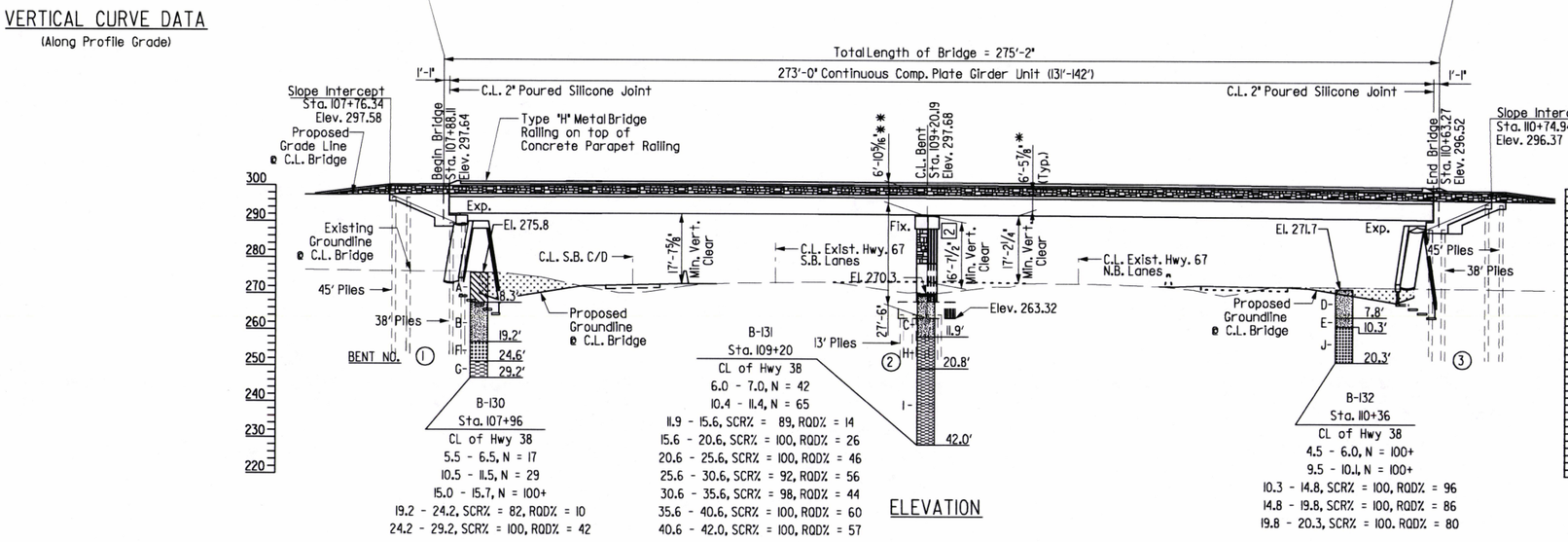
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR
10-10-16

SIGNALIZATION PLAN SHEETS

For R/W Data, See Roadway Plans

Use Type Special Approach Slab at both ends of girder.





+2.50% P.V.I. Sta. 109+00.00 Elev. 303.93 -3.00%

V.C. = 900.00'

VERTICAL CURVE DATA

(Along Profile Grade)

**Profile Grade @ C.L. Bent To Low Side Top Of Cap

*Profile Grade To Low Steel

For Soil Boring Legend, See Dwg. No. 59074

⚠ Revised Job from Federal oversight to State oversight. LWM 10-25-16

DETAIL DRAWINGS:	DRAWING NO.
M.S.E. Walls	59074-59076
End Bents	59077-59078
Intermediate Bent	59079-59080
273'-0" Cont. Comp. Plate Girder Unit	59081-59088
Poured Silicone Joint	59089
Elastomeric Bearings	59090
Type Special Approach Slab	59091
Transitional Approach Railing	59092
Steel Piling	55020

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13339 LARRY W. MILLER

Larry W. Miller 10-25-16

BRIDGE ENGINEER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10-25-16				6	ARK.			
				JOB NO.		061102	168	400
				(1) 07401		LAYOUT		59073

GENERAL NOTES

BENCH MARK: AHTD monument 20. N=241377.21, E=1310688.90, Elev. 274.73, Hwy. 38 Sta. 105+79.60, Offset 189.29' Left.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions. Unless otherwise noted in the plans, Section and Subsection numbers refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (2012, 6th Edition) with interim specifications.

LIVE LOADING: HL93

SEISMIC PERFORMANCE ZONE: 2

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (Superstructure)	f'c = 4,000 psi
Class S Concrete (Substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M31 or M322 Type A, Gr. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 50)	Fy = 50,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi

BORING LOGS: Boring Logs may be obtained from the Construction Contract Procurement Section of the Program Management Division.

STEEL PILING: All piling at Bent Nos. 1 and 3 shall be HP14x73 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 130 tons per pile and into the material designated as Shale or Sandstone on the boring legend. All piling at Bent No. 2 shall be HP12x53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 95 tons per pile and into the material designated as Shale or Sandstone on the boring legend. Lengths shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the Standard Specifications. Actual pile lengths to be determined in the field. On all piles the Contractor shall use approved steel H-Pile driving points.

Piles for end bents shall be driven to a minimum penetration of 10' after excavation to bottom of leveling pad is completed and prior to backfilling.

Piles for Bent 2 shall be driven to a minimum penetration of 10' below bottom of footing.

PILE FOOTINGS: The top of footings shall be set a minimum of 2'-0" below finished ground. Foundations for footings shall be prepared in accordance with Subsection 801.04 and backfilled in accordance with Subsection 801.08.

PREBORING: Preboring is required for all bents to achieve minimum penetration. The depth of preboring shall be sufficient to provide the minimum pile penetration and to set the pile tips a minimum 3' into material designated as Shale or Sandstone on the boring legend. The actual size and depth of preboring shall be determined in the field by the Engineer. The Contractor shall be responsible for keeping prebored holes free of debris prior to driving piles and backfilling which may require the use of temporary casings or other methods. After driving is completed, the prebored hole shall be backfilled with Class S Concrete or non-shrink grout to the top of the rock and the remaining length shall be backfilled in accordance with Subsection 805.08(a). Any related cost for backfilling and temporary casing will not be paid for directly, but shall be considered subsidiary to the item "Preboring".

BRIDGE DECK: The concrete girder deck except sidewalk surfaces shall be given a tine finish as specified for final finishing in Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Sidewalks shall be given a Class 6 Broomed Finish.

CLASS 1 PROTECTIVE SURFACE TREATMENT: Class 1 Protective Surface Treatment shall be applied to the sidewalk surface, roadway surface and top of backwall.

PAINT: All structural steel except galvanized members, some surfaces in contact with concrete, and as otherwise noted, shall be painted as specified in Subsection 807.75. The color of paint shall be Dark Gray and shall match Fed Std. 595B, Color Chip No. 26122.

MAINTENANCE OF TRAFFIC: See Roadway Drawings.

LAYOUT OF HWY. 38 BRIDGE OVER HWY. 67 HWY. 67 INTERCHANGE (N. OF CABOT) (S) ⚠ LONOKE COUNTY

ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: LWM DATE: 6-15

CHECKED BY: BEG DATE: 07-21-16

DESIGNED BY: LWM DATE: 6-15

FILENAME: b061102ml_l1.dgn

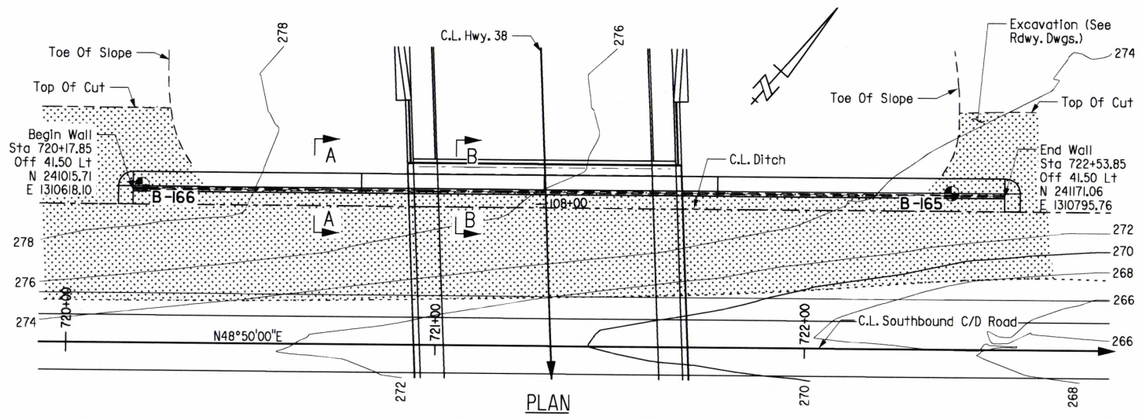
SCALE: 1" = 20'-0"

BRIDGE NO. 07401

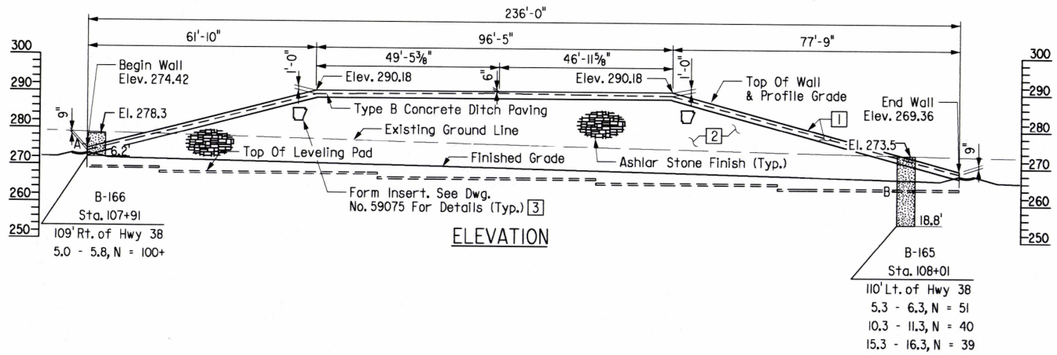
DRAWING NO. 59073

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.		061102	169	400
(1) 07401		MSE RETAINING WALL		59074



PLAN



ELEVATION

STATION ALONG WALL	TOP OF WALL ELEV.	DITCH FLOWLINE ELEV.
720+17.85	274.42	270.55
720+25.00	276.24	270.40
720+50.00	282.61	269.90
720+75.00	288.99	269.39
720+79.68	290.18	269.29
721+00.00	290.18	268.88
721+25.00	290.18	268.31
721+50.00	290.18	267.74
721+75.00	290.18	267.17
721+76.10	290.18	267.14
722+00.00	283.78	266.60
722+25.00	277.09	265.97
722+50.00	270.39	265.35
722+53.85	269.36	265.25

BORING LEGEND FOR BRIDGE BORINGS

A - Very stiff, light brown & gray, sandy, lean clay.
B - Very stiff to very hard, light brown & gray, silty, clayey sand.
C - Dense to very dense, brown, gray & black, silty, clayey sand.
D - Very dense, tan & gray, silty sand with gravel.
E - Very dense, tan & gray, silty sand.
F - Sandstone: Medium to dark gray, orange-brown stain, fine grain with interbedded Shale, slightly weathered with Shale severely weathered, highly fractured, hard with soft seams.
G - Shale (Claystone): Dark gray to black, scattered light gray, very fine grain with fine grain Sandstone pebbles & cobbles, silty laminations, slightly weathered with seams severely weathered, very thinly laminated, medium hard with soft seams.
H - Shale (Claystone): Black, dark gray, dark brown, orange-brown stain, very fine grain, moderately to moderately severely weathered with seams severely to completely (clay) weathered, very thinly laminated, low to medium hardness, slightly silty in parts, iron stain, clay seams.
I - Shale (Claystone): Black, dark gray, very fine grain, fresh to slightly weathered with seams severely weathered, very thinly laminated, medium hard with soft seams, slightly silty in parts, very finely micaceous.
J - Sandstone: Light to medium gray, traces of black grains, orange-brown stain, fine grain with traces of medium grain, well cemented, massive bedded, slightly weathered to fresh, hard, widely scattered gypsum infill of healed joints.

BORING LEGEND FOR WALL BORINGS

A - Tan & gray, silty sand.
B - Tan & gray, silty sand with gravel.

[1] Class 3 Textured Coating Finish (Color = Gray, Color Chip No. 37150)

[2] "Ashlar Stone" Form Liner & Class 3 Textured Coating Finish (Color = Gray, Color Chip No. 37150)

[3] Class 3 Textured Coating Finish (Color = Dark Gray, Color Chip No. 36122)

Stationing is along wall profile grade line. See section for location.

Control point stations and offsets in PLAN VIEW are measured to the outside vertical face of retaining wall and are perpendicular to C.L. Construction.

For wall sections and details, see Dwg. No. 59076

0+00 1+00 2+00 3+00

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11539 LARRY W. MILLER
Larry W. Miller 10-6-16
BRIDGE ENGINEER

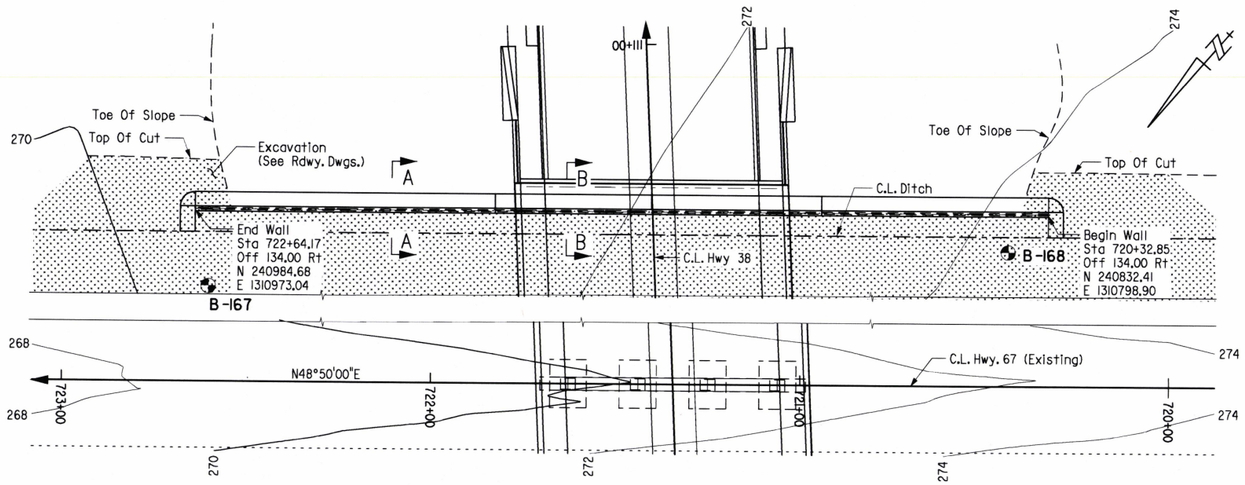
LAYOUT OF MSE RETAINING WALL NO. 1
HWY. 38 BRIDGE OVER HWY. 67
ROUTE 67 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LWM DATE: 06-15 FILENAME: b06l102ml_wl.dgn
CHECKED BY: BEG DATE: 07-21-16 SCALE: 1" = 20'-0"
DESIGNED BY: LWM DATE: 06-15

BRIDGE NO. 07401 DRAWING NO. 59074

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.		061102	170	400
				(1) 07401		MSE RETAINING WALL		59075



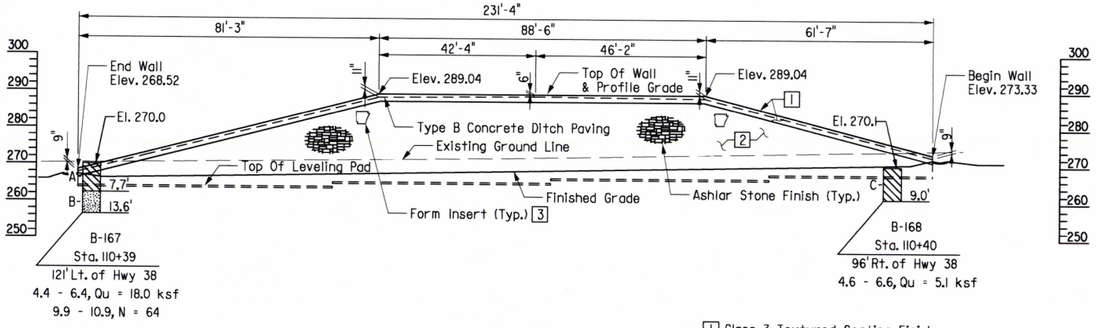
PLAN

Stationing is along wall profile grade line. See section for location.

Control point stations and offsets in PLAN VIEW are measured to the outside vertical face of retaining wall and are perpendicular/radial to C.L. Construction.

For wall sections and details, see Dwg. No. 59076

STATION ALONG WALL	TOP OF WALL ELEV.	DITCH FLOWLINE ELEV.
720+32.85	273.33	269.86
720+50.00	277.71	269.53
720+75.00	284.08	269.06
720+94.42	289.04	268.70
721+00.00	289.04	268.59
721+25.00	289.04	268.28
721+50.00	289.04	267.82
721+75.00	289.04	267.36
721+82.92	289.04	266.90
722+00.00	284.73	266.76
722+25.00	278.41	266.31
722+50.00	272.10	265.86
722+64.17	268.52	265.61



ELEVATION

1 Class 3 Textured Coating Finish (Color = Gray, Color Chip No. 37150)

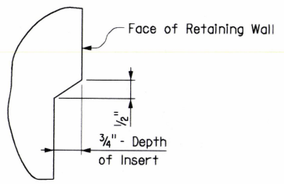
2 "Ashlar Stone" Form Liner & Class 3 Textured Coating Finish (Color = Gray, Color Chip No. 37150)

3 Class 3 Textured Coating Finish (Color = Dark Gray, Color Chip No. 36122)

0+00 1+00 2+00 3+00

BORING LEGEND

A - Brown, tan, yellow, black & gray, sandy, lean clay.
B - Light brown, black & gray, silty, clayey sand.
C - Gray, white & tan, lean clay with sand.



CHAMFER DETAILS

Scale: 6" = 1'-0"

FORM INSERT GENERAL NOTES

Place center of insert in the retaining wall as shown in the elevation view.

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

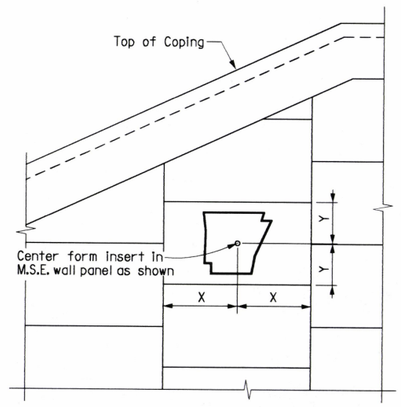
Wash and clean multi-use form inserts before each use.

All work and materials for form inserts shall be included in the unit price bid for the item MSE RETAINING WALL.

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

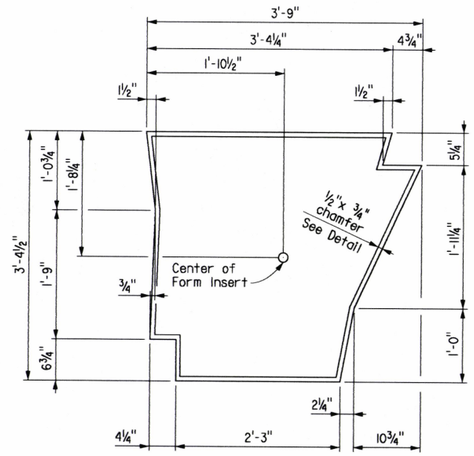
The form insert shall be approved by the Engineer before its use.

Recessed image (including chamfers) of State of Arkansas insert shall be given a Class 3 Textured Coating Finish as specified in SP Job No. 061102 "TEXTURED COATING FINISH."



FORM INSERT ELEVATION VIEW

(Left side is shown. Right side is similar)



Note: Use form insert on designated walls as noted on Dwg. Nos. 59074 & 59075.

FORM INSERT DETAILS AT MSE WALL

Scale: 1" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
BRIDGE ENGINEER
10-16-16

LAYOUT OF MSE RETAINING WALL NO. 2
HWY. 38 BRIDGE OVER HWY. 67
ROUTE 67 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LWM DATE: 06-15
CHECKED BY: BEG DATE: 07-21-16
DESIGNED BY: LWM DATE: 06-15
FILENAME: b061102msl_w2.dgn
SCALE: 1" = 20'-0"

BRIDGE NO. 07401 DRAWING NO. 59075

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.		061102	171	400
				(1) 07401		MSE RETAINING WALL		59076

[1] Top of leveling pad shall be a minimum of 2'-0" below finished grade or existing ground, whichever is lower. When C.L. Ditch is within 5'-0" of MSE Wall, then top of leveling pad shall be 2'-0" below ditch invert.

[2] ½" thick preformed joint filler AASHTO M153 Type I per Section 501.02(h)(1) with ½" x 1" Type 3 or 4 joint sealer per Section 501.02(h)(2). Backer rod is not required.

[3] Excavation required for area of Reinforcing Zone will be paid for under the pay item 210, "Unclassified Excavation". See SP Job 061102 "MSE RETAINING WALL" for additional information.

[4] Contractor has the option of using a cut slope or shoring to maintain stability of cut. Any excavation and replacement backfill beyond the limits of Reinforcing Zone will not be paid for directly but will be considered subsidiary to various pay items. See SP Job 061102 "MSE RETAINING WALL".

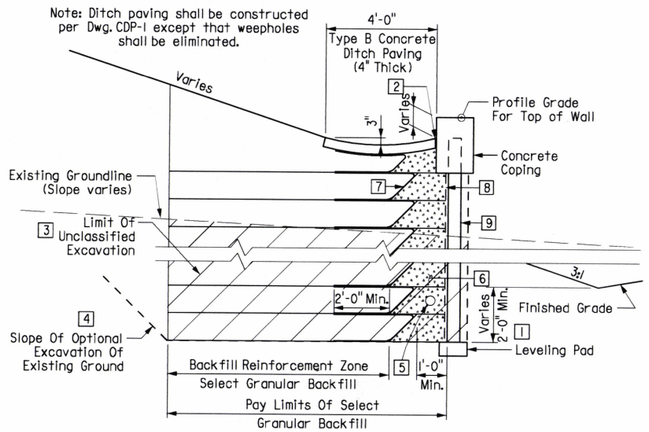
[5] 4" Pipe Underdrain for full length of wall in accordance with Section 611 and Std. Dwg. PU-1. This work and material are to be considered subsidiary to the item "MSE RETAINING WALL" and will not be paid for directly.

[6] Drainage Fill material (Class 3 Mineral Aggregate as specified in Subsection 403.01). To be paid for as Select Granular Backfill.

[7] Geotextile Filter Fabric (Type 2 as specified in Subsection 625.02)

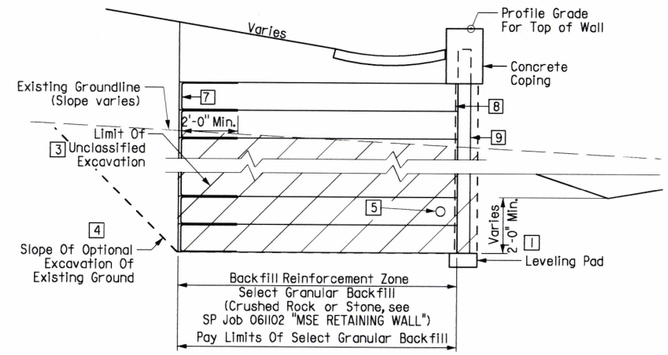
[8] Geotextile Filter Fabric (Type 2 as specified in Subsection 625.02) covering joints between panels at back face of wall - See SP Job 061102 "MSE RETAINING WALL"

[9] Outside Vertical Face of MSE RETAINING WALL to receive Ashlar Stone Finish. See SP Job 061102 "MSE RETAINING WALL" for Details



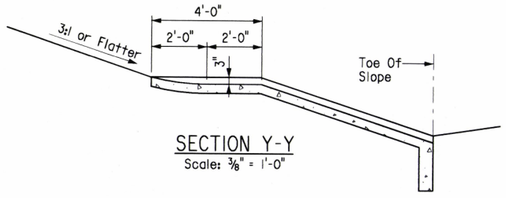
Backfill Method A is shown. Contractor has the option of using Method B. See SP Job 061102 "MSE RETAINING WALL" and detail BACKFILL METHOD B.

SECTION A-A
Scale: ⅜" = 1'-0"

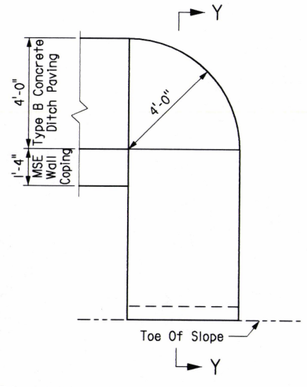


Section A-A is shown. Other sections are similar.

BACKFILL METHOD B
Scale: ⅜" = 1'-0"

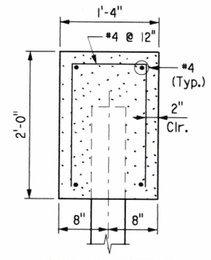


SECTION Y-Y
Scale: ⅜" = 1'-0"



This detail is to be constructed at all outlet ends of Type B Concrete ditch paving.

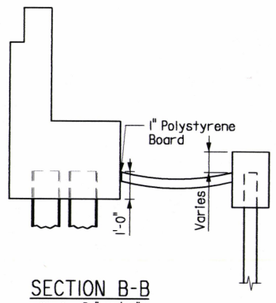
DETAIL X
Scale: ⅜" = 1'-0"



COPING DETAIL
Scale: 1" = 1'-0"

Notes:
Reinforcing steel and Class S(AE) Concrete for coping shall not be paid for directly, but will be considered subsidiary to the item "MSE RETAINING WALL".

Precast coping may be substituted for cast-in-place coping shown.



SECTION B-B
Scale: ⅜" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
BRIDGE ENGINEER
10-16-16

DETAILS OF MSE RETAINING WALLS HWY. 38 BRIDGE OVER HWY. 67

ROUTE 67 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: LWM DATE: 10/14
CHECKED BY: BEG DATE: 07-21-16
DESIGNED BY: LWM DATE: 10/14
FILENAME: b061102ml_w3.dgn
SCALE: As Shown

BRIDGE NO. 07401 DRAWING NO. 59076

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.		061102	172	400
				① 07401		BENT 1 & 3		59077

For "VIEW A-A" and "VIEW B-B", See Dwg. No. 59078.

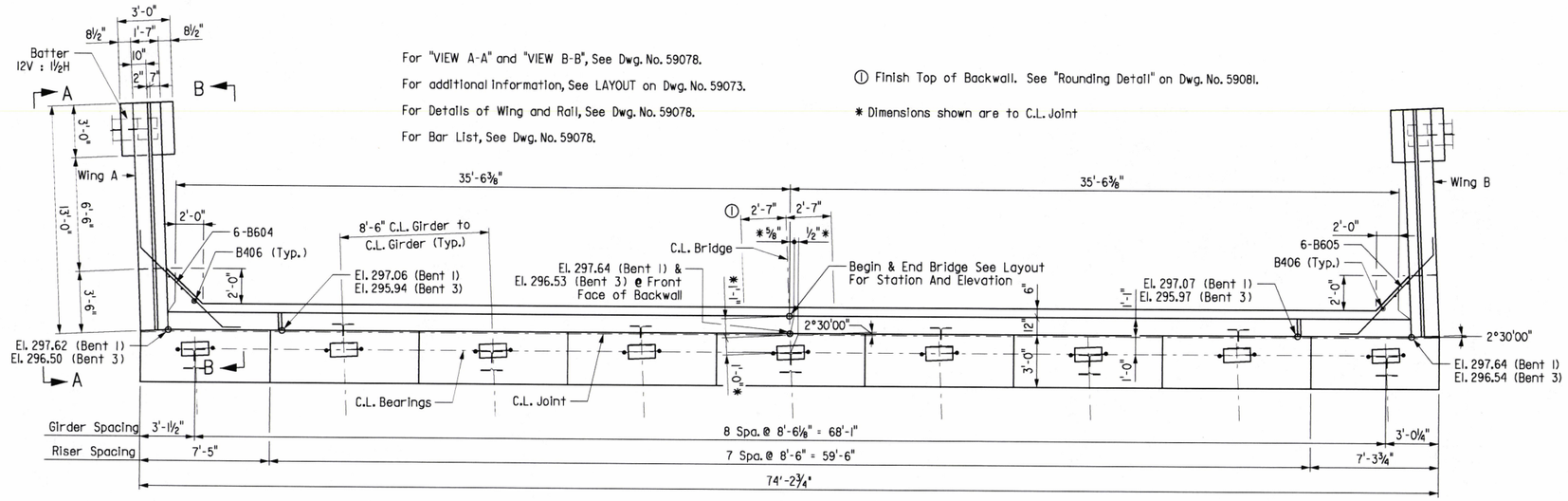
For additional information, See LAYOUT on Dwg. No. 59073.

For Details of Wing and Rail, See Dwg. No. 59078.

For Bar List, See Dwg. No. 59078.

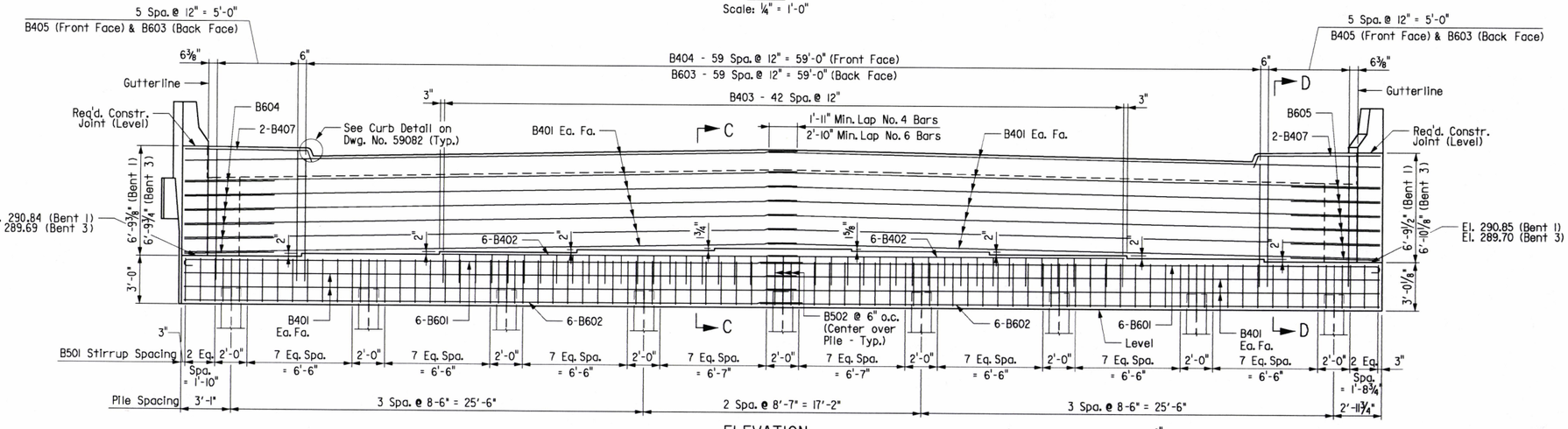
① Finish Top of Backwall. See "Rounding Detail" on Dwg. No. 59081.

* Dimensions shown are to C.L. Joint



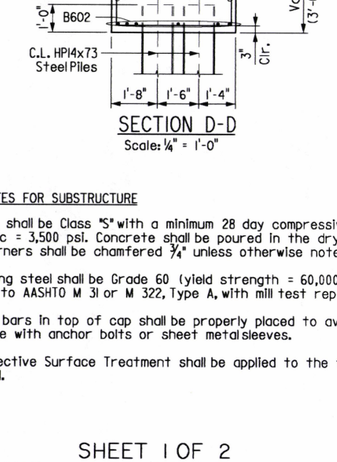
PLAN

Scale: ¼" = 1'-0"



ELEVATION

Scale: ¼" = 1'-0"

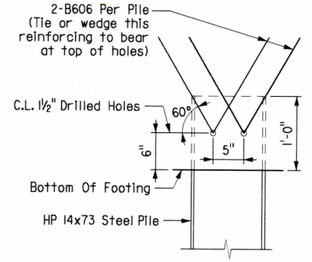


SECTION C-C

Scale: ¼" = 1'-0"

SECTION D-D

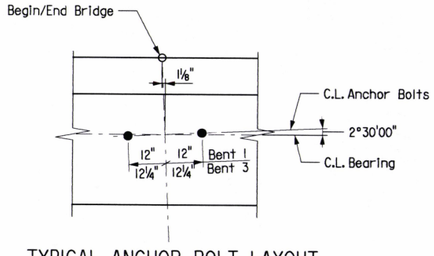
Scale: ¼" = 1'-0"



DETAIL AT PILE TOP

No Scale

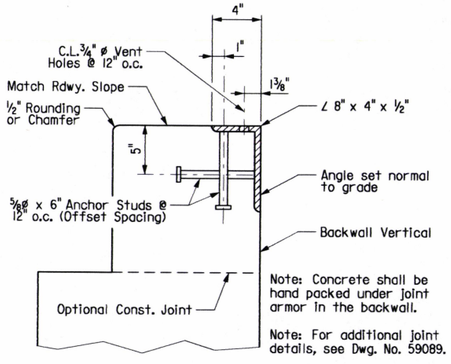
Drilled holes will not be paid for directly but shall be considered incidental to the item "STEEL PILING (HP14x73)".



TYPICAL ANCHOR BOLT LAYOUT

Scale: ½" = 1'-0"

For details of elastomeric bearings, see Dwg. No. 59090.



DETAIL Z

Scale: 2" = 1'-0"

GENERAL NOTES FOR SUBSTRUCTURE

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Class I Protective Surface Treatment shall be applied to the top of the backwall.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13339 LARRY W. MILLER

Larry W. Miller 10-6-16

BRIDGE ENGINEER

SHEET 1 OF 2

DETAILS OF BENTS 1 & 3

HWY. 38 BRIDGE OVER HWY. 67

ROUTE 67 SEC. 11

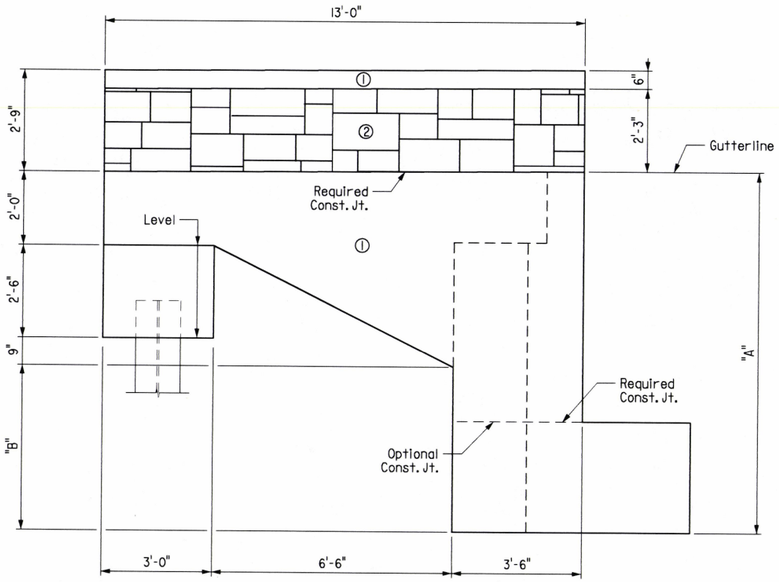
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: BEG	DATE: 7-16	FILENAME: B06II02MI-BII.dgn	
CHECKED BY: LWM	DATE: 07-21-16	SCALE: AS SHOWN	
DESIGNED BY: BEG	DATE: 7-16		

BRIDGE NO. 07401 DRAWING NO. 59077

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.		061102	173	400
				① 07401		BENT 1 & 3		59078

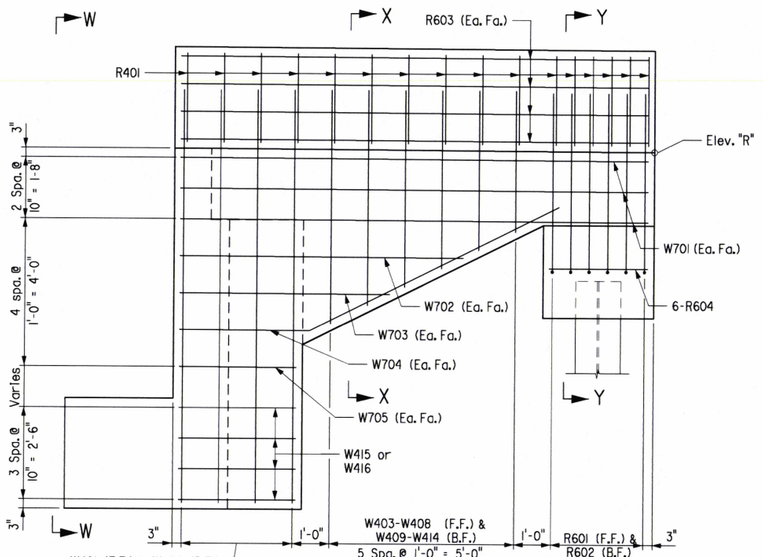


VIEW A-A
(Wing A Shown, Wing B Similar)
Scale: ½" = 1'-0"

① Class 3 Textured Coating Finish (Color = Gray, Color Chip No. 37150)

② "Ashlar Stone" Form Liner & Class 3 Textured Coating Finish (Color = Gray, Color Chip No. 37150)

NOTE:
A Class 3 Textured Coating Finish shall be applied to bridge surfaces as specified in SP JOB NO. 061102 "TEXTURED COATING FINISH" and in accordance with Subsection 802.19.

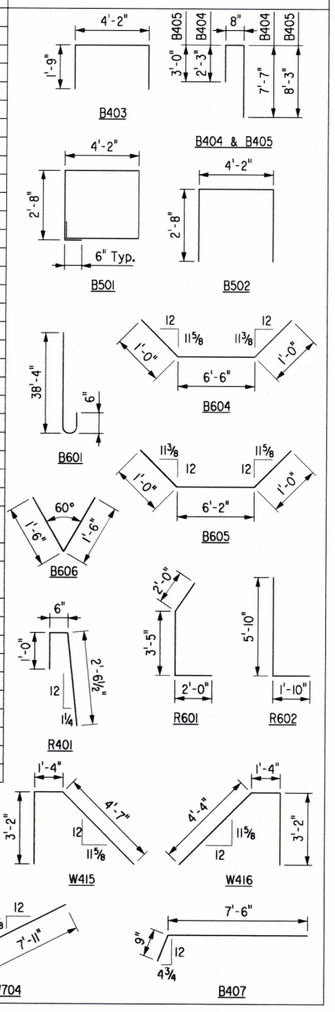


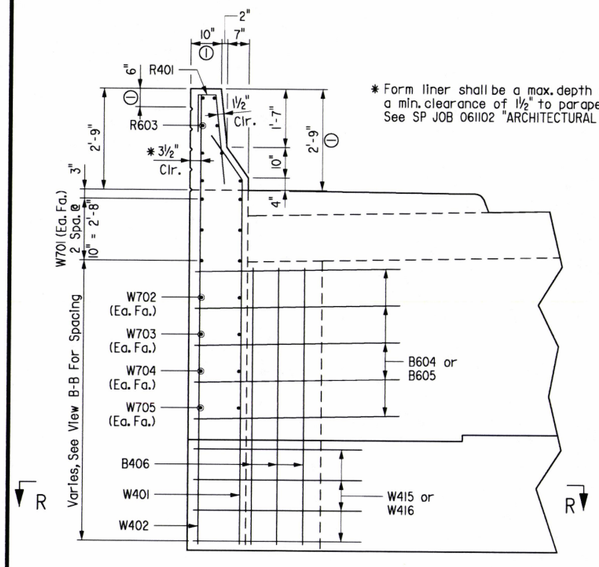
VIEW B-B
(Wing A Shown, Wing B Similar)
Scale: ½" = 1'-0"

BENT 1 & 3 BAR LIST (EACH BENT)

Mark	Number Required	Length	Pin Dia.
B401	36	37'-11"	Str.
B402	12	22'-1"	Str.
B403	43	7'-6"	2"
B404	60	10'-4"	3"
B405	12	11'-9"	3"
B406	6	7'-6"	Str.
B407	4	8'-3"	2"
B501	70	14'-2"	2½"
B502	27	9'-4"	2½"
B601	12	39'-0"	4½"
B602	12	38'-4"	Str.
B603	72	6'-11"	Str.
B604	6	8'-6"	4½"
B605	6	8'-2"	4½"
B606	18	2'-10"	4½"
R401	32	3'-11"	2"
R601	12	7'-3"	4½"
R602	12	7'-6"	4½"
R603	16	12'-8"	Str.
R604	12	2'-8"	Str.
W401	8	11'-11"	3"
W402	8	12'-3"	Str.
W403 to W408	2 Each	7'-0" to 4'-2"	3"
W409 to W414	2 Each	7'-3" to 4'-9"	Str.
W415	4	9'-1"	2"
W416	4	8'-10"	2"
W701	12	12'-8"	Str.
W702	4	7'-8"	Str.
W703	4	5'-8"	Str.
W704	4	11'-5"	5¼"
W705	4	3'-2"	Str.

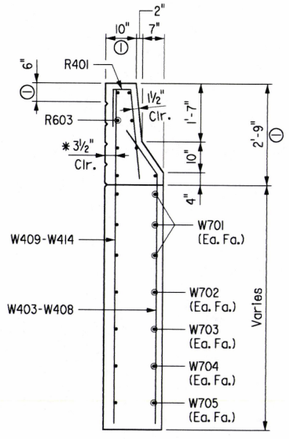
BENDING DIAGRAMS
(Dimensions are out to out of bars)



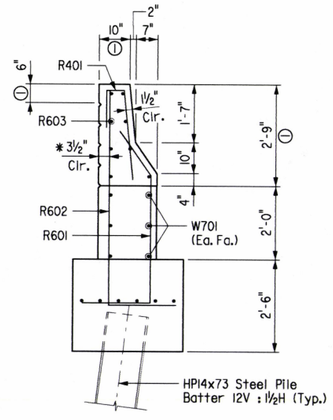


VIEW W-W
(Wing A Shown, Wing B Similar)
Scale: ½" = 1'-0"

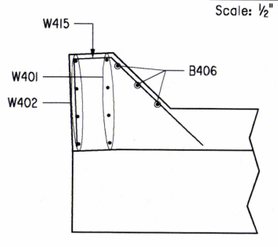
* Form liner shall be a max. depth of 2" to provide a min. clearance of 1½" to parapet reinforcing. See SP JOB 061102 "ARCHITECTURAL FINISH".



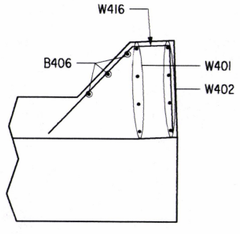
SECTION X-X
Scale: ½" = 1'-0"



SECTION Y-Y
Scale: ½" = 1'-0"



SECTION R-R (WING A)
Scale: ⅜" = 1'-0"



SECTION R-R (WING B)
Scale: ⅜" = 1'-0"

TABLE OF WING VARIABLES

Location	"A"	"B"	"R"
Bent 1, Wing A	9'-9⅜"	4'-5⅝"	297.56
Bent 1, Wing B	9'-9⅜"	4'-5⅞"	297.58
Bent 3, Wing A	9'-9¾"	4'-4¾"	296.33
Bent 3, Wing B	9'-10⅛"	4'-5¼"	296.37

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
BRIDGE ENGINEER
10-6-16

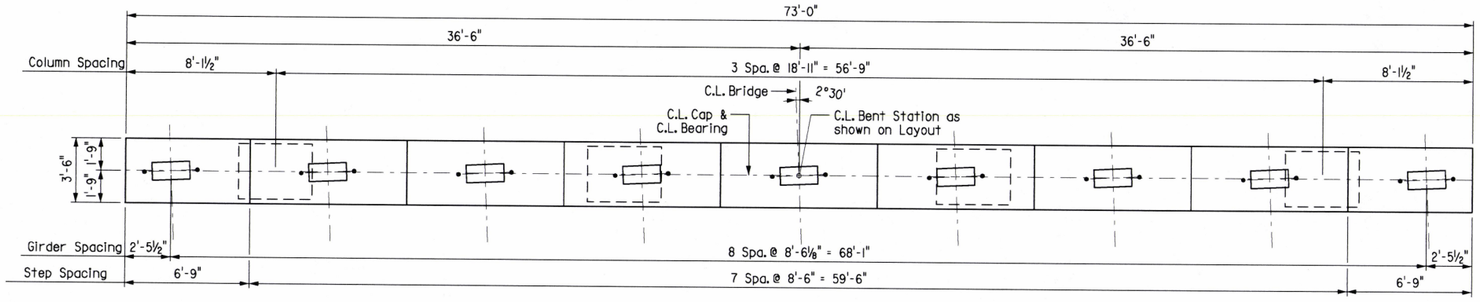
For GENERAL NOTES FOR SUBSTRUCTURE, see Dwg. No. 59077.

SHEET 2 OF 2
DETAILS OF BENTS 1 & 3
HWY. 38 BRIDGE OVER HWY. 67
ROUTE 67 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

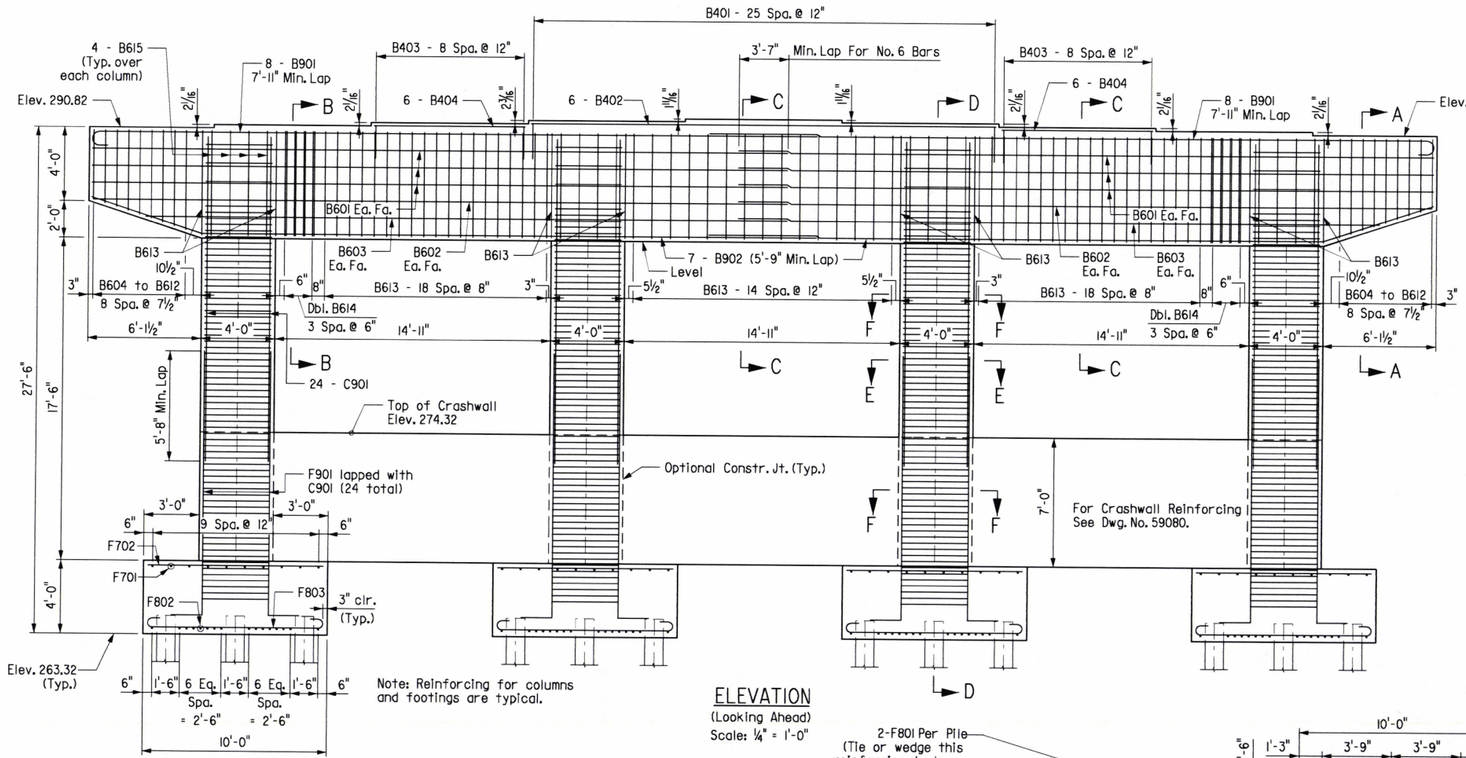
DRAWN BY: BEG DATE: 7-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: BEG DATE: 7-16
FILENAME: B06II02MI_BI2.dgn
SCALE: AS SHOWN
BRIDGE NO. 07401
DRAWING NO. 59078

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

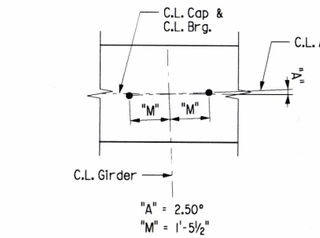
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	174	400
(1) 07401		BENT 2		59079



PLAN
Scale: ¼" = 1'-0"

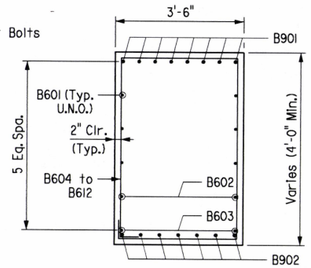


ELEVATION
(Looking Ahead)
Scale: ¼" = 1'-0"

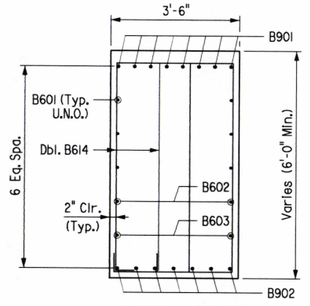


TYPICAL ANCHOR BOLT LAYOUT
Scale: ⅜" = 1'-0"

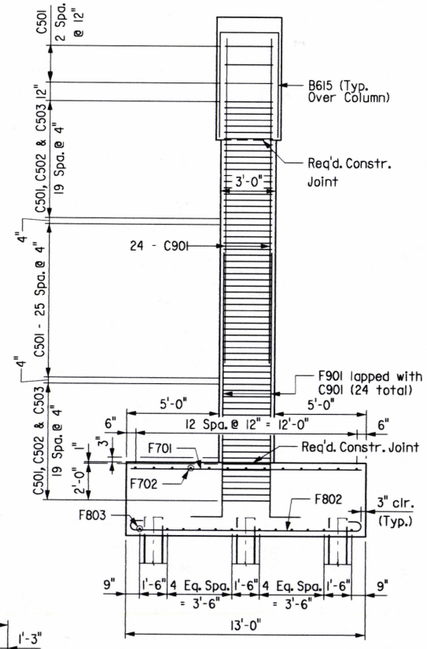
For details of elastomeric bearings, see Dwg. No. 59090



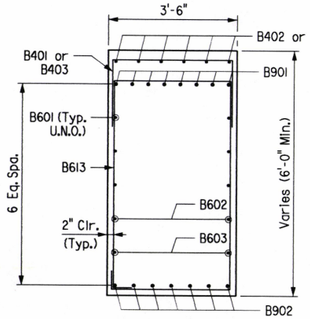
SECTION A-A
Scale: ½" = 1'-0"



SECTION B-B
Scale: ½" = 1'-0"

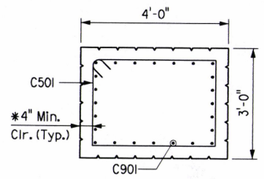


SECTION D-D
Scale: ¼" = 1'-0"

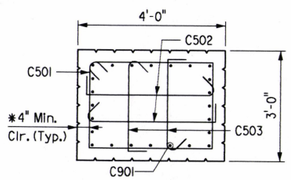


SECTION C-C
Scale: ½" = 1'-0"

Note: For General Notes, Bar List, and details of Crashwall and column aesthetics see Dwg. No. 59080.

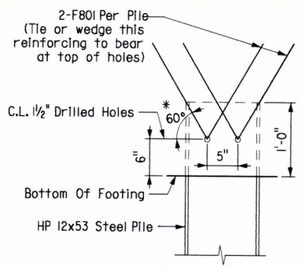


SECTION E-E
Scale: ½" = 1'-0"



SECTION F-F
(Top of Column Shown, Bottom is Similar)
Scale: ½" = 1'-0"

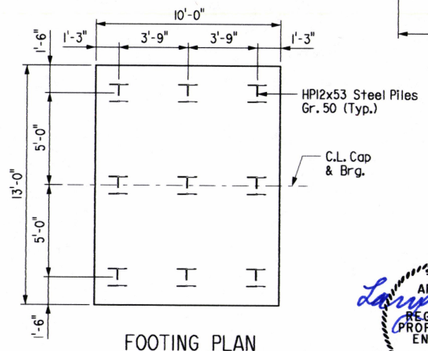
Note: The 135° hooks of consecutive C502 & C503 cross-ties shall be alternated end-for-end.



DETAIL AT PILE TOP
No Scale

Drilled holes will not be paid for directly but shall be considered incidental to the item "STEEL PILING (HP12x53)".

* Tilt bars as needed to provide minimum cover.



FOOTING PLAN
Scale: ¼" = 1'-0"

* Form Liner shall be a maximum depth of 2" to provide a minimum clearance of 2". See Dwg. No. 59080 for details of column aesthetics. See SP Job 061102 "ARCHITECTURAL FINISH".

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
BRIDGE ENGINEER
10-6-16

SHEET 1 OF 2
DETAILS OF BENT 2
HWY. 38 BRIDGE OVER HWY. 67
ROUTE 67 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BEG	DATE: 6-16	FILENAME: B06II02MI_B2I.dgn	
CHECKED BY: LWM	DATE: 07-21-16	SCALE: AS SHOWN	
DESIGNED BY: BEG	DATE: 6-16		

BRIDGE NO. 07401
DRAWING NO. 59079

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.		061102	175	400
				① 07401		BENT 2		59080

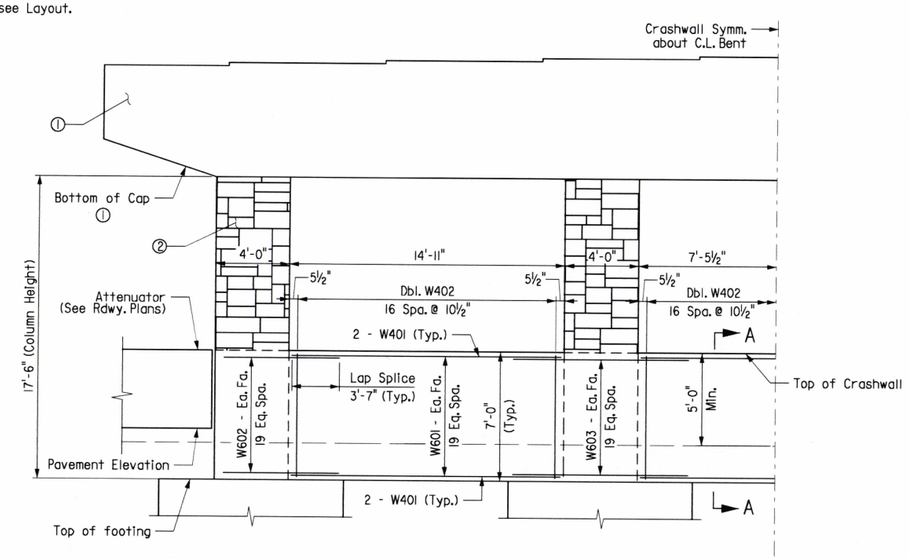
GENERAL NOTES

Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

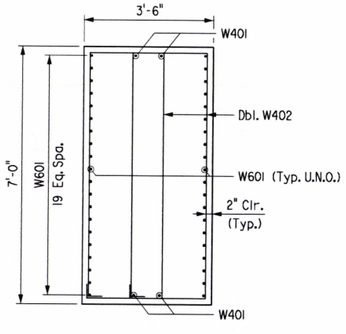
For additional information, see Layout.



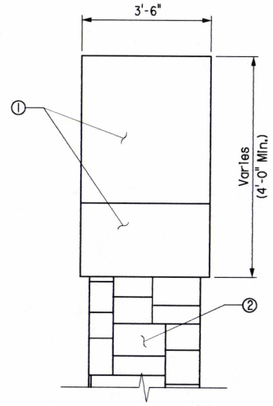
CRASHWALL ELEVATION
Scale: ¼" = 1'-0"

① Class 3 Textured Coating Finish (Color = Gray, Color Chip No. 37150)

② "Ashlar Stone" Form Liner & Class 3 Textured Coating Finish (Color = Gray, Color Chip No. 37150)



SECTION A-A
Scale: ½" = 1'-0"

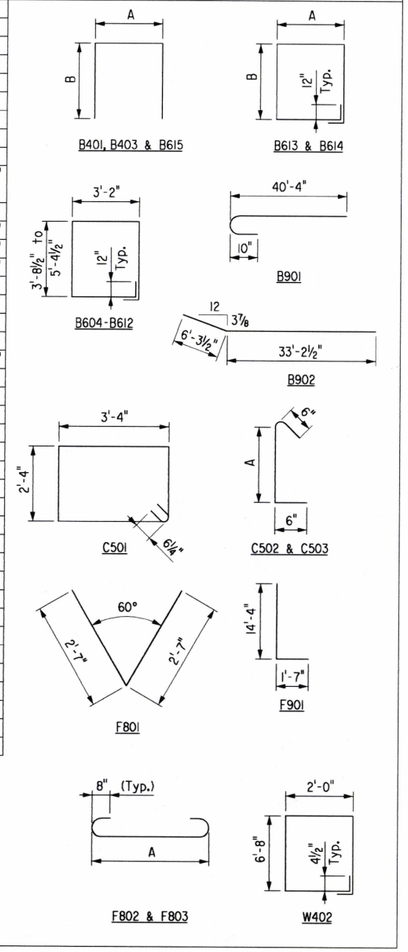


CAP - END VIEW
Scale: ½" = 1'-0"

BENT 2 BAR LIST

Mark	Number Required	Length	A	B	Pin Dia.
B401	26	6'-10"	3'-2"	1'-11"	2"
B402	6	25'-2"			Str.
B403	18	6'-6"	3'-2"	1'-9"	2"
B404	12	8'-2"			Str.
B601	12	38'-2"			Str.
B602	4	38'-0"			Str.
B603	4	35'-3"			Str.
B604 to B612	2 ea.	14'-11" to 18'-3"			4 1/2"
B613	61	18'-10"	3'-2"	5'-8"	4 1/2"
B614	16	16'-6"	2'-0"	5'-8"	4 1/2"
B615	16	14'-2"	3'-2"	5'-8"	4 1/2"
B901	16	41'-7"			9"
B902	14	39'-6"			9"
C501	276	12'-0"			3 3/4"
C502	320	4'-2"	3'-4"		2 1/2"
C503	320	3'-2"	2'-4"		2 1/2"
C901	96	17'-7"			Str.
F701	40	12'-6"			Str.
F702	52	9'-6"			Str.
F801	72	5'-0"			6"
F802	64	14'-4"	12'-6"		6"
F803	48	11'-4"	9'-6"		6"
F901	96	15'-8"			9"
W401	12	14'-7"			Str.
W402	102	17'-8"			2"
W601	120	14'-7"			Str.
W602	80	7'-5"			Str.
W603	80	11'-6"			Str.

Bending Diagrams (Dimensions are out to out of bars.)



STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11539 LARRY W. MILLER

Larry W. Miller 10-6-16

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 2
HWY. 38 BRIDGE OVER HWY. 67
ROUTE 67 SEC. II
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BEG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: BEG DATE: 6-16
FILENAME: B06II02MI_B22.dgn
SCALE: AS SHOWN

BRIDGE NO. 07401 DRAWING NO. 59080

Slab Reinforcing:

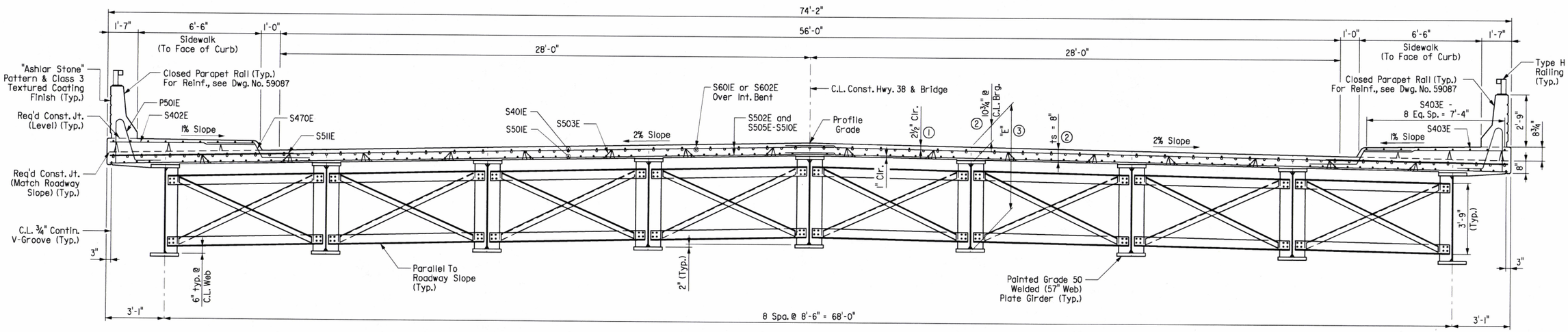
Longitudinal: S401E @ 18" o.c. in top
S501E @ 8" o.c. in bottom
S601E or S602E as shown, see "Reinforcing Plan & Deck Pouring Sequence" on Dwg. No. 59083.

Transverse: S503E @ 12" o.c. bent up over girders ——— Alternate
S502E @ 12" o.c. in top and bottom
S511E @ 6" in top of overhangs (Spaced with S502E & S503E bars)

NOTE: All transverse dimensions are measured perpendicular to C.L. Bridge unless noted otherwise.

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.		061102	176	400
① 07401		SPAN DETAILS		59081



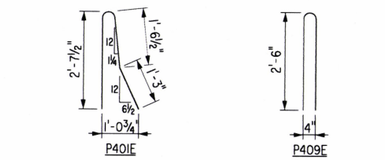
TYPICAL SECTION

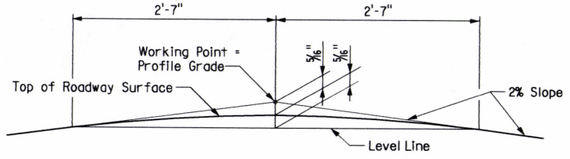
Scale: 3/8" = 1'-0"

BAR LIST

Bending Diagrams
(Dimensions are out to out of bars.)

Mark	No. Req'd.	Length	Pin Dia.
S401E	400	36'-0"	Str.
S402E	546	7'-7"	Str.
S403E	144	36'-4"	Str.
S470E	546	6'-5"	3"
S501E	480	57'-0"	Str.
S502E	1080	38'-3"	Str.
S503E	538	39'-1"	3"
S504E	8	38'-3"	Str.
S505E	8	34'-1"	Str.
S506E to S510E	2 ea.	8'-3" to 52'-2"	Str.
S511E	1078	9'-8"	Str.
S601E	99	34'-7"	Str.
S602E	99	31'-7"	Str.
P401E	1062	5'-6"	3"
P402E	24	39'-2"	Str.
P403E	6	16'-7"	Str.
P404E	44	18'-7"	Str.
P405E	50	17'-7"	Str.
P406E	32	32'-10"	Str.
P407E	6	15'-7"	Str.
P408E	4	3'-10"	2"
P409E	12	5'-2"	3"
P501E	1062	6'-2"	3¾"





ROUNDING DETAIL

No Scale

① TOLERANCE:
Minus: ¼"
Plus: Equal to amount of slab thickening used to meet slab thickness tolerance.
See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED" on Dwg. No. 59082.

② See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED" on Dwg. No. 59082.

③ "E" = 5'-7¾" plus bottom flange thickness measured at C.L. Bearing & C.L. Girder (Typ.)

NOTES:

One Epoxy Coated #5 bar in the top and one Epoxy Coated #5 bar in the bottom may be substituted for each bar S503E. Payment will be based on the weight of bars S503E.

Class I Protective Surface Treatment shall be applied to the roadway surface and sidewalks.

All bars designated with an "E" suffix are to be epoxy coated.

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices per Subsection 804.06.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
10-6-16
BRIDGE ENGINEER

SHEET 1 OF 8
DETAILS OF 273'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT HWY. 38 BRIDGE OVER HWY. 67

ROUTE 67 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: DJJ DATE: 7-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: DJJ DATE: 7-16
FILENAME: B06110 2MI_SI.dgn
SCALE: AS SHOWN

BRIDGE NO. 07401 DRAWING NO. 59081

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.		061102	177	400
				(1) 07401		SPAN DETAILS		59082

SUPERSTRUCTURE 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 numbers refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (2012, 6th Edition) with interim specifications.

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c	= 4,000 psi
Reinforcing Steel (AASHTO M 31 or M 322 Type A, Gr. 60)	fy	= 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50)	Fy	= 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy	= 36,000 psi

CONCRETE: Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted. All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

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

The concrete deck shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. The sidewalk shall receive a broomed finish as specified for final finishing in Subsection 802.19 for Class 6, Broomed Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the girder. If a longitudinal strike-off is used, a vertical camber adjustment must be made in the strike-off to account for the future dead load deflection due to the railing.

A minimum of 72 hours shall elapse between completion of the sidewalk and the pouring of the parapet railing.

REINFORCING STEEL: All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "EPOXY COATED REINFORCING STEEL (GRADE 60)".

STRUCTURAL STEEL: All structural steel shall be AASHTO M 270, Gr. 50 unless otherwise noted and shall be paid for as "STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270, GR. 50)". All structural steel except galvanized steel and steel which is completely encased in concrete shall be painted in accordance with Subsection 807.75. The color of paint shall be DARK GRAY and shall conform to Federal Standard 595B, Color Chip No. 26122. All exposed surfaces shall be cleaned in accordance with Subsection 807.84(b). Structural steel completely embedded in concrete may be AASHTO M 270, Grade 36. See Dwg. No. 59090 for cleaning requirements of external load plates of elastomeric bearings.

Drawings show general features of design only. Shop drawings shall be made in accordance with the Specifications, submitted, and approval secured before fabrication is begun.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Shapes and materials shown in the plans will be the basis of payment and no additional compensation will be made for any adjustments due to substitutions.

Longitudinal girders and all splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-notch Test specified in Subsection 807.05. This work and material will not be paid for directly but are considered subsidiary to item "STRUCTURAL STEEL IN PLATE GIRDER SPANS (M 270, GR. 50)".

All Girders shall be blocked in their true position in the shop, in groups of a minimum of three (3) sections as specified in Subsection 807.54(b)(2). Girders shall be blocked with webs horizontal. The camber, length of sections, distance between bearings and openings of joints shall be measured with the girders in their true position and this information shall become part of the permanent records for this job. The component parts shall be match-marked in this assembly and these marks shall be shown on the erection diagram. All girder dimensions are based on a temperature of 60° F. A tolerance of ¼" +/- is allowed for camber.

Field splice flange plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

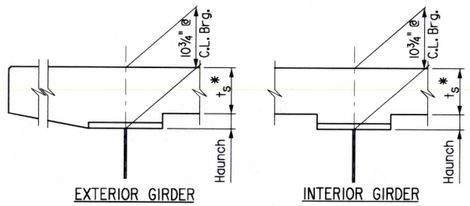
All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether temporary or permanent, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching falsework support devices or screed rail supports to the structural steel that do not exceed the limitations of Subsection 802.13 will not require approval prior to construction. All welding shall conform to Subsection 807.26.

Anchor bolts shall be galvanized according to Section 807.07 and shall be Grade 55.

Field connections shall be bolted with high-strength bolts. Unless noted otherwise, bolts shall be ¾"ø and open holes shall be 15/16". Holes for ¾"ø high-strength bolts may be 15/16"ø if a washer is supplied for use under both the nut and head of the bolt. Bolt spacing shall be 2½" for ¾"ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior girder webs and on the bottom of the girder flanges.

Cross frames shall be installed as girders are erected. All bolts in cross frames and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck, unless noted otherwise.

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



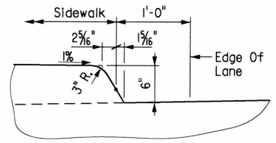
Note: ts = slab thickness as shown on "TYPICAL SECTION".
*Tolerance when removable deck forming is used is +½", -¼".
Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

No Scale

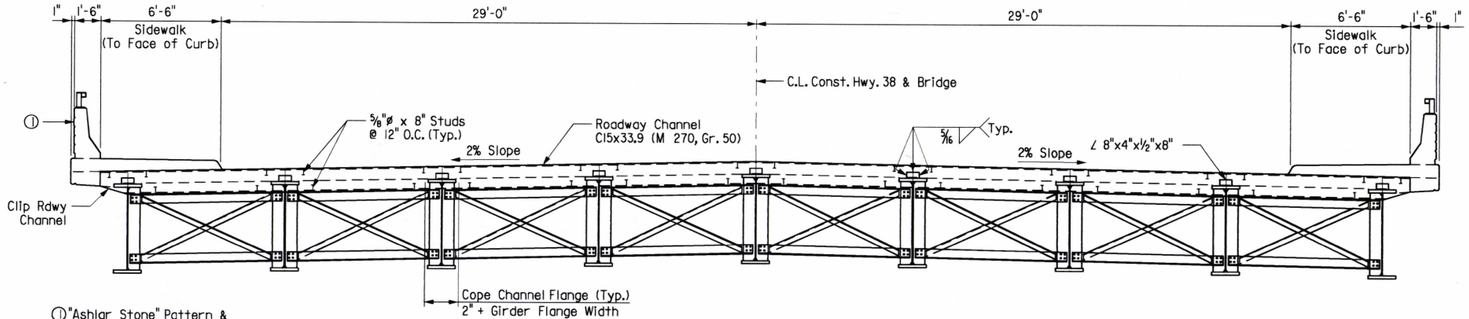
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance; Minimum - occurs when the top flange contacts the bottom reinforcing steel; Maximum - top flange thickness plus 2¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.



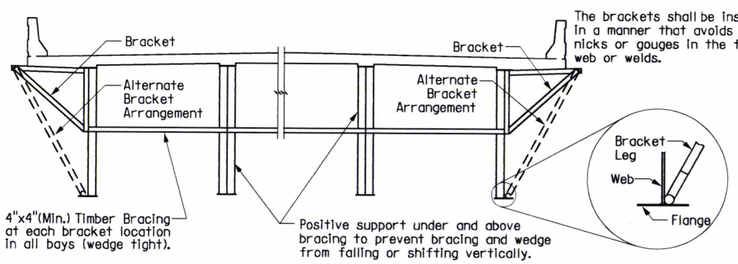
CURB DETAIL

Scale: 1" = 1'-0"



ROADWAY NEAR SECTION JOINT

¼" = 1'-0"



Note: If a transverse finishing machine is used, the rail shall be supported directly over the exterior girders, or as an alternate, the rail may be supported by the overhang brackets if the above strutting system is used. The strutting system may be omitted if ½"x6½" web stiffeners are welded to the insides of the exterior girders at the location of each bracket or if the alternate bracket arrangement shown above is used. The Alternate Bracket arrangement shall extend down to the junction of the web and bottom flange. The stiffener shall conform to the cross frame connection detail shown on Dwg. No. 59086. No direct payment will be made for brackets, timber bracing, supports, or welded stiffeners. Payment shall be subsidiary to "Structural Steel in Plate Girder Spans (M270. Gr. 50)."

SCREED RAIL SUPPORT

No Scale

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
10-6-16

BRIDGE ENGINEER

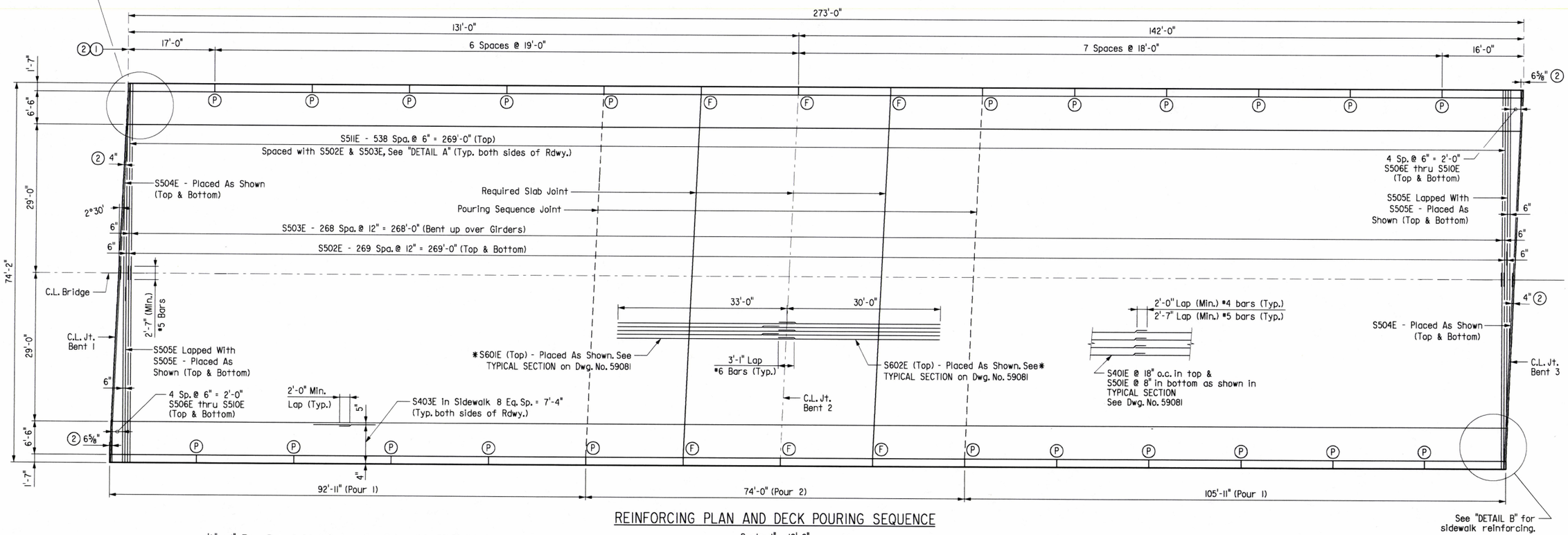
SHEET 2 OF 8
DETAILS OF 273'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT
HWY. 38 BRIDGE OVER HWY. 67
ROUTE 67 SEC. II
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: DJJ DATE: 6-16 FILENAME: B06II02MI_S2.dgn
CHECKED BY: LWM DATE: 07-21-16 SCALE: AS SHOWN
DESIGNED BY: DJJ DATE: 6-16
BRIDGE NO. 07401 DRAWING NO. 59082

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.		061102	178	400
				(1) 07401		SPAN DETAILS		59083

Note: See TYPICAL SECTION on Dwg. No. 59081 for placement of longitudinal reinforcing.

Note: For Bar List, see Dwg. No. 59081.



REINFORCING PLAN AND DECK POURING SEQUENCE

Scale: 1" = 10'-0"

* Note: Alternate Bars S601E & S602E as shown to stagger lap splice location.

(1) Parapet joint spacing is measured along gutterline.

(2) Dimensions are measured to centerline joint.

(P) C.L. Partial Depth Parapet Joint (¼" to 1" max.). Stop 1'-2" from top of slab.

(F) C.L. Full Depth Parapet Joint (¼" to 1" max.). Stop 4" from top of slab.

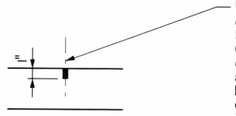
Note: Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse before the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

72 hours shall elapse between the completion of the entire deck and the pouring of the sidewalk. 72 hours shall elapse between the completion of the sidewalk and the pouring of the parapet rail.

The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

Concrete in girder superstructure shall be consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

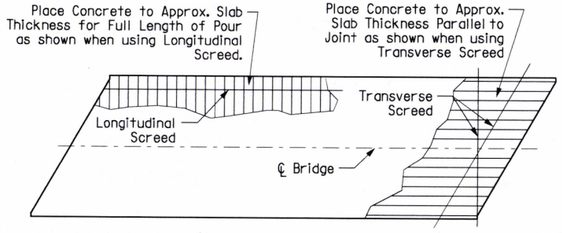
Required slab joints and pouring sequence construction joints shall align with parapet open joints at the gutterline.



½" x 1" Type 3 or 4 Joint Sealer. See Subsection 501.02 (h) and 501.05 (j). Backer rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the sidewalk is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set up to allow the sawing of joint without damage to the slab. Slab joints shall be placed at all Pouring Sequence Construction Joints and Required Slab Joint locations. After installation of the joint in the sidewalk and prior to pouring the parapet rail, the joint sealer shall extend across the deck slab (gutterline to gutterline) and across the top of the sidewalk to the edge of the slab. Slab joints shall align with parapet open joints. No joint sealer shall be placed on the deck slab under the sidewalk.

SLAB JOINT DETAIL

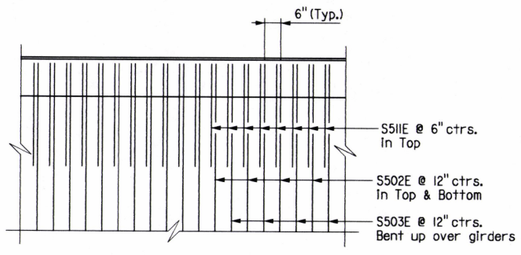
No Scale



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

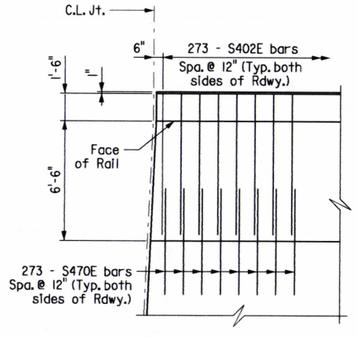
CONCRETE PLACEMENT PROCEDURE

No Scale



DETAIL A

No Scale



DETAIL B

Scale: ¼" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
Larry W. Miller 10-6-16
BRIDGE ENGINEER

SHEET 3 OF 8
DETAILS OF 273'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT HWY. 38 BRIDGE OVER HWY. 67

ROUTE 67 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

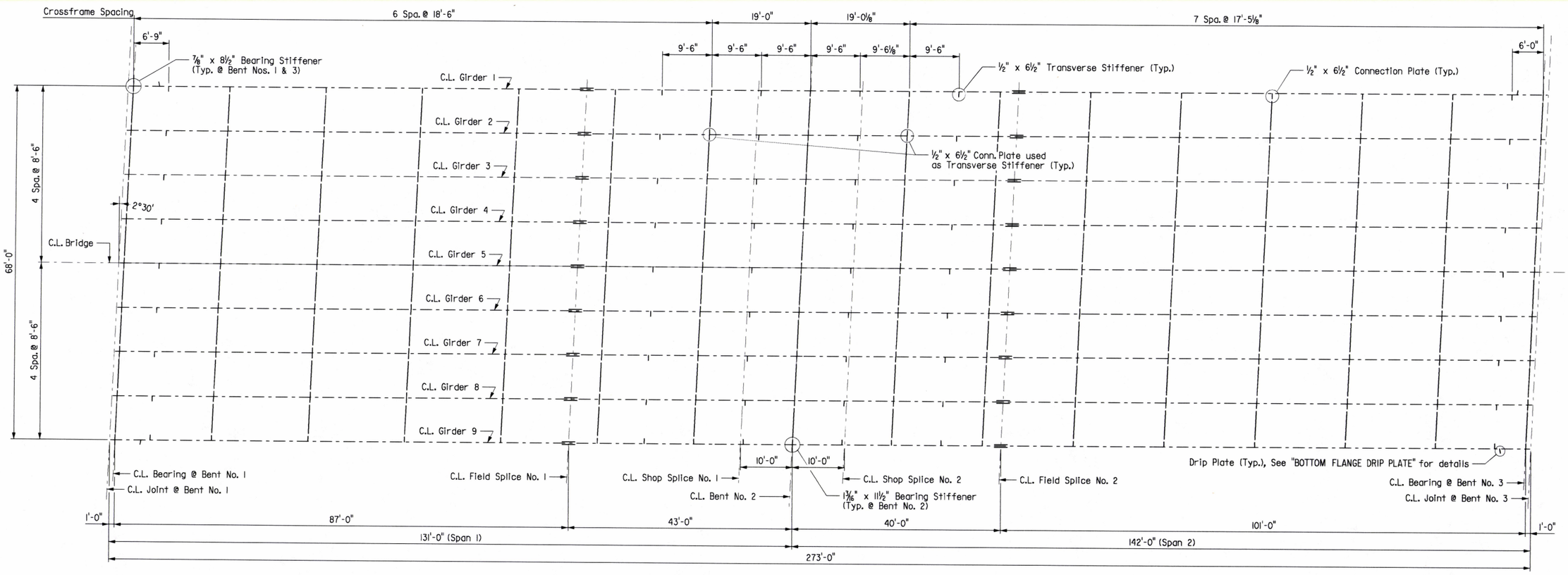
DRAWN BY: DJJ DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: DJJ DATE: 6-16

FILENAME: B06102MI_S3.dgn
SCALE: AS SHOWN

BRIDGE NO. 07401 DRAWING NO. 59083

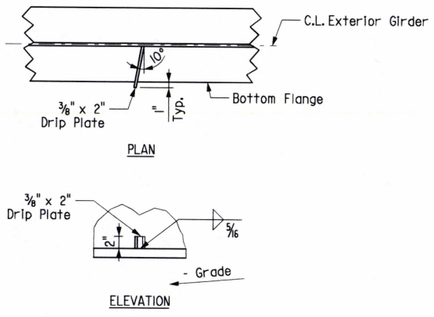
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	179	400
(1) 07401		SPAN DETAILS		59084



FRAMING PLAN

Scale: 1" = 10'-0"



BOTTOM FLANGE DRIP PLATE

No Scale

Notes:
Bottom flange drip plate to be welded to the outside of each exterior girder.

Locate drip plate 5'-0" from C.L. Bearing on high side of each end bent.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
10-6-16
BRIDGE ENGINEER

SHEET 4 OF 8
DETAILS OF 273'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT
HWY. 38 BRIDGE OVER HWY. 67
ROUTE 67 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BEG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: BEG DATE: 6-16
FILENAME: B06II02MI_S4.dgn
SCALE: 1" = 10'-0"

BRIDGE NO. 07401 DRAWING NO. 59084

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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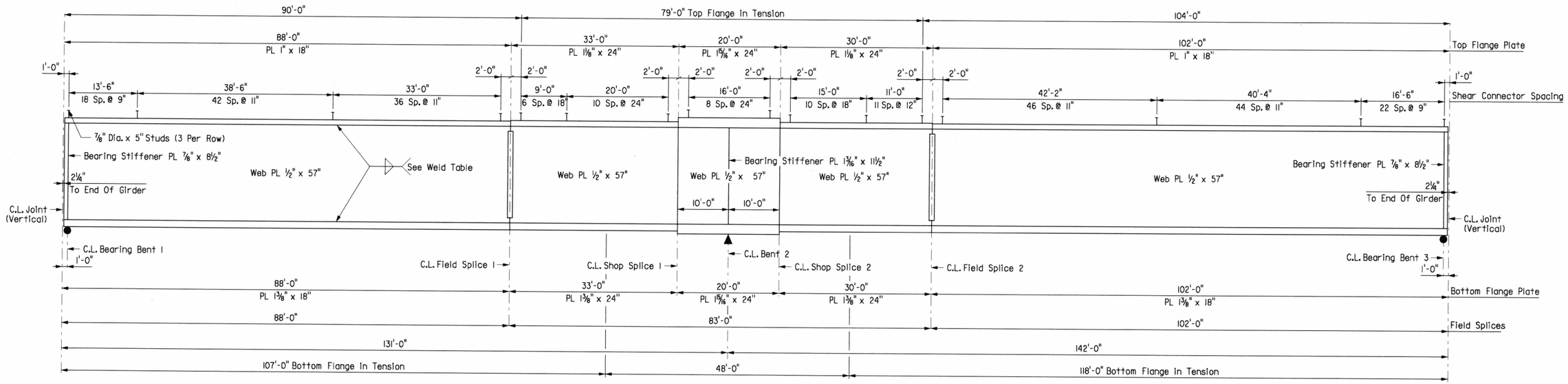
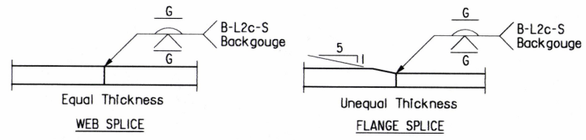
				JOB NO.		061102	180	400
				(1) 07401		SPAN DETAILS		59085



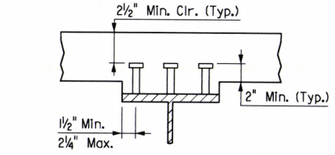
FRAMING PLAN

Scale: 1" = 10'-0"



DETAILS OF SHOP WELDED SPLICES

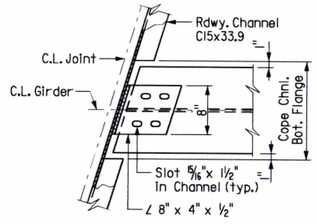
No Scale



Stud Shear Connectors shown shall be ⅞" dia. x 5" long, granular flux filled, solid fluxed or equal, and automatically end welded to the girder flange in accordance with the recommendations of the Manufacturer. ¾" dia. studs may be used in place of the ⅞" dia. studs shown, at the ratio of 1.361 - ¾" dia. studs in place of one ⅞" dia. stud. ⅞" dia. studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24".

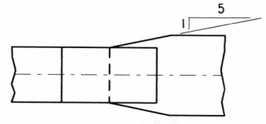
SHEAR CONNECTOR DETAIL

No Scale



ROADWAY CHANNEL CONNECTION DETAIL

No Scale



FIELD SPLICE AT UNEQUAL FLANGE WIDTHTS

No Scale

STATE OF ARKANSAS
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10-6-16
BRIDGE ENGINEER

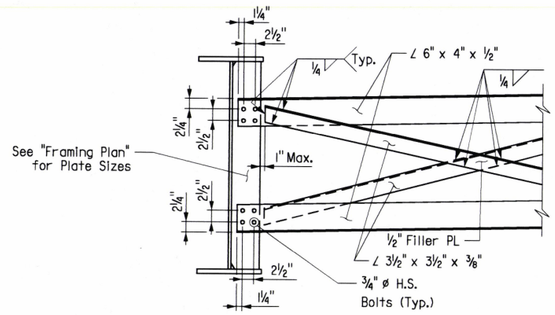
SHEET 5 OF 8
DETAILS OF 273'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT
HWY. 38 BRIDGE OVER HWY. 67
ROUTE 67 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BEG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: BEG DATE: 6-16
FILENAME: B06II02MI_S5.dgn
SCALE: AS SHOWN

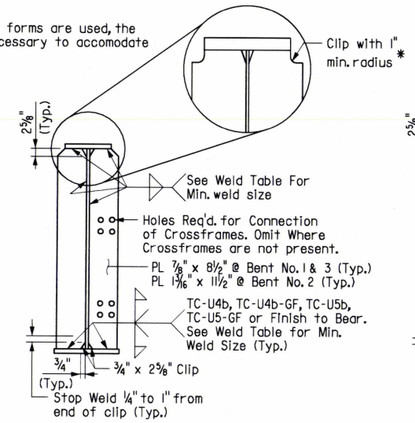
BRIDGE NO. 07401 DRAWING NO. 59085

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.		061102	181	400
				(1) 07401		SPAN DETAILS		59086

* Note: If permanent steel girder deck forms are used, the fabricator shall clip the plate as necessary to accomodate the deck form support.

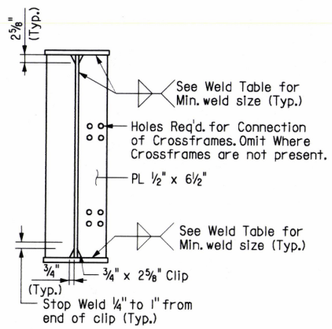


TYPICAL CROSSFRAME CONNECTION

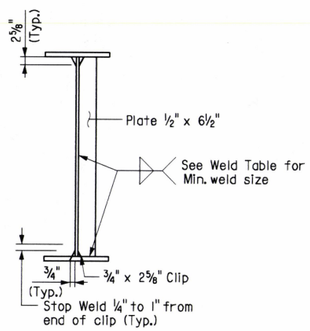


BEARING STIFFENER DETAIL

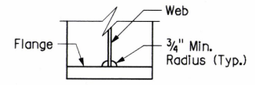
Note: Bearing stiffeners shall be fabricated to be vertical in final position.



CROSS FRAME CONNECTION DETAIL



INTERMEDIATE STIFFENER DETAIL



Note: Height and width of clip shall be as noted in other details.

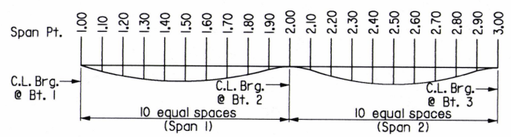
ALTERNATE CLIP DETAIL

(For Bearing Stiffeners, Transverse Stiffeners, and Cross-Frame Connection Plates)

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

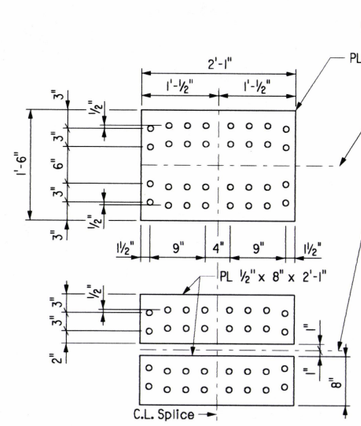
Tolerance for camber for dead load deflection plus vertical curve is +/- ¼". Deflections shown are along the centerline girder from the plane perpendicular to the web extending from centerline bearing to centerline bearing. Vertical curve corrections not included. Negative sign (-) indicates upward deflection.

SPAN NO.	POINT OF DEFLECTION	INTERIOR GIRDER			EXTERIOR GIRDER		
		Structural Steel	Structural Steel +Slab	Structural Steel +Slab +Para. Rail +Sidewalk	Structural Steel	Structural Steel +Slab	Structural Steel +Slab +Para. Rail +Sidewalk
1	1.0	0.00	0.00	0.00	0.00	0.00	0.00
	1.1	0.21	0.74	0.78	0.21	0.66	0.73
	1.2	0.37	1.34	1.42	0.37	1.21	1.32
	1.3	0.48	1.71	1.82	0.48	1.54	1.69
	1.4	0.51	1.82	1.93	0.51	1.64	1.80
	1.5	0.46	1.66	1.76	0.46	1.49	1.64
	1.6	0.36	1.28	1.36	0.36	1.16	1.27
	1.7	0.22	0.79	0.84	0.22	0.71	0.78
	1.8	0.09	0.32	0.34	0.09	0.28	0.31
	1.9	0.00	0.01	0.01	0.00	0.01	0.01
2	2.0	0.00	0.00	0.00	0.00	0.00	0.00
	2.1	0.10	0.36	0.38	0.10	0.32	0.35
	2.2	0.28	1.05	1.12	0.28	0.94	1.04
	2.3	0.51	1.88	2.00	0.51	1.69	1.85
	2.4	0.72	2.64	2.80	0.72	2.37	2.60
	2.5	0.86	3.15	3.34	0.86	2.83	3.10
	2.6	0.89	3.29	3.49	0.89	2.96	3.24
	2.7	0.82	3.00	3.18	0.82	2.70	2.95
	2.8	0.62	2.29	2.43	0.62	2.06	2.26
	2.9	0.34	1.25	1.32	0.34	1.12	1.23
	3.0	0.00	0.00	0.00	0.00	0.00	0.00

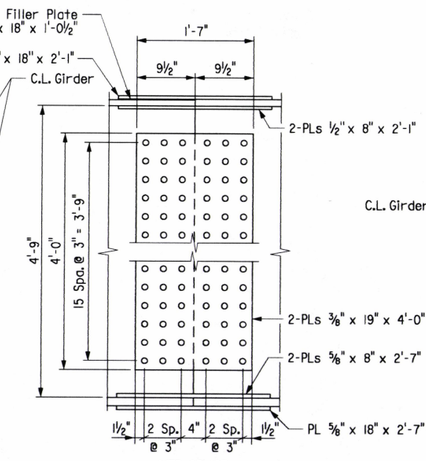


DEAD LOAD DEFLECTION DIAGRAM

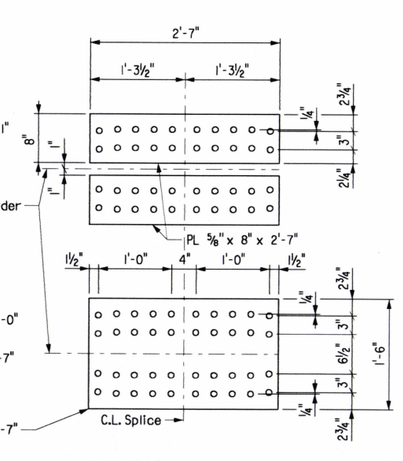
No Scale



TOP FLANGE SPLICE



WEB SPLICE



BOTTOM FLANGE SPLICE

DETAILS OF BOLTED FIELD SPLICES

All field splice bolts shall be ⅞" hi-strength bolts with 15/16" dia. holes.

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

TABLE FOR WELD

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	5/16"	

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

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13339 LARRY W. MILLER

Larry W. Miller 10-6-16

BRIDGE ENGINEER

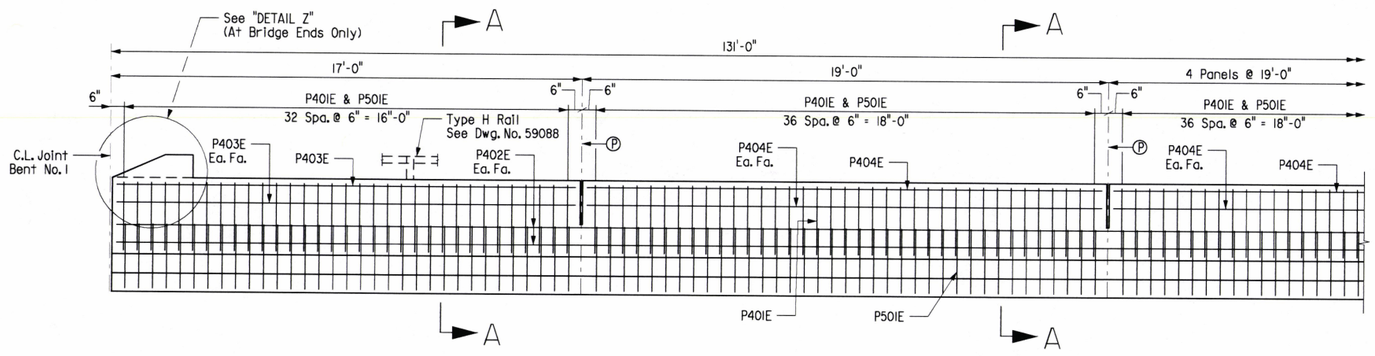
SHEET 6 OF 8
DETAILS OF 273'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT
HWY. 38 BRIDGE OVER HWY. 67
ROUTE 67 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BEG DATE: 6-16 FILENAME: B06II02MI_S6.dgn
CHECKED BY: LWM DATE: 07-21-16 SCALE: NO SCALE
DESIGNED BY: BEG DATE: 6-16

BRIDGE NO. 07401 DRAWING NO. 59086

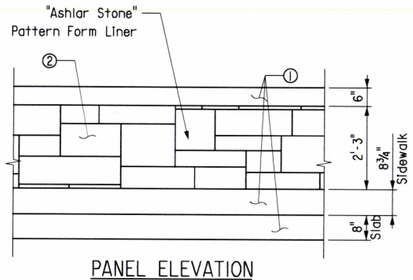
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	182	400
① 07401		SPAN DETAILS		59087



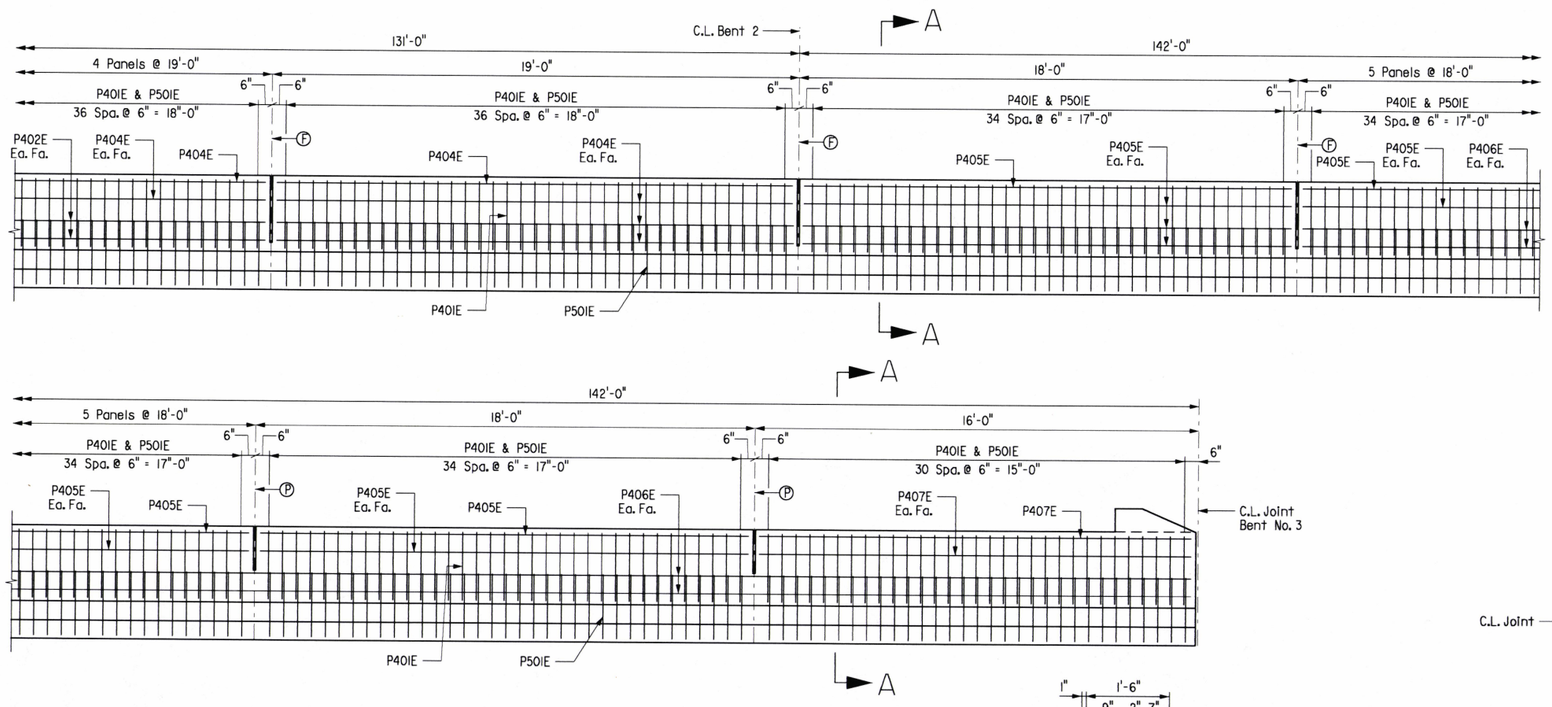
① Class 3 Textured Coating Finish (Color = Gray, Color Chip No. 37150)

② "Ashlar Stone" Form Liner & Class 3 Textured Coating Finish (Color = Gray, Color Chip No. 37150)



PANEL ELEVATION

(Showing Outside Face of Parapet)
Scale: ½" = 1'-0"



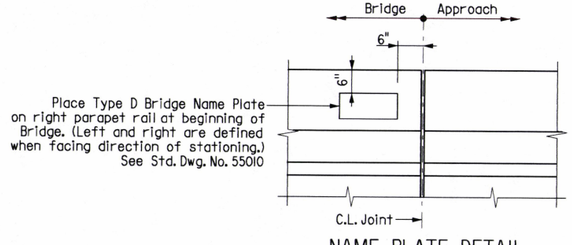
Minimum lap for horizontal #4 parapet bars = 2'-3"

Ⓟ C.L. Partial Depth Parapet Joint (¼" to 1" max.). Stop 1'-2" from top of sidewalk.

Ⓕ C.L. Full Depth Parapet Joint (¼" to 1" max.). Stop 4" from top of sidewalk.

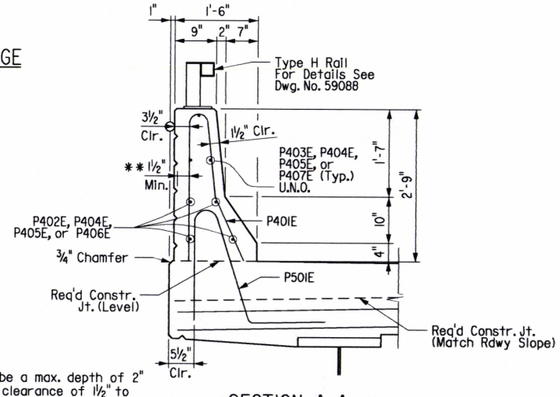
DETAILS OF PARPET RAIL (CLOSED) - BOTH SIDES OF BRIDGE

Scale: ⅜" = 1'-0"



NAME PLATE DETAIL

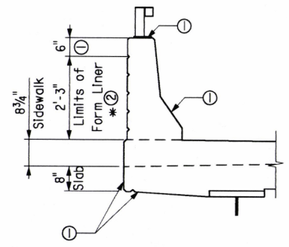
No Scale



**Note: Form Liner shall be a max. depth of 2" to provide a min. clearance of 1½" to parapet reinforcing. See SP JOB 061102 "ARCHITECTURAL FINISH".

SECTION A-A

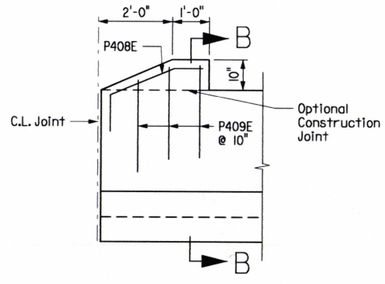
Scale: ¾" = 1'-0"



CLOSED PANEL PARAPET

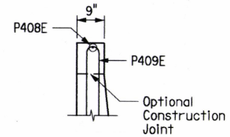
Scale: ½" = 1'-0"

* "Ashlar Stone" Pattern



DETAIL Z

Scale: ½" = 1'-0"



SECTION B-B

Scale: ½" = 1'-0"

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13339 LARRY W. MILLER

Larry W. Miller 10-6-16

BRIDGE ENGINEER

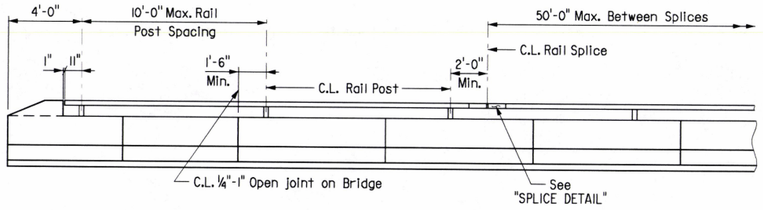
SHEET 7 OF 8
DETAILS OF 273'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT
HWY. 38 BRIDGE OVER HWY. 67
ROUTE 67 SEC. II
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BEG	DATE: 6-16	FILENAME: B06II02MI_S7.dgn
CHECKED BY: LWM	DATE: 07-21-16	SCALE: AS SHOWN
DESIGNED BY: BEG	DATE: 6-16	

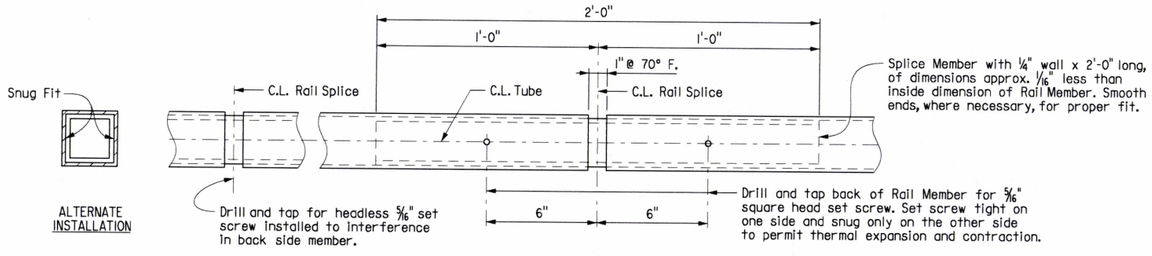
BRIDGE NO. 07401

DRAWING NO. 59087

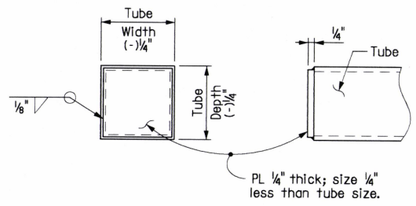
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	183	400
				(1) 07401		SPAN DETAILS		59088



RAIL POST SPACING DETAIL

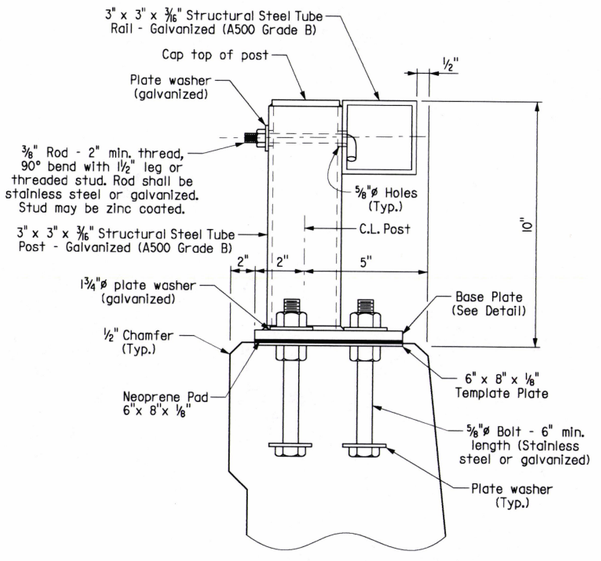


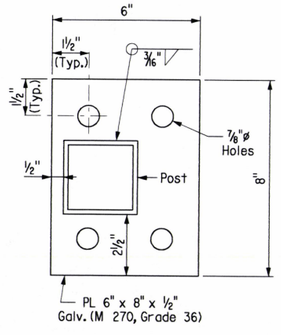
SPLICE DETAIL



END ELEV SIDE ELEV

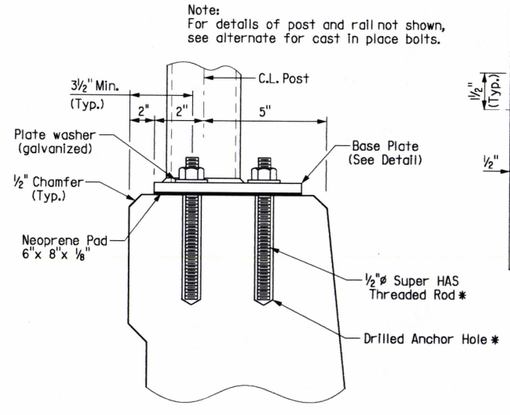
DETAILS OF END CAPS

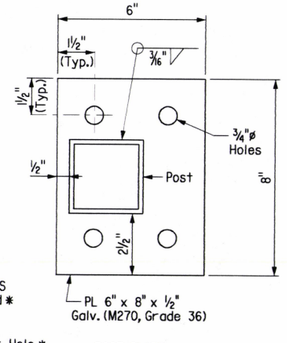




BASE PLATE

DETAILS OF POST ANCHOR SYSTEM
(CAST IN PLACE BOLTS)





BASE PLATE

*HILTI HIT RE 500 Epoxy Adhesive Anchor System with 4½" embedment or an approved equal.

The HILTI Epoxy Adhesive Anchor System shall be installed in accordance with the manufacturer's recommendations.

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

MATERIALS:

Tubing, Posts, and Accessories: AASHTO M 270, Grade. 36 or ASTM A500-Grade B.

Railing End Caps: AASHTO M 270, Grade 36, galvanized.

Steel rail members shall be galvanized in accordance with AASHTO M 111 after fabrication and shall receive a powder coating process after galvanizing. Galvanizing shall not interfere with the powder coating process. Galvanized surfaces shall be prepared in accordance with Subsection 807.87 and the powder coating manufacturer's recommendations before application of the powder coating process. The powder coating process shall be a two coat system applied using electrostatic spray. The base coat shall be a thermosetting epoxy powder with a minimum thickness of 2 to 4 mils. The top coat shall be tough polyester powder with a minimum thickness of 2 to 4 mils. Color shall be Brown equal to or close to Federal Std. 595B, color chip 20059 and as approved by the Engineer. Coated galvanized framework shall have a salt spray resistance of 3000 hours using ASTM B117 without loss of adhesion. The powder coating process shall be in accordance with Manufacturer recommendations. Any damage to the powder coated finish shall be repaired with a compatible touch-up system in accordance with Manufacturer's recommendations and to the satisfaction of the Engineer at the Contractor's expense.

Plate Washers shall be stainless steel and conform to the requirements of ASTM A197-Type 302 or AASHTO M 270, Gr. 36, galvanized in accordance with AASHTO M 232 or ASTM B695, Class 40 or 50. Plate washers shall have dimensions meeting the requirements of ANSI/ASME B18.22.1, Type A plain washer (Wide Series).

Mixing of Stainless steel and galvanized fasteners will not be permitted.

Cast in place anchor bolts shall be of stainless steel or high strength steel. Stainless steel anchor bolts shall conform to ASTM A193 or A320-Grade B8 with a minimum yield strength of 80,000 psi. High strength steel anchor bolts shall conform to ASTM A325 or A354-Grade BC galvanized in accordance with AASHTO M 232 or ASTM B695, Class 40 or 50.

Splice Set Screws: Stainless steel, ASTM Specifications A193 or A320-Grade B8, or AASHTO M 270, Grade 36, galvanized.

Nuts: Nuts shall conform to AASHTO M 292, Grade 8 (Stainless steel) or ASTM A325 galvanized in accordance with AASHTO M 232 or ASTM B695, Class 40 or 50.

Threads: Threads on bolts, screws, and nuts shall conform to American Standard Coarse Series, Class 2 FIT, ASA Specification B1.1.

Washers shall be of High strength steel conforming to ASTM F436, Grade 36, galvanized in accordance with AASHTO M 232 or ASTM B695, Class 40 or 50, or of stainless steel conforming to ASTM A276 or A167-Type 302.

NOTES FOR BRIDGE RAILING:

Rail layout shall conform to vertical and horizontal alignment of girder.

Maximum post spacing = 10'-0".

Minimum distance from centerline post to centerline open or contraction joints in parapet = 1'-6".

Rail splices shall be at 50' maximum spacing. Centerline splices shall be located at a maximum of 2 feet from centerline of post. Rail sections shall be fabricated to attach to at least three posts.

Base plates shall not be placed upon areas that are improperly finished, deformed, or irregular.

Bridge railing, including posts, fasteners, template plates, anchor bolts, neoprene pads, galvanizing and powder coatings shall be paid for at the contract unit price bid per linear foot for "Metal Bridge Railing (Type H)".

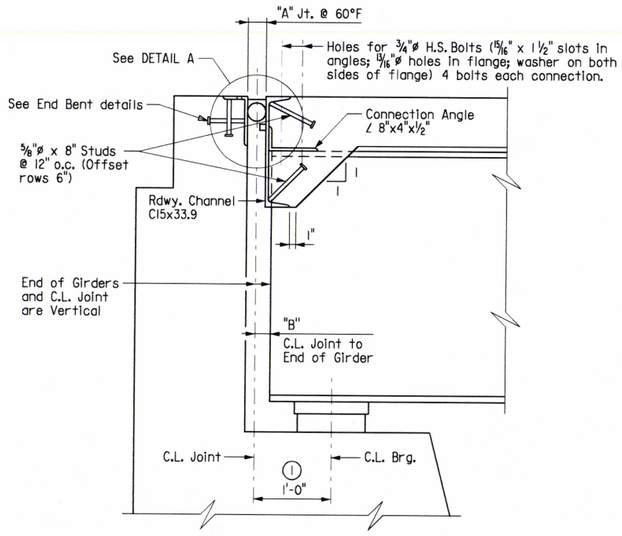
Shop drawings showing details of railing shall be submitted and approval secured before fabrication is begun.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13539
LARRY W. MILLER
BRIDGE ENGINEER
10-6-16

SHEET 8 OF 8
DETAILS OF 273'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT
HWY. 38 BRIDGE OVER HWY. 67
ROUTE 67 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BEG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: BEG DATE: 6-16
FILENAME: B06II02MI_S8.dgn
SCALE: NO SCALE
BRIDGE NO. 07401
DRAWING NO. 59088

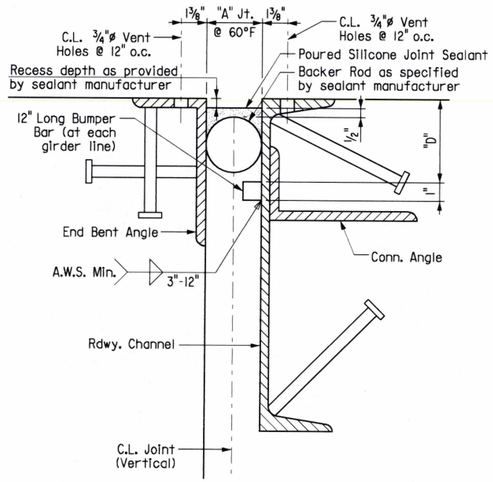
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	184	400
				(1) 07401		JOINT DETAILS		59089



(1) Measured Along C.L. Girder.

SECTION THRU JOINT AT END BENTS

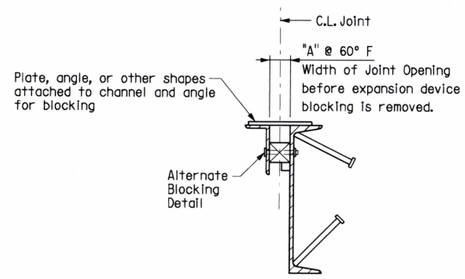
Scale: 1" = 1'-0"
Sections thru Joints are taken normal to C.L. Joints



Concrete shall be hand packed under the joint armor. Care shall be taken to ensure that concrete completely fills the areas below the top channel flange.

DETAIL A

Scale: 3" = 1'-0"



Note:
Install seal in slab joint and parapet joint with damming procedure as recommended by the Manufacturer. The sealant shall be recessed to prevent damage and be allowed to cure prior to removal of the outer damming material.

NOTE:
Concrete shall be hand packed under the joint armor in the backwall and in the span.

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension shown, and the blocking details shall be shown on the Shop Drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

One of two different blocking systems is required depending on the type of span finishing used.

For Transverse Strike-off:
Plate, Angle, or other shapes, attached to Channels (or angles) for Blocking.

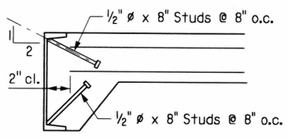
For Longitudinal Strike-off:
Bolt & spacer attached to Channels for Blocking.

EXPANSION DEVICE INSTALLATION AT END BENTS:

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

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

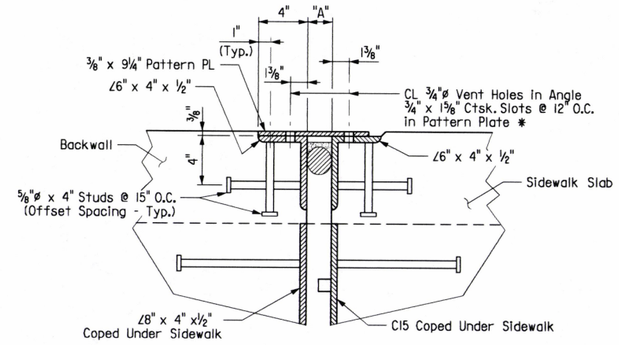
2) The backwall shall be poured to the optional construction joint after girders are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature.



Note: As an alternate to ⅝"ø studs, ½"ø x 8" studs spaced as shown may be used. Use weight of ⅝"ø stud as basis of measurement of structural steel in anchors.

DETAIL OF ALTERNATE ANCHORS

No Scale



*¾" x 1⅝" ctsk. slots in ⅜" pattern plates. Tap 4" leg of angle for ⅜"ø flat head cap screws @ 12" O.C. Install screws in the shop and ship as unit. Remove screws on one side after erection is complete.

SECTION A-A

Scale: 2" = 1'-0"

SILICONE JOINT DATA

Bent Number	"A" Width Perpendicular to Joint at 24 Hour Average Temperature ** of:			"B" Perpendicular to Joint at 60°F	Bumper Plate Size	"D"
	40° F	60° F	80° F			
1	2 3/16"	2"	1 15/16"	2¼" ±	1" x 1"	4½"
3	2 3/16"	2"	1 15/16"	2¼" ±	1" x 1"	4½"

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

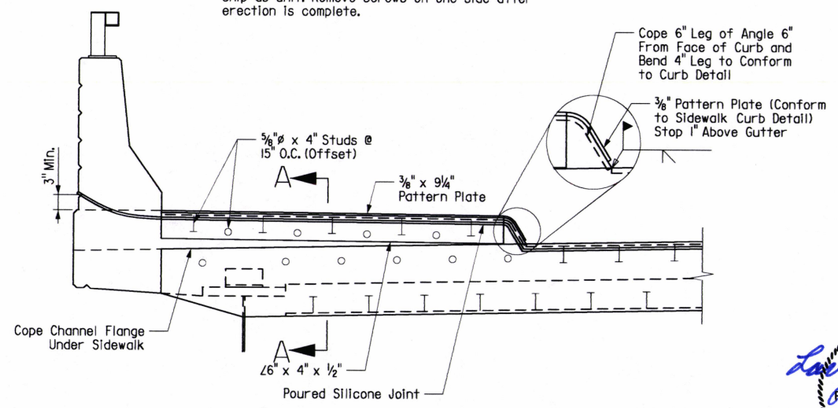
NOTES:
The temperature limitations recommended by the sealant manufacturer shall be observed.

The sealant shall be installed only when the average 24 hour air temperature is between 40°F and 80°F.

BACKER ROD NOTE:
Use an appropriately sized backer rod at the depth shown in the manufacturer's literature based on the joint width at the time of sealing.

Except as noted, do not install more backer rod than can be sealed in the same day.

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



JOINT SEAL PLACEMENT AT CURB

Scale: ¾" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11339
LARRY W. MILLER
Larry W. Miller 10-6-16
BRIDGE ENGINEER

DETAILS OF POURED SILICONE JOINT
HWY. 38 BRIDGE OVER HWY. 67

ROUTE 67 SEC. II

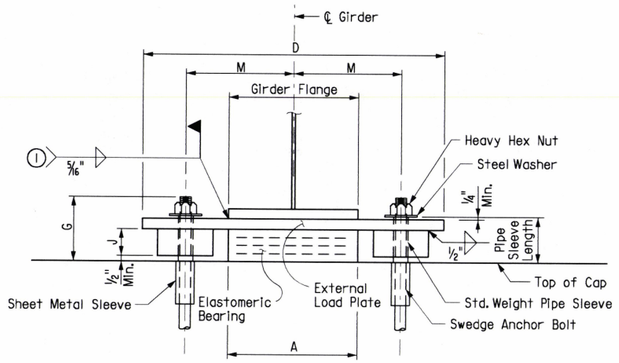
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

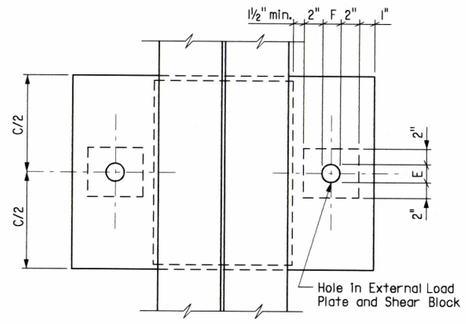
DRAWN BY: BEG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: BEG DATE: 6-16
FILENAME: B06I102MI_JI.dgn
SCALE: AS SHOWN

BRIDGE NO. 07401 DRAWING NO. 59089

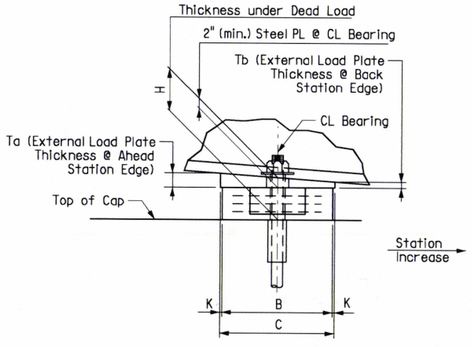
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	185	400
				(1) 07401		BEARING DETAILS		59090



FRONT VIEW - AT BENT 2

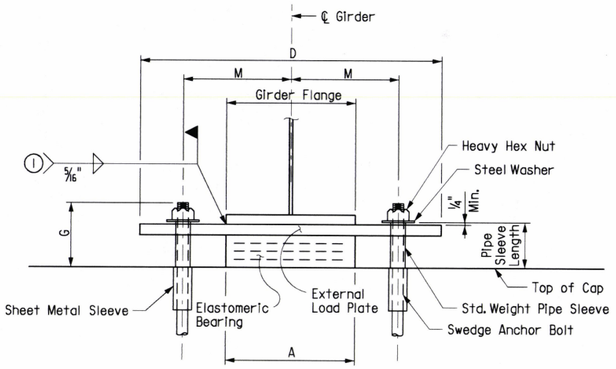


PLAN VIEW - AT BENT 2

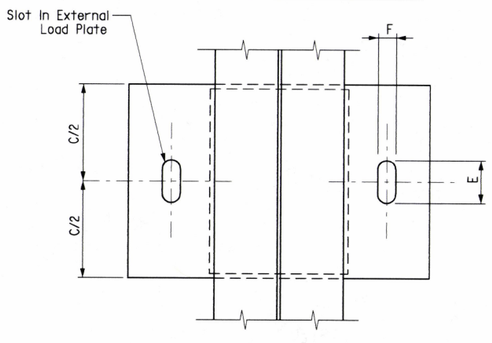


SIDE VIEW - AT BENT 2

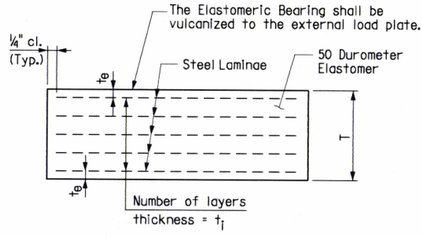
(1) Care shall be taken to ensure that the external load plate is in full and complete contact with the girder flange before welding begins.



FRONT VIEW - AT BENTS 1, 3



PLAN VIEW - AT BENTS 1, 3

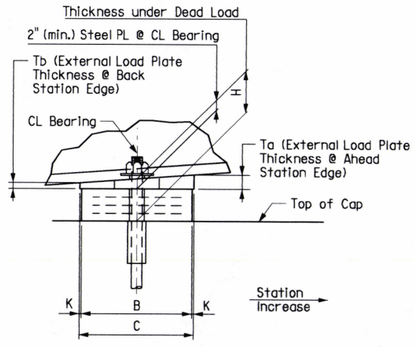


t_e = thickness of elastomer cover on top and bottom of pad

t_i = thickness of elastomer between steel laminae

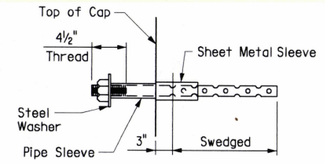
N = number of elastomer layers of thickness t_i

ELASTOMERIC BEARING



The direction of bevel of the external load plate as shown is for Bent 1. Bevel for Bent 3 will be in the opposite direction. See Table of Fabricator Variables for dimensions.

SIDE VIEW - AT BENTS 1, 3



ANCHOR BOLT DETAIL

Anchor bolts may be cast in place or drilled and grouted into place. If anchor bolts are to be cast in place, the galvanized sheet metal sleeves will not be required.

If anchor bolts are to be drilled and grouted in place, the galvanized sheet metal sleeves shall be cast in place as shown. Sleeves shall be dry packed with Styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of structural steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized sheet metal sleeves will not be paid for directly, but will be considered subsidiary to the item "STRUCTURAL STEEL IN PLATE GIRDER SPANS, (M 270, Gr.50)".

GENERAL NOTES

Elastomeric Bearings shall conform to Section 808 and shall be paid for at the unit price bid for "ELASTOMERIC BEARINGS".

External load plates and shear blocks shall conform to AASHTO M 270, Grade 50. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232 Class C or ASTM B695 Class 50.

External load plates (with shear blocks as applicable) shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(b) and painted in accordance with Subsection 807.75. Mask areas of field welding. Painting will not be paid for directly but will be considered subsidiary to "ELASTOMERIC BEARINGS".

Anchor bolts, washers and nuts shall conform to Subsection 807.07. The anchor bolt grade of steel shall be as specified in the "TABLE OF FABRICATOR VARIABLES". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe sleeves, anchor bolts, washers and nuts shall be paid for at the unit price bid for "STRUCTURAL STEEL IN GIRDER SPANS (M 270, Gr. 50)".

External load plates and shear blocks will not be paid for separately but will be included in the unit price bid for "ELASTOMERIC BEARINGS".

Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the girder will be allowed only when 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40°F and 80°F; and 2) the slots in the external load plate are positioned to center on the anchor bolts; and 3) no horizontal deformation of the elastomeric pad is evident.

If welding at other temperatures is required, the Engineer will provide adjustment data.

Elastomeric bearings shall be firmly seated in accordance with Subsection 808.08. This work is considered subsidiary to "ELASTOMERIC BEARINGS" and will not be paid for directly.

TABLE OF FABRICATOR VARIABLES

* Maximum Design Load = Service I Limit State

LOCATION					ELASTOMERIC PAD								EXTERNAL LOAD PLATE									ANCHOR BOLT				
BENT NO(S).	GIRDER OR GIRDER NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	*MAXIMUM DESIGN LOAD (KIPS)	G	H	A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	J	K	M	T_a	T_b	ANCHOR BOLT (ø x L)	ANCHOR BOLT GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
1	ALL	Exp.	9	179.0	8"	4 3/8"	18 1/2"	9 1/2"	3	1/2"	1/4"	4 @ 12 Ga.	2 7/16"	10 1/2"	30 1/2"	3 1/2"	3 1/8"	na	1/2"	12"	2.02	1.98	2 1/4" x 32 3/4"	55	2 1/2" x 4 3/4"	4" x 7"	4"
2	ALL	Fixed	9	540.2	8"	4 3/8"	24 1/2"	11 1/2"	3	1/2"	1/4"	4 @ 12 Ga.	2 7/16"	12 1/2"	44 1/4"	3 1/8"	3 1/8"	1 7/8"	1/2"	17 1/2"	1.98	2.02	2 1/4" x 32 3/4"	55	2 1/2" x 4 3/4"	4" x 7"	4"
3	ALL	Exp.	9	195.1	8 3/4"	4 5/16"	18 1/2"	9 1/2"	4	1/2"	1/4"	5 @ 12 Ga.	3"	10 1/2"	31 1/2"	4 1/8"	3 3/4"	na	1/2"	12 1/4"	1.94	2.06	2 1/2" x 35 1/2"	55	3" x 5 3/8"	4" x 7"	4 1/2"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
10-6-16
BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS
HWY. 38 BRIDGE OVER HWY. 67
ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BEG DATE: 6-16 FILENAME: B06I102MI_El.dgn
CHECKED BY: LWM DATE: 07-21-16 SCALE: AS SHOWN
DESIGNED BY: BEG DATE: 6-16

BRIDGE NO. 07401 DRAWING NO. 59090

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
10-25-16			

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	186	400
① 07401		APPR. SLAB		59091

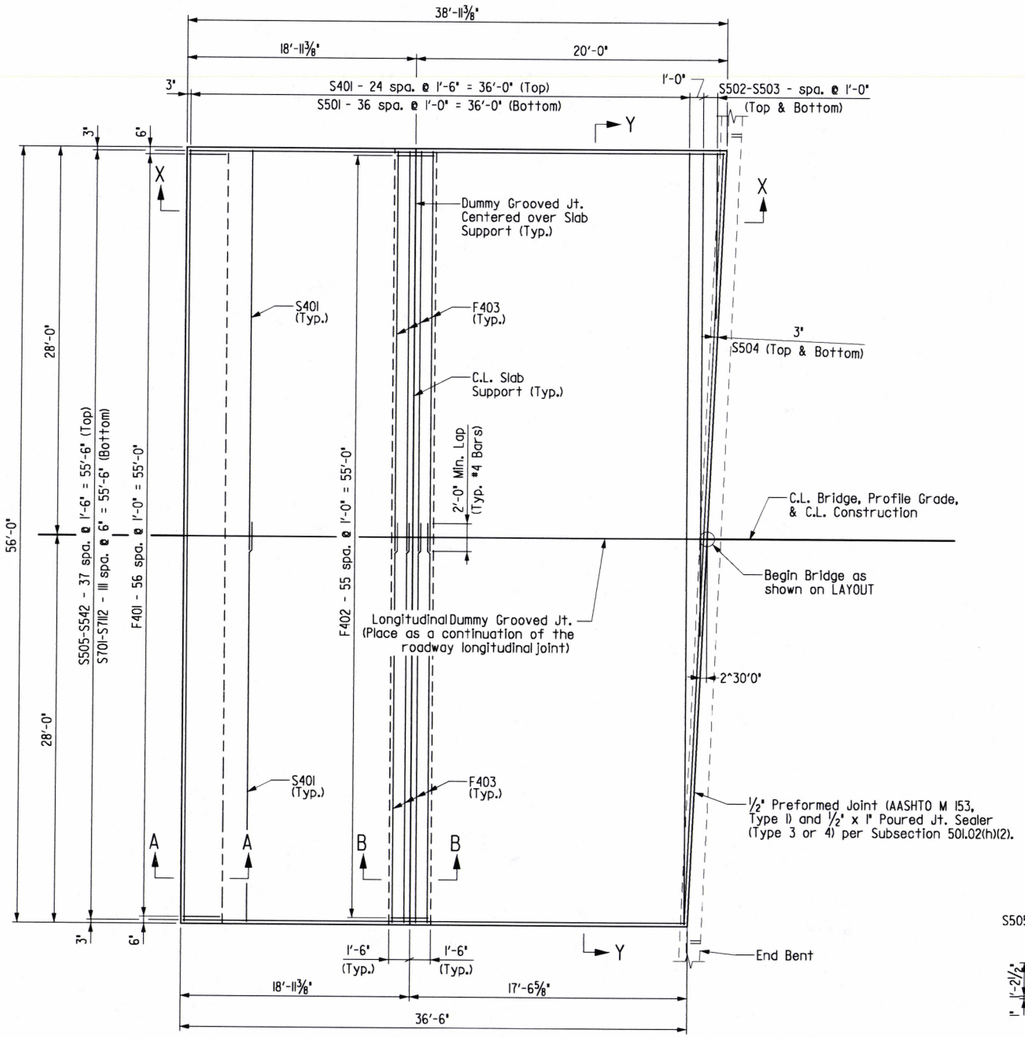
GENERAL NOTES

Concrete shall be Class S (AE) (f'c = 4,000 psi).

All reinforcing steel shall be grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

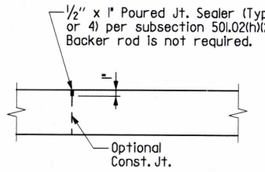
Approach Slabs (Type SpecialI) will be measured and paid for in accordance with Section 504 of the Standard Specifications.

The surface finishes shall match that used on the bridge deck.



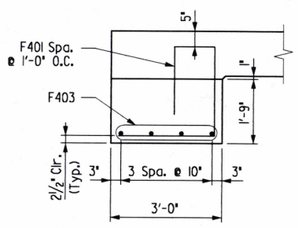
PLAN

Approach Slab (Type SpecialI)
(Begin Bridge Shown, End Bridge Similar)
Scale: 3/16" = 1'-0"



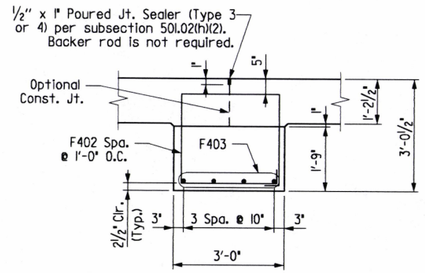
DETAILS OF DUMMY GROOVED JOINT

Scale: ½" = 1'-0"



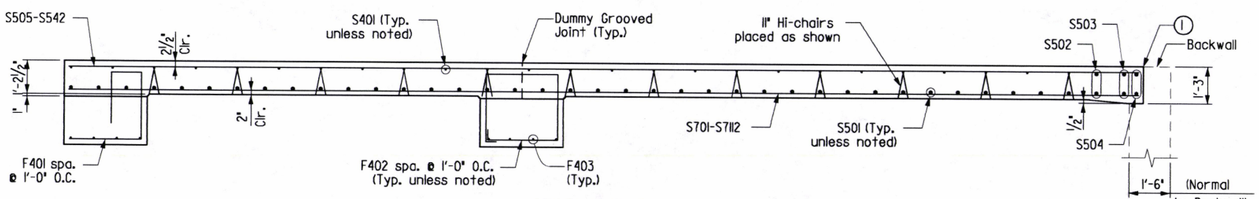
SECTION A-A

Scale: ½" = 1'-0"



SECTION B-B

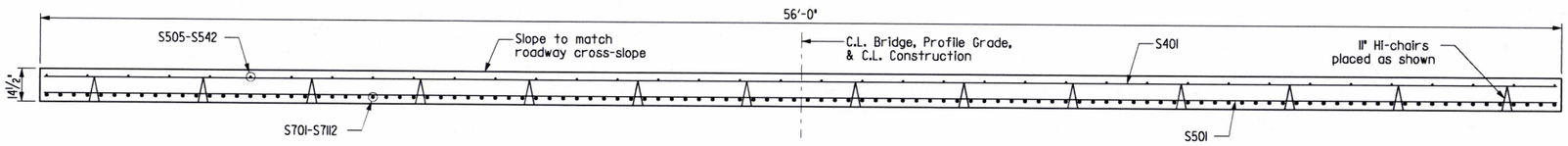
Scale: ½" = 1'-0"



SECTION X-X

Scale: 3/8" = 1'-0"

① ½" Preformed Joint (AASHTO M 153, Type I) and ½" x 1" Poured Jt. Sealer (Type 3 or 4) per Subsection 501.02(h)(2).



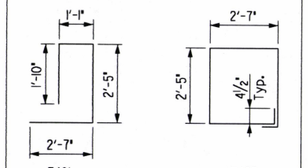
SECTION Y-Y

Scale: 3/8" = 1'-0"

BAR LIST - ONE TYPE SPECIAL I APPROACH SLAB

Mark	No. Req'd.	Length	Pin Dia.
F401	56	7'-8"	2"
F402	56	10'-4"	2"
F403	16	28'-10"	Str.
S401	50	28'-10"	Str.
S501	37	28'-10"	Str.
S502	2	34'-10"	Str.
S503	2	11'-11"	Str.
S504	2	55'-8"	Str.
S505 to S542	1 Each	36'-2" to 38'-7"	Str.
S701 to S712	1 Each	36'-2" to 38'-7"	Str.

BENDING DIAGRAMS



QUANTITIES FOR ONE TYPE SPECIAL I APPROACH SLAB

Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
13,309	114.84

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER
10-25-16
BRIDGE ENGINEER

⚠ Revised job from Federal oversight to State oversight. LWM 10-25-16

DETAILS OF TYPE SPECIAL APPROACH SLAB HWY. 67 INTERCHANGE (N. OF CABOT) (S) LONOKE COUNTY ⚠

ROUTE 67 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

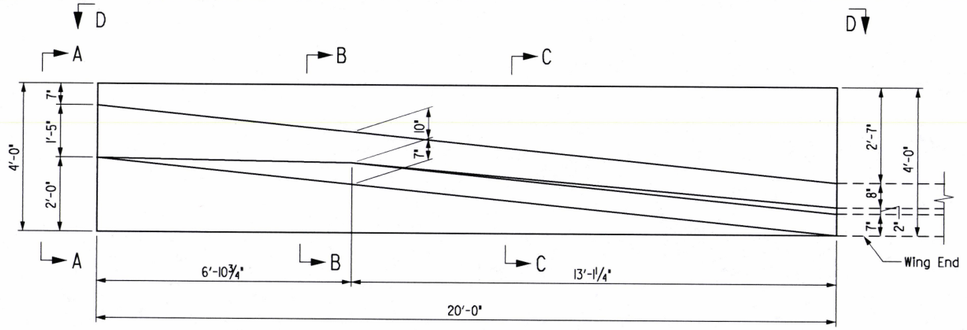
LITTLE ROCK, ARK.

DRAWN BY: JAP DATE: 7-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: JAP DATE: 7-16
FILENAME: B061102MI_ASI.dgn
SCALE: AS SHOWN

BRIDGE NO. 07401

DRAWING NO. 59091

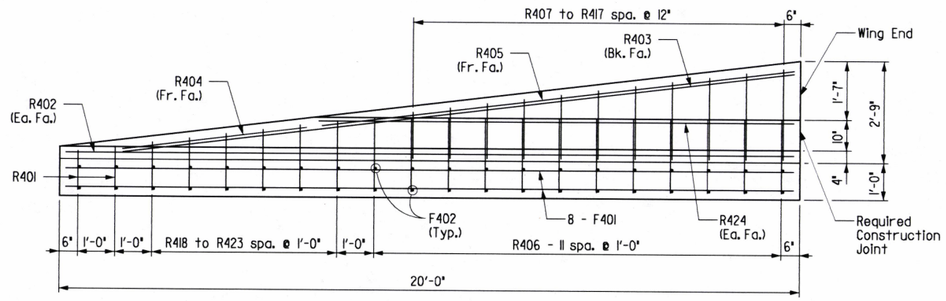
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10-25-16				6	ARK.			
				JOB NO.		061102	187	400
				(1) 07401		TRANS. RAIL		59092



PLAN OF TRANSITIONAL APPROACH RAILING

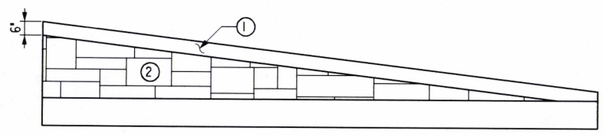
NOTE: Railings on each side of roadway are opposite hand to each other.

Scale: ½" = 1'-0"



ELEVATION OF TRANSITIONAL APPROACH RAILING

Scale: ½" = 1'-0"

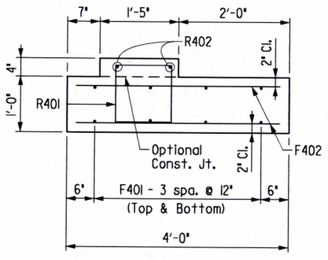


VIEW D-D

Scale: ¾" = 1'-0"

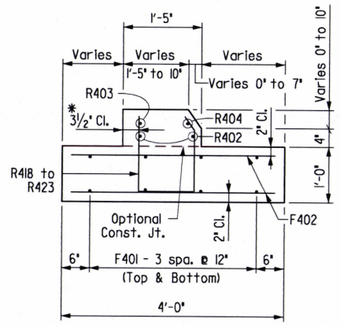
① Class 3 Textured Coating Finish (Color = Gray, Color Chip No. 37150)

② "Ashlar Stone" Form Liner & Class 3 Textured Coating Finish (Color = Gray, Color Chip No. 37150)



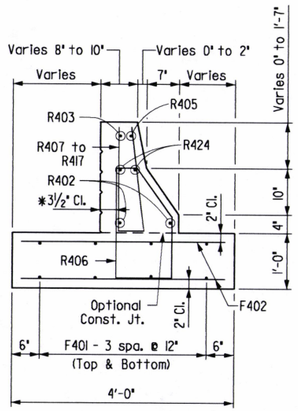
VIEW A-A

Scale: ¾" = 1'-0"



VIEW B-B

Scale: ¾" = 1'-0"



VIEW C-C

Scale: ¾" = 1'-0"

* Form liner shall be a max. depth of 2" to provide a min. clearance of 1½" to rail reinforcing. See SP Job No. 061102 "ARCHITECTURAL FINISH".

NOTES:

Transitional Approach Railing shall be placed at locations shown on the layout.

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi and shall be poured in the dry. All exposed corners shall be chamfered ¾" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

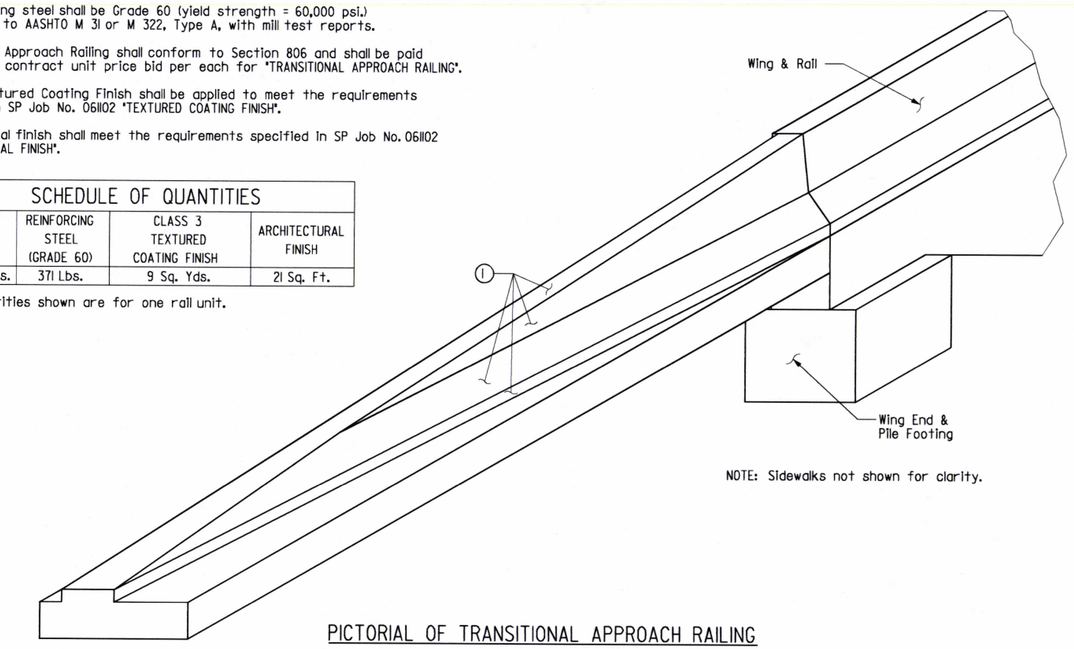
Transitional Approach Railing shall conform to Section 806 and shall be paid for at the contract unit price bid per each for "TRANSITIONAL APPROACH RAILING".

Class 3 Textured Coating Finish shall be applied to meet the requirements specified in SP Job No. 061102 "TEXTURED COATING FINISH".

Architectural finish shall meet the requirements specified in SP Job No. 061102 "ARCHITECTURAL FINISH".

SCHEDULE OF QUANTITIES			
CLASS "S" CONCRETE	REINFORCING STEEL (GRADE 60)	CLASS 3 TEXTURED COATING FINISH	ARCHITECTURAL FINISH
4.20 Cu. Yds.	371 Lbs.	9 Sq. Yds.	21 Sq. Ft.

NOTE: Quantities shown are for one rail unit.



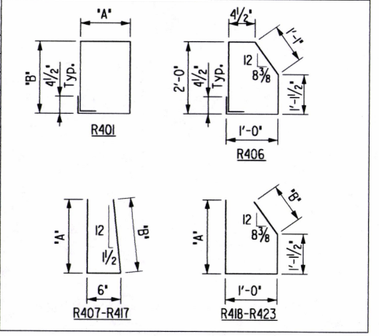
NOTE: Sidewalks not shown for clarity.

PICTORIAL OF TRANSITIONAL APPROACH RAILING

Scale: ½" = 1'-0"

BAR LIST - PER TRANSITIONAL RAIL					
MARK	NO. REQ'D	LENGTH	"A"	"B"	PIN DIA.
F401	8	19'-8"			Str.
F402	40	3'-8"			Str.
R401	2	4'-6"	1'-0"	1'-1"	2"
R402	2	19'-8"			Str.
R403	1	18'-3"			Str.
R404	1	5'-0"			Str.
R405	1	12'-10"			Str.
R406	12	6'-0"			2"
R407 to R417	1 Each	2'-10" to 5'-2"	1'-3" to 2'-5"	1'-3" to 2'-5"	2"
R418 to R423	1 Each	3'-6½" to 4'-10"	1'-4" to 1'-11"	3" to 11½"	2"
R424	2	12'-10"			Str.

BAR BENDING DIAGRAMS



NOTE: Number of bars shown is for one transitional approach rail only.

NOTE: Dimensions of bars in bending diagrams are out to out.

DETAILS OF TRANSITIONAL APPROACH RAILING HWY. 67 INTERCHANGE (N. OF CABOT) (S) LONOKE COUNTY

ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER

10-25-16

BRIDGE ENGINEER

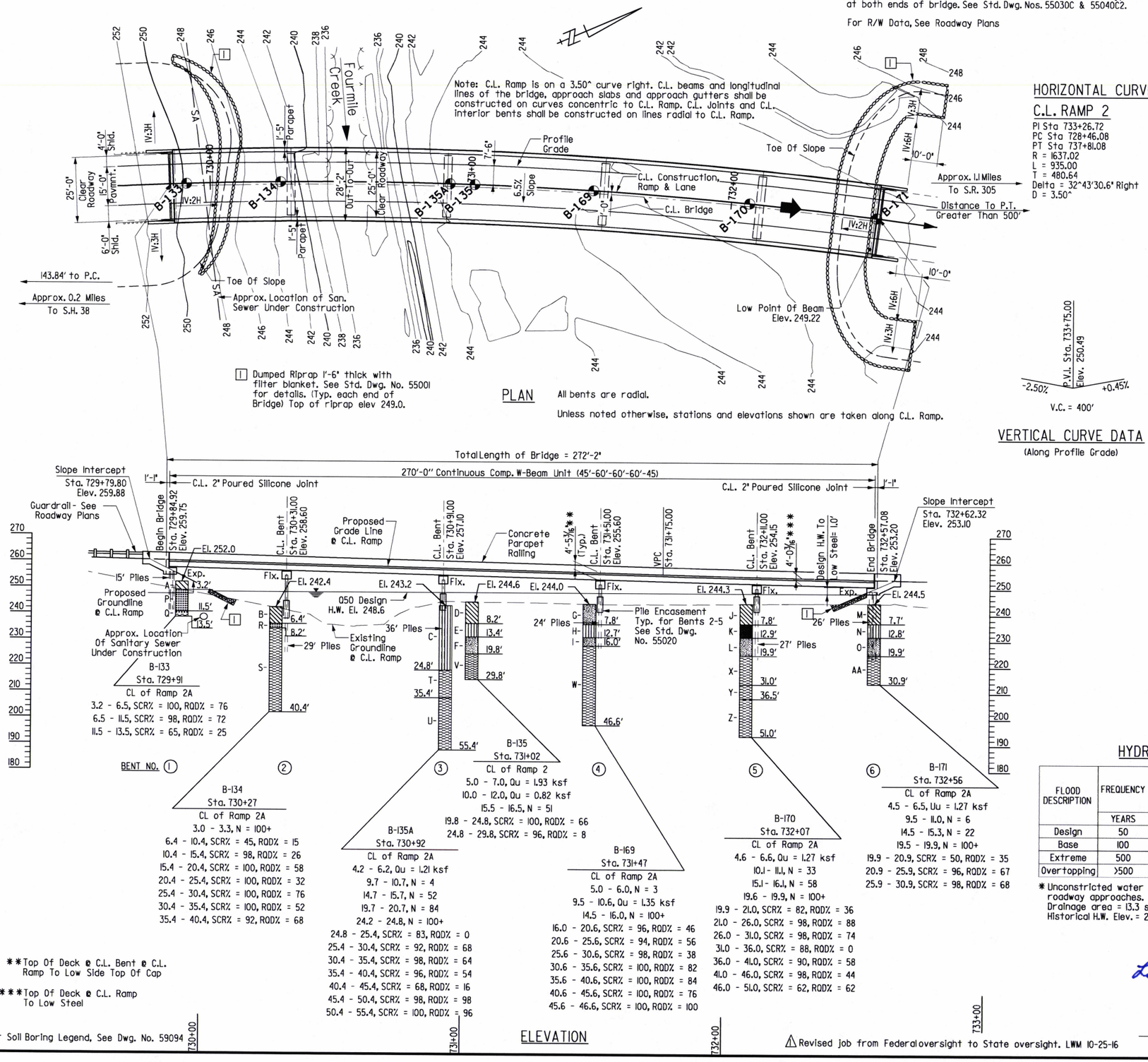
DRAWN BY: JAP DATE: 7-16 FILENAME: B06II02MI_ARI.dgn

CHECKED BY: LWM DATE: 07-21-16 SCALE: AS SHOWN

DESIGNED BY: JAP DATE: 7-16

BRIDGE NO. 07401 DRAWING NO. 59092

⚠ Revised job from Federal oversight to State oversight. LWM 10-25-16



HORIZONTAL CURVE DATA

C.L. RAMP 2

PI Sta 733+26.72
PC Sta 728+46.08
PT Sta 737+81.08
R = 1637.02
L = 935.00
T = 480.64
Delta = 32^43'30.6" Right
D = 3.50^

VERTICAL CURVE DATA

(Along Profile Grade)

-2.50% P.V.I. Sta. 733+75.00 Elev. 250.49 +0.45%

V.C. = 400'

PLAN

ELEVATION

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	*NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	6,375	248.3	248.6
Base	100	7,100	248.7	248.9
Extreme	500	8,600	249.3	249.6
Overtopping	>500	----	----	----

* Unconstricted water surface without structure or roadway approaches.
Drainage area = 13.3 square miles.
Historical H.W. Elev. = 248.8 ft.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10-25-16				6	ARK.			
				JOB NO.		061102	188	400
				(1) 07402		LAYOUT		59093

GENERAL NOTES

BENCH MARK: AHTD monument 9. N=241116.68, E=1311505.52, Elev. 265.28, Ramp 2 Sta. 726+88.22, Offset 22.04' Left.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions. Unless otherwise noted in the plans, Section and Subsection numbers refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (2012, 6th Edition) with interim specifications.

LIVE LOADING: HL93

SEISMIC PERFORMANCE ZONE: 2

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (Superstructure)	f'c = 4,000 psi
Class S Concrete (Substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M 31 or M 322 Type A, Gr. 60)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi

BORING LOGS: Boring Logs may be obtained from the Construction Contract Procurement Section of the Program Management Division.

STEEL PILING: All piling at Bents 1 & 6 shall be HP12x53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 95 tons per pile and into the material designated as Shale or Sandstone on the boring legend. All piling in Bents 2 thru 5 shall be HP14x73 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 130 tons per pile and into the material designated as Shale or Sandstone on the boring legend. Lengths shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the Standard Specifications. Actual pile lengths to be determined in the field. On all piles the Contractor shall use approved steel H-Pile driving points.

Piles in end bents shall be driven after embankment to bottom of cap is in place. Minimum penetration is measured from natural ground. Drive piles in Bent 1 to a minimum penetration of 10'. Drive piles in Bents 2 and 4 to a minimum penetration of 15'. Drive piles in Bents 5 and 6 to a minimum penetration 20'. Drive piles in Bent 3 to a minimum penetration 25'.

PREBORING: Preboring is required for all piles in Bents 1 and 2. The depth of preboring shall be sufficient to provide the minimum pile penetration and to set the pile tips a minimum 3' into material designated as Shale or Sandstone on the boring legend. The actual size and depth of preboring shall be determined in the field by the Engineer. The Contractor shall be responsible for keeping prebored holes free of debris prior to driving piles and backfilling which may require the use of temporary casings or other methods. After driving is completed, the prebored hole shall be backfilled with Class S Concrete or non-shrink grout to the top of the rock and the remaining length shall be backfilled in accordance with Subsection 805.08(a). Any related cost for backfilling and temporary casing will not be paid for directly, but shall be considered subsidiary to the item 'PREBORING'.

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

CLASS I PROTECTIVE SURFACE TREATMENT: Class I Protective Surface Treatment shall be applied to the roadway surface, top of backwall, top and roadway face of the concrete parapet rail and transition rails.

DETAIL DRAWINGS:	DRAWING NO.
End Bents	59095-59096, 59098
Intermediate Bents	59097
270'-0" Cont. Comp. W-Beam Unit	59099-59104
Poured Silicone Joint	59105
Elastomeric Bearings	59106
Steel Piling	55020

SHEET 1 OF 2
LAYOUT OF RAMP 2 BRIDGE OVER FOURMILE CREEK
HWY. 67 INTERCHANGE (N. OF CABOT) (S)
LONOKE COUNTY
ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER
Larry W. Miller 10-25-16
BRIDGE ENGINEER

DRAWN BY: LWM DATE: 7-15
CHECKED BY: BEC DATE: 07-21-16
DESIGNED BY: LWM DATE: 7-15
FILENAME: b061102m2_l1.dgn
SCALE: 1" = 20'-0"

BRIDGE NO. 07402 DRAWING NO. 59093

⚠ Revised job from Federal oversight to State oversight. LWM 10-25-16

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
10-25-16			

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	189	400
(1) 07402		LAYOUT		59094

BORING LEGEND

A - Interpereted as sandy, silty clay with rock fragments.
B - Interpereted as very hard, sandy, silty clay with rock fragments.
C - Soft to very hard, brown, sandy silt.
D - Soft, brown, sandy, silty clay.
E - Soft, gray, brown & tan, sandy silt.
F - Very dense, brown & black, clayey sand.
G - Soft, brown, silty clay with sand.
H - Hard, tan & gray, sandy silt.
I - Very dense, brown, gray & black, clayey sand.
J - Soft, tan & gray, silty clay with sand.
K - Dense, brown, silty, clayey gravel with sand.
L - Very dense, brown & gray, clayey sand.
M - Soft, brown, tan & gray, sandy lean clay.
N - Medium stiff, brown, tan & gray, sandy silt.
O - Medium dense to very dense, dark gray & brown, clayey sand.
P - Sandstone: Light to medium gray, orange-brown stain, fine grain, well cemented, massive bedded, moderately weathered to fresh, hard.
Q - Sandstone & Shale: Gray, black, very fine to fine grain, interlayered, contacts sharp, moderately to slightly weathered.
R - Sandstone: Light to medium gray, scattered black, orange-brown stain, fine grain, well cemented, massive bedded moderately to slightly weathered, hard, clay infill, traces of quartz veining, shale laminations.
S - Shale (Claystone): Dark gray to black, traces of light gray, very fine grain to silty in parts, moderately weathered to fresh with seams severely weathered, very thinly laminated, medium hard with scattered soft seams, clay seams and infill.
T - Shale (Claystone): Dark gray to black, traces of light gray, very fine grain to silty inparts, moderately weathered with seams severely weathered, very thinly laminated, medium hard with soft seams.
U - Shale (Claystone): Dark gray to black, very fine grain in parts, fesh to slightly weathered, very thinly laminated, moderately hard.
V - Shale (Claystone): Dark gray to black, traces of light gray, very fine grain, silty laminations, slightly weathered with seams severely weathered, very thinly laminated, medium hard with soft seams.
W - Shale (Claystone): Black, very fine grain, fresh to slightly weathered with seams severely weathered, very thinly laminated, medium to moderately hard.
X - Shale (Claystone): Black, traces of white, very fine grain, silty laminations in parts, slightly to moderately weathered, thinly laminated, medium to moderately hard.
Y - Shale (Claystone): Black, very fine grain, severely weathered with fragments moderately weathered, soft with medium hard fragments, highly fractured - severely to completely weathered.
Z - Shale (Claystone): Black, very fine grain, silty laminations in parts, slightly to moderately weathered, very thinly laminated, medium to moderate hardness.
AA- Shale (Claystone): Black, very fine grain, silty laminations, slightly to moderately weathered with seams, very thinly laminated, medium hard with soft seams.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13339 LARRY W. MILLER

Larry W. Miller 10-25-16

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF RAMP 2 BRIDGE
OVER FOURMILE CREEK
HWY. 67 INTERCHANGE (N. OF CABOT) (S) ⚠
LONOKE COUNTY
ROUTE 67 SEC. 11

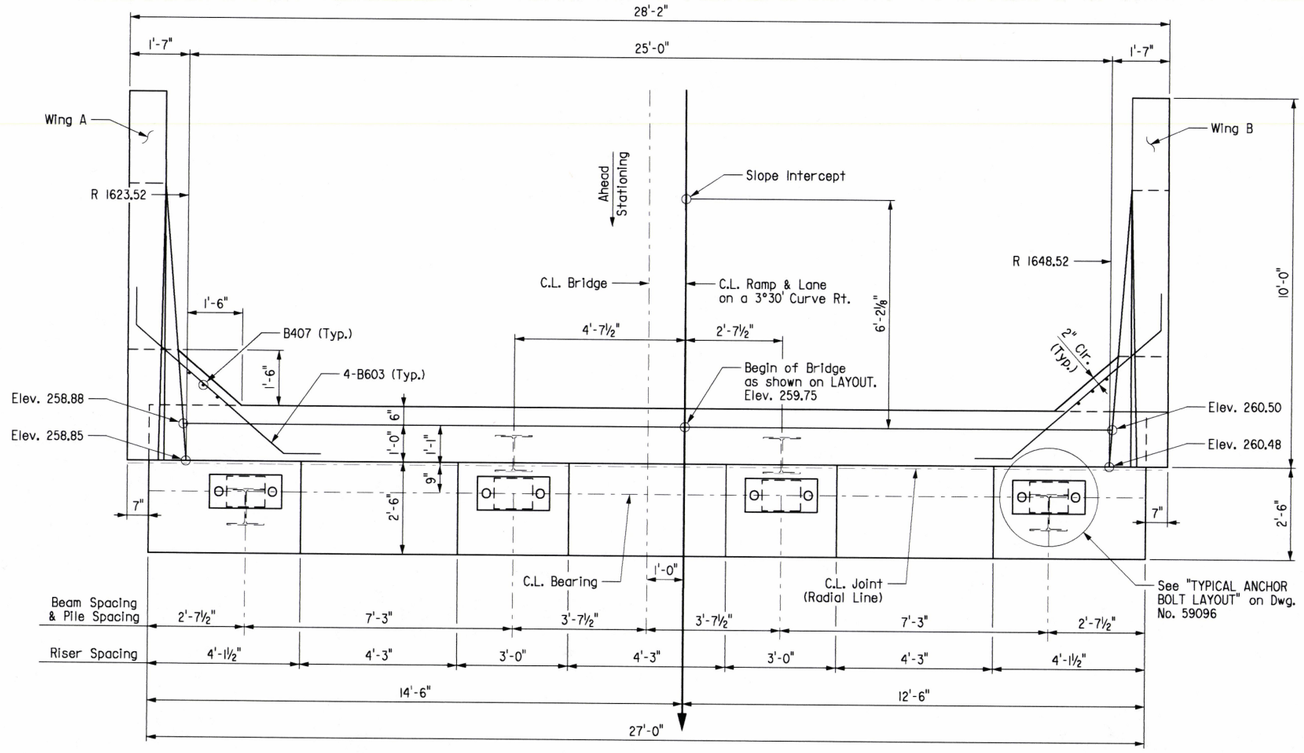
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LWM DATE: 7-15
CHECKED BY: BEG DATE: 07-21-16
DESIGNED BY: LWM DATE: 7-15

FILENAME: b061102m2_L2.dgn
SCALE: As Shown

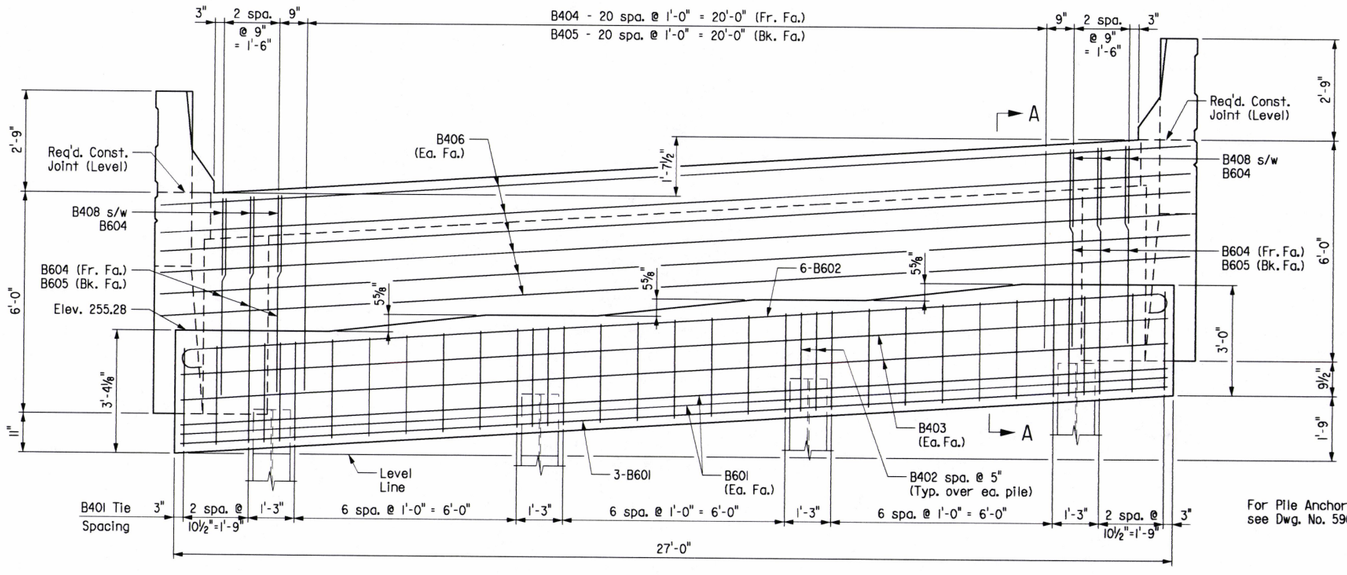
BRIDGE NO. 07402 DRAWING NO. 59094

⚠ Revised job from Federal oversight to State oversight. LWM 10-25-16



PLAN

Scale: ½" = 1'-0"



ELEVATION

(Looking Back)
Scale: ½" = 1'-0"

NOTE: Class I Protective Surface Treatment shall be applied to the roadway face and top of the end bent rail and to the top of the backwall.

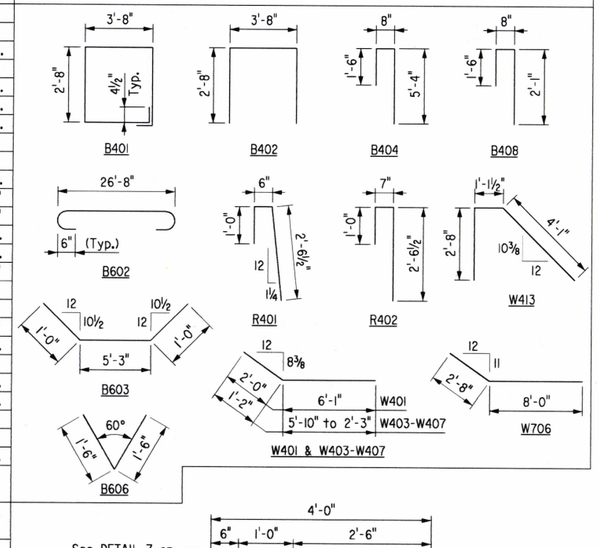
NOTE: Wings are constructed on concentric arcs.

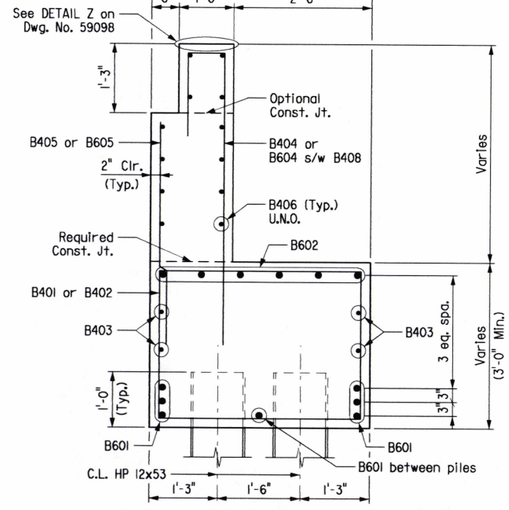
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	190	400
				(1) 07402		END BENT 1		59095

BAR LIST - END BENT 1

Mark	Number Required	Length	Pin Dia.
B401	27	13'-0"	2"
B402	8	8'-10"	2"
B403	4	26'-8"	Str.
B404	21	7'-4"	2"
B405	21	4'-2"	Str.
B406	12	27'-10"	Str.
B407	6	4'-4"	Str.
B408	6	4'-1"	2"
B601	7	26'-8"	Str.
B602	6	28'-0"	4½"
B603	8	7'-3"	4½"
B604	6	5'-4"	Str.
B605	6	4'-2"	Str.
B606	8	2'-10"	4½"
R401	8	3'-11"	2"
R402	8	4'-0"	2"
R403	12	9'-8"	Str.
R601	16	4'-5"	Str.
R602	6	5'-0"	Str.
W401	6	8'-1"	2"
W402	6	8'-5"	Str.
W403 to W407	2 Each	7'-0" to 3'-5"	2"
W408 to W412	2 Each	8'-1" to 4'-6"	Str.
W413	6	7'-9"	2"
W701	12	9'-8"	Str.
W702	4	6'-5"	Str.
W703	4	5'-7"	Str.
W704	4	4'-9"	Str.
W705	4	3'-11"	Str.
W706	4	10'-8"	5¼"

Bending Diagrams
(Dimensions are out to out of bars.)





SECTION A-A

Scale: ¾" = 1'-0"

For Pile Anchor Detail, see Dwg. No. 59096.

For Details of Wing and Rail, Typical Anchor Bolt Layout, and Substructure General Notes, see Dwg. No. 59096.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER
Larry W. Miller 10-6-16
BRIDGE ENGINEER

DETAILS OF BENT 1 RAMP 2 OVER FOURMILE CREEK

ROUTE 67 SEC. 11

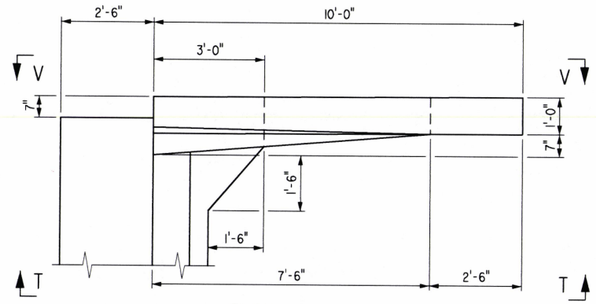
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JAP DATE: 07-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: JAP DATE: 07-16
FILENAME: b061102m2_bll.dgn
SCALE: As Shown

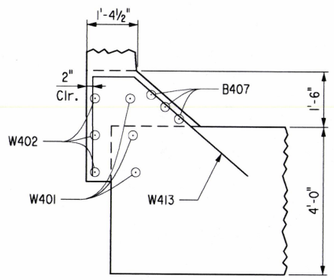
BRIDGE NO. 07402 DRAWING NO. 59095

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.		061102	191	400
				(1) 07402		END BENT DETAILS		59096



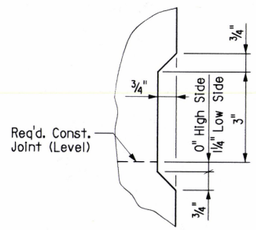
PLAN OF RAIL

Scale: ½" = 1'-0"



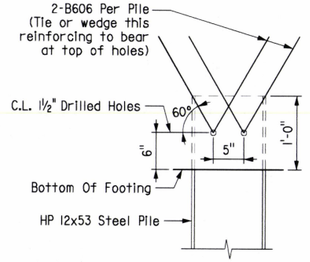
SECTION Z-Z

Scale: ½" = 1'-0"



DETAIL A

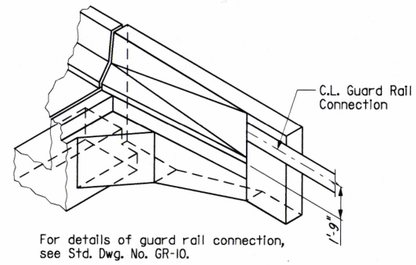
No Scale



DETAIL AT PILE TOP

No Scale

Drilled holes will not be paid for directly but shall be considered incidental to the item "STEEL PILING (HP12x53)".

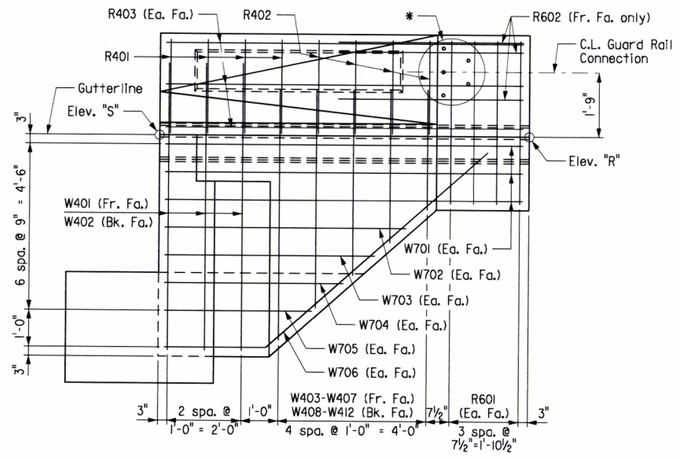


For details of guard rail connection, see Std. Dwg. No. GR-10.

Install guardrail at Bent 1 only.

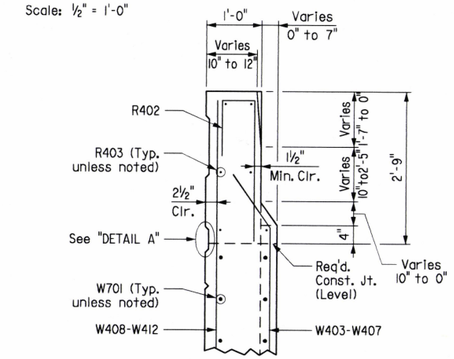
THREE DIMENSIONAL VIEW
WING RAIL & PARAPET

No Scale



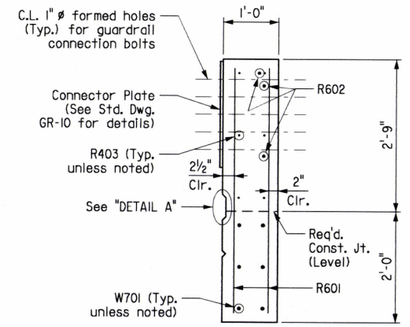
VIEW T-T

Scale: ½" = 1'-0"



SECTION X-X

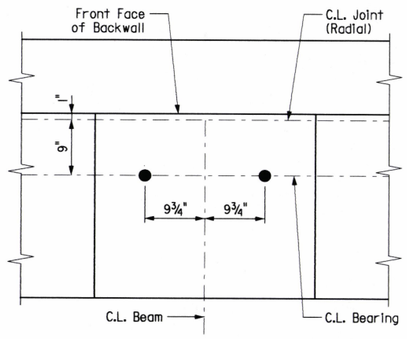
Scale: ¾" = 1'-0"



SECTION Y-Y

Scale: ¾" = 1'-0"

Install guardrail at Bent 1 only.



TYPICAL ANCHOR BOLT LAYOUT

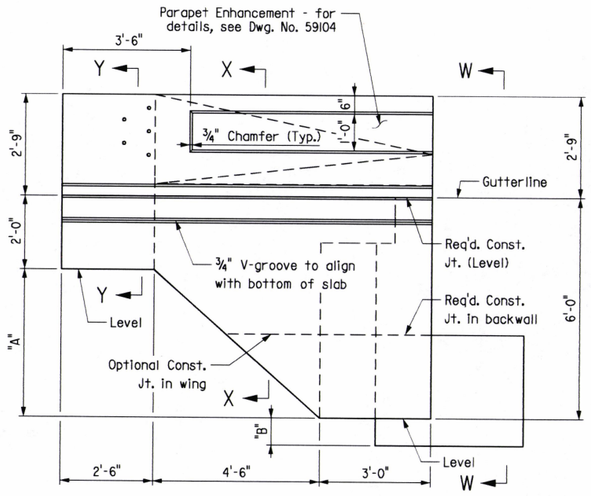
Scale: 1" = 1'-0"

Note: For details of elastomeric bearing, see Dwg. No. 59106.

NOTE: Class 1 Protective Surface Treatment shall be applied to the roadway face and top of the end bent rail and to the top of the backwall.

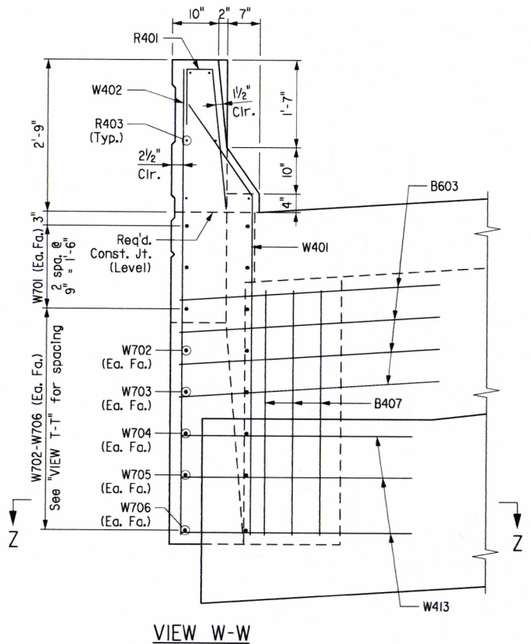
NOTE: Wings are constructed on concentric arcs.

* 5 - 1" ø formed holes for guard rail connection. See Std. Dwg. No. GR-10 for bolt spacing and additional connection details.



VIEW V-V

Scale: ½" = 1'-0"



VIEW W-W

Scale: ¾" = 1'-0"

TABLE OF WING VARIABLES

Location	"A"	"B"	"R"	"S"
Bent 1, Wing A	4'-2½"	11"	259.06	258.85
Bent 1, Wing B	4'-3⅜"	9½"	260.76	260.48
Bent 6, Wing A	3'-9⅜"	10⅝"	252.12	252.34
Bent 6, Wing B	3'-10⅜"	9"	253.82	253.97

SUBSTRUCTURE GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

For additional information, see LAYOUT.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
Larry W. Miller 10-6-16
BRIDGE ENGINEER

COMMON END BENT DETAILS
RAMP 2 OVER
FOURMILE CREEK

ROUTE 67 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JAP DATE: 07-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: JAP DATE: 07-16

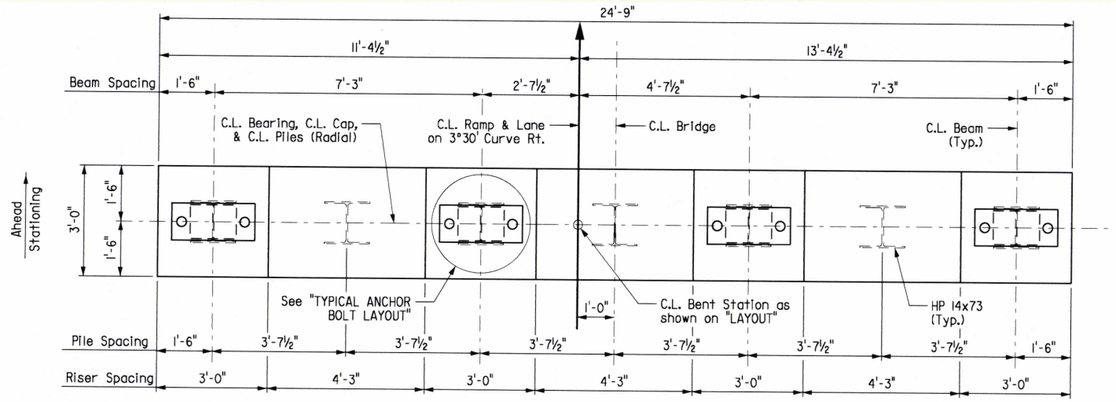
FILENAME: b061102m2_bl2.dgn
SCALE: As Shown

BRIDGE NO. 07402

DRAWING NO. 59096

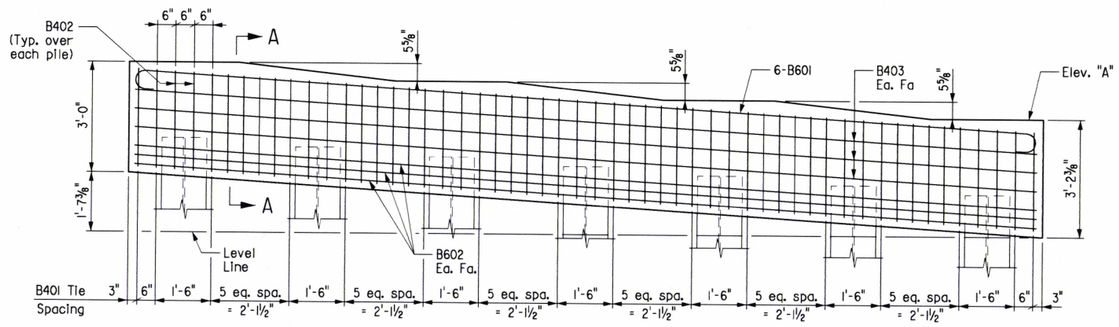
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	192	400
(1) 07402		INTERMEDIATE BENTS		59097



PLAN

Scale: ½" = 1'-0"



ELEVATION

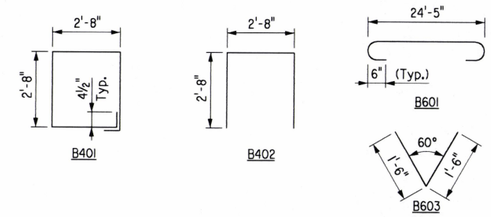
(Looking Ahead)

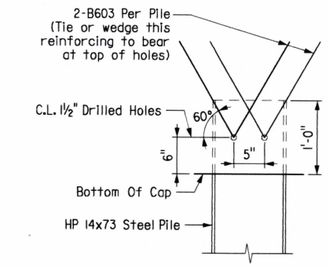
Scale: ½" = 1'-0"

BAR LIST - PER BENT

Mark	Number Required	Length	Pin Dia.
B401	40	11'-0"	2"
B402	14	7'-10"	2"
B403	6	24'-5"	Str.
B404	18	3'-3"	Str.
B601	6	25'-9"	4½"
B602	6	24'-5"	Str.
B603	14	2'-10"	4½"

Bending Diagrams (Dimensions are out to out of bars.)

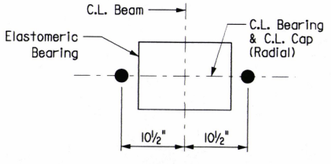




DETAIL AT PILE TOP

No Scale

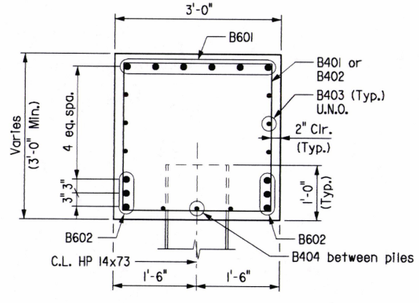
Drilled holes will not be paid for directly but shall be considered incidental to the item "STEEL PILING (HP14x73)".



TYPICAL ANCHOR BOLT LAYOUT

Scale: 1" = 1'-0"

Note: For details of elastomeric bearing, see Dwg. No. 59106.



SECTION A-A

Scale: ¾" = 1'-0"

ELEVATION "A"

Bent #	Elevation
2	254.17
3	252.66
4	251.16
5	249.72

SUBSTRUCTURE GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

For additional information, see LAYOUT.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 10339 LARRY W. MILLER

Larry W. Miller 10-6-16

BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENTS RAMP 2 OVER FOURMILE CREEK

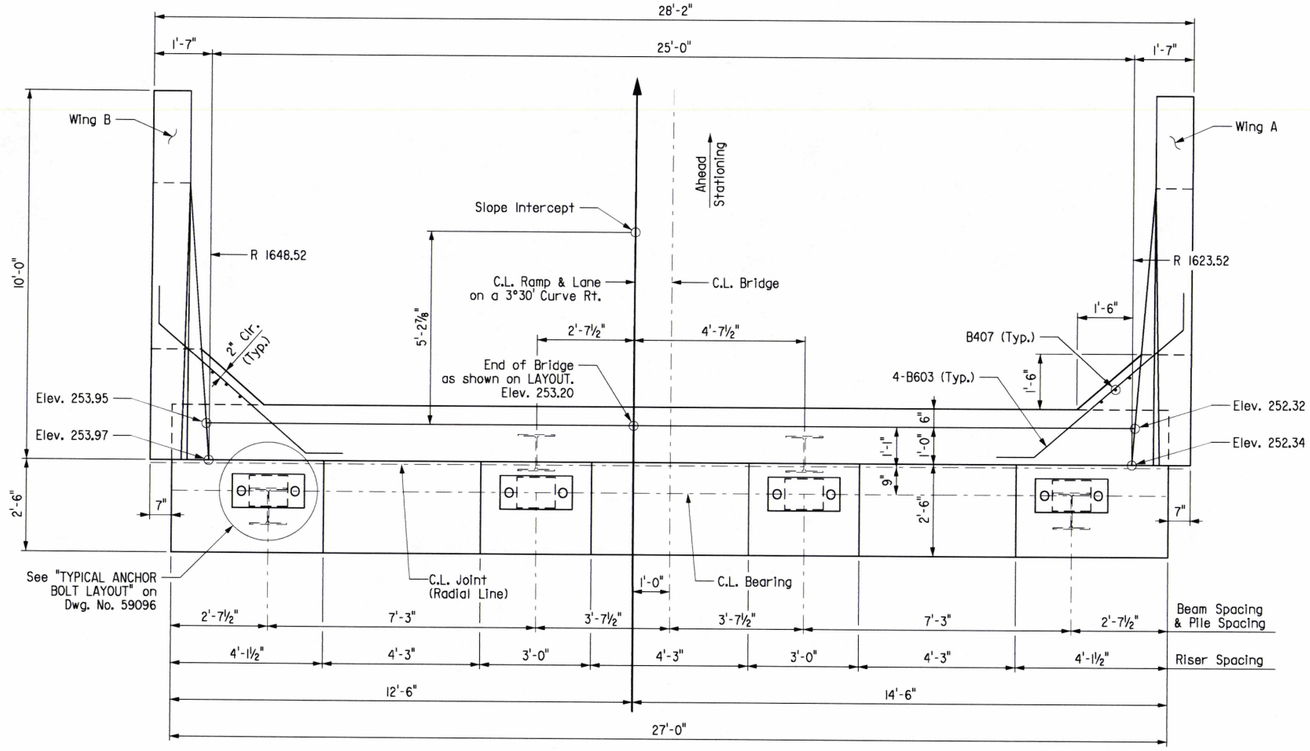
ROUTE 67 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

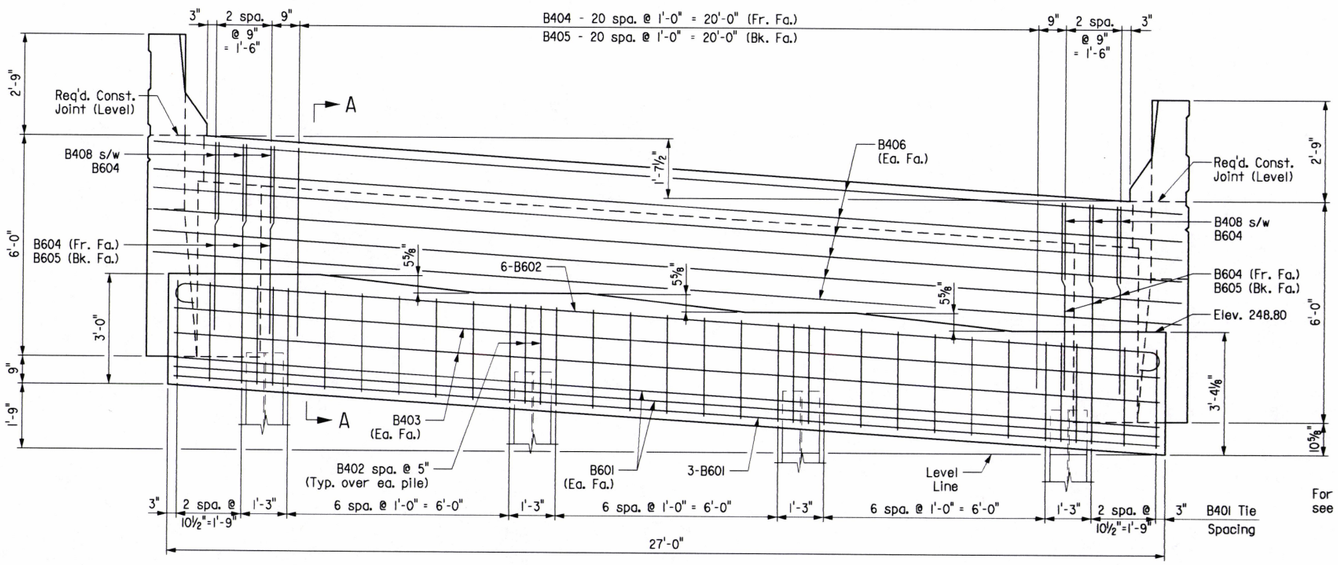
DRAWN BY: JAP	DATE: 07-16	FILENAME: b06l102m2_b2.dgn
CHECKED BY: LWM	DATE: 07-21-16	SCALE: As Shown
DESIGNED BY: JAP	DATE: 07-16	

BRIDGE NO. 07402 DRAWING NO. 59097



PLAN

Scale: ½" = 1'-0"



ELEVATION

(Looking Ahead)
Scale: ½" = 1'-0"

NOTE: Class I Protective Surface Treatment shall be applied to the roadway face and top of the end bent rail and to the top of the backwall.

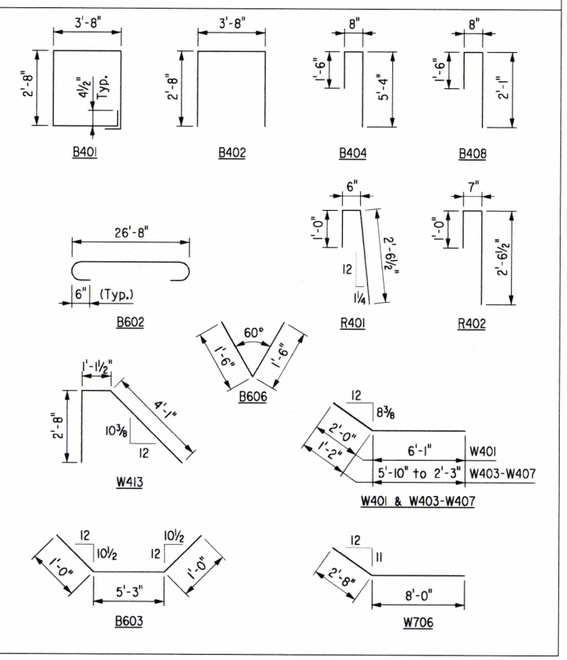
NOTE: Wings are constructed on concentric arcs.

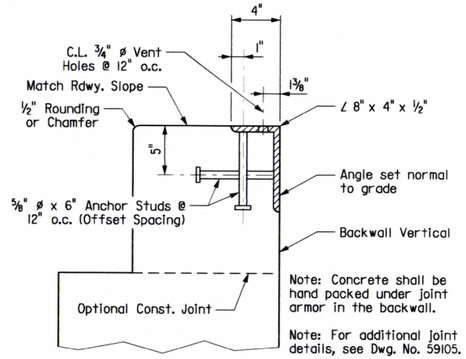
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	193	400
				①	07402	END BENT 6		59098

BAR LIST - END BENT 6

Mark	Number Required	Length	Pin Dia.
B401	27	13'-0"	2"
B402	8	8'-10"	2"
B403	4	26'-8"	Str.
B404	21	7'-4"	2"
B405	21	4'-2"	Str.
B406	12	27'-10"	Str.
B407	6	4'-4"	Str.
B408	6	4'-1"	2"
B601	7	26'-8"	Str.
B602	6	28'-0"	4½"
B603	8	7'-3"	4½"
B604	6	5'-4"	Str.
B605	6	4'-2"	Str.
B606	8	2'-10"	4½"
R401	8	3'-11"	2"
R402	8	4'-0"	2"
R403	12	9'-8"	Str.
R601	16	4'-5"	Str.
R602	6	5'-0"	Str.
W401	6	8'-1"	2"
W402	6	8'-5"	Str.
W403 to W407	2 Each	7'-0" to 3'-5"	2"
W408 to W412	2 Each	8'-1" to 4'-6"	Str.
W413	6	7'-9"	2"
W701	12	9'-8"	Str.
W702	4	6'-5"	Str.
W703	4	5'-7"	Str.
W704	4	4'-9"	Str.
W705	4	3'-11"	Str.
W706	4	10'-8"	5¼"

Bending Diagrams (Dimensions are out to out of bars.)





DETAIL Z

Scale: 2" = 1'-0"

For Pile Anchor Detail, see Dwg. No. 59096.

For Details of Wing and Rail, Typical Anchor Bolt Layout, and Substructure General Notes, see Dwg. No. 59096.

For SECTION A-A, see Dwg. No. 59095.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER

Larry W. Miller 07-16-16

BRIDGE ENGINEER

DETAILS OF BENT 6 RAMP 2 OVER FOURMILE CREEK

ROUTE 67 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

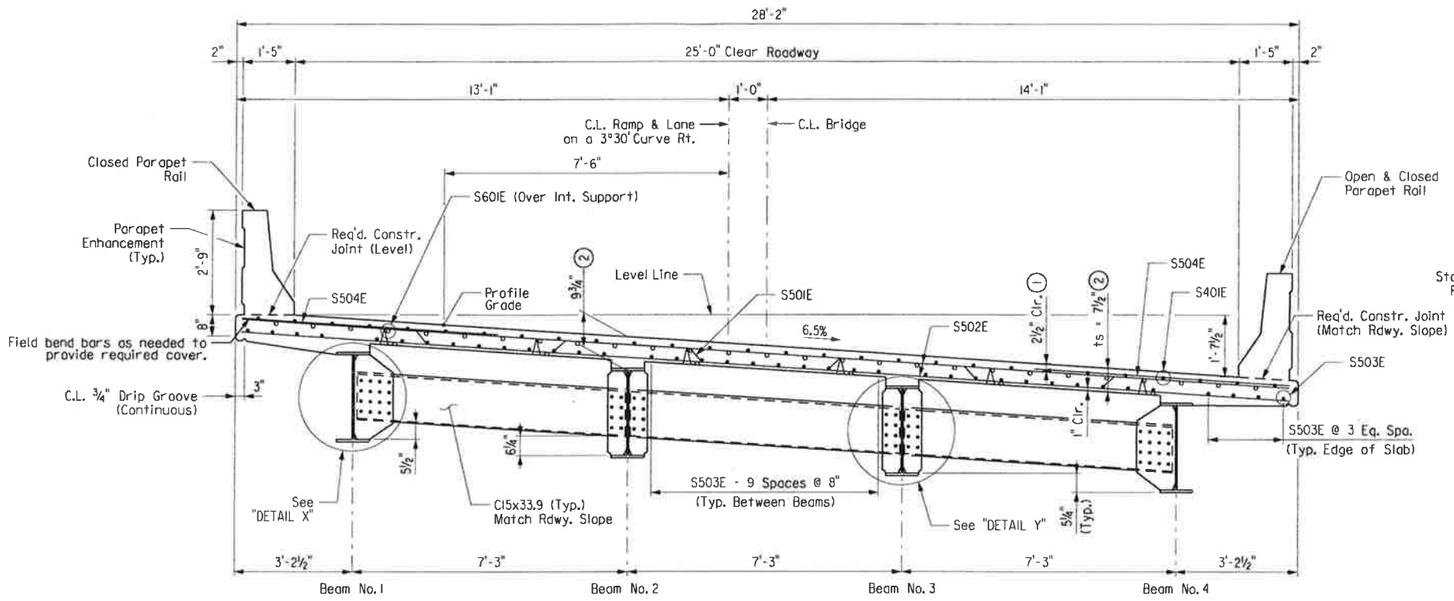
DRAWN BY: JAP DATE: 07-16 FILENAME: b06l102m2_b6.dgn

CHECKED BY: LWM DATE: 07-21-16 SCALE: As Shown

DESIGNED BY: JAP DATE: 07-16

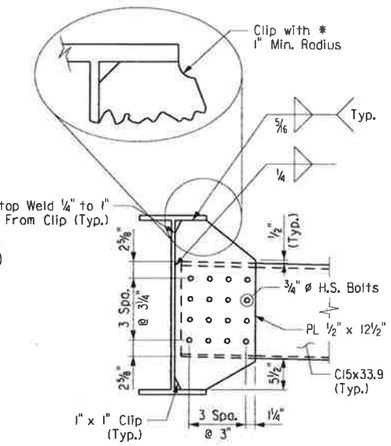
BRIDGE NO. 07402 DRAWING NO. 59098

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11-16-16				6	ARK.			
				JOB NO.		061102	194	400
				(1) 07402		SPAN DETAILS		59099



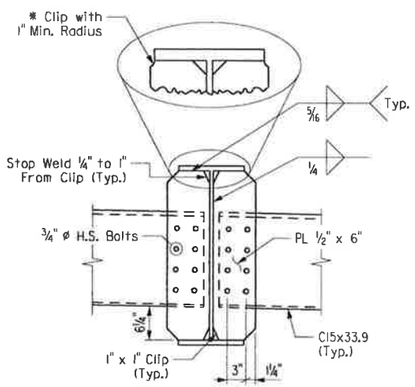
TYPICAL ROADWAY SECTION

Scale: ½" = 1'-0"



DETAIL X

Scale: 1" = 1'-0"



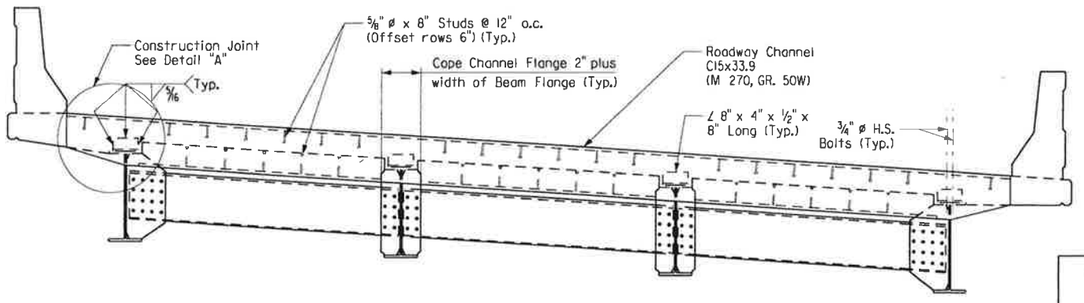
DETAIL Y

Scale: 1" = 1'-0"

* If permanent steel bridge deck forms are used, the fabricator shall clip the plate as necessary to accomodate the deck form support.

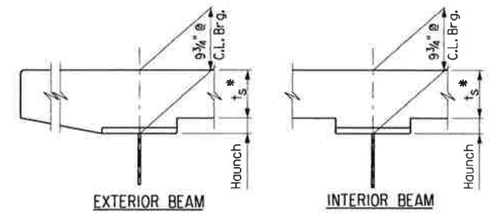
(1) TOLERANCE: Minus: ¼". Plus: Equal to amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED".

(2) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED".



SECTION THROUGH JOINT

Scale: ½" = 1'-0"



Note: ts = slab thickness as shown on "TYPICAL SECTION".
*Tolerance when removable deck forming is used is +½", -¼".
Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

No Scale

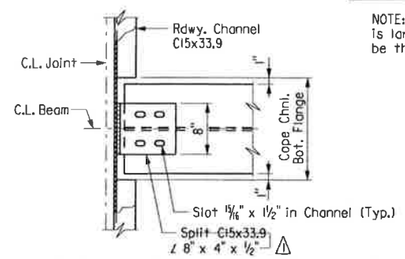
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance; Minimum - occurs when the top flange contacts the bottom reinforcing steel; Maximum - top flange thickness plus 2½". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

TABLE FOR WELD

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	5/16"	

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



ROADWAY CHANNEL CONNECTION DETAIL

NOTES:

One Epoxy Coated #5 bar in the top and one Epoxy Coated #5 bar in the bottom may be substituted for each bar S501E. Payment will be based on the weight of bar S501E.

Class 1 Protective Surface Treatment shall be applied to the Roadway Surface and the Traffic Face and Top of Concrete Parapet Rail.

All bars designated with an E suffix are to be epoxy coated.

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices per Subsection 804.06.

SLAB REINFORCING:

Transverse:
- S501E @ 12" o.c. bent up over beams
- S502E @ 12" o.c. in top and bottom
- S504E @ 6" along Gutterline (Top)

Longitudinal:
- S401E @ 12" o.c. in top
- S503E @ 8" o.c. in bottom
- S601E as shown, see "REINFORCING PLAN & DECK POURING SEQUENCE" on Dwg. No. 59100

⚠ Revised connection member. LWM 11-16-16

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER

11-16-16

BRIDGE ENGINEER

SHEET 1 OF 6
DETAILS OF 270'-0" CONTINUOUS COMPOSITE W-BEAM UNIT RAMP 2 OVER FOURMILE CREEK

ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RSG DATE: 07-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: RSG DATE: 07-16

FILENAME: b061102m2_s1.dgn
SCALE: As Shown

BRIDGE NO. 07402 DRAWING NO. 59099

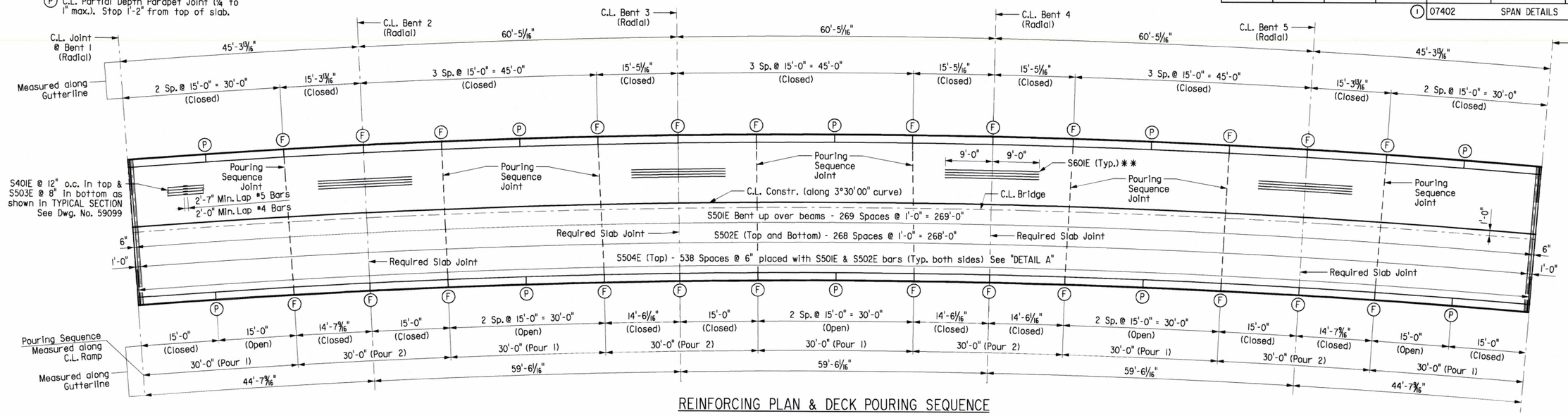
b061102M2_S1.dgn 11/17/2016 8:45:39 AM

(F) C.L. Full Depth Parapet Joint (¼" to 1" max.). Stop 4" from top of slab.

(P) C.L. Partial Depth Parapet Joint (¼" to 1" max.). Stop 1'-2" from top of slab.

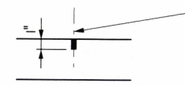
** Placed as shown in "TYPICAL ROADWAY SSECTION", Dwg. No. 59099

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.		061102	195	400
				(1) 07402		SPAN DETAILS		59100



REINFORCING PLAN & DECK POURING SEQUENCE

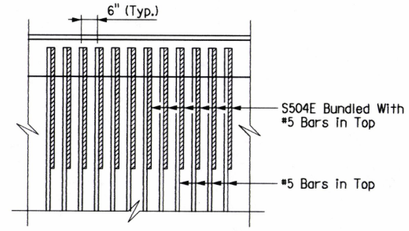
Scale: 1" = 10'



SLAB JOINT DETAIL

No Scale

½" x 1" Type 3 or 4 Joint Sealer. See Subsection 501.02 (h) and 501.05 (j). Backer rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set up to allow the sawing of joint without damage to the slab. Slab joints shall be placed at all Pouring Sequence Construction Joints and Required Slab Joint locations. The joint sealer shall extend across the deck slab (gutterline to gutterline). Slab joints shall align with parapet open joints.



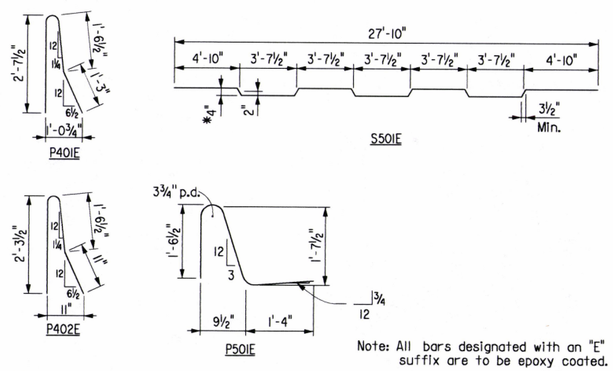
DETAIL A

No Scale

SUPERSTRUCTURE BAR LIST

Mark	No. Req'd.	Length	Pin Dia.
S401E	224	35'-9"	Str.
S501E	270	28'-5"	3¾"
S502E	538	27'-10"	Str.
S503E	190	56'-5"	Str.
S504E	1078	6'-9"	Str.
S601E	108	18'-0"	Str.
P401E	974	5'-6"	3"
P402E	72	4'-10"	3"
P403E	40	4'-11"	Str.
P404E	21	14'-1"	Str.
P405E	14	14'-3"	Str.
P406E	182	14'-7"	Str.
P407E	14	14'-11"	Str.
P408E	21	15'-0"	Str.
P501E	974	4'-7"	3¾"

Bending Diagrams (Dimensions are out to out of bars.)



Note: All bars designated with an "E" suffix are to be epoxy coated.

* ½" Overtolerance, No Undertolerance

NOTE:

Pours must be made in order as numbered. Pours with the same number may be placed simultaneously or separately. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of the adjacent pour. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer.

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

The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

Required slab joints and pouring sequence joints shall align with parapet open joint at the gutterline.

All transverse reinforcing steel shall be placed on radial lines. Spacing is measured along C.L. Ramp & C.L. Constr., unless noted otherwise.

All longitudinal lines and longitudinal reinforcing steel shall be placed on curves concentric with C.L. Bridge.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11339
LARRY W. MILLER
10-6-16
BRIDGE ENGINEER

SHEET 2 OF 6
DETAILS OF 270'-0" CONTINUOUS COMPOSITE W-BEAM UNIT RAMP 2 OVER FOURMILE CREEK

ROUTE 67 SEC. 11

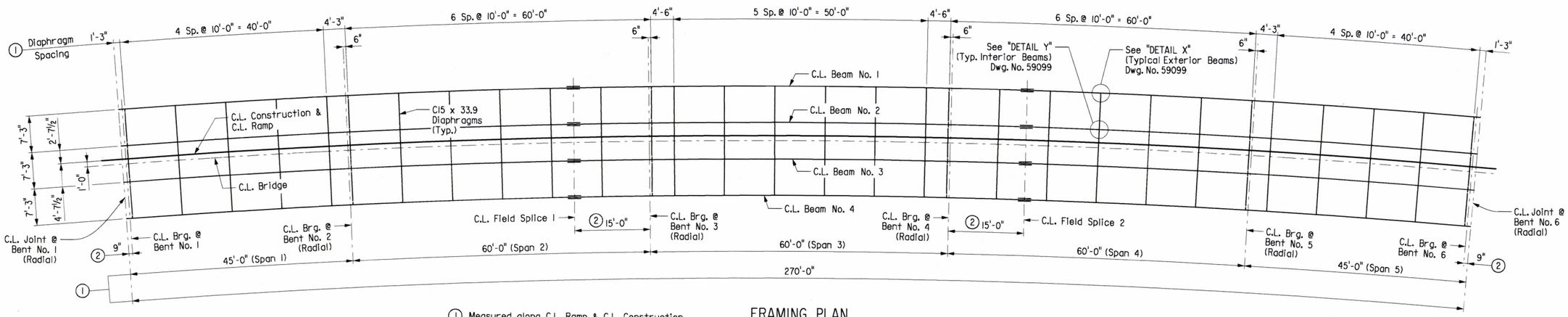
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RSG DATE: 07-16 FILENAME: b061102m2_s2.dgn
CHECKED BY: LWM DATE: 07-21-16 SCALE: As Shown
DESIGNED BY: RSG DATE: 07-16

BRIDGE NO. 07402 DRAWING NO. 59100

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.		061102	196	400
				(1) 07402		SPAN DETAILS		59101



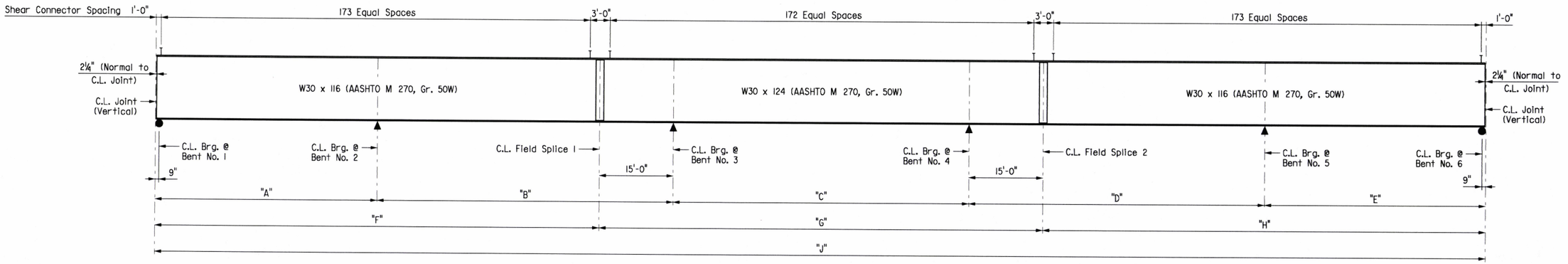
(1) Measured along C.L. Ramp & C.L. Construction

(2) Measured along C.L. Beam

FRAMING PLAN

Scale: 3/32" = 1'-0"

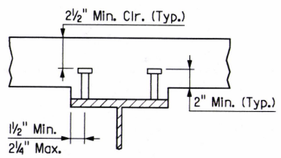
NOTE: Beams are Curved and Concentric to C.L. Construction. Diaphragms are placed on Radial Lines and spaced along C.L. Construction.



TYPICAL BEAM ELEVATION

No Scale

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



SHEAR CONNECTOR DETAIL

No Scale

Stud Shear Connectors shown shall be ⅞" dia. x 5" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. ¾" dia. studs may be used in place of the ⅞" dia. studs shown, at the ratio of 1.361 - ¾" dia. studs in place of one ⅞" dia. stud. ⅞" dia. studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24".

TABLE OF BEAM VARIABLES

(Dimensions shown are taken along C.L. Beam)

BEAM NO.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"
1	45'-3¼"	60'-4⅝"	60'-4⅝"	60'-4⅝"	45'-3¼"	90'-7⅝"	90'-4⅝"	90'-7⅝"	271'-7⅞"
2	45'-0⅞"	60'-1⅛"	60'-1⅛"	60'-1⅛"	45'-0⅞"	90'-2"	90'-1⅛"	90'-2"	270'-5⅜"
3	44'-10½"	59'-9⅝"	59'-9⅝"	59'-9⅝"	44'-10½"	89'-8⅜"	89'-9⅝"	89'-8⅞"	269'-2⅞"
4	44'-8⅛"	59'-6¾"	59'-6¾"	59'-6¾"	44'-8⅛"	89'-2⅞"	89'-6¾"	89'-2⅞"	268'-0½"

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13339 LARRY W. MILLER

Larry W. Miller 10-16-16

BRIDGE ENGINEER

SHEET 3 OF 6
DETAILS OF 270'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
RAMP 2 OVER
FOURMILE CREEK

ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: DLM DATE: 07-16 FILENAME: b061102m2_s3.dgn

CHECKED BY: LWM DATE: 07-21-16 SCALE: As Shown

DESIGNED BY: DLM DATE: 07-16

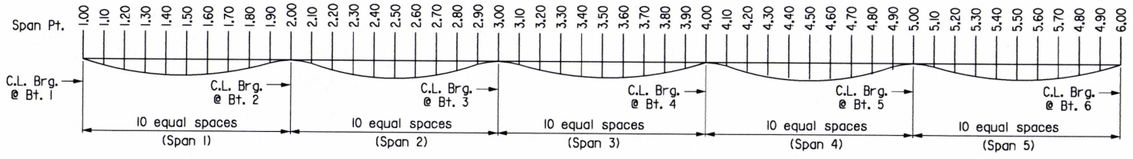
BRIDGE NO. 07402 DRAWING NO. 59101

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.		061102	197	400
				(1) 07402		SPAN DETAILS		59102

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

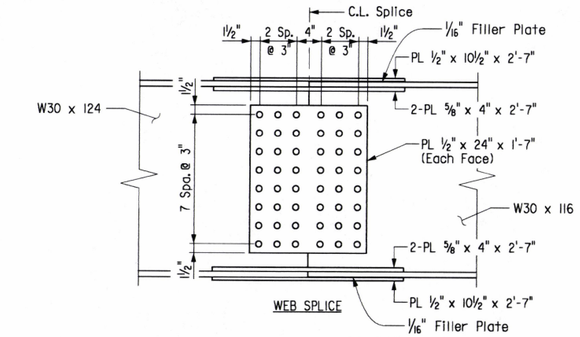
Camber for Dead Load Deflection plus vertical curve +/- ¼" tolerance. Vertical curve corrections not included. Negative sign (-) indicates upward deflection.
Deflections shown are along the centerline beam from the plane perpendicular to the web extending from centerline bearing to centerline bearing.

	POINT OF DEFLECTION	Structural Steel				Structural Steel (+) Slab				Structural Steel (+) Slab (+) Parapet Rail			
		Beam 1	Beam 2	Beam 3	Beam 4	Beam 1	Beam 2	Beam 3	Beam 4	Beam 1	Beam 2	Beam 3	Beam 4
SPAN NO. 1	1.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1.10	0.013	0.014	0.014	0.014	0.065	0.070	0.071	0.070	0.072	0.077	0.078	0.077
	1.20	0.024	0.025	0.026	0.025	0.121	0.129	0.131	0.129	0.133	0.141	0.144	0.142
	1.30	0.031	0.033	0.034	0.033	0.157	0.168	0.171	0.168	0.173	0.184	0.187	0.185
	1.40	0.034	0.036	0.037	0.036	0.171	0.182	0.185	0.182	0.188	0.199	0.203	0.200
	1.50	0.032	0.035	0.035	0.034	0.164	0.175	0.177	0.173	0.180	0.192	0.194	0.191
	1.60	0.027	0.029	0.029	0.028	0.135	0.145	0.146	0.143	0.149	0.159	0.160	0.157
	1.70	0.017	0.019	0.019	0.018	0.087	0.093	0.095	0.091	0.096	0.102	0.104	0.100
	1.80	0.010	0.011	0.011	0.010	0.049	0.052	0.053	0.050	0.054	0.057	0.058	0.055
	1.90	0.002	0.002	0.002	0.002	0.008	0.008	0.008	0.007	0.009	0.009	0.009	0.008
SPAN NO. 2	2.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2.10	0.011	0.012	0.012	0.012	0.058	0.062	0.063	0.063	0.064	0.068	0.069	0.069
	2.20	0.032	0.034	0.035	0.035	0.167	0.176	0.181	0.181	0.184	0.193	0.199	0.199
	2.30	0.051	0.054	0.056	0.055	0.267	0.282	0.290	0.289	0.294	0.309	0.318	0.318
	2.40	0.066	0.070	0.072	0.072	0.345	0.365	0.374	0.375	0.380	0.401	0.410	0.413
	2.50	0.071	0.075	0.077	0.077	0.372	0.392	0.402	0.402	0.410	0.430	0.441	0.443
	2.60	0.065	0.069	0.071	0.070	0.342	0.361	0.370	0.370	0.377	0.396	0.406	0.407
	2.70	0.050	0.053	0.054	0.054	0.263	0.278	0.284	0.285	0.290	0.305	0.312	0.314
	2.80	0.030	0.032	0.033	0.033	0.161	0.169	0.175	0.175	0.177	0.186	0.192	0.193
	2.90	0.011	0.012	0.012	0.012	0.062	0.066	0.067	0.068	0.068	0.072	0.074	0.075
	3.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SPAN NO. 3	3.10	0.007	0.007	0.007	0.007	0.028	0.030	0.030	0.029	0.031	0.033	0.033	0.032
	3.20	0.022	0.024	0.024	0.024	0.100	0.107	0.108	0.107	0.110	0.118	0.119	0.118
	3.30	0.041	0.043	0.044	0.044	0.189	0.200	0.203	0.202	0.209	0.220	0.223	0.223
	3.40	0.055	0.058	0.059	0.058	0.255	0.270	0.275	0.271	0.281	0.297	0.302	0.299
	3.50	0.060	0.063	0.065	0.064	0.279	0.295	0.302	0.298	0.308	0.324	0.332	0.329
	3.60	0.055	0.059	0.060	0.059	0.258	0.274	0.279	0.277	0.285	0.301	0.307	0.306
	3.70	0.043	0.046	0.046	0.046	0.198	0.210	0.214	0.212	0.219	0.231	0.235	0.234
	3.80	0.025	0.027	0.027	0.027	0.115	0.122	0.124	0.122	0.127	0.134	0.136	0.135
	3.90	0.008	0.009	0.009	0.009	0.034	0.037	0.038	0.037	0.038	0.041	0.042	0.041
	4.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SPAN NO. 4	4.10	0.008	0.009	0.009	0.009	0.047	0.050	0.051	0.051	0.052	0.055	0.056	0.056
	4.20	0.027	0.029	0.030	0.030	0.147	0.155	0.159	0.160	0.162	0.170	0.175	0.176
	4.30	0.048	0.051	0.052	0.052	0.254	0.269	0.275	0.275	0.280	0.295	0.302	0.303
	4.40	0.064	0.068	0.069	0.069	0.335	0.354	0.362	0.362	0.369	0.388	0.397	0.399
	4.50	0.071	0.076	0.077	0.077	0.373	0.394	0.402	0.403	0.411	0.432	0.441	0.444
	4.60	0.067	0.071	0.073	0.072	0.350	0.369	0.378	0.378	0.385	0.405	0.415	0.416
	4.70	0.054	0.057	0.058	0.058	0.281	0.296	0.303	0.303	0.309	0.325	0.332	0.334
	4.80	0.034	0.036	0.036	0.036	0.176	0.186	0.189	0.189	0.194	0.204	0.207	0.208
	4.90	0.015	0.015	0.016	0.016	0.077	0.080	0.083	0.083	0.085	0.088	0.091	0.091
	5.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SPAN NO. 5	5.10	0.001	0.001	0.001	0.001	0.003	0.004	0.004	0.003	0.003	0.004	0.004	0.003
	5.20	0.006	0.007	0.007	0.007	0.030	0.033	0.034	0.032	0.033	0.036	0.037	0.035
	5.30	0.017	0.018	0.018	0.018	0.084	0.090	0.091	0.089	0.092	0.098	0.100	0.098
	5.40	0.024	0.026	0.027	0.026	0.123	0.131	0.134	0.131	0.135	0.143	0.147	0.144
	5.50	0.031	0.033	0.034	0.033	0.157	0.167	0.171	0.167	0.173	0.183	0.187	0.184
	5.60	0.034	0.036	0.037	0.036	0.171	0.183	0.186	0.183	0.188	0.200	0.204	0.201
	5.70	0.031	0.033	0.034	0.033	0.158	0.169	0.172	0.169	0.174	0.185	0.188	0.186
	5.80	0.024	0.026	0.027	0.026	0.124	0.133	0.136	0.133	0.137	0.146	0.149	0.146
	5.90	0.014	0.015	0.015	0.015	0.071	0.077	0.077	0.077	0.078	0.084	0.084	0.085
	6.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

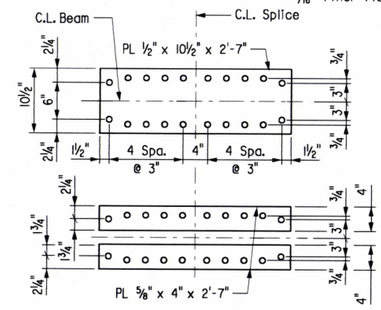


DEAD LOAD DEFLECTION DIAGRAM

No Scale



WEB SPLICE



FLANGE SPLICE

NOTE: All field splice bolts shall be ⅞" ø H.S. bolts. All holes for splice bolts shall be 15/16" ø. All field splice plates shall be AASHTO M 270, Gr. 50W steel.

FIELD SPLICE DETAILS

Scale: 1" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11339
LARRY W. MILLER
Larry W. Miller 10-6-16
BRIDGE ENGINEER

SHEET 4 OF 6
DETAILS OF 270'-0" CONTINUOUS COMPOSITE W-BEAM UNIT RAMP 2 OVER FOURMILE CREEK

ROUTE 67 SEC. II
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: DLM DATE: 07-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: DLM DATE: 07-16
FILENAME: b061102m2_s4.dgn
SCALE: As Shown

BRIDGE NO. 07402 DRAWING NO. 59102

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.		061102	198	400
(1) 07402		SPAN DETAILS		59103

SUPERSTRUCTURE GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions. Unless otherwise noted in the plans, Section and Subsection numbers refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (2012, 6th Edition) with interim specifications.

LIVE LOADING: HL93

SEISMIC PERFORMANCE ZONE: 2

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (Superstructure)	f'c = 4,000 psi
Reinforcing Steel (AASHTO M 31 or M 322 Type A, Gr. 60)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi

STRUCTURAL STEEL: All structural steel shall be AASHTO M 270, Gr. 50W unless otherwise noted and shall be paid for as "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)". Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36. All exposed surfaces shall be cleaned in accordance with Subsection 807.84(e) unless noted otherwise. M 270, Gr. 50W steel shall not be painted unless noted otherwise. See Dwg. No. 59106 for cleaning and painting requirements of external load plates of elastomeric bearings.

Longitudinal beams, diaphragms, connector plates and all splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly but are considered subsidiary to the item "STRUCTURAL STEEL IN BEAMS SPANS (M 270, Gr. 50W)".

All beams shall be blocked in their true position in the shop with webs horizontal and as specified in Subsection 807.54 (b)(2). The camber, length of sections, distance between bearings, and openings of joints shall be measured with the beams in their true position. This information shall become a part of the permanent records of this job. The component parts shall be match-marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60° F. A tolerance of ¼" +/- is allowed for camber.

Field splice flange plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

Drawings show general features of design only. Shop drawings shall be made in accordance with Subsection 807.04, submitted, and approval secured before fabrication is begun.

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

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Shapes and materials shown in the plans will be the basis of payment and no additional compensation will be made for any adjustments due to substitutions.

Field connections shall be bolted with high-strength bolts. Unless noted otherwise, bolts shall be ¾" diameter and open holes shall be 15/16". Bolt spacing shall be 2½" for ¾" diameter bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of exterior webs and the bottom of flanges.

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether temporary or permanent, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching falsework support devices or screed rail supports to the structural steel that do not exceed the limitations of Subsection 802.13 will not require approval prior to construction. All welding shall conform to Subsection 807.26.

Anchor bolts shall be galvanized according to Subsection 807.07 and shall be Grade 55.

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

CONCRETE: Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

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

The concrete deck shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam. If a longitudinal strike-off is used, a vertical camber adjustment must be made in the strike-off to account for the future dead load deflection due to the railing.

A minimum of 72 hours shall elapse between completion of the deck and the pouring of the parapet railing. Any railing pours made before the entire deck has been placed and cured must be approved by the Engineer.

REINFORCING STEEL: All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports. The reinforcing steel shall be accurately located in the forms and firmly held in place by steel wire supports sufficient in size and number to prevent displacement during the course of construction. The wire supports will not be paid for directly but will be considered subsidiary to the item "EPOXY COATED REINFORCING STEEL (Grade 60)".

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13339 LARRY W. MILLER

Larry W. Miller 10-6-16

BRIDGE ENGINEER

SHEET 5 OF 6
DETAILS OF 270'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
RAMP 2 OVER
FOURMILE CREEK

ROUTE 67 SEC. II

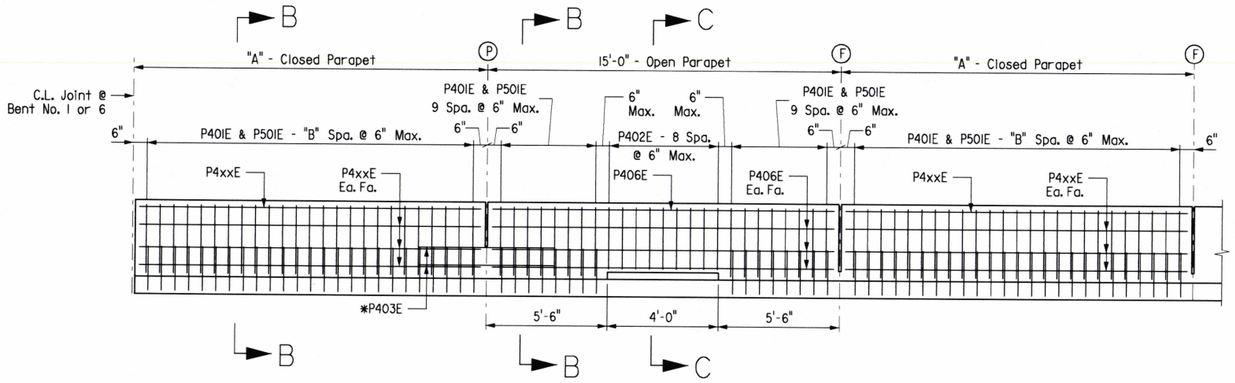
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: DLM DATE: 07-16 FILENAME: b061102m2_s5.dgn
CHECKED BY: LWM DATE: 07-21-16 SCALE: AS SHOWN
DESIGNED BY: DLM DATE: 07-16

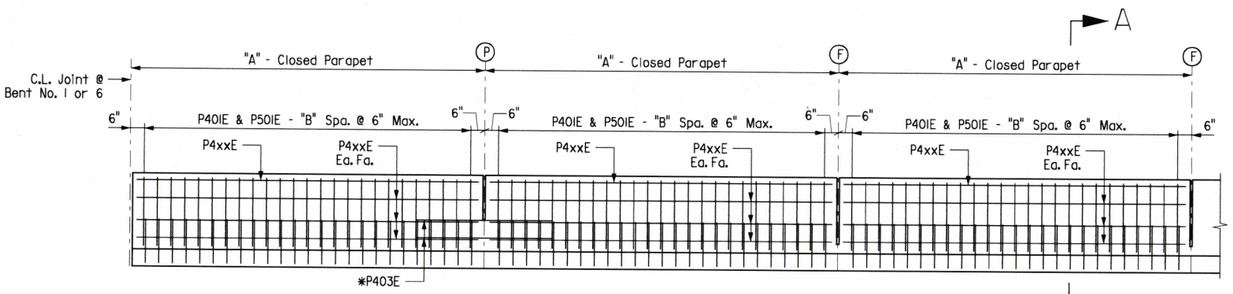
BRIDGE NO. 07402 DRAWING NO. 59103

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.		061102	199	400
				(1) 07402		SPAN DETAILS		59104



DETAILS OF PARPET RAIL - LOW SIDE OF BRIDGE

Scale: 3/8" = 1'-0"



DETAILS OF PARPET RAIL - HIGH SIDE OF BRIDGE

Scale: 3/8" = 1'-0"

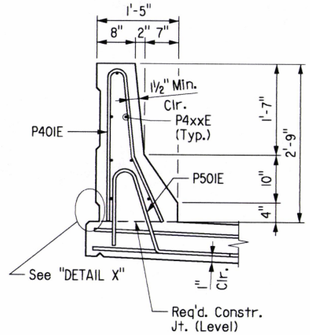
* P403E - Ea. Fa. - Lapped with #4 bars as shown. Typ. at all partial-depth parapet joints.

(F) C.L. Full Depth Parapet Joint (1/4" to 1" max.) as shown in "REINFORCING PLAN", Dwg. No. 59100. Stop 4" from top of slab.

(P) C.L. Partial Depth Parapet Joint (1/4" to 1" max.) as shown in "REINFORCING PLAN", Dwg. No. 59100. Stop 1'-2" from top of slab.

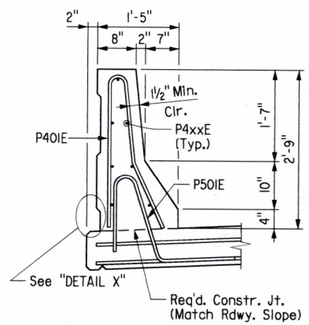
TABLE OF PARAPET RAIL VARIABLES

"A" Closed Parapet	"B"	P4xxE Bar
14'-6 1/16"	27	P404E
14'-7 3/16"	28	P405E
15'-0"	28	P406E
15'-3 1/16"	29	P407E
15'-5 1/16"	29	P408E



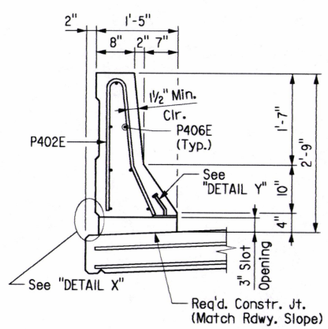
SECTION A-A

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



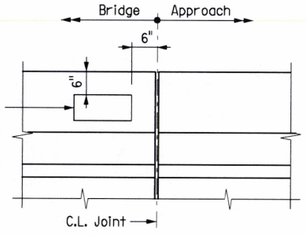
SECTION B-B

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



SECTION C-C

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

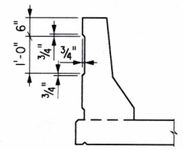


NAME PLATE DETAIL

No Scale

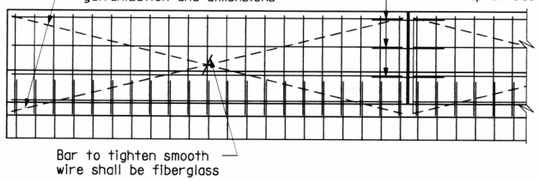
Note: All dimensions shown are taken along gutterline of bridge.

Note: Parapet rail is to be constructed plumb.



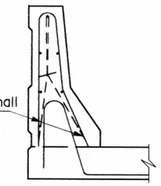
ENHANCEMENT DETAIL

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



For actual placement of reinforcing steel, see parapet details.

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

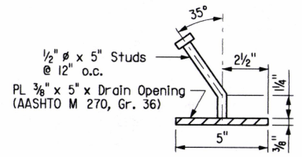


All panels shall be braced as shown to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale



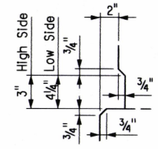
DETAIL Y

No Scale

Note:

Parapet Studs shall be 5" long, granular flux filled, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)

The surfaces of the 3/8" Plates which will not be in contact with concrete shall be painted in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for directly, but will be considered subsidiary to "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)



DETAIL X

No Scale

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13339 LARRY R. MILLER

Larry R. Miller 10-6-16

BRIDGE ENGINEER

SHEET 6 OF 6
DETAILS OF 270'-0" CONTINUOUS COMPOSITE W-BEAM UNIT RAMP 2 OVER FOURMILE CREEK

ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RSG DATE: 07-16

CHECKED BY: LWM DATE: 07-21-16

DESIGNED BY: RSG DATE: 07-16

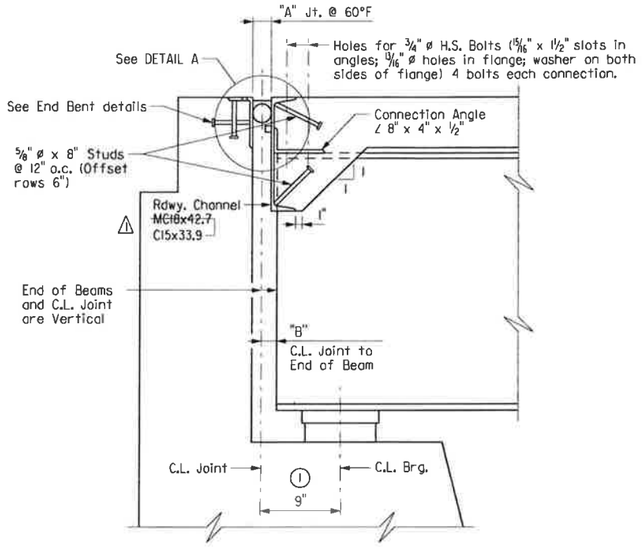
FILENAME: b061102m2_s6.dgn

SCALE: AS SHOWN

BRIDGE NO. 07402

DRAWING NO. 59104

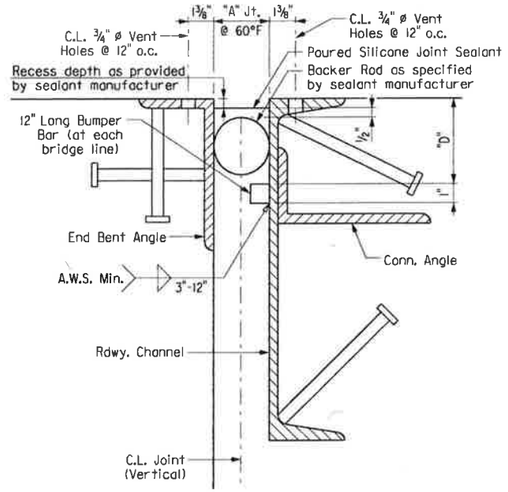
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11-16-16				6	ARK.			
				JOB NO.		061102	200	400
				① 07402		JOINT DETAILS		59105



① Measured Along C.L. Beam.

SECTION THRU JOINT AT END BENTS

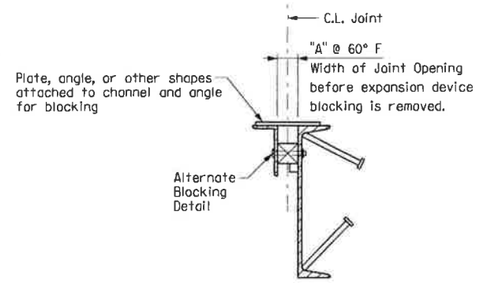
Scale: 1" = 1'-0"
Sections thru Joints are taken normal to C.L. Joints



Concrete shall be hand packed under the joint armor. Care shall be taken to ensure that concrete completely fills the areas below the top channel flange.

DETAIL A

Scale: 3" = 1'-0"



DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension shown, and the blocking details shall be shown on the Shop Drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

EXPANSION DEVICE INSTALLATION AT END BENTS:

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

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

2) The backwall shall be poured to the optional construction joint after beams are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature.

SILICONE JOINT DATA

Bent Number	"A" Width Perpendicular to Joint at 24 Hour Average Temperature ** of:			"B" Perpendicular to Joint at 60°F	Bumper Plate Size	"D"
	40° F	60° F	80° F			
1	2 3/16"	2"	1 13/16"	2¼" ±	1" x 1"	4½"
6	2 3/16"	2"	1 13/16"	2¼" ±	1" x 1"	4½"

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

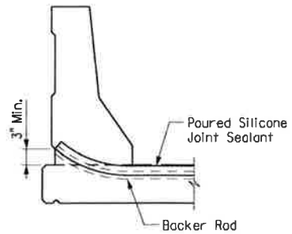
NOTES:
The temperature limitations recommended by the sealant manufacturer shall be observed.

The sealant shall be installed only when the average 24 hour air temperature is between 40°F and 80°F.

BACKER ROD NOTE:
Use an appropriately sized backer rod at the depth shown in the manufacturer's literature based on the joint width at the time of sealing.

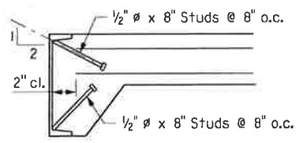
Except as noted, do not install more backer rod than can be sealed in the same day.

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



JOINT SEAL PLACEMENT AT CURB

Scale: ¾" = 1'-0"



Note: As an alternate to ⅝" ø studs, ½" ø x 8" studs spaced as shown may be used. Use weight of ⅝" ø stud as basis of measurement of structural steel in anchors.

DETAIL OF ALTERNATE ANCHORS

No Scale

⚠ Revised roadway channel size. LWM 11-16-16

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11039 LARRY W. MILLER
11-16-16
BRIDGE ENGINEER

DETAILS OF POURED SILICONE JOINT RAMP 2 OVER FOURMILE CREEK

ROUTE 67 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

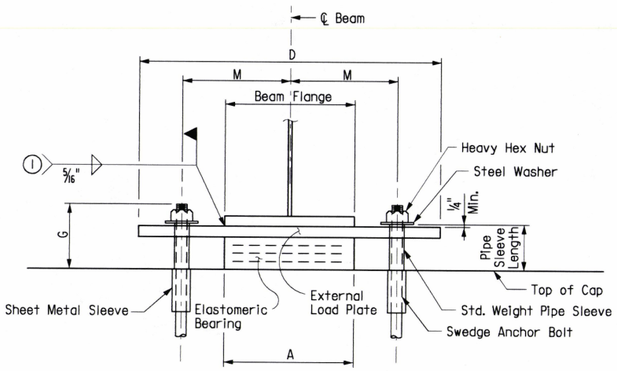
DRAWN BY: DLM DATE: 07-16 FILENAME: b061102m2_j1.dgn
CHECKED BY: LWM DATE: 07-21-16 SCALE: AS SHOWN
DESIGNED BY: DLM DATE: 07-16

BRIDGE NO. 07402 DRAWING NO. 59105

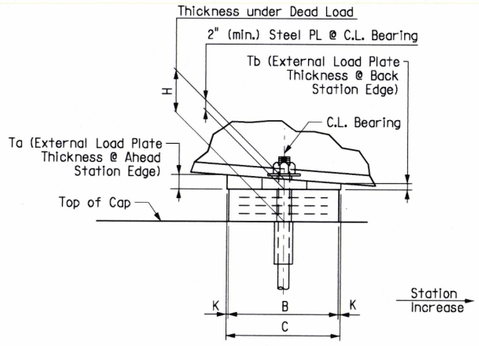
3061102M2_J1.dgn 11/17/2016 8:45:19 AM

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.		061102	201	400
				(1) 07402		ELASTOMERIC BEARINGS		59106

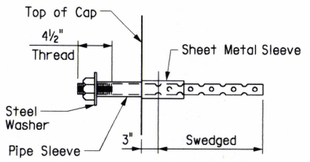
(1) Care shall be taken to ensure that the external load plate is in full and complete contact with the beam or bridge flange before welding begins.



FRONT VIEW



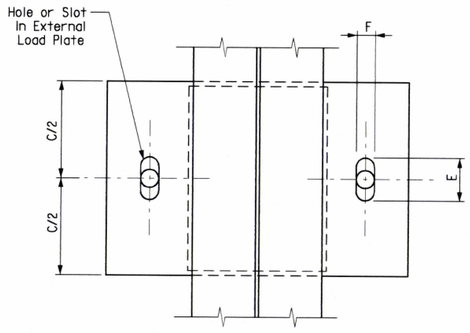
SIDE VIEW



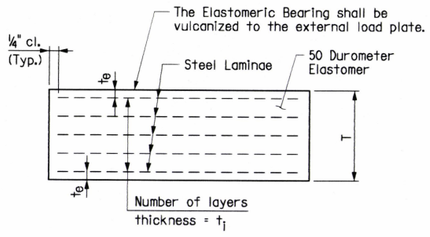
ANCHOR BOLT DETAIL

Anchor bolts may be cast in place or drilled and grouted into place. If anchor bolts are to be cast in place, the galvanized sheet metal sleeves will not be required.

If anchor bolts are to be drilled and grouted in place, the galvanized sheet metal sleeves shall be cast in place as shown. Sleeves shall be dry packed with Styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of structural steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized sheet metal sleeves will not be paid for directly, but will be considered subsidiary to the item "STRUCTURAL STEEL IN BEAM SPANS, (M 270, Gr. 50W)".



PLAN VIEW



t_e = thickness of elastomer cover on top and bottom of pad

t_i = thickness of elastomer between steel laminae

N = number of elastomer layers of thickness t_i

ELASTOMERIC BEARING

GENERAL NOTES

Elastomeric Bearings shall conform to Section 808 and shall be paid for at the unit price bid for "ELASTOMERIC BEARINGS".

External load plates shall conform to AASHTO M 270, Grade 50W. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232 Class C or ASTM B695 Class 50.

External load plates shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(e).

Anchor bolts, washers and nuts shall conform to Subsection 807.07. The anchor bolt grade of steel shall be as specified in the "TABLE OF FABRICATOR VARIABLES". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe sleeves, anchor bolts, washers and nuts shall be paid for at the unit price bid for "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)".

External load plates will not be paid for separately but will be included in the unit price bid for "ELASTOMERIC BEARINGS".

Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the bridge will be allowed only when 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40°F and 80°F; and 2) the slots in the external load plate are positioned to center on the anchor bolts; and 3) no horizontal deformation of the elastomeric pad is evident.

If welding at other temperatures is required, the Engineer will provide adjustment data.

Elastomeric bearings shall be firmly seated in accordance with Subsection 808.08. This work is considered subsidiary to the item "ELASTOMERIC BEARINGS" and will not be paid for directly.

TABLE OF FABRICATOR VARIABLES

* Maximum Design Load = Service I Limit State

LOCATION		BEARING TYPE	NO. of BEARINGS EACH BENT	* MAXIMUM DESIGN LOAD (KIPS)	ELASTOMERIC PAD							EXTERNAL LOAD PLATE								ANCHOR BOLT				
BENT NO(S).	BEAM OR GIRDER NO.				G	H	A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	K	M	T_a	T_b	ANCHOR BOLT (ø x L)	GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
1	ALL	Exp.	4	83.3	8"	5"	14½"	10"	4	½"	¼"	5 @ 12 Ga.	3"	11"	25½"	3"	2⅝"	½"	9¾"	1.86	2.14	1¾" x 28¾"	55	2" x 5⅜"	4" x 11"	3⅜"
2	ALL	Fixed	4	182.2	8¾"	4⅝"	15"	11"	4	½"	¼"	5 @ 12 Ga.	3"	12"	28"	3¾"	3¾"	½"	10½"	1.85	2.15	2½" x 36½"	55	3" x 5⅜"	4" x 11"	4½"
3	ALL	Fixed	4	182.2	8¾"	4⅝"	15"	11"	4	½"	¼"	5 @ 12 Ga.	3"	12"	28"	3¾"	3¾"	½"	10½"	1.85	2.15	2½" x 36½"	55	3" x 5⅜"	4" x 11"	4½"
4	ALL	Fixed	4	182.2	8¾"	4⅝"	15"	11"	4	½"	¼"	5 @ 12 Ga.	3"	12"	28"	3¾"	3¾"	½"	10½"	1.85	2.15	2½" x 36½"	55	3" x 5⅜"	4" x 11"	4½"
5	ALL	Fixed	4	182.2	8¾"	4⅝"	15"	11"	4	½"	¼"	5 @ 12 Ga.	3"	12"	28"	3¾"	3¾"	½"	10½"	1.87	2.13	2½" x 36½"	55	3" x 5⅜"	4" x 11"	4½"
6	ALL	Exp.	4	83.3	8"	5"	14½"	10"	4	½"	¼"	5 @ 12 Ga.	3"	11"	25½"	3"	2⅝"	½"	9¾"	1.90	2.10	1¾" x 28¾"	55	2" x 5⅜"	4" x 11"	3⅜"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
Larry W. Miller 10-16-16
BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS RAMP 2 OVER FOURMILE CREEK

ROUTE 67 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: DLM DATE: 07-16 FILENAME: b061102m2_el.dgn

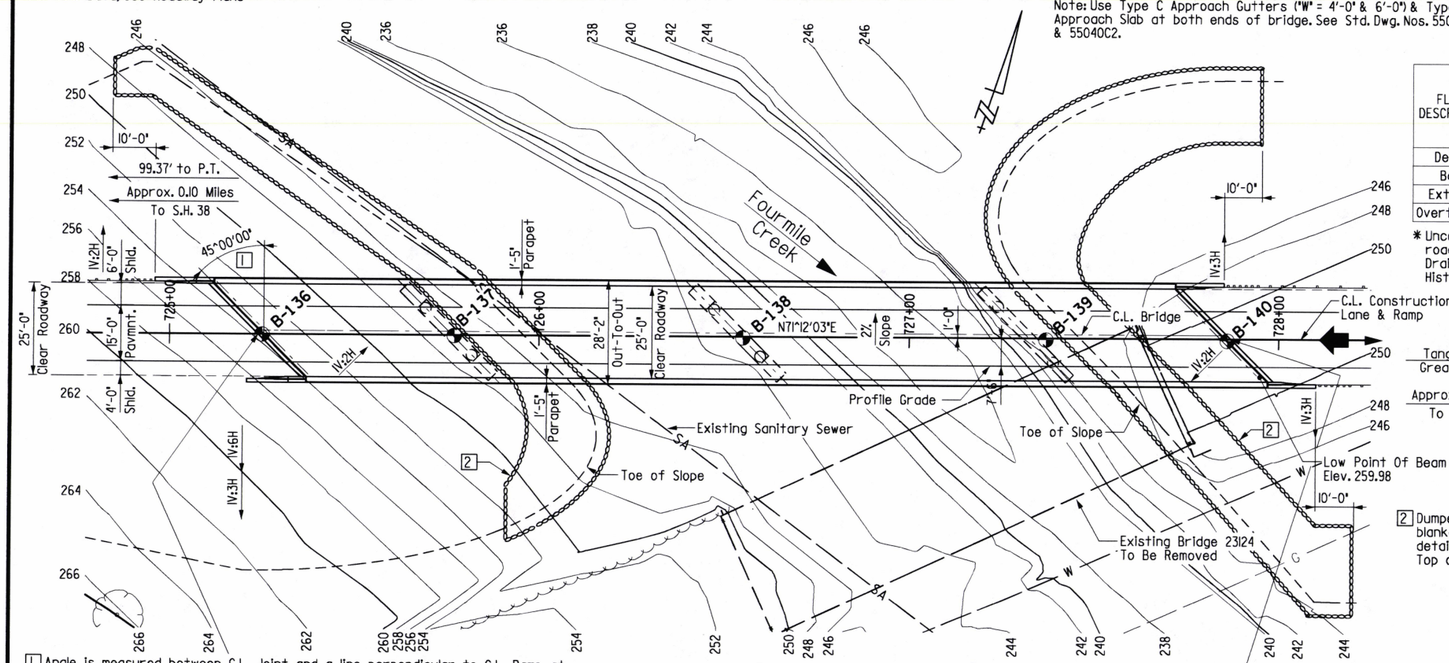
CHECKED BY: LWM DATE: 07-21-16 SCALE: NO SCALE

DESIGNED BY: DLM DATE: 07-16

BRIDGE NO. 07402 DRAWING NO. 59106

For R/W Data, See Roadway Plans

Note: Use Type C Approach Gutters ("W" = 4'-0" & 6'-0") & Type C2 Approach Slab at both ends of bridge. See Std. Dwg. Nos. 55030C & 55040C2.



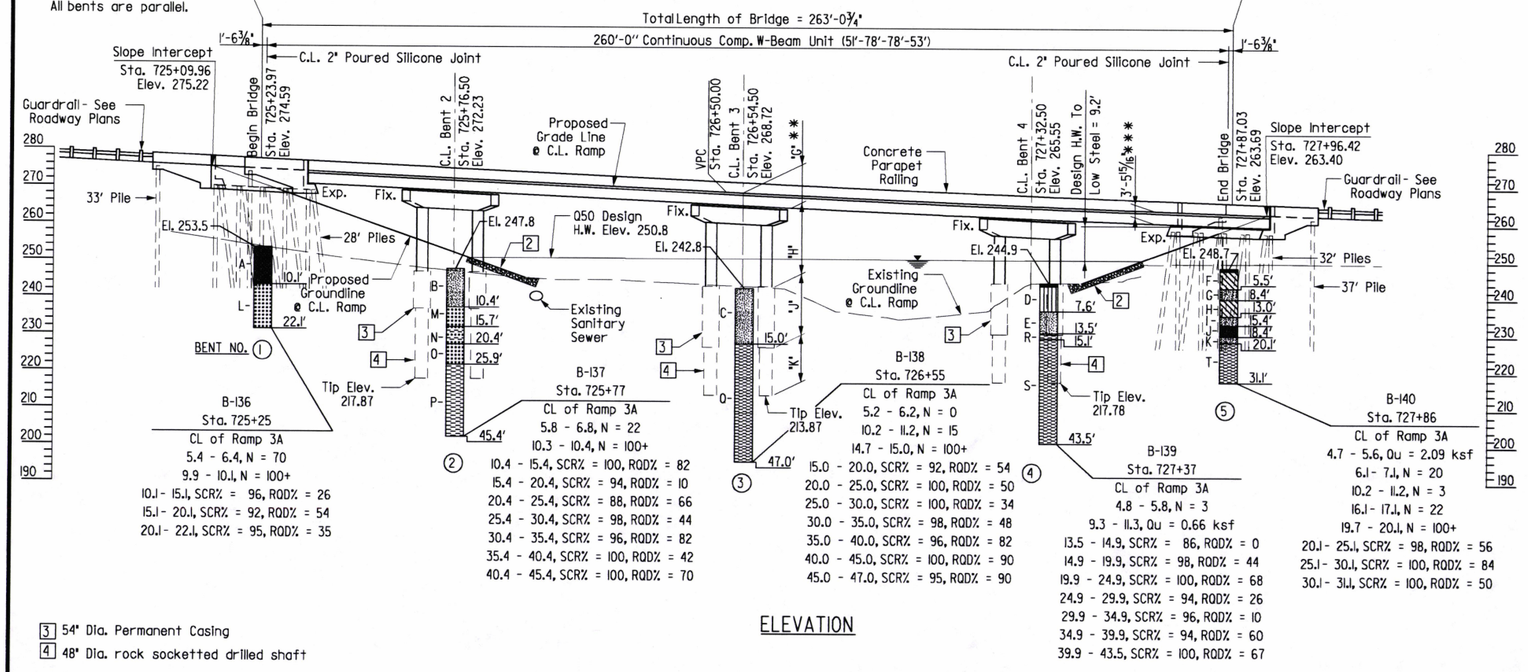
1 Angle is measured between C.L. Joint and a line perpendicular to C.L. Ramp at Station 725+25.50.

All bents are parallel.

2 Dumped Riprap 1'-6" thick with filter blanket. See Std. Dwg. No. 55001 for details. (Typ. each end of Bridge) Top of riprap elev. 251.0.

PLAN

Unless noted otherwise, stations and elevations shown are taken along C.L. Ramp.



3 54" Dia. Permanent Casing

4 48" Dia. rock socketted drilled shaft

***Top Of Deck @ C.L. Ramp To Low Steel

**Top Of Deck @ C.L. Bent @ C.L. Ramp To Low Side Top Of Cap

ELEVATION

For Soil Boring Legend, See Dwg. No. 59108

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	*NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	6,375	248.6	250.8
Base	100	7,100	248.9	251.4
Extreme	500	8,600	249.5	252.5
Overtopping	>500	----	----	----

* Unconstricted water surface without structure or roadway approaches.
Drainage area = 13.3 square miles.
Historical H.W. Elev. = 251.1 ft.

BENT	'C'	'H'	'J'	'K'
2	4'-4⅝"	20'-6"	10'-6"	19'-0"
3	4'-4⅞"	20'-6"	17'-0"	13'-0"
4	4'-3¼"	17'-0"	13'-6"	13'-0"

4.50% P.V.I. Sta. 728+50 Elev. 260.07 -0.50%

V.C. = 400'

VERTICAL CURVE DATA

(Along Profile Grade)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
10-25-16			

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	202	400
07403 (1)		LAYOUT		59107

GENERAL NOTES

BENCH MARK: Metal spike. Survey control point no. 1140. N=241812.52, E=1310641.77, Elev. 243.79, Ramp 3A Sta. 724+10.44, Offset 179.75' Left.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions. Unless otherwise noted in the plans, Section and Subsection numbers refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (2012, 6th Edition) with interim specifications.

LIVE LOADING: HL93

SEISMIC PERFORMANCE ZONE: 2

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (Superstructure)	f'c = 4,000 psi
Class S Concrete (Substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M 31 or M 322 Type A, Gr. 60)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi

BORING LOGS: Boring Logs may be obtained from the Construction Contract Procurement Section of the Program Management Division.

STEEL PILING: All piling shall be HP12x53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 95 tons per pile and into the material designated as shale or sandstone on the boring legend. Lengths shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the Standard Specifications. Actual pile lengths to be determined in the field. On all piles the Contractor shall use approved steel H-Pile driving points.

Piles in end bents shall be driven after embankment to bottom of cap is in place. Drive all piles to a minimum penetration below natural ground of 10' at Bent 1 and 20' at Bent 5.

DRILLED SHAFTS: Foundations for Bents 2-4 shall consist of Drilled Shafts. All drilled shafts shall be founded to the minimum rock penetrations and tip elevations as shown on the plans. No adjustments in Plan Tip Elevation shall be made without prior approval from the Engineer. Methods of construction of the drilled shafts shall be in accordance with SP Job 061102 'DRILLED SHAFT FOUNDATIONS'. Any casing used as a means for construction of the drilled shafts, such as to prevent caving, to exclude groundwater, or to provide shoring shall not extend below top of rock. The Contractor must obtain approval from the Engineer for any deviation from this requirement.

CROSSHOLE SONIC LOGGING: Nondestructive testing shall be performed on each drilled shaft in accordance with SP Job 061102 'NONDESTRUCTIVE TESTING OF DRILLED SHAFTS'.

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

CLASS I PROTECTIVE SURFACE TREATMENT: Class I Protective Surface Treatment shall be applied to the roadway surface, top of backwall, top and roadway face of the concrete parapet rail and transition rails.

EXISTING BRIDGE: Existing Bridge No. 23124 (L.M. 2.20) is 34'-3" wide and 124'-0" long and consists of 4 spans of precast concrete channel beams supported by pile bents on steel H-piles. The existing bridge is located on the proposed alignment. No plans for the existing bridge are available.

REMOVAL AND SALVAGE: After the new Willie Ray Drive bridge is opened to traffic, the existing bridge (No. 23124) shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Drawings.

DETAIL DRAWINGS:	DRAWING NO.
End Bents	59109-59110, 59113-59114
Intermediate Bents	59111-59112
260'-0" Cont. Comp. W-Beam Unit	59115-59120
Poured Silicone Joint	59121
Elastomeric Bearings	59122
Steel Piling	55020

SHEET 1 OF 2
LAYOUT OF RAMP 3A BRIDGE OVER FOURMILE CREEK
HWY. 67 INTERCHANGE (N. OF CABOT) (S)
LONOKE COUNTY
ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13339 LARRY W. MILLER

Larry W. Miller 10-25-16

BRIDGE ENGINEER

DRAWN BY: LWM DATE: 7-15
CHECKED BY: BEG DATE: 07-21-16
DESIGNED BY: LWM DATE: 7-15
FILENAME: b061102m3_L1.dgn
SCALE: 1" = 20'-0"

BRIDGE NO. 07403 DRAWING NO. 59107

⚠ Revised Job from Federal oversight to State oversight. LWM 10-25-16

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10-25-16				6	ARK.			
				JOB NO.		061102	203	400
				(1) 07403		LAYOUT		59108

A WAITING PERIOD OF 35 DAYS IS REQUIRED AFTER THE PLACEMENT OF EMBANKMENT FILL AND PRIOR TO COMMENCING PILE DRIVING OPERATIONS FOR END BENT 5 ON RAMP 3A OVER FOURMILE CREEK. THE WAITING PERIOD BEGINS AFTER ALL FILL HAS BEEN PLACED FOR END BENT 5.

THE CONTRACTOR SHALL COMPLETE THE EMBANKMENT CONSTRUCTION AND MONITOR THE SETTLEMENT OF THE FOUNDATION SOILS FOR A MINIMUM OF 35 DAYS AT END BENT 5 ON RAMP 3A OVER FOURMILE CREEK PRIOR TO DRIVING PILES. THE ENGINEER SHALL DETERMINE WHEN PILE DRIVING MAY BEGIN. MONITORING FOR SETTLEMENT SHALL BE ACCOMPLISHED IN A MANNER ACCEPTABLE TO THE ENGINEER AND NO DIRECT PAYMENT WILL BE MADE FOR THIS WORK.

BORING LEGEND

A - Very dense, brown & gray, silty, clayey gravel with sand.
B - Medium dense, gray & brown, clayey sand.
C - Very loose to very dense, brown, gray & black, clayey sand with gravel.
D - Soft, brown, sandy silt.
E - Very loose, gray & tan, silty sand.
F - Very stiff, tan & gray, sandy lean clay.
G - Medium dense, gray & brown, clayey sand with gravel.
H - Soft, brown, sandy lean clay.
I - Medium dense, gray & brown, silty, clayey sand.
J - Medium dense, brown & black, clayey gravel with sand.
K - Very dense, gray & brown, clayey sand.
L - Sandstone: Light to dark gray, traces of white, black, fine grain, fine micaceous, slightly to severely weathered, highly fractured in intervals, hard with medium hard to soft seams.
M - Sandstone: Gray, traces of white, black, fine grain, fine micaceous, slightly weathered, hard.
N - Sandstone & Shale (Claystone): Gray, black, very fine grain & fine grain, fine micaceous, slightly weathered, fractured in intervals, hard & medium hard.
O - Sandstone: Light to dark gray, traces of white, black, fine grain, fine micaceous, slightly weathered, hard.
P - Shale (Claystone): Black, traces of light gray, very fine grain, slightly weathered, very thinly laminated, medium to moderate hardness with soft seams.
Q - Shale (Claystone): Black-dark gray, traces of light gray, very fine grain to silty in parts, fresh to slightly weathered with seams severely weathered, very thinly laminated, medium to moderate hardness with soft seams.
R - Shale (Claystone): Black, dark gray, dark brown, traces of orange-brown stain, very fine grain, moderately severely weathered, very thinly laminated, soft.
S - Shale (Claystone): Black, dark gray, very fine grain, moderately weathered grading to fresh with seams severely weathered, very thinly laminated, low to medium hard, slightly silty in parts.
T - Shale (Claystone): Black, very fine grain, slightly weathered grading to fresh, very thinly laminated, medium hardness, slightly silty in parts.

⚠ Revised job from Federal oversight to State oversight. LWM 10-25-16

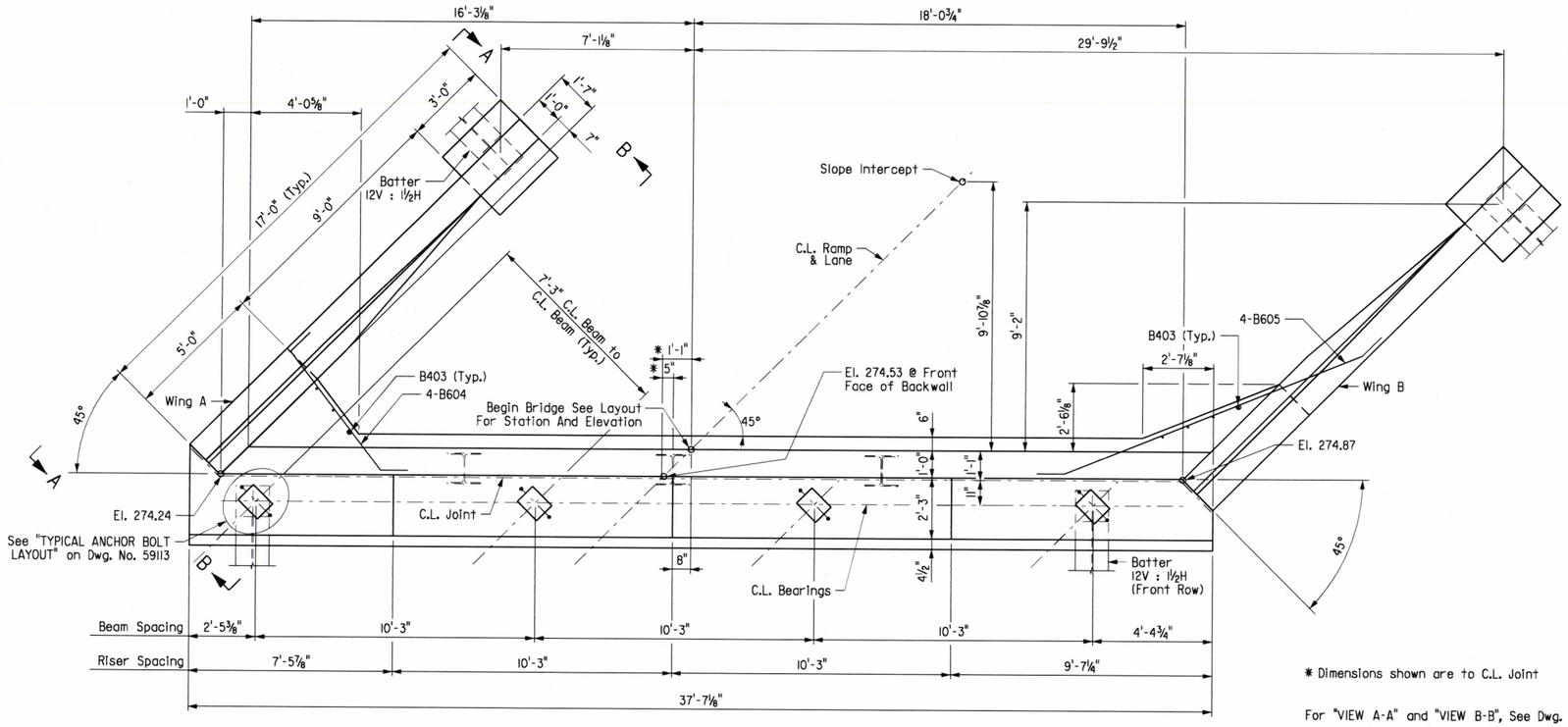
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11339
LARRY W. MILLER
10-25-16
BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF RAMP 3A BRIDGE
OVER FOURMILE CREEK
HWY. 67 INTERCHANGE (N. OF CABOT) (S) ⚠
LONOKE COUNTY
ROUTE 67 SEC. II
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LWM DATE: 07-15
CHECKED BY: BEG DATE: 07-21-16
DESIGNED BY: LWM DATE: 07-15
FILENAME: b061102m3_L2.dgn
SCALE: As Shown

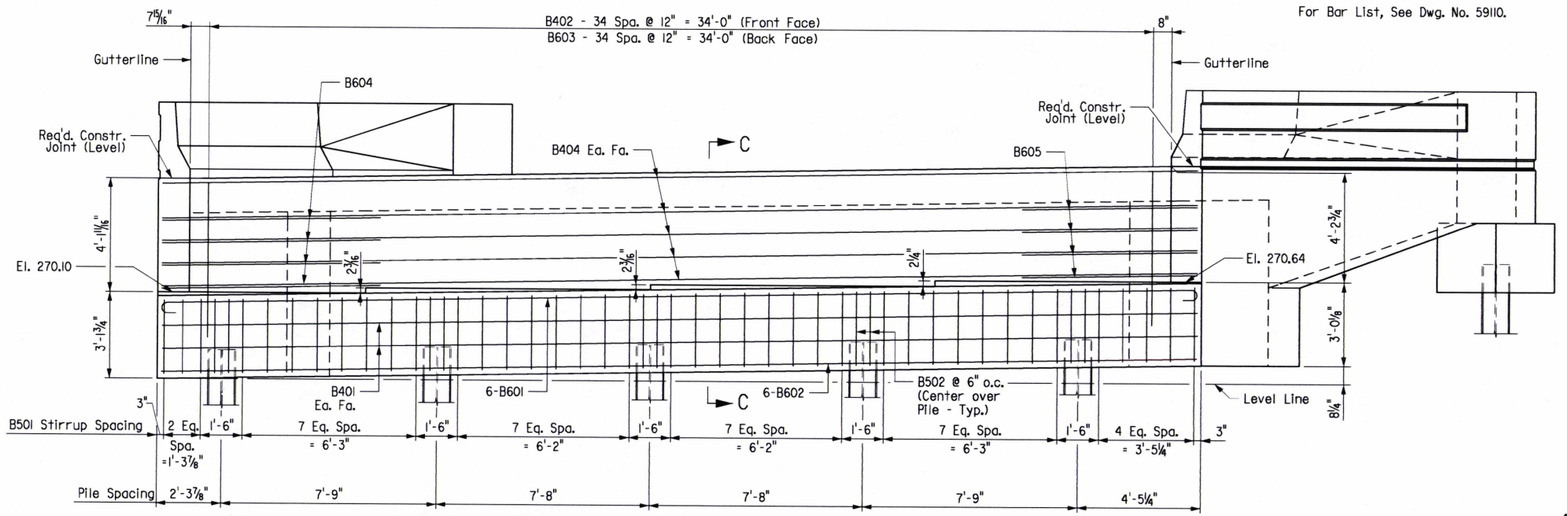
BRIDGE NO. 07403 DRAWING NO. 59108

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.		061102	204	400
				(1) 07403		BENT 1		59109



PLAN

Scale: ⅜" = 1'-0"



ELEVATION

(Looking Back)

Scale: ⅜" = 1'-0"

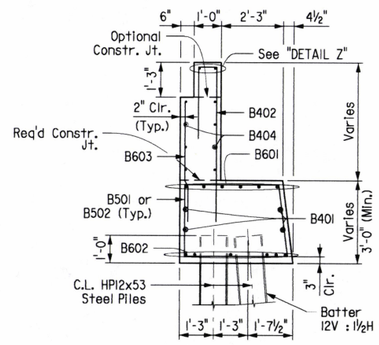
GENERAL NOTES FOR SUBSTRUCTURE

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Class I Protective Surface Treatment shall be applied to the roadway face and top of the end bent rail and to the top of the backwall.



SECTION C-C

Scale: ⅜" = 1'-0"

* Dimensions shown are to C.L. Joint

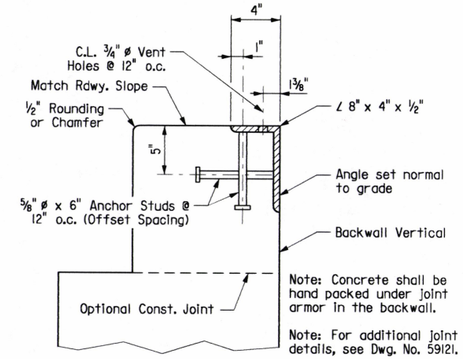
For "VIEW A-A" and "VIEW B-B", See Dwg. No. 59110.

For additional information, See "LAYOUT" on Dwg. No. 59107.

For "DETAIL AT PILE TOP", See Dwg. No. 59113.

For Details of Wing and Rail, See Dwg. No. 59110.

For Bar List, See Dwg. No. 59110.



DETAIL Z

Scale: 2" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11339
LARRY M. MILLER
BRIDGE ENGINEER
10-6-16

SHEET 1 OF 2
DETAILS OF BENT 1
RAMP 3A OVER FOURMILE CREEK
ROUTE 67 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: DJJ DATE: 7-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: DJJ DATE: 7-16
FILENAME: B06II02M3_BII.dgn
SCALE: AS SHOWN

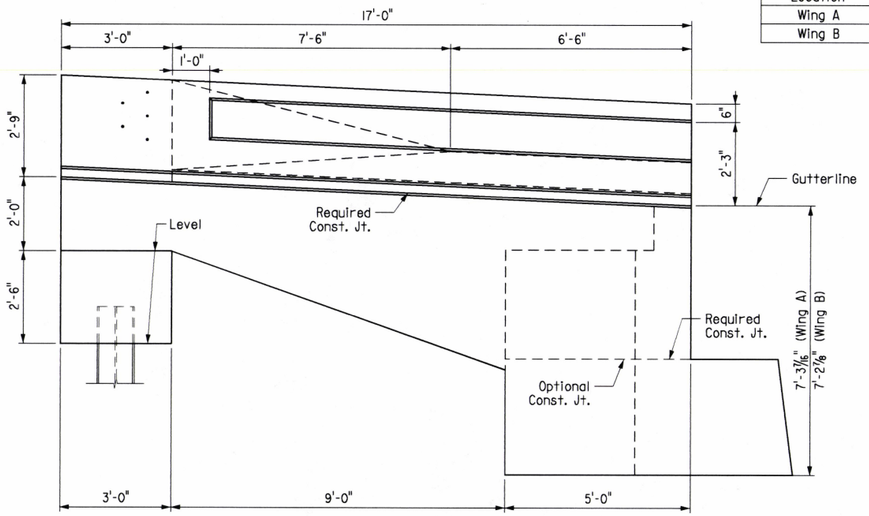
BRIDGE NO. 07403

DRAWING NO. 59109

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.		061102	205	400
				(1) 07403		BENT 1		59110

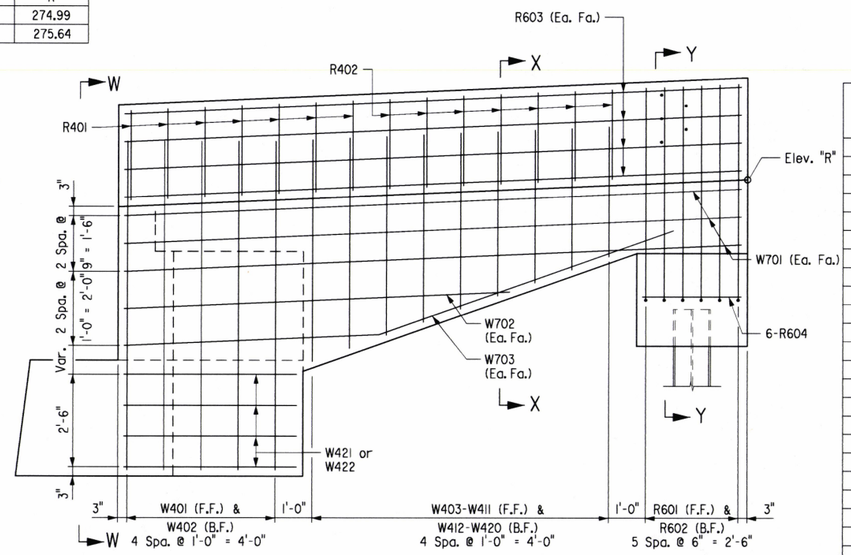
TABLE OF WING VARIABLES

Location	"R"
Wing A	274.99
Wing B	275.64



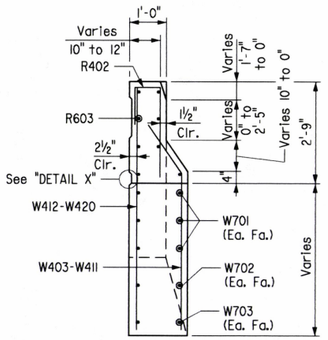
VIEW A-A

(Wing A Shown, Wing B Similar)
Scale: ½" = 1'-0"



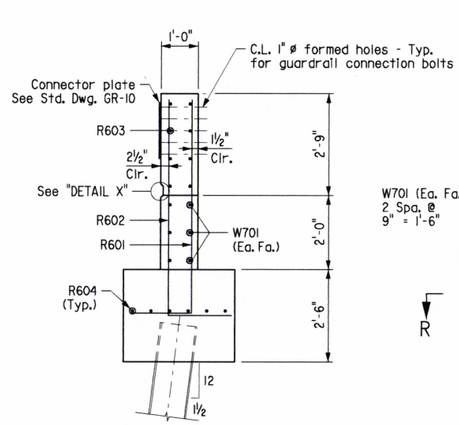
VIEW B-B

(Wing A Shown, Wing B Similar)
Scale: ½" = 1'-0"



SECTION X-X

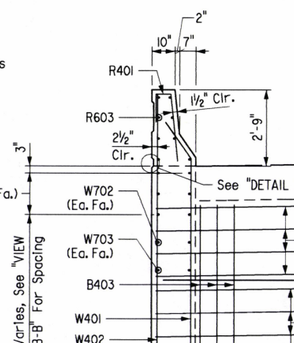
Scale: ½" = 1'-0"



Guardrail connection is not required on all wings.
See Layout Drawing for location of guardrail connections.

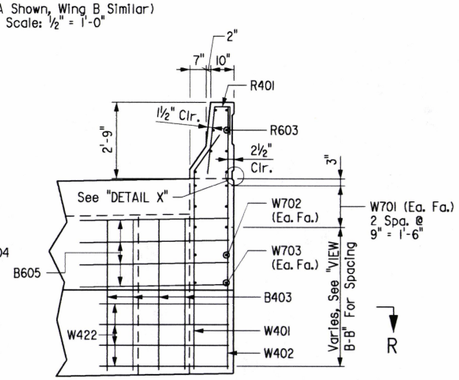
SECTION Y-Y

Scale: ½" = 1'-0"



VIEW W-W

(Wing A)
Scale: ⅜" = 1'-0"



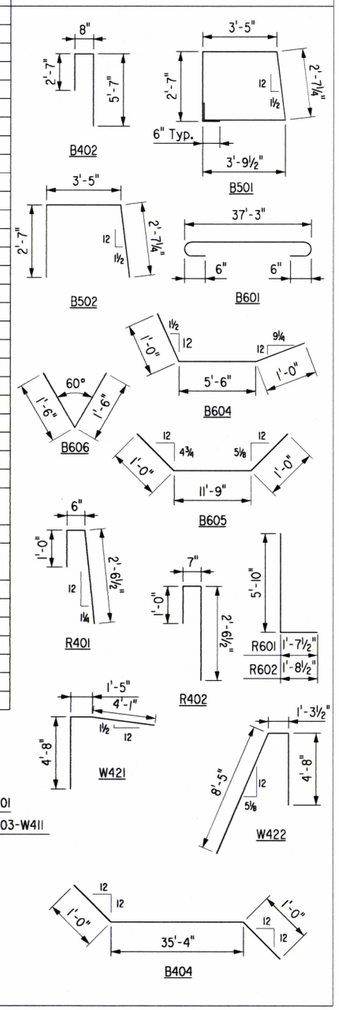
VIEW W-W

(Wing B)
Scale: ⅜" = 1'-0"

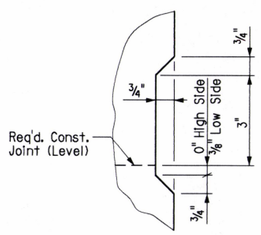
BAR LIST

Mark	Number Required	Length	Pin Dia.
B401	4	37'-3"	Str.
B402	35	8'-8"	2"
B403	7	5'-7"	Str.
B404	10	37'-4"	3"
B501	40	12'-11"	2½"
B502	10	8'-7"	2½"
B601	6	38'-7"	4½"
B602	6	37'-3"	Str.
B603	35	4'-6"	Str.
B604	4	7'-6"	4½"
B605	4	13'-9"	4½"
B606	10	2'-10"	4½"
R401	14	3'-11"	2"
R402	14	4'-0"	2"
R601	12	7'-4"	4½"
R602	12	7'-3"	4½"
R603	16	16'-8"	Str.
R604	12	2'-8"	Str.
W401	10	9'-4"	3"
W402	10	9'-8"	Str.
W403 to W411	2 Each	5'-7" to 3'-4"	3"
W412 to W420	2 Each	7'-0" to 4'-6"	Str.
W421	4	10'-2"	2"
W422	4	14'-5"	2"
W701	12	16'-8"	Str.
W702	4	10'-5"	Str.
W703	4	15'-4"	5¼"

BENDING DIAGRAMS (Dimensions are out to out of bars)

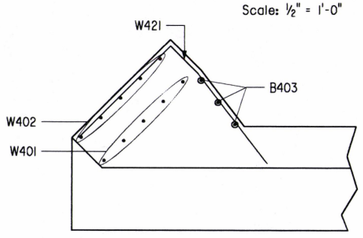


For GENERAL NOTES FOR SUBSTRUCTURE, see Dwg. No. 59109.



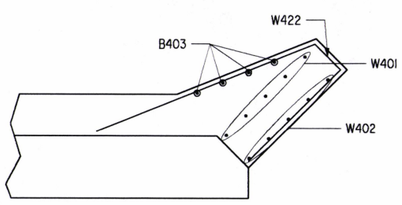
DETAIL X

No Scale



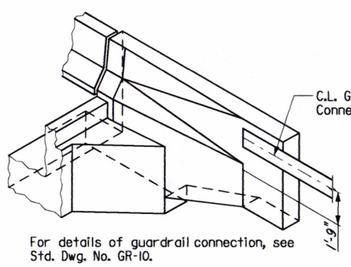
SECTION R-R

(Wing A)
Scale: ⅜" = 1'-0"



SECTION R-R

(Wing B)
Scale: ⅜" = 1'-0"



For details of guardrail connection, see Std. Dwg. No. GR-10.

See Layout Drawing for locations of guardrail installation.

THREE DIMENSIONAL VIEW WING RAIL & PARAPET

No Scale

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 10339 LARRY W. MILLER
Larry W. Miller 10-6-16
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 1
RAMP 3A OVER FOURMILE CREEK

ROUTE 67 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

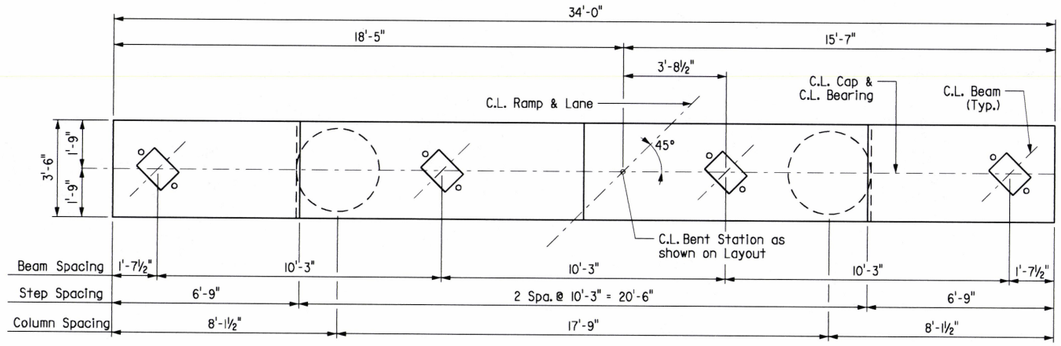
DRAWN BY: DJJ DATE: 8-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: DJJ DATE: 8-16

FILENAME: B06110 2M3_B12.dgn
SCALE: AS SHOWN

BRIDGE NO. 07403

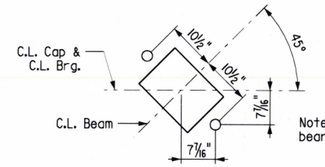
DRAWING NO. 59110

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.		061102	206	400
				(1) 07403		SPAN DETAILS		59111



PLAN

Scale: ⅜" = 1'-0"



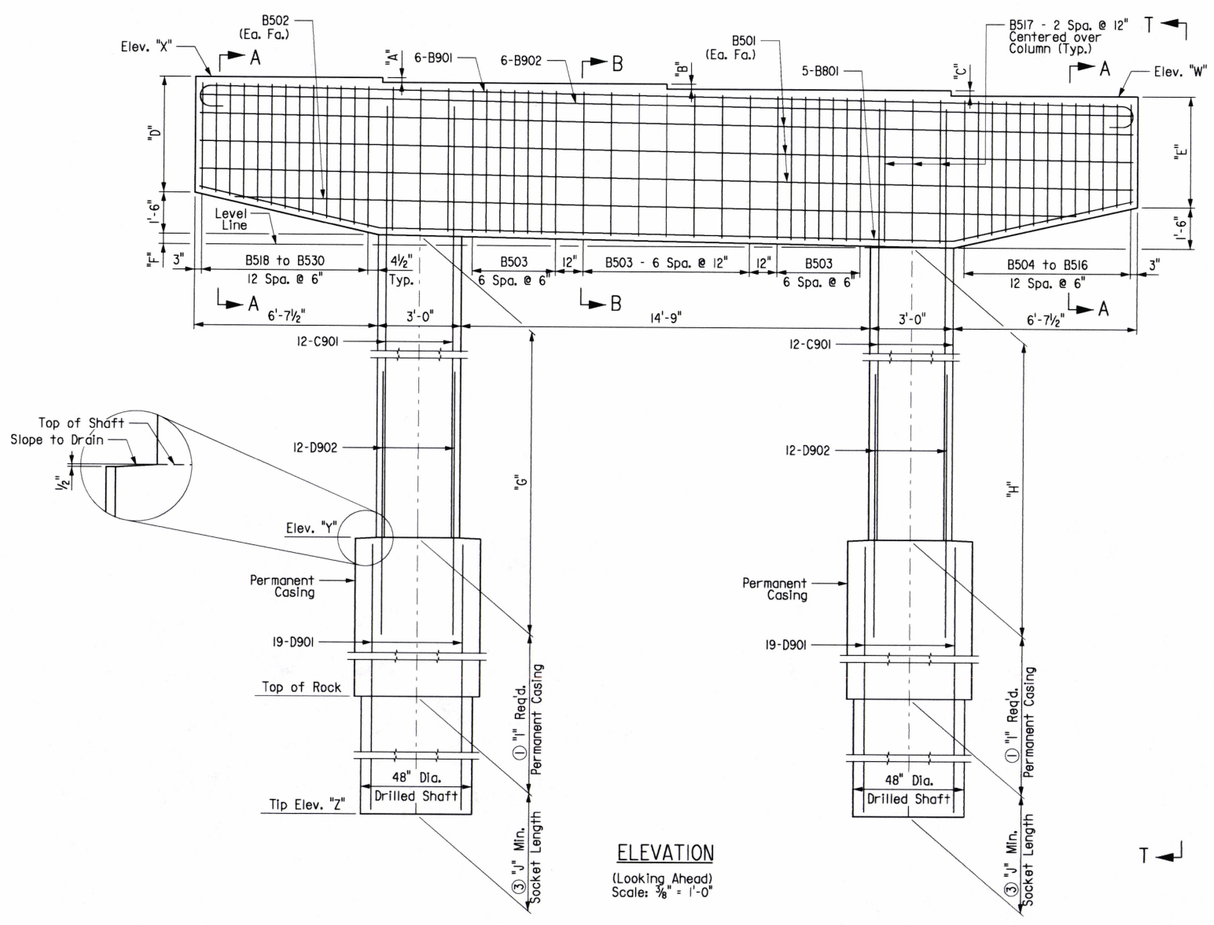
Note: For details of elastomeric bearings, see Dwg. No. 59122.

TYPICAL ANCHOR BOLT LAYOUT

Scale: ¾" = 1'-0"

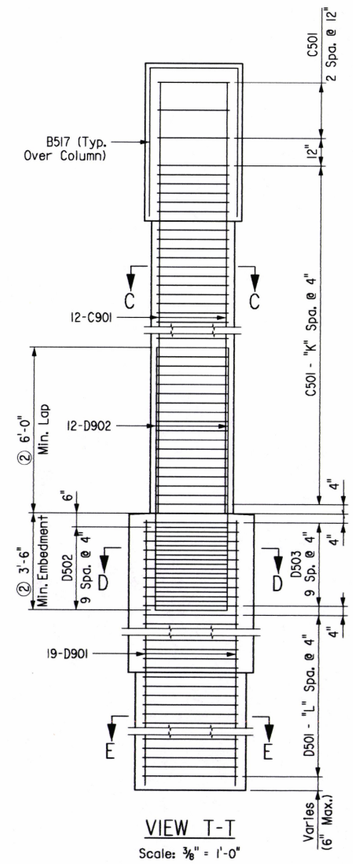
TABLE OF VARIABLES

Bent No.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	"K"	"L"	Elev. "W"	Elev. "X"	Elev. "Y"	Elev. "Z"
2	2⅜"	2⅜"	2⅜"	4'-2⅛"	4'-0"	4⅜"	15'-4⅜"	15'-0"	10'-6"	19'-0"	50	77	267.87	268.41	247.37	217.87
3	2⅜"	2⅛"	2⅛"	4'-2⅛"	4'-0"	4⅜"	15'-4⅜"	15'-0"	17'-0"	13'-0"	50	79	264.37	264.90	243.87	213.87
4	1½"	1⅞"	1⅜"	4'-1½"	4'-0"	2⅞"	11'-8⅞"	11'-6"	13'-6"	13'-0"	40	68	261.28	261.64	244.28	217.78



ELEVATION

(Looking Ahead)
Scale: ⅜" = 1'-0"



VIEW T-T

Scale: ⅜" = 1'-0"

T

Note: Reinforcing for columns and drilled shafts are typical.

GENERAL NOTES

Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Concrete in the cap and column shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi, and shall be poured in the dry. Concrete in the drilled shafts shall be Class "S" as modified by SP Job 061102 "DRILLED SHAFT FOUNDATIONS". All exposed corners shall be chamfered ¾" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

For additional information, see LAYOUT.

Drilled shafts shall conform to SP Job 061102 "DRILLED SHAFT FOUNDATIONS".

① Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job 061102 "DRILLED SHAFT FOUNDATIONS". Permanent casings shall not extend below top of competent rock.

② The column reinforcing cage, consisting of bars D502 and D902, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The contractor will be responsible for obtaining satisfactory results.

③ Minimum penetration into competent rock below permanent casing.

For all "SECTIONS" and bar list, see Dwg. No. 59112.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
Larry W. Miller 10-16-16
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF INTERIOR BENTS
RAMP 3A OVER FOURMILE CREEK
ROUTE 67 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

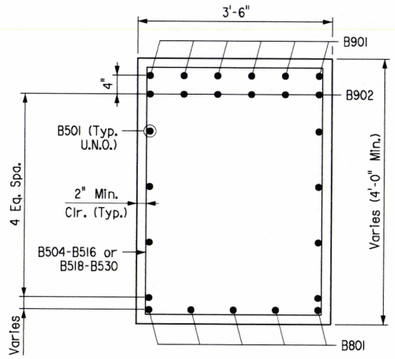
DRAWN BY: BEG DATE: 7-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: BEG DATE: 7-16

FILENAME: B06II02M3_B21.dgn
SCALE: AS SHOWN

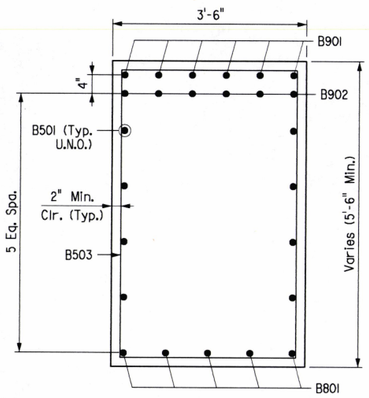
BRIDGE NO. 07403
DRAWING NO. 59111

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.		061102	207	400
				① 07403		SPAN DETAILS		59112

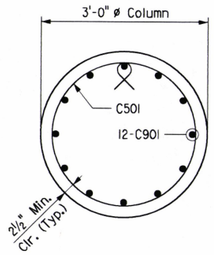
① D501, D502, D503, D901 and D902 Bars are non-pay items and are subsidiary to SP Job 061102 "DRILLED SHAFT FOUNDATIONS"



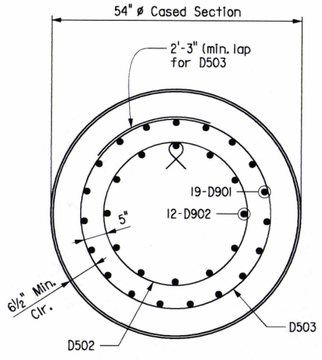
SECTION A-A
Scale: 3/4" = 1'-0"



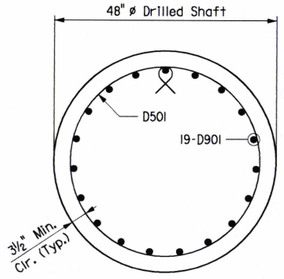
SECTION B-B
Scale: 3/4" = 1'-0"



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



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

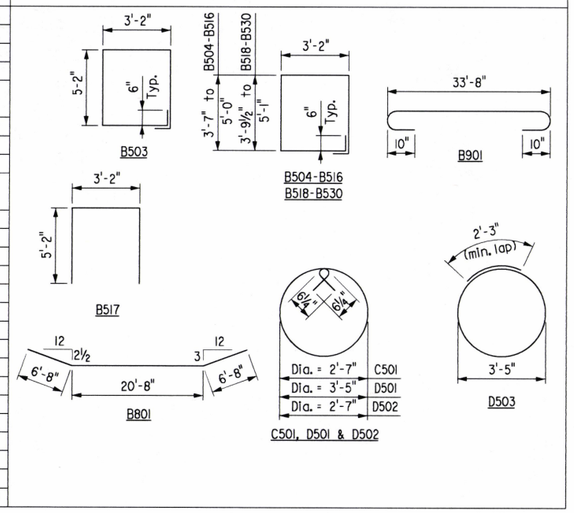


SECTION E-E
Scale: 3/4" = 1'-0"

BENT 2 BAR LIST

Mark	Number Required	Length	Pin Dia.
B501	6	33'-8"	Str.
B502	2	30'-4"	Str.
B503	21	17'-2"	2½"
B504 to B516	1 ea.	14'-0" to 16'-10"	2½"
B517	6	13'-4"	2½"
B518 to B530	1 ea.	14'-5" to 17'-0"	2½"
B801	5	34'-0"	6"
B901	6	36'-2"	9"
B902	6	33'-8"	Str.
C501	108	9'-6"	3¾"
C901	24	20'-0"	Str.
① D501	156	12'-1"	3¾"
① D502	20	9'-6"	3¾"
① D503	20	13'-0"	3¾"
① D901	38	29'-3"	Str.
① D902	24	9'-6"	Str.

Bending Diagrams (Dimensions are out to out of bars.)



BENT 3 BAR LIST

Mark	Number Required	Length	Pin Dia.
B501	6	33'-8"	Str.
B502	2	30'-4"	Str.
B503	21	17'-2"	2½"
B504 to B516	1 ea.	14'-0" to 16'-10"	2½"
B517	6	13'-4"	2½"
B518 to B530	1 ea.	14'-5" to 17'-0"	2½"
B801	5	34'-0"	6"
B901	6	36'-2"	9"
B902	6	33'-8"	Str.
C501	108	9'-6"	3¾"
C901	24	20'-0"	Str.
① D501	160	12'-1"	3¾"
① D502	20	9'-6"	3¾"
① D503	20	13'-0"	3¾"
① D901	38	29'-9"	Str.
① D902	24	9'-6"	Str.

Note: For Bar Bending Diagrams, See "BENT 2 BAR LIST".

BENT 4 BAR LIST

Mark	Number Required	Length	Pin Dia.
B501	6	33'-8"	Str.
B502	2	30'-4"	Str.
B503	21	17'-2"	2½"
B504 to B516	1 ea.	14'-0" to 16'-10"	2½"
B517	6	13'-4"	2½"
B518 to B530	1 ea.	14'-5" to 17'-0"	2½"
B801	5	34'-0"	6"
B901	6	36'-2"	9"
B902	6	33'-8"	Str.
C501	88	9'-6"	3¾"
C901	24	16'-8"	Str.
① D501	138	12'-1"	3¾"
① D502	20	9'-6"	3¾"
① D503	20	13'-0"	3¾"
① D901	38	26'-3"	Str.
① D902	24	9'-6"	Str.

Note: For Bar Bending Diagrams, See "BENT 2 BAR LIST".

Note: For General Notes and additional details, see Dwg. No. 59111.

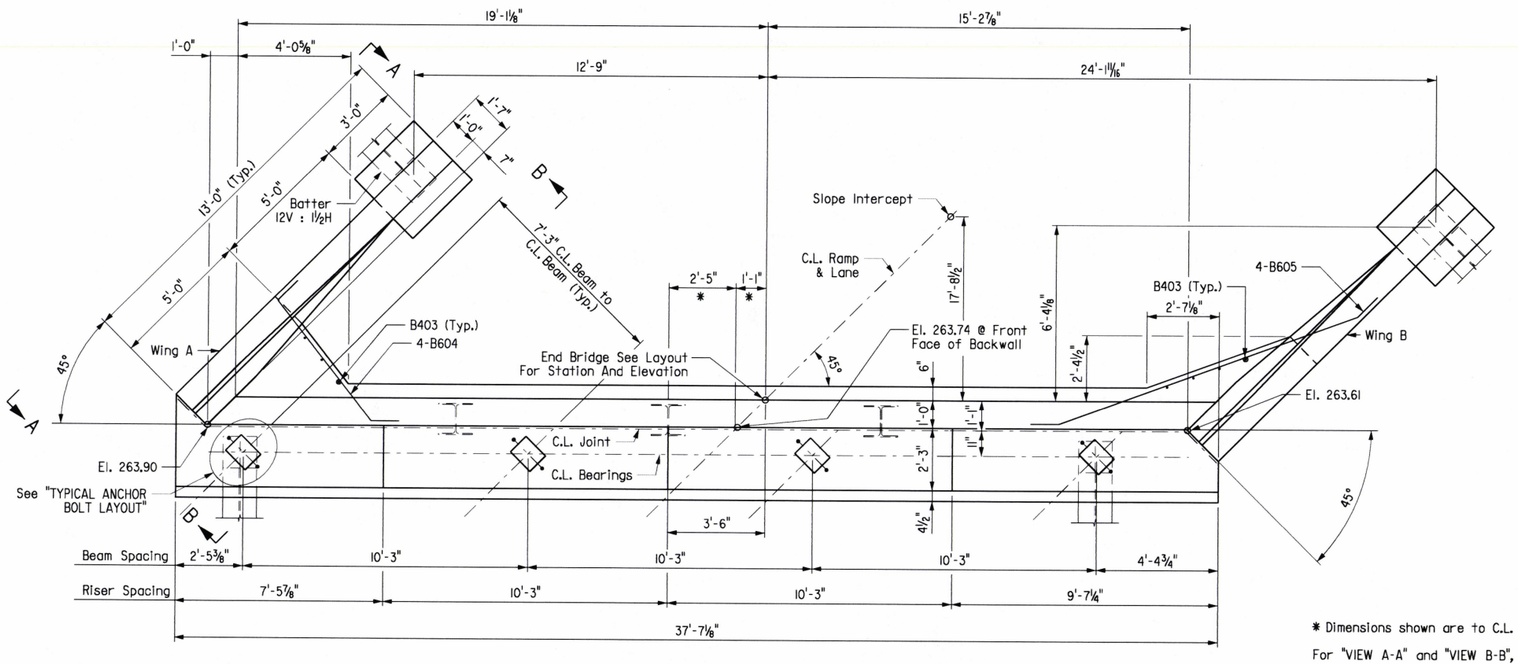
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER
Larry W. Miller 10-6-16
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF INTERIOR BENTS
RAMP 3A OVER FOURMILE CREEK
ROUTE 67 SEC. II
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BEG DATE: 7-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: BEG DATE: 7-16
FILENAME: B061102M3_B22.dgn
SCALE: AS SHOWN

BRIDGE NO. 07403 DRAWING NO. 59112

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.		061102	208	400
				(1) 07403		BENT 5		59113



PLAN

Scale: ⅜" = 1'-0"

* Dimensions shown are to C.L. Joint

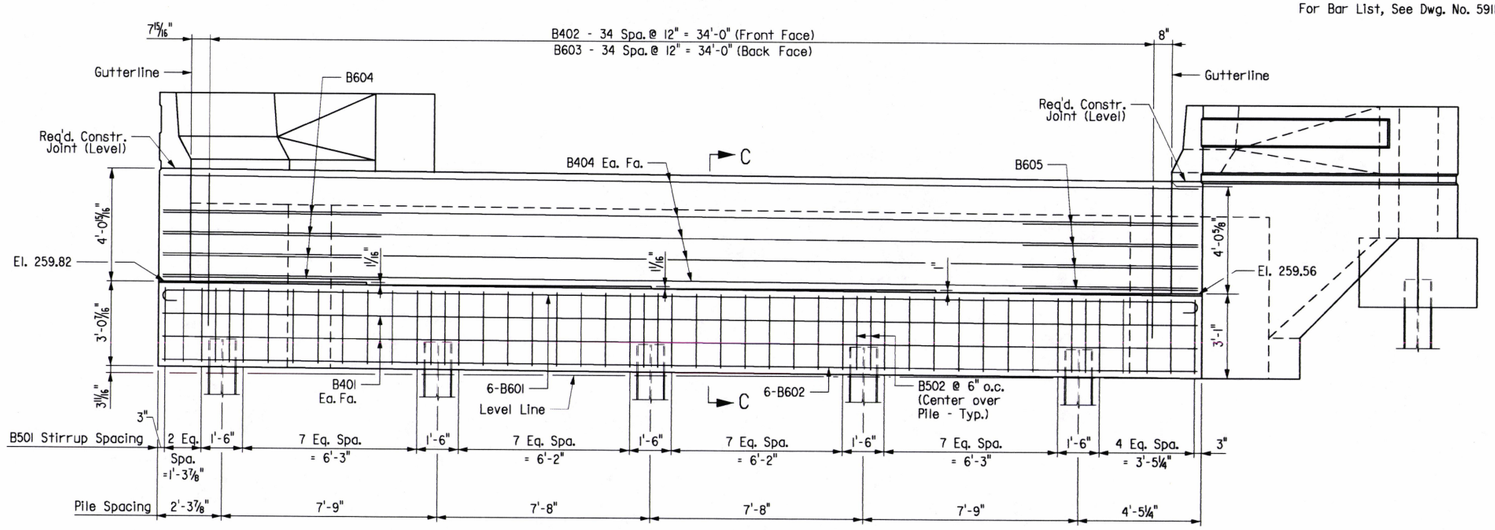
For "VIEW A-A" and "VIEW B-B", See Dwg. No. 59114.

For "SECTION C-C, See Dwg. No. 59109.

For additional information, See "LAYOUT" on Dwg. No. 59107.

For Details of Wing and Rail, See Dwg. No. 59114.

For Bar List, See Dwg. No. 59114.



ELEVATION

(Looking Ahead)
Scale: ⅜" = 1'-0"

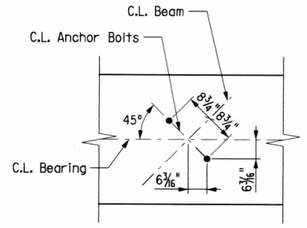
GENERAL NOTES FOR SUBSTRUCTURE

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

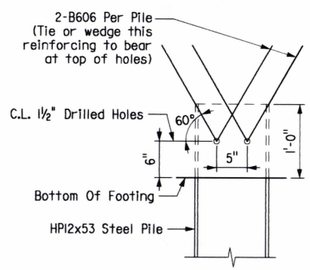
Class I Protective Surface Treatment shall be applied to the roadway face and top of end bent rail and to the top of the backwall.



Note: For details of elastomeric bearings, See Dwg. No. 59122.

TYPICAL ANCHOR BOLT LAYOUT

Scale: ½" = 1'-0"



DETAIL AT PILE TOP

No Scale

Drilled holes will not be paid for directly but shall be considered incidental to the item "STEEL PILING (HP12x53)".

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
BRIDGE ENGINEER
10-16-16

SHEET 1 OF 2
DETAILS OF BENT 5
RAMP 3A OVER FOURMILE CREEK
ROUTE 67 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

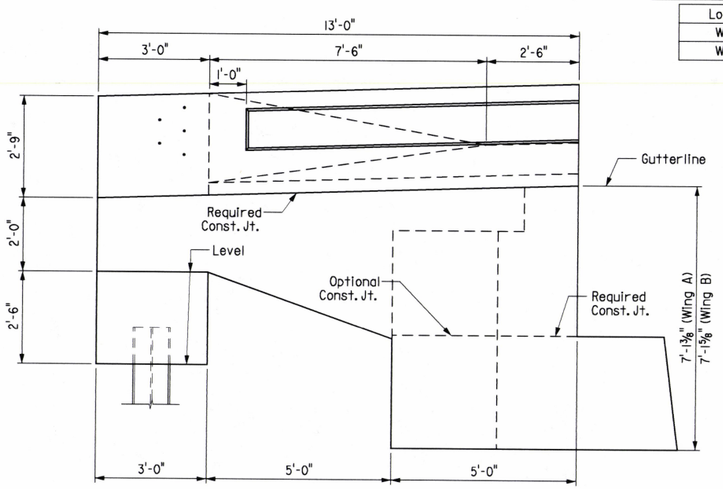
DRAWN BY: DJJ DATE: 8-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: DJJ DATE: 8-16
FILENAME: B06110 2M3_B51.dgn
SCALE: AS SHOWN

BRIDGE NO. 07403 DRAWING NO. 59113

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.		061102	209	400
				(1) 07403		BENT 5		59114

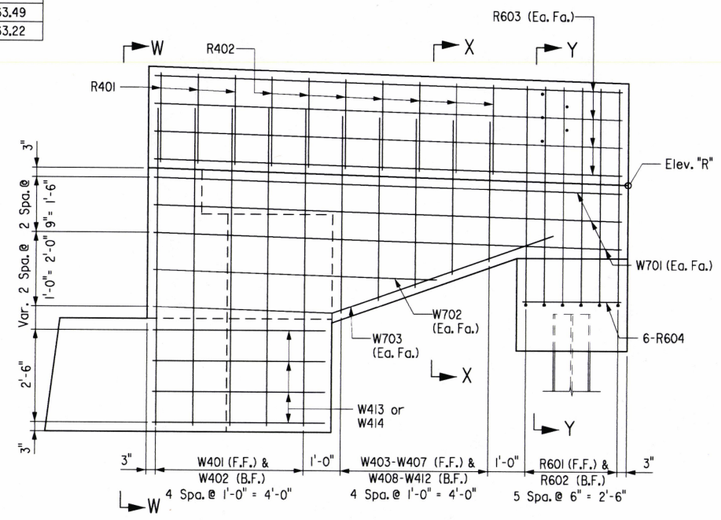
TABLE OF WING VARIABLES

Location	"R"
Wing A	263.49
Wing B	263.22



VIEW A-A

(Wing A Shown, Wing B Similar)
Scale: ½" = 1'-0"

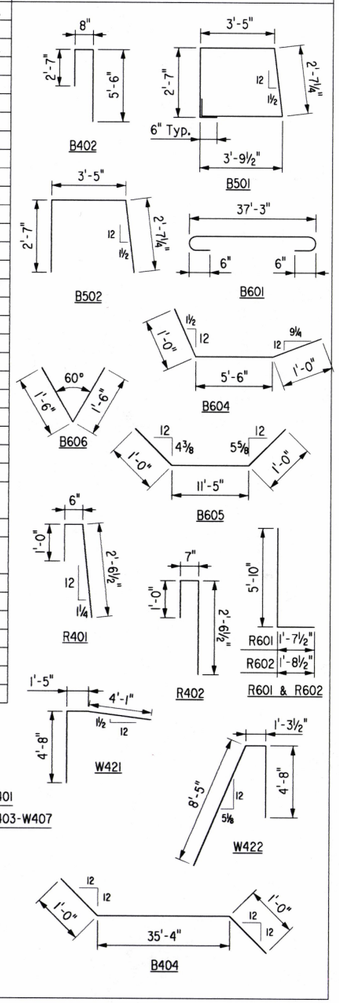


VIEW B-B

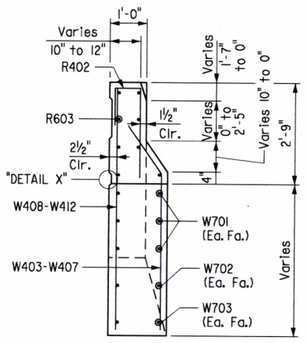
(Wing A Shown, Wing B Similar)
Scale: ½" = 1'-0"

BAR LIST

Mark	Number Required	Length	Pin Dia.	BENDING DIAGRAMS (Dimensions are out to out of bars)
B401	4	37'-3"	Str.	
B402	35	8'-7"	2"	
B403	7	5'-6"	Str.	
B404	10	37'-4"	3"	
B501	40	12'-11"	2½"	
B502	10	8'-7"	2½"	
B601	6	38'-7"	4½"	
B602	6	37'-3"	Str.	
B603	35	4'-5"	Str.	
B604	4	7'-6"	4½"	
B605	4	13'-5"	4½"	
B606	10	2'-10"	4½"	
R401	6	3'-11"	2"	
R402	14	4'-0"	2"	
R601	12	7'-4"	4½"	
R602	12	7'-3"	4½"	
R603	16	12'-8"	Str.	
R604	12	2'-8"	Str.	
W401	10	9'-2"	3"	
W402	10	9'-5"	Str.	
W403 to W407	2 Each	5'-2" to 3'-7"	3"	
W408 to W412	2 Each	6'-4" to 4'-9"	Str.	
W413	4	10'-2"	2"	
W414	4	14'-5"	2"	
W701	12	12'-8"	Str.	
W702	4	7'-8"	Str.	
W703	4	11'-2"	5¼"	

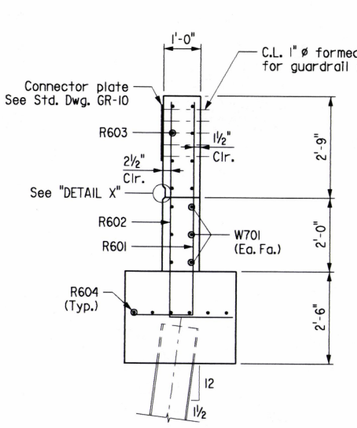


For GENERAL NOTES FOR SUBSTRUCTURE, see Dwg. No. 59113.



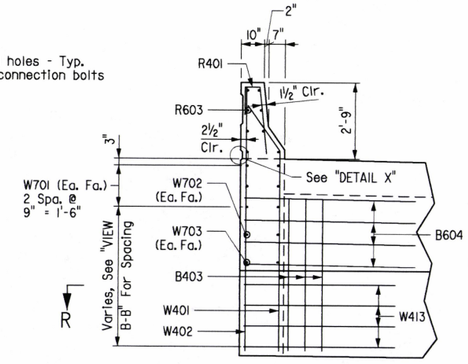
SECTION X-X

Scale: ½" = 1'-0"



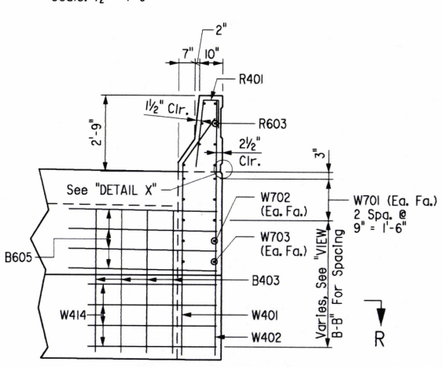
SECTION Y-Y

Scale: ½" = 1'-0"



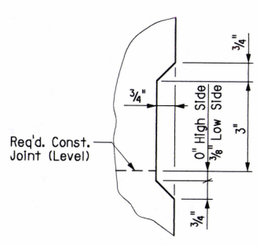
VIEW W-W

(Wing A)
Scale: ⅜" = 1'-0"



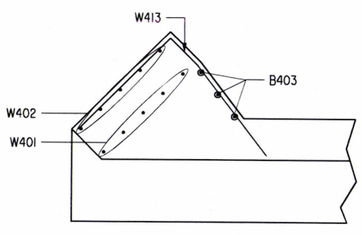
VIEW W-W

(Wing B)
Scale: ⅜" = 1'-0"



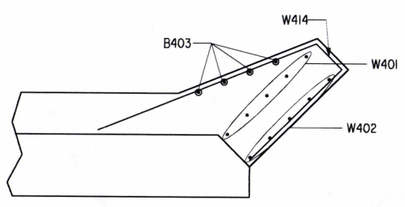
DETAIL X

No Scale



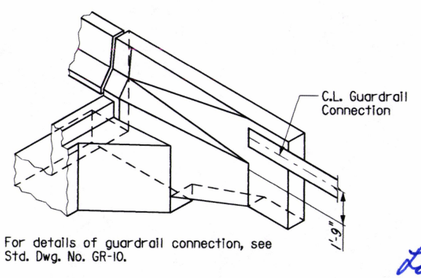
SECTION R-R

(Wing A)
Scale: ⅜" = 1'-0"



SECTION R-R

(Wing B)
Scale: ⅜" = 1'-0"



For details of guardrail connection, see Std. Dwg. No. GR-10.

THREE DIMENSIONAL VIEW WING RAIL & PARAPET

No Scale

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
BRIDGE ENGINEER
10-6-16

SHEET 2 OF 2
DETAILS OF BENT 5
RAMP 3A OVER FOURMILE CREEK

ROUTE 67 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

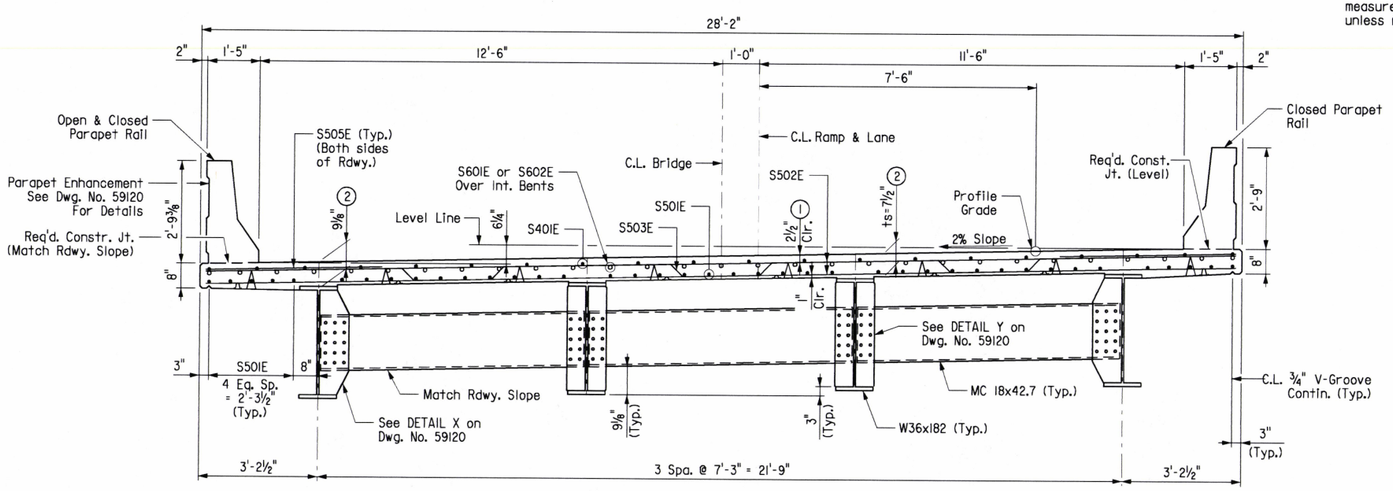
LITTLE ROCK, ARK.

DRAWN BY: DJJ DATE: 8-16 FILENAME: B06I102M3_B52.dgn
CHECKED BY: LWM DATE: 07-21-16 SCALE: AS SHOWN
DESIGNED BY: DJJ DATE: 8-16

BRIDGE NO. 07403 DRAWING NO. 59114

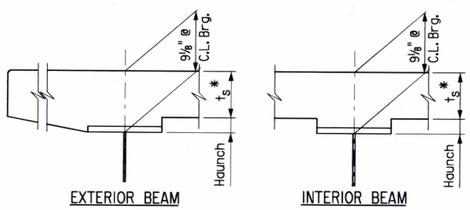
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	210	400
				(1) 07403		SPAN DETAILS		59115

NOTE: All transverse dimensions are measured perpendicular to C.L. Bridge unless noted otherwise.



TYPICAL SECTION

Looking Ahead
Scale: ½" = 1'-0"



Note: ts = slab thickness as shown on "TYPICAL SECTION"
*Tolerance when removable deck forming is used is +½", -¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

No Scale

Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance; Minimum - occurs when the top flange contacts the bottom reinforcing steel; Maximum - top flange thickness plus 1⅞". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

Slab Reinforcing:

Longitudinal: S401E @ 18" o.c. in top
S501E @ 8" o.c. in bottom
S601E or S602E as shown, see "REINFORCING PLAN & SLAB POURING SEQUENCE" on Dwg. No. 59117.
Transverse: S503E @ 12" o.c. bent up over beams
S502E @ 12" o.c. in top and bottom
S505E @ 6" in top of overhangs (Spaced with S502E & S503E bars)

(1) TOLERANCE:
Minus: ¼"
Plus: Equal to amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED".

(2) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED".

NOTES:

One Epoxy Coated #5 bar in the top and one Epoxy Coated #5 bar in the bottom may be substituted for each bar S501E. Payment will be based on the weight of bar S501E.

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

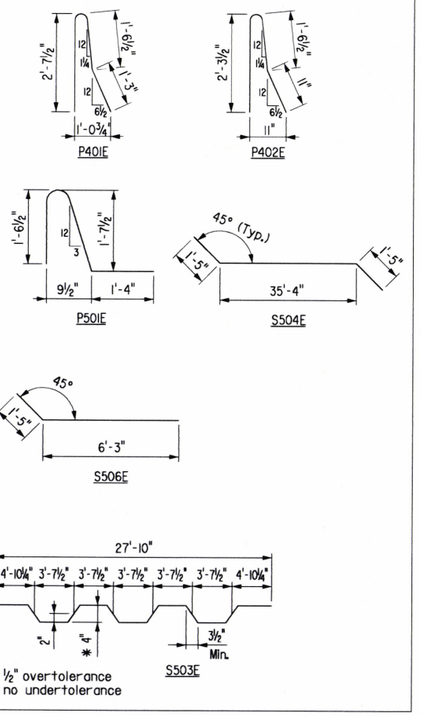
All bars designated with an E suffix are to be epoxy coated.

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices per Subsection 804.06.

BAR LIST

Bending Diagrams
(Dimensions are out to out of bars.)

Mark	No. Req'd.	Length	Pin Dia.
S401E	140	38'-10"	Str.
S501E	200	54'-0"	Str.
S502E	472	27'-10"	Str.
S503E	235	28'-6"	3"
S504E	4	38'-2"	3¾"
S505E	1018	6'-4"	Str.
S506E	20	7'-8"	3¾"
S507E to S551E	4 ea.	4'-1" to 26'-1"	Str.
S601E	58	20'-0"	Str.
S602E	29	26'-0"	Str.
P401E	908	5'-6"	3"
P402E	108	4'-10"	3"
P403E	80	4'-11"	Str.
P404E	56	12'-4"	Str.
P405E	168	12'-7"	Str.
P406E	56	12'-10"	Str.
P501E	908	4'-7"	3¾"



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
10-6-16
BRIDGE ENGINEER

SHEET 1 OF 6
DETAILS OF 260'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
RAMP 3A OVER FOURMILE CREEK
ROUTE 67 SEC. II
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: DJJ DATE: 7-15
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: DJJ DATE: 7-15
FILENAME: B06II02M3_S1.dgn
SCALE: AS SHOWN

BRIDGE NO. 07403
DRAWING NO. 59115

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.		061102	211	400
				(1) 07403		SPAN DETAILS		59116

SUPERSTRUCTURE 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 numbers refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (2012, 6th Edition) with interim specifications.

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c = 4,000 psi
Reinforcing Steel (AASHTO M 31 or M 322 Type A, Gr. 60)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi

CONCRETE: Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted. All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

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

The concrete deck shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the bridge. If a longitudinal strike-off is used, a vertical camber adjustment must be made in the strike-off to account for the future dead load deflection due to the railing.

A minimum of 72 hours shall elapse between completion of the deck and the pouring of the parapet railing. Any railing pours made before the entire deck has been placed and cured must be approved by the Engineer.

REINFORCING STEEL: All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "EPOXY COATED REINFORCING STEEL (GRADE 60)".

STRUCTURAL STEEL: All structural steel shall be AASHTO M 270, Gr. 50W unless otherwise noted and shall be paid for as "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)". All exposed surfaces shall be cleaned in accordance with Subsection 807.84(e) unless noted otherwise. Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36. See Dwg. No. 59122 for cleaning requirements of external load plates of elastomeric bearings.

Drawings show general features of design only. Shop drawings shall be made in accordance with Subsection 807.04, submitted, and approval secured before fabrication is begun.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Shapes and materials shown in the plans will be the basis of payment and no additional compensation will be made for any adjustments due to substitutions.

Longitudinal beams and all splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-notch Test specified in Subsection 807.05. This work and material will not be paid for directly but are considered subsidiary to item "STRUCTURAL STEEL IN BEAM SPANS (M 270, GR. 50W)".

All Beams shall be blocked in their true position in the shop, in groups of a minimum of three (3) sections as specified in Subsection 807.54(b)(2). Beams shall be blocked with webs horizontal. The camber, length of sections, distance between bearings and openings of joints shall be measured with the beams in their true position and this information shall become part of the permanent records for this job. The component parts shall be match-marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60° F. A tolerance of ¼" +/- is allowed for camber.

Field splice flange plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

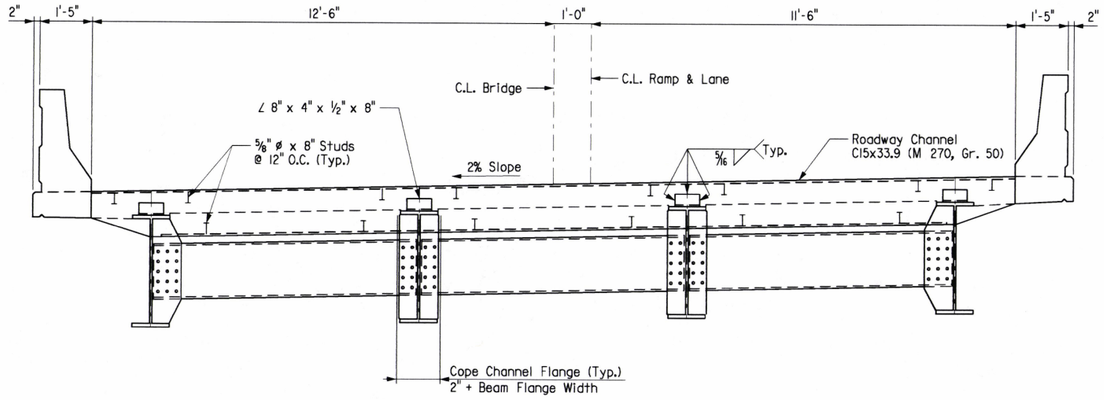
All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether temporary or permanent, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching falsework support devices or screed rail supports to the structural steel that do not exceed the limitations of Subsection 802.13 will not require approval prior to construction. All welding shall conform to Subsection 807.26.

Anchor bolts shall be galvanized according to Section 807.07 and shall be Grade 55.

Field connections shall be bolted with high-strength bolts. Unless noted otherwise, bolts shall be ¾" ø and open holes shall be 15/16". Holes for ¾" ø high-strength bolts may be 5/8" ø if a washer is supplied for use under both the nut and head of the bolt. Bolt spacing shall be 2½" for ¾" ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges.

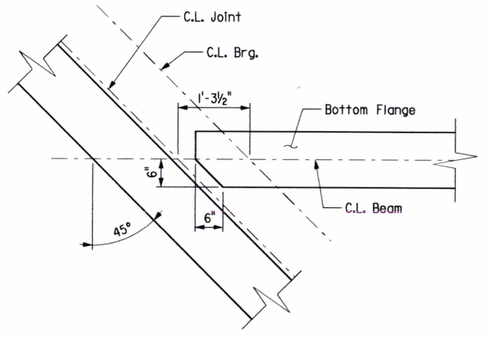
Diaphragms shall be installed as beams are erected. All bolts in diaphragms and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck, unless noted otherwise.

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



ROADWAY NEAR SECTION JOINT

Scale: ½" = 1'-0"



Note: Clip bottom flange of each beam as shown.

PLAN OF BEARING AT END BENTS

Scale: ¾" = 1'-0"

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER

10-6-16

BRIDGE ENGINEER

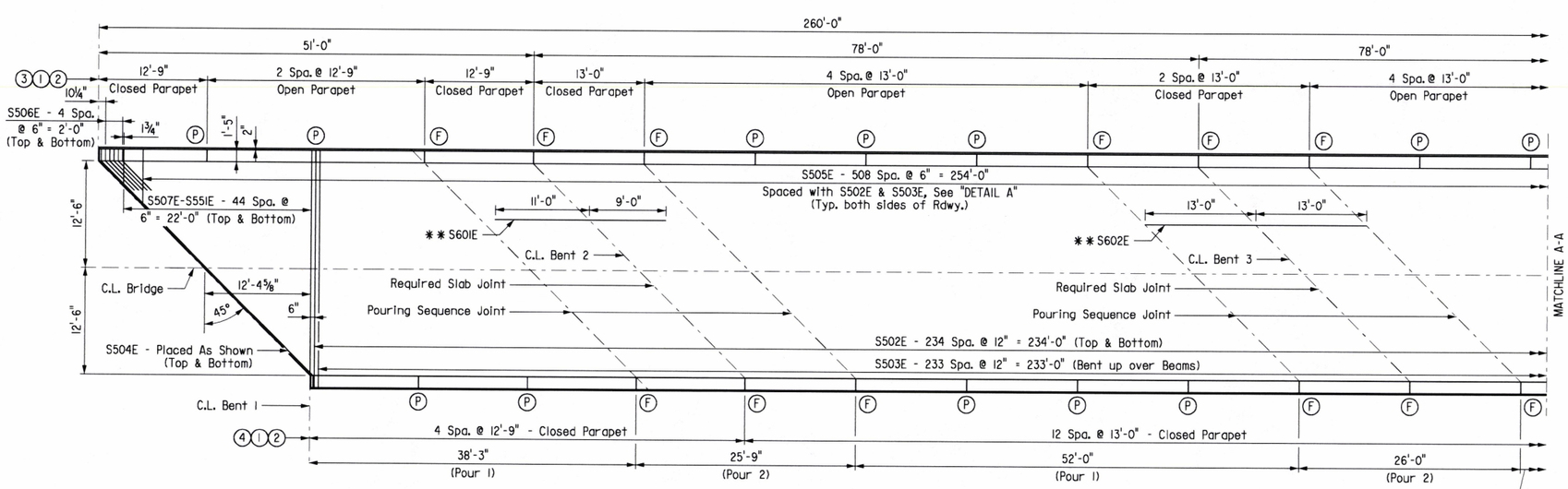
SHEET 2 OF 6
DETAILS OF 260'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
RAMP 3A OVER FOURMILE CREEK
ROUTE 67 SEC. II
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: DJJ DATE: 7-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: DJJ DATE: 7-16

FILENAME: B061102M3_S2.dgn
SCALE: AS SHOWN

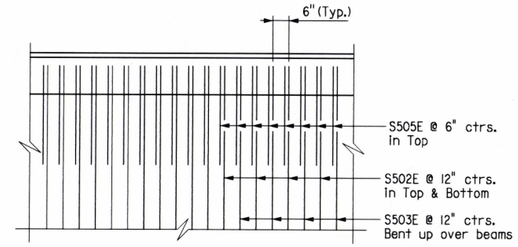
BRIDGE NO. 07403 DRAWING NO. 59116

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.		061102	212	400
				(1) 07403		SPAN DETAILS		59117



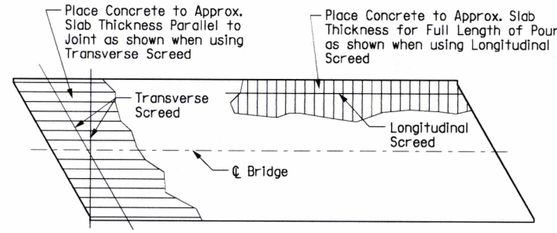
REINFORCING PLAN AND DECK POURING SEQUENCE

Scale: 1/8" = 1'-0"



DETAIL A

No Scale



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

CONCRETE PLACEMENT PROCEDURE

No Scale

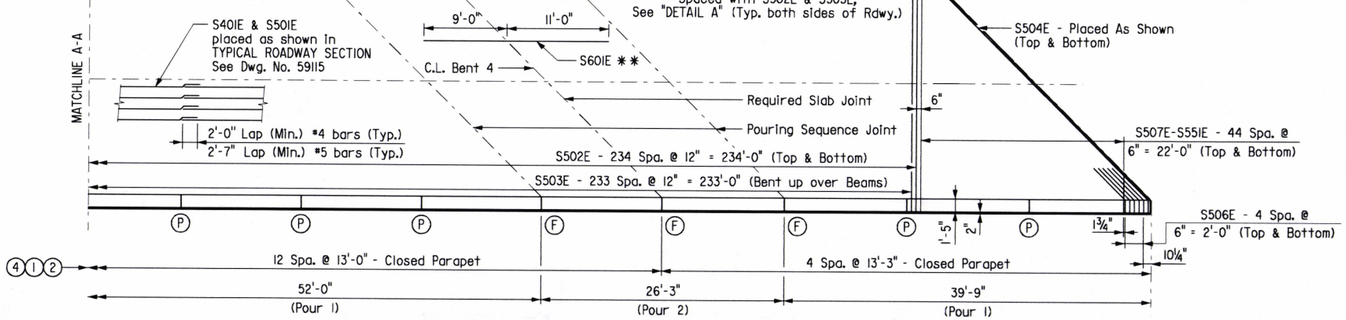
Note: Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse before the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

72 hours shall elapse between the completion of the entire deck and the pouring of the parapet. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer.

The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

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

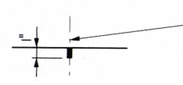
Required slab joints and pouring sequence construction joints shall align with parapet open joints at the gutterline.



REINFORCING PLAN AND DECK POURING SEQUENCE

Scale: 1/8" = 1'-0"

** Placed as shown in "TYPICAL ROADWAY SECTION", Dwg. No. 59115.



SLAB JOINT DETAIL

No Scale

1/2" x 1" Type 3 or 4 Joint Sealer. See Subsection 501.02 (h) and 501.05 (j). Backer rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set up to allow the sawing of joint without damage to the slab. Slab joints shall be placed at all Pouring Sequence Construction Joints and Required Slab Joint locations. The joint sealer shall extend across the deck slab (gutterline to gutterline). Slab joints shall align with parapet open joints.

(1) Parapet joint spacing is measured along gutterline.
(2) Dimensions are measured to centerline joint.
(3) Low side of Bridge.
(4) High side of Bridge.
(P) C.L. Partial Depth Parapet Joint (1/4" to 1" max.). Stop 1'-6" from top of slab.
(F) C.L. Full Depth Parapet Joint (1/4" to 1" max.). Stop 4" from top of slab.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER 10-6-16

BRIDGE ENGINEER

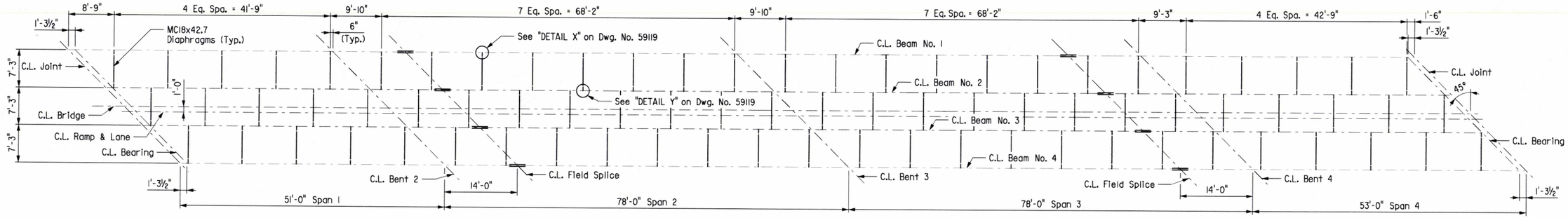
SHEET 3 OF 6
DETAILS OF 260'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
RAMP 3A OVER FOURMILE CREEK
ROUTE 67 SEC. II
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: DJJ DATE: 7-16 FILENAME: B06II02M3_S3.dgn
CHECKED BY: LWM DATE: 07-21-16 SCALE: AS SHOWN
DESIGNED BY: DJJ DATE: 7-16

BRIDGE NO. 07403 DRAWING NO. 59117

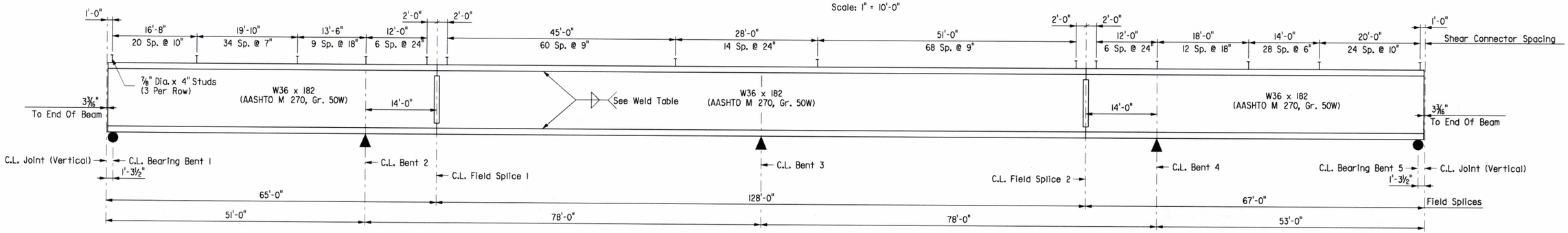
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	213	400
(1) 07403		SPAN DETAILS		59118



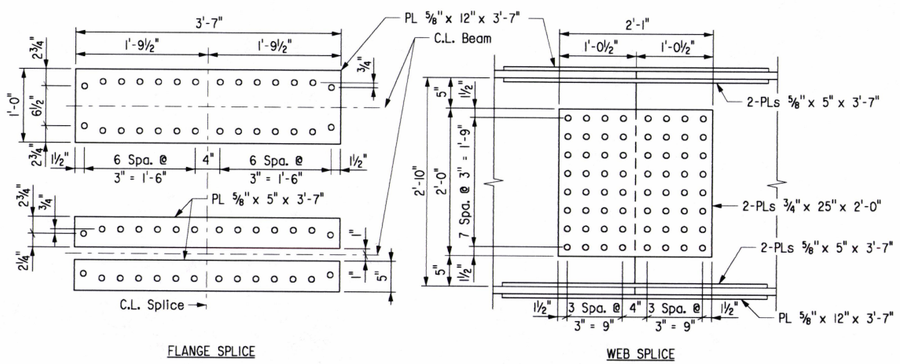
FRAMING PLAN

Scale: 1" = 10'-0"



TYPICAL BEAM ELEVATION

Scale: 1" = 10'-0"



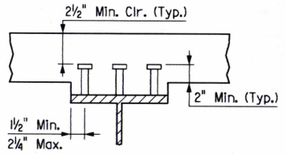
FLANGE SPLICE

WEB SPLICE

DETAILS OF BOLTED FIELD SPLICE NOS. 1 & 2

Scale: 1" = 1'-0"

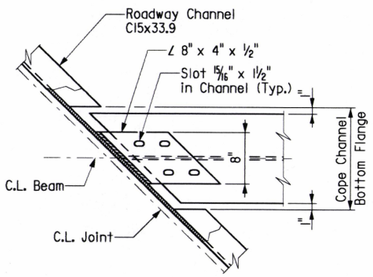
NOTE: All field splice bolts shall be ⅞" ø H.S. bolts. All holes for splice bolts shall be 15/16" ø. All field splice plates shall be AASHTO M 270, Gr. 50W steel.



Stud Shear Connectors shown shall be ⅞" dia. x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. ¾" dia. studs may be used in place of the ⅞" dia. studs shown, at the ratio of 1.36i - ¾" dia. studs in place of one ⅞" dia. stud. ⅞" dia. studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24".

SHEAR CONNECTOR DETAIL

No Scale



ROADWAY CHANNEL CONNECTION DETAIL

STATE OF ARKANSAS — LARRY W. MILLER — REGISTERED PROFESSIONAL ENGINEER — No. 13339

Larry W. Miller 10-16-16

BRIDGE ENGINEER

SHEET 4 OF 6
DETAILS OF 260'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
RAMP 3A OVER FOURMILE CREEK
ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: BEG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: BEG DATE: 6-16
FILENAME: B06II02M3_S4.dgn
SCALE: AS SHOWN

BRIDGE NO. 07403

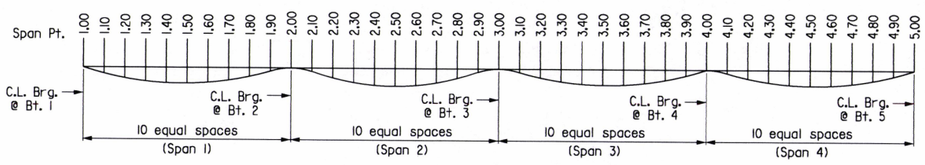
DRAWING NO. 59118

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.		061102	214	400
				(1) 07403		SPAN DETAILS		59119

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Tolerance for camber for dead load deflection plus vertical curve is +/- ¼". Deflections shown are along the centerline beam from the plane perpendicular to the web extending from centerline bearing to centerline bearing. Vertical curve corrections not included. Negative sign (-) indicates upward deflection.

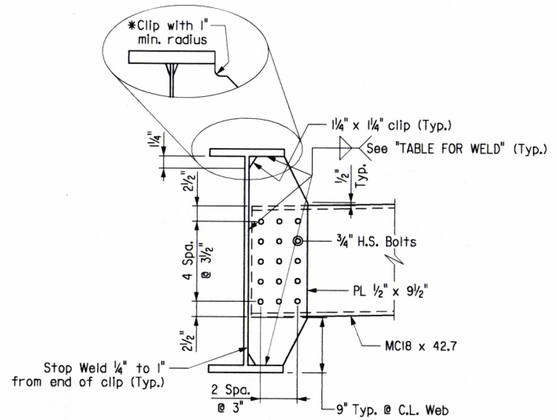
SPAN NO.	POINT OF DEFLECTION	INTERIOR BEAM			EXTERIOR BEAM		
		Structural Steel	Structural Steel +Slab	Structural Steel +Slab +Para. Rail	Structural Steel	Structural Steel +Slab	Structural Steel +Slab +Para. Rail
1	1.00	0.00	0.00	0.00	0.00	0.00	0.00
	1.10	0.01	0.05	0.05	0.01	0.04	0.05
	1.20	0.02	0.08	0.09	0.02	0.08	0.09
	1.30	0.02	0.10	0.11	0.02	0.10	0.11
	1.40	0.03	0.11	0.12	0.03	0.10	0.11
	1.50	0.02	0.09	0.10	0.02	0.09	0.10
	1.60	0.02	0.06	0.07	0.02	0.06	0.07
	1.70	0.01	0.03	0.03	0.01	0.03	0.03
	1.80	0.00	0.00	0.00	0.00	0.00	0.00
	1.90	0.00	-0.02	-0.02	0.00	-0.02	-0.02
2	2.00	0.00	0.00	0.00	0.00	0.00	0.00
	2.10	0.03	0.11	0.12	0.03	0.10	0.12
	2.20	0.06	0.27	0.30	0.06	0.25	0.29
	2.30	0.10	0.41	0.46	0.10	0.40	0.45
	2.40	0.12	0.51	0.57	0.12	0.49	0.55
	2.50	0.13	0.54	0.60	0.13	0.51	0.58
	2.60	0.12	0.48	0.54	0.12	0.46	0.52
	2.70	0.09	0.36	0.41	0.09	0.35	0.39
	2.80	0.05	0.21	0.23	0.05	0.20	0.23
	2.90	0.02	0.07	0.07	0.02	0.06	0.07
3	3.00	0.00	0.00	0.00	0.00	0.00	0.00
	3.10	0.02	0.06	0.07	0.02	0.06	0.07
	3.20	0.05	0.20	0.23	0.05	0.19	0.22
	3.30	0.09	0.35	0.39	0.09	0.34	0.38
	3.40	0.11	0.47	0.52	0.11	0.45	0.51
	3.50	0.13	0.52	0.58	0.13	0.50	0.56
	3.60	0.12	0.49	0.55	0.12	0.47	0.53
	3.70	0.10	0.40	0.45	0.10	0.38	0.43
	3.80	0.06	0.25	0.28	0.06	0.24	0.27
	3.90	0.02	0.10	0.11	0.02	0.10	0.11
4	4.00	0.00	0.00	0.00	0.00	0.00	0.00
	4.10	0.00	-0.01	-0.01	0.00	-0.01	-0.01
	4.20	0.00	0.01	0.01	0.00	0.01	0.01
	4.30	0.01	0.05	0.06	0.01	0.05	0.06
	4.40	0.02	0.10	0.11	0.02	0.09	0.10
	4.50	0.03	0.13	0.14	0.03	0.12	0.14
	4.60	0.03	0.14	0.16	0.03	0.14	0.15
	4.70	0.03	0.13	0.15	0.03	0.13	0.14
	4.80	0.03	0.11	0.12	0.03	0.10	0.11
	4.90	0.01	0.06	0.06	0.01	0.06	0.06
	5.00	0.00	0.00	0.00	0.00	0.00	0.00



DEAD LOAD DEFLECTION DIAGRAM

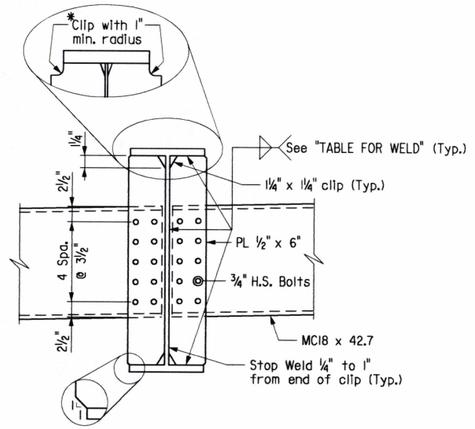
No Scale

*Note: If permanent steel bridge deck forms are used, the fabricator shall clip the plate as necessary to accomodate the deck form support.



DETAIL X

Scale: 1" = 1'-0"



DETAIL Y

Scale: 1" = 1'-0"

TABLE FOR WELD

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	5/16"	

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

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER

10/6/16

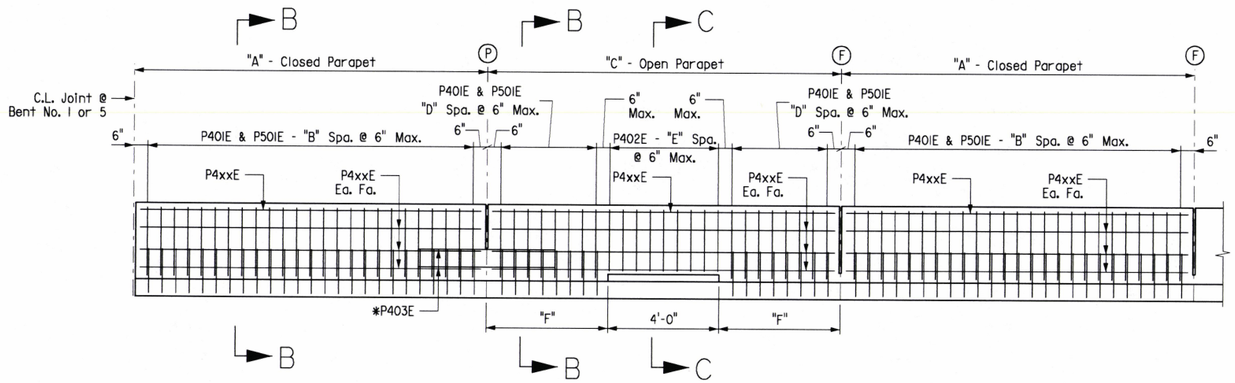
BRIDGE ENGINEER

SHEET 5 OF 6
DETAILS OF 260'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
RAMP 3A OVER FOURMILE CREEK
ROUTE 67 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BEG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: BEG DATE: 6-16
FILENAME: B061102M3_S5.dgn
SCALE: AS SHOWN

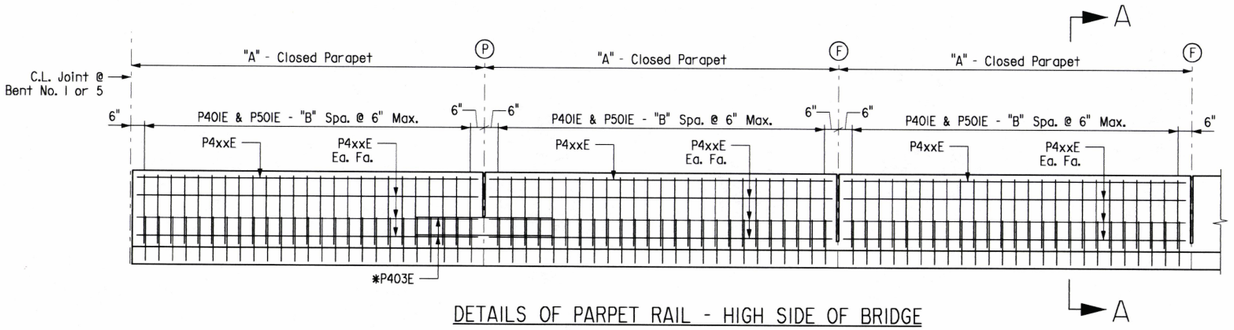
BRIDGE NO. 07403 DRAWING NO. 59119

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.		061102	215	400
				(1) 07403		SPAN DETAILS		59120



DETAILS OF PARPET RAIL - LOW SIDE OF BRIDGE

Scale: 3/8" = 1'-0"



DETAILS OF PARPET RAIL - HIGH SIDE OF BRIDGE

Scale: 3/8" = 1'-0"

* P403E - Ea. Fa. - Lapped with #4 bars as shown. Typ. at all partial-depth parapet joints.

Minimum lap for horizontal #4 parapet bars = 2'-3"

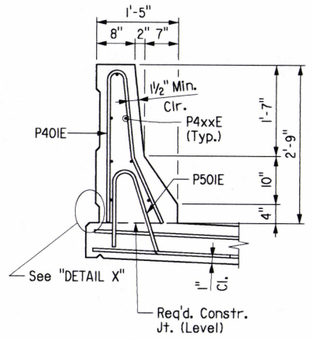
(F) C.L. Full Depth Parapet Joint (1/4" to 1" max.) as shown in "REINFORCING PLAN", Dwg. No. 59117. Stop 4" from top of slab.

(P) C.L. Partial Depth Parapet Joint (1/4" to 1" max.) as shown in "REINFORCING PLAN", Dwg. No. 59117. Stop 1'-2" from top of slab.

TABLE OF PARAPET RAIL VARIABLES

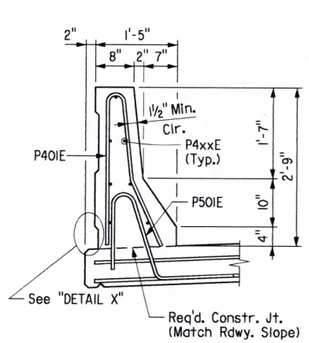
"A" Closed Parapet	"B"	P4xxE Bar
12'-9"	24	P404E
13'-0"	24	P405E
13'-3"	26	P406E

"C" Open Parapet	"D"	"E"	"F"	P4xxE Bar
12'-9"	7	8	4'-4 1/2"	P404E
13'-0"	7	8	4'-6"	P405E
13'-3"	8	8	4'-7 1/2"	P406E



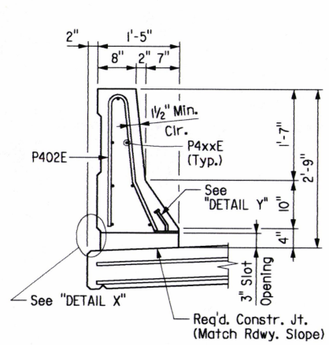
SECTION A-A

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



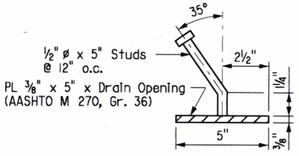
SECTION B-B

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



SECTION C-C

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



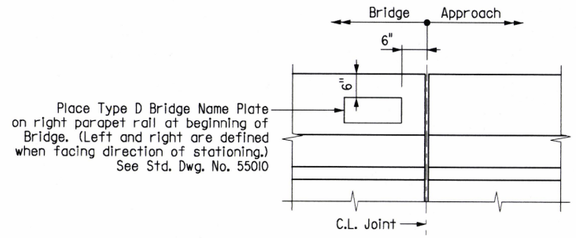
DETAIL Y

No Scale

Note:

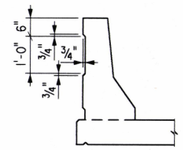
Parapet Studs shall be 5" long, granular flux filled, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)".

The surfaces of the 3/8" Plates which will not be in contact with concrete shall be painted in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for directly, but will be considered subsidiary to "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)".



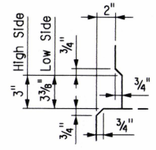
NAME PLATE DETAIL

No Scale



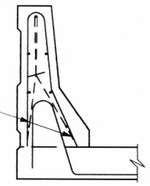
PARAPET ENHANCEMENT

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



DETAIL X

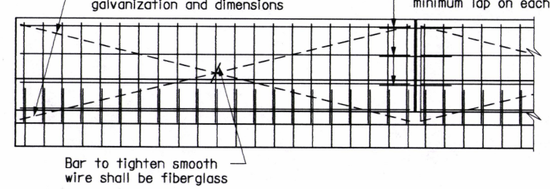
No Scale



For actual placement of reinforcing steel, see parapet details.

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

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



All panels shall be braced as shown to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER

Larry W. Miller 10/6/16

BRIDGE ENGINEER

SHEET 6 OF 6
DETAILS OF 260'-0" CONTINUOUS COMPOSITE W-BEAM UNIT RAMP 3A OVER FOURMILE CREEK

ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

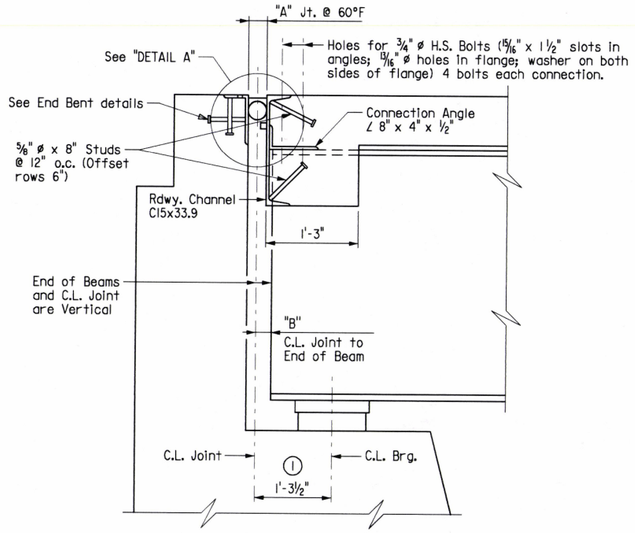
DRAWN BY: BEG DATE: 6-16 FILENAME: B06II02M3_S6.dgn

CHECKED BY: LWM DATE: 07-21-16 SCALE: AS SHOWN

DESIGNED BY: BEG DATE: 6-16

BRIDGE NO. 07403 DRAWING NO. 59120

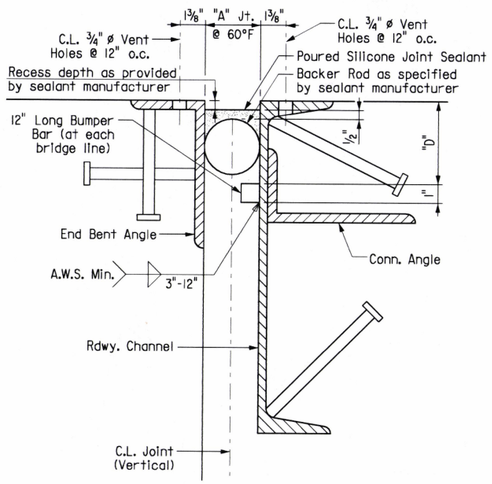
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	216	400
				(1) 07403		JOINT DETAILS		59121



(1) Measured Along C.L. Beam.

SECTION THRU JOINT AT END BENTS

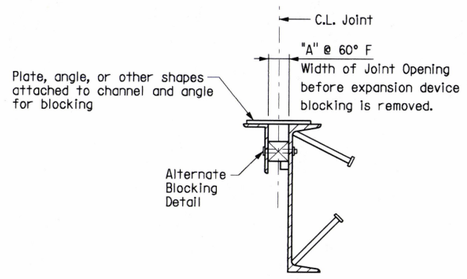
Scale: 1" = 1'-0"
Sections thru Joints are taken normal to C.L. Joints



Concrete shall be hand packed under the joint armor. Care shall be taken to ensure that concrete completely fills the areas below the top channel flange.

DETAIL A

Scale: 3" = 1'-0"



DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension shown, and the blocking details shall be shown on the Shop Drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

One of two different blocking systems is required depending on the type of span finishing used.

For Transverse Strike-off:
Plate, Angle, or other shapes, attached to Channels (or Angles) for Blocking.

For Longitudinal Strike-off:
Bolt & spacer attached to Channels for Blocking.

EXPANSION DEVICE INSTALLATION AT END BENTS:

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

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

2) The backwall shall be poured to the optional construction joint after beams are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature.

SILICONE JOINT DATA

Bent Number	"A" Width Perpendicular to Joint at 24 Hour Average Temperature ** of:			"B" Perpendicular to Joint at 60°F	Bumper Plate Size	"D"
	40° F	60° F	80° F			
1	2 3/16"	2"	1 15/16"	2¼" ±	1" x 1"	4½"
3	2 3/16"	2"	1 15/16"	2¼" ±	1" x 1"	4½"

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

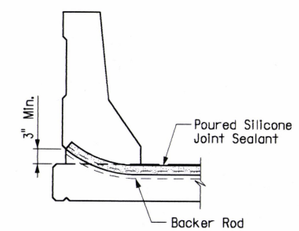
NOTES:
The temperature limitations recommended by the sealant manufacturer shall be observed.

The sealant shall be installed only when the average 24 hour air temperature is between 40°F and 80°F.

BACKER ROD NOTE:
Use an appropriately sized backer rod at the depth shown in the manufacturer's literature based on the joint width at the time of sealing.

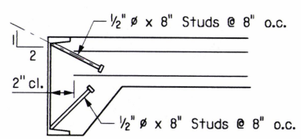
Except as noted, do not install more backer rod than can be sealed in the same day.

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



JOINT SEAL PLACEMENT AT CURB

Scale: ¾" = 1'-0"



Note: As an alternate to ⅝" ø studs, ½" ø x 8" studs spaced as shown may be used. Use weight of ⅝" ø stud as basis of measurement of structural steel in anchors.

DETAIL OF ALTERNATE ANCHORS

No Scale

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11339
LARRY R. MILLER
10/6/16
BRIDGE ENGINEER

DETAILS OF POURED SILICONE JOINT RAMP 3A OVER FOURMILE CREEK

ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION

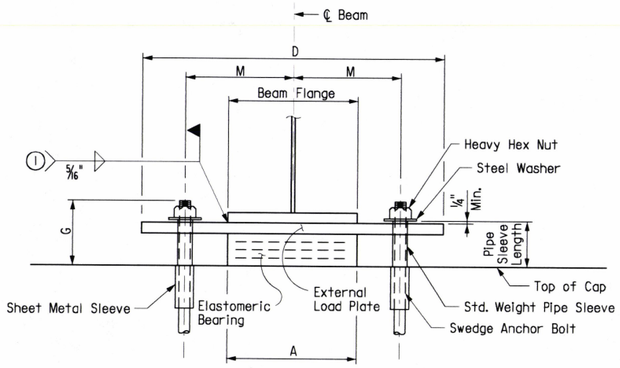
LITTLE ROCK, ARK.

DRAWN BY: BEG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: BEG DATE: 6-16
FILENAME: B06II02M3_JI.dgn
SCALE: AS SHOWN

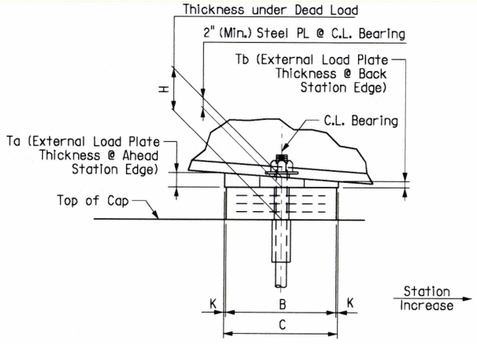
BRIDGE NO. 07403 DRAWING NO. 59121

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.		061102	217	400
				(1) 07403		BEARING DETAILS		59122

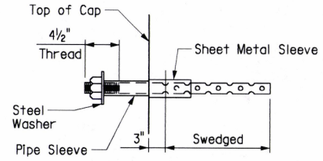
(1) Care shall be taken to ensure that the external load plate is in full and complete contact with the beam or bridge flange before welding begins.



FRONT VIEW



SIDE VIEW

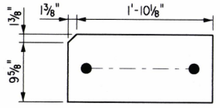


ANCHOR BOLT DETAIL

Anchor bolts may be cast in place or drilled and grouted into place. If anchor bolts are to be cast in place, the galvanized sheet metal sleeves will not be required.

If anchor bolts are to be drilled and grouted in place, the galvanized sheet metal sleeves shall be cast in place as shown. Sleeves shall be dry packed with Styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of structural steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized sheet metal sleeves will not be paid for directly, but will be considered subsidiary to the item "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)".

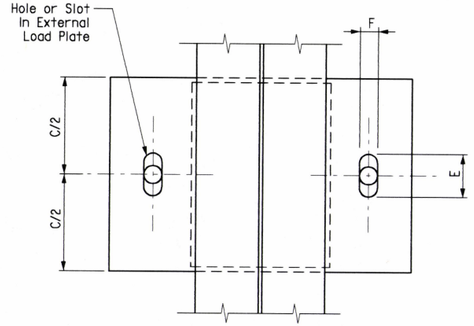
DIRECTION OF STATIONING BENT 1



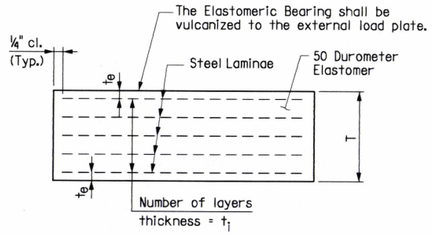
DIRECTION OF STATIONING BENT 5

CORNER CLIP DETAIL

(END BENTS ONLY)



PLAN VIEW



t_e = thickness of elastomer cover on top and bottom of pad

t_1 = thickness of elastomer between steel laminae

N = number of elastomer layers of thickness t_1

ELASTOMERIC BEARING

GENERAL NOTES

Elastomeric Bearings shall conform to Section 808 and shall be paid for at the unit price bid for "ELASTOMERIC BEARINGS".

External load plates shall conform to AASHTO M 270, Grade 50W. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232 Class C or ASTM B695 Class 50.

External load plates shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(e).

Anchor bolts, washers and nuts shall conform to Subsection 807.07. The anchor bolt grade of steel shall be as specified in the "TABLE OF FABRICATOR VARIABLES". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe sleeves, anchor bolts, washers and nuts shall be paid for at the unit price bid for "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)".

External load plates will not be paid for separately but will be included in the unit price bid for "ELASTOMERIC BEARINGS".

Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the bridge will be allowed only when 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40°F and 80°F; and 2) the slots in the external load plate are positioned to center on the anchor bolts; and 3) no horizontal deformation of the elastomeric pad is evident.

If welding at other temperatures is required, the Engineer will provide adjustment data.

Elastomeric bearings shall be firmly seated in accordance with Subsection 808.08. This work is considered subsidiary to the item "ELASTOMERIC BEARINGS" and will not be paid for directly.

TABLE OF FABRICATOR VARIABLES

* Maximum Design Load = Service I Limit State

LOCATION					ELASTOMERIC PAD								EXTERNAL LOAD PLATE								ANCHOR BOLT				
BENT NO(S).	BEAM OR GIRDER NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	*MAXIMUM DESIGN LOAD (KIPS)	G	H	A	B	N	t_1	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	K	M	T_a	T_b	ANCHOR BOLT (ø x L)	GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
1	ALL	Exp.	4	79.2	8"	5"	12½"	10"	4	½"	1/4"	5 @ 12 Ga.	3"	11"	23½"	3"	2⅝"	½"	8¾"	1.75	2.25	1¾" x 27¾"	55	2" x 5⅜"	4" x 6½"	3⅜"
2	ALL	Fixed	4	209.8	9¼"	5"	15"	11"	4	½"	1/4"	5 @ 12 Ga.	3"	12"	28"	3¾"	3¾"	½"	10½"	1.73	2.27	2¾" x 39"	55	3" x 5⅜"	5" x 6½"	5"
3	ALL	Fixed	4	209.8	9¼"	5"	15"	11"	4	½"	1/4"	5 @ 12 Ga.	3"	12"	28"	3¾"	3¾"	½"	10½"	1.73	2.27	2¾" x 39"	55	3" x 5⅜"	5" x 6½"	5"
4	ALL	Fixed	4	209.8	9¼"	5"	15"	11"	4	½"	1/4"	5 @ 12 Ga.	3"	12"	28"	3¾"	3¾"	½"	10½"	1.78	2.22	2¾" x 39"	55	3" x 5⅜"	5" x 6½"	5"
5	ALL	Exp.	4	81.6	8"	5"	12½"	10"	4	½"	1/4"	5 @ 12 Ga.	3"	11"	23½"	3"	2⅝"	½"	8¾"	1.83	2.17	1¾" x 27¾"	55	2" x 5⅜"	4" x 6½"	3⅜"

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13339 LARRY W. MILLER

Larry W. Miller 10/6/16

BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS
RAMP 3A OVER FOURMILE CREEK
ROUTE 67 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BEG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: BEG DATE: 6-16

FILENAME: B06I102M3_El.dgn
SCALE: NO SCALE

BRIDGE NO. 07403 DRAWING NO. 59122

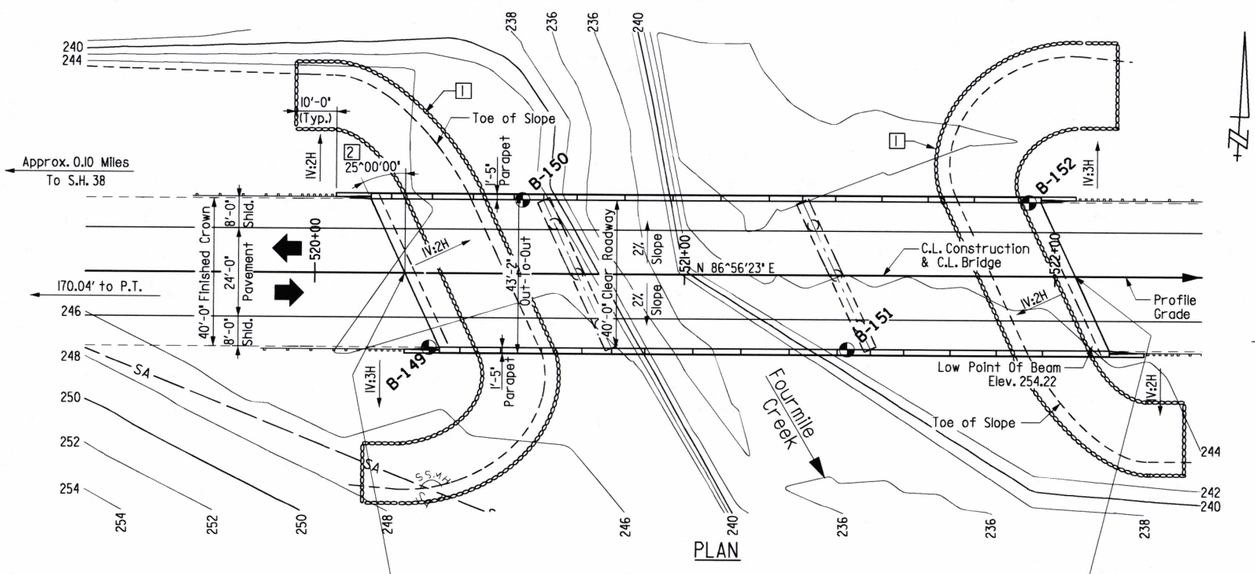
For R/W Data, See Roadway Plans

Note: Use Type A Approach Gutters ("W" = 8'-0") & Type A Approach Slab at both ends of bridge. See Std. Dwg. Nos. 55030A & 55040A.

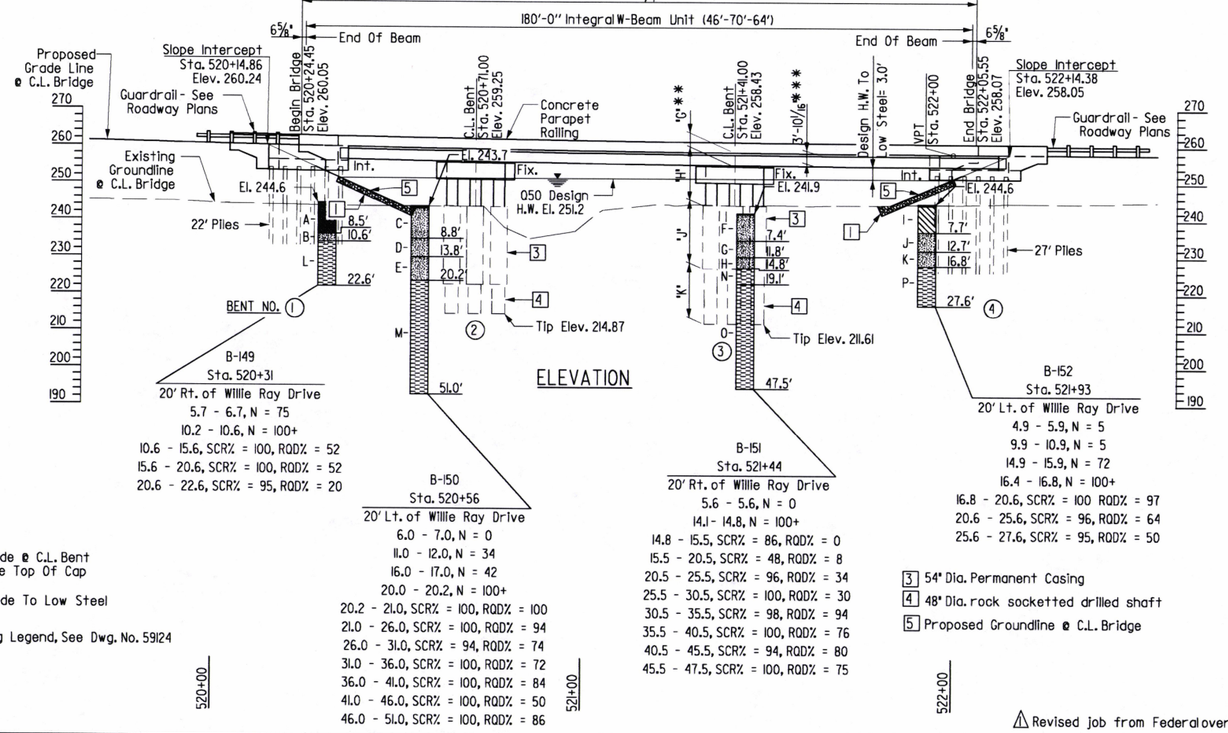
[1] Dumped Riprap 1'-6" thick with filter blanket. See Std. Dwg. 55001 for details. (Typ. each end of Bridge) Top of riprap elev 251.5.

[2] Angle is measured between Begin Bridge and a line perpendicular to C.L. bridge at Station 520+24.45.

All bents are parallel.



PLAN



ELEVATION

**Profile Grade @ C.L. Bent To Low Side Top Of Cap

***Profile Grade To Low Steel

For Soil Boring Legend, See Dwg. No. 59124

[3] 54" Dia. Permanent Casing

[4] 48" Dia. rock socketted drilled shaft

[5] Proposed Groundline @ C.L. Bridge

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	*NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	6,375	248.9	251.2
Base	100	7,100	249.3	251.8
Extreme	500	8,600	249.9	252.8
Overtopping	<10	3,530	247.2	248.9

* Unconstricted water surface without structure or roadway approaches.
Drainage area = 13.3 square miles.
Historical H.W. Elev. = 251.3 ft.
Q100 Backwater Elev. for existing structure = 251.9 ft.

VERTICAL CURVE DATA

(Along Profile Grade)

P.V.I. Sta. 519+50.00
Elev. 256.84
-4.960% -0.300%
V.C. = 500'

BENT	"G"	"H"	"J"	"K"
2	4'-4⅝"	12'-6"	19'-6"	8'-0"
3	4'-3⅛"	11'-0"	16'-6"	15'-0"

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10-25-16				6	ARK.			
				JOB NO.		061102	218	400
				07404		LAYOUT		59123

GENERAL NOTES

BENCH MARK: Metal spike. Survey control point no. 1140. N=241812.52, E=1310641.77, Elev. 243.79, Willie Ray Drive Sta. 520+21.09, Offset 25.20' Right.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions. Unless otherwise noted in the plans, Section and Subsection numbers refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (2012, 6th Edition) with interim specifications.

LIVE LOADING: HL93

SEISMIC PERFORMANCE ZONE: 2

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (Superstructure)	f'c = 4,000 psi
Class S Concrete (Substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M31 or M322 Type A, Gr. 60)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi

BORING LOGS: Boring Logs may be obtained from the Construction Contract Procurement Section of the Program Management Division.

STEEL PILING: All piling shall be HP12x53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 95 tons per pile and into the material designated as Shale on the boring legend. Lengths shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the Standard Specifications. Actual pile lengths to be determined in the field. On all piles the Contractor shall use approved steel H-Pile driving points.

Piles in end bents shall be driven after embankment to bottom of cap is in place. Drive all piles to a minimum penetration below natural ground of 10' at Bent 1 and 18' at Bent 4.

PREBORING: Preboring is required for all piling at Bents 1 and 4. Prebored holes at Bents 1 and 4 shall have a diameter 6" greater than the diameter of the pile for a depth of 10' below the bottom of the cap. The void space around the pile after completion of driving shall be backfilled with sand or pea gravel. The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casings or other approved methods. Any related cost for backfilling and temporary casing will not be paid for separately but shall be considered subsidiary to the item "Steel Piling". Preboring will be paid for in accordance with Section 805.

DRILLED SHAFTS: Foundations for Bents 2-3 shall consist of Drilled Shafts. All drilled shafts shall be founded to the minimum rock penetrations and tip elevations as shown on the plans. No adjustments in Plan Tip Elevation shall be made without prior approval from the Engineer. Methods of construction of the drilled shafts shall be in accordance with SP Job 061102 "Drilled Shaft Foundations". Any casing used as a means for construction of the drilled shafts, such as to prevent caving, to exclude groundwater, or to provide shoring shall not extend below top of rock. The Contractor must obtain approval from the Engineer for any deviation from this requirement.

CROSSHOLE SONIC LOGGING: Nondestructive testing shall be performed on each drilled shaft in accordance with SP Job 061102 "Nondestructive Testing of Drilled Shafts".

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

CLASS I PROTECTIVE SURFACE TREATMENT: Class I Protective Surface Treatment shall be applied to the roadway surface, top of backwall, top and roadway face of the concrete parapet rail and transition rails.

DETAIL DRAWINGS:	DRAWING NO.
End Bents	59125
Intermediate Bents	59126-59127
180'-0" Integral W-Beam Unit	59128-59133
Elastomeric Bearings	59134
Steel Piling	55020

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
10-25-16
BRIDGE ENGINEER

⚠ Revised job from Federal oversight to State oversight. LWM 10-25-16

SHEET 1 OF 2
LAYOUT OF WILLIE RAY DRIVE BRIDGE OVER FOURMILE CREEK
HWY. 67 INTERCHANGE (N. OF CABOT) (S) ⚠
LONOKE COUNTY
ROUTE SEC.

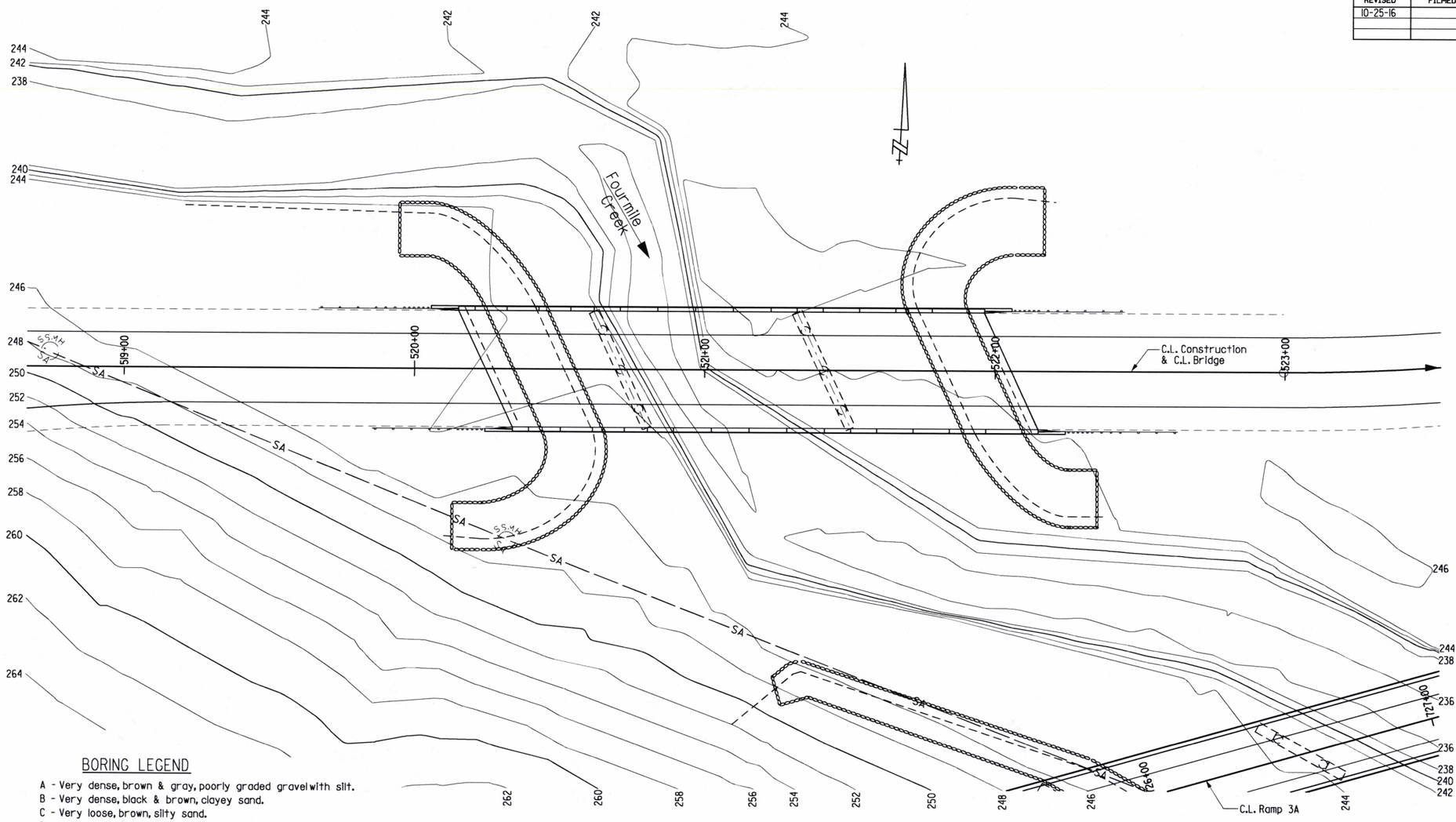
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LWM DATE: 7-15
CHECKED BY: BEC DATE: 07-21-16
DESIGNED BY: LWM DATE: 7-15
FILENAME: b061102m4_L1.dgn
SCALE: 1" = 20'-0"

BRIDGE NO. 07404 DRAWING NO. 59123

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
10-25-16			

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	219	400
(1) 07404		LAYOUT		59124



LOCATION SKETCH

BORING LEGEND

A - Very dense, brown & gray, poorly graded gravel with silt.
B - Very dense, black & brown, clayey sand.
C - Very loose, brown, silty sand.
D - Dense, gray & brown, poorly graded sand.
E - Dense, dark gray clayey sand.
F - Very loose, brown & gray, silty sand.
G - Medium dense, brown & gray, silty sand.
H - Very dense, dark gray, clayey sand with gravel.
I - Medium stiff, brown, sandy, silty clay.
J - Loose, brown & gray, silty sand.
K - Very dense, gray & brown, clayey sand.
L - Shale (Claystone): Black with traces of brown-orange-yellow stain, very fine grain, slightly weathered to moderately weathered, very thinly laminated, medium to moderate hardness, fissile within limited intervals, clay seams.
M - Shale (Claystone): Black, dark gray with traces of light gray-white & brown-orange stain, very fine grain, slightly weathered to moderately weathered with seams severely weathered, thinly laminated, medium to moderate hardness, fissile within limited intervals, fine micaceous, clay seams.
N - Shale (Claystone): Black, very fine grain, silty laminations, severely weathered with fragments moderately weathered, soft with medium hard seams.
O - Shale (Claystone): Black with traces of light gray, very fine grain, silty to fine sandy laminations, moderately weathered grading to slightly weathered & fresh, thinly laminated, medium to moderate hardness, fissile within limited intervals.
P - Shale (Claystone): Black, very fine grain, slightly weathered grading to moderately weathered, thinly laminated, medium hard to soft, poorly fissile within limited intervals.

A WAITING PERIOD OF 75 DAYS IS REQUIRED AFTER THE PLACEMENT OF EMBANKMENT FILL AND PRIOR TO COMMENCING PILE DRIVING OPERATIONS FOR END BENT 4 ON WILLIE RAY DRIVE OVER FOURMILE CREEK. THE WAITING PERIOD BEGINS AFTER ALL FILL HAS BEEN PLACED FOR END BENT 4.

THE CONTRACTOR SHALL COMPLETE THE EMBANKMENT CONSTRUCTION AND MONITOR THE SETTLEMENT OF THE FOUNDATION SOILS FOR A MINIMUM OF 75 DAYS AT END BENT 4 ON WILLIE RAY DRIVE OVER FOURMILE CREEK PRIOR TO DRIVING PILES. THE ENGINEER SHALL DETERMINE WHEN PILE DRIVING MAY BEGIN. MONITORING FOR SETTLEMENT SHALL BE ACCOMPLISHED IN A MANNER ACCEPTABLE TO THE ENGINEER AND NO DIRECT PAYMENT WILL BE MADE FOR THIS WORK.

⚠ Revised job from Federal oversight to State oversight. LWM 10-25-16

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No. 11339 — LARRY W. MILLER
Larry W. Miller 10-25-16
BRIDGE ENGINEER

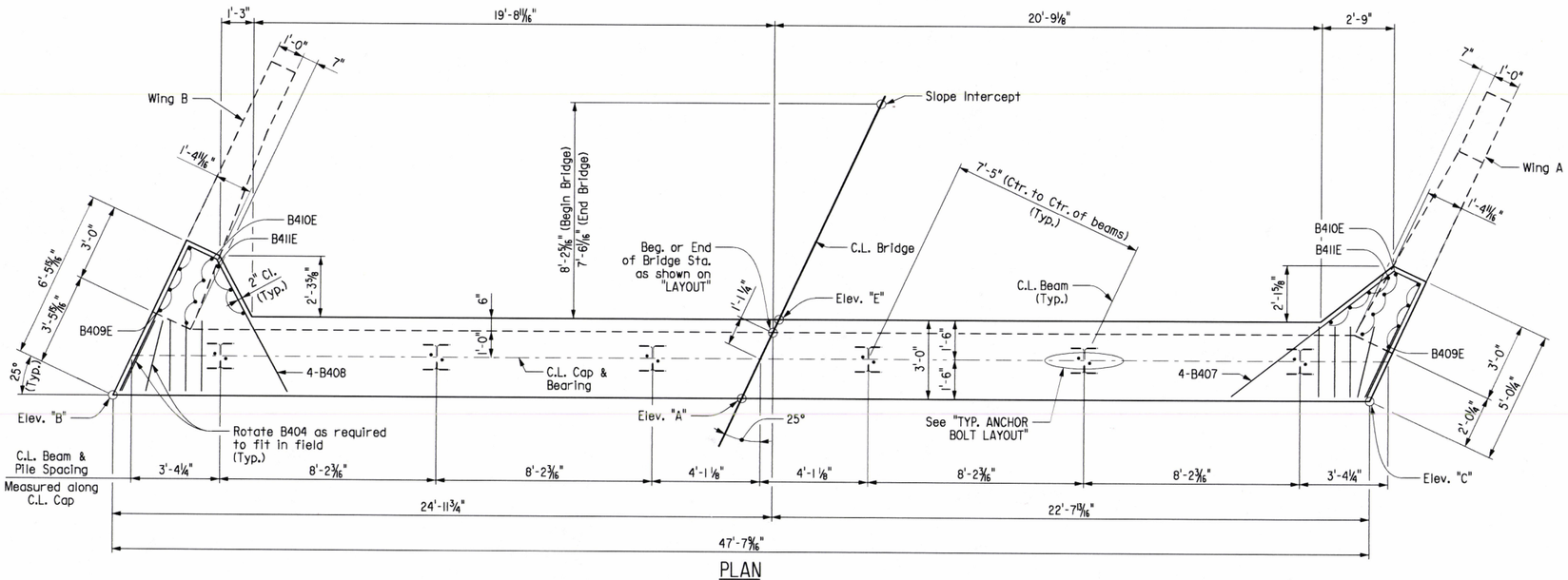
SHEET 2 OF 2
LAYOUT OF WILLIE RAY DRIVE BRIDGE OVER FOURMILE CREEK
HWY. 67 INTERCHANGE (N. OF CABOT) (S) ⚠
LONOKE COUNTY
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LWM DATE: 02-16
CHECKED BY: BEG DATE: 07-21-16
DESIGNED BY: LWM DATE: 02-16
FILENAME: b06l102m4_L2.dgn
SCALE: 1" = 20'-0"

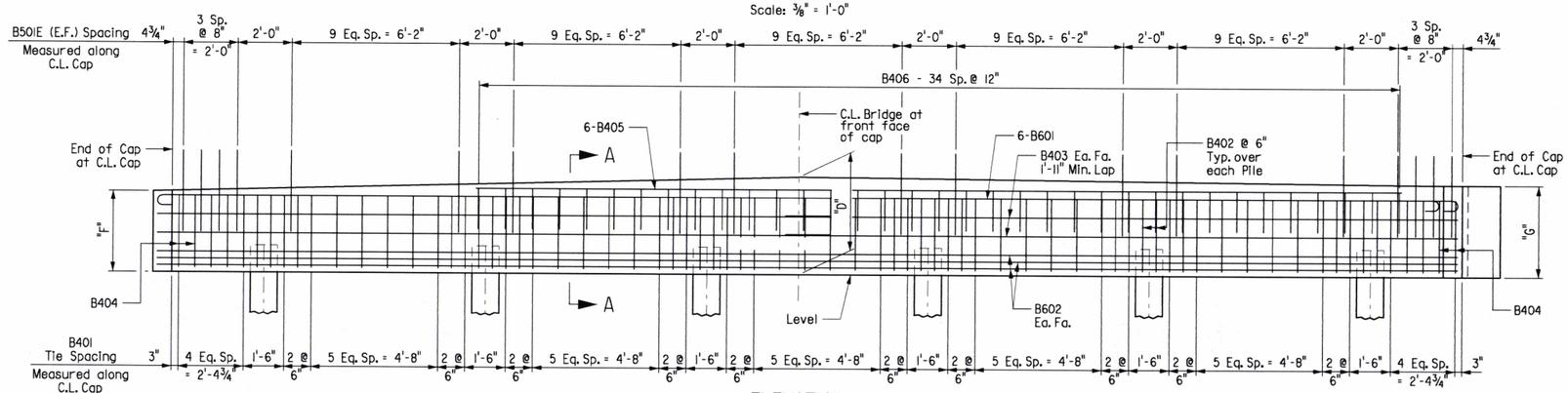
BRIDGE NO. 07404
DRAWING NO. 59124

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.		061102	220	400
				①	07404	END BENTS		59125



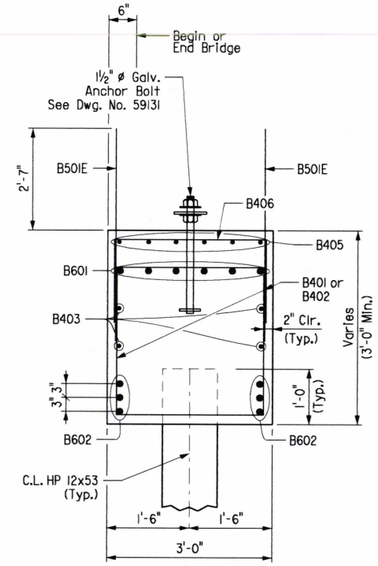
PLAN

Scale: 3/8" = 1'-0"



ELEVATION

Scale: 3/8" = 1'-0"



SECTION A-A

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

SUBSTRUCTURE GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Granular backfill and pipe underdrain required behind cap. See Dwg. No. 59130.

For details of anchor bolts, see Dwg. No. 59131.

For additional information, see Layout.

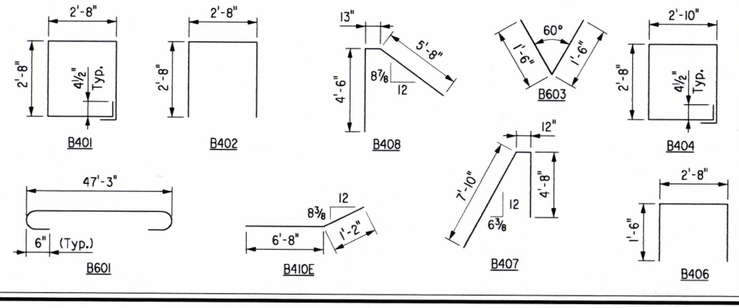
① See Dwg. No. 59132 for additional details.

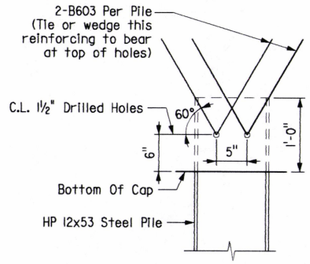
BAR LIST - PER BENT

Note: Bars with an "E" suffix are to be Epoxy Coated.

	Mark	Number Required	Length	Pin Dia.
	B401	56	11'-0"	2"
	B402	12	7'-10"	2"
	B403	8	24'-8"	Str.
	B404	4	11'-4"	2"
	B405	6	34'-2"	Str.
	B406	35	5'-6"	2"
	B407	4	13'-4"	2"
	B408	4	12'-7"	2"
①	B409E	8	9'-0"	Str.
①	B410E	8	7'-10"	2"
①	B411E	7	5'-4"	Str.
	B501E	58	4'-7"	Str.
	B601	6	48'-7"	4 1/2"
	B602	6	47'-3"	Str.
	B603	12	2'-10"	4 1/2"

Bending Diagrams (Dimensions are out to out of bars.)

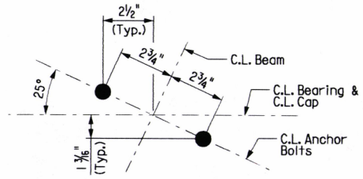




DETAIL AT PILE TOP

No Scale

Drilled holes will not be paid for directly but shall be considered incidental to the item "STEEL PILING (HP12x53)".



TYP. ANCHOR BOLT LAYOUT

No Scale

TABLE OF VARIABLES

Bent No.	Elev. "A"	Elev. "B"	Elev. "C"	"D"	Elev. "E"	"F"	"G"
1	256.20	255.58	255.97	3'-7 1/16"	256.27	3'-0"	3'-4 11/16"
4	254.28	253.88	253.81	3'-5 5/8"	254.27	3'-0 9/16"	3'-0"

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER

Larry W. Miller 10-6-16

BRIDGE ENGINEER

DETAILS OF END BENTS WILLIE RAY DRIVE OVER FOURMILE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: DLM DATE: 6-16

CHECKED BY: LWM DATE: 07-21-16

DESIGNED BY: DLM DATE: 6-16

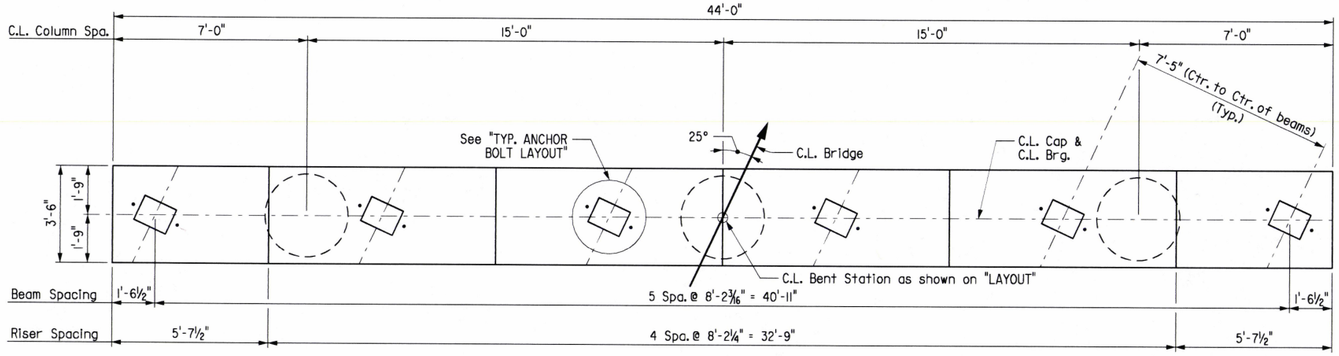
FILENAME: b061102m4_bll.dgn

SCALE: As Shown

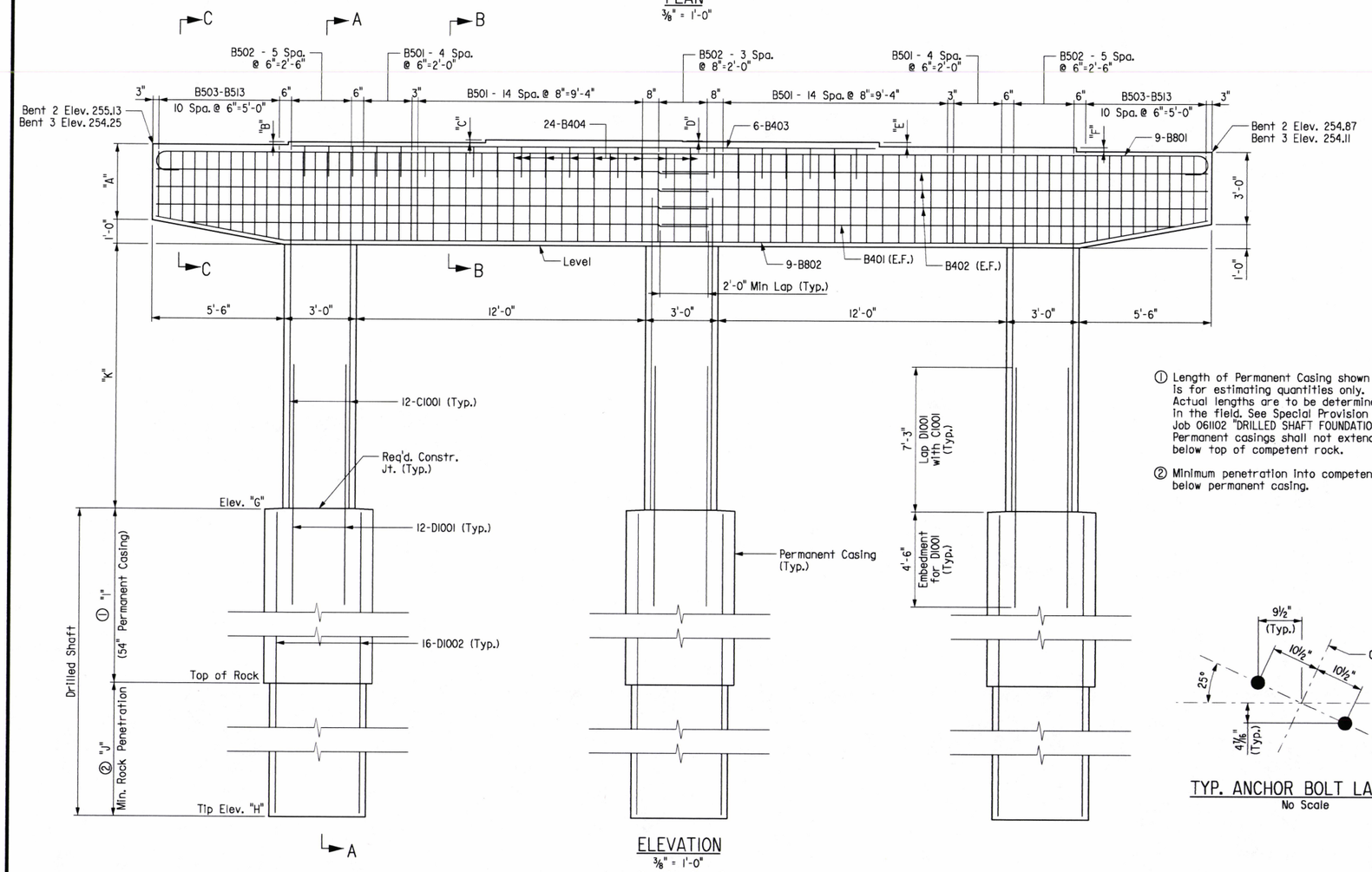
BRIDGE NO. 07404

DRAWING NO. 59125

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.		061102	221	400
				(1) 07404		BENT 3 DETAILS		59126



PLAN
⅜" = 1'-0"



ELEVATION
⅜" = 1'-0"
(Looking Ahead)

① Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job 061102 "DRILLED SHAFT FOUNDATIONS". Permanent casings shall not extend below top of competent rock.

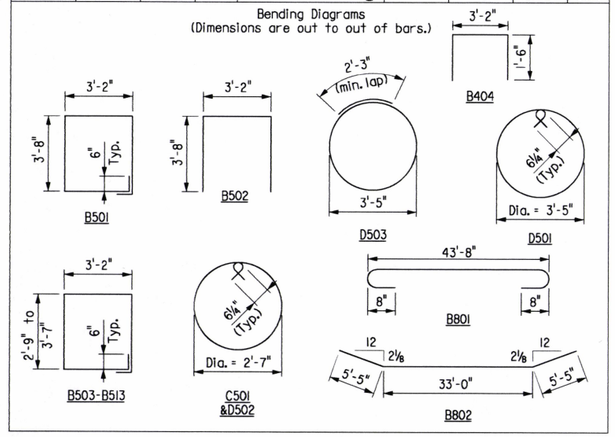
② Minimum penetration into competent rock below permanent casing.

TYP. ANCHOR BOLT LAYOUT
No Scale

BAR LIST

	Mark	BENT 2 Number Required	BENT 2 Length	BENT 2 Pin Dia.	Mark	BENT 3 Number Required	BENT 3 Length	BENT 3 Pin Dia.
	B401	4	21'-5"	Str.	B401	4	21'-5"	Str.
	B402	12	22'-8"	Str.	B402	12	22'-8"	Str.
	B403	6	24'-3"	Str.	B403	6	24'-3"	Str.
	B404	24	6'-0"	2"	B404	24	6'-0"	2"
	B501	40	14'-2"	2½"	B501	40	14'-2"	2½"
	B502	16	10'-4"	2½"	B502	16	10'-4"	2½"
	B503 to B513	2 Each	12'-4" to 14'-0"	2½"	B503 to B513	2 Each	12'-4" to 14'-0"	2½"
	B801	9	45'-6"	6"	B801	9	45'-6"	6"
	B802	9	43'-10"	6"	B802	9	43'-10"	6"
	C501	102	9'-7"	3¾"	C501	87	9'-7"	3¾"
	C1001	36	12'-3"	Str.	C1001	36	10'-9"	Str.
③	D501	204	12'-1"	3¾"	③ D501	240	12'-1"	3¾"
③	D502	39	9'-7"	3¾"	③ D502	39	9'-7"	3¾"
③	D503	39	13'-0"	3¾"	③ D503	39	13'-0"	3¾"
③	D1001	36	11'-9"	Str.	③ D1001	36	11'-9"	Str.
③	D1002	48	27'-2"	Str.	③ D1002	48	31'-2"	Str.

Bending Diagrams
(Dimensions are out to out of bars.)



③ D501, D502, D503, D1001, and D1002 Bars are non-pay items and are subsidiary to SP Job 061102 "DRILLED SHAFT FOUNDATIONS"

TABLE OF VARIABLES

BENT	"A"	"B"	"C"	"D"	"E"	"F"	Elev. "G"	Elev. "H"	"I"	"J"	"K"
2	3'-3⅛"	1⅛"	1⅛"	⅝"	2⅜"	2⅜"	242.37	214.87	19'-6"	8'-0"	8'-6"
3	3'-11⅛"	1⅜"	1½"	⅜"	2⅛"	2"	243.11	211.61	16'-6"	15'-0"	7'-0"

For SECTIONS A-A, B-B, and C-C, see Dwg. No. 59127.

For SUBSTRUCTURE GENERAL NOTES, see Dwg. No. 59127.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY W. MILLER
Larry W. Miller 10-16-16
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENTS 2 & 3
WILLIE RAY DRIVE
OVER FOURMILE CREEK

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

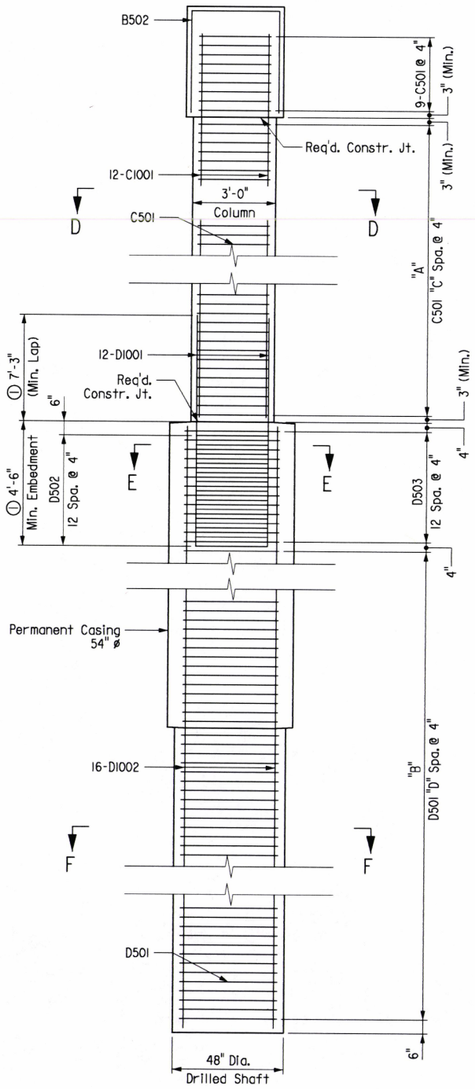
DRAWN BY: RSG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: RSG DATE: 6-16
FILENAME: b061102m4_b21.dgn
SCALE: AS SHOWN

BRIDGE NO. 07404 DRAWING NO. 59126

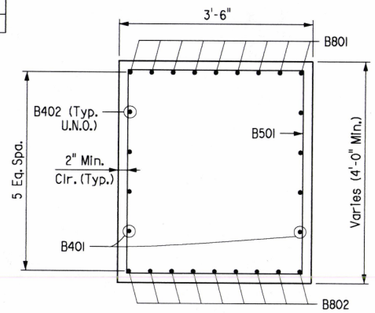
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	222	400
				(1) 07404		BENT 3 DETAILS		59127

TABLE OF VARIABLES

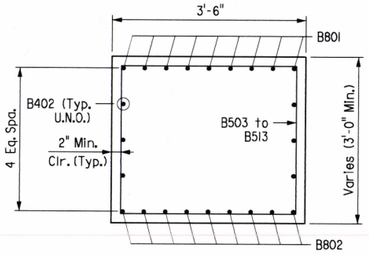
BENT	"A"	"B"	"C"	"D"
2	8'-0"	22'-4"	24	67
3	6'-6"	26'-4"	19	79



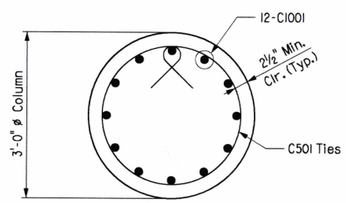
SECTION A-A
Scale: 3/8" = 1'-0"



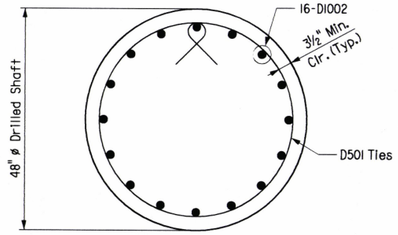
SECTION B-B
Scale: 3/4" = 1'-0"



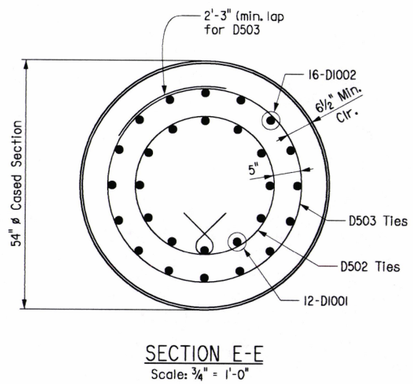
SECTION C-C
Scale: 3/4" = 1'-0"



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



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



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

① The column reinforcing cage, consisting of bars D502 and D1001, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The contractor will be responsible for obtaining satisfactory results.

GENERAL NOTES

All Concrete shall be Class "S" with a minimum 28-day compressive strength f'c = 3500 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sieves.

For additional information, see LAYOUT.

SHEET 2 OF 2
DETAILS OF BENTS 2 & 3
WILLIE RAY DRIVE
OVER FOURMILE CREEK

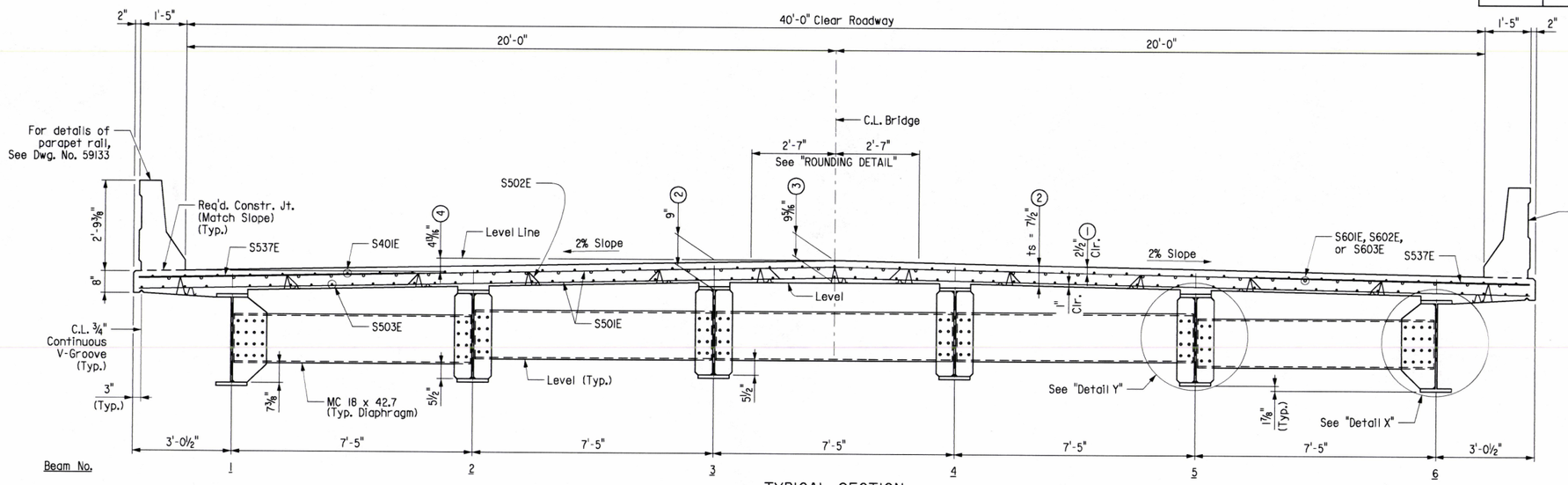
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 11339
LARRY W. MILLER
BRIDGE ENGINEER
10-6-16

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

DRAWN BY: RSG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: RSG DATE: 6-16
FILENAME: b061102m4_b22.dgn
SCALE: AS SHOWN

BRIDGE NO. 07404 DRAWING NO. 59127

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.		061102	223	400
				(1) 07404		180'-0" UNIT		59128



TYPICAL SECTION
(Looking Ahead)
Scale: ½" = 1'-0"

SLAB REINFORCING:

Transverse:
- S501E @ 12" (Top and Bottom)
- S502E @ 12" (Bent up over beams)
- S537E @ 6" @ Both Gutterlines

Longitudinal:
- S401E @ 12" (Top)
- S503E Place as shown (Bottom)
- S601E as shown over Int. Bents
- S602E as shown over Int. Bents
- S603E as shown at end supports

NOTES:

One Epoxy Coated #5 bar in the top and one Epoxy Coated #5 bar in the bottom may be substituted for each bar S501E. Payment will be based on the weight of bar S501E.

Class I Protective Surface Treatment shall be applied to the roadway surface and the traffic face and top of concrete parapet rail.

All bars designated with an E suffix are to be epoxy coated.

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices per Subsection 804.06.

(1) TOLERANCE: Minus: ¼". Plus: Equal to amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED".

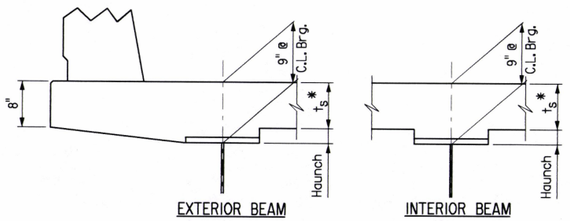
(2) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED".

(3) To Working Point - See "ROUNDING DETAIL".

TABLE FOR WELD

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	5/16"	

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



EXTERIOR BEAM INTERIOR BEAM

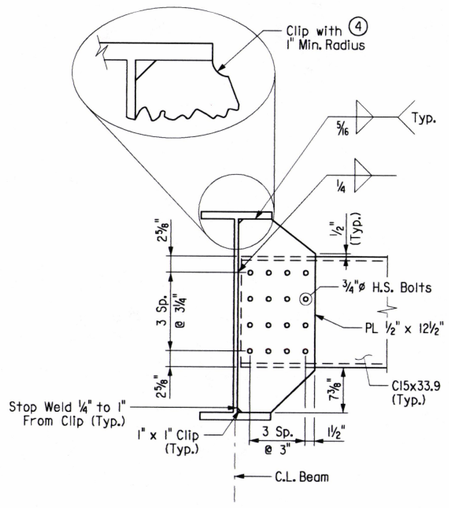
Note: ts = slab thickness as shown on "TYPICAL SECTION".
*Tolerance when removable deck forming is used is +½", -¼".
Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

No Scale

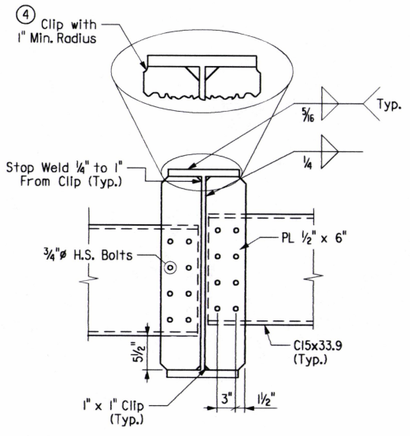
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance; Minimum - occurs when the top flange contacts the bottom reinforcing steel; Maximum - top flange thickness plus 1⅞". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

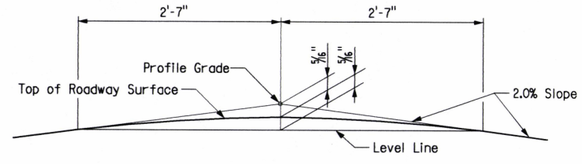


DETAIL X
Scale: 1" = 1'-0"

(4) Note: If permanent steel bridge deck forms are used, the fabricator shall clip the plate as necessary to accomodate the deck form support.



DETAIL Y
Scale: 1" = 1'-0"



ROUNDING DETAIL
No Scale

SHEET 1 OF 6
DETAILS OF 180'-0"
INTEGRAL W-BEAM UNIT
WILLIE RAY DRIVE
OVER FOURMILE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

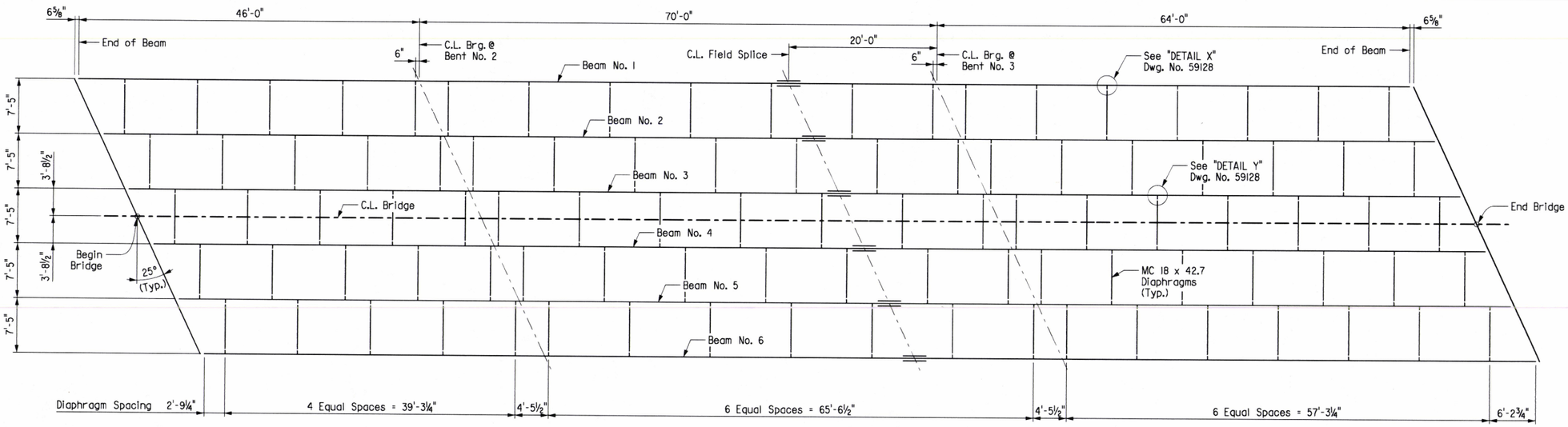
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11539 LARRY W. MILLER
Larry W. Miller 10-6-16
BRIDGE ENGINEER

DRAWN BY: RSG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: RSG DATE: 6-16
FILENAME: b061102m4_sl.dgn
SCALE: As Shown

BRIDGE NO. 07404 DRAWING NO. 59128

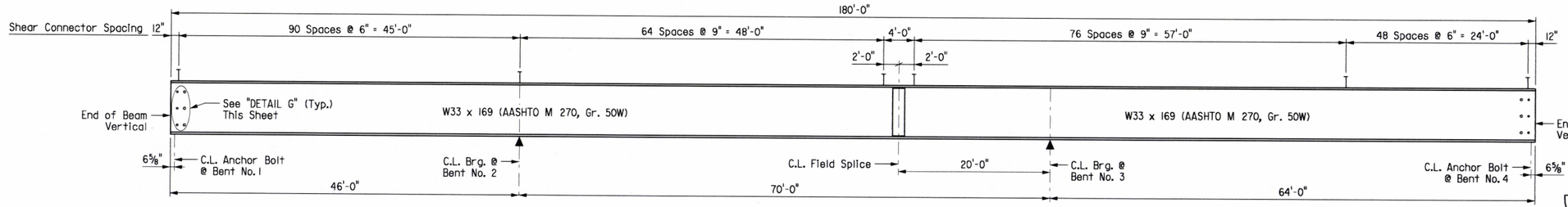
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	224	400
(1) 07404		180'-0" UNIT		59129



FRAMING PLAN

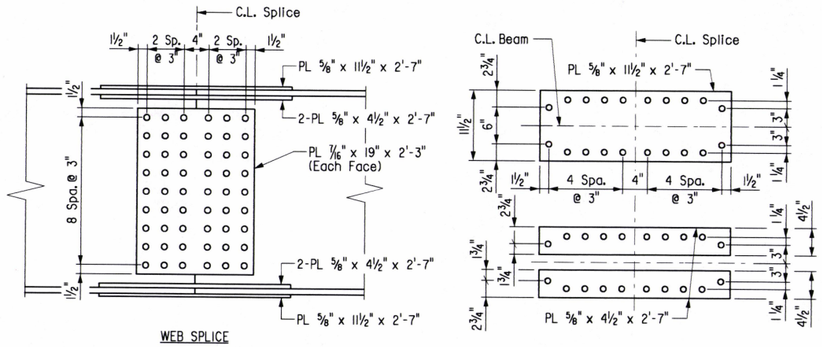
Scale: ⅛" = 1'-0"



TYPICAL BEAM ELEVATION

No Scale

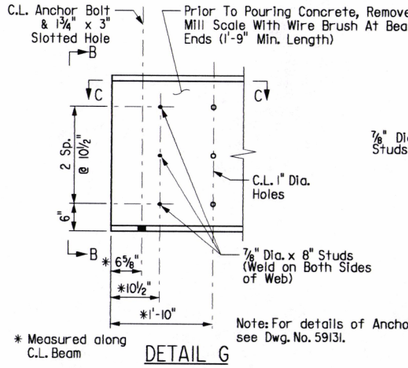
NOTE: Bolted field splices may be eliminated or shop welded splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.



NOTE: All field splice bolts shall be ⅞" ø H.S. bolts. All holes for splice bolts shall be 15/16" ø. All field splice plates shall be AASHTO M 270, Gr. 50W steel.

FIELD SPLICE DETAILS

Scale: 1" = 1'-0"

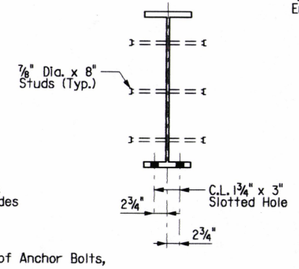


* Measured along C.L. Beam

Note: For details of Anchor Bolts, see Dwg. No. 59131.

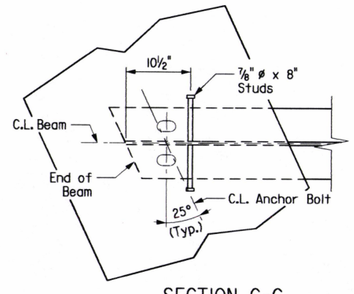
DETAIL G

No Scale



VIEW B-B

No Scale

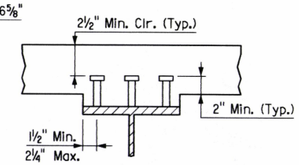


SECTION C-C

No Scale

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13339
LARRY W. MILLER
10-16-16

BRIDGE ENGINEER



SHEAR CONNECTOR DETAIL

No Scale

Stud Shear Connectors shown shall be ⅞" dia. x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. ¾" dia. studs may be used in place of the ⅞" dia. studs shown, at the ratio of 1.361 - ¾" dia. studs in place of one ⅞ dia. stud. ⅞" dia. studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24".

SHEET 2 OF 6
DETAILS OF 180'-0" INTEGRAL W-BEAM UNIT WILLIE RAY DRIVE OVER FOURMILE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: DLM DATE: 6-16 FILENAME: b061102m4_s2.dgn

CHECKED BY: LWM DATE: 07-21-16 SCALE: As Shown

DESIGNED BY: DLM DATE: 6-16

BRIDGE NO. 07404 DRAWING NO. 59129

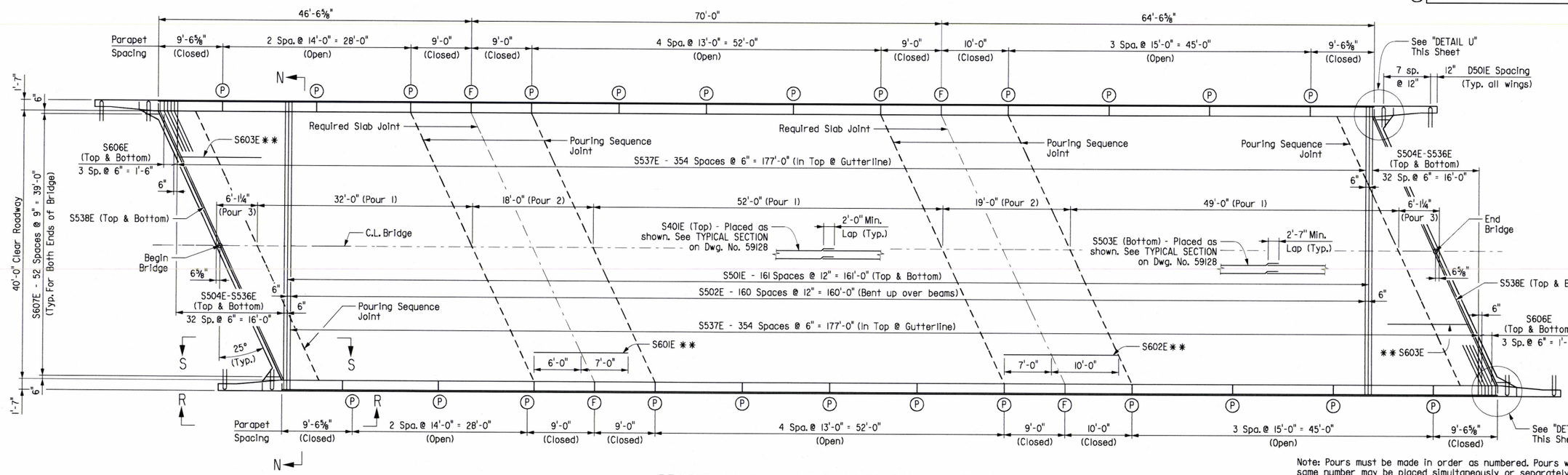
(F) C.L. Full Depth Parapet Joint (¼" to 1" max.). Stop 4" from top of slab.

(P) C.L. Partial Depth Parapet Joint (¼" to 1" max.). Stop 1'-2" from top of slab.

** Placed as shown in "TYPICAL SECTION", See Dwg. No. 59128

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.		061102	225	400
(1) 07404		180'-0" UNIT		59130



Note: Pours must be made in order as numbered. Pours with the same number may be placed simultaneously or separately. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of the adjacent pour. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. Concrete in bridge superstructure shall be consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

Required slab joints and pouring sequence joints shall align with parapet open joint at the gutterline, except for Pour 3.

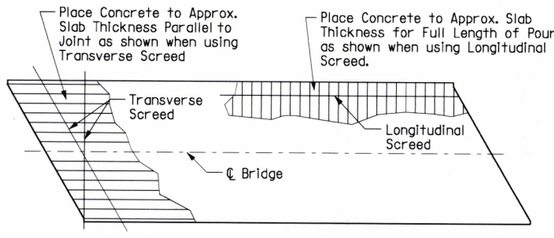
For Bar List, See Dwg. No. 59132.

For "View N-N", see Dwg. No. 59131

For "View R-R" and "View S-S", see Dwg. No. 59132

REINFORCING PLAN AND DECK POURING SEQUENCE

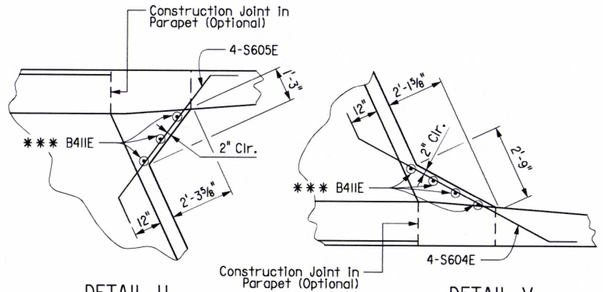
Scale: ⅛" = 1'-0"



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

CONCRETE PLACEMENT PROCEDURE

No Scale



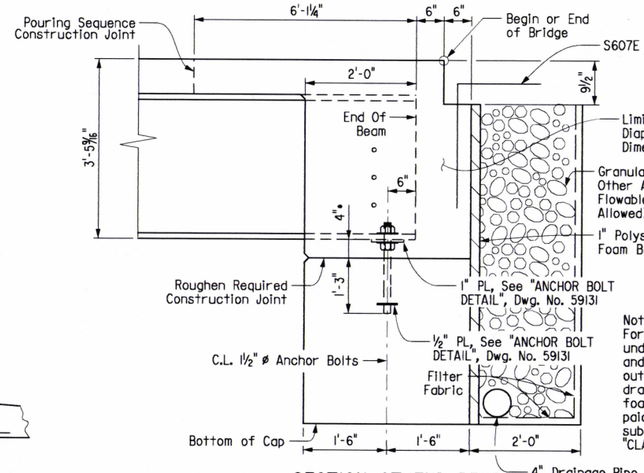
DETAIL U

Scale: ⅜" = 1'-0"

DETAIL V

Scale: ⅜" = 1'-0"

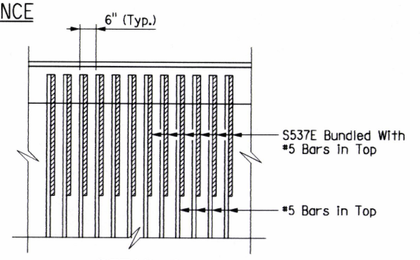
*** See End Bent Details on Dwg. No. 59125 for reinforcing and additional details.



SECTION AT END BENT

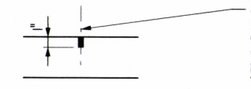
NO SCALE
(Perp. To Cap)

Note:
For additional details of pipe underdrain see Std. Dwg. No. PU-1 and Section 611. Pipe underdrains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "CLASS S CONCRETE-BRIDGE".



DETAIL A

No Scale



½" x 1" Type 3 or 4 Joint Sealer. See Subsection 501.02 (h) and 501.05 (j). Backer rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set up to allow the sawing of joint without damage to the slab. Slab joints shall be placed at all Pouring Sequence Construction Joints and Required Slab Joint locations. The joint sealer shall extend across the deck slab (gutterline to gutterline). Slab joints shall align with parapet open joints.

SLAB JOINT DETAIL

No Scale

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13339 LARRY W. MILLER

Larry W. Miller 10-6-16

BRIDGE ENGINEER

SHEET 3 OF 6
DETAILS OF 180'-0" INTEGRAL W-BEAM UNIT
WILLIE RAY DRIVE
OVER FOURMILE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RSG DATE: 6-16 FILENAME: b061102m4_s3.dgn

CHECKED BY: LWM DATE: 07-21-16 SCALE: As Shown

DESIGNED BY: RSG DATE: 6-16

BRIDGE NO. 07404 DRAWING NO. 59130

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.		061102	226	400
				(1) 07404		180'-0" UNIT		59131

SUPERSTRUCTURE GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions. Unless otherwise noted in the plans, Section and Subsection numbers refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (2012, 6th Edition) with interim specifications.

LIVE LOADING: HL93

SEISMIC PERFORMANCE ZONE: 2

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (Superstructure)	f'c = 4,000 psi
Reinforcing Steel (AASHTO M 31 or M 322 Type A, Gr. 60)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi

STRUCTURAL STEEL: All structural steel shall be AASHTO M 270, Gr. 50W unless otherwise noted and shall be paid for as "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)". Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36. All exposed surfaces shall be cleaned in accordance with Subsection 807.84(e) unless noted otherwise. M 270, Gr. 50W steel shall not be painted unless noted otherwise.

Longitudinal beams and all splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly but are considered subsidiary to the item "STRUCTURAL STEEL IN BEAMS SPANS (M 270, Gr. 50W)".

All beams shall be blocked in their true position in the shop with webs horizontal and as specified in Subsection 807.54 (b)(2). The camber, length of sections, distance between bearings, and openings of joints shall be measured with the beams in their true position. This information shall become a part of the permanent records of this job. The component parts shall be match-marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60° F. A tolerance of ¼" +/- is allowed for camber.

Field splice flange plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

Drawings show general features of design only. Shop drawings shall be made in accordance with Subsection 807.04, submitted, and approval secured before fabrication is begun.

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

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Shapes and materials shown in the plans will be the basis of payment and no additional compensation will be made for any adjustments due to substitutions.

Field connections shall be bolted with high-strength bolts. Unless noted otherwise, bolts shall be ¾" diameter and open holes shall be 13/16". Holes for ¾" diameter bolts may be 15/16" diameter if a washer is supplied for use under both the nut and head of the bolt. Bolt spacing shall be 2½" for ¾" diameter bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of exterior webs and the bottom of flanges.

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether temporary or permanent, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching falsework support devices or screed rail supports to the structural steel that do not exceed the limitations of Subsection 802.13 will not require approval prior to construction. All welding shall conform to Subsection 807.26.

Anchor bolts shall be galvanized according to Subsection 807.07 and shall be Grade 55.

CONCRETE: Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

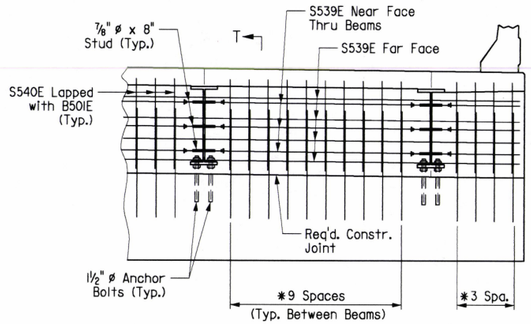
The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

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

The concrete deck shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam. If a longitudinal strike-off is used, a vertical camber adjustment must be made in the strike-off to account for the future dead load deflection due to the railing.

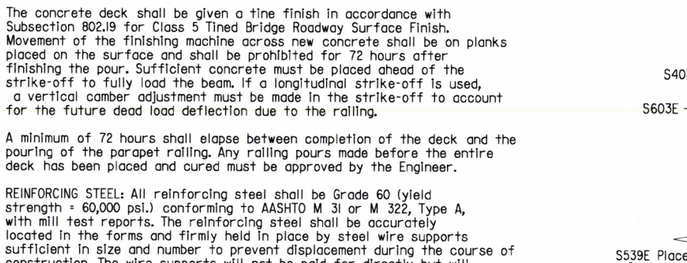
A minimum of 72 hours shall elapse between completion of the deck and the pouring of the parapet railing. Any railing pours made before the entire deck has been placed and cured must be approved by the Engineer.

REINFORCING STEEL: All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi.) conforming to AASHTO M 31 or M 322, Type A, with mill test reports. The reinforcing steel shall be accurately located in the forms and firmly held in place by steel wire supports sufficient in size and number to prevent displacement during the course of construction. The wire supports will not be paid for directly but will be considered subsidiary to the item "EPOXY COATED REINFORCING STEEL (Grade 60)".



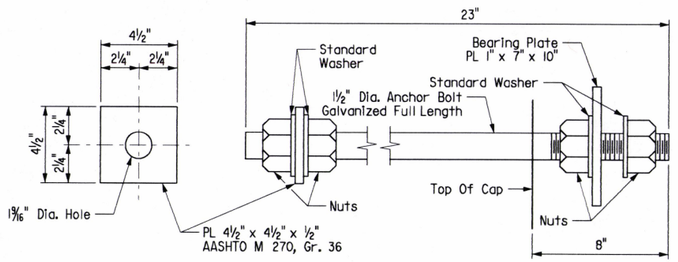
T ◄ VIEW N-N

Scale: ⅜" = 1'-0"



ANCHOR BOLT DETAIL FOR END BENTS

No Scale

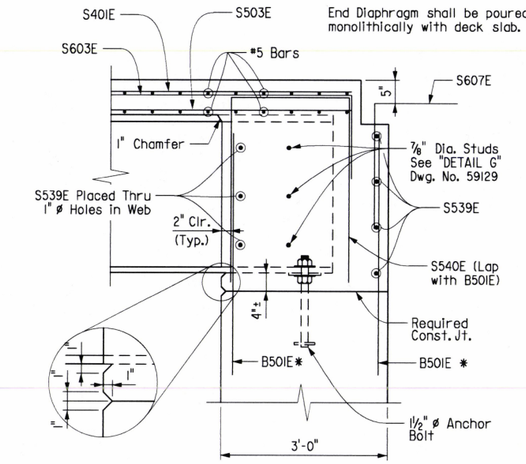


ALTERNATE ANCHOR BOLT DETAIL FOR END BENTS

No Scale

Note:
Limits of concrete end diaphragm shall match plan dimensions of end bent cap.

End Diaphragm shall be poured monolithically with deck slab.



SECTION T-T

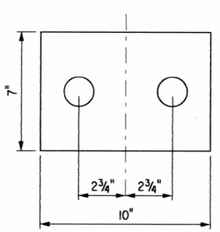
Scale: ¾" = 1'-0" (Perp. To Cap)

*See Dwg. No. 59125 for reinforcing details and placement.

NOTE:

Anchor bolts shall comply with AASHTO M 314, Grade 55 with Supplementary Requirement S1 and galvanized according to Subsection 807.07. Nuts for bolts shall be as specified in Subsection 807.07. Plates, anchor bolts, nuts and washers shall be paid for at the unit price bid "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)".

Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.



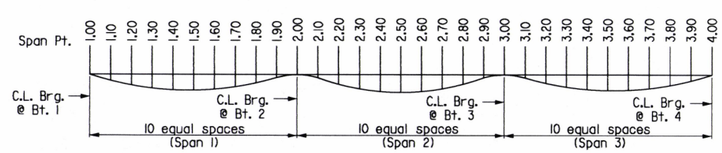
BEARING PLATE DETAIL

No Scale

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Tolerance for camber for dead load deflection plus vertical curve is +/- ¼". Deflections shown are along the centerline beam from the plane perpendicular to the web extending from centerline bearing to centerline bearing. Vertical curve corrections not included. Negative sign (-) indicates upward deflection.

	POINT OF DEFLECTION	INTERIOR BEAM Structural Steel	INTERIOR BEAM Structural Steel +Slab	INTERIOR BEAM Structural Steel +Slab +Para. Rail	EXTERIOR BEAM Structural Steel	EXTERIOR BEAM Structural Steel +Slab	EXTERIOR BEAM Structural Steel +Slab +Para. Rail
SPAN NO. 1	1.00	0.00	0.00	0.00	0.00	0.00	0.00
	1.10	0.01	0.04	0.04	0.01	0.04	0.04
	1.20	0.02	0.06	0.07	0.02	0.06	0.07
	1.30	0.02	0.08	0.09	0.02	0.08	0.09
	1.40	0.02	0.09	0.10	0.02	0.09	0.10
	1.50	0.02	0.08	0.09	0.02	0.08	0.09
	1.60	0.02	0.06	0.06	0.02	0.06	0.06
	1.70	0.01	0.03	0.03	0.01	0.03	0.03
	1.80	0.00	0.01	0.01	0.00	0.01	0.01
	1.90	0.00	-0.01	-0.01	0.00	-0.01	-0.01
SPAN NO. 2	2.00	0.00	0.00	0.00	0.00	0.00	0.00
	2.10	0.02	0.07	0.08	0.02	0.07	0.08
	2.20	0.05	0.17	0.19	0.05	0.17	0.19
	2.30	0.07	0.27	0.30	0.07	0.27	0.30
	2.40	0.09	0.33	0.37	0.09	0.33	0.37
	2.50	0.09	0.34	0.38	0.09	0.34	0.38
	2.60	0.08	0.30	0.34	0.08	0.30	0.34
	2.70	0.06	0.22	0.24	0.06	0.22	0.24
	2.80	0.03	0.11	0.13	0.03	0.11	0.13
	2.90	0.01	0.02	0.03	0.01	0.02	0.03
SPAN NO. 3	3.00	0.00	0.00	0.00	0.00	0.00	0.00
	3.10	0.02	0.07	0.07	0.02	0.07	0.08
	3.20	0.05	0.19	0.21	0.05	0.19	0.21
	3.30	0.09	0.32	0.36	0.09	0.32	0.36
	3.40	0.12	0.43	0.49	0.12	0.43	0.49
	3.50	0.13	0.51	0.56	0.13	0.51	0.57
	3.60	0.14	0.52	0.58	0.14	0.52	0.58
	3.70	0.12	0.47	0.52	0.12	0.47	0.52
	3.80	0.09	0.35	0.39	0.09	0.35	0.39
	3.90	0.05	0.19	0.21	0.05	0.19	0.21
	4.00	0.00	0.00	0.00	0.00	0.00	0.00



DEAD LOAD DEFLECTION DIAGRAM

No Scale

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11339 LARRY D. MILLER

Larry D. Miller 10-6-16

BRIDGE ENGINEER

SHEET 4 OF 6
DETAILS OF 180'-0"
INTEGRAL W-BEAM UNIT
WILLIE RAY DRIVE
OVER FOURMILE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

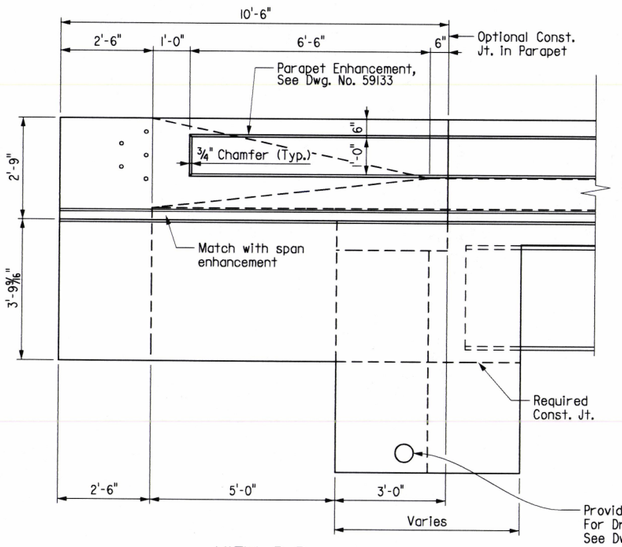
LITTLE ROCK, ARK.

DRAWN BY: RSG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: DLM DATE: 6-16

FILENAME: b061102m4_s4.dgn
SCALE: As Shown

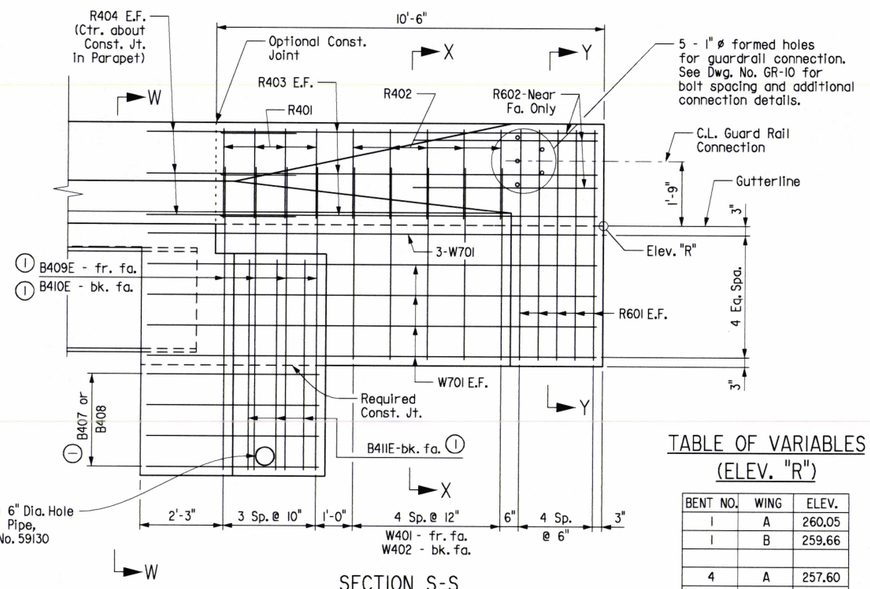
BRIDGE NO. 07404 DRAWING NO. 59131

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.		061102	227	400
				(1) 07404		180'-0" UNIT		59132



VIEW R-R

Scale: ½" = 1'-0"



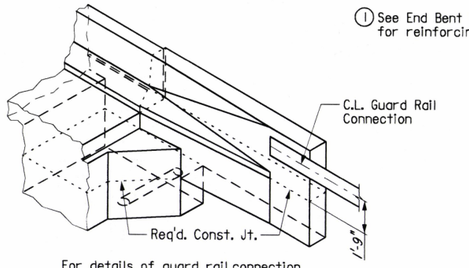
SECTION S-S

Scale: ½" = 1'-0"

TABLE OF VARIABLES (ELEV. "R")

BENT NO.	WING	ELEV.
1	A	260.05
1	B	259.66
4	A	257.60
4	B	257.66

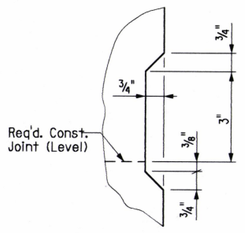
(1) See End Bent Details on Dwg. No. 59125 for reinforcing and additional details



For details of guard rail connection, see Std. Dwg. No. GR-10.

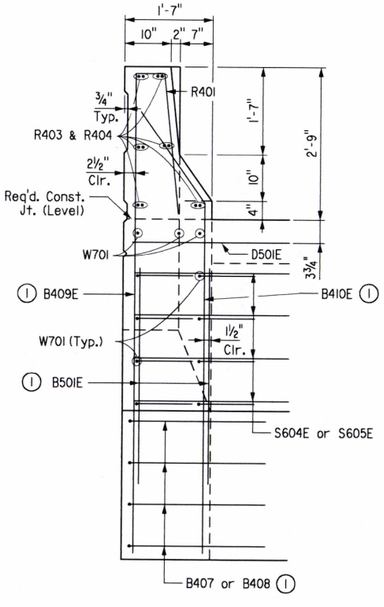
THREE DIMENSIONAL VIEW WING RAIL & PARAPET

No Scale



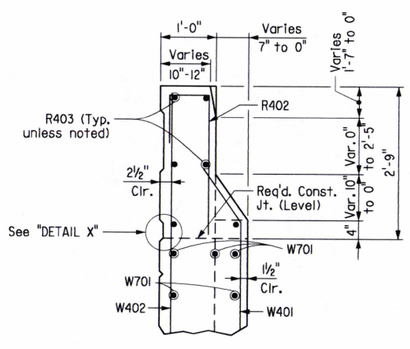
DETAIL X

No Scale



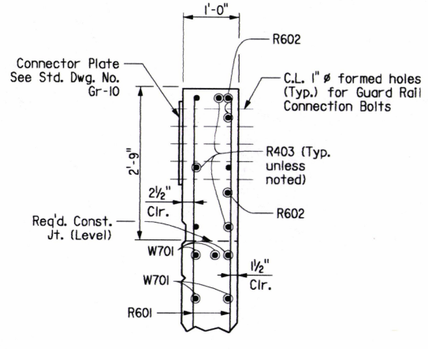
VIEW W-W

¾" = 1'-0"



SECTION X-X

No Scale

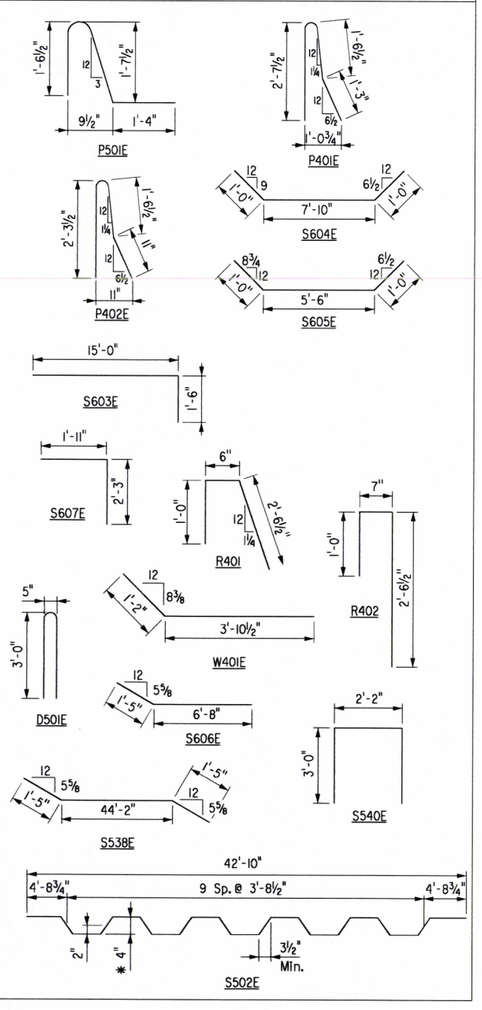


SECTION Y-Y

No Scale

BAR LIST

MARK	NO. REQ'D	LENGTH	PIN DIA.	BENDING DIAGRAMS (Dimensions are out to out of Bars)
S401E	215	38'-0"	Str.	
S501E	324	42'-10"	Str.	
S502E	161	43'-11"	3"	
S503E	252	47'-4"	Str.	
S504 to S536E	4 Each	41'-3" to 7'-3"	Str.	
S537E	710	6'-6"	Str.	
S538E	4	47'-0"	3¾"	
S539E	14	47'-3"	Str.	
S540E	116	8'-0"	2½"	
S601E	42	13'-0"	Str.	
S602E	42	17'-0"	Str.	
S603E	84	16'-4"	4½"	
S604E	8	9'-10"	4½"	
S605E	8	7'-6"	4½"	
S606E	32	8'-1"	4½"	
S607E	106	4'-0"	4½"	
D501E	32	6'-2"	3¾"	
P401E	584	5'-6"	3"	
P402E	144	4'-10"	3"	
P403E	96	4'-5"	Str.	
P404E	42	8'-7"	Str.	
P405E	28	9'-2"	Str.	
P406E	14	9'-7"	Str.	
P407E	56	12'-7"	Str.	
P408E	28	13'-7"	Str.	
P409E	42	14'-7"	Str.	
P501E	584	4'-7"	3¾"	
R401E	16	3'-11"	2"	
R402E	20	4'-0"	2"	
R403E	24	10'-2"	Str.	
R404E	24	4'-5"	Str.	
R601E	40	6'-2"	Str.	
R602E	12	5'-0"	Str.	
W401E	20	5'-1"	2"	
W402E	20	6'-2"	Str.	
W701E	44	12'-3"	Str.	



NOTES:

Dimensions are out to out of bars.

Bars with an "E" suffix are to be epoxy coated.

* ½" overtolerance no undertolerance

SHEET 5 OF 6
DETAILS OF 180'-0"
INTERGAL W-BEAM UNIT
WILLIE RAY DRIVE
OVER FOURMILE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13539 LARRY W. MILLER

Larry W. Miller 10-6-16

BRIDGE ENGINEER

DRAWN BY: RSG DATE: 6-16

CHECKED BY: LWM DATE: 07-21-16

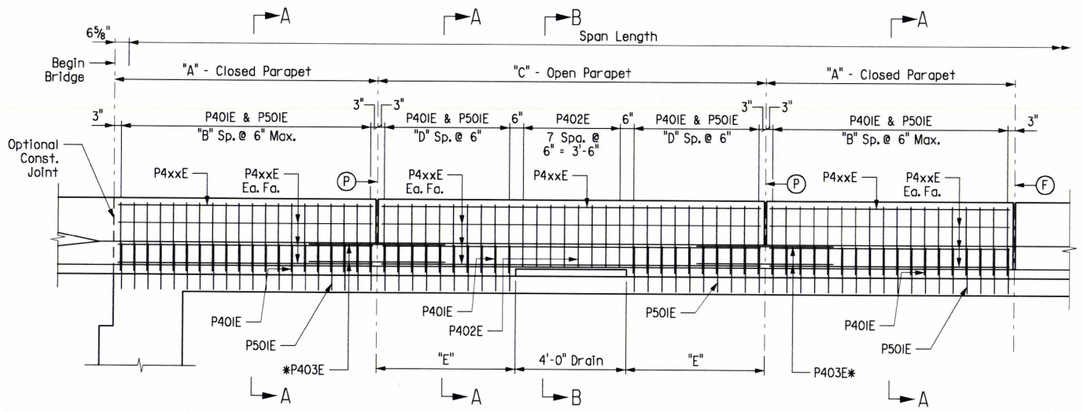
DESIGNED BY: RSG DATE: 6-16

FILENAME: b061102m4_s5.dgn

SCALE: As Shown

BRIDGE NO. 07404 DRAWING NO. 59132

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.		061102	228	400
				(1) 07404		180'-0" UNIT		59133



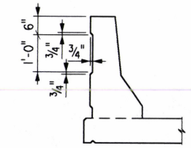
DETAILS OF PARAPET RAIL

Scale: ⅜" = 1'-0"

(P) C.L. Partial Depth Parapet Joint (¼" to 1" max.) as shown in "REINFORCING PLAN", Dwg. No. 59130. Stop 1'-2" from top of slab.

(F) C.L. Full Depth Parapet Joint (¼" to 1" max.) as shown in "REINFORCING PLAN", Dwg. No. 59130. Stop 4" from top of slab.

*P403E - Ea. Fa. - Lapped with #4 bars as shown. Typ. at all partial-depth parapet joints.



CONTINUOUS PARAPET ENHANCEMENT

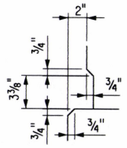
Scale: ½" = 1'-0"

TABLE OF PARAPET RAIL VARIABLES

"A" Closed Parapet	"B"	"P4xxE" Bar
9'-0"	17	P404
9'-6⅜"	19	P405
10'-0"	19	P406

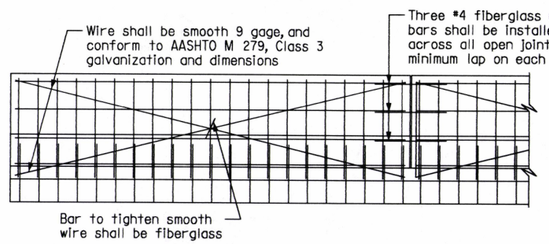
"C" Open Parapet	"D"	"E"	"P4xxE" Bar
13'-0"	8	4'-6"	P407
14'-0"	9	5'-0"	P408
15'-0"	10	5'-6"	P409

Note: For location of Open and Closed Parapet panels, see "RENIFORCING PLAN & DECK POURING SEQUENCE", Dwg. No. 59130.



DETAIL X

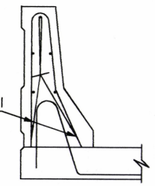
No Scale



All panels shall be braced as shown to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of ¼". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

For actual placement of reinforcing steel, see parapet details.

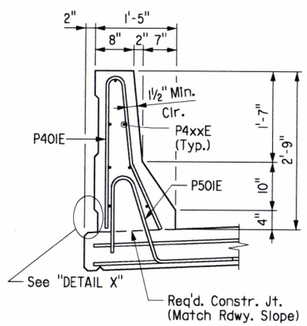
All smooth wire bracing shall be placed on the inside faces of the reinforcing.



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

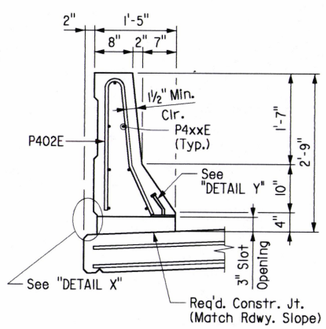
DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale



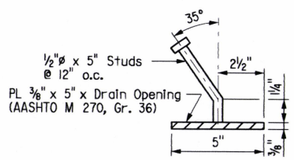
SECTION A-A

Scale: ¾" = 1'-0"



SECTION B-B

Scale: ¾" = 1'-0"



DETAIL Y

No Scale

Note:

Parapet Studs shall be 5" long, granular flux filled, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50)".

The surfaces of the ⅜" Plates which will not be in contact with concrete shall be painted in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for directly, but will be considered subsidiary to "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)".

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13339 LARRY W. MILLER

Larry Miller 10-6-16

BRIDGE ENGINEER

SHEET 6 OF 6
DETAILS OF 180'-0" INTEGRAL W-BEAM UNIT
WILLIE RAY DRIVE
OVER FOURMILE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RSG DATE: 6-16
CHECKED BY: LWM DATE: 07-21-16
DESIGNED BY: DLM DATE: 6-16

FILENAME: b06l102m4_s6.dgn
SCALE: As Shown

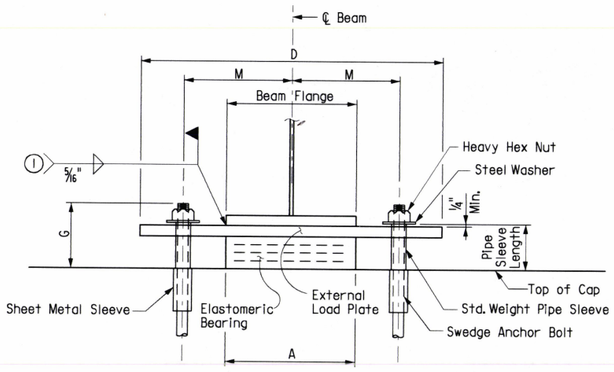
BRIDGE NO. 07404

DRAWING NO. 59133

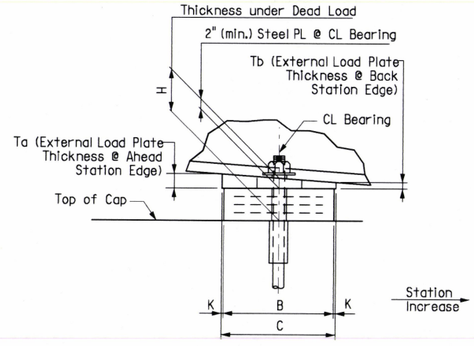
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	229	400
①	07404	ELASTOMERIC BEARINGS		59134

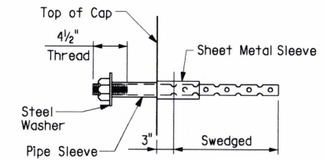
① Care shall be taken to ensure that the external load plate is in full and complete contact with the beam flange before welding begins.



FRONT VIEW



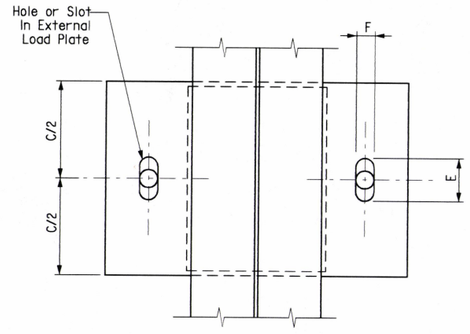
SIDE VIEW



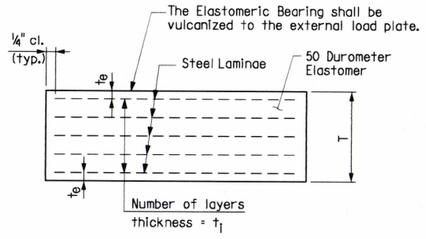
ANCHOR BOLT DETAIL

Anchor bolts may be cast in place or drilled and grouted into place. If anchor bolts are to be cast in place, the galvanized sheet metal sleeves will not be required.

If anchor bolts are to be drilled and grouted in place, the galvanized sheet metal sleeves shall be cast in place as shown. Sleeves shall be dry packed with Styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of structural steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized sheet metal sleeves will not be paid for directly, but will be considered subsidiary to the item "STRUCTURAL STEEL IN BEAM SPANS, (M 270, Gr. 50W)".



PLAN VIEW



t_e = thickness of elastomer cover on top and bottom of pad

t_1 = thickness of elastomer between steel laminae

N = number of elastomer layers of thickness t_1

ELASTOMERIC BEARING

GENERAL NOTES

Elastomeric Bearings shall conform to Section 808 and shall be paid for at the unit price bid for "ELASTOMERIC BEARINGS".

External load plates shall conform to AASHTO M 270, Grade 50W. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232 Class C or ASTM B695 Class 50.

External load plates shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(e).

Anchor bolts, washers and nuts shall conform to Subsection 807.07. The anchor bolt grade of steel shall be as specified in the "TABLE OF FABRICATOR VARIABLES". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe sleeves, anchor bolts, washers and nuts shall be paid for at the unit price bid for "STRUCTURAL STEEL IN BEAM SPANS (M 270, Gr. 50W)".

External load plates will not be paid for separately but will be included in the unit price bid for "ELASTOMERIC BEARINGS".

Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the beam will be allowed only when 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40°F and 80°F; and 2) the slots in the external load plate are positioned to center on the anchor bolts; and 3) no horizontal deformation of the elastomeric pad is evident.

If welding at other temperatures is required, the Engineer will provide adjustment data.

Elastomeric bearings shall be firmly seated in accordance with Subsection 808.08. This work is considered subsidiary to the item "ELASTOMERIC BEARINGS" and will not be paid for directly.

TABLE OF FABRICATOR VARIABLES

* Maximum Design Load = Service I Limit State

LOCATION		BEARING TYPE	NO. of BEARINGS EACH BENT	*MAXIMUM DESIGN LOAD (KIPS)	ELASTOMERIC PAD									EXTERNAL LOAD PLATE								ANCHOR BOLT				
BENT NO(S).	BEAM NO.				G	H	A	B	N	t_1	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	K	M	T_a	T_b	ANCHOR BOLT (ø x L)	GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
2	ALL	Fixed	6	211.8	9¼"	4 5/16"	15"	11½"	4	½"	¼"	5 @ 12 Ga.	3"	12½"	28"	3¾"	3¾"	½"	10½"	1.91	2.09	2¾" X 39¼"	55	3" X 5⅜"	5" X 7½"	5"
3	ALL	Fixed	6	211.8	9¼"	4 5/16"	15"	11½"	4	½"	¼"	5 @ 12 Ga.	3"	12½"	28"	3¾"	3¾"	½"	10½"	1.95	2.05	2¾" X 39¼"	55	3" X 5⅜"	5" X 7½"	5"

STATE OF ARKANSAS
LARRY W. MILLER
REGISTERED PROFESSIONAL ENGINEER
No. 13539
10-16-16

BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS WILLIE RAY DRIVE OVER FOURMILE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

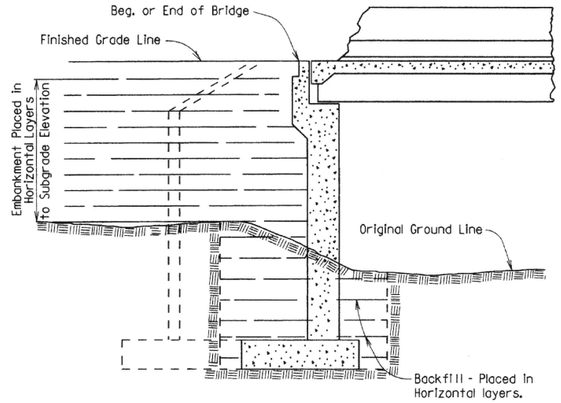
DRAWN BY: DLM DATE: 6-16 FILENAME: b061102m4_el.dgn

CHECKED BY: LWM DATE: 07-21-16 SCALE: As Shown

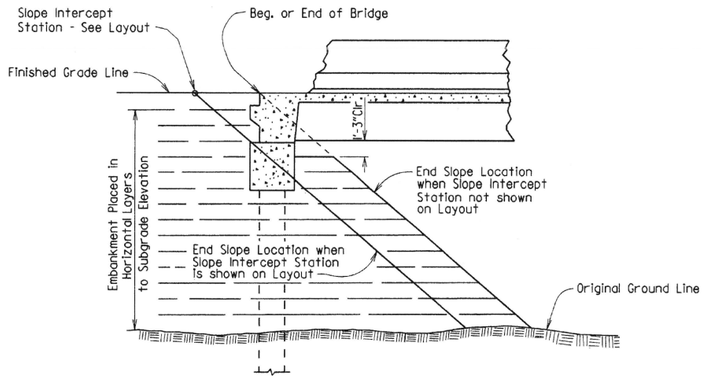
DESIGNED BY: DLM DATE: 6-16

BRIDGE NO. 07404 DRAWING NO. 59134

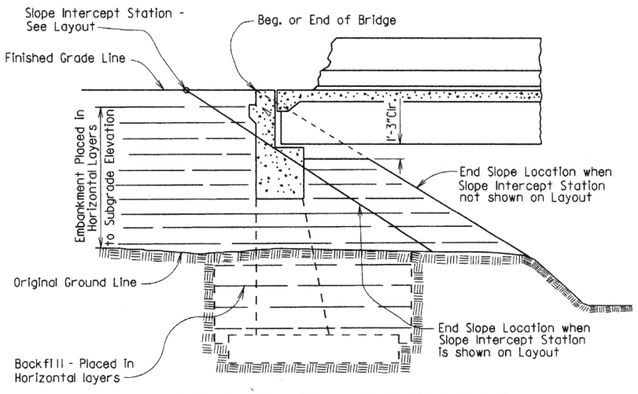
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				① EMBANKMENT & BACKFILL 55000				



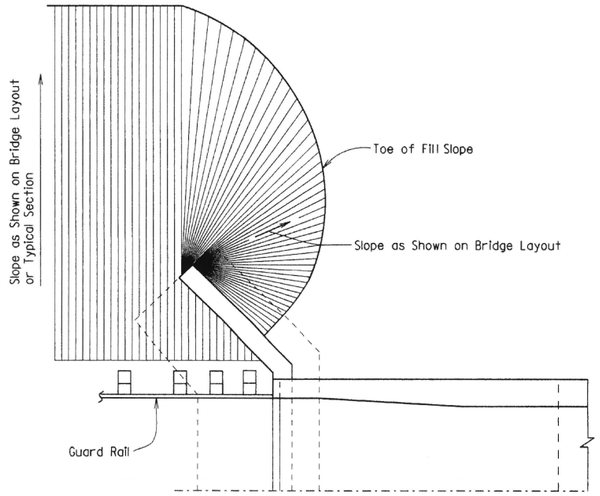
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



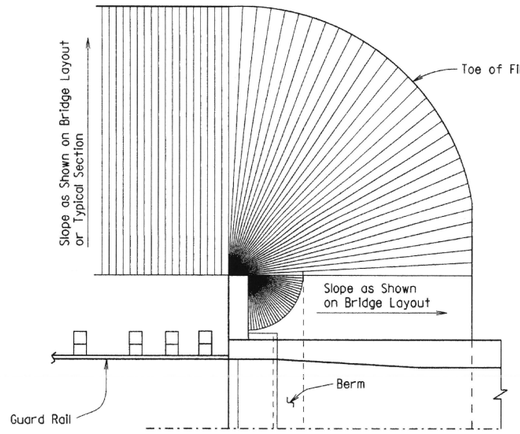
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



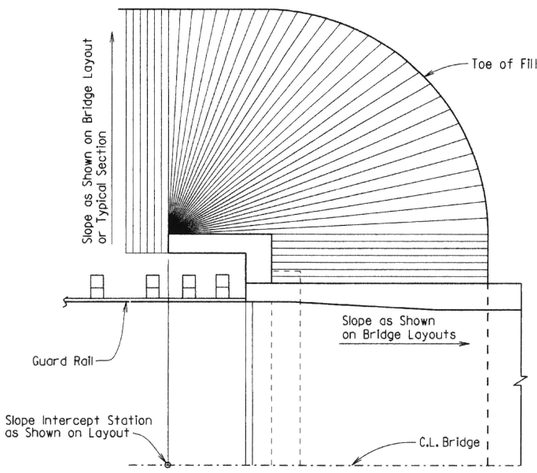
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



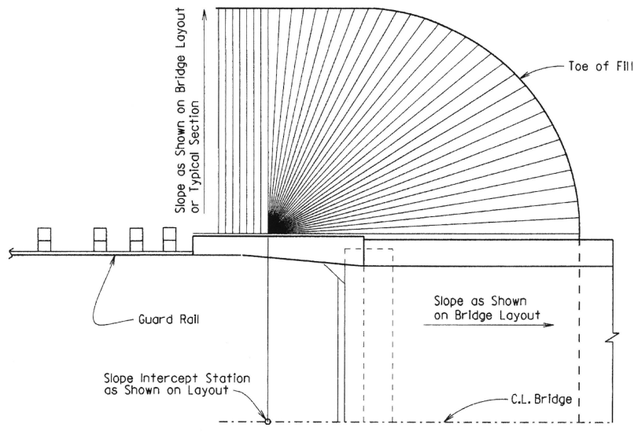
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge end including around the end of wingwalls. Embankment adjacent to structures shall be constructed in 6 inch horizontal layers (loose measure) and compacted by the use of mechanical equipment to the satisfaction of the Engineer. Refer to Subsections 210.09, 210.10 and 801.08 for construction requirements.

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

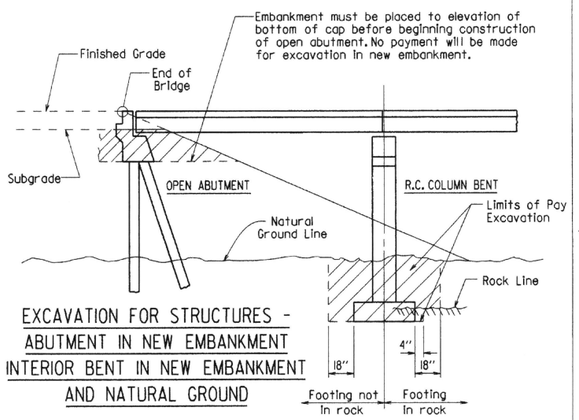
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014
CHECKED BY: BEF DATE: 2-27-2014
DESIGNED BY: STD. DATE: -

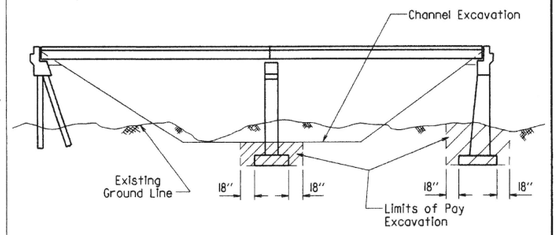
FILENAME: b55000.dgn
SCALE: NO SCALE

DRAWING NO. 55000

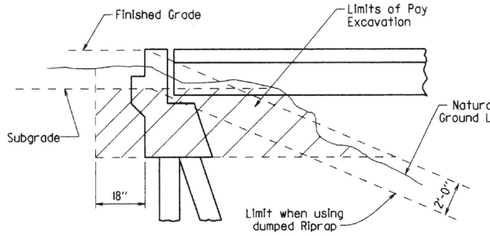
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				① RIPRAP & EXCAV. 55001				



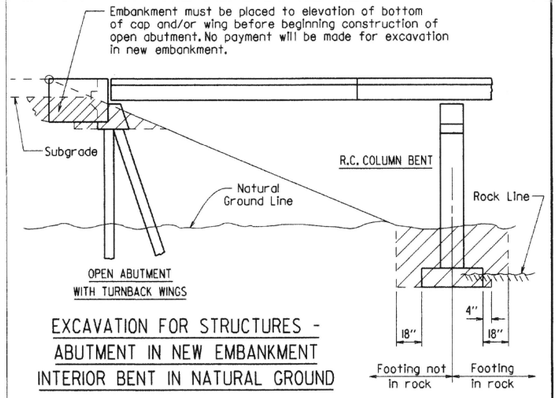
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



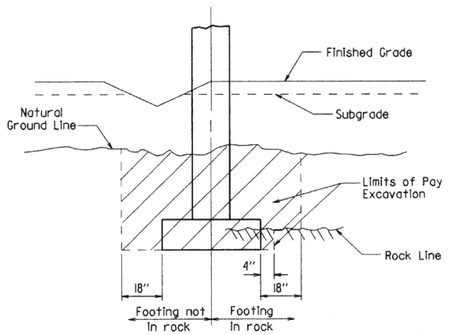
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



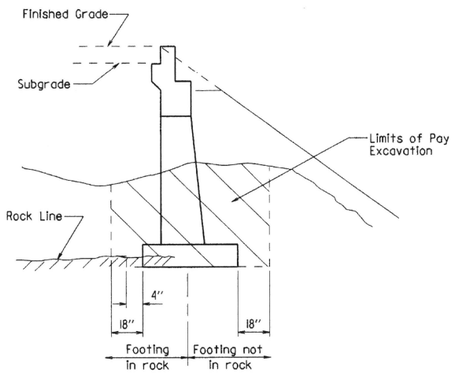
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



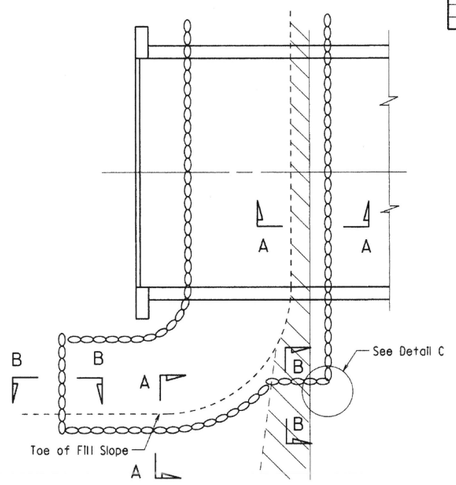
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



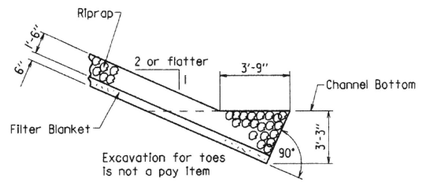
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



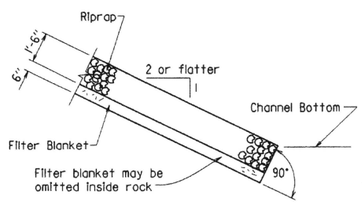
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



PLAN OF DUMPED RIPRAP



SECTION A-A
(Toe Excavation in Soil)

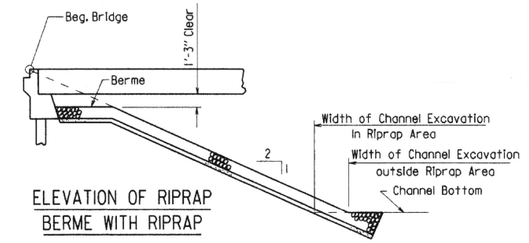


SECTION A-A
(Toe Excavation in Rock)

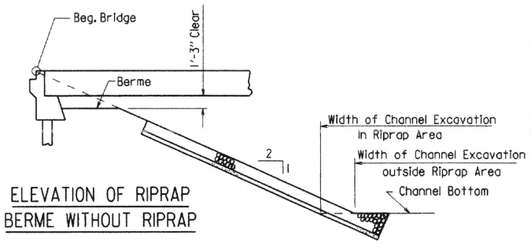
Note : Use this type of toe when rock is encountered which is in a stable condition.

Note : In lieu of an aggregate filter blanket, a synthetic fiber geotextile fabric complying with the requirements of Subsection 816.02(e) may be used.

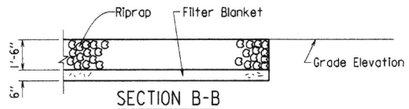
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



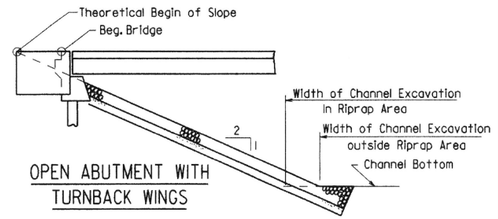
ELEVATION OF RIPRAP BERME WITH RIPRAP



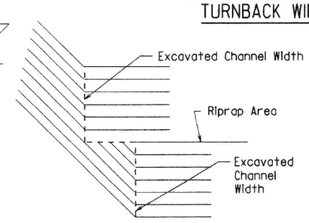
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

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

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b5500Ldgn

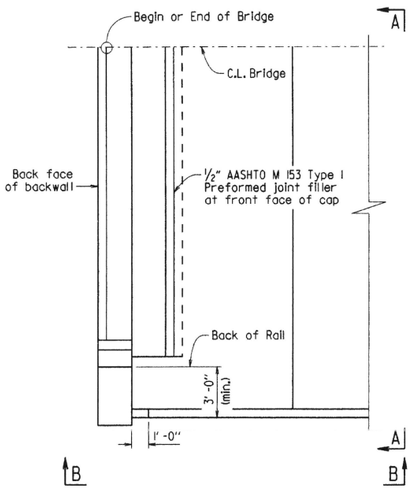
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE:

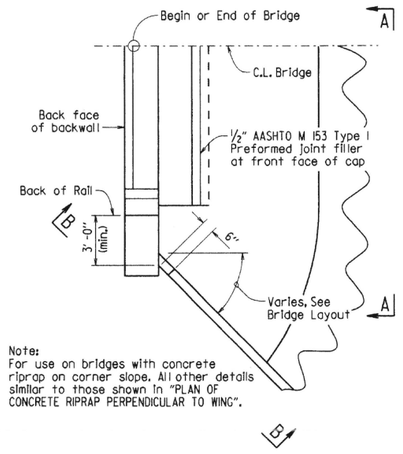
DRAWING NO. 55001

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.				
				① CONCRETE RIPRAP 55002				

Note:
Sloped surfaces of concrete riprap to be marked off into blocks (construction joints optional) with an approved grooving tool, spacing the grooved lines about 5' apart.



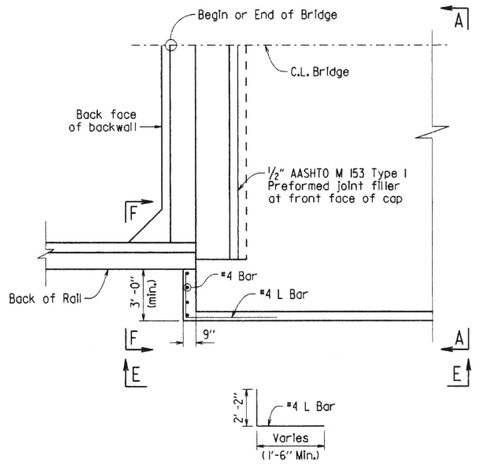
PLAN OF CONCRETE RIPRAP
PERPENDICULAR TO WING
¼" = 1'-0"



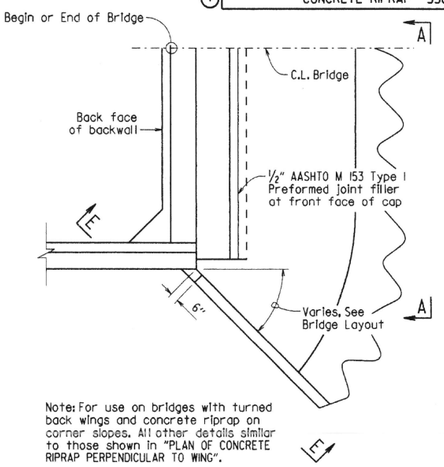
Note:
For use on bridges with concrete riprap on corner slope. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

PLAN OF CONCRETE RIPRAP
AT ANGLE TO WING
¼" = 1'-0"

Note:
For use on bridges with turned back wings. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".



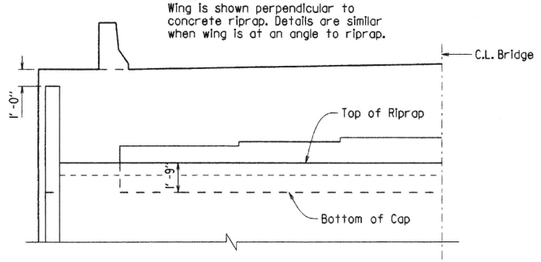
PLAN OF CONCRETE RIPRAP
PERPENDICULAR TO TURNED BACK WING
¼" = 1'-0"



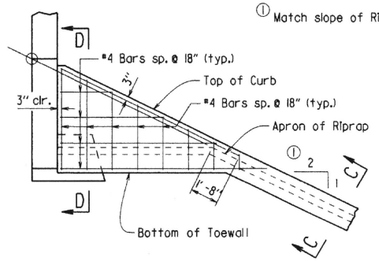
Note: For use on bridges with turned back wings and concrete riprap on corner slopes. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

PLAN OF CONCRETE RIPRAP
AT ANGLE FROM TURNED BACK WING
¼" = 1'-0"

Note:
Wing is shown perpendicular to concrete riprap. Details are similar when wing is at an angle to riprap.

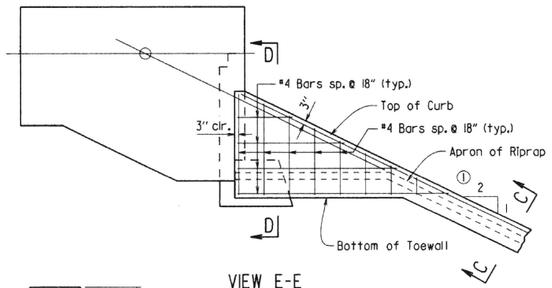


VIEW A-A
¼" = 1'-0"

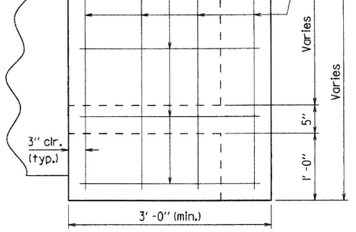


① Match slope of Riprap Apron.

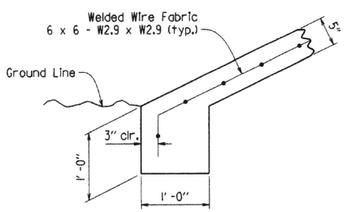
VIEW B-B
¼" = 1'-0"



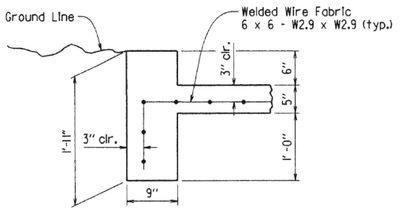
VIEW E-E
¼" = 1'-0"



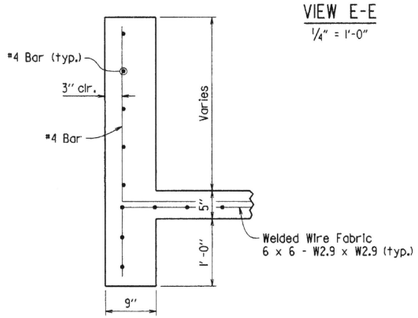
VIEW F-F
1" = 1'-0"



TOE OF CONCRETE RIPRAP
1" = 1'-0"



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



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

GENERAL NOTES

All concrete shall be Class A with a minimum compressive strength, f'c = 2,100 psi.

Welded wire fabric shall conform to AASHTO M55 or M221.

STANDARD DETAILS FOR CONCRETE RIPRAP

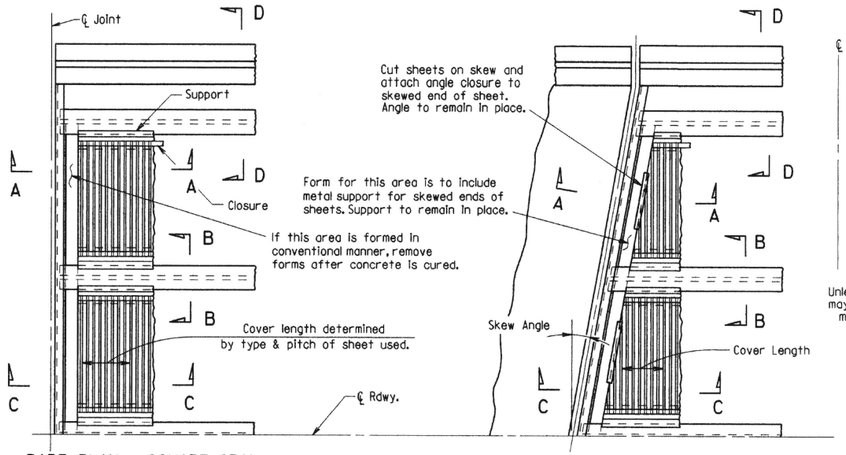
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 2/27/2014 FILENAME: b55002.dgn
CHECKED BY: BEF DATE: 2/27/2014 SCALE: AS SHOWN
DESIGNED BY: Std. DATE: ---

DRAWING NO. 55002

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.			
				JOB NO.				
				①	BRIDGE DECK FORMS		55005	

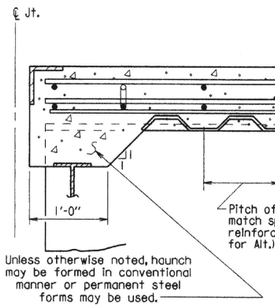


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

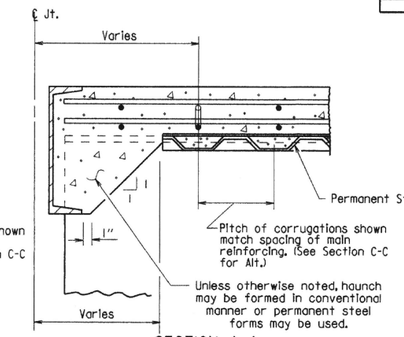
3/8" = 1'-0"



SECTION A-A

N.T.S.

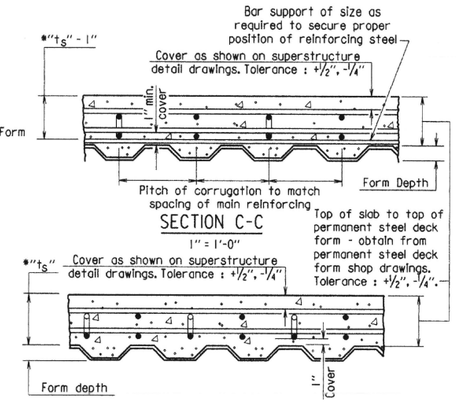
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



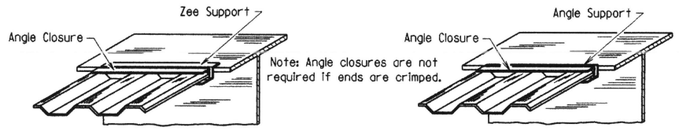
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

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



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

*t_s = slab thickness as shown on superstructure detail drawings.

GENERAL NOTES

Permanent steel deck forms may be used at the Contractor's option and shall be at no additional cost to the Department. Such use may result in changes to the dead load deflection of the girder. Any cost for adjustments due to a change in the dead load deflection will be borne by the Contractor. Payment for deck concrete and structural steel will not be increased due to use of permanent steel deck forms.

Permanent steel deck forms shall conform to Subsection 802.14(b). Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Engineer before work of forming the bridge deck is started.

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

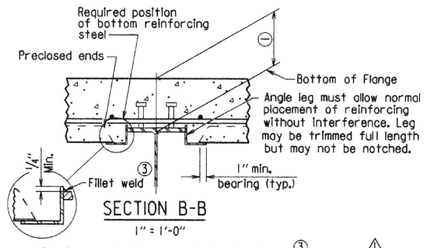
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

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

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

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

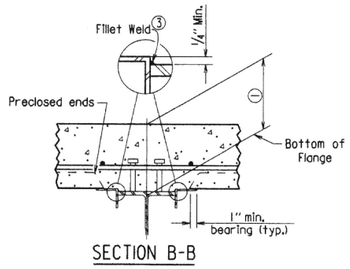
Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition), with applicable Supplemental Specifications and Special Provisions.



SECTION B-B

1" = 1'-0"

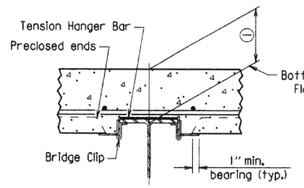
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)



SECTION B-B

1" = 1'-0"

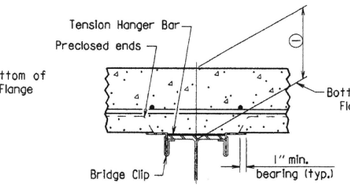
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

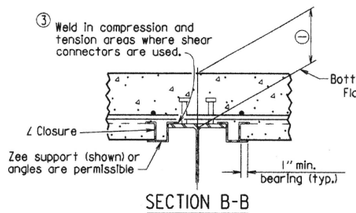
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

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

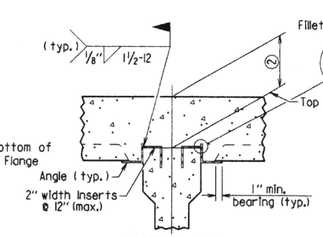


SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

③ Minimum weld: ⅛" x 1" @ 18". More weld may be required; maximum length per weld = 1½" (typ.)

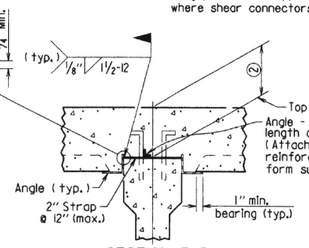


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)



SECTION B-B

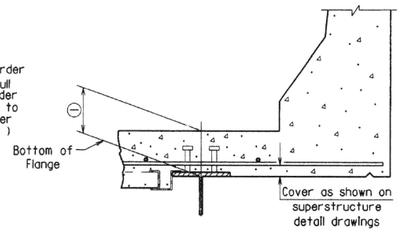
(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)

① Distance from top of slab to bottom of top flange as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top flange or the support angle leg contacts the bottom reinforcing steel; Maximum = t_s + 1¾" + flange thickness. See Section C-C for slab thickness tolerance between adjacent girder flanges.

② Distance from top of slab to top of girder as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top of girder or the support angle leg contacts the bottom reinforcing steel; Maximum - value shown on the superstructure detail drawings when removable forms are used. See Section C-C for slab thickness tolerance between adjacent girder flanges.



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

⚠ Revised weld dimension by KWY, Ck'd. by BEF, 3/24/16.

STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55005.dgn

CHECKED BY: BEF DATE: 2-27-2014 SCALE: NONE

DESIGNED BY: STD. DATE: —

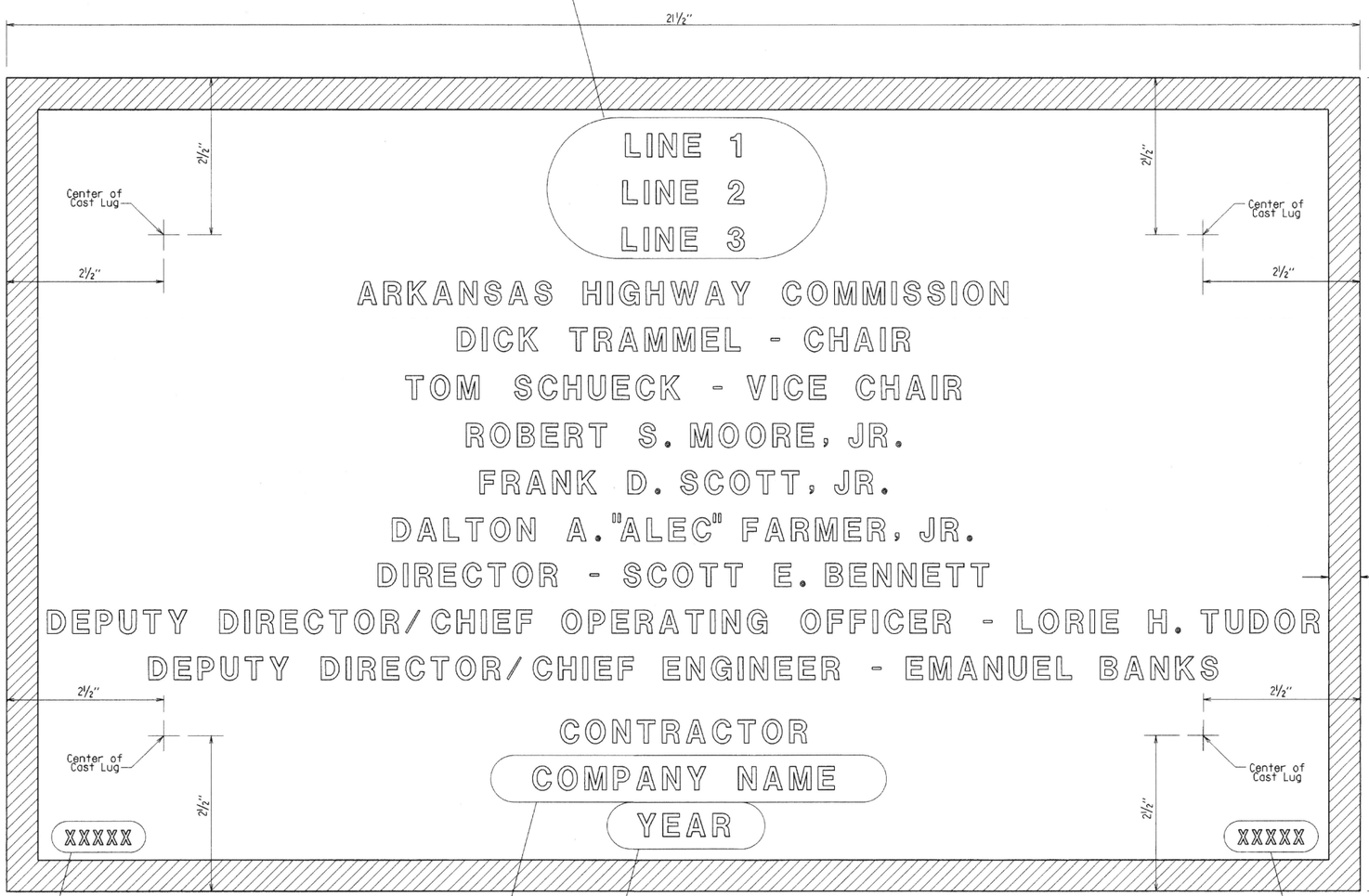
DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-1-14				6	ARK.			
1-14-15				JOB NO.				

(1) TYPE D NAME PLATE 55010

The name of the bridge as shown on the plans shall be placed on Lines 1 - 3 using 1/8" raised letters and numerals 3/8" high.

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



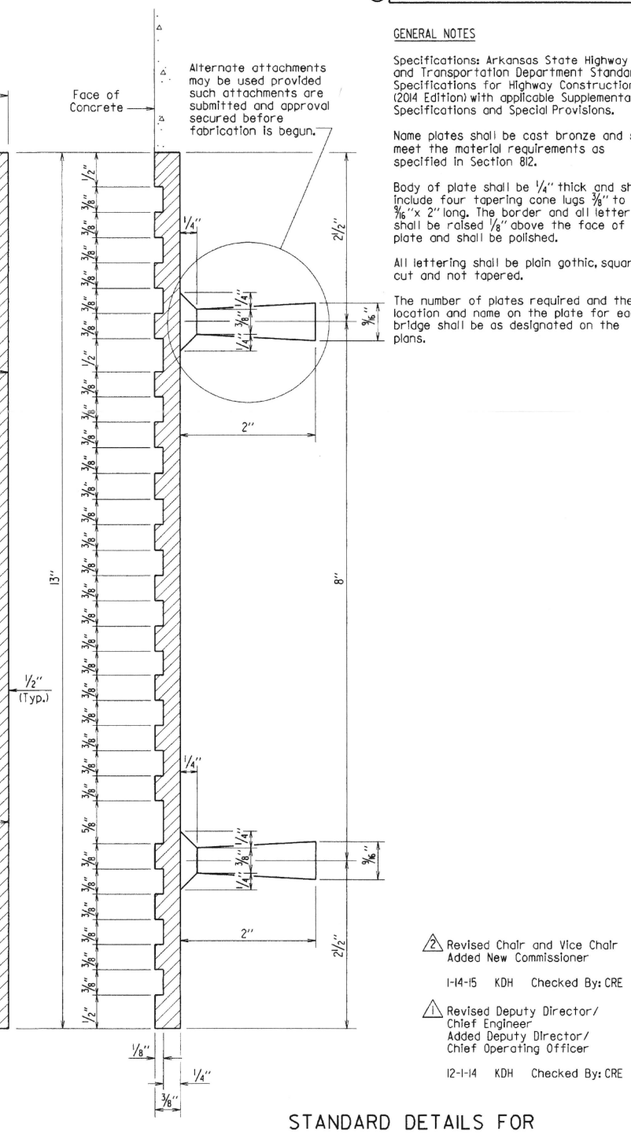
Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20
HL-93

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

Place the name of the company awarded the construction contract here using 1/8" raised letters and numerals 3/8" high. Example : ABCD CONSTRUCTION, INC.

Place the Bridge number here using 1/8" raised letters and numerals 1/4" high. Examples : A1234
05432

TYPICAL BRIDGE NAME PLATE



GENERAL NOTES

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2014 Edition) with applicable Supplemental Specifications and Special Provisions.

Name plates shall be cast bronze and shall meet the material requirements as specified in Section 812.

Body of plate shall be 1/4" thick and shall include four tapering cone lugs 3/8" to 5/8" x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered.

The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

(2) Revised Chair and Vice Chair Added New Commissioner
1-14-15 KDH Checked By: CRE

(1) Revised Deputy Director/ Chief Engineer Added Deputy Director/ Chief Operating Officer
12-1-14 KDH Checked By: CRE

STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55010.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: ——

DRAWING NO. 55010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.			
				JOB NO.				
				①		STEEL H-PILES		55020

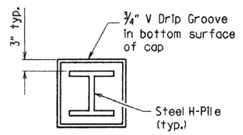
GENERAL NOTES FOR STEEL H-PILES:

Steel H-Piles shall conform to AASHTO M 270, Grade 36 or greater.

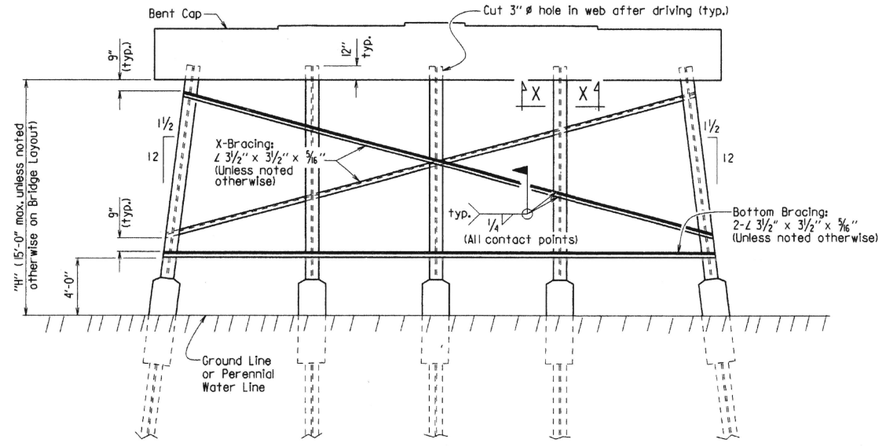
See Bridge Layout and Bent Details for pile size, estimated length, spacing, pile anchorage (if required) and for driving information.

Steel H-Piles that extend above the ground and are not protected by pile encasement shall be painted in accordance with Subsection 805.02.

Brackets, lugs, cap plates, pile tips, driving points, pile painting, splicing and welding shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



VIEW X-X



Notes:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment shall be made under Item 807.

Unless noted otherwise, omit X-Bracing when "H" is less than 8 feet.

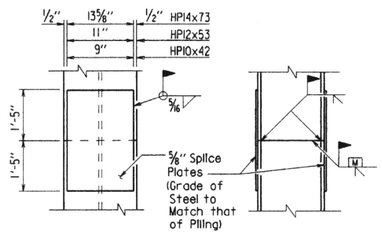
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

When required on the Bridge Layout sheet, pile encasements shall be constructed. See Notes and Details for H-Pile Encasements.

Omit all bracing (and V-groove in cap) when pile encasement is extended to bottom of bent cap.

TYPICAL DETAILS OF H-PILE TRESTLE INTERMEDIATE BENT

(Shown with Partial Height Encasement)



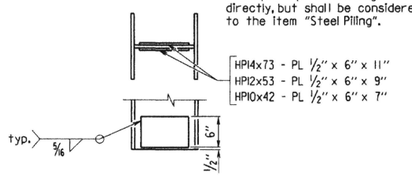
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

TYPICAL SPLICE DETAILS

⚠ H-pile splicers manufactured by Associated Pile and Fitting Corporation, LB Foster Piling, Skyline Steel or equivalent may be used in lieu of the "Typical Splice Details" shown. H-pile splicers shall match the same grade of steel specified for the piling and shall be welded to the pile with a 5/16" fillet weld around the entire perimeter of the splice. Flanges shall be welded with a complete penetration groove weld complying with AASHTO/AWS Joint Designation B-U4a or B-U4b. All welding shall conform to Subsection 807.26 of the AHTD Standard Specifications for Highway Construction (2014 Edition).

Notes:
Steel pile tip reinforcing not required when approved H-Pile driving points are used.

Steel pile tip reinforcing shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



REINFORCING DETAIL FOR STEEL H-PILE TIP

GENERAL NOTES FOR H-PILE ENCASEMENTS:

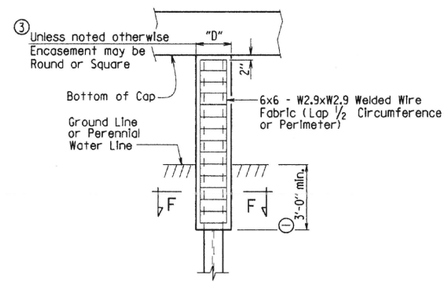
⚠ See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

All concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

Reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A.

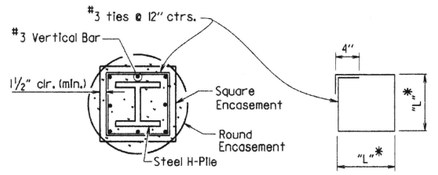
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

Concrete, welded wire fabric or reinforcing steel and galvanized pipe shall not be paid for directly, but shall be considered subsidiary to the item "Pile Encasement".



PILE ENCASEMENT DETAIL FOR STEEL H-PILES

④ (Shown with Encasement to Bottom of Cap)

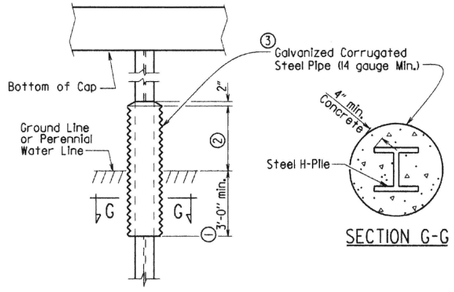


SECTION F-F

*Measured out-to-out of bar.

TABLE OF VARIABLES FOR PILE ENCASEMENT

Pile Size	"D" Square Encsmt.	"D" Round Encsmt.	"L"*
HP10x42	1'-7"	2'-0"	1'-4"
HP12x53	1'-8"	2'-2"	1'-5"
HP14x73	1'-11"	2'-6"	1'-8"



SECTION G-G

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Partial Height Encasement)

① Unless otherwise noted on Bridge Layout.

② 3'-0" minimum or as shown on Bridge Layout.

③ Encasement dimensions shall be sized to maintain a minimum concrete cover of 4" from the H-Pile. Reinforcement shall be sized to provide a minimum concrete cover of 1½" and a minimum clearance of 1¼" from the pile.

④ Alternate pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the Partial Height Encasement detail.

⚠ Added alternate method of splicing H-piles and revised pile encasement note.
3/24/2016 AMS

This document was originally issued and sealed by Charles R. Ellis, PE No. 9235, on March 24, 2016. This copy is not a signed and sealed document.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

BRIDGE ENGINEER

STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION

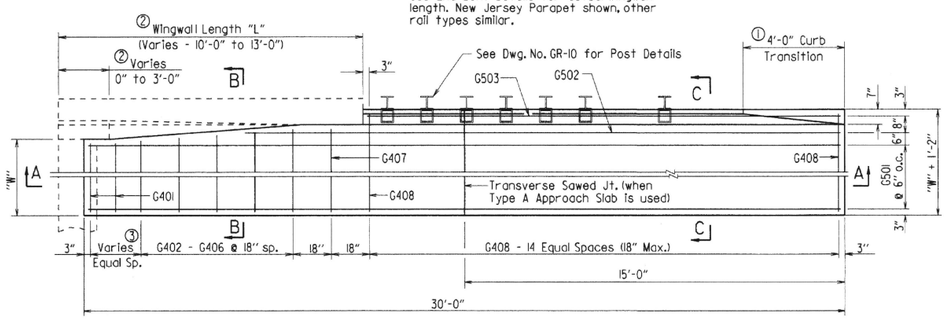
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55020.dgn
CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55020

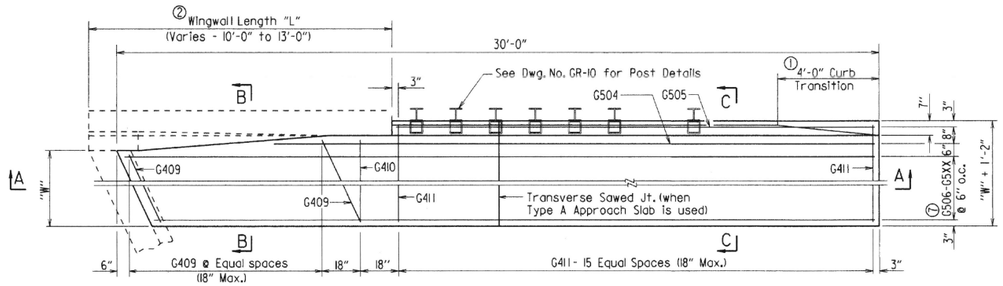
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
9/2/15				6	ARK.			
				JOB NO.				
				①	TYPE A GUTTERS		55030A	

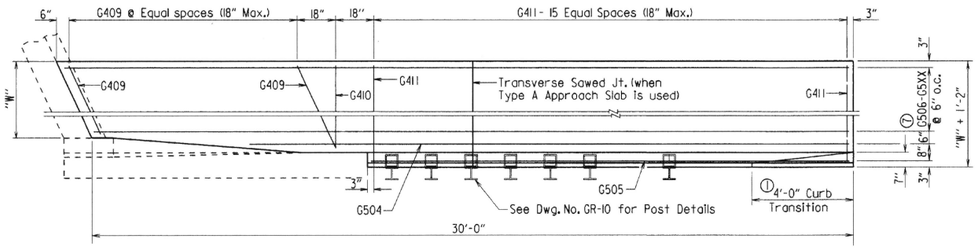
② See End Bent Details for actual wingwall length. New Jersey Parapet shown, other rail types similar.



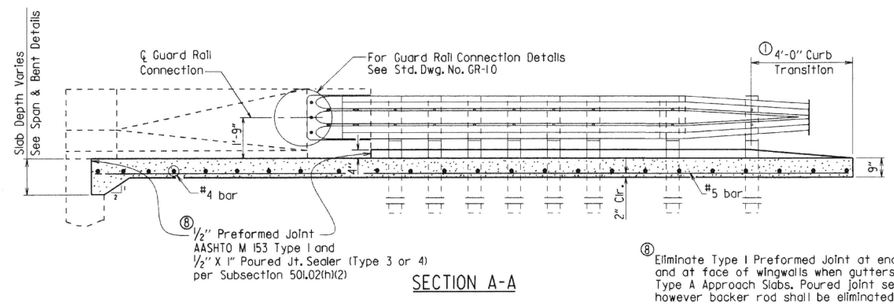
③ Number of G401 bars vary with wingwall length - See Bar List

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE





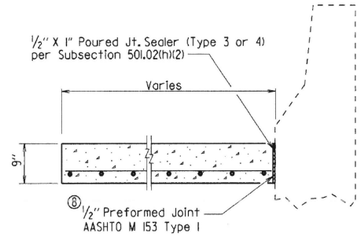
PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



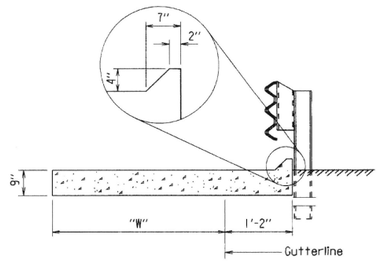
SECTION A-A

① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.



SECTION B-B
N.T.S.



SECTION C-C
N.T.S.

BAR LIST FOR ONE TYPE A GUTTER

	Mark	No. Req'd. for Width "W" ⚠ 2'-0"	3'-0"	4'-0"	6'-0"	8'-0"	Length
Square Bridge	G401	④	④	④	④	④	"W"- 4"
	G402-G406	1 each	1 each	1 each	1 each	1 each	"W"-3" to "W"+2"
	G407	1	1	1	1	1	"W"+3"
	G408	15	15	15	15	15	"W"+ 10"
	G501	4	6	8	12	16	29'-8"
	G502	1	1	1	1	1	(35'-5") - "L"
	G503	1	1	1	1	1	30'-8"-"L"
Skewed Bridge	G409	⑥	⑥	⑥	⑥	⑥	⑤
	G410	1	1	1	1	1	"W"+3"
	G411	16	16	16	16	16	"W"+ 10"
	G504	1	1	1	1	1	⑤
	G505	1	1	1	1	1	⑤
	G506 - G5XX ⑦	1 each	1 each	1 each	1 each	1 each	⑤

④ 0 for "L" = 10'
1 for "L" = 11'
2 for "L" = 12'
2 for "L" = 13'

⑦ G509 for "W" = 2' ⚠
G511 for "W" = 3'
G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'

⑤ Bar Lengths vary with Skew and Wingwall Length.

⑥ No. Req'd. varies with Skew and Wingwall length.

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

⚠ "W" Width (ft.)	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
2	210	2.55
3	285	3.40
4	360	4.25
6	515	5.90
8	665	7.55

Quantities are based on "L" = 10'-0".

Note:
All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.

⑧ Eliminate Type I Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type A Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.

⚠ Revised to add "W" = 2'-0"; By LJB
Checked By: KWY 9/2/15

GENERAL NOTES

All concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Approach Gutters will be measured and paid for in accordance with Section 504.

STANDARD DETAILS FOR TYPE A APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION

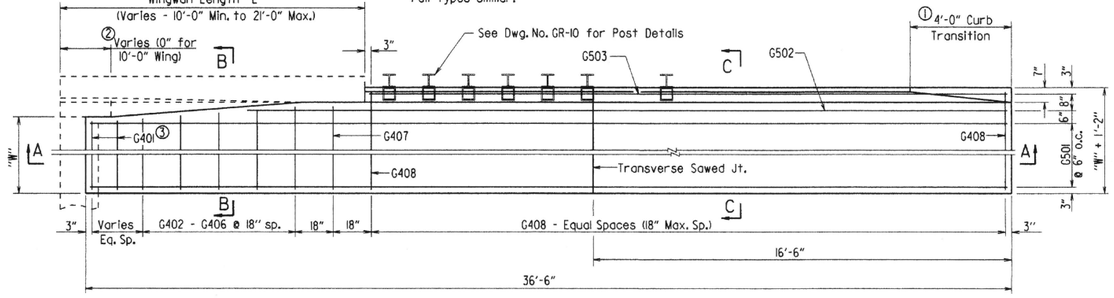
LITTLE ROCK, ARK.

DRAWN BY: A.W.S. DATE: 2/27/2014
CHECKED BY: K.W.Y. DATE: 2/27/2014
DESIGNED BY: STD. DATE:
FILENAME: b55030a.dgn
SCALE: 3/8" = 1'-0" or As Shown

DRAWING NO. 55030A

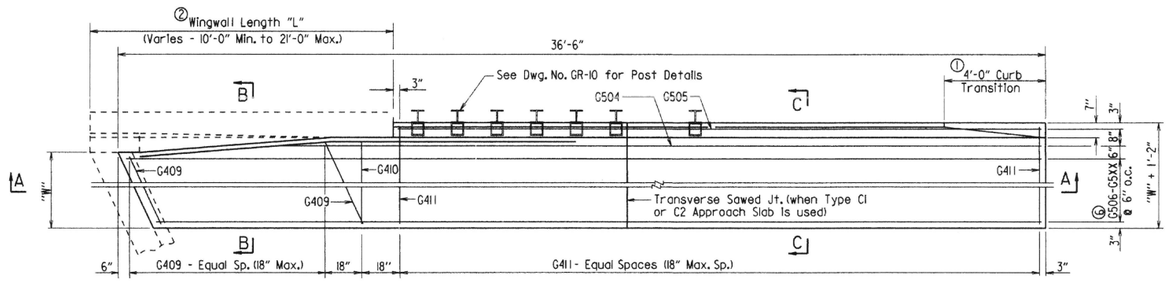
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				①	TYPE C GUTTERS		55030C	

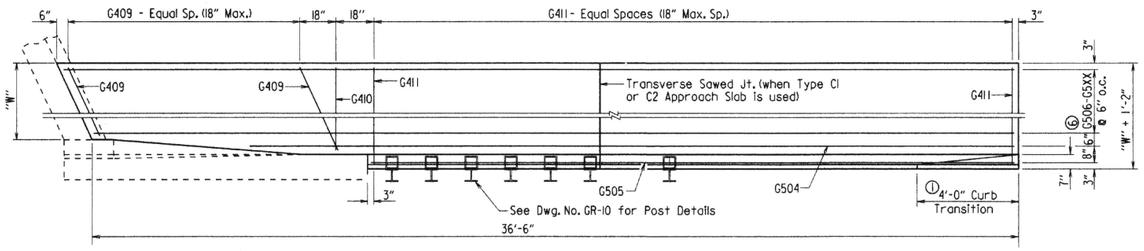
②See End Bent Details for actual wingwall length. New Jersey Parapet shown, other rail types similar.



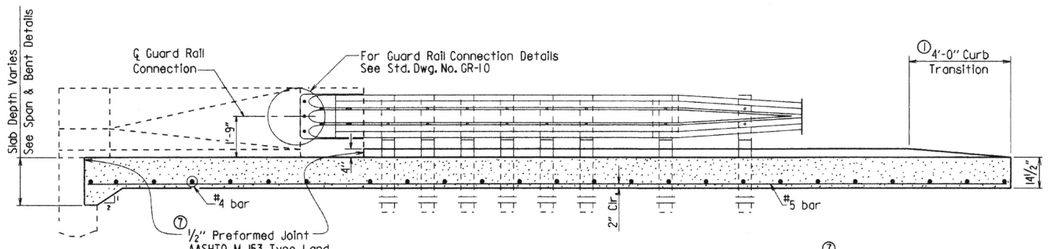
③Provide G401 bars @ 18" max. spacing. Number of G401 bars vary with wingwall length. No G401 bars required for 10'-0" wingwalls.

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE





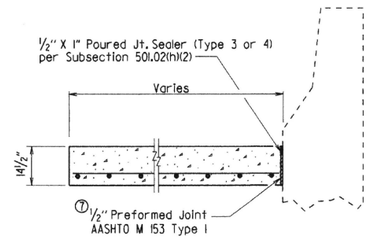
PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



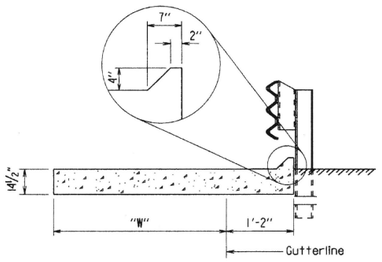
SECTION A-A

①Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.



SECTION B-B
N.T.S.



SECTION C-C
N.T.S.

Note:
All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.

⑦Eliminate Type I Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type C2 Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.

BAR LIST FOR ONE TYPE C GUTTER

	Mark	No. Req'd. for Width "W" 4'-0"	6'-0"	8'-0"	10'-0"	Length
Square Bridge	G401	④	④	④	④	"W" - 4"
	G402-G406	1 each	1 each	1 each	1 each	"W"-3" to "W"+2"
	G407	1	1	1	1	"W"+3"
	G408	④	④	④	④	"W"+ 10"
	G501	8	12	16	20	36'-2"
	G502	1	1	1	1	(41'-11") - "L"
	G503	1	1	1	1	(37'-2") - "L"
Skewed Bridge	G409	④	④	④	④	⑤
	G410	1	1	1	1	"W"+3"
	G411	④	④	④	④	"W"+ 10"
	G504	1	1	1	1	⑤
	G505	1	1	1	1	⑤
	G506 - G5XX ⑥	1 each	1 each	1 each	1 each	⑤

④No. Req'd. varies with Skew and Wingwall Length.

⑤Bar Lengths vary with Skew and Wingwall Length.

⑥G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'
G525 for "W" = 10'

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

"W" Width (ft.)	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
4	445	8.30
6	630	11.55
8	810	14.80
10	995	18.10

Quantities are based on "L" = 10'-0".

GENERAL NOTES

All concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31or M 322, Type A, with mill test reports.

Approach Gutters will be measured and paid for in accordance with Section 504.

STANDARD DETAILS FOR TYPE C APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55030c.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: ⅜" = 1'-0" or As Shown
DESIGNED BY: STD. DATE:

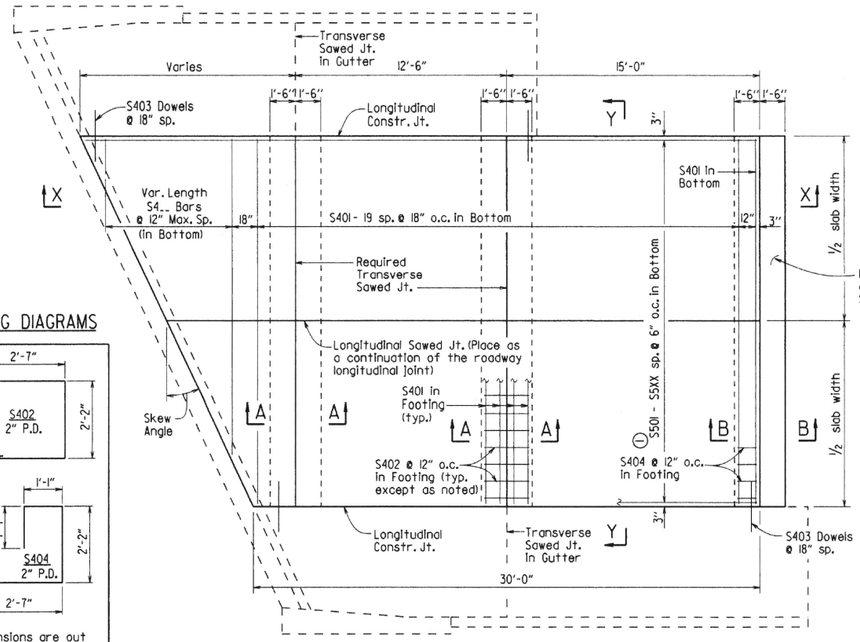
DRAWING NO. 55030C

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.				

TYPE A APPROACH SLAB 55040A

Notes:
The surface finish for Approach Slabs shall match that used on the bridge deck.

All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.

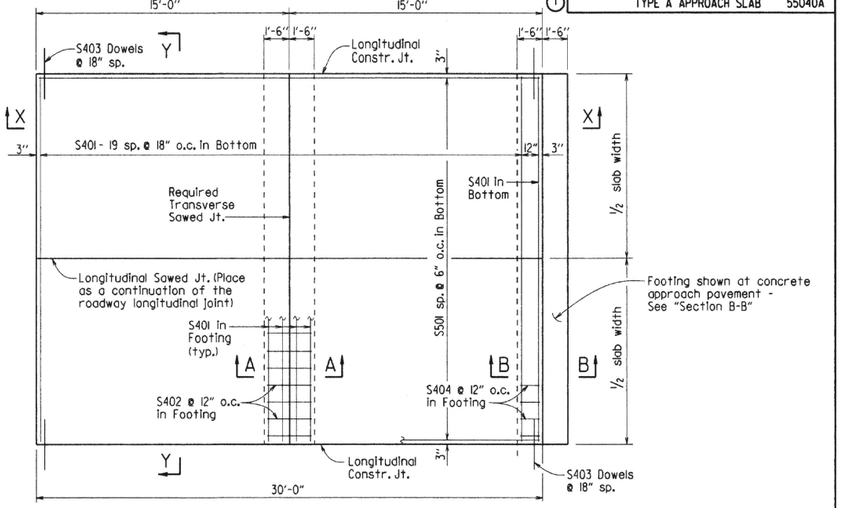


PLAN - SKEWED APPROACH SLAB WITH APPROACH GUTTERS
1/4" = 1'-0"

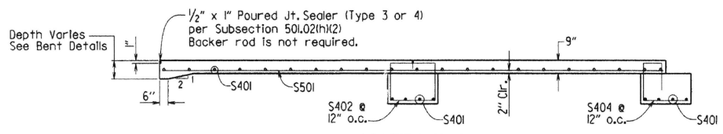
① S5XX = S540 for 20'-0" Width
= S544 for 22'-0" Width
= S548 for 24'-0" Width
= S572 for 36'-0" Width

BENDING DIAGRAMS

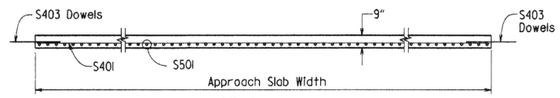
Dimensions are out to out of bar.



PLAN - SQUARE APPROACH SLAB
1/4" = 1'-0"



SECTION X-X
SQUARE APPROACH SLAB SHOWN
1/4" = 1'-0"



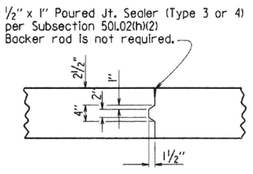
SECTION Y-Y
N.T.S.

BAR LIST

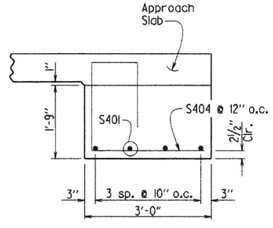
(Square & Skewed Approach Slabs)

	Mark	Square No. Req'd.	Square Length	Skewed No. Req'd.	Skewed Length
20'-0" Slab Width	S401	29	19'-8"	33	19'-8"
	S402	20	9'-10"	40	9'-10"
	S403	40	3'-0"	*	3'-0"
	S404	20	7'-2"	20	7'-2"
	S4..	—	—	1 Ea.	19.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	40	29'-8"	—	—
	S501 - S540	—	—	1 Ea.	29.6' + 0.25'(tan skew angle) to 29.6' + 19.75'(tan skew angle)
22'-0" Slab Width	S401	29	21'-8"	33	21'-8"
	S402	22	9'-10"	44	9'-10"
	S403	40	3'-0"	*	3'-0"
	S404	22	7'-2"	22	7'-2"
	S4..	—	—	1 Ea.	21.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	44	29'-8"	—	—
	S501 - S544	—	—	1 Ea.	29.6' + 0.25'(tan skew angle) to 29.6' + 21.75'(tan skew angle)
24'-0" Slab Width	S401	29	23'-8"	33	23'-8"
	S402	24	9'-10"	48	9'-10"
	S403	40	3'-0"	*	3'-0"
	S404	24	7'-2"	24	7'-2"
	S4..	—	—	1 Ea.	23.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	48	29'-8"	—	—
	S501 - S548	—	—	1 Ea.	29.6' + 0.25'(tan skew angle) to 29.6' + 23.75'(tan skew angle)
36'-0" Slab Width	S401	29	35'-8"	33	35'-8"
	S402	36	9'-10"	72	9'-10"
	S403	40	3'-0"	*	3'-0"
	S404	36	7'-2"	36	7'-2"
	S4..	—	—	1 Ea.	35.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	72	29'-8"	—	—
	S501 - S572	—	—	1 Ea.	29.6' + 0.25'(tan skew angle) to 29.6' + 35.75'(tan skew angle)

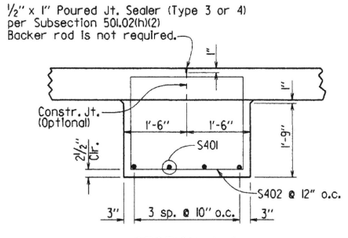
*Varies with skew angle



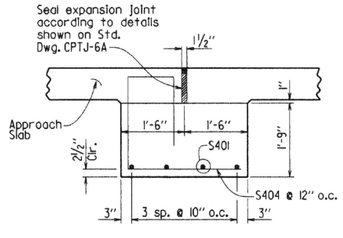
DETAILS OF LONGITUDINAL CONSTRUCTION JOINT
1" = 1'-0"



SECTION B-B
AT ASPHALT APPROACH PAVEMENT
N.T.S.



SECTION A-A
N.T.S.



SECTION B-B
AT CONCRETE APPROACH PAVEMENT
N.T.S.

TABLE OF QUANTITIES FOR ONE SQUARE APPROACH SLAB

(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
20'-0"	1925	24.85
22'-0"	2110	27.30
24'-0"	2300	29.90
36'-0"	3410	44.85

GENERAL NOTES

This drawing shall be used for Approach Slabs in Seismic Performance Zones 2, 3 & 4 and for the maximum skew angles shown below:

20'-0" Slab Width: Maximum Skew Angle = 45°
22'-0" Slab Width: Maximum Skew Angle = 45°
24'-0" Slab Width: Maximum Skew Angle = 40°
36'-0" Slab Width: Maximum Skew Angle = 30°

All concrete shall be Class S (AE) with a minimum 28 day compressive strength f'c = 4,000 psi and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Approach Slabs will be measured and paid for in accordance with Section 504.

STANDARD DETAILS FOR TYPE A APPROACH SLAB

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55040a.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: AS SHOWN
DESIGNED BY: STD. DATE:

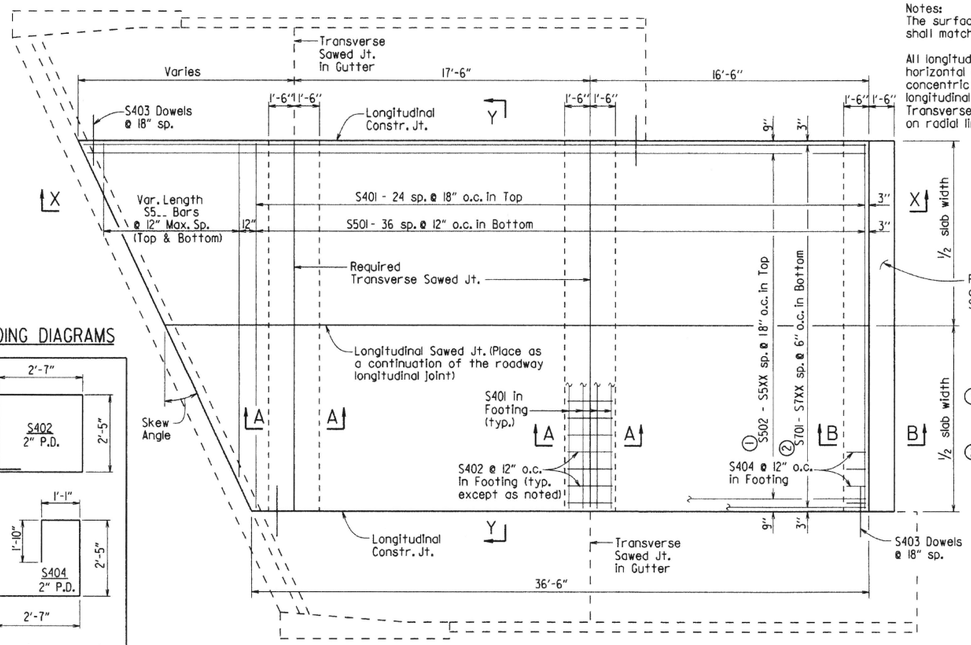
DRAWING NO. 55040A

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.				

TYPE C2 APPROACH SLAB 55040C2

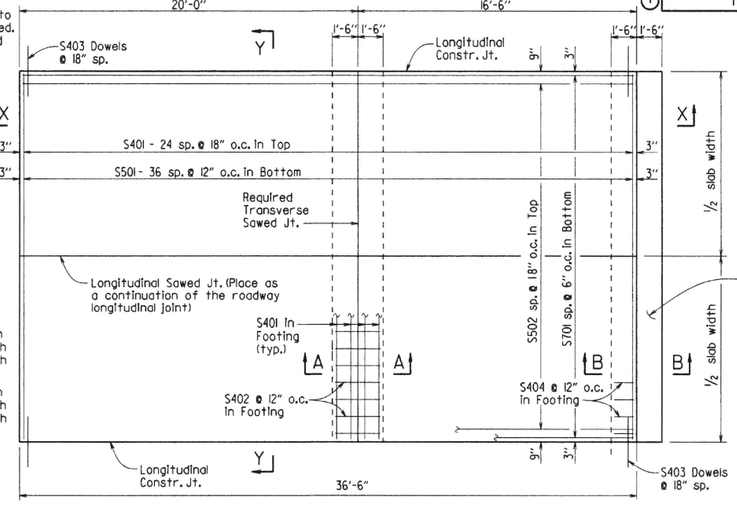
Notes:
The surface finish for Approach Slabs shall match that used on the bridge deck.

All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.



PLAN - SKEWED APPROACH SLAB WITH APPROACH GUTTERS

¼" = 1'-0"



PLAN - SQUARE APPROACH SLAB

¼" = 1'-0"

① S5XX = S511 for 15'-0" Width
= S517 for 24'-0" Width
= S525 for 36'-0" Width

② S7XX = S730 for 15'-0" Width
= S748 for 24'-0" Width
= S772 for 36'-0" Width

BENDING DIAGRAMS

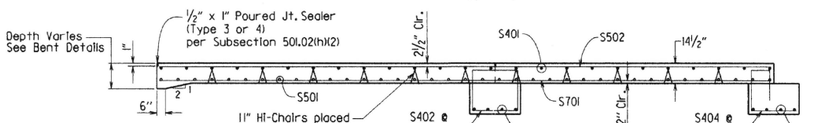
Dimensions are out to out of bar.

BAR LIST

(Square & Skewed Approach Slabs)

	Mark	Square No. Req'd.	Square Length	Skewed No. Req'd.	Skewed Length
15'-0" Slab Width	S401	33	14'-8"	37	14'-8"
	S402	15	10'-4"	30	10'-4"
	S403	50	3'-0"	*	3'-0"
	S404	15	7'-8"	15	7'-8"
	S501	37	14'-8"	37	14'-8"
	S502	10	36'-2"	—	—
	S502 - S511	—	—	1 Ea.	36.1' + 0.75'(tan skew angle) to 36.1' + 14.25'(tan skew angle)
	S5..	—	—	2 Ea.	14.7' - 0.75'/(tan skew angle) to 2'-0" Min.
	S701	30	36'-2"	—	—
	S701 - S730	—	—	1 Ea.	36.1' + 0.25'(tan skew angle) to 36.1' + 14.75'(tan skew angle)
24'-0" Slab Width	S401	33	23'-8"	37	23'-8"
	S402	24	10'-4"	48	10'-4"
	S403	50	3'-0"	*	3'-0"
	S404	24	7'-8"	24	7'-8"
	S501	37	23'-8"	37	23'-8"
	S502	16	36'-2"	—	—
	S502 - S517	—	—	1 Ea.	36.1' + 0.75'(tan skew angle) to 36.1' + 23.25'(tan skew angle)
	S5..	—	—	2 Ea.	23.7' - 0.75'/(tan skew angle) to 2'-0" Min.
	S701	48	36'-2"	—	—
	S701 - S748	—	—	1 Ea.	36.1' + 0.25'(tan skew angle) to 36.1' + 23.75'(tan skew angle)
36'-0" Slab Width	S401	33	35'-8"	37	35'-8"
	S402	36	10'-4"	72	10'-4"
	S403	50	3'-0"	*	3'-0"
	S404	36	7'-8"	36	7'-8"
	S501	37	35'-8"	37	35'-8"
	S502	24	36'-2"	—	—
	S502 - S525	—	—	1 Ea.	36.1' + 0.75'(tan skew angle) to 36.1' + 35.25'(tan skew angle)
	S5..	—	—	2 Ea.	35.7' - 0.75'/(tan skew angle) to 2'-0" Min.
	S701	72	36'-2"	—	—
	S701 - S772	—	—	1 Ea.	36.1' + 0.25'(tan skew angle) to 36.1' + 35.75'(tan skew angle)

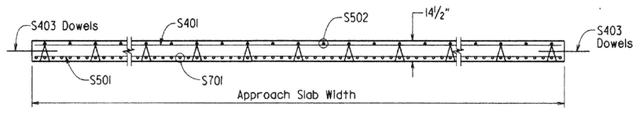
*Varies with skew angle



SECTION X-X

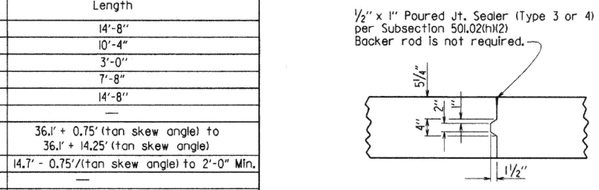
SQUARE APPROACH SLAB SHOWN

¼" = 1'-0"



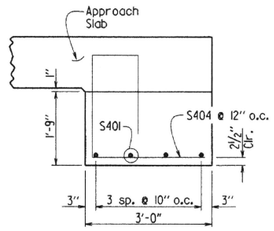
SECTION Y-Y

N.T.S.



DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

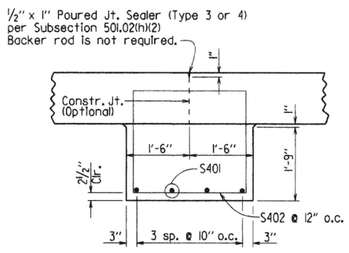
¾" = 1'-0"



SECTION B-B

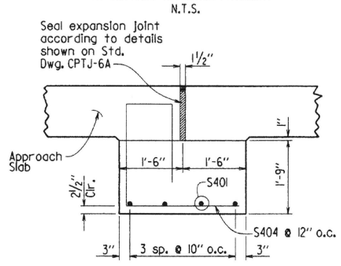
AT ASPHALT APPROACH PAVEMENT

N.T.S.



SECTION A-A

N.T.S.



SECTION B-B

AT CONCRETE APPROACH PAVEMENT

N.T.S.

TABLE OF QUANTITIES FOR ONE SQUARE APPROACH SLAB

(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
15'-0"	3765	30.75
24'-0"	5980	49.15
36'-0"	8925	73.75

GENERAL NOTES

This drawing shall be used for Approach Slabs in Seismic Performance Zones 2, 3 & 4 and for the maximum skew angles shown below:

15'-0" Slab Width: Maximum Skew Angle = 50°
24'-0" Slab Width: Maximum Skew Angle = 40°
36'-0" Slab Width: Maximum Skew Angle = 30°

All concrete shall be Class S (AE) with a minimum 28 day compressive strength f'c = 4,000 psi and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Approach Slabs will be measured and paid for in accordance with Section 504.

STANDARD DETAILS FOR TYPE C2 APPROACH SLAB

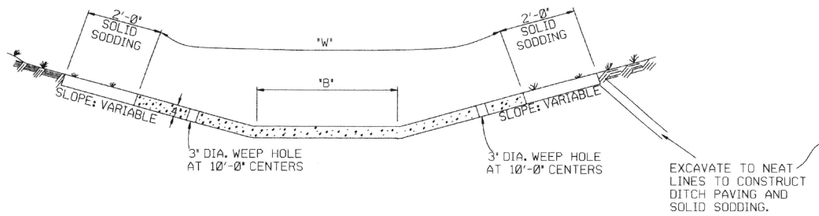
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55040c2.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: AS SHOWN
DESIGNED BY: STD. DATE:

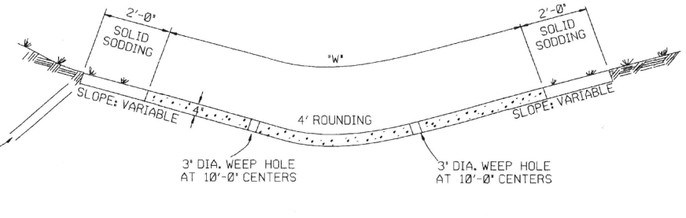
DRAWING NO. 55040C2

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



TYPE A

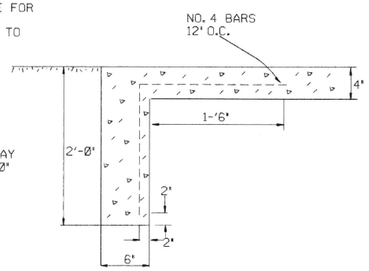
REFER TO TABULATION OF QUANTITIES
FOR "W" DIMENSIONS



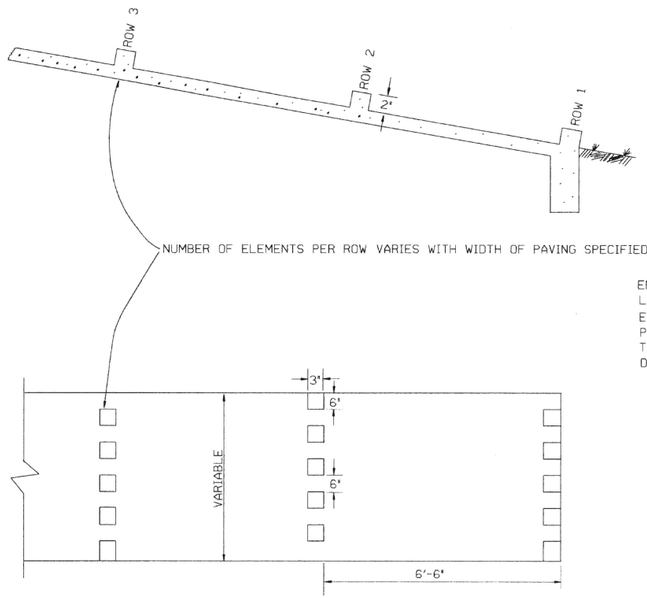
TYPE B

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

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



TOE WALL DETAIL FOR
CONCRETE DITCH PAVING



ENERGY DISSIPATORS
(NO SCALE)

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

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

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

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

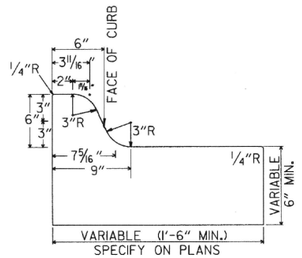
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	596-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

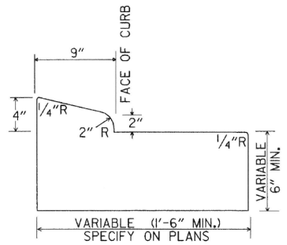
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

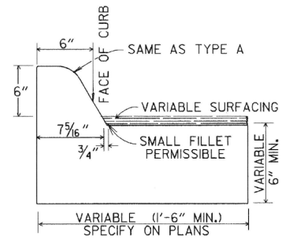
STANDARD DRAWING CDP-1



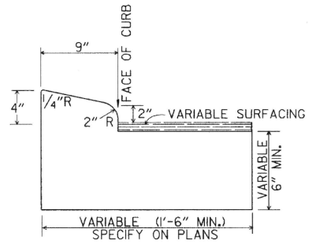
TYPE A



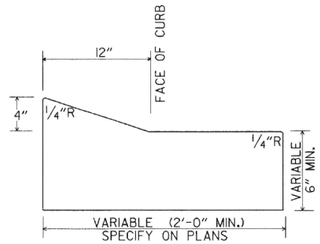
TYPE B-I



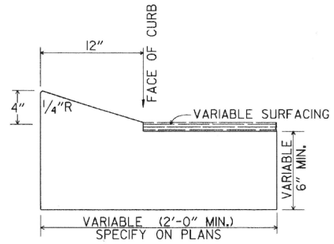
TYPE C



TYPE B-2

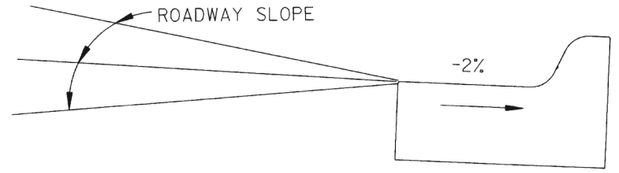


TYPE E-1



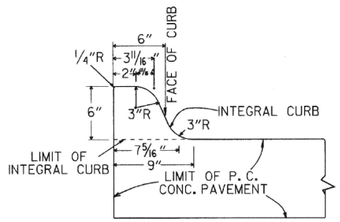
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

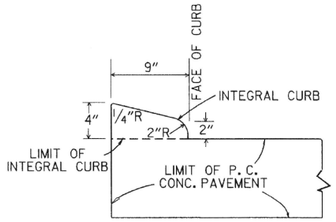


DETAIL OF GUTTER SLOPE

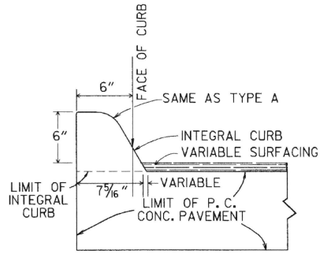
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

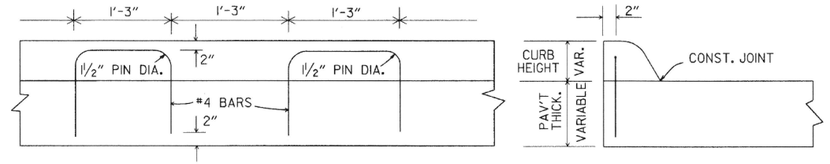


TYPE B



TYPE C

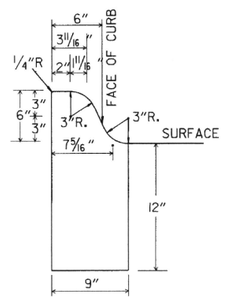
INTEGRAL CURB



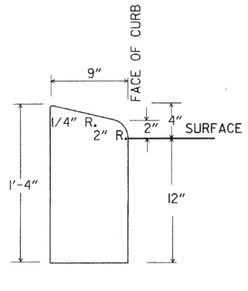
LONGITUDINAL SECTION

ELEVATION

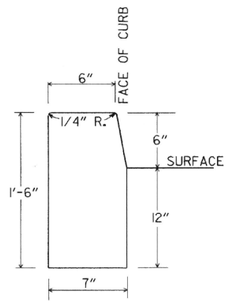
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



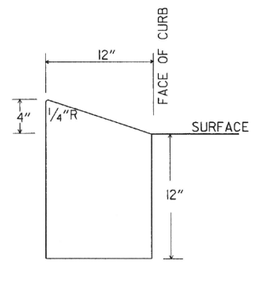
TYPE A



TYPE B

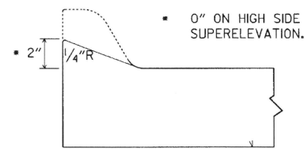


TYPE D



TYPE E

CONCRETE CURB



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

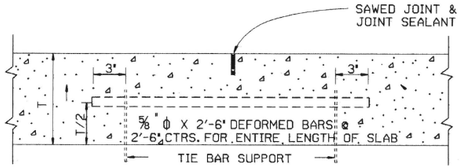
DETAILS OF MODIFIED CURB

DATE	REVISION	DATE FILMED
11-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
11-10-05	ADDED DETAILS OF TYPE E CURBS	
11-16-01	REVISED CONCRETE CURB TYPE B	
11-18-98	REVISED MODIFIED CURB	
6-2-94	ADDED NOTE TO SPECIAL MODIFIED CURB	
8-5-93	CORRECTED GUTTER SLOPE	8-5-93
10-1-92	ADDED DETAILS OF GUTTER SLOPE	10-1-92
5-24-90	ADDED DETAILS OF MODIFIED CURB	5-24-90
11-30-89	VARIBLE DEPTH TYPE A & B I	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	512-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

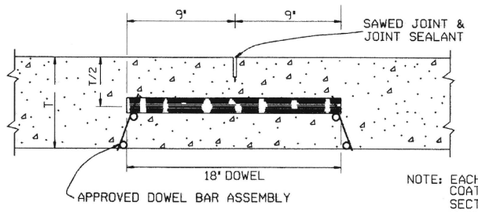
STANDARD DRAWING CG-1



LONGITUDINAL JOINT

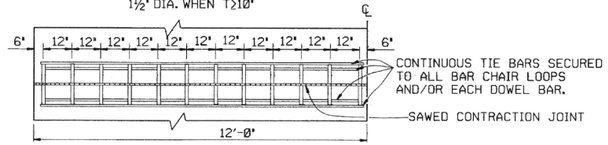
NOTE: THE TIE BAR SUPPORT SHOWN ABOVE MAY BE ELIMINATED IF OTHER APPROVED METHODS FOR PLACING AND SUPPORTING THE TIE BARS ARE PROVIDED.

TIE BARS SHALL BE 15' FROM TRANSVERSE JOINTS.



NOTE: EACH DOWEL TO BE COATED ACCORDING TO SECTION 502 OF THE STANDARD SPECIFICATIONS.

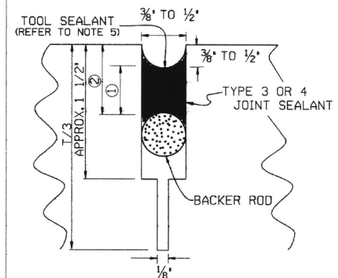
ROUND STEEL BAR DOWEL
1¼" DIA. WHEN T<10"
1½" DIA. WHEN T≥10"



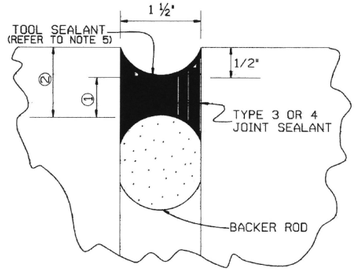
ONE-HALF 24' PAVEMENT
12 DOWELS
PLAN

NOTE: FOR 20' PAVEMENT USE 20 DOWELS @ 12" CTRS. WITH 6" SPACING FROM C.L. AND EDGE OF SLAB TO FIRST BAR. FOR 15' PAVEMENT USE 15 DOWELS @ 12" CTRS. WITH 6" SPACING FROM C.L. AND EDGE OF SLAB TO FIRST BAR. FOR 26' PAVEMENT USE 26 DOWELS @ 12" CTRS. WITH 6" SPACING FROM C.L. AND EDGE OF SLAB TO FIRST BAR. FOR PAVEMENT WIDTHS OTHER THAN THOSE SHOWN ABOVE, USE DOWELS AT 12" CTRS. WITH 6" MAX. SPACING FROM C.L. TO FIRST BAR. DISTANCE FROM EDGE OF SLAB TO FIRST BAR SHALL BE ADJUSTED TO MAINTAIN 12" DOWEL BAR SPACING

CONTRACTION JOINT DETAILS



DETAIL OF SAWED CONTRACTION JOINT



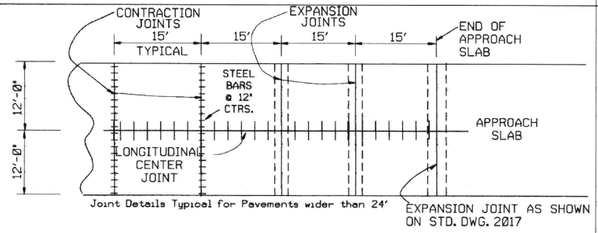
DETAIL OF EXPANSION JOINT

JOINT CONFIGURATION FOR TYPE 3 OR 4 JOINT SEALANT

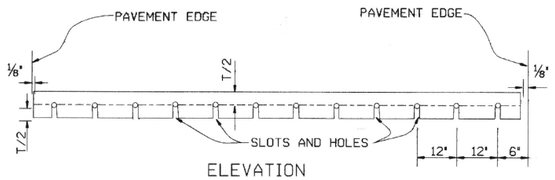
JOINT WIDTH	SEALANT THICKNESS ①	BACKER ROD DIAMETER	BACKER ROD PLACEMENT DEPTH ②
INCHES			
¼	¼	⅜	½
⅜	¼	½	½
½	¼	½	½
½	½	⅝	½
⅝	½	¾	⅝
¾	¾	⅞	⅞
1	¾	⅞	⅞
1 ½	¾	2	1 ¼

JOINT CONFIGURATION FOR TYPE 5 JOINT SEALANT

JOINT WIDTH	SEALANT THICKNESS ①	BACKER ROD DIAMETER	BACKER ROD PLACEMENT DEPTH ②
INCHES			
¼	½	⅜	¾
⅜	¾	½	1

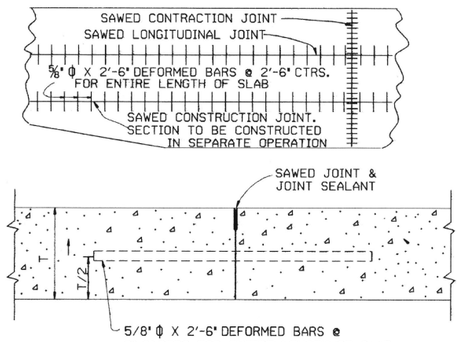


PLAN SHOWING EXPANSION JOINTS AT BRIDGE APPROACH SLABS



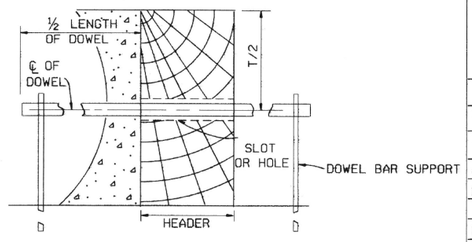
ELEVATION

NOTE: ALL DOWEL BARS SHALL CONFORM TO THE DETAILS FOR CONTRACTION JOINTS.



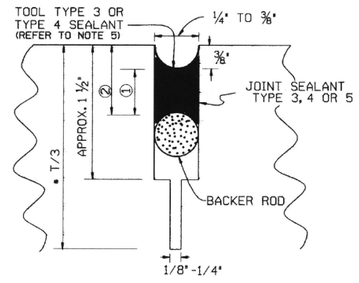
NOTE: TIE BARS SHALL BE 15' FROM TRANSVERSE JOINTS.

LONGITUDINAL CONSTRUCTION JOINT



SECTION

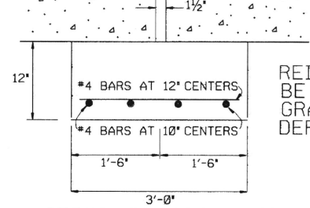
TRANSVERSE CONSTRUCTION JOINT



*NOTE: T/3 SAW CUT NOT REQUIRED FOR LONGITUDINAL CONSTRUCTION JOINT.

DETAIL OF SAWED LONGITUDINAL JOINT AND LONGITUDINAL CONSTRUCTION JOINT

DATE	REVISION	DATE FILMED
5-25-06	ADDED GENERAL NOTE 7	
10-9-03	REMOVED TIE BAR COATING & REVISED GENERAL NOTES	
11-16-01	ADDED TOOL SEALANT AND NOTE 5; REVISED NOTE 3	
4-26-96	REVISED CONTRACTION JOINT NOTE	
11- 3-94	ADDED NOTE RE: REINF. BARS	
4- 1-93	REVISED DOWEL BARS & GEN. NOTES	4- 1-93
10- 1-92	REVISED DOWEL SPACING	10- 1-92
8- 15-91	ADDED SPAC FOR CONTR JTS & DEL KEYWAY	
05-24-90	REVISED TIE BAR, DOWEL & JOINT SIZE	
01-25-90	ADDED EXPANSION JOINT	01-25-90
11-30-89	CHANGED T/4+1 TO T/3+1	11-30-89
03-23-89	ALTERED SAWED JOINT & ADDED NOTE	512-03-23-89
07-15-88	REVISED AND REDRAWN	632-07-15-88



REINFORCING SHALL BE GRADE 40 OR GRADE 60 DEFORMED BARS.

DETAIL OF JOINT SUPPORT FOR EXPANSION JOINTS

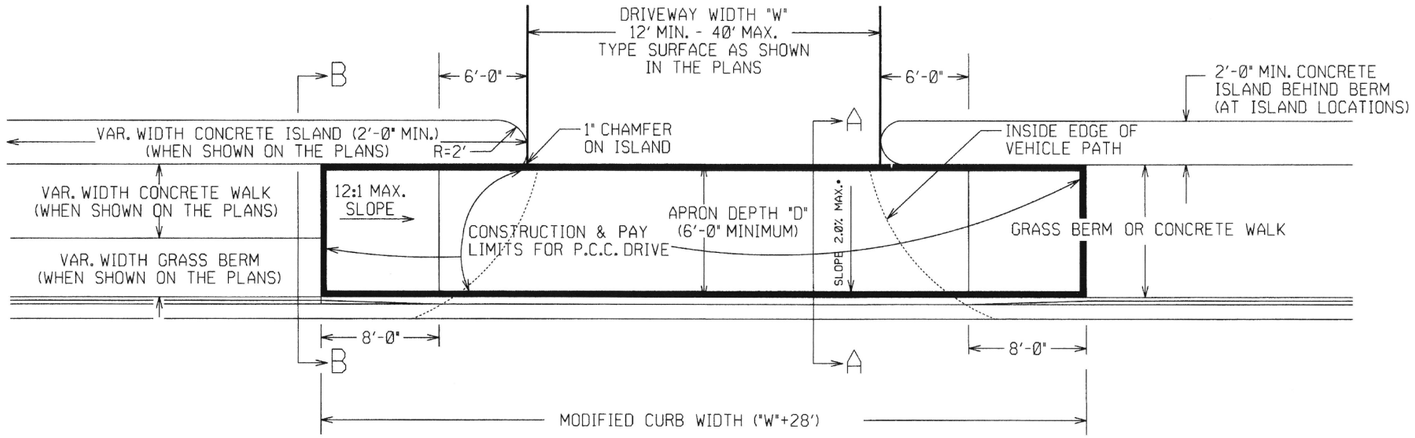
GENERAL NOTES

1. "T" DENOTES THICKNESS OF SLAB.
2. DOWEL BARS SHALL BE PLACED IN ACCORDANCE WITH THE DIMENSIONS SHOWN. A TOLERANCE OF PLUS OR MINUS ONE INCH WILL BE ALLOWED FOR THE VERTICAL AND LATERAL PLACEMENT AND A TOLERANCE OF PLUS OR MINUS ¼" WILL BE ALLOWED FOR THE TILT AND SKEW. DOWEL BARS SHALL BE FIELD COATED FOR A MINIMUM DISTANCE OF 2" GREATER THAN HALF THE LENGTH OF THE BAR WITH AN APPROVED GREASE AS A BOND BREAKER JUST PRIOR TO PLACEMENT OF CONCRETE.
3. THE EXPANSION JOINT SUPPORT MAY BE CONSTRUCTED WITH CLASS "A", "S" OR PAVING CONCRETE. PAYMENT FOR THE JOINT SUPPORT SHALL BE FOR THE CONTRACT UNIT PRICE BID FOR THE CLASS OF CONCRETE SPECIFIED IN THE PLANS. PAYMENT FOR ALL OTHER WORK AND MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE JOINT SUPPORT SHALL BE INCLUDED IN THE PRICE BID FOR THE ABOVE ITEMS.
4. CONTRACTION JOINTS SHALL BE CONSTRUCTED ON 15' CENTERS.
5. TOOLING NOT REQUIRED FOR SELF-LEVELING SILICONE.
6. UNLESS OTHERWISE SPECIFIED IN THE PLANS, CONCRETE SHOULDERS SHALL BE CONSTRUCTED ACCORDING TO THE DETAILS SHOWN HEREON. CONTRACTION JOINTS SHALL MATCH CONTRACTION JOINTS IN THE LANES.
7. TIE WIRES IN DOWEL BAR ASSEMBLIES SHALL NOT BE CUT PRIOR TO PLACEMENT OF PAVING CONCRETE.

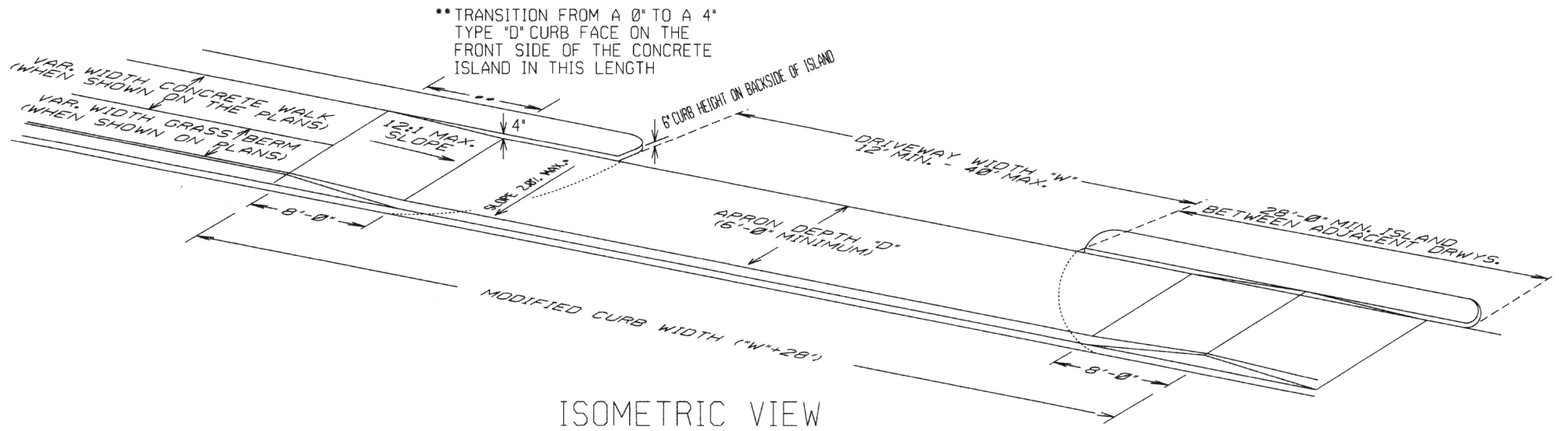
ARKANSAS STATE HIGHWAY COMMISSION

TRANSVERSE & LONGITUDINAL JOINTS FOR CONCRETE PAVEMENT (NON-REINFORCED)

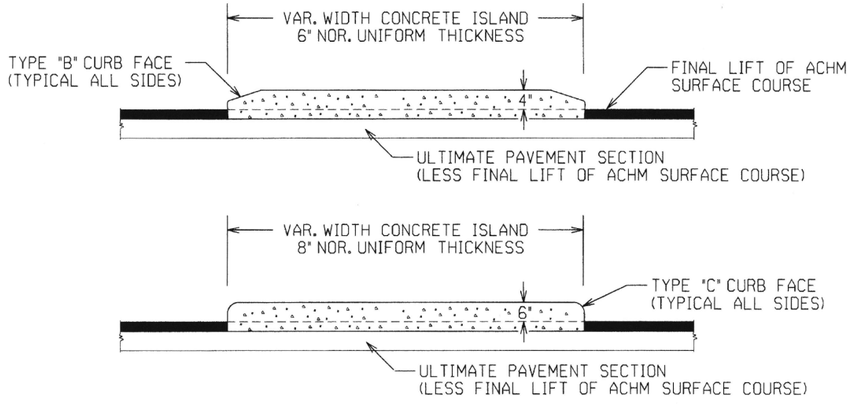
STANDARD DRAWING CPTJ - 6A



PLAN VIEW

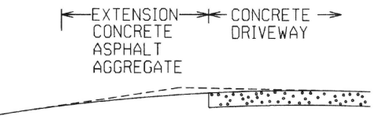


ISOMETRIC VIEW



CURBED ISLANDS FOR CHANNELIZATION

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



EXTENSION TYPICAL SECTIONS

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

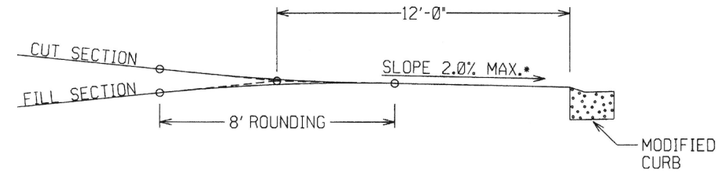
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

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

4: AGGREGATE - 6" AGGREGATE BASE COURSE

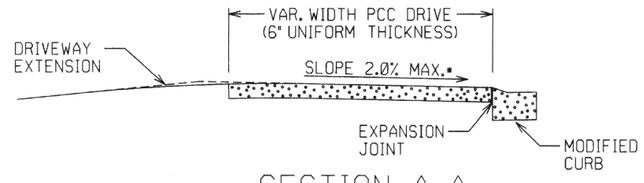
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

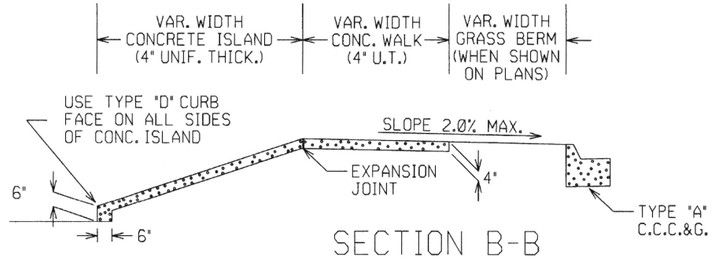


DRIVEWAY VERTICAL ALIGNMENT DETAILS

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



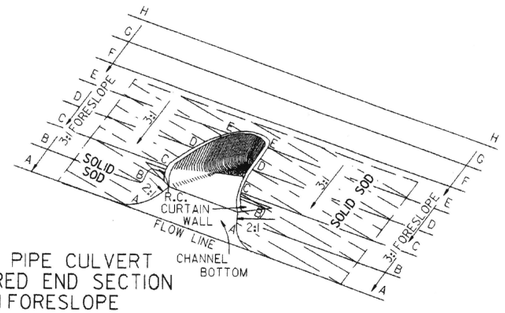
SECTION A-A



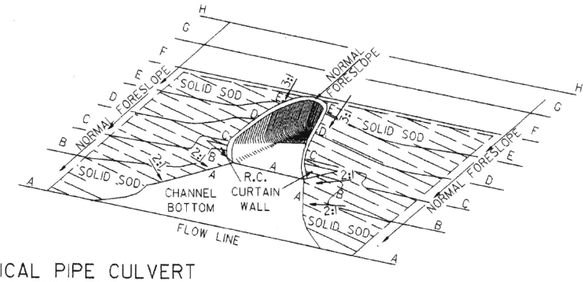
SECTION B-B
CURBED ISLAND BEHIND WALK

DATE REV	DATE FILMED	DESCRIPTION
2-27-14		REVISED PLAN & ISOMETRIC VIEW
11-29-07		ADDED CHANNELIZATION ISLAND WITH TYPE C CURB FACE & REVISED DRIVEWAY SLOPE NOTE & VERTICAL ALIGNMENT DETAIL
11-10-05		REV. APRON SLOPE & DEPTH OF AGG. BASE.
8-22-02		ADDED ISLAND DETAILS & NOTES
3-30-00		REV. MOD. CURB WIDTH & TRANS. NOTE
11-19-98		REVISED NOTES
11-18-98		REDRAWN AND REISSUED

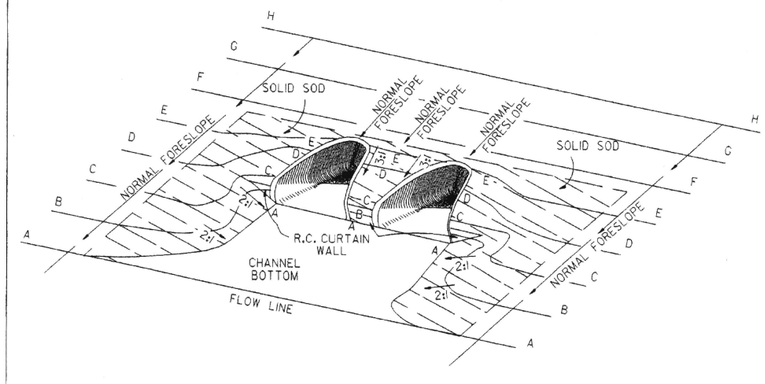
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1



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



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1½"	7'-3"	15'-6"	12'-0"	0.82	77.1	1.10	100.7
48"	2'-5"	7'-10"	17'-0"	13'-0"	0.98	94.9	1.27	120.4
54"	2'-9½"	8'-5"	18'-6"	14'-0"	1.16	115.8	1.47	143.7
60"	3'-4"	9'-0"	20'-6"	15'-6"	1.47	149.7	1.84	180.3
72"	4'-5"	10'-2"	25'-6"	18'-6"	2.31	232.6	2.73	271.0

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

REINFORCING STEEL SCHEDULE

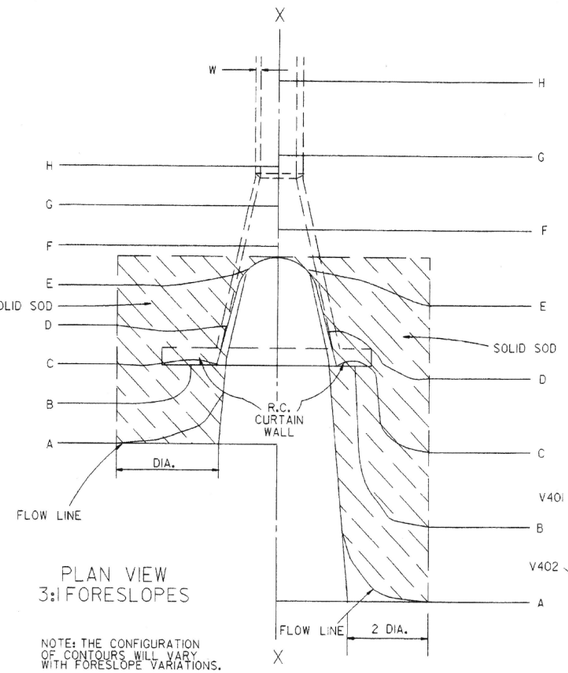
PIPE DIA.	SINGLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	V401 L	V401 NO.	V402 L	V402 NO.	DOUBLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	H403 L	H403 NO.	V401 L	V401 NO.	V402 L	V402 NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8½"	12	8"	18
30"	10'-8"	2	2'-4½"	4	1'-11½"	10	8"	12	17'-8"	2	2'-4½"	4	8"	2	1'-11½"	14	8"	22
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14	8"	28
42"	15'-2"	2	3'-9½"	8	2'-9½"	16	8"	15	23'-8"	2	3'-9½"	8	8"	4	2'-9½"	18	8"	30
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20	8"	32
54"	18'-2"	2	4'-8½"	12	3'-5½"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5½"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

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

SOLID SODDING

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

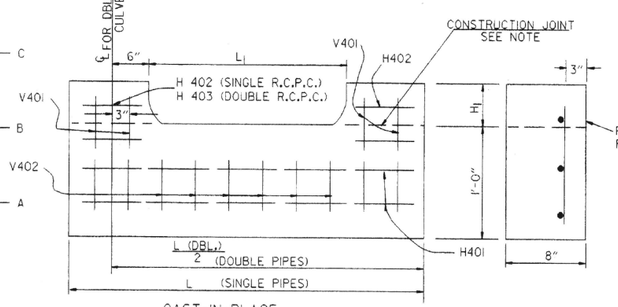
NOTE: QUANTITIES SHOWN ABOVE ARE FOR ONE (1) END OF F.E.S.



PLAN VIEW
3:1 FORESLOPES

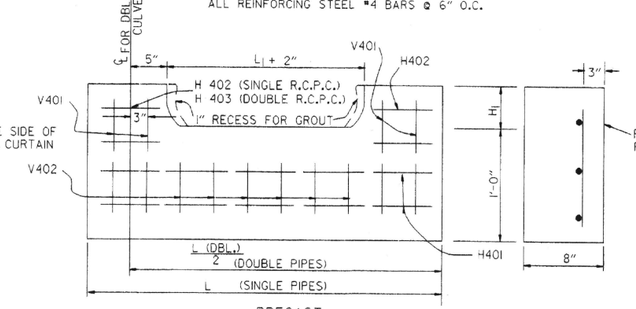
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES



CAST-IN-PLACE

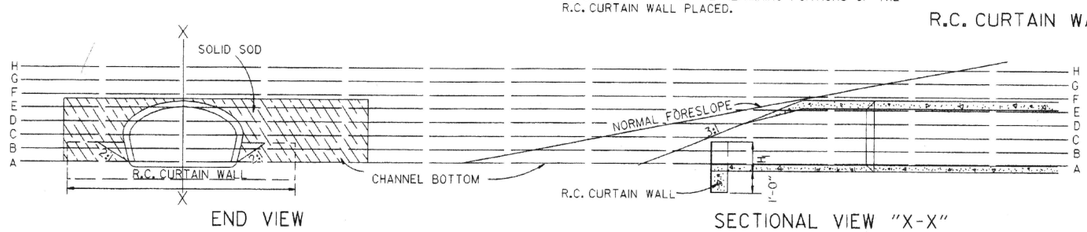
NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.



PRECAST

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

R.C. CURTAIN WALL DETAILS



END VIEW

SECTIONAL VIEW "X-X"

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 × 3 W10 × W10 MAY BE USED IN LIEU OF REINFORCING BARS.

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

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

STANDARD DRAWING FES-1

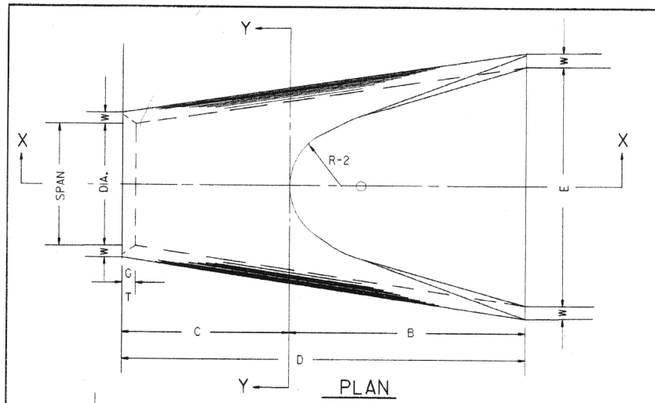
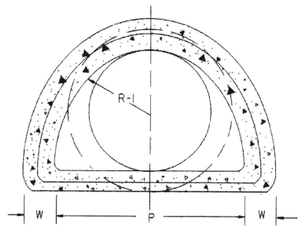
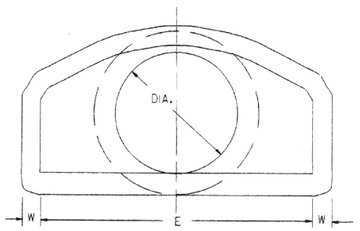


TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	3:1	25"	33 3/16"	16 13/16"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7 3/4"	6'-3/4"	5'-0"	3:1	31"	37"	18¼"	15"	3¼"	1940	1'-4⅝"
36"	4"	1'-3"	5'-3"	2'-10 3/4"	8'-1/4"	6'-0"	3:1	37"	47 1/16"	24 5/16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅜"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36 11/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 13/16"	38 5/16"	24"	5"	13250	4'-6"



SECTION Y-Y



END VIEW

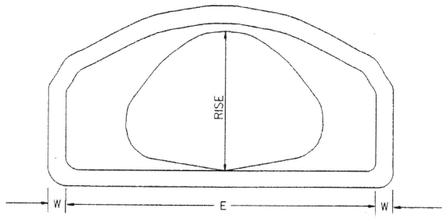
NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

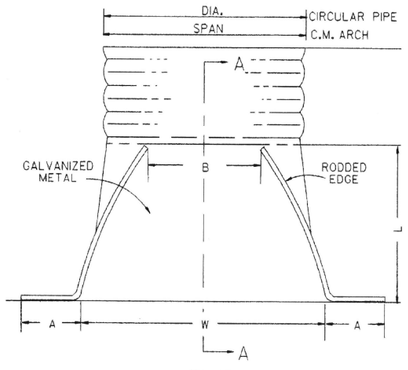
ARCH PIPE

EQUIV. DIA.	* SPAN AASHTO M 206	* SPAN AHD NOMINAL	* RISE AASHTO M 206	* RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	C-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 13/16"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 13/16"	20"	3"	2½:1
36	43¾	44	26⅞	27	4"	10½"	4'-0"	2'-1½"	6'-1½"	6'-6"	54 5/16"	22"	3½"	2½:1
42	51⅛	51	31 5/16	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½:1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70 5/16"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/16"	24"	4¾"	2½:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 13/16"	24"	5"	2½:1

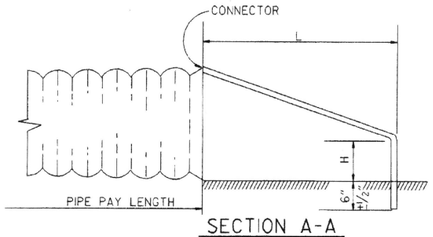
* THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.



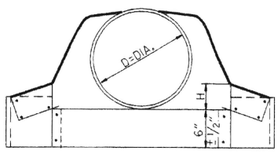
END VIEW
CONCRETE ARCH PIPE



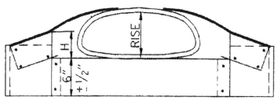
PLAN



SECTION A-A



CIRCULAR PIPE



C.M. ARCH PIPE

CIRCULAR PIPE

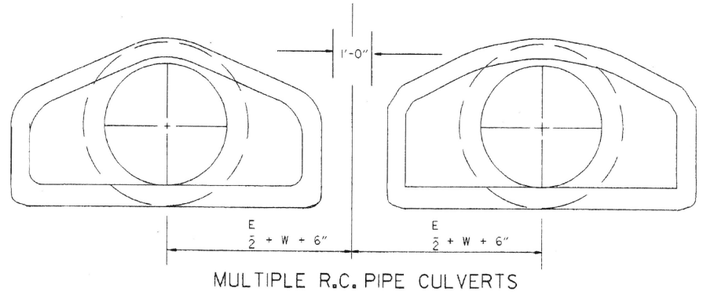
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12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

C.M. ARCH PIPE

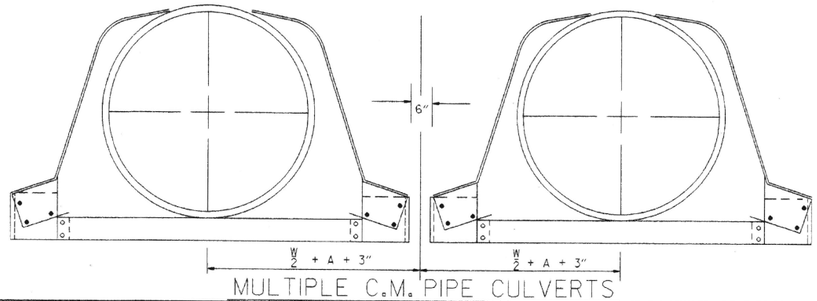
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12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

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

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

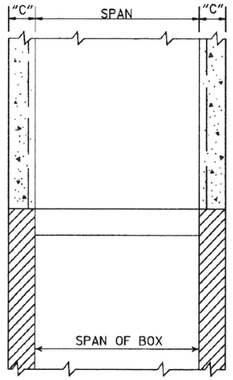
DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74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

ARKANSAS STATE HIGHWAY COMMISION

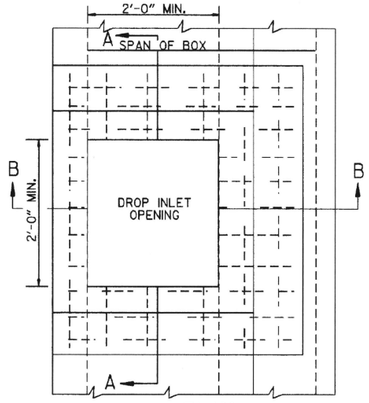
FLARED END SECTION

STANDARD DRAWING FES-2

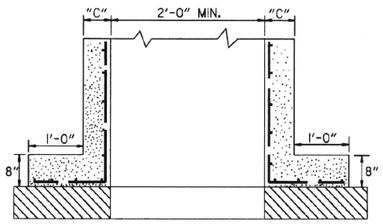
stdfes2.dgn



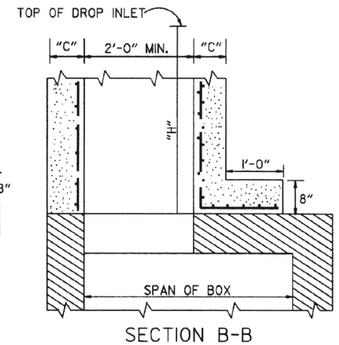
SECTION B-B



PLAN

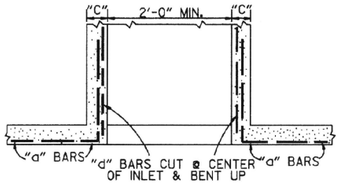


SECTION A-A

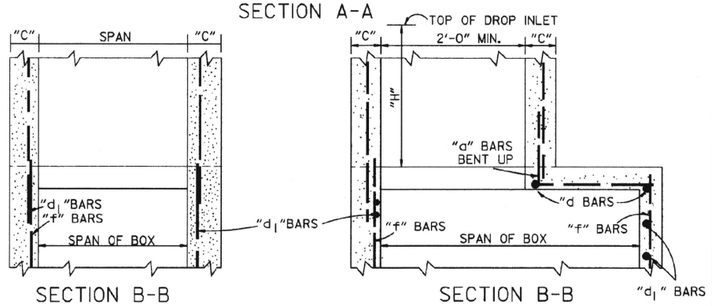


SECTION B-B

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



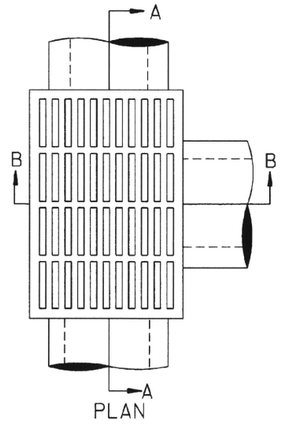
SECTION A-A



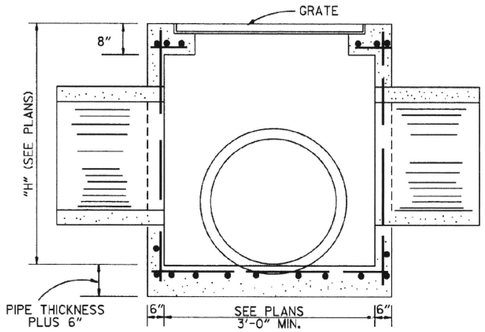
SECTION B-B SECTION B-B

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

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

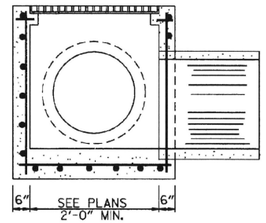


PLAN



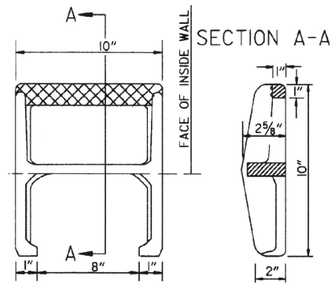
SECTION A-A

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



SECTION B-B

DROP INLET (TYPE E)

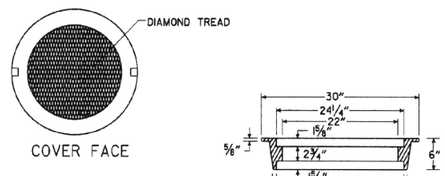


APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

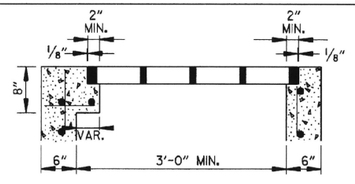
NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

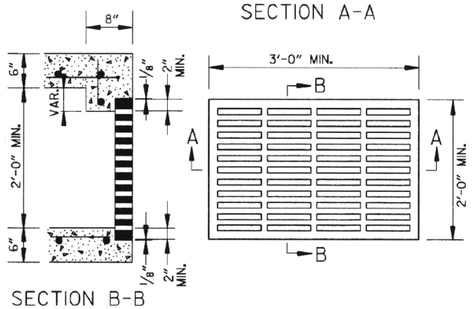


APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



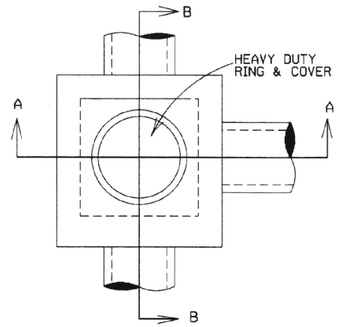
SECTION A-A



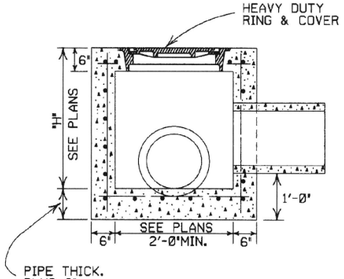
SECTION B-B

APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

GRATE FOR TYPE E DROP INLET

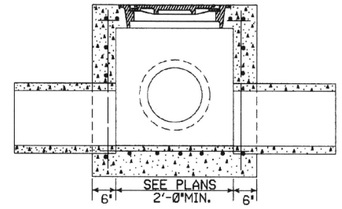


PLAN



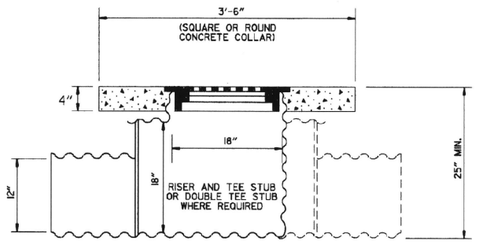
SECTION A-A

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

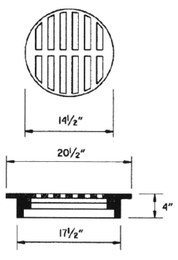


SECTION B-B

JUNCTION BOX (TYPE E)



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



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

DETAIL OF YARD DRAIN

GENERAL NOTES:

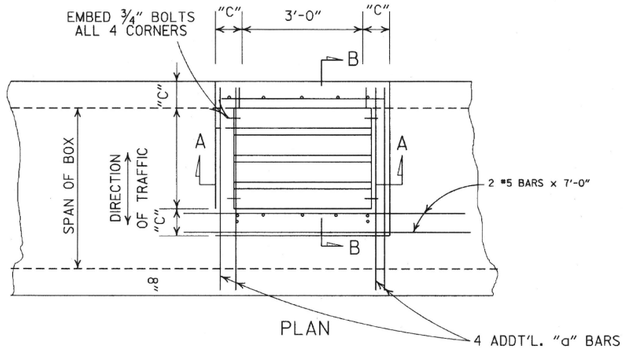
1. ALL EXPOSED CORNERS SHALL BE ¾" CHAMFERED.
2. STEPS SHALL BE INSTALLED ON 16" CENTERS ON ALL INLETS 4'-0" HIGH OR OVER, OR AS APPROVED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL SHALL BE ¾" PREFORMED FIBER.
4. GRATE OR GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS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

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

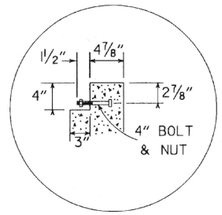
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS & JUNCTION BOXES

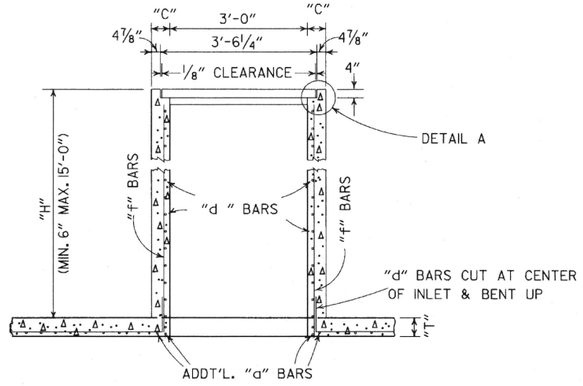
STANDARD DRAWING FPC-9



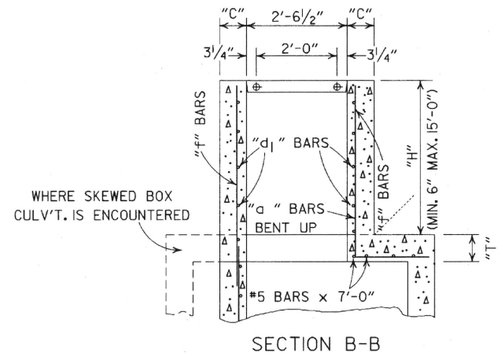
PLAN



DETAIL A



SECTION A-A

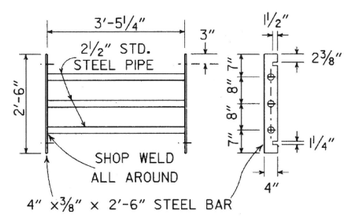


SECTION B-B

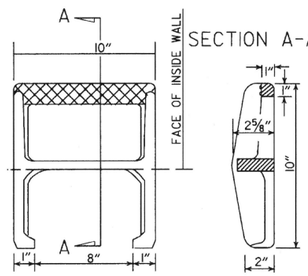
NOTE: ADDT'L.REINF. STEEL TO BE INCLUDED IN UNIT PRICE BID PER TYPE "TM" D.I.

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

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



GRATE DETAIL



SECTION A-A

APPROX. WEIGHT = 11LBS. (CAST IRON)

PLAN

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

DETAIL OF STEP FOR DROP INLET

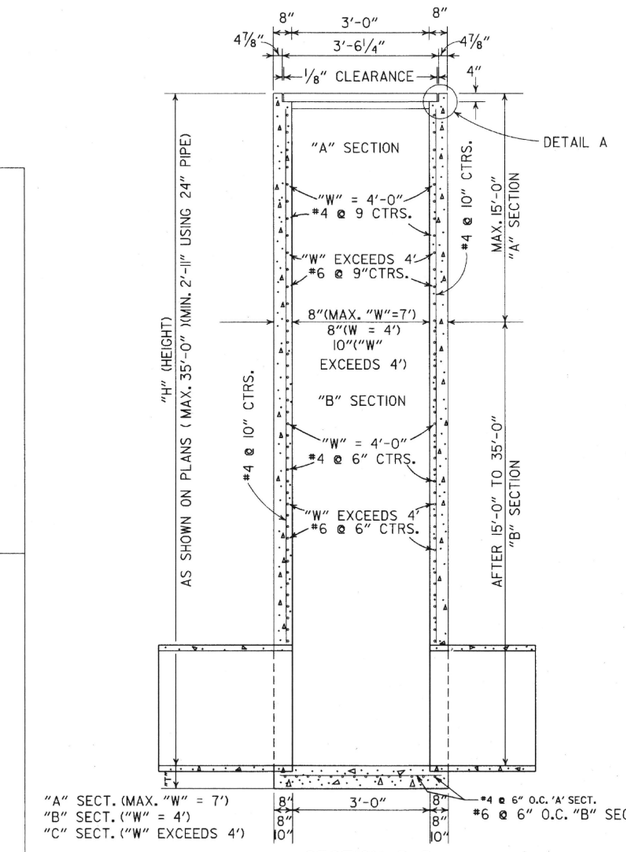
GENERAL NOTES:

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

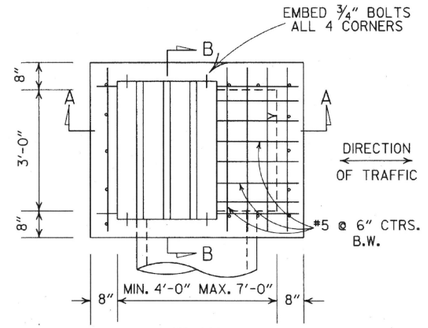
TABLE OF "W" DIMENSIONS

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

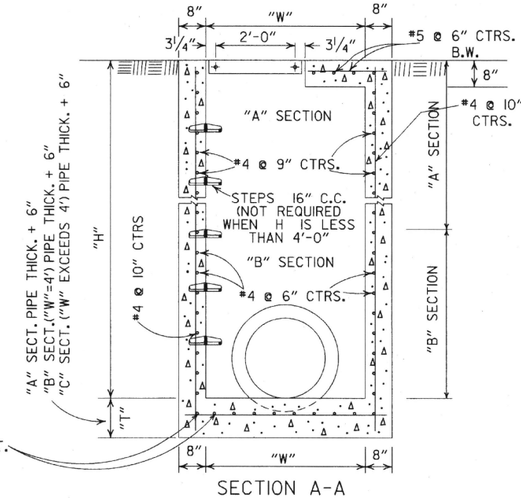
NOTE: DIMENSIONS SHOWN ABOVE ARE FOR PIPES INTERSECTING DROP INLET ON ONE SIDE ONLY. FOR SKEWED PIPES INTERSECTING BOTH SIDES OF DROP INLET, "W" WILL NEED TO BE INCREASED OR AXIS OF INTERSECTING PIPES WILL NEED TO BE SHIFTED.



SECTION B-B



PLAN



SECTION A-A

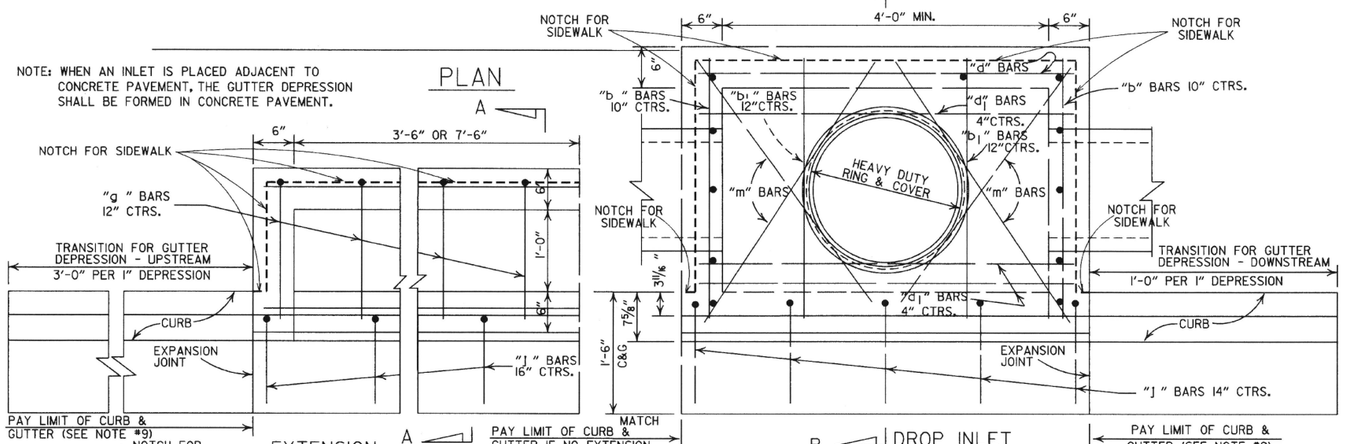
DROP INLET(TYPE RM)

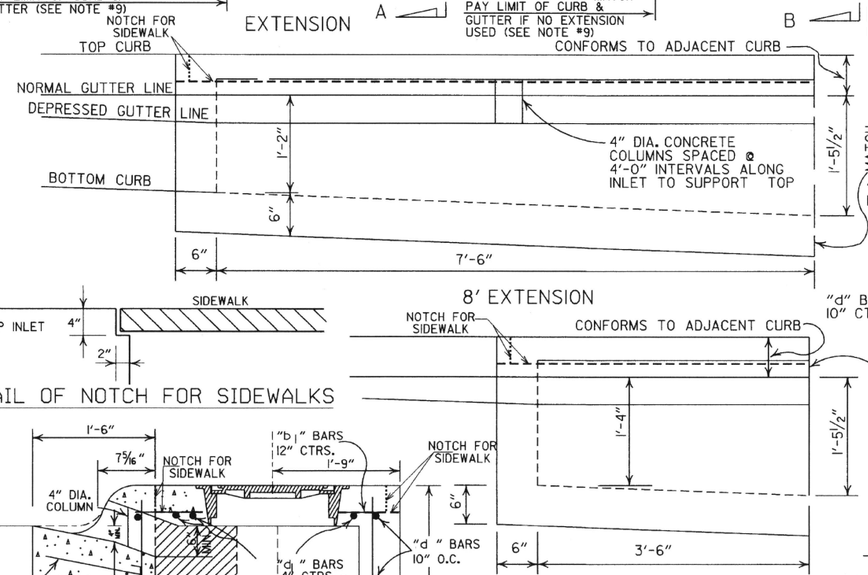
8-22-02	ADDED & REVISED DIMENSION TO SECTION A-A	
1-12-00	CORRECTED DIMENSION ON SECTION B-B	
11-06-97	ADDED DIMENSION TO SECTION A-A	
10-18-96	REVISED ASTM REF. TO AASHTO AND ADDED NOTE TO TABLE OF "W" DIMENSIONS	
10-1-92	ADDED DIRECTION OF TRAFFIC	10-1-92
8-15-91	ADDED NOTE ABOUT PAINTING OF GRATE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

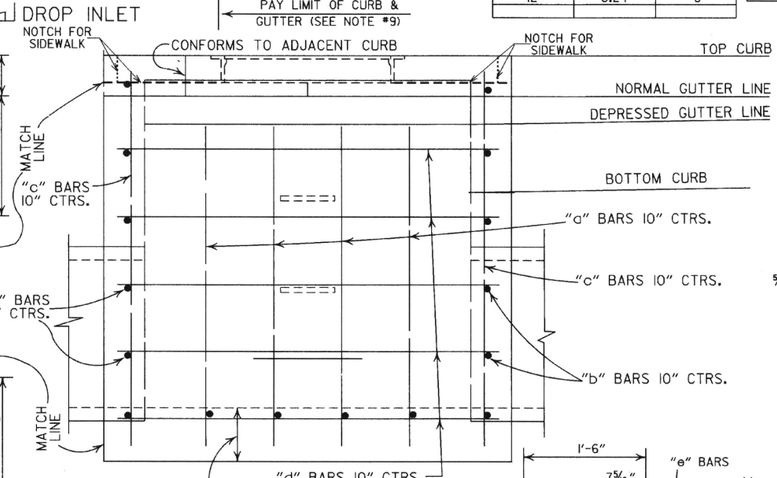
ARKANSAS STATE HIGHWAY COMMISSION

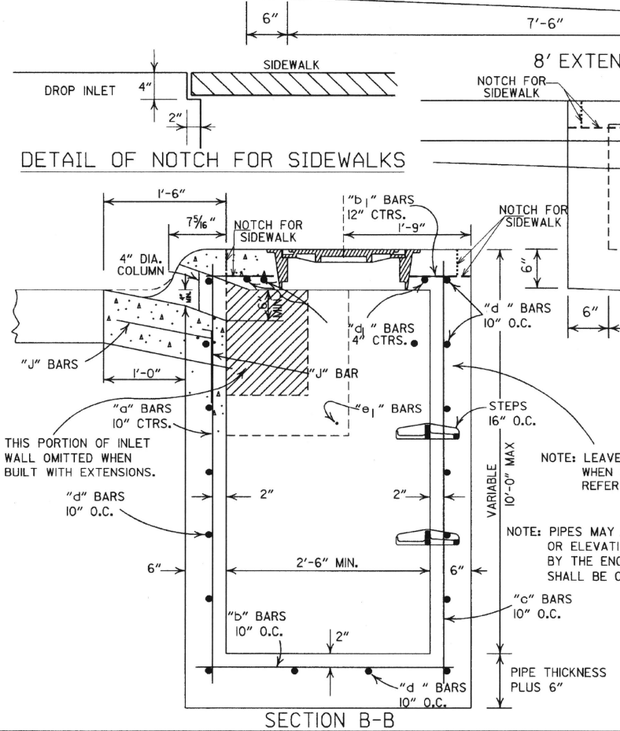
DETAILS OF DROP INLETS

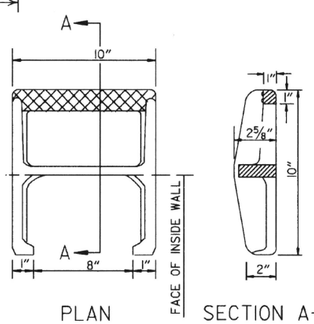
STANDARD DRAWING FPC-9D











4'-0" LENGTH DROP INLET

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

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

DROP INLET EXTENSION

4'-0" CLASS A CONC. CU. YDS.	4'-0" REINF. STEEL POUNDS	8'-0" CLASS A CONC. CU. YDS.	8'-0" REINF. STEEL POUNDS
0.58	38	0.87	72

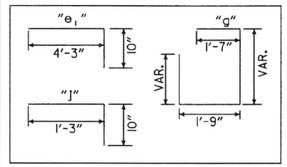
DEDUCT FROM QUANTITY COMPUTED FOR EACH EXTENSION ADDED.

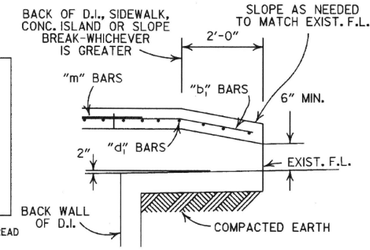
0.04	3		

DEDUCT FROM QUANTITY COMPUTED FOR EACH PIPE ENTERING INLET

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

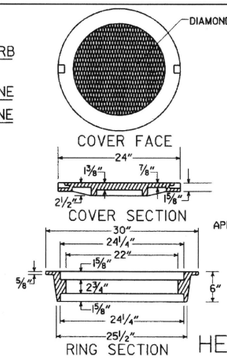
BAR DIAMETER





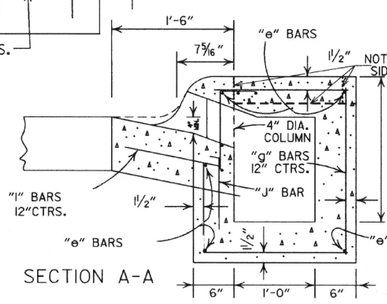
BACK OPENING

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



APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



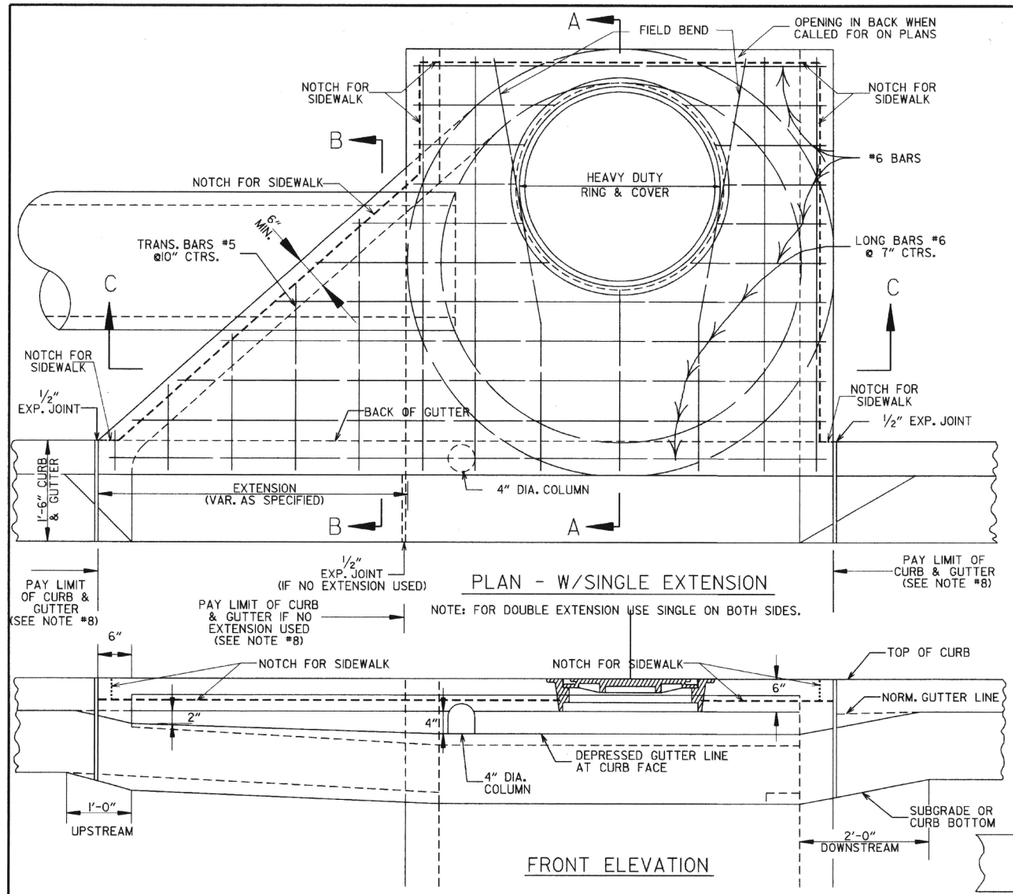
GENERAL NOTES:
1. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OF AS APPROVED BY THE ENGINEER.
3. ALL REINF. BARS SHALL BE #4 AND HAVE 1½" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. THIS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

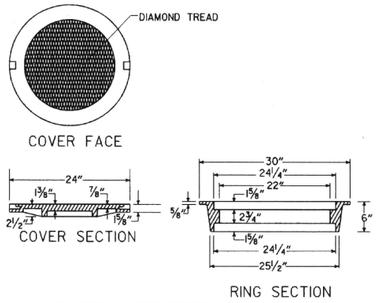
DATE REV.	REVISION	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13; REVISED SECTION B-B	
1-12-00	CORRECTED DIMENSION ON SECTION B-B & REVISED RING & COVER	
5-13-99	ADDED DETAIL OF NOTCH FOR SIDEWALKS	
7-02-98	REPLACED RING & COVER W/HEAVY DUTY RING & COVER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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS (TYPE C)

STANDARD DRAWING FPC-9E

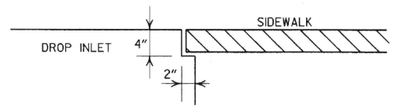




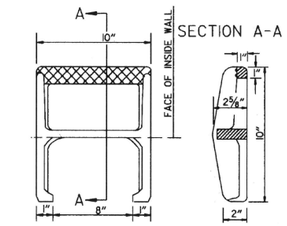
APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

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



DETAIL OF NOTCH FOR SIDEWALKS

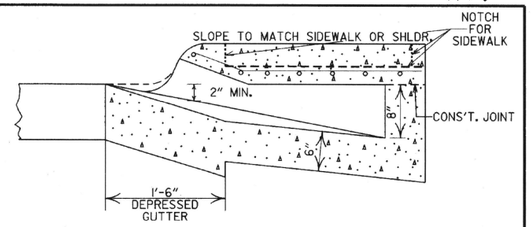


APPROX. WEIGHT = 11 LBS. (CAST IRON)

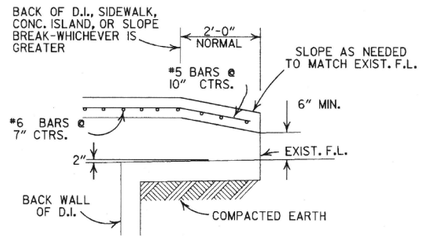
PLAN

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

DETAIL OF STEP FOR DROP INLET



SECTION B-B

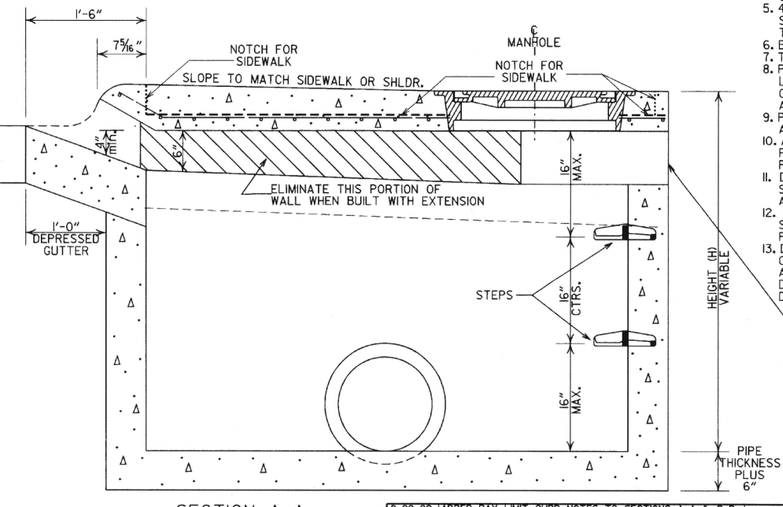


BACK OPENING

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

GENERAL NOTES:

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



SECTION A-A

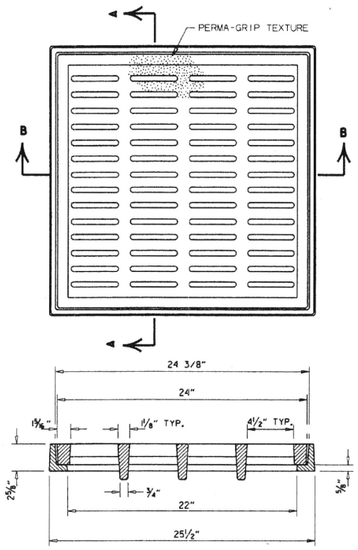
DIA. OF D.I.	DIA. OF OUTLET PIPE	MINIMUM WALL THICKNESS CAST IN PLACE	MINIMUM WALL THICKNESS PRECAST
4' I.D.	12" THRU 27"	6"	5"
5' I.D.	30" THRU 42"	8"	6"
6' I.D.	48" THRU 54"	8"	7"

DATE	REVISIONS	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13	
1-12-00	REVISED HEAVY DUTY RING & COVER	
5-13-99	ADDED NOTCH DETAIL FOR SIDEWALKS	
7-02-98	REP. NOTE 8, REM. PLAN DET., REV. PICTURE FOR NEW RING & COVER, ADDED HEAVY DUTY RING & COVER AND DETAIL OF STEP FOR DROP INLET	
4-26-96	ADDED NOTE 11 & ADJ. OPENING DIMENSION	
10-12-95	CORRECTED #6 BAR SPACING	
7-20-95	CORRECTED DIAMETER OF D.I. IN BOX	
2-2-95	TYPE C TO MO (OPEN BACK DETAIL)	
11-1-94	REVISED GENERAL NOTES	11-3-94
4-1-93	REV. BACK OPEN. DETAIL & NOTE	4-1-93
8-15-91	REVISED NOTES 11,12 & ADDED BK.OPEN. DETAIL	8-15-91
11-20-89	ADDED NOTE NO. 12	11-20-89
5-24-89	ADDED NOTE & MINIMUM WALL THICKNESS	513-5-24-89
7-15-88	ADDED EXTEND NOTE TO SECTION A-A	639-7-15-88
1-14-87	MODIFIED WALL THICKNESS	783-1-14-87
6-12-87	ISSUED	4-6-12-87

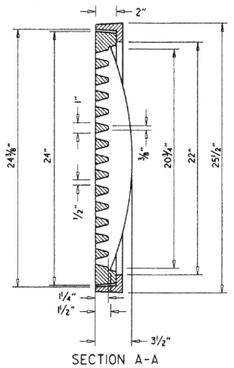
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLET (TYPE MO)

STANDARD DRAWING FPC-9M



SECTION B-B

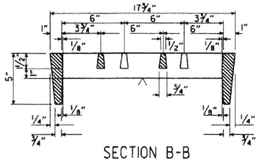


SECTION A-A

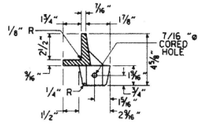
GENERAL NOTES (PEDESTRIAN GRATE & FRAME)

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

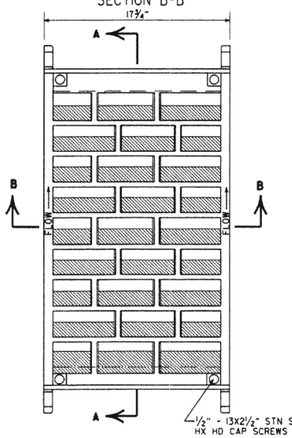
DETAILS OF PEDESTRIAN GRATE AND FRAME

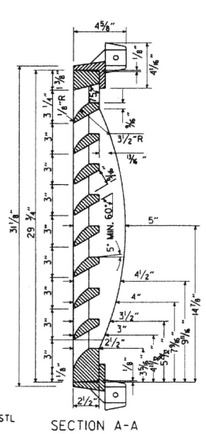


SECTION B-B



SECTION THRU FRAME



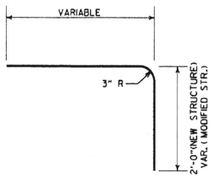


SECTION A-A

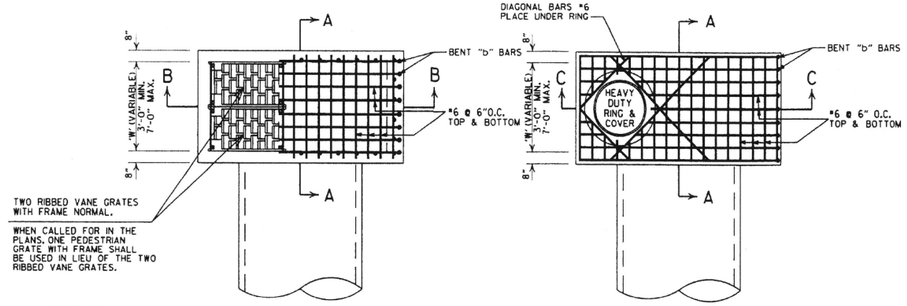
DETAILS OF RIBBED VANE GRATE AND FRAME

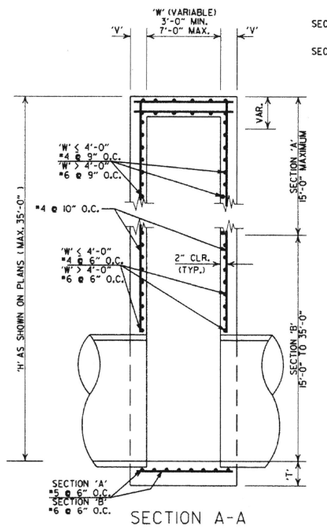
GENERAL NOTES (RIBBED VANE GRATE & FRAME)

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



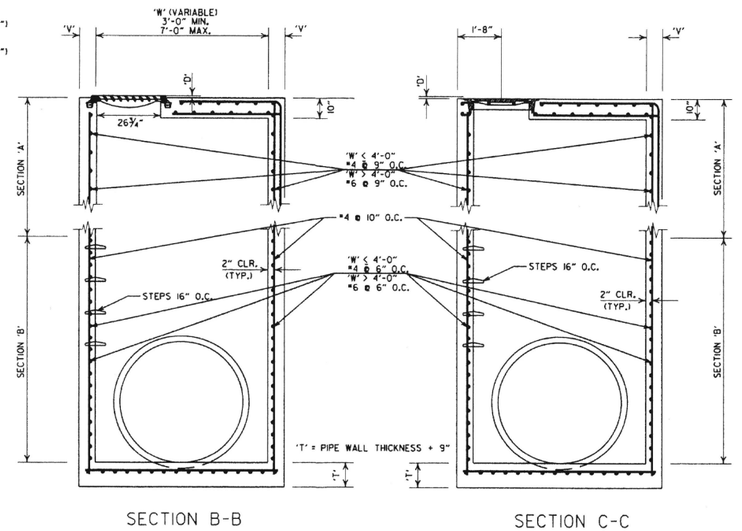
DETAIL OF BENT "b" BAR





SECTION A-A

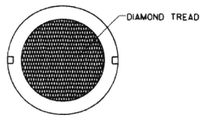
SECTION 'A'
'V' = 8"
SECTION 'B' (W≤4'-0")
'V' = 8"
SECTION 'B' (W>4'-0")
'V' = 10"



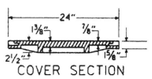
SECTION B-B

SECTION C-C

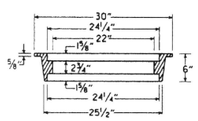
DETAILS OF DROP INLET (TYPE ST)



COVER FACE



COVER SECTION



RING SECTION

HEAVY DUTY RING & COVER

APPROXIMATE TOTAL WEIGHT = 333 LBS.

GENERAL NOTES (TYPE ST DROP INLET & JUNCTION BOX)

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

GENERAL NOTES (HEAVY DUTY RING & COVER):

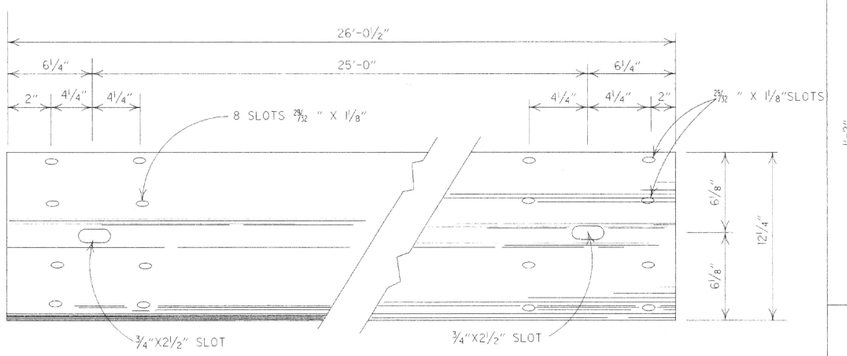
1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
4. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

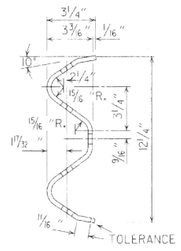
DATE REVISED	DATE FILMED	DESCRIPTION
7-26-12		REMOVED NOTE 4, REVISED 'T', REVISED BOTTOM SLAB REBAR FOR SECTION 'A', SHOWED REBAR CLEARANCE IN SECTIONS
11-16-01		ADDED NOTE 4
1-12-00		REVISED HEAVY DUTY RING & COVER
5-13-99		ADDED PEDESTRIAN FRAME & GRATE
7-02-98		REMOVED NOTE 5, REV. DIMENSIONS, ADDED HEAVY DUTY RING & COVER ADDED AASHTO REF. REVISED GRATE
10-18-96		REVISED ASTM REF. TO AASHTO
10-1-92		REVISED & REISSUED
8-15-91	8-15-91	REVISED & REISSUED

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLET & JUNCTION BOX (TYPE ST)

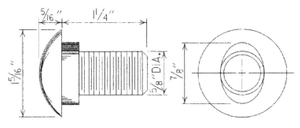
STANDARD DRAWING FPC-9S



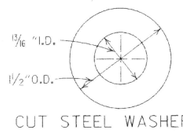


DETAILS OF W-BEAM GUARD RAIL

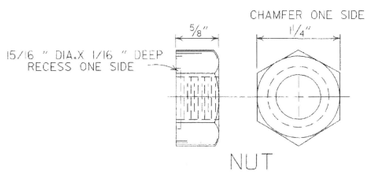
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



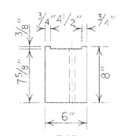
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



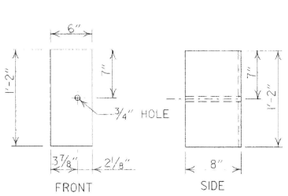
CUT STEEL WASHER



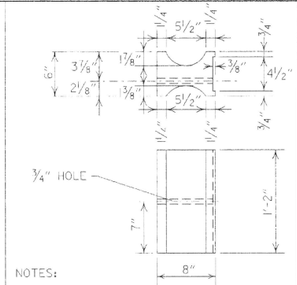
NUT



WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

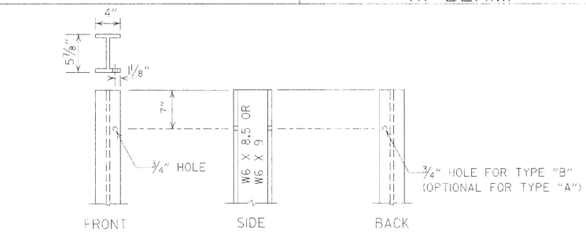


WOOD BLOCKOUT (W-BEAM)

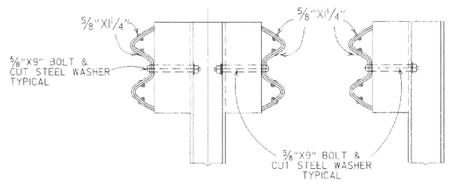


NOTES:
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)

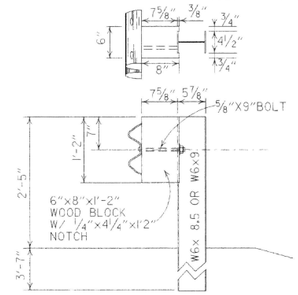


STEEL POST

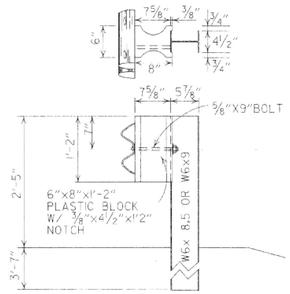


DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.



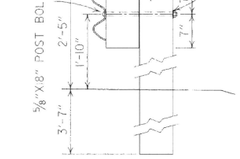
WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

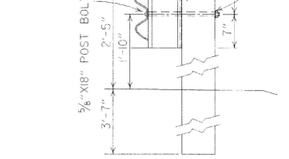
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.



POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - ¼".

WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

WHERE W-BEAM GUARD RAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.

W-BEAM GUARD RAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.

USE W-BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARD RAIL, W-BEAM GUARD RAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO.1 STRUCTURAL OR BETTER 9.7# (1400 f) OR NO.1 1350 f SOUTHERN PINE.

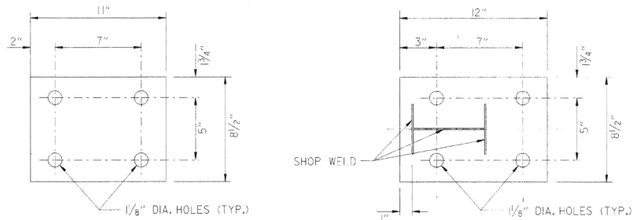
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
10-15-09	ADDED REFERENCE TO MASH	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
3-30-00	REMOVED GUARD RAIL AT BRIDGE ENDS	
1-2-00	ADDED PLASTIC BLOCKOUT	
8-2-98	REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARD RAIL REPLACE, BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK, & ADDED DETAILS OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES	
4-3-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
6-2-94	ADDED ALT. STEEL POST SIZE	
8-5-93	REVISED STEEL POST SIZE	8-5-93
10-1-92	REDRAWN & REVISED	10-1-92
8-15-91	REVISED WASHER NOTE	8-15-91
8-2-90	REV. GEN. NOTE & DEPHT OF ANC. POST IN ROCK	8-2-90
7-15-88	REVISED SECTION 3 & GENERAL NOTES	
3-4-88	REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-9-87	REDRAWN & REVISED	802-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

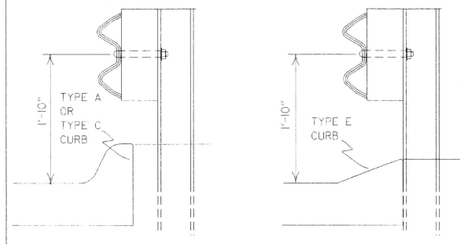
GUARD RAIL DETAILS

STANDARD DRAWING GR-8



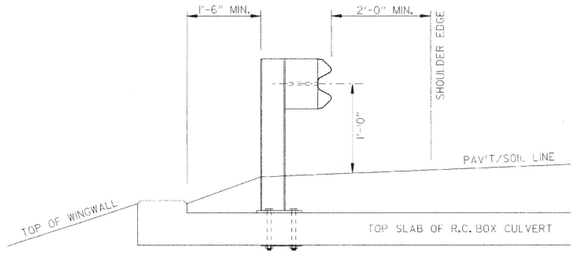
WASHER PLATE BASE PLATE

Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 807 of the Standard Specifications.

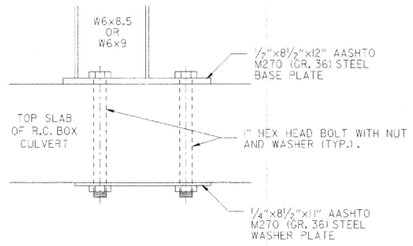


DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

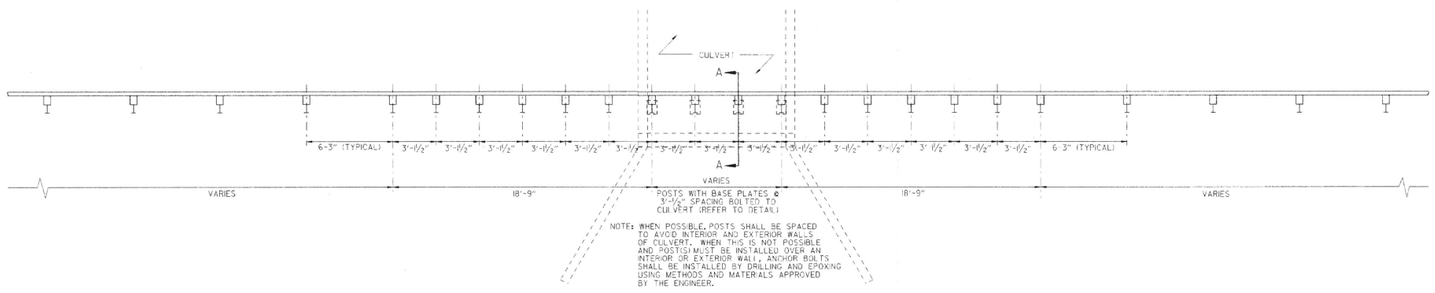
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A



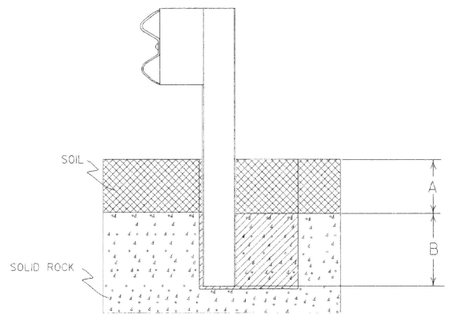
DETAIL OF CONNECTION



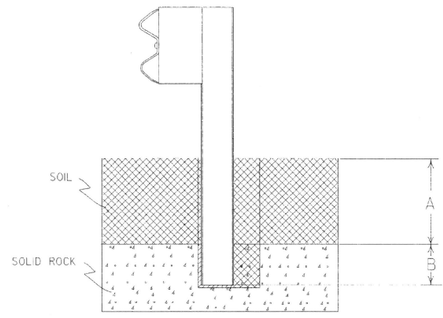
PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS

NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARD RAIL POSTS AS SHOWN ON STD. DWG. GR-8.

Case 1

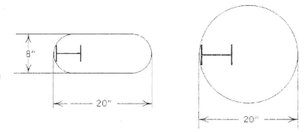


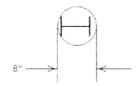
Case 2



Plan View Steel Posts

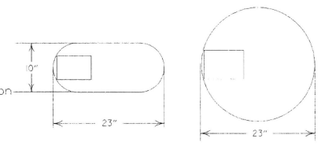
Either hole configuration acceptable

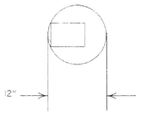




Plan View Wood Posts

Either hole configuration acceptable





Notes: For overlying soil depths (A) ranging from 0 to 8", the depth of required drilling (B) is equal to 24".

Zone A:
Backfill according to Section 617.03(a).

Zone B:
Backfill hole in 6" lifts with material meeting the requirements of Section 802.02(c) - Alternate gradation. Compact to 95% maximum dry density per ASTM D-698.

Notes: For overlying soil depths (A) ranging from 18" to 44", the depth of required drilling (B) is equal to either 12" or 44" minus the depth of soil whichever is less.

Zone A & B:
Backfill according to Section 617.03(a).

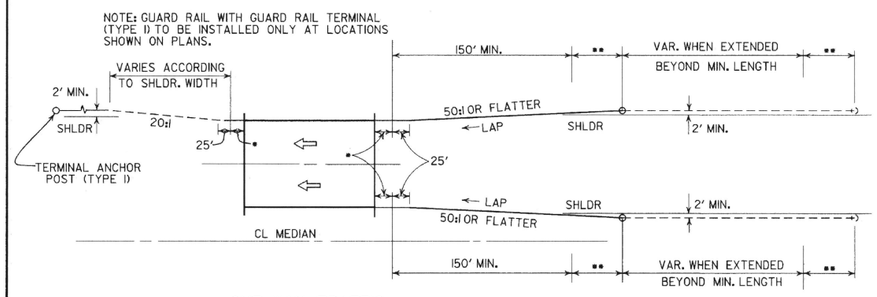
DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
4-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
4-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL PLACEMENT AT LOW-FILL CULVERTS	
3-30-00	REMOVED CONCRETE INSERT ANCHOR	
8-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADD. DET. OF GUARD RAIL CONNECTION TO R.C. BOX CULV'T, DELETED DET. OF STEEL LINE POST CONN.& ADDED DET. OF GUARD RAIL PLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK	
4-3-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
11-22-95	ADDED OPTIONAL HOLES	
6-2-94	REVISED ALTERNATE POST SIZE	
8-5-93	REVISED STEEL POST SIZE	
10-1-92	REDRAWN & REVISED	10-1-92
8-2-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
7-15-88	CONFORMED TO 1988 SPECS	
3-4-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	712-10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-9-87	REDRAWN & REVISED	803-10-9-87

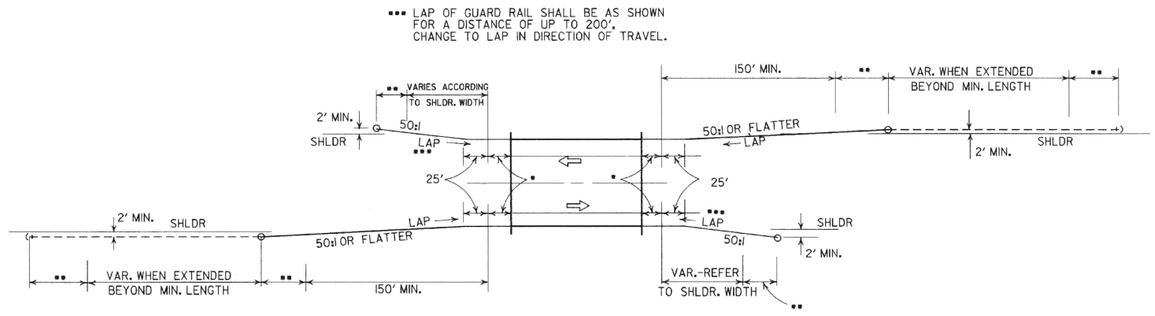
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-8A

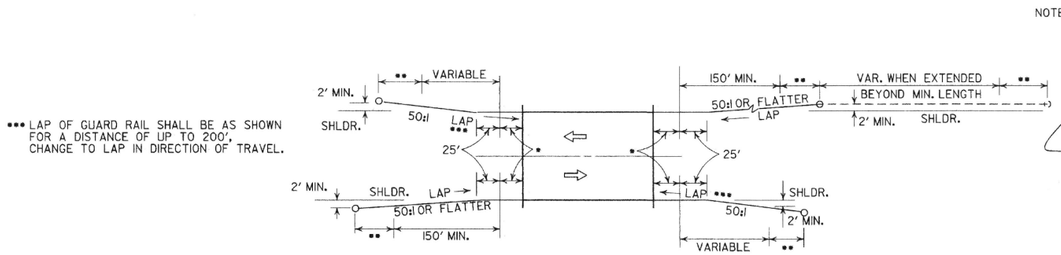


ONE-WAY TRAFFIC

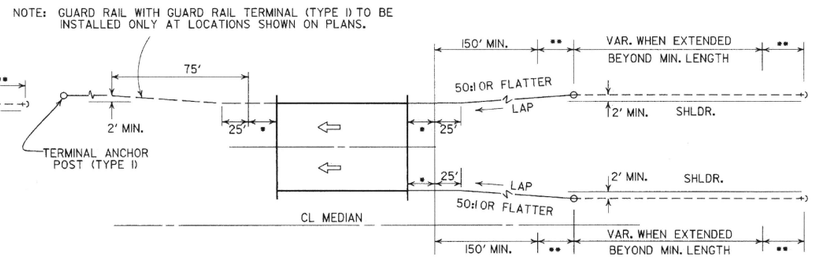


TWO-WAY TRAFFIC

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



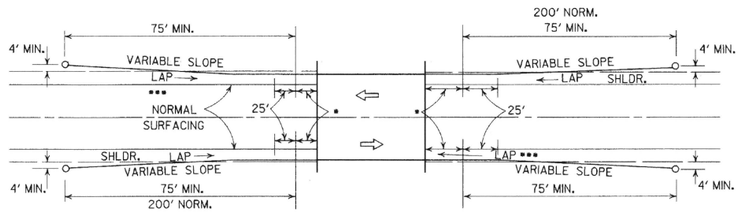
TWO-WAY TRAFFIC



ONE-WAY TRAFFIC

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

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



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

LEGEND

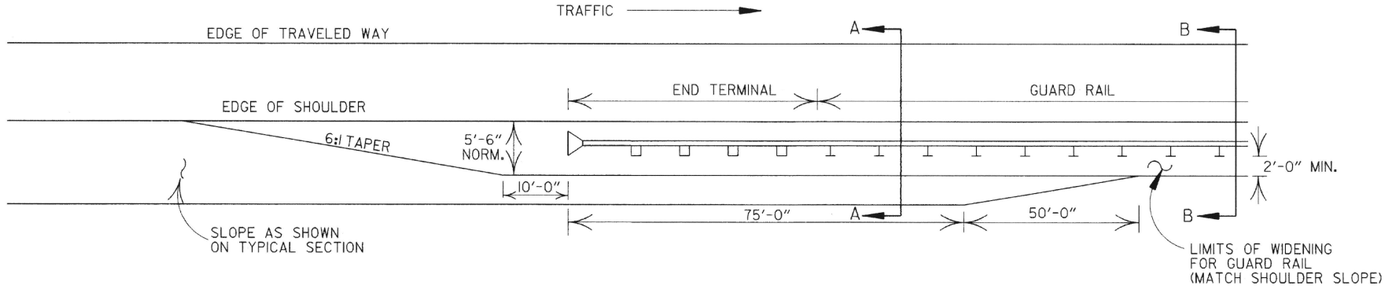
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

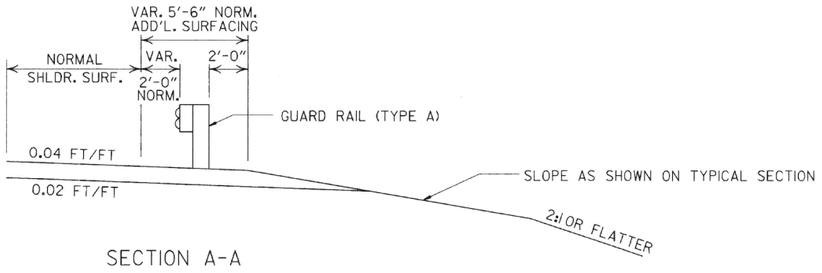
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87	REDRAWN & REVISED	

ARKANSAS STATE HIGHWAY COMMISSION

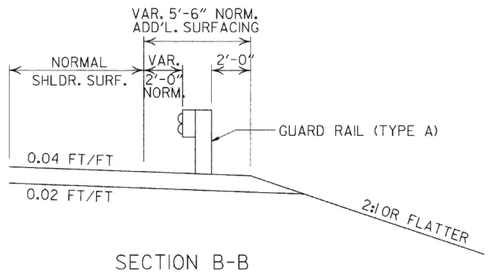
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





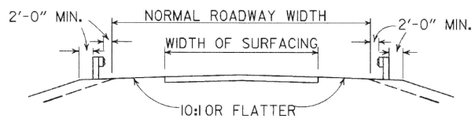
SECTION A-A



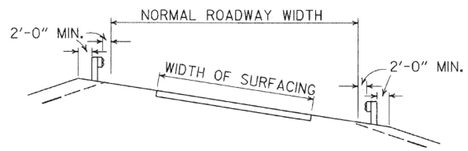
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

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

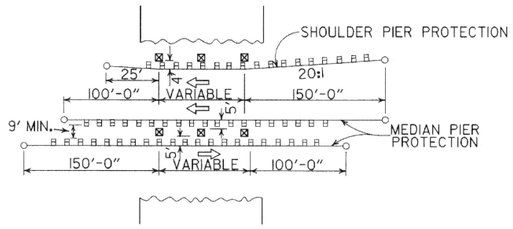


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



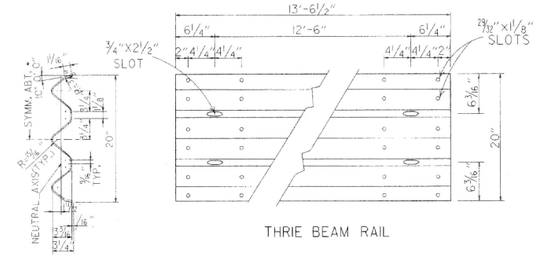
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

DATE	REVISION	DATE FILM
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

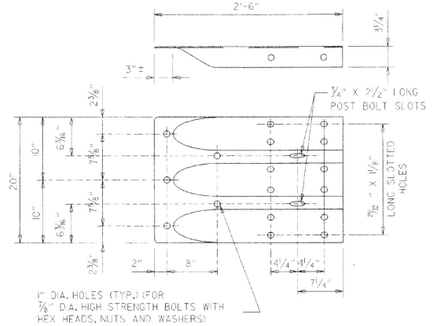
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A

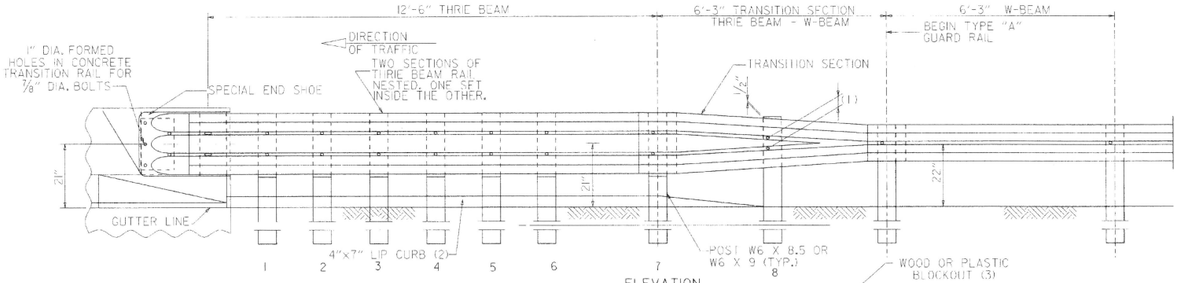


THRIE BEAM RAIL

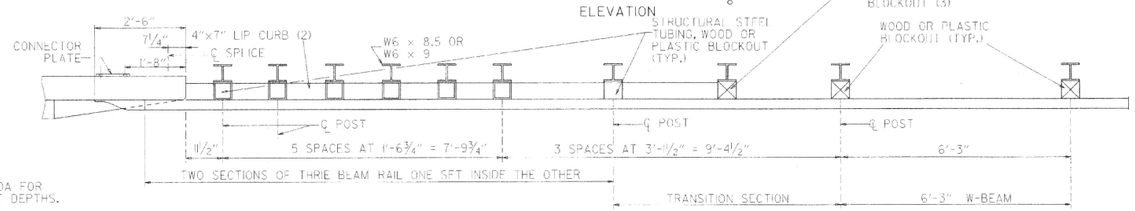
SECTION THRU
THRIE BEAM RAIL



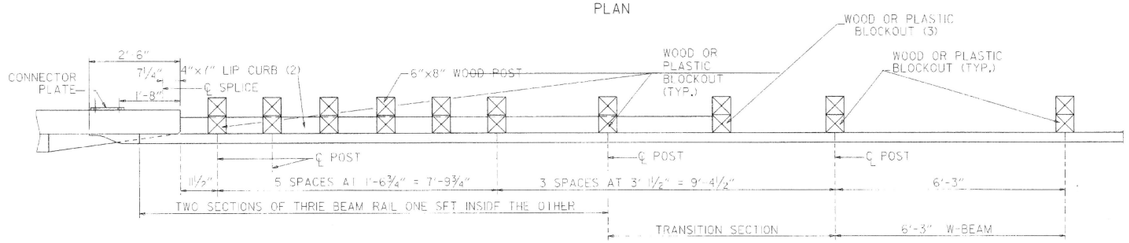
SPECIAL END SHOE



ELEVATION



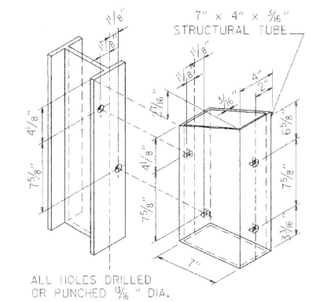
PLAN



PLAN

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

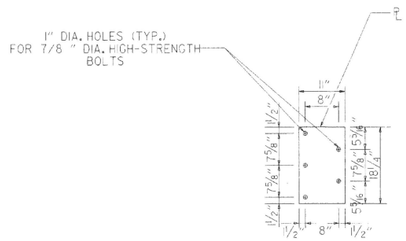
THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS



ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.

ALL HOLES DRILLED OR PUNCHED ⅜" DIA.

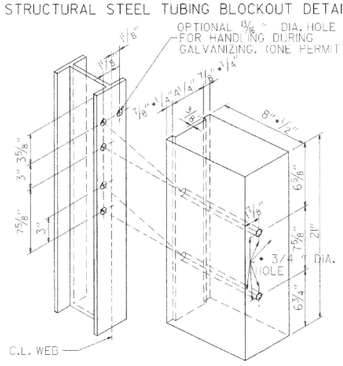
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



CONNECTOR PLATE

CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.

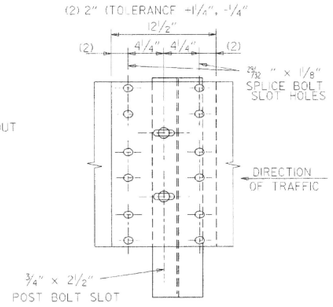
NOTE:
SEE STANDARD DRAWING GR-10A FOR GUARD RAIL POST EMBEDMENT DEPTHS.



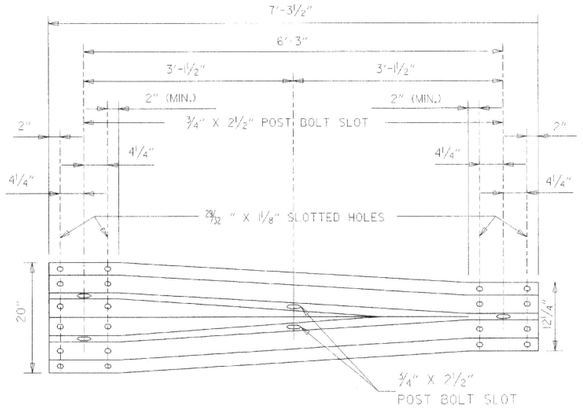
ALL HOLES ⅜" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



THRIE BEAM RAIL
SPLICE AT POST



TRANSITION SECTION

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE, ZINC COATING SHALL BE TYPE II.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-9 & GR-11.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7# (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

REFER TO STD. DRWG. GR-10A FOR POST DETAILS.

USE THRIE BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

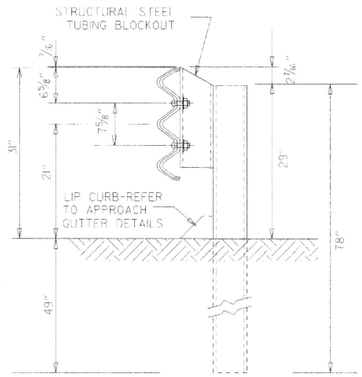
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

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

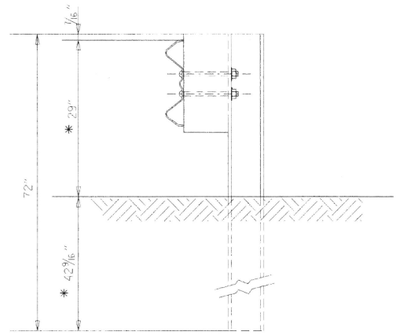
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

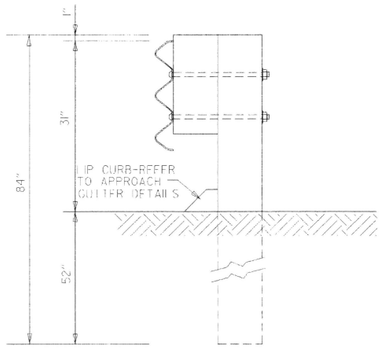


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

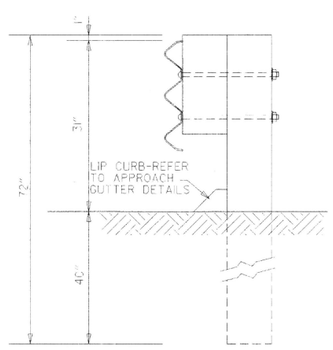


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

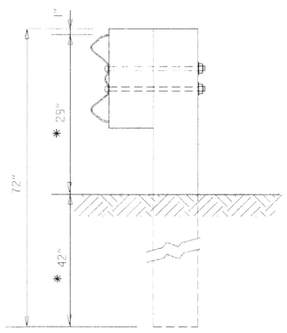
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7



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

GENERAL NOTES:

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

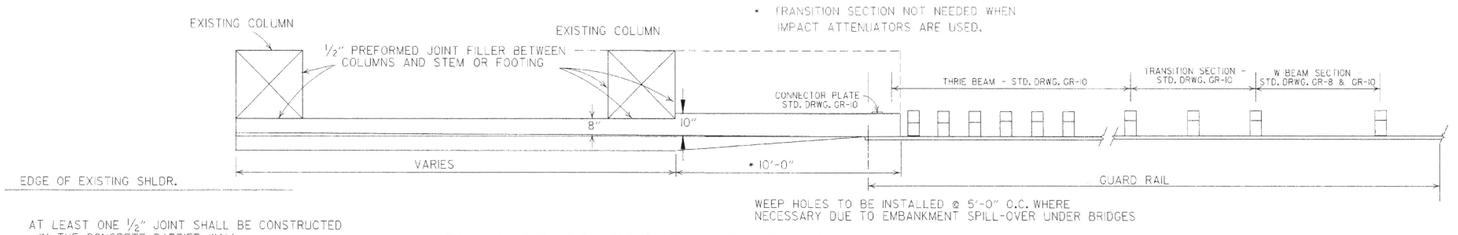
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1STRUCTURAL OR BETTER 9.7f (1400 f) OR NO.1 1350 f SOUTHERN PINE.

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

ARKANSAS STATE HIGHWAY COMMISSION

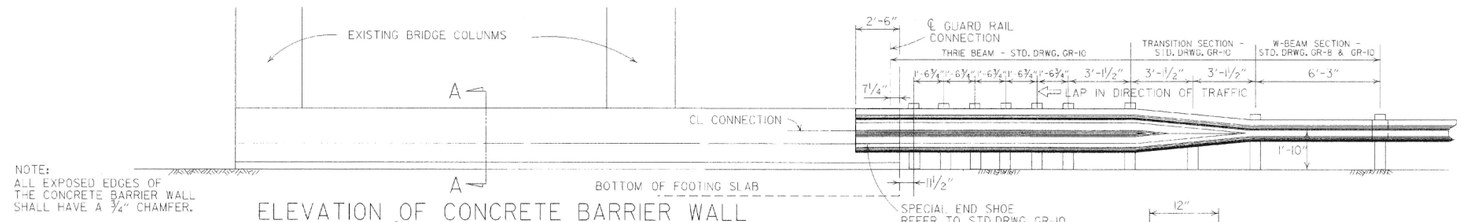
GUARD RAIL DETAILS

STANDARD DRAWING GR-10A



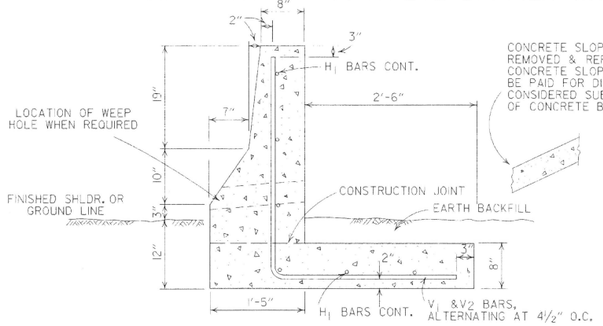
AT LEAST ONE ½" JOINT SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL. JOINTS SHALL BE EQUALLY SPACED AT A MAXIMUM OF 25'-0" O.C. FILL JOINT WITH PREFORMED JOINT FILLER.

PLAN OF CONCRETE BARRIER WALL

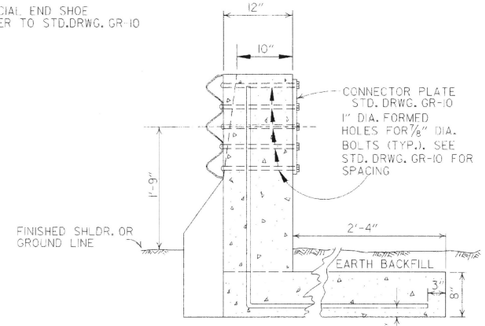


NOTE:
ALL EXPOSED EDGES OF THE CONCRETE BARRIER WALL SHALL HAVE A ¾" CHAMFER.

ELEVATION OF CONCRETE BARRIER WALL

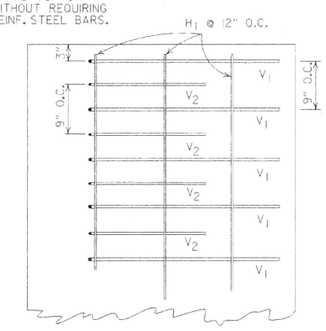


SECTION A-A



SECTION THRU CONNECTION

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

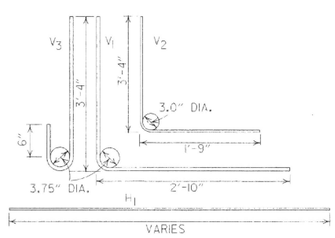


PLAN OF REINFORCING STEEL IN FOOTING

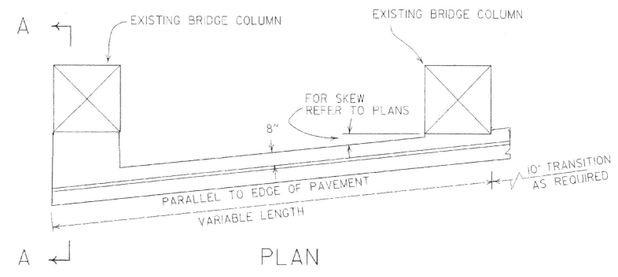
BAR LIST

MARK	NO.	SIZE	LENGTH
V1		#5	6'-2¼"
V2		#4	5'-1"
V3		#5	4'-1⅛"
H1	6	4	VAR.

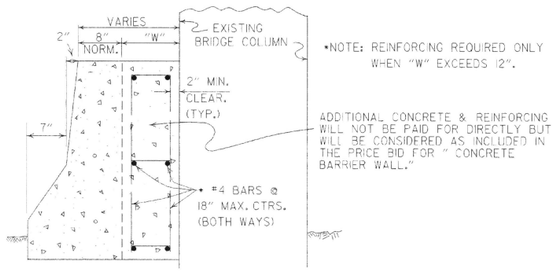
THE V3 BARS SHALL BE USED IN PLACE OF THE V1 & V2 BARS IN FRONT OF PIERS.



BEND DIAGRAMS



PLAN



SECTION A-A

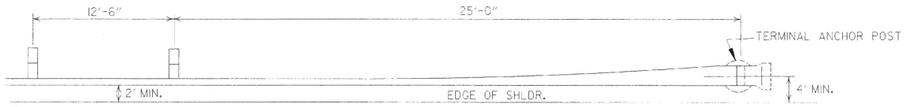
DETAILS OF CONCRETE BARRIER WALL WHEN PIERS ARE SKEWED TO ROADWAY

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

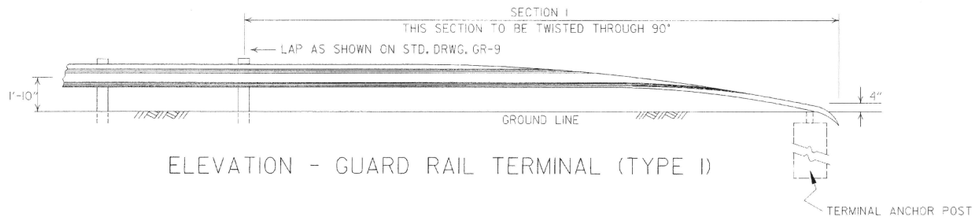
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE BARRIER WALL
(PIER PROTECTION TYPE A)

STANDARD DRAWING GR-11

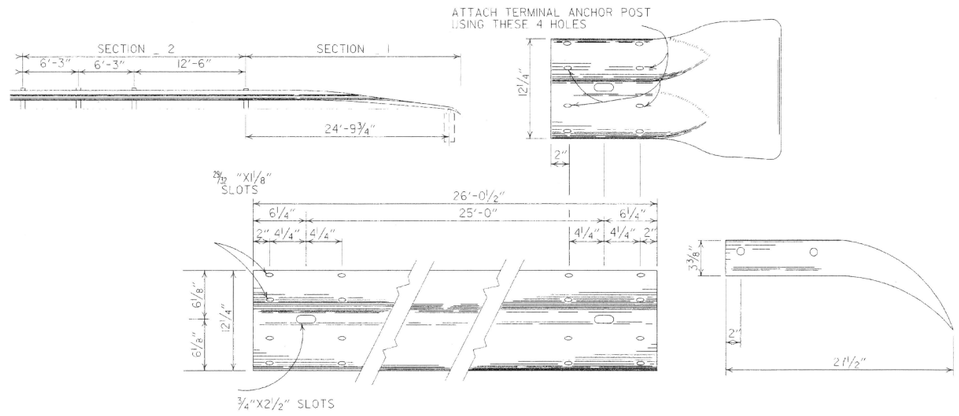


PLAN - GUARD RAIL TERMINAL (TYPE I)



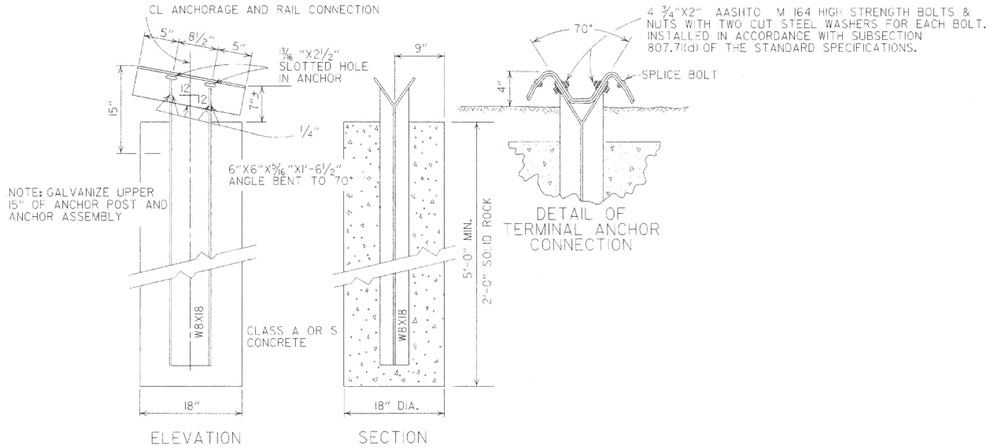
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

NOTE:
SECTIONS 1 AND 2 OF GUARD RAIL TERMINAL SHALL BE PAID FOR AT THE PRICE BID PER LINEAR FOOT OF THE TYPE OF GUARD RAIL SPECIFIED.



SECTION 1

TERMINAL SECTION



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

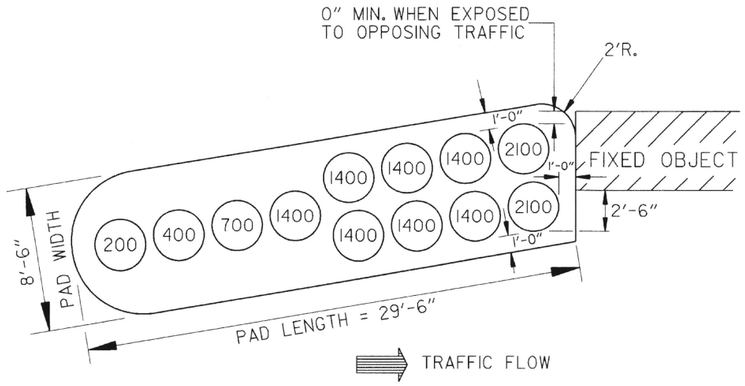
DETAIL OF TERMINAL ANCHOR POST (TYPE I)

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

ARKANSAS STATE HIGHWAY COMMISSION

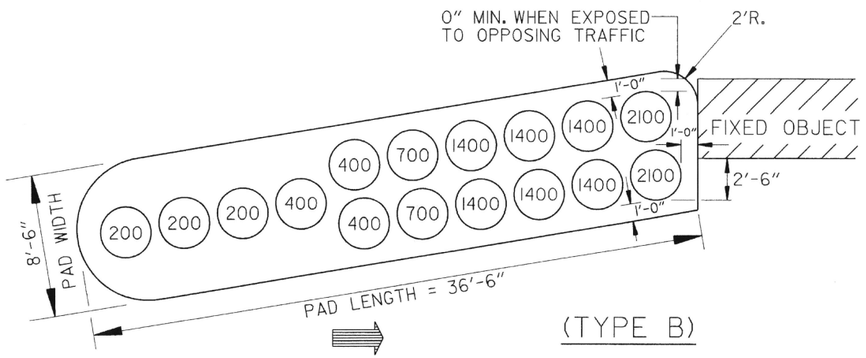
GUARD RAIL DETAILS

STANDARD DRAWING GRT-1



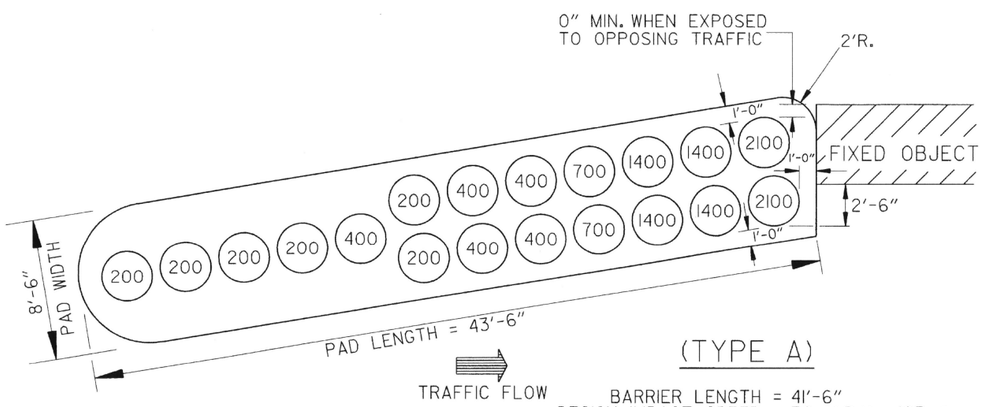
(TYPE C)

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



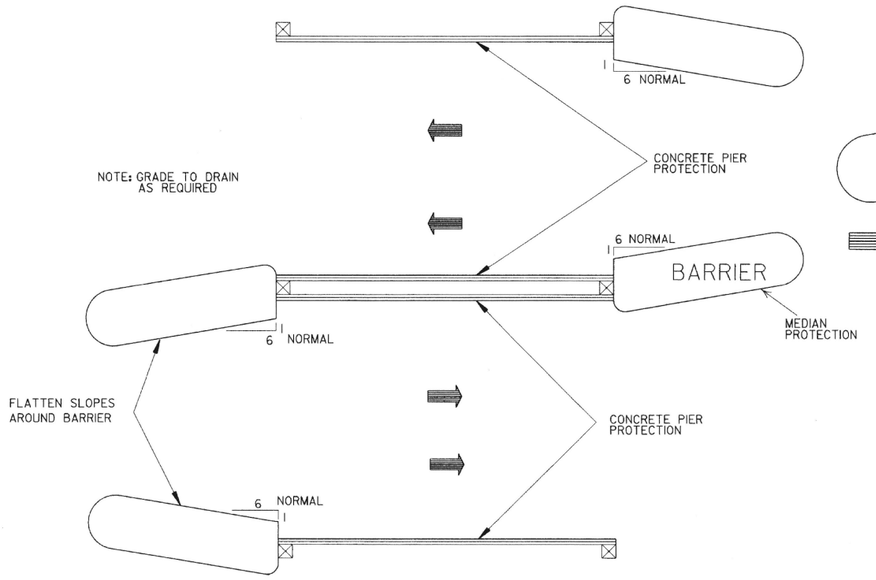
(TYPE B)

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

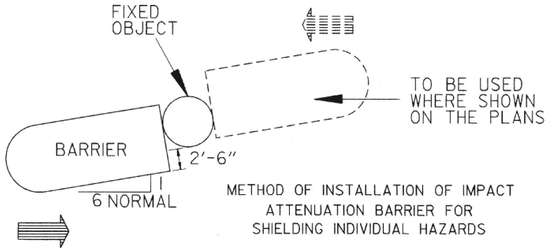


(TYPE A)

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



METHOD OF INSTALLATION OF
IMPACT ATTENUATION BARRIER
FOR PIER PROTECTION



METHOD OF INSTALLATION OF IMPACT
ATTENUATION BARRIER FOR
SHIELDING INDIVIDUAL HAZARDS

GENERAL NOTES

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

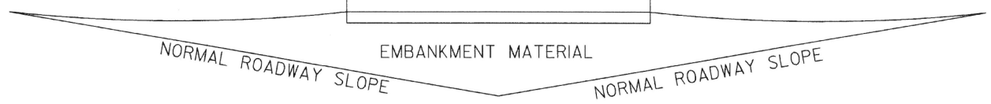
APPROXIMATE QUANTITIES PER PAD

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

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

ALTERNATE #1
AVG. 8'-6" A.C.H.M. SURF. COURSE(1/2")
220 LBS. PER SQ. YD. &
AGGREGATE BASE COURSE
(4" COMPACTED DEPTH)

OR ALTERNATE #2
AVG. 8'-6" PORTLAND
CEMENT CONCRETE
BASE (4" U.T.)



DETAIL OF BARRIER PAD

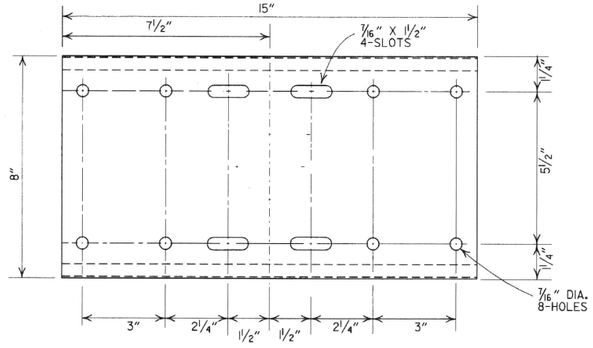
NOTE: BARRIER PAD TO BE SKEWED TOWARD ONCOMING TRAFFIC
A MAXIMUM OF 6:1 WITH 6:1 BEING NORMAL

DATE	REVISION	DATE FILMED
10-15-09	ADDED REFERENCE TO MASH	
11-29-07	REVISED TY. A & TY. C ARRAYS	
11-19-98	REVISED FIXED OBJECT	
11-18-98	REV. NOTES & TYPE A MOD. WTS.	
10-18-96	REDRAWN	
7-15-88	CONFORMED TO 1988 SPECS	
7-29-87	REDRAWN	

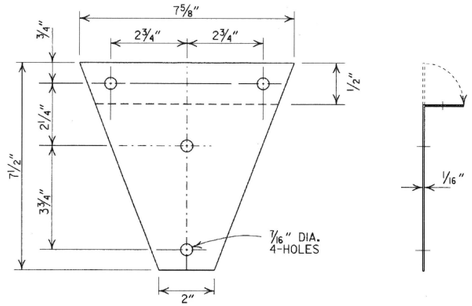
ARKANSAS STATE HIGHWAY COMMISSION

IMPACT ATTENUATION BARRIER

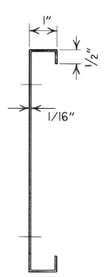
STANDARD DRAWING IB-1

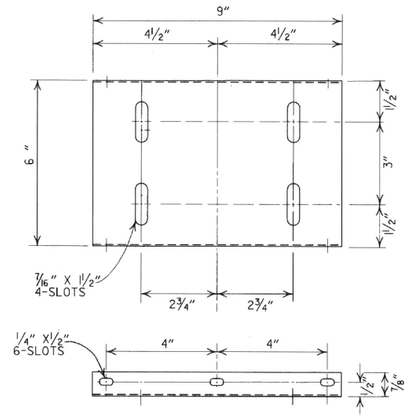


SHELF



BRACKET

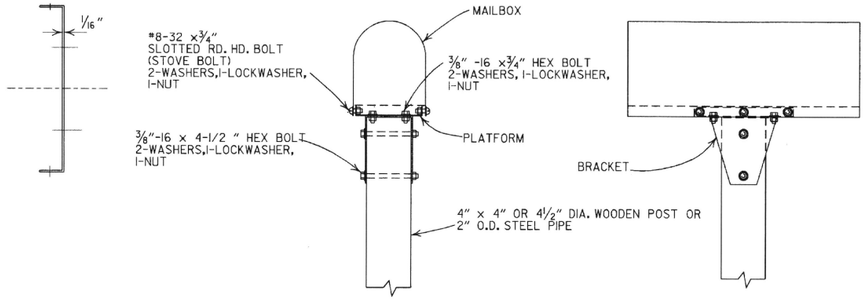




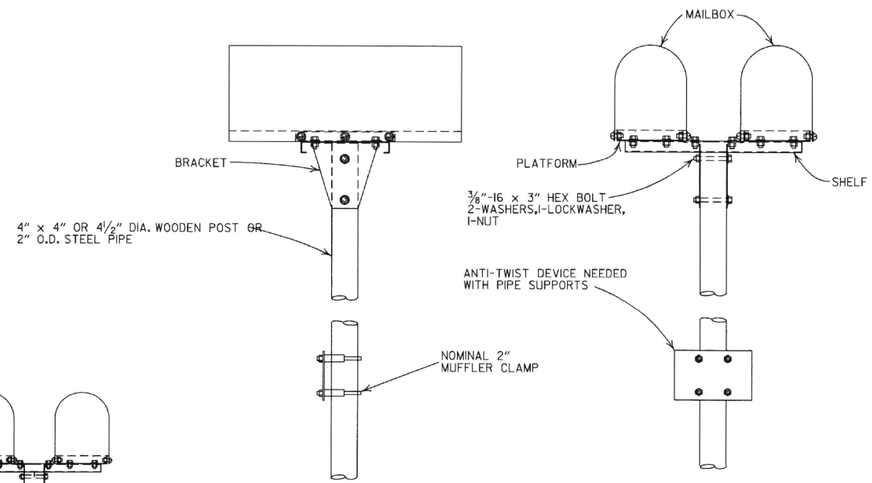
PLATFORM

GENERAL NOTES

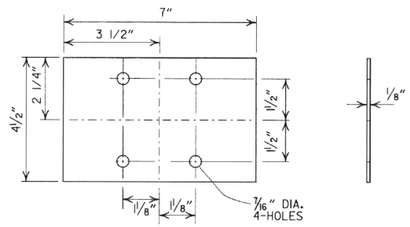
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED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



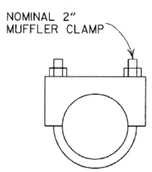
SINGLE INSTALLATION



DOUBLE INSTALLATION



ANTI-TWIST PLATE



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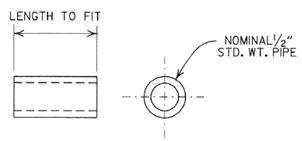

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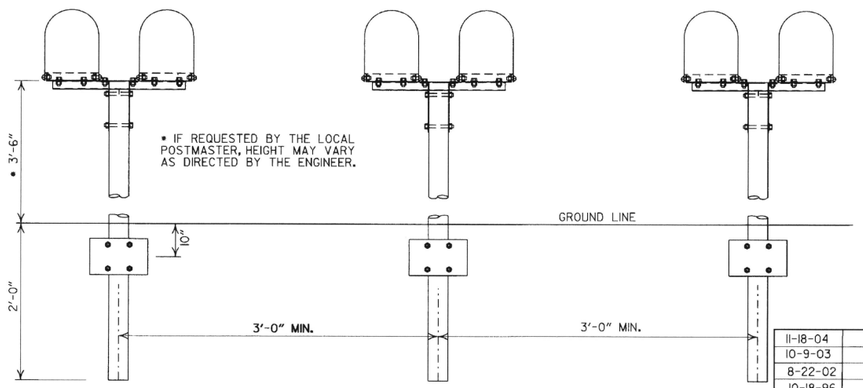


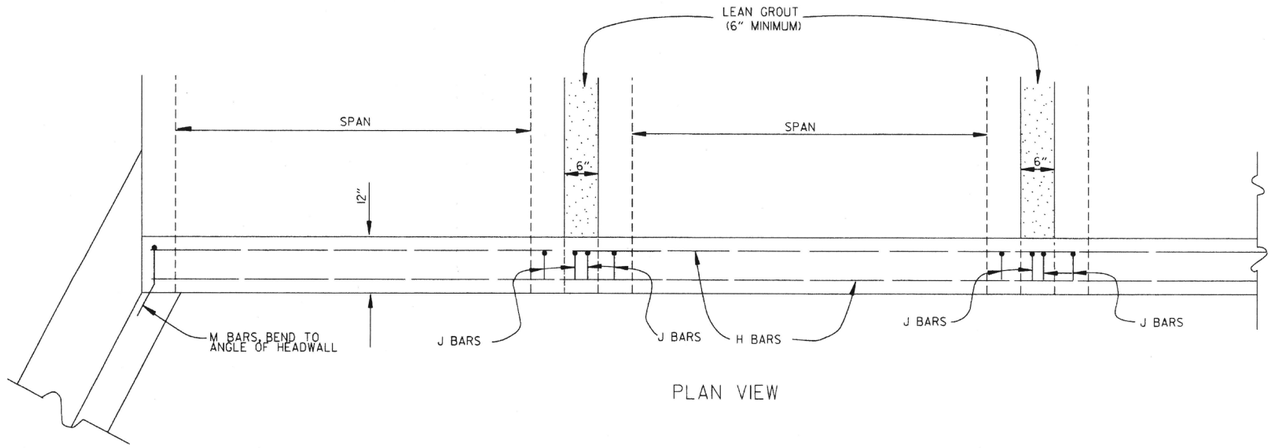
SPACING FOR MULTIPLE POST INSTALLATION

DATE	FILMED	REVISION
11-18-04		REVISED NOTES
10-9-03		REVISED NOTE 6
8-22-02		REVISED NOTE 6
10-18-96		CORRECTED AASHTO
10-1-92		CORRECTED SPELLING
9-26-91		NEW PHONE NUMBER
8-15-91		ADDED NOTE
11-30-89		ADJUSTED HEIGHT & ADDED NOTE
2-16-89		DELETED SLOTS FROM SHELF & PLTF
11-17-88	10-1-92	ADJUSTED DIMENSIONS OF STEEL POSTS
7-15-88	120-7-15-88	ISSUED

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

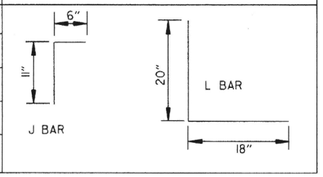
STANDARD DRAWING MB-1



PLAN VIEW

BAR LIST

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



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

GENERAL NOTES

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

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

ALL EXPOSED CORNERS TO HAVE ¾" CHAMFERS.

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

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

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

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

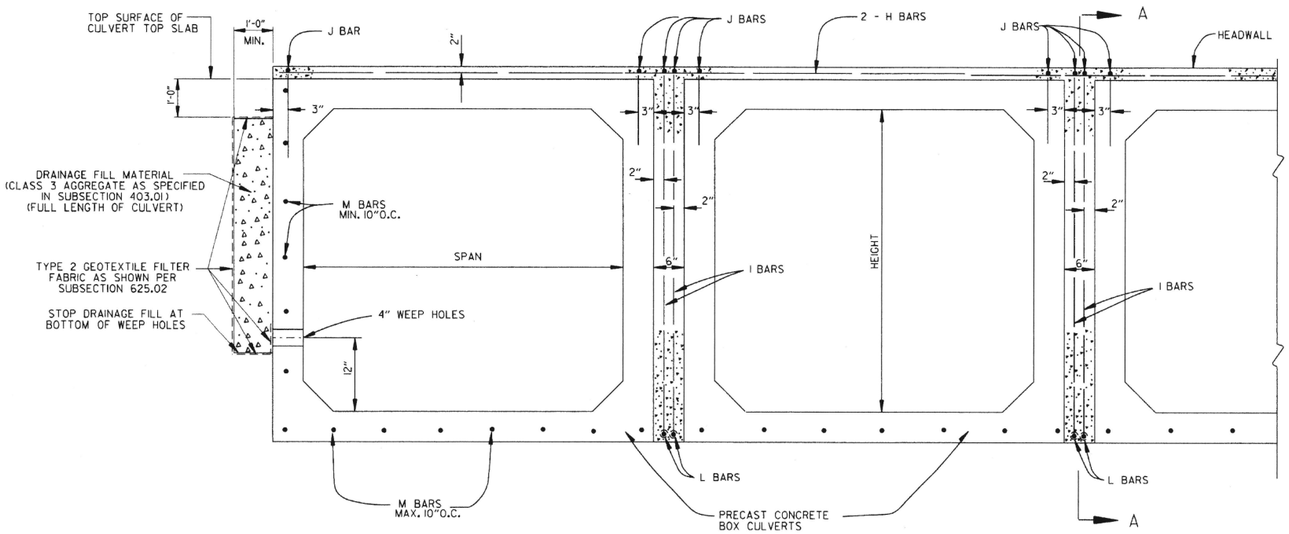
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

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

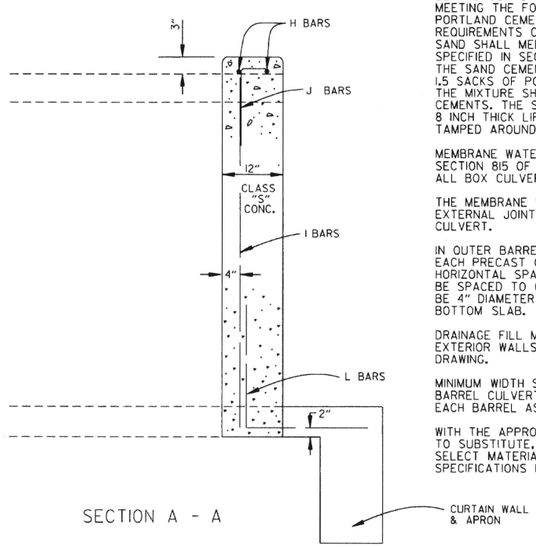
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT. SEE DETAILS ON THIS DRAWING.

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

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



END VIEW



SECTION A - A

DATE	REVISION	DATE FILMED
1-28-15	REVISED GEOTEXTILE FABRIC PLACEMENT	
12-15-11	ADDED NOTE & DTLS FOR WEEP HOLE AND DRAINAGE FILL	
10-15-09	ADDED GENERAL NOTE	
11-10-05	REVISED SPACING OF "M" BARS	
4-10-03	REVISED GENERAL NOTES	
10-18-96	CORRECTED AASHTO REF.	
10-1-92	ADDED NOTE FOR MEMBRANE WATERPROOFING	
8-15-91	ADDED NOTE FOR LEAN GROUT	
11- 8-90	REVISED FOR 1991 SPECS	
11-30-89	ISSUED; JABE	

ARKANSAS STATE HIGHWAY COMMISSION

PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	31⅝	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

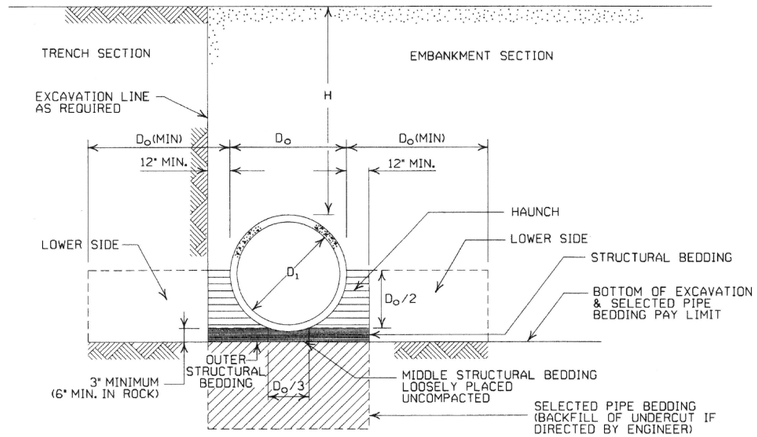
- LEGEND -

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

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

* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET) METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
		2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL MIN. THICKNESS REQUIRED INCHES	STEEL ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	STEEL MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	ALUMINUM MIN. THICKNESS REQUIRED INCHES	ALUMINUM ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	ALUMINUM MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM		
15	17x13	3	0.064	2	15	0.060	2	15
18	21x15	3	0.064	2	15	0.060	2	15
21	24x18	3	0.064	2.25	15	0.060	2.25	15
24	28x20	3	0.064	2.5	15	0.075	2.5	15
30	35x24	3	0.079	3	12	0.075	3	12
36	42x29	3½	0.079	3	12	0.105	3	12
42	49x33	4	0.079	3	12	0.105	3	12
48	57x38	5	0.109	3	13	0.135	3	13
54	64x43	6	0.109	3	14	0.135	3	14
60	71x47	7	0.138	3	15	0.164	3	15
66	77x52	8	0.168	3	15			
72	83x57	9	0.168	3	15			

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

CONSTRUCTION SEQUENCE

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

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

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

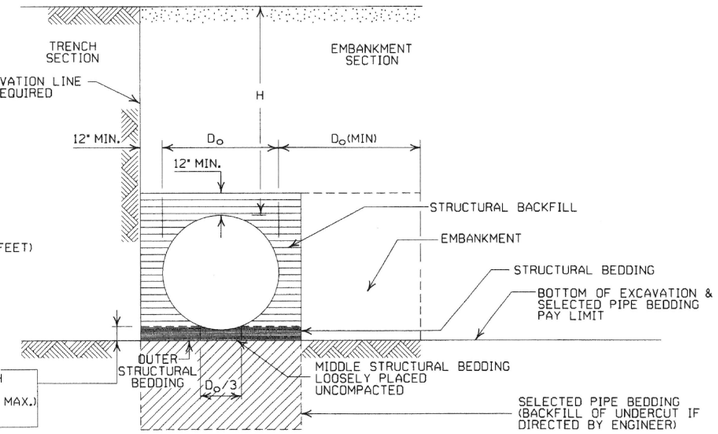
③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

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

- LEGEND -

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

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

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

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

DATE	REVISION	DATE FILMED
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 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.

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

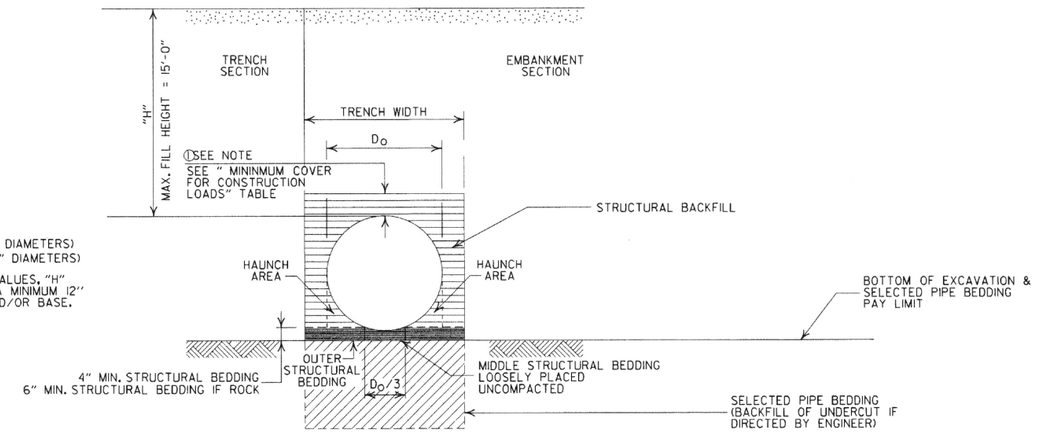
MINIMUM COVER FOR CONSTRUCTION LOADS

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

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

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

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

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL

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 1INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

MULTIPLE INSTALLATION OF PVC PIPES

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

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

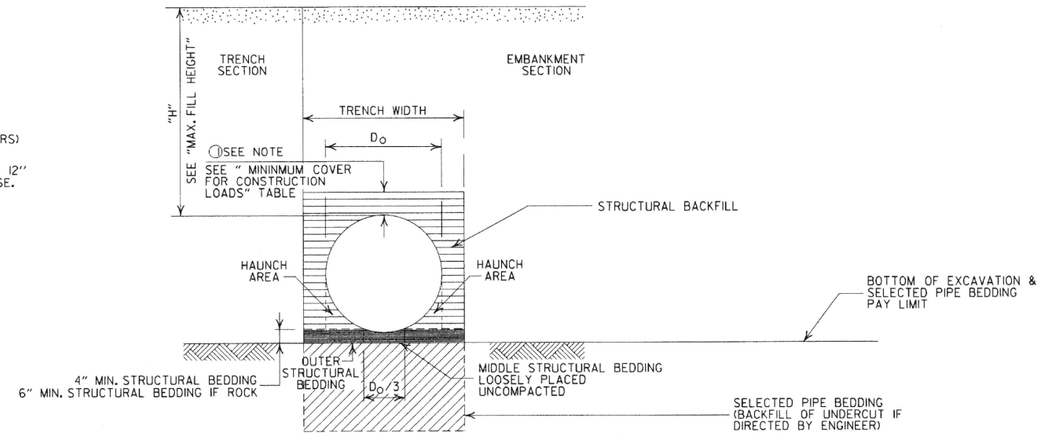
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (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 ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

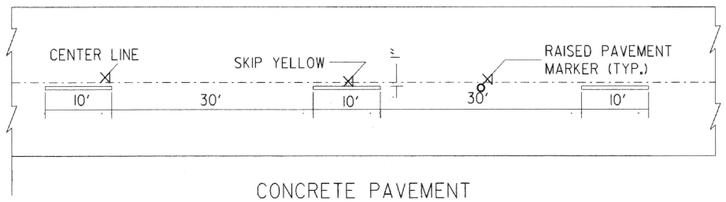
= UNDISTURBED SOIL

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

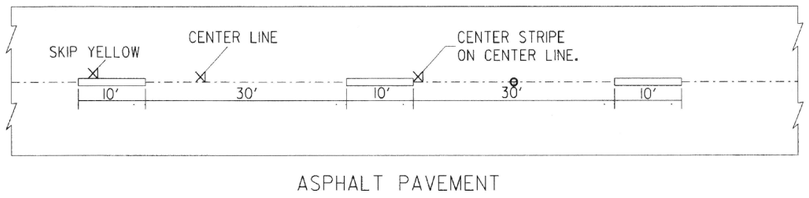
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

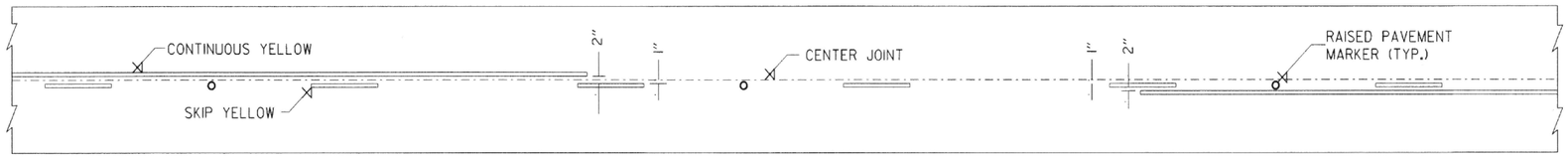


CONCRETE PAVEMENT

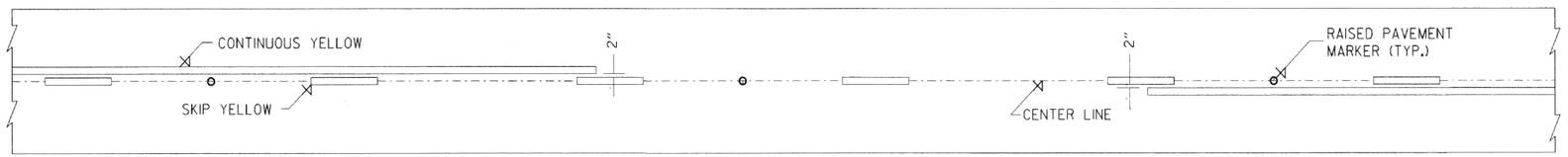


ASPHALT PAVEMENT

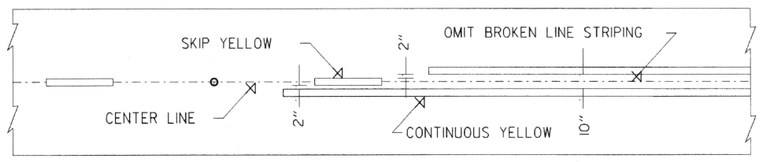
BROKEN LINE STRIPING



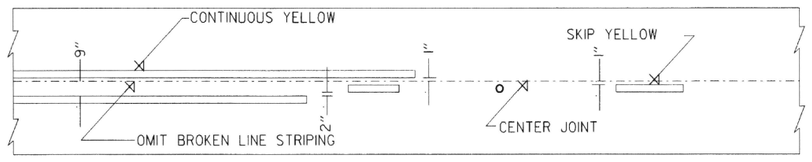
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

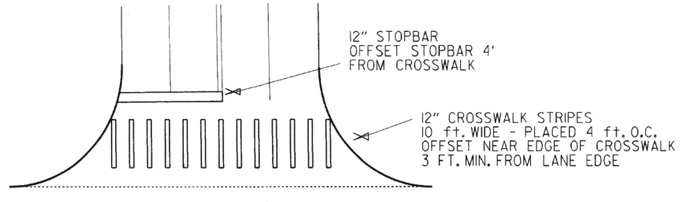


ASPHALT PAVEMENT



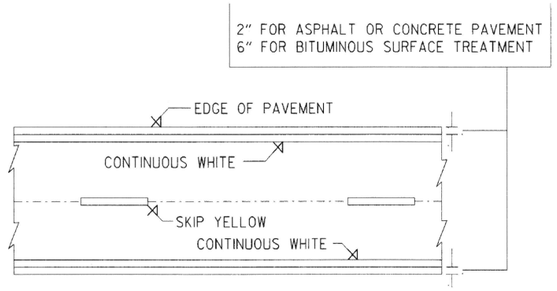
CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

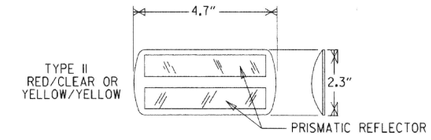


CROSSWALK AND STOPBAR DETAILS

NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.



PAVEMENT EDGE LINE MARKING



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



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

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

DATE	REVISION	FILMED
5-12-16	REVISED LINE WIDTHS, SPACING, & NOTES	
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

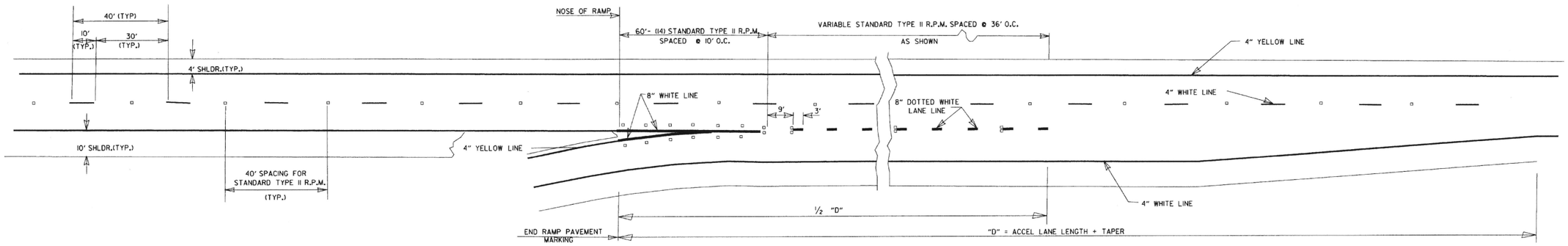
PAVEMENT MARKING QUANTITIES
(BASED ON 700' ACCEL. LANE + 300' TAPER)

ENTRANCE RAMP

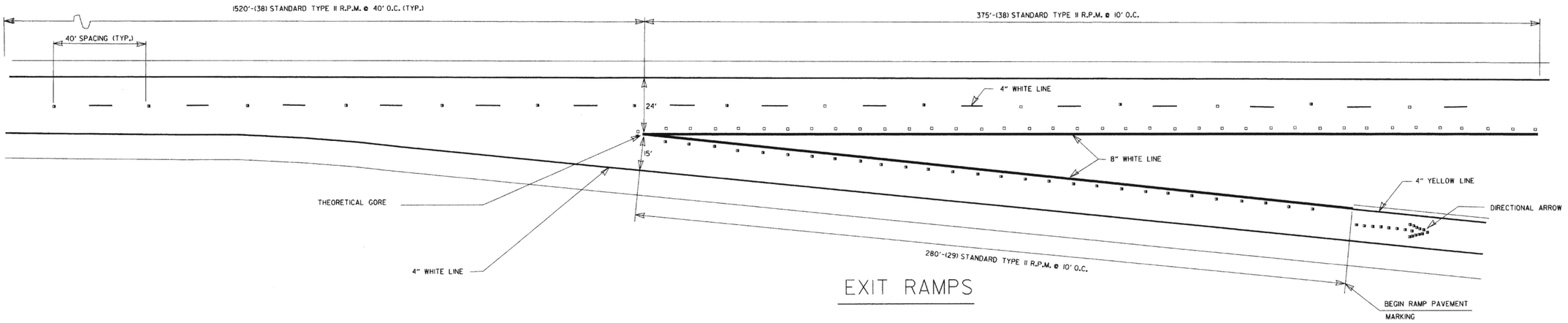
8" WHITE = 228 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 38 EACH

EXIT RAMP

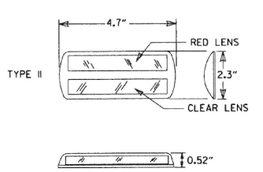
4" WHITE = 280 LIN. FT.
8" WHITE = 655 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 38 EACH
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 48 EACH
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 38 EACH



ENTRANCE RAMPS

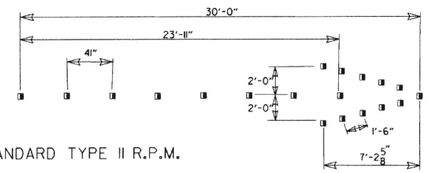


EXIT RAMPS



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

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



(19) STANDARD TYPE II R.P.M.

DIRECTIONAL ARROWS

GENERAL NOTES:

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

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

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

DATE	REVISION	FILMED
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
7-26-12	REVISED RPM NOTATION	
12-15-11	REVISED RPMs ACCORDING TO LATEST POLICY	
11-17-10	REMOVED PLOWABLE PAVEMENT MARKERS	
6-3-10	REVISED PER 2009 MUTCD	
11-18-04	REVISED NOTES	
8-22-02	ADDED & REVISED NOTES; REV. ENTRANCE & EXIT RAMPS	
5-18-00	REMOVED HASHMARKS	
7-02-98	CHANGED TYPES TO ROMAN NUMERALS	
4-26-96	ADDED DIMENSIONS & QUANTITIES; REVISED LANE WIDTH ON EXIT RAMP	
2-2-95	PLACED IN USE	2-2-95

ARKANSAS STATE HIGHWAY COMMISSION

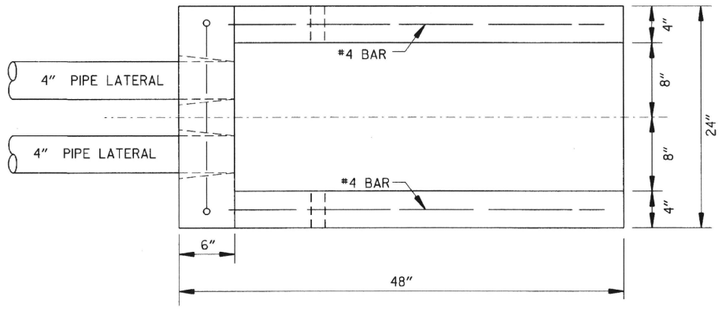
PERMANENT PAVEMENT MARKING ON ACCESS CONTROLLED ROADWAYS

STANDARD DRAWING PM-2

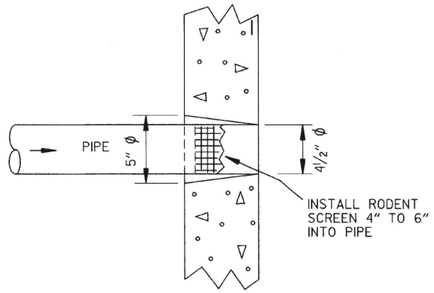
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

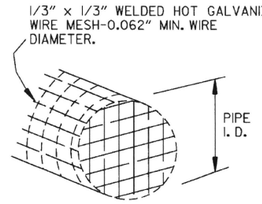
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



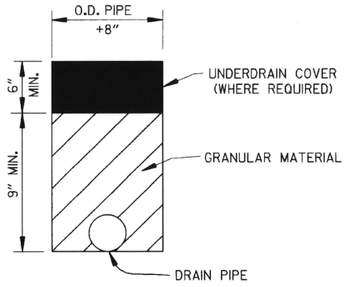
PLAN VIEW

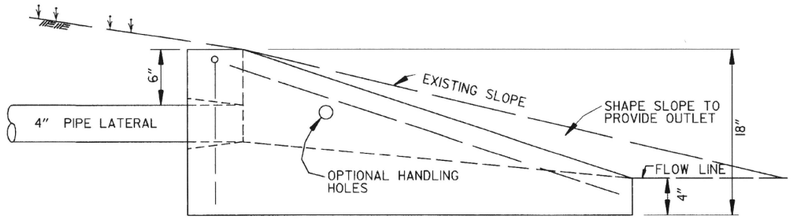


DETAIL OF HOLE FOR 4" PIPE

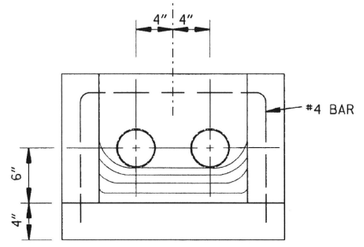


DETAIL OF RODENT SCREEN

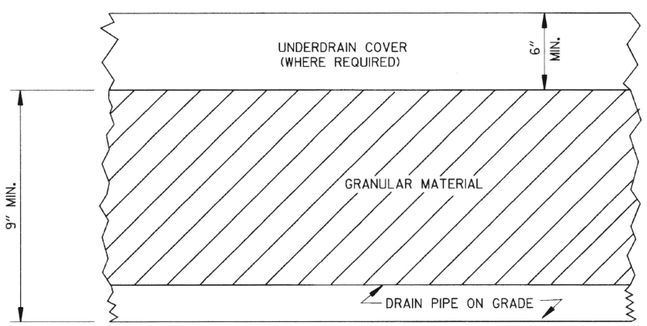




SIDE VIEW

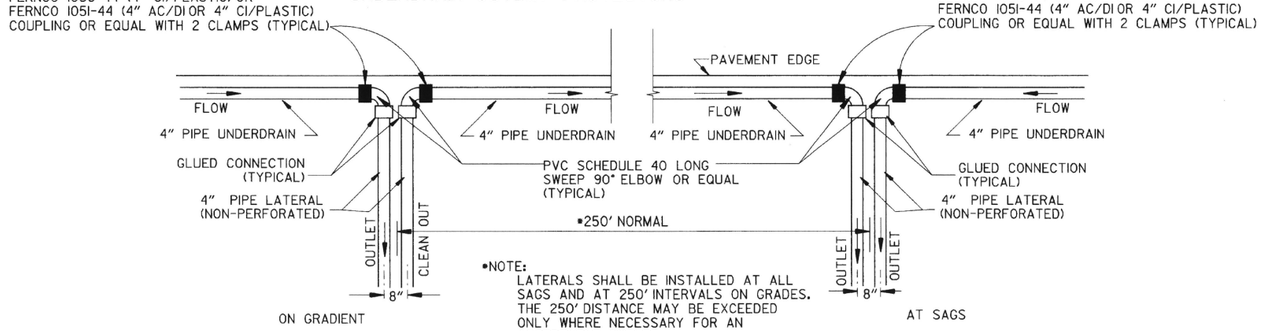


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

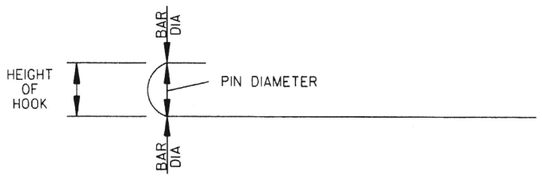
STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

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

BAR SIZE	PIN DIAMETER	HOOK EXTENSION "K"
3	2¼"	4"
4	3 "	4½"
5	3¾"	5"
6	4½"	6"
7	5¼"	7"
8	6"	8"

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "b1", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2¾ INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.



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

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

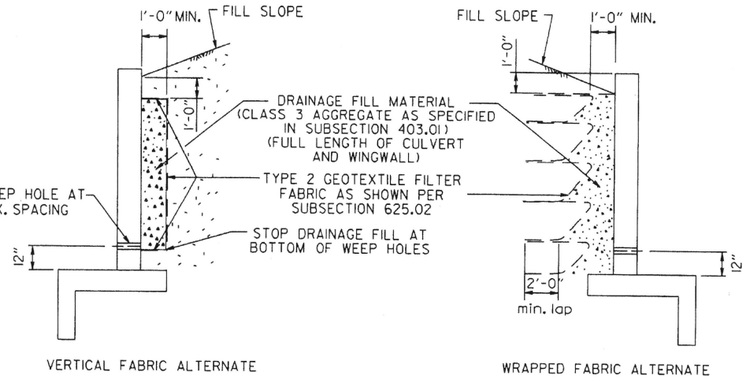
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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

REPLACEMENT BAR LENGTHS TABLE

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

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

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

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

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

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

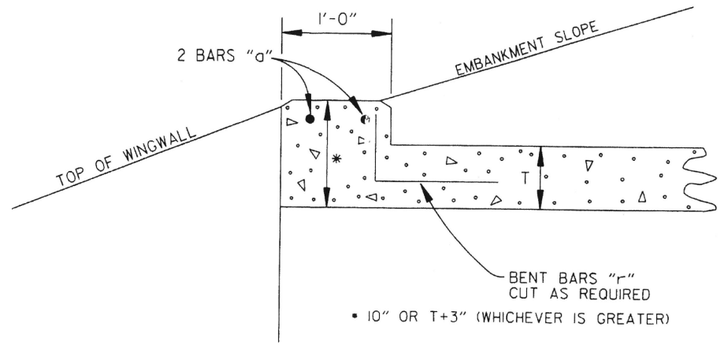
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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

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

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

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



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.

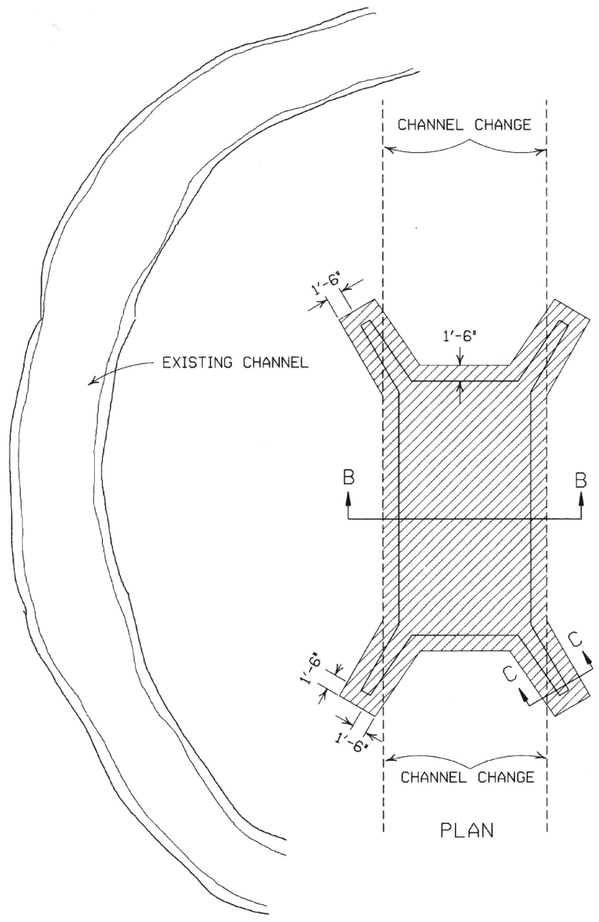
R.C. BOX CULVERT HEADWALL MODIFICATIONS

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	

ARKANSAS STATE HIGHWAY COMMISSION

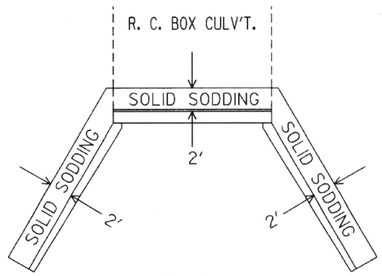
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

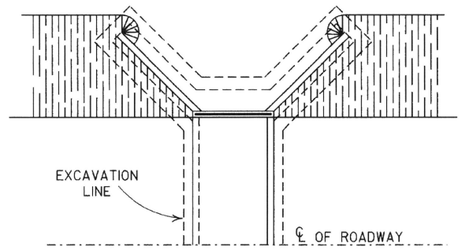
SOLID SODDING



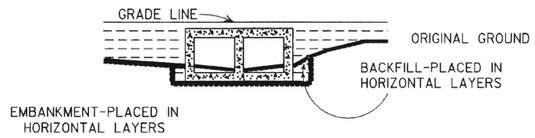
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

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

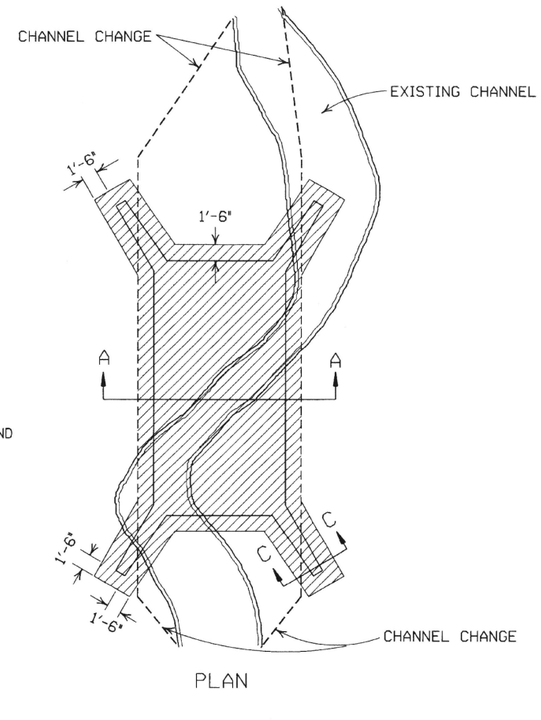


PLAN

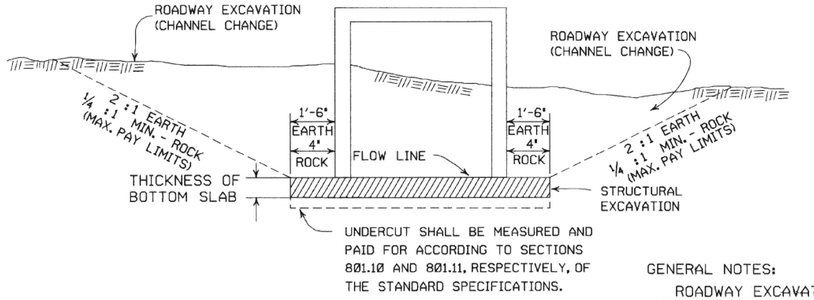


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

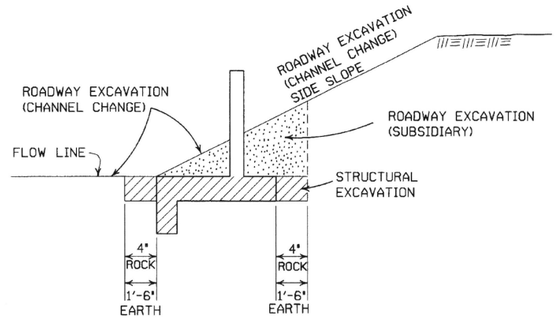


PLAN

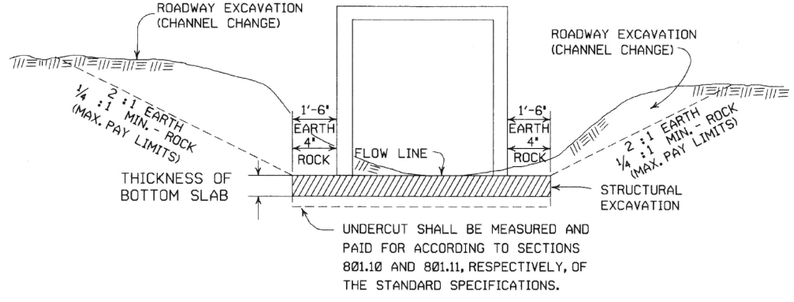


SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:

ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

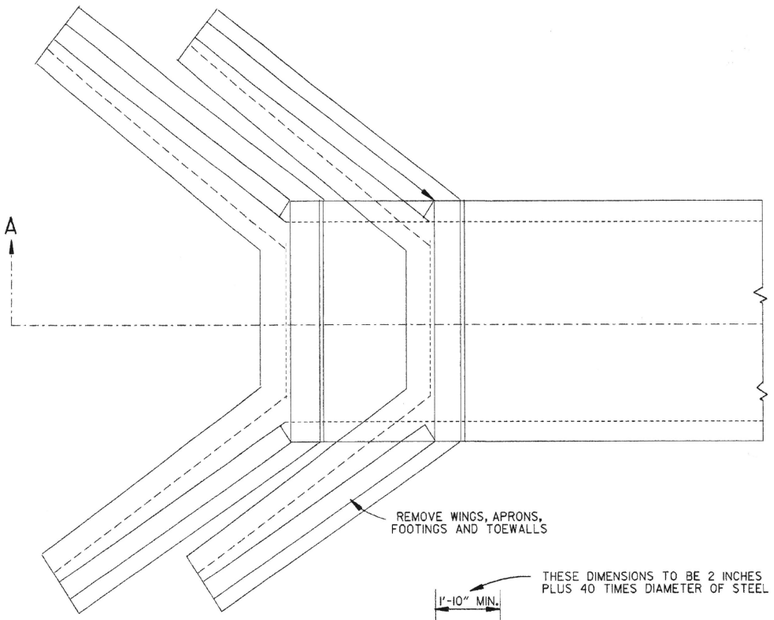
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

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

ARKANSAS STATE HIGHWAY COMMISSION

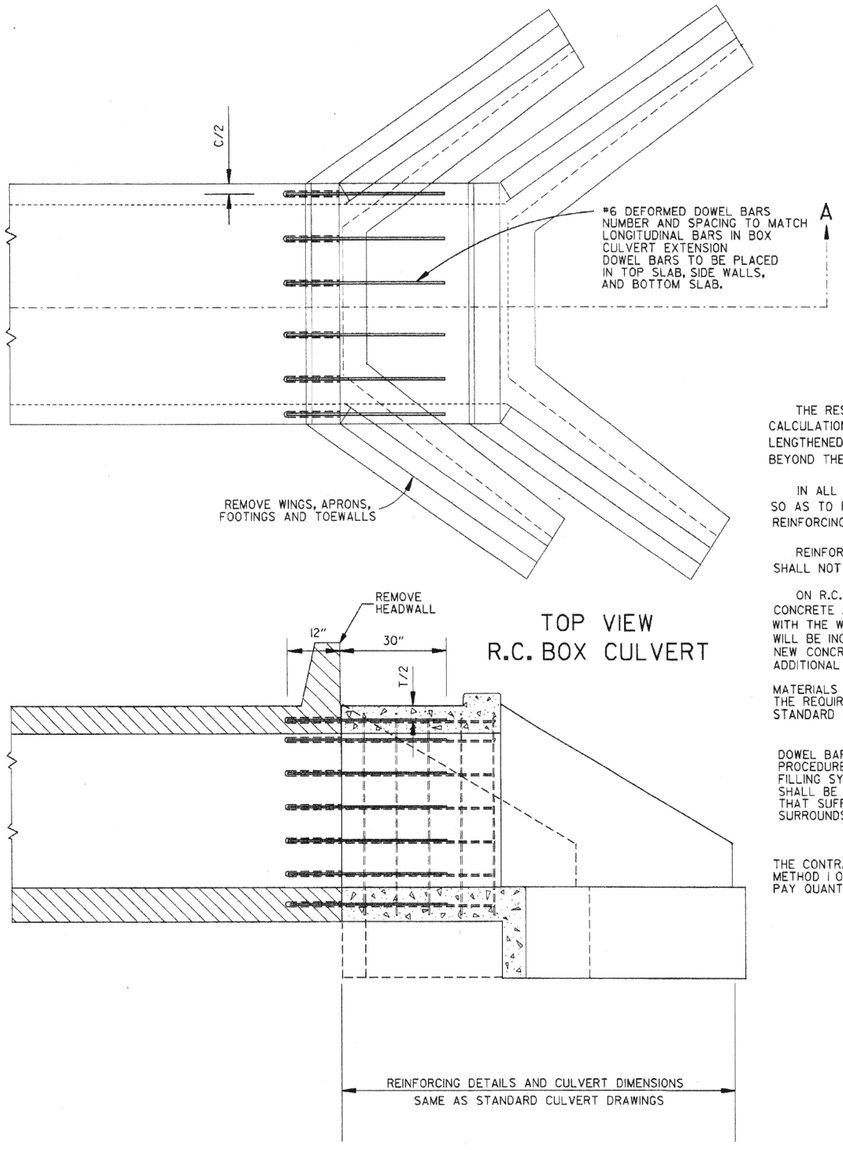
EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

STANDARD DRAWING RCB-2



TOP VIEW
R.C. BOX CULVERT

SECTION A-A
METHOD 1



TOP VIEW
R.C. BOX CULVERT

SECTION A-A
METHOD 2

GENERAL NOTES

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS

STANDARD DRAWING RCB-3

LOOP DETECTOR INSTALLATION AND TESTING

NOTES:

1. LOOPS WITH A PERIMETER GREATER THAN 40' SHALL HAVE TWO TURNS. LOOPS WITH A PERIMETER LESS THAN OR EQUAL TO 40' SHALL HAVE THREE TURNS, UNLESS OTHERWISE NOTED ON THE PLANS. QUADRUPOLE LOOPS SHALL BE TWO TURNS (2-4-2 CONFIGURATION) UNLESS OTHERWISE NOTED.
2. LOOP AND FEEDER WIRE SHALL BE CONTINUOUS WITHOUT SPLICES EXCEPT AT THE LOOP/FEEDER WIRE SPLICE AS SHOWN. SPLICE SHALL BE ROSIN SOLDERED AND WATERPROOFED WITH AN ACCEPTED SPLICE KIT. DRAIN WIRE SHALL BE GROUNDED IN CABINET AND INSULATED AT LOOP TO FEEDER SPLICE.
3. THE LOOP TO FEEDER SPLICE, FEEDER JACKET AND JACKET OF LOOP WIRE IN DUCT SHALL BE COMPLETELY SEALED AND WATERPROOFED.
4. CONTRACTOR MAY MAKE CONNECTIONS TO SIGNAL CABLE AND LOOP TO FEEDER CONNECTION AT TERMINAL STRIPS MOUNTED TO POLE INSIDE HAND HOLD COVER AS SHOWN IN DETAIL. TERMINALS MUST BE EASILY ACCESSIBLE, BUT PROTECTED AGAINST ACCIDENTAL CONTACT. CONNECTION OF POWER CARRYING CIRCUITS MUST BE SEPARATED FROM LOOP OR LOGIC CIRCUITS. ALL CONNECTIONS TO TERMINAL STRIPS SHALL UTILIZE SPADE LUGS OR AS APPROVED BY THE ENGINEER.
5. EACH LOOP SHALL HAVE A SEPARATE "FEEDER WIRE" UNLESS OTHERWISE NOTED. ALL FEEDER WIRES SHALL BE LABELED AS TO LOOP NUMBER AS DESIGNATED ON THE PLANS.
6. ALL LOOP WIRE ENTERING PULL BOXES SHALL BE ENCLOSED IN CONDUIT. EACH LOOP WIRE SHALL ENTER PULL BOX OR POLE BASE THROUGH A SEPARATE PIECE OF ONE INCH (1"Ø) CONDUIT.
7. LOOP WIRE FROM LOOP TO CONDUIT IS NOT TWISTED. LOOP WIRE IN THE CONDUIT MUST BE TWISTED TWO TO FIVE TURNS PER FOOT.
8. WARRANTY PERIOD FOR LOOPS SHALL NOT COMMENCE UNTIL TESTED BY THE CONTRACTOR AND ACCEPTED BY THE ENGINEER. CONTRACTOR SHALL PERFORM TEST AND PROVIDE A RECORD TO THE ENGINEER AS LISTED IN THE DETECTOR LOOP TESTING PROCEDURE.
9. UNLESS OTHERWISE APPROVED BY THE ENGINEER, BACKER ROD SHALL BE INSTALLED IN SHORT SECTIONS SPACED NOT MORE THAN 18" APART AND WEDGED INTO SLOT TO HOLD CABLE IN PLACE. CABLE SHALL BE TOTALLY ENCAPSULATED IN SEALER.
10. "HOT POUR" SEALER SHALL NOT BE ALLOWED WITH 705-LOOP WIRING IN DUCT.
11. WHERE UNDERGROUND SPLICES OF SIGNAL CABLE ARE REQUIRED, CONNECTIONS SHALL BE SOLDERED AND COMPLETELY WATERPROOFED TO THE SATISFACTION OF THE ENGINEER. WATERPROOFING SHALL EXTEND A MINIMUM OF TWO INCHES PAST THE SIGNAL CABLE JACKET AND SHALL COMPLETELY COVER ALL INDIVIDUAL CONDUCTORS OF THE SIGNAL CABLE. WATERPROOFING DOES NOT APPLY TO CONNECTIONS MADE IN POLE BASES.
12. CONTRACTOR SHALL CONNECT A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE. ONLY ONE NEUTRAL IS REQUIRED FOR PEDESTRIAN SIGNALS. A SEPARATE 5C (TYPICAL) IS PROVIDED FOR PEDESTRIAN PUSH BUTTONS.
13. TRAFFIC CONTROLLER CABINET AND LAYOUT SHALL BE SUCH THAT IT IS NOT NECESSARY TO SHUT DOWN POWER OR REMOVE LOAD SWITCHES IN ORDER TO EASILY TEST OR MODIFY DETECTOR INPUTS TO CONTROLLER. CONTROLLER CABINET SHALL BE WIRED SUCH POWER TO LOAD SWITCHES CANNOT BACKFEED TO LOAD SWITCH POWER BUSS DURING FLASH OPERATION.

TYPICAL PROCEDURE FOR DETECTOR LOOP TESTING

(1) DISCONNECT AND TEST CONTINUITY (< 10 OHMS)
IF CONTINUITY IS BAD, GO TO TEST 3

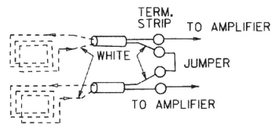
(2) TEST INSULATION (@ 500 VOLT TEST > 10 MEG-OHM)
IF TESTS 1& 2 ARE GOOD, NO FURTHER TESTING IS NECESSARY. RECORDED RESULTS CONSIST OF TESTS 1& 2 FROM CONTROL CABINET WITH FEEDER WIRE CONNECTED TO LOOP.

(3) OPEN SPLICE (DO NOT BREAK CONNECTION) REPEAT TEST 1& 2
IF TEST 3 IS BAD, GO TO TEST 4

(4) BREAK SPLICE, INSTALL JUMPER IN CABINET, REPEAT TESTS 1& 2 SEPARATELY FOR FEEDER AND FOR LOOP

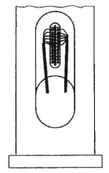
FAILURES TYPICALLY RESULT FROM BROKEN WIRE IN PAVEMENT, FAULTY INSULATION OF LOOP OR FEEDER WIRE, OR POORLY INSULATED SPLICE CONNECTION.

SERIES CONNECTED LOOPS

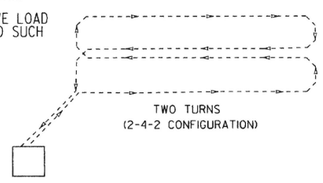


WIND LOOPS COUNTERCLOCKWISE; TAG WIRE EXITING SLOT AND TIE TO WHITE LEAD OF FEEDER WIRE; WHEN LOOPS ARE TIED TO SAME VEHICLE DETECTOR, SERIES CONNECT IN CABINET AS SHOWN.

HANDHOLE TERMINAL

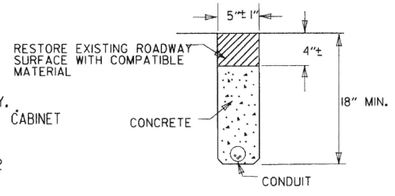


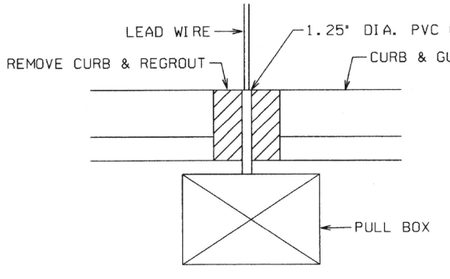
QUADRUPOLE LOOP

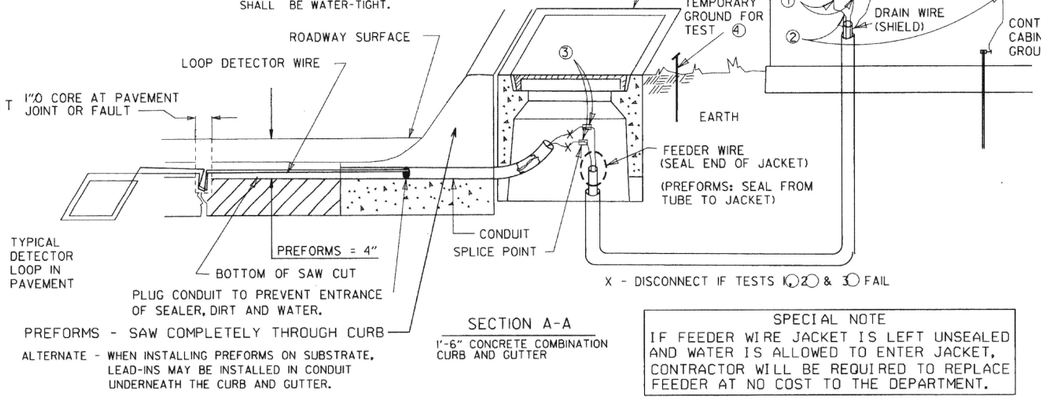


TRENCHING DETAIL

(FOR SAW CUT TRENCH IN ROADWAY)



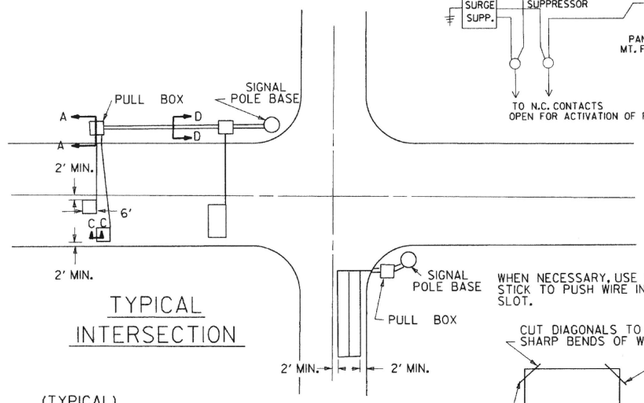




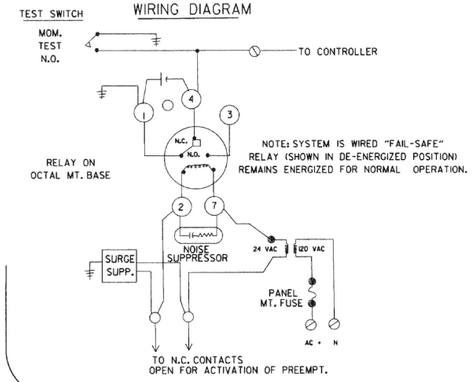
SECTION A-A
1'-6" CONCRETE COMBINATION CURB AND GUTTER

(TYPICAL)

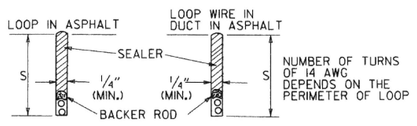
TYPICAL INTERSECTION



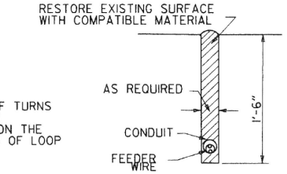
TRAFFIC SIGNAL PRE-EMPTION INTERFACE WIRING DIAGRAM



TYPICAL SECTIONS FOR PULSE AND PRESENCE LOOP DETECTORS



SECTION C-C
S=2 ½" IN ASPHALT
S=1½" IN CONCRETE



SECTION D-D

SPECIAL NOTE
IF FEEDER WIRE JACKET IS LEFT UNSEALED AND WATER IS ALLOWED TO ENTER JACKET, CONTRACTOR WILL BE REQUIRED TO REPLACE FEEDER AT NO COST TO THE DEPARTMENT.

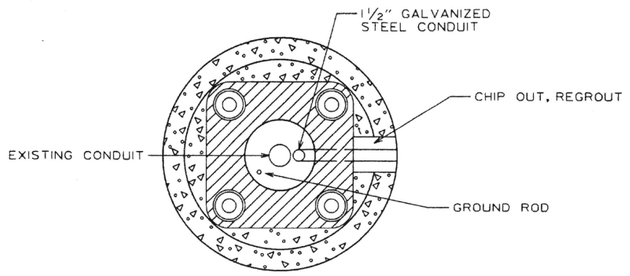
DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
5-17-01	REVISED	
4-11-01	REVISED	
2-4-00	REVISED PRE-EMPTION TEST SWITCH	
11-18-98	REVISED NOTES	
11-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

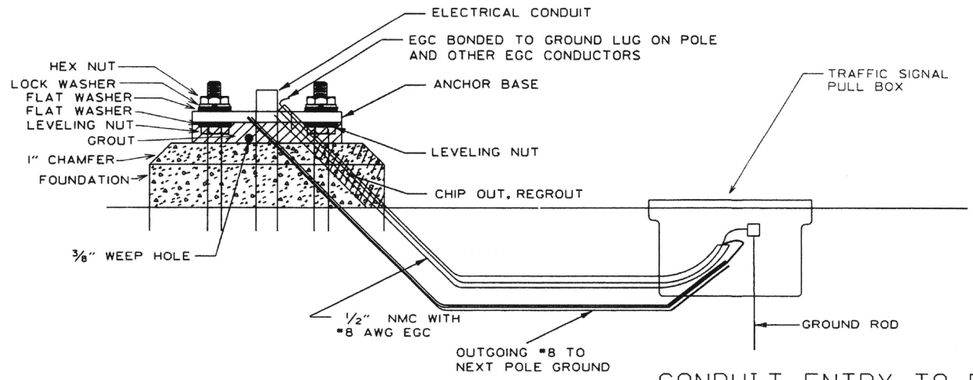
LOOP DETECTOR INSTALLATION

STANDARD DRAWING SD-4

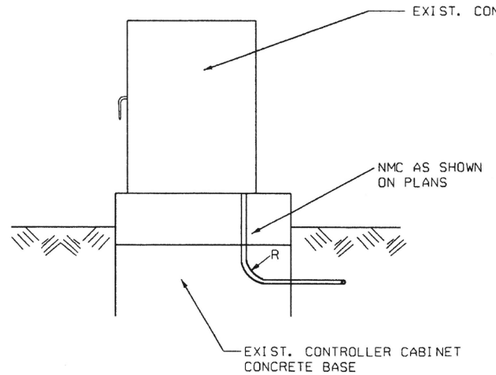
CONDUIT ENTRY TO EXISTING POLE BASE



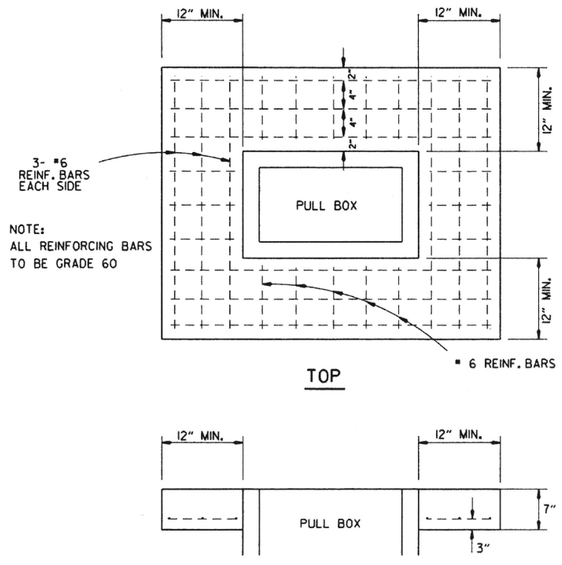
ANCHOR BASE



CONDUIT ENTRY TO EXISTING CONTROLLER CABINET



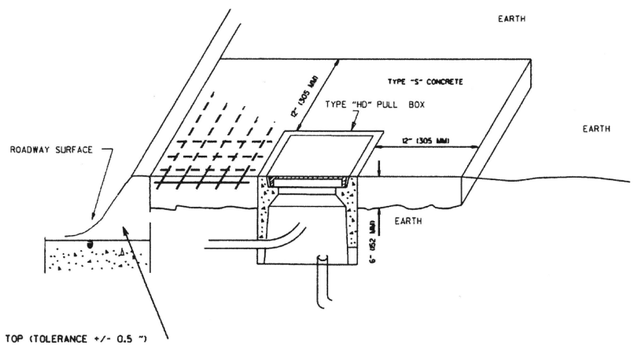
NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.



TOP

ELEVATION

TYPE "HD" CONCRETE PULL BOX DETAIL



NOTE: ALL TYPE 1 AND TYPE 2 HD PULL BOXES ARE INSTALLED WITH AN APRON OF CONCRETE 12" (305 MM) WIDE AND 7" (178 MM) IN DEPTH. ALL PAYMENT SHALL BE INCLUDED IN THE PRICE OF THE TYPE HD PULL BOX. PULL BOX SHALL BE INSTALLED FLUSH TO SURROUNDING GRADE UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER. THE CONCRETE SHALL BE CLASS "S." THREE #6 REINFORCING BARS IN THE APRON ON ALL SIDES OF THE PULL BOX IS REQUIRED IN CONCRETE.

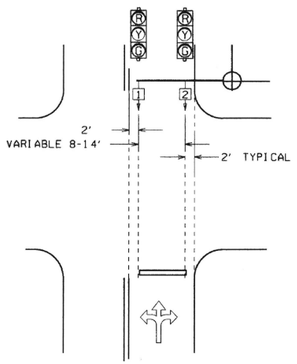
DATE	REVISION	DATE FILM
9-2-15	REVISED PULL BOX DEPTH	
9-12-13	ISSUED AS STANDARD DRAWING	
5-21-09	REVISED GROUNDING	
7-31-08	ADDED & REVISED CONDUIT ENTRY	
6-23-04	REVISED CLEARANCE AT CURB ENTRY	
1-4-02	ADDED REINFORCING TO BOX APRON	
7-2-01	REVISED	
12-27-99	REVISED NOTES	
11-18-98	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

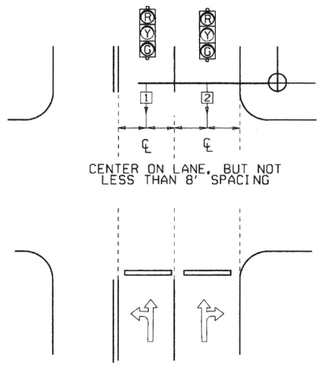
HEAVY DUTY PULL BOX

STANDARD DRAWING SD-6

(A)



(B)



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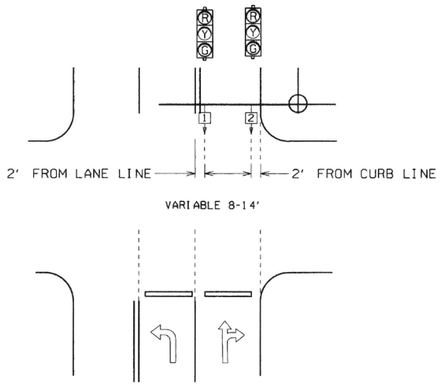
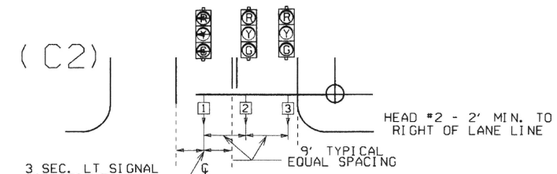
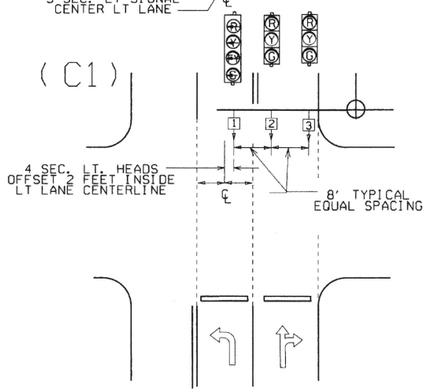


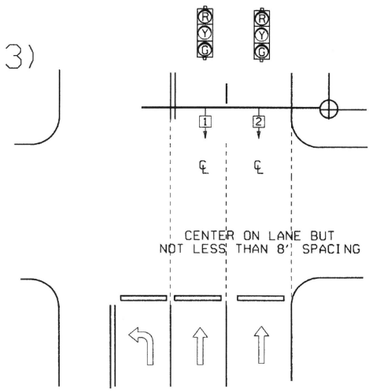
(C2)



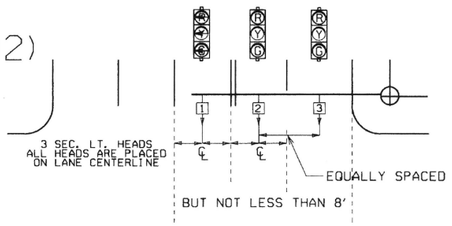
(C1)



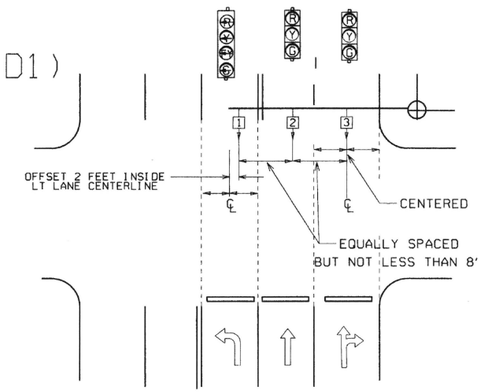
(C3)



(D2)

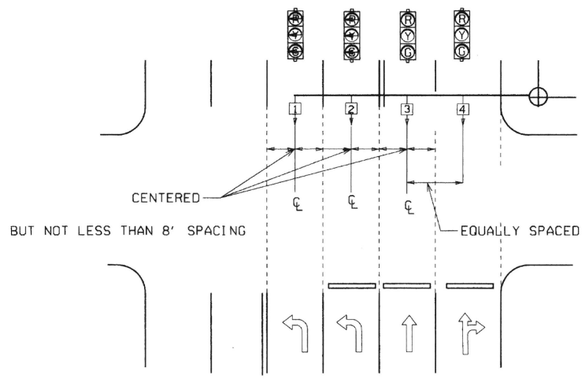


(D1)



NOTE: WHERE LEFT TURN HEAD (HEAD 1 ON D1 AND D2) IS NOT CALLED FOR ON PLANS, MAST ARM LENGTH MAY STILL BE ALLOWED FOR FUTURE INSTALLATION. HEADS FOR THROUGH MOVEMENTS SHALL STILL BE ALIGNED WITH THROUGH LANES AS SHOWN ON DETAILS.

(E)



℄ = CENTER OF LANE FROM APPROACH SIDE

GENERAL NOTES:

1. FOUR SECTION 'PROTECTED/PERMISSIVE' LEFT TURN HEADS SHOULD BE PLACED A MINIMUM OF TWO (2') FEET TO THE RIGHT OF THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

2. THREE SECTION 'PROTECTED' LEFT TURN HEADS SHOULD BE PLACED ON THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

3. WHEN IT IS NECESSARY TO PLACE POLES OTHER THAN AS SHOWN ON PLAN SHEET(S) RESULTING IN MAST ARM EXTENDING MORE THAN TWO FEET PAST (TO THE LEFT OF) THE CENTERLINE OF THE APPROACHING LEFT TURN LANE, MAST ARM SHALL BE CUT TO APPROPRIATE LENGTH AS DETERMINED BY THE ENGINEER, AND A NEW END CAP PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THIS PRIOR TO INSTALLING THE MAST ARM IF ADDITIONAL COMPENSATION IS REQUIRED.

4. SIGNAL HEAD SPACING SHALL, IN NO CASE, BE LESS THAN EIGHT (8') FEET BETWEEN HEADS ON CENTER, MEASURED HORIZONTALLY PERPENDICULAR TO THE APPROACH.

5. ALL SIGNAL HEADS SHOWN ON THIS DETAIL SHEET SHALL BE LOCATED ACCORDING TO THE DIMENSIONS SHOWN IN RELATION TO THE APPROACH SIDE OF THE INTERSECTION.

6. MAXIMUM MOUNTING HEIGHT OF SIGNAL FACES LOCATED BETWEEN 40 FEET AND 53 FEET FROM STOP BAR SHALL BE IN ACCORDANCE WITH FIGURE 4D-1 OF 2009 MUTCD.

9-12-13	ISSUED AS STANDARD DRAWING	
3-11-10	2009 MUTCD	
12-9-99	ISSUED	
DATE	REVISION	DATE FILM

ARKANSAS STATE HIGHWAY COMMISSION

SIGNAL HEAD PLACEMENT

STANDARD DRAWING SD-8

NOTES, PED AND TRAFFIC SIGNAL HEAD SIGNS:
EACH ITEM 'TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)' SHALL INCLUDE A SPECIAL SIGN AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12' TO THE RIGHT OF THE SIGNAL HEAD UNLESS REMOVED WITHIN THE SIGNAL PLAN NOTES.

EACH ITEM 'TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)' TO BE USED AS A LEFT TURN INDICATION ONLY SHALL INCLUDE A SIGN (R10-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12' TO THE RIGHT OF THE SIGNAL HEAD.

EACH PEDESTRIAN PUSHBUTTON SHALL HAVE ONE R10-3E SIGN ATTACHED TO THE POLE ABOVE THE BUTTON. ALL SIGN FACES SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING (TYPE III) WITH SILKSCREEN LEGEND AND BORDER.

ALL SIGN BLANKS SHALL BE CONSTRUCTED OF ALUMINUM ALLOY (ASTM DESIGNATION B-209. ALLOY 5052-H38) WITH THICKNESS OF 0.100 INCH.

GENERAL NOTES:
1. MAST ARM POLES SHALL BE MOUNTED A MINIMUM OF 4 FT. BEHIND CURB OR SHOULDER.

2. OCTAGONAL POLES AND ARMS MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS CAN BE INSTALLED IN LIEU OF ROUND. ALL POLES AND ARMS IN A JOB MUST BE THE SAME SHAPE.

3. MINIMUM STRUCTURAL REQUIREMENTS:
DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

USE FATIGUE CATEGORY I FOR ALL STRUCTURES ON ROUTES WHERE THE SPEED LIMIT IS 65 MPH AND GREATER AT THE STRUCTURE LOCATION AND ON ROUTES WHERE SPEED LIMIT IS GREATER THAN 45 MPH WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY II FOR STRUCTURES ON ROUTES WITH A SPEED LIMIT LESS THAN 65 MPH AND GREATER THAN 45 MPH WITH ARMS LESS THAN 60' AND ROUTES WITH SPEED LIMITS OF 45 MPH AND LESS WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY III FOR ALL STRUCTURES WHERE SPEED LIMIT IS 45 MPH AND LESS AND ARMS LESS THAN 60'.

CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH.

STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH A THICKNESS GREATER THAN 1/2" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

DEAD LOAD: AS A MINIMUM, DESIGN SHALL BE BASED ON THE FIXED ATTACHMENTS SHOWN BELOW OR AS MODIFIED IN THE PLANS.

ALL SIGNAL HEADS TO BE ONE WAY, 12 INCH, AND HAVE 5 IN. BACK PLATES:

HEADS AT END OF ARM - ONE 4 SEC., 85 LB., 16.0 SQ. FT. ONE SIGN MOUNTED 3 FT. FROM SIGNAL * 2' X 0' X 2' * 6'; 20 LB. REMAINING HEADS SPACED A 8 FT. * 3 SEC., 56 LB., TWO 5 SEC):
14.4 SQ. FT. DESIGN TO ACCOMMODATE (INCLUDING
2 HEADS FOR ARMS 10 TO 16 FT.
2 HEADS FOR ARMS 10 TO 16 FT.; INCLUDING LB.
3 HEADS FOR 18 TO 24 FT. ARMS;
4 HEADS FOR OVER 26 FT. ARMS.

STREET NAME SIGN -- 72" X 18", 36 LB., MOUNTED SUCH THAT OUTSIDE EDGE IS NOT GREATER THAN 12 FT. FROM POLE. DEPENDING UPON POSITION OF SIGNAL HEAD ADJACENT TO POLE, SIGN MAY OVERLAP POLE SHAFT
ROADWAY LUMINAIRES (WHERE REQUIRED ON PLAN SHEET) * VARIABLE ARM LENGTH (MAX.), 3.3 SQ. FT., 75 LB. PED SIGNALS -- TWO 2 SEC. 12 INCH MOUNTED 8 FT. FROM BASE OF POLE.
POST MOUNTED 3 SEC. SIGNAL HEAD AT 10 FT. ON SIDE OF POLE.

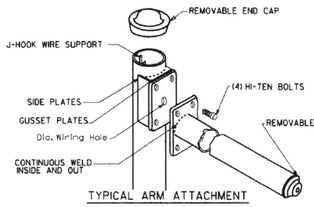
4. POLE/MAST ARM CAP -- POLE AND MAST ARMS CAPS SHALL BE PROVIDED, FABRICATED OF EITHER STEEL OR CAST ALUMINUM.

5. HAND HOLE -- HAND HOLES SHALL BE 4 X 6 INCHES FOR STANDARD, AND 3 X 5 INCHES FOR PED POLES, MINIMUM PLACED APPROXIMATELY 12 INCHES FROM BASE, AND SHALL BE FIXED WITH A BOLT DOWN COVER. A VACUUM FORMED ABS COVER IS AN ACCEPTABLE ALTERNATE TO STEEL. POLES GREATER THAN 21 FT. IN HEIGHT (FOR ROADWAY LUMINAIRE ATTACHMENT) SHALL INCLUDE A HAND HOLD WITHIN 12 INCHES OF MAST ARM(S) ATTACHMENT(S).

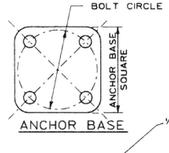
6. POLE/MAST ARM TAPER AND SLOPE - AVERAGE TAPER OF SIGNAL ARMS AND POLE SHALL BE 0.125 TO 0.15 INCHES PER FT.

MAST ARM CENTERLINE ANGLE AT ATTACHMENT POINT WITH POLE SHALL MAINTAIN NOT LESS THAN 0.5 DEGREES OR MORE THAN 4 DEGREES POSITIVE SLOPE WITH A LINE PERPENDICULAR TO THE POLE CENTERLINE. THE ARM SHALL MAINTAIN A POSITIVE AFTER IT IS PLACED UNDER LOAD.

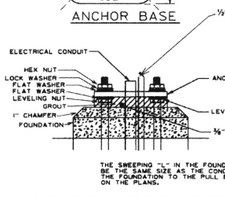
7. NUT COVERS - EACH POLE SHALL INCLUDE A BOLT DOWN NUT COVER FOR EACH ANCHOR BOLT.

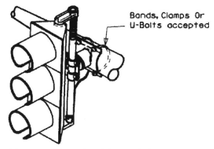


TYPICAL ARM ATTACHMENT

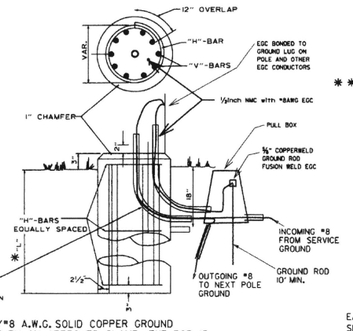


ANCHOR BASE





NOTE: THE SIGNAL SHALL BE CONNECTED TO THE MAST ARM BY BRACKETING AS DIRECTED BY THE ENGINEER.

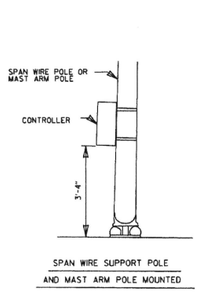


THE GROUND ROD SHALL BE FUSION WELDED TO A 1C/#8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO THE PRIMARY GROUND MAY BE BY AN APPROVED CLAMP. THE ROD IS TO BE LOCATED IN THE CONCRETE PULL BOX.

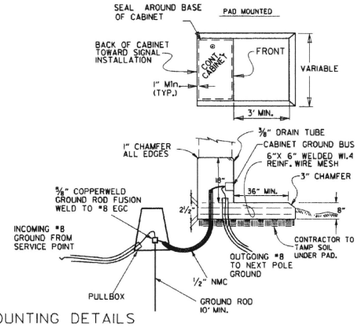
TYPICAL FOUNDATION DETAILS

POLE FOUNDATION MINIMUM DIMENSIONS AND STEEL REINFORCING. ALL REINFORCING STEEL SHALL BE GRADE 40 MIN.

ARM LENGTH	FDN. DIAMETER	DEPTH "L" *	STEEL VERT.	STEEL HORZ.	STEEL O/C.
PED	30"	7'-0"	12-#7 (6'-6")	10-#4	8.44"
2' to 12'	30"	10'-6"	12-#7 (10'-0")	15-#4	8.42"
over 12' to 20'	30"	11'-6"	12-#7 (11'-0")	16-#4	8.66"
over 20' to 35'	36"	12'-6"	13-#8 (12'-0")	17-#4	8.88"
over 35' to 50'	36"	13'-6"	13-#8 (13'-0")	19-#4	8.56"
over 50' to 72'	42"	14'-6"	18-#8 (14'-0")	20-#4	8.74"
Twins to 20'	30"	16'-0"	12-#6 (15'-6")	22-#4	8.76"
Twins over 20' to 44'	36"	16'-0"	13-#8 (15'-6")	22-#4	8.76"
Twins over 44' to 50'	42"	16'-0"	18-#8 (15'-6")	22-#4	8.76"
Twins over 50' to 72'	42"	16'-6"	18-#8 (16'-0")	23-#4	8.64"



SPAN WIRE SUPPORT POLE AND MAST ARM POLE MOUNTED



CONTROLLER CABINET MOUNTING DETAILS

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CABINET ORIENTATION SHALL BE SUCH THAT THE BACK OF THE CABINET IS PARALLEL TO THE STREET AND POSITIONED TO ALLOW VISIBILITY OF THE SIGNAL DISPLAY WHILE OBSERVING THE CONTROLLER FRONT PANEL.

8. GROUND ROD - A 10' X 5/8" GROUND ROD SHALL BE INSTALLED IN THE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND 1/2" NMC SHALL BE INCLUDED IN ITEM 714 FOR SIGNAL POLES AND ITEM 701 FOR THE CONTROLLER. THE PULL BOX AND CONDUCTOR BOX SHALL BE PAID FOR SEPARATELY.

9. POLE BASE/FOUNDATION - ANCHOR BOLTS SHALL INCLUDE AS A MINIMUM, ONE LEVELING NUT, TWO FLAT WASHERS, ONE LOCK WASHER, AND ONE HEX. NUT. PERIMETER OF ANCHOR BASE SHALL BE GROUTED WITH A 1/4" WEEP HOLE. ALL CONCRETE SHALL BE CLASS "S" OR GREATER.

10. CONCRETE - ALL CONCRETE FOR CONTROLLER CABINET AND POLE FOUNDATIONS SHALL BE CLASS "S" OR GREATER.

11. PEDESTRIAN PHASES - PEDESTRIAN MOVEMENTS SHALL BE PUSH BUTTON ACTUATED AND CONCURRENTLY TIMED, UNLESS OTHERWISE INDICATED ON THE PLAN SHEET(S). FURNISHING AND INSTALLING PED PUSH SWITCH SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM PEDESTRIAN SIGNAL HEAD.

SIGNAL OPERATION NOTES:

FLASHING OPERATION - PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 3 TO 5 WORK DAYS OR AS DIRECTED BY THE ENGINEER. SIGNAL SHALL BE PLACED IN OPERATION ONLY ON A REGULAR WORK DAY, EXCEPT FRIDAY.

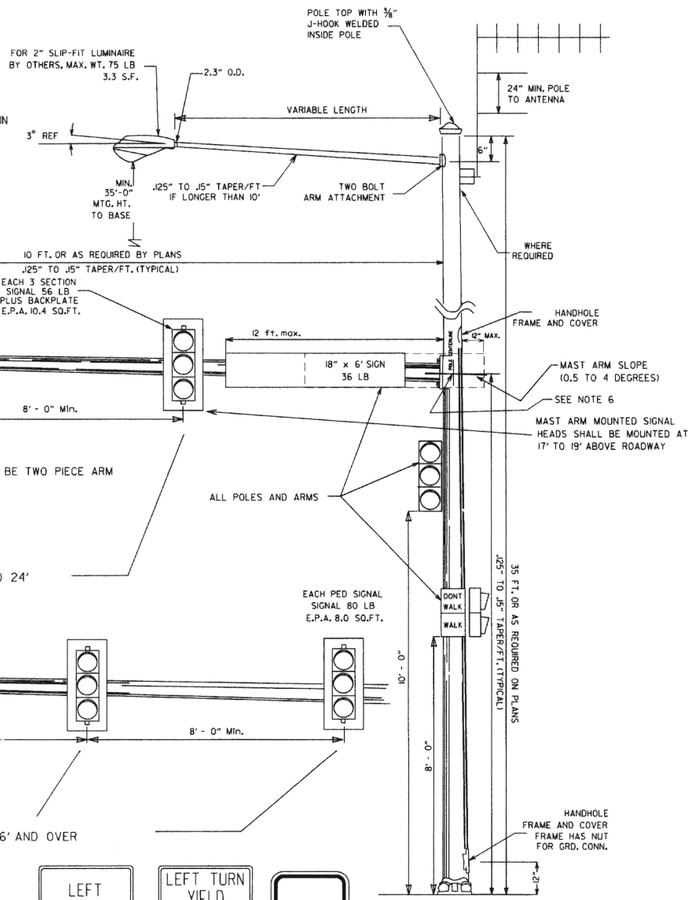
THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD. AT THE TIME INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS IN FLASH SEQUENCE.

SPECIAL NOTE: 90 MPH WIND ZONE DESIGN, SEE NOTE 3. MINIMUM STRUCTURAL REQUIREMENTS.

* WHEN THE GROUND ELEVATION AT THE POLE IS LOWER THAN THE ROADWAY ELEVATION, THE LENGTH OF FOUNDATION ABOVE THE GROUND MAY BE INCREASED TO PROVIDE THE REQUIRED SIGNAL HEAD CLEARANCE ABOVE THE ROADWAY. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 18" OR LESS, NO INCREASE IN DEPTH "L" WILL BE REQUIRED. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 5'-6" OR LESS, INCREASE DEPTH "L" BY 1'-0". FOR LENGTHS GREATER THAN 5'-6", DEPTH "L" SHALL BE ADJUSTED AS DIRECTED BY THE ENGINEER. LONGITUDINAL REINFORCING, AS SHOWN IN THE TABLE, SHALL BE PROVIDED FOR THE LENGTH OF THE EXTENDED SHAFT AND #4 TIES SHALL BE PROVIDED AT A SPACING NOT TO EXCEED 9" ON CENTERS. PAYMENT WILL BE IN ACCORDANCE WITH SECTION 714 OF THE STANDARD SPECIFICATIONS.

** IN LIEU OF DESIGNING THE STRUCTURE TO RESIST PERIODIC GALLOPING, A VIBRATORY MITIGATION DEVICE MAY BE PROVIDED BY THE POLE MANUFACTURER. THE VIBRATORY MITIGATION DEVICE SHALL BE AN ANTI-GALLOPING PANEL CONSISTING OF A 60"X16"X0.125" SIGN BLANK MOUNTED NEAR THE END OF THE MAST ARM NOT TO EXCEED ONE QUARTER OF THE LENGTH OF THE MAST ARM FROM THE END OF THE MAST ARM WITH THE LONG AXIS OF THE PANEL COLLINEAR WITH THE LONG AXIS OF THE MAST ARM. THE PANEL SHOULD BE MOUNTED AT SUCH A HEIGHT AS TO PROVIDE AT LEAST 6" CLEAR FROM THE TOP OF ANY SIGNAL ASSEMBLY OR SIGN PANEL LOCATED ON THE MAST ARM WITHIN THE LENGTH OF THE ANTI-GALLOPING PANEL.

TRUCK-INDUCED GUST LOADS SHALL BE EXCLUDED FOR FATIGUE DESIGN FOR ALL STRUCTURES EXCEPT MAST ARMS MOUNTED OVER FACILITIES WITH POSTED SPEEDS OF 65 MPH OR GREATER AT THE LOCATION OF THE STRUCTURE.



DATE	REVISION	DATE FILM
2-27-14	REVISED NOTES.	
9-12-13	ISSUED AS STANDARD DRAWING	
7-21-11	REVISED VMD, SIGNAL HEADS	
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
4-25-08	ADDED VIBRATORY MITIGATION DEVICE & NOTES	
4-18-08	REVISED AASHTO NOTES	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
10-12-04	REVISED CABINET ORIENTATION	
6-23-04	REVISED	
5-6-04	REV. NOTE 3/AASHTO REQUIREMENTS	
6-11-01	REV. NOTES & POLE MAST ARM SLOPE	
4-8-01	REVISED POLE TAPERS	
4-25-00	REV. NOTES & SIGNAL HEAD PLACEMENT	
8-22-99	REVISED FOUNDATION DETAILS	
8-17-98	REVISED DETAILS AND NOTES	
8-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

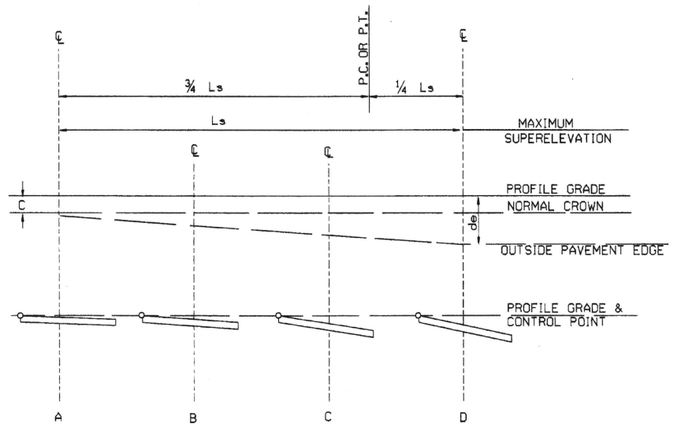
STEEL POLE WITH MAST ARM

STANDARD DRAWING SD-11

SUPERELEVATION TABLE FOR ONE - WAY TRAFFIC

DEGREE OF CURVE	30 MPH			40 MPH			50 MPH			55 MPH			60 MPH			65 MPH			70 MPH		
	e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)	
		MINIMUM	DESIRABLE		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.			N. C.		
0° 30′	N. C.			N. C.			N. C.			N. C.			N. C.			N. C.			N. C.		
0° 45′	N. C.			N. C.			R. C.			0.022			0.023			0.025			0.028		
1° 00′	N. C.			N. C.			0.021			0.028			0.030			0.033	250		0.037	275	
1° 15′	N. C.			R. C.			0.026			0.037	225		0.037	250		0.041			0.046		
1° 30′	N. C.			0.021			0.031	200		0.043			0.043			0.048			0.054		
1° 45′	N. C.			0.025	175		0.036			0.048			0.049			0.055			0.062		
2° 00′	R. C.			0.028			0.040			0.053			0.055			0.062			0.070		
2° 15′	R. C.			0.031			0.045			0.058			0.061			0.069	265		0.078	300	
2° 30′	0.021			0.034			0.049			0.063			0.067			0.075	280		0.085	315	400
2° 45′	0.023			0.037		250	0.053			0.068			0.072			0.081	300		0.091	335	
3° 00′	0.025			0.040			0.057			0.073	230		0.077	260		0.087	315		0.098	350	
3° 15′	0.027	150		0.043			0.061			0.077	245		0.082	275		0.093	325	400	0.104	360	450
3° 30′	0.029			0.046			0.065	205		0.082	255		0.086	285		0.098	340		0.110	380	
3° 45′	0.031		250	0.049			0.069	215		0.086	265		0.090	295	400	0.103	345		0.116	400	
4° 00′	0.033			0.051			0.072	225		0.089	270		0.093	305		0.107	350		0.120	415	
4° 30′	0.037			0.056			0.078	240		0.097	280		0.096	315							
5° 00′	0.040			0.061			0.083	250		0.091	295		0.098	320							
5° 30′	0.043			0.066	185		0.088	260		0.094	300	400									
6° 00′	0.046			0.070	190		0.092	270		0.096	305										
6° 30′	0.050			0.074	200		0.095	280		0.100	315										
7° 00′	0.053			0.078	210		0.098	285	350												
7° 30′	0.056			0.081	215		0.099	290													
8° 00′	0.058			0.084	220		0.100	290													
8° 30′	0.061			0.087	225	300															
9° 00′	0.063			0.089	230																
10° 00′	0.068	160		0.094	235																
11° 00′	0.072	170		0.097	250																
12° 00′	0.076	175		0.099	250																
13° 00′	0.080	180		0.100	250																
14° 00′	0.083	190																			
15° 00′	0.086	195																			
16° 00′	0.089	200																			
17° 00′	0.091	200																			
18° 00′	0.093	205																			
19° 00′	0.095	210																			
20° 00′	0.097	215	300																		
21° 00′	0.098	215																			
22° 00′	0.099	215																			
23° 00′	0.099	215																			
24° 00′	0.100	220																			

D MAX = 24° 45′ | D MAX = 13° 15′ | D MAX = 8° 15′ | D MAX = 6° 30′ | D MAX = 5° 15′ | D MAX = 4° 15′ | D MAX = 3° 30′



ONE-WAY TRAFFIC
INSIDE LANE

SUPERELEVATION FORMULA = $S = -\frac{L(de-C)}{Ls} - C$

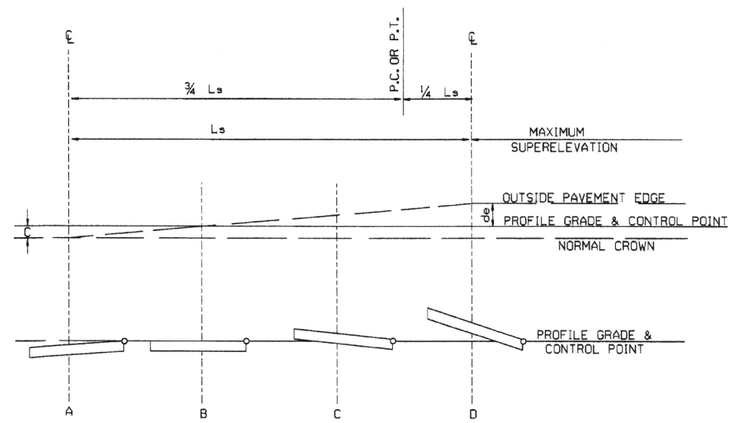
ABBREVIATIONS

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

GENERAL NOTES

1. ON PAVEMENT WITH ONE-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE PROFILE GRADE POINT.
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR Ls MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. MINIMUM Ls VALUES MAY BE USED FOR RAMPS; DESIRABLE VALUES SHALL APPLY TO MAIN LANES.
5. DIVIDED PAVEMENTS WIDER THAN 4 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLOWS:

6 LANE DIVIDED---------+20%
8 LANE DIVIDED---------+50%



ONE-WAY TRAFFIC
OUTSIDE LANE

SUPERELEVATION FORMULA = $S = +\frac{L(de+C)}{Ls} - C$

DATE	REVISION	DATE FILMED
01-09-87	ISSUED	578-1-15-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR ONE-WAY TRAFFIC

STANDARD DRAWING SE-1

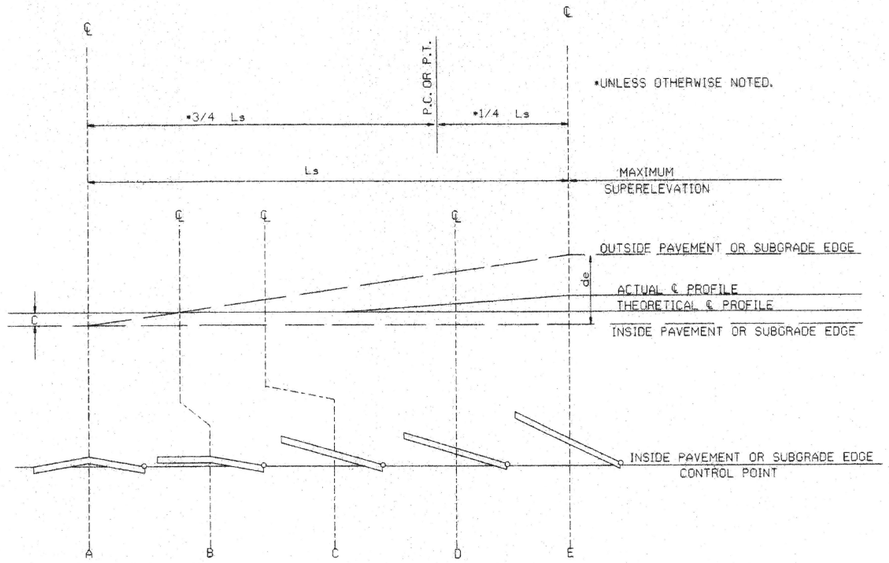
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) DESIRABLE
0° 15′	N. C.			N. C.			N. C.			N. C.			N. C.			N. C.		
0° 30′	N. C.			N. C.			N. C.			N. C.			N. C.			N. C.		
0° 45′	N. C.			N. C.			R. C.			0.022			0.023			0.028		
1° 00′	N. C.			N. C.			0.021			0.026			0.030			0.037		
1° 15′	N. C.			R. C.			0.026			0.032			0.037	250	300	0.046	275	300
1° 30′	N. C.			0.021			0.031	200		0.037	225	300	0.043			0.054		
1° 45′	N. C.			0.025	175		0.036			0.043			0.049			0.062		
2° 00′	R. C.			0.028			0.040			0.048			0.055			0.070		
2° 15′	R. C.			0.031			0.045		250	0.053			0.061			0.078	300	350
2° 30′	0.021			0.034			0.049			0.058			0.067			0.085	315	
2° 45′	0.023			0.037		200	0.053			0.063			0.076			0.091	335	400
3° 00′	0.025			0.040			0.057			0.067	220		0.077	260		0.096	350	
3° 15′	0.027	150	200	0.043			0.061	205		0.072	235		0.082	275		0.098	360	
3° 30′	0.029			0.046			0.065	215		0.076	245		0.086	285	350	0.100	380	
3° 45′	0.031			0.049			0.069	225		0.080	255		0.090	295				
4° 00′	0.033			0.051			0.072	235		0.083	270		0.093	305				
4° 30′	0.037			0.056			0.078	240		0.087	280		0.096	315				
5° 00′	0.040			0.061			0.083	250		0.091	295	350	0.098	320				
5° 30′	0.043			0.066	185		0.088	260		0.094	300							
6° 00′	0.046			0.070	190		0.092	270		0.096	305							
6° 30′	0.050			0.074	200		0.095	280	300	0.100	315							
7° 00′	0.053			0.078	210		0.098	285										
7° 30′	0.056			0.081	215		0.099	290										
8° 00′	0.058			0.084	220		0.100	290										
8° 30′	0.061			0.087	225	250												
9° 00′	0.063			0.089	230													
10° 00′	0.068	160		0.094	235													
11° 00′	0.072	170		0.097	250													
12° 00′	0.076	175		0.099	250													
13° 00′	0.080	180		0.100	250													
14° 00′	0.083	190																
15° 00′	0.086	195																
16° 00′	0.089	200																
17° 00′	0.091	200																
18° 00′	0.093	205																
19° 00′	0.095	210																
20° 00′	0.097	215	250															
21° 00′	0.098	215																
22° 00′	0.099	215																
23° 00′	0.099	215																
24° 00′	0.100	220																

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

ABBREVIATIONS

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



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

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

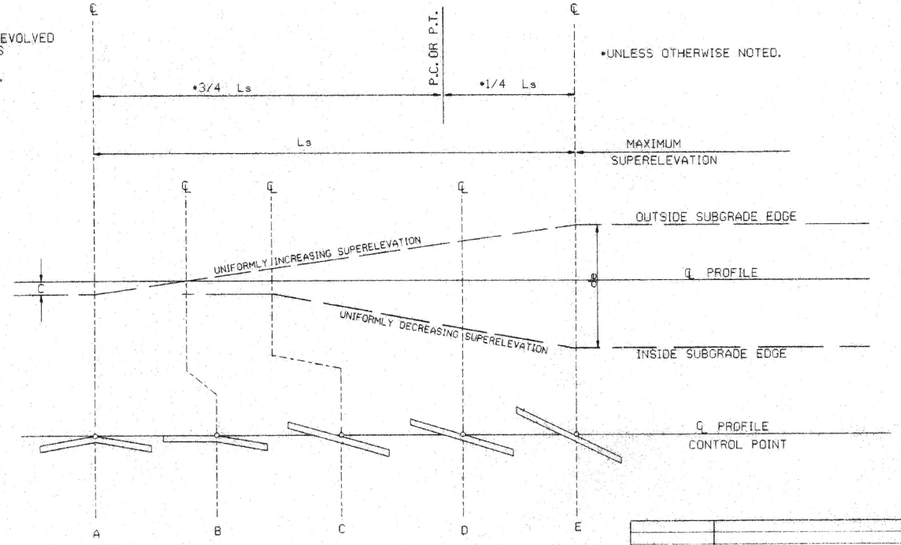
GENERAL NOTES

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

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

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

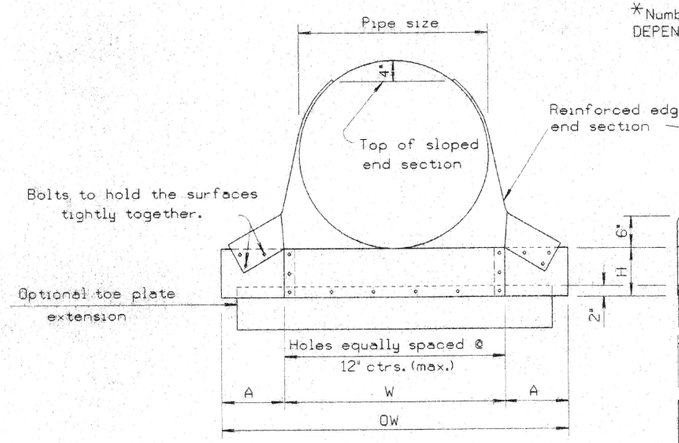
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

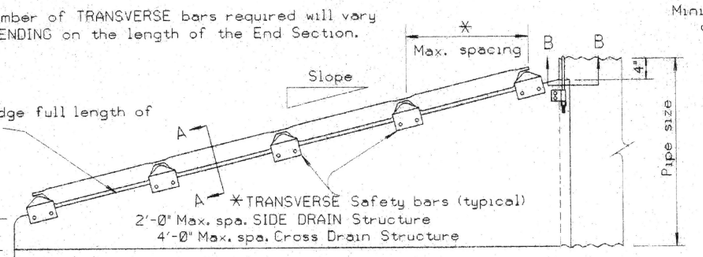
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

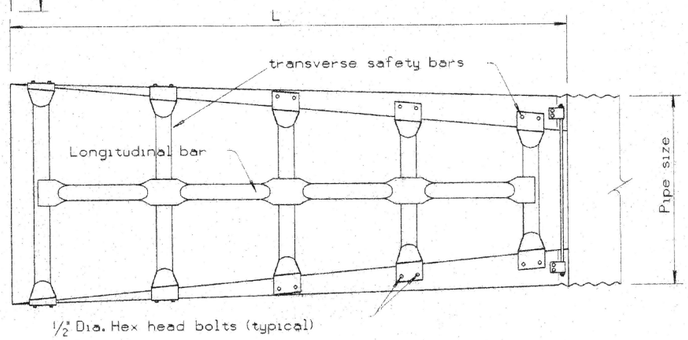
FILE STDSE2.DGN



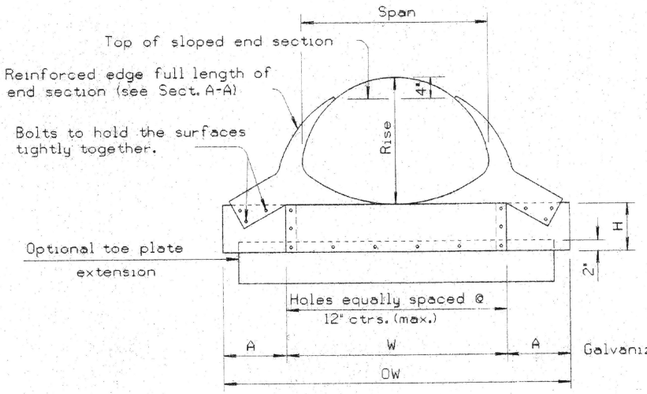
FRONT VIEW CIRCULAR PIPE



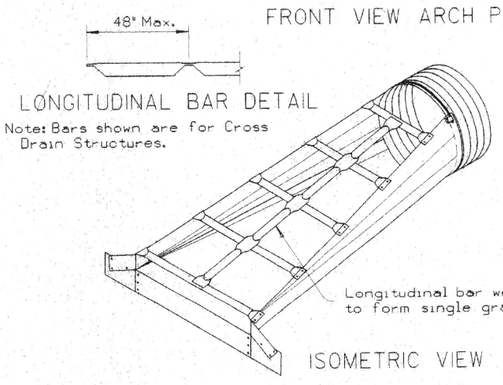
SIDE ELEVATION CIRCULAR OR ARCH SECTION



TOP VIEW CIRCULAR OR ARCH SECTION



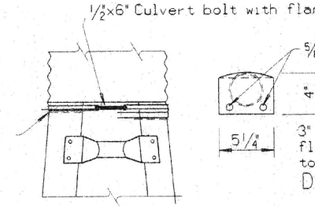
FRONT VIEW ARCH PIPE



LONGITUDINAL BAR DETAIL

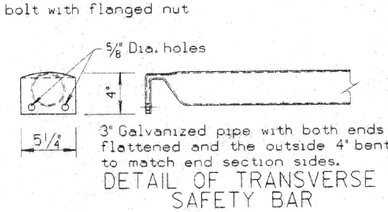
Note: Bars shown are for Cross Drain Structures.

ISOMETRIC VIEW

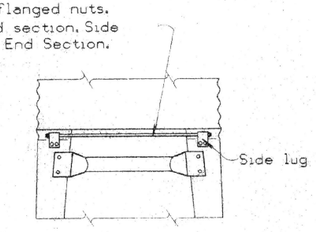


TYPE #1 CONNECTOR DETAIL

For 15" thru 24" pipe

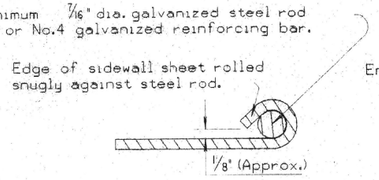


DETAIL OF TRANSVERSE SAFETY BAR

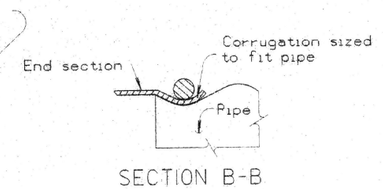


TYPE #2 CONNECTOR DETAIL

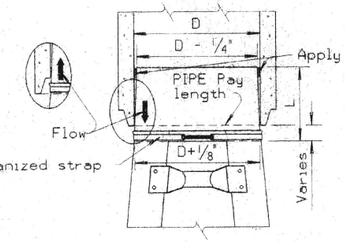
For 30" and larger round pipes & 21"x15" thru 64"x43" arch pipes



SECTION A-A



SECTION B-B



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

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

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

GENERAL NOTES

End sections shall be fabricated from galvanzied steel meeting the requirements of SUBSECTION 606.02(c)(1) OF THE STANDARD SPECIFICATIONS.
When specified optional toe plate extension shall be punched and bolted to end section apron lip with ⅜" diameter galvanized bolts.
Steel for toe plate extension shall be same gauge as end section.
Dimensions shall be overall width less 6" by 8" high.
Attachment to circular pipes 15" through 24" diameter shall be made with Type #1 straps. All other sizes shall be attached with Type #2 rods and lugs.
Safety bars shall be fabricated from steel pipe meeting the requirements of ASTM A-53 Schedule 40 Specifications. Safety bars shall be hot dipped galvanized after fabrication.
All work and materials required for construction and installation of safety end section shall be included in the PRICE BID EACH FOR SAFETY END SECTIONS FOR PIPE CULVERTS.
Longitudinal and transverse bars will be required for cross drain structures when span is greater than 30", no safety bars will be REQUIRED FOR 30" SPAN OR LESS WHEN USED ON CROSS DRAIN STRUCTURES.
Transverse bars will be required for all sizes of side drain structures.
Class 1 safety end sections shall be end sections with a 4:1 slope.
Class 2 safety end sections shall be end sections with a 6:1 slope.

SAFETY END SECTIONS FOR ARCH PIPES

Equv. Dia.	Nom. W.W. Area Sq Ft	Pipe Arch Span (In.)	Pipe Arch Rise (In.)	Min. Gauge End Sect.	Dimensions in Inches A	H	W	OW	Slope	L (In)	Slope	L (In)
18"	1.6	21	15	16	8	6	27	43	4:1	20	6:1	30
21"	2.2	24	18	16	8	6	30	46	4:1	32	6:1	48
24"	2.9	28	20	16	8	6	34	50	4:1	40	6:1	60
30"	4.5	35	24	14	12	9	41	65	4:1	56	6:1	84
36"	6.5	42	29	12	12	9	48	72	4:1	76	6:1	114
42"	8.9	49	33	12	16	12	55	87	4:1	92	6:1	138
48"	11.6	57	38	12	16	12	63	95	4:1	112	6:1	168
54"	14.7	64	43	12	16	12	70	102	4:1	132	6:1	198
60"	18.1	71	47	12	16	12	77	109	4:1	148	6:1	222
72"	26.0	83	57	12	16	12	89	121	4:1	188	6:1	282

SAFETY END SECTIONS FOR CIRCULAR PIPES

Pipe Dia.	Min. Gauge Ends	Dimensions in Inches A 1"Tol	H 1"Tol	W 2"Tol	OW	L Dimensions in Inches Slope	L	Slope	L
15"	16	8	6	21	37	4:1	20	6:1	30
18"	16	8	6	24	40	4:1	32	6:1	48
21"	16	8	6	27	43	4:1	44	6:1	66
24"	16	8	6	30	46	4:1	56	6:1	84
30"	12	12	9	36	60	4:1	80	6:1	120
36"	12	12	9	42	66	4:1	104	6:1	156
42"	12	16	12	48	80	4:1	128	6:1	192
48"	12	16	12	54	86	4:1	152	6:1	228
54"	12	16	12	60	92	4:1	176	6:1	264
60"	12	16	12	66	98	4:1	200	6:1	300

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

ARKANSAS STATE HIGHWAY COMMISSION

SAFETY END SECTION FOR CIRCULAR AND ARCH PIPES

STANDARD DRAWING SES-1

FILE stdses1.dgn



R1-1
30"X30"



W1-3
30"X30"
(LT. OR RT.)



W1-8
18"X24"



W2-5
30"X30"



W3-1
36"X36"



W5-1
36"X36"



M6-3
21"X15"



R1-2
36"X36"X36"



W1-4
30"X30"
(LT. or RT.)



W2-1
30"X30"



S1-1
36"X36"

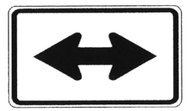


W3-2
36"X36"

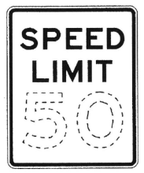


County
Route Marker
M1-6
24"X24"

NOTE: REFLECTORIZED YELLOW LEGEND (COUNTY NAME, ROUTE LETTER & NUMBER) & BORDER ON A BLUE BACKGROUND.



M6-4
21"X15"



R2-1
24"X30"



W1-5
30"X30"
(LT. or RT.)



W2-2
30"X30"



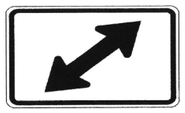
W5-2
36"X36"



W8-3
36"X36"



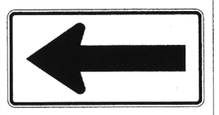
R1-3P
18"X6"



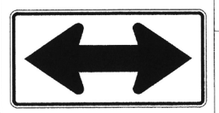
M6-5
21"X15"



W1-1
30"X30"
(LT. or RT.)



W1-6
48"X24"



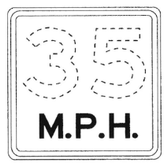
W1-7
48"X24"



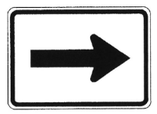
W2-3
30"X30"
(LT. or RT.)



W5-3
36"X36"

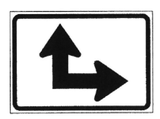


W13-1P
18"X18"



M6-1
21"X15"

NOTE: ALL M6 SIGNS TO BE MADE WITH REFLECTORIZED YELLOW ARROW & BORDER WITH BLUE BACKGROUND.



M6-6
21"X15"



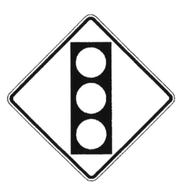
W1-2
30"X30"
(LT. or RT.)



W2-4
30"X30"



W10-1
36" DIAMETER



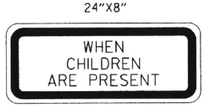
W3-3
36"X36"



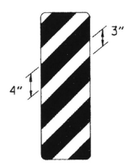
M6-2
21"X15"



S4-3P
24"X8"



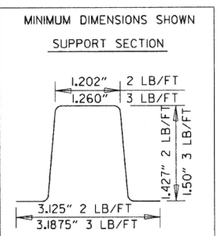
S4-2P
24"X10"



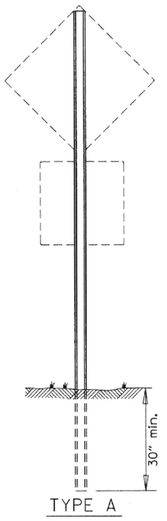
OM-3
12"X36"
(LT. or RT.)

MINIMUM DIMENSIONS SHOWN

SUPPORT SECTION

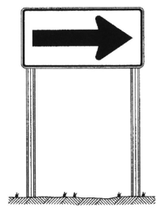


(U-CHANNEL)
STANDARD SUPPORT
ASSEMBLIES



TYPE A

NOTE: LENGTH OF SIGN POSTS SHALL BE DETERMINED SO AS TO PROVIDE FOR MINIMUM VERTICAL CLEARANCES AS CALLED FOR IN THE SPECIFICATIONS PLUS A MINIMUM VERTICAL PENETRATION OF 30" IN THE SOIL.



TYPE B

TYPE C

MINIMUM WEIGHT

TYPE A & B = 3 LBS./FT.
TYPE C = 2 LBS./FT.

STANDARD HIGHWAY SIGNS

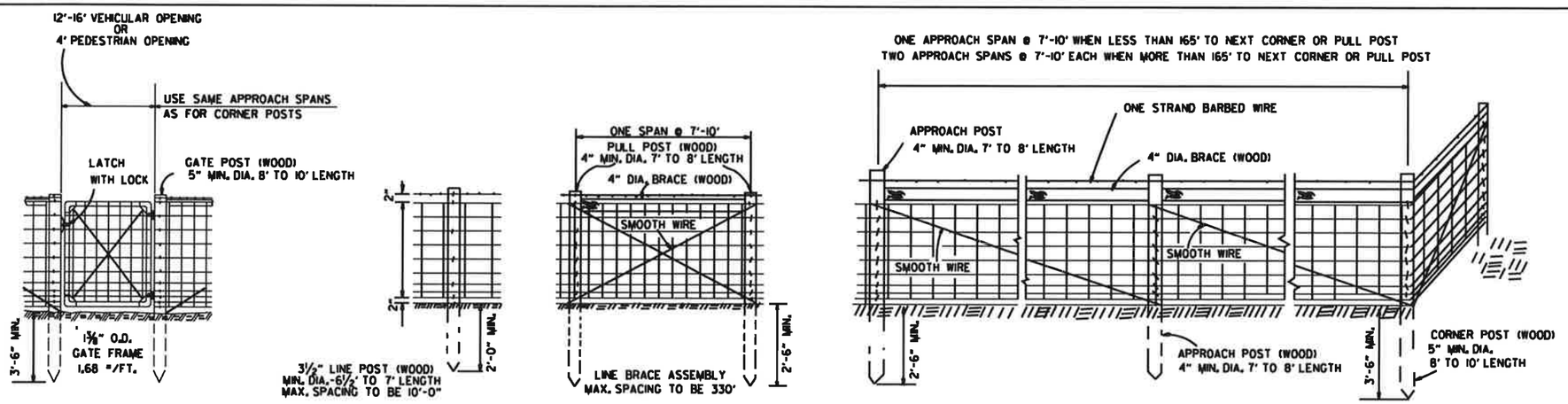
SUPPORT ASSEMBLIES

DATE	REVISION	DATE FILMED
9-12-13	DELETED JOB NO. BLOCK; REVISED RI-3 TO RI-3P	
4-17-08	REVISED SIGN DESIGNATION - W3-1 & W3-2	
4-10-03	REVISED W5-2, W8-3, OM-3; ADDED W1-8	
1-5-81	REDRAWN	960-1-15-81
9-15-78	ADDED W14-3	877-9-15-78
9-2-76	POST WT.	623-9-3-76
5-3-76	STEEL POST WT. FROM 2#-3#; ADDED S4-2 & S4-3	504-5-3-76
8-12-74	REV. HT. TYPE "C" ASSEMBLY	500-8-21-74
12-21-72	ADDED M6-2,3,4,5,6	500-12-21-72
12-1-72	ISSUED	562-12-1-72

ARKANSAS STATE HIGHWAY COMMISSION

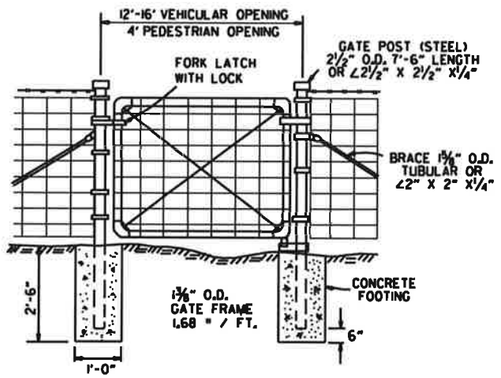
STANDARD HIGHWAY SIGNS
AND SUPPORT ASSEMBLIES

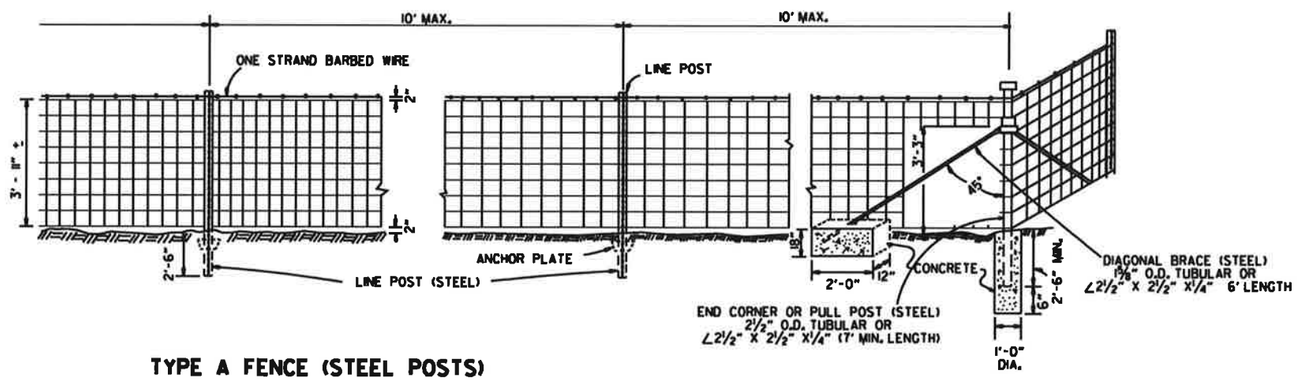
STANDARD DRAWING SHS-1



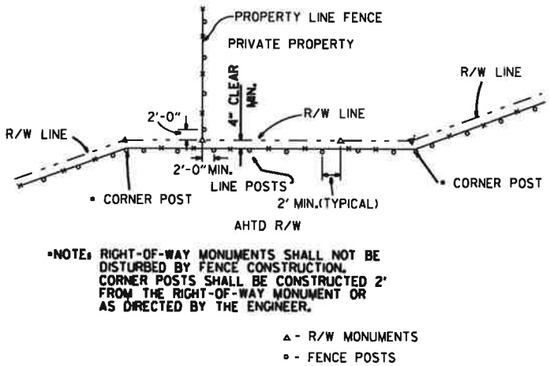
NOTE: STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE A FENCE (WOOD POSTS)





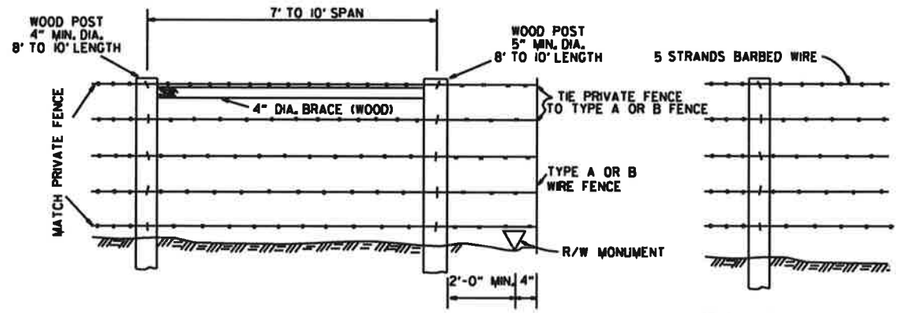
TYPE A FENCE (STEEL POSTS)



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

△ - R/W MONUMENTS
▫ - FENCE POSTS

RIGHT-OF-WAY FENCE LOCATION

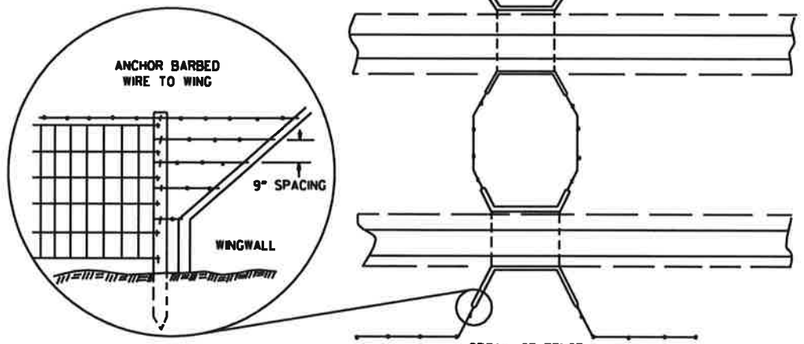


WHERE EXISTING PRIVATE FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN WITH TYPE A FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.

PRIVATE FENCE TERMINAL INSTALLATION

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

TYPE B FENCE



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

GENERAL NOTES:

STEEL LINE POSTS SHALL BE GALVANIZED, 7 FT. IN LENGTH.

TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK).

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

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

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

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

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

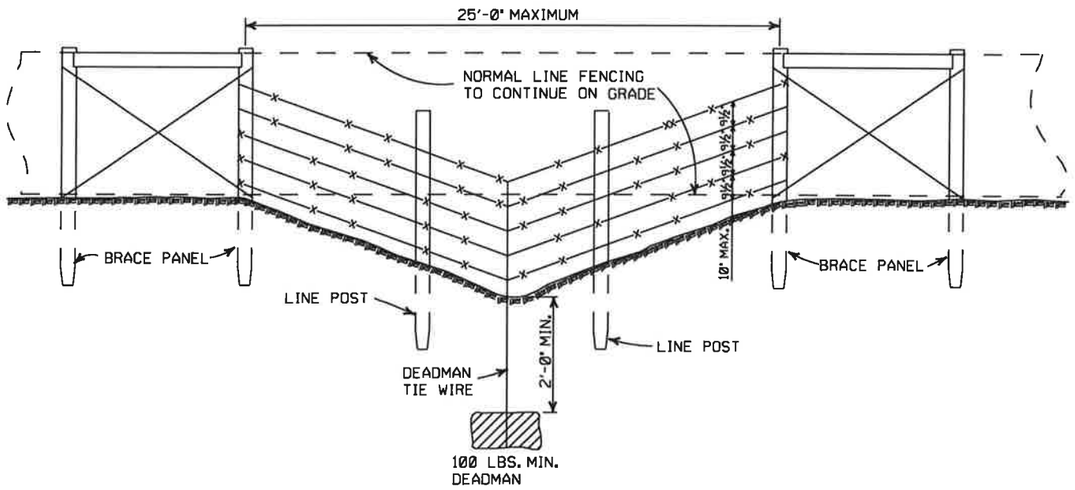
DATE	REVISION	DATE FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED ASTM REF. TO AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	ADDED CORNER POST NOTE	6-2-94
8-5-93	REVISED R-O-W LOCATION DETAIL	8-5-93
10-1-92	ADDED STAPLE NOTE	
8-2-90	REV'D PULL POST LENGTH	
11-30-89	DELETED CLASS CONC.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

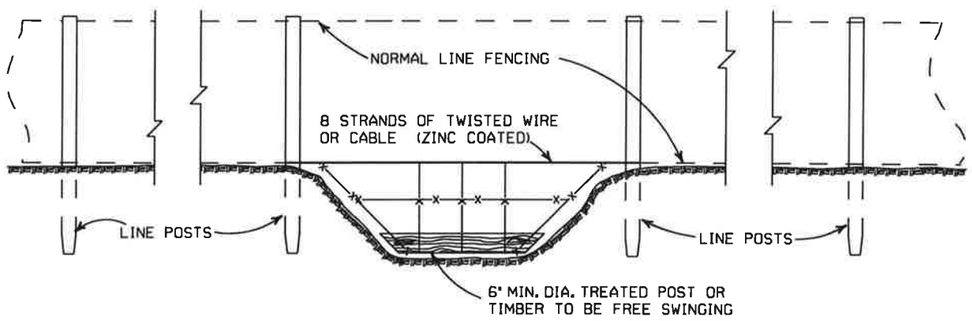
ARKANSAS STATE HIGHWAY COMMISSION

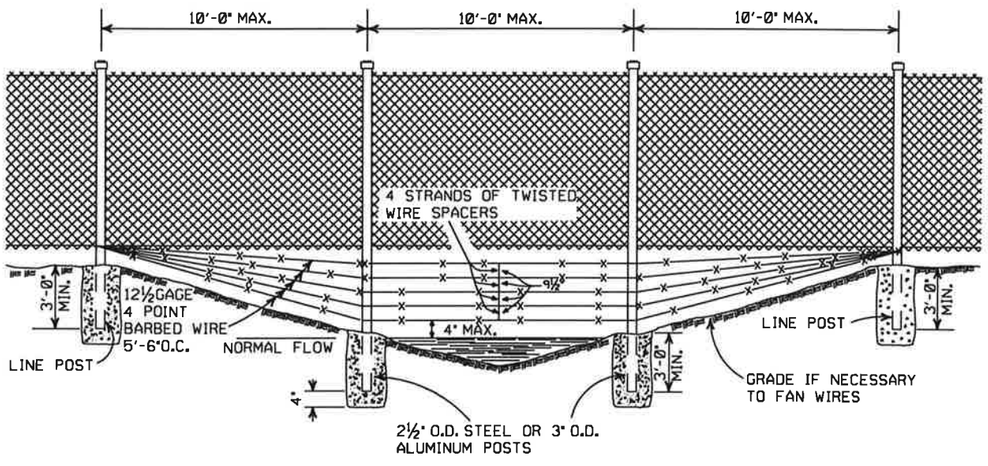
WIRE FENCE
TYPE A AND B

STANDARD DRAWING WF-1

279B







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.

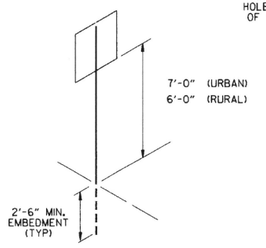
PAYMENT FOR THE TYPE INSTALLATION USED WILL NOT BE MADE DIRECTLY BUT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR WIRE FENCE OR CHAIN LINK FENCE.

DATE	REVISION	FILMED
4-20-79	REVISED TOP RAIL & TENSION WIRE	696-4-20-79
10-2-72	REVISED AND REDRAWN	529-10-2-72

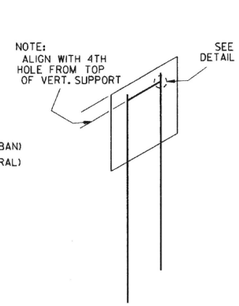
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE WATER GAPS

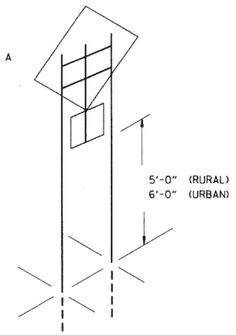
STANDARD DRAWING WF-2



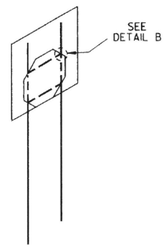
U-1



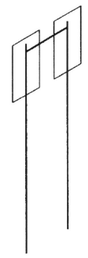
U-2



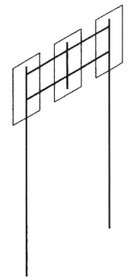
U-2 (A)



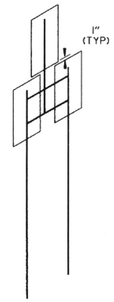
U-2 (B)



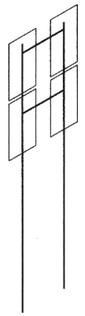
U-2 (1)



U-2 (2)



U-2 (3)



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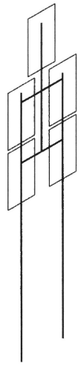

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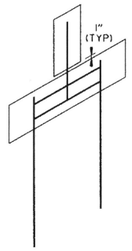

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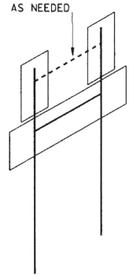

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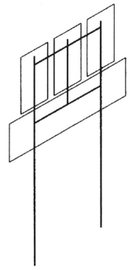
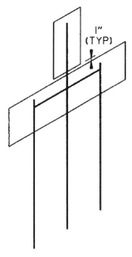


U-2 (8)

U-3



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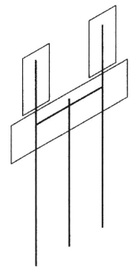

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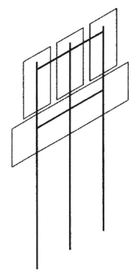

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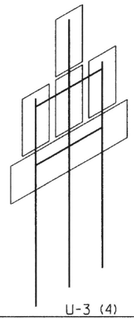

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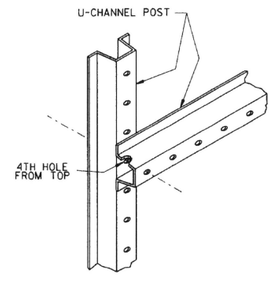
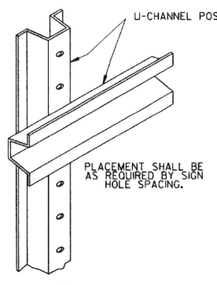


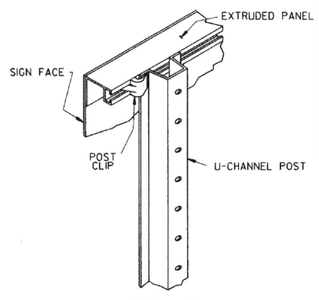
DETAIL A

SHOWING HORIZONTAL BRACE



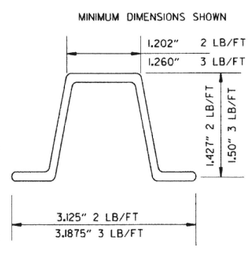
DETAIL B

SHOWING BACK-TO-BACK INSTALLATION



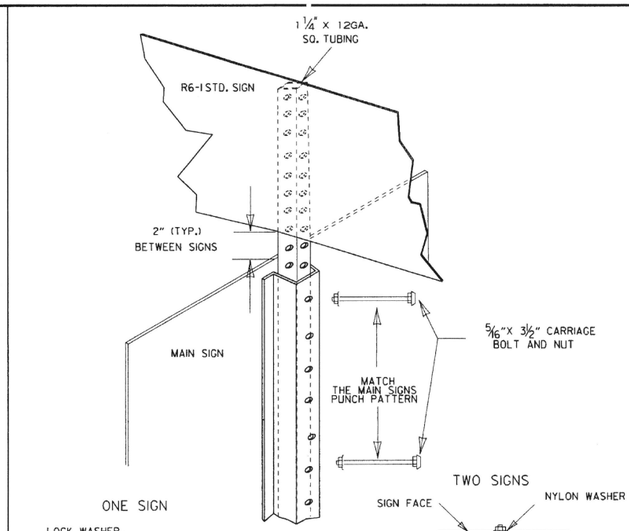
DETAIL C

SHOWING GUIDE SIGN MOUNTING WITH EXTRUDED PANELS



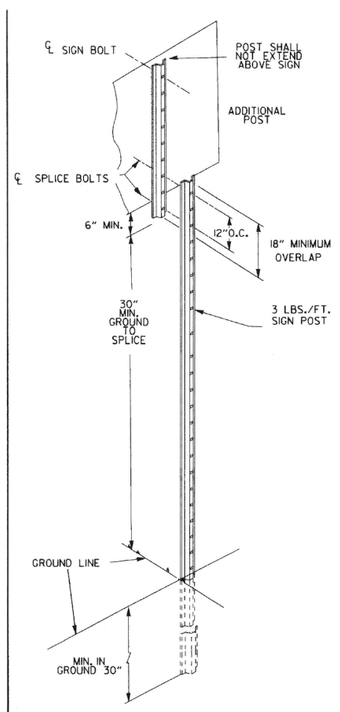
DETAIL C

U-CHANNEL POST



DETAIL E

R6-1 EXTENSION FOR U-CHANNEL POST



DETAIL F

DETAIL OF SPLICES

NOTES:

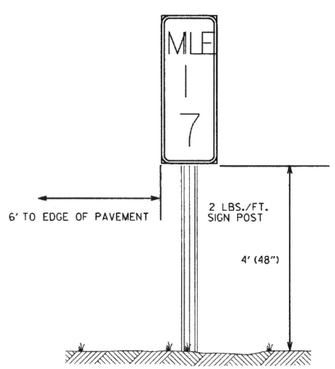
SIGNS AT LEAST 8' IN LENGTH MAY BE INSTALLED ON THREE 3 LB. POST. IN NO CASE SHALL THERE BE MORE THAN TWO 3 LB. POSTS WITHIN A 7' PATH.

SPLICES NECESSARY TO ATTAIN PROPER MOUNTING HEIGHT SHALL BE AS SHOWN IN DETAIL (F).

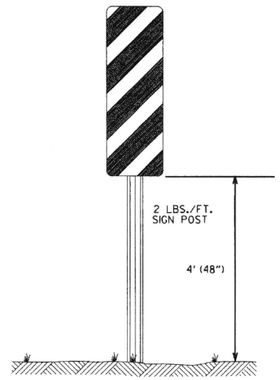
NORMAL INSTALLATIONS WILL REQUIRE $\frac{5}{16}$" DIA. CARRIAGE BOLTS TO MOUNT SIGNS TO POST AND TO ASSEMBLE THE VARIOUS POST SUPPORTS.

ALL SIGN POSTS SHALL BE PLUMB.

THE POST FOR "TYPE U" SUPPORTS SHALL BE HOT DIP GALVANIZED.



TYPICAL MILE MARKER INSTALLATION



TYPICAL OM-3 INSTALLATION AT EDGE OF OBSTRUCTION

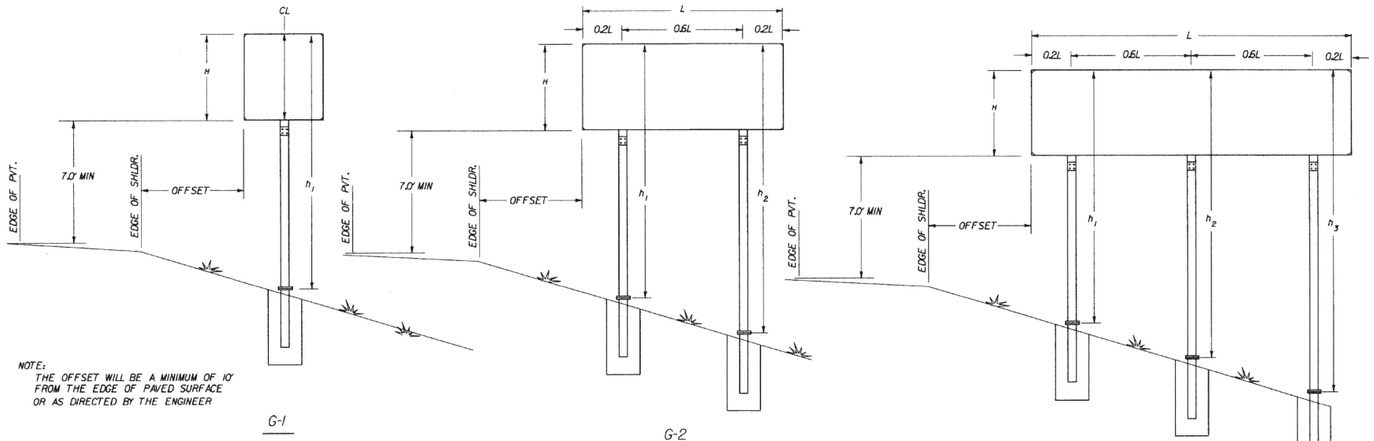
DATE	REVISION	FILMED
9-12-13	REVISED U-2(3), U-2(6), U-3(1), DETAIL D; ADDED DETAILS E & F; ADDED TYPICAL MARKERS	
10-9-03	REMOVED ROUND POST & REVISED SPACING	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL	6-8-95
2-2-95	REDRAWN	2-2-95

ARKANSAS STATE HIGHWAY COMMISSION

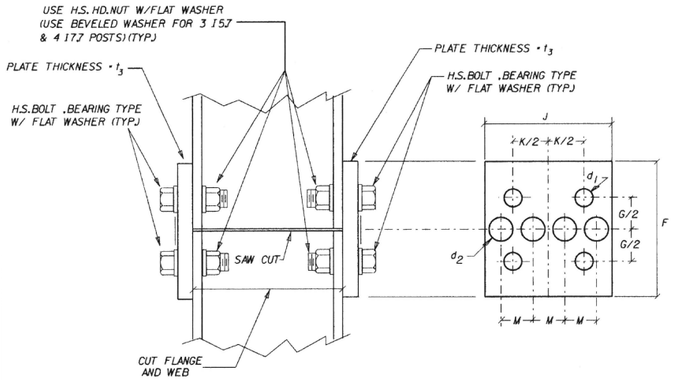
U-CHANNEL POST ASSEMBLIES

STANDARD DRAWING SHS-2

POST SIZE	BASE CONNECTION DATA											FUSE PLATE DATA									WT. OF EACH FUSE PLATE LBS.
	BOLT SIZE	BOLT TORQUE (INCH/LBS)	A	B	C	D	E	t_1	t_2	W	R	F	G		J	K	M	d_1	d_2	t_3	BOLT SIZE
W 6X9												4 1/4"	2"		4"	2 1/4"	1"	9/16"	3/4"	1/4"	1/2" x 1 1/2"	1.01
W 6X12	5/8" x 2 3/4"	450"-690"	5"	2"	1 1/4"	2 3/4"	1 1/8"	3/4"	1/2"	1/4"	11/32"	5"	2 1/2"		6"	3 1/2"	1 1/2"	11/16"	1 1/4"	3/8"	5/8" x 2 1/4"	2.51
W 6X15												5"	2 1/2"		5 1/4"	2 3/4"	1 1/4"	13/16"	1 1/16"	3/8"	3/4" x 2 1/4"	2.26
W 8X18												5 1/2"	2 1/2"		5 1/4"	2 3/4"	1 1/4"	13/16"	1"	1/2"	3/4" x 2 1/4"	3.35
W 8X21																						
W 10X22	3/4" x 3 1/2"	750"-1050"	6"	2 1/4"	1 3/8"	3 1/2"	1 1/4"	1"	3/4"	5/16"	11/32"	6"	3"		5 3/4"	2 3/4"	1 3/8"	15/16"	1 1/8"	1/2"	3/4" x 2 1/4"	4.03
W 10X26																						
W 12X26												6"	3"		6 1/2"	3 1/2"	1 5/8"	15/16"	1 5/16"	1/2"	3/4" x 2 1/4"	4.47

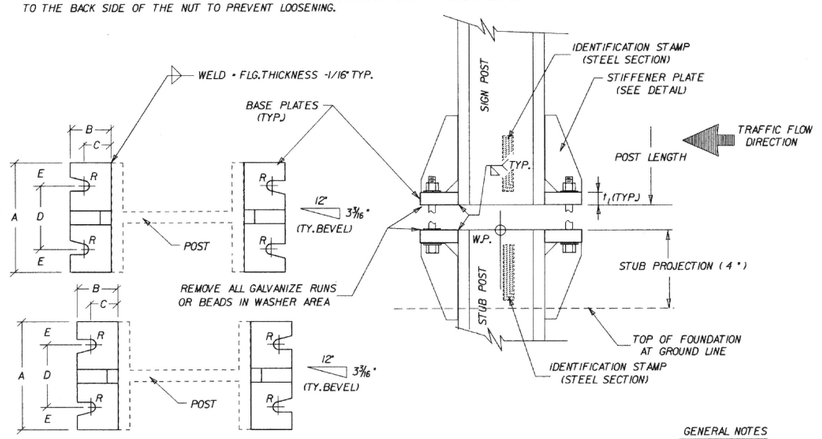


NOTE:
THE OFFSET WILL BE A MINIMUM OF 10' FROM THE EDGE OF PAVED SURFACE OR AS DIRECTED BY THE ENGINEER

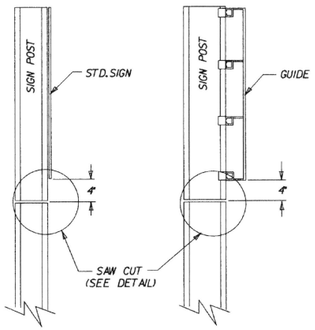


NOTE: USE H.S. HEX HEAD BOLTS, HEX HEAD NUTS AND BEVEL OR FLAT WASHERS (WHERE REQ.) UNDER NUTS. ALL HOLES SHALL BE DRILLED. ALL PLATE CUTS SHALL PREFERABLY BE SAW CUTS, HOWEVER FLAME CUTTING WILL BE PERMITTED PROVIDED ALL EDGES ARE GROUND. METAL PROJECTING BEYOND THE PLANE OF THE PLATE FACE WILL NOT BE PERMITTED. STEEL FUSE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM-A36, ASTM-A441, ASTM-572 GRADE 50, OR ASTM-A588 MAY BE SUBSTITUTED FOR A36 AT THE OPTION OF THE FABRICATOR. STEEL USED SHALL HAVE AN ULTIMATE TENSILE STRENGTH NOT TO EXCEED 80 KSI.

NOTE: SECTIONS SHOWN ARE FOR INSTALLATION ON THE RIGHT SHOULDER AND IN THE GORE. BOLT HOLES IN BASE PLATE ARE SLOTTED AND BEVELED AS SHOWN. USE H.S. BOLTS WITH HEX HD., HEX NUT AND THREE FLAT WASHERS FOR EACH BOLT. SEE TABLE FOR BOLT DIA. AND TORQUE.
NOTE: ASSEMBLE SIGN POST TO STUB POST USING THE BOLTS SPEC. IN THE TABLE AND AS SHOWN IN THE ELEVATION DETAILS. THERE SHALL BE THREE FLAT WASHERS ON EACH BOLT LOCATED AS SHOWN IN THE ELEVATIONS. USE A SHIM TO PLUMB THE SIGN POST, THEN TIGHTEN THE BOLTS USING A 12" TO 15" WRENCH UNTIL THE WASHERS AND SHIMS ARE SEATED AND THE BOLT THREADS ARE CLEAR, THEN LOOSEN EACH BOLT IN TURN AND RETIGHTEN IN A SYSTEMATIC ORDER TO THE PRESCRIBED TORQUE (SEE TABLE). THE BURR THREADS ADJACENT TO THE BACK SIDE OF THE NUT TO PREVENT LOOSENING.



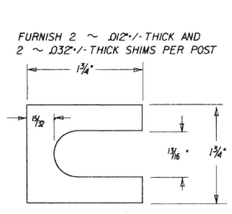
NOTE: BOLT HOLES, USED IN THE MOUNTING OF STANDARD SIGNS SHALL BE LOCATED IN THE FLANGE ADJACENT TO THE NEAR EDGE OF PAVEMENT FOR SINGLE POST ASSEMBLIES AND IN THE OUTSIDE FLANGES FOR MULTIPLE POST ASSEMBLIES.



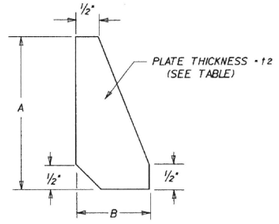
NOTE: POST SHALL BE SAW CUT AFTER GALVANIZING AND THE CUT SURFACE TREATED, AFTER PLATE IS INSTALLED AND ALL BOLTS FULLY TIGHTENED, WITH AN APPROVED ZINC SOLDER MEETING THE FEDERAL SPEC. O-G-93 (STICK ONLY).

STANDARD SIGNS GUIDE SIGNS

FUSE PLATE DETAILS



SHIM DETAIL



STIFFENER PLATE DETAIL

GENERAL NOTES

TIGHTEN THE HIGH STRENGTH BOLTS IN THE BASE CONNECTION ONLY TO THE TORQUE SHOWN. DO NOT OVERTIGHTEN.

BASE PLATES AND STIFFENER PLATES SHALL BE OF THE SAME MATERIAL AS THE PRIMARY SUPPORT POSTS WHICH THEY ARE WELDED.

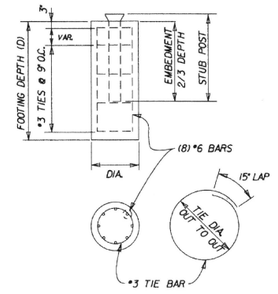
REFER TO THE PLANS FOR FOOTING DIMENSIONS.

EACH STUB POST AND SIGN POST SHALL HAVE A PERMANENT IDENTIFYING STAMP WHICH SPECIFIES THE STEEL SECTION USED. IF THE CONTRACTOR ELECTS TO SHIP THE STUB POST SEPARATE FROM THE SIGN POST A MATCH MARK SYSTEM WILL BE REQUIRED.

STEEL SCHEDULE

FOOTING DIAMETER	#3 TIE BARS		
	DIAMETER	BAR LENGTH	POUNDS
INCHES	INCHES	FEET	
18	12	4.39	1.65
24	18	5.96	2.24
30	24	7.53	2.83
36	30	9.1	3.42

FOOTINIG DEPTH	#6 STRAIGHT BARS		
	BAR LENGTH	NUMBER REQ'D.	POUNDS
FEET	FEET		
2.50	2.00	8	24.03
3.00	2.50	8	30.04
3.50	3.00	8	36.05
4.00	3.50	8	42.06
4.50	4.00	8	48.06
5.00	4.50	8	54.07
5.50	5.00	8	60.08
6.00	5.50	8	66.09
6.50	6.00	8	72.10
7.00	6.50	8	78.10
7.50	7.00	8	84.11
8.00	7.50	8	90.12



FOOTING QUANTITIES

FOOTINIG DEPTH	NUMBER TIE BARS REQ'D	18" DIAMETER		24" DIAMETER		30" DIAMETER		36" DIAMETER	
		CLASS S CONCRETE	REINF STEEL	CLASS S CONCRETE	REINF STEEL	CLASS S CONCRETE	REINF STEEL	CLASS S CONCRETE	REINF STEEL
FEET		CU. YD.	(GRADE 60)	CU. YD.	(GRADE 60)	CU. YD.	(GRADE 60)	CU. YD.	(GRADE 60)
2.50	4	0.16	31						
3.00	4	0.20	37						
3.50	5	0.23	44						
4.00	6	0.26	52	0.47	56				
4.50	6	0.29	58	0.52	62				
5.00	7	0.33	66	0.58	70	0.91	74		
5.50	8			0.64	78	1.00	83		
6.00	8			0.70	84	1.09	89	1.57	93
6.50	9					1.18	98	1.70	103
7.00	10					1.27	106	1.83	112
7.50	10							1.96	118
8.00	11							2.09	128

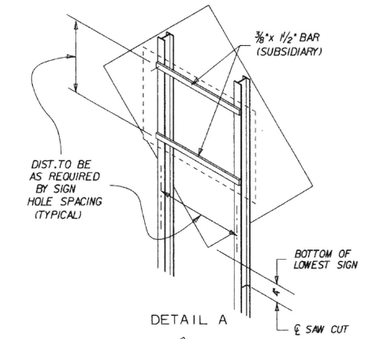
SIGN POST AND STUB POST

DATE	REVISION	FILMED
9-12-13	ISSUED	

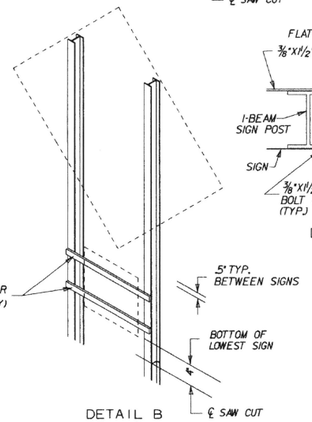
ARKANSAS STATE HIGHWAY COMMISSION

DETAIL OF BREAKAWAY SIGN SUPPORTS FOR GUIDE SIGNS

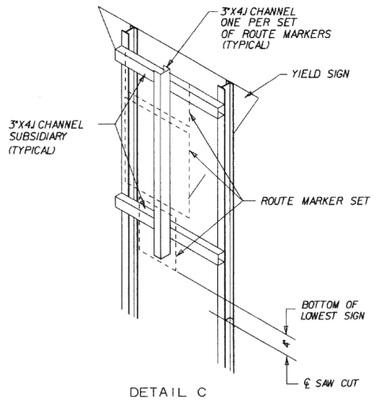
STANDARD DRAWING SHS-3



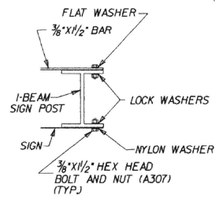
DETAIL A



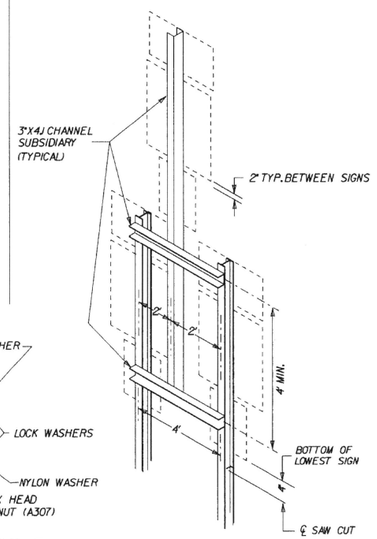
DETAIL B



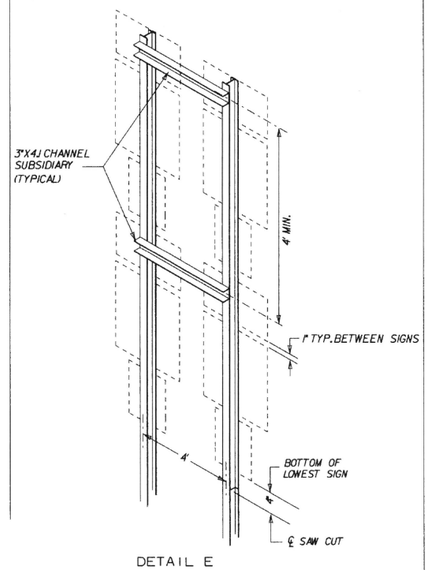
DETAIL C



DETAIL F



DETAIL D



DETAIL E

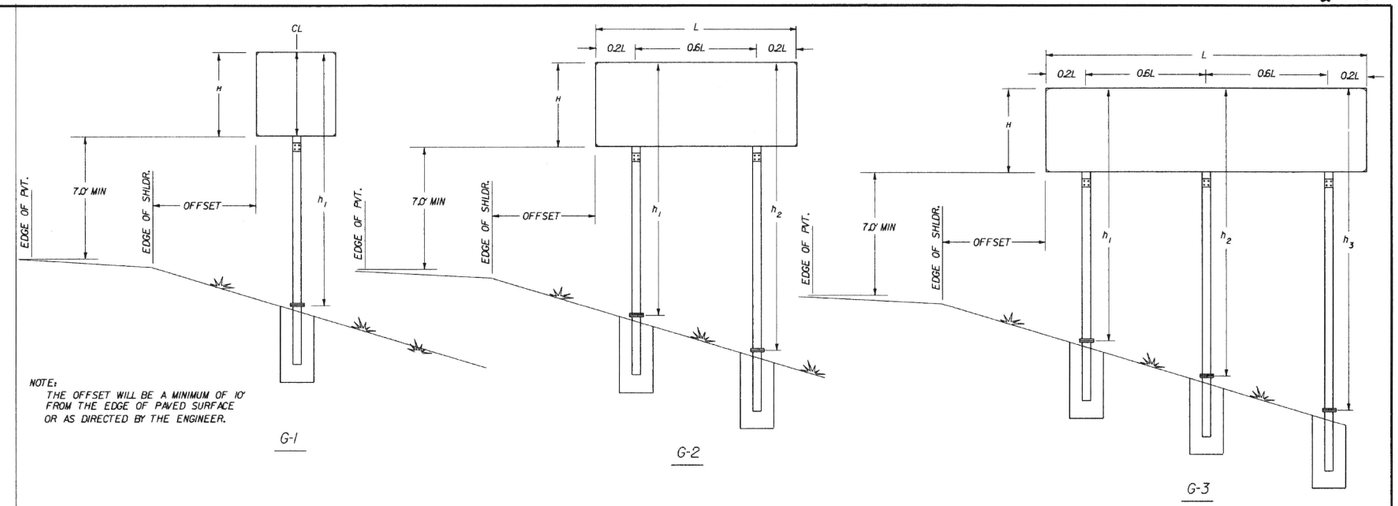
NOTE

ALL ADDITIONAL MOUNTING HARDWARE, BOLTS, NUTS, CHANNELS AND BAR STRAPS REQUIRED TO MOUNT SECONDARY SIGNS WILL BE CONSIDERED TO BE SUPPLEMENTAL TO THE MAIN SIGN SUPPORT SPECIFIED. PAYMENT WILL BE CONSIDERED SUBSIDIARY TO THE MAIN SUPPORT.

THE GALVANIZED STEEL CHANNEL AND BAR SUPPORTS MAY BE AST.M A-36.

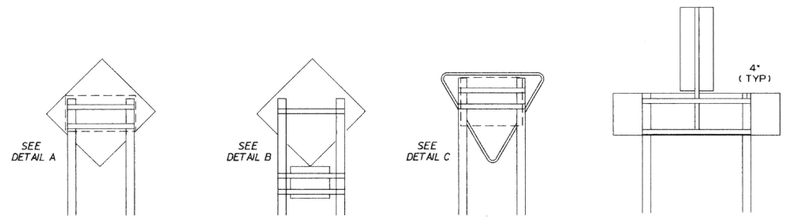
REFER TO THE P.C. RUTLEDGE FORMULA ON PAGE 58 OF THE AASHTO PUBLICATION "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.

ALL BOLT HOLES SHALL BE 1/8" DIA. UNLESS OTHERWISE SHOWN.

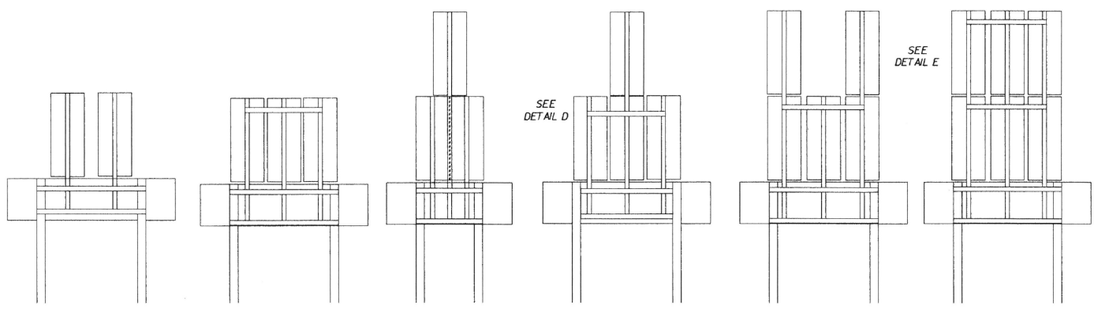


NOTE:
THE OFFSET WILL BE A MINIMUM OF 10' FROM THE EDGE OF PAVED SURFACE OR AS DIRECTED BY THE ENGINEER.

G-1 G-2 G-3



G2-1 G2-2 G2-3 G2-4



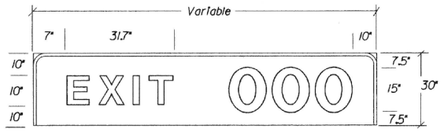
G2-5 G2-6 G2-7 G2-8 G2-9 G2-10

			ARKANSAS STATE HIGHWAY COMMISSION
			DETAIL OF BREAKAWAY SIGN SUPPORTS FOR STANDARD SIGNS
9-12-13	ISSUED		STANDARD DRAWING SHS-4
DATE	REVISION	FILMED	



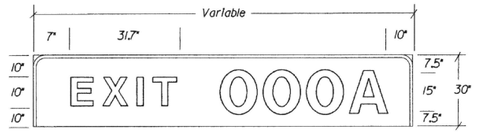
TYPICAL DETAIL

TYPE A



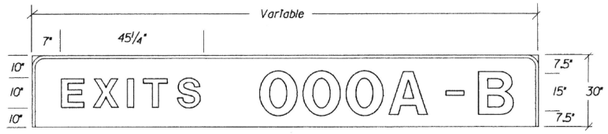
EXIT WITH 1 DIGIT 84"X30"=17.50 SF
EXIT WITH 2 DIGITS 96"X30"=20.0 SF
EXIT WITH 3 DIGITS 114"X30"=23.57 SF

TYPE B



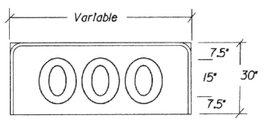
EXIT WITH 1 DIGIT PLUS "A"OR"B" 96"X30"=20.0 SF
EXIT WITH 2 DIGITS PLUS "A"OR"B" 114"X30"=23.57 SF
EXIT WITH 3 DIGITS PLUS "A"OR"B" 126"X30"=26.25 SF

TYPE C



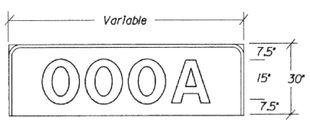
EXITS WITH 1 DIGIT PLUS "A"&"B" 132"X30"=27.50 SF
EXITS WITH 2 DIGITS PLUS "A"&"B" 150"X30"=31.25 SF
EXITS WITH 3 DIGITS PLUS "A"&"B" 168"X30"=35.00 SF

TYPE D



1 DIGIT 24"X30"=5.0 SF
2 DIGITS 42"X30"=8.75 SF
3 DIGITS 60"X30"=12.50 SF

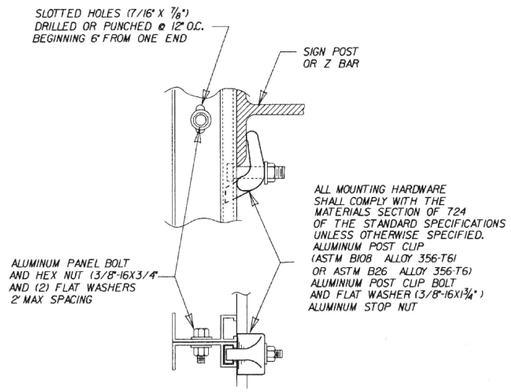
TYPE E

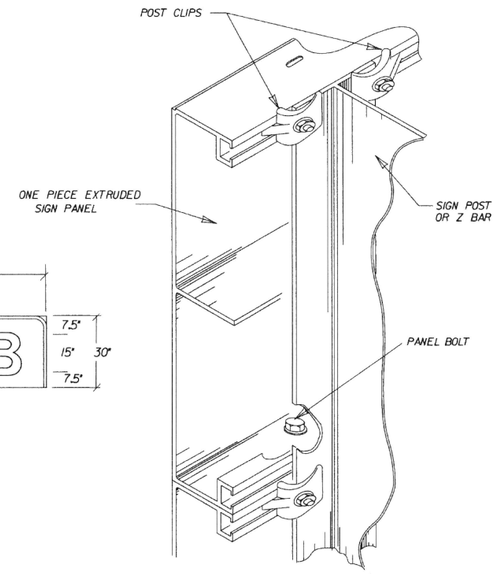


1 DIGIT PLUS "A"OR"B" 42"X30"=8.75 SF
2 DIGITS PLUS "A"OR"B" 60"X30"=12.50 SF
3 DIGITS PLUS "A"OR"B" 78"X30"=16.25 SF

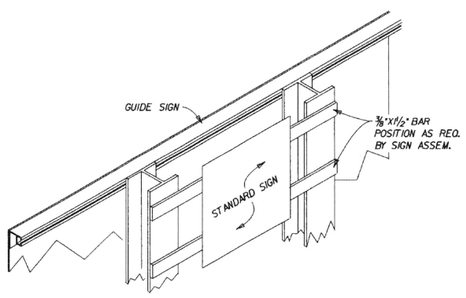
EXIT PANEL DETAILS

NOTE: EXIT NUMBER PANELS SHALL HAVE WHITE LEGENDS AND BORDERS. THE BACK GROUND COLOR WILL BE AS USE SPECIFIES. SHEETING TYPE WILL BE THE SAME AS THE GUIDE SIGN WHICH THE EXIT PANEL IS ATTACHED OR AS SPECIFIED IN THE PLANS. PAYMENT FOR ALL POST CLIPS, BOLTS, AND ANGLES SHALL BE SUBSIDIARY TO THE ITEM "EXIT NUMBER PANEL".

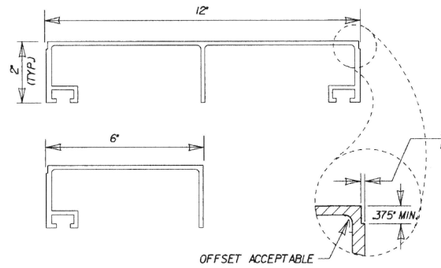




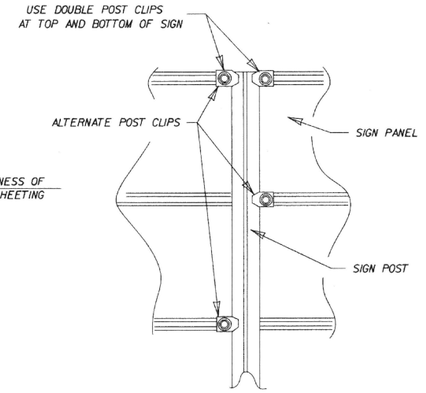
MOUNTING HARDWARE



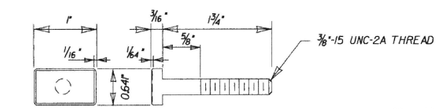
SECONDARY SIGN INSTALLATION ON BACKSIDE OF GUIDE SIGN



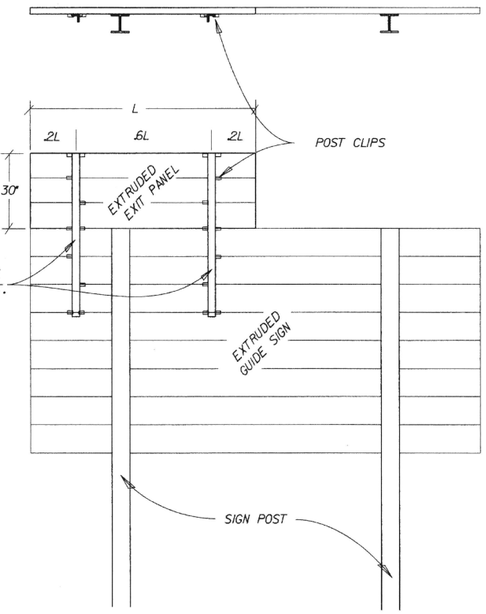
ONE PIECE EXTRUDED SIGN PANELS



POST CLIP PLACEMENT



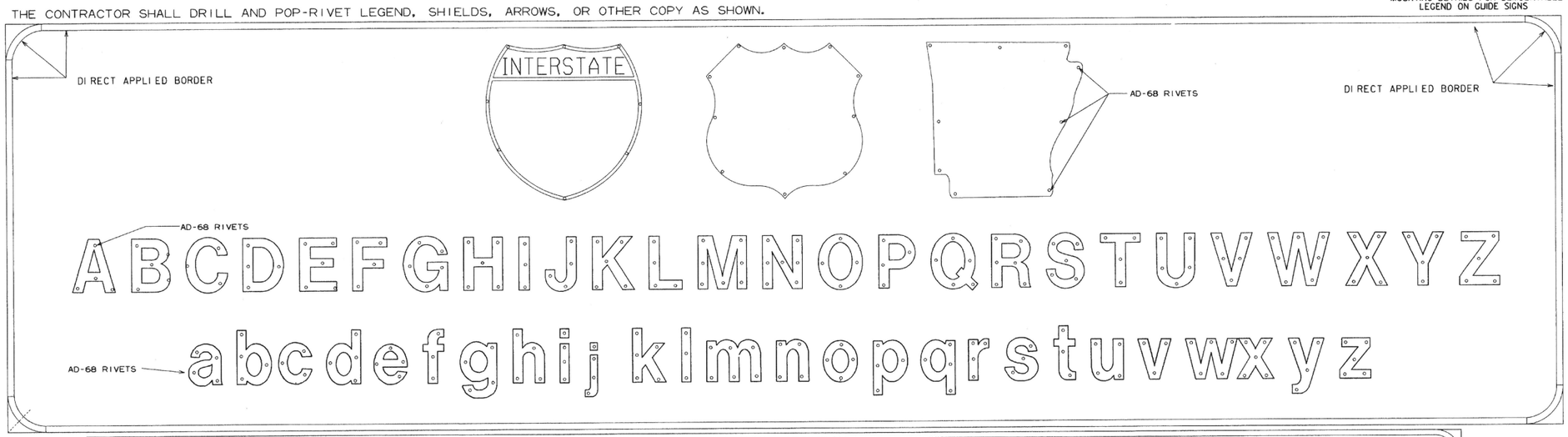
POST CLIP BOLT

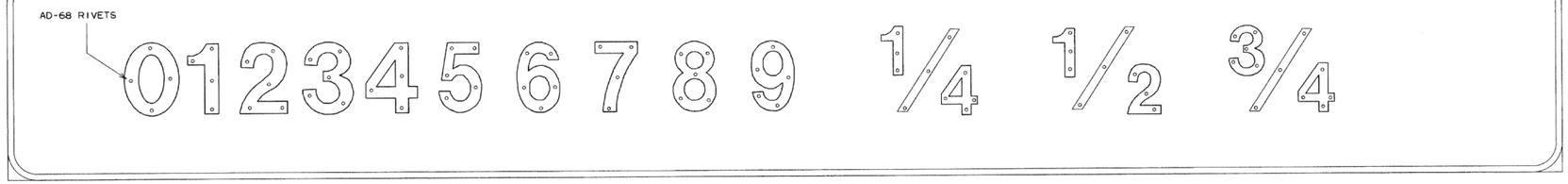


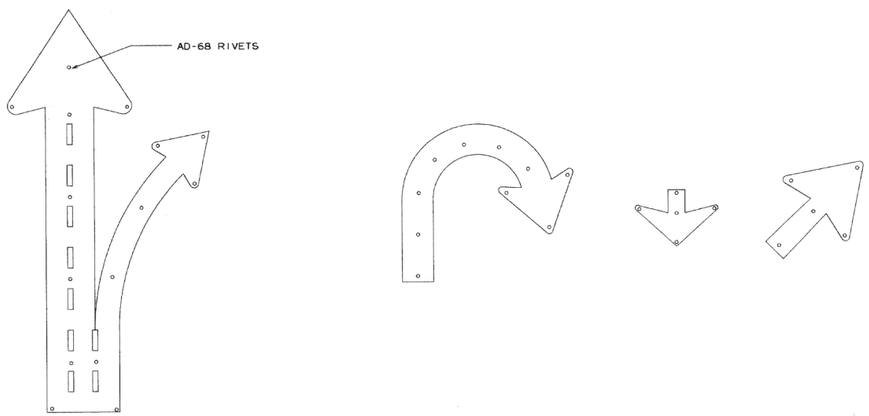
			ARKANSAS STATE HIGHWAY COMMISSION
			DETAILS OF GUIDE SIGN PANELS
9-12-13	ISSUED		STANDARD DRAWING SHS-5
DATE	REVISION	FILMED	

THE CONTRACTOR SHALL DRILL AND POP-RIVET LEGEND, SHIELDS, ARROWS, OR OTHER COPY AS SHOWN.

MOUNTING DETAILS FOR DEMOUNTABLE LEGEND ON GUIDE SIGNS







NOTES:

LEGEND ON GUIDE SIGNS ON THE MAIN LANES SHALL BE DEMOUNTABLE LEGEND.
LEGEND ON GUIDE SIGNS ON CROSS ROADS AND RAMPS SHALL BE DIRECT APPLIED.
THE DEMOUNTABLE AND DIRECT APPLIED LEGENDS SHALL BE TYPE IX SHEETING.

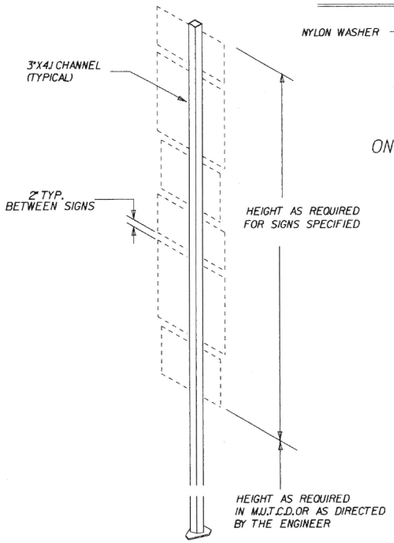
THE BACKGROUND ON ALL GUIDE SIGNS AND STANDARD SIGNS SHALL BE CONSTRUCTED USING TYPE III SHEETING.

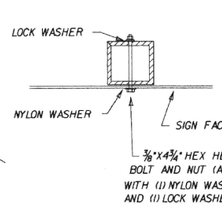
TYPE IX SHEETING FOR BORDER, LEGEND, SHIELDS, ARROWS, OR OTHER COPY SHALL BE ORIENTED VERTICALLY AS PER MANUFACTURERS' DATUM MARKS, ORIENTATION MARKS, OR OTHER RECOMMENDATIONS.

SIGN LEGEND, SHIELDS, ARROWS OR OTHER COPY SHALL BE APPLIED WITH RIVETS ONLY.

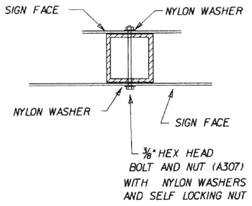
NO OTHER METHOD OF APPLYING CHARACTERS IS ALLOWED.

			ARKANSAS STATE HIGHWAY COMMISSION
			MOUNTING DETAILS FOR DEMOUNTABLE LEGEND ON GUIDE SIGNS
9-12-13	ISSUED		STANDARD DRAWING SHS-6
DATE	REVISION	FILMED	





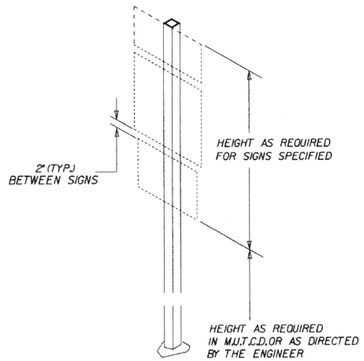
ONE SIGN



TWO SIGNS

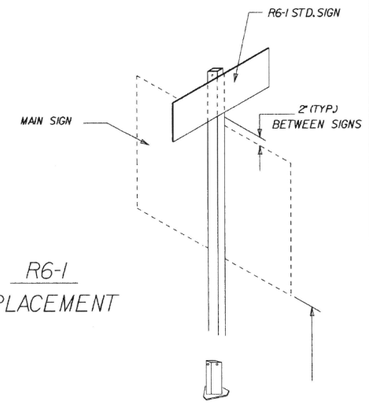
CHANNEL SHALL BE FULL LENGTH OF RECTANGULAR AND SQUARE SIGNS AND SHALL EXTEND 1/2" BEYOND BOLT HOLES ON DIAMOND OR IRREGULAR SHAPED SIGNS.

MOUNTING HARDWARE

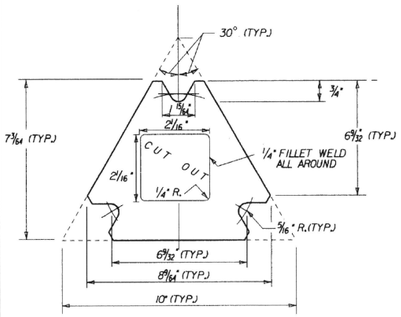


TYPE-I

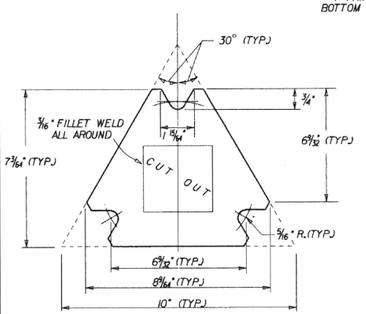
BASIS OF ESTIMATE
APPROX. 100 lbs STEEL



R6-1 PLACEMENT



TOP PLATE



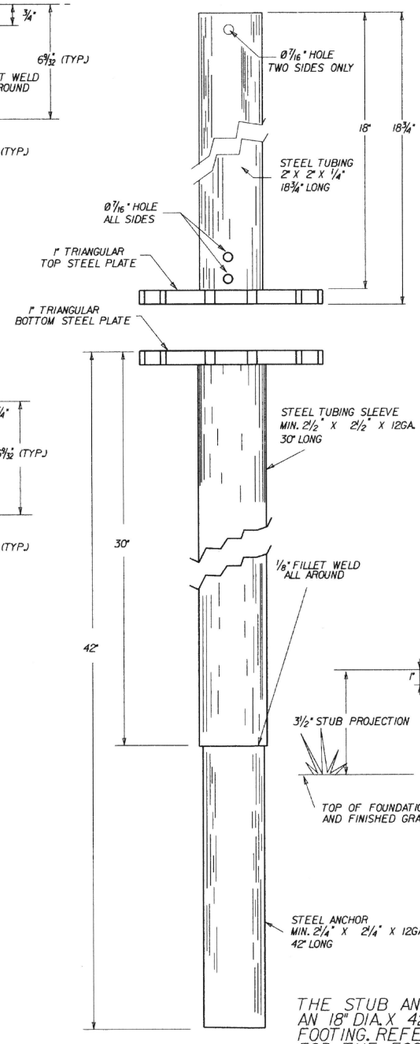
BOTTOM PLATE

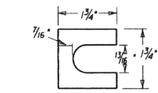
GENERAL NOTES:

THE TOP PLATE OF TRIANGULAR SLIP BASES SHALL HAVE THE SAME EXTERIOR DIMENSIONS AS THE BOTTOM PLATE.

INSIDE DIAMETER OF THE SIGN POST SHALL BE CUT THROUGH THE CENTER OF THE TOP PLATE WITH THE HOLE EDGE BEVELED AS SHOWN. THE BEVEL END SHALL BE TANGENT TO THE BOLT HOLE . ANY MISALIGNMENT SHALL BE REMOVED BY GRINDING . FACE OF BEVEL SHALL BE FINISHED TO A MINIMUM SMOOTHNESS OF 1-500 .

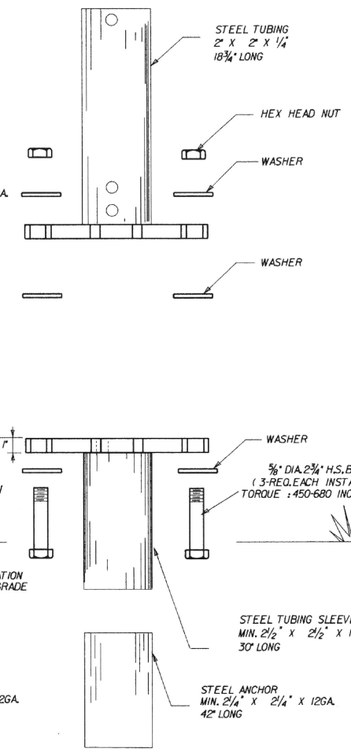
OTHER MASH COMPLIANT BREAKAWAY SIGN SUPPORTS THAT HAVE THE SAME TOP PLATE DIMENSIONS AND SUPPORT 2 1/4" X 2 1/4" SQUARE TUBE SIGN POSTS MAY BE SUBSTITUTED AS APPROVED BY THE ENGINEER.





FURNISH (2) .012" THICK AND (2) .032" THICK SHIMS PER POST

SHIM DETAIL



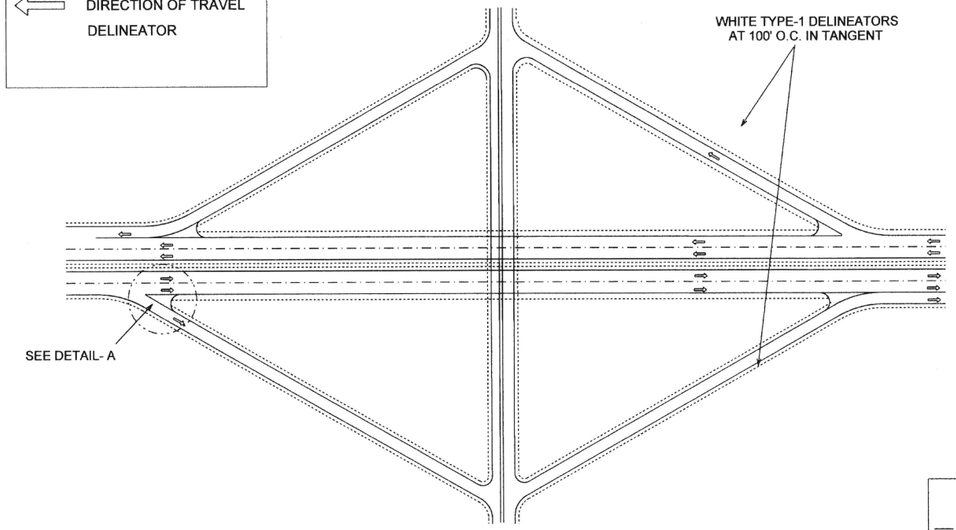
THE STUB ANCHOR SHALL BE SET IN AN 18" DIA. X 42" DEEP CONCRETE FOOTING. REFER TO STD. DRWG. SHS-3 FOR THE FOOTING DETAILS.

			ARKANSAS STATE HIGHWAY COMMISSION
			DETAIL OF OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORTS
9-12-13 DATE	ISSUED REVISION	FILMED	STANDARD DRAWING SHS-7

LEGEND

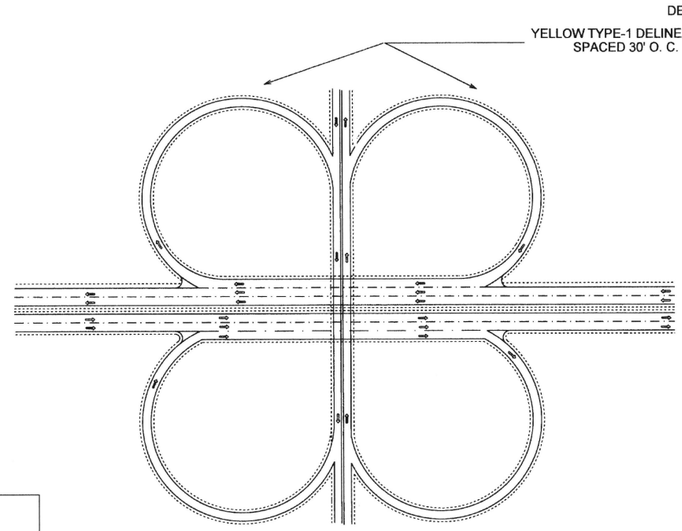
DIRECTION OF TRAVEL

DELINEATOR

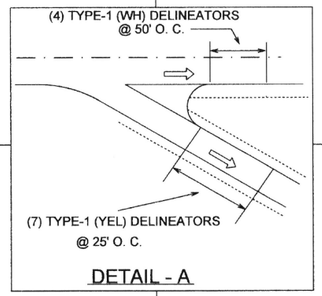


TYPICAL DIAMOND INTERCHANGE
(ALL RAMPS)

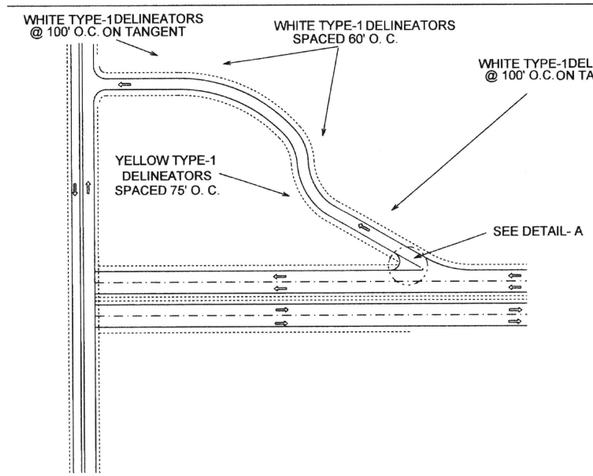
DELINEATORS PLACEMENT DETAIL



TYPICAL CLOVERLEAF INTERCHANGE
(ALL RAMPS)



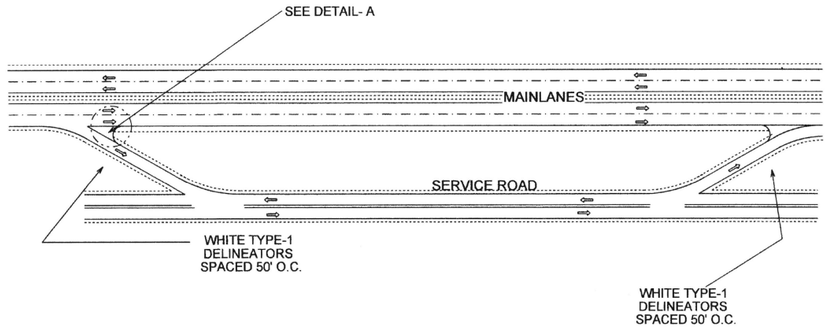
DETAIL - A



MODIFIED DIAMOND INTERCHANGE

NOTE:

DELINEATORS SHALL ONLY BE INSTALLED AS SHOWN IN DETAIL-A IF RAISED PAVEMENT MARKERS ARE NOT PRESENT IN THE GORE OF THE OFF RAMPS.

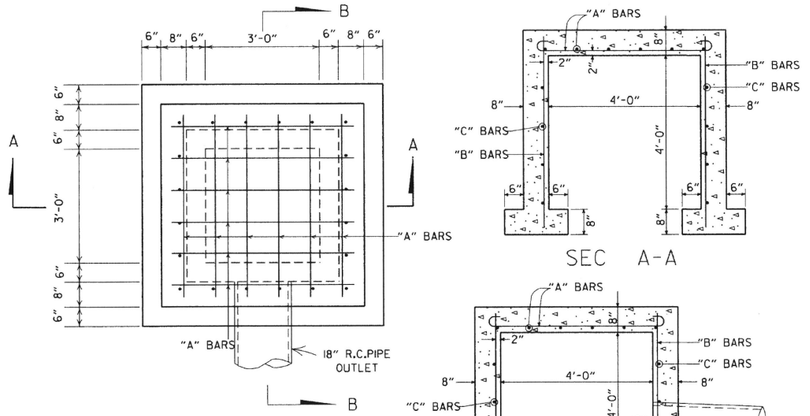


TYPICAL SLIP RAMP

GUIDANCE:

DELINEATORS SHOULD BE MOUNTED ON SUITABLE SUPPORTS SO THAT THE TOP OF THE HIGHEST RETROREFLECTOR IS 1.2 M (4 FT) ABOVE THE NEAR ROADWAY EDGE. THEY SHOULD BE PLACED 0.6 TO 2.4 M (2 TO 8 FT) OUTSIDE THE OUTER EDGE OF THE SHOULDER, OR IF APPROPRIATE, IN LINE WITH THE ROADSIDE BARRIER THAT IS 2.4 M (8 FT) OR LESS OUTSIDE THE OUTER EDGE OF THE SHOULDER.

			ARKANSAS STATE HIGHWAY COMMISSION
			TYPICAL DELINEATOR PLACEMENT ALONG THE INTERSTATE SYSTEM
9-12-13	ISSUED		STANDARD DRAWING SHS-8
DATE	REVISION	FILMED	

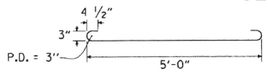


NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
"A"	12	6'-0"	10"
"B"	20	5'-0"	10 ½"
"C"	16	5'-0"	12"

ALL STEEL TO BE #4 BARS

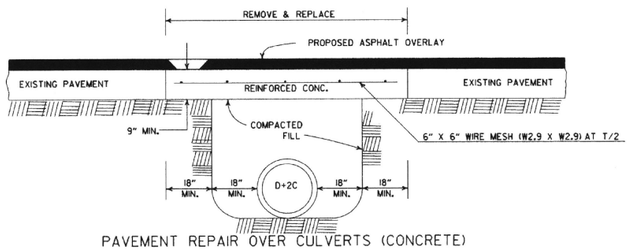


QUANTITIES

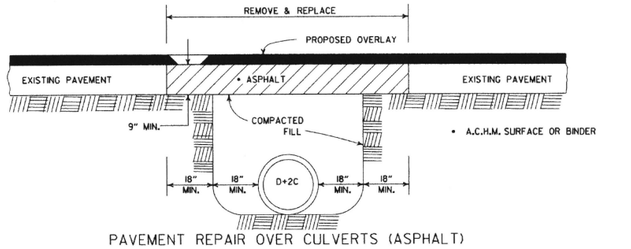
CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

GENERAL NOTE:
THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITTIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

REINFORCED CONCRETE SPRING BOX



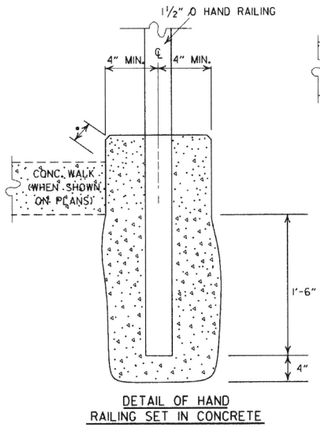
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



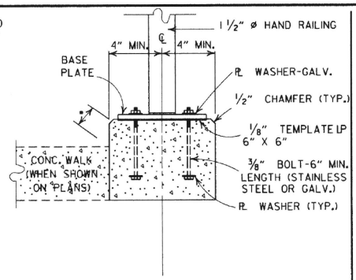
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

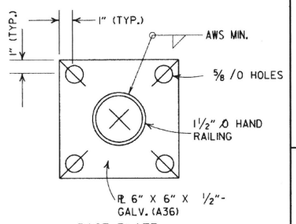
• A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

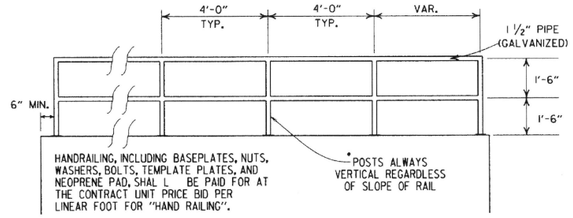


POST CONNECTION TO WALL

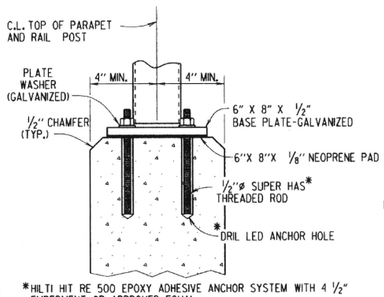


BASE PLATE

POST CONNECTION DETAILS



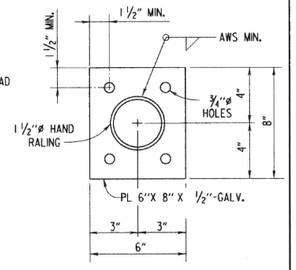
HAND RAILING SHALL CONFORM TO SECTION 633.



*HILTI HIT RE 500 EPOXY ADHESIVE ANCHOR SYSTEM WITH 4 ½" EMBEDMENT OR APPROVED EQUAL.

THE ADHESIVE ANCHOR SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

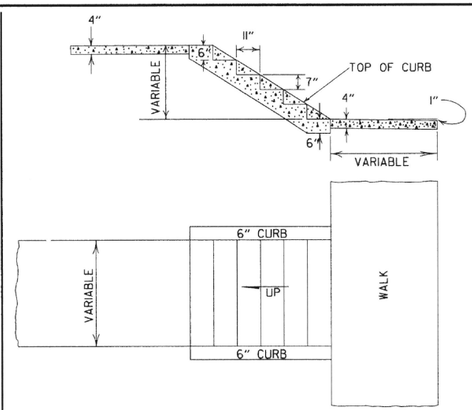
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
9-12-13	REVISED REINFORCED CONCRETE SPRING BOX	
7-26-12	REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS	
4-17-08	REV. JOINT & FOOTING STEP DETAILS	
11-29-07	REVISED RETAINING WALL DRAINAGE	
5-25-06	REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX	
10-9-03	REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS	
4-10-03	REVISED RETAINING WALL DRAWING	
8-22-02	ADDED HAND RAILING DETAIL	
11-16-01	REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES	
11-18-98	ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS	
7-02-98	ENLARGED PIPE	
4-03-97	ADDED NOTE TO STEEL BAR SCHED.	
10-18-96	CORRECTED SPELLING	
4-26-96	ADD WEEP HOLE;REV. JOINT SPACING IN RET. WALL	
6-2-94	CHANGED CONST. TO CONTRACTION JOINT	
10-1-92	CHANGED MESH FABRIC TO WIRE MESH	10-1-92
8-15-91	DELETED HDWL MODIFICATION DETAIL	8-15-91
11-8-90	DELETED COLD MIX FROM CULV'T. REPAIR	11-8-90
11-30-89	REV. RETAINING WALL STEEL SCHEDULE	11-30-89
11-17-88	V. BARS BEHIND ARROW	665-11-17-88
7-15-88	REV. PAVEMENT REPAIR ADDED HDWL. MODS, DEL. PIPE UNDERDRAINS	649-7-15-88
11-1-84	REV. TRENCH FOR PIPE UNDERDRAIN	510-11-1-84
1-4-83	ELIMINATED CONC. CLASS & ADDED CHAMFER NOTE	682-1-4-83
3-2-81	SPELLING OF "UNDERDRAIN"	721-3-2-81
4-20-79	REV. UNDERDRAIN DET& PAVEMENT REPAIR	674-4-20-79
2-2-76	12"MIN. GRAN. MAT'L. OVER PIPE	919-2-2-76
4-10-75	REM. SPECS. FOR GRAN. MAT'L.	568-4-10-75-853
5-22-74	GRANULAR MAT'L. TO BE SB-3	567-5-22-74-740
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI-1

R1-1



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

R1-2



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

R2-1



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

W3-5



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

W3-5a



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

R4-1



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

R4-2



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

R5-1



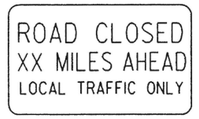
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2



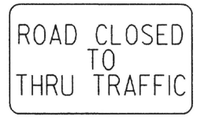
48"X30"

RII-3A



60"X30"

RII-4



60"X30"

RSP-1



48"X30"

WI-1



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

WI-2



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

WI-3



STD. 48"X48"

WI-4



STD. 48"X48"

WI-6



STD. 48"X24"
SPECIAL 60"X30"

WI-8



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

W3-1



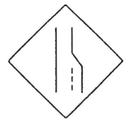
STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1



STD. 36"X36"
SPECIAL 48"X48"

W6-3



EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7



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

W9-2



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

WI3-1



STD. 24"X24"

W20-1



STD. 48"X48"

W20-2



STD. 48"X48"

W20-3



STD. 48"X48"

W20-4



STD. 48"X48"

W20-5



STD. 48"X48"

W20-7a



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

W21-2



STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

WI-4b



STD. 48"X48"

R56-1



STD. 18"X18"

W8-11



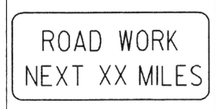
STD. 36"X36"
FWY. 48"X48"

W8-9



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

G20-1



60"X24"

G20-2

48"X24"

OM-3L OM-3R

12"X36"

M4-9

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

M4-10

48"X18"

R55-1

36"X60"

• USE 6" C LETTERS
•• USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.
3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.
- 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
- 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.
6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.
7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.
8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

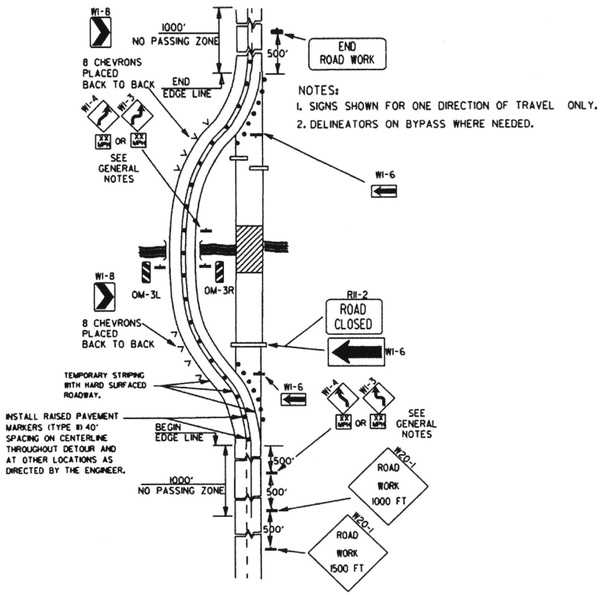
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

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

ARKANSAS STATE HIGHWAY COMMISSION

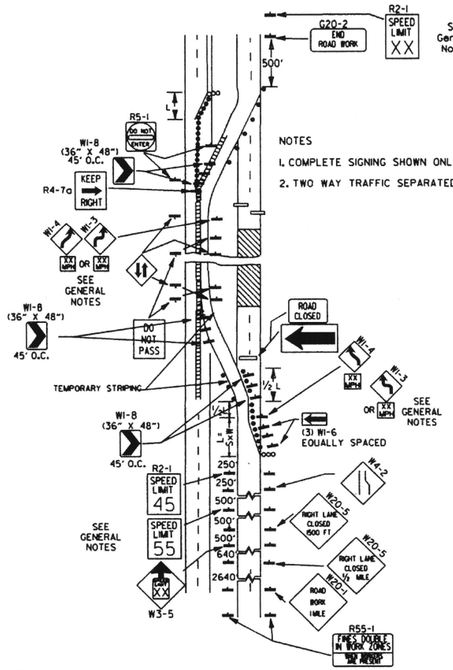
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



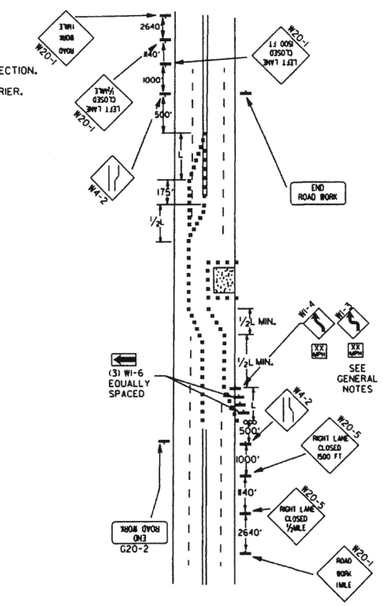
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.

NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

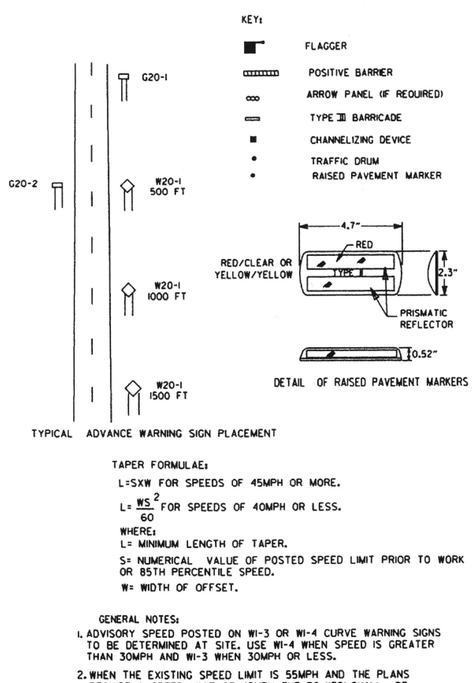


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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



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



DETAIL OF RAISED PAVEMENT MARKERS

TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

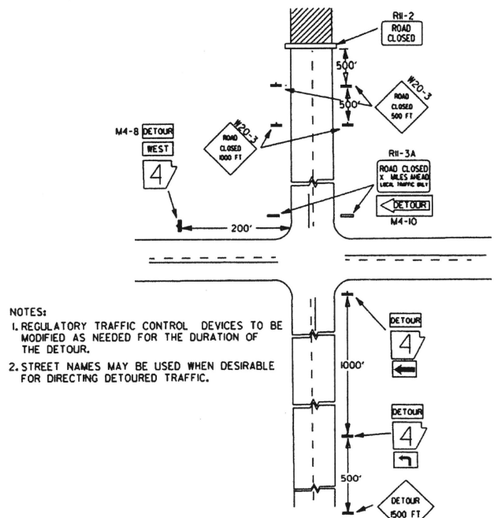
L=SXW FOR SPEEDS OF 45MPH OR MORE.

$L = \frac{WS^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

WHERE:
L= MINIMUM LENGTH OF TAPER.
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
W= WIDTH OF OFFSET.

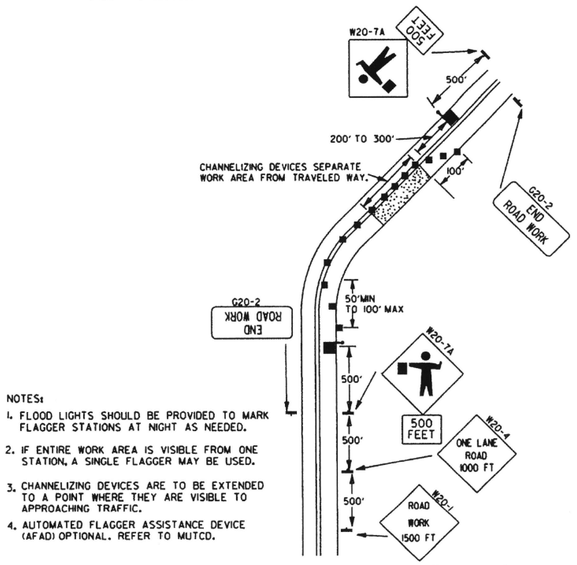
GENERAL NOTES:

1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.
8. 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.



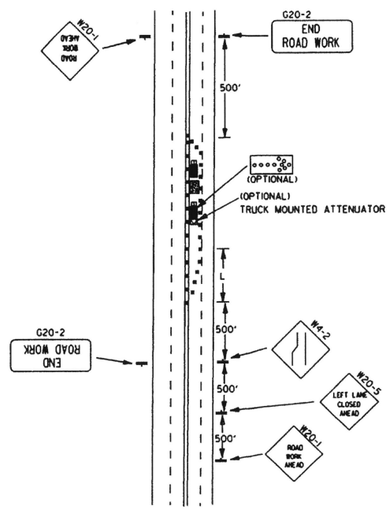
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



NOTES:
1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
4. AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD) OPTIONAL. REFER TO MUTCD.

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



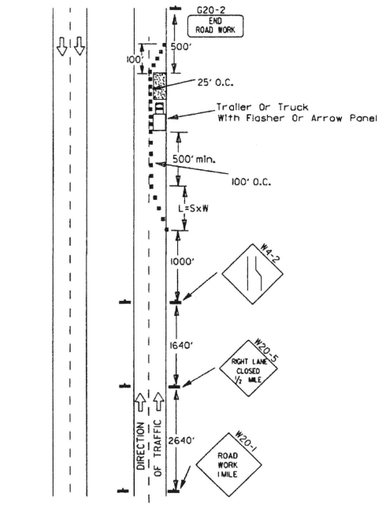
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

DATE	REVISION	FILMED
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-8-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

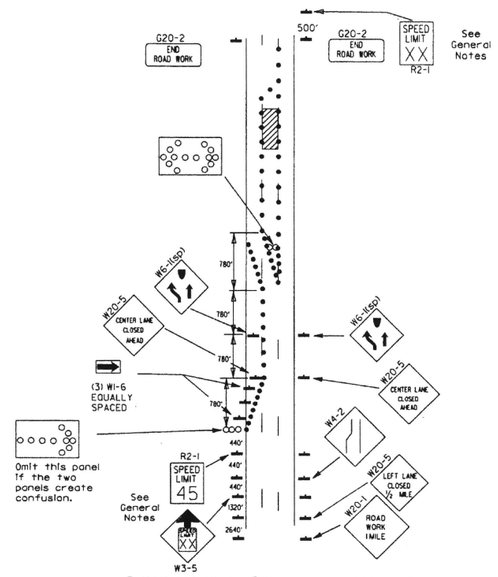
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

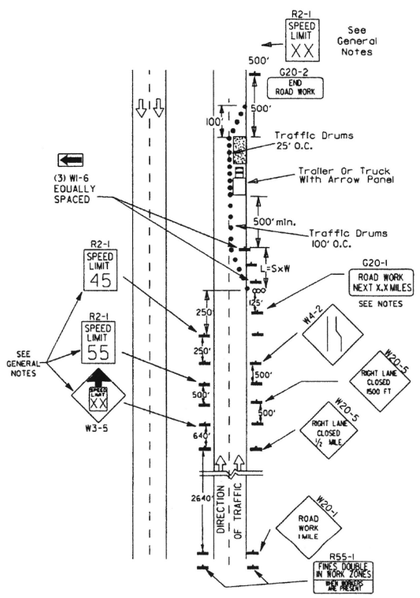
STANDARD DRAWING TC-2



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



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



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

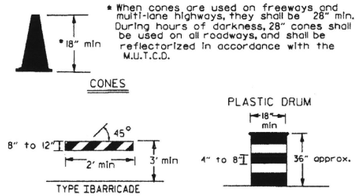
KEY:

- ○○○ Arrow Panel (If Required)
- ■ Channelizing Device
- ● Traffic drum

GENERAL NOTES:

1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the W3-5 shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

Channelizing devices



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

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

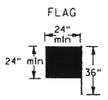
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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

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

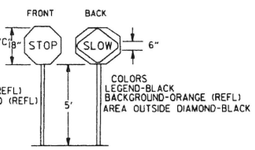
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

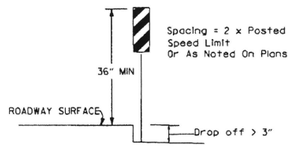


Flag shall be of good grade red material

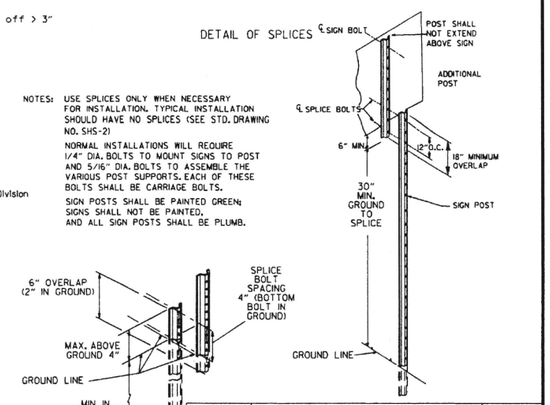
STOP SLOW PADDLE



VERTICAL PANEL PLACEMENT



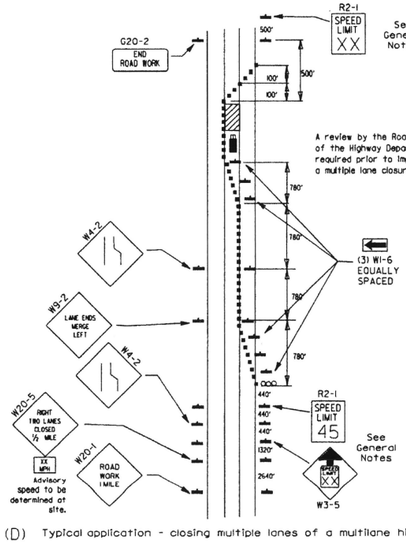
DETAIL OF SPLICES



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

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

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



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

9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
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	
DATE	REVISION	FILMED

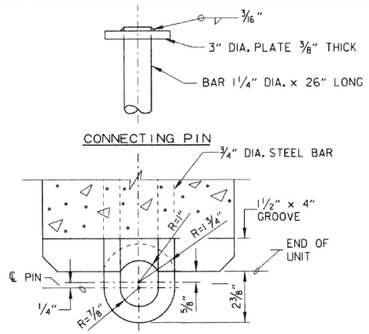
ARKANSAS STATE HIGHWAY COMMISSION

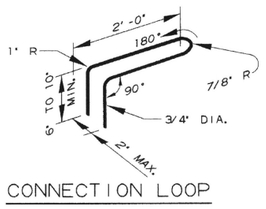
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-3

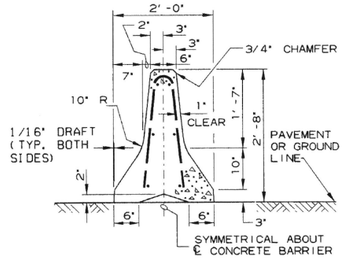
REINFORCING BAR TABLE PER BARRIER UNIT

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

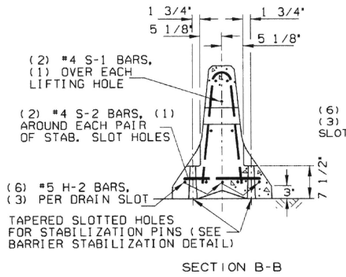




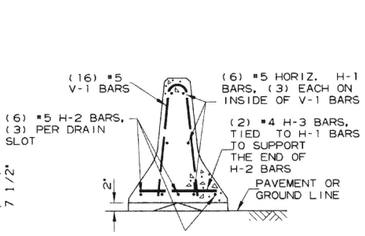
CONNECTION LOOP



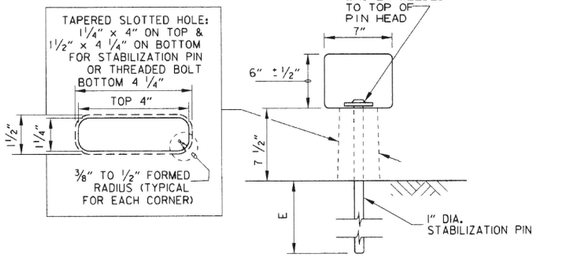
SECTION A-A



SECTION B-B



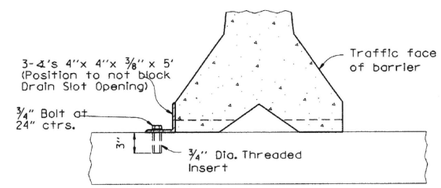
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

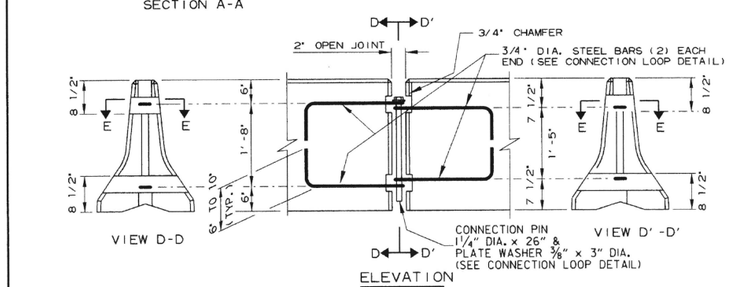
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



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

BARRIER STABILIZATION DETAIL

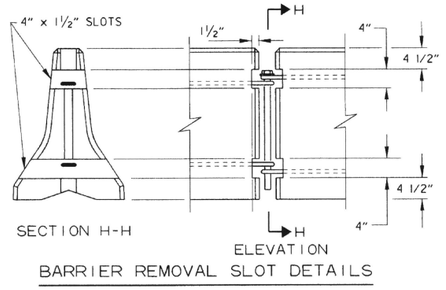
BRIDGE DECKS



VIEW D-D

VIEW D'-D'

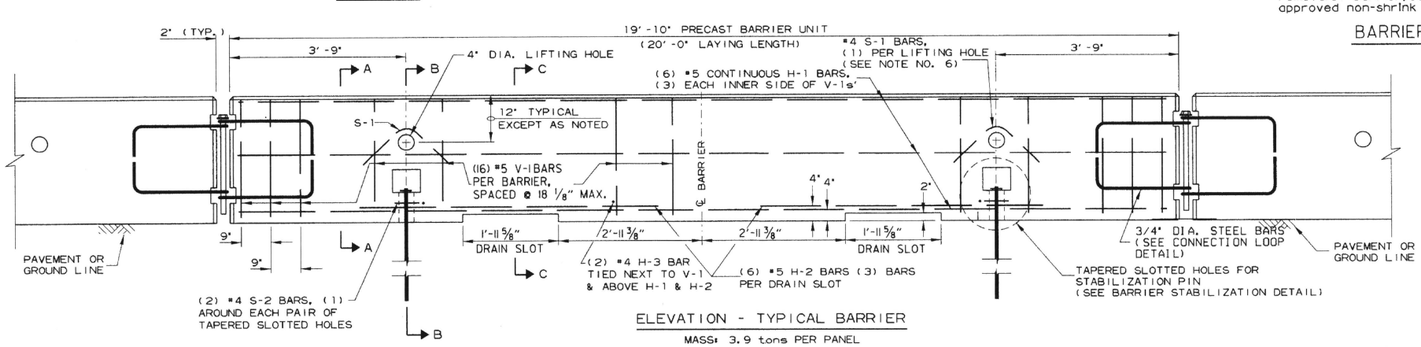
ELEVATION



SECTION H-H

ELEVATION

BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

(1) The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.

(2) Materials shall meet the following minimum requirements:
Concrete: 2500 psi compressive strength at 28 days.
Reinforcing Steel: AASHTO M 31 or M 53, Grade 60
Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin.
Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

In applications where barrier wall is within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers.
Delineator color shall be in accordance with the Manual on Uniform Traffic Control Devices.
Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier".
The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.

(3) Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 test level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.

(4) Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.

(5) Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.

(6) A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.

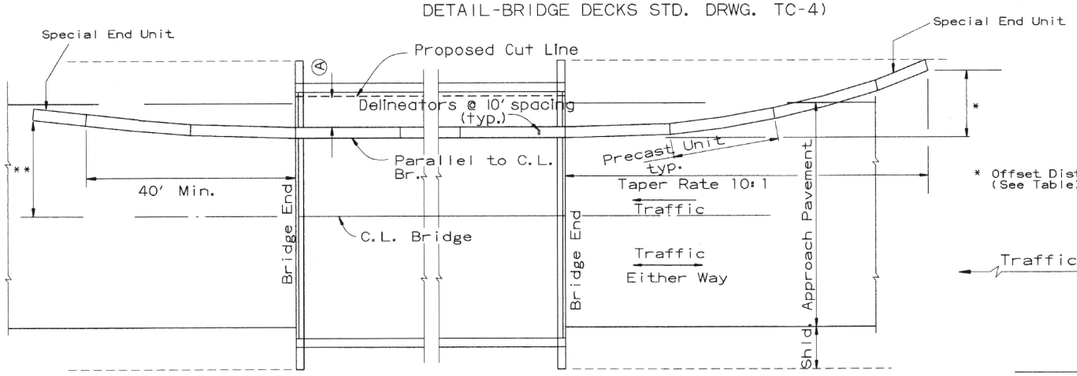
DATE	REVISION	FILMED
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

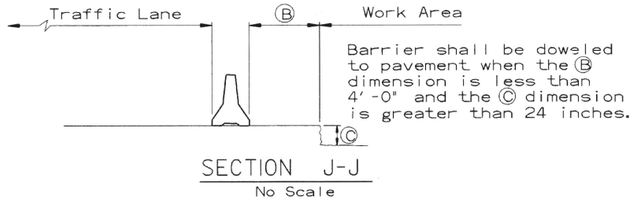
STANDARD DRAWING TC-4

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



BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

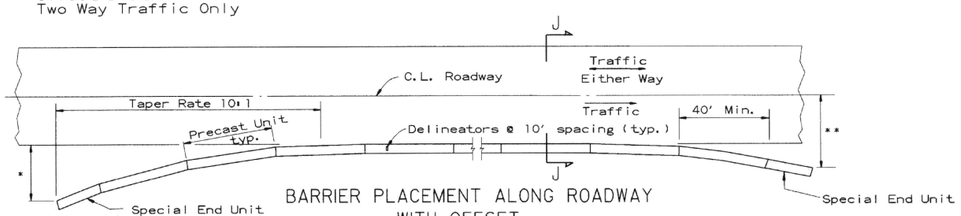


Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

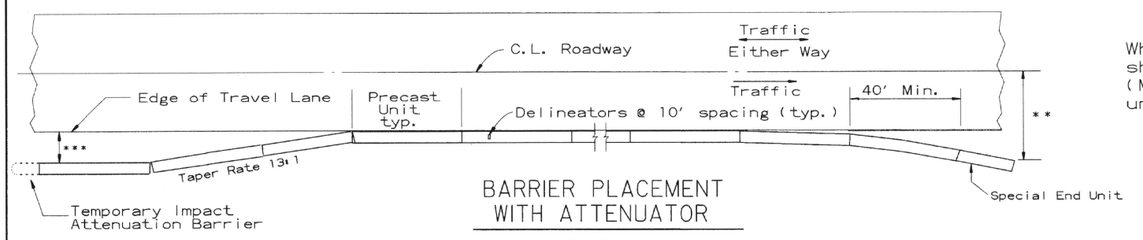
** Offset Distance For Two Way Traffic Only

* Offset Distance (See Table)

Offset Distance Table

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

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

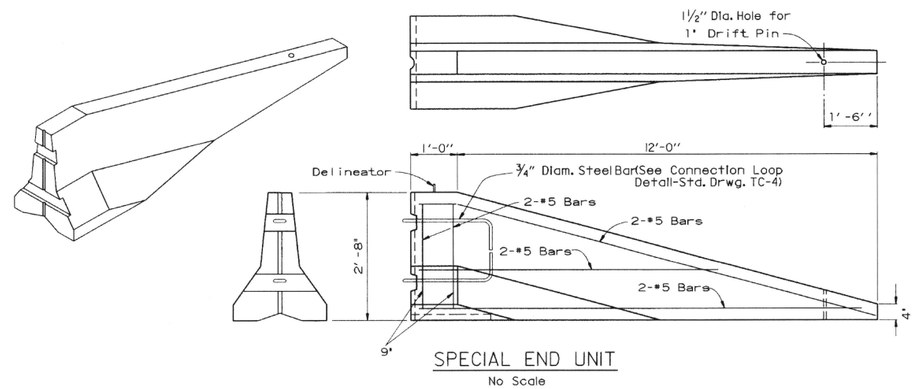


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

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

** Offset Distance For Two Way Traffic Only



SPECIAL END UNIT

No Scale

General Notes

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

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

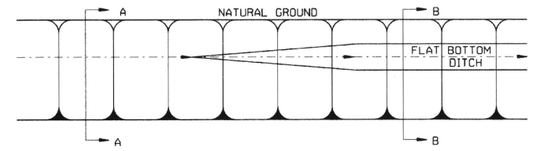
ARKANSAS STATE HIGHWAY COMMISSION

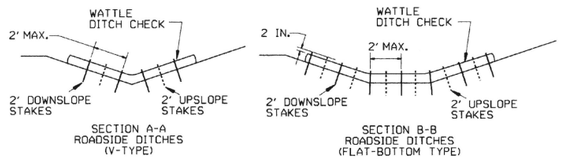
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-5

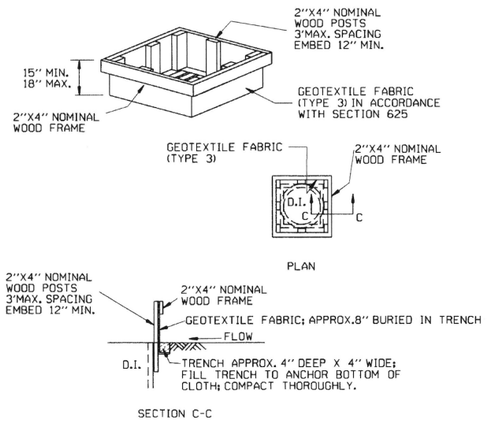
GENERAL NOTES

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

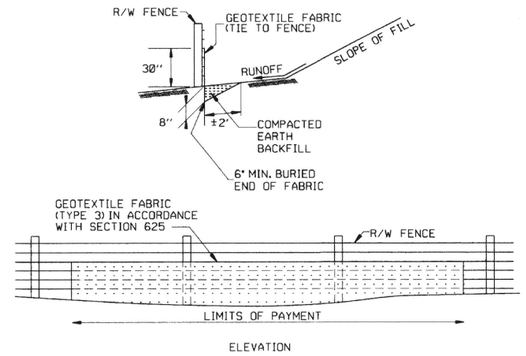




WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

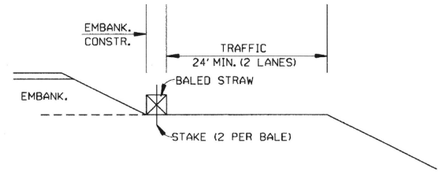
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

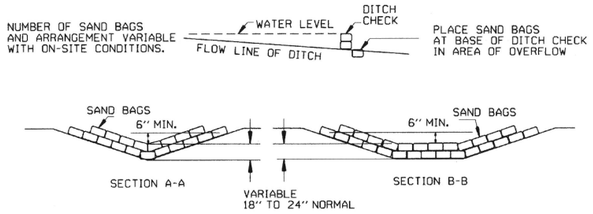
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

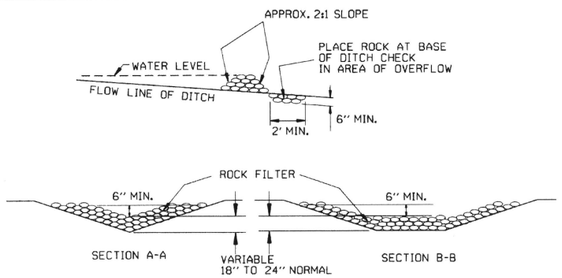
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



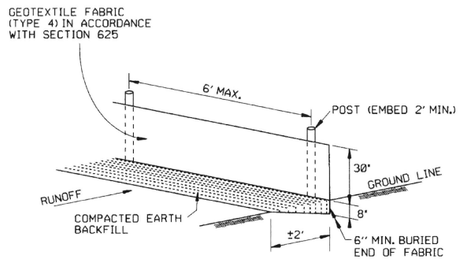
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

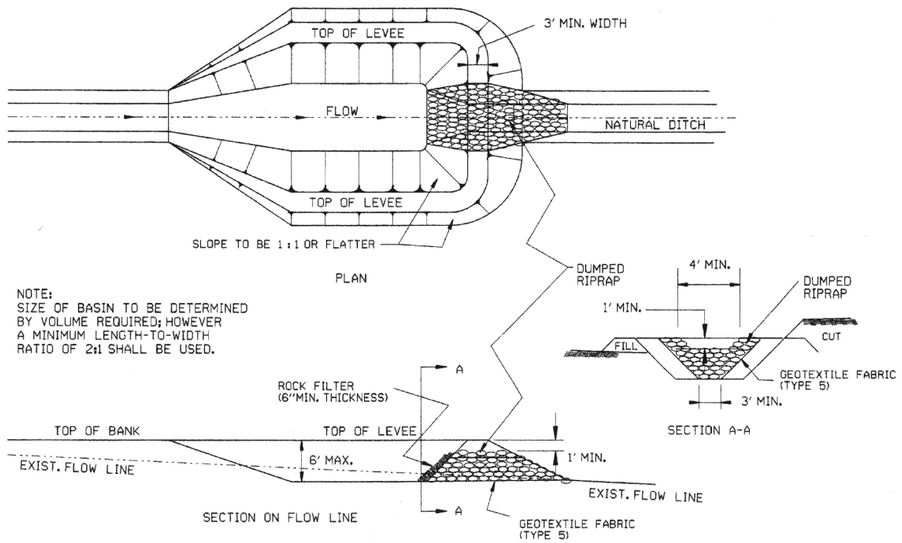
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

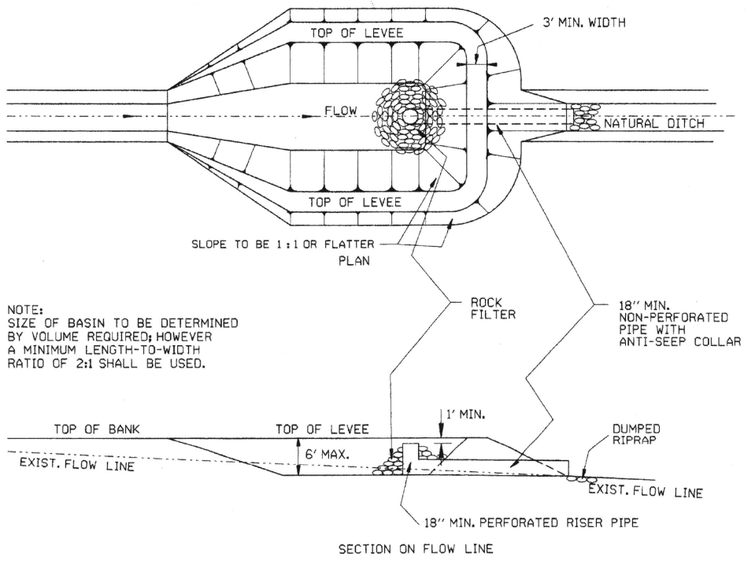
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

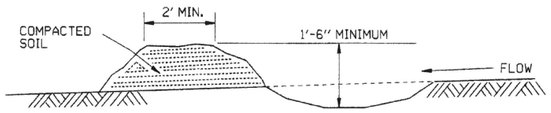
STANDARD DRAWING TEC-1



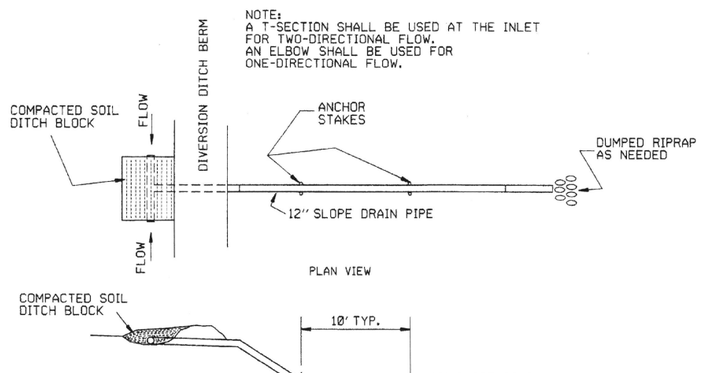
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



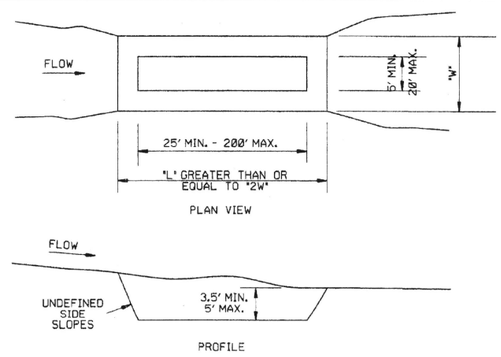
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

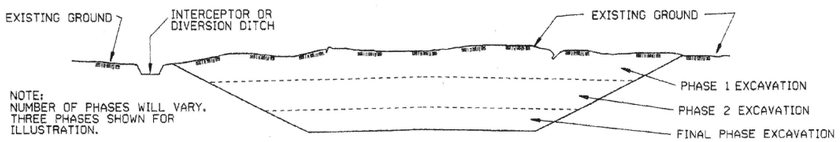
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



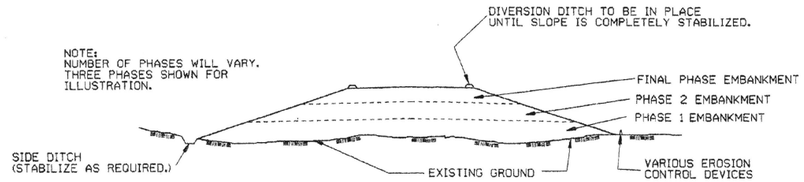
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

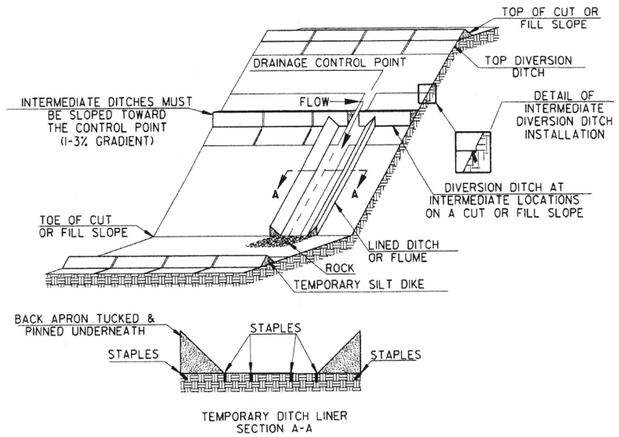
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

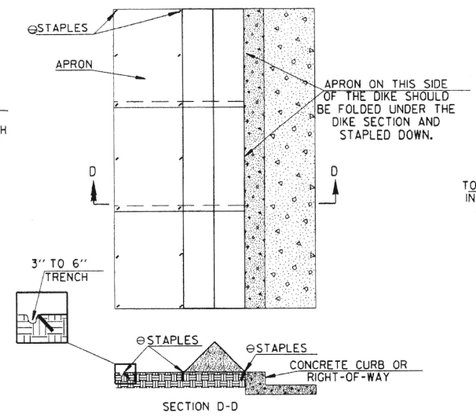
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3

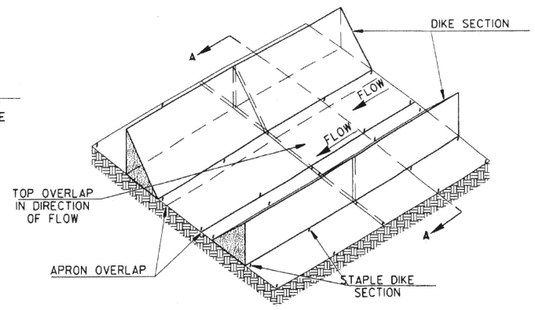
stdtec3.dgn



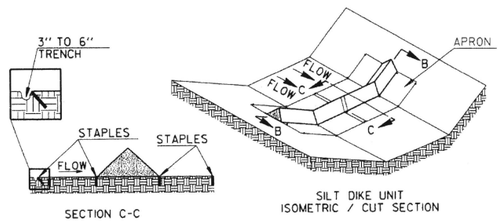
TRIANGULAR SILT DIKE INSTALLATION FOR DIVERSION DITCH AND/OR DITCH LINER

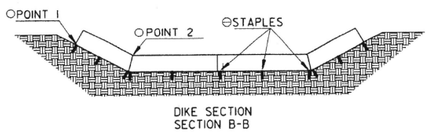


TRIANGULAR SILT DIKE INSTALLATION FOR CONTINUOUS BARRIER



TRIANGULAR SILT DIKE INSTALLATION FOR TEMPORARY DITCH LINER

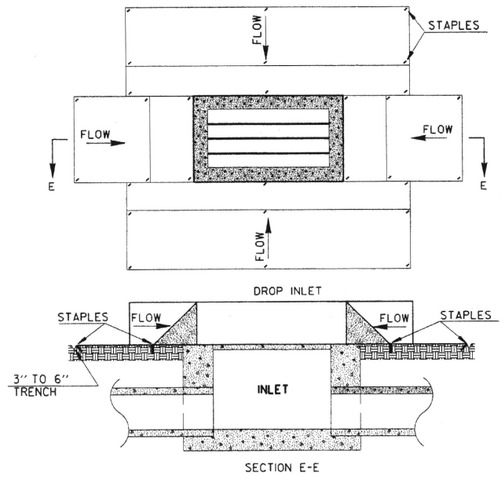




TRIANGULAR SILT DIKE INSTALLATION FOR ROADWAY DITCH OR DRAINAGE DITCH

○ POINT "1" MUST BE HIGHER THAN POINT "2" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

⊖ STAPLES SHALL BE PLACED WHERE THE UNITS OVERLAP AND IN THE CENTER OF THE UNIT AS SHOWN ON THE DIAGRAM.



TRIANGULAR SILT DIKE INSTALLATION FOR DROP INLETS

SYMBOLOGY

SYMBOL TO BE USED TO DENOTE DEVICE ON PLANS

NOTE: SILT DIKE SHOULD ONLY BE USED FOR DROP INLETS IN SUMP LOCATIONS.

GENEFAL NOTES

1. THIS WORK SHALL CONSIST OF FURNISHING, INSTALLING, AND MAINTAINING THE TRIANGULAR SILT DIKE. THE DIKES SHALL BE USED AS A CONTINUOUS LINE BARRIER AT THE TOE OF SLOPE OR ACROSS THE ROADWAY DITCH TO CONTAIN SEDIMENT AND MINIMIZE EROSION, OR AS DIRECTED BY THE ENGINEER. THESE DIKES SHALL BE INSTALLED AND LOCATED AS SOON AS CONSTRUCTION WILL ALLOW OR AS DIRECTED BY THE ENGINEER.

2. TRIANGULAR SILT DIKE SHALL BE TRIANGULAR SHAPED HAVING A HEIGHT OF AT LEAST 8" TO 10" IN THE CENTER WITH EQUAL SIDES AND A 16" TO 20" BASE. THE TRIANGULAR SHAPED INNER MATERIAL SHALL BE URETHANE FOAM. THE OUTER COVER SHALL BE A WOVEN GEOTEXTILE FABRIC PLACED AROUND THE INNER MATERIAL & ALLOWED TO EXTEND BEYOND BOTH SIDES OF THE TRIANGLE 24" TO 36". THIS FABRIC SHOULD BE MILDEW RESISTANT, ROT-PROOF AND RESISTANT TO HEAT AND ULTRAVIOLET RADIATION MEETING REQUIREMENTS FOR SEDIMENT CONTROL IN AASHTO M288. THE DIKES SHALL BE ATTACHED TO THE GROUND WITH WIRE STAPLES. THE STAPLES SHALL BE NO. 11 GAUGE WIRE AND BE AT LEAST 6" TO 8" LONG. STAPLES SHALL BE PLACED AS SHOWN ON THESE DETAILS.

   THE CONTRACTOR SHALL INSPECT ALL DIKES AFTER EACH RAINFALL EVENT OF AT LEAST 0.5" OR GREATER. ANY DEFICIENCIES OR DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR. ACCUMULATED SILT OR DEBRIS SHALL BE REMOVED AND RELOCATED AS DIRECTED BY THE ENGINEER. IF THE DIKES ARE DAMAGED OR INADVERTENTLY MOVED DURING THE SILT REMOVAL PROCESS, THE CONTRACTOR SHALL IMMEDIATELY REPLACE AFTER DAMAGE OCCURS.

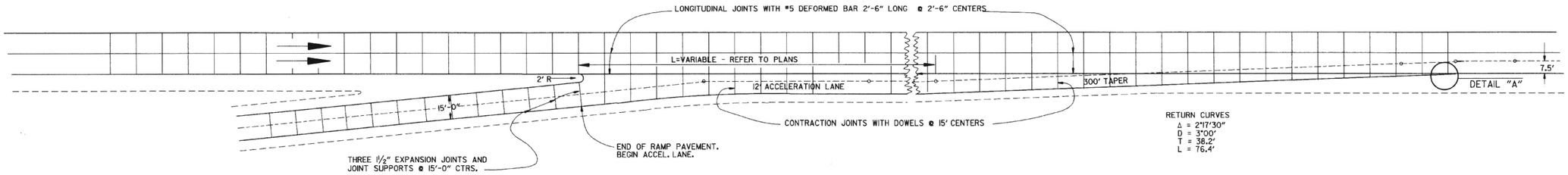
3. ACCEPTED TRIANGULAR SILT DIKE, MEASURED AS PROVIDED ABOVE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR TRIANGULAR SILT DIKE. PRICE BID WILL INCLUDE THE COST OF FURNISHING THE DIKES, INSTALLING, MAINTAINING AND REMOVAL WHEN DIRECTED BY THE ENGINEER.

DATE	REVISION	FILMED
7-26-12	REVISED GENERAL NOTE 2.	
12-15-11	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

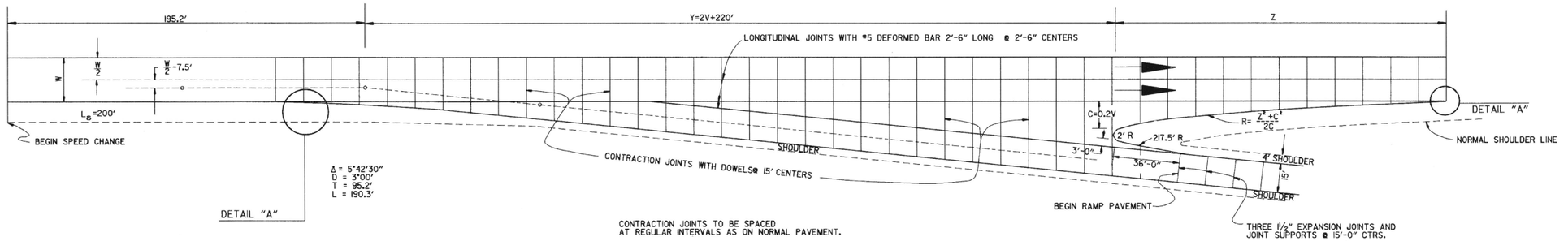
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-4



ENTRANCE RAMP

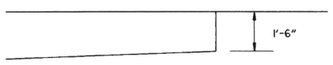
NOTE: JOINT SPACING ON THE MAIN LANES SHALL BE ADJUSTED AS NECESSARY TO CONFORM TO THESE JOINT LAYOUTS. THE MAIN LANE JOINT SPACING MAY BE REDUCED TO A 12' MINIMUM.



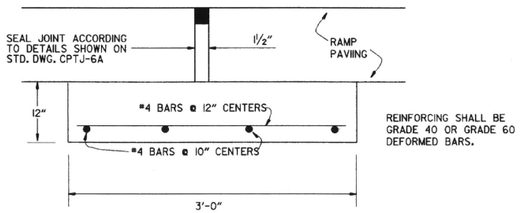
EXIT RAMP

EXIT RAMP

DESIGN SPEED V	Y	NOSE OFFSET C	LENGTH NOSE TAPER Z	RETURN RADIUS R	ADDITIONAL SURFACING SQ. YDS.
40	300.0	8.0	96.0	580.0	602.43
50	320.0	10.0	120.0	725.0	687.29
60	340.0	12.0	168.0	1182.0	790.55
70	360.0	14.0	210.0	1582.0	902.27



DETAIL "A"



DETAIL OF EXPANSION JOINT & JOINT SUPPORT

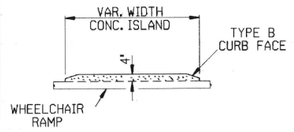
NOTE: THE EXPANSION JOINTS SHALL BE MEASURED AND PAID FOR AS P.C.C. PAVEMENT (RAMP THICKNESS). WHEN RAMP PAVING IS ASPHALT, EXPANSION JOINT IS NOT REQUIRED.
THE JOINT SUPPORT MAY BE CONSTRUCTED WITH CLASS "A", "S", OR PAVING CONCRETE. PAYMENT FOR THE JOINT SUPPORT SHALL BE FOR THE CONTRACT UNIT PRICE BID FOR THE CLASS OF CONCRETE USED. ALL OTHER WORK AND MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE JOINT SUPPORT SHALL BE INCLUDED IN THE PRICE BID FOR THE ABOVE ITEMS.

DATE	REVISION	DATE FILM'D
8-22-02	DELETED NOTE	
11-16-01	CORRECTED SPELLING ON ENTRANCE RAMP NOTE	
5-13-99	ADDED, EDITED AND DELETED NOTES	
11-03-94	ADDED NOTE RE: REINF. BARS	
10-1-92	ADDED DETAIL A & OTHER MINOR CHANGES	10-1-92
1-25-90	REVISED EXPANSION JOINT	1-25-90
7-15-88	CONFORM'D TO 1988 SPECIFICATIONS	65C-7-15-88
3-2-81	ISSUED	511-10-2-72

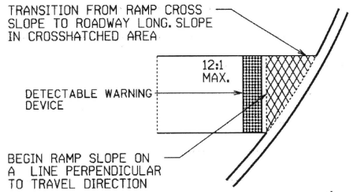
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD TURNOUT FOR ENTRANCE & EXIT RAMPS (NON-REINFORCED)

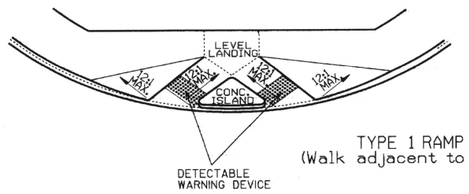
STANDARD DRAWING TR-1A



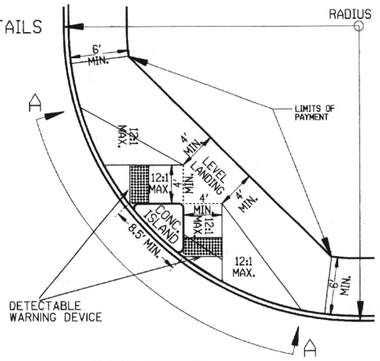
CONCRETE ISLAND DETAIL

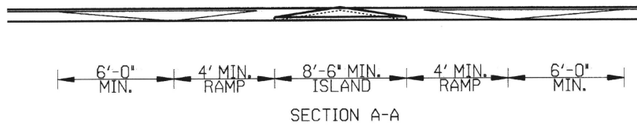


SLOPE TRANSITION DETAILS



TYPE 1 RAMP
(Walk adjacent to curb)

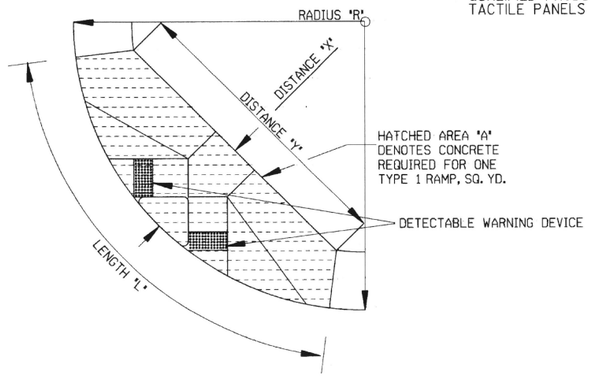




SECTION A-A

TYPE 1 RAMP DIMENSIONS AND QUANTITIES

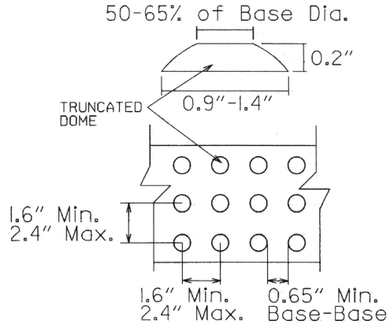
RADIUS "R" FEET	DISTANCE "X" FEET	DISTANCE "Y" FEET	LENGTH "L" FEET	RAMP AREA "A" SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	40.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35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



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

GENERAL NOTES FOR DETECTABLE WARNING DEVICES

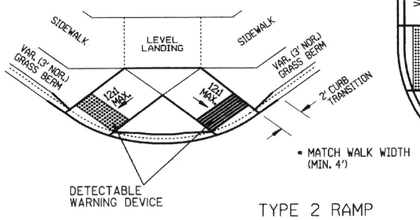
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT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



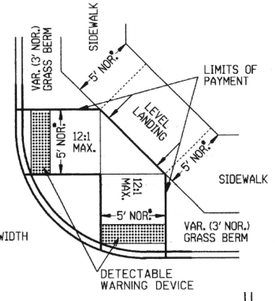
DETECTABLE WARNING DEVICE DETAIL

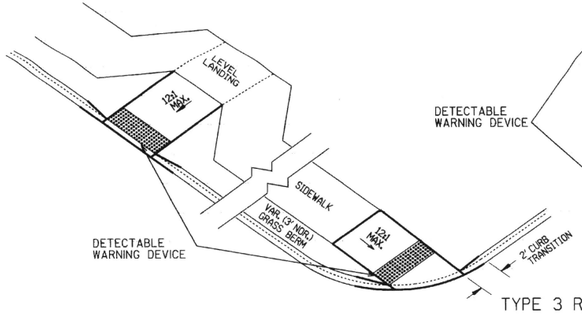
GENERAL NOTES:

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

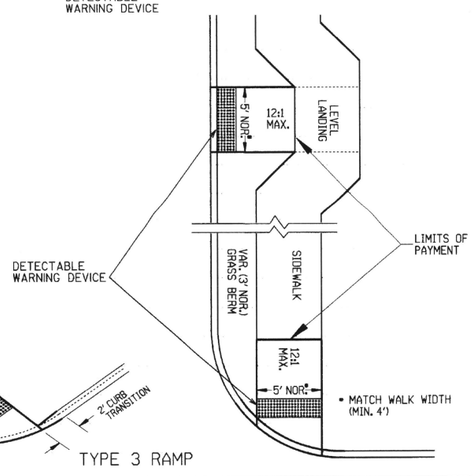


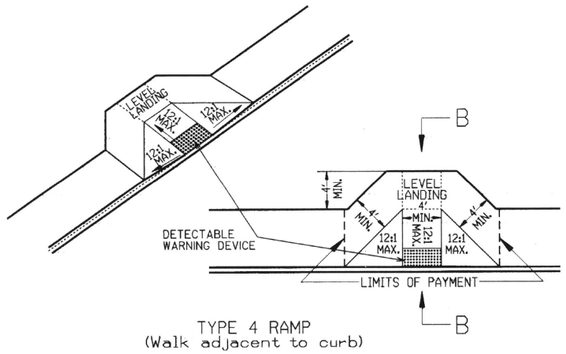
TYPE 2 RAMP



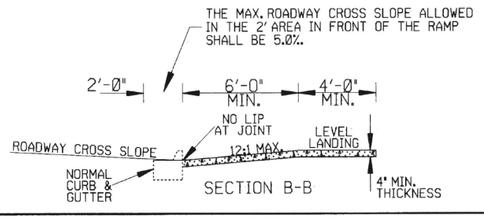


TYPE 3 RAMP





TYPE 4 RAMP
(Walk adjacent to curb)



SECTION B-B

RAMP SELECTION CRITERIA

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

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

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

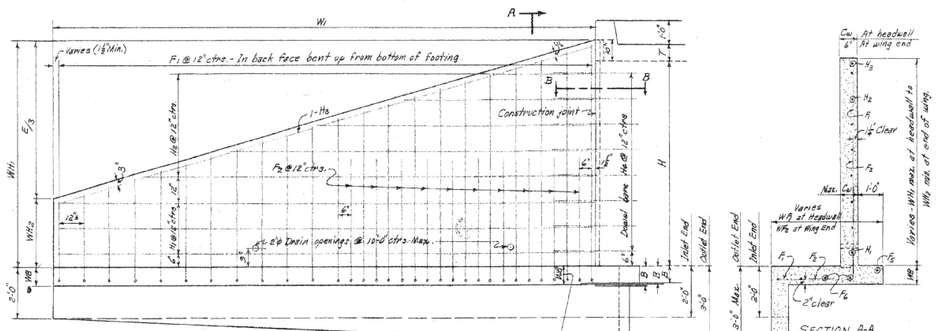
11-10-05	REVISED TO NEW SIDEWALK POLICY	
10-9-03	REVISED GEN. NOTES & ADDED NOTE	
4-10-03	REV. DETECTABLE WARNING DEVICES	
8-22-02	ADD DETECTABLE WARNING DEVICES	
3-30-00	ADD SLOPE TRANS. & REV. ISL. DIMS.	
11-18-98	REVISED NOTES	
8-12-98	REVISED TEXTURE	
7-02-98	REDRAWN & REISSUED	
10-18-96	CORRECTED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

ARKANSAS STATE HIGHWAY COMMISSION

WHEELCHAIR RAMPS NEW CONSTRUCTION AND ALTERATIONS

STANDARD DRAWING WR-1

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



RESHOT 3-4-93

300

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

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

DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	'a' bars STRAIGHT In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall - Each. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	'b' bars BENT - See Diagram below. In Top and Bottom Slabs of Barrel. Alternate with 'a' bars. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	'd' bars STRAIGHT Longitudinal in Top Slab of Barrel SIZE	SPACING	No. REQ'D	LENGTH	'd' bars STRAIGHT Longitudinal in Sidewalls SIZE	SPACING	No. REQ'D	LENGTH	'd' bars STRAIGHT Longitudinal in Bottom Slab of Barrel SIZE	SPACING	No. REQ'D	LENGTH	'f' bars STRAIGHT Verticals in Sidewalls SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
D	S	H																												
0'-0" TO 5'-0" MAXIMUM	4'@ 1	2'	#5	13"	120	120	4'-9"	#6	13"	110	110	5'-10"	4'-8"	#5	10½"	6	#6	12"	4				#4	12"	5	#4	12"	120	120	2'-11"
		3'			120	120	4'-9"			110	110	5'-10"	4'-8"			6			6						5			120	120	3'-11"
		4'			120	120	4'-9"			110	110	5'-10"	4'-8"			6			8						5			120	120	4'-11"
		5'			120	120	4'-9"			110	110	5'-10"	4'-8"			6			10						5			120	120	5'-11"
		6'			120	120	4'-11"			110	110	6'-0"	4'-10"			6			12						5			120	120	6'-11"
	5'@ 1	5'			120	120	5'-9"			110	110	6'-10"	5'-8"			7									6			120	120	4'-0"
		6'			120	120	5'-9"			110	110	6'-10"	5'-8"			7			8						6			120	120	5'-0"
	5'@ 2	5'	#6	13"	120	120	5'-9"	#6	13"	110	110	6'-10"	5'-8"	#5	10⅝"	7	#4	12"	6	#4	12"	6	#4	12"	6	#4	12"	120	120	5'-0"
		6'			120	120	5'-11"			110	110	7'-0"	5'-10"			7			12			6			6			120	120	6'-0"
		7'			120	120	6'-0"			110	110	7'-1"	5'-11"			7			14			7			6			120	120	6'-0"
	6'@ 1	3'			128	128	6'-9"			118	118	7'-10"	6'-8"			8			6			7			7			120	120	4'-11"
		4'			128	128	6'-9"			118	118	7'-10"	6'-8"			8			8			8			7			120	120	5'-1"
	6'@ 2	5'	#6	12"	128	128	6'-9"	#6	12"	118	118	7'-10"	6'-8"	#5	10⅝"	8	#4	12"	10	#4	12"	12	#4	12"	7	#4	12"	120	120	6'-1"
		6'			128	128	6'-11"			118	118	8'-0"	6'-10"			8			12			14			7			120	120	7'-1"
		7'			128	128	7'-0"			118	118	8'-1"	6'-11"			8			14			15			7			120	120	8'-1"
		8'			128	128	7'-1"			118	118	8'-2"	7'-0"			8			16			16			7	#5	12"	120	120	9'-1"
	7'@ 1	4'			140	140	7'-9"			130	130	8'-10"	7'-8"			9			8			8			8			120	120	5'-2"
		5'			140	140	7'-9"			130	130	8'-10"	7'-8"			9			10			10			8			120	120	6'-2"
	7'@ 2	6'	#6	11"	140	140	7'-11"	#6	11"	130	130	9'-0"	7'-10"	#5	10⅝"	9	#4	12"	12	#4	12"	14	#4	12"	8			120	120	7'-2"
		7'			140	140	8'-0"			130	130	9'-1"	7'-11"			9			14			16			8			120	120	8'-2"
		8'			140	140	8'-1"			130	130	9'-2"	8'-0"			9			16			18			8			120	120	9'-2"
		9'			140	140	8'-3"			130	130	9'-3"	8'-2"			9			18			20			8	#5	12"	120	120	10'-2"
	8'@ 1	4'			128	128	8'-9"			118	118	9'-10"	8'-8"			9			8			8			9			120	120	5'-2"
		5'			128	128	8'-11"			118	118	10'-0"	8'-10"			11			10			10			9			120	120	6'-2"
		6'			128	128	8'-11"			118	118	10'-0"	8'-10"			11			12			12			9			120	120	7'-2"
	8'@ 2	7'	#7	12"	128	128	9'-0"	#6	12"	118	118	10'-1"	8'-11"	#5	10"	11	#4	12"	14	#4	12"	16	#4	12"	9			120	120	8'-2"
		8'			128	128	9'-1"			118	118	10'-2"	9'-0"			11			16			18			9			144	144	9'-10"
		9'			128	128	9'-3"			118	118	10'-4"	9'-2"			11			18			20			9	#5	12"	120	120	10'-6"
		10'			128	128	9'-5"			118	118	10'-6"	9'-4"			11			20			22			9	#5	11"	132	132	11'-9"
	9'@ 1	5'			140	140	9'-11"			130	130	11'-0"	9'-10"			12			10			10			10			120	120	6'-5"
		6'			140	140	10'-0"			130	130	11'-1"	9'-11"			12			12			12			10	#4	12"	120	120	7'-5"
		7'			140	140	10'-0"			130	130	11'-1"	9'-11"			12			14			14			10			120	120	8'-5"
	9'@ 2	8'	#7	11"	140	140	10'-1"	#6	11"	130	130	11'-2"	10'-0"	#5	10"	12	#4	12"	16	#4	12"	18	#4	12"	10	#5	11"	144	144	9'-5"
		9'			140	140	10'-3"			130	130	11'-4"	10'-2"			12			18			20			10	#5	12"	120	120	10'-5"
		10'			140	140	10'-5"			130	130	11'-6"	10'-4"			12			20			22			10	#5	11"	132	132	11'-5"
		11'			140	140	10'-7"			130	130	11'-8"	10'-6"			12			22			24			10	#5	10"	144	144	12'-5"
	10'@ 1	5'			128	128	10'-11"			118	118	12'-2"	10'-10"			13			10			10			11			120	120	6'-6"
		6'			128	128	11'-0"			118	118	12'-3"	10'-11"			13			12			12			11	#4	12"	120	120	7'-6"
		7'			128	128	11'-0"			118	118	12'-3"	10'-11"			13			14			14			11			120	120	8'-6"
	10'@ 2	8'	#7	12"	128	128	11'-1"	#7	12"	118	118	12'-4"	11'-0"	#5	10"	13	#4	12"	16	#4	12"	16	#4	12"	11			144	144	9'-6"
		9'			128	128	11'-3"			118	118	12'-6"	11'-2"			13			18			18			11	#5	12"	120	120	10'-6"
		10'			128	128	11'-5"			118	118	12'-8"	11'-4"			13			20			20			11	#5	11"	132	132	11'-6"
		11'			128	128	11'-7"			118	118	12'-10"	11'-6"			13			22			22			11	#5	10"	144	144	12'-6"
		12'			128	128	11'-9"			118	118	13'-0"	11'-8"			13			24			24			11	#6	12"	120	120	13'-6"
	11'@ 1	6'			140	140	12'-1"			130	130	13'-1"	12'-0"			15			12			12			12			120	120	7'-7"
		7'			140	140	12'-1"			130	130	13'-2"	12'-0"			15			14			14			12	#4	12"	120	120	8'-7"
		8'			140	140	12'-1"			130	130	13'-3"	12'-0"			15			16			16			12			144	144	9'-7"
	11'@ 2	9'	#7	11"	140	140	12'-3"	#7	11"	130	130	13'-4"	12'-2"	#5	9½"	15	#4	12"	18	#4	12"	18	#4	12"	12	#5	11"	120	120	10'-7"
		10'			140	140	12'-5"			130	130	13'-5"	12'-4"			15			20			20			12	#5	11"	132	132	11'-7"
		11'			140	140	12'-7"			130	130	13'-6"	12'-6"			15			22			22			12	#5	10"	144	144	12'-7"
		12'			140	140	12'-9"			130	130	14'-0"	12'-8"			15			24			24			12	#6	12"	120	120	13'-7"
	12'@ 1	6'			128	128	13'-1"			118	118	14'-1"	13'-0"			16			12			12			13					
		7'			128	128	13'-1"			118	118	14'-2"	13'-0"			16			14			14			13	#4	12"	120	120	8'-8"
		8'			128	128	13'-1"			118	118	14'-3"	13'-0"			16			16			16			13			144	144	9'-8"
	12'@ 2	9'	#8	12"	128	128	13'-3"	#7	12"	118	118	14'-4"	13'-2"	#5	9½"	16	#4	12"	18	#4	12"	18	#4	12"	13	#5	11"	120	120	10'-8"
		10'			128	128	13'-5"			118	118	14'-5"	13'-4"			16			20			20			13	#5	11"	132	132	11'-8"
		11'			128	128	13'-7"			118	118	14'-10"	13'-6"			16			22			22			13	#5	10"	144	144	12'-8"
		12'			128	128	13'-9"			118	118	15'-0"	13'-8"			16			24			24			13	#6	12"	120	120	13'-8"

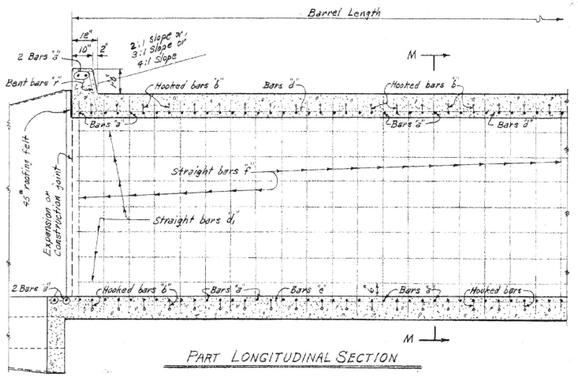
DIMENSIONS — QUANTITIES

MAX. DESIGN DEPTH OF COVER	CLEAR SPAN	BARREL DIMENSIONS CLEAR HEIGHT	SQ. FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	UNIT QUANTITIES CLASS 'S' CONC. PER LIN. FT. OF BARREL	REINFORCING STEEL PER LIN. FT. OF BARREL	ADDITIONAL PER LAP	ADDITIONAL TWO HEADWALLS & APRONS
D	S	H	A	OW	T	C	B	OH	CU.YD.	LB.	LB.	LB.
0'-0" TO 5'-0" MAXIMUM	4'@ 1	2'	8	5'-0"	7"	6"	6½"	3'-1½"	0.282	41.49	17.95	66.35
		3'	12	5'-0"		6"		3'-7½"	0.319	44.16	18.62	66.35
		4'	16	5'-0"		6"		4'-1½"	0.356	46.83	21.29	66.35
		5'	20	5'-0"		6"		4'-7½"	0.394	49.50	22.34	66.35
		6'	24	5'-0"		7"		5'-1½"	0.476	52.96	24.63	67.75
	5'@ 1	3'	15	6'-0"				4'-2½"	0.380	55.55	22.19	101.27
		4'	20	6'-0"		6"		4'-8½"	0.417	58.23	23.86	101.27
	5'@ 2	5'	25	6'-0"	7½"	6"	7"	5'-2½"	0.456	60.90	25.53	101.27
		6'	30	6'-2"		7"		5'-8½"	0.535	64.93	27.20	103.27
		7'	35	6'-3"		7½"		6'-2½"	0.604	67.63	28.97	104.27
	6'@ 1	3'	18	7'-0"		6"		4'-3½"	0.446	66.23	24.76	118.94
		4'	24	7'-0"		6"		4'-9½"	0.488	68.96	26.93	118.94
	6'@ 2	5'	30	7'-0"	8"	6"	7½"	5'-3½"	0.530	71.68	28.10	118.96
		6'	36	7'-2"		7"		6'-3½"	0.602	75.31	29.77	120.96
		7'	42	7'-3"		7½"		6'-9½"	0.671	78.98	31.99	121.97
		8'	48	7'-4"		8"		7'-3½"	0.746	88.97	33.11	122.97
	7'@ 1	4'	28	8'-0"		6"		5'-5"	0.568	81.32	29.01	136.88
		5'	35	8'-0"		6"		6'-5"	0.605	84.00	30.65	136.88
	7'@ 2	6'	42	8'-2"		7"		7'-5"	0.688	87.76	32.35	138.88
		7'	49	8'-3"	9½"	7½"	8½"	8'-5"	0.757	90.98	34.02	139.88
		8'	56	8'-4"		8"		9'-5"	0.832	96.65	35.69	140.88
		9'	63	8'-6"		9"		10'-5"	0.966	105.59	37.36	142.89
	8'@ 1	4'	32	9'-0"		6"		5'-7"	0.676	95.26	38.32	194.07
		5'	40	9'-2"		7"		6'-7"	0.758	99.12	39.99	196.80
	8'@ 2	6'	48	9'-3"		7"		7'-7"	0.797	101.79	36.66	196.80
		7'	56	9'-3"	9½"	7½"	9½"	8'-7"	0.867	105.05	38.33	198.16
		8'	64	9'-4"		8"		9'-7"	0.942	110.81	40.00	199.52
		9'	72	9'-6"		9"		10'-7"	1.057	119.92	41.67	202.25
		10'	80	9'-8"		10"		11'-7"	1.184	126.67	43.34	204.97
	9'@ 1	5'	95	10'-2"		7"		6'-8"	0.849	119.72	37.56	219.61
		6'	56	10'-3"		7½"		7'-8"	0.910	118.04	39.23	220.97
	9'@ 2	7'	63	10'-3"		7½"		8'-8"	0.957	120.71	40.90	220.97
		8'	72	10'-4"	10"	8"	10"	9'-8"	1.033	126.54	42.57	222.35
		9'	81	10'-6"		9"		10'-8"	1.198	135.80	44.24	225.06
		10'	90	10'-8"		10"		11'-8"	1.276	142.68	45.91	227.78
		11'	99	10'-10"		11"		12'-8"	1.416	150.40	47.58	230.51
	10'@ 1	5'	50	11'-2"		7"		6'-9½"	0.957	130.69	40.13	242.69
		6'	60	11'-3"		7½"		7'-9½"	1.024	133.99	41.80	244.00
	10'@ 2	7'	70	11'-3"		7½"		8'-9½"	1.071	136.66	43.47	244.00
		8'	80	11'-4"	10⅝"	8"	11"	9'-9½"	1.147	142.55	45.14	245.36
		9'	90	11'-6"		9"		10'-9½"	1.263	151.92	96.81	248.09
		10'	100	11'-8"		10"		11'-9½"	1.391	158.83	98.98	250.81
		11'	110	11'-10"		11"		12'-9½"	1.532	166.71	50.15	253.54
		12'	120	12'-0"		12"		13'-9½"	1.685	178.67	51.82	256.26
	11'@ 1	6'	66	12'-3"		8"		7'-10½"	1.159	186.16	96.12	268.62
		7'	77	12'-4"		8"		8'-10½"	1.202	157.83	47.79	268.62
	11'@ 2	8'	88	12'-4"		8"		9'-10½"	1.252	168.06	49.46	268.62
		9'	99	12'-6"	11"	9"	11⅝"	10'-10½"	1.368	172.60	51.13	271.34
		10'	110	12'-8"		10"		11'-10½"	1.497	179.70	52.80	274.07
		11'	121	12'-10"		11"		12'-10½"	1.638	187.67	54.47	276.79
		12'	132	13'-0"		12"		13'-10½"	1.792	193.79	56.14	279.52
	12'@ 1	6'	72	13'-3"		8"		8'-0"	1.284	192.20	98.69	357.62
		7'	84	13'-4"		8"		9'-0"	1.333	174.87	50.96	357.62
	12'@ 2	8'	96	13'-4"		8"		10'-0"	1.383	180.15	52.03	357.62
		9'	108	13'-6"	11⅝"	9"	12⅝"	11'-0"	1.500	183.85	58.70	361.18
		10'	120	13'-8"		10"		12'-0"	1.630	197.07	55.37	364.74
		11'	132	13'-10"		11"		13'-0"	1.772	205.16	57.04	368.30
		12'	144	14'-0"		12"		14'-0"	1.926	217.45	58.71	371.86

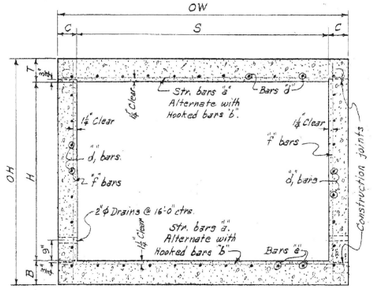
W-X002-1, W-X003-2 or W-X004-2

W-X002-1 or W-X003-1 or W-X004-1 and W-X002-2

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



PART LONGITUDINAL SECTION



TYPICAL SECTION M-M

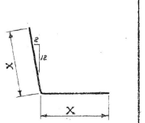
LONGITUDINAL SECTION

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM Bars 'b'.
#6	3"	5"	1'-2"	K, Pin Diam., X
#7	3½"	5⅝"	1'-4"	

Note:- Dimensions are to centers of bars.

DOWEL BARS FOR TWO HEADWALLS

SPAN	SIZE	SPACING	No. REQ'D	LENGTH	X	Bars 'i' Dowel bars in Headwalls.
4'	#4	11¼	12	2'-6"	1'-3"	
5'	#4	11¼	14	2'-7"	1'-3⅝"	
6'	#4	11¼	16	2'-8"	1'-4"	
7'	#4	11¼	18	2'-9"	1'-4⅝"	
8'	#4	11⅝"	20	2'-11"	1'-5⅝"	
9'	#4	11⅝"	22	3'-0"	1'-6"	
10'	#4	11⅝"	24	3'-1"	1'-6⅝"	
11'	#4	12"	26	3'-2"	1'-7"	
12'	#4	12"	28	3'-3"	1'-7⅝"	



GENERAL NOTES:-

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

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

BAR LAP:- In computing the quantities of steel from the tables add one lap for each additional 38'-0" length of barrel over 32'-6". Lap longitudinal bars 30 diameters.

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

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

DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961

AND

SPECIAL MILITARY LOADING

Two 24,000 Lb. Axles @ 9'-0" ctrs.

UNIT STRESSES:-

Class 'S' Concrete (n=10) 1200 #/□"

Reinforcing Steel 20,000 #/□"

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

CLASS 'S' CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS

FOR

REINFORCED CONCRETE BOX CULVERTS

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

SINGLES — UNDER 5'-0" COVER

STANDARD DRAWING NO. R-100X-0

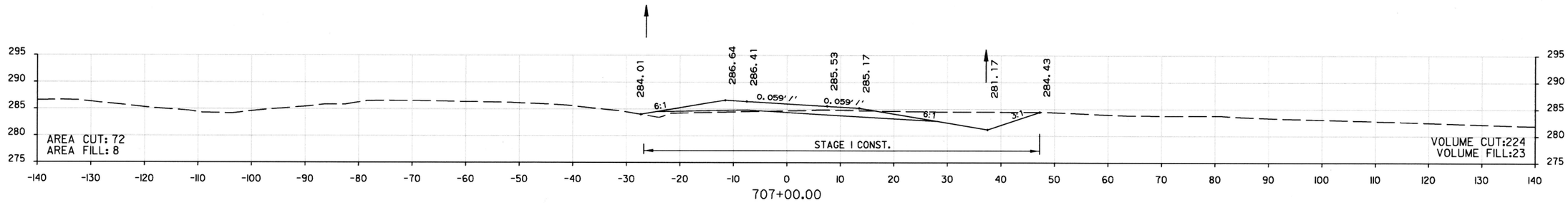
Designed By:- W.C.H. 1-23-63. Checked By:- TSMC - 5-6-63

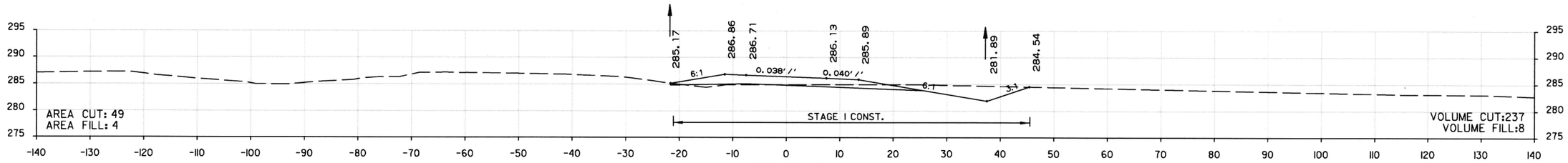
Drawn By:- W.C.H. 2-8-63. Checked By:- TSMC - 5-24-63

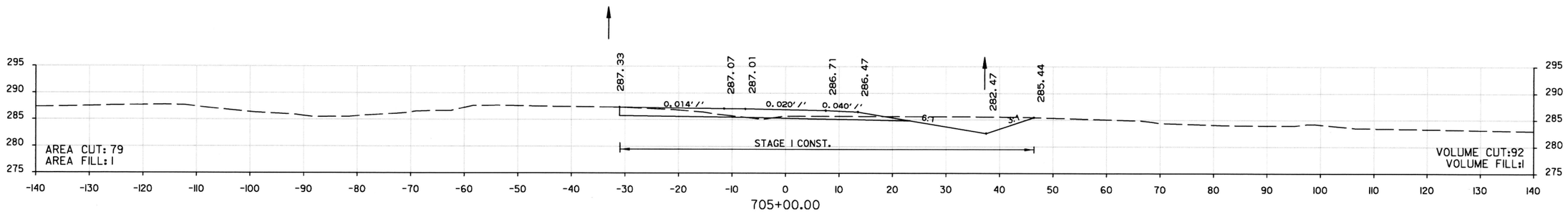
Quantities By:- W.C.H. 2-12-63. Checked By:- TSMC - 5-24-63

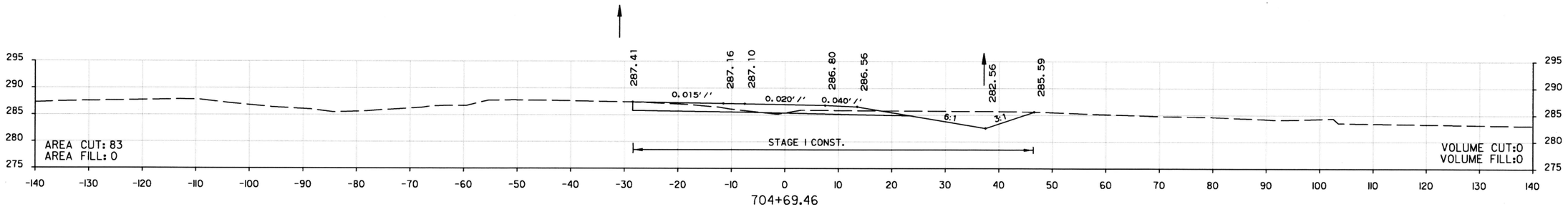
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	301	400

(2) CROSS SECTIONS









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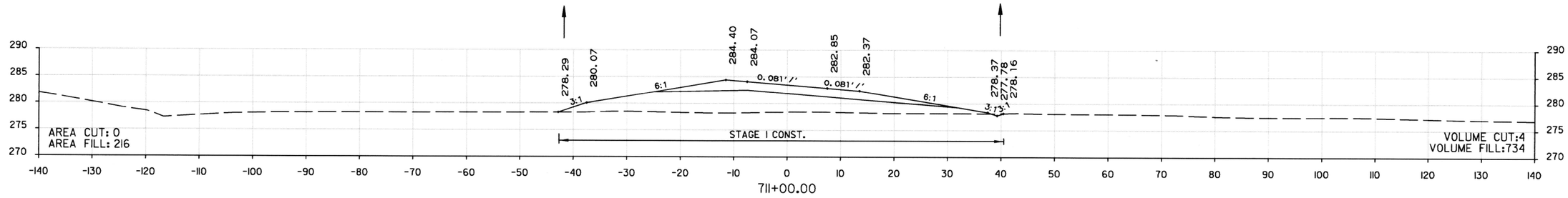
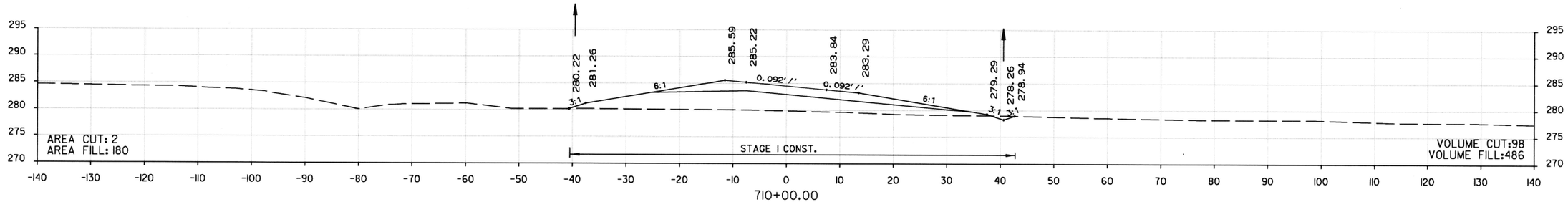
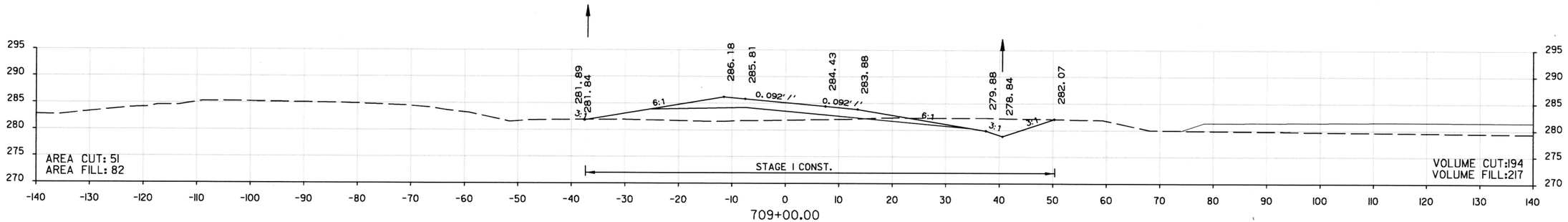
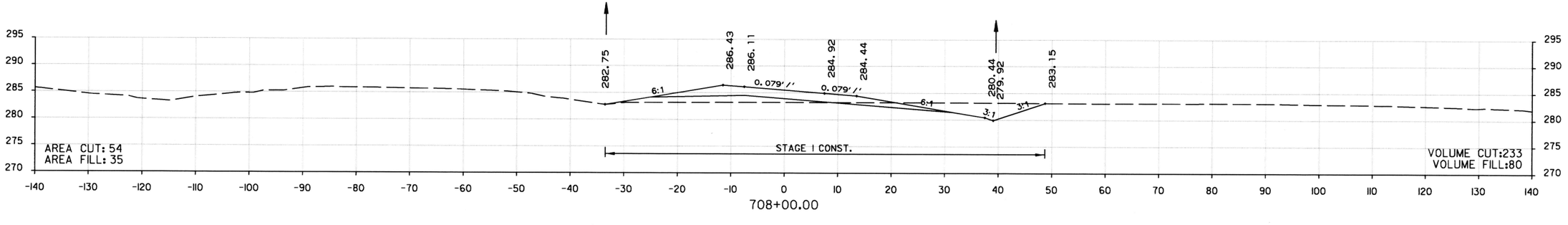
STA. 704+69.46 TO STA. 707+00.00
RAMP I

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	302	400
				(2)	CROSS SECTIONS			





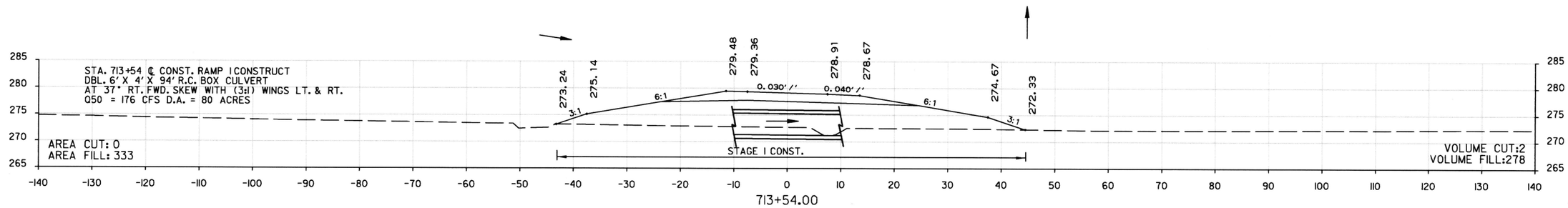


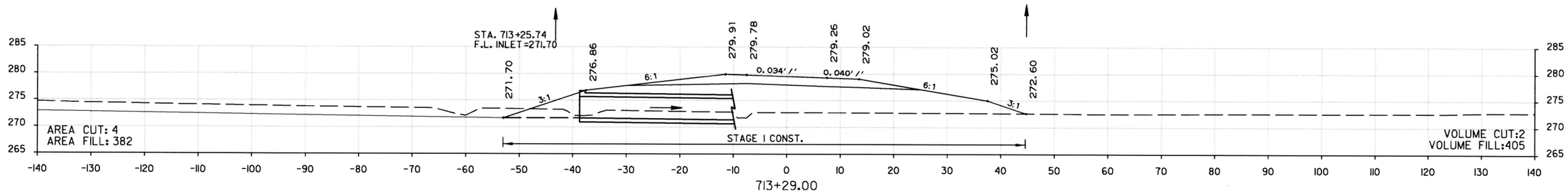


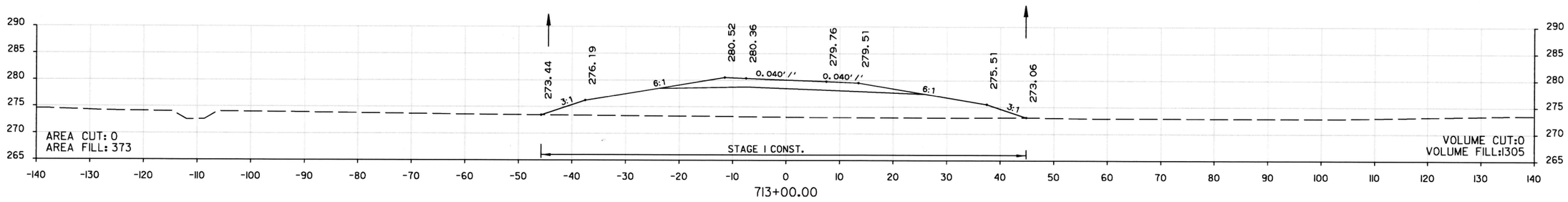
STA. 708+00.00 TO STA. 711+00.00
RAMP I

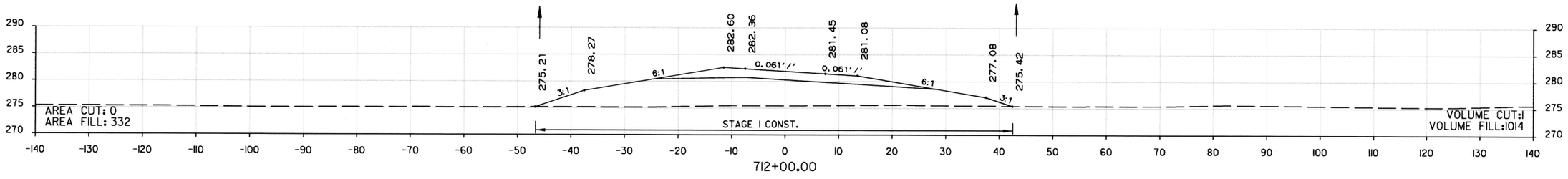
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	303	400

(2) CROSS SECTIONS



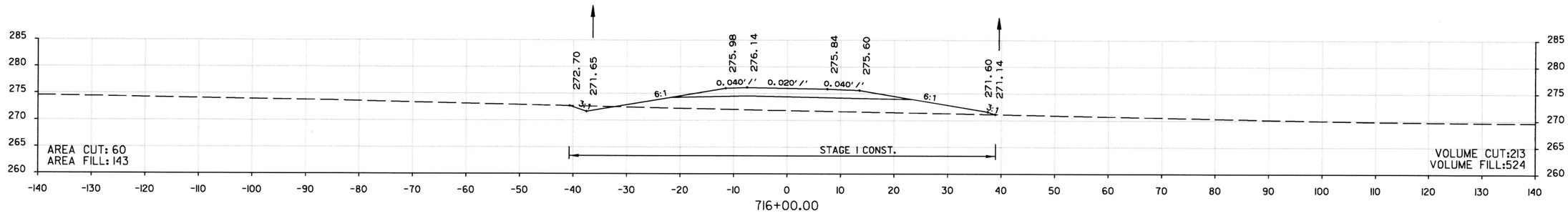


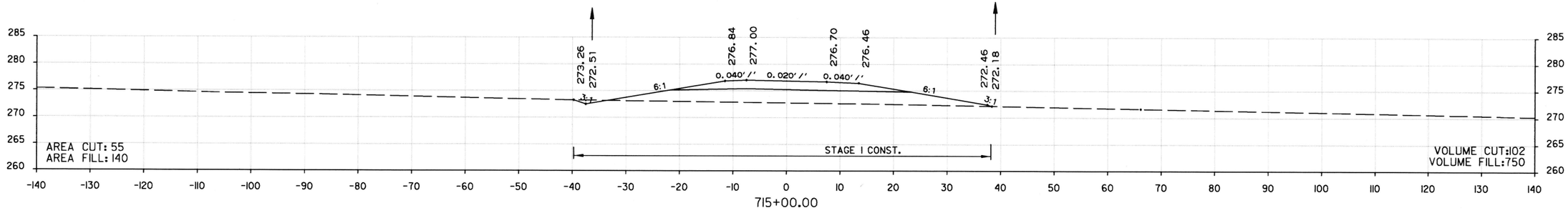


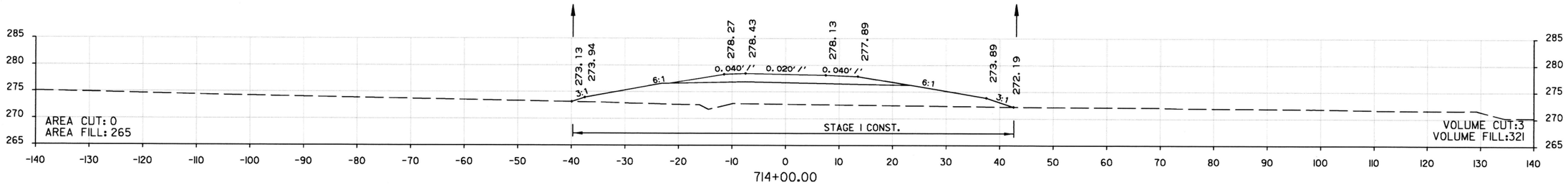


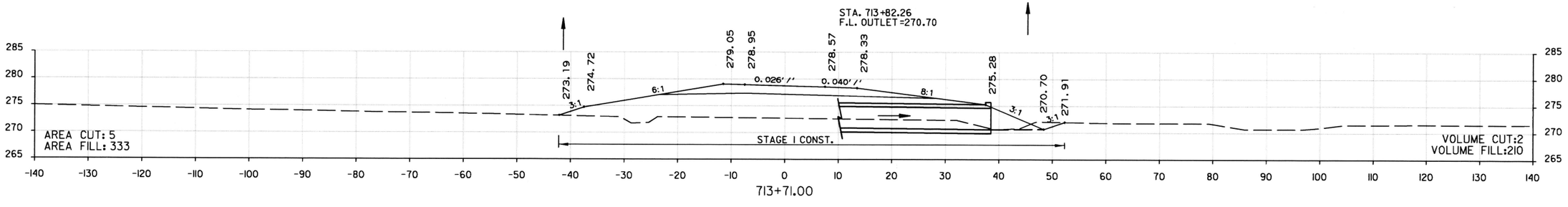
STA. 712+00.00 TO STA. 713+50.00
RAMP I

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	304	400
				(2)	CROSS SECTIONS			





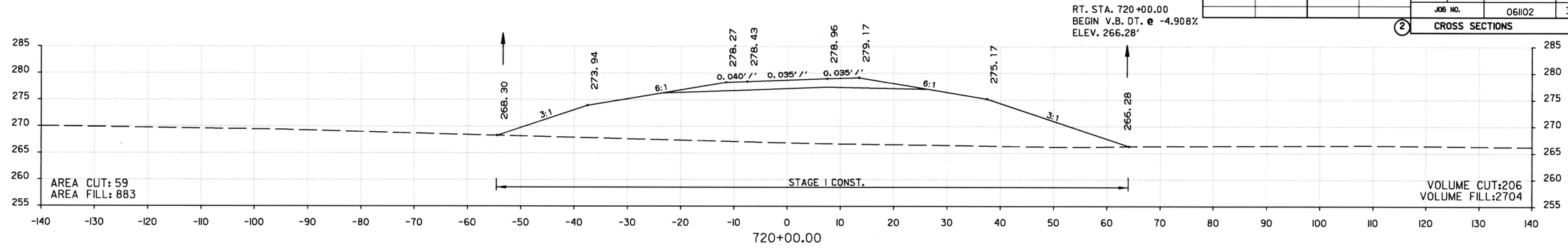


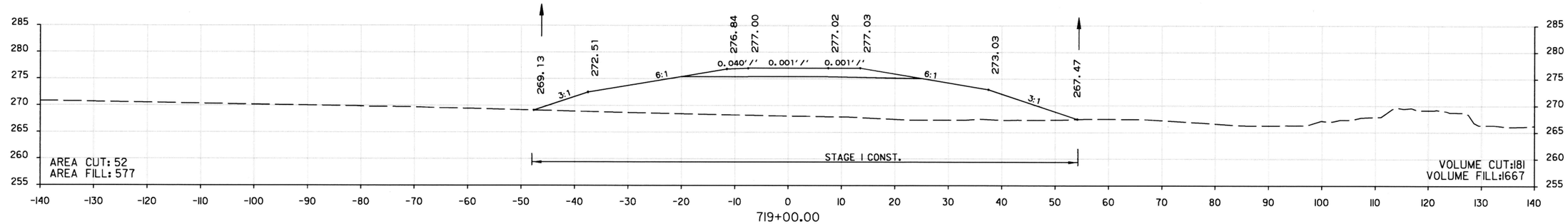


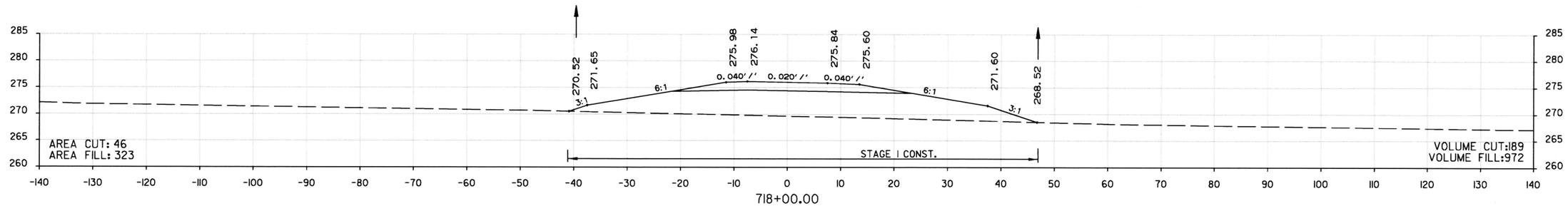
STA. 713+71.00 TO STA. 716+00.00
RAMP I

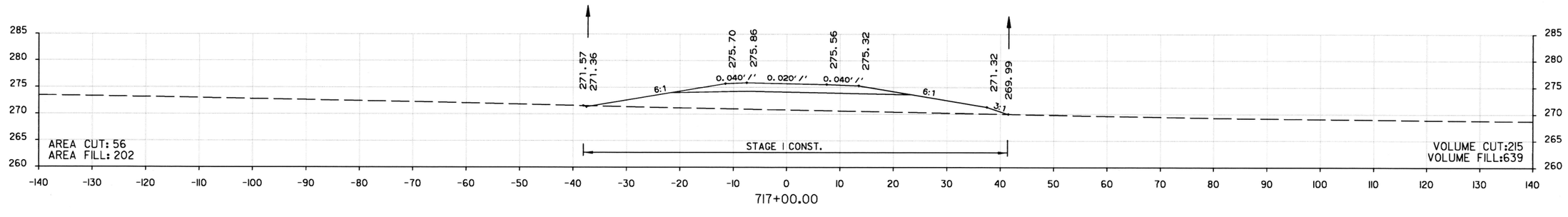
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		06102	305	400

(2) CROSS SECTIONS





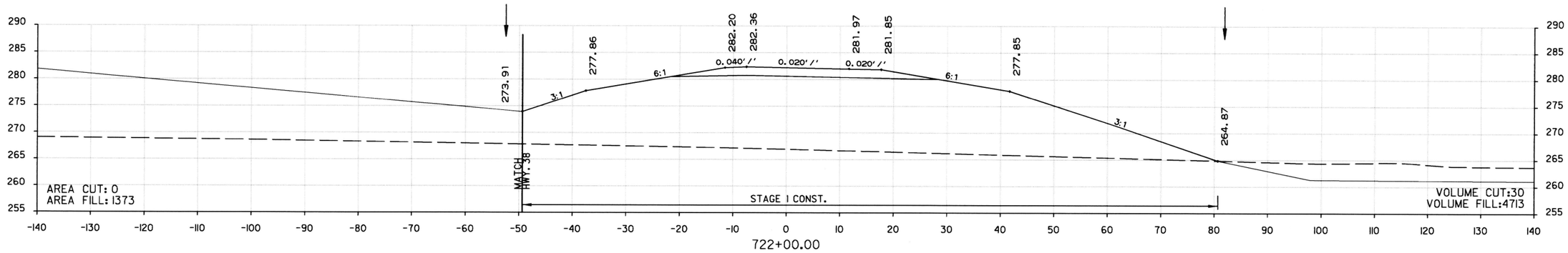


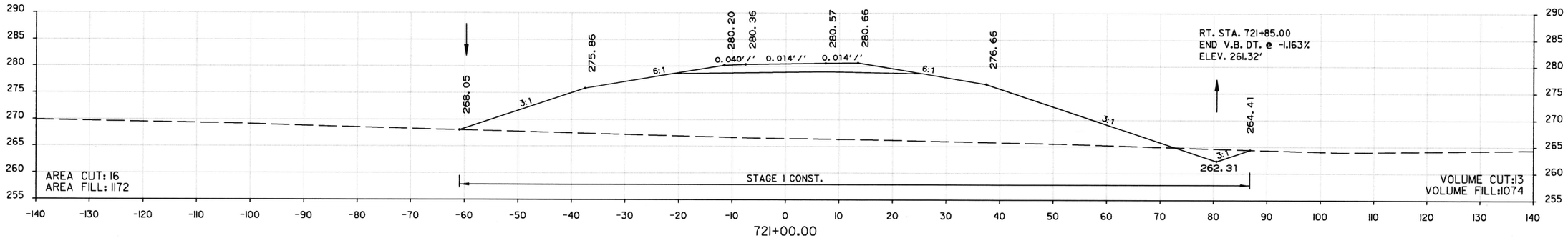


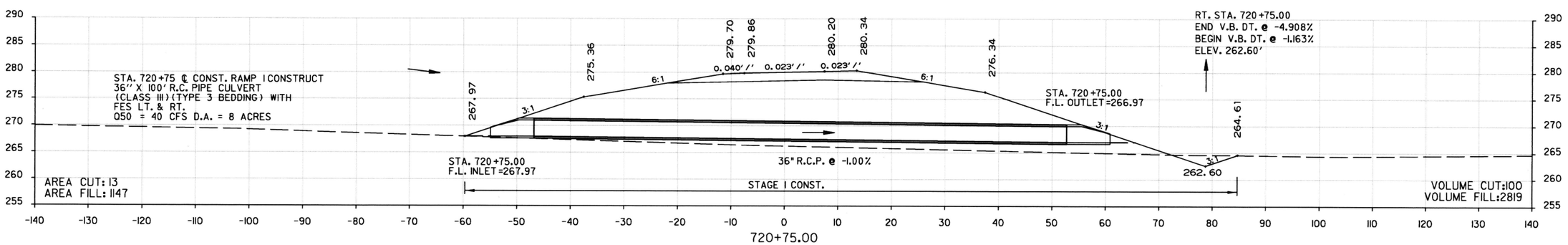
STA. 717+00.00 TO STA. 720+00.00
RAMP I

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	306	400
				(2)	CROSS SECTIONS			

STA. 722+52.60
END RAMP 1

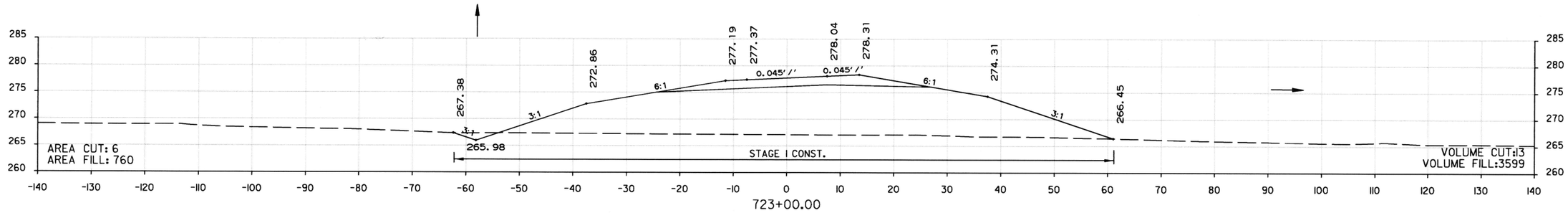


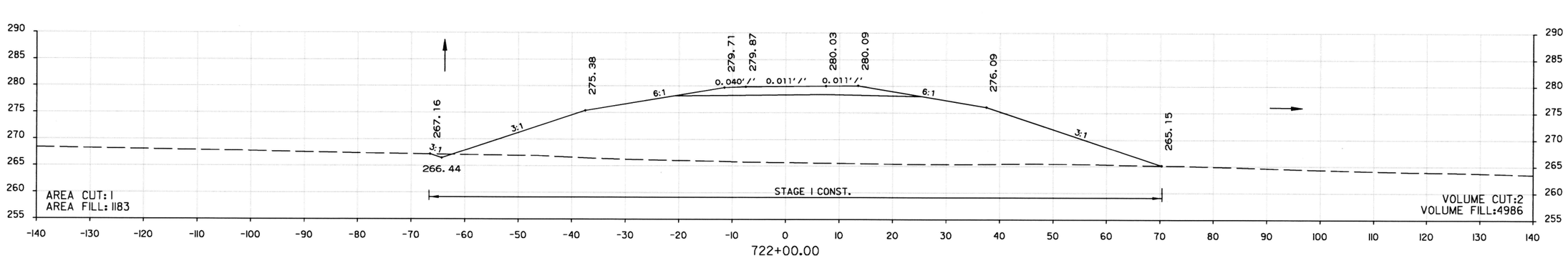


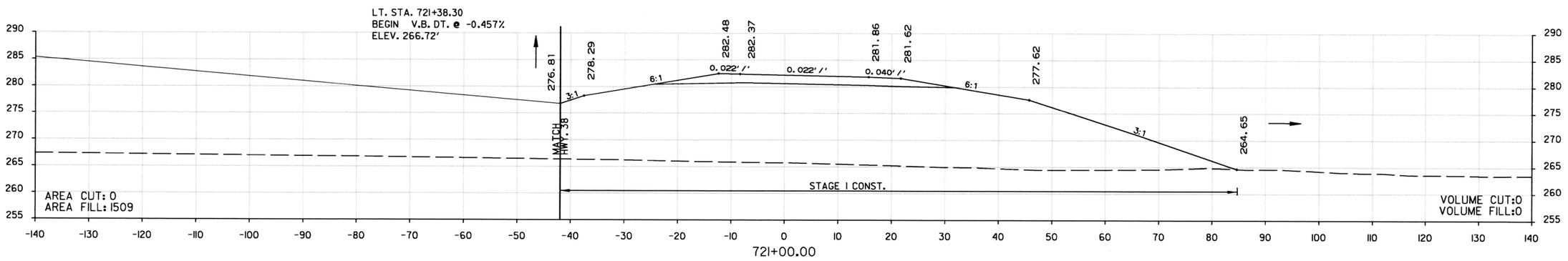


STA. 720+75.00 TO STA. 722+00.00
RAMP 1

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.		061102	307	400
				(2)	CROSS SECTIONS			





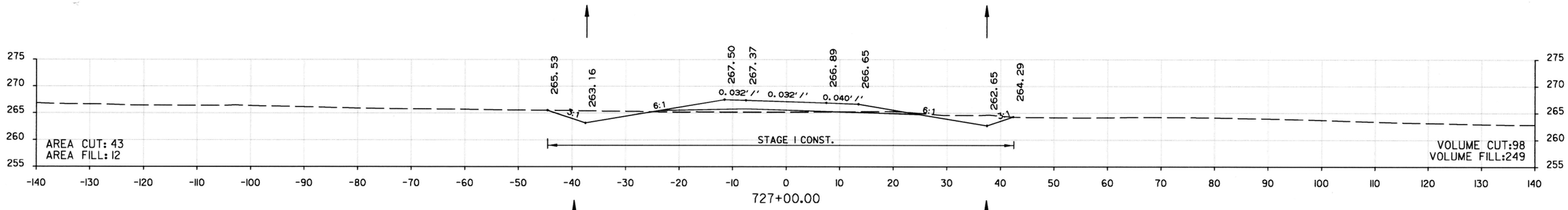


STA. 720+58.38
BEGIN RAMP 2

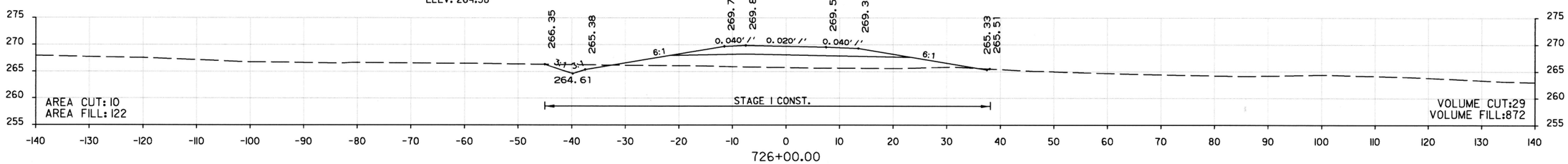
STA. 721+00.00 TO STA. 723+00.00
RAMP 2

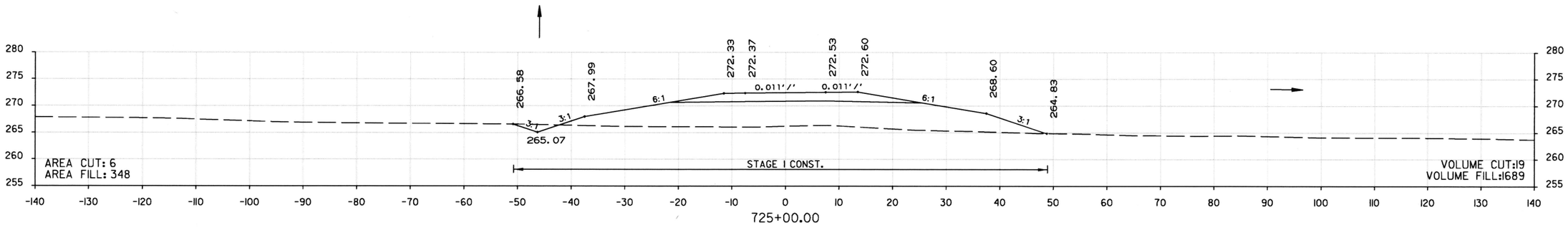
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		06II02	308	400

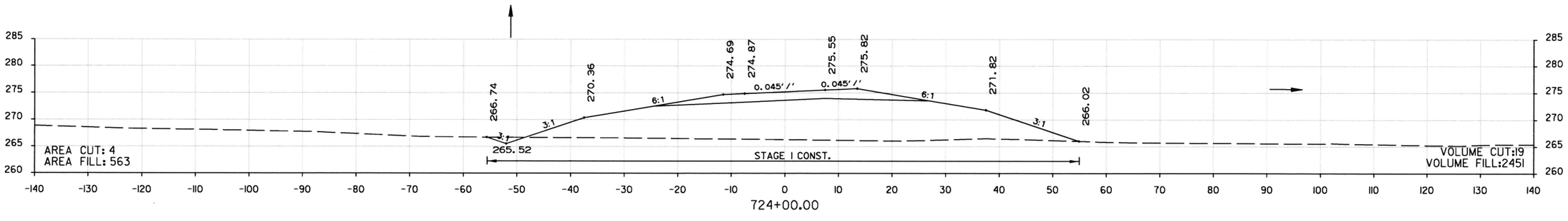
(2) CROSS SECTIONS



LT. STA. 726+50.00
END V.B. DT. @ -0.457%
ELEV. 264.38'

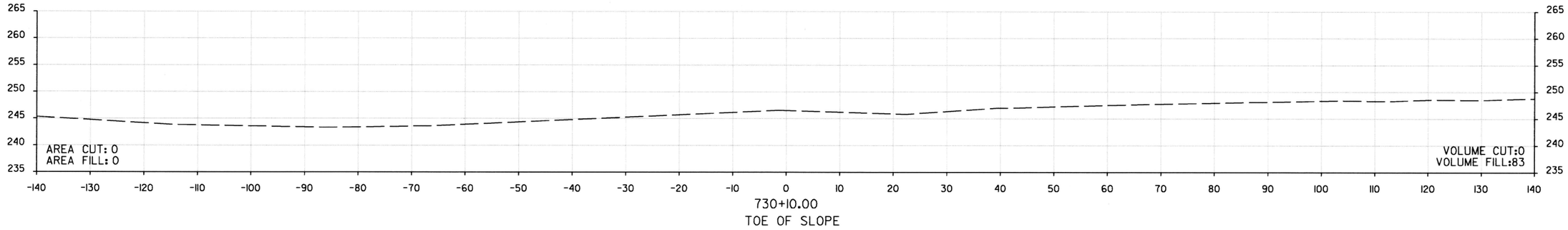




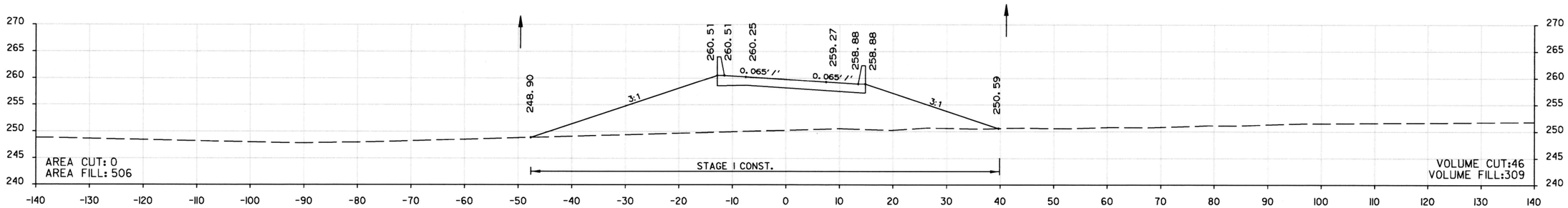


STA. 724+00.00 TO STA. 727+00.00
RAMP 2

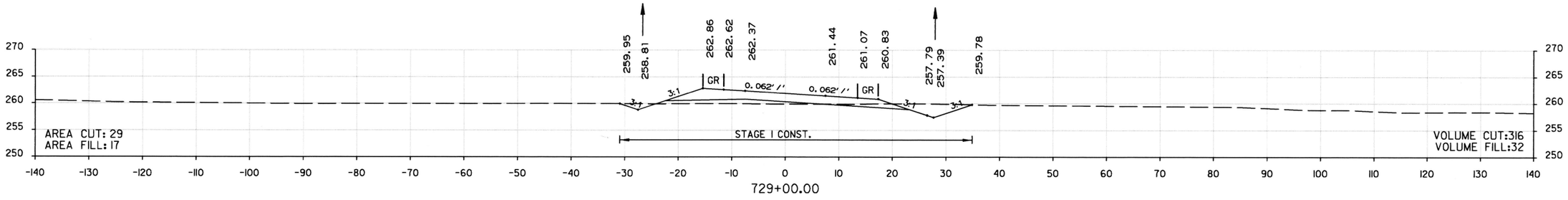
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		06II02	309	400
				(2)	CROSS SECTIONS			



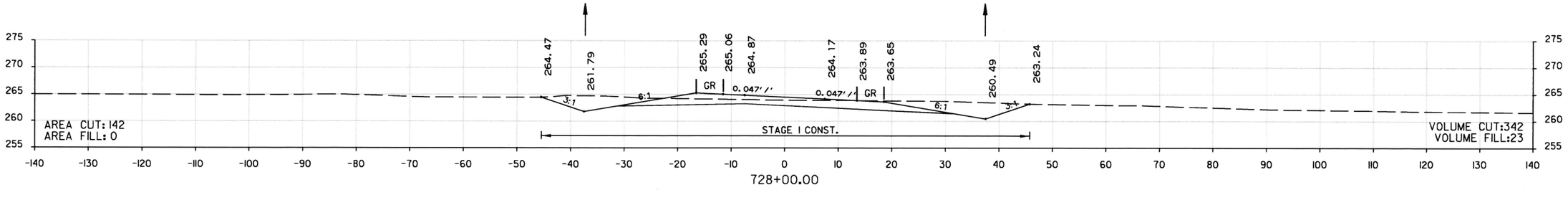
730+10.00
TOE OF SLOPE



729+84.92
BRIDGE END



729+00.00

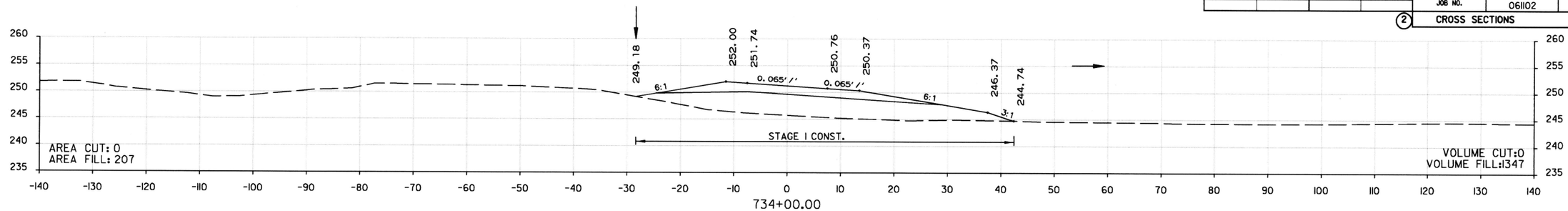


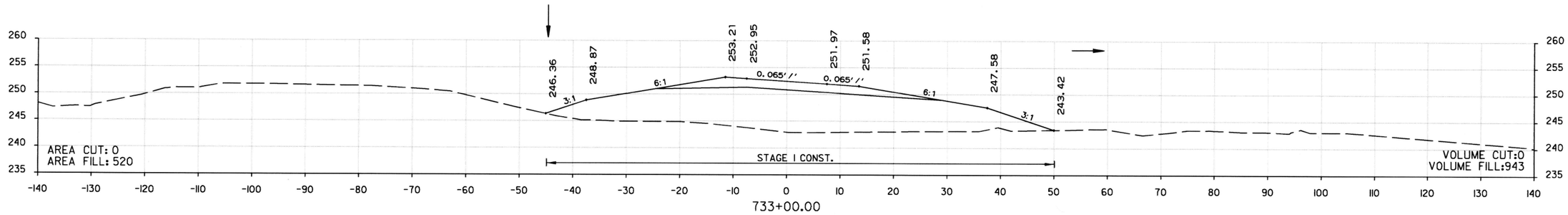
728+00.00

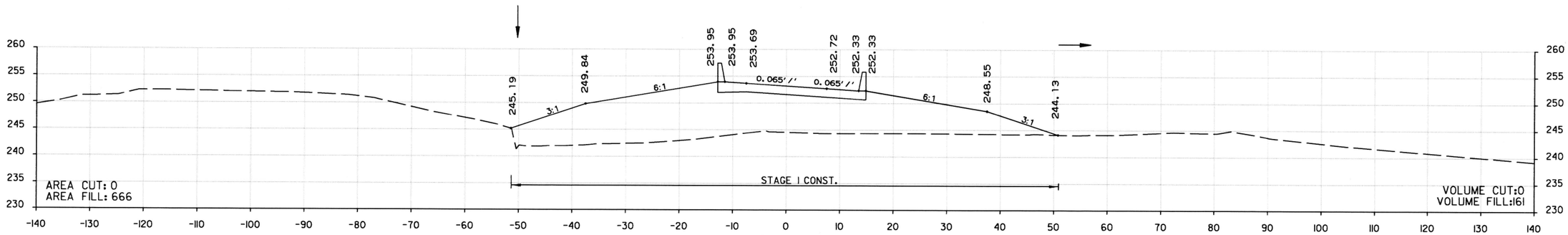
STA. 728+00.00 TO STA. 730+10.00
RAMP 2

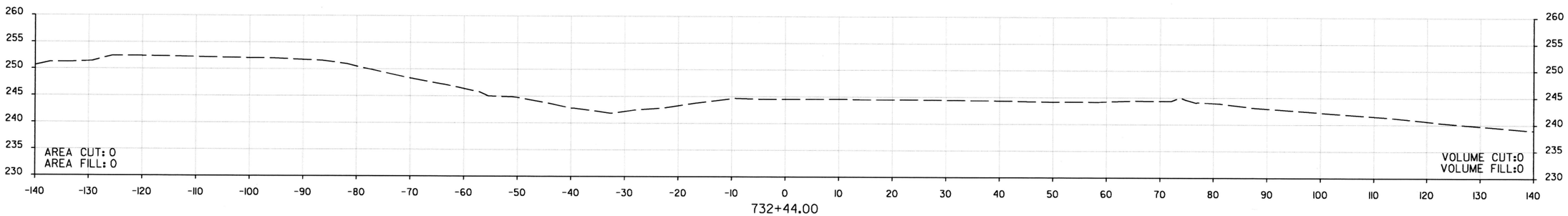
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		06II02	310	400

(2) CROSS SECTIONS





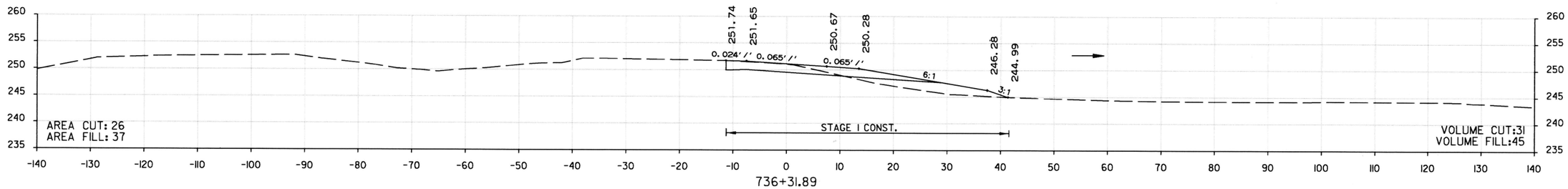




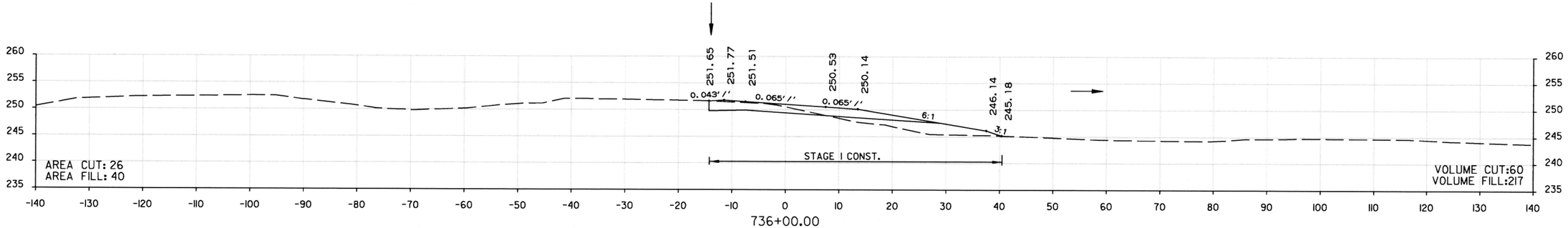
STA. 732+44.00 TO STA. 734+00.00
RAMP 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	311	400
				(2)	CROSS SECTIONS			

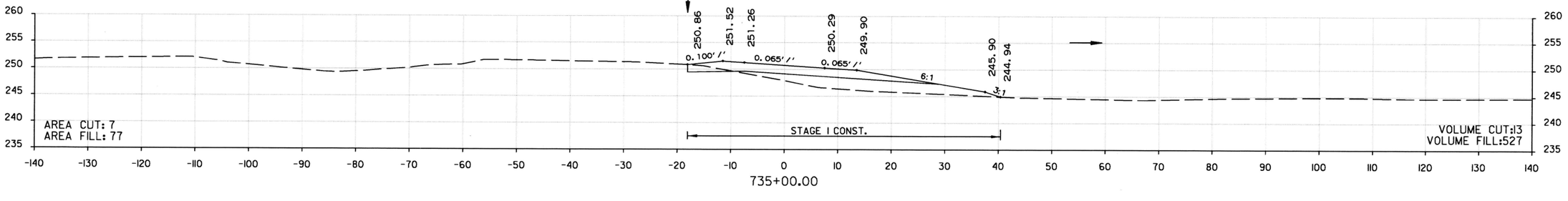
STA. 736+31.90
END RAMP 2



736+31.89



736+00.00

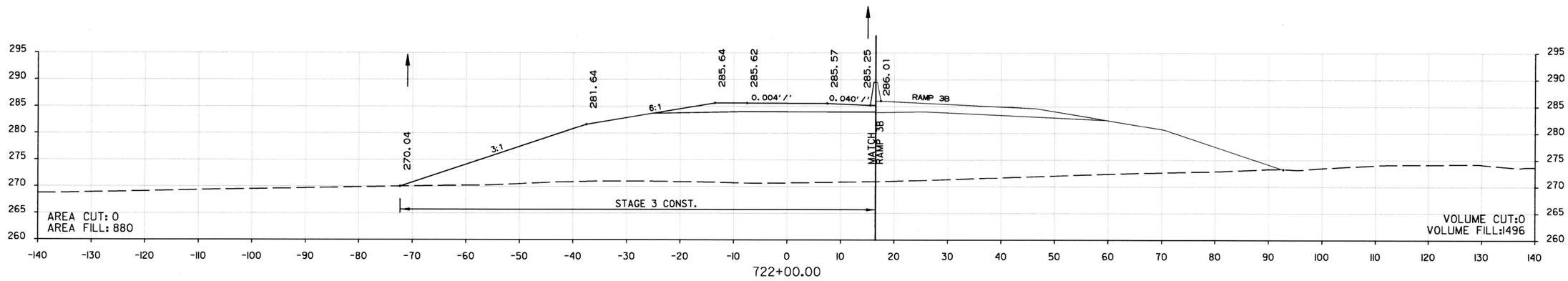


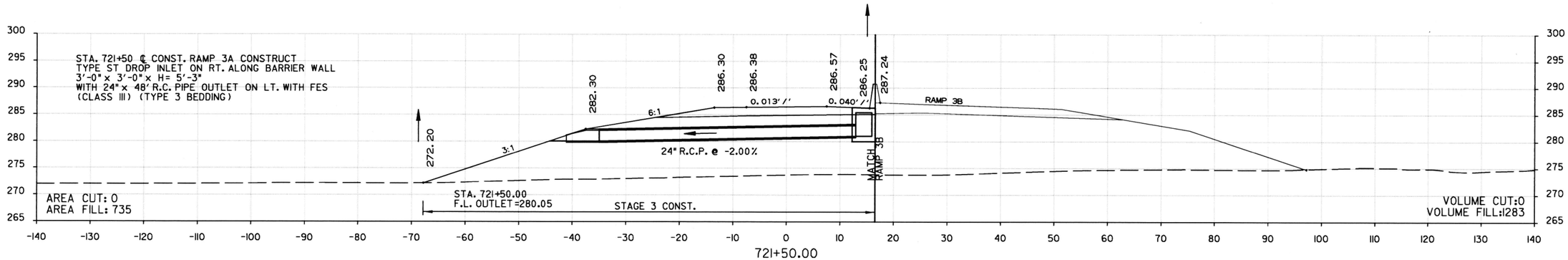
735+00.00

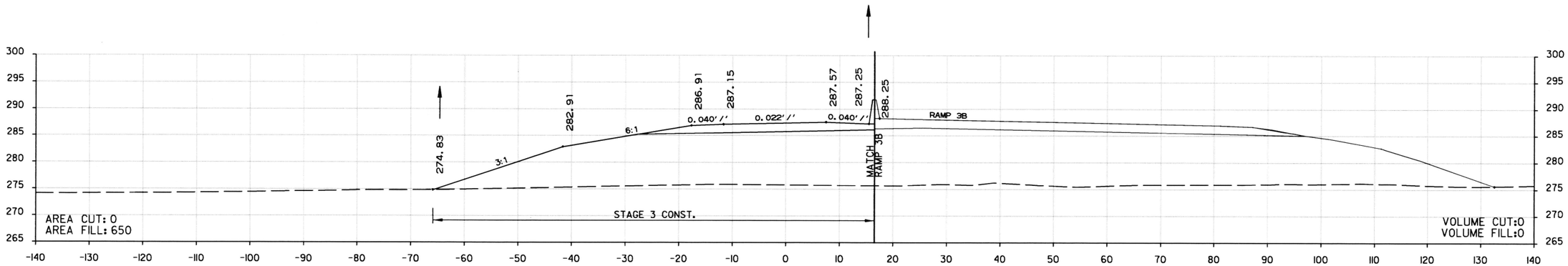
STA. 735+00.00 TO STA. 736+31.89
RAMP 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	312	400

(2) CROSS SECTIONS





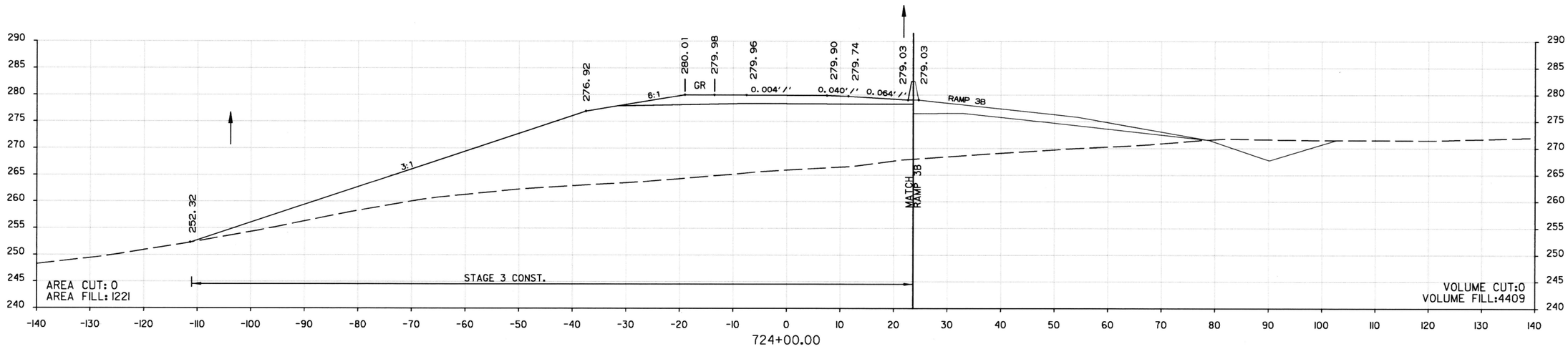


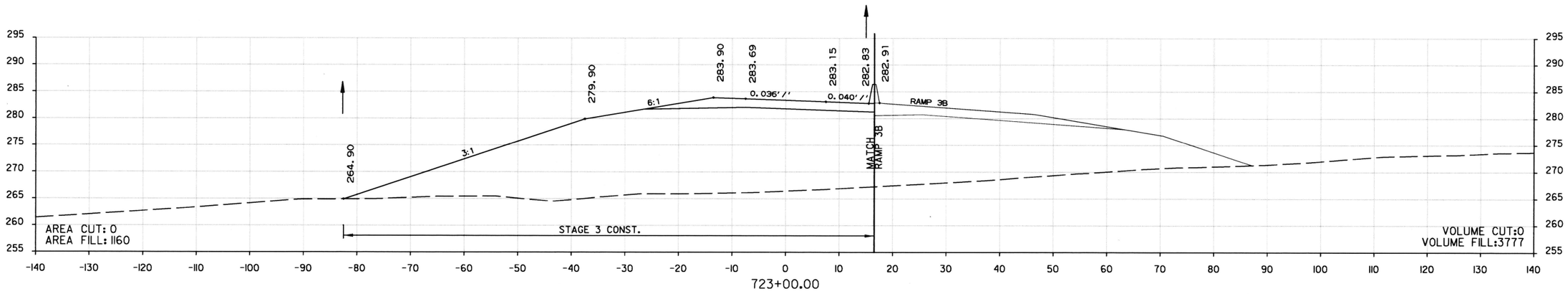
STA. 720+44.34
BEGIN RAMP 3A

STA. 721+00.00 TO STA. 722+00.00
RAMP 3A

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.		061102	313	400

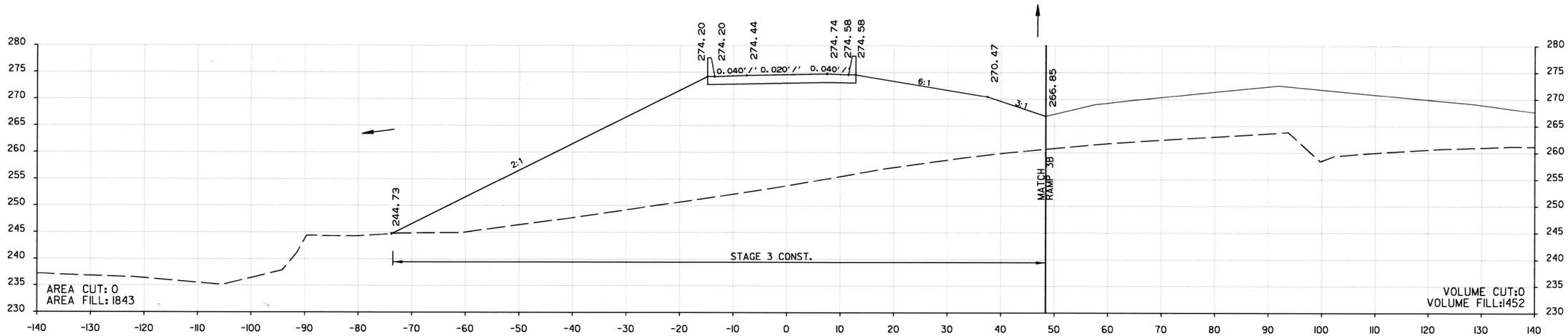
(2) CROSS SECTIONS

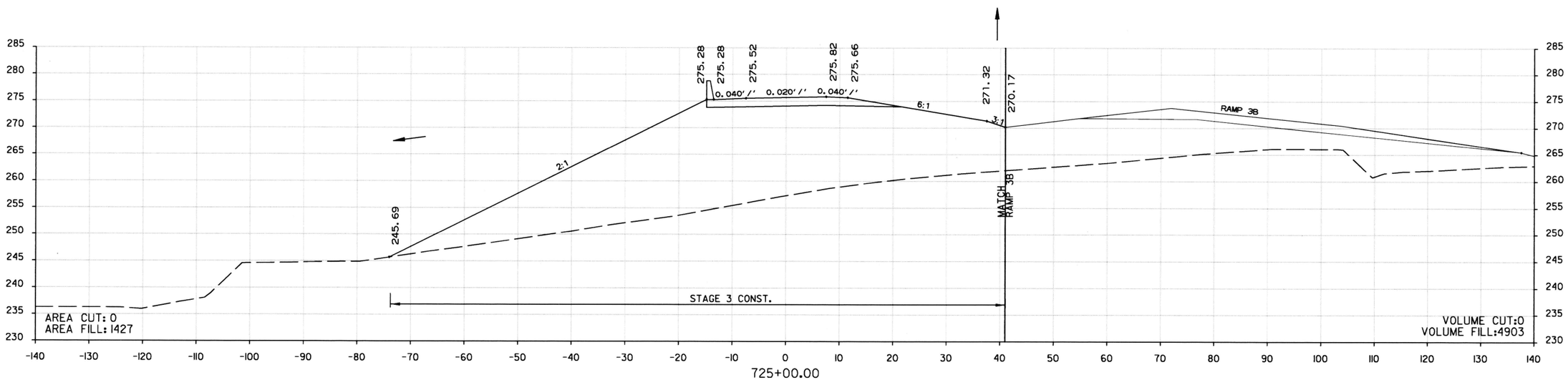




STA. 723+00.00 TO STA. 724+00.00
RAMP 3A

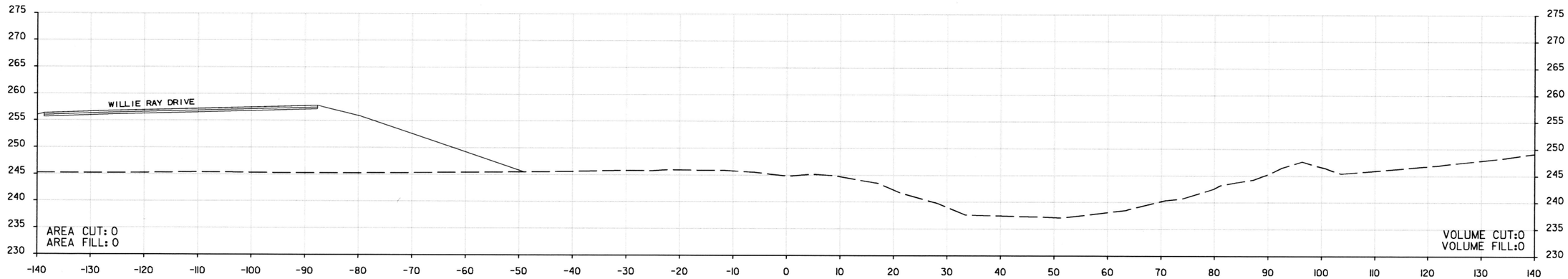
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	314	400
				(2)	CROSS SECTIONS			



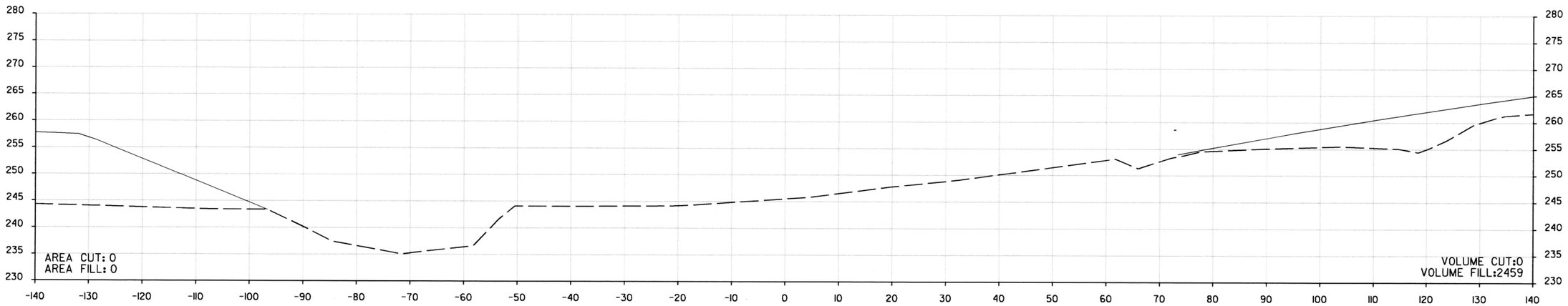


STA. 725+00.00 TO STA. 725+23.97
RAMP 3A

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.		061102	315	400
				(2)	CROSS SECTIONS			



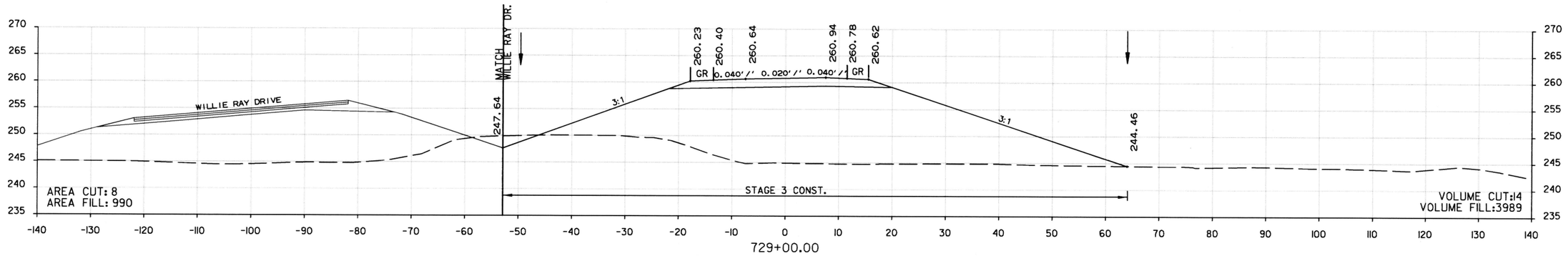
727+46.00
TOE OF SLOPE

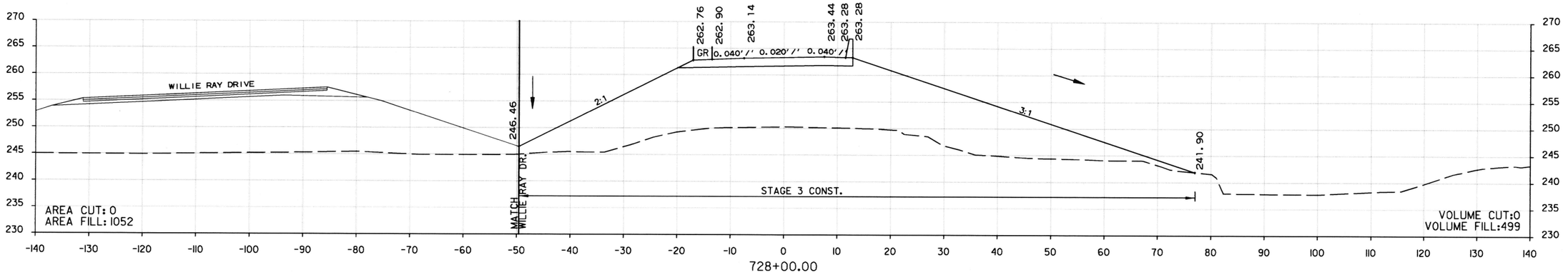


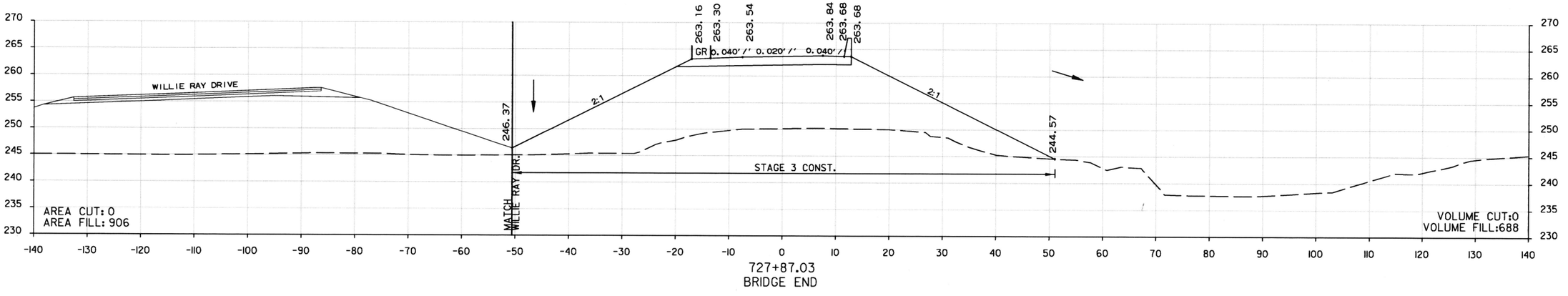
725+96.00
TOE OF SLOPE

STA. 725+96.00 TO STA. 727+46.00
RAMP 3A

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.		061102	316	400
				(2)	CROSS SECTIONS			

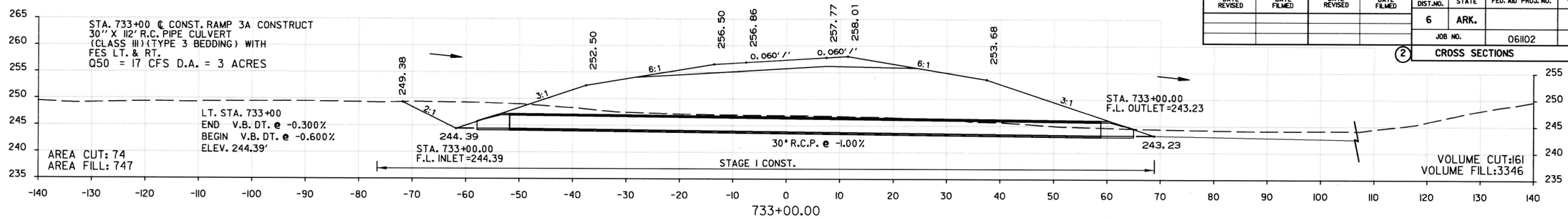


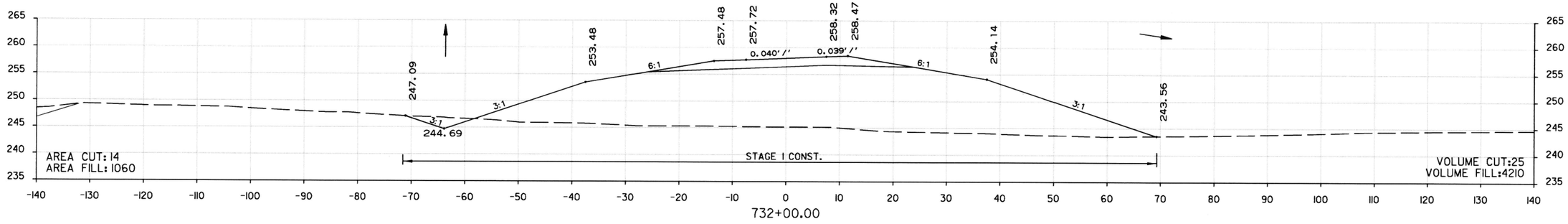


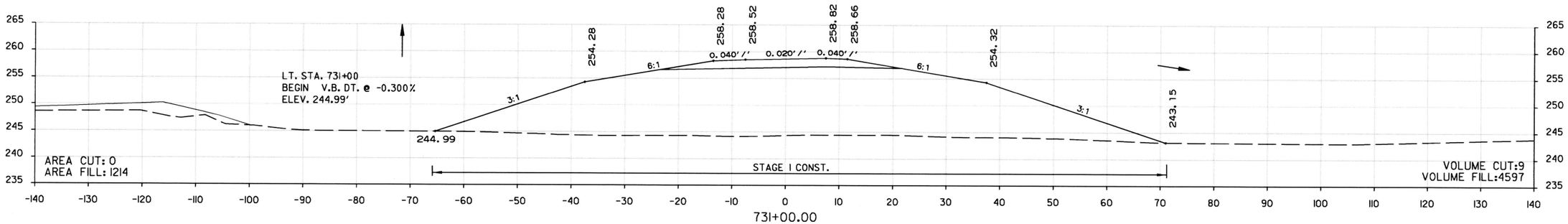


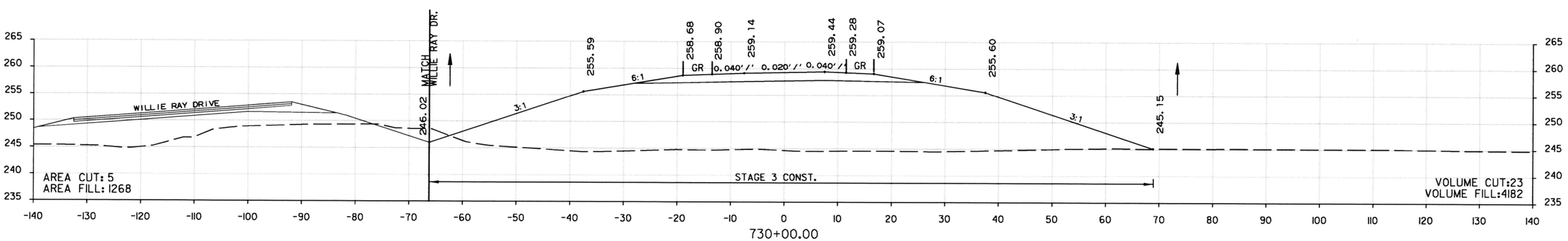
STA. 727+87.03 TO STA. 729+00.00
RAMP 3A

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.		061102	317	400
				(2)	CROSS SECTIONS			





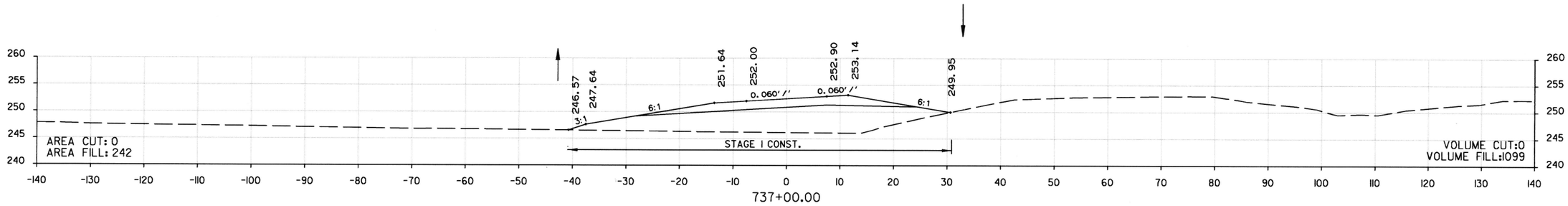


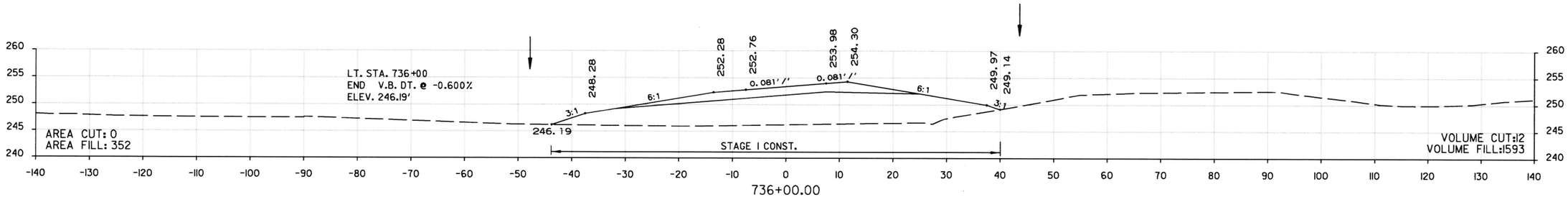


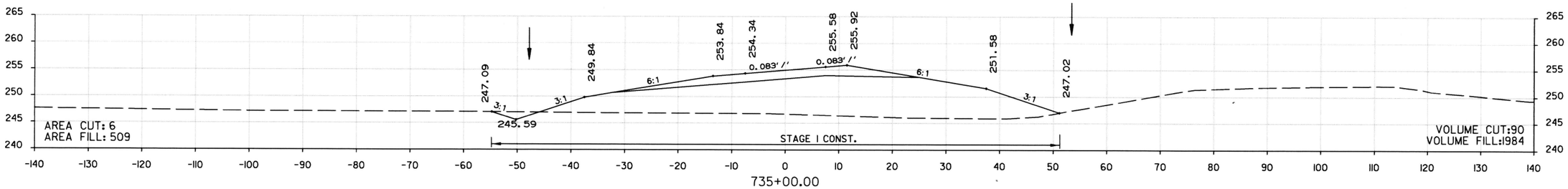
STA. 730+00.00 TO STA. 733+00.00
RAMP 3A

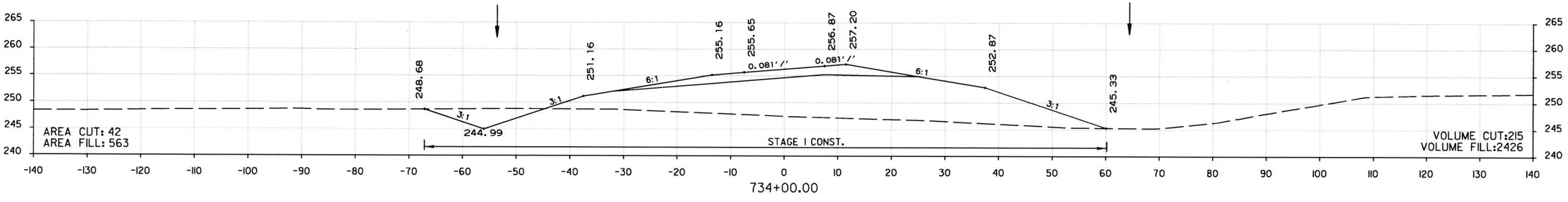
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	318	400

(2) CROSS SECTIONS





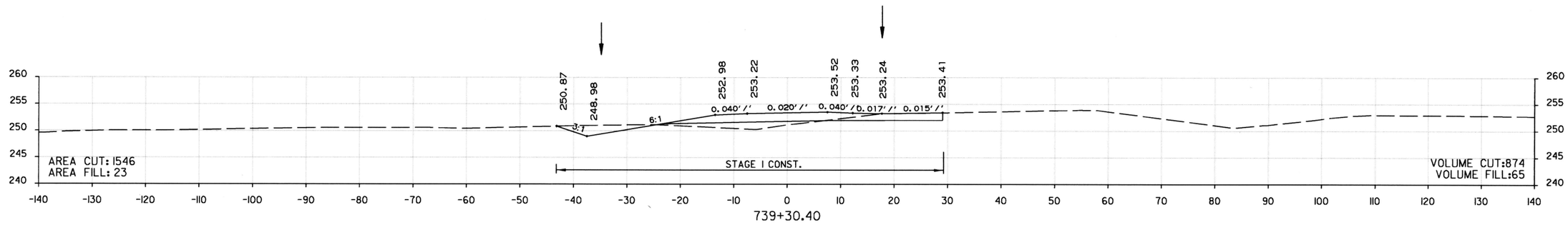




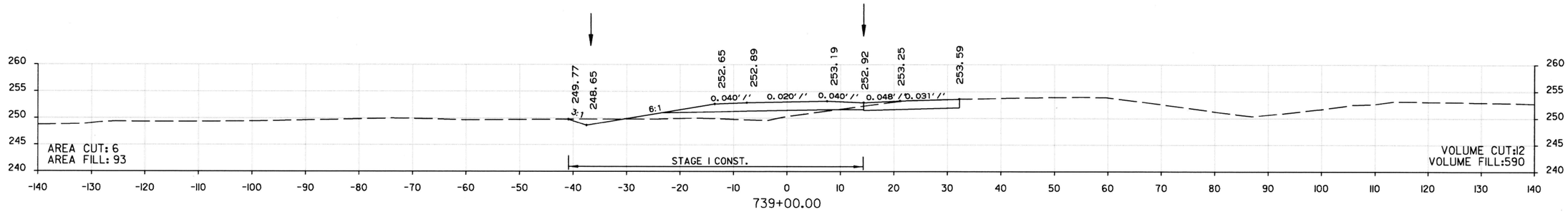
STA. 734+00.00 TO STA. 737+00.00
RAMP 3A

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.		061102	319	400
				(2)	CROSS SECTIONS			

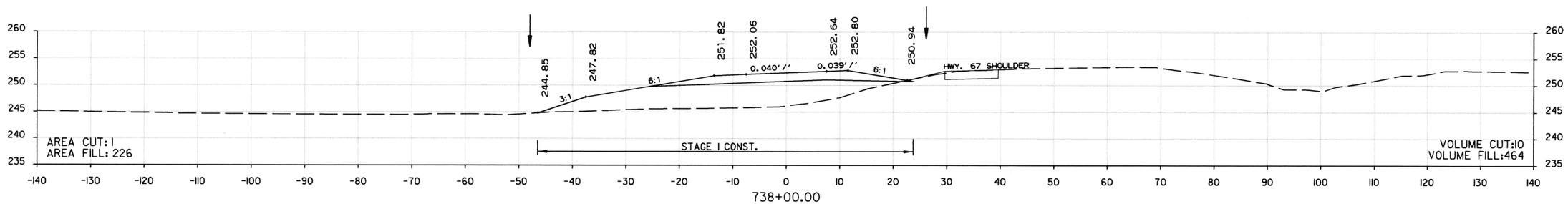
STA. 739+30.40
END RAMP 3A



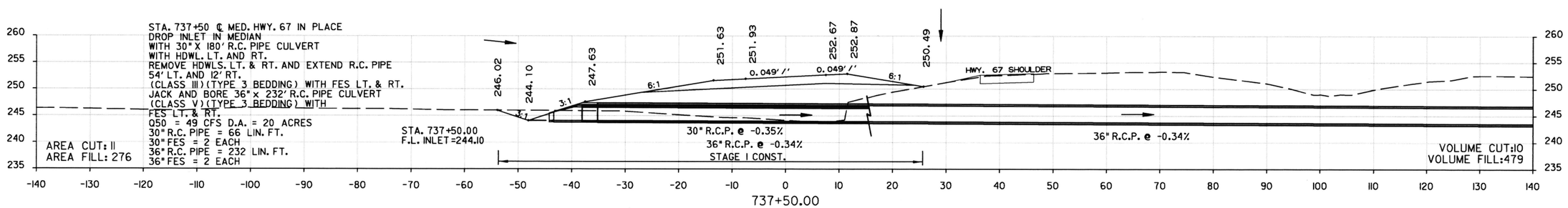
739+30.40



739+00.00



738+00.00

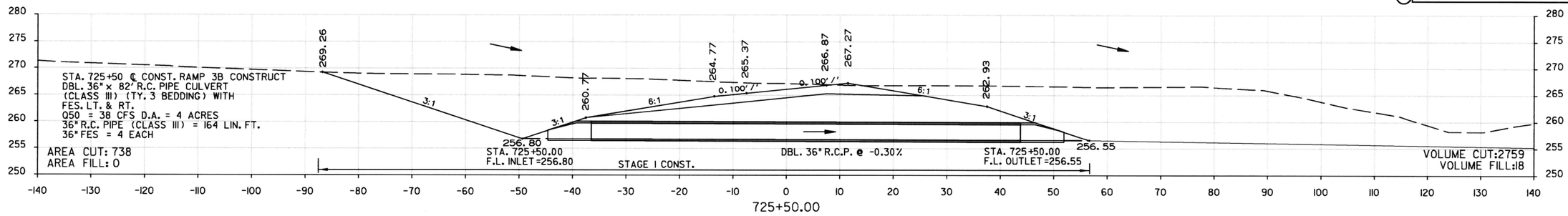


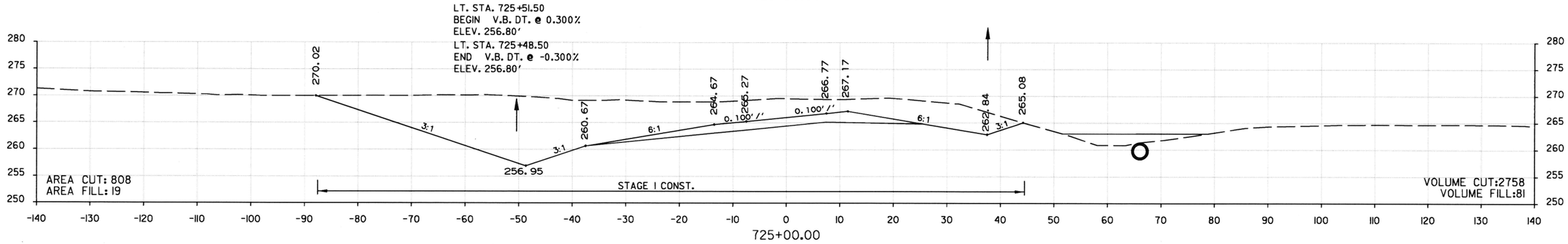
737+50.00

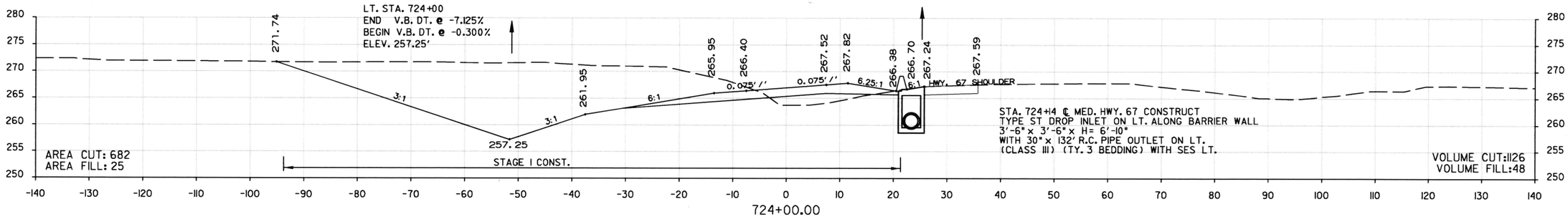
STA. 737+50.00 TO STA. 739+30.40
RAMP 3A

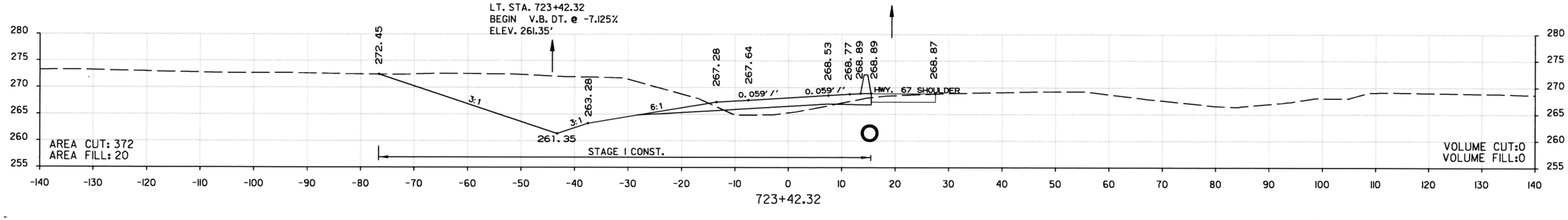
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	320	400

(2) CROSS SECTIONS





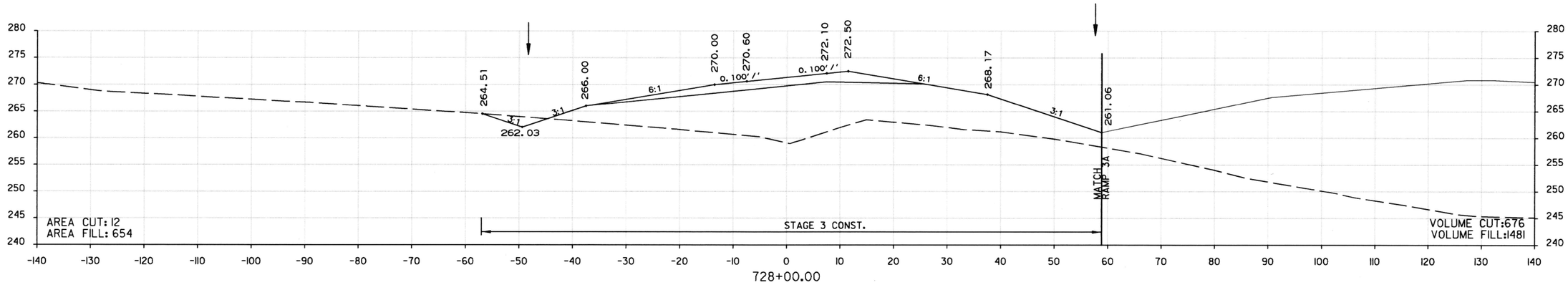


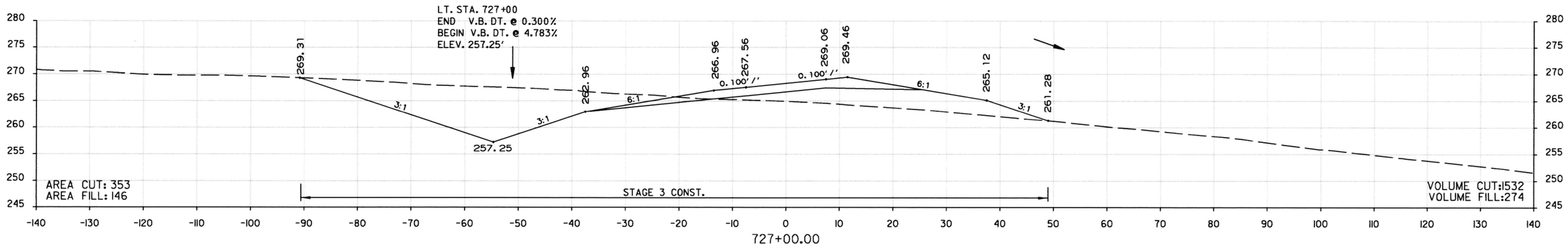


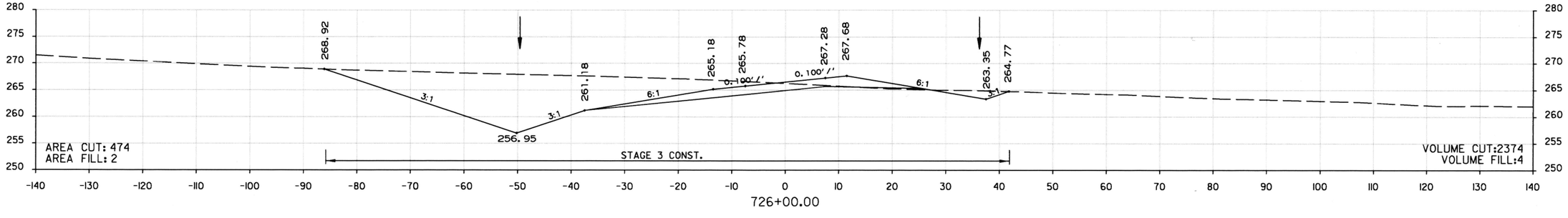
STA. 723+42.32
BEGIN RAMP 3B

STA. 723+42.32 TO STA. 725+50.00
RAMP 3B

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.		061102	321	400
				(2)	CROSS SECTIONS			



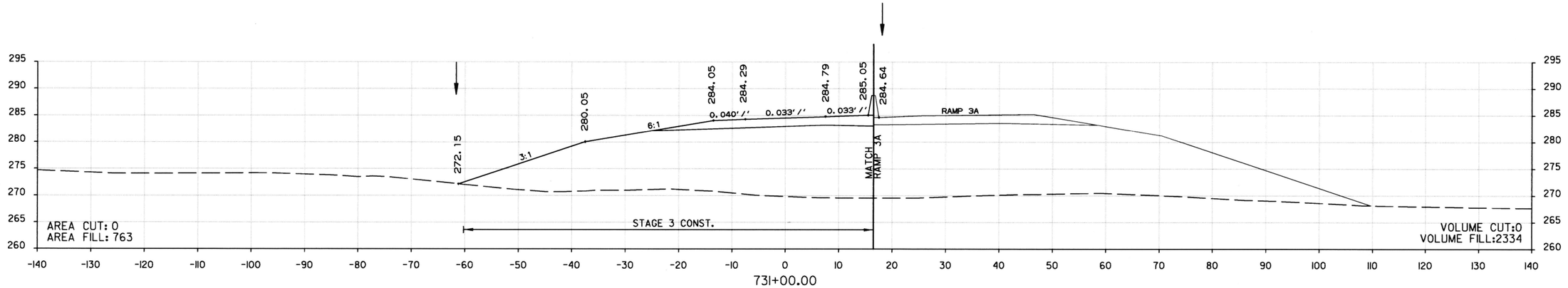


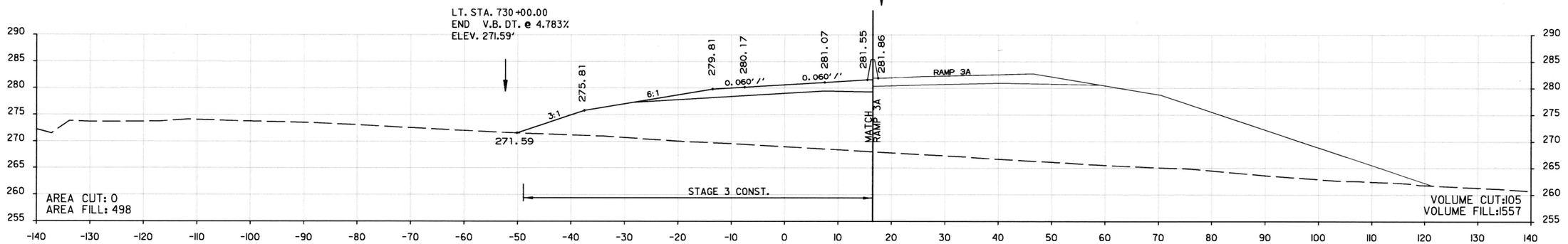


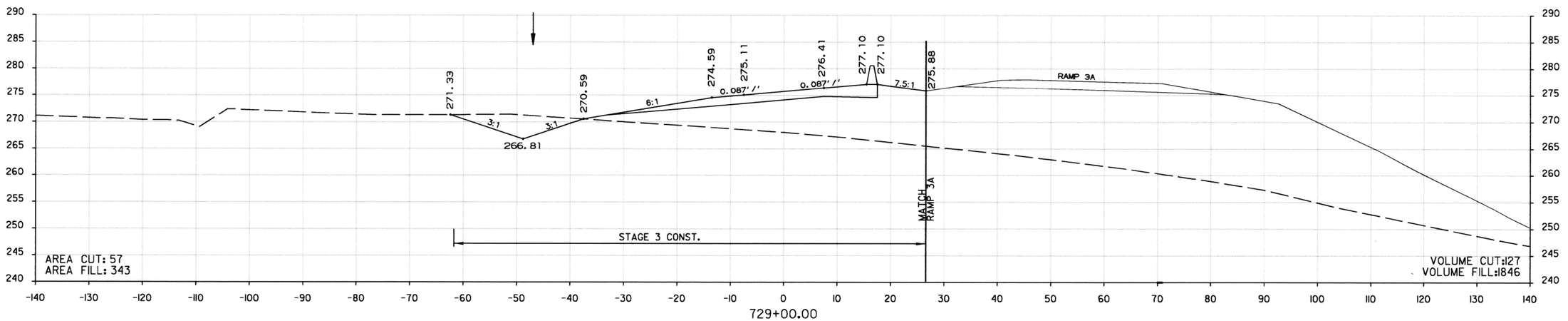
STA. 726+00.00 TO STA. 728+00.00
RAMP 3B

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.		061102	322	400

(2) CROSS SECTIONS

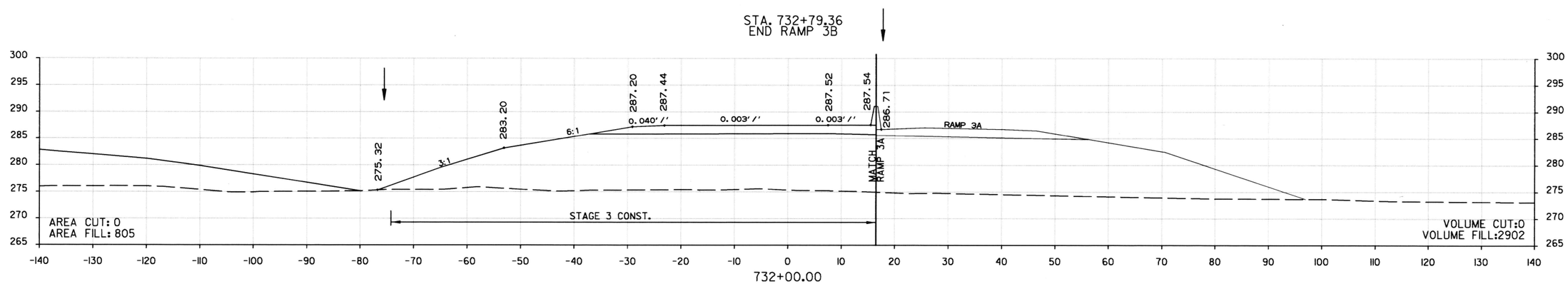






STA. 729+00.00 TO STA. 731+00.00
RAMP 3B

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.		061102	323	400
				(2)	CROSS SECTIONS			

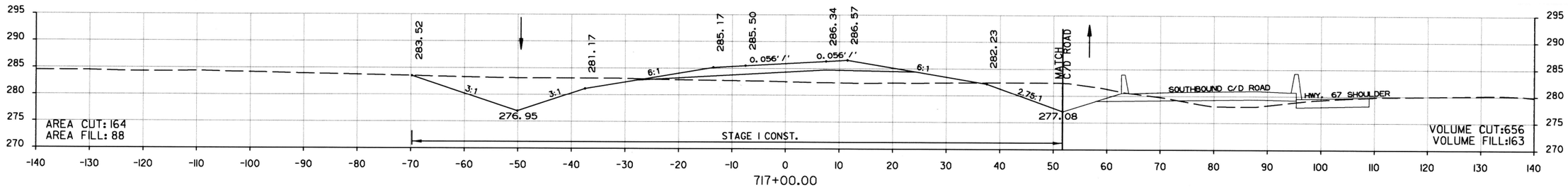


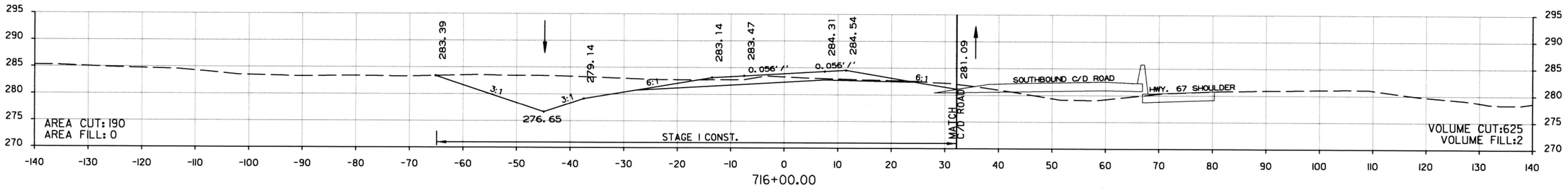
STA. 732+00.00 TO STA. 732+00.00
RAMP 3B

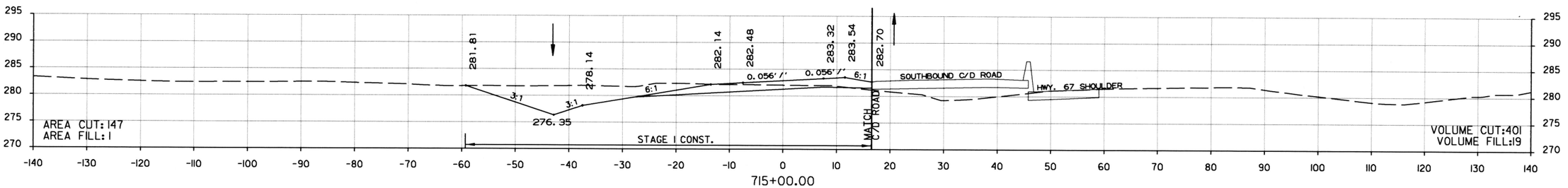
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

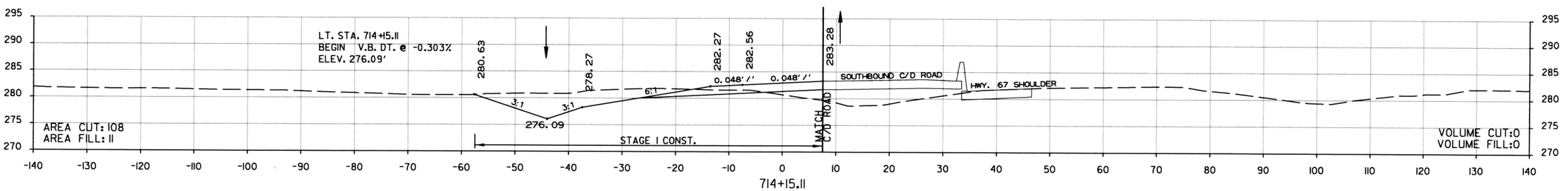
FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	324	400

(2) CROSS SECTIONS





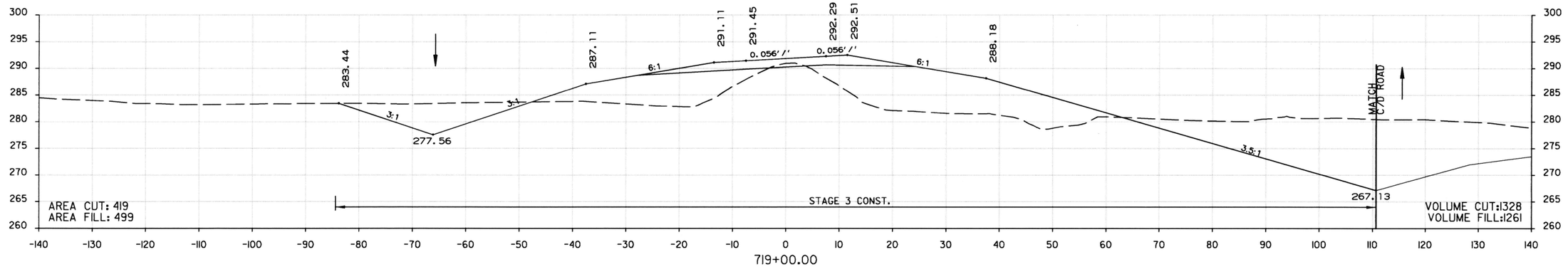


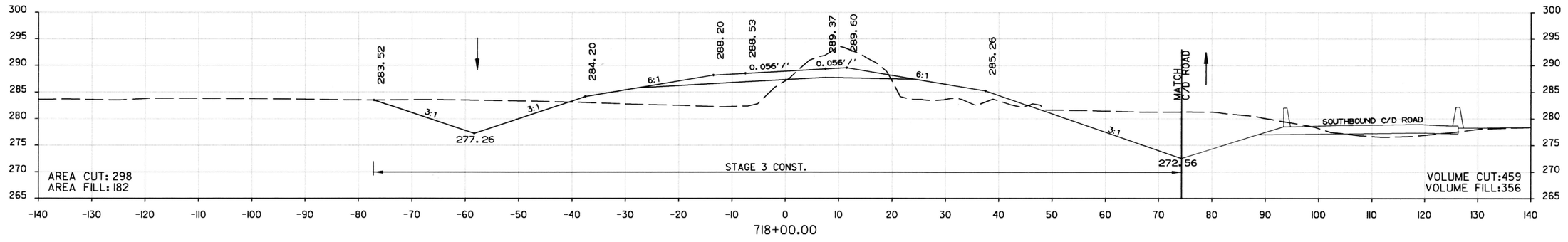


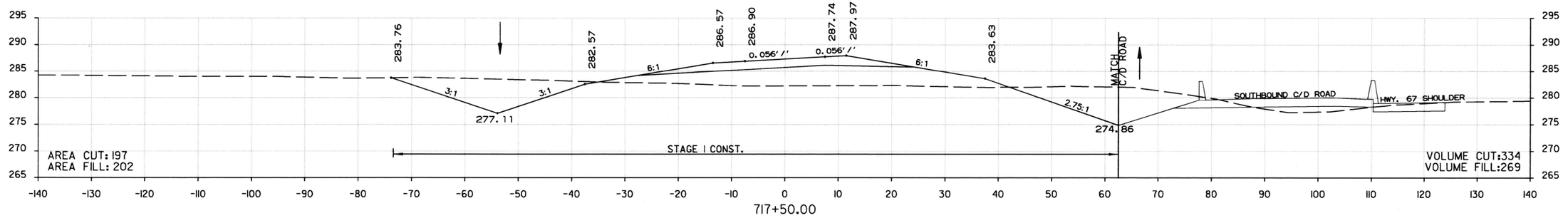
STA. 714+15.11
BEGIN RAMP 4

STA. 714+15.11 TO STA. 717+00.00
RAMP 4

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.		061102	325	400
				(2)	CROSS SECTIONS			

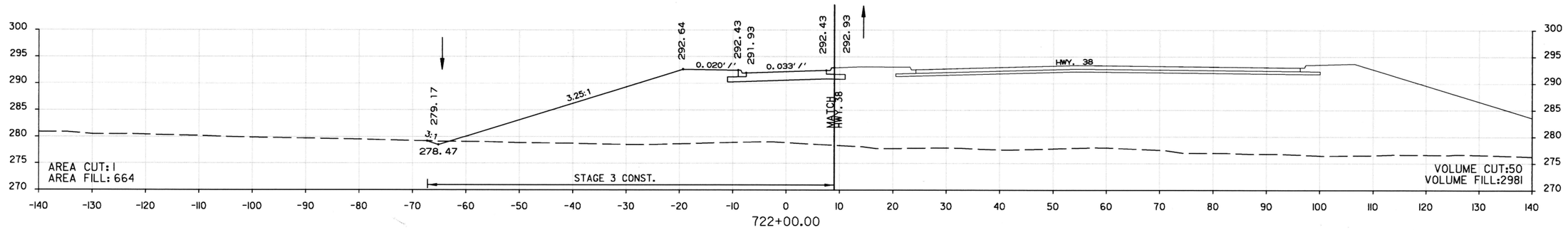


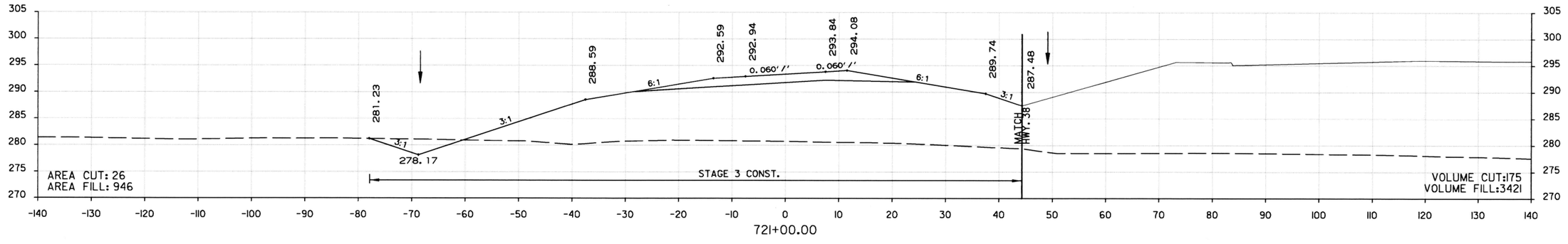


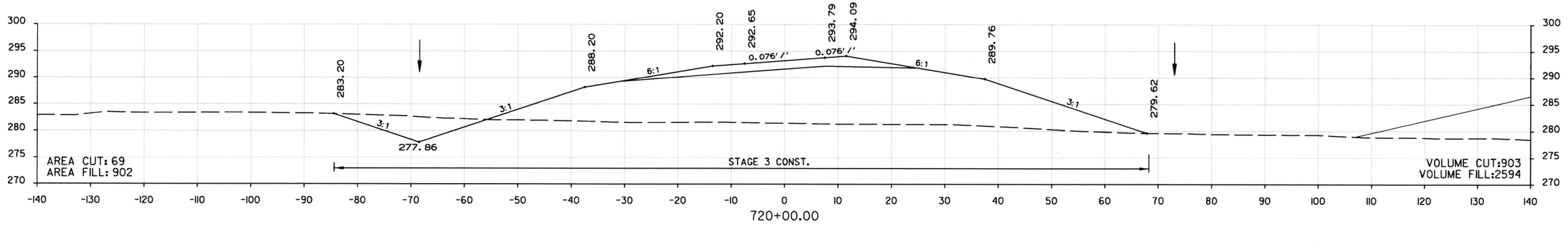


STA. 717+50.00 TO STA. 719+00.00
RAMP 4

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.		061102	326	400
				(2)	CROSS SECTIONS			





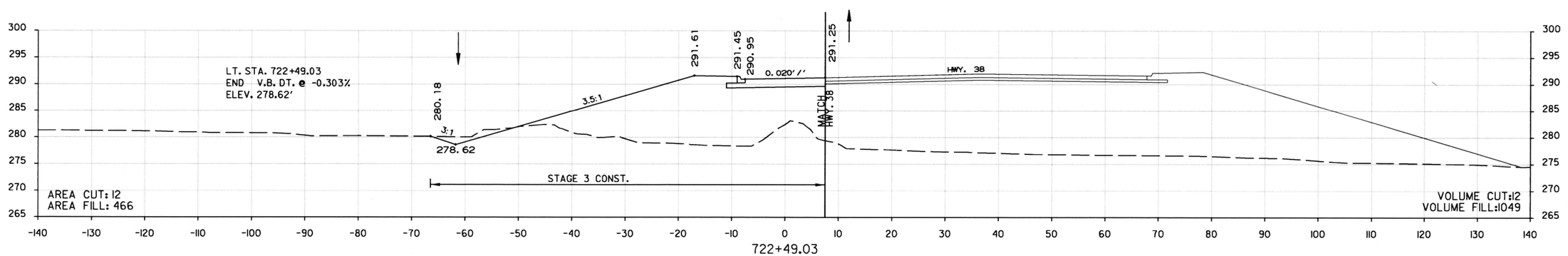


STA. 720+00.00 TO STA. 722+00.00
RAMP 4

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.		061102	327	400

(2) CROSS SECTIONS

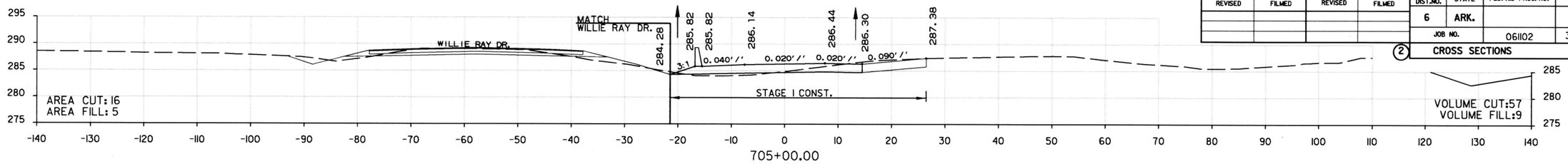
STA. 722+49.03
END RAMP 4

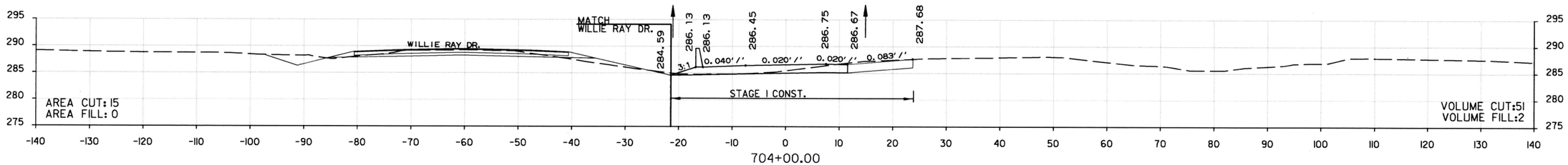


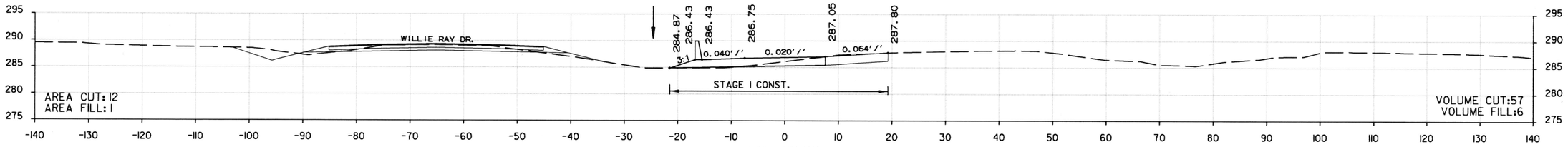
STA. 722+49.03 TO STA. 722+49.03
RAMP 4

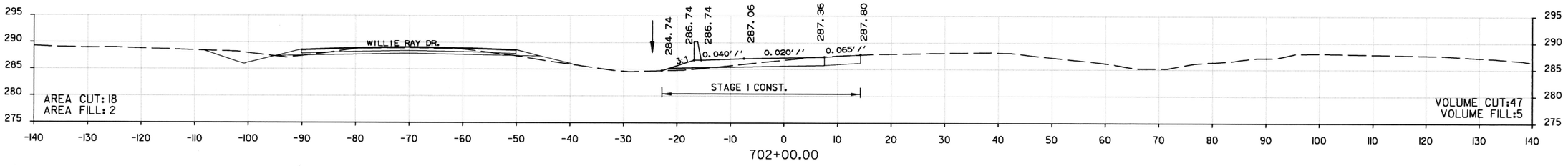
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	328	400

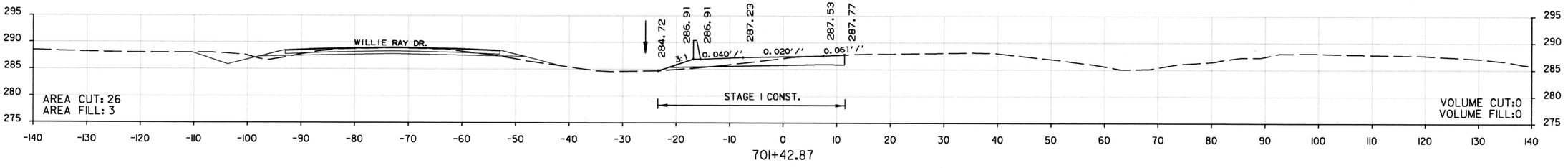
(2) CROSS SECTIONS









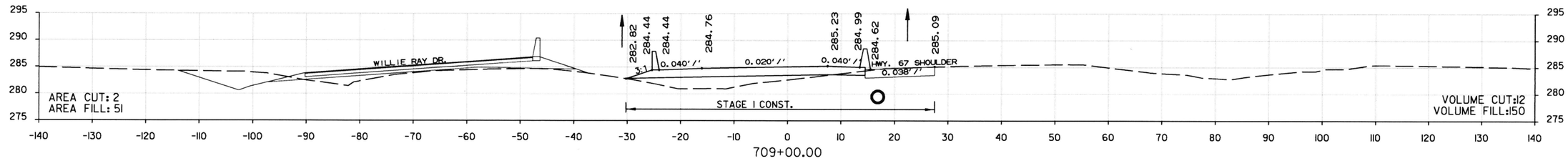


STA. 701+42.87
BEGIN SOUTHBOUND C/D ROAD

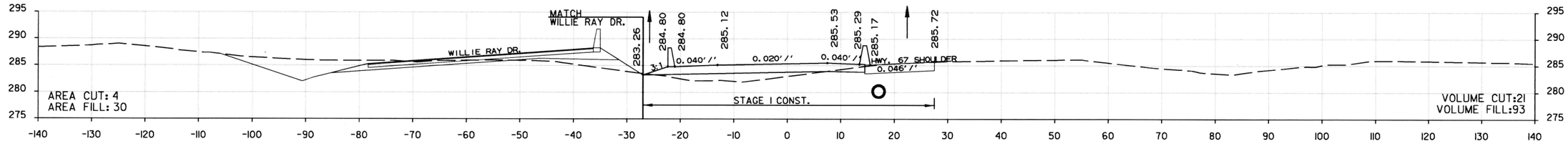
STA. 701+42.87 TO STA. 705+00.00
SOUTHBOUND C/D ROAD

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.		061102	329	400

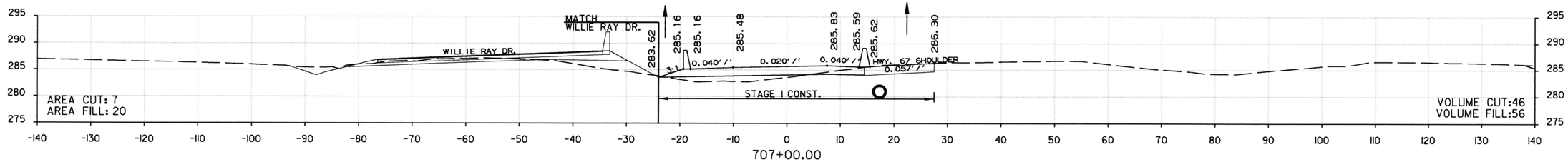
(2) CROSS SECTIONS



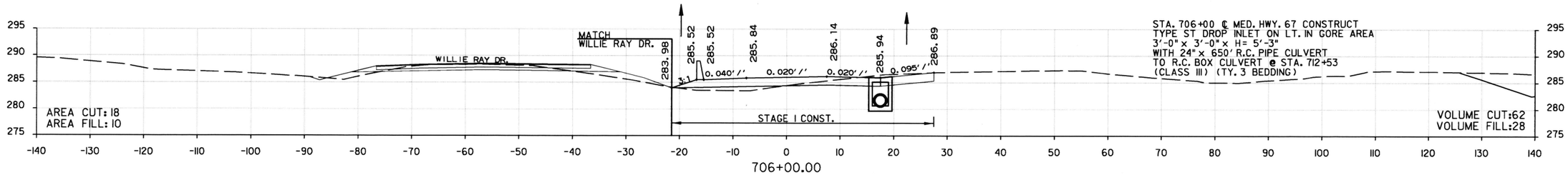
709+00.00



708+00.00



707+00.00

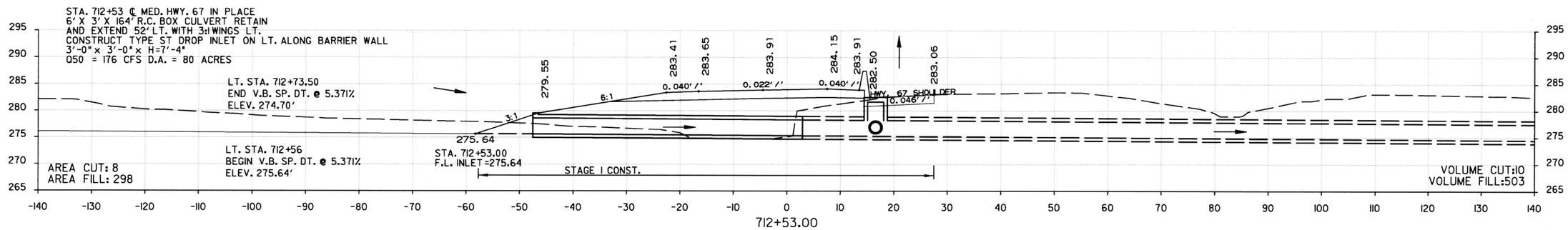


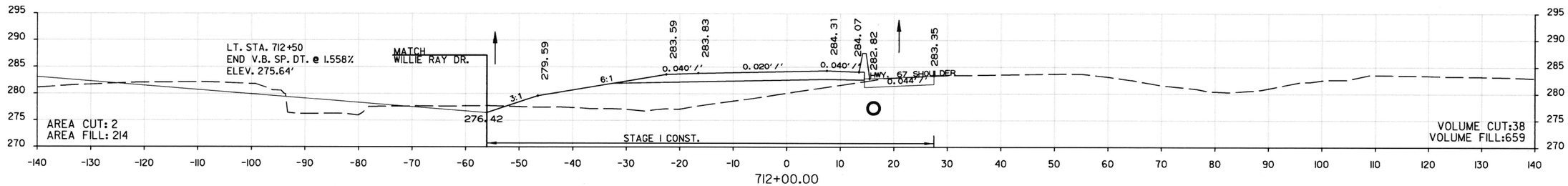
706+00.00

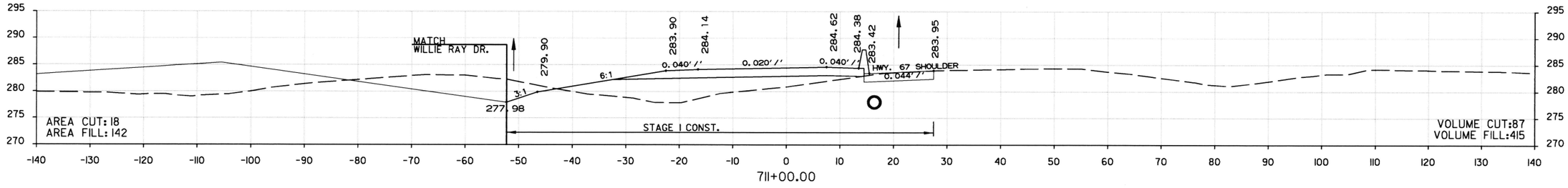
STA. 706+00.00 TO STA. 709+00.00
SOUTHBOUND C/D ROAD

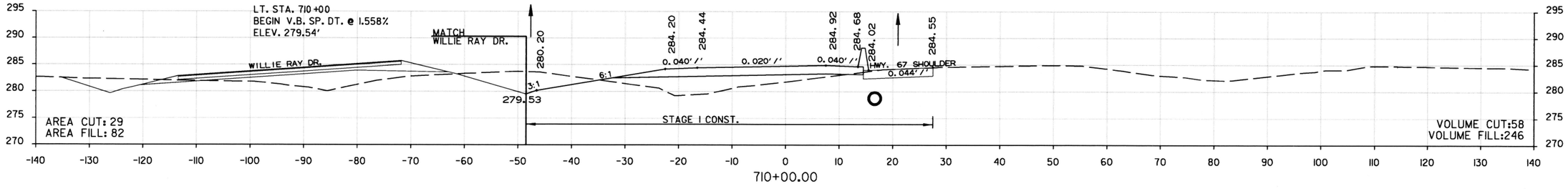
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	330	400

(2) CROSS SECTIONS





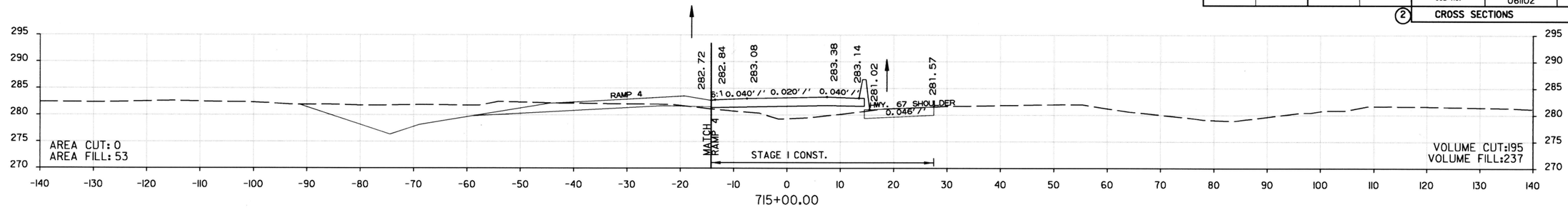


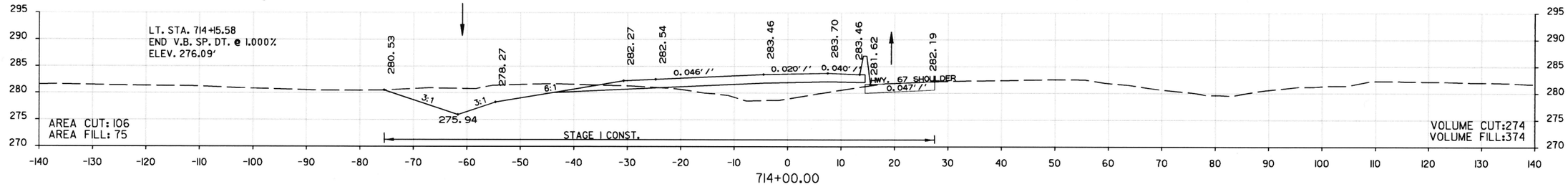


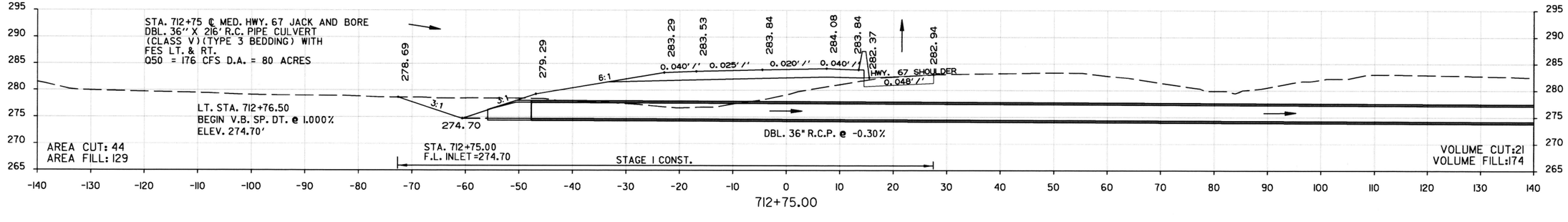
STA. 710+00.00 TO STA. 712+53.00
SOUTHBOUND C/D ROAD

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.		061102	331	400

(2) CROSS SECTIONS

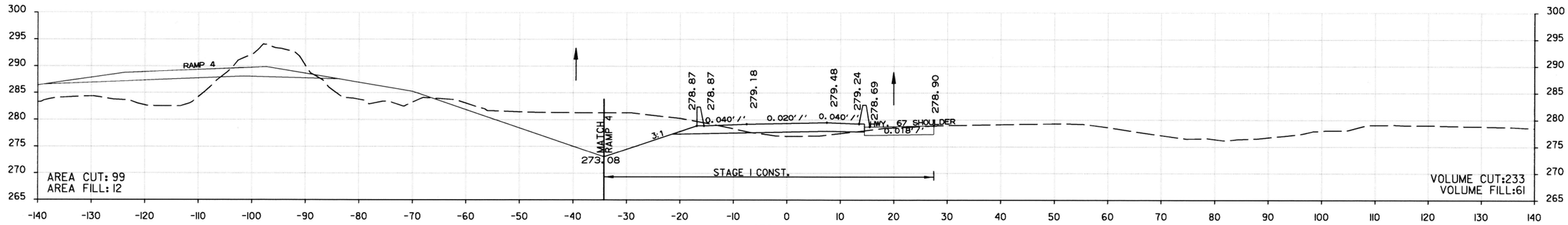


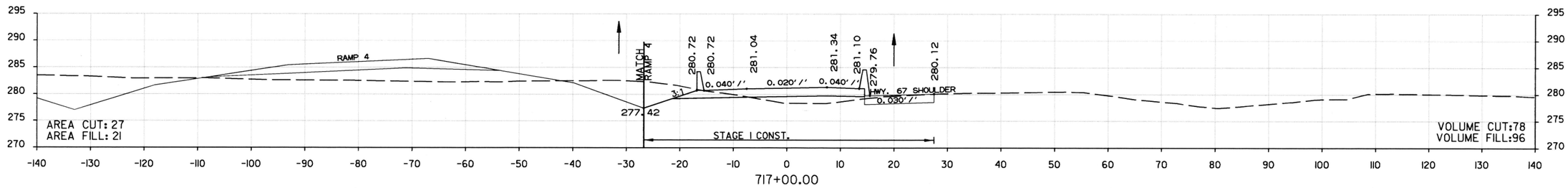


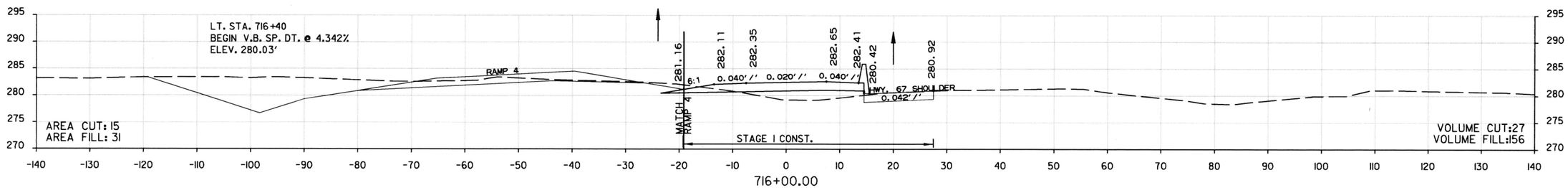


STA. 712+75.00 TO STA. 715+00.00
SOUTHBOUND C/D ROAD

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.		061102	332	400
				(2)	CROSS SECTIONS			

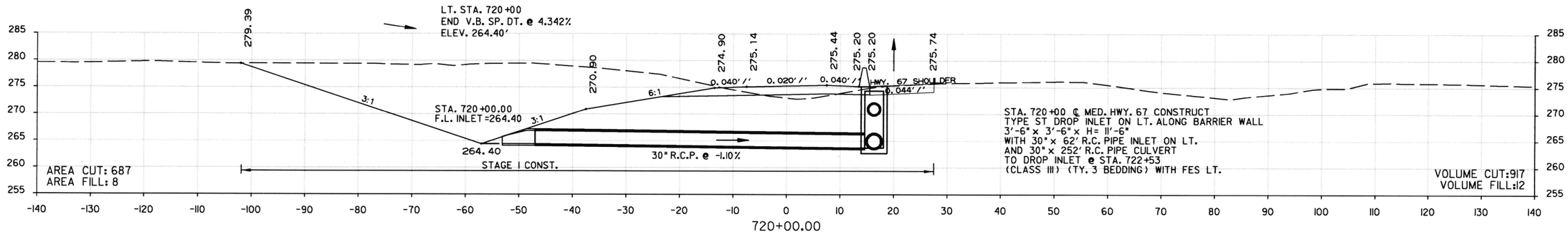


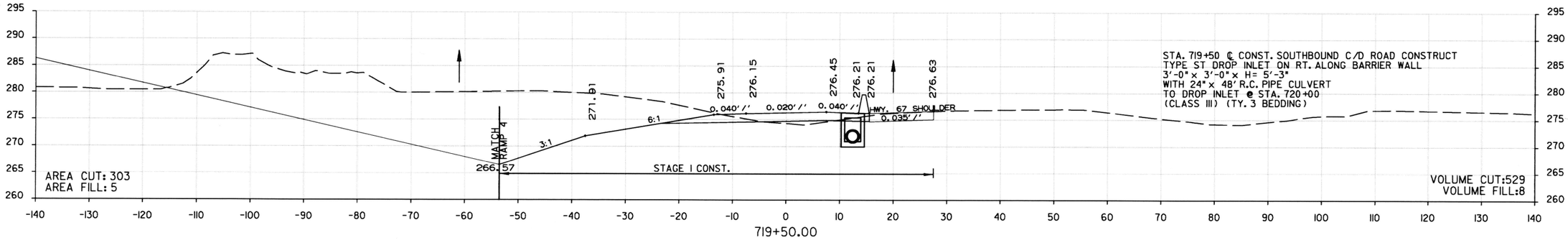


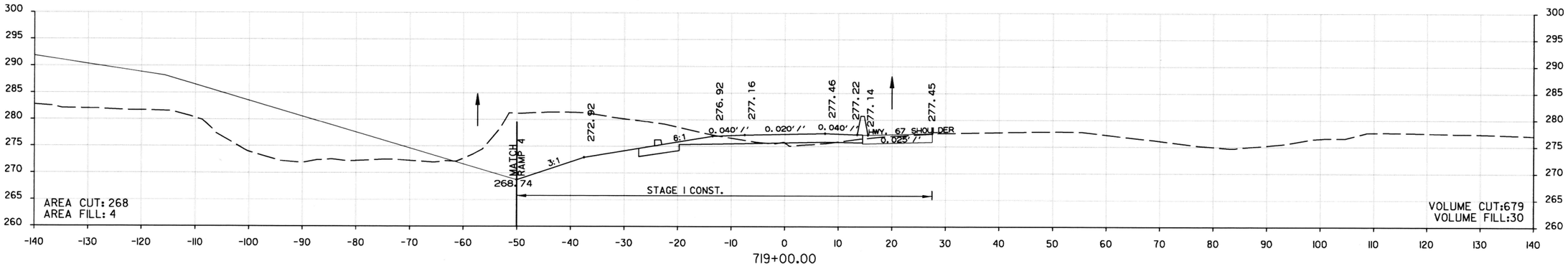


STA. 716+00.00 TO STA. 718+00.00
SOUTHBOUND C/D ROAD

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.		061102	333	400
				(2)	CROSS SECTIONS			

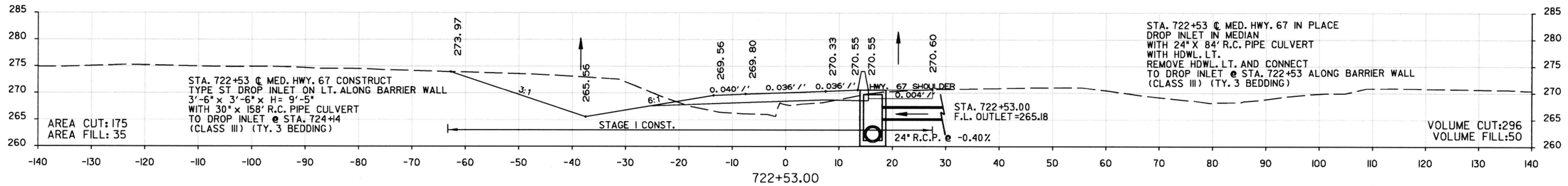


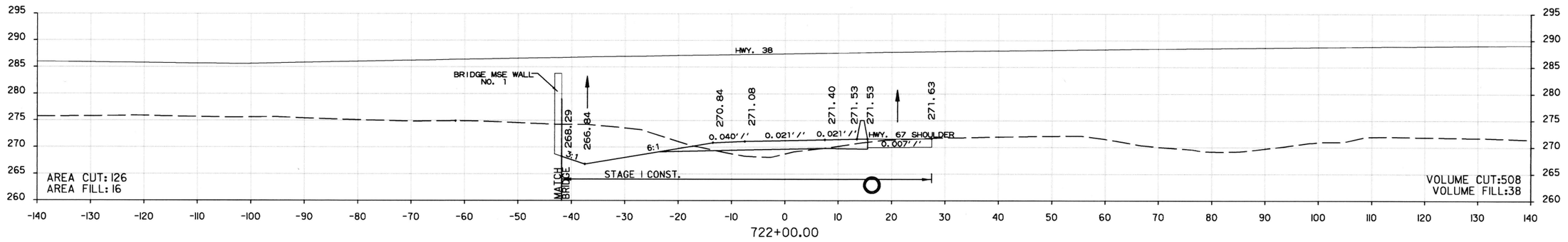


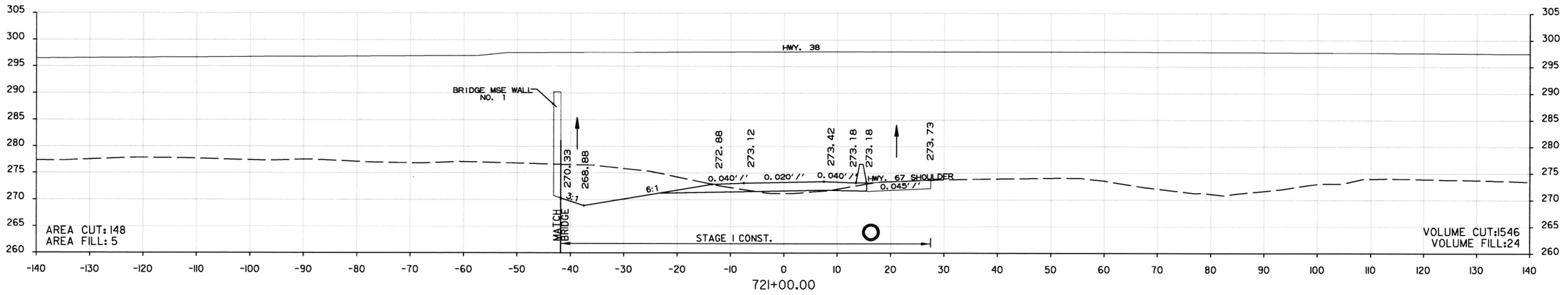


STA. 719+00.00 TO STA. 720+00.00
SOUTHBOUND C/D ROAD

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.		061102	334	400
				(2)	CROSS SECTIONS			





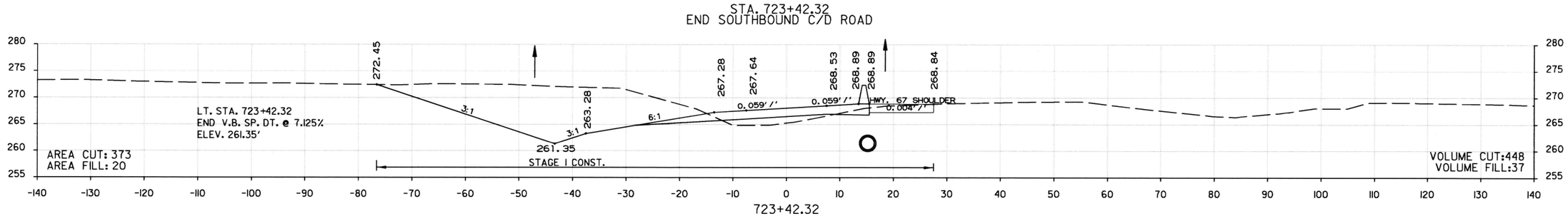


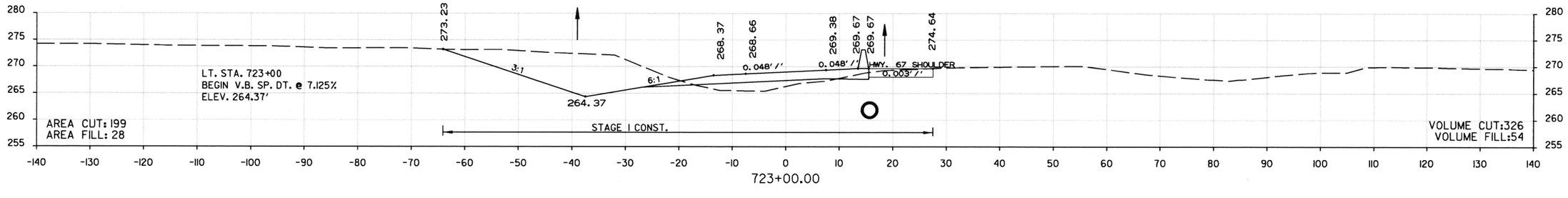
STA. 721+00.00 TO STA. 722+53.00
SOUTHBOUND C/D ROAD

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.		061102	335	400

(2) CROSS SECTIONS

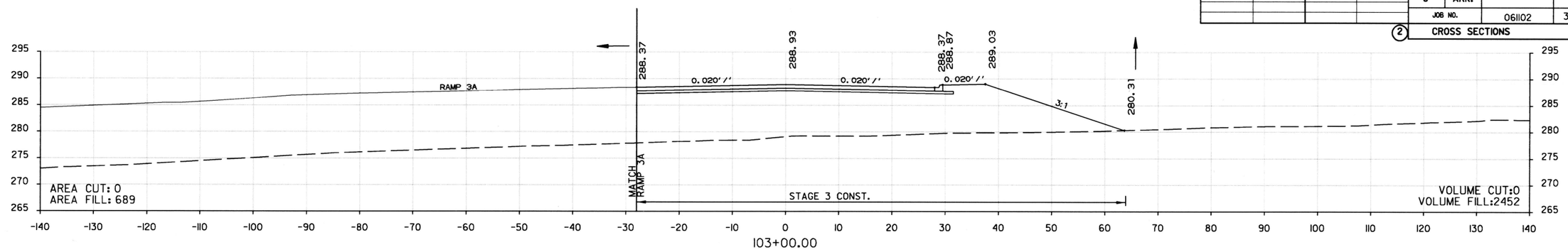


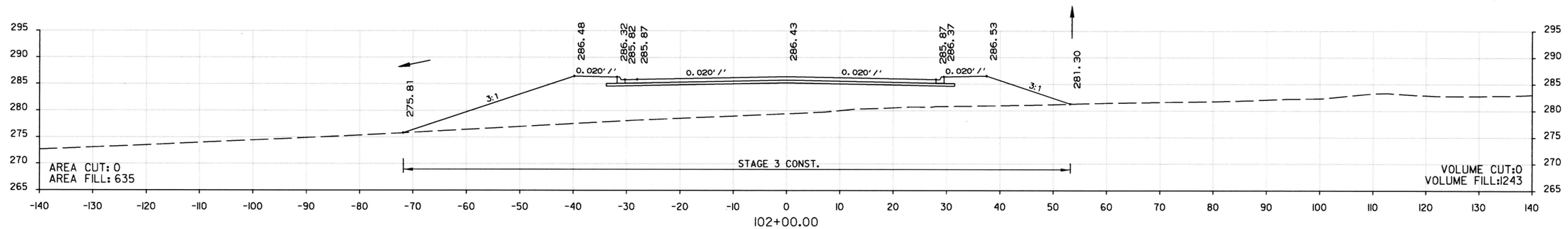


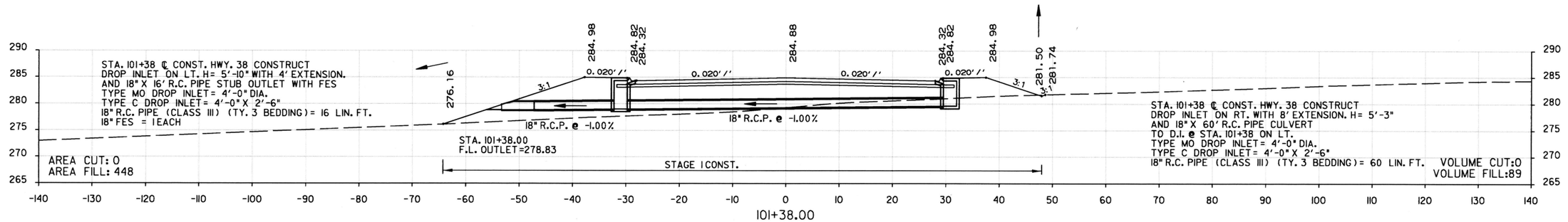
STA. 723+00.00 TO STA. 723+42.32
SOUTHBOUND C/D ROAD

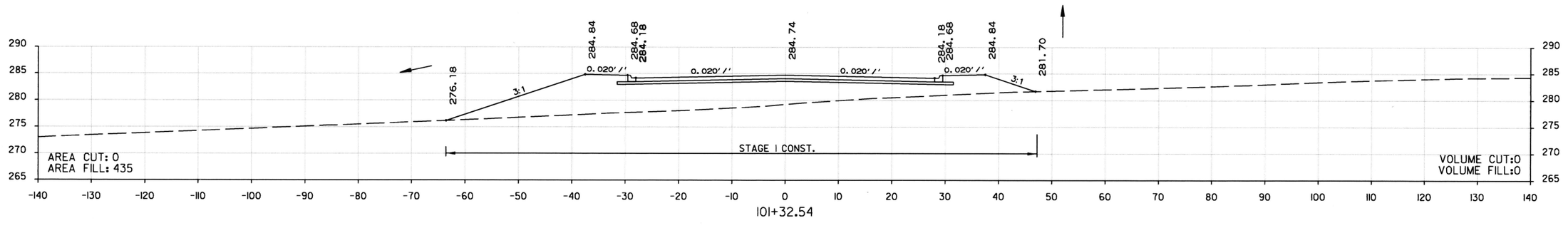
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	336	400

(2) CROSS SECTIONS





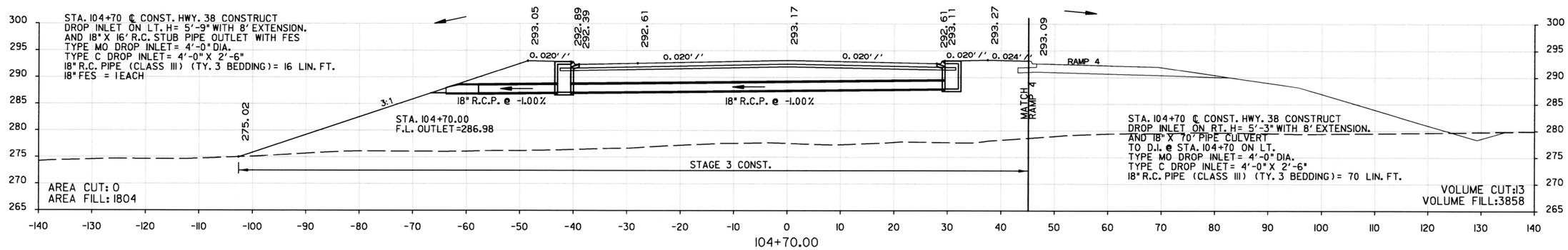


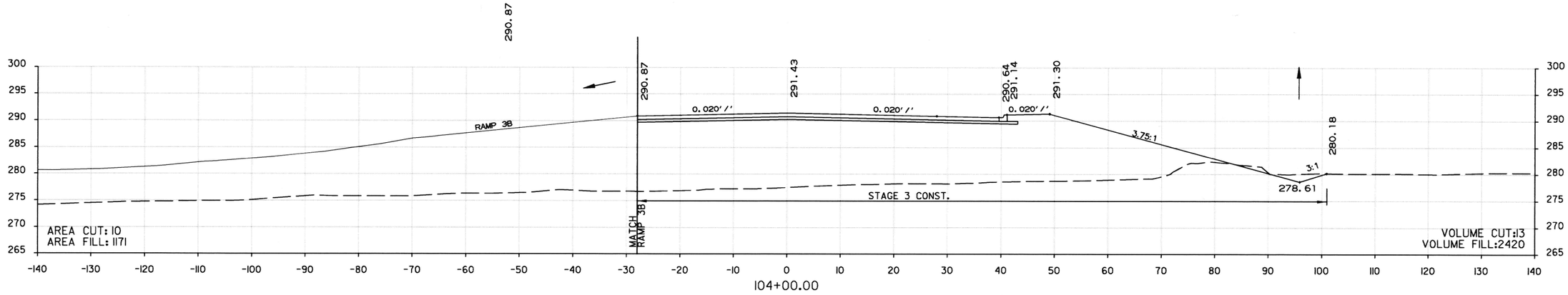


STA. 100+12.00 BEGIN HWY. 38

STA. 101+32.54 TO STA. 103+00.00
HIGHWAY 38

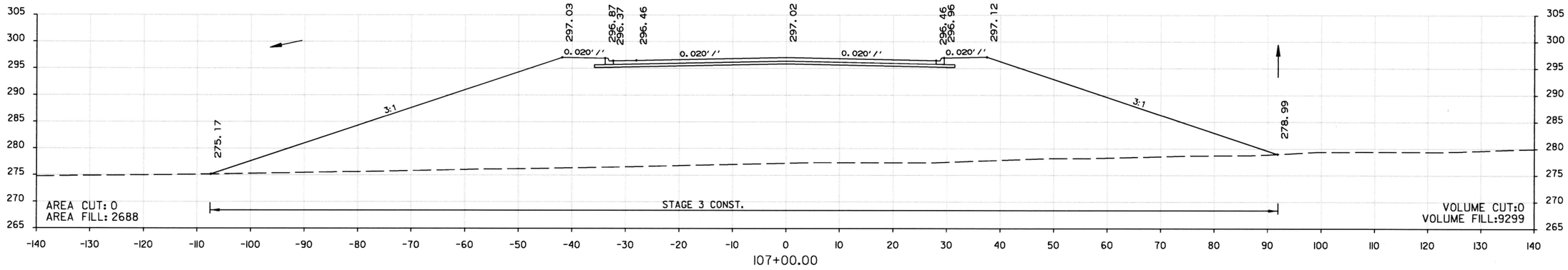
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	337	400
				(2)	CROSS SECTIONS			

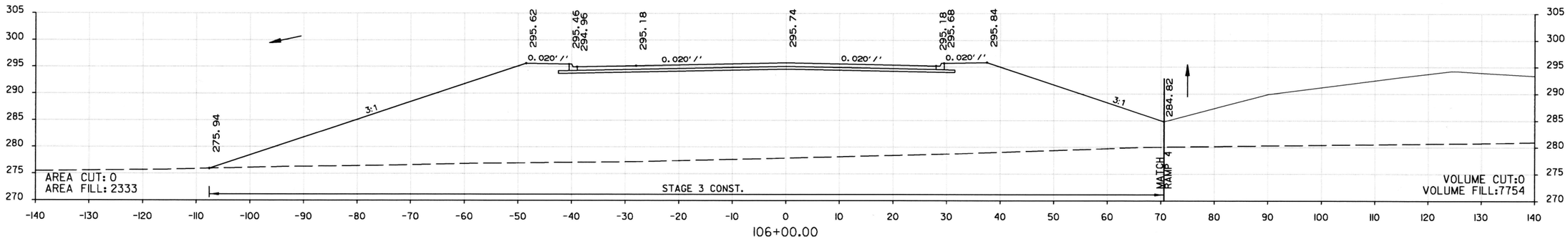


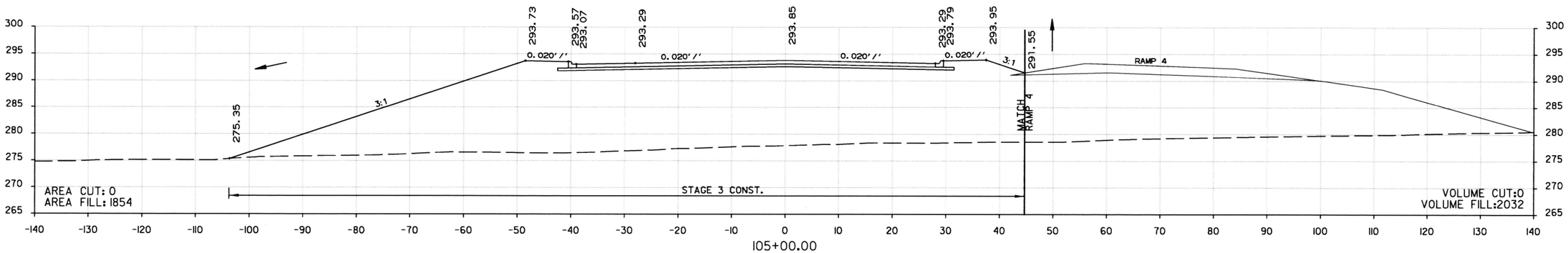


STA. 103+34.00 TO STA. 104+70.00
HIGHWAY 38

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.		061102	338	400
				(2)	CROSS SECTIONS			

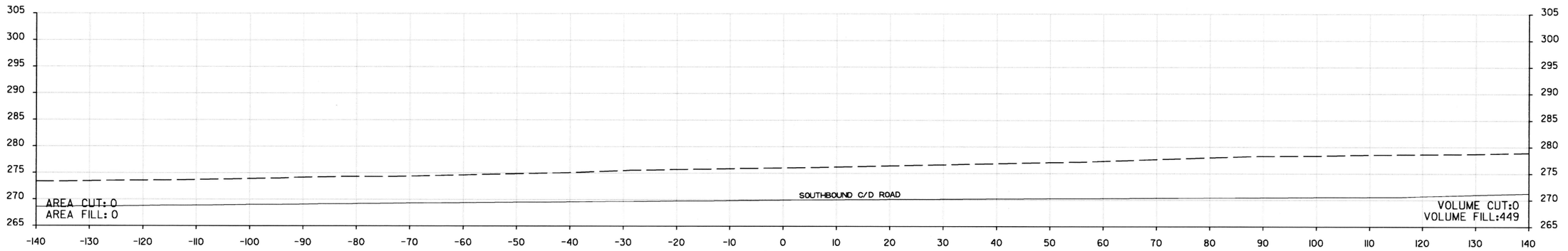




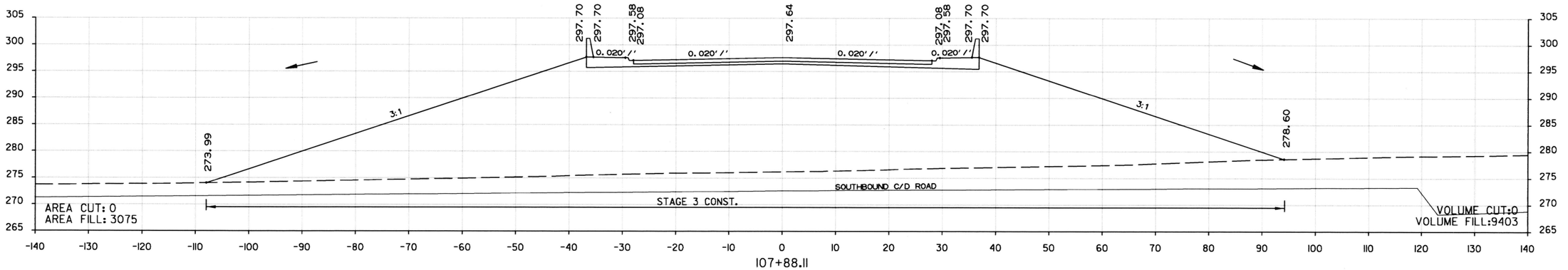


STA. 105+00.00 TO STA. 107+00.00
HIGHWAY 38

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.		061102	339	400
				(2)	CROSS SECTIONS			



107+96.00
TOE OF SLOPE

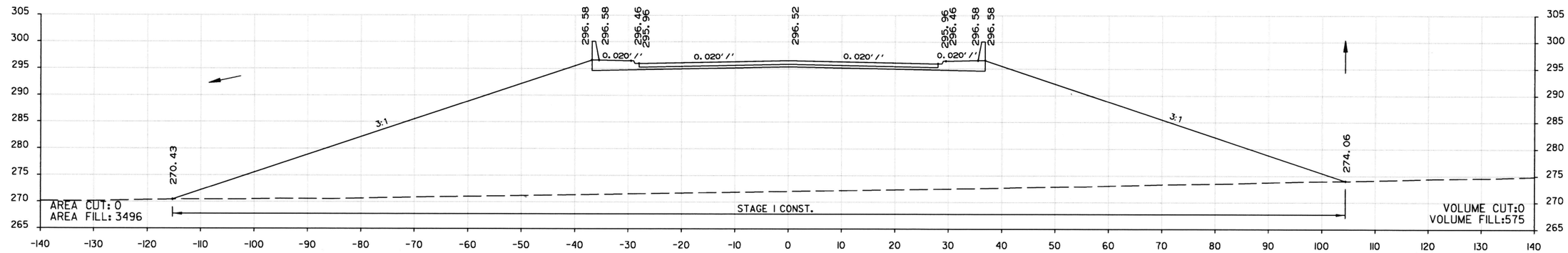


107+88.11
BRIDGE END

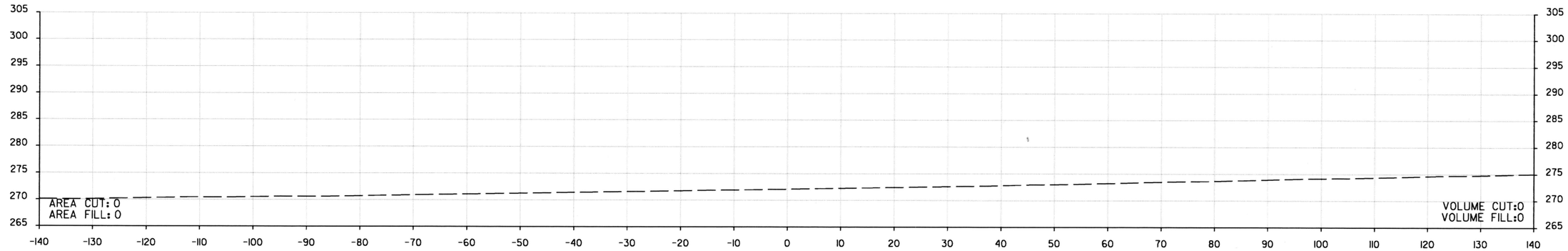
STA. 107+88.11 TO STA. 107+96.00
HIGHWAY 38

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.		061102	340	400

(2) CROSS SECTIONS



110+63.27
BRIDGE END

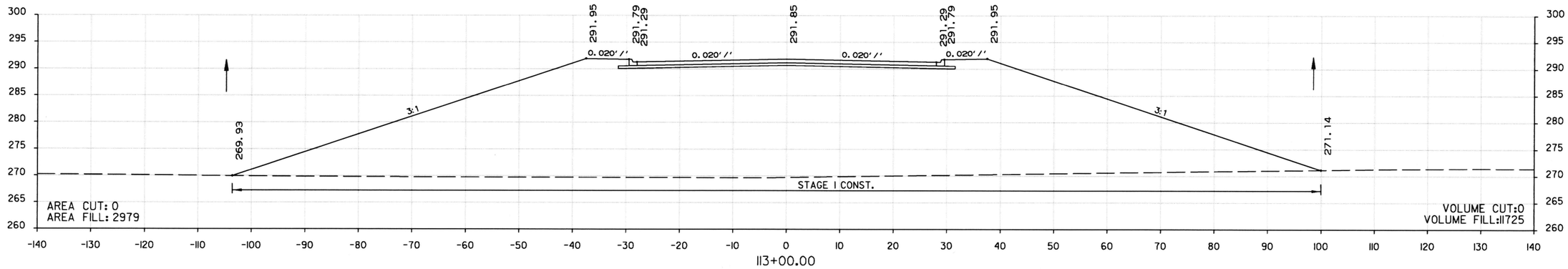


110+55.00
TOE OF SLOPE

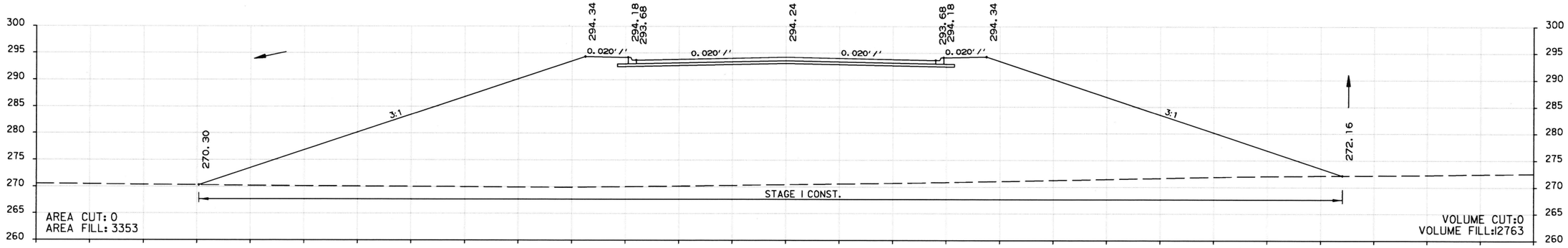
STA. 110+55.00 TO STA. 110+63.27
HIGHWAY 38

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.		06I102	341	400

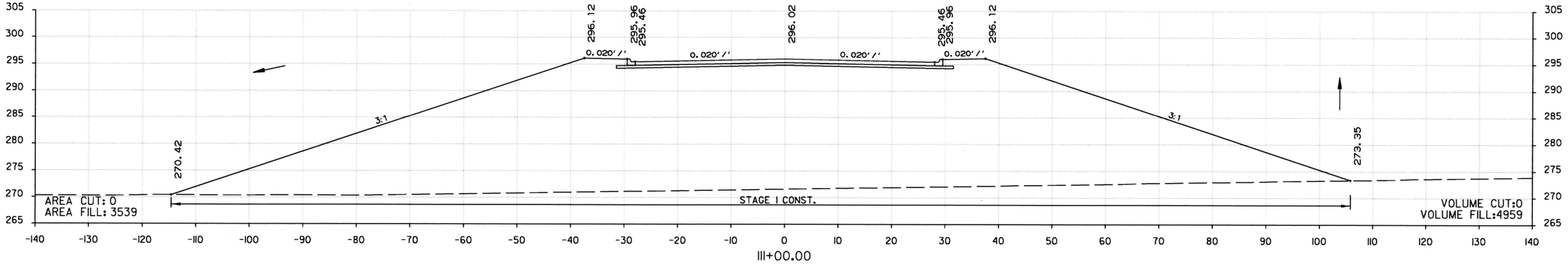
(2) CROSS SECTIONS



II3+00.00



II2+00.00

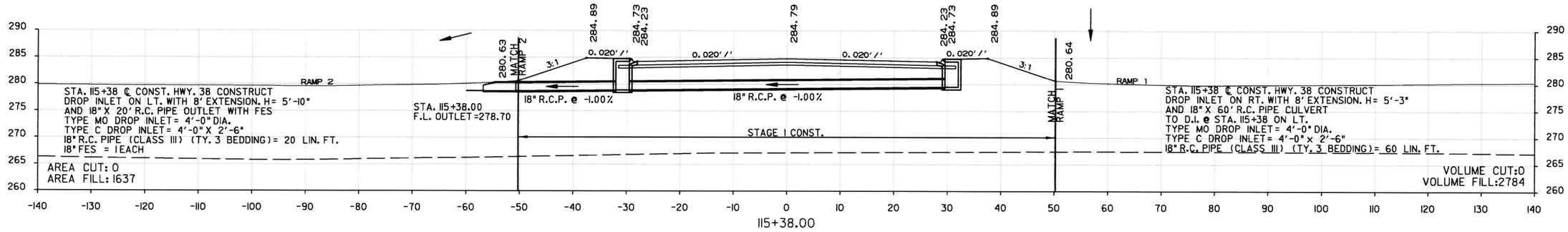


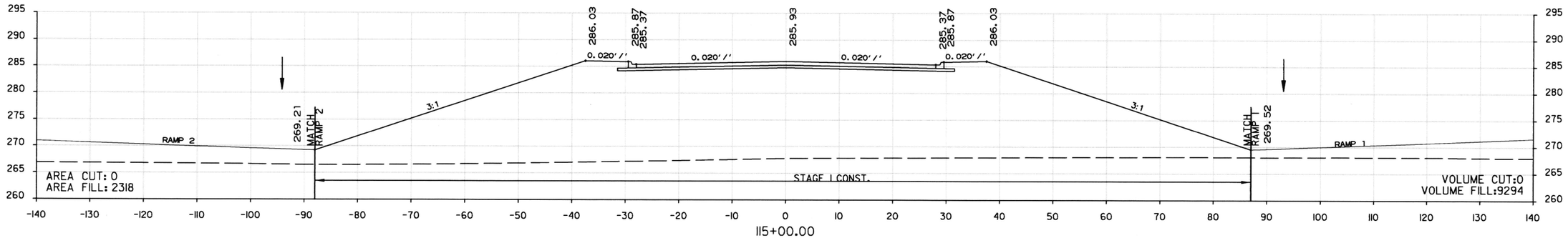
III+00.00

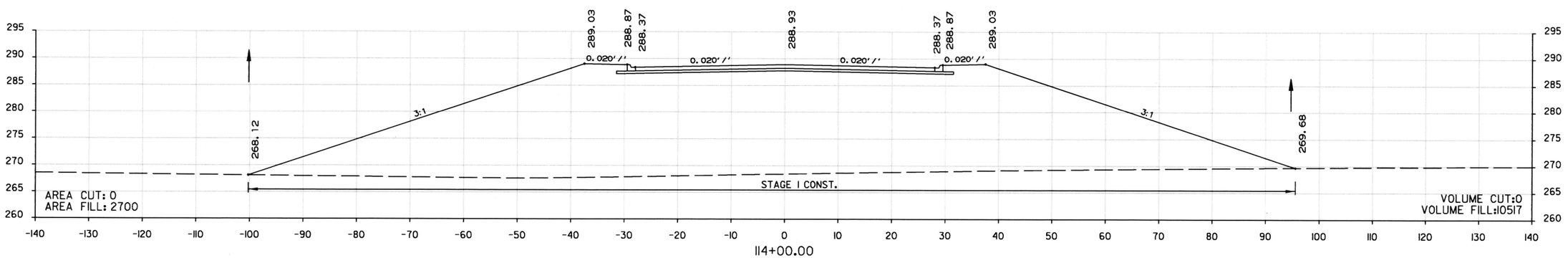
STA. III+00.00 TO STA. II3+00.00
HIGHWAY 38

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.		061102	342	400

(2) CROSS SECTIONS





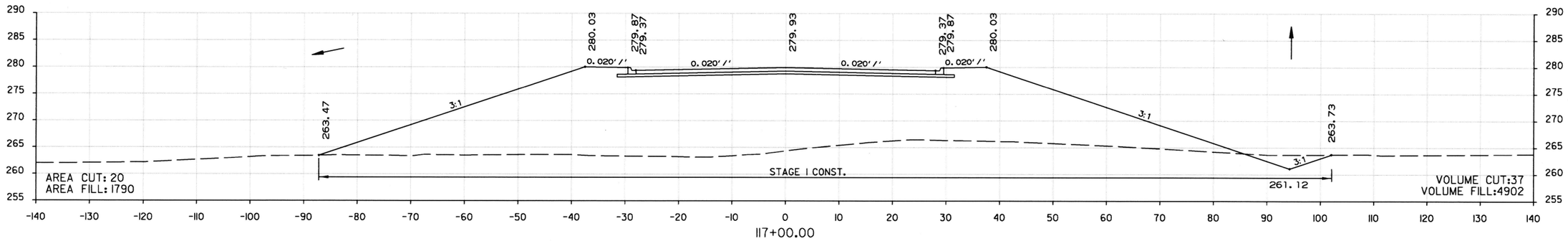


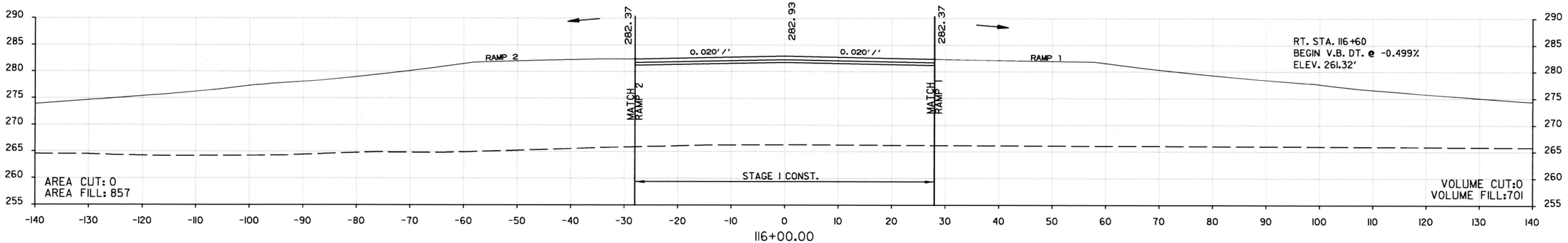
STA. 114+00.00 TO STA. 115+38.00
HIGHWAY 38

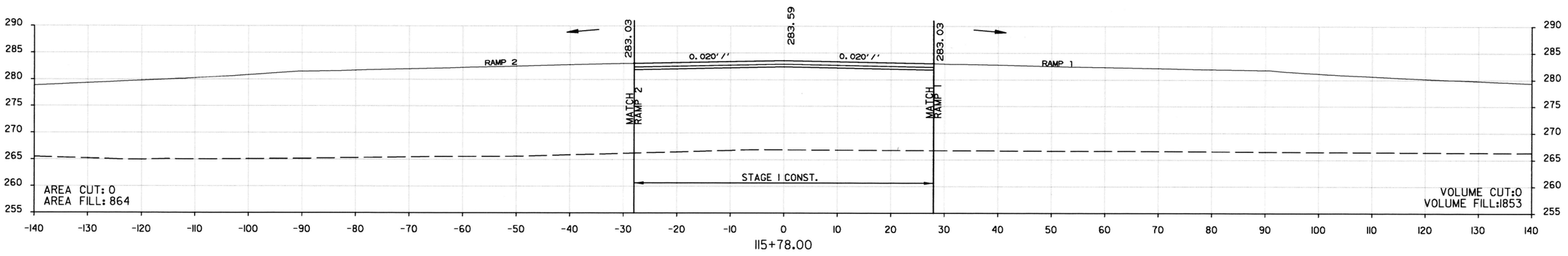
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	343	400

(2) CROSS SECTIONS



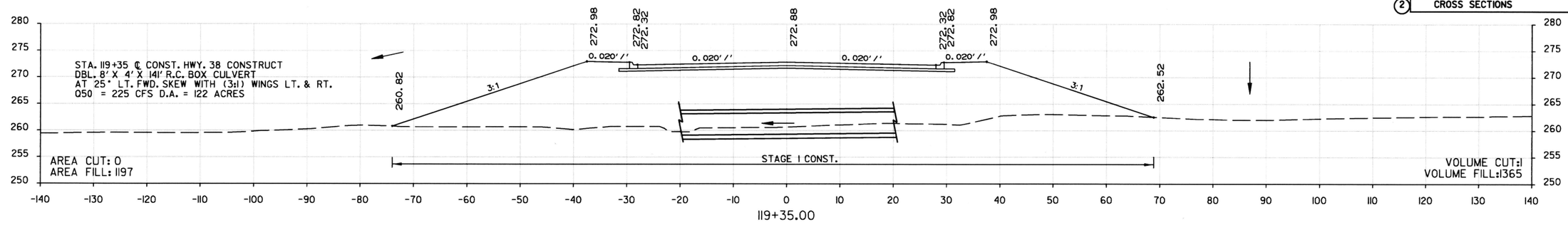


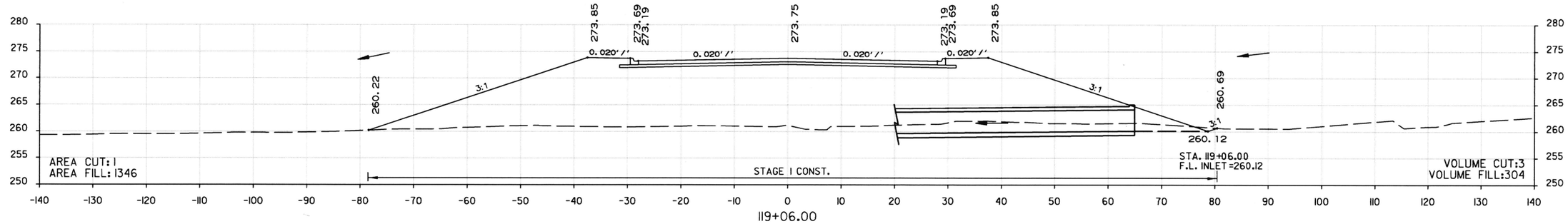


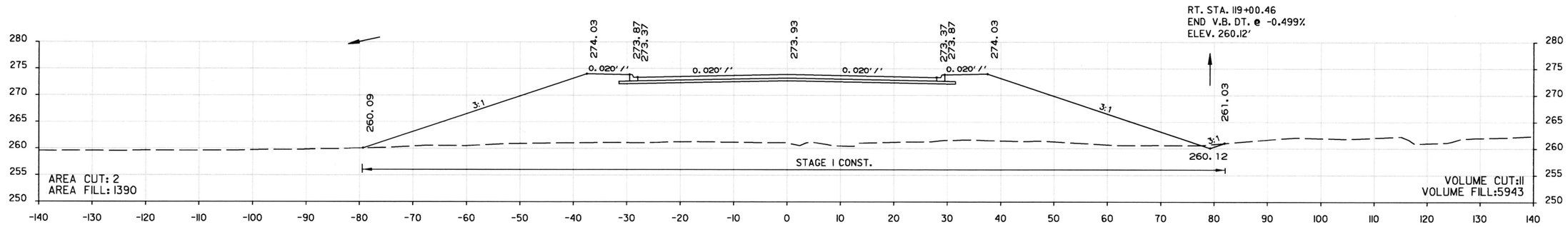
STA. 115+78.00 TO STA. 117+00.00
HIGHWAY 38

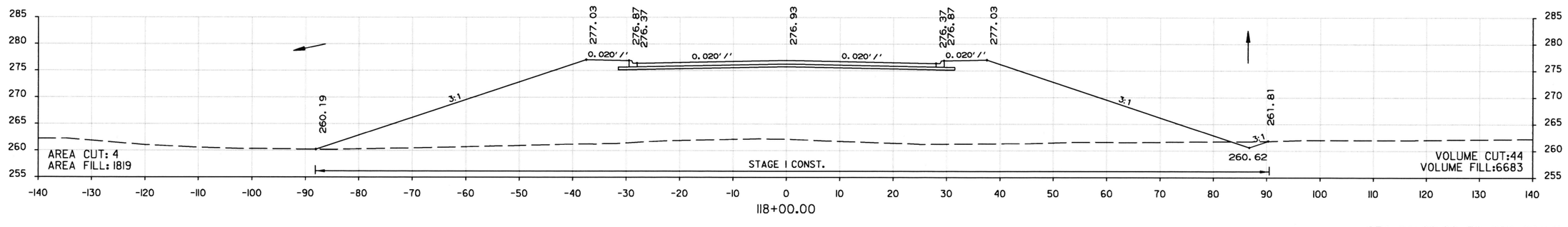
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		06II02	344	400

(2) CROSS SECTIONS





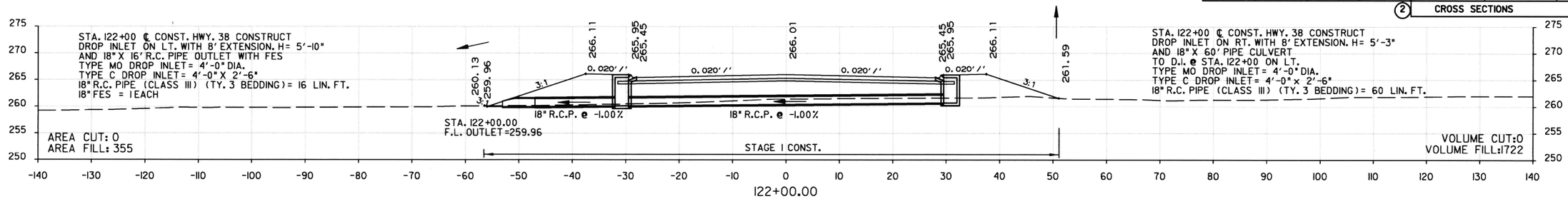


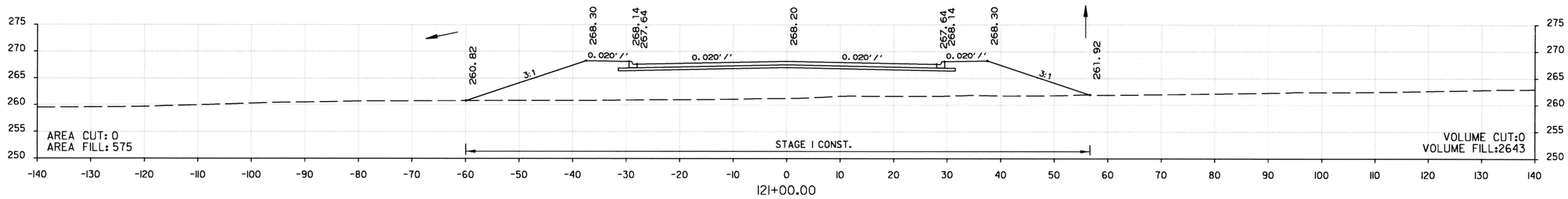


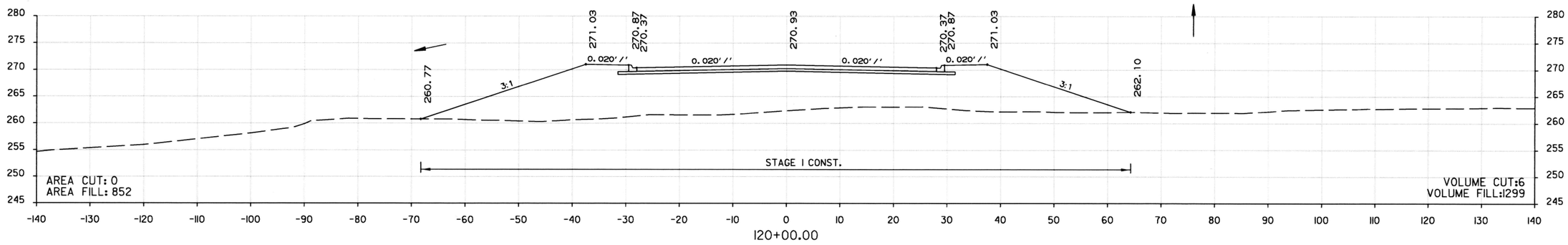
STA. 118+00.00 TO STA. 119+35.00
HIGHWAY 38

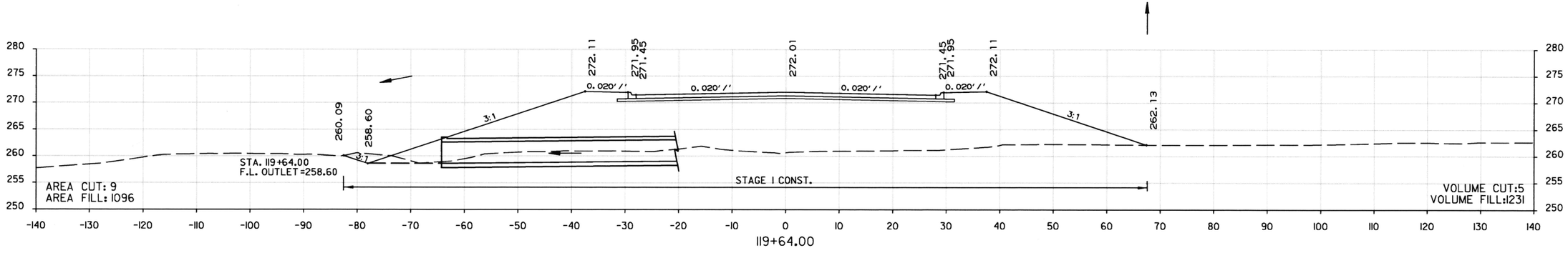
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		06II02	345	400

(2) CROSS SECTIONS





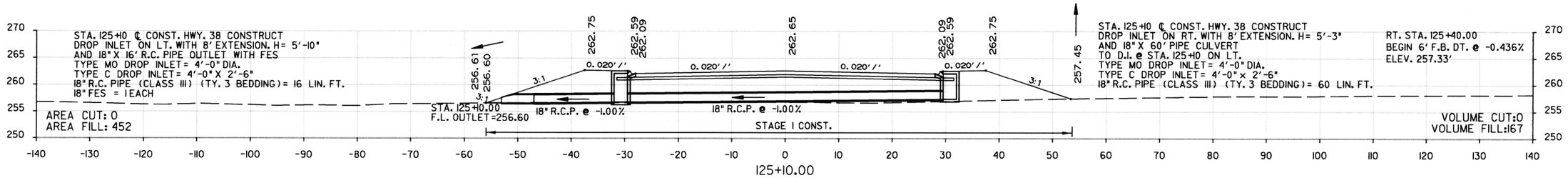




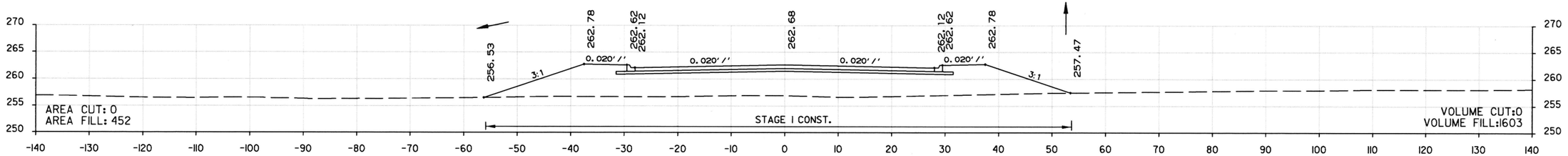
STA. II9+64.00 TO STA. I22+00.00
HIGHWAY 38

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.		06II02	346	400

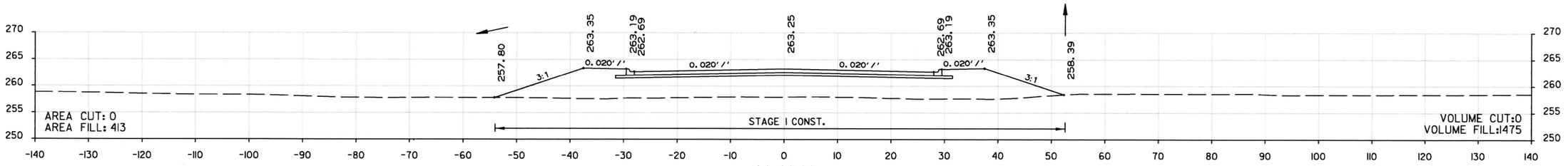
(2) CROSS SECTIONS



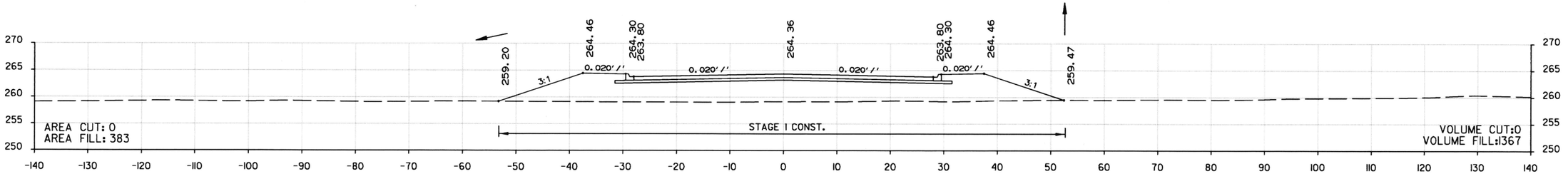
125+10.00



125+00.00



124+00.00

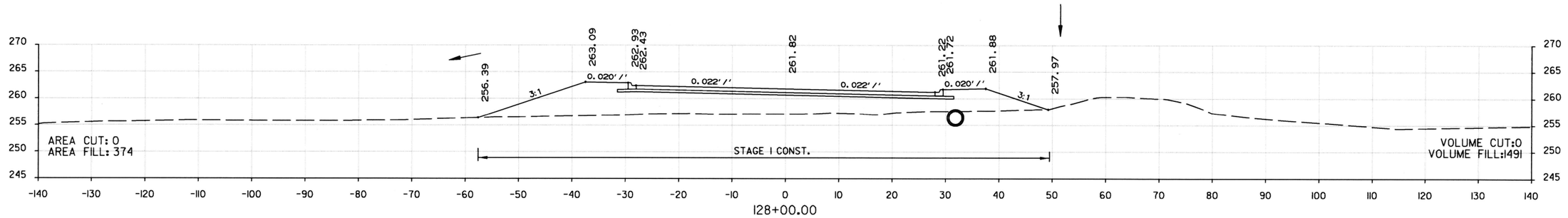


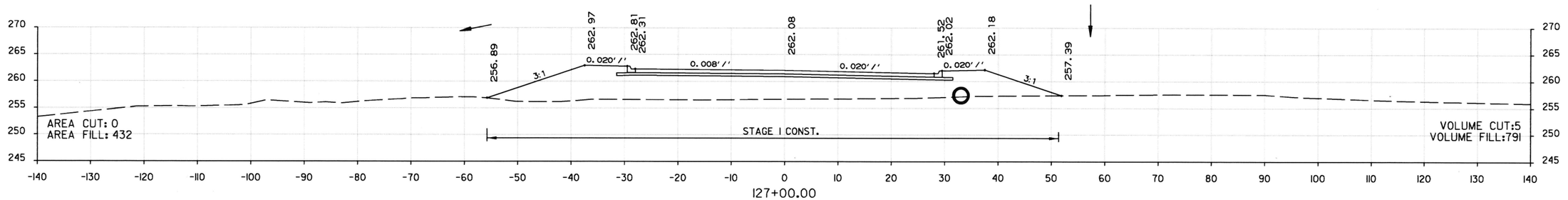
123+00.00

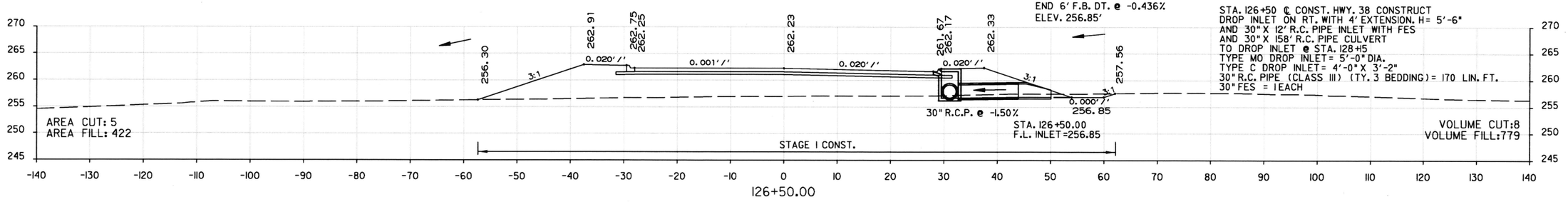
STA. 123+00.00 TO STA. 125+10.00
HIGHWAY 38

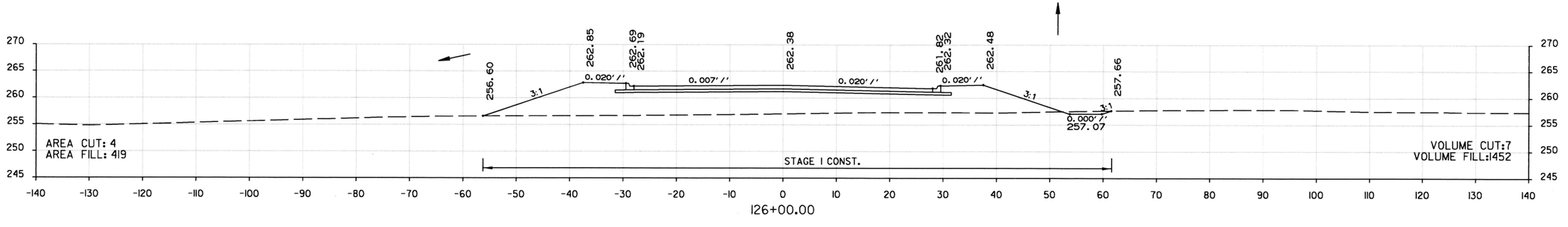
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	347	400

(2) CROSS SECTIONS





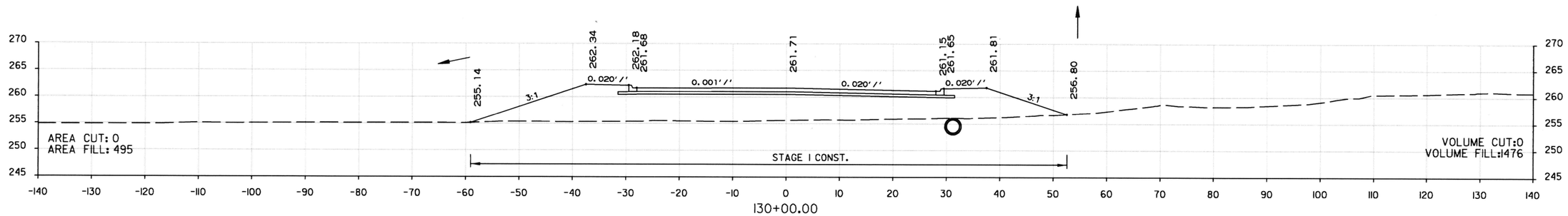




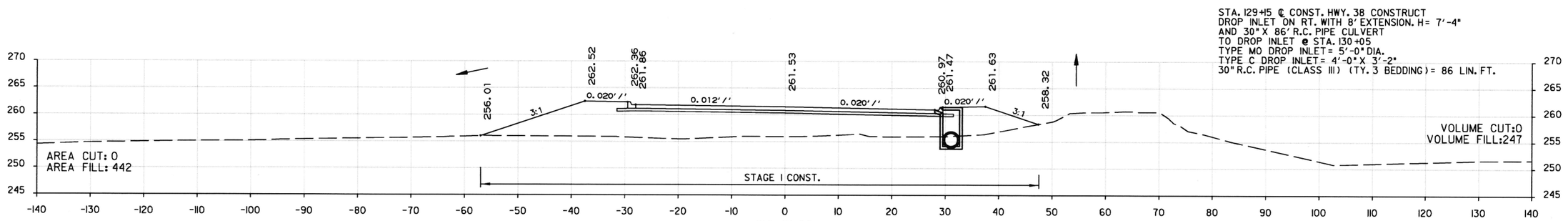
STA. 126+00.00 TO STA. 128+00.00
HIGHWAY 38

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.		061102	348	400

(2) CROSS SECTIONS

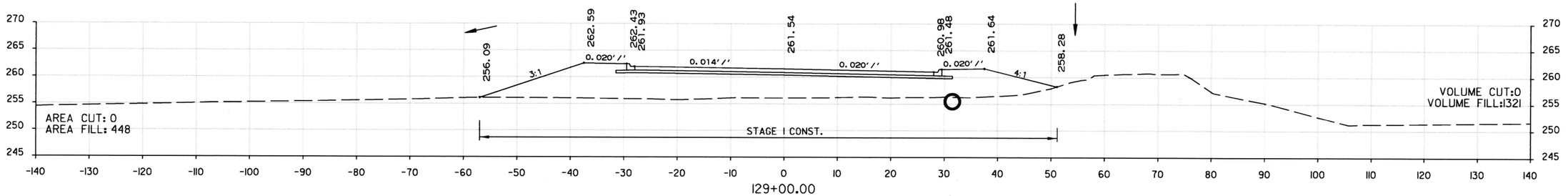


130+00.00

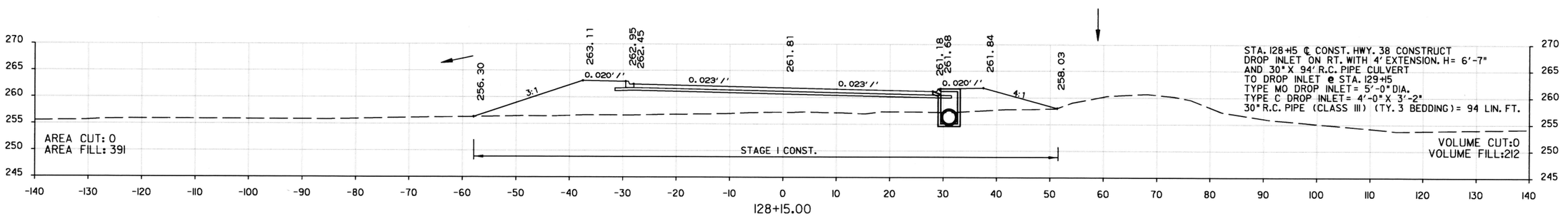


129+15.00

STA. 129+15 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON RT. WITH 8' EXTENSION. H= 7'-4"
AND 30" X 86' R.C. PIPE CULVERT
TO DROP INLET @ STA. 130+05
TYPE MO DROP INLET = 5'-0" DIA.
TYPE C DROP INLET = 4'-0" X 3'-2"
30" R.C. PIPE (CLASS III) (TY. 3 BEDDING) = 86 LIN. FT.



129+00.00



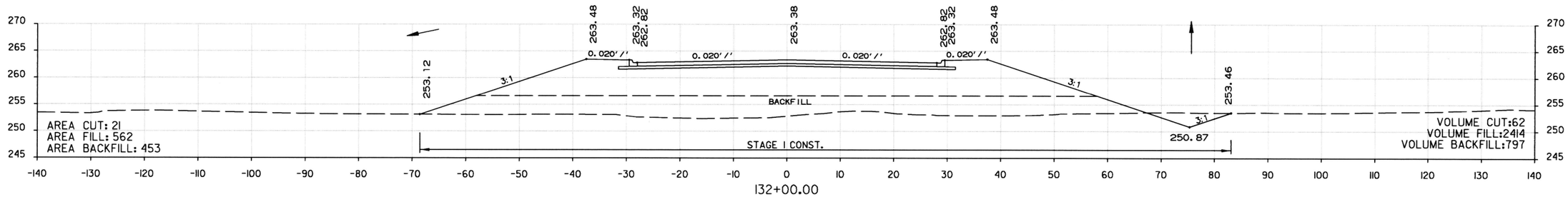
128+15.00

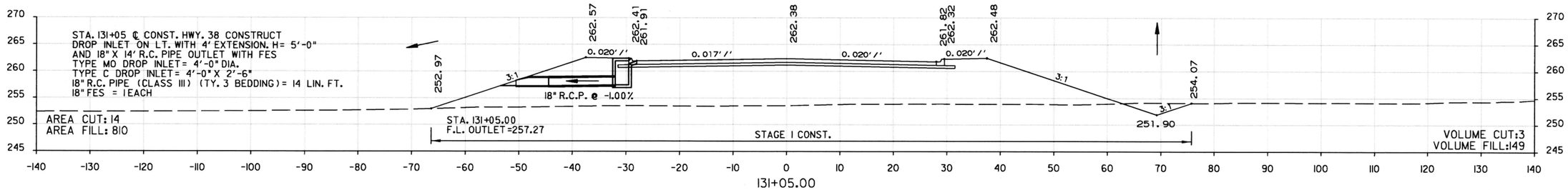
STA. 128+15 ℄ CONST. HWY. 38 CONSTRUCT
DROP INLET ON RT. WITH 4' EXTENSION. H= 6'-7"
AND 30" X 94' R.C. PIPE CULVERT
TO DROP INLET @ STA. 129+15
TYPE MO DROP INLET = 5'-0" DIA.
TYPE C DROP INLET = 4'-0" X 3'-2"
30" R.C. PIPE (CLASS III) (TY. 3 BEDDING) = 94 LIN. FT.

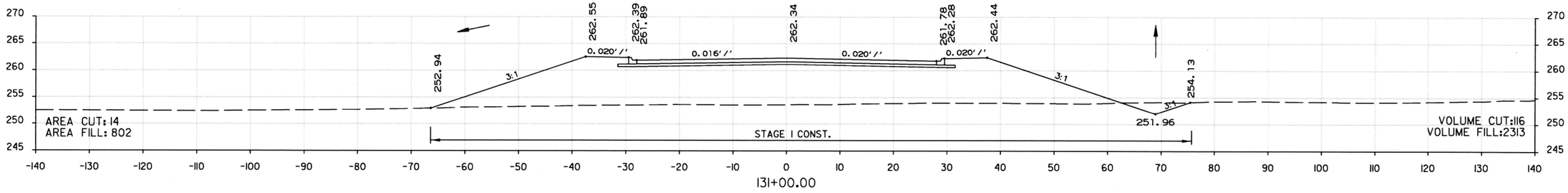
STA. 128+15.00 TO STA. 130+00.00
HIGHWAY 38

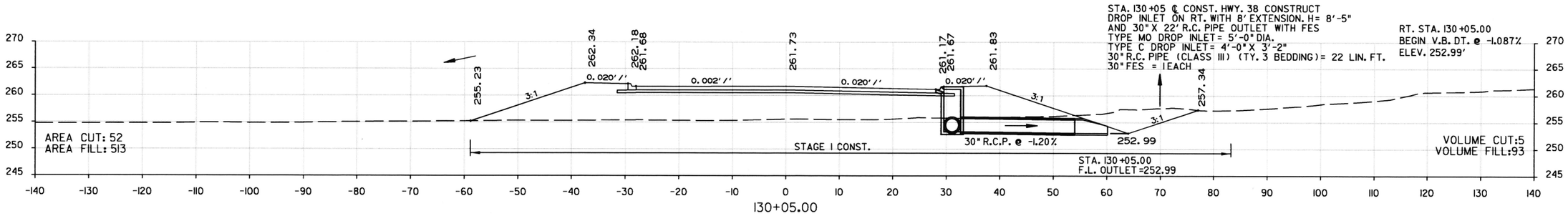
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	349	400

(2) CROSS SECTIONS





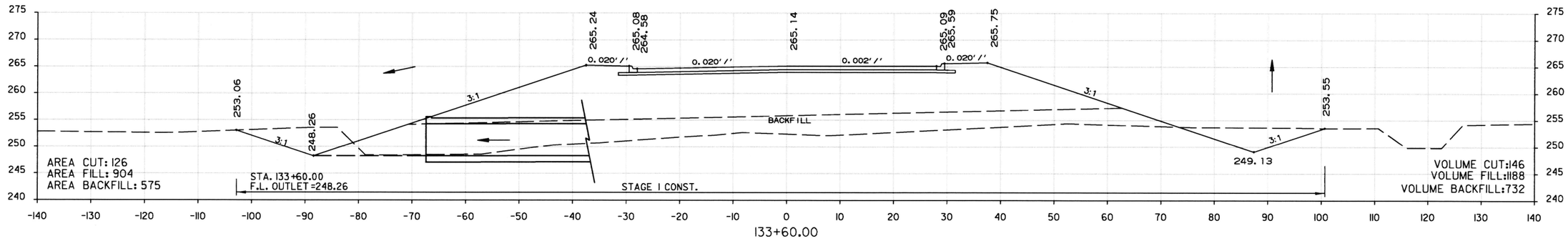


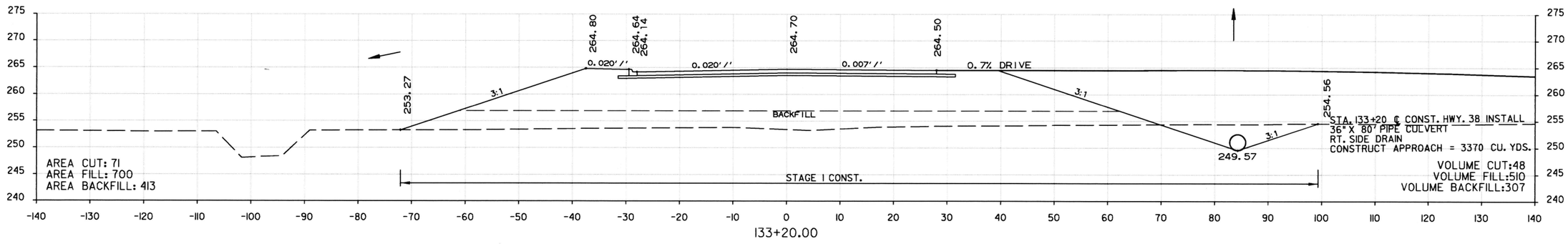


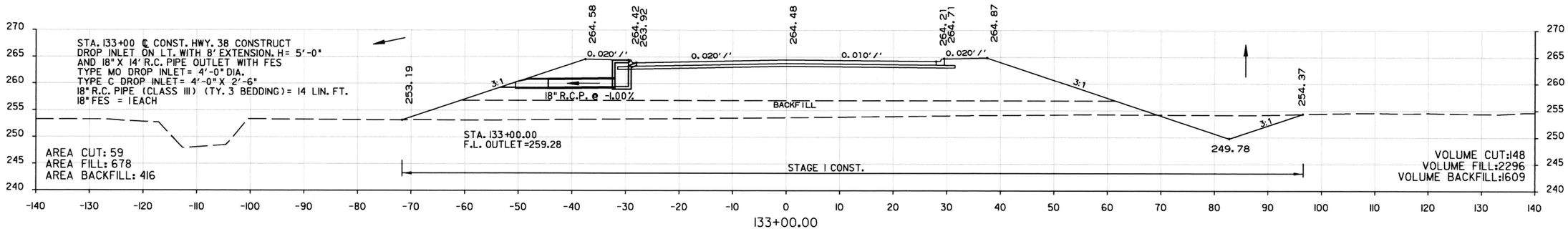
STA. 130+05.00 TO STA. 132+00.00
HIGHWAY 38

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.		061102	350	400

(2) CROSS SECTIONS

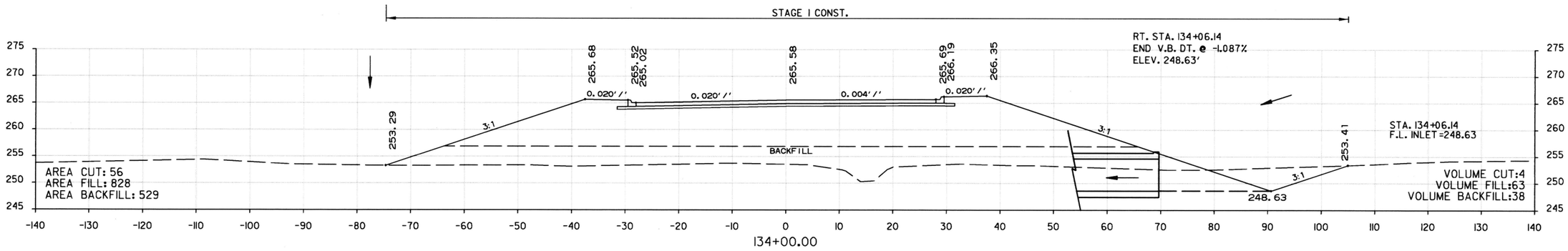


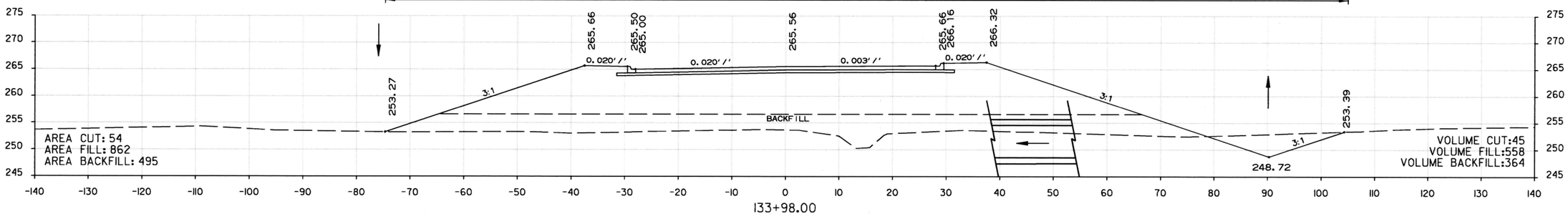


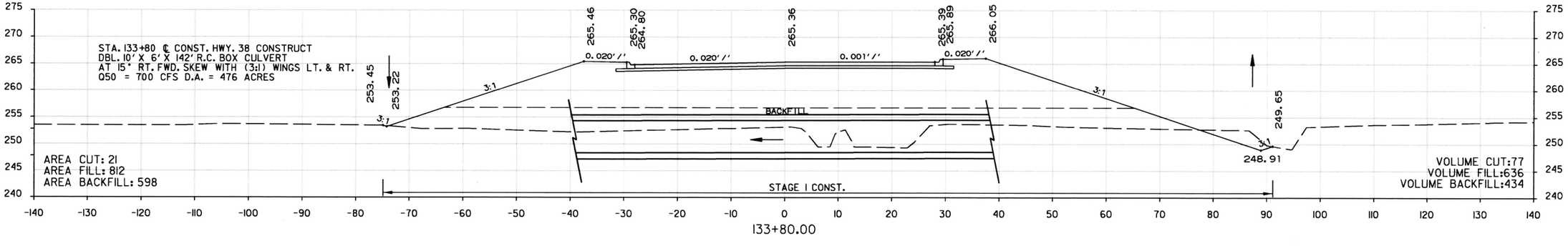


STA. 133+00.00 TO STA. 133+60.00
HIGHWAY 38

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.		061102	351	400
				(2)	CROSS SECTIONS			



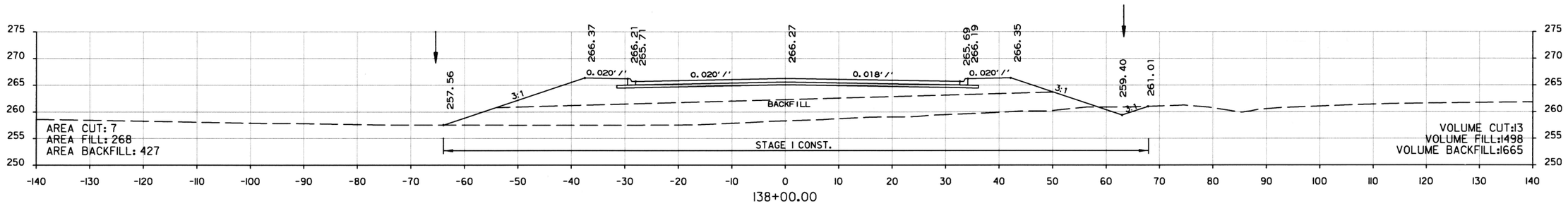




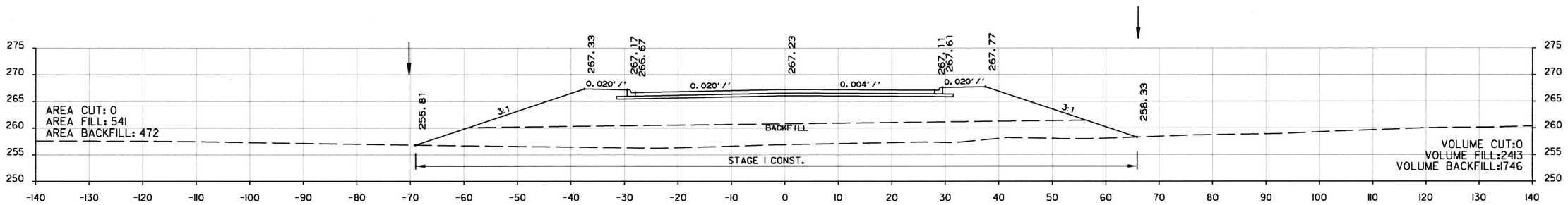
STA. 133+80.00 TO STA. 134+00.00
HIGHWAY 38

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
10/25/2016				6	ARK.			
				JOB NO.		061102	352	400

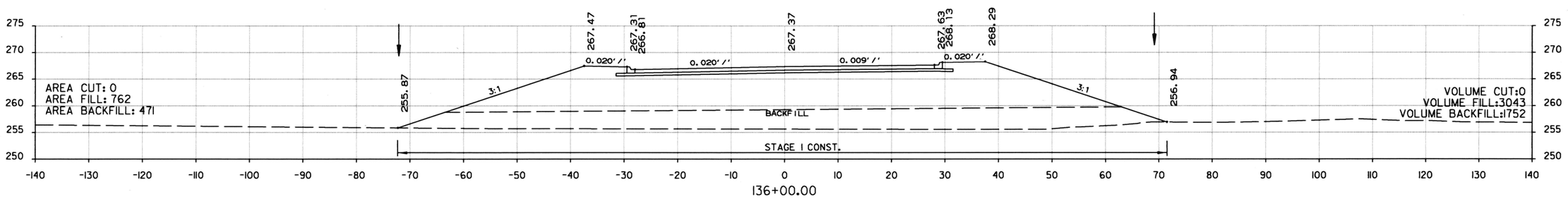
(2) CROSS SECTIONS



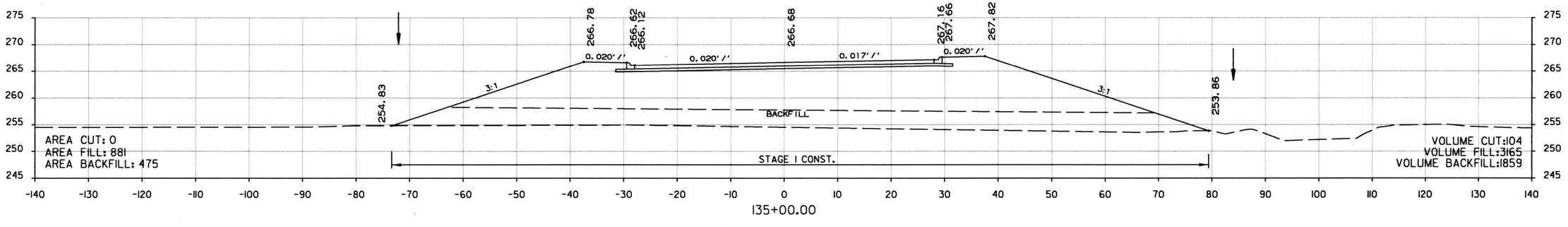
138+00.00



137+00.00



136+00.00

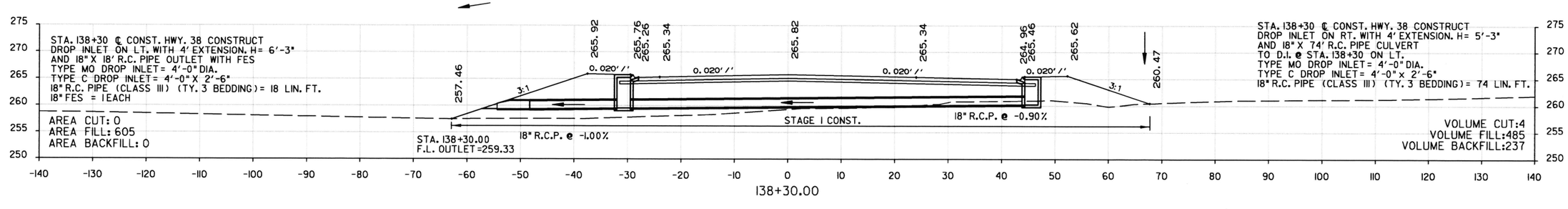


135+00.00

STA. 135+00.00 TO STA. 138+00.00
HIGHWAY 38

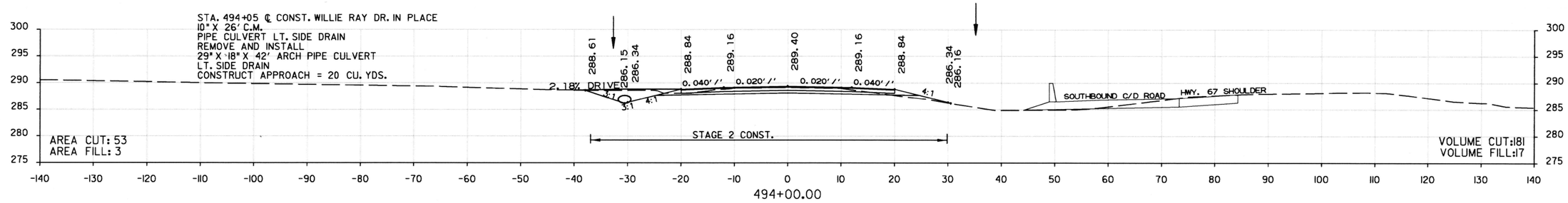
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	353	400
				(2)	CROSS SECTIONS			

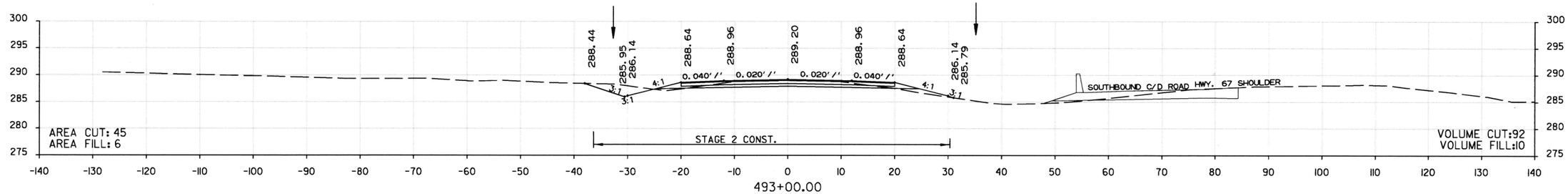
STA. 139+06.90 END HWY. 38

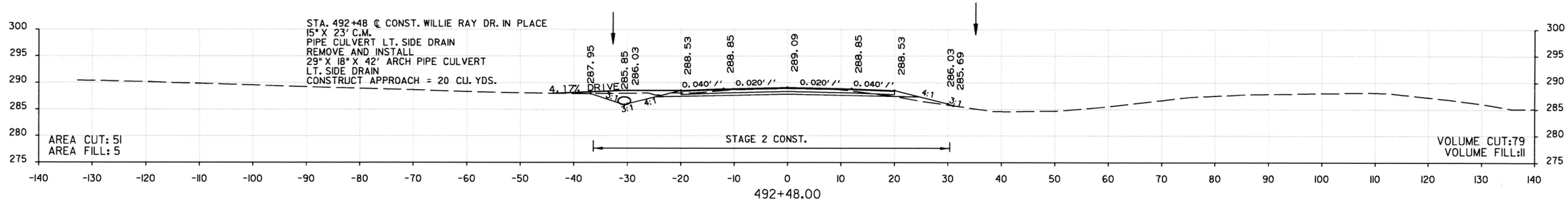


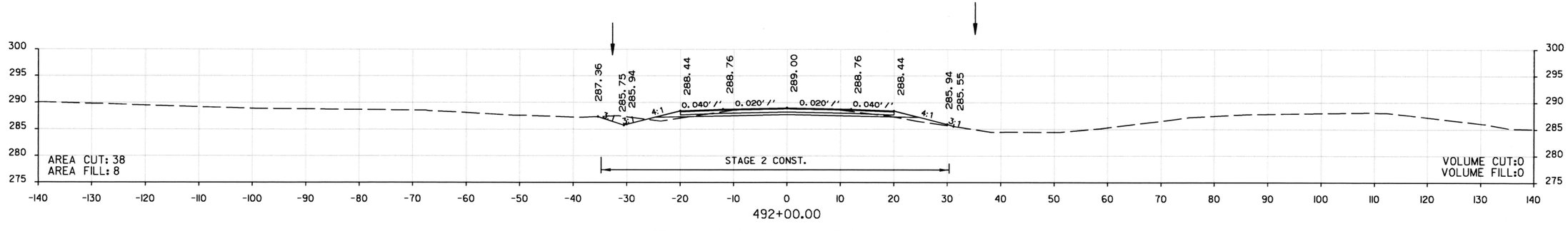
STA. 138+30.00 TO STA. 138+30.00
HIGHWAY 38

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.		061102	354	400
				(2)	CROSS SECTIONS			









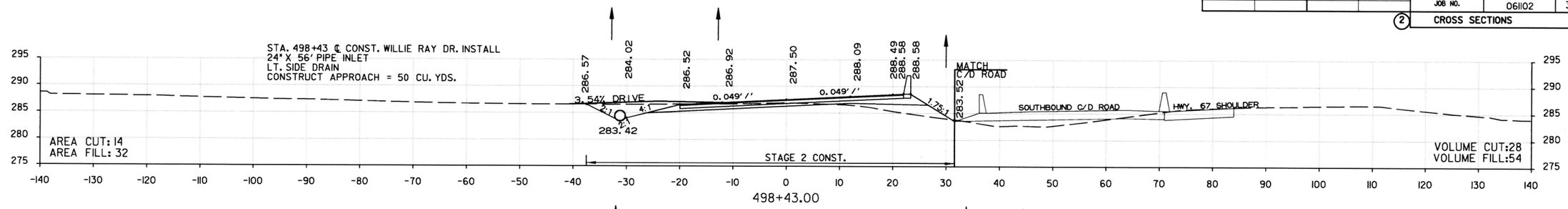
STA. 492+00.00 BEGIN WILLIE RAY DRIVE
END 100' PAVEMENT TRANSITION

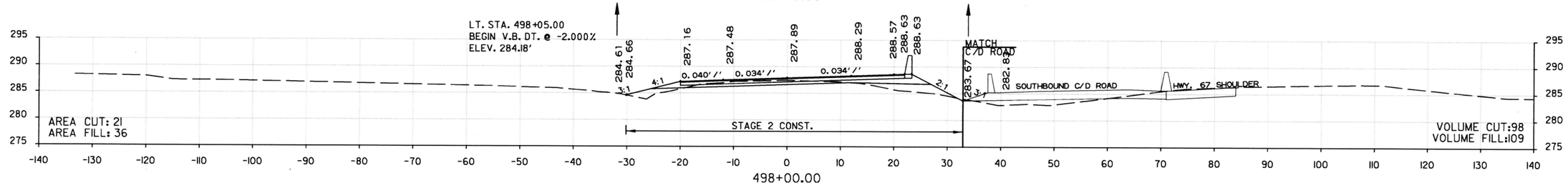
STA. 491+00.00
BEGIN 100' PAVEMENT TRANSITION

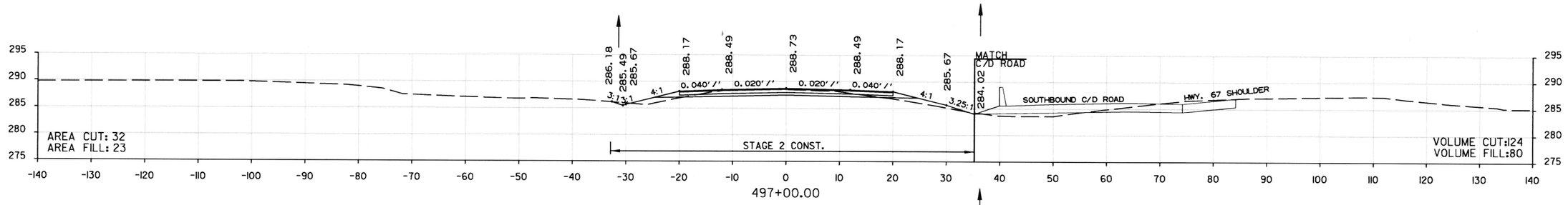
STA. 492+00.00 TO STA. 494+00.00
WILLIE RAY DRIVE

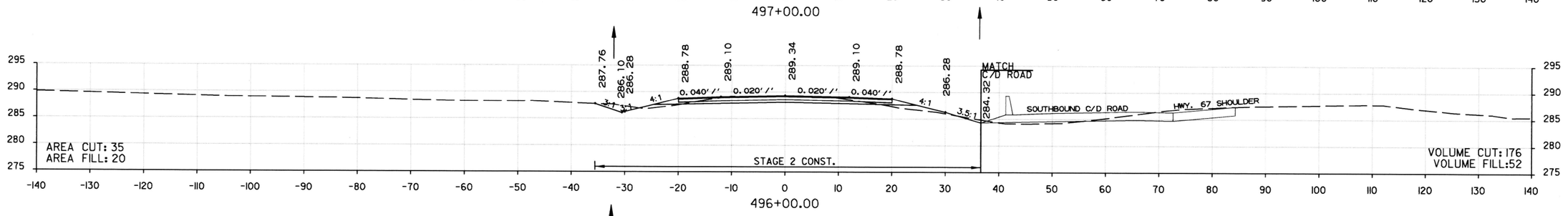
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	355	400

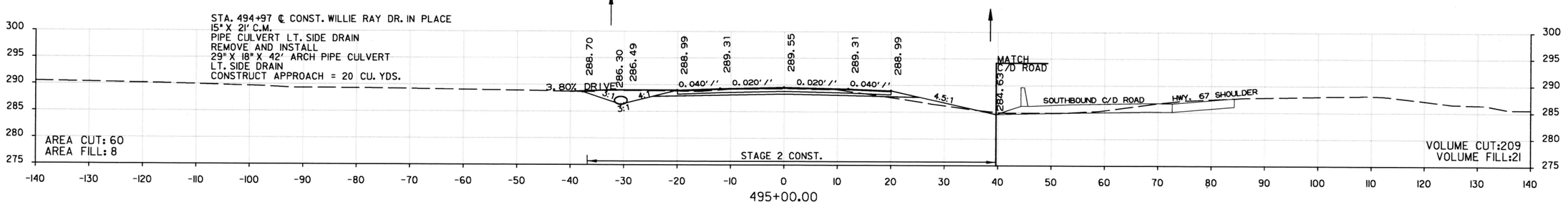
(2) CROSS SECTIONS







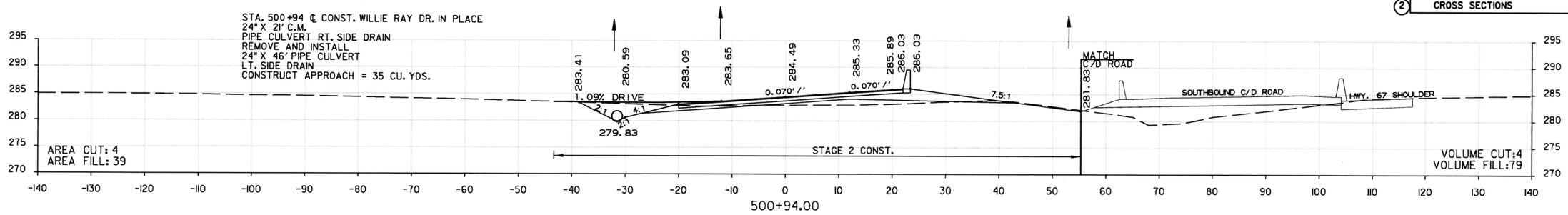


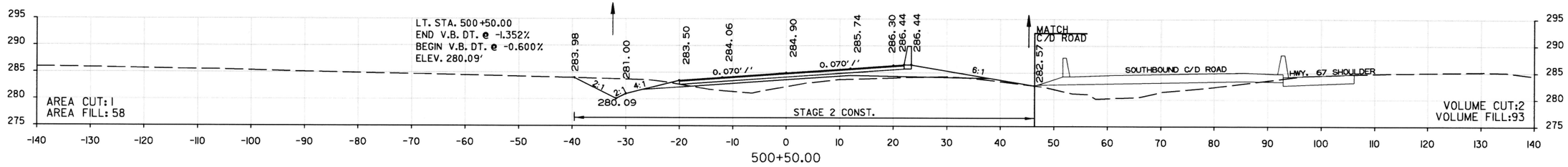


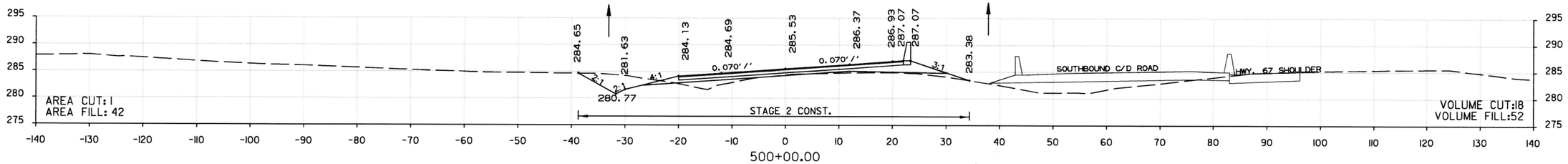
STA. 495+00.00 TO STA. 498+43.00
WILLIE RAY DRIVE

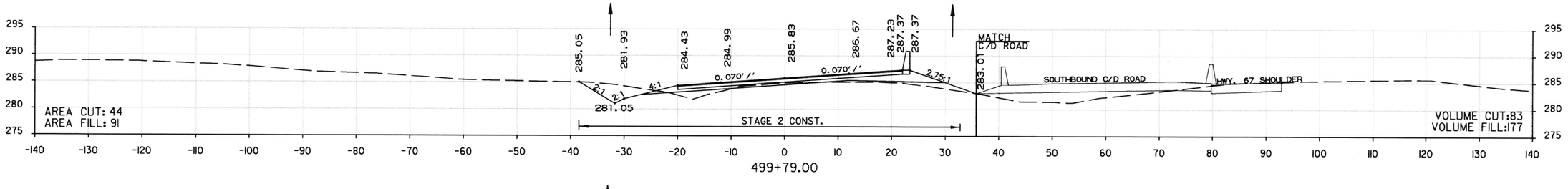
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	356	400

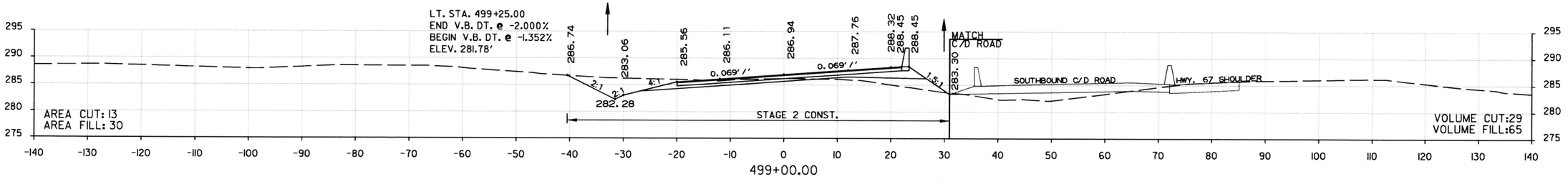
(2) CROSS SECTIONS







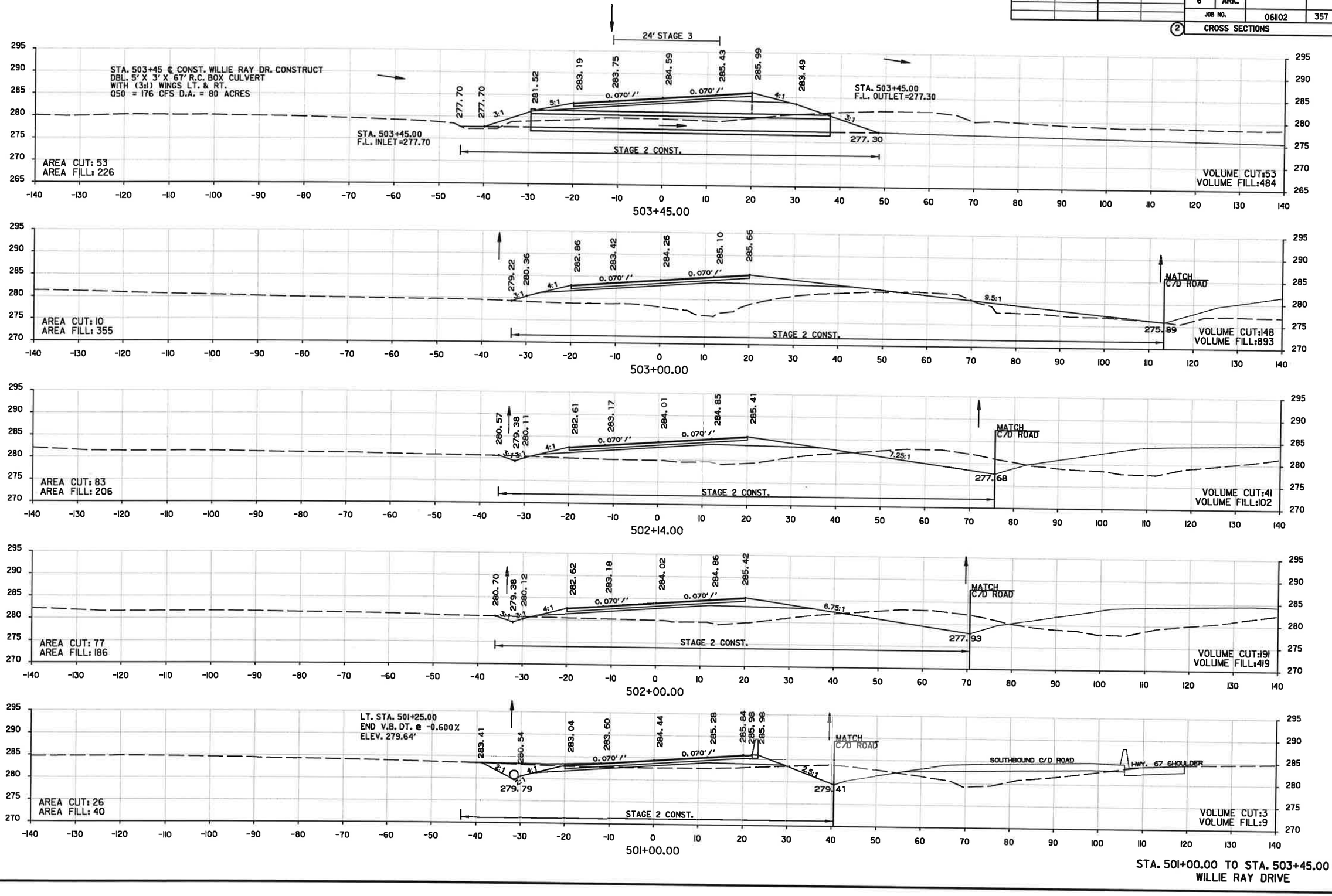




STA. 499+00.0 TO STA. 500+94.00
WILLIE RAY DRIVE

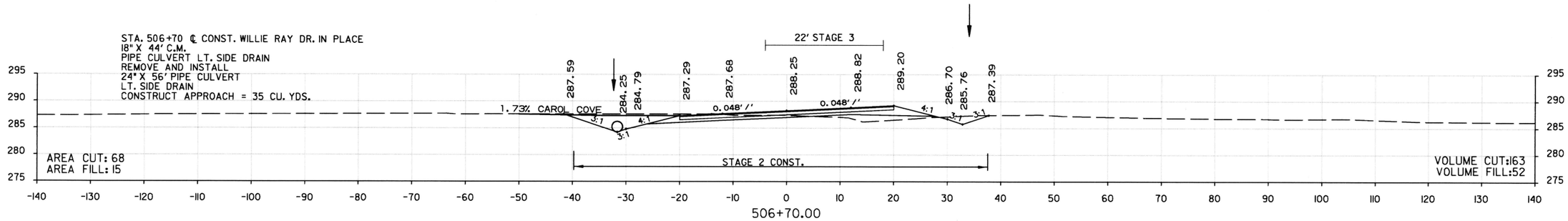
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11/28/2016				6	ARK.			
				JOB NO.		061102	357	400

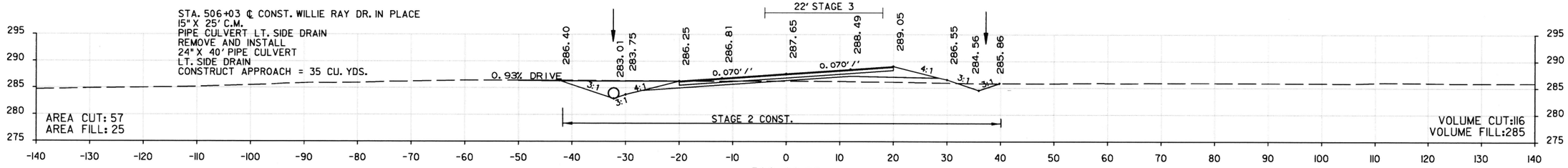
(2) CROSS SECTIONS

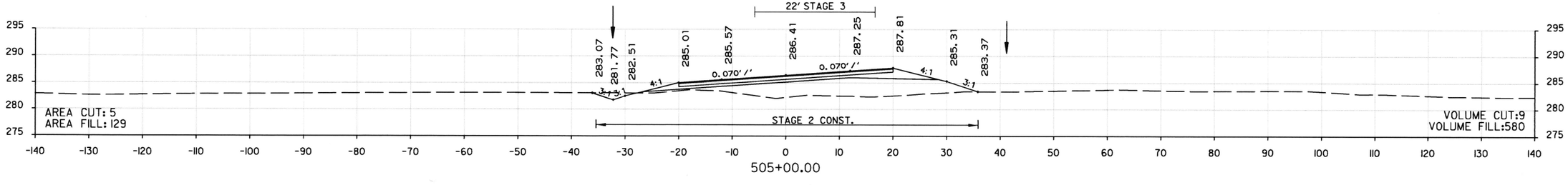


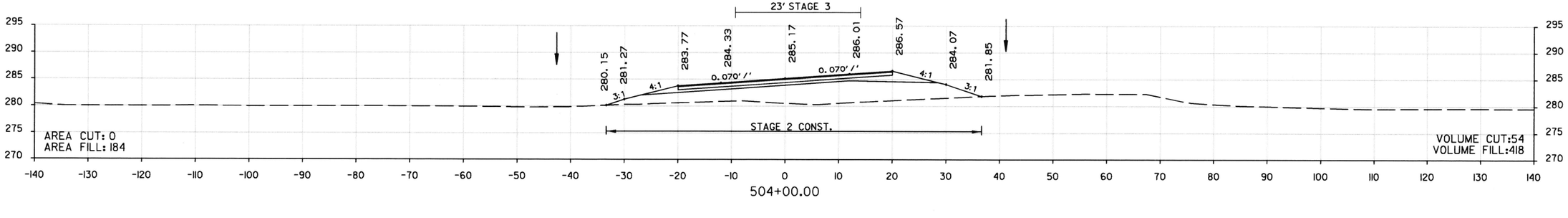
STA. 501+00.00 TO STA. 503+45.00
WILLIE RAY DRIVE

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.		061102	358	400
				(2)	CROSS SECTIONS			





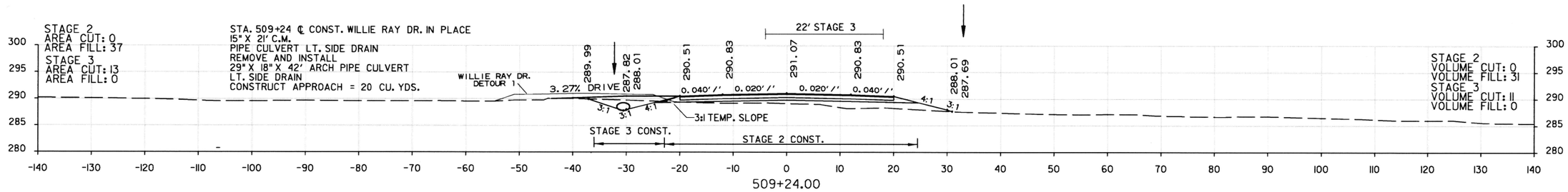


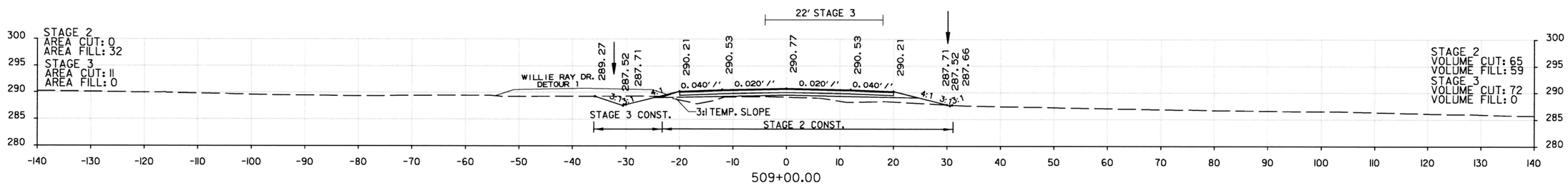


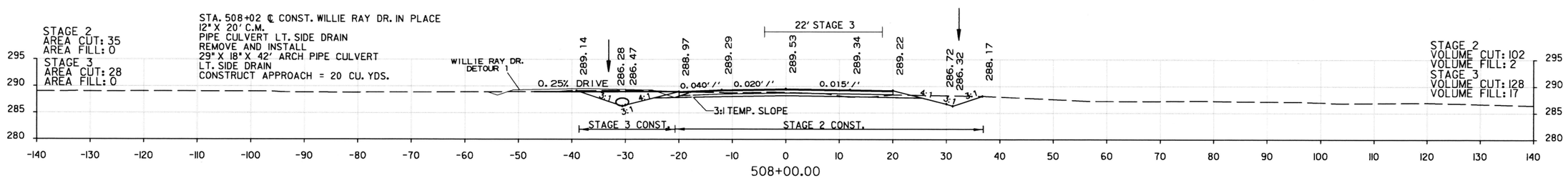
STA. 504+00.00 TO STA. 506+70.00
WILLIE RAY DRIVE

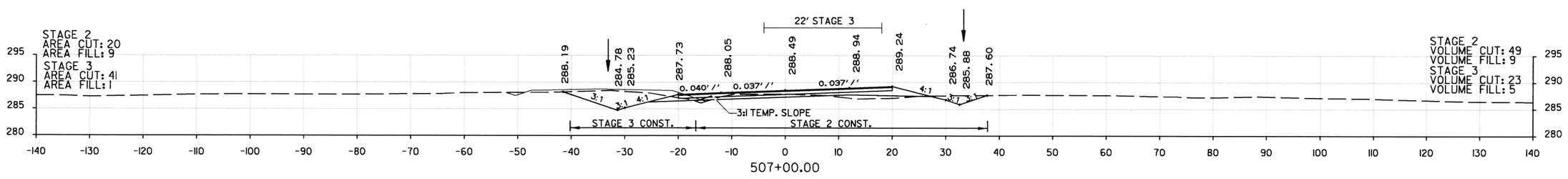
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	359	400

(2) CROSS SECTIONS



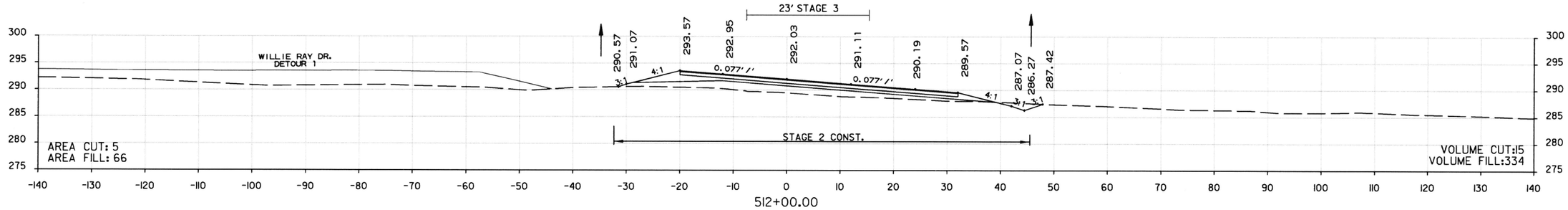




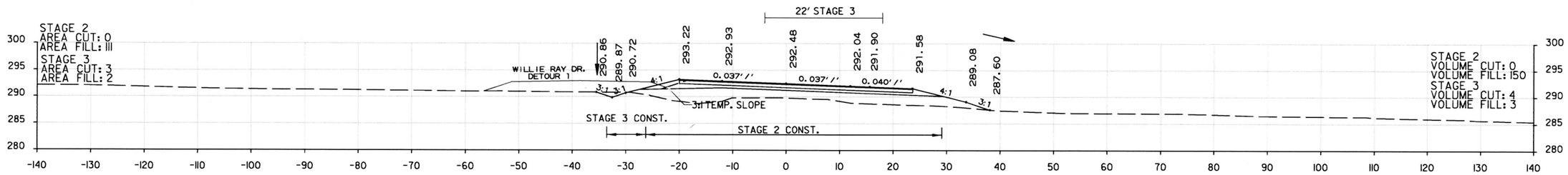


STA. 507+00.00 TO STA. 509+24.00
WILLIE RAY DRIVE

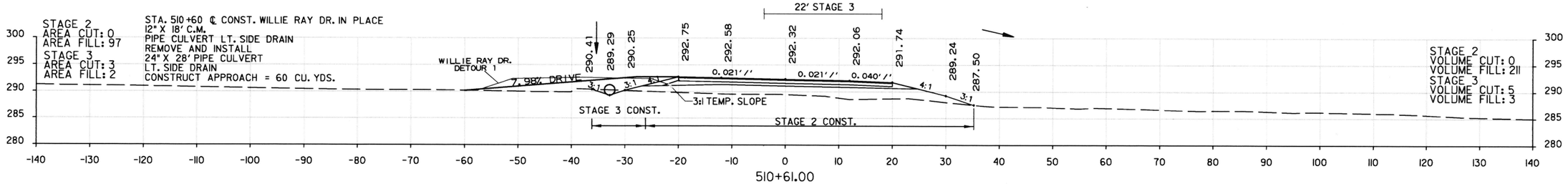
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	360	400
				(2)	CROSS SECTIONS			



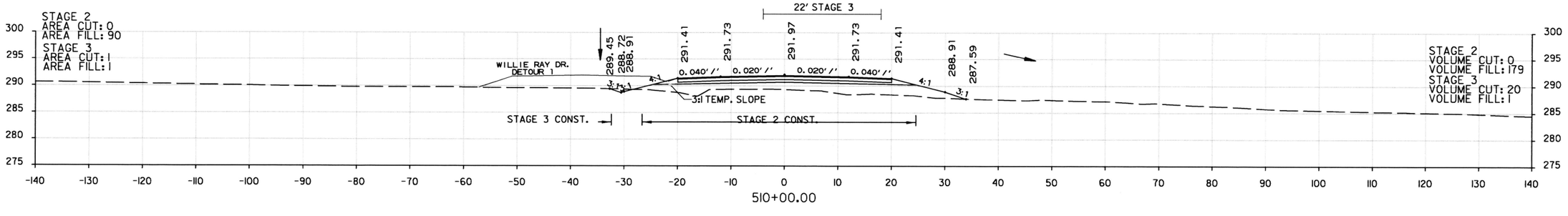
512+00.00



511+00.00



510+61.00

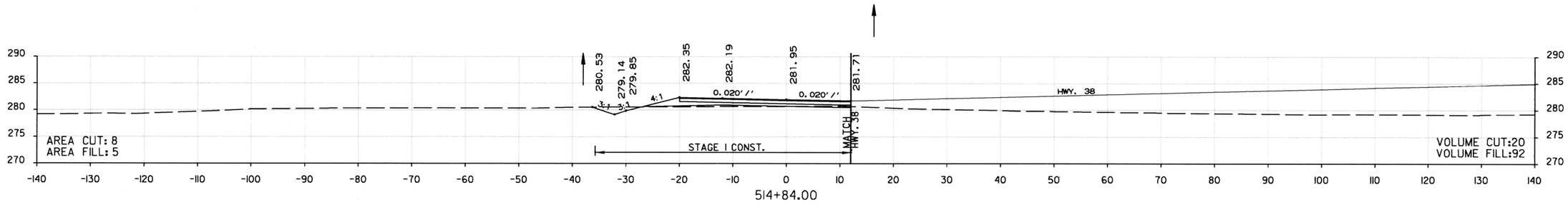


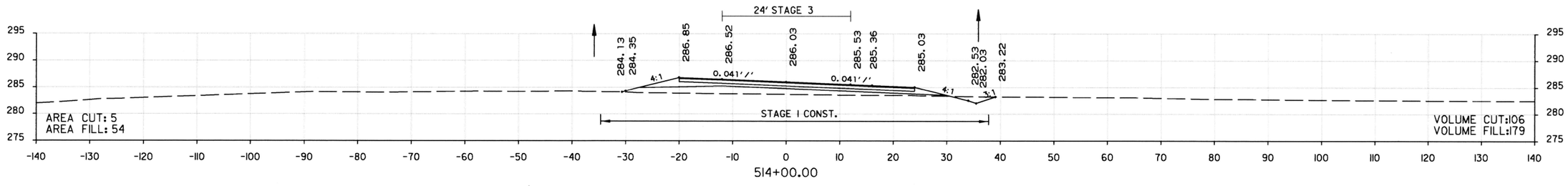
510+00.00

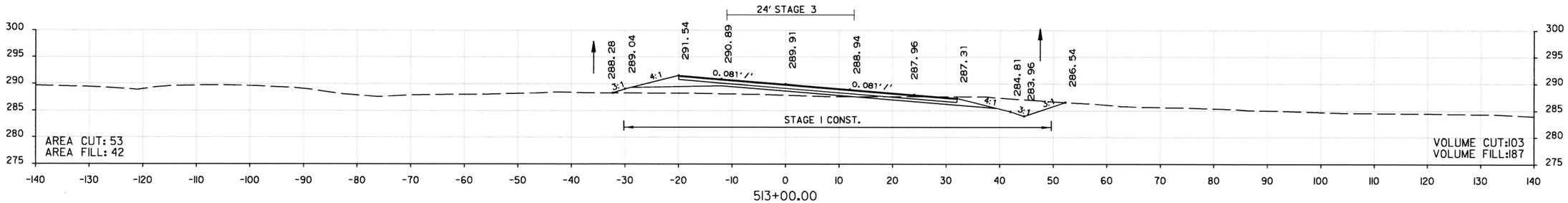
STA. 510+00.00 TO STA. 512+00.00
WILLIE RAY DRIVE

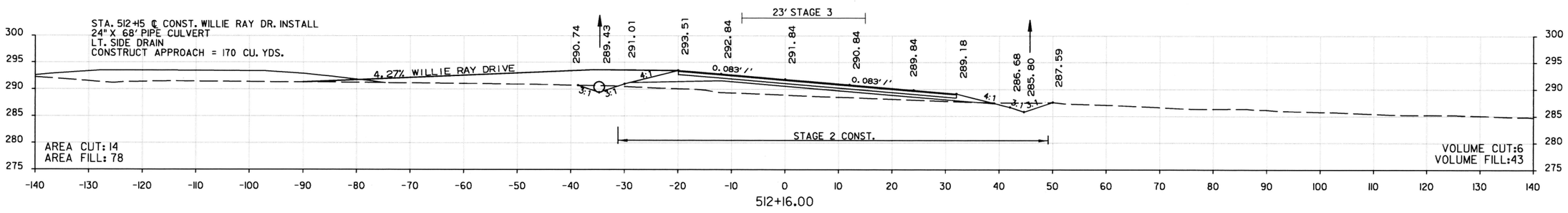
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		06102	361	400

(2) CROSS SECTIONS





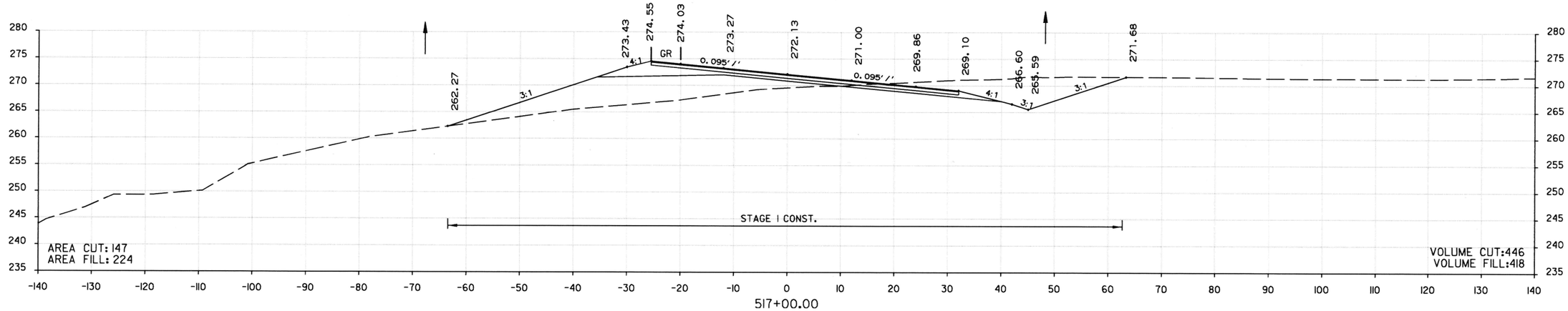


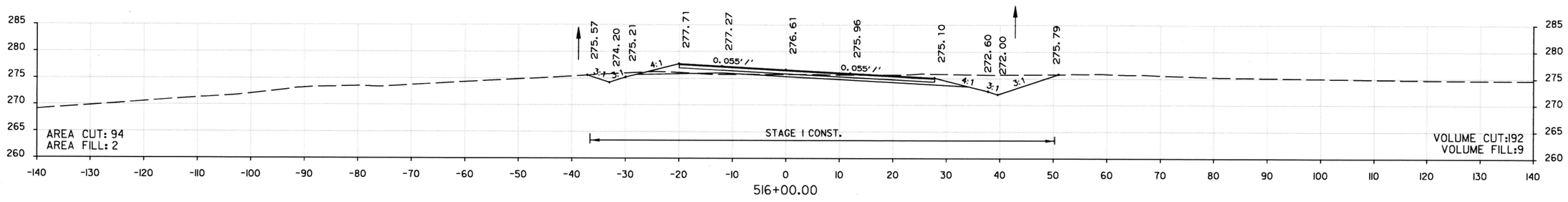


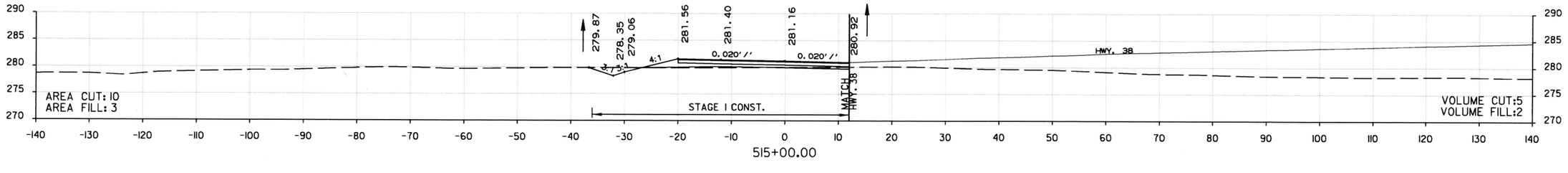
STA. 512+16.00 TO STA. 514+84.00
WILLIE RAY DRIVE

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.		061102	362	400

(2) CROSS SECTIONS



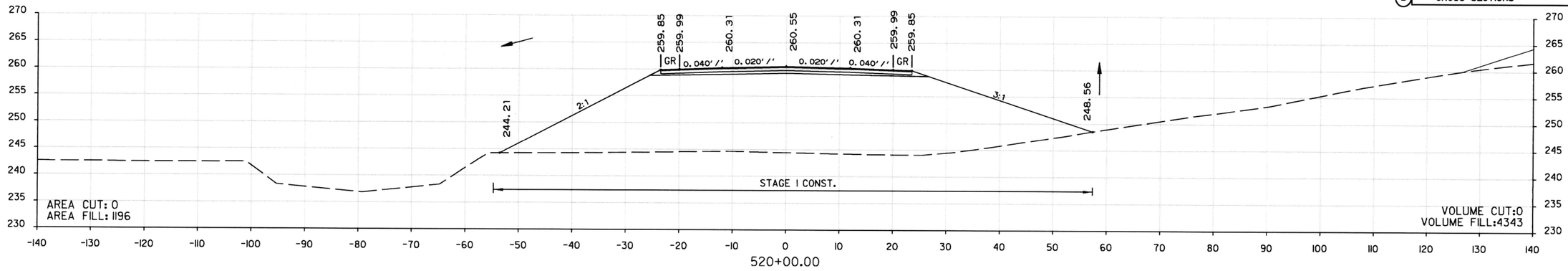


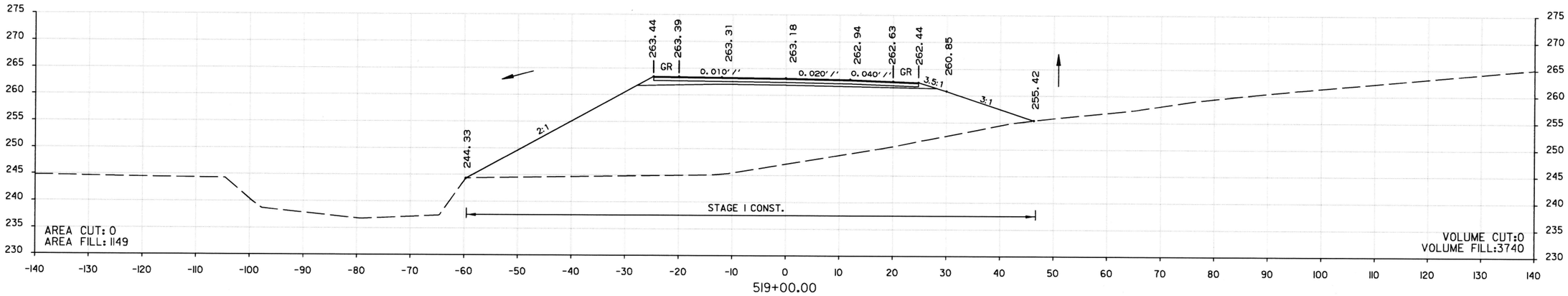


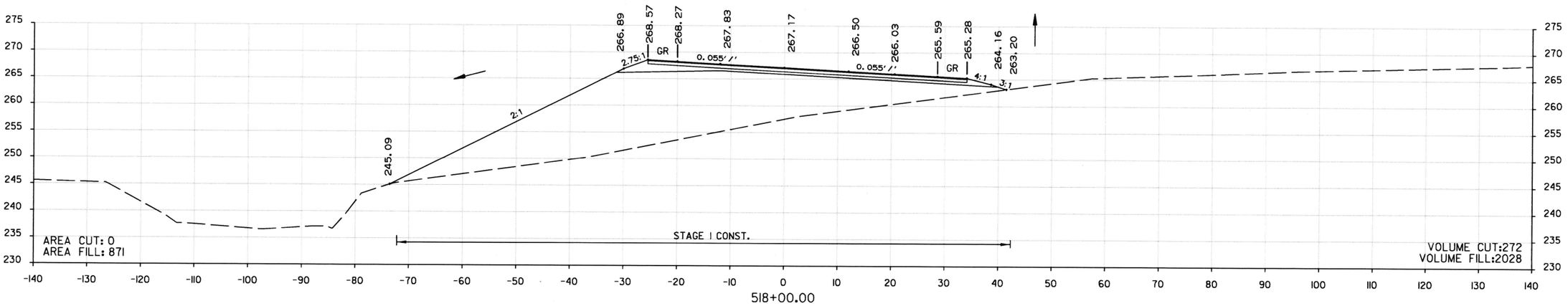
STA. 515+00.00 TO STA. 517+00.00
WILLIE RAY DRIVE

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.		061102	363	400

(2) CROSS SECTIONS

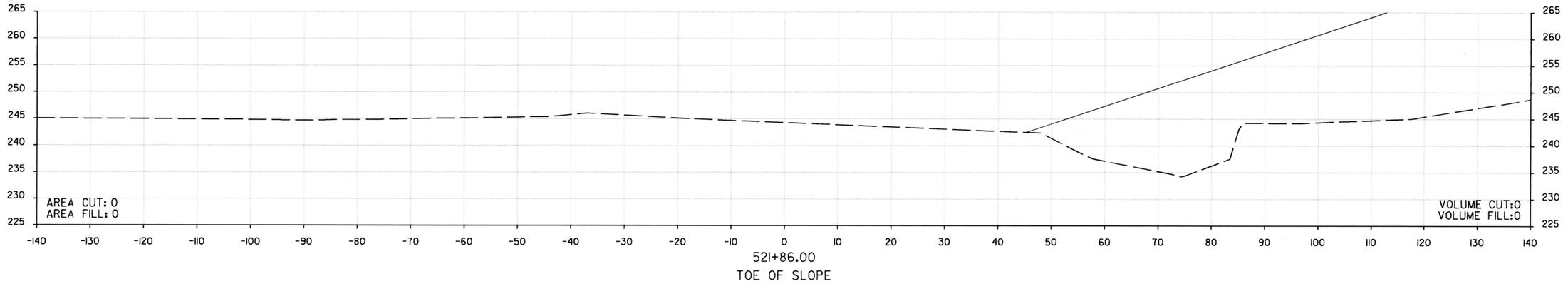




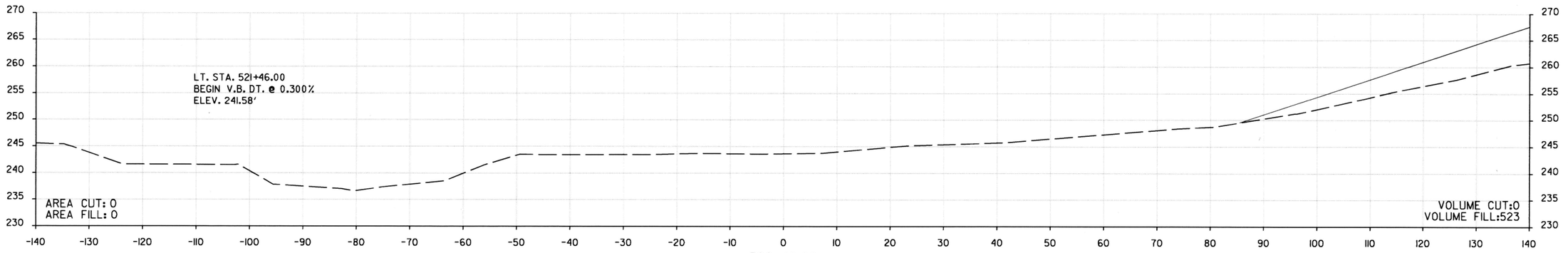


STA. 518+00.00 TO STA. 520+00.00
WILLIE RAY DRIVE

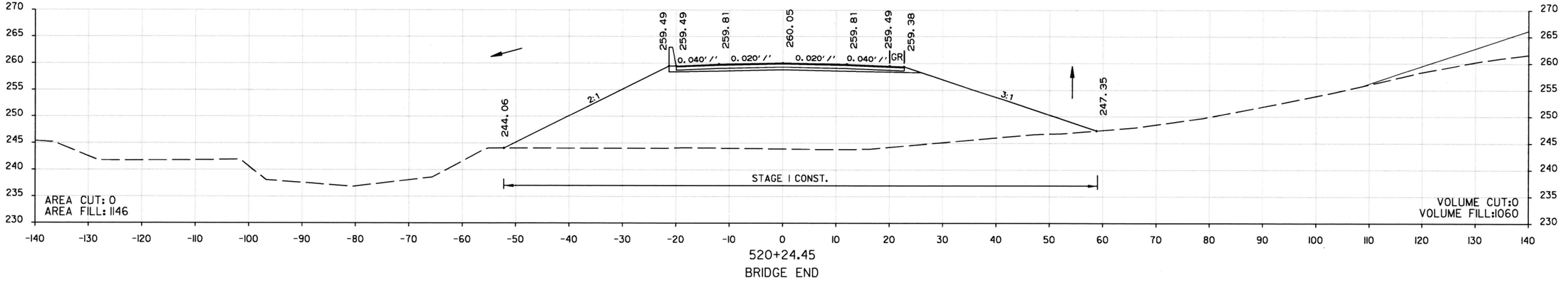
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	364	400
				(2)	CROSS SECTIONS			



521+86.00
TOE OF SLOPE



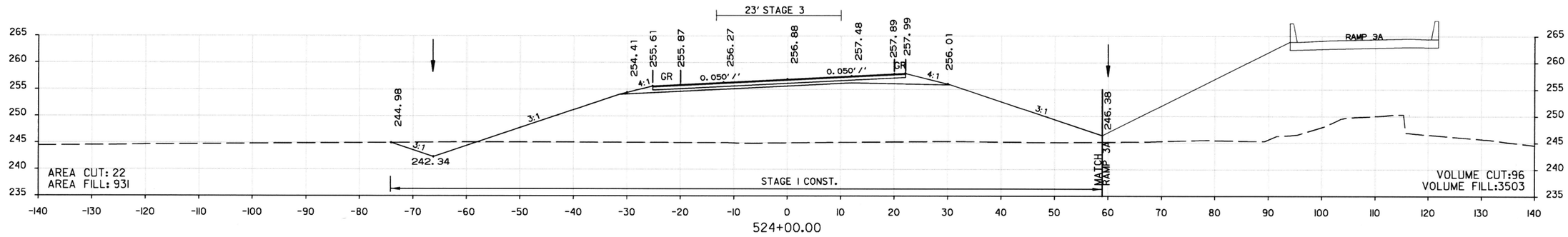
520+48.00
TOE OF SLOPE

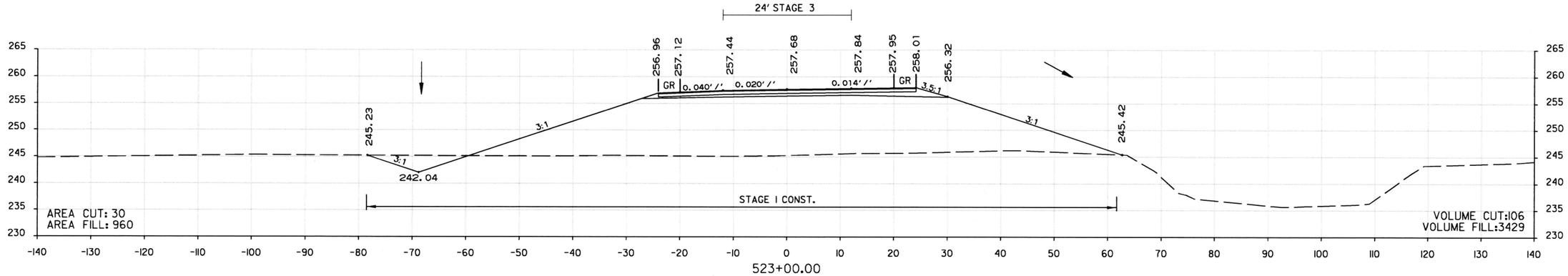


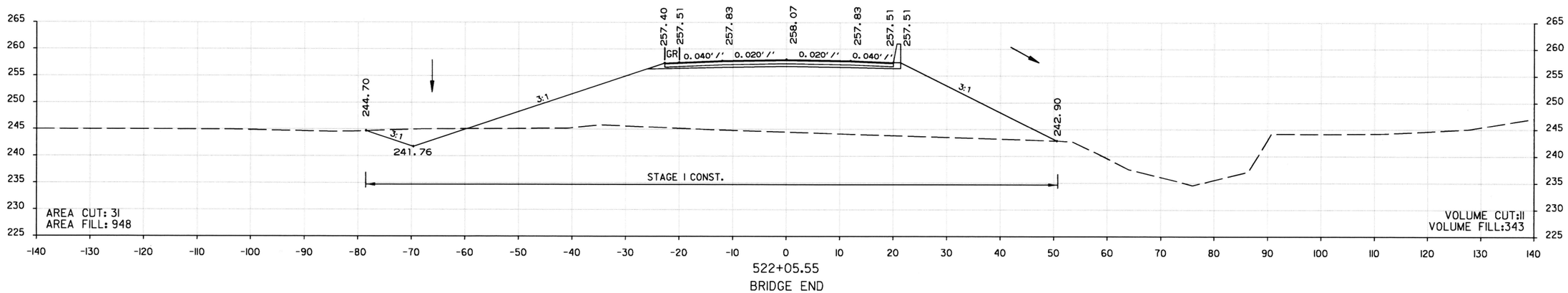
520+24.45
BRIDGE END

STA. 520+24.45 TO STA. 521+86.00
WILLIE RAY DRIVE

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.		06II02	365	400
				(2)	CROSS SECTIONS			



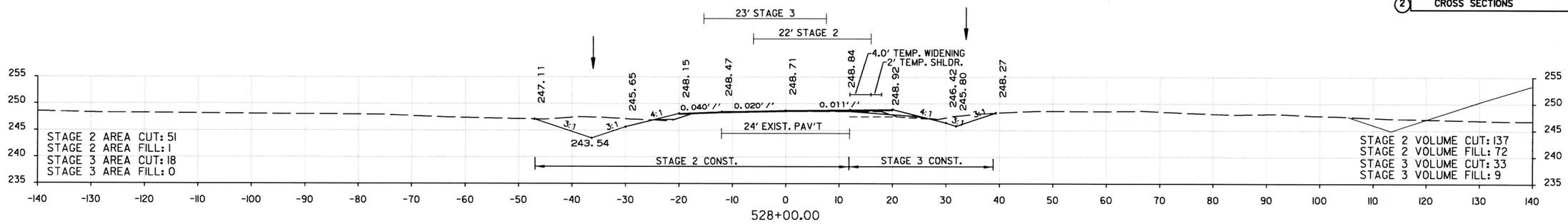


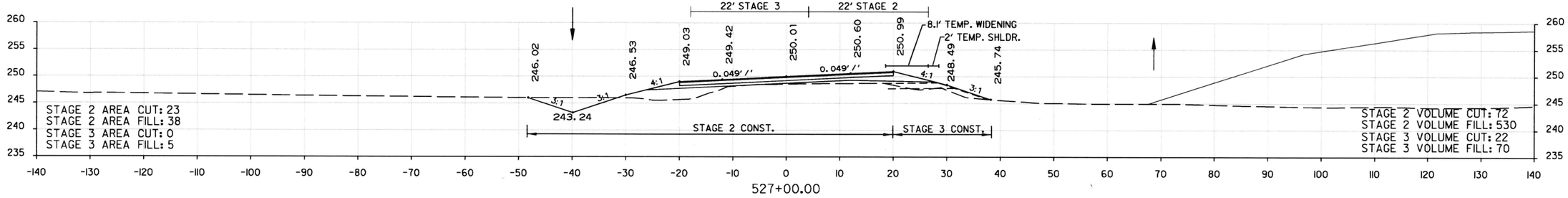


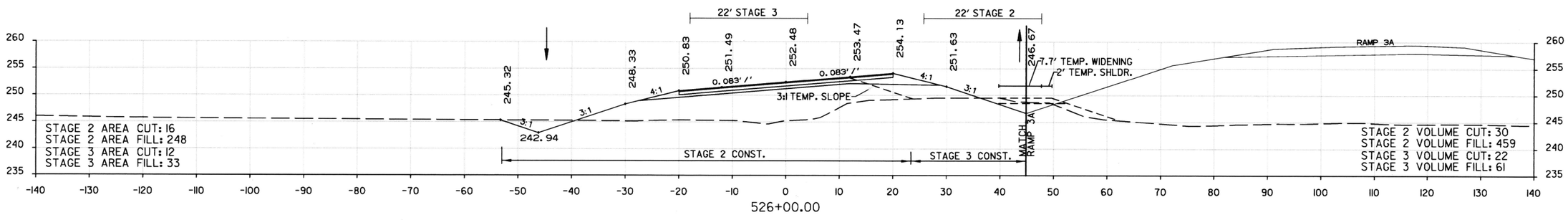
STA. 522+05.55 TO STA. 524+00.00
WILLIE RAY DRIVE

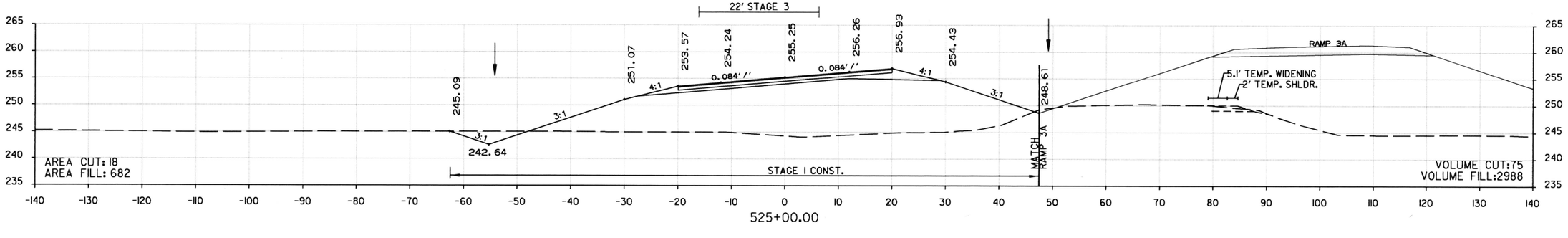
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	366	400

(2) CROSS SECTIONS







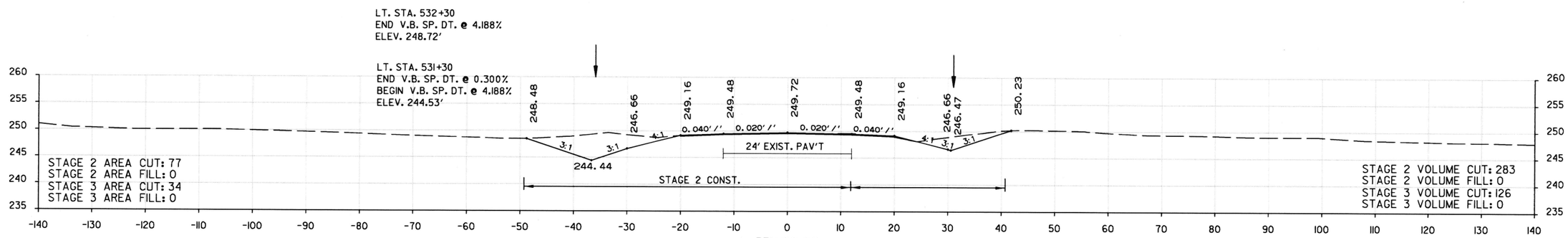


STA. 525+00.00 TO STA. 528+00.00
WILLIE RAY DRIVE

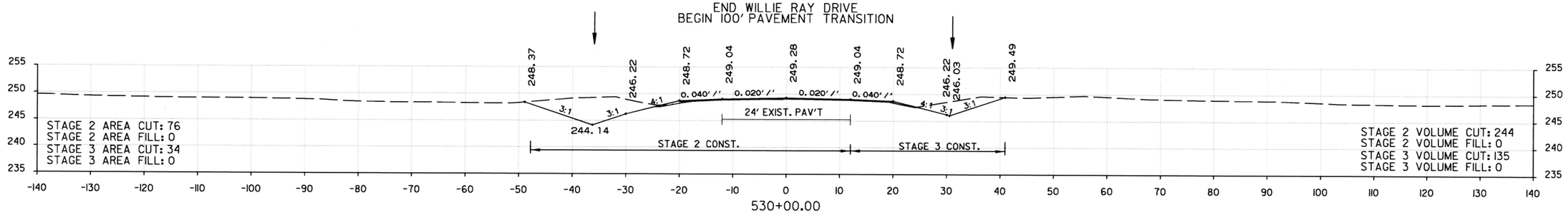
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	367	400
				(2)	CROSS SECTIONS			

STA. 532+00.00
END 100' PAVEMENT TRANSITION

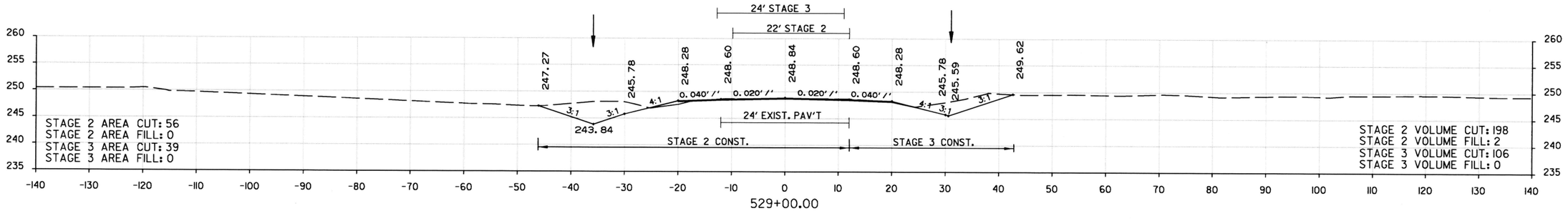
STA. 531+00.00 END WILLIE RAY DRIVE
BEGIN 100' PAVEMENT TRANSITION



531+00.00
END WILLIE RAY DRIVE
BEGIN 100' PAVEMENT TRANSITION



530+00.00

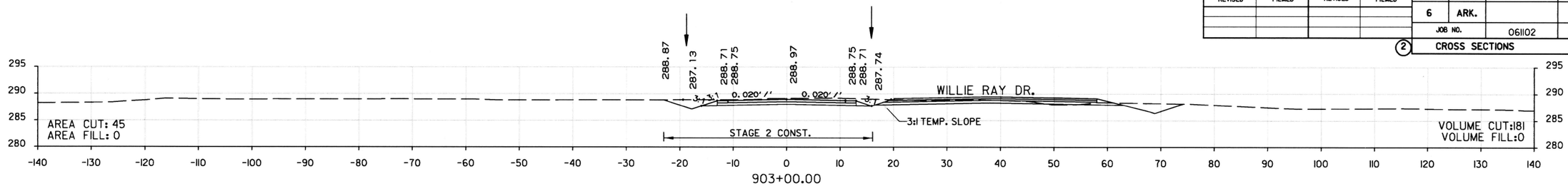


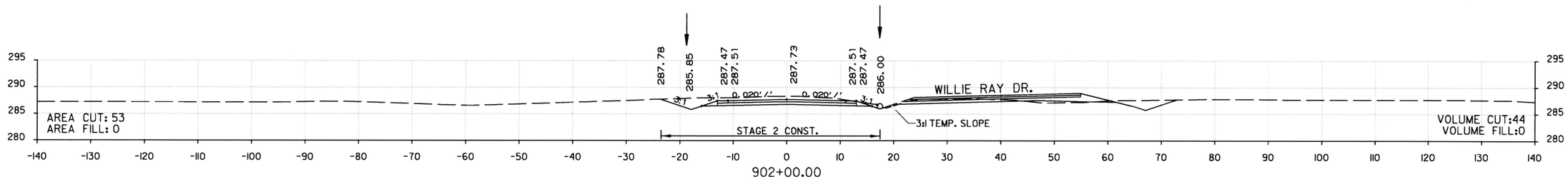
529+00.00

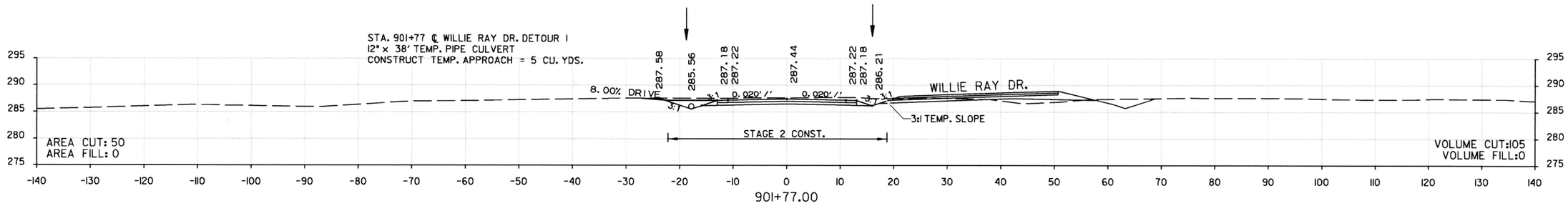
STA. 529+00.00 TO STA. 531+00.00
WILLIE RAY DRIVE

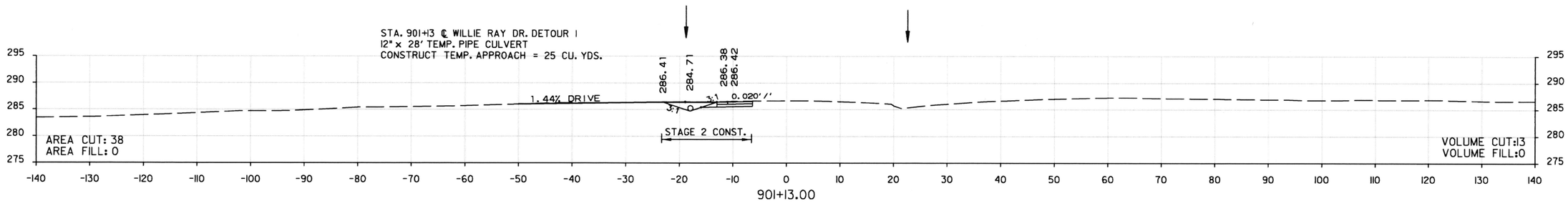
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	368	400

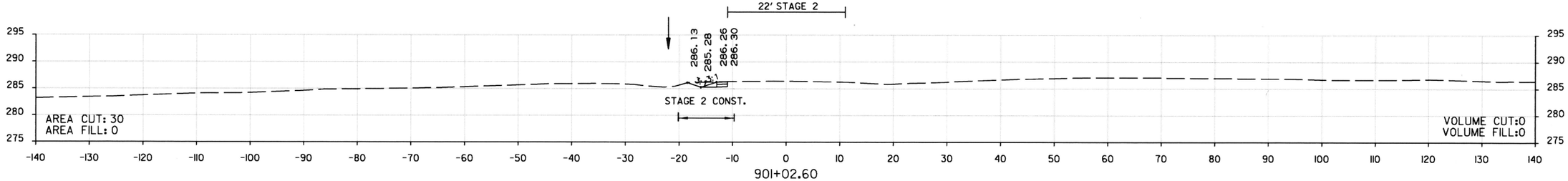
(2) CROSS SECTIONS







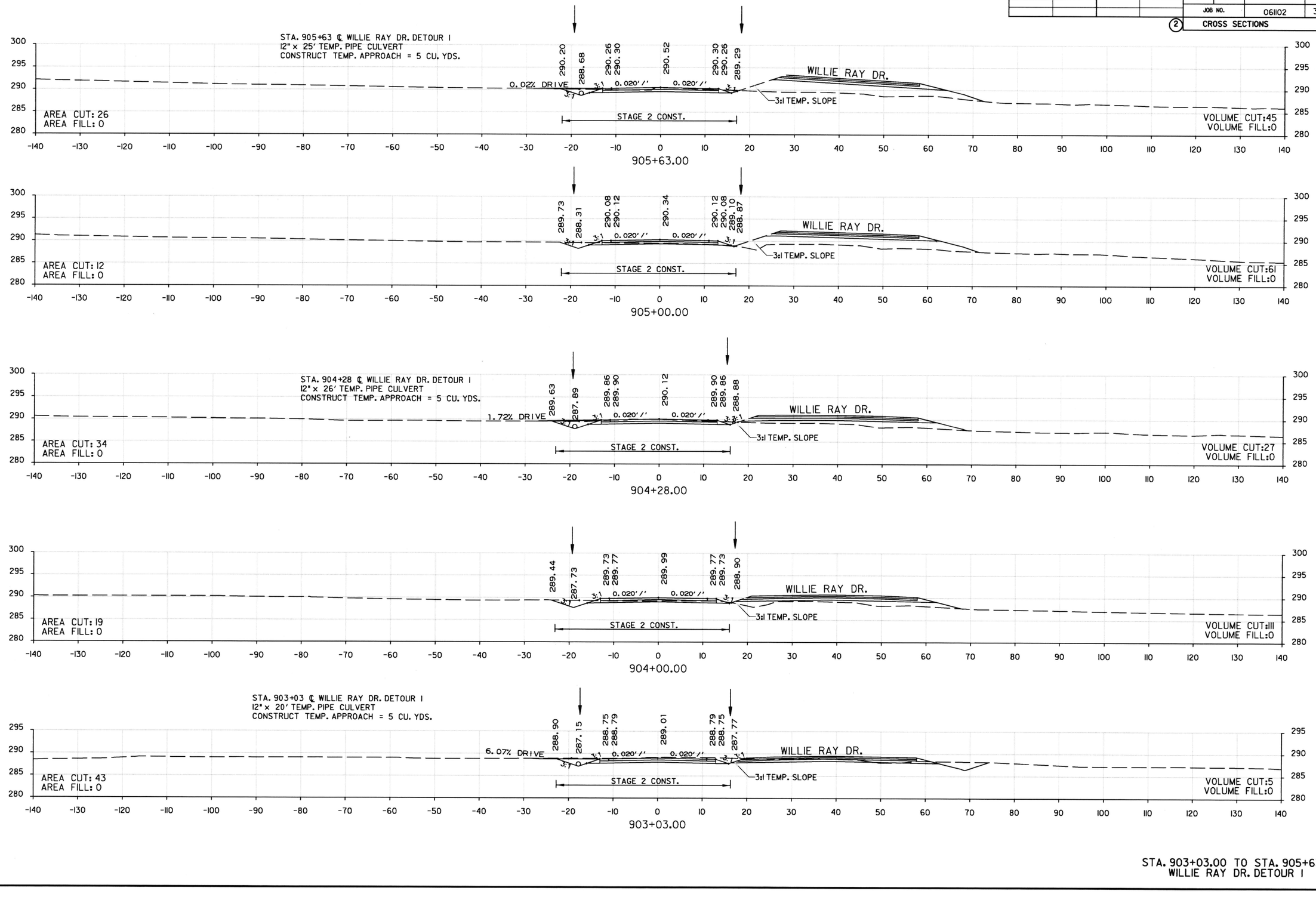




STA. 901+02.60 TO STA. 903+00.00
WILLIE RAY DR. DETOUR 1

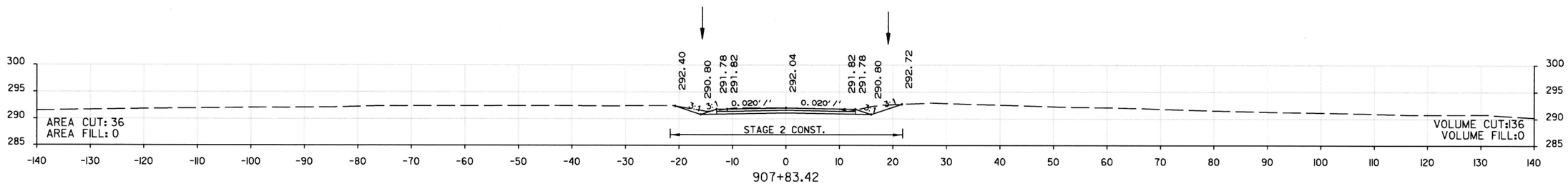
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	369	400

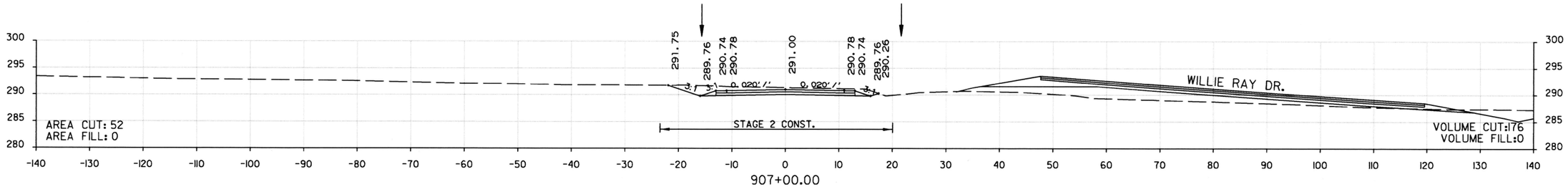
(2) CROSS SECTIONS

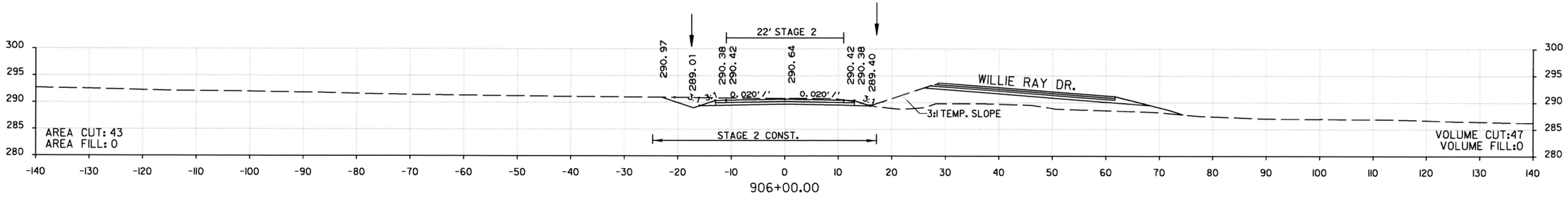


STA. 903+03.00 TO STA. 905+63.00
WILLIE RAY DR. DETOUR 1

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.		06I102	370	400
				(2)	CROSS SECTIONS			

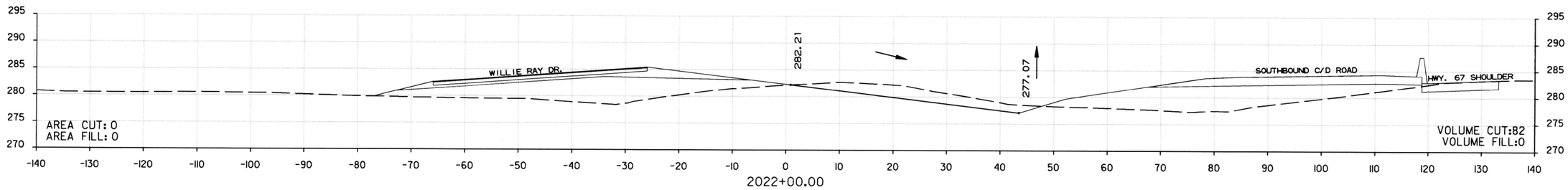


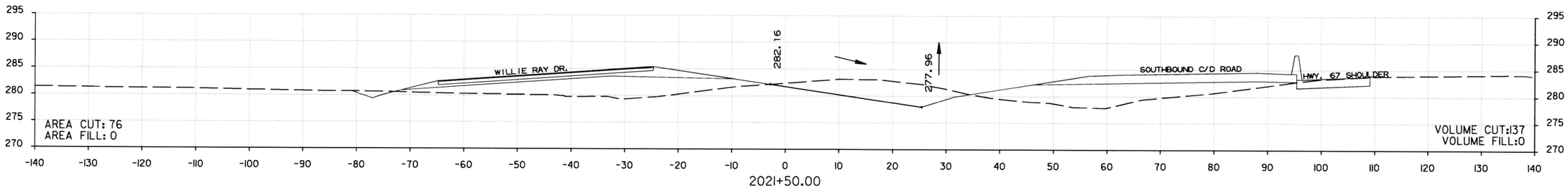


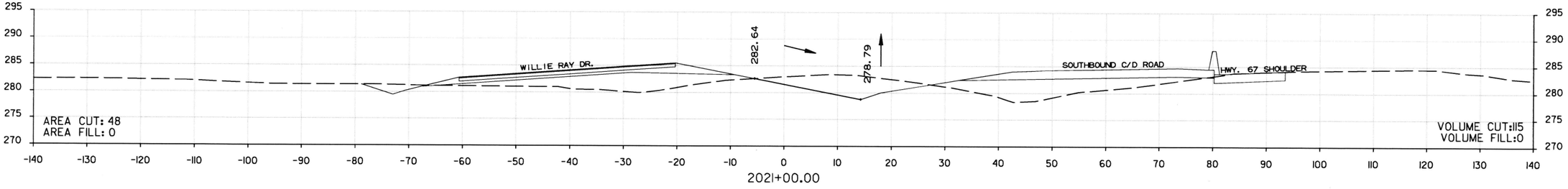


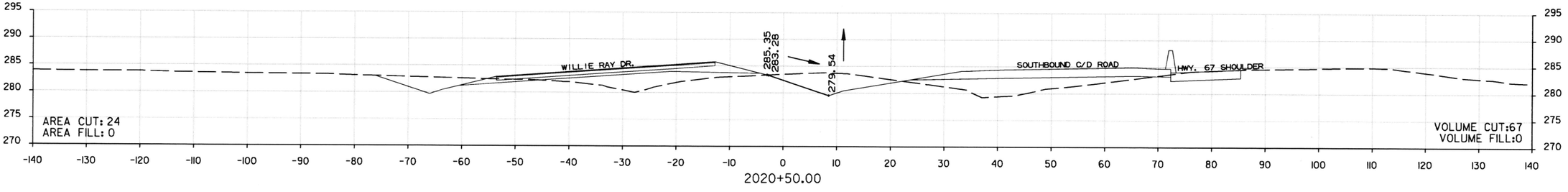
STA. 906+00.00 TO STA. 907+83.42
WILLIE RAY DR. DETOUR I

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	371	400
				(2)	CROSS SECTIONS			



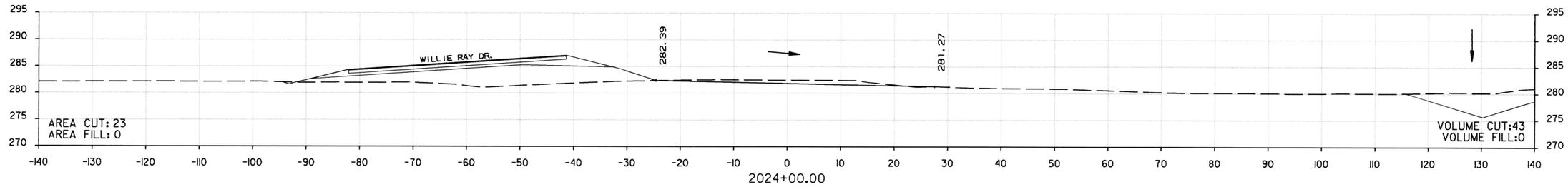


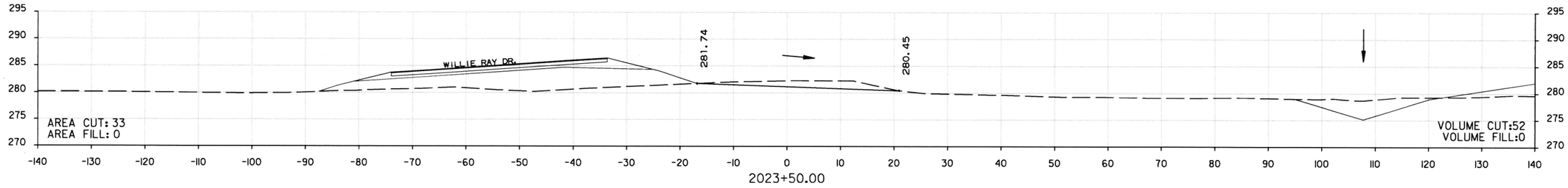


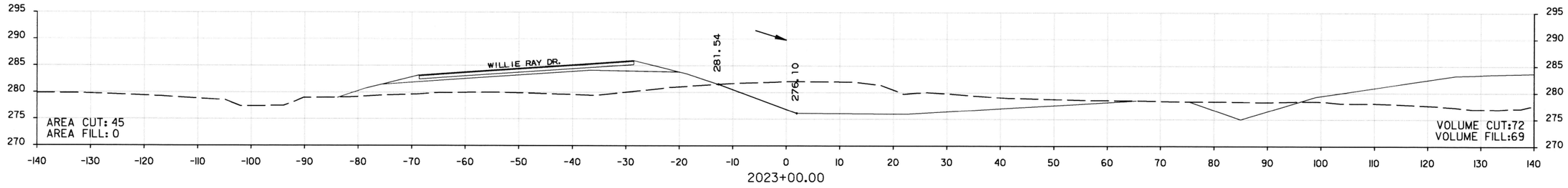


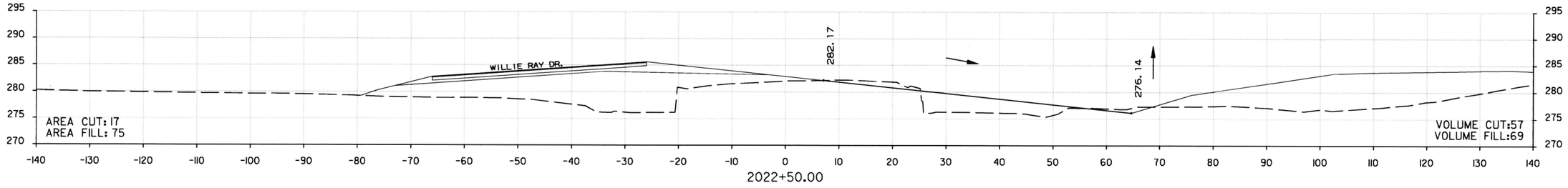
STA. 2020+50.00 TO STA. 2022+00.00
GRADING PLAN (EXIST. WILLIE RAY DR.)

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.		061102	372	400
				(2)	CROSS SECTIONS			



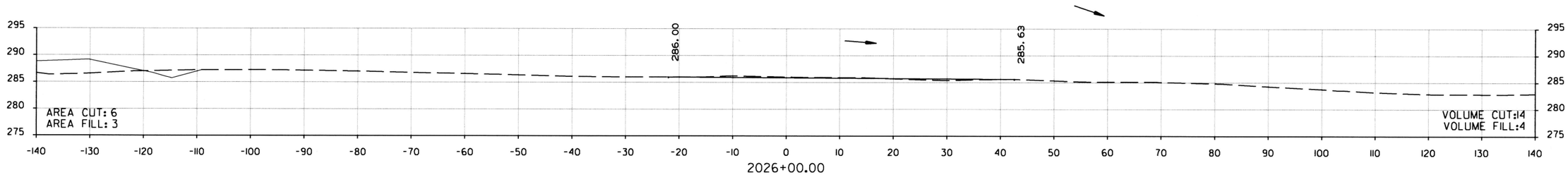




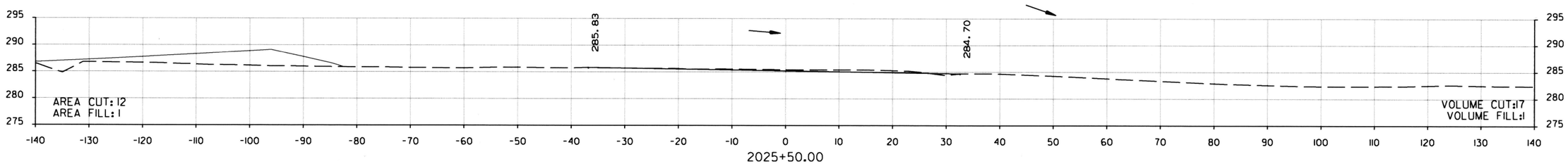


STA. 2022+50.00 TO STA. 2024+00.00
GRADING PLAN (EXIST. WILLIE RAY DR.)

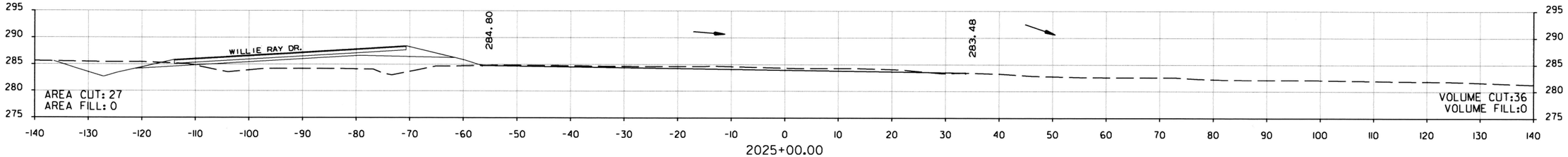
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	373	400
				(2)	CROSS SECTIONS			



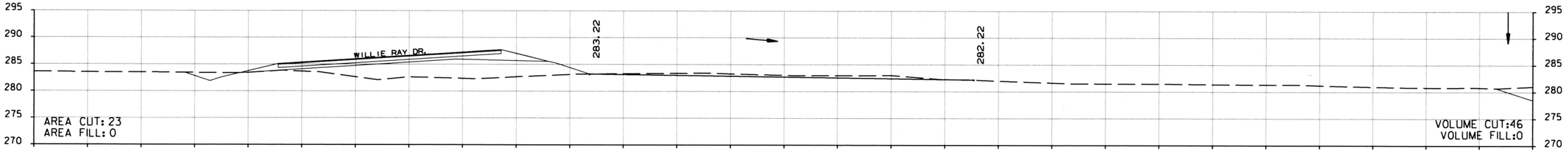
2026+00.00



2025+50.00



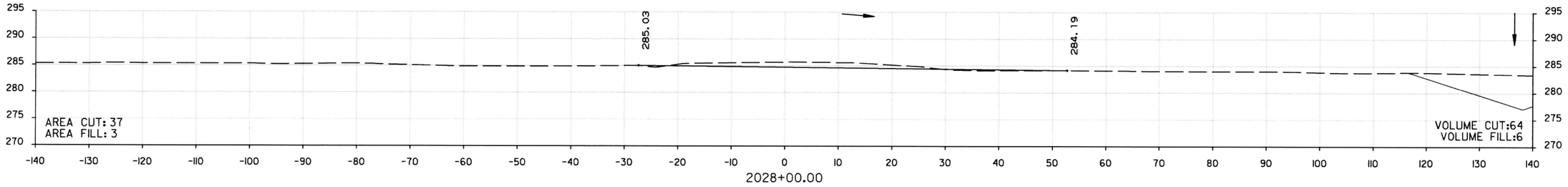
2025+00.00

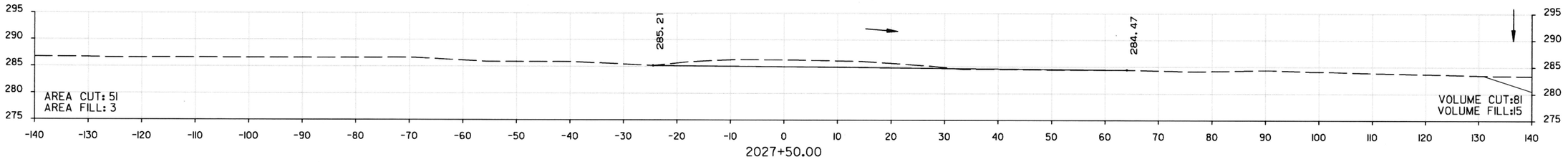


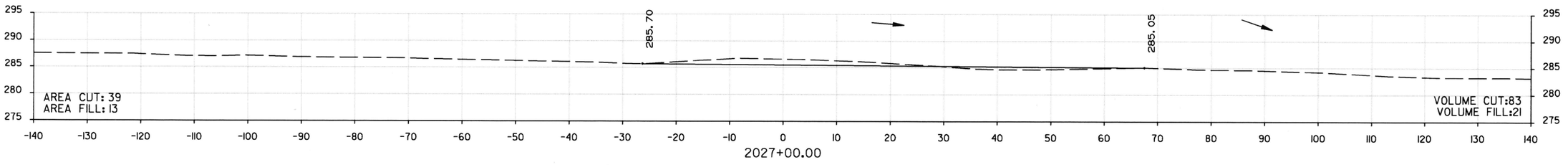
2024+50.00

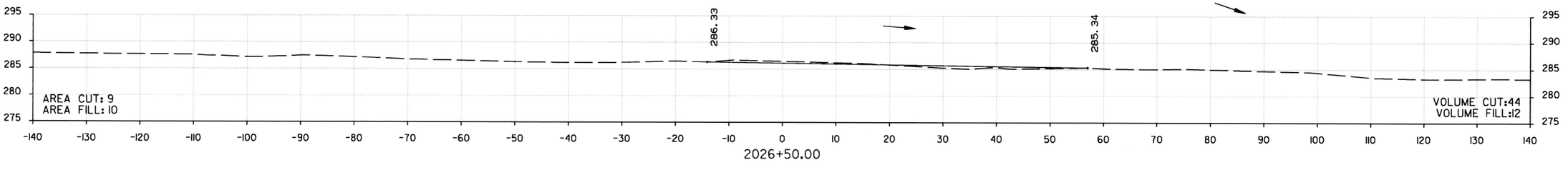
STA. 2024+50.00 TO STA. 2026+00.00
GRADING PLAN (EXIST. WILLIE RAY DR.)

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.		061102	374	400
				(2)	CROSS SECTIONS			





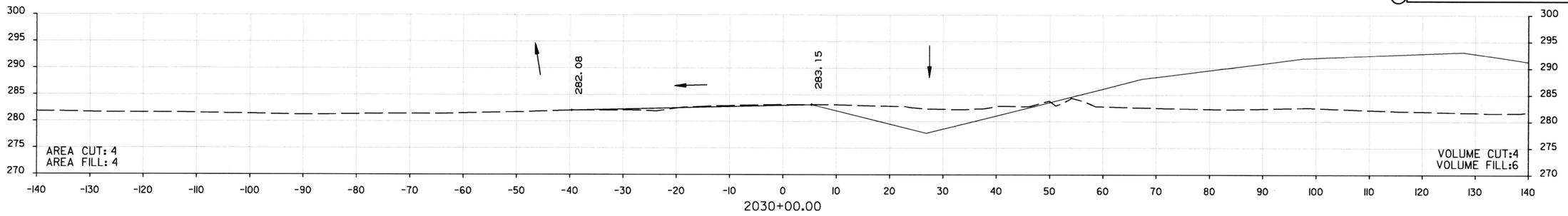


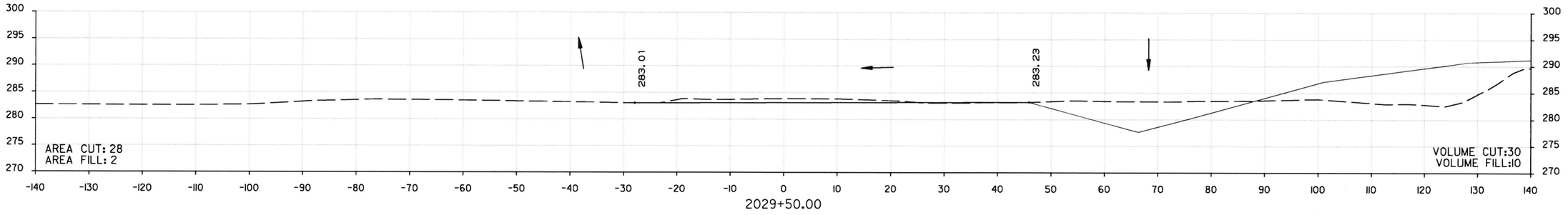


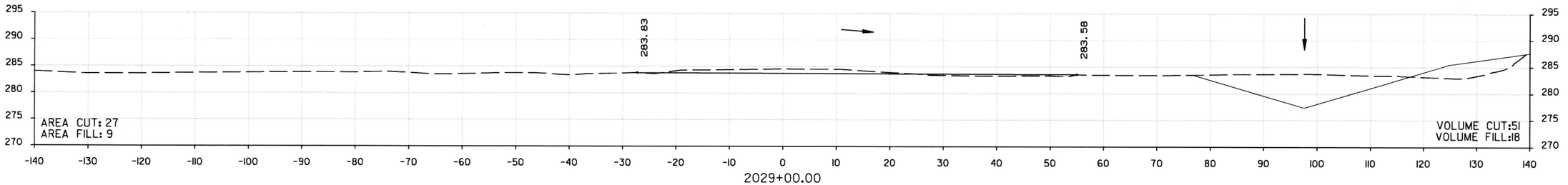
STA. 2026+50.00 TO STA. 2028+00.00
GRADING PLAN (EXIST. WILLIE RAY DR.)

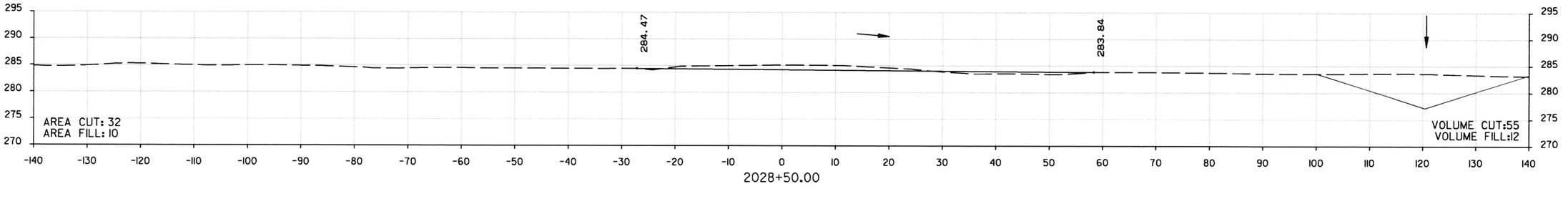
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	375	400

(2) CROSS SECTIONS



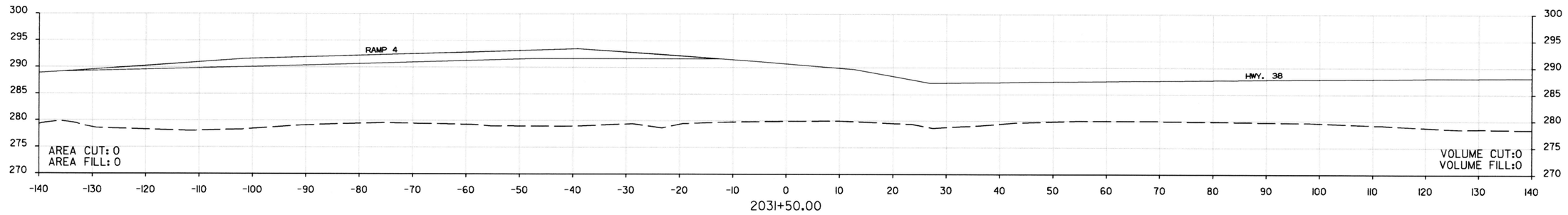


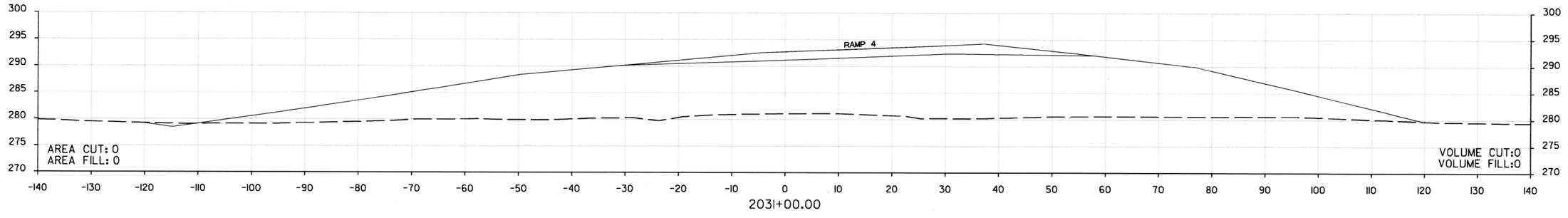


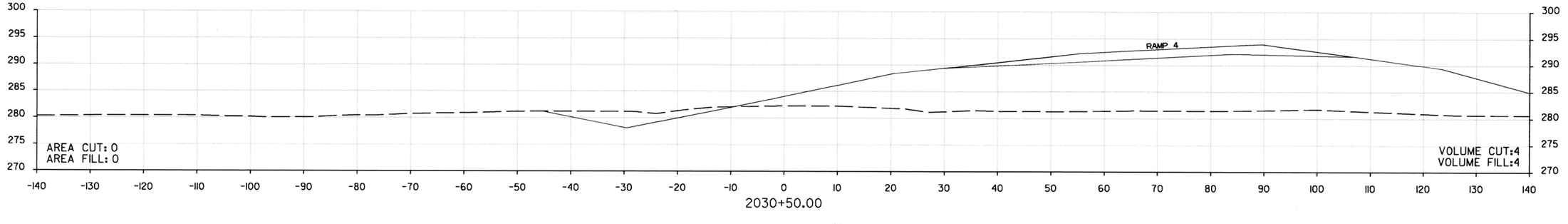


STA. 2028+50.00 TO STA. 2030+00.00
GRADING PLAN (EXIST. WILLIE RAY DR.)

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.		061102	376	400
				(2)	CROSS SECTIONS			

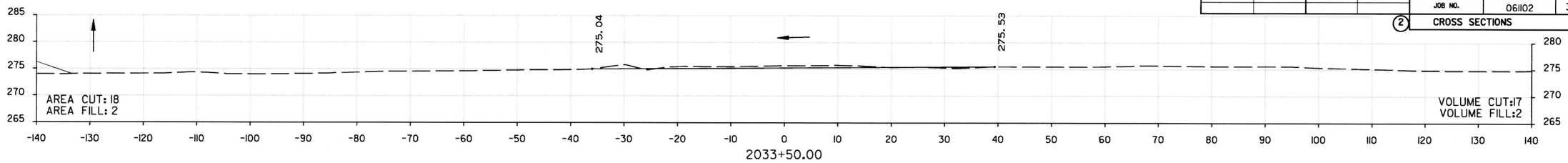


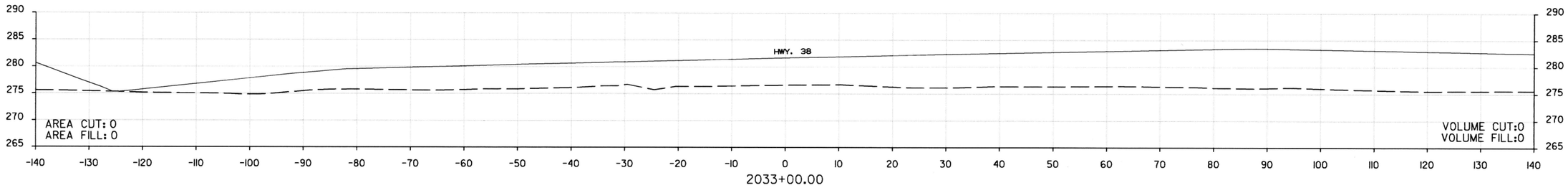


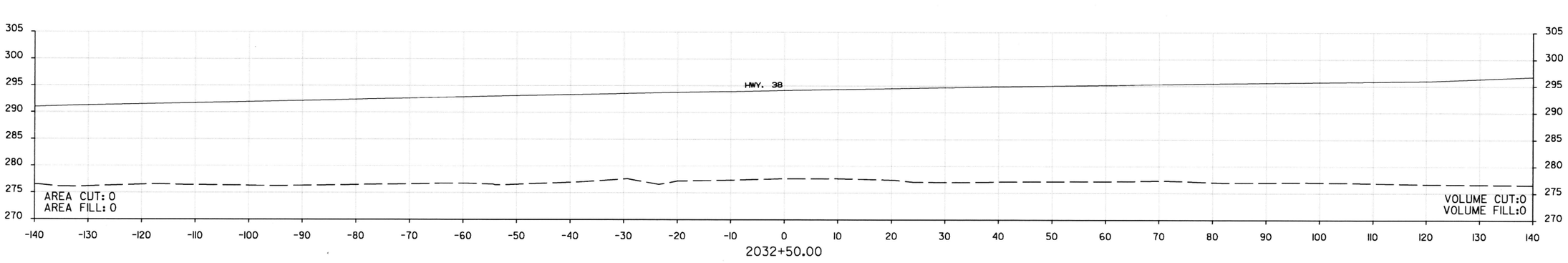


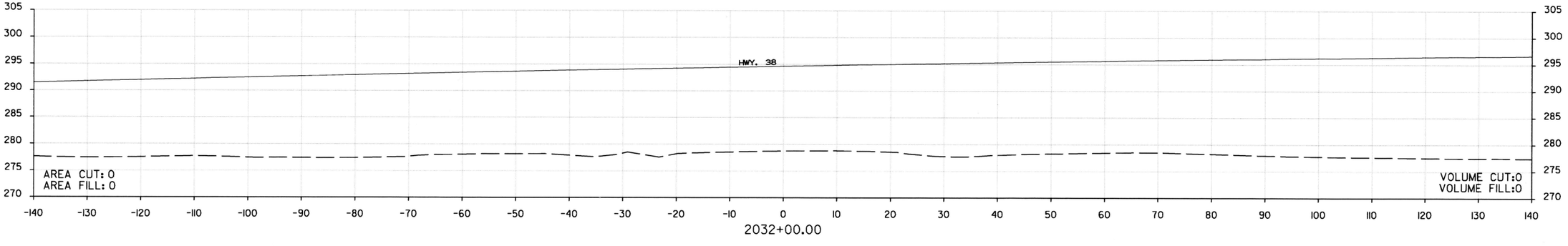
STA. 2030+50.00 TO STA. 2031+50.00
GRADING PLAN (EXIST. WILLIE RAY DR.)

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.		061102	377	400
				(2)	CROSS SECTIONS			



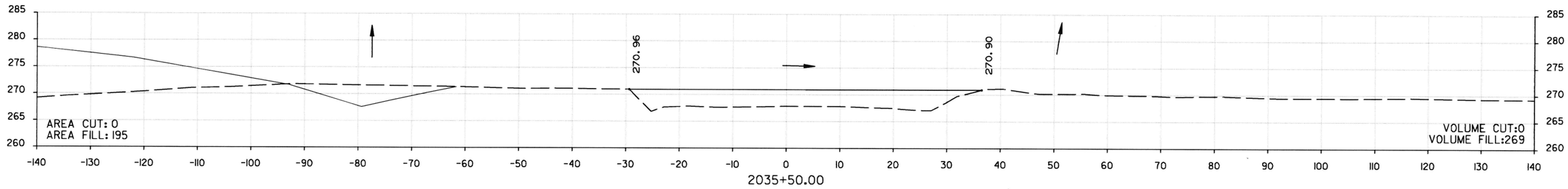


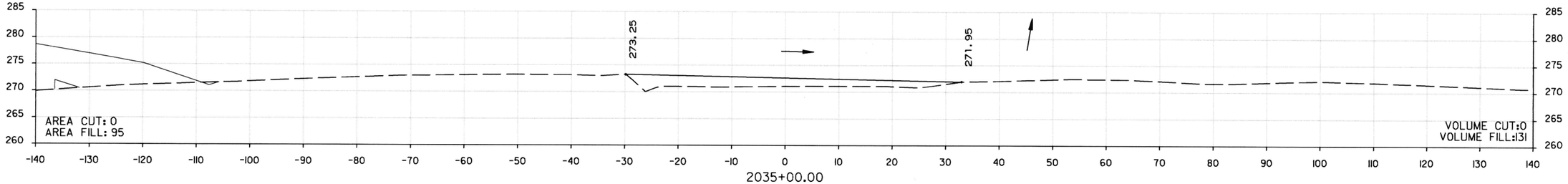


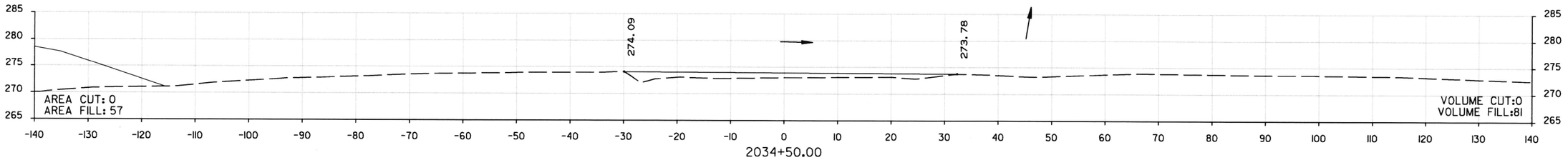


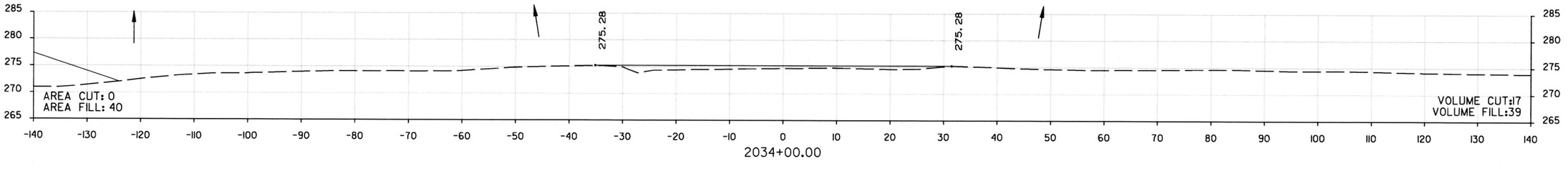
STA. 2032+00.00 TO STA. 2033+50.00
GRADING PLAN (EXIST. WILLIE RAY DR.)

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.		061102	378	400
				(2)	CROSS SECTIONS			



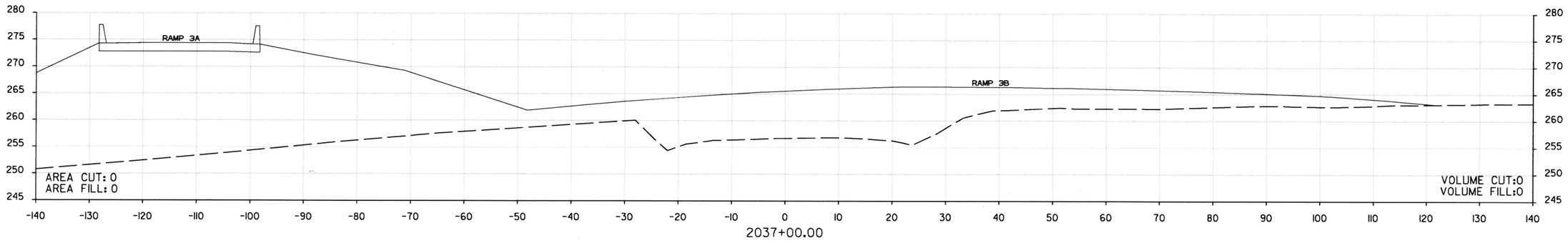


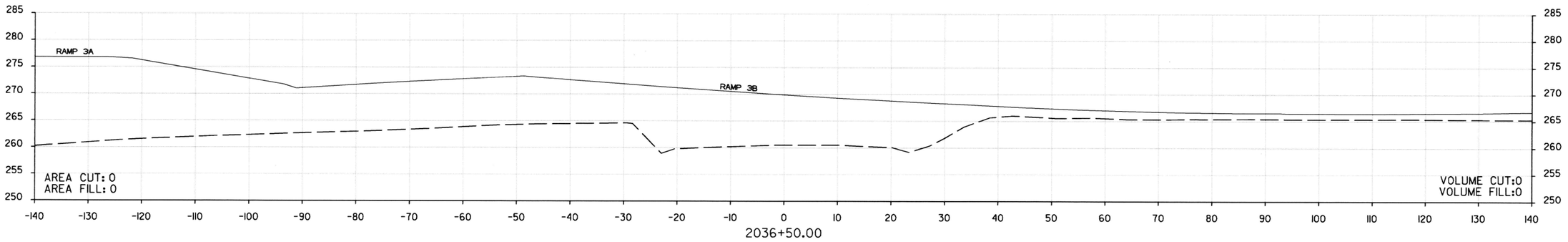


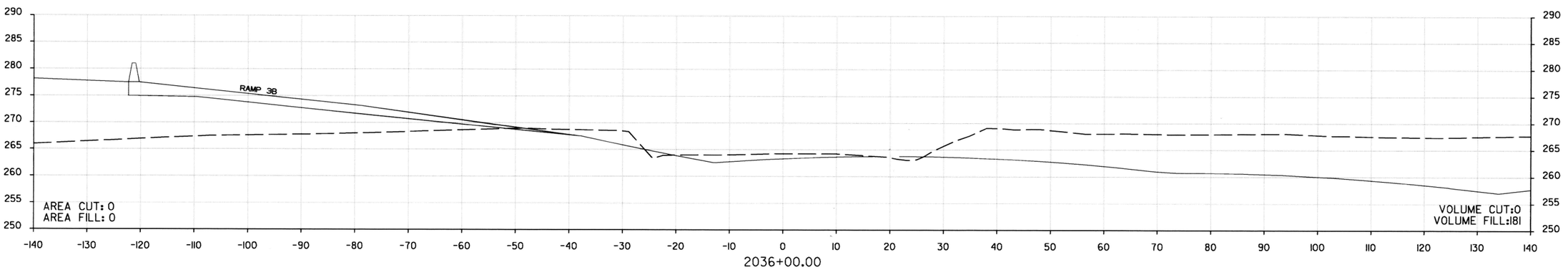


STA. 2034+00.00 TO STA. 2035+50.00
GRADING PLAN (EXIST. WILLIE RAY DR.)

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.		061102	379	400
				(2)	CROSS SECTIONS			

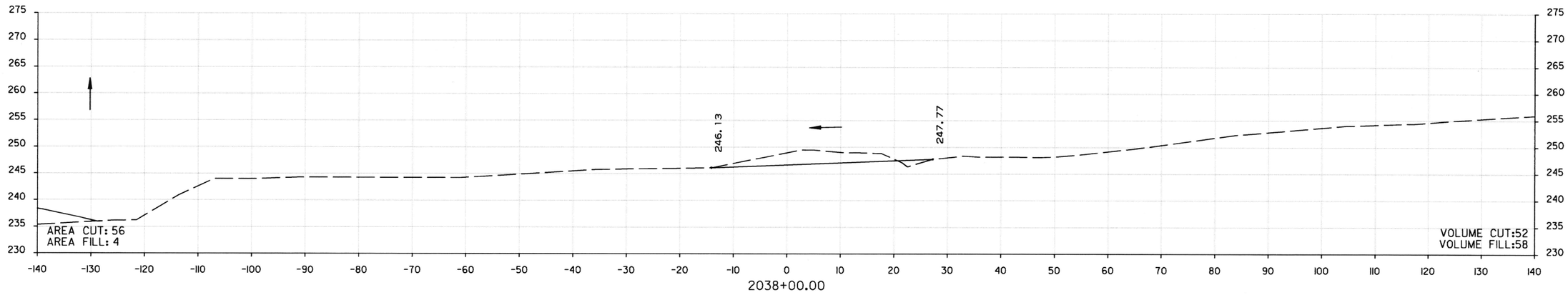


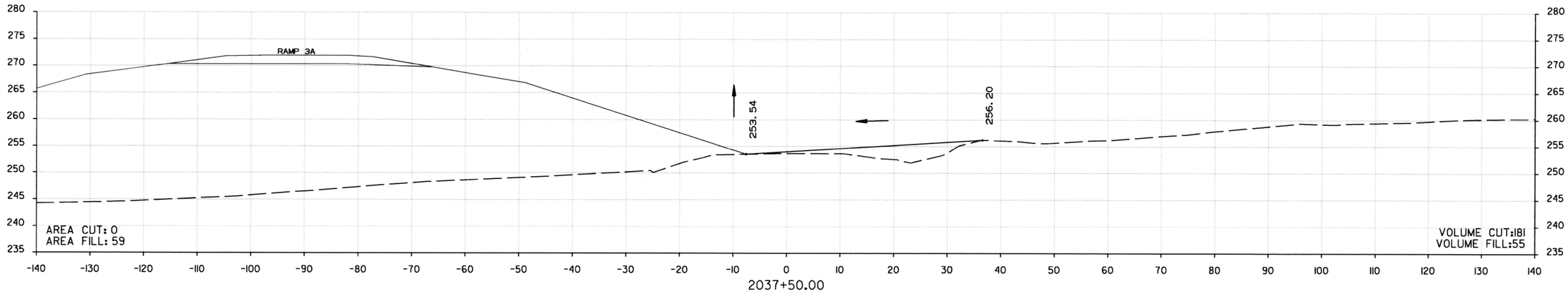




STA. 2036+00.00 TO STA. 2037+00.00
GRADING PLAN (EXIST. WILLIE RAY DR.)

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.		061102	380	400
				(2)	CROSS SECTIONS			

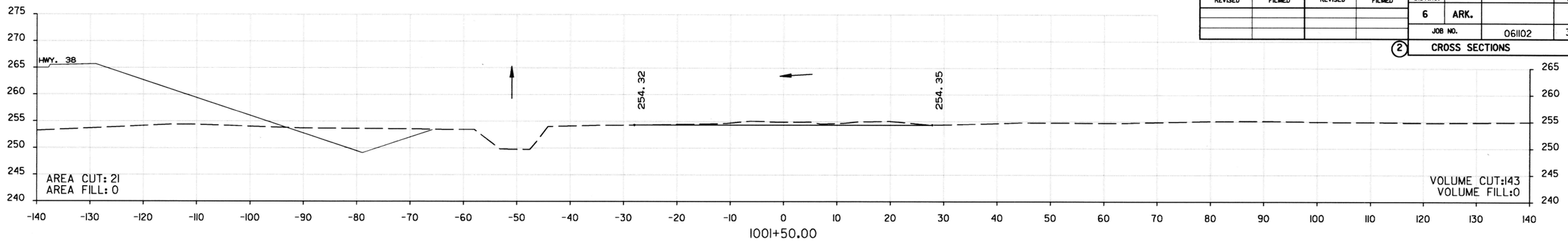


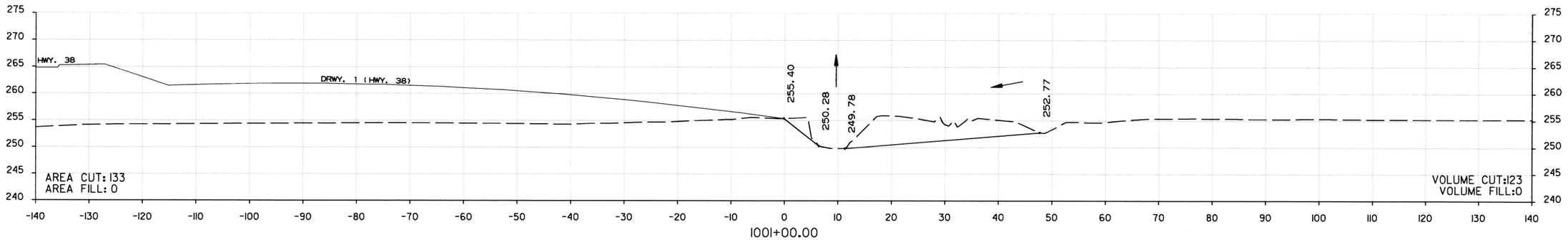


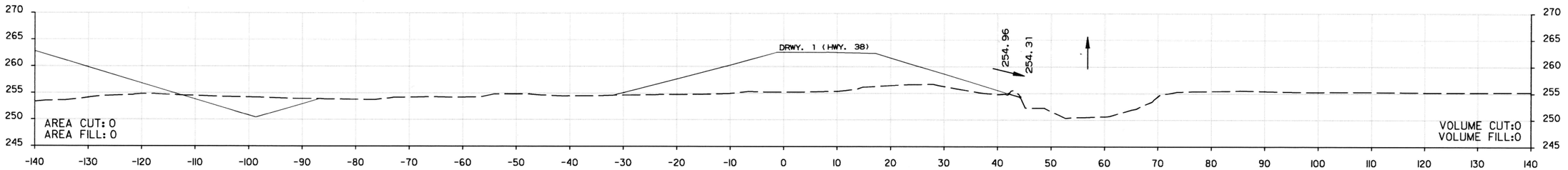
STA. 2037+50.00 TO STA. 2038+00.00
GRADING PLAN (EXIST. WILLIE RAY DR.)

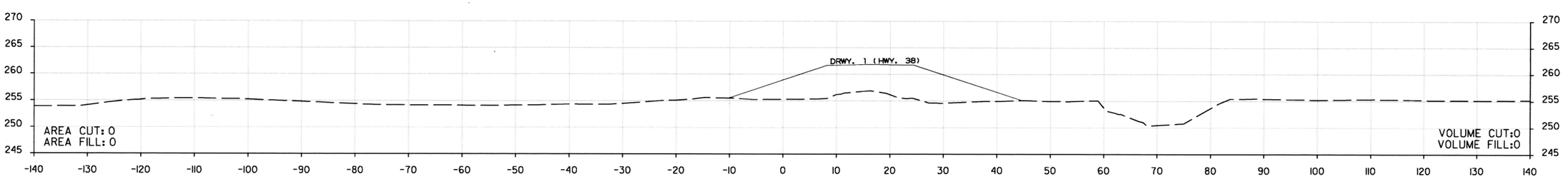
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	381	400

(2) CROSS SECTIONS





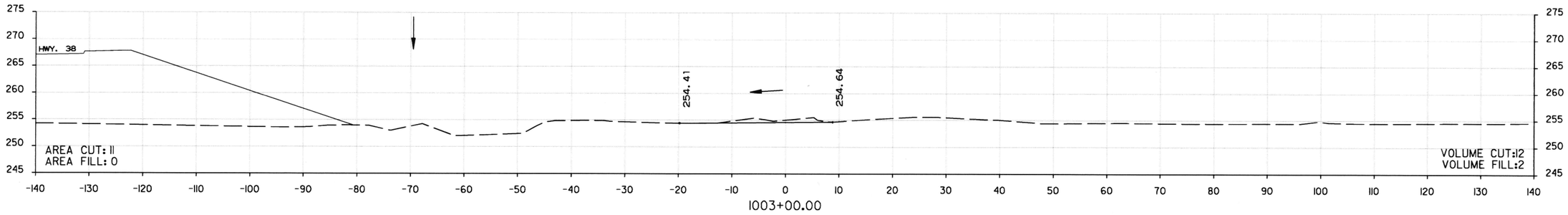


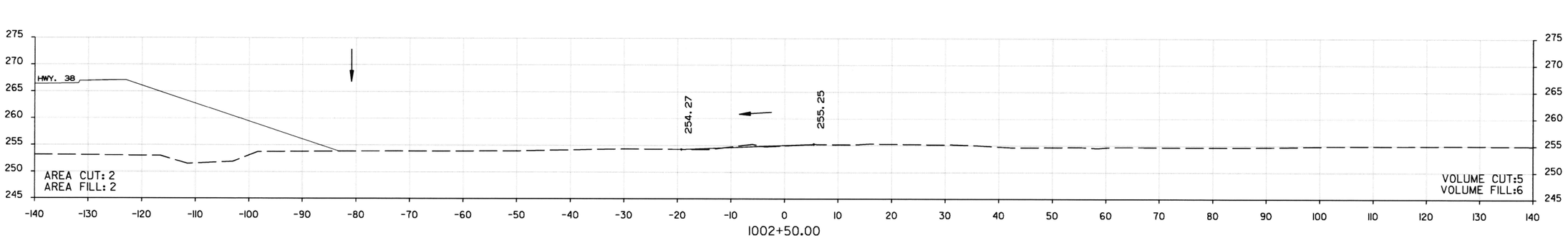


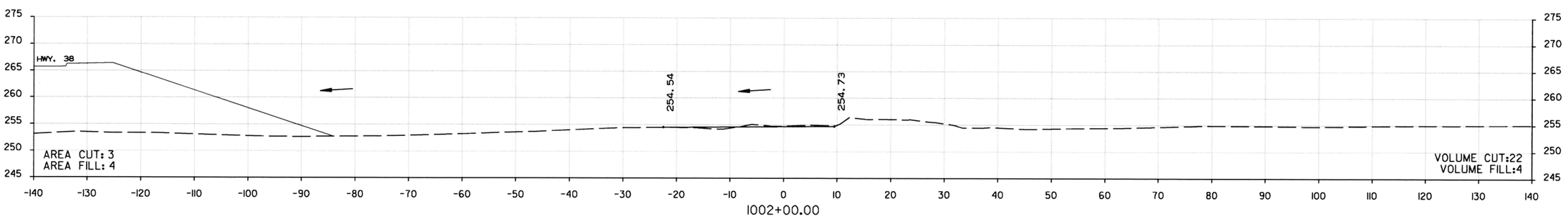
STA. 1000+00.00 TO STA. 1001+50.00
GRADING PLAN (EXIST. W. BERRY LN.)

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.		061102	382	400
(2)	CROSS SECTIONS			



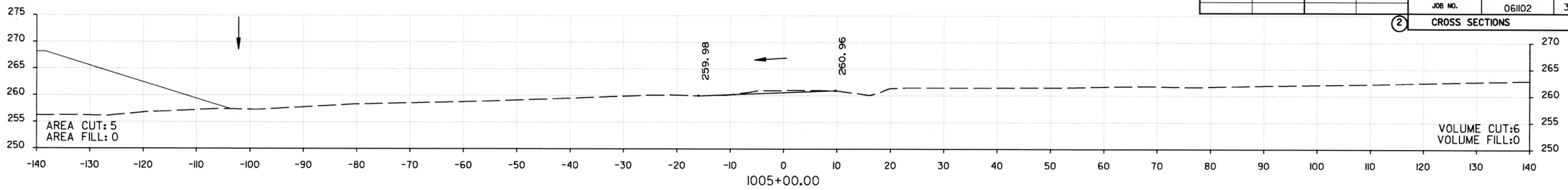




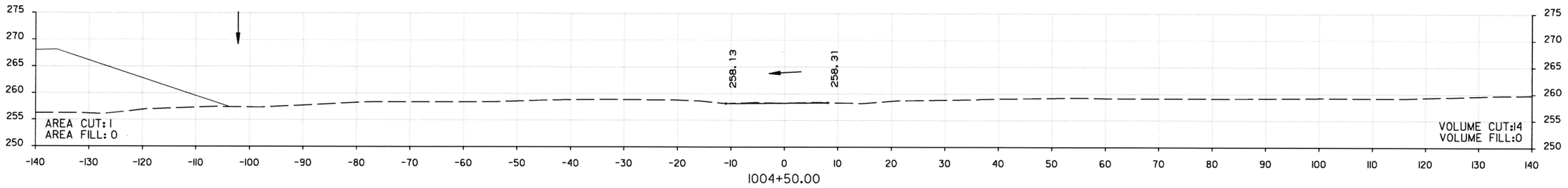
STA. 1002+00.00 TO STA. 1003+00.00
GRADING PLAN (EXIST. W. BERRY LN.)

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.		061102	383	400

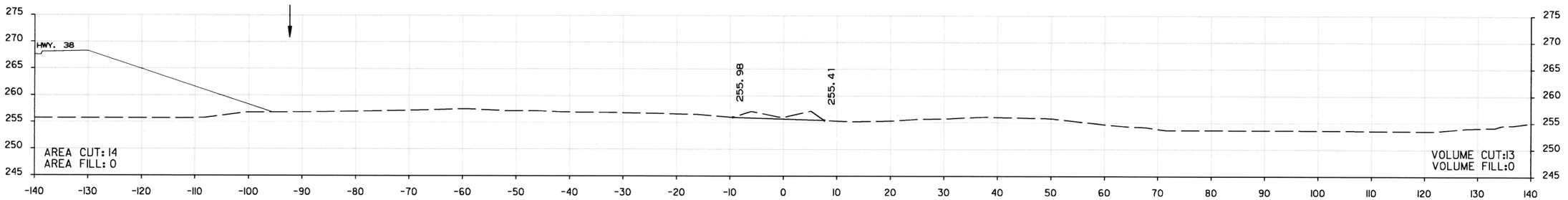
(2) CROSS SECTIONS



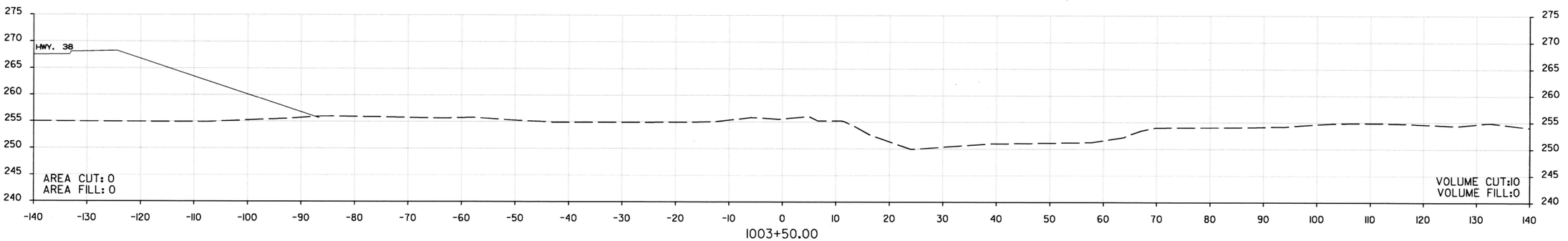
1005+00.00



1004+50.00



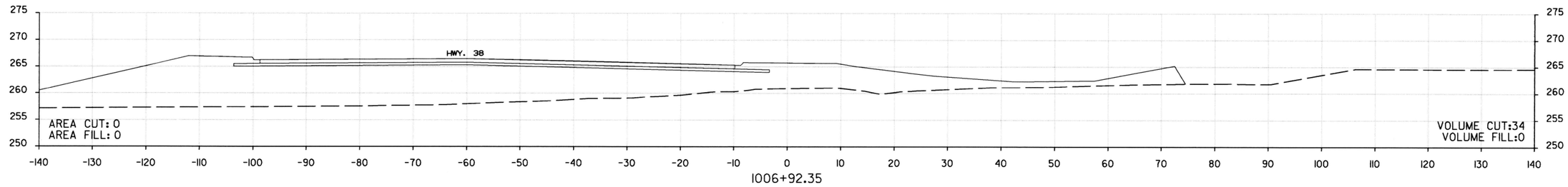
1004+00.00

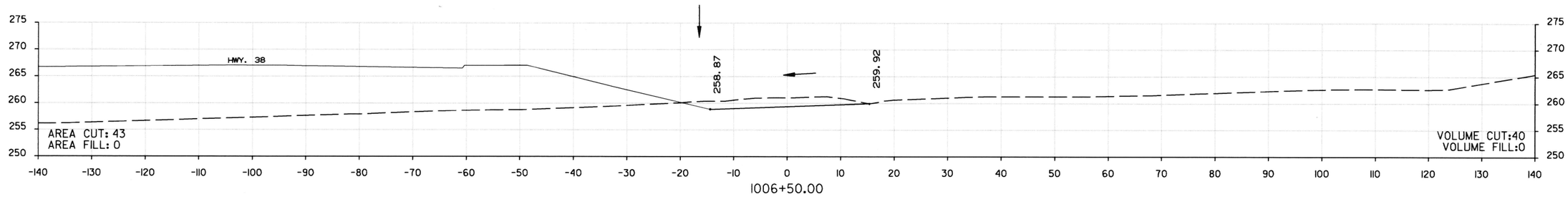


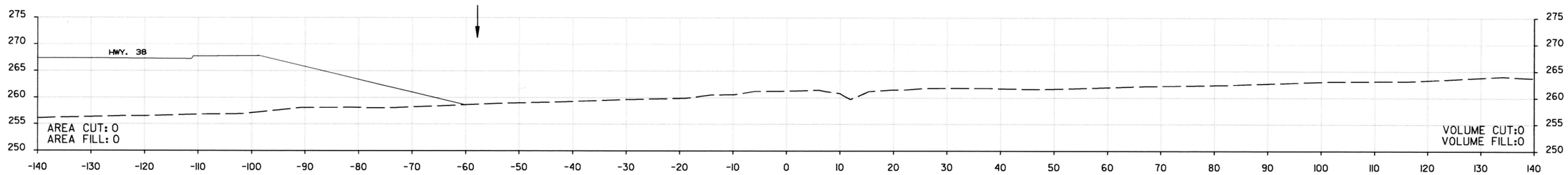
1003+50.00

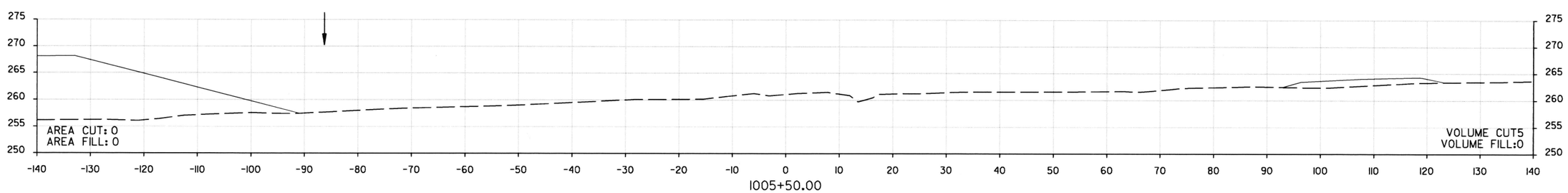
STA. 1003+50.00 TO STA. 1005+00.00
GRADING PLAN (EXIST. W. BERRY LN.)

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.		061102	384	400
				(2)	CROSS SECTIONS			



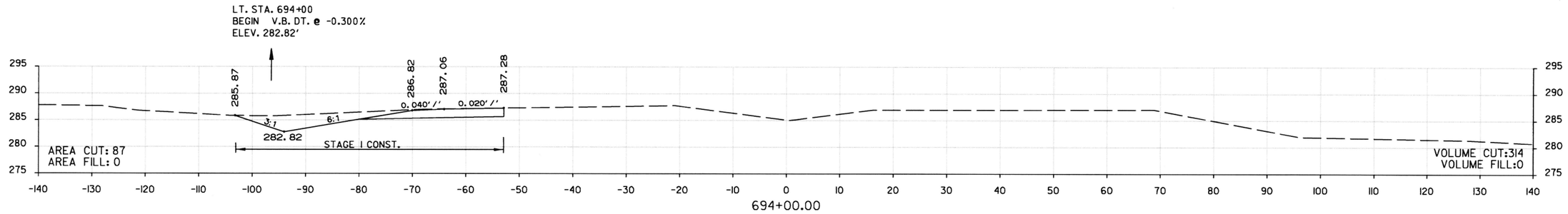


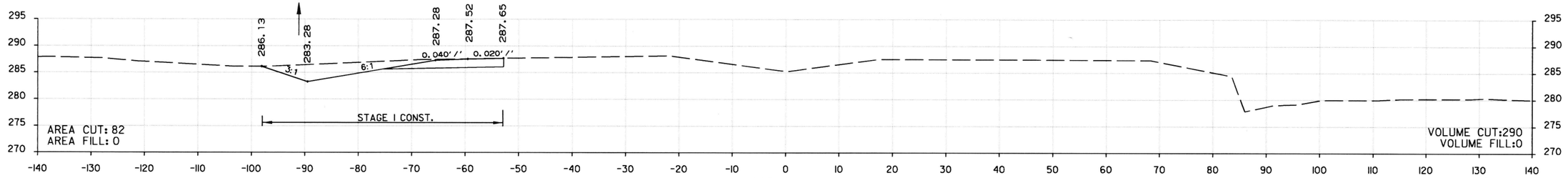


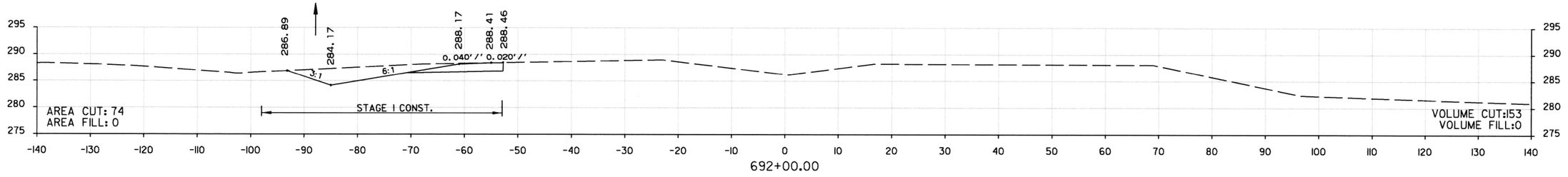


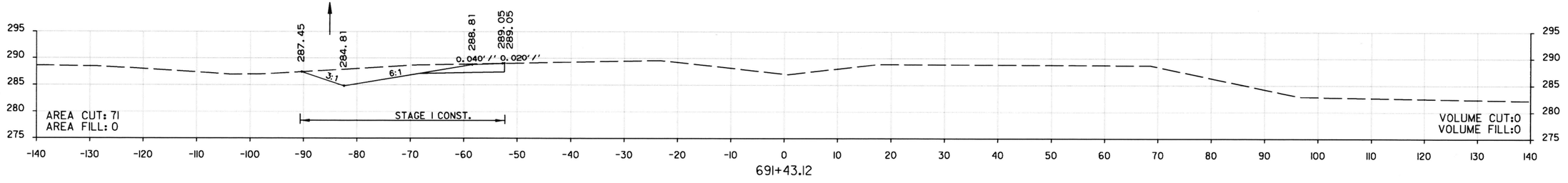
STA. 1005+50.00 TO STA. 1006+92.35
GRADING PLAN (EXIST. W. BERRY LN.)

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.		061102	385	400
				(2)	CROSS SECTIONS			



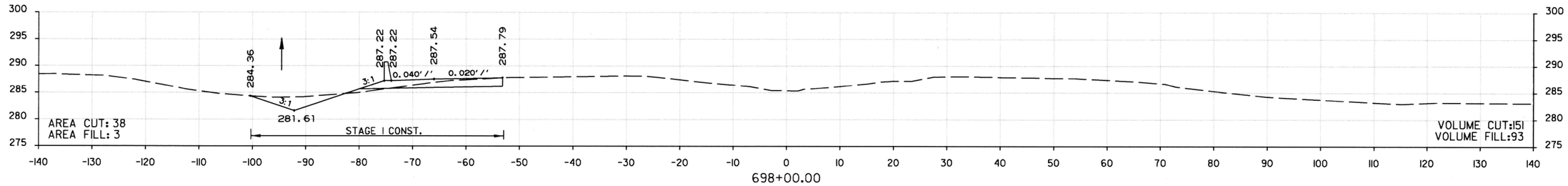


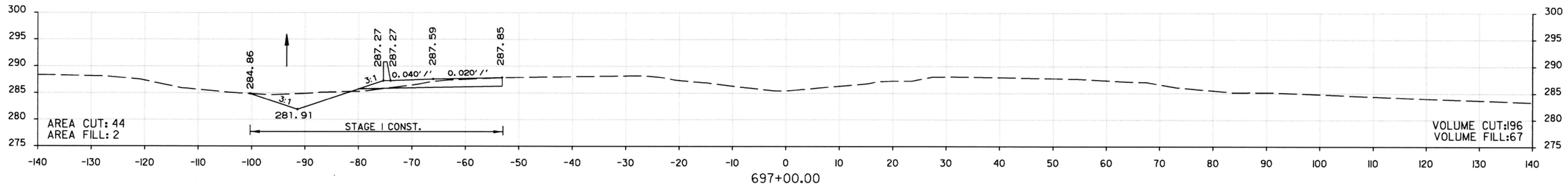


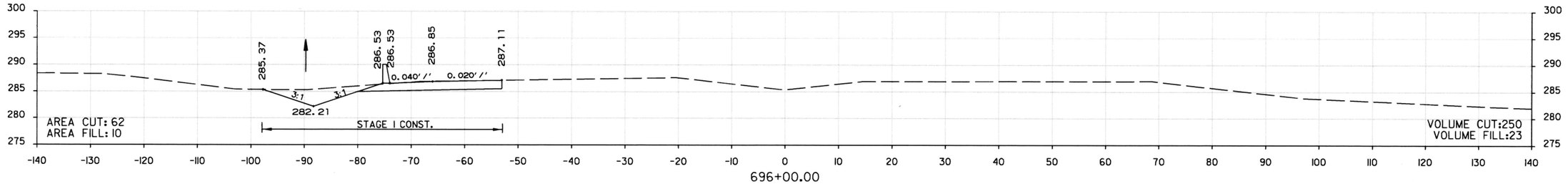


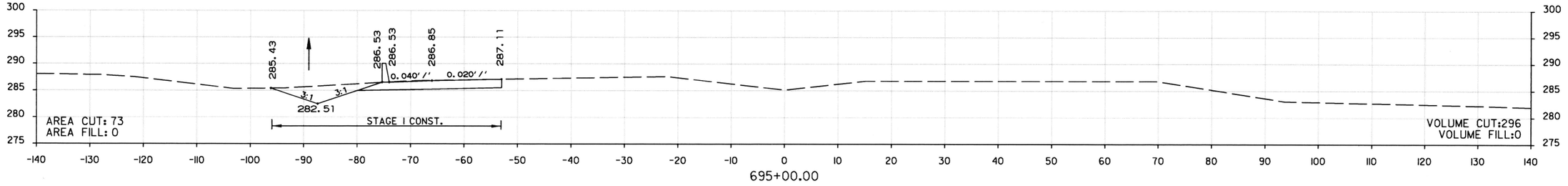
STA. 691+43.12 TO STA. 694+00.00
HWY. 67

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.		061102	386	400
				(2)	CROSS SECTIONS			





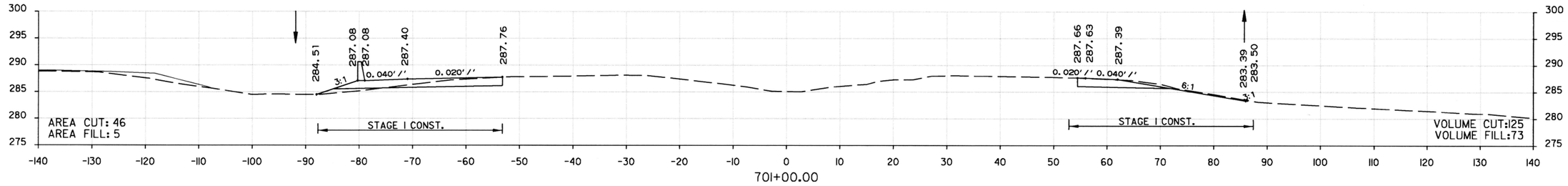


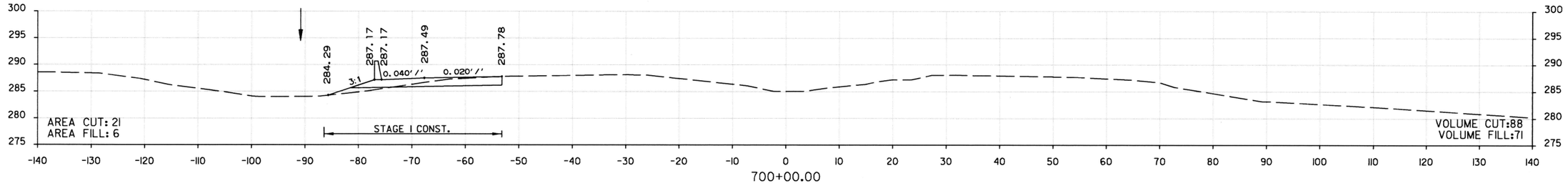


STA. 695+00.00 TO STA. 698+00.00
HWY. 67

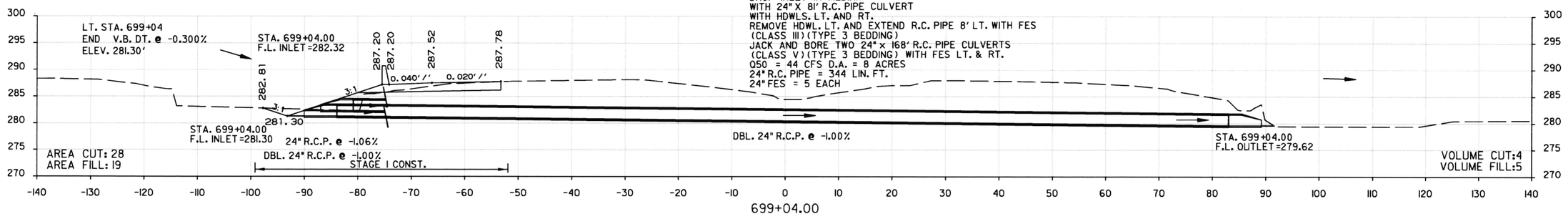
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	387	400

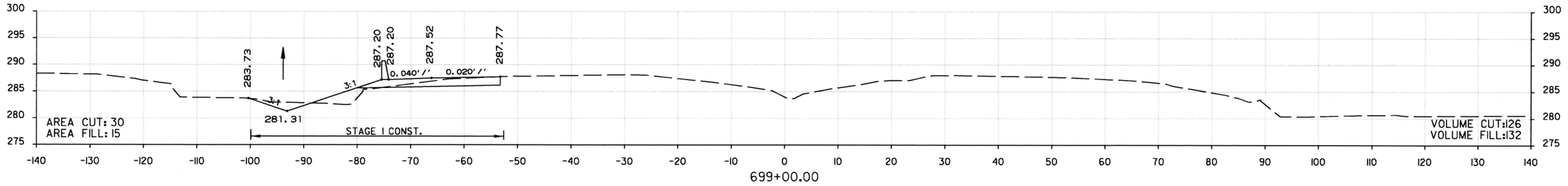
(2) CROSS SECTIONS





STA. 699+04 ℄ MED. HWY. 67 IN PLACE
DROP INLET IN MEDIAN
WITH 24" X 81' R.C. PIPE CULVERT
WITH HDWLS. LT. AND RT.
REMOVE HDWL. LT. AND EXTEND R.C. PIPE 8' LT. WITH FES
(CLASS III)(TYPE 3 BEDDING)
JACK AND BORE TWO 24" x 168' R.C. PIPE CULVERTS
(CLASS V)(TYPE 3 BEDDING) WITH FES LT. & RT.
Q50 = 44 CFS D.A. = 8 ACRES
24" R.C. PIPE = 344 LIN. FT.
24" FES = 5 EACH

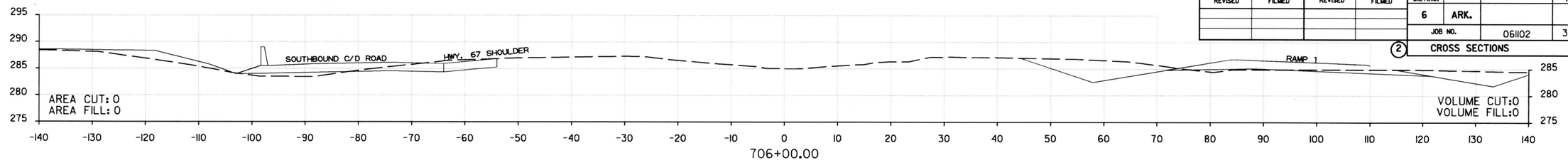


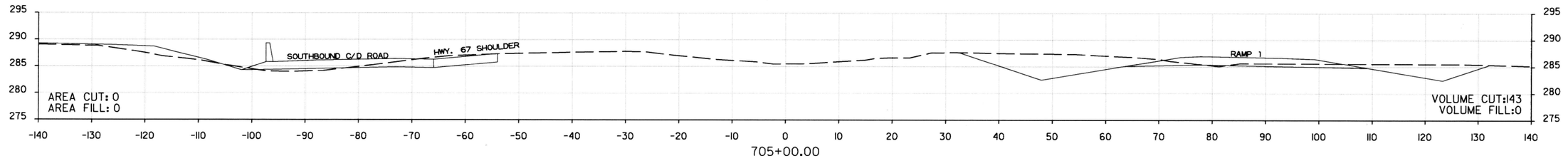


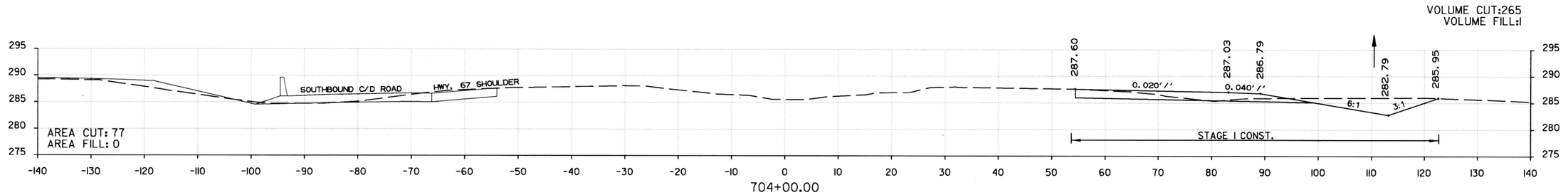
STA. 699+00.00 TO STA. 701+00.00
HWY. 67

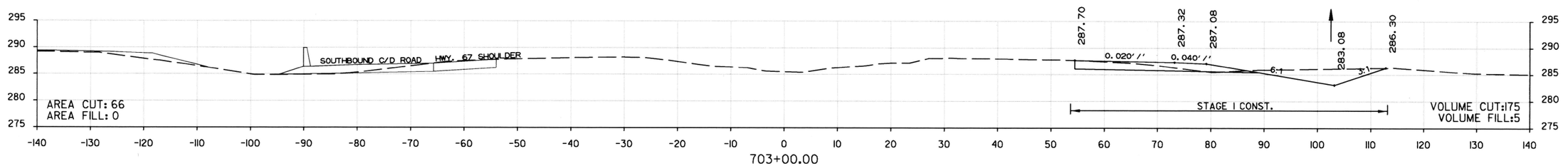
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	388	400

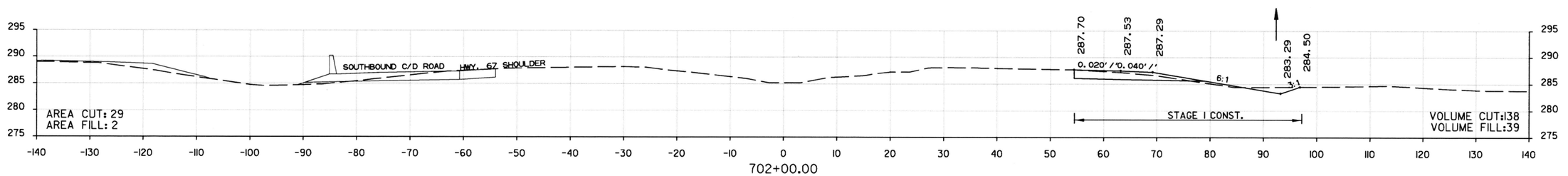
(2) CROSS SECTIONS









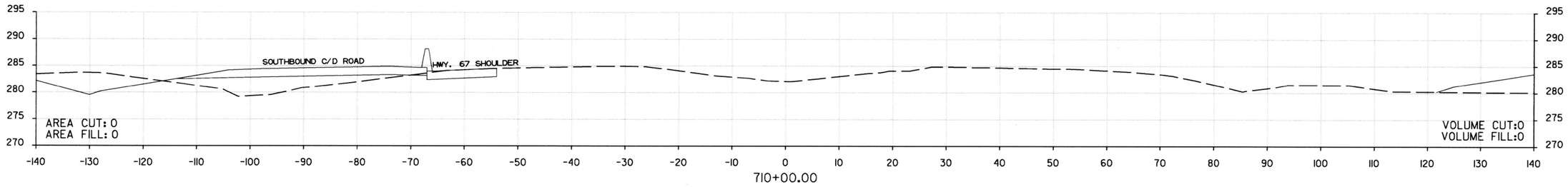


NOTE: SEE SOUTHBOUND CD ROAD CROSS SECTIONS SHEETS 328-335 FOR ADDITIONAL INFORMATION.

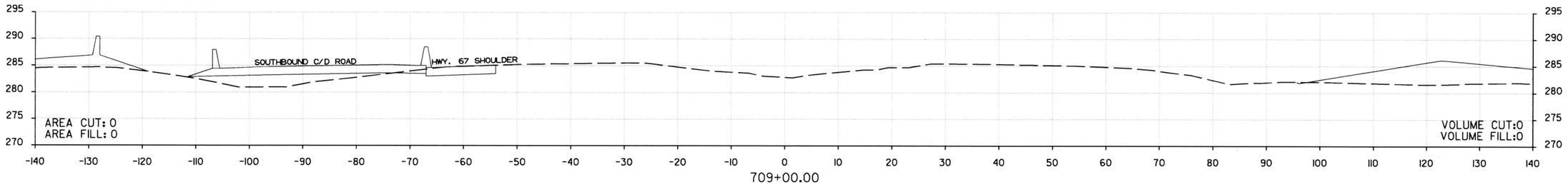
STA. 702+00.00 TO STA. 706+00.00
HWY. 67

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.		061102	389	400

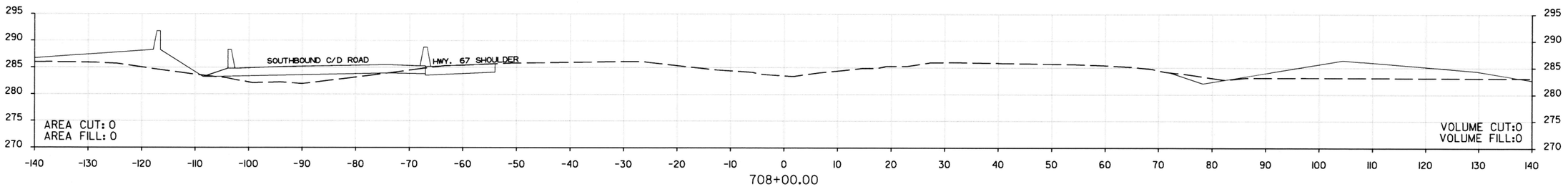
(2) CROSS SECTIONS



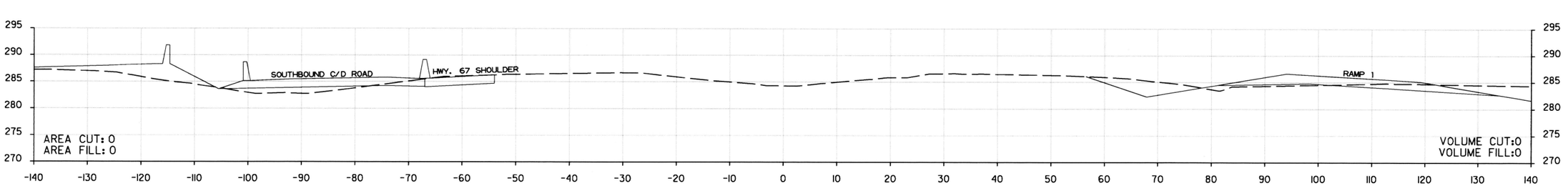
710+00.00



709+00.00



708+00.00



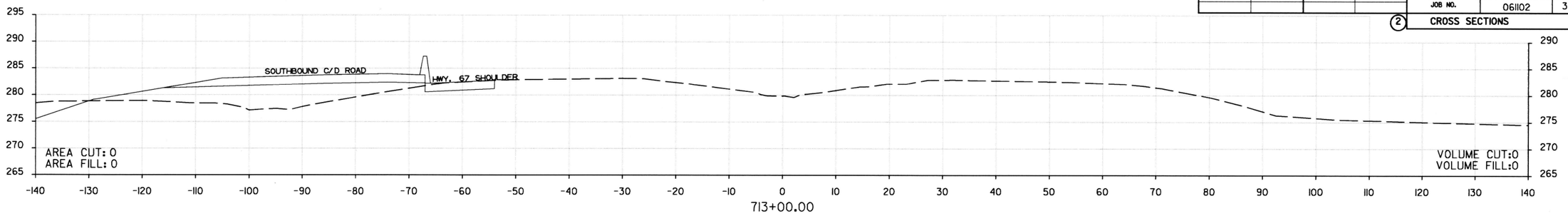
707+00.00

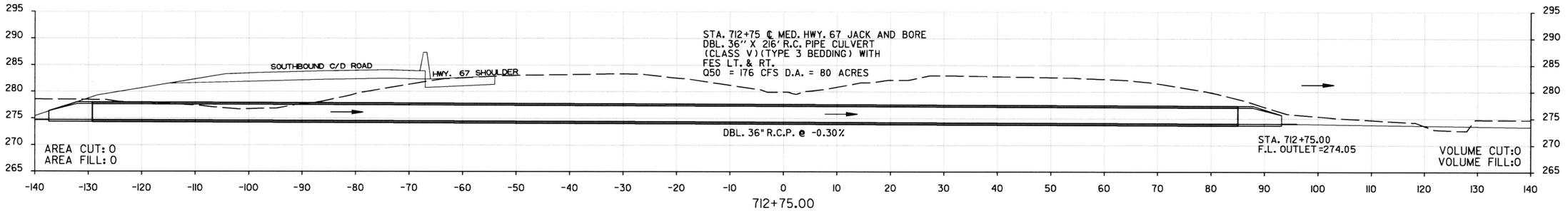
NOTE: SEE SOUTHBOUND CD ROAD CROSS SECTIONS SHEETS 328-335 FOR ADDITIONAL INFORMATION.

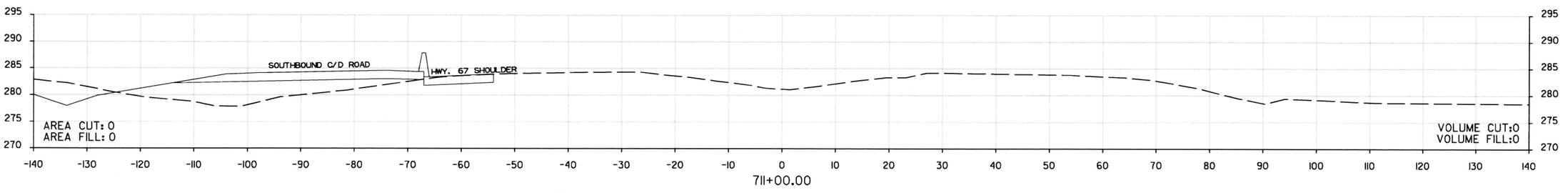
STA. 707+00.00 TO STA. 710+00.00
HWY. 67

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.		061102	390	400

(2) CROSS SECTIONS





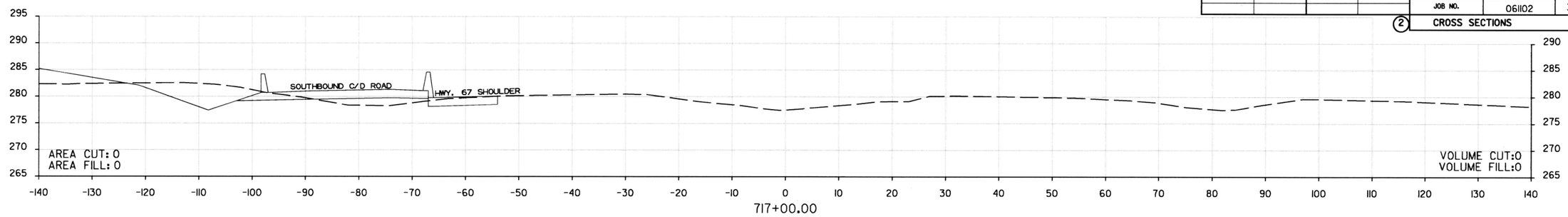


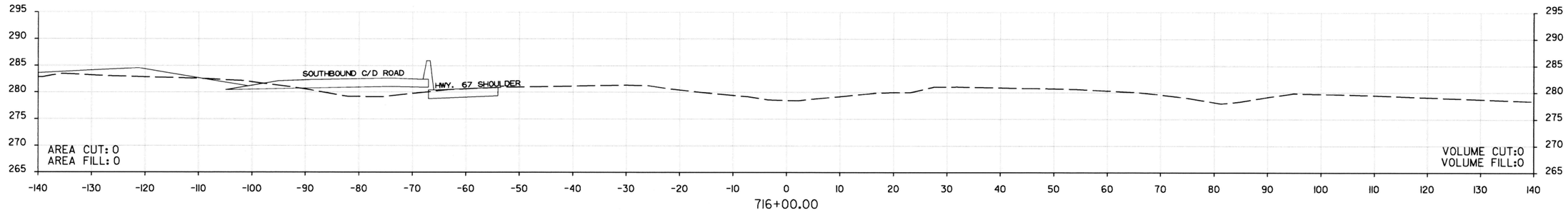
NOTE: SEE SOUTHBOUND CD ROAD CROSS SECTIONS SHEETS 328-335 FOR ADDITIONAL INFORMATION.

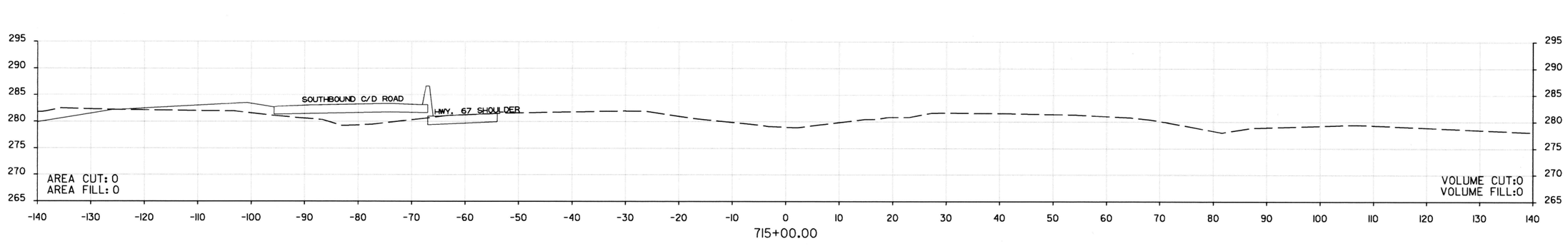
STA. 711+00.00 TO STA. 713+00.00
HWY. 67

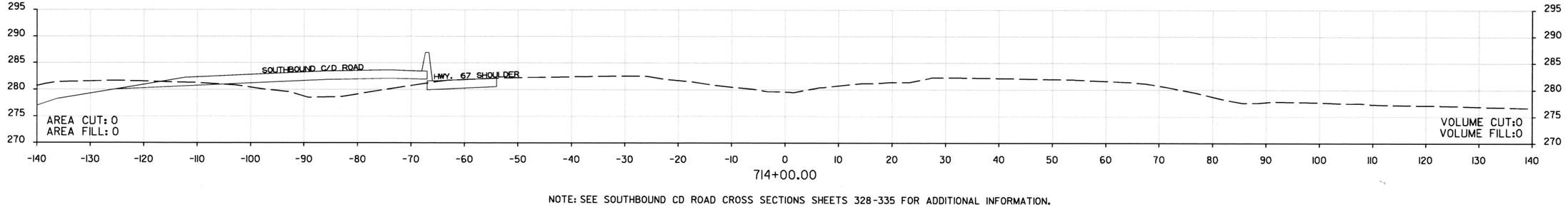
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	391	400

(2) CROSS SECTIONS







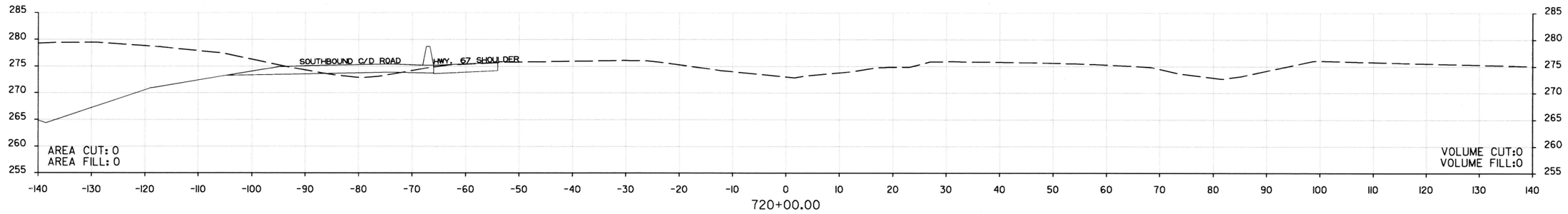


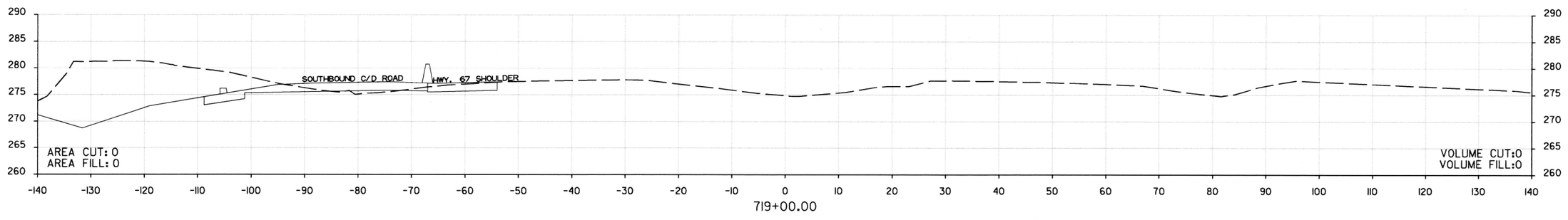
NOTE: SEE SOUTHBOUND CD ROAD CROSS SECTIONS SHEETS 328-335 FOR ADDITIONAL INFORMATION.

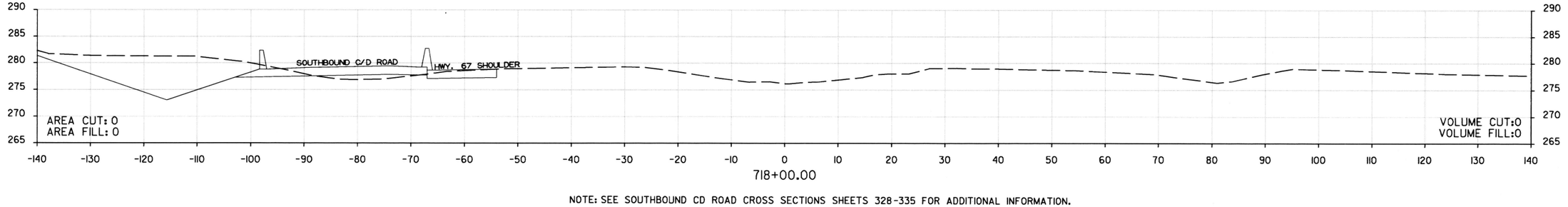
STA. 714+00.00 TO STA. 717+00.00
HWY. 67

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.		061102	392	400

(2) CROSS SECTIONS





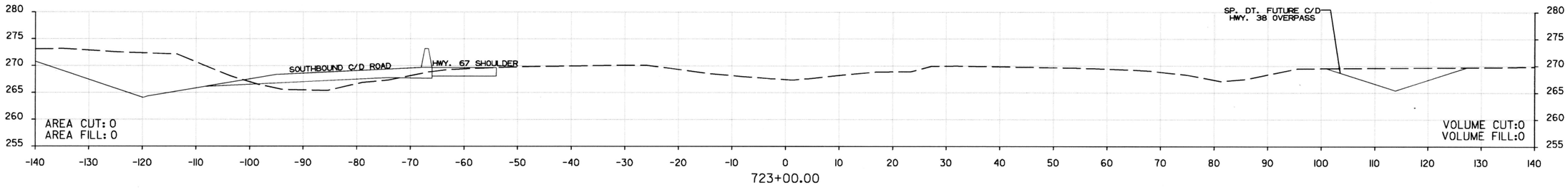


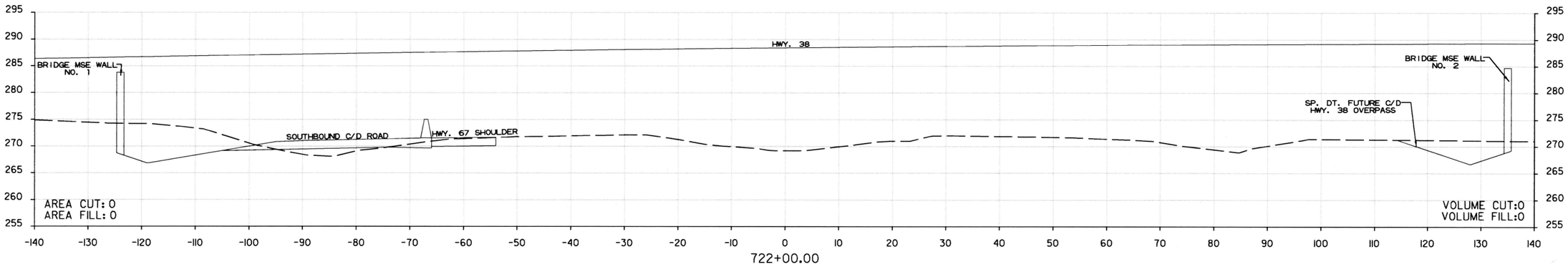
NOTE: SEE SOUTHBOUND CD ROAD CROSS SECTIONS SHEETS 328-335 FOR ADDITIONAL INFORMATION.

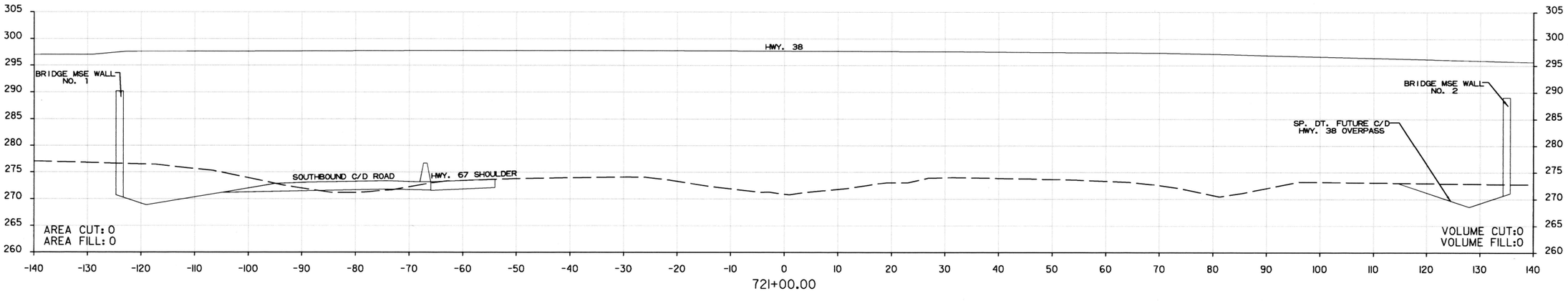
STA. 718+00.00 TO STA. 720+00.00
HWY. 67

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.		061102	393	400

(2) CROSS SECTIONS





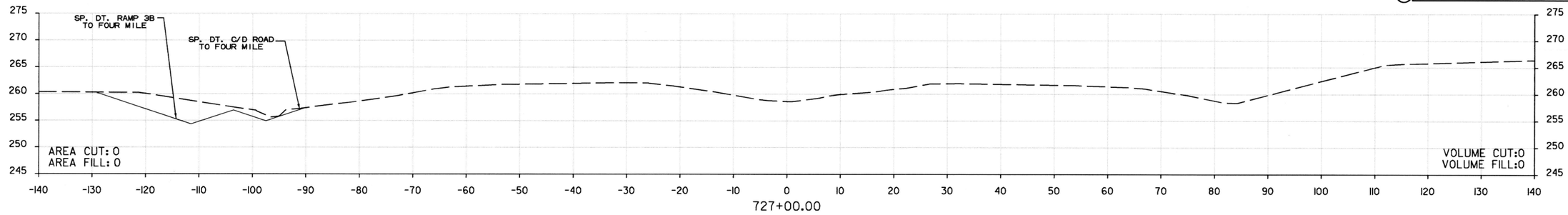


NOTE: SEE SOUTHBOUND CD ROAD CROSS SECTIONS SHEETS 328-335 FOR ADDITIONAL INFORMATION.

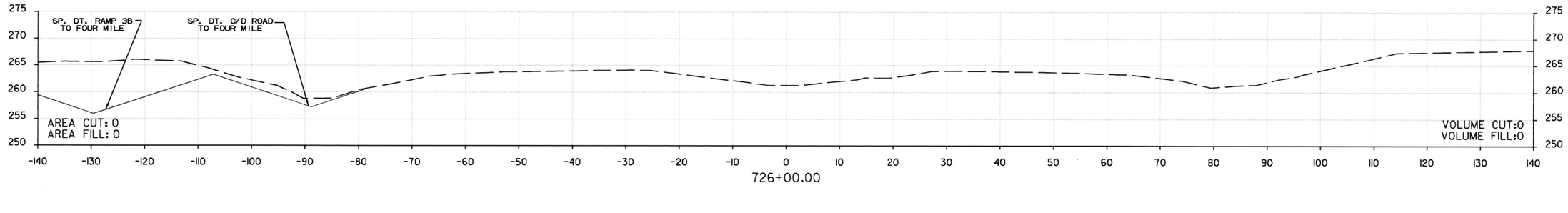
STA. 721+00.00 TO STA. 723+00.00
HWY. 67

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.		061102	394	400

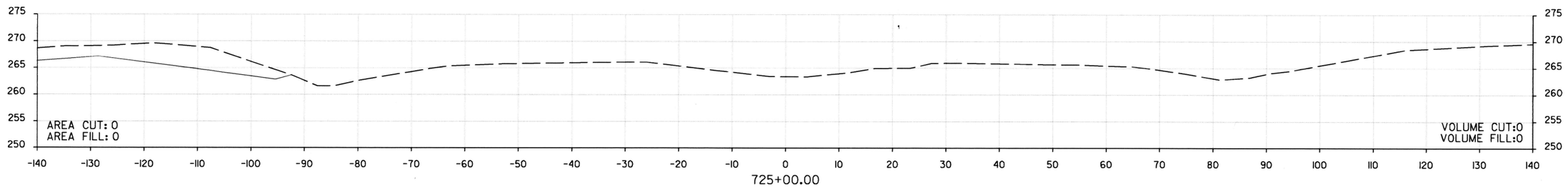
(2) CROSS SECTIONS



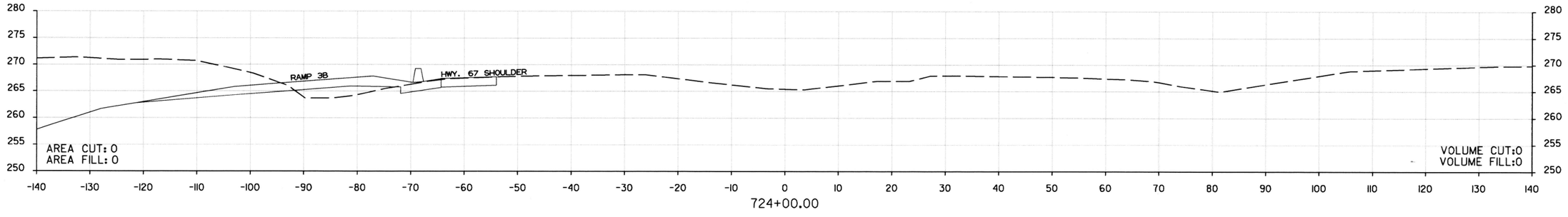
727+00.00



726+00.00



725+00.00



724+00.00

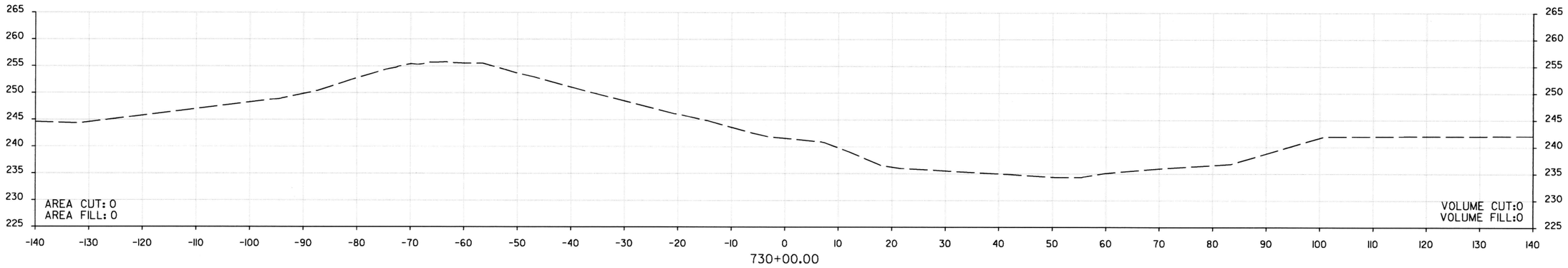
NOTE: SEE RAMP 3B CROSS SECTIONS SHEET 320 FOR ADDITIONAL INFORMATION.

STA. 724+00.00 TO STA. 727+00.00
HWY. 67

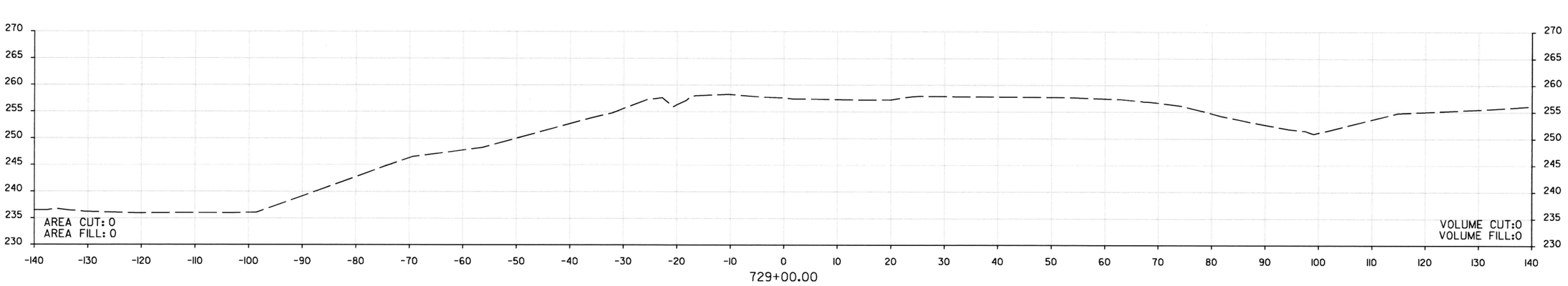
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061102	395	400

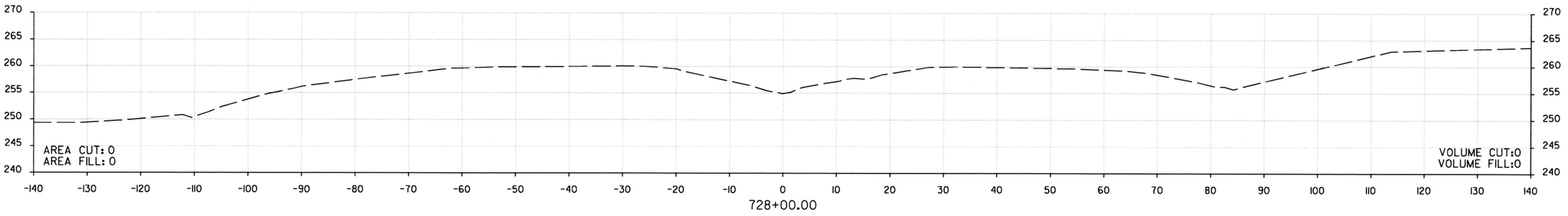
(2) CROSS SECTIONS



730+00.00



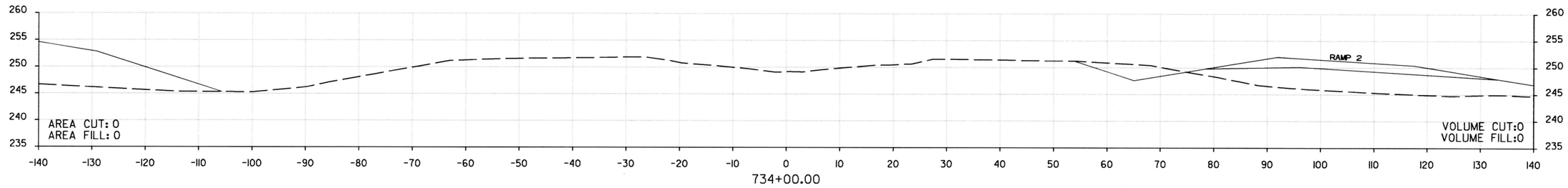
729+00.00

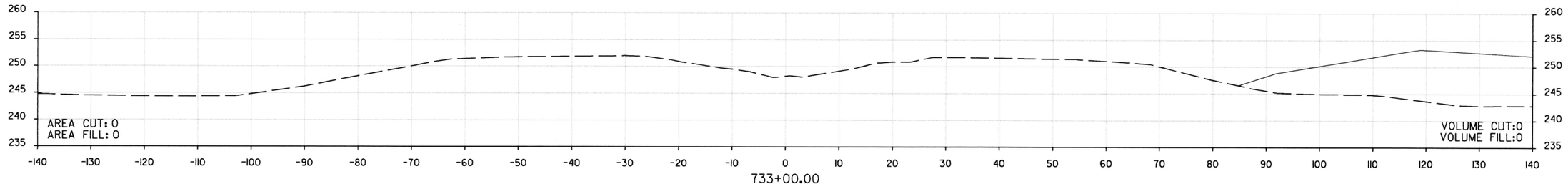


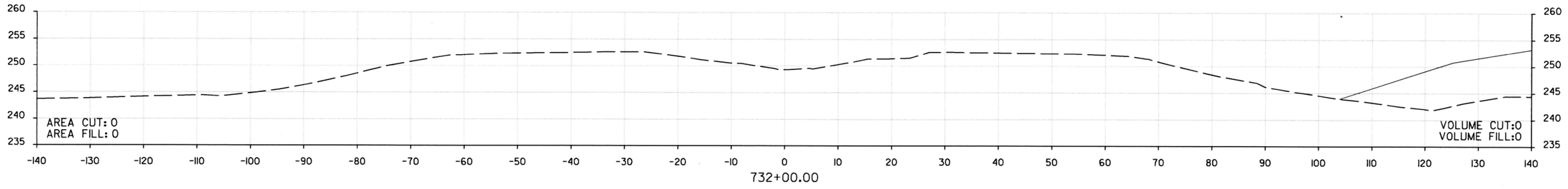
728+00.00

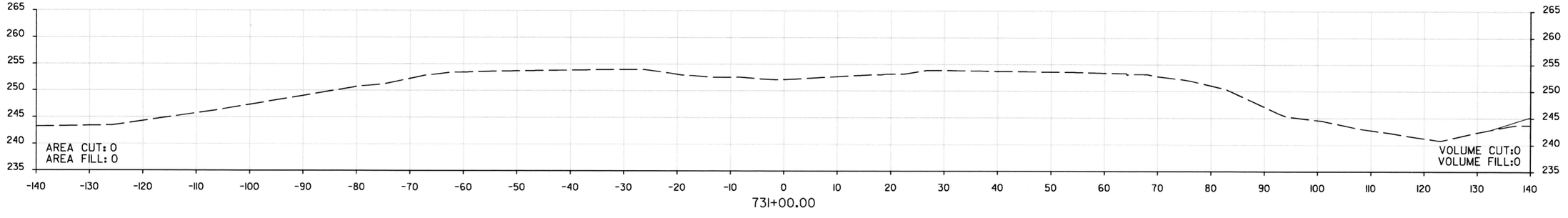
STA. 728+00.00 TO STA. 730+00.00
HWY. 67

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.		061102	396	400
				(2)	CROSS SECTIONS			







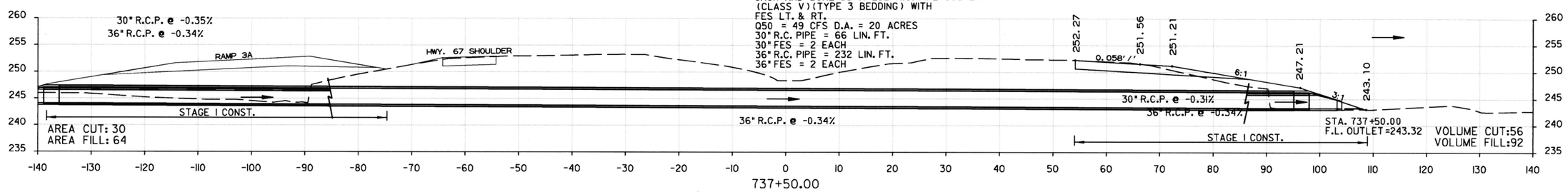


STA. 731+00.00 TO STA. 734+00.00
HWY. 67

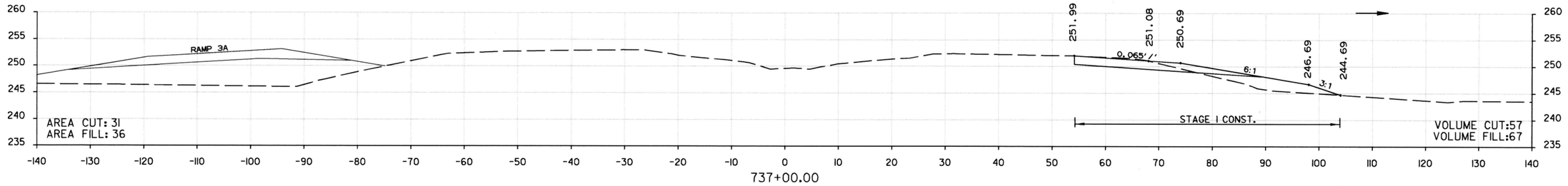
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	397	400

(2) CROSS SECTIONS

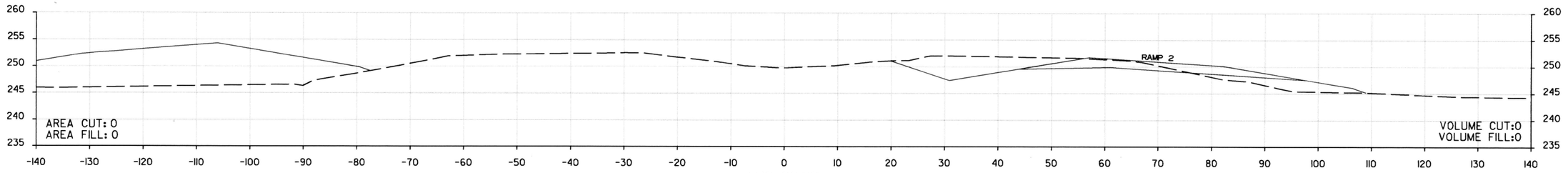
STA. 737+50 ℄ MED. HWY. 67 IN PLACE
DROP INLET IN MEDIAN
WITH 30"X 180' R.C. PIPE CULVERT
WITH HDWL. LT. AND RT.
REMOVE HDWLS. LT. & RT. AND EXTEND R.C. PIPE
54' LT. AND 12' RT.
(CLASS III)(TYPE 3 BEDDING) WITH FES LT. & RT.
JACK AND BORE 36"x 232' R.C. PIPE CULVERT
(CLASS V)(TYPE 3 BEDDING) WITH
FES LT. & RT.
Q50 = 49 CFS D.A. = 20 ACRES
30" R.C. PIPE = 66 LIN. FT.
30" FES = 2 EACH
36" R.C. PIPE = 232 LIN. FT.
36" FES = 2 EACH



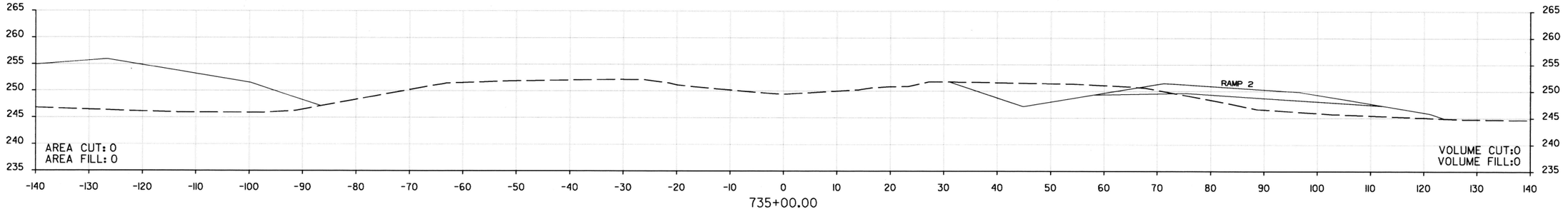
737+50.00



737+00.00



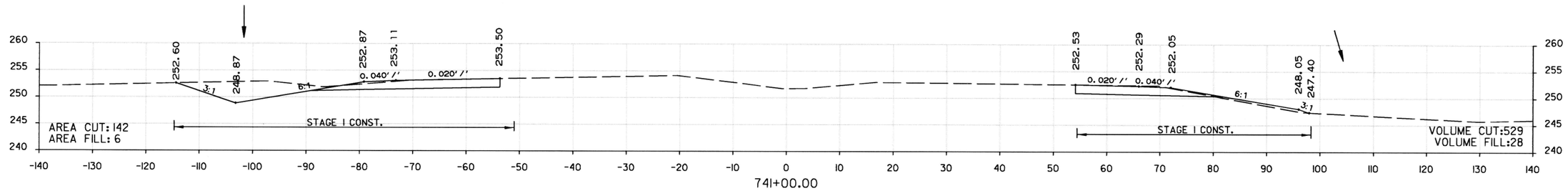
736+00.00

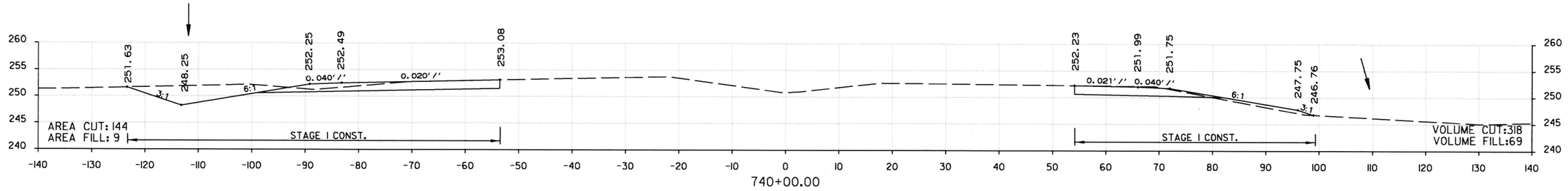


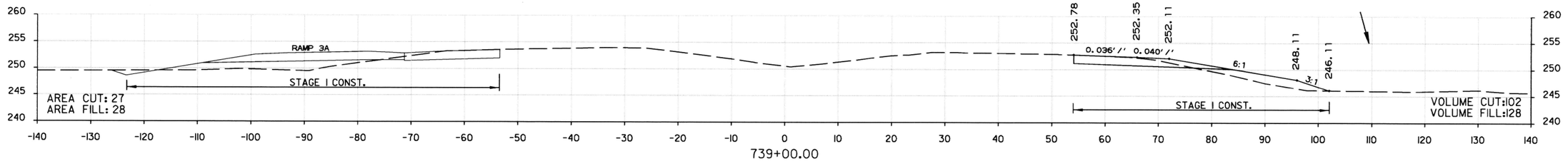
735+00.00

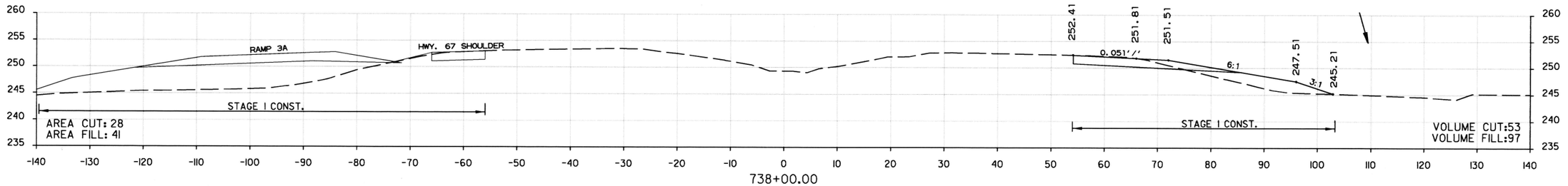
STA. 735+00.00 TO STA. 737+50.00
HWY. 67

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.		061102	398	400
				(2)	CROSS SECTIONS			





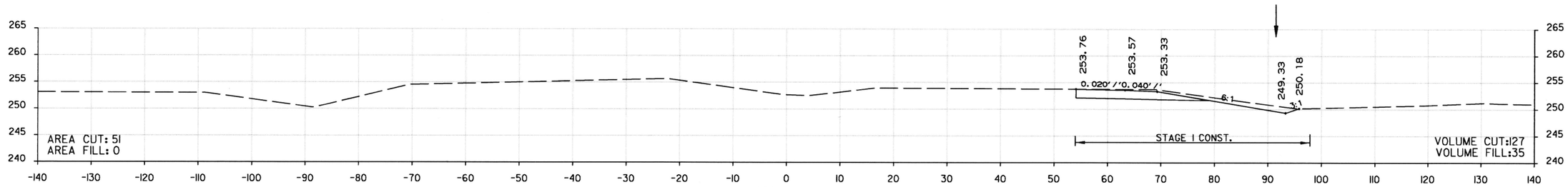




STA. 738+00.00 TO STA. 741+00.00
HWY. 67

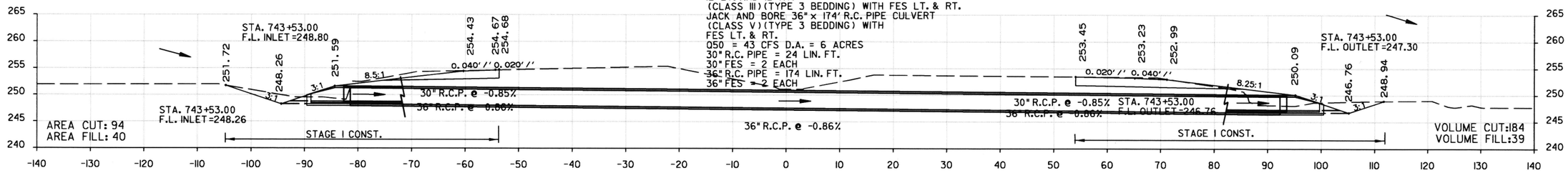
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	399	400

(2) CROSS SECTIONS

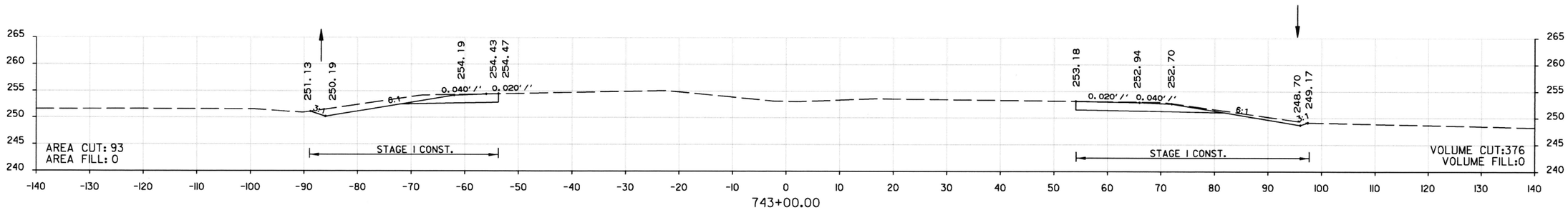


744+00.00

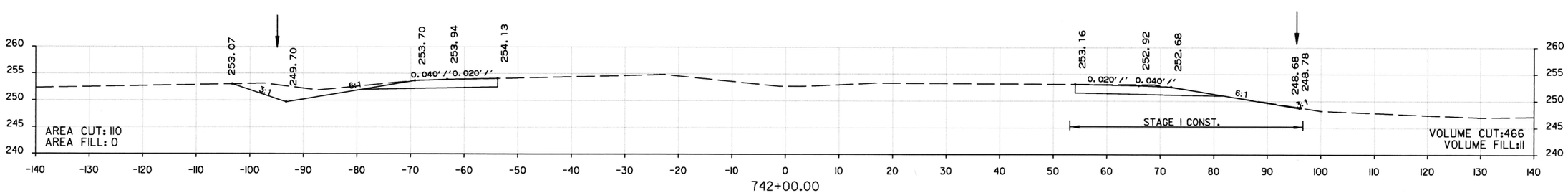
STA. 743+53 ℄ MED. HWY. 67 IN PLACE
DROP INLET IN MEDIAN
WITH 30" X 165' R.C. PIPE CULVERT
WITH HDWL. LT. AND RT.
REMOVE HDWL. LT. & RT. AND EXTEND R.C. PIPE
12' LT. AND 12' RT.
(CLASS III)(TYPE 3 BEDDING) WITH FES LT. & RT.
JACK AND BORE 36" x 174' R.C. PIPE CULVERT
(CLASS V)(TYPE 3 BEDDING) WITH
FES LT. & RT.
Q50 = 43 CFS D.A. = 6 ACRES
30" R.C. PIPE = 24 LIN. FT.
30" FES = 2 EACH
36" R.C. PIPE = 174 LIN. FT.
36" FES = 2 EACH



743+53.00



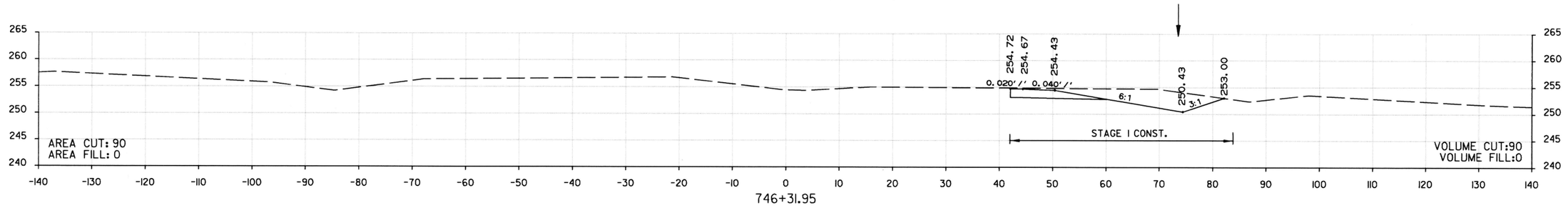
743+00.00



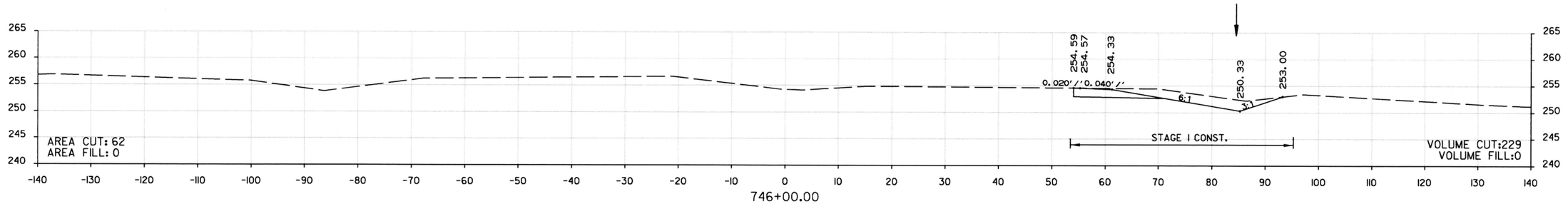
742+00.00

STA. 742+00.00 TO STA. 744+00.00
HWY. 67

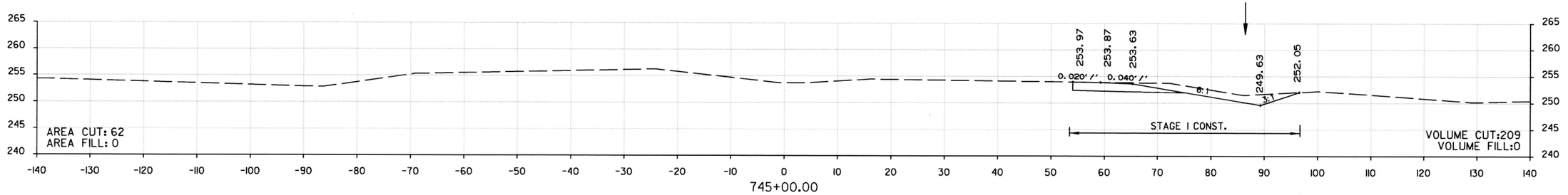
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	400	400
				(2)	CROSS SECTIONS			



746+31.95



746+00.00



745+00.00

STA. 745+00.00 TO STA. 746+31.95
HWY. 67