

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

LITTLE BODCAU
CREEK & RELIEF
STRS. & APPRS. (S)

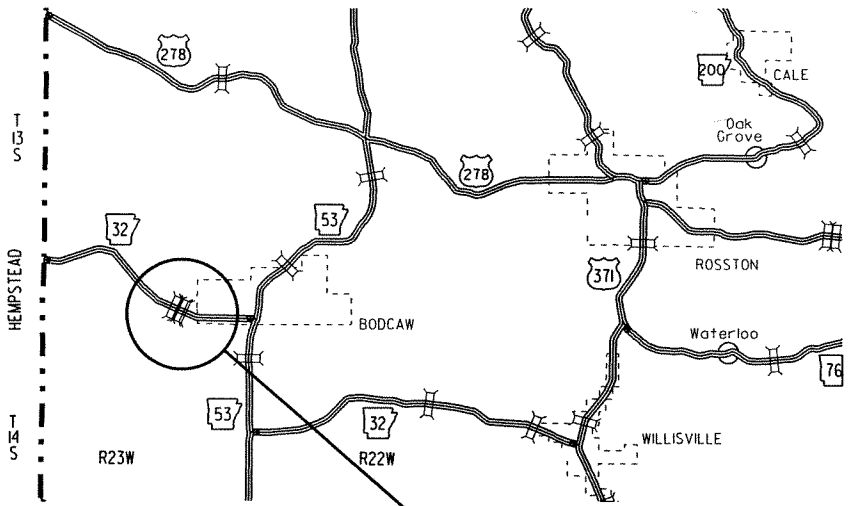
NEVADA COUNTY
ROUTE 32 SECTION 8

JOB 030386

F. A. P. NO. BRN-0050(25)

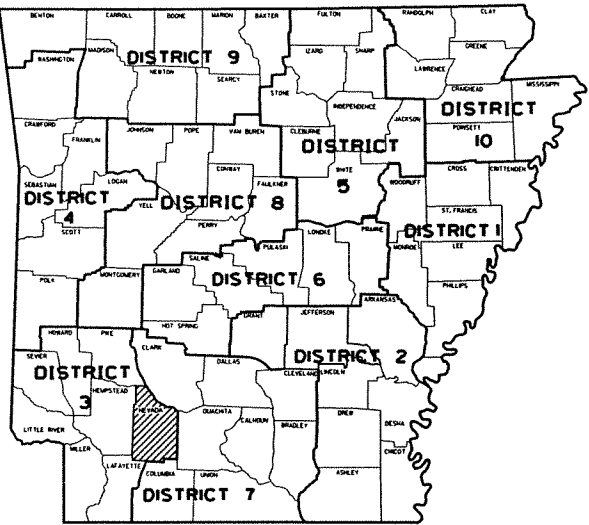
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 030386	1	77

(2) LITTLE BODCAU CREEK & RELIEF STRS. & APPRS. (S)



VICINITY MAP

PROJECT
LOCATION



ARK. HWY. DIST. NO. 3

STRUCTURES OVER 20' -0" SPAN

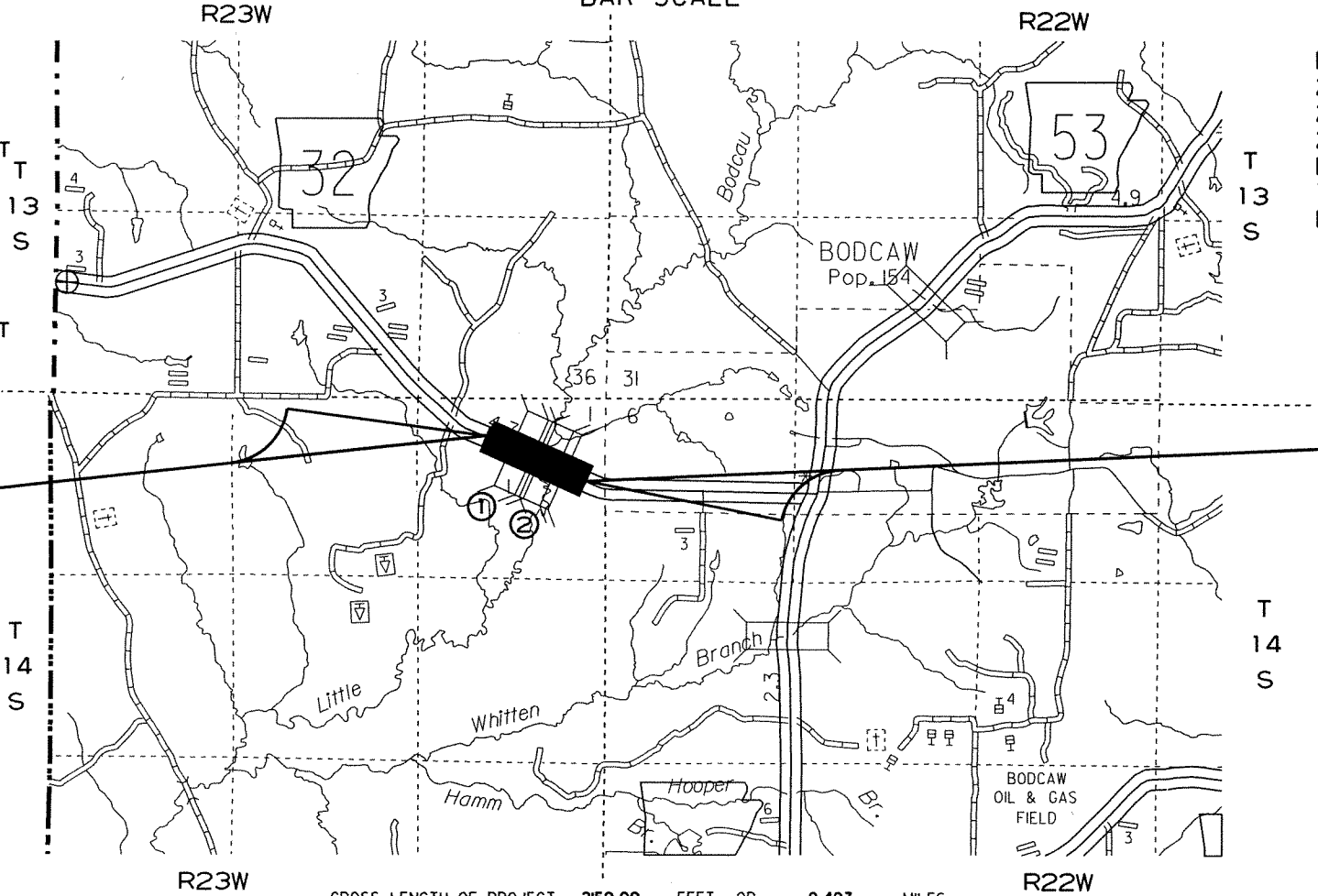
- ① BR. END STA. 106+89.94
BRIDGE NO. 07198
30' -0" CLEAR ROADWAY
128' -1 1/2" TOTAL LENGTH
126' -0" CONTINUOUS COMPOSITE W-BEAM UNIT
(42' -0", 42' -0", 42' -0")
BR. END STA 108+18.06
- ② BR. END STA. 112+85.92
BRIDGE NO. 07199
30' -0" CLEAR ROADWAY
190' -2" TOTAL LENGTH
188' -0" CONTINUOUS COMPOSITE W-BEAM UNIT
(47' -0", 47' -0", 47' -0", 47' -0")
BR. END STA 114+76.08

STA 100+00.01 - BEGIN
JOB 030386
L. M. 2.95

BEGINNING:
LAT: N33° 33' 32"
LONG: W93° 26' 15"
MID POINT:
LAT: N33° 33' 26"
LONG: W93° 25' 58"
ENDING:
LAT: N33° 33' 22"
LONG: W93° 25' 50"



BAR SCALE



• DESIGN TRAFFIC DATA •

DESIGN YEAR	2031
2011 ADT	800
2031 ADT	1000
2031 DHV	110
DIRECTIONAL DISTRIBUTION	60 %
TRUCKS	7 %
DESIGN SPEED	60 MPH

STA 121+50.01 - END
JOB 030386
L. M. 3.35



APPROVED

STATE OF
ARKANSAS
REGISTERED
PROFESSIONAL
ENGINEER
No. 3917
FRANK VOZEL
8/18/11
DEPUTY DIRECTOR
AND CHIEF ENGINEER

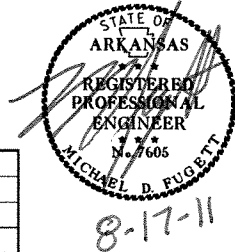
P.E. 030386
NON-PART.

GROSS LENGTH OF PROJECT	2150.00	FEET OR	0.407	MILES
NET " " ROADWAY	1831.72	" "	0.347	"
NET " " BRIDGES	318.28	" "	0.060	"
NET " " PROJECT	2150.00	" "	0.407	"

INDEX OF SHEETS				
SHEET NO.	TITLE	BRIDGE NO.	DRAWING NO.	DATE
1	TITLE SHEET			
2	INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES			
3	TYPICAL SECTIONS OF IMPROVEMENT			
4-6	SPECIAL DETAILS			
7-9	TEMPORARY EROSION CONTROL DETAILS			
10-13	MAINTENANCE OF TRAFFIC DETAILS			
14-16	QUANTITY SHEETS			
17	SCHEDULE OF BRIDGE QUANTITIES	07198, 07199	51793	
18	SUMMARY OF QUANTITIES AND REVISIONS			
19-20	SURVEY CONTROL DETAILS			
21-22	PLAN AND PROFILE SHEETS			
23-24	DETOUR PLAN AND PROFILE SHEETS			
25	LAYOUT OF BRIDGE OVER LITTLE BODCAU CREEK RELIEF (SHEET 1 OF 2)	07198	51794	
26	LAYOUT OF BRIDGE OVER LITTLE BODCAU CREEK RELIEF (SHEET 2 OF 2)	07198	51795	
27	DETAILS OF END BENTS - LITTLE BODCAU CREEK RELIEF	07198	51796	
28	COMMON DETAILS OF END BENTS - LITTLE BODCAU CREEK & RELIEF	07198, 07199	51797	
29	DETAILS OF INTERIOR BENTS - LITTLE BODCAU CREEK & RELIEF	07198, 07199	51798	
30	DETAILS OF ELASTOMERIC BEARINGS - LITTLE BODCAU CREEK & RELIEF	07198, 07199	51799	
31	COMMON DETAILS OF CONTINUOUS W-BEAM UNITS - LITTLE BODCAU CREEK & RELIEF (SHEET 1 OF 4)	07198, 07199	51800	
32	COMMON DETAILS OF CONTINUOUS W-BEAM UNITS - LITTLE BODCAU CREEK & RELIEF (SHEET 2 OF 4)	07198, 07199	51801	
33	COMMON DETAILS OF CONTINUOUS W-BEAM UNITS - LITTLE BODCAU CREEK & RELIEF (SHEET 3 OF 4)	07198, 07199	51802	
34	COMMON DETAILS OF CONTINUOUS W-BEAM UNITS - LITTLE BODCAU CREEK & RELIEF (SHEET 4 OF 4)	07198, 07199	51803	
35	DETAILS OF 126'-0" CONTINUOUS W-BEAM UNIT - LITTLE BODCAU CREEK RELIEF (SHEET 1 OF 2)	07198	51804	
36	DETAILS OF 126'-0" CONTINUOUS W-BEAM UNIT - LITTLE BODCAU CREEK RELIEF (SHEET 2 OF 2)	07198	51805	
37	LAYOUT OF BRIDGE OVER LITTLE BODCAU CREEK (SHEET 1 OF 2)	07199	51806	
38	LAYOUT OF BRIDGE OVER LITTLE BODCAU CREEK (SHEET 2 OF 2)	07199	51807	
39	DETAILS OF END BENTS - LITTLE BODCAU CREEK	07199	51808	
40	DETAILS OF 188'-0" CONTINUOUS W-BEAM UNIT - LITTLE BODCAU CREEK (SHEET 1 OF 2)	07199	51809	
41	DETAILS OF 188'-0" CONTINUOUS W-BEAM UNIT - LITTLE BODCAU CREEK (SHEET 2 OF 2)	07199	51810	
42	EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS		1888A	4-10-03
43	DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES		1891F	4-10-03
44	DETAILS OF STANDARD TYPE B APPROACH GUTTERS		2016B	7-14-10
45	DETAILS OF STANDARD TYPE D BRIDGE NAME PLATES		2387	9-8-11
46	DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONC. GIRDER SPANS		14991	4-10-03
47	STD. DETAILS OF CONCRETE PILES IN SEISMIC PERFORMANCE ZONES 1 & 2		14964	12-10-09
48	GUARD RAIL DETAILS		GR-8	7-14-10
49	GUARD RAIL DETAILS		GR-9	4-17-08
50	GUARD RAIL DETAILS		GR-9A	4-17-08
51	GUARD RAIL DETAILS		GR-10	7-14-10
52	GUARD RAIL DETAILS		GR-10A	7-14-10
53	GUARD RAIL DETAILS		GRT-1	7-14-10
54	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING		PCC-1	5-18-00
55	METAL PIPE CULVERT FILL HEIGHTS & BEDDING		PCM-1	3-30-00
56	PAVEMENT MARKING DETAILS		PM-1	11-17-10
57	DETAILS OF PIPE UNDERDRAIN		PU-1	4-10-03
58	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC		SE-2	10-18-96
59	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-1	11-17-10
60	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-2	3-11-10
61	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-3	10-15-09
62	TEMPORARY EROSION CONTROL DEVICES		TEC-1	11-18-98
63	TEMPORARY EROSION CONTROL DEVICES		TEC-2	6-02-94
64	TEMPORARY EROSION CONTROL DEVICES		TEC-3	11-03-94
65	WIRE FENCE WATER GAPS		WF-2	4-20-79
66	WIRE FENCE TYPE C AND D		WF-4	8-22-02
67-77	CROSS SECTIONS			

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				JOB NO.		030386	2	77

2 INDEX, GOV. SPECS., AND GEN. NOTES



GOVERNING SPECIFICATIONS

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

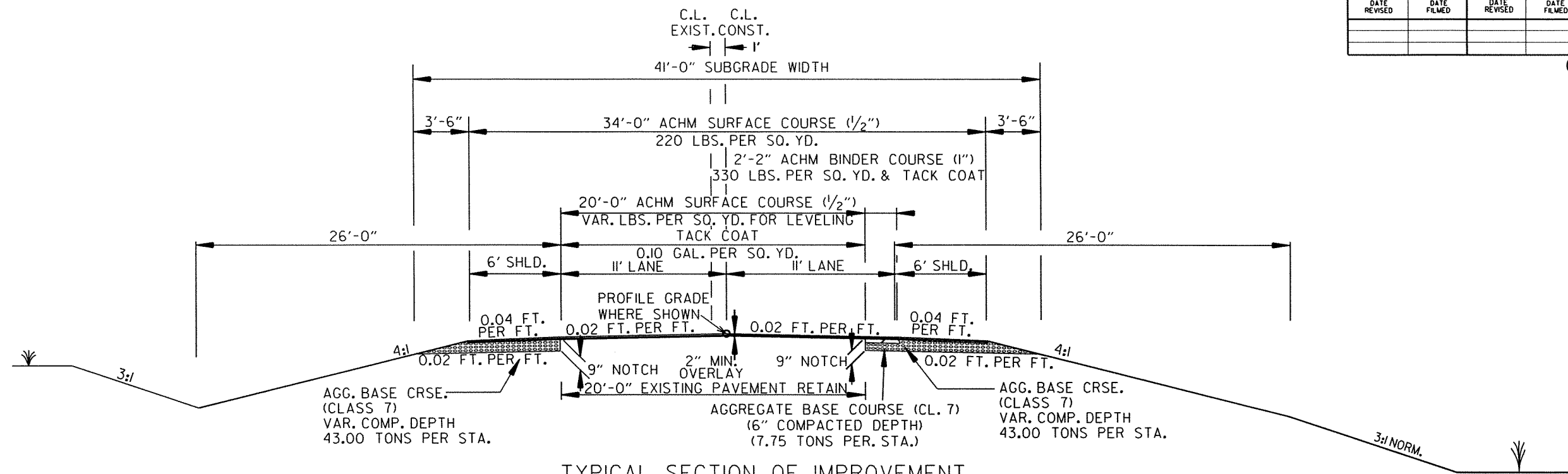
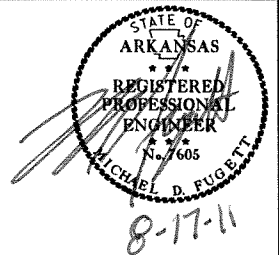
NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	FHWA-1273 REVISIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL - AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-2	MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
103-1	DETERMINATION OF DBE PARTICIPATION
105-1	CONSTRUCTION CONTROL MARKINGS
105-2	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
107-1	WORKER VISIBILITY
108-1	LIQUIDATED DAMAGES
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
303-1	AGGREGATE BASE COURSE
404-1	PRODUCTION VERIFICATION OF ASPHALT CONCRETE HOT MIX
409-1	MINERAL AGGREGATES
410-3	DENSITY TESTING FOR ACHM LEVELING COURSES AND BOND BREAKERS
411-1	ASPHALT CONCRETE COLD PLANT MIX
600-1	WATER FOR VEGETATION
603-1	MAINTENANCE OF TRAFFIC
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
JOB 030386	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 030386	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 030386	CONSTRUCTION IN SPECIAL HAZARD AREAS
JOB 030386	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 030386	HIGH PERFORMANCE PAVEMENT MARKING
JOB 030386	INTERNET BIDDING
JOB 030386	NESTING SITES OF MIGRATORY BIRDS
JOB 030386	PARTNERING REQUIREMENTS
JOB 030386	SECTION 404 NATIONWIDE PERMIT 23 REQUIREMENTS
JOB 030386	SILICONE JOINT SEALANT
JOB 030386	SOIL STABILIZATION
JOB 030386	STORM WATER POLLUTION PREVENTION PLAN
JOB 030386	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 030386	UTILITY ADJUSTMENTS
JOB 030386	VALUE ENGINEERING
JOB 030386	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.	ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
5.	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.
6.	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.
7.	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.
8.	ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 UNCLASSIFIED EXCAVATION.

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2 TYPICAL SECTIONS OF IMPROVEMENT



TYPICAL SECTION OF IMPROVEMENT
STA. 100+00.01 - STA. 102+50.00
STA. 119+50.00 - STA. 121+50.01

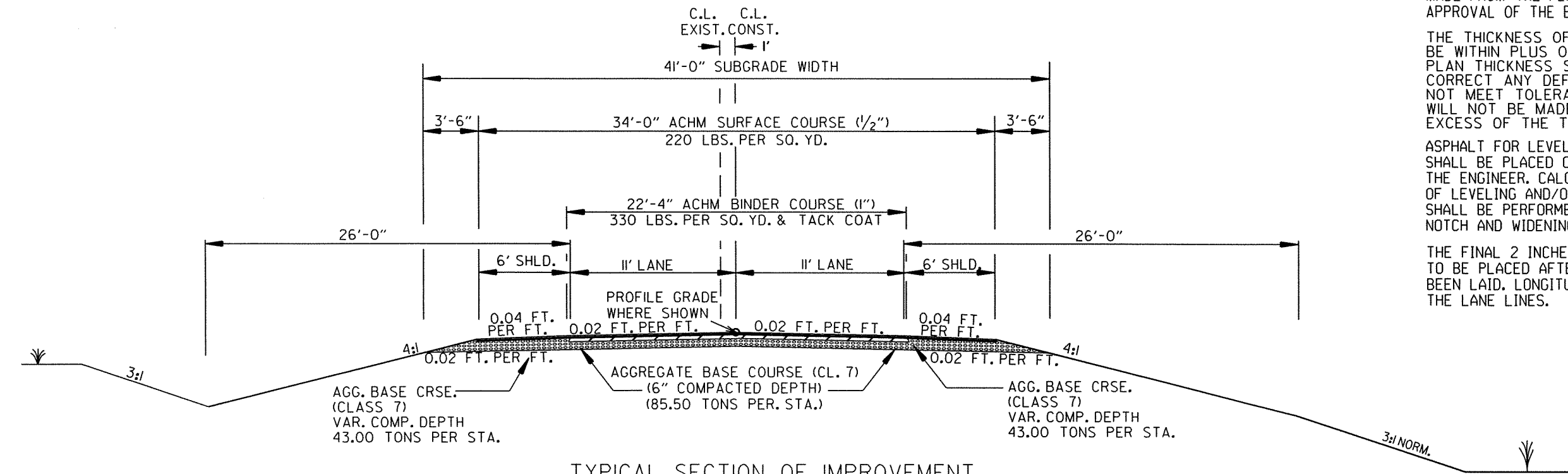
NOTES:

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

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

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

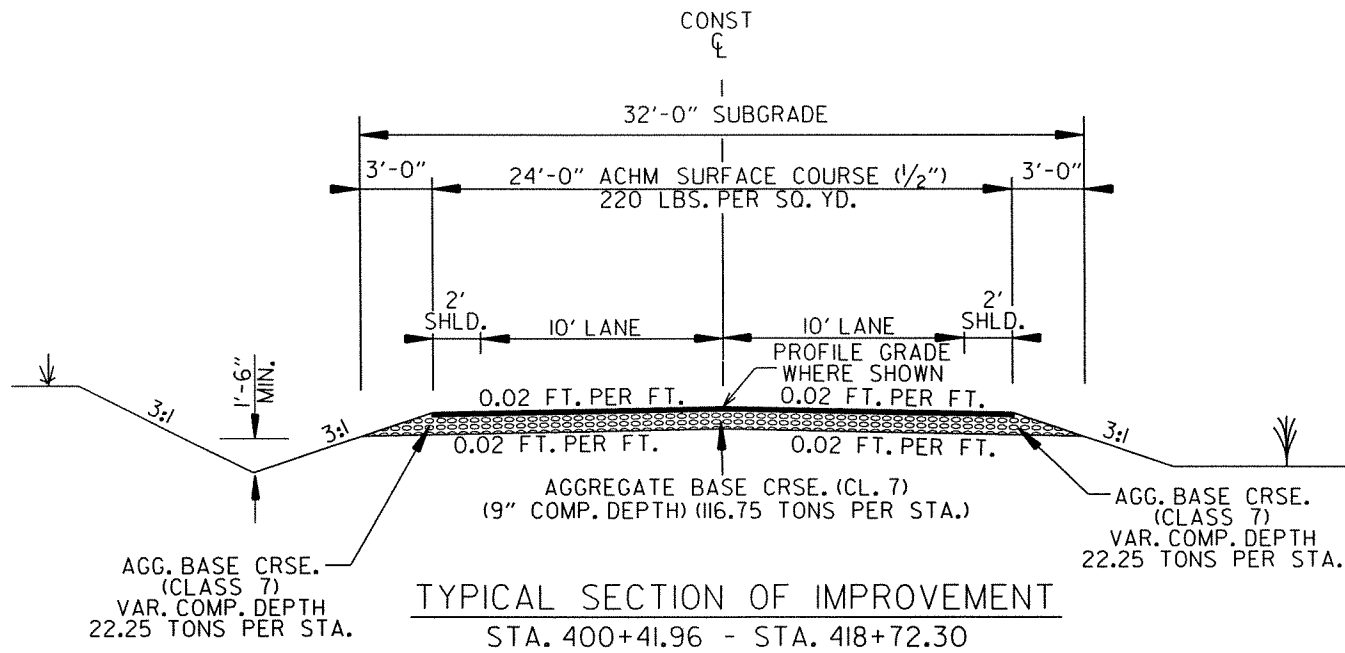
THE FINAL 2 INCHES OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT THE LANE LINES.



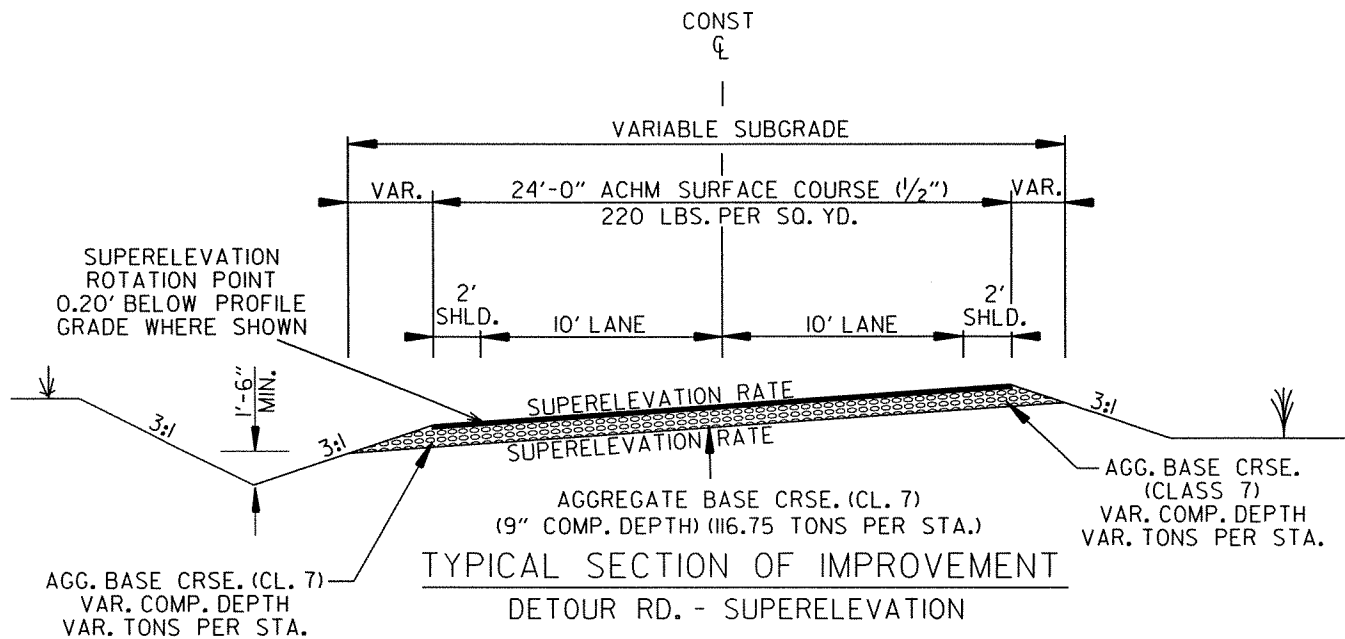
TYPICAL SECTION OF IMPROVEMENT
STA. 102+50.00 - STA. 106+89.94
STA. 108+18.06 - STA. 112+85.92
STA. 114+76.08 - STA. 119+50.00

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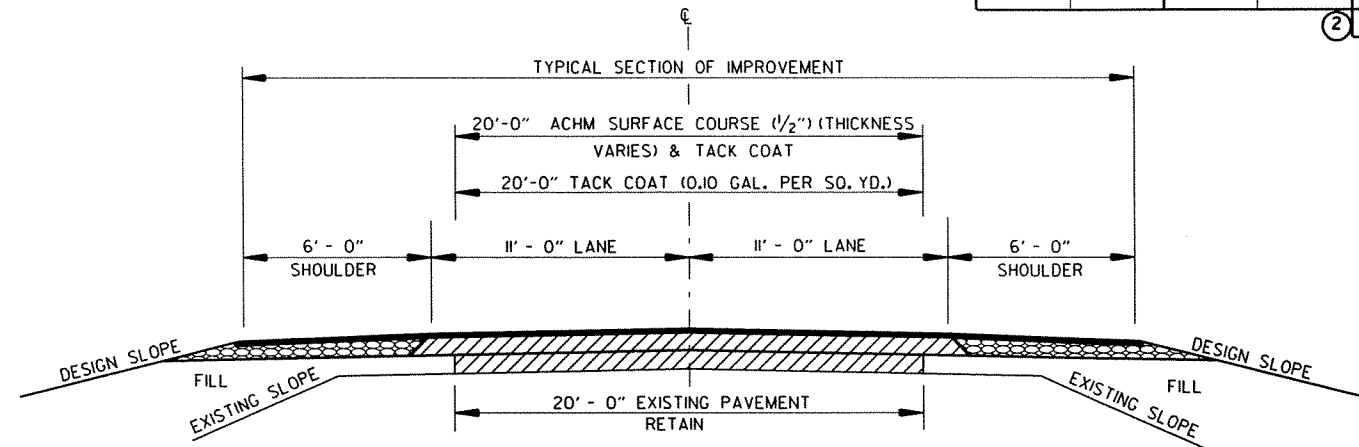
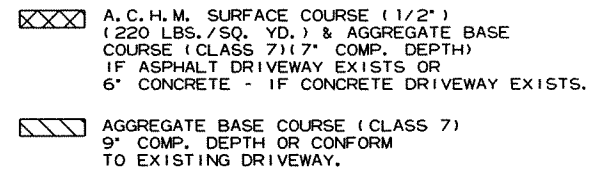
2 SPECIAL DETAILS



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

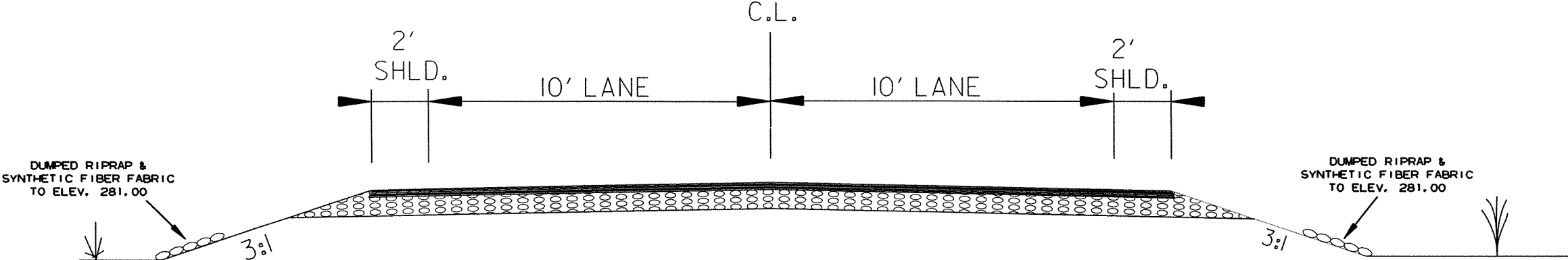
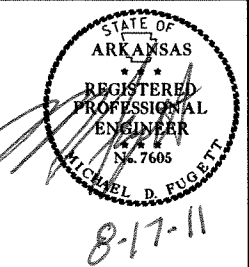


② SPECIAL DETAILS



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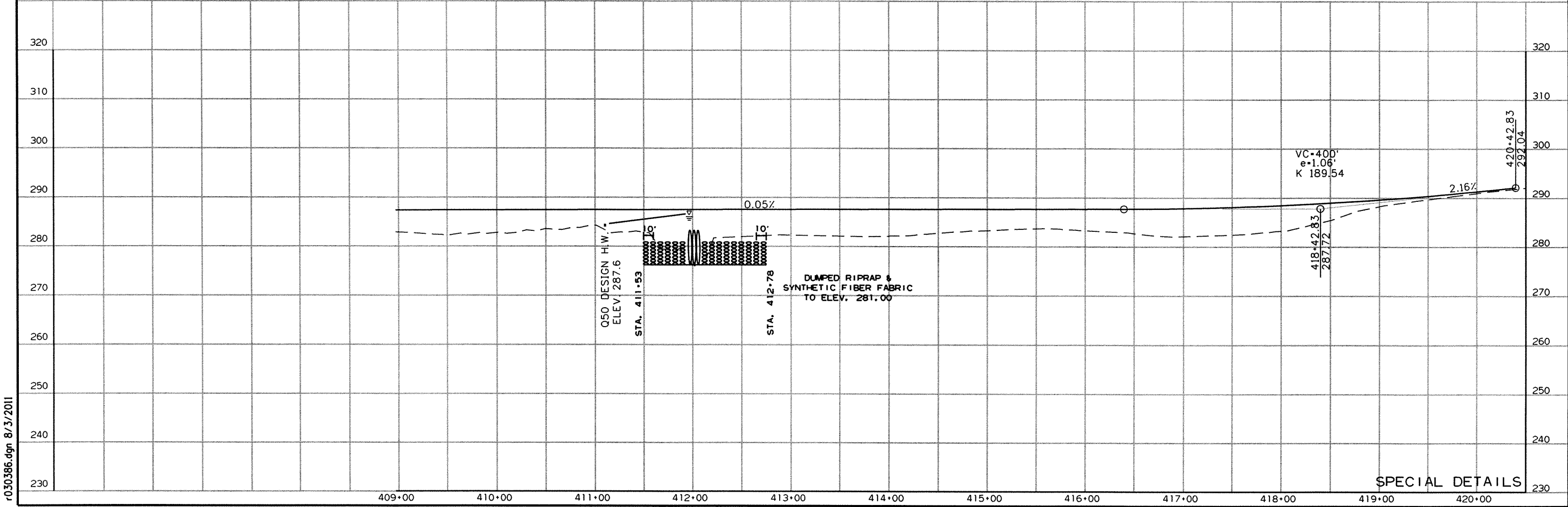
2 SPECIAL DETAILS



THIS STREAM IS CLASSIFIED AS A PERENNIAL STREAM. THE PERENNIAL STREAM BANK ELEVATION IS 282.0 FT. MSL.

TYPICAL SECTION OF IMPROVEMENT-DETOUR RD.
STA. 411+53 - STA. 412+78

SPECIAL DETAILS FOR
DUMPED RIPRAP AND
SYNTHETIC FIBER FABRIC
LITTLE BODCAU CREEK



SPECIAL DETAILS

EROSION CONTROL GENERAL NOTES

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

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

EROSION CONTROL QUANTITIES - STAGE 1

SAND BAG DITCH CHECKS (E-5) = 425 BAGS
DIVERSION DITCH (E-8) = 3687 LIN.FT.
SILT FENCE (E-11) = 412 LIN.FT.
PIPE FOR SLOPE DRAIN (E-12) = 123 LIN.FT.
SEDIMENT REMOVAL AND DISPOSAL = 200 CU.YD.
DUMPED RIPRAP = 6 CU.YD.

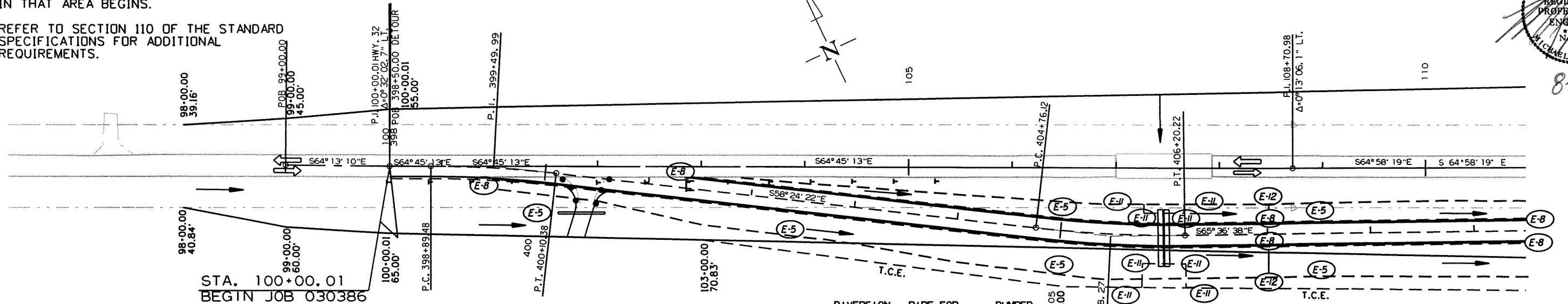
- (E-5) SAND BAG DITCH CHECKS
- (E-8) DIVERSION DITCH
- (E-11) SILT FENCE
- (E-12) PIPE FOR SLOPE DRAIN

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(2) TEMPORARY EROSION CONTROL DETAILS



8-17-11



STA. 100+00.01
BEGIN JOB 030386
L.M. 2.95

SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 400+00	RT.	25
STA. 402+50	RT.	25
STA. 405+00	RT.	25
STA. 405+00	LT.	25
STA. 407+50	RT.	25
STA. 407+50	LT.	25
STA. 409+00	RT.	25
STA. 409+00	LT.	25
STA. 411+50	RT.	25
STA. 411+50	LT.	25
STA. 412+25	RT.	25
STA. 412+25	LT.	25
STA. 414+00	RT.	25
STA. 414+00	LT.	25
STA. 416+50	RT.	25
STA. 419+00	RT.	25
STA. 421+00	RT.	25

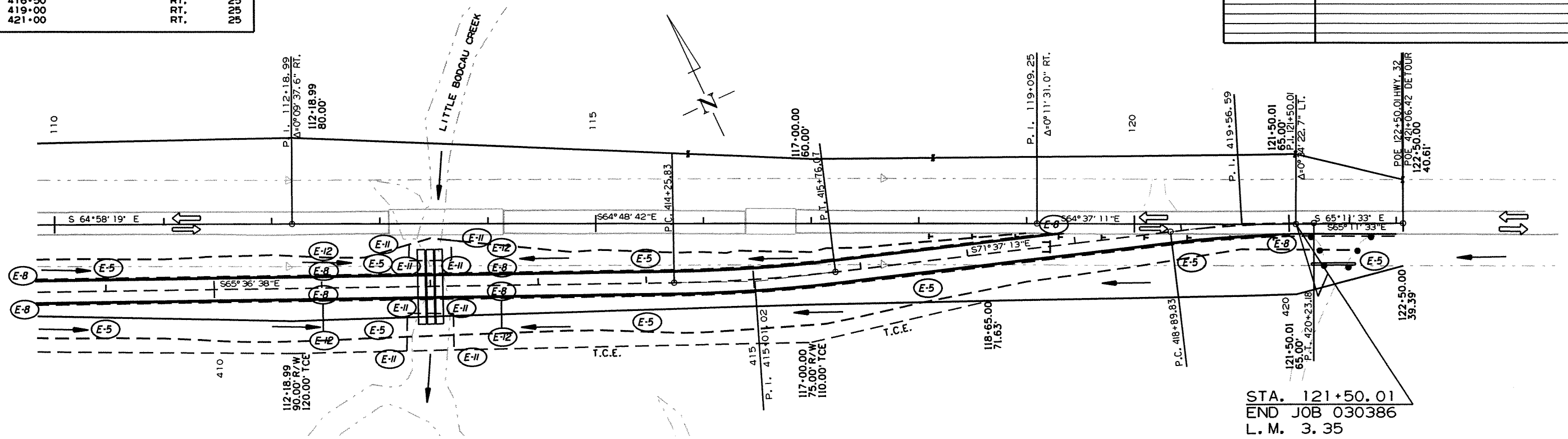
SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 405+64 - STA. 406+32	LT.	80
STA. 405+64 - STA. 406+32	RT.	107
STA. 411+69 - STA. 412+36	LT.	100
STA. 411+69 - STA. 412+36	RT.	125

DIVERSION DITCH LIN. FT.	PIPE FOR SLOPE DRAIN LIN. FT.	DUMPED RIPRAP CU. YD.
399+50 - 420+00		2050
401+41 - 417+78		1637
407+00	18	1
407+00	23	1
411+00	17	1
411+00	24	1
412+66	17	1
412+66	24	1

STA. 406+00 INSTALL
DBL. 60" x 56"
TEMPORARY PIPE CULVERT

REVISION BOX

DATE	REVISION



STA. 412+00 INSTALL
TRP. 84" x 70"
TEMPORARY PIPE CULVERT

STA. 121+50.01
END JOB 030386
L.M. 3.35

TEMPORARY EROSION CONTROL DETAILS STAGE 1

EROSION CONTROL GENERAL NOTES

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

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

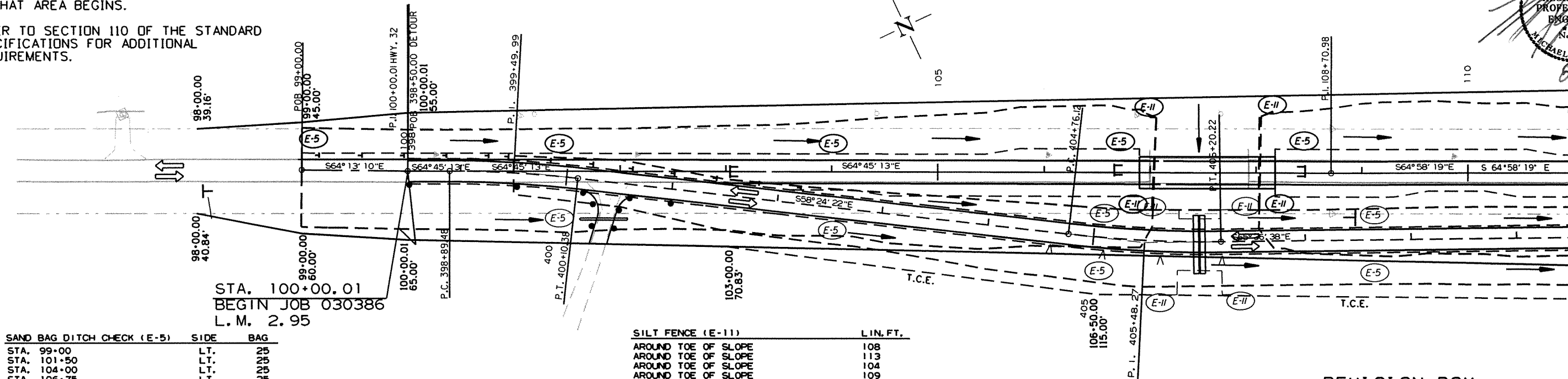
EROSION CONTROL QUANTITIES - STAGE 2

SAND BAG DITCH CHECKS (E-5) - 275 BAGS
SILT FENCE (E-11) - 434 LIN. FT.
SEDIMENT REMOVAL AND DISPOSAL - 100 CU.YD.

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

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2 TEMPORARY EROSION CONTROL DETAILS

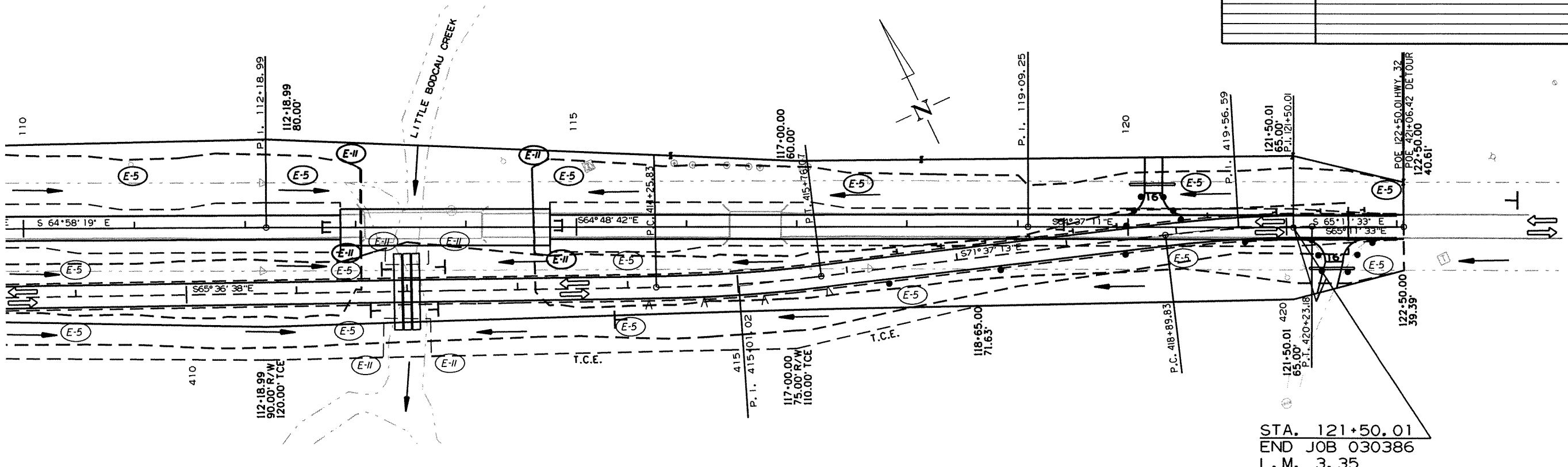


SAND BAG DITCH CHECK (E-5)	SIDE	BAG
STA. 99+00	L.T.	25
STA. 101+50	L.T.	25
STA. 104+00	L.T.	25
STA. 106+75	L.T.	25
STA. 108+50	L.T.	25
STA. 111+00	L.T.	25
STA. 112+50	L.T.	25
STA. 115+00	L.T.	25
STA. 117+50	L.T.	25
STA. 120+75	L.T.	25
STA. 122+00	L.T.	25

SILT FENCE (E-11)	LIN. FT.
AROUND TOE OF SLOPE	108
AROUND TOE OF SLOPE	113
AROUND TOE OF SLOPE	104
AROUND TOE OF SLOPE	109

REVISION BOX

DATE	REVISION



STA. 121+50.01
END JOB 030386
L.M. 3.35

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

EROSION CONTROL GENERAL NOTES

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

EROSION CONTROL QUANTITIES - STAGE 3

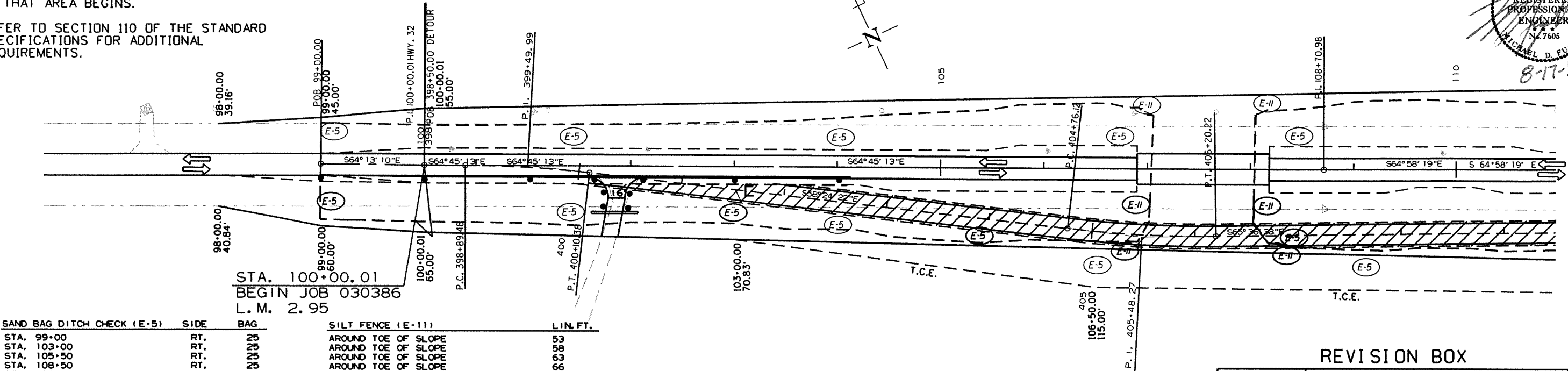
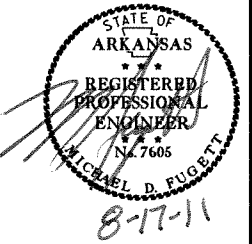
SAND BAG DITCH CHECKS (E-5) - 225 BAGS
SILT FENCE (E-11) - 240 LIN. FT.
SEDIMENT REMOVAL AND DISPOSAL - 100 CU.YD.

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		9	77

JOB NO. 030386

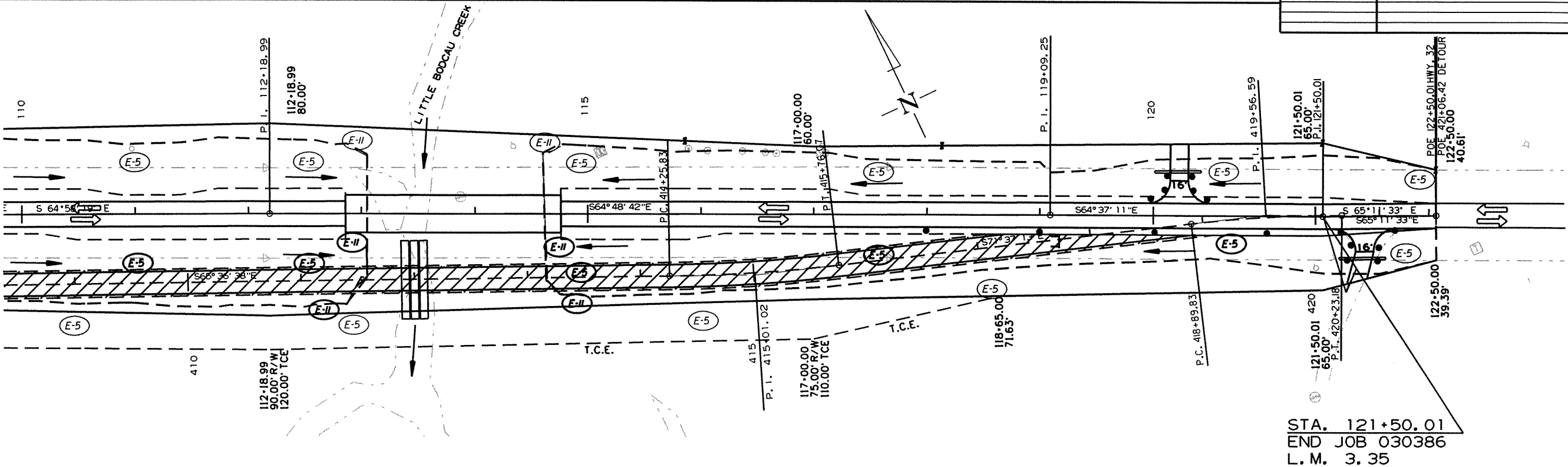
TEMPORARY EROSION CONTROL DETAILS



SAND BAG DITCH CHECK (E-5)	SIDE	BAG	SILT FENCE (E-11)	LIN. FT.
STA. 99+00	RT.	25	AROUND TOE OF SLOPE	53
STA. 103+00	RT.	25	AROUND TOE OF SLOPE	58
STA. 105+50	RT.	25	AROUND TOE OF SLOPE	63
STA. 108+50	RT.	25	AROUND TOE OF SLOPE	66
STA. 111+00	RT.	25		
STA. 112+50	RT.	25		
STA. 115+00	RT.	25		
STA. 117+50	RT.	25		
STA. 120+75	RT.	25		

REVISION BOX

DATE	REVISION

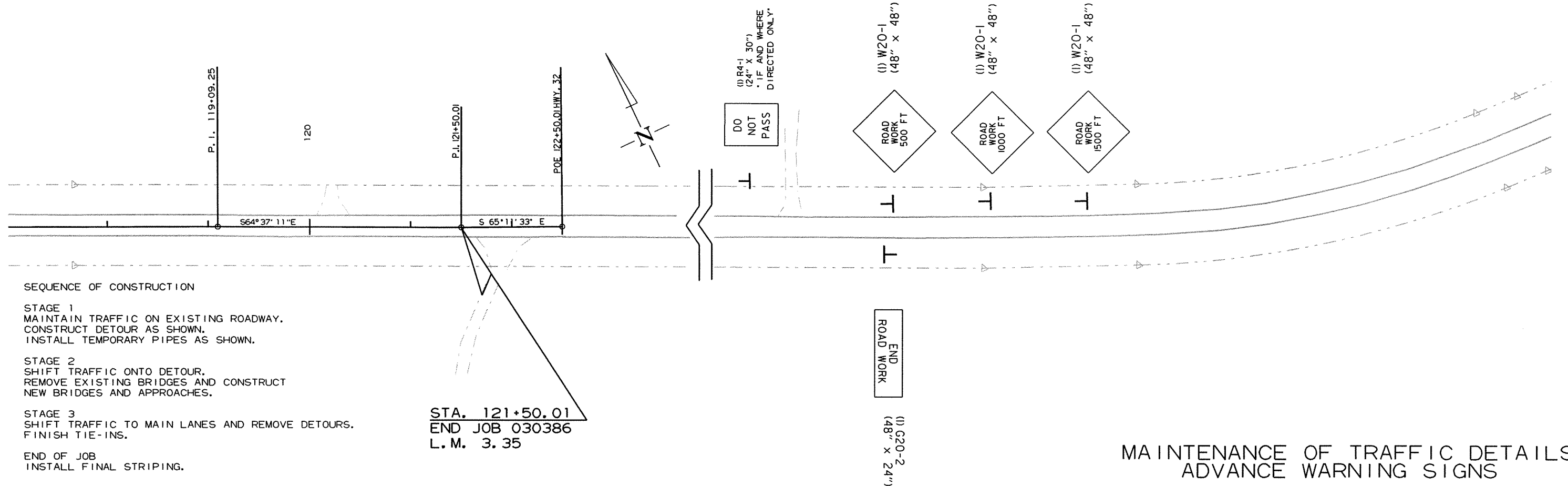
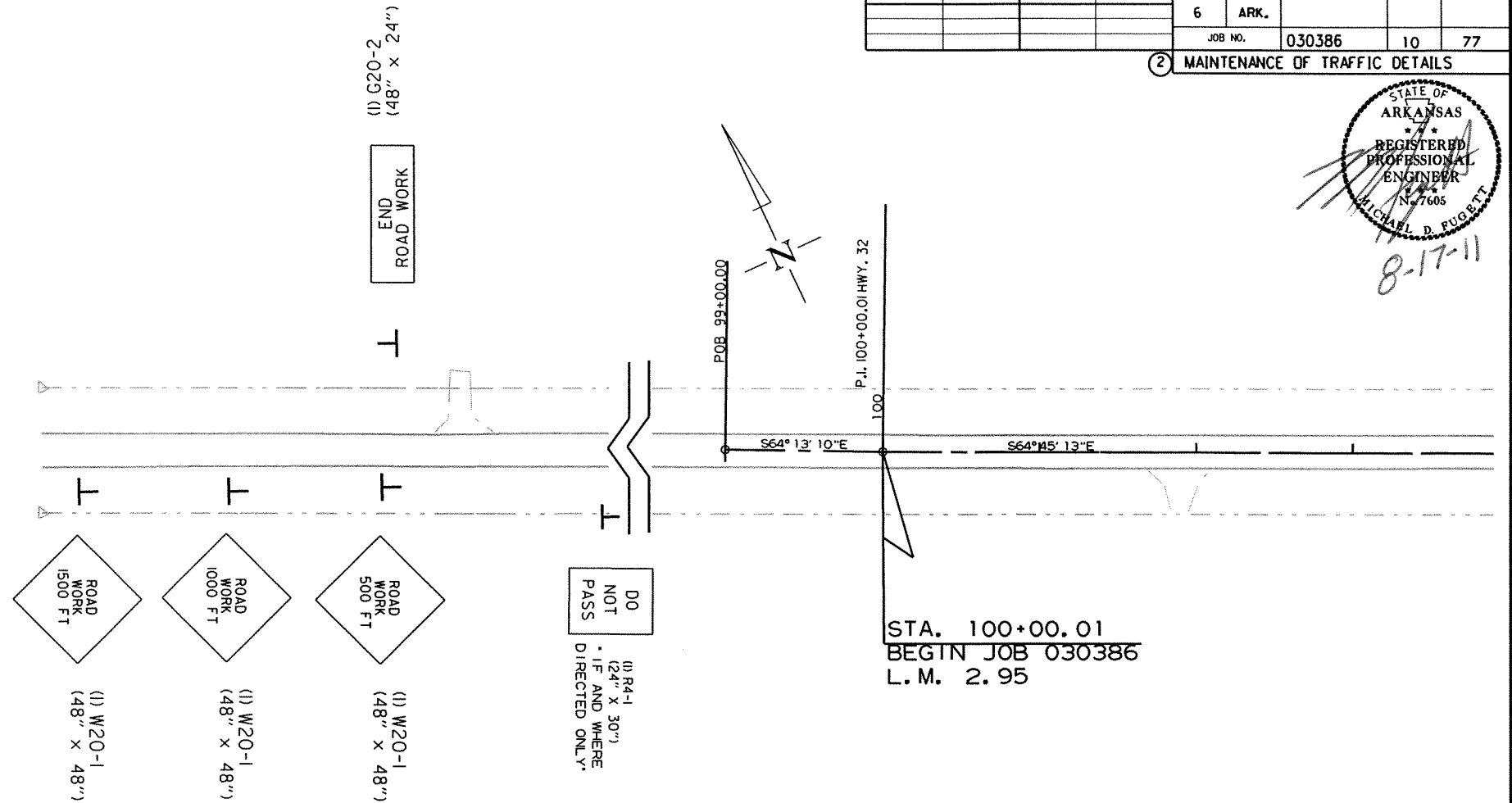
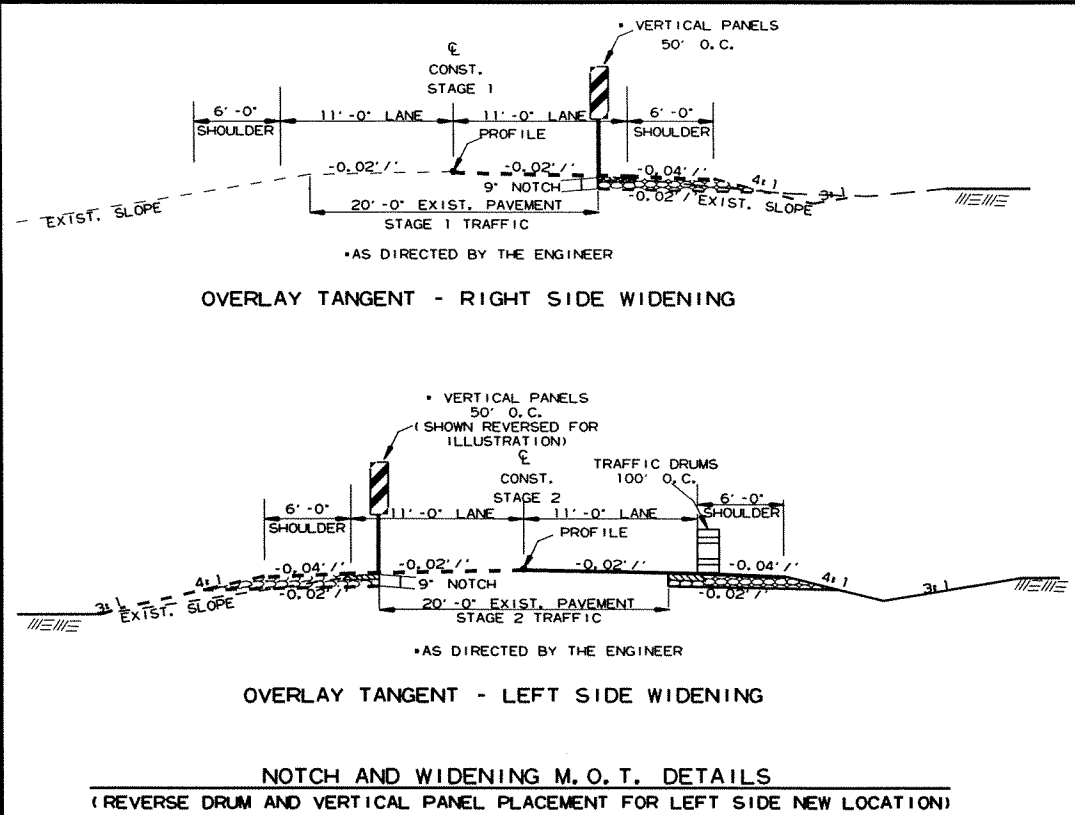
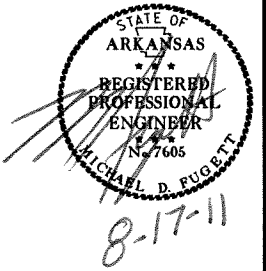


STA. 121+50.01
END JOB 030386
L. M. 3. 35

TEMPORARY EROSION CONTROL DETAILS
STAGE 3

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		10	77

2 MAINTENANCE OF TRAFFIC DETAILS



MAINTENANCE OF TRAFFIC - STAGE 1 QUANTITIES
 SIGNS = 142 SQ. FT.
 BARRICADES TY. III LT. = 16 LIN. FT.
 BARRICADES TY. III RT. = 16 LIN. FT.
 TRAFFIC DRUMS = 12 EACH
 VERTICAL PANELS = 16 EACH
 CONSTRUCTION PAVEMENT MARKING = 8026 LIN. FT.
 RAISED PAVEMENT MARKERS (TY. III) (YEL./YEL.) = 50 EACH
 60" TEMPORARY CULVERT = 110 LIN. FT.
 84" TEMPORARY CULVERT = 207 LIN. FT.

SEQUENCE OF CONSTRUCTION

STAGE 1
 MAINTAIN TRAFFIC ON EXISTING ROADWAY.
 CONSTRUCT DETOUR AS SHOWN.
 INSTALL TEMPORARY PIPES AS SHOWN.

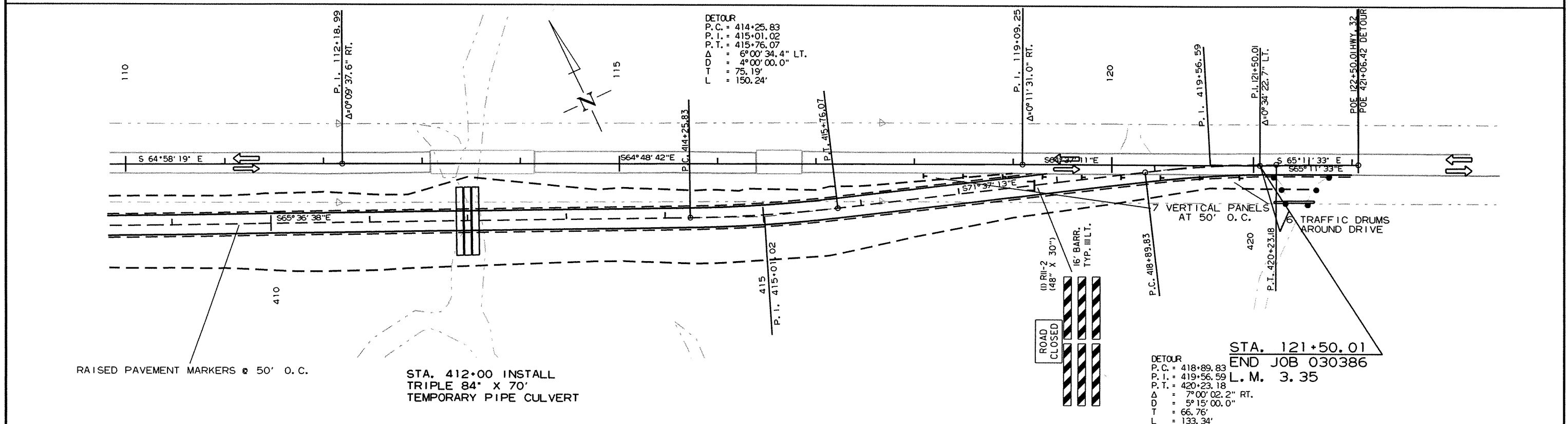
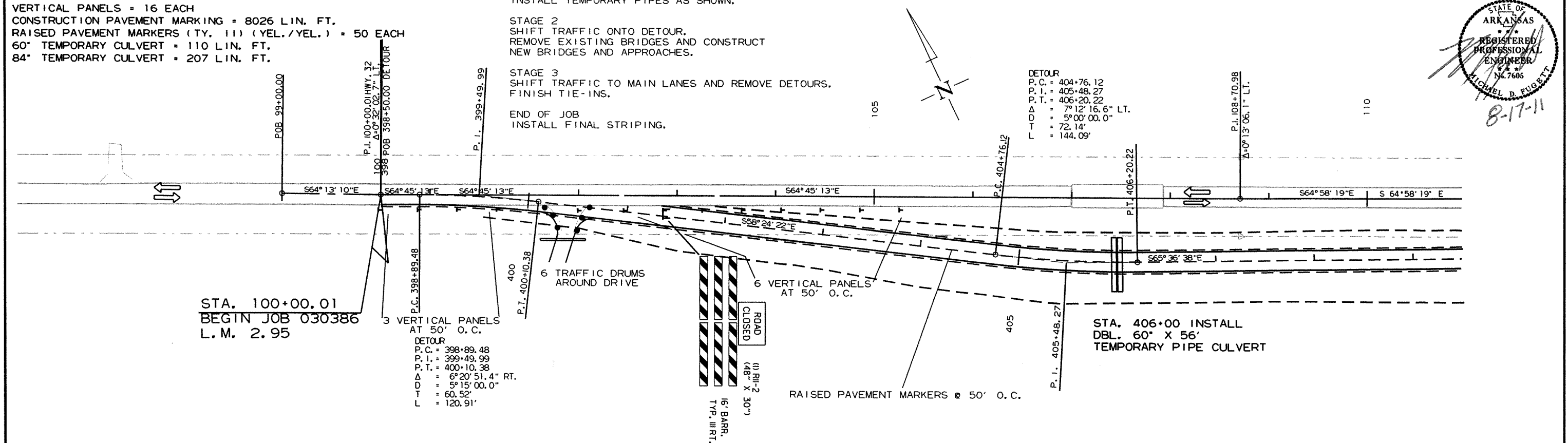
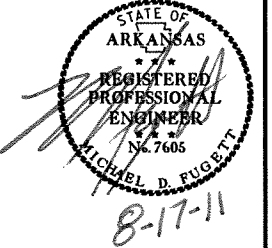
STAGE 2
 SHIFT TRAFFIC ONTO DETOUR.
 REMOVE EXISTING BRIDGES AND CONSTRUCT
 NEW BRIDGES AND APPROACHES.

STAGE 3
 SHIFT TRAFFIC TO MAIN LANES AND REMOVE DETOURS.
 FINISH TIE-INS.

END OF JOB
 INSTALL FINAL STRIPING.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030386	11	77

② MAINTENANCE OF TRAFFIC DETAILS



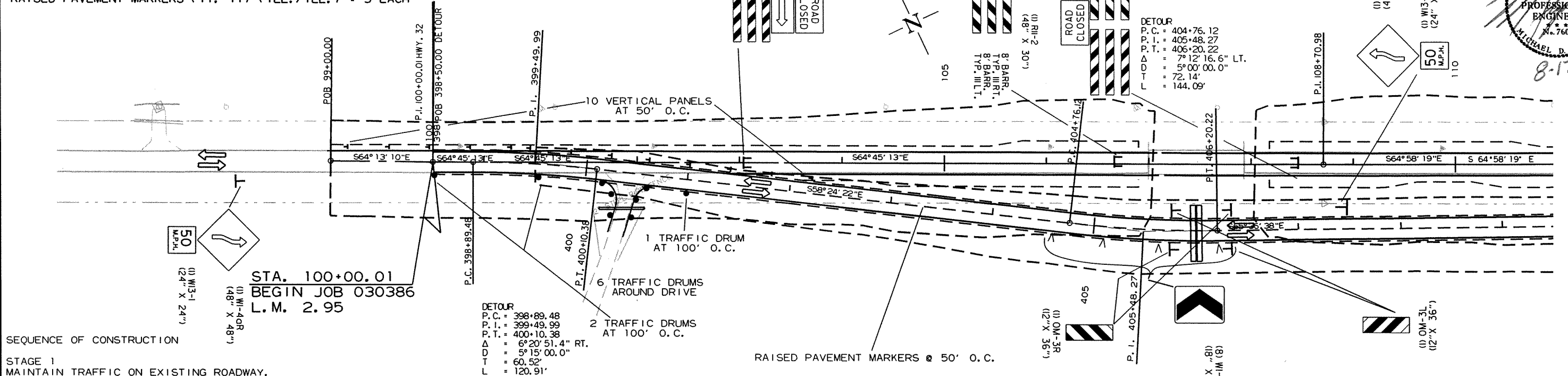
MAINTENANCE OF TRAFFIC DETAILS
 STAGE 1

MAINTENANCE OF TRAFFIC - STAGE 2 QUANTITIES

SIGNS = 350 SQ. FT.
 BARRICADES TY. III LT. = 48 LIN. FT.
 BARRICADES TY. III RT. = 48 LIN. FT.
 TRAFFIC DRUMS = 25 EACH
 VERTICAL PANELS = 19 EACH
 CONSTRUCTION PAVEMENT MARKING = 800 LIN. FT.
 RAISED PAVEMENT MARKERS (TY. II) (YEL./YEL.) = 5 EACH

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

JOB NO. 030386 12 77



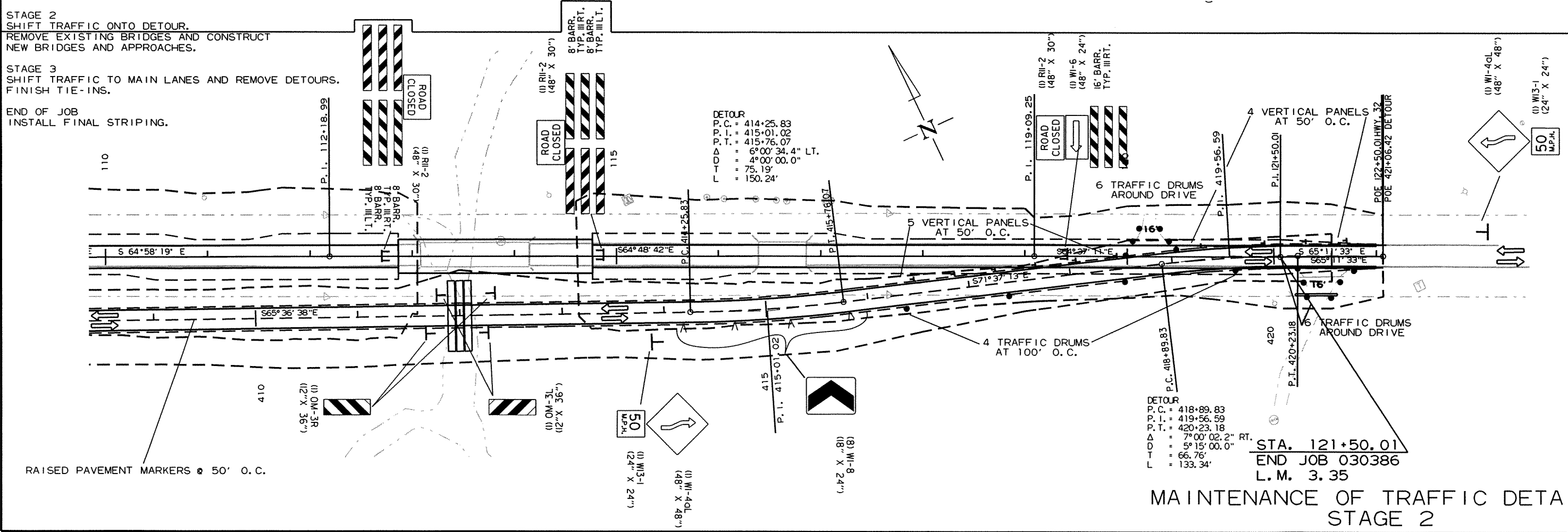
SEQUENCE OF CONSTRUCTION

STAGE 1
 MAINTAIN TRAFFIC ON EXISTING ROADWAY.
 CONSTRUCT DETOUR AS SHOWN.
 INSTALL TEMPORARY PIPES AS SHOWN.

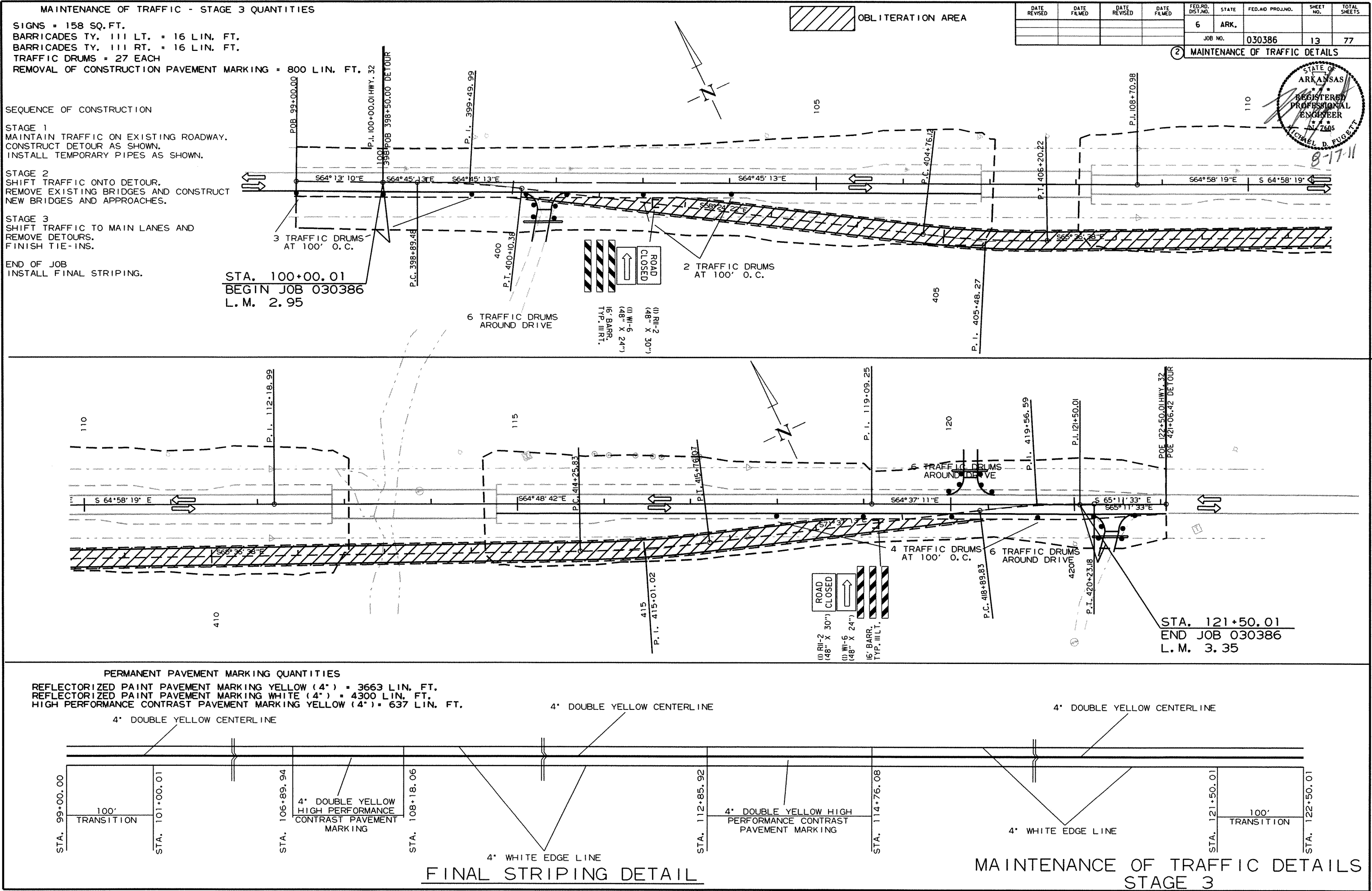
STAGE 2
 SHIFT TRAFFIC ONTO DETOUR.
 REMOVE EXISTING BRIDGES AND CONSTRUCT
 NEW BRIDGES AND APPROACHES.

STAGE 3
 SHIFT TRAFFIC TO MAIN LANES AND REMOVE DETOURS.
 FINISH TIE-INS.

END OF JOB
 INSTALL FINAL STRIPING.



r030386.dgn 8/3/2011



MAINTENANCE OF TRAFFIC ITEMS

LOCATION	BARRICADES		TRAFFIC DRUMS	VERTICAL PANELS	CONSTRUCTION PAVEMENT MARKING	REMOVAL OF CONSTRUCTION PAVEMENT MARKING	RAISED PAVEMENT MARKERS (TYPE II) (YEL./YEL.)
	TYPE III RT.	TYPE III LT.					
	LIN. FT.	LIN. FT.					
MAIN LANES-STAGE 1	16	16	12	16	8026		50
MAIN LANES-STAGE 2	48	48	25	19	800		5
MAIN LANES-STAGE 3	16	16	27			800	
TOTALS	48	48	27	19	8826	800	55

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

PERMANENT PAVEMENT MARKING ITEMS

LOCATION	REFLECTORIZED PAINT PAVEMENT MARKING		HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
	WHITE	YELLOW	YELLOW
	4"	4"	4"
	LIN. FT.		
ENTIRE PROJECT	4300	3663	637
TOTALS	4300	3663	637

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

QUANTITY SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-17-11

SIGN NO.	DESCRIPTION	SIZE	QUANTITY			MAXIMUM REQUIRED	SIGNS SQ. FT.
			STAGE 1	STAGE 2	STAGE 3		
G20-2	END ROAD WORK	48" X 24"	2	2	2	2	16
OM-3L	OBJECT MARKER	12" X 36"		4		4	12
OM-3R	OBJECT MARKER	12" X 36"		4		4	12
R4-1	DO NOT PASS	24" X 30"	2	2	2	2	10
R11-2	ROAD CLOSED	48" X 30"	2	6	2	4	60
W1-4aL	REVERSE CURVE LEFT	48" X 48"		2		2	32
W1-4aR	REVERSE CURVE RIGHT	48" X 48"		2	2	2	32
W1-6	ARROW	48" X 24"		2	2	2	16
W1-8	CHEVRON	18" X 24"		16		16	48
W13-1	SPEED LIMIT	24" X 24"		4		4	16
W20-1	ROAD WORK 1500 FT.	48" X 48"	2	2	2	2	32
W20-1	ROAD WORK 1000 FT.	48" X 48"	2	2	2	2	32
W20-1	ROAD WORK 500 FT.	48" X 48"	2	2	2	2	32
TOTAL							350

REMOVAL AND DISPOSAL OF PIPE CULVERTS			
STATION	SIDE	DESCRIPTION	EACH
101+87	RT.	24" X 27' C.M. PIPE CULVERT	1
120+23	LT.	24" X 24' C.M. PIPE CULVERT	1
121+88	RT.	18" X 44' C.M. PIPE CULVERT	1
TOTAL			3

REMOVAL AND DISPOSAL OF PIPE CULVERTS INCLUDES HEADWALLS AND FLARED END SECTIONS IF APPLICABLE.

SOIL STABILIZATION	
LOCATION	SOIL STABILIZATION TON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	25
TOTAL	25

QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

ASPHALT CONCRETE HOT MIX PATCHING OF EXISTING ROADWAY

LOCATION	ACHM PATCHING OF EXISTING ROADWAY TON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	100
TOTAL	100

QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

STATION	DESCRIPTION	SIDE	WIDTH	TURNOUT AREA	EXTENSION AREA	TOTAL DRIVEWAY AREA	*AGGREGATE BASE COURSE (CL.7)	ACHM SURFACE COURSE (1/2")	SIDE DRAIN
					*AGGREGATE (CLASS 7) (9" COMP. DEPTH)			(220 LB./SQ.YD.)	
					SQ. YD.			TON	
101+87	PRIVATE DRIVE	RT.	16	54	68	122	58	6	46
120+23	PRIVATE DRIVE	LT.	16	54	58	112	52	6	42
121+88	PRIVATE DRIVE	RT.	16	54	47	101	47	6	42
	TEMP. DRIVES						300		
TOTALS							457	18	130

VOLUME CONTROL:
ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.7%, ASPHALT BINDER (PG-64-22) 5.3%
Nmax = 115 GYRATIONS
* REFER TO DETAIL FOR DRIVEWAY TURNOUTS (COLLECTORS).

SOIL LOG						
STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO SOIL CLASS	COLOR
102+00	27'RT	0-5	ND	NP	A-4(0)	GR/BR
102+00	14'RT	0-5	ND	NP	A-4(0)	GRAY
102+00	6'RT	0-5	ND	NP	A-4(0)	GRAY
110+00	CL	0-5	ND	NP	A-4(0)	BROWN
116+00	CL	0-5	ND	NP	A-2-4(0)	BROWN
124+00	28'LT	0-5	ND	NP	A-2-4(0)	RD/BR
124+00	15'LT	0-5	ND	NP	A-2-4(0)	RD/BR
124+00	6'LT	0-5	ND	NP	A-4(0)	RD/BR
506+00	5'RT	0-5	ND	NP	A-2-4(0)	GRAY
506+00	24'RT	0-5	ND	NP	A-2-4(0)	GRAY
506+00	13'RT	0-5	ND	NP	A-2-4(0)	GRAY
515+00	30'LT	0-5	ND	NP	A-2-4(0)	GRAY
515+00	14'LT	0-5	18	4	A-4(0)	GRAY
515+00	5'LT	0-5	22	5	A-4(0)	BROWN

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

BENCH MARKS	
LOCATION	BENCH MARKS
	EACH
STA. 112+85.92 RT. BRIDGE END	1

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

ASPHALT CONCRETE PATCHING FOR MAINT. OF TRAFFIC

LOCATION	ACHM PATCHING FOR M.O.T.	TACK COAT
	TON	GALLON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER	11	22
TOTALS	11	22

BASIS OF ESTIMATE:
PATCHING: 25 TONS PER MILE; TACK COAT: 50 GAL. PER MILE
QUANTITY ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

COLD MILLING ASPHALT PAVEMENT

LOCATION	COLD MILLING ASPHALT PAVEMENT SQ. YD.
STA. 99+00.00 - STA. 100+00.01	222
STA. 121+50.01 - STA. 122+50.01	222
TOTAL	444

TEMPORARY PIPE CULVERT

LOCATION	TEMPORARY PIPE CULVERT	
	60" LIN. FT.	84" LIN. FT.
STA. 406+00	112	
STA. 412+00		210
TOTALS	112	210

FOR R.C. PIPE CULVERT INSTALLATION USE TYPE 3 BEDDING
UNLESS OTHERWISE SPECIFIED.
FOR C.M. PIPE CULVERT INSTALLATION USE TYPE 2 BEDDING
UNLESS OTHERWISE SPECIFIED.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 030386	15	77

2 QUANTITY SHEETS



APPROACH GUTTERS (TYPE B)

LOCATION	APPROACH GUTTERS (TYPE B) (W=4') CU. YD.	REINFORCING STEEL - ROADWAY (GRADE 60) POUND
STA. 106+62.94 - STA. 106+89.94 RT.	3.75	319
STA. 106+62.94 - STA. 106+89.94 LT.	3.75	319
STA. 108+18.06 - STA. 108+45.06 RT.	3.75	319
STA. 108+18.06 - STA. 108+45.06 LT.	3.75	319
STA. 112+58.92 - STA. 112+85.92 RT.	3.75	319
STA. 112+58.92 - STA. 112+85.92 LT.	3.75	319
STA. 114+76.08 - STA. 115+03.08 RT.	3.75	319
STA. 114+76.08 - STA. 115+03.08 LT.	3.75	319
TOTALS	30.00	2552

EROSION CONTROL ITEMS - TEMPORARY

LOCATION	SAND BAG DITCH CHECKS (E-5)	DIVERSION DITCH (E-8)	SILT FENCE (E-11)	PIPE FOR SLOPE DRAINS (E-12)	*SEDIMENT BASIN (E-14)	*OBLITERATION OF SEDIMENT BASIN	SEDIMENT REMOVAL AND DISPOSAL	TEMPORARY SEEDING	MULCH COVER	WATER	DUMPED RIPRAP	FILTER BLANKET
	BAG		LIN. FT.					ACRE		M. GAL.	CU. YD.	SQ. YD.
MAIN LANES-STAGE 1	425	3687	225	123			200				6	
MAIN LANES-STAGE 2	275		434				100					
MAIN LANES-STAGE 3	225		240				100					
DETOUR CONSTRUCTION								1.91	1.91	39.0	30	60
ENTIRE PROJECT					32	32	50					
TOTALS	925	3687	899	123	32	32	450	1.91	1.91	39.0	36	60

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.

BASIS OF ESTIMATE: WATER 20.4 M.G. PER ACRE TEMP. SEEDING
* QUANTITIES ESTIMATED- TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

SELECTED PIPE BEDDING AND BACKFILL

LOCATION	SELECTED PIPE BEDDING	SELECTED PIPE BACKFILL
	CU. YD.	
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	50	125
TOTALS	50	125

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

EROSION CONTROL ITEMS - PERMANENT

LOCATION	SEEDING	LIME	MULCH COVER	SECOND SEEDING APPL.	WATER
	ACRE	TON	ACRE		M. GAL.
MAIN LANES	3.68	8	3.68	3.68	375.4
OBLITERATION AREA	2.59	5	2.59	2.59	264.2
TOTALS	6.27	13	6.27	6.27	639.6

BASIS OF ESTIMATE: LIME: 2 TONS PER ACRE SEEDING;
WATER: 102.0 M.GAL. PER ACRE SEEDING

EARTHWORK

STATION	STATION	LOCATION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU. YD.	
98+00	122+50	MAIN LANES	3363	18832
398+50	420+42.83	DETOUR CONSTRUCTION	1298	11705
398+50	420+42.83	DETOUR REMOVAL	10111	1369
ENTIRE PROJECT		DRIVES		310
CHANNEL EXCAVATION		LITTLE BODCAU CREEK RELIEF BRIDGE NO. 07198	195	
CHANNEL EXCAVATION		LITTLE BODCAU CREEK BRIDGE NO. 07199	560	
TOTALS			15527	32216

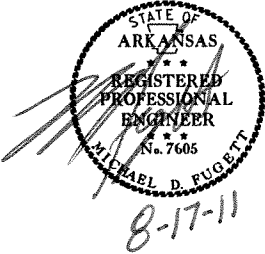
NOTE: EARTHWORK QUANTITIES TO BE PAID AS PLAN QUANTITY.

CLEARING AND GRUBBING

STATION	STATION	CLEARING	GRUBBING
		STATION	
99+00	122+50	24	24
TOTALS		24	24

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO. 030386			16	77

2 QUANTITY SHEETS



BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		ACHM BINDER COURSE (1") (330 LBS./SQ. YD.)			ACHM SURFACE COURSE (1/2")						TACK COAT					
									(220 LBS./SQ. YD.)			LEVELING			(0.03 GAL./SQ. YD.)			(0.10 GAL./SQ. YD.)		
						AVG. WDMTH	SQ. YD.	TON	AVG. WDMTH	SQ. YD.	TON	SQ. YD.	LBS./SQ. YD.	TON	AVG. WDMTH	SQ. YD.	GAL.	AVG. WDMTH	SQ. YD.	GAL.
99+00.00	100+00.01	MAIN LANES-TRANSITION	100.00	47.00	47	1.08	12	2	27.00	300	33				1.08	12	1			
100+00.01	102+50.00	MAIN LANES-NOTCH & WIDENING	400.00	93.75	375	2.17	96	16	34.00	1511	166	889	550	244	2.17	96	3	20.00	888.89	89
102+50.00	106+89.94	MAIN LANES-FULL DEPTH	389.94	171.50	669	22.33	967	160	34.00	1473	162				22.17	961	29			
108+18.06	112+85.92	MAIN LANES-FULL DEPTH	467.86	171.50	802	22.33	1161	192	34.00	1767	194				22.17	1153	35			
114+76.08	119+50.00	MAIN LANES-FULL DEPTH	623.92	171.50	1070	22.33	1548	255	34.00	2357	259				22.17	1537	46			
119+50.00	121+50.01	MAIN LANES-NOTCH & WIDENING	150.00	93.75	141	2.17	36	6	34.00	567	62	333	550	92	2.17	36	1	20.00	333.33	33
121+50.01	122+50.01	MAIN LANES-TRANSITION	100.00	47.00	47	1.08	12	2	27.00	300	33				1.08	12	1			
400+41.96	418+72.30	DETOUR ROAD	1830.34	161.25	2951				24.00	4881	537									
ENTIRE	PROJECT	ADDITIONAL FOR GUARDRAIL WIDENING			277						104									
TOTALS					6379			633			1550			336			116			122

VOLUME CONTROL:

ACHM BINDER COURSE (1"): MINERAL AGGR. 95.6%, ASPHALT BINDER (PG 64-22) 4.4%

ACHM SURFACE COURSE (1/2"): MINERAL AGGR. 94.7%, ASPHALT BINDER (PG 64-22) 5.3%

Nmax= 115 GY RATIONS

FENCING ITEMS

STATION	STATION	SIDE	WIRE FENCE	16'
			(TYPE D)	GATES
			LIN. FT.	EACH
116+00	122+50	LT.	650	
120+22		LT.		1
TOTALS			650	1

REMOVAL AND DISPOSAL OF ITEMS

STATION	SIDE	DESCRIPTION	PIPE FENCE	BOARD FENCE	FENCE
			LIN. FT.		
101+70	RT.	PIPE FENCE	22		
102+10	RT.	PIPE FENCE	29		
116+09	LT.	FENCE			663
121+00	RT.	BOARD FENCE		12	
TOTALS			51	12	663

GUARDRAIL

STATION	STATION	SIDE	GUARDRAIL	TERMINAL	THRIE
			(TYPE A)	ANCHOR	BEAM
			LIN. FT.	POSTS	GUARDRAIL
				(TYPE 1)	TERMINAL
104+61.79	106+89.94	RT.	200	1	1
105+86.79	106+89.94	LT.	75	1	1
108+18.06	109+21.21	RT.	75	1	1
108+18.06	110+46.21	LT.	200	1	1
110+57.77	112+85.92	RT.	200	1	1
111+82.77	112+85.92	LT.	75	1	1
114+76.08	115+79.23	RT.	75	1	1
114+76.08	117+04.23	LT.	200	1	1
TOTALS			1100	8	8

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.		030386	17	77
				07198, 07199		QUANTITIES	51793	

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 030386

BRIDGE NO.	CODE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	802	802	803	804	805	805	807	808	812	816	816	SP JOB 030386	
				ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS I PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	② CONCRETE PILING (18" SQUARE)	② TEST PILE (18" SQUARE)	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	ELASTOMERIC BEARINGS	BRIDGE NAME PLATE (TYPE D)	DUMPED RIPRAP	FILTER BLANKET		SILICONE JOINT SEALANT
					UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LIN. FT.	LIN. FT.	LB.	CU. IN.	EACH	CU. YD.		SQ. YD.
07198	X071	LITTLE BODCAU CREEK RELIEF	BENT NOS. 1 AND 4			6	45.06		0.4	5,004	280	50	1,132	1,417.2		321	577		
			BENT NOS. 2 AND 3			25.54			2,785	405	55		2,167.8						
			126' CONT. COMP. W-BEAM UNIT				129.40	10.4	32,531			51,538		1				66	
			SITE NO. 1 (STA. 107+50)	1															
			TOTALS FOR BRIDGE NO. 07198		6	70.60	129.40	10.8	40,320	685	105	52,670	3,585.0	1	321	577	66		
07199	X071	LITTLE BODCAU CREEK	BENT NOS. 1 AND 5		6	45.06		0.4	5,004	280	50	1,132	1,906.0		341	616			
			BENT NOS. 2, 3 AND 4			38.34			4,177	560	50		3,440.0						
			188' CONT. COMP. W-BEAM UNIT				193.30	15.5	49,639			82,408		1			66		
			SITE NO. 2 (STA. 113+60)	1															
			TOTALS FOR BRIDGE NO. 07199		6	83.40	193.30	15.9	58,820	840	100	83,540	5,346.0	1	341	616	66		
			① SITE NO. 3 (STA. 116+60)	1															
TOTALS FOR JOB NO. 030386					12	154.00	322.70	26.7	99,140	1,525	205	136,210	8,931.0	2	662	1,193	132		

- ① EXISTING BRIDGE NO. M0749 (LOGMILE 3.26) IS 25' WIDE AND 46' LONG AND CONSISTS OF A CONCRETE DECK ON STEEL BEAMS SUPPORTED BY CONCRETE PILE TREXSTLE BENTS.

 THIS BRIDGE SHALL BE REMOVED IN ACCORDANCE WITH SECTION 205. ALL MATERIAL FROM THE EXISTING BRIDGE SHALL BECOME THE PROPERTY OF THE CONTRACTOR EXCEPT THE FOLLOWING WHICH SHALL REMAIN THE PROPERTY OF THE STATE:

 GUARDRAIL POSTS (ANGLE IRON)
 6X6 H-BEAM CAP SUPPORT AT BENTS 2 AND 3
 TIMBER CAPS AT BENTS 1, 2, 3 AND 4

 THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT PRIOR TO REMOVAL TO DETERMINE THE SPECIFIC GUARDRAIL PIECES DEEMED SALVAGEABLE. THE CONTRACTOR SHALL PROVIDE TEMPORARY STORAGE AND ON SITE LOADING ONTO AHTD EQUIPMENT FOR REMOVAL OF SALVAGE ITEMS FROM THE SITE.
- ② ALL CONCRETE PILING SHALL BE PRESTRESSED.

AILEEN SCHUBEL
DESIGN SECTION SUPERVISOR

SCHEDULE OF BRIDGE QUANTITIES
LITTLE BODCAU CREEK & RELIEF
STRS. & APPRS. (S)
NEVADA COUNTY

ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.



DRAWN BY: AWS. DATE: 11/8/10 FILENAME: b030386-ql.dgn
 CHECKED BY: PGT DATE: 2-25-11 SCALE: None
 DESIGNED BY: DATE:
 BRIDGE NO. 07198, 07199 DRAWING NO. 51793

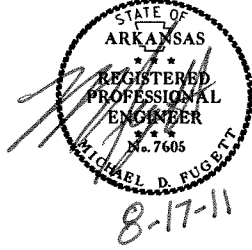
BRIDGE ENGINEER

SUMMARY OF QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
201	CLEARING	24	STATION
201	GRUBBING	24	STATION
202	REMOVAL AND DISPOSAL OF FENCE	663	LIN. FT.
202	REMOVAL AND DISPOSAL OF BOARD FENCE	12	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE FENCE	51	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	3	EACH
210	UNCLASSIFIED EXCAVATION	15527	CU. YD.
210	COMPACTED EMBANKMENT	32216	CU. YD.
SP&210	SOIL STABILIZATION	25	TON
SS&303	AGGREGATE BASE COURSE (CLASS 7)	6836	TON
401	TACK COAT	260	GAL
SPSS&406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	605	TON
SPSS&406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	28	TON
SPSS&407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	1803	TON
SPSS&407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	101	TON
412	COLD MILLING ASPHALT PAVEMENT	444	SQ. YD.
SPSS&414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	11	TON
SPSS&415	ACHM PATCHING OF EXISTING ROADWAY	100	TON
504	APPROACH GUTTERS (TYPE B)	30.00	CU. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP&602	FURNISHING FIELD OFFICE	1	EACH
SS&603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
603	60" TEMPORARY CULVERT	112	LIN. FT.
603	84" TEMPORARY CULVERT	210	LIN. FT.
SS&604	SIGNS	350	SQ. FT.
SS&604	BARRICADES	96	LIN. FT.
SS&604	TRAFFIC DRUMS	27	EACH
SS&604	CONSTRUCTION PAVEMENT MARKINGS	8826	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	800	LIN. FT.
SS&604	VERTICAL PANELS	19	EACH
SS&606	24" SIDE DRAIN	130	LIN. FT.
606	SELECTED PIPE BEDDING	50	CU. YD.
606	SELECTED PIPE BACKFILL	125	CU. YD.
611	UNDERDRAIN OUTLET PROTECTORS	5	EACH
611	4" PIPE UNDERDRAINS	1100	LIN. FT.
SS&617	GUARDRAIL (TYPE A)	1100	LIN. FT.
SS&617	TERMINAL ANCHOR POSTS (TYPE 1)	8	EACH
SS&617	THRIE BEAM GUARDRAIL TERMINAL	8	EACH
619	WIRE FENCE (TYPE D)	650	LIN. FT.
619	16" STEEL GATES	1	EACH
619	16" ALUMINUM GATES	1	EACH
620	LIME	13	TON
620	SEEDING		ACRE
620	MULCH COVER	6.27	ACRE
SS&620	WATER	8.18	ACRE
621	TEMPORARY SEEDING	678.6	MGAL
621	SILT FENCE	1.91	ACRE
621	SAND BAG DITCH CHECKS	899	LIN. FT.
621	DIVERSION DITCH	925	BAG
621	SEDIMENT BASIN	3687	LIN. FT.
621	OBLITERATION OF SEDIMENT BASIN	32	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	32	CU. YD.
621	PIPE FOR SLOPE DRAINS	450	CU. YD.
623	SECOND SEEDING APPLICATION	123	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL	6.27	ACRE
SS&718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")	1.00	LUMP SUM
SS&718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")	4300	LIN. FT.
SP&719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	3663	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	637	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	637	LIN. FT.
804	REINFORCING STEEL-ROADWAY (GRADE 60)	55	EACH
816	FILTER BLANKET	2552	POUND
816	DUMPED RIPRAP	60	SQ. YD.
		36	CU. YD.
STRUCTURES OVER 20'-0" SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)	1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 3)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	12	CU. YD.
802	CLASS 5 CONCRETE-BRIDGE	154.00	CU. YD.
802	CLASS 5(AE) CONCRETE - BRIDGE	322.70	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	26.7	GAL.
804	REINFORCING STEEL-BRIDGE (GRADE 60)	99140	POUND
805	CONCRETE PILING (18" SQUARE)	1525	LIN. FT.
805	TEST PILE (18" SQUARE)	205	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)	136210	POUND
808	ELASTOMERIC BEARINGS	8931.0	CU. IN.
SP	SILICONE JOINT SEALANT	132	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)	2	EACH
816	FILTER BLANKET	1193	SQ. YD.
816	DUMPED RIPRAP	862	CU. YD.

* DENOTES ALTERNATE BID ITEMS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 030386	18	77
2 SUMMARY OF QUANTITIES AND REVISIONS								



REVISIONS		
DATE	DESCRIPTION	PAGE NO.(S)

SURVEY CONTROL COORDINATES

Project Name: s030386
Date: 5/5/2011
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL,
PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	1640394.6178	874016.8148	286.408	CTL	5/8" REBAR W/2" CAP
2	1639954.4582	874957.9928	285.267	CTL	5/8" REBAR W/2" CAP
3	1639772.8870	875343.7047	286.464	CTL	5/8" REBAR W/2" CAP
4	1639511.1780	875906.1482	286.428	CTL	5/8" REBAR W/2" CAP
5	1639338.5756	876274.7549	286.728	CTL	5/8" REBAR W/2" CAP
6	1638960.5127	877075.7832	296.720	CTL	5/8" REBAR W/2" CAP
7	1638789.7217	877507.3491	302.582	CTL	5/8" REBAR W/2" CAP
100	1640240.4683	874365.3017	286.898	GPS	AHTD GPS 500004
101	1639192.1021	876581.6503	290.425	GPS	AHTD GPS 500004A
900	1638533.9948	883511.3756	346.382	BM	27 EV 1973
901	1638635.0670	883512.7657	350.737	BM	CHSLD SQ TOP F.A.S. MKR
902	1635916.5834	882713.5537	317.944	TBM	CPS BASE 28" OAK
903	1634301.7504	882522.0020	304.664	BM	CHSLD SQ SW COR WITTEN BR
904	1638684.1500	879958.5649	338.261	TBM	CHSLD SQ END CULVERT
915	1640267.3544	874375.4097	287.307	TBM	OF TELE BOX
916	1639436.1265	876163.7657	283.289	TBM	8 SPK BASE PP
917	1638786.3643	877565.6496	304.658	TBM	8 SPK BASE PP#05 6 03
1500	1640543.3789	872886.9209	317.078	CTL	RTK ELEV
1501	1640899.3271	873026.8080	322.409	CTL	RTK ELEV
1502	1638902.2936	877579.4302	308.637	CTL	RTK ELEV
1503	1638827.6923	878141.7891	313.825	CTL	RTK ELEV

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.9999387222 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME s030386gi.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE
AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 500004 - 500004A
CONVERGENCE ANGLE: 0-48-10.6 LEFT AT LT: 33-33-28.13 LG: 093-26-04.7
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 030386	19	77

2 SURVEY CONTROL DETAILS



CONST

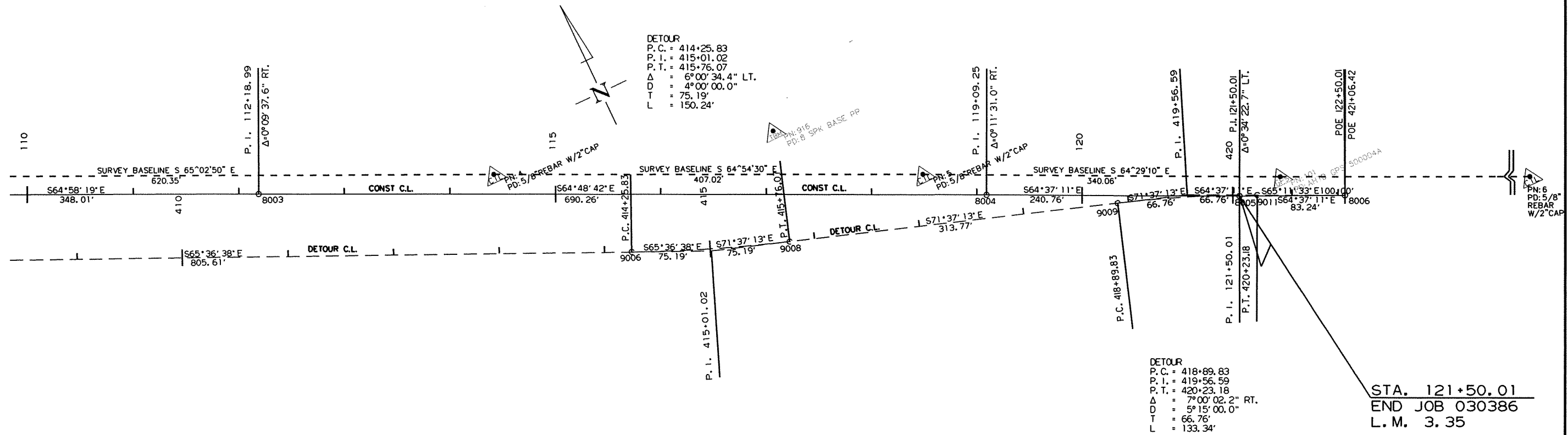
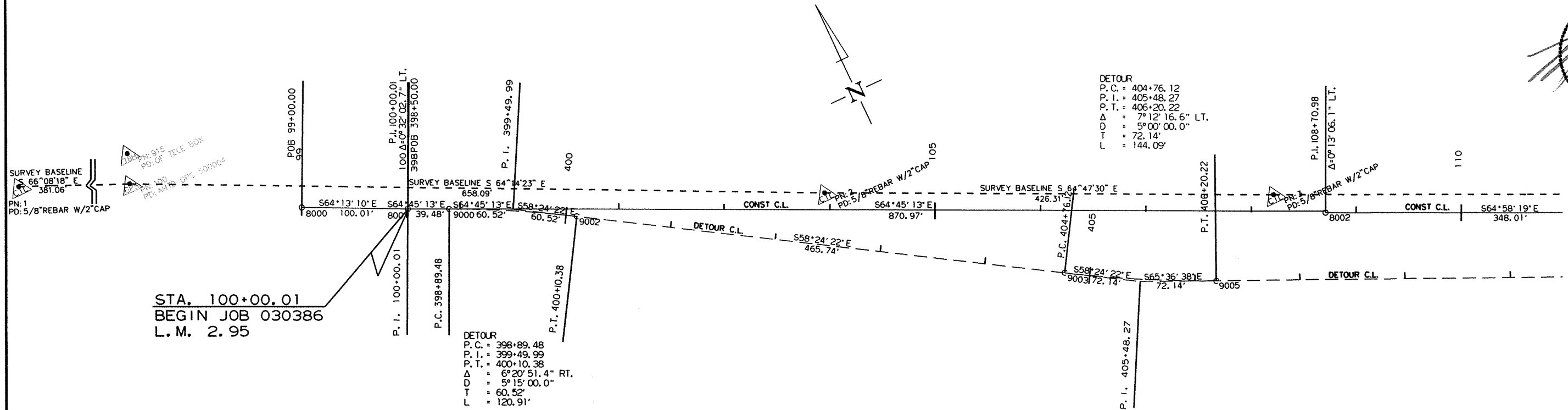
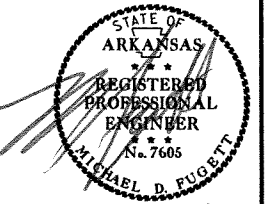
POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	99+00.00	1640151.1240	874503.6409
8001	P. I.	100+00.01	1640107.6291	874593.6929
8002	P. I.	108+70.98	1639736.1504	875381.4700
8003	P. I.	112+18.99	1639588.9193	875696.8053
8004	P. I.	119+09.25	1639295.1460	876321.4322
8005	P. I.	121+50.01	1639191.9510	876538.9524
8006	POE	122+50.01	1639149.9937	876629.7252

DETOUR

POINT NO.	TYPE	STATION	NORTHING	EASTING
8001	POB	398+50.00	1640107.6291	874593.6929
9000	P. C.	398+89.48	1640090.7910	874629.4007
9002	P. T.	400+10.38	1640033.2767	874735.6817
9003	P. C.	404+76.12	1639789.2771	875132.3907
9005	P. T.	406+20.22	1639721.6928	875259.5428
9006	P. C.	414+25.83	1639389.0277	875993.2609
9008	P. T.	415+76.07	1639334.2718	876133.0925
9009	P. C.	418+89.83	1639235.3366	876430.8528
9011	P. T.	420+23.18	1639185.6745	876554.5153
8006	POE	421+06.42	1639149.9937	876629.7252

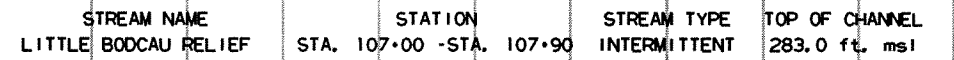
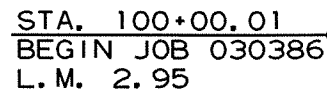
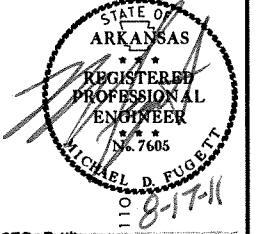
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				6	ARK.			
						JOB NO. 030386	20	77

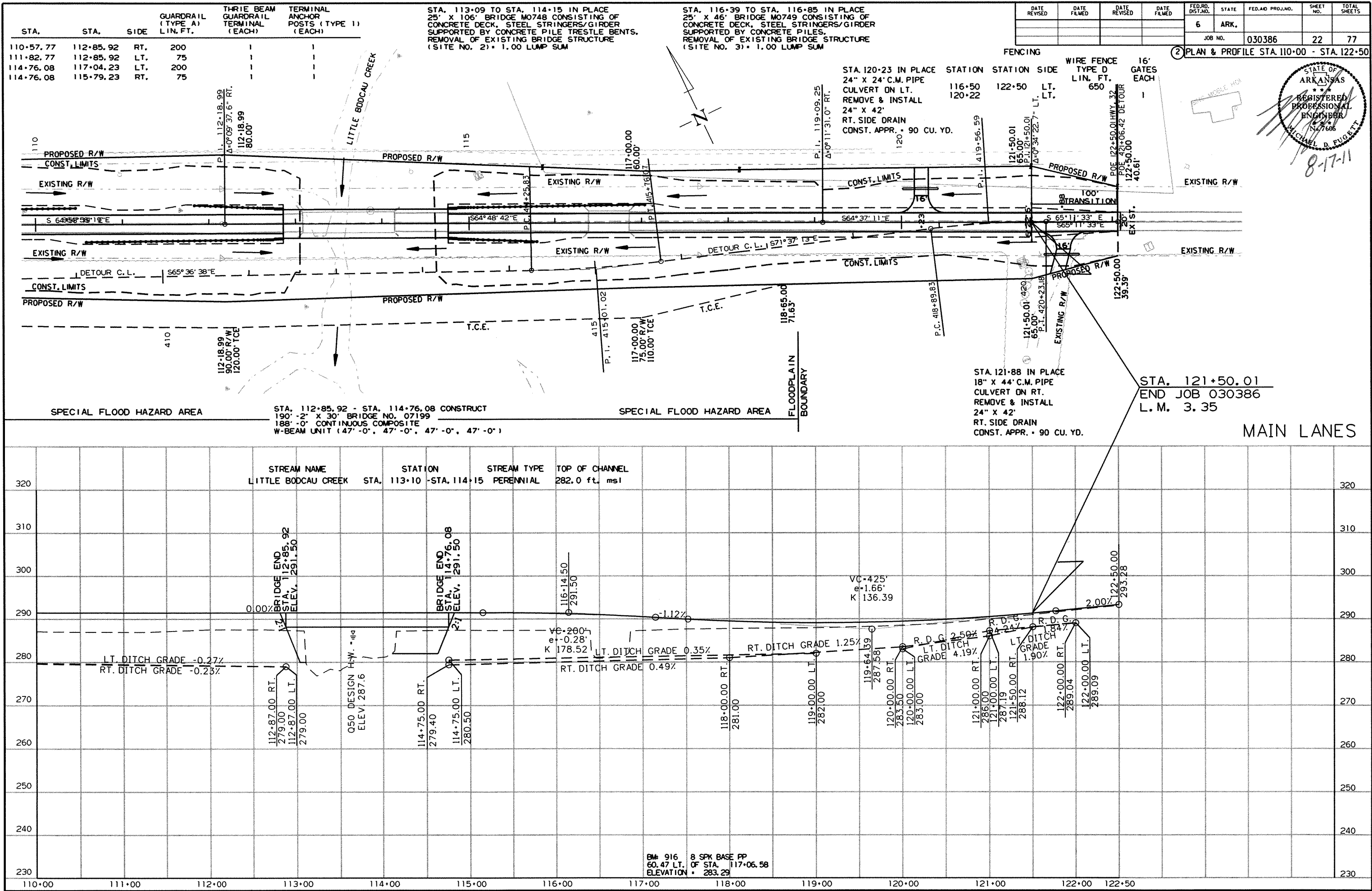
2 SURVEY CONTROL DETAILS



2 PLAN & PROFILE STA. 99+00 - STA. 110+00

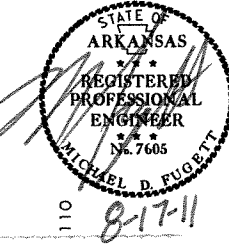
STA. 106+99 TO STA. 107+91 IN PLACE
24' X 92' BRIDGE M0747 CONSISTING OF
CONCRETE DECK, STEEL STRINGER/GIRDER SUPPORTED
BY TIMBER PILE TRESTLE BENTS.
REMOVAL OF EXISTING BRIDGE STRUCTURE
(SITE NO. 1) = 1.00 LUMP SUM





DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	030386		23	77

2 DETOUR PLAN & PROFILE SHEETS



DETOUR
P.C. = 404+76.12
P.I. = 405+48.27
P.T. = 406+20.22
Δ = 7°12'16.6" LT.
D = 5°00'00.0"
T = 72.14'
L = 144.09'
e = 0.083'/'
Ls = 250.00'

STA. 398+89.48
BEGIN DETOUR

DETOUR
P.C. = 398+89.48
P.I. = 399+49.99
P.T. = 400+10.38
Δ = 6°20'51.4" RT.
D = 5°15'00.0"
T = 60.52'
L = 120.91'
NO SUPER

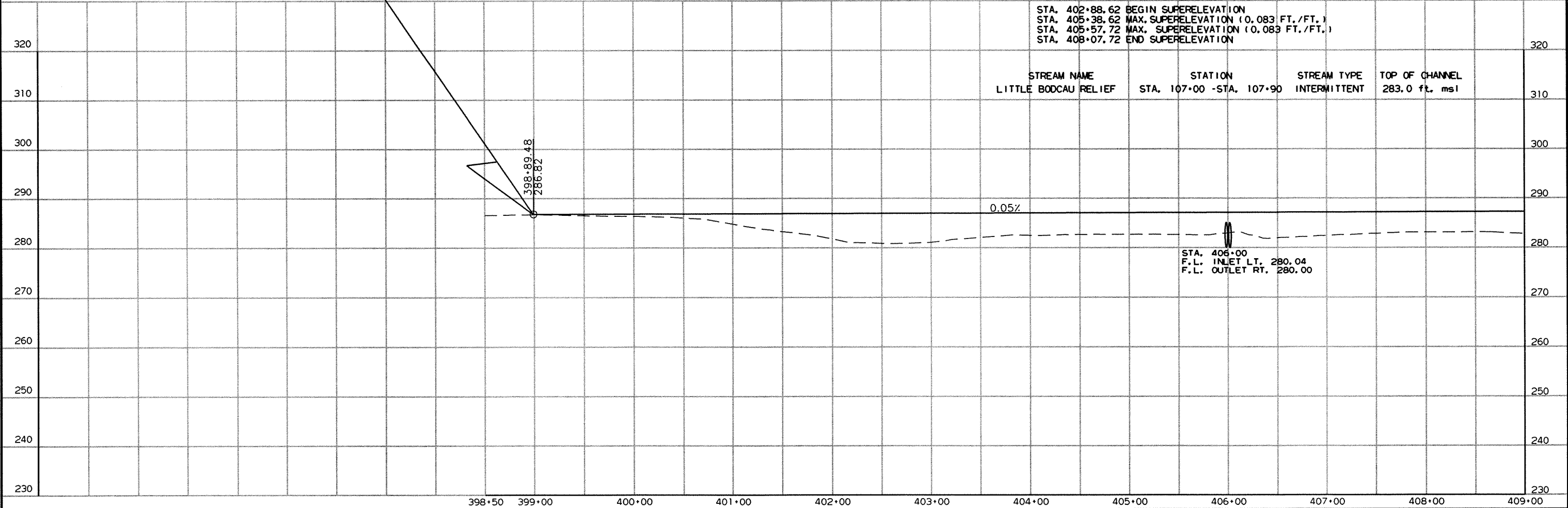
STA. 406+00 INSTALL
DBL. 60" x 56"
TEMPORARY PIPE CULVERT

DETOUR

STA. 402+88.62 BEGIN SUPERELEVATION
STA. 405+38.62 MAX. SUPERELEVATION (0.083 FT./FT.)
STA. 405+57.72 MAX. SUPERELEVATION (0.083 FT./FT.)
STA. 408+07.72 END SUPERELEVATION

STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL
LITTLE BODCAU RELIEF	STA. 107+00 - STA. 107+90	INTERMITTENT	283.0 ft. msl

STA. 406+00
F.L. INLET LT. 280.04
F.L. OUTLET RT. 280.00



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.	030386		24	77

② DETOUR PLAN & PROFILE SHEETS



8-17-11

DETOUR
P.C. = 414+25.83
P.I. = 415+01.02
P.T. = 415+76.07
 Δ = 6°00'34.4" LT.
D = 4°00'00.0"
T = 75.19'
L = 150.24'
e = 0.072
Ls = 250.00'

DETOUR
P.C. = 418+89.83
P.I. = 419+56.59
P.T. = 420+23.18
 Δ = 7°00'02.2" RT.
D = 5°15'00.0"
T = 66.76'
L = 133.34'
NO SUPER

STA. 412+38.33 BEGIN SUPERELEVATION
STA. 414+88.33 MAX. SUPERELEVATION (0.072 FT./FT.)
STA. 415+13.57 MAX. SUPERELEVATION (0.072 FT./FT.)
STA. 417+63.57 END SUPERELEVATION

STREAM NAME STATION STREAM TYPE TOP OF CHANNEL
LITTLE BODCAU CREEK STA. 113+10 - STA. 114+15 PERENNIAL 282.0 ft. msl

STA. 411+53
STA. 412+00
F.L. INLET LT. 276.40
F.L. OUTLET RT. 275.87
STA. 412+78
DUMPED RIPRAP = 30 CU. YD.
FILTER BLANKET = 60 SQ. YD.

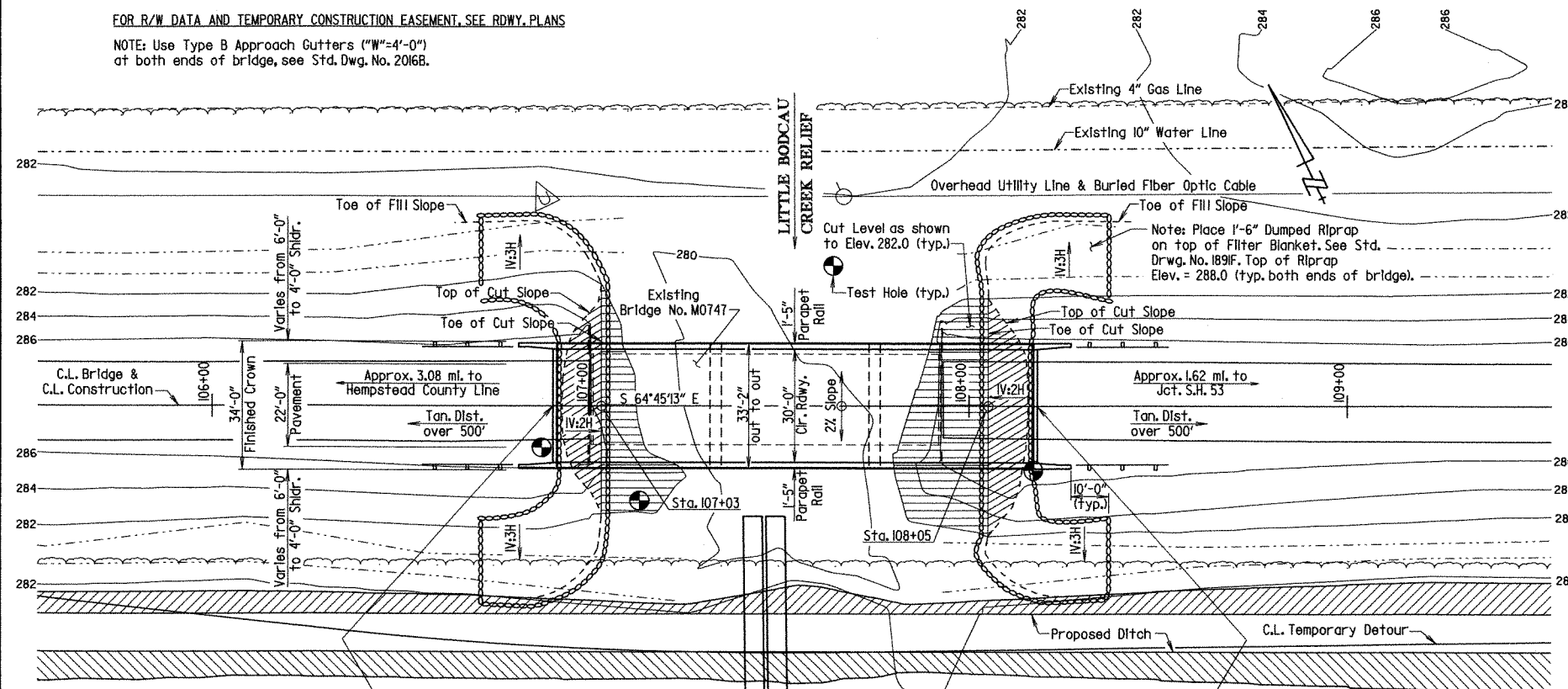
VC+400'
e=1.06'
K 189.54

STA. 420+23.18
END DETOUR

DETOUR

FOR R/W DATA AND TEMPORARY CONSTRUCTION EASEMENT, SEE RDWY. PLANS

NOTE: Use Type B Approach Gutters ("W"=4'-0") at both ends of bridge, see Std. Dwg. No. 2016B.



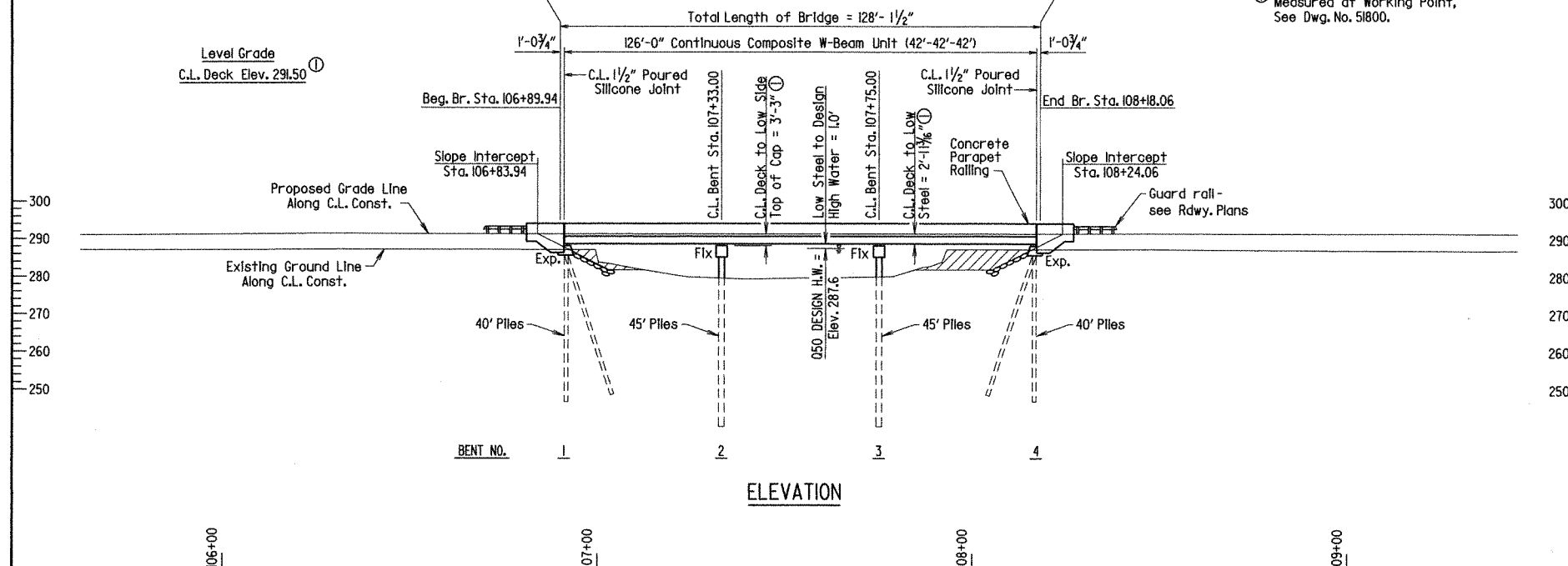
For details of temporary piers, see Rdwy. Plans

PLAN

Notes:
The Contractor shall remove the existing approach embankment at Bents 1 & 4 as shown. Approx. 195 cubic yards of excavation.

The proposed bridge shall be constructed to avoid interference with the existing piling. The Contractor shall verify measurements before driving any piling. Any adjustments necessary to fit the proposed bridge to the existing bridge location shall be submitted for the Engineer's approval.

For Details of Hydraulic Data and Boring Data, see Dwg. No. 51795.



ELEVATION

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.		030386	25	77
				07198		LAYOUT		51794

GENERAL NOTES

BENCH MARK: #3, 5/8" rebar with 2" cap, 17.12' Lt. of Sta. 108+21.5, Elev. = 286.46.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 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.

LIVE LOADING: HL93

SEISMIC PERFORMANCE ZONE: I

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 M53, Gr. 60) fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36) Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W) Fy = 50,000 psi

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.

CONCRETE PILING: All piling shall be 18" square prestressed concrete and shall be driven with an approved air, steam or diesel hammer to an ultimate bearing capacity of 206 tons per pile. Piling in end bents shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are assumed for estimating quantities only. Actual lengths to be determined in the field. Drive one 50' test pile in Bent 1 and one 55' test pile in Bent 3.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of Section 805.09(b), "Method B-Wave Equation Analysis (WEAP)". It is estimated that the minimum rated hammer energy required to obtain the ultimate bearing capacity for all piles will be 48,000 foot pounds per blow.

BRIDGE DECK: The concrete bridge deck shall be given a fine finish as specified for final finishing in subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.

DETAIL DRAWINGS:

End Bents 51796 & 51797
Int. Bents 51798
Elastomeric Bearings 51799
126'-0" Continuous W-Beam Unit 51800-51805
Concrete Piling 14964
Type B Approach Gutters 2016B

EXISTING BRIDGE: Existing Bridge No. M0747 (log mile 3.08) is 25.0' wide and 92.0' long and consists of a concrete deck on steel beams supported by timber pile trestle bents.

REMOVAL AND SALVAGE: Existing Bridge No. M0747 shall be removed in accordance with Section 205. Existing concrete slab debris and exposed timber piling from a previous structure shall also be removed to a minimum depth of 2' below natural ground. This work shall be considered subsidiary to "Removal of Existing Bridge Structure". All material from the existing bridge shall become the property of the Contractor except the following which shall remain the property of the State.

Guardrail Beams and Posts (angle iron) from Bridge Approaches
12" I-beams in all spans
Bent #3 Cap

The Contractor shall notify the Department prior to removal to determine the specific guardrail pieces deemed salvageable. The Contractor shall provide temporary storage and on site loading onto AHTD equipment for removal of salvage items from the site.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER
LITTLE BODCAU CREEK RELIEF
STRS. & APPRS. (S)

NEVADA COUNTY
ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.



BRIDGE ENGINEER

DRAWN BY: JYP DATE: 9-13-2010 FILENAME: b030386x1.dgn
CHECKED BY: PGT DATE: 2-11 SCALE: 1" = 20'
DESIGNED BY: KMY DATE: 8-10
BRIDGE NO. 07198 DRAWING NO. 51794

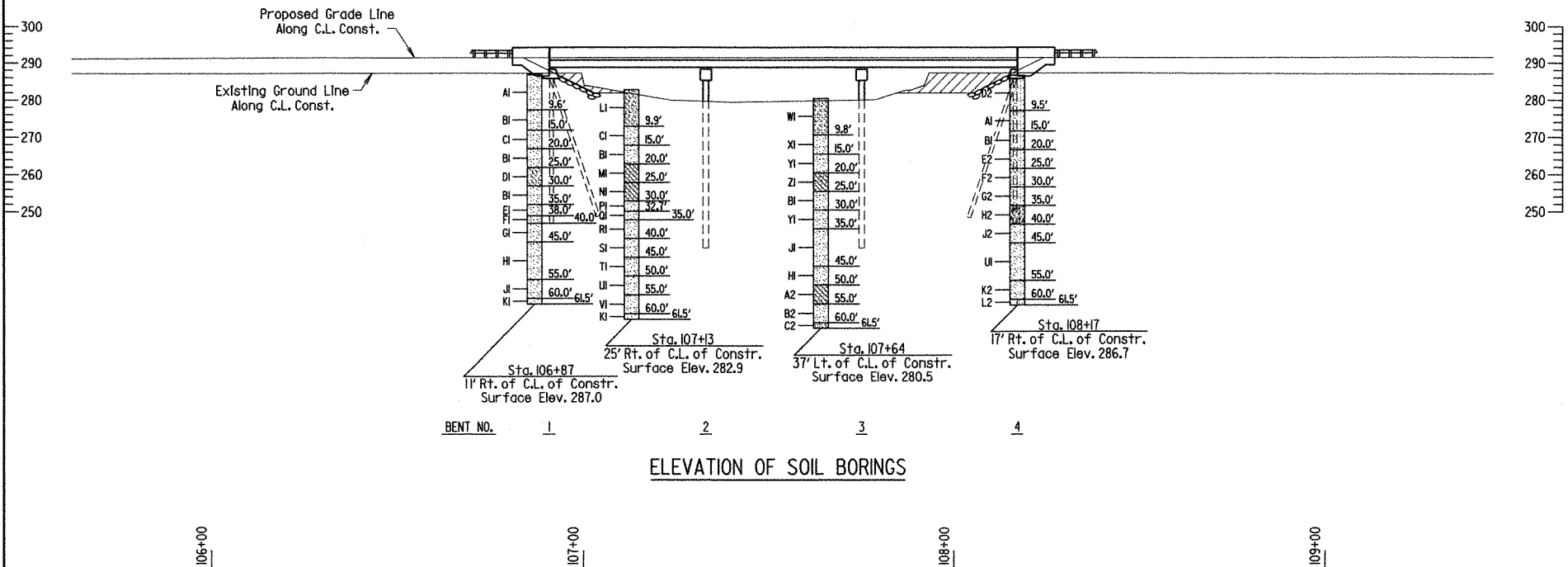
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030386	26	77
				07198		LAYOUT		51795

BORING LEGEND

AI-Moist, Loose, Light Gray Sand
BI-Wet, Loose, Light Gray Sand
CI-Wet, Loose, Light Gray and Brown Sand with some Organic Matter
DI-Wet, Very Loose, Light Gray and Brown Clayey Sand
EI-Wet, Loose, Brown and Gray Sand
FI-Wet, Loose, Brown and Gray Sand with Poorly Cemented Sand
GI-Moist, Dense, Dark Brown Sand with frequent Cemented Sand Seams and some Organic Matter
HI-Moist, Very Dense, Dark Brown Sand with occasional Cemented Sand Seams
JI-Moist, Dense, Dark Brown Sand with occasional Cemented Sand Seams
KI-Moist, Dense, Dark Brown and Gray Sand
LI-Moist, Medium Dense, Light Gray and Brown Clayey Sand
MI-Wet, Soft, Light Gray Clay with Sand
NI-Wet, Very Soft, Light Gray Clay with Sand
PI-Wet, Loose, Brown and Gray Sand with Trace of Gravel
OI-Wet, Loose, Brown and Gray Sand with Poorly-Cemented Sand
RI-Wet, Dense, Brown and Gray Sand with Trace of Gravel
SI-Wet, Very Dense, Brown and Gray Sand
TI-Moist, Very Dense, Dark Brown and Gray Sand with frequent Cemented Sand Seams
UI-Moist, Very Dense, Dark Brown Sand
VI-Moist, Dense, Brown and Gray Sand
WI-Moist, Medium Dense, Light Gray and Brown Clayey Sand with some Organic Matter
XI-Wet, Very Loose, Light Gray Sand with some Organic Matter
YI-Wet, Medium Dense, Light Gray Sand with some Organic Matter
ZI-Wet, Soft, Light Gray Sandy Clay
A2-Moist, Hard, Dark Brown Sandy Clay
B2-Moist, Very Dense, Dark Brown and Gray Sand
C2-Moist, Very Dense, Dark Brown Sand with frequent Clay Layers
D2-Moist, Loose, Light Gray and Brown Sand
E2-Wet, Loose, Light Gray Sand with some Organic Matter
F2-Wet, Medium Dense, Light Gray Sand
G2-Wet, Very Loose, Brown Sand with some Organic Matter
H2-Wet, Dense, Mottled Gray and Reddish Brown Sand with Clay, Gravel and some Organic Matter
J2-Moist, Dense, Dark Brown Sand
K2-Moist, Dense, Dark Brown Sand with some Clay
L2-Moist, Dense, Brown Sand with frequent Light Gray Silt Seams

"N" VALUES

Sta. 106+87 - 11' Rt. of C.L. of Constr.	Sta. 107+64 - 37' Lt. of C.L. of Constr.
5.1- 6.1, N=5 10.1- 11.1, N=5 15.5- 16.5, N=6 20.5- 21.5, N=7 25.5- 26.5, N=3 30.5- 31.5, N=6 35.5- 36.5, N=6 40.5- 41.5, N=40 45.5- 46.5, N=53 50.5- 51.5, N=55 55.5- 56.5, N=46 60.5- 61.5, N=50	5.3- 6.3, N=14 10.3- 11.3, N=2 15.5- 16.5, N=15 20.5- 21.5, N=3 25.5- 26.5, N=5 30.5- 31.5, N=21 35.5- 36.5, N=46 40.5- 41.5, N=44 45.5- 46.5, N=52 50.5- 51.5, N=56 55.5- 56.5, N=52 60.5- 61.5, N=52
Sta. 107+13 - 25' Rt. of C.L. of Constr.	Sta. 108+17 - 17' Rt. of C.L. of Constr.
5.4- 6.4, N=13 10.4- 11.4, N=7 15.5- 16.5, N=6 20.5- 21.5, N=2 25.5- 26.5, N=1 30.5- 31.5, N=5 35.5- 36.5, N=36 40.5- 41.5, N=55 45.5- 46.5, N=55 50.5- 51.5, N=59 55.5- 56.5, N=37 60.5- 61.5, N=46	5.0- 6.0, N=7 10.0- 11.0, N=10 15.5- 16.5, N=8 20.5- 21.5, N=6 25.5- 26.5, N=16 30.5- 31.5, N=4 35.5- 36.5, N=36 40.5- 41.5, N=50 45.5- 46.5, N=69 50.5- 51.5, N=78 55.5- 56.5, N=44 60.5- 61.5, N=37



HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	① TOTAL DISCHARGE	DISCHARGE @ THIS SITE	② NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER	
					PLAN EMBANKMENT	③ FUTURE EMBANKMENT
	YEARS	CFS	CFS	FEET	FEET	FEET
Design	Q50	6,900	2,571	286.7	287.6	287.6
Base	Q100	8,400	3,032	287.2	287.7	288.1
Extreme	Q500	11,400	5,514	288.2	288.6	288.9
Overtopping	Q35	6,100	—	286.4	287.0	—

②Unconstricted water surface without structure or roadway approaches.

③Future Embankment height is assumed to be 287.60 and overtops at flows greater than the Q50.

Q100 backwater elevation for existing structures = 287.6
Proposed Low Bridge Chord Elev. = 288.57

Drainage area = 29.3 sq. miles
Historical H.W. Elev. = 288.8

③Includes flow at Little Bodcau Creek and Relief Bridge sites.

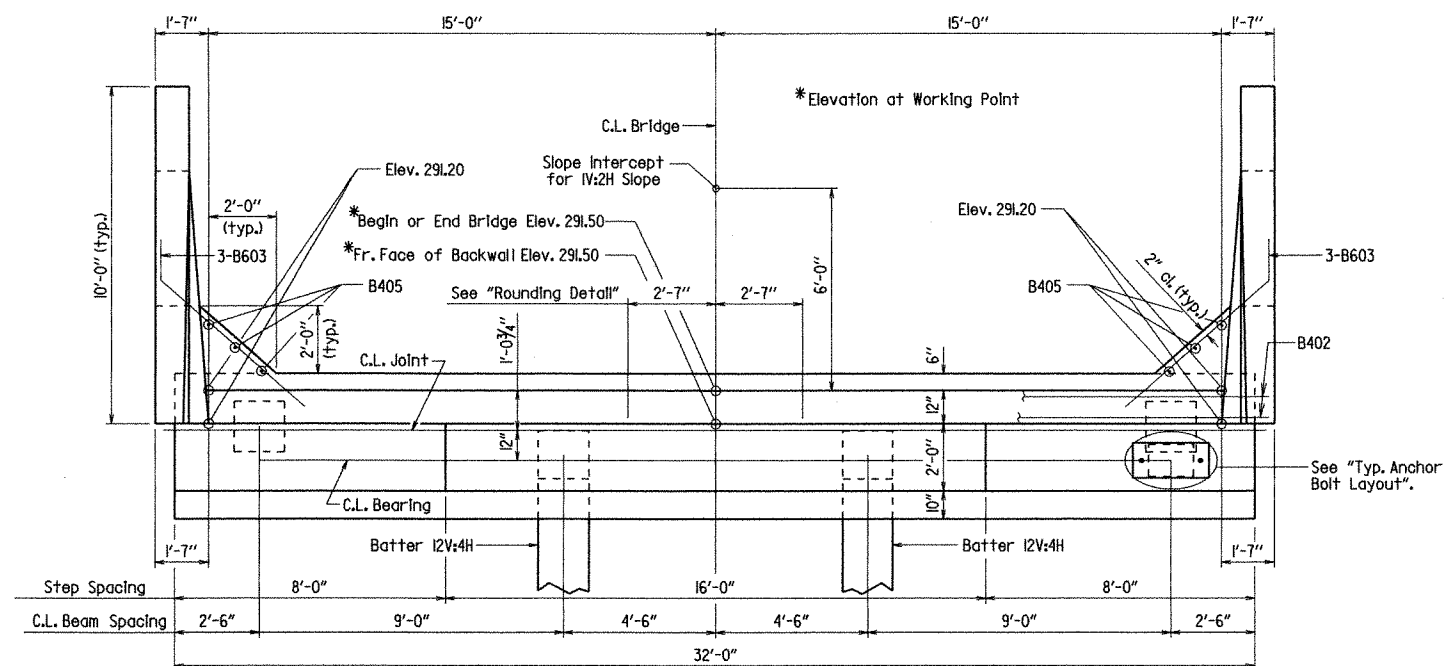


SHEET 2 OF 2
LAYOUT OF BRIDGE OVER
LITTLE BODCAU CREEK RELIEF
STRS. & APPRS. (S)
NEVADA COUNTY
ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

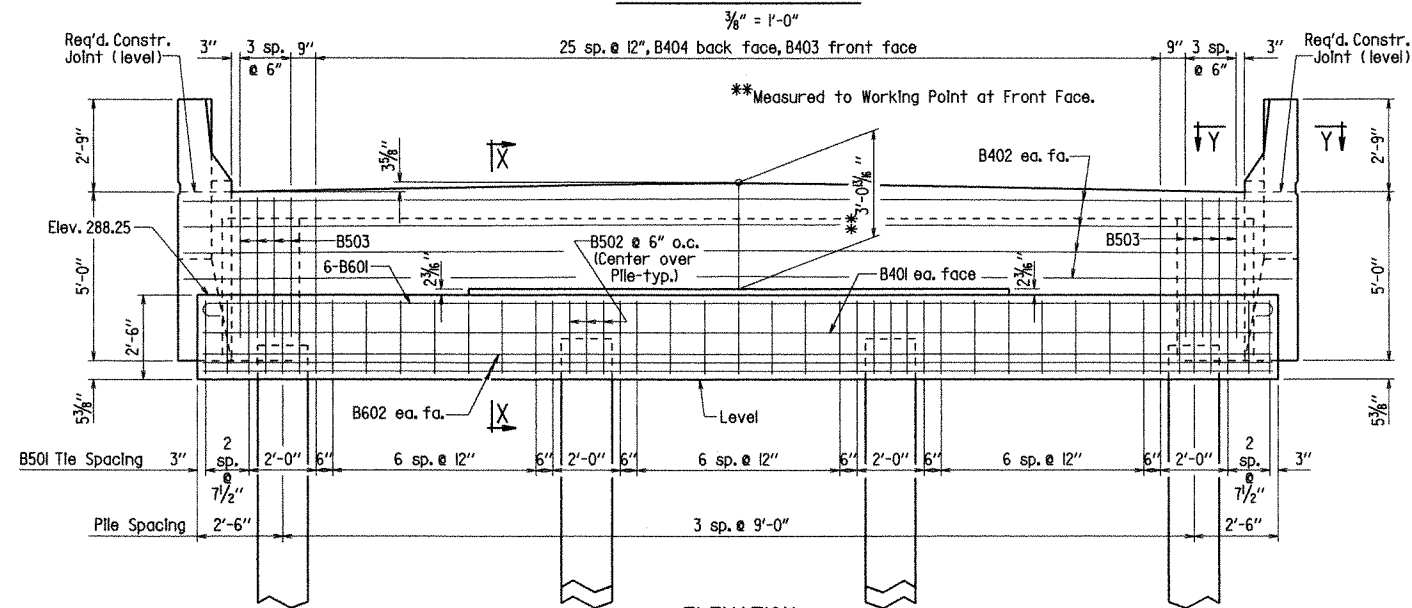
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CHECKED BY: PGT DATE: 2-11-11
DESIGNED BY: KMY DATE: 9-10-11
BRIDGE NO. 07198 DRAWING NO. 51795

For Bar List and details of wing and rail, see Dwg. No. 51797.

NOTE: Class I Protective Surface Treatment shall be applied to the top of the backwall and to the roadway face and top of the wing rails.

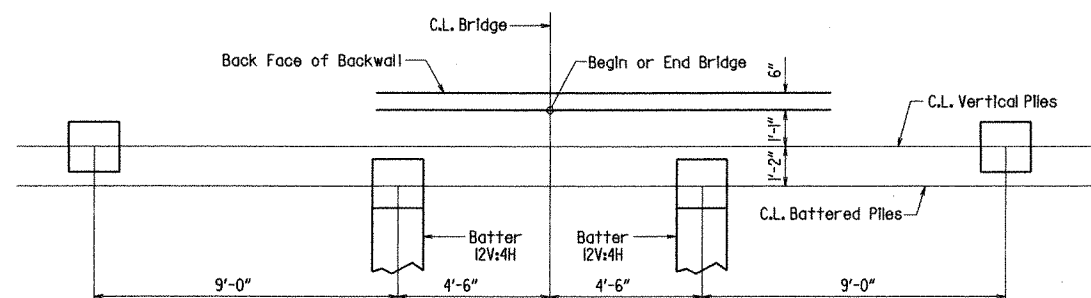


PLAN OF BENTS 1 & 4



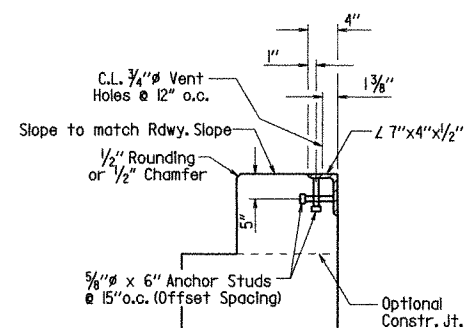
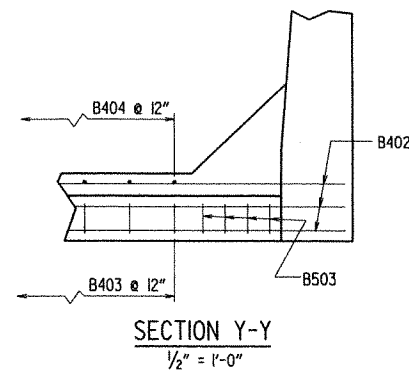
ELEVATION

Looking Back - Bent 1
Looking Ahead - Bent 4
 $\frac{3}{8}'' = 1'-0''$



LAYOUT OF PILES

$\frac{3}{8}'' = 1'-0''$

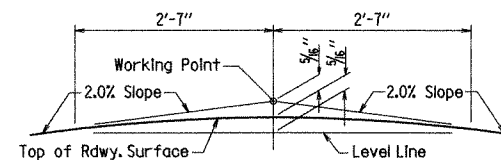


NOTES: For additional joint details, see Dwg. No. 51801.

Concrete shall be hand packed under the joint armor in the backwall.

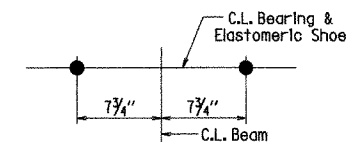
DETAIL Z

No Scale



ROUNDING DETAIL

No Scale

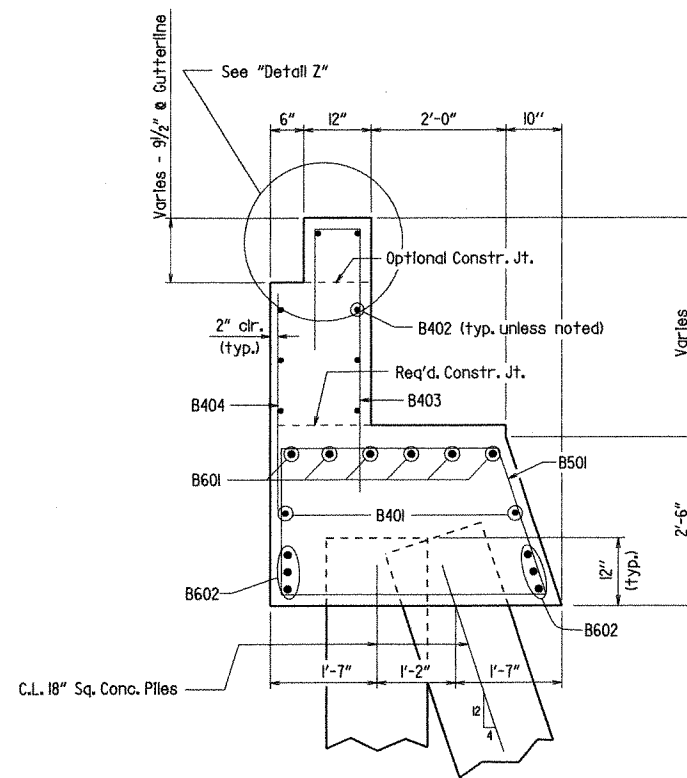


For details of elastomeric bearings, see Dwg. No. 51799.

TYP. ANCHOR BOLT LAYOUT

No Scale

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.		030386	27	77
				07198		END BENTS		51796



SECTION X-X

$\frac{3}{4}'' = 1'-0''$

NOTE: The Backwall above the required construction joint shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Dwg. No. 51801, "Expansion Device Installation at End Bents", for additional information.

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 to be chamfered $\frac{3}{4}''$ unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (yield strength = 60,000 psi.).

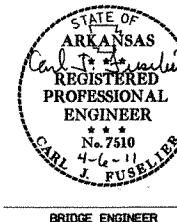
Structural steel in end bents shall be M270, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)".

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

For additional information, see Layout.

DETAILS OF END BENTS
LITTLE BODCAU CREEK RELIEF
ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 10-21-10 FILENAME: b030386.bl.dgn
CHECKED BY: JYP DATE: 9-30-11 SCALE: As Noted
DESIGNED BY: PGT DATE: 10-10
BRIDGE NO. 07198 DRAWING NO. 51796



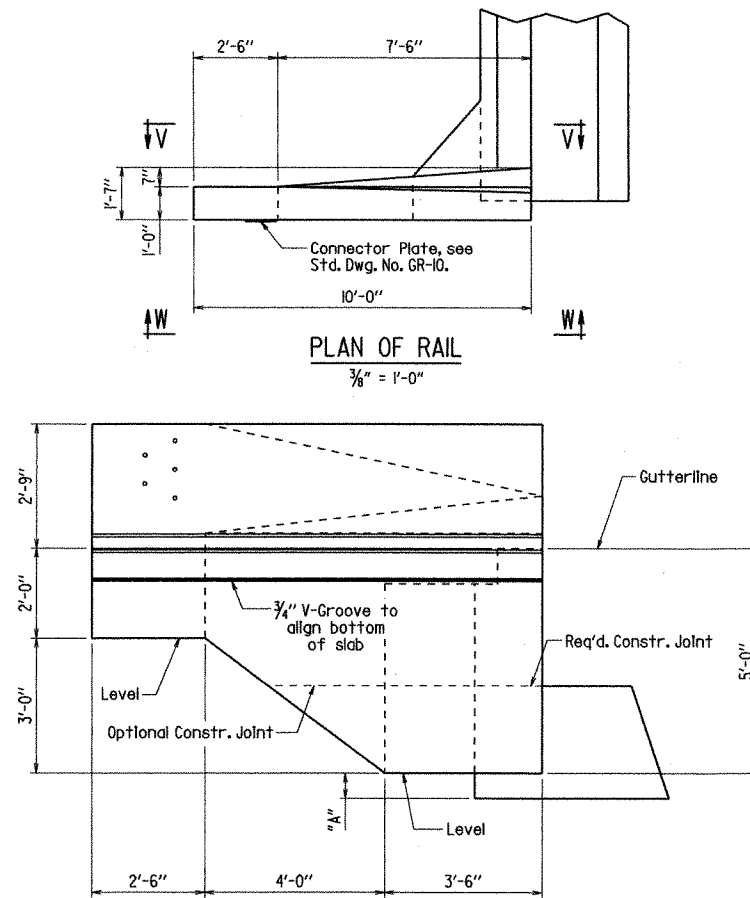
BRIDGE ENGINEER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		28	77
				JOB NO.	030386		28	77
				07198,07199	END BENTS		51797	

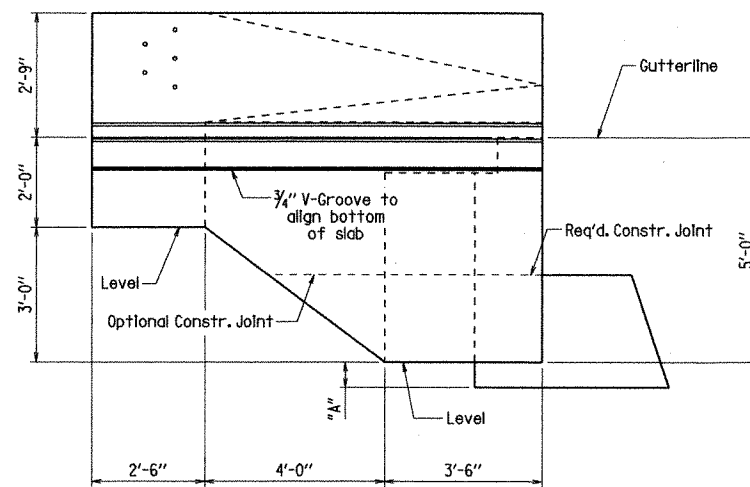
BAR LIST - PER BENT

MARK	NO.	REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	2	3'-8"	Str.		
B402	8	32'-10"	Str.		
B403	26	6'-7"	2"		
B404	26	3'-4"	Str.		
B405	6	3'-10"	Str.		
B501	33	12'-1"	2 1/2"		
B502	12	7'-5"	2 1/2"		
B503	8	8'-10"	2 1/2"		
B601	6	33'-0"	4 1/2"		
B602	6	3'-8"	Str.		
B603	6	6'-10"	4 1/2"		
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	8	6'-3"	2"		
W402	8	7'-5"	Str.		
W403-W406	2 each	Var. 3'-5" to 5'-8"	2"		
W407-W410	2 each	Var. 4'-6" to 6'-9"	Str.		
W411	6	4'-10"	2"		
W701	12	9'-8"	Str.		
W702	4	6'-4"	Str.		
W703	4	5'-4"	Str.		
W704	4	4'-4"	Str.		
W705	4	10'-4"	5 1/4"		

Dimensions are out to out of bars.



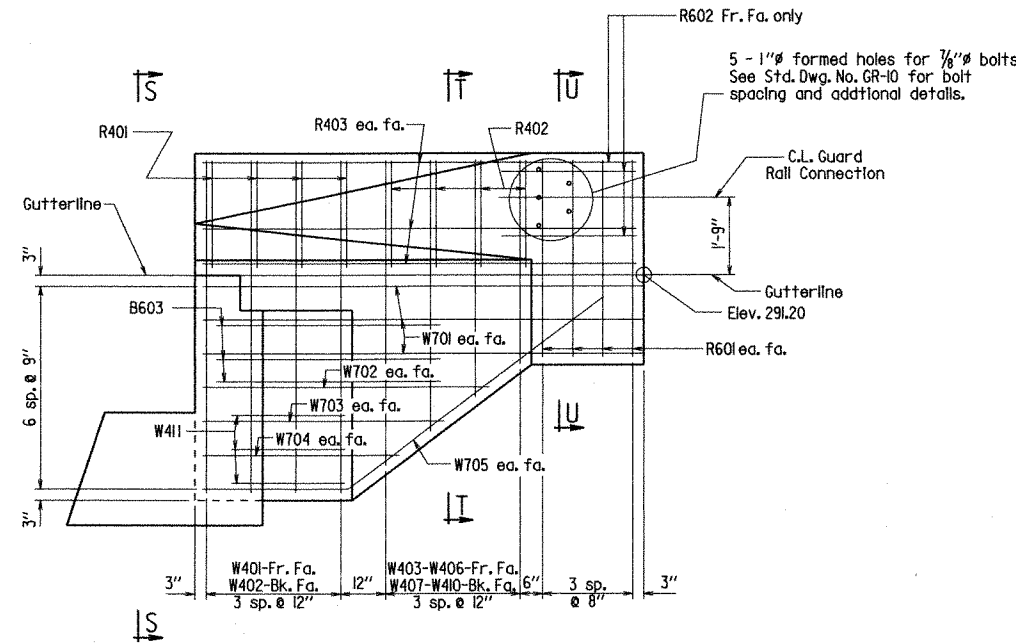
PLAN OF RAIL
3/8" = 1'-0"



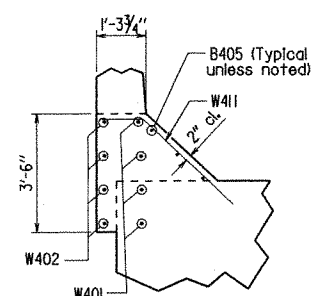
VIEW W-W
1/2" = 1'-0"

TABLE OF VARIABLES

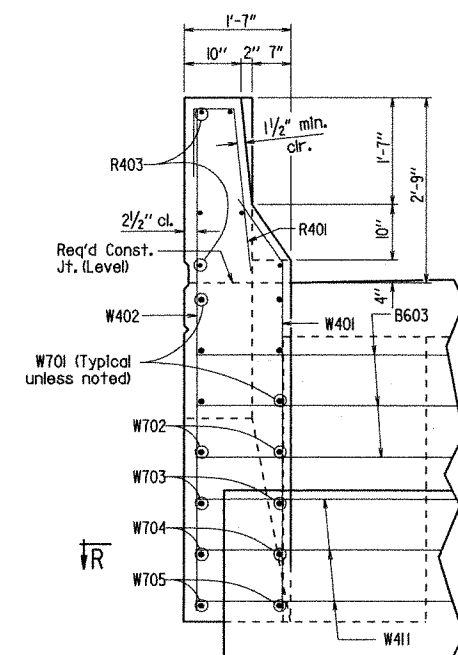
Bridge No.	"A"
07198	5 3/8"
07199	6 1/8"



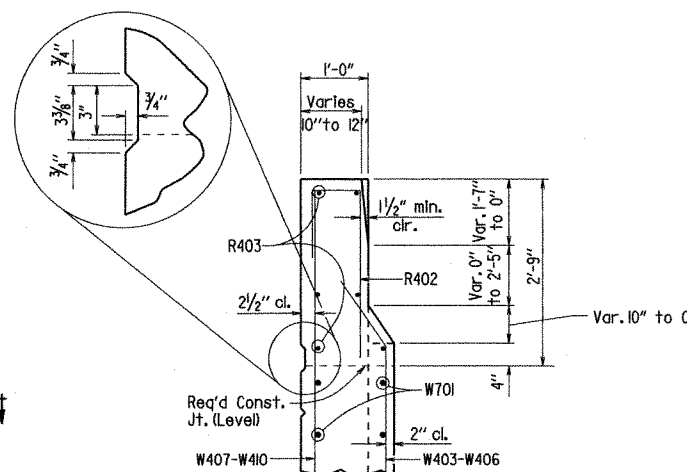
VIEW V-V
1/2" = 1'-0"



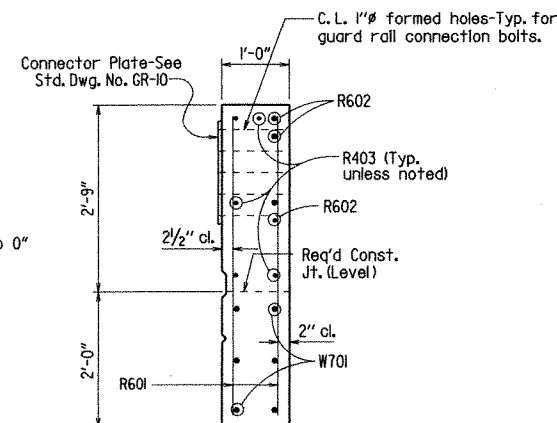
SECTION R-R
3/8" = 1'-0"



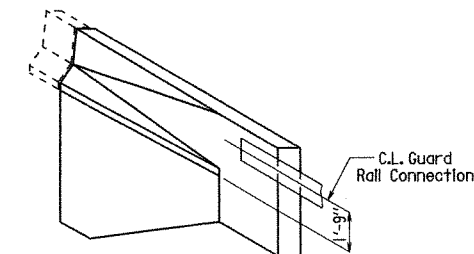
VIEW S-S
3/4" = 1'-0"



SECTION T-T
3/4" = 1'-0"



SECTION U-U
3/4" = 1'-0"



THREE DIMENSIONAL VIEW OF RAIL
No Scale



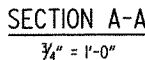
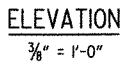
BRIDGE ENGINEER

COMMON DETAILS OF END BENTS LITTLE BODCAU CREEK & RELIEF

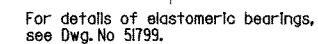
ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 10-21-10 FILENAME: b030386.bl.dgn
CHECKED BY: JYP DATE: 3-30-11 SCALE: As Noted
DESIGNED BY: PGT DATE: 10-10
BRIDGE NO. 07198, 07199 DRAWING NO. 51797

①	07198, 07199	INT. BENTS	51798
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Bridge No.	Bent No(s).	Elev. "A"
07198	2 & 3	288.25
07199	2 & 4	288.24
	3	288.25

[illegible]

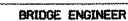
No Scale

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 to be chamfered $\frac{3}{4}"$ unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (yield strength = 60,000 psi.).

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

For additional information, see Layout.

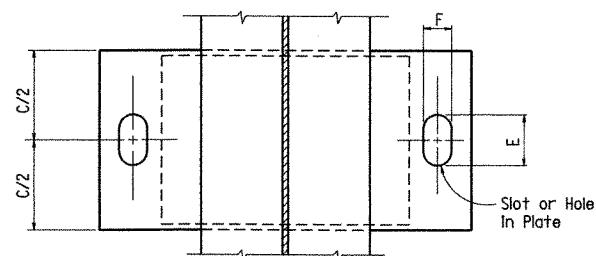


ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

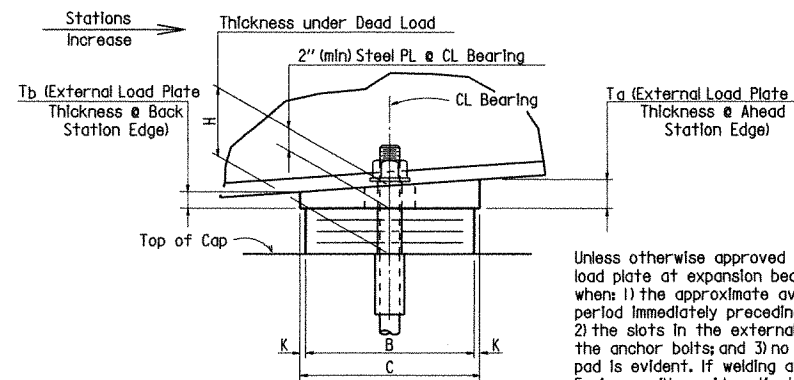
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 CHECKED BY: JYP DATE: 3-30-11 SCALE: As Shown
 DESIGNED BY: PGT DATE: 10-10
 BRIDGE NO. 07198, 07199 DRAWING NO. 51798

Technical drawing of a beam-to-column connection. The drawing shows a cross-section of a beam (labeled 2) with a flange (labeled 1) welded to a column cap. The beam flange is welded to the cap with a 5/16" fillet weld. The cap is supported by an external load plate and elastomeric bearing. The connection is secured with heavy hex nuts, steel washers, and swedge anchor bolts. Dimensions include: D (beam depth), M (flange width), C (cap thickness), A (bearing width), and Pipe Sleeve Length. Labels include: Beam or Girder (2), Beam Flange, Heavy Hex Nut, Steel Washer, 1/4" Min., Pipe Sleeve Length, Std. Weight Pipe Sleeve, Swedge Anchor Bolt, Elastomeric Bearing, External Load Plate, Sheet Metal Sleeve, Top of Cap, and 5/16".

- ① Care shall be taken to ensure that the external load plate is in full and complete contact with the beam or girder flange before welding begins.
- ② C.L. Elastomeric pad shall be aligned with C.L. Beam.

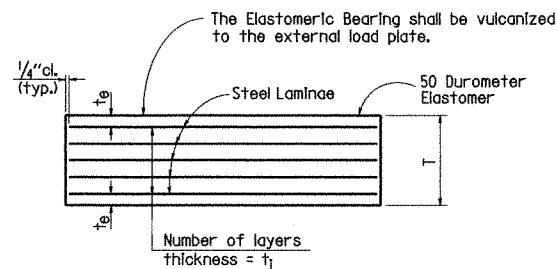


PLAN VIEW



SIDE VIEW

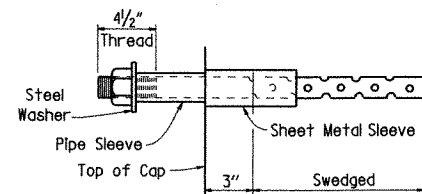
Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the girder will be allowed only when: 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40° F and 80° F; and 2) the slots in the external 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.



t_e = thickness of elastomer cover on top and bottom of pad
 t_l = thickness of elastomer between steel laminae
 N = number of elastomer layers of thickness t_l

ELASTOMERIC BEARING

TABLE OF FABRICATOR VARIABLES

[illegible]

ANCHOR BOLT DETAIL

NOTE: 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 equivalent 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)"

GENERAL NOTES

Elastomeric Bearings shall conform to Section 808 of the Standard Specifications 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 A53, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or AASHTO M 298, 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(b) for painted steel and 807.84(e) for unpainted Grade 50W steel.

Anchor Bolts, Washers and Nuts shall conform to subsection 807.07 of the Standard Specifications. 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 (M270, Gr. 50W)".

Bearings shall be seated in accordance with subsection 808.08. This work and materials are considered as subsidiary to the item "Elastomeric Bearings" and will not be paid for directly.



BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS
LITTLE BODCAU CREEK & RELIEF

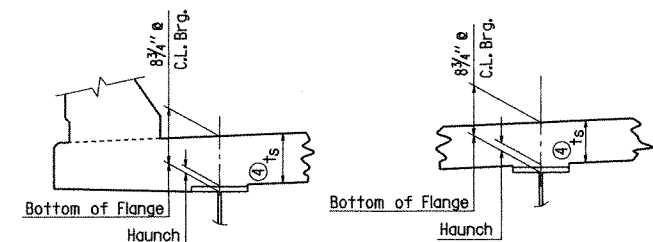
ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 10-8-10 FILENAME: b030386_el.dgn
 CHECKED BY: JNP DATE: 3-30-11 SCALE: NONE
 DESIGNED BY: PGT DATE: 10-10
 BRIDGE NO. 07198, 07199 DRAWING NO. 51799

NOTE: Class I Protective Surface Treatment shall be applied to the Roadway Surface and to the Roadway Face & Top of the Concrete Parapet Rail.

Diagram illustrating the location of the working point relative to the road surface and level line. The diagram shows a cross-section of a road with a 2.0% slope. A horizontal line represents the level line. The working point is located at the intersection of the road surface and a vertical line. The horizontal distance from the centerline to the working point is 2'-7". The vertical distance from the level line to the working point is 5 1/8". The vertical distance from the top of the road surface to the working point is 5 1/8".

ROUNDING DETAIL
No Scale



INTERIOR BEAM

Notes:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerances: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus $1\frac{3}{4}$ ". No increase in concrete and structural steel quantities will be made to maintain tolerances.

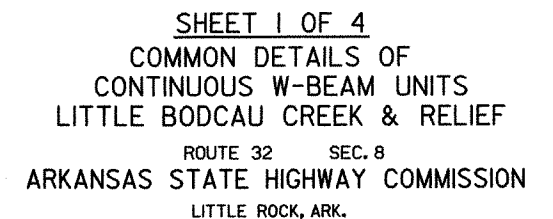
ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale

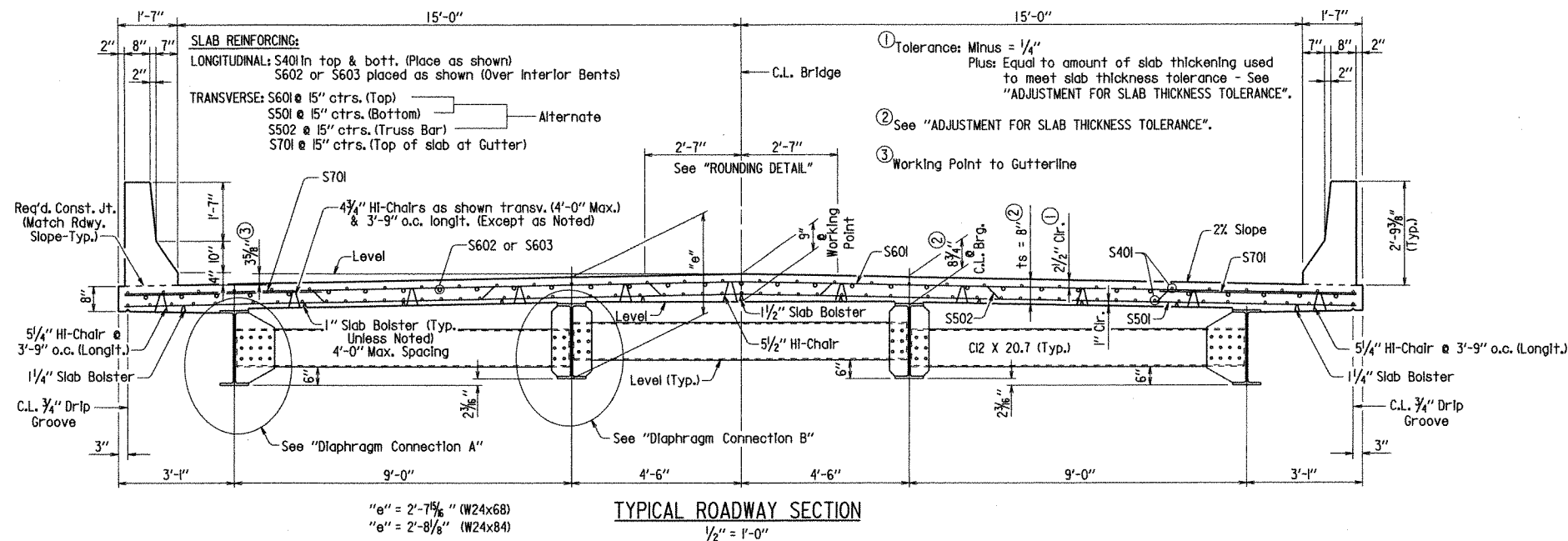
Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To $\frac{3}{4}$ " Inclusive	$\frac{1}{4}$ "	
Over $\frac{3}{4}$ "	$\frac{5}{16}$ "	

Note:
As an alternate to $\frac{5}{8}" \phi$ studs, $\frac{1}{2}" \phi \times 8"$ studs spaced as shown may be used. Use weight of $\frac{5}{8}" \phi$ stud as basis of measurement of structural steel in anchors.

No Scale



DRAWN BY: PGT DATE: 9-24-10 FILENAME: b030386.sldgn
CHECKED BY: JP DATE: 3-30-11 SCALE: AS SHOWN
DESIGNED BY: PGT DATE: 9-10
BRIDGE NO. 07198, 07199 DRAWING NO. 51800



TYPICAL ROADWAY SECTION

$$\frac{1}{2}'' = 1'-0''$$

Detail Device $\frac{1}{8}$ " high and provide $\frac{1}{4}$ " shims
using 2 - $\frac{1}{16}$ " and 1 - $\frac{1}{8}$ " PL's

Conn. Angle - $\angle 7'' \times 4'' \times \frac{1}{2}''$
 Detail Device $\frac{1}{8}''$ high and provide $\frac{1}{4}''$ shims using 2 - $\frac{1}{16}''$ and 1 - $\frac{1}{8}''$ PL's

$\angle 7'' \times 4'' \times \frac{1}{2}''$

$\frac{5}{8}'' \phi \times 8''$ Studs @ 12" o.c.

$\frac{5}{16}''$ (Typ.)

Cope Channel Flange 2" + Width of Beam Flange (typ.)
 See Channel Connection Detail on Dwg. No. 5180I.

$\frac{3}{4}'' \phi$ HI-Strength Bolts

2'-9 $\frac{3}{8}''$ (Typ.)

C.L. $\frac{3}{4}''$ Drip Groove

3"

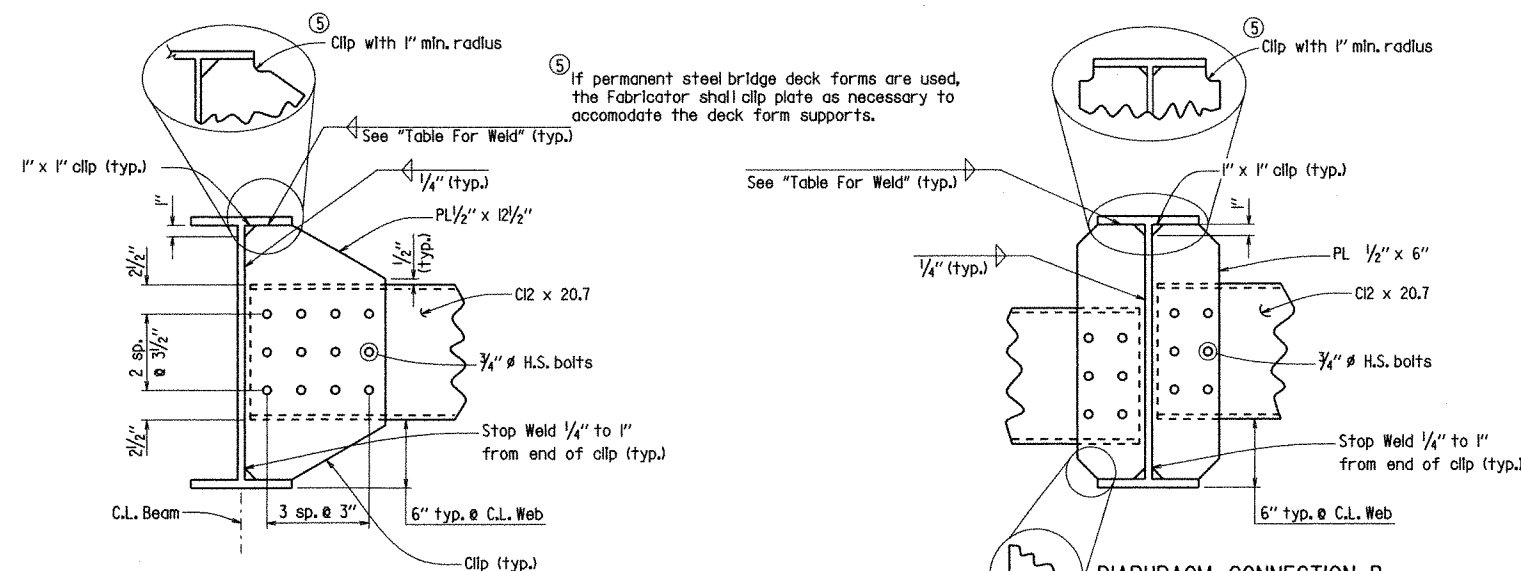
C12 X 20.7 (Typ.)

Level (Typ.)

C.L. $\frac{3}{4}''$ Drip Groove

3"

SECTION NEAR JOINT

$$\frac{1}{2}'' = 1'-0''$$


DIAPHRAGM CONNECTION A

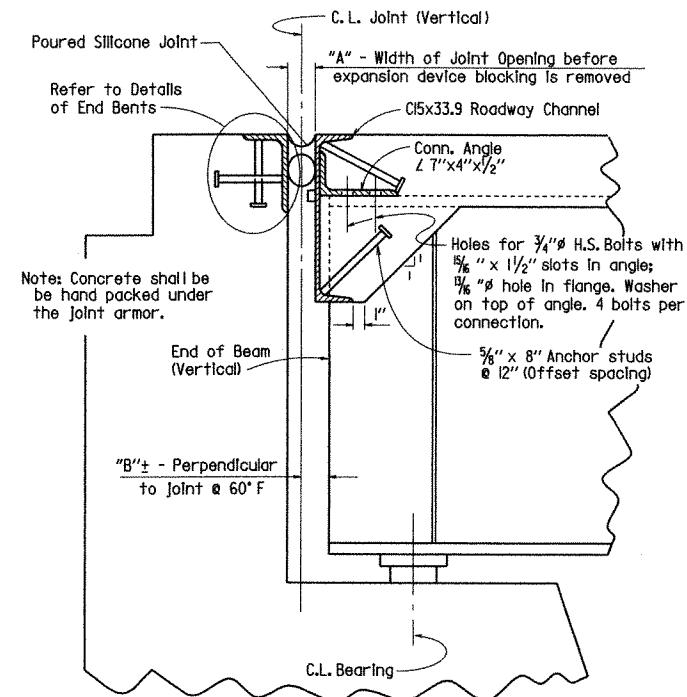
No Scale

DIAPHRAGM CONNECTION B

No Scale

BRIDGE ENGINEER

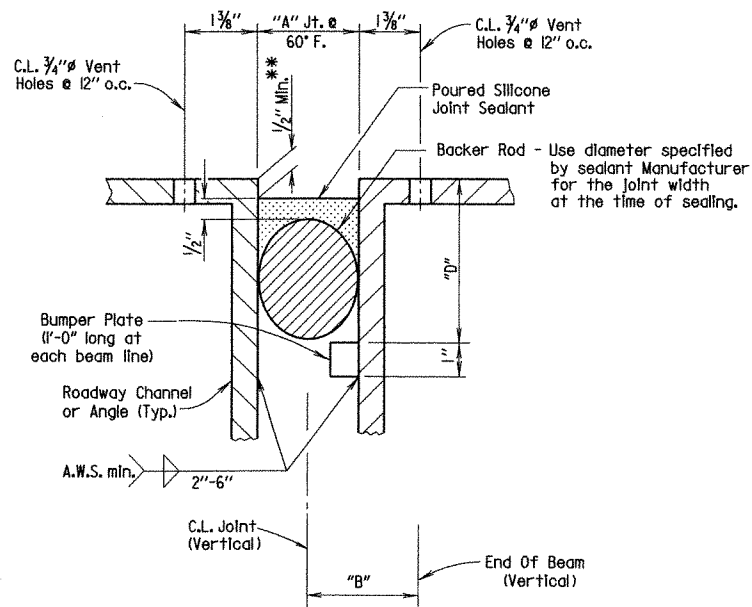
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030386	32	77
				07198, 07199		Cont. Unit		51801



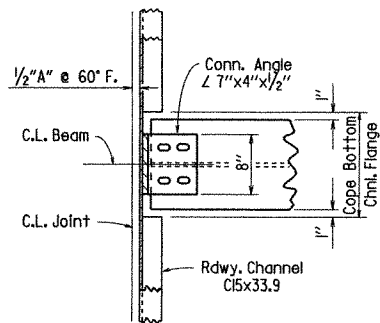
Note: Section taken perpendicular to C.L. Joint

SECTION THRU JOINT AT END BENT

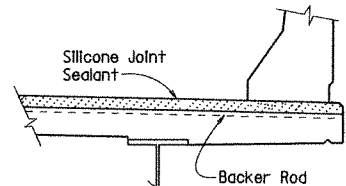
** Recess depth as recommended by the sealant Manufacturer



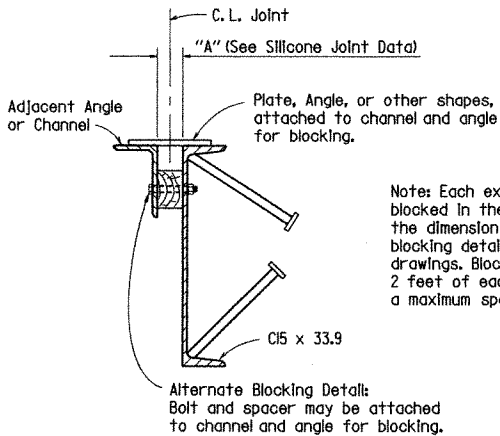
DETAIL OF POURED SILICONE JOINT



CHANNEL CONNECTION DETAIL



JOINT SEAL PLACEMENT AT CURB



Note: Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension "A" shown for 60' F 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.

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

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, and the opening adjusted for temperature and grade.
- 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 and grade.

SILICONE JOINT DATA

Bridge No.	"A" Width Perpendicular to Joint at 24 Hour Average Temperature* Of:			"B" Perpendicular to Joint at 60'F	"D"	Bumper Plate Size
	40'F	60'F	80'F			
07198	1 5/8"	1 1/2"	1 3/8"	2" ±	4"	1" x 3/4"
07199	2 1/8"	2"	1 7/8"	2 1/4" ±	4 1/2"	1" x 1"

* 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° and 80° F.

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. Unless otherwise 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.



BRIDGE ENGINEER

SHEET 2 OF 4
COMMON DETAILS OF
CONTINUOUS W-BEAM UNITS
LITTLE BODCAU CREEK & RELIEF
ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 9-27-10 FILENAME: b030386-sl.dgn
CHECKED BY: JHP DATE: 3-30-11 SCALE: No Scale
DESIGNED BY: PGT DATE: 9-10
BRIDGE NO. 07198, 07199 DRAWING NO. 51801

GENERAL NOTES

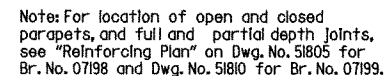


TABLE OF VARIABLES

2"

1'-5"

8" 7"

1 1/2" min. cl.

1'-7"

10"

4"

5" (typ.)

8"

5 1/2" cl. (typ.)

1" cl.

P4xx bars

2 1/2" Clr.

P4xx bars

P40I

P50I

Req'd. Constr. Joint-Match roadway slope

SECTION A-A

3/4" = 1'-0"

2"

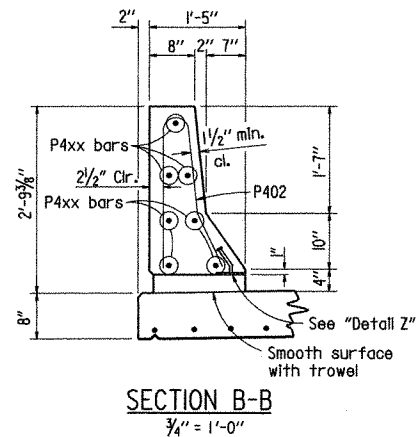
3/4"

3 3/8"

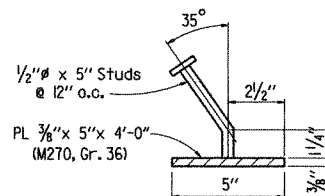
3/4"

3/4"

SECTION A-A
3/4" = 1'-0"



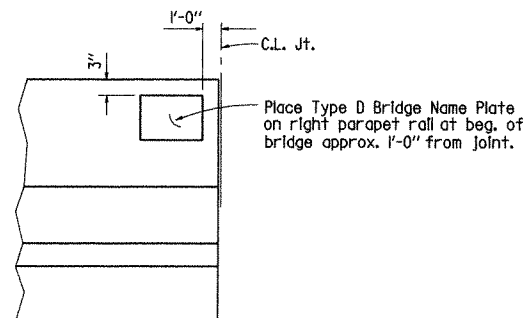
SECTION B-B
3/4" = 1'-0"



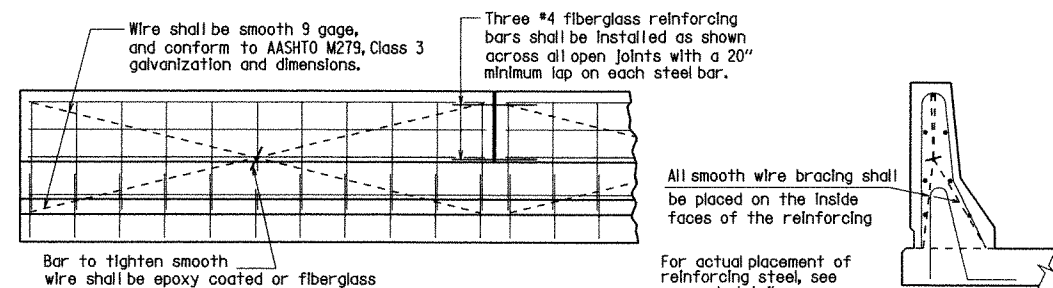
Note:
Parapet Studs shall be 5" long, granular flux filled, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as Structural Steel in Beam Spans (M270, Gr. 50W).

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 (M270, Gr. 50W).

DETAIL Z
No Scale



VIEW SHOWING LOCATION OF NAME PLATE
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 $\frac{1}{4}$ ". 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
Scale: 1/2" = 1'-0"

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

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c = 4,000 psi
Reinforcing Steel (AASHTO M31 or M53, 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 $\frac{3}{4}$ " 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 (IAC) Concrete. See Standard Drawing No. 14991 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 trowel 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 slab and the pouring of the parapet railing.

REINFORCING STEEL :

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60. 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 "Reinforcing Steel-Bridge".

STRUCTURAL STEEL :

Structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)". Grade 50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with subsection 807.84(e) unless otherwise noted. Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36 unless otherwise noted.

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. Payment will be based on the basis of shapes and materials shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

Beams and field splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in subsection 807.05.

All beams shall be assembled in the shop as specified in Section 807.54 and blocked in their true position with webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. 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 degrees F. A tolerance of $1/16"$ +/- is allowed for camber.

Flange field splice 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 permanent or temporary, 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.

Field connections shall be bolted with high-strength bolts and shall be $\frac{3}{4}$ " ϕ 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. Holes for $\frac{3}{4}$ " ϕ high-strength bolts may be $\frac{5}{8}$ " ϕ diameter if a washer is supplied for use under both the nut and head of the bolt.

Diaphragms shall be installed as beams are erected. All bolts in diaphragms and field splices shall be installed and tightened in accordance with subsection 807.7 prior to pouring the concrete deck unless otherwise noted.

SHEET 3 OF 4

COMMON DETAILS OF
CONTINUOUS W-BEAM UNITS
LITTLE BODCAU CREEK & RELIEF

ROUTE 32 SEC. 8

ROUTE 52 SEC. 5
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 9-27-10 FILENAME: b030386..sl.dgn

CHECKED BY: JYP DATE: 3-30-11 SCALE: AS SHOWN

DESIGNED BY: PGT DATE: 9-10

BRIDGE NO. 07/98, 07/99 DRAWING NO. 5/802



BRIDGE ENGINEER

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.		030386	34	77
				07198, 07199		Cont. Unit		51803

TABLES OF DEAD LOAD DEFLECTIONS-INCHES

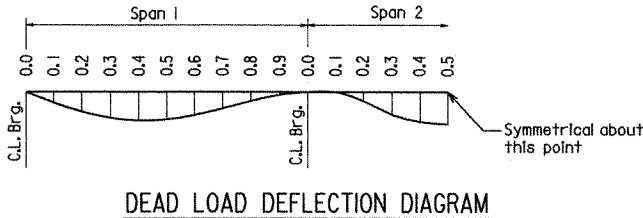
Bridge No.07198 (Little Bodcau Creek Relief)

Span	Point of Deflection	Structural Steel		Structural Steel+Slab		Str. Steel +Slab+Roll	
		Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.
1	0	0	0	0	0	0	0
	0.1	0.019	0.022	0.202	0.251	0.218	0.266
	0.2	0.035	0.041	0.375	0.467	0.405	0.496
	0.3	0.046	0.055	0.498	0.621	0.538	0.659
	0.4	0.052	0.061	0.560	0.699	0.605	0.742
	0.5	0.051	0.061	0.557	0.694	0.601	0.736
	0.6	0.045	0.054	0.492	0.613	0.531	0.650
	0.7	0.035	0.041	0.378	0.471	0.408	0.500
	0.8	0.022	0.026	0.237	0.296	0.256	0.314
	0.9	0.009	0.011	0.099	0.123	0.107	0.131
	0	0	0	0	0	0	0
2	0.1	-0.003	-0.003	-0.028	-0.034	-0.030	-0.036
	0.2	0.001	-0.001	-0.006	-0.007	-0.006	-0.007
	0.3	0.003	0.004	0.033	0.041	0.036	0.043
	0.4	0.006	0.007	0.065	0.081	0.070	0.086
	0.5	0.007	0.008	0.077	0.096	0.083	0.101

Half-point of Unit.

Note: Camber for Dead Load Deflection $\pm 1/4"$ tolerance.
Deflections shown are along C.L. Beam from a chord from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates point above chord.

Symmetrical about half-point of Unit.



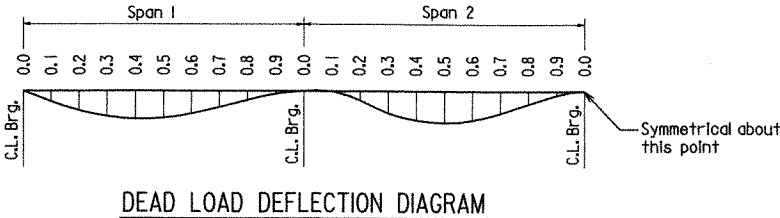
Bridge No.07199 (Little Bodcau Creek)

Span	Point of Deflection	Structural Steel		Structural Steel+Slab		Str. Steel +Slab+Roll	
		Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.	Ext. Bms.	Int. Bms.
1	0	0	0	0	0	0	0
	0.1	0.026	0.029	0.235	0.292	0.255	0.311
	0.2	0.048	0.055	0.436	0.541	0.474	0.577
	0.3	0.064	0.073	0.578	0.717	0.628	0.765
	0.4	0.072	0.081	0.645	0.801	0.701	0.854
	0.5	0.071	0.080	0.635	0.788	0.690	0.840
	0.6	0.062	0.070	0.553	0.686	0.601	0.732
	0.7	0.047	0.054	0.416	0.516	0.452	0.550
	0.8	0.029	0.033	0.252	0.312	0.274	0.333
	0.9	0.012	0.013	0.097	0.120	0.105	0.128
	0	0	0	0	0	0	0
2	0.1	-0.002	-0.002	0	0.001	0	0.001
	0.2	0.003	0.004	0.067	0.084	0.072	0.089
	0.3	0.011	0.013	0.158	0.197	0.171	0.209
	0.4	0.018	0.022	0.237	0.296	0.256	0.314
	0.5	0.022	0.027	0.279	0.348	0.302	0.370
	0.6	0.022	0.026	0.271	0.338	0.293	0.359
	0.7	0.018	0.021	0.215	0.268	0.232	0.285
	0.8	0.011	0.013	0.128	0.160	0.138	0.170
	0.9	0.004	0.004	0.041	0.052	0.044	0.055
	0	0	0	0	0	0	0

Half-point of Unit.

Note: Camber for Dead Load Deflection $\pm 1/4"$ tolerance.
Deflections shown are along C.L. Beam from a chord from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates point above chord.

Symmetrical about half-point of Unit.

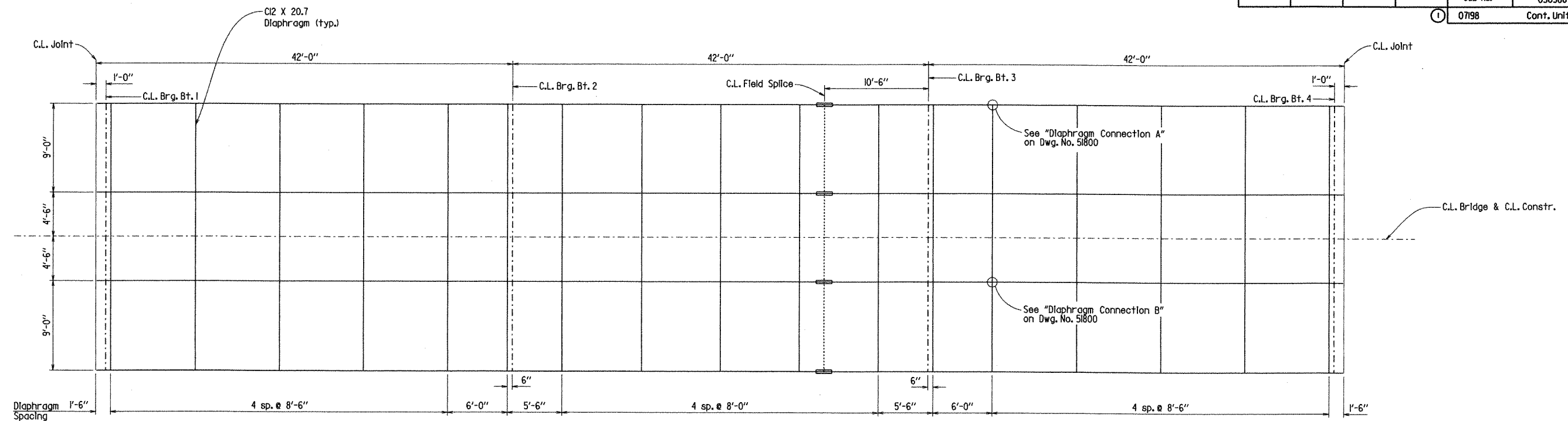


SHEET 4 OF 4
COMMON DETAILS OF
CONTINUOUS W-BEAM UNITS
LITTLE BODCAU CREEK & RELIEF

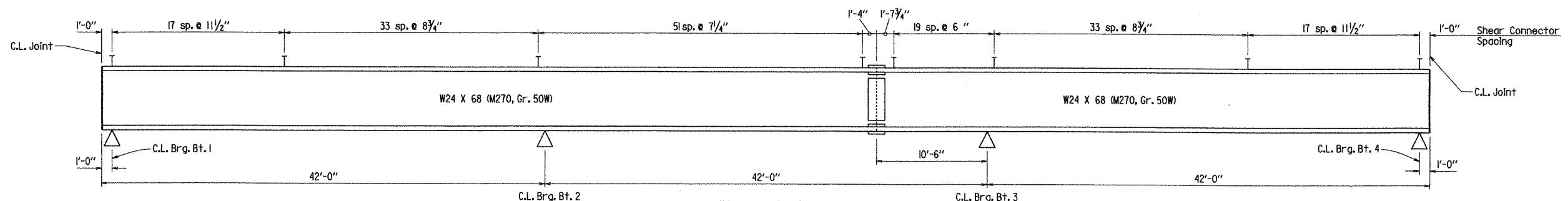
ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 10-8-10 FILENAME: b030386.sldgn
CHECKED BY: JNP DATE: 3-30-11 SCALE: No Scale
DESIGNED BY: PGT DATE: 9-10
BRIDGE NO.07198, 07199 DRAWING NO. 51803

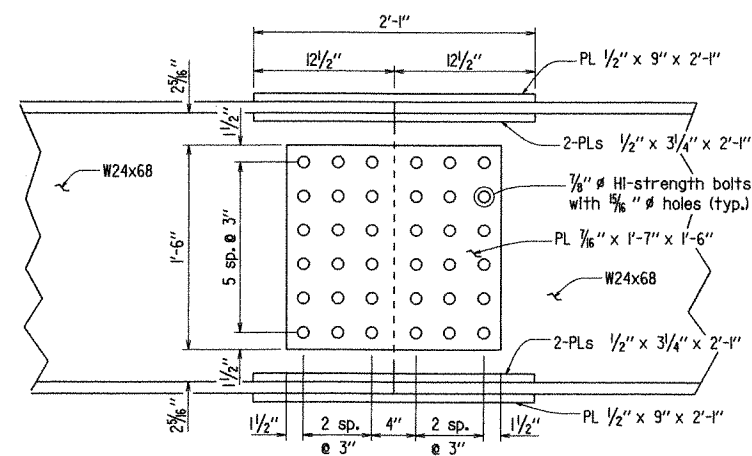
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030386	35	77
				07198		Cont. Unit		51804



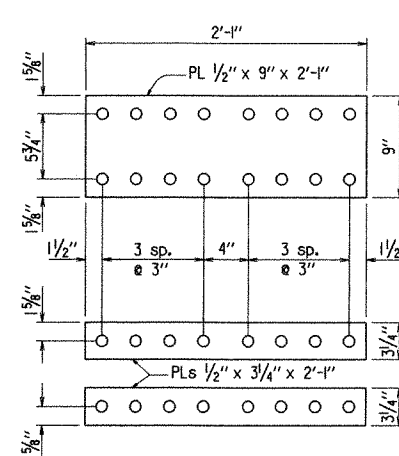
FRAMING PLAN
3/16" = 1'-0"



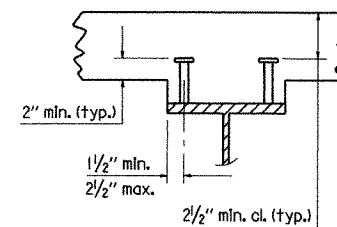
BEAM ELEVATION
NTS



FIELD SPICE DETAILS
NTS



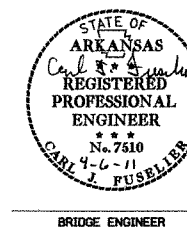
FLANGE SPICE PLs (Top & Bottom)



SHEAR CONNECTOR DETAIL
NTS

Stud Shear Connectors shown shall be 3/8" 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. 3/4" studs may be used in place of the 3/8" studs shown, at the ratio of 1.361 - 3/4" studs in place of one 3/8" stud. 3/8" studs will be used as basis for measurement of structural steel in shear connectors.

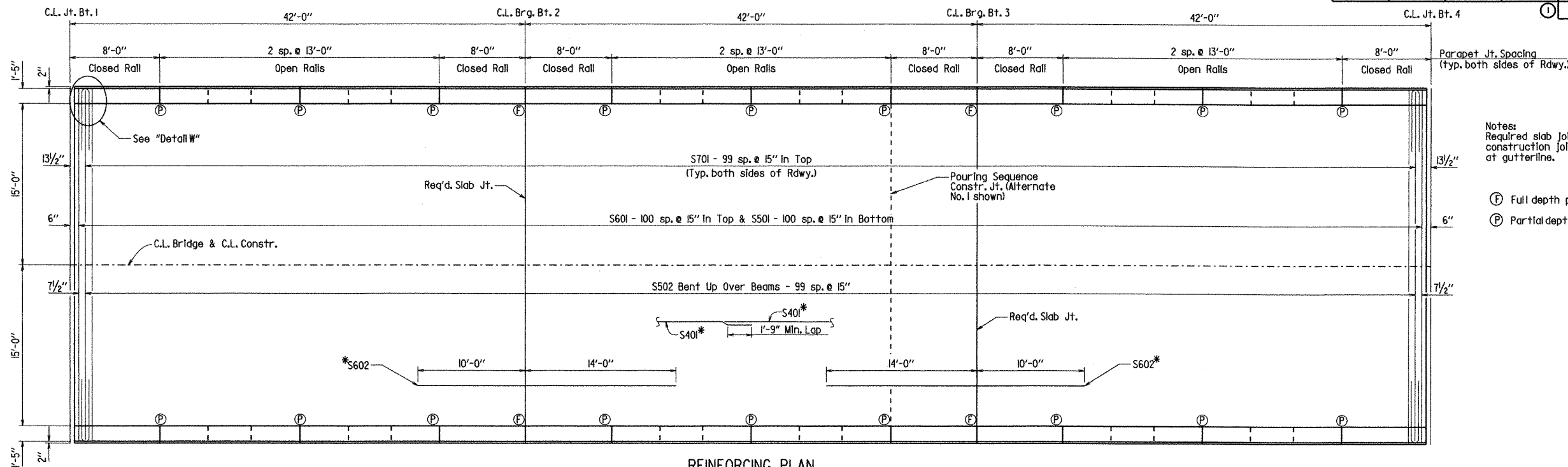
Note: Bolted Field Splices may be eliminated or shop welded splices may be substituted with approval of the Bridge Engineer. Payment will be made on the basis of the plan quantities.



SHEET 1 OF 2
DETAILS OF
126'-0" CONTINUOUS W-BEAM UNIT
LITTLE BODCAU CREEK RELIEF
ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: PGT DATE: 10-4-10 FILENAME: b030386.sl.dgn
CHECKED BY: JNP DATE: 3-20-11 SCALE: As Shown
DESIGNED BY: PGT DATE: 9-10
BRIDGE NO. 07198 DRAWING NO. 51804

*Placed as Shown in "TYPICAL ROADWAY SECTION", See Dwg. No. 51800.

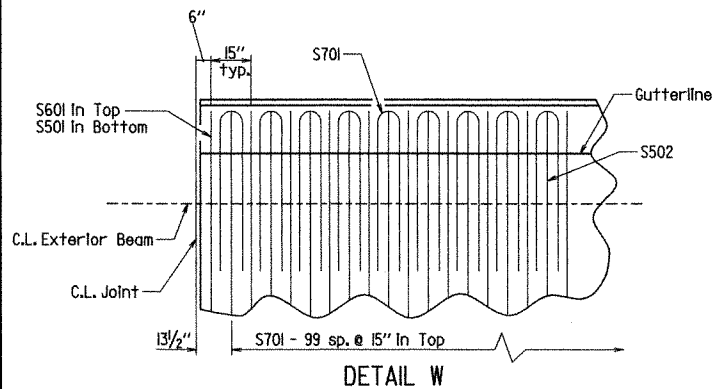
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		030386	36	77
						Cont. Unit		51805



Notes:
Required slab joints and pouring sequence construction joints shall align with parapet joints at gutterline.

- Ⓡ Full depth parapet joint at this location
- Ⓟ Partial depth parapet joint at this location

REINFORCING PLAN

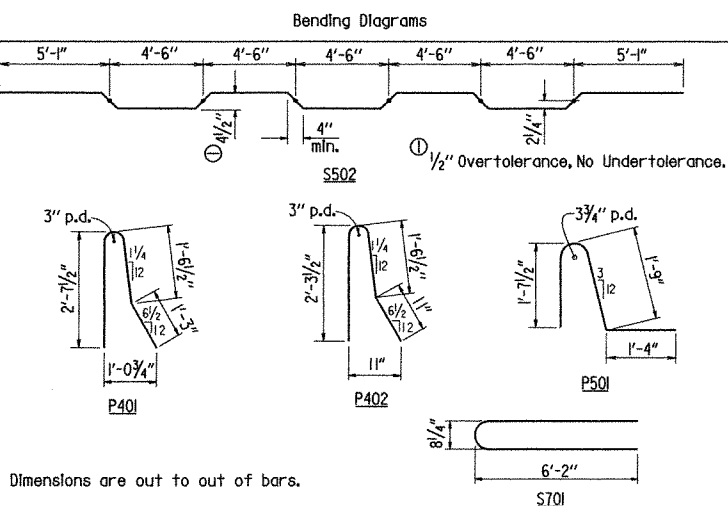


Use Type 3, 4 or 6 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer rod filler will not be required. Joint Sealer shall be measured and paid for as Class (S)AE Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face of the parapet. 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 to allow sawing of the joint without damaging 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 from gutterline to gutterline.

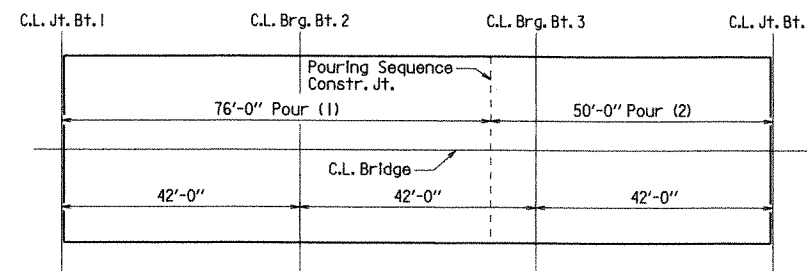
SLAB JOINT DETAIL

BAR LIST

Mark	No. Req'd.	Length	Pin Dia.
S401	356	32'-9"	Str.
S501	101	32'-10"	Str.
S502	100	33'-4"	3"
S601	101	32'-10"	Str.
S602	66	24'-0"	Str.
S701	200	12'-8"	6 1/2"
P401	408	5'-6"	3"
P402	96	4'-10"	3"
P405	84	12'-7"	Str.
P406	72	5'-7"	Str.
P407	84	7'-7"	Str.
P501	408	4'-10"	3 3/4"

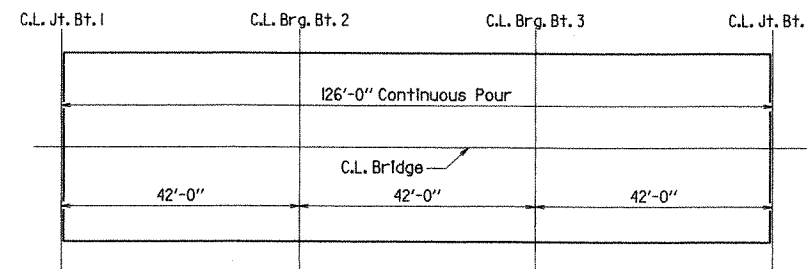


Dimensions are out to out of bars.



Note: Pour (1) must be placed before Pour (2) can be placed. 72 hours shall elapse between the end of a pour and the start of the next pour.

ALTERNATE NO. 1

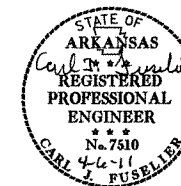


ALTERNATE NO. 2

ALTERNATES FOR SLAB POURING SEQUENCE

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.



BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF
126'-0" CONTINUOUS W-BEAM UNIT
LITTLE BODCAU CREEK RELIEF
ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 10-7-10 FILENAME: b030386.sldgn
CHECKED BY: JYP DATE: 3-30-11 SCALE: No Scale
DESIGNED BY: PGT DATE: 9-10
BRIDGE NO. 07198 DRAWING NO. 51805

FOR R/W DATA AND TEMPORARY
CONSTRUCTION EASEMENT, SEE ROWY. PLANS

NOTE: Use Type B Approach Gutters ("W"-4'-0")
at both ends of bridge, see Std. Dwg. No. 2016B.

Note: Place 1'-6" Dumped Riprap
on top of Filter Blanket. See Std.
Dwg. No. 1891F. Top of Riprap
Elev. = 288.0 (typ. both ends of bridge).

LITTLE BODCAU CREEK

Existing 4" Gas Line
Existing 10" Water Line

Overhead Utility Line & Buried Fiber Optic Cable

Cut Level as
shown to Elev. 282.0.

Existing
Bridge No. M0748

Approx. 1.50 mi. to
Jct. S.H. 53

Tan. Dist.
over 500'

Sta. 113+03

Cut Level as
shown to Elev. 280.0.

Sta. 114+63

C.L. Temporary Detour

Proposed Ditch

For details of temporary
pipes, see Rdwy. Plans

PLAN

Notes:
The Contractor shall remove the existing
approach embankment at Bents 1 & 5 as
shown. Approx. 560 cubic yards of excavation.

The proposed bridge shall be constructed to avoid
interference with the existing piling. The Contractor
shall verify measurements before driving any piling. Any
adjustments necessary to fit the proposed bridge to
the existing bridge location shall be submitted for the
Engineer's approval.

For Details of Hydraulic Data and Boring Data,
see Dwg. No. 51807.

Level Grade
C.L. Deck Elev. 291.50

Reg. Br. Sta. 112+85.92

Slope Intercept
Sta. 112+79.92

Proposed Grade Line
Along C.L. Const.

Existing Ground Line
Along C.L. Const.

BENT NO.

1

2

3

4

5

ELEVATION

Total Length of Bridge = 190'-2"

188'-0" Continuous Composite W-Beam Unit (47'-47'-47'-47')

C.L. 2" Poured
Silicone Joint

C.L. Deck to Low Side
Top of Cap = 3'-3 1/8"

C.L. Bent Sta. 113+34.00

Low Steel to Design
High Water = 10'

C.L. Deck to Low Side
Steel = 2'-1 1/8"

C.L. Bent Sta. 113+84.00

C.L. Deck to Low Side
Top of Cap = 3'-3 1/8"

C.L. Bent Sta. 114+28.00

C.L. Deck to Low Side
Top of Cap = 3'-3 1/8"

C.L. Bent Sta. 114+76.08

C.L. Deck to Low Side
Top of Cap = 3'-3 1/8"

Concrete
Parapet
Railing

Slope Intercept
Sta. 114+82.08

Guard rail -
see Rdwy. Plans

Measured at Working Point,
See Dwg. No. 51800.

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.		030386	37	77
				07199	LAYOUT		51806	

GENERAL NOTES

BENCH MARK: #4, 5/8" rebar with 2" cap, 18.75' Lt. of Sta. 114+45.1, Elev. = 286.43.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications
for Highway Construction (2003 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.

LIVE LOADING: HL93
SEISMIC PERFORMANCE ZONE: 1

MATERIALS AND STRENGTHS
Class S(AE) Concrete (superstructure) f'c = 4,000 psi
Class 5 Concrete (substructure) f'c = 3,500 psi
Reinforcing Steel (AASHTO M31 or M53, Gr. 60) fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36) Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W) Fy = 50,000 psi

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.

CONCRETE PILING: All piling shall be 18" square prestressed concrete and shall be driven with an approved
air, steam or diesel hammer to an ultimate bearing capacity of 206 tons per pile. Piling in end
bents shall be driven after embankment to bottom of cap is in place. Lengths of piling shown are
assumed for estimating quantities only. Actual lengths to be determined in the field. Drive one 50' test
pile in Bent 1 and one 50' test pile in Bent 4.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling
shall be based on the requirements of Section 805.09(b), "Method B-Wave Equation Analysis (WEAP)". It is
estimated that the minimum rated hammer energy required to obtain the ultimate bearing capacity for
all piles will be 48,000 foot pounds per blow.

BRIDGE DECK: The concrete bridge deck shall be given a fine finish as specified for final finishing in
subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.

DETAIL DRAWINGS:
End Bents 51797 & 51808
Int. Bents 51798
Elastomeric Bearings 51799
188'-0" Continuous W-Beam Unit 51800-51805, 51809 & 51810
Concrete Piling 14964
Type B Approach Gutters 2016B

EXISTING BRIDGE: Existing Bridge No. M0748 (log mile 3.20) is 25.0' wide and 106.0' long and consists of a
concrete deck on steel beams supported by timber and concrete pile trestle bents.

REMOVAL AND SALVAGE: Existing Bridge No. M0748 shall be removed in accordance with Section 205.
Exposed timber piling from a previous structure shall also be removed to a minimum depth of 2'
below natural ground. This work shall be considered subsidiary to "Removal of Existing Bridge
Structure". All material from the existing bridge shall become the property of the Contractor
except the following which shall remain the property of the State.

Guardrail Posts (angle iron) from Bridge Approaches
9" I-beams in all spans

The Contractor shall notify the Department prior to removal to determine the
specific guardrail pieces deemed salvageable. The Contractor shall provide temporary
storage and on site loading onto AHTD equipment for removal of salvage items from
the site.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER
LITTLE BODCAU CREEK
LITTLE BODCAU CREEK & RELIEF
STRS. & APPRS. (S)
NEVADA COUNTY
ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.



DRAWN BY: JYP DATE: 9-13-2010 FILENAME: b030386x2.ilddgn
CHECKED BY: PGT DATE: 2-11 SCALE: 1" = 20'
DESIGNED BY: KMY DATE: 8-10
BRIDGE NO. 07199 DRAWING NO. 51806

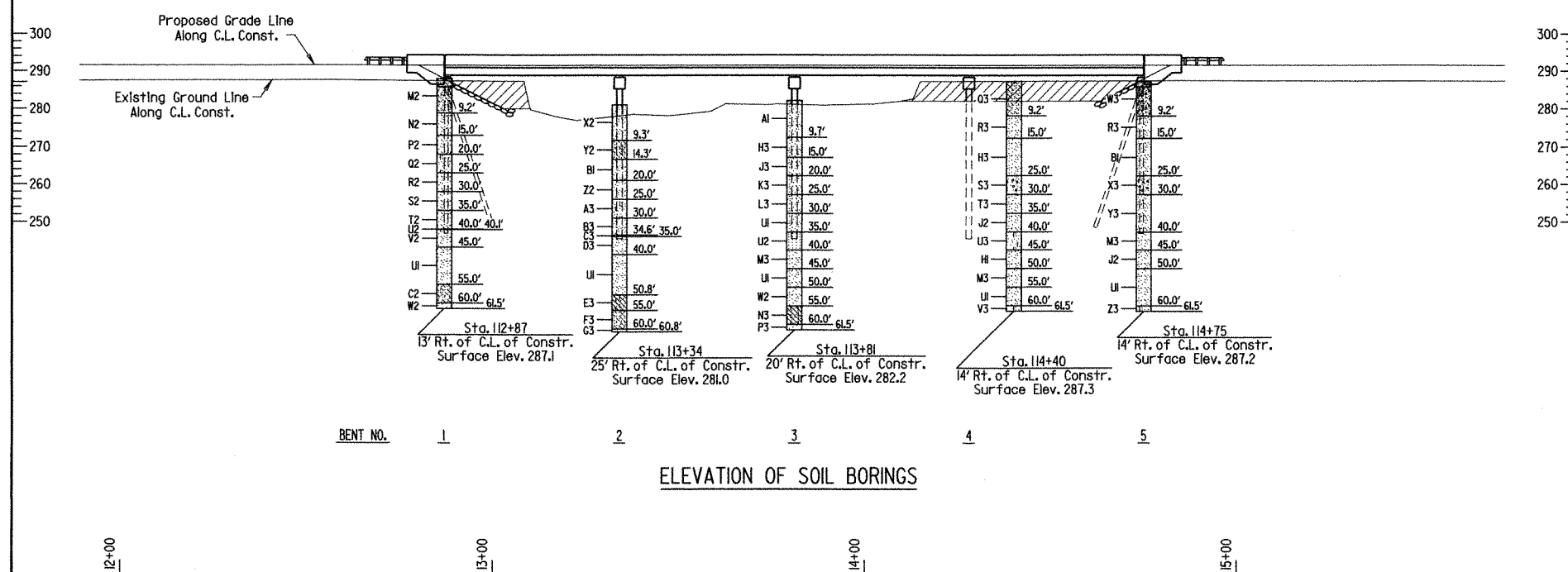
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				6	ARK.			
				JOB NO.		030386	38	77
				07199	LAYOUT		51807	

BORING LEGEND

A1-Moist, Loose, Light Gray Sand
 B1-Wet, Loose, Light Gray Sand
 H1-Moist, Very Dense, Dark Brown Sand with occasional Cemented Sand Seams
 U1-Moist, Very Dense, Dark Brown Sand
 C2-Moist, Very Dense, Dark Brown Sand with frequent Clay Layers
 J2-Moist, Dense, Dark Brown Sand
 M2-Moist, Loose, Reddish Brown and Light Gray Sand with Clay Seams and some Organic Matter
 N2-Moist, Very Loose, Light Gray Sand
 P2-Wet, Medium Dense, Light Gray Sand with Trace of Organic Matter
 Q2-Wet, Very Loose, Light Gray Silty Sand
 R2-Wet, Loose, Reddish Brown Sand
 S2-Wet, Medium Dense, Brown Sand with Trace of Gravel
 T2-Moist, Medium Dense, Dark Brown Sand
 U2-Hard, Brown Cemented Sand
 V2-Moist, Very Dense, Brown Sand with occasional Cemented Sand Seams
 W2-Moist, Very Dense, Dark Brown Sand with some Clay
 X2-Moist, Loose, Light Gray Sand with some Organic Matter
 Y2-Wet, Very Loose, Light Gray Sand with Clay and some Organic Matter
 Z2-Wet, Medium Dense, Brown Sand with some Gravel
 A3-Wet, Medium Dense, Light Gray Silty Sand
 B3-Wet, Medium Dense, Brown to Dark Brown Sand
 C3-Wet, Medium Dense, Dark Brown Sand with occasional Cemented Sand Seams
 D3-Wet, Very Dense, Dark Brown Sand
 E3-Moist, Hard, Dark Brown Clay with frequent Gray Silt and Brown Sand Seams
 F3-Moist, Very Dense, Dark Brown Sand with frequent Clay Seams
 G3-Wet, Very Dense, Dark Brown Sand with occasional Cemented Sand Seams
 H3-Wet, Loose, Light Brown Sand
 J3-Wet, Medium Dense, Light Brown Sand
 K3-Wet, Loose, Dark Brown Sand with some Gravel
 L3-Moist, Medium Dense, Dark Brown Sand with Trace of Gravel
 M3-Moist, Very Dense, Dark Brown Sand with Trace of Gravel
 N3-Moist, Hard, Dark Brown Sandy Clay with frequent Silt Seams
 P3-Moist, Very Dense, Dark Brown and Gray Sand with some Clay
 Q3-Moist, Very Loose, Brown and Gray Sand with Clay
 R3-Moist, Loose, Light Brown Sand
 S3-Wet, Medium Dense, Brown and Gray Sand with Gravel
 T3-Moist, Dense, Dark Brown Sand with Trace of Gravel
 U3-Moist, Very Dense, Dark Brown Silty Sand
 V3-Moist, Dense, Brown Sand with frequent Gray Silt Seams
 W3-Moist, Loose, Reddish Brown Clayey Sand with Gravel
 X3-Wet, Medium Dense, Brown Sand with Gravel
 Y3-Wet, Dense, Dark Brown Sand
 Z3-Moist, Very Dense, Brown Sand with frequent Gray Silt Seams

"N" VALUES

Sta. 112+87 - 13' Rt. of C.L. of Constr.	Sta. 114+40 - 14' Rt. of C.L. of Constr.
4.7- 5.7, N=8	4.7- 5.7, N=4
9.7- 10.7, N=4	9.7- 10.7, N=8
15.5- 16.5, N=14	15.5- 16.5, N=5
20.5- 21.5, N=4	20.5- 21.5, N=10
25.5- 26.5, N=8	25.5- 26.5, N=13
30.5- 31.5, N=27	30.5- 31.5, N=31
35.5- 36.5, N=16	35.5- 36.5, N=50
40.0- 40.1, N=25 (1')	40.5- 41.5, N=52
45.5- 46.5, N=82	45.5- 45.8, N=60 (3')
50.5- 51.5, N=54	50.5- 51.5, N=56
55.5- 56.5, N=80	55.5- 56.5, N=70
60.5- 61.5, N=58	60.5- 61.5, N=42
Sta. 113+34 - 25' Rt. of C.L. of Constr.	Sta. 114+75 - 14' Rt. of C.L. of Constr.
4.8- 5.8, N=10	4.7- 5.7, N=5
9.8- 10.8, N=4	9.7- 10.7, N=9
14.8- 15.8, N=6	15.5- 16.5, N=5
20.5- 21.5, N=17	20.5- 21.5, N=7
25.5- 26.5, N=23	25.5- 26.5, N=21
30.5- 31.5, N=16	30.5- 31.5, N=32
35.5- 36.5, N=72	35.5- 36.5, N=43
40.5- 41.5, N=84	40.5- 41.5, N=57
45.5- 46.5, N=81	45.5- 46.5, N=47
50.5- 51.5, N=71	50.5- 51.5, N=82
55.5- 56.5, N=70	55.5- 56.5, N=84
60.5- 60.8, N=35 (3')	60.5- 61.5, N=66
Sta. 113+81 - 20' Rt. of C.L. of Constr.	
5.2- 6.2, N=6	
10.2- 11.2, N=5	
15.5- 16.5, N=12	
20.5- 21.5, N=7	
25.5- 26.5, N=14	
30.5- 31.5, N=57	
35.0- 35.2, N=24 (3')	
40.5- 41.5, N=72	
45.5- 46.5, N=83	
50.5- 51.5, N=58	
55.5- 56.5, N=53	
60.5- 61.5, N=57	



HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	④ TOTAL DISCHARGE	DISCHARGE @ THIS SITE	② NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER	
					PLAN EMBANKMENT	③ FUTURE EMBANKMENT
	YEARS	CFS	CFS	FEET	FEET	FEET
Design	Q50	6,900	4,329	286.7	287.6	287.6
Base	Q100	8,100	5,068	287.2	287.7	288.1
Extreme	Q500	11,400	5,886	288.2	288.6	288.9
Overtopping	Q35	6,100	-	286.4	287.0	-

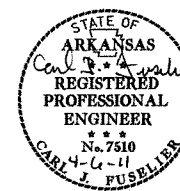
② Unconstricted water surface without structure or roadway approaches.

③ Future Embankment height is assumed to be 287.60 and overtops at flows greater than the Q50.

Q100 backwater elevation for existing structures = 287.6
Proposed Low Bridge Chord Elev. = 288.55

Drainage area = 29.3 sq. miles
Historical H.W. Elev. = 288.8

④ Includes flow at Little Bodcau Creek and Relief Bridge sites.

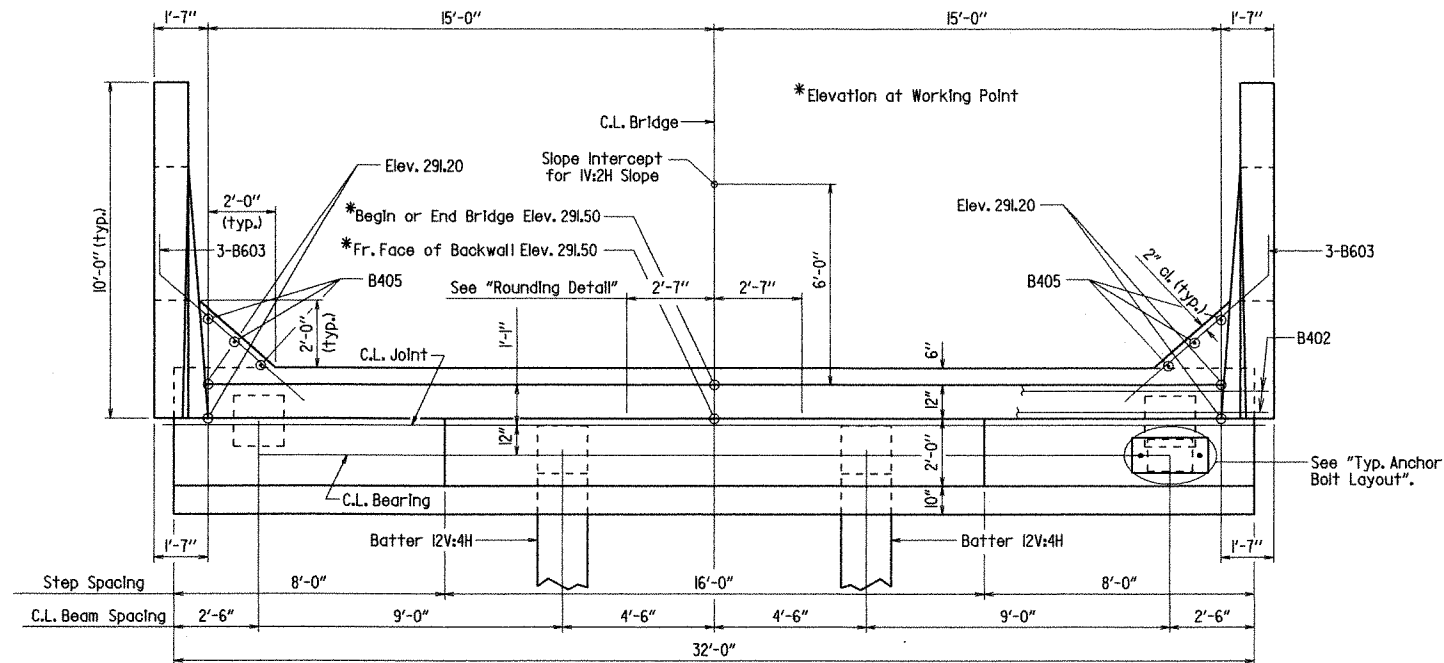


SHEET 2 OF 2
 LAYOUT OF BRIDGE OVER
 LITTLE BODCAU CREEK
 LITTLE BODCAU CREEK & RELIEF
 STRS. & APPRS. (S)
 NEVADA COUNTY
 ROUTE 32 SEC. 8
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

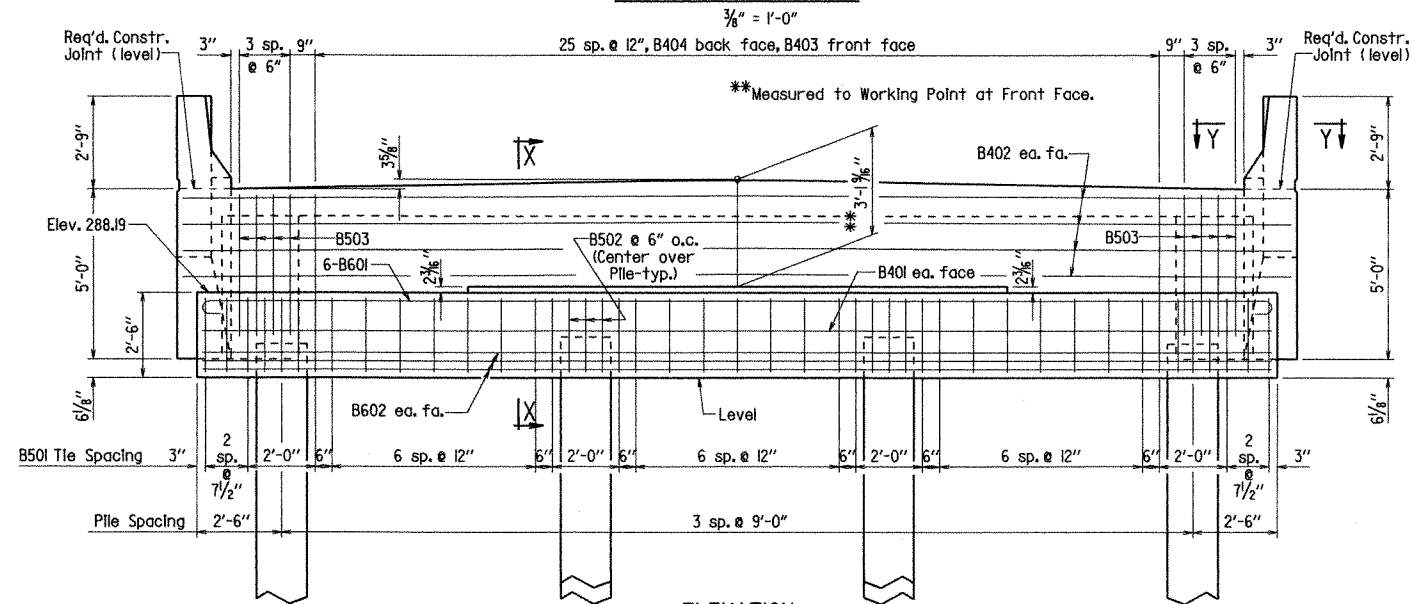
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 DESIGNED BY: Ewy DATE: 8-10 SCALE: 1" = 20'
 BRIDGE NO. 07199 DRAWING NO. 51807

For Bar List and details of wing and rail, see Dwg. No. 51797.

NOTE: Class I Protective Surface Treatment shall be applied to the top of the backwall and to the roadway face and top of the wing rails.

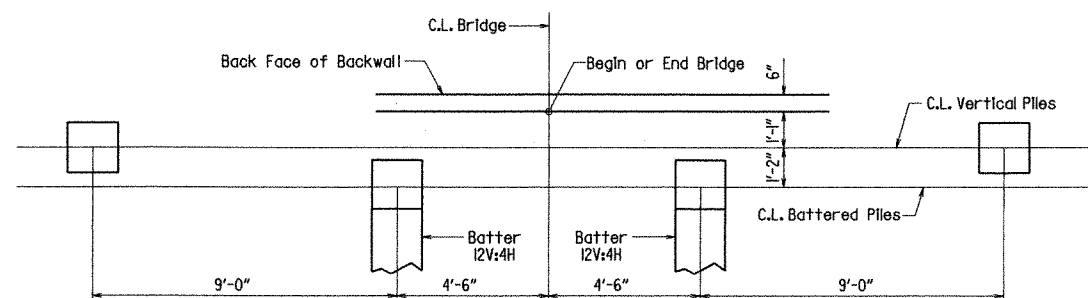


PLAN OF BENTS 1 & 5



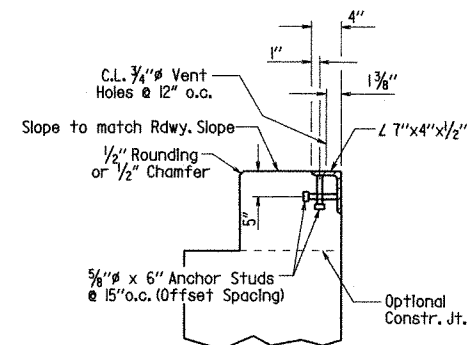
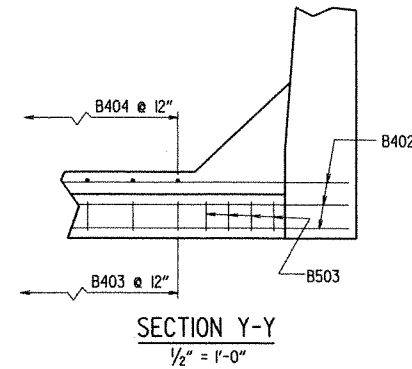
ELEVATION

Looking Back - Bent 1
Looking Ahead - Bent 5
3/8" = 1'-0"



LAYOUT OF PILES

3/8" = 1'-0"

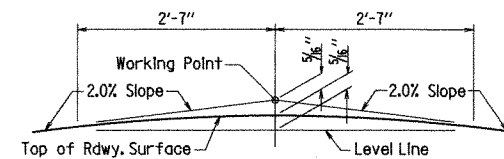


NOTES: For additional joint details, see Dwg. No. 5180L.

Concrete shall be hand packed under the joint armor in the backwall.

DETAIL Z

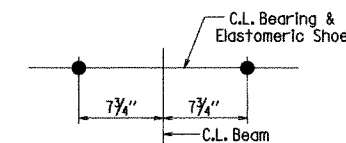
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NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

No Scale

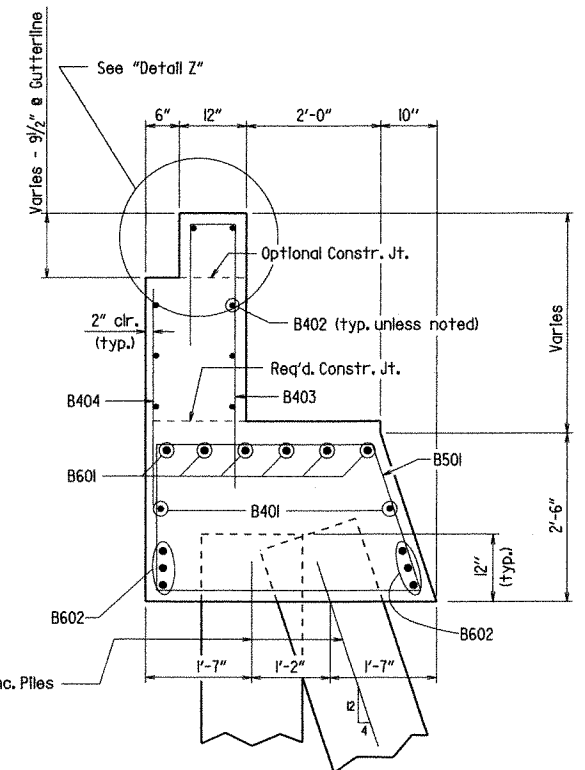


For details of elastomeric bearings, see Dwg. No. 51799.

TYP. ANCHOR BOLT LAYOUT

No Scale

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.		030386	39	77
				07199		END BENTS	51808	



SECTION X-X

3/4" = 1'-0"

NOTE: The Backwall above the required construction joint shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Dwg. No. 5180L, "Expansion Device Installation at End Bents", for additional information.

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 to be chamfered 3/4" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (yield strength = 60,000 psi.).

Structural steel in end bents shall be M270, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)".

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

For additional information, see Layout.

DETAILS OF END BENTS
LITTLE BODCAU CREEK
ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

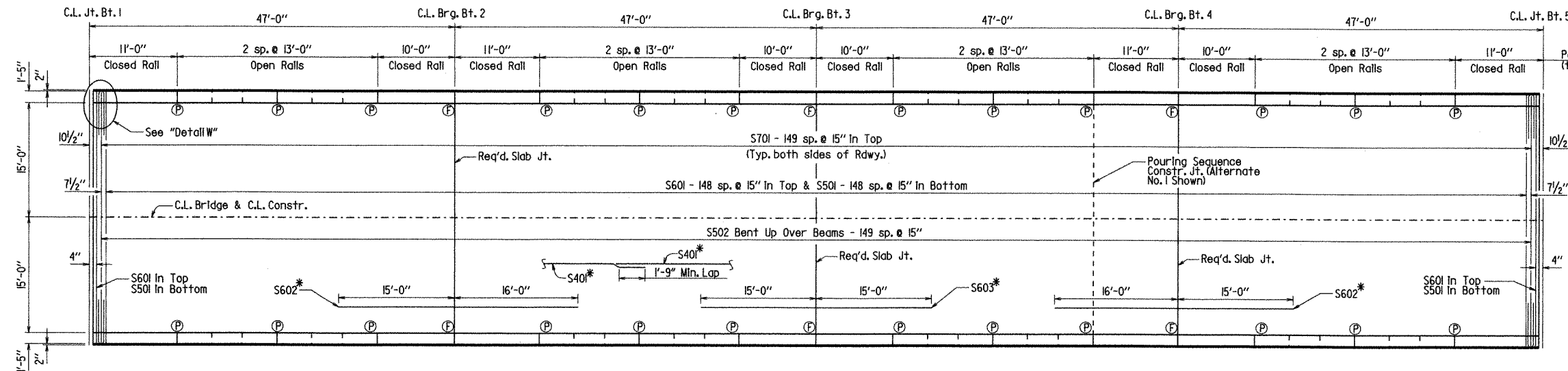
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BRIDGE NO. 07199 DRAWING NO. 51808



BRIDGE ENGINEER

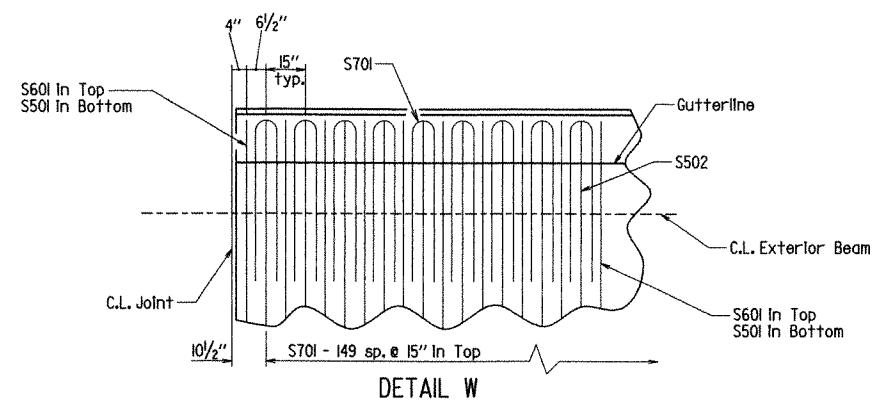
*Placed as Shown in "TYPICAL ROADWAY SECTION", See Dwg. No. 51800.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						030386	41	77
				JOB NO.	07199		Cont. Unit	51810



Notes:
Required slab joints and pouring sequence construction joints shall align with parapet joints at gutterline.
Ⓡ Full depth parapet joint at this location
Ⓟ Partial depth parapet joint at this location

REINFORCING PLAN

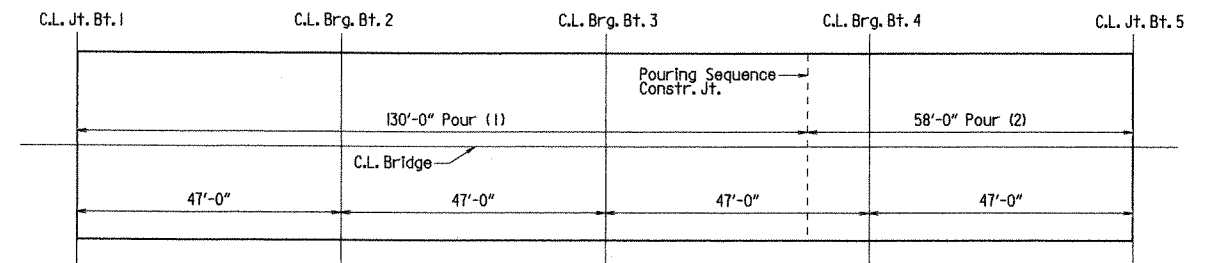


BAR LIST

Mark	No. Req'd.	Length	Pin Dia.
S401	445	38'-11"	Str.
S501	151	32'-10"	Str.
S502	150	33'-4"	3"
S601	151	32'-10"	Str.
S602	66	31'-0"	Str.
S603	33	30'-0"	Str.
S701	300	12'-8"	6 1/2"
P401	624	5'-6"	3"
P402	128	4'-10"	3"
P403	56	9'-7"	Str.
P404	56	10'-7"	Str.
P405	112	12'-7"	Str.
P406	96	5'-7"	Str.
P501	624	4'-10"	3 3/4"

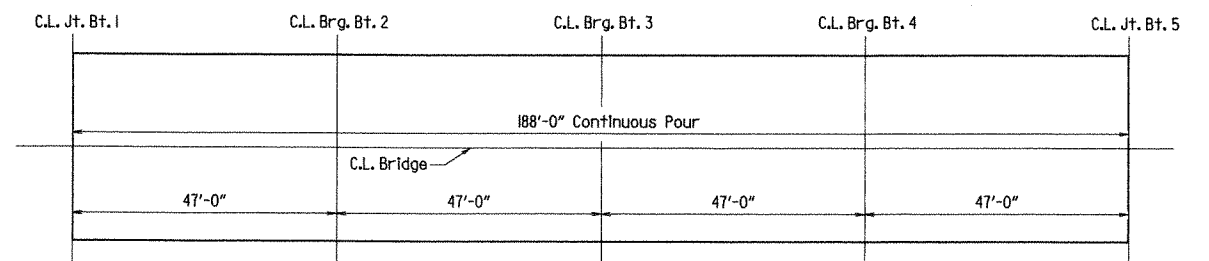
Bending Diagrams

Dimensions are out to out of bars.



Note: Pour (1) must be placed before Pour (2) can be placed. 72 hours shall elapse between the end of a pour and the start of the next pour.

ALTERNATE NO. 1



ALTERNATE NO. 2

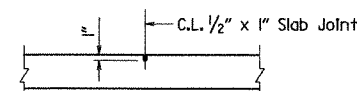
ALTERNATES FOR SLAB POURING SEQUENCE

Any rolling 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.

Use Type 3, 4 or 6 Joint Sealer. See subsections 501.02(h) and 501.05(i). 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 and shall align with open joints at the front face of the parapet. 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 to allow sawing of the joint without damaging 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 from gutterline to gutterline.

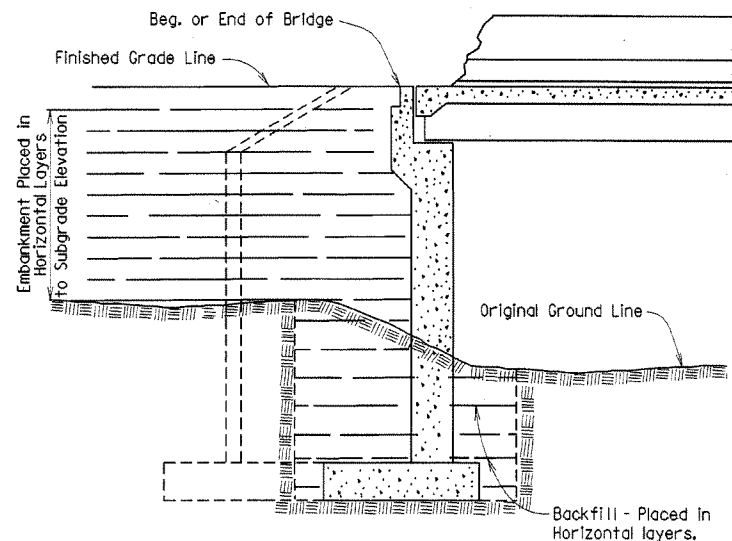
SLAB JOINT DETAIL



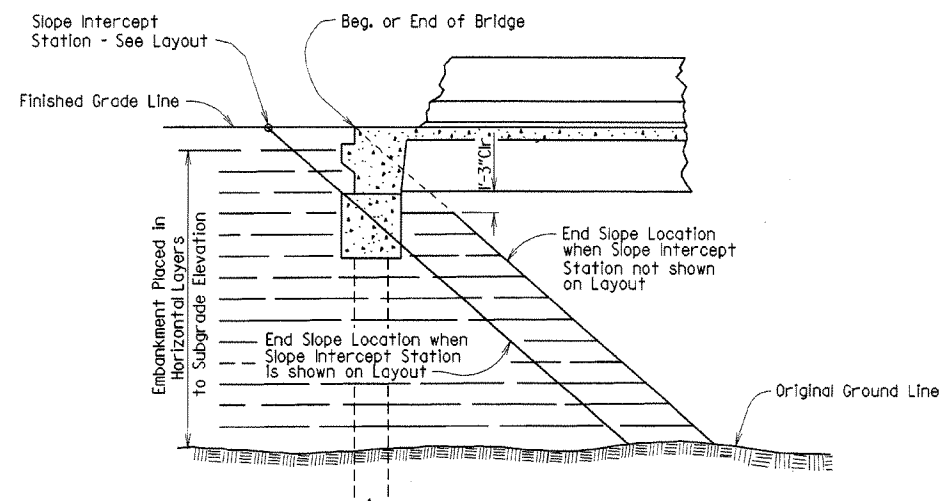
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF
188'-0" CONTINUOUS W-BEAM UNIT
LITTLE BODCAU CREEK
ROUTE 32 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: PGT DATE: 10-5-10 FILENAME: b030386.sldgn
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BRIDGE NO. 07199 DRAWING NO. 51810

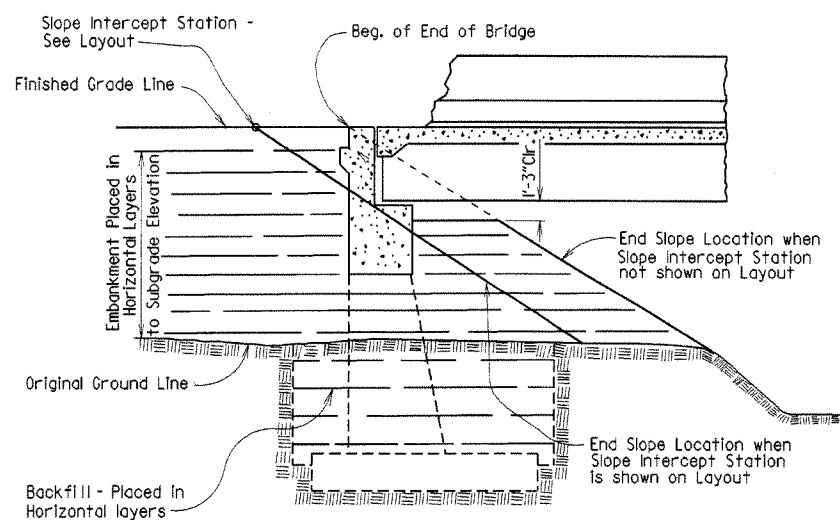
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				JOB NO.				
				EMBANKMENT & BACKFILL 1888A				



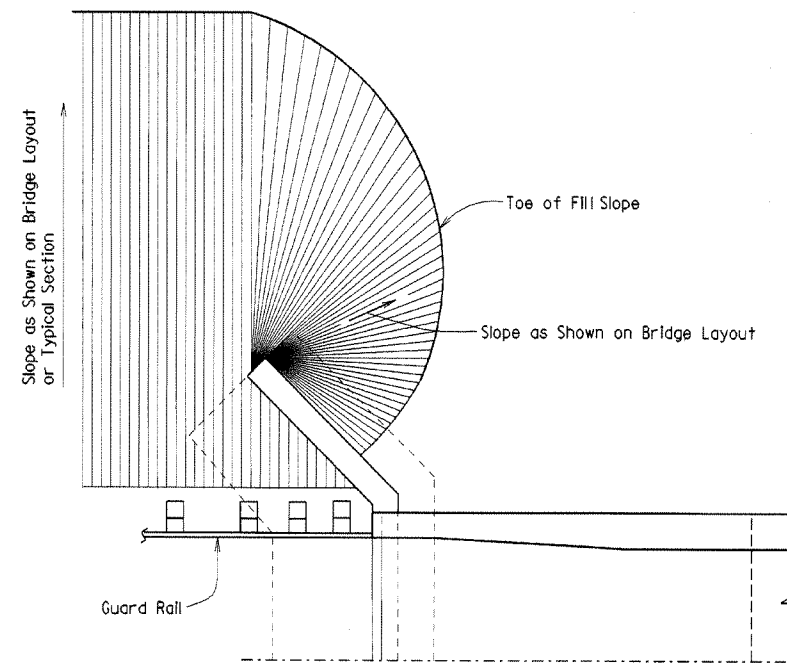
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



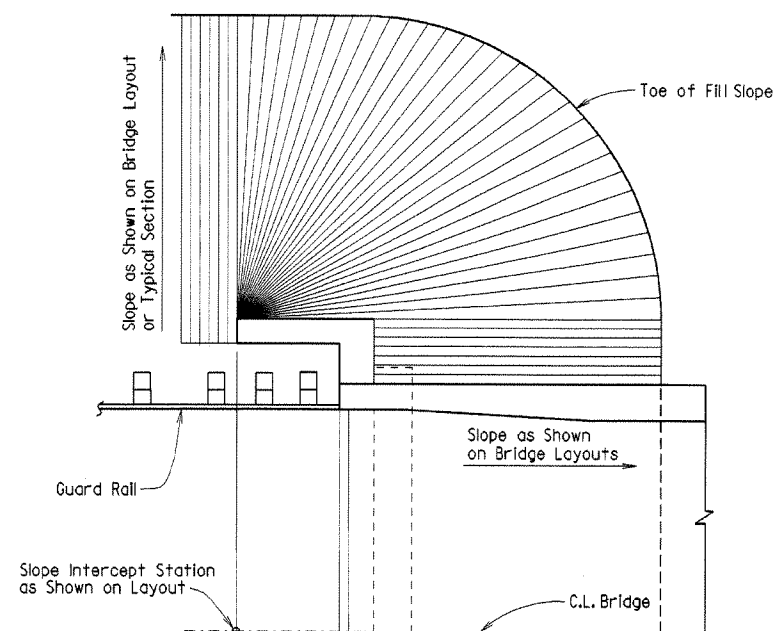
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



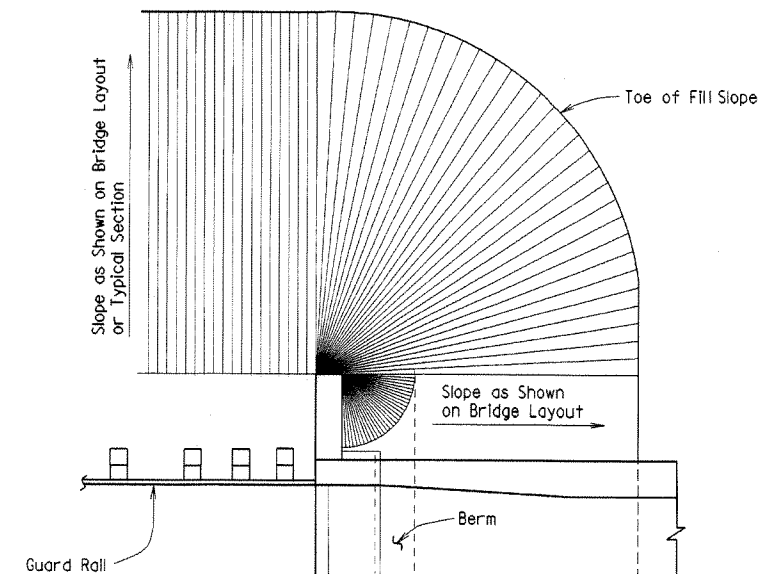
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



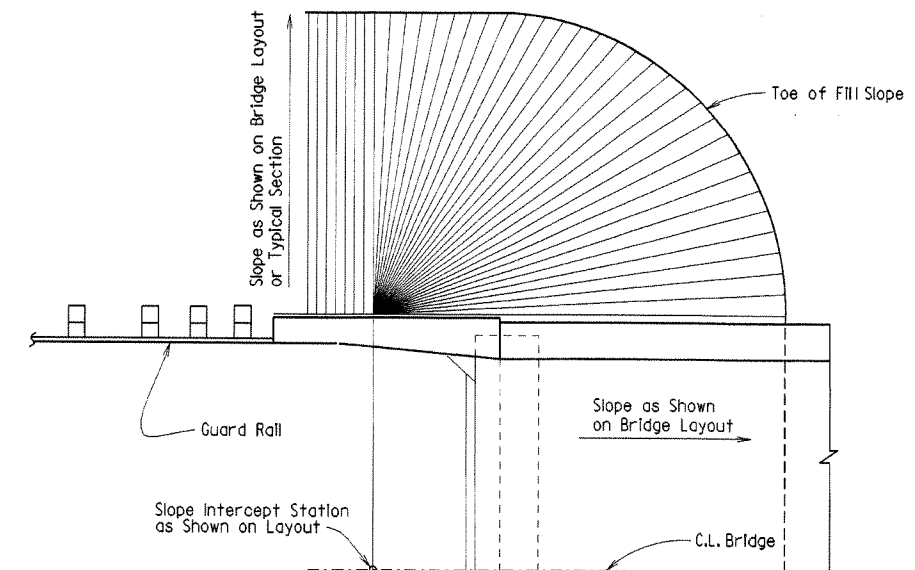
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH STUB WING



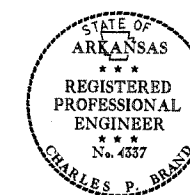
SPILL-THROUGH END BENTS WITH TRANSITION WING

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 4 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 of the Specifications for construction requirements.

Revised and redrawn MJT 04-10-2003
Chk'd. By: CSF 04-10-2003

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS



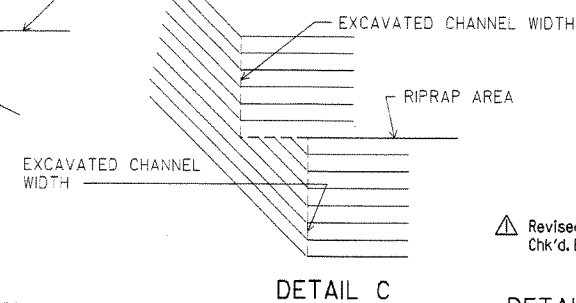
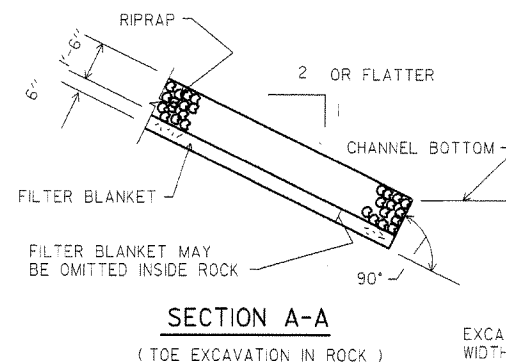
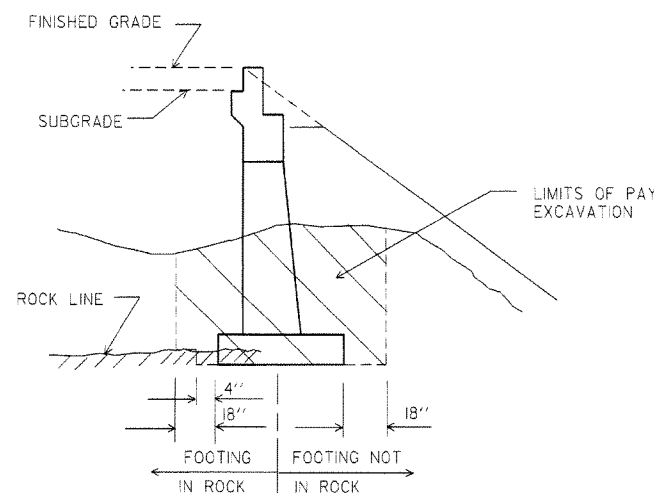
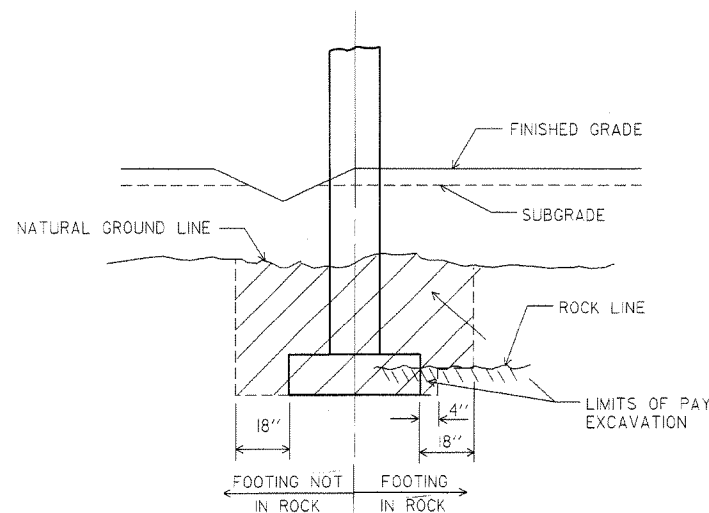
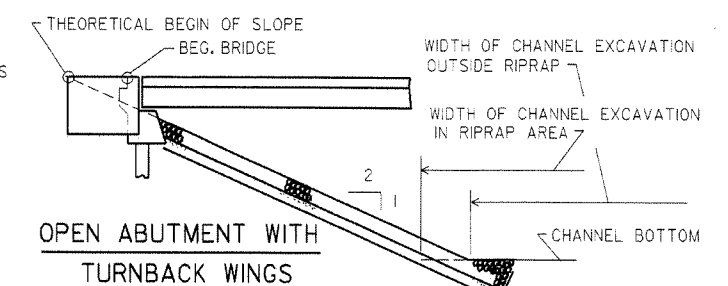
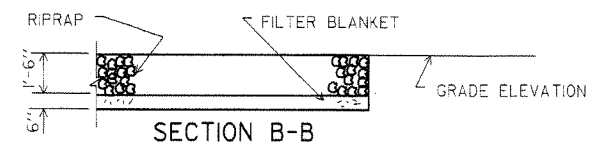
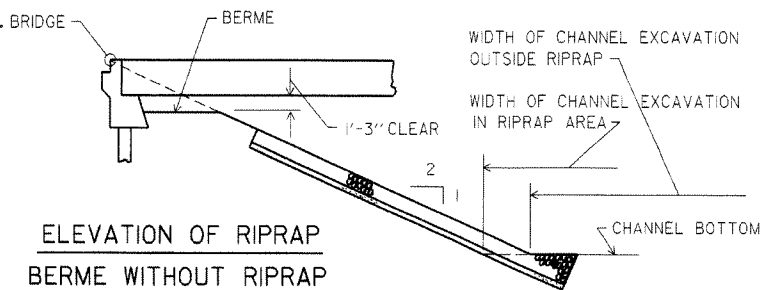
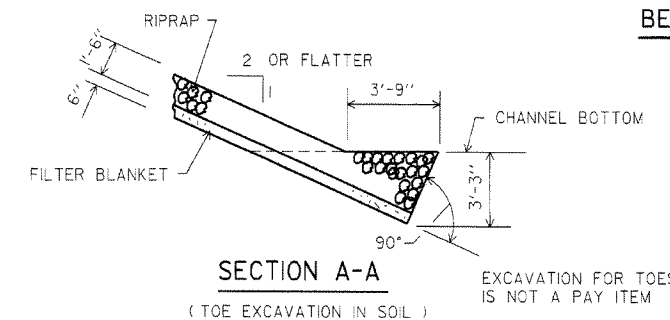
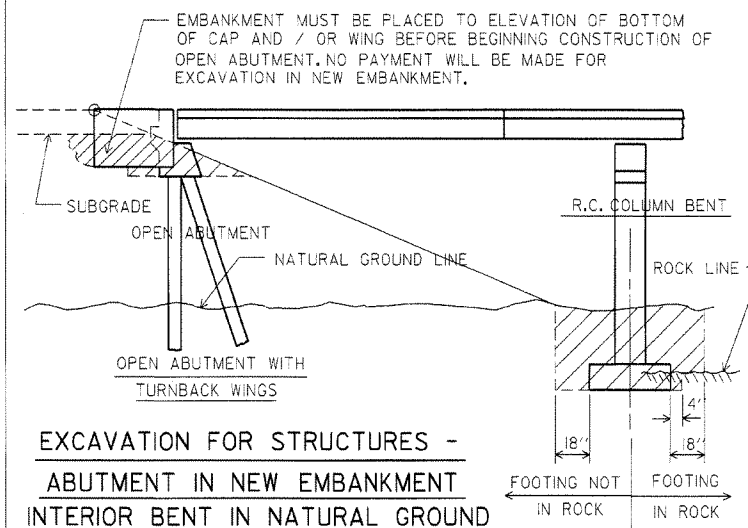
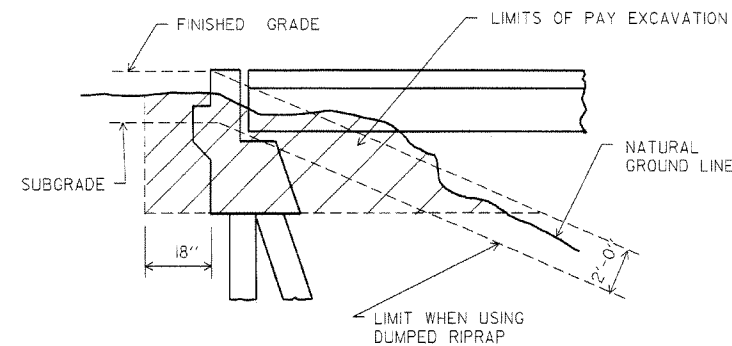
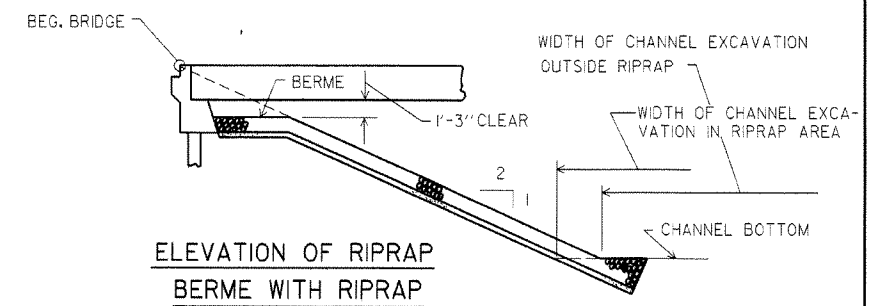
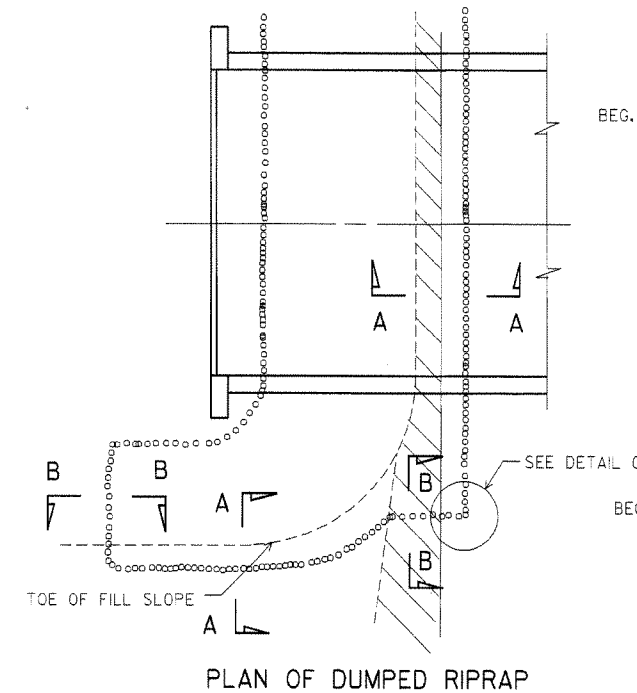
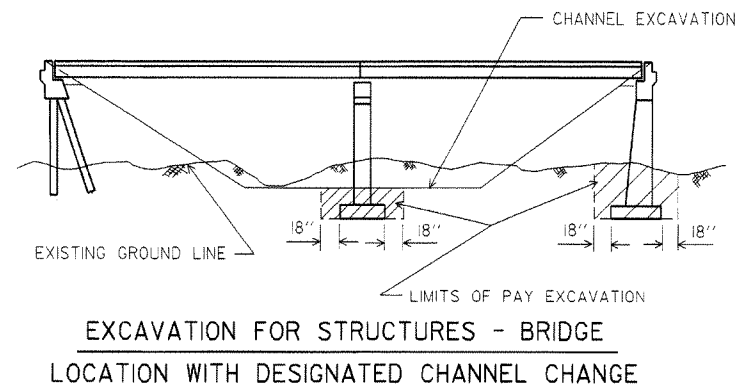
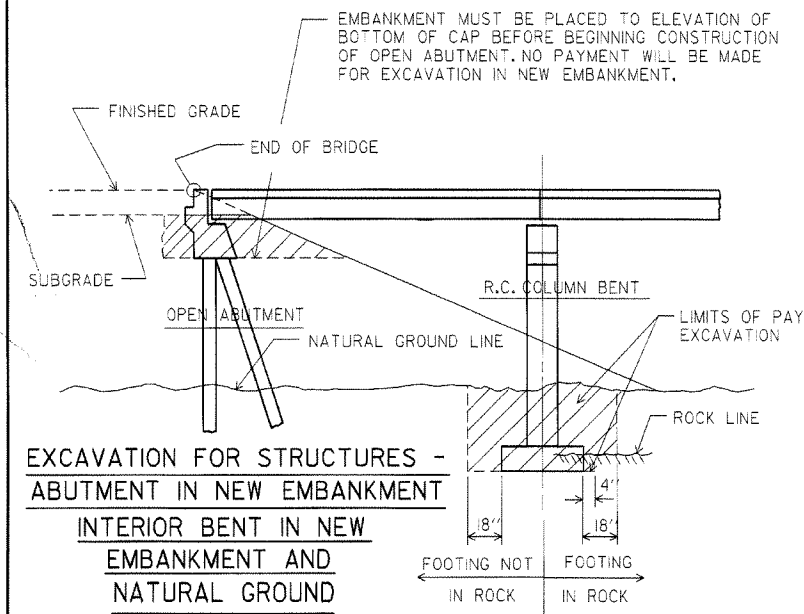
BRIDGE ENGINEER

EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: B1888A.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD DATE: BRIDGE NO. DRAWING NO. 1888A

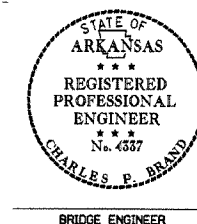
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		43	
JOB NO.								
RIP. & EXCAV.								1891F



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(a) 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.

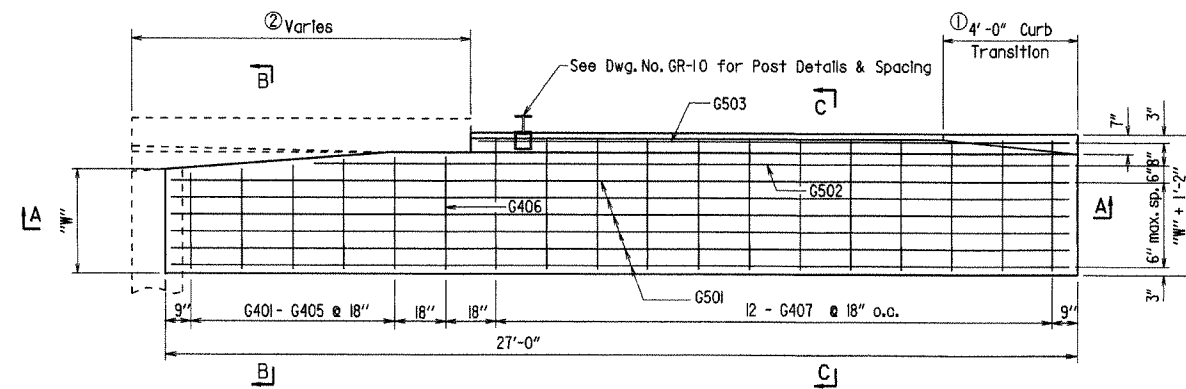


Revised and redrawn MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

DETAILS FOR DUMPED RIPRAP
AND FILTER BLANKET AND
DETAILS FOR COMPUTING
EXCAVATION FOR STRUCTURES
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

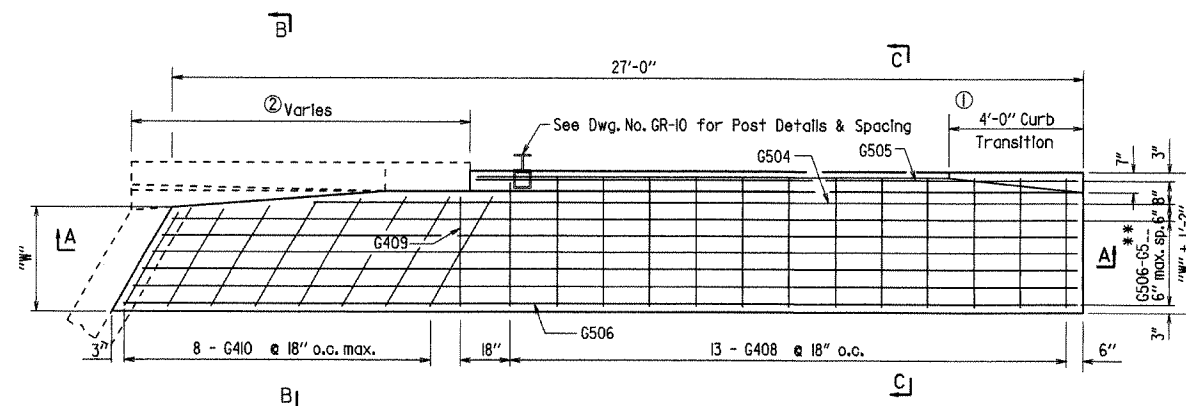
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CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD DATE: BRIDGE NO. DRAWING NO. 1891F

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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07-14-2010								
				JOB NO.		TYPE B GUTTERS		
						2016B		

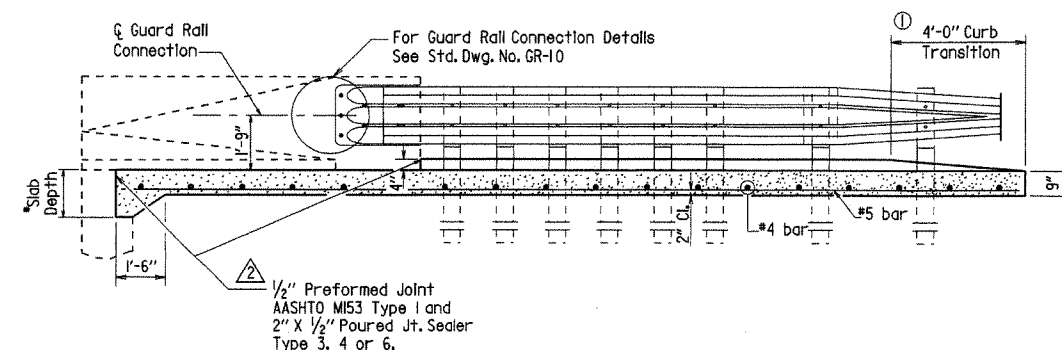


HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE

② Length varies. See End Bent details for actual length. Quantities shown are for 10'-0" Transition Roll.



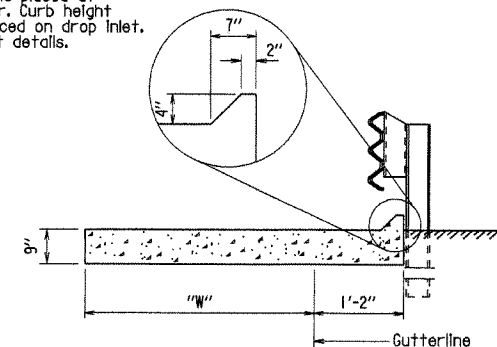
PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



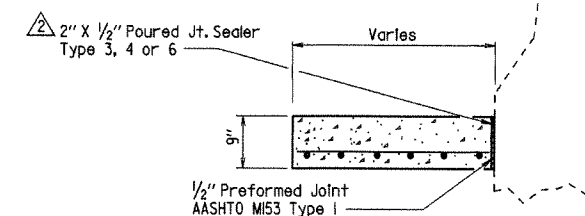
SECTION A - A

Slab Depth Varies - See Span and Bent Details

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 C - C
N.T.S.



SECTION B - B
N.T.S.

*** BAR LIST ② TYPE B GUTTER

Mark	No. Required for Width "W"				Length	Square or Skewed
	3'-0"	4'-0"	6'-0"	8'-0"		
G401 - G405	1 each	1 each	1 each	1 each	"W" - 3" to "W" + 3"	Square
G406	1	1	1	1	"W" + 3"	Square
G407	12	12	12	12	"W" + 10"	Square
G408	13	13	13	13	"W" + 10"	Skewed
G409	1	1	1	1	"W" + 3"	Skewed
G410	8	8	8	8	*	Skewed
G501	6	8	12	16	26'-8"	Square
G502	1	1	1	1	22'-2"	Square
G503	1	1	1	1	17'-8"	Square
G504	1	1	1	1	*	Skewed
G505	1	1	1	1	*	Skewed
G506 - GS... **	1 each	1 each	1 each	1 each	*	Skewed

* Bar Lengths vary with Skew.
** G512 for "W" = 3'
G514 for "W" = 4'
G518 for "W" = 6'
G522 for "W" = 8'

*** Special bar list required when skew angle exceeds 40° for W = 8'; 50° for W = 6'; or 60° for W = 4'.

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

"W" Width (ft.)	Reinforcing Steel (lbs.)	Concrete (cubic yards)
3	252	3.00
4	319	3.75
6	459	5.25
8	590	6.75

GENERAL NOTES

Concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement.

Reinforcement Steel shall conform to AASHTO M31 or M53, Grade 60 (fy = 60,000 psi).

Approach Gutters will be measured and paid for in accordance with Section 504 of the Standard Specifications.

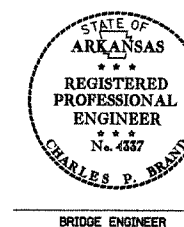
① Revised and redrawn 4-10-2003. By KDH Ck. By: CJF 4-10-2003

② Added joint sealer type & revised transition roll length 07-14-2010 by MJT Checked by: CJF 07-14-2010

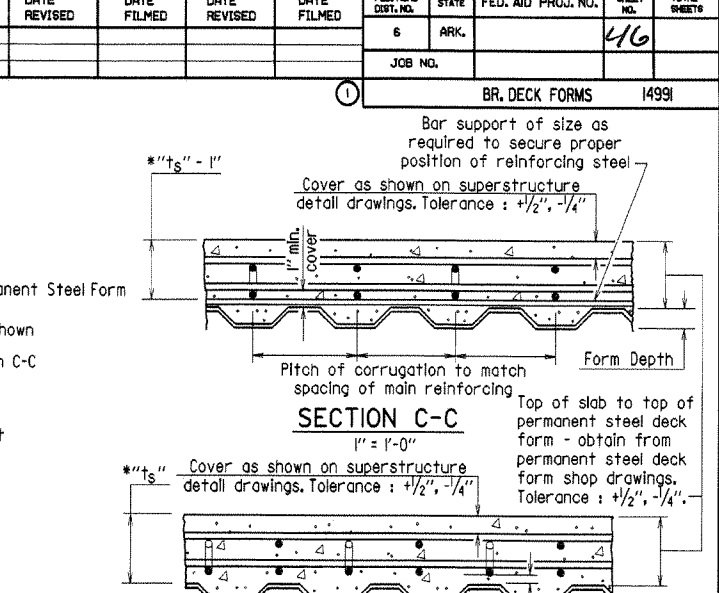
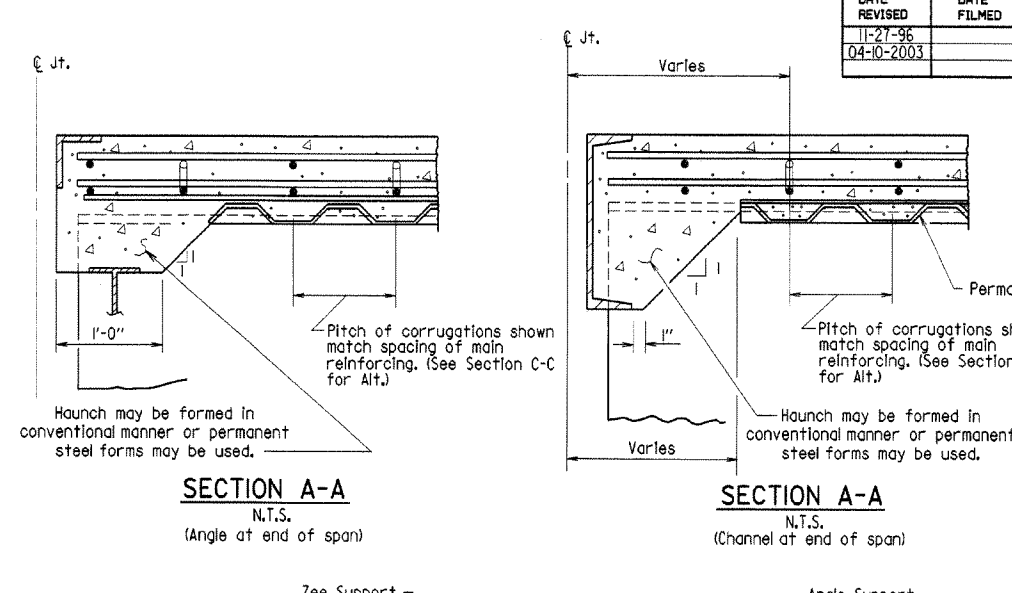
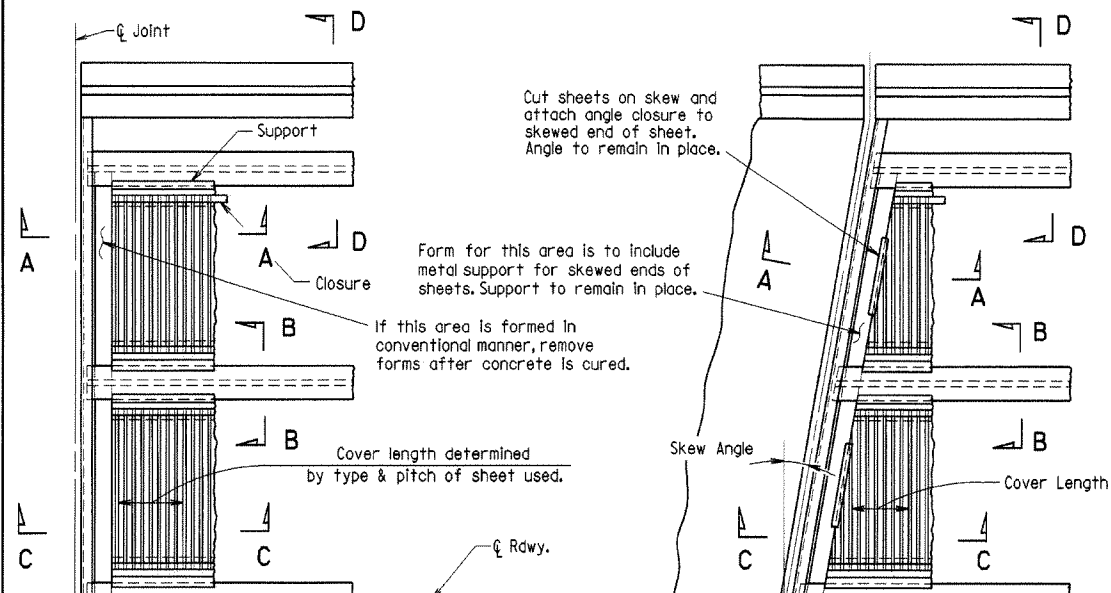
DETAILS OF STANDARD TYPE B APPROACH GUTTERS

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 4-10-2003 FILENAME: B2016B.STD
CHECKED BY: CJF DATE: 4-10-2003 SCALE: 3/8" = 1'-0"
DESIGNED BY: STD DATE: BRIDGE NO. DRAWING NO. 2016B



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11-27-96						6	ARK.		116	
04-10-2003										
BR. DECK FORMS 14991										



PART PLAN - SQUARE SPAN
3/8" = 1'-0"

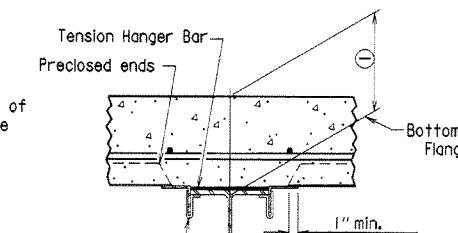
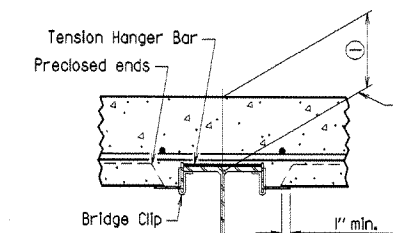
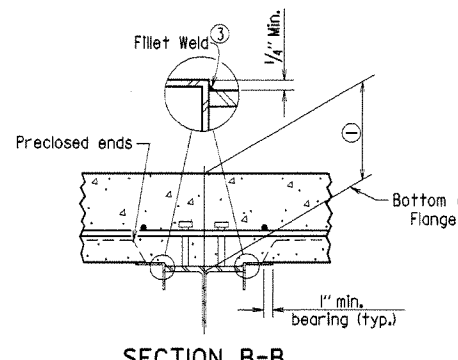
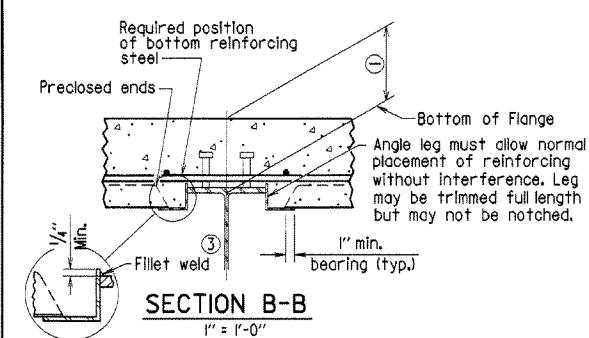
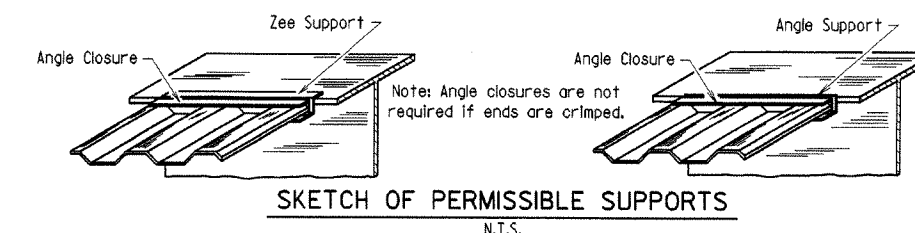
PART PLAN - SKEWED SPAN
3/8" = 1'-0"

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)

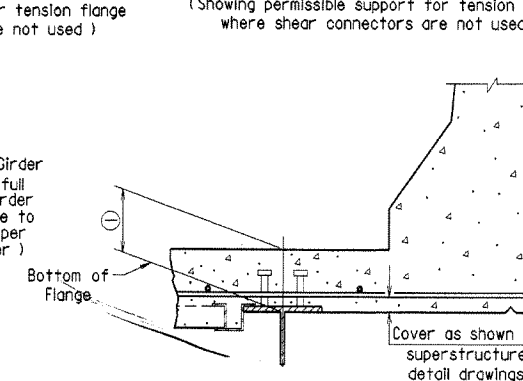
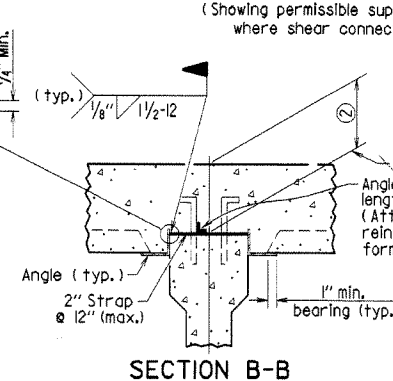
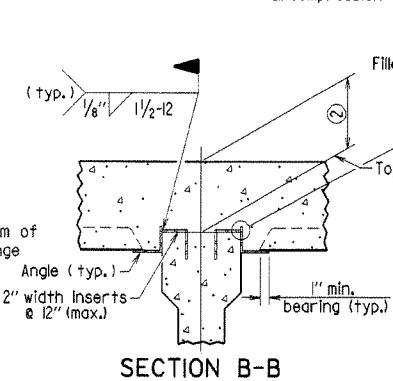
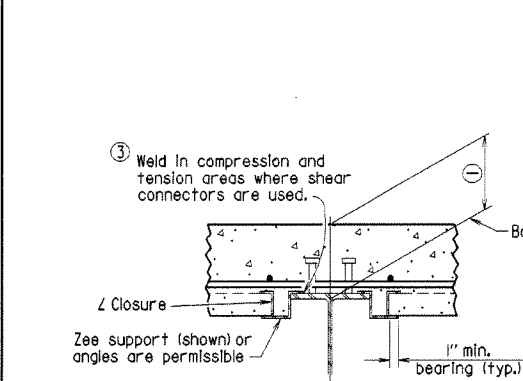


(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)

(Showing permissible support for tension flange where shear connectors are not used)

(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B
1" = 1'-0"
(Showing Z Closure)

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)

SECTION D-D
1" = 1'-0"
Note: Only Bottom Reinforcing is shown.

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 = $t_s + 1/4"$ + 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.

Revised for 2003 AHTD Construction Specifications and CPB Seal, MJT 04-10-2003
Chk'd. By: C.S.F. 04-10-2003

* 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) of the Standard Specifications. Detailed drawings, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Bridge 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 L supports to the flange must be approved by the Bridge 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 Bridge 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.

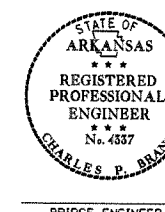
Bar support rods, when used, shall be sized and spaced to adequately support the bottom reinforcing mat at the required position.

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 (2003 Edition), with applicable supplemental specifications and special provisions.

**DETAILS OF PERMISSIBLE TYPE
PERMANENT STEEL BRIDGE DECK FORMS
FOR STEEL & CONCRETE GIRDER SPANS**
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 10-17-96
CHECKED BY: CPB DATE: 10-17-96 SCALE: as noted
DESIGNED BY: STD DATE: —
BRIDGE NO. DRAWING NO. 14991



Redrawn and revised 11/27/96; MJT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-10-2009				6	ARK.		47	
				JOB NO.	CONCRETE PILES			14964

MAXIMUM PICKUP LENGTHS "L"

Type of Pick-Up	Prestressed		Non-Prestressed	Prestressed			Non-Prestressed		
	16" Oct.	18" Oct.	16" or 18" Oct.	④ 14" Sq.	16" Sq.	18" Sq.	④ 14" Sq.	16" Sq.	18" Sq.
One Point	52'	55'	46'	55'	59'	63'	52'	51'	55'
Two Point	75'	80'	67'	79'	84'	90'	75'	74'	79'
Three Point	105'	112'	93'	110'	117'	126'	104'	103'	111'

GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition) with applicable Supplemental Specifications and Special Provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fourth Edition.

SEISMIC PERFORMANCE ZONES: I & 2

The Contractor may use prestressed piles or non-prestressed piles. Either type will be measured and paid for at the contract unit price bid for "Concrete Piling".

SPIRAL REINFORCING: Spiral reinforcing shall be steel wire meeting the requirements of AASHTO M 32 or M 225 or shall be plain round steel bars meeting the requirements of AASHTO M 31 or M 53, Gr. 60.

MANUFACTURE, TRANSPORTATION AND STORAGE: Shipment of piles from the plant site or pile driving will not be permitted until the required minimum compressive strength is reached, and in no case less than 10 days after pouring the concrete. Prestressed piles may be removed from the casting bed to nearby storage any time after transfer of stress. See Section 802 "Concrete for Structures" of the Standard Specifications for additional information.

Unless otherwise approved by the Engineer, all protruding or exposed pile lifting or transporting devices above the finished ground shall be removed after pile driving is complete. Removal shall be a minimum of 1" below the surface of the pile and the cavity shall be filled with a non-shrink grout listed on the Department's OPL.

FORMS: For forming exterior of piles, the use of steel forms on concrete-founded casting beds is required unless otherwise approved by the Engineer. Side forms may have a maximum drift on each side not exceeding 1/4" per foot.

TOLERANCES: Pile ends shall be plane surfaces perpendicular to the longitudinal axis of pile with a maximum tolerance of 1/8" per foot transversely.

The maximum sweep (deviation from straightness measured from end to end of the pile, while not subject to bending forces) shall not exceed 1/8" in 10 feet.

BUILD-UPS: To provide for build-ups of piles where authorized by the Engineer, concrete shall be cut back to expose the reinforcing steel for a distance sufficient to provide a lap of 60 diameters of the reinforcing bars required for build-up. Reinforcing for build-ups shall be the reinforcing shown for non-prestressed piles.

INSTALLATION, MEASUREMENT AND PAYMENT: See Section 805 "Piling" of the Standard Specifications.

ADDITIONAL NOTES FOR PRESTRESSED PILES ONLY:

CONCRETE: Concrete in prestressed piles shall be Class (SAE) and shall have a minimum compressive strength (f'c) of 5,000 psi at 28 days. Compressive strength at transfer of the prestressing force shall be not less than 4,000 psi. Concrete in build-ups shall have a minimum compressive strength of 4,000 psi and shall be cured for a minimum of 10 days.

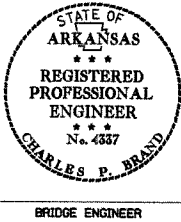
PRESTRESSING REINFORCING: Seven-wire stress-relieved or low relaxation strands shall conform to the general requirements of AASHTO M 203. Broken wires within individual strands will be permitted up to 2% of the total number of wires in each pile, providing that there is not more than one broken wire per strand. Two or more broken wires per strand will be cause for replacement of the strand, even though the two broken wires are within the 2% limitation.

ADDITIONAL NOTES FOR NON-PRESTRESSED PILES ONLY:

All concrete shall be Class (SAE) and shall have a minimum compressive strength (f'c) of 4,000 psi at 28 days.

All longitudinal reinforcing bars shall be deformed bars and shall conform to the requirements of AASHTO M 31 or M 53, GR. 60.

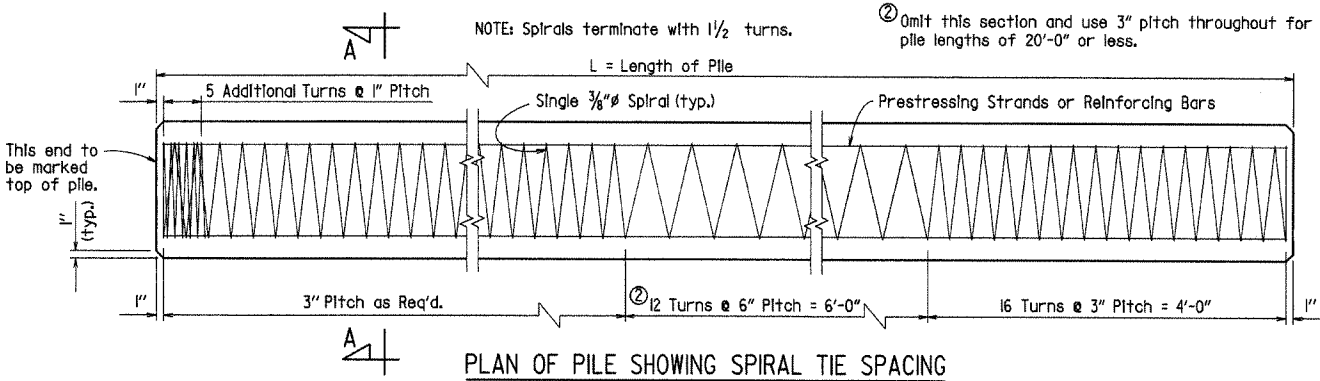
Added paragraph to General Notes KDH 12-10-2009
Checked by: cdf Date: 12-10-2009



STANDARD DETAILS OF CONCRETE PILES
IN SEISMIC PERFORMANCE
ZONES I & 2

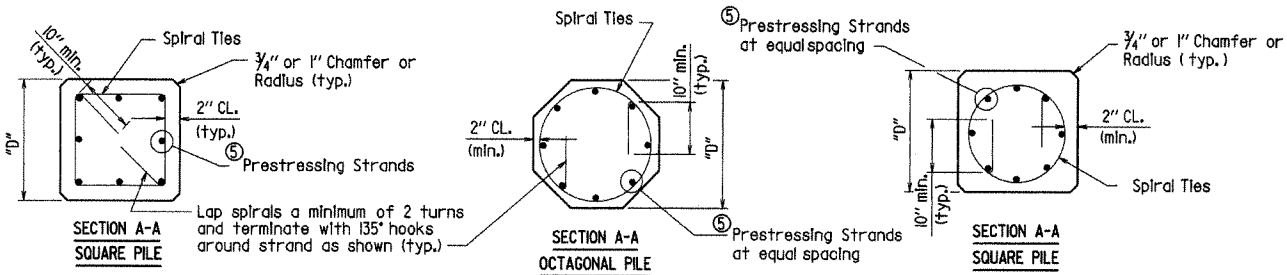
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KNY DATE: 1-17-08
CHECKED BY: JAC DATE: 1-17-08
DESIGNED BY: Std. DATE:
BRIDGE NO. DRAWING NO. 14964



For anchorage of pile to bent, see Bent Details.

NOTE: Strand location shall be symmetrical about the axis of the pile with no more than one strand difference between any two adjacent sides. Circular spiral ties are required for odd number of strands.



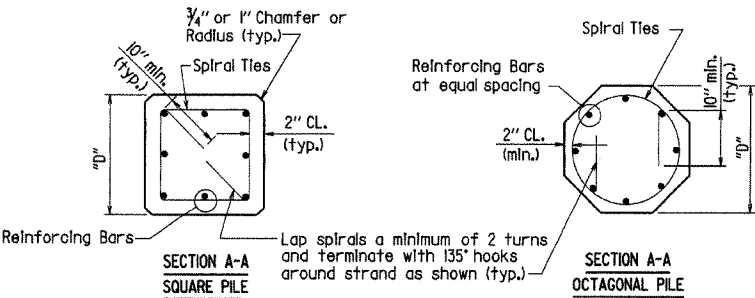
① Number based on initial pre-stress force of "B" x Ultimate Tensile Stress, Prestress Losses and min. 700 psi Unit Prestress on concrete after Losses.

"B" 0.75 Low Relaxation
0.70 Stress-Relieved

⑤ See table "Prestressed Concrete Pile Properties" for actual number of strands per pile size.

PRESTRESSED CONCRETE PILE PROPERTIES

	Grade	Strand Diameter	① Number of Strands per Size "D"					Minimum Ultimate Tensile Strength Per Strand (Lbs.)	Initial Prestressing Force Per Strand (Lbs.)
			16" Oct.	18" Oct.	④ 14" Sq.	16" Sq.	18" Sq.		
Stress-Relieved	250	7/16"	11	13	10	13	16	27,000	18,900
		1/2"	8	10	8	10	12	36,000	25,200
	270	7/16"	9	11	8	12	14	31,000	21,700
		1/2"	7	9	6	8	10	41,300	28,900
Low Relaxation	250	7/16"	9	11	8	11	14	27,000	20,200
		1/2"	7	9	6	8	10	36,000	27,000
	270	7/16"	8	10	7	9	12	31,000	23,300
		1/2"	6	8	6	7	9	41,300	31,000

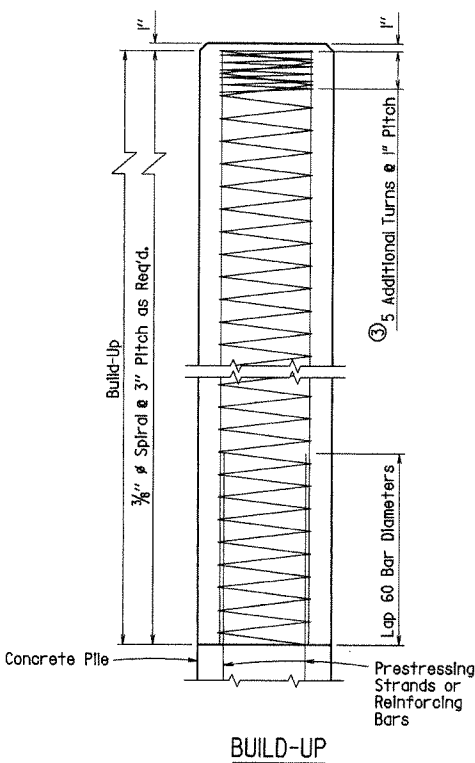


NON-PRESTRESSED CONCRETE PILES

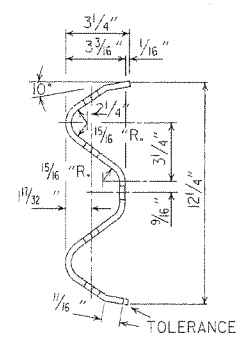
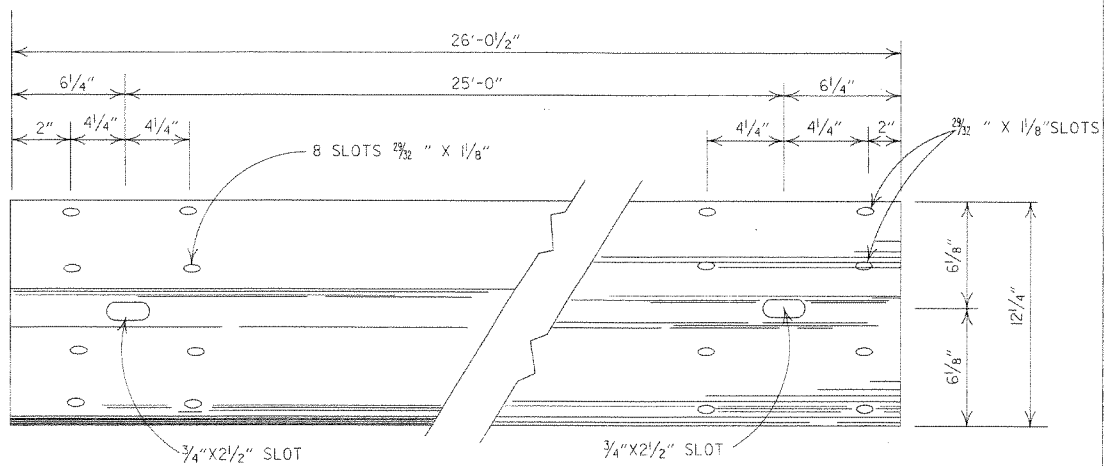
NON-PRESTRESSED PILE REINFORCING

Pile Size	No. Req'd.	Bar Size
16" Oct.	8	# 7
18" Oct.	8	# 7
④ 14" Sq.	8	# 7
16" Sq.	8	# 7
18" Sq.	8	# 8

④ 14" sq. piles to be used in Seismic Performance Zone I only.

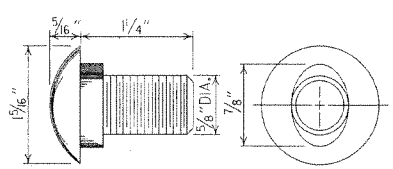


③ The five additional turns of spiral reinforcing may be omitted for build-up without additional driving.

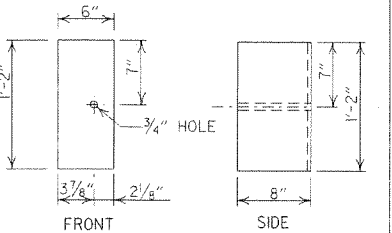
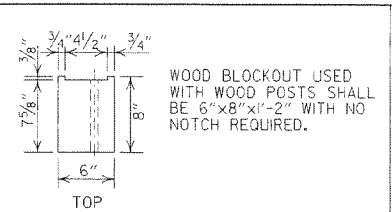
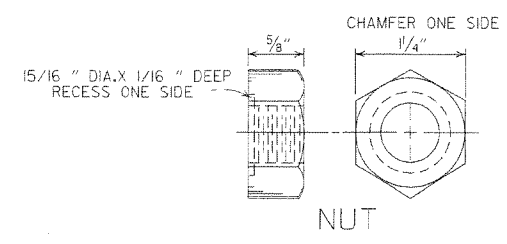
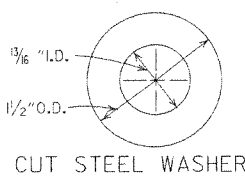


DETAILS OF W-BEAM GUARD RAIL

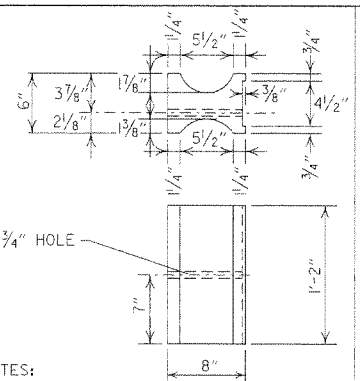
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH

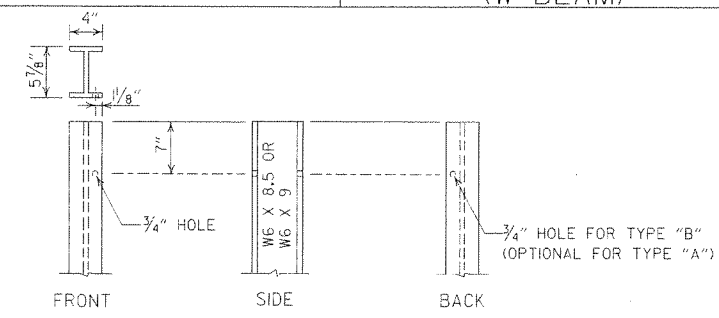


WOOD BLOCKOUT (W-BEAM)

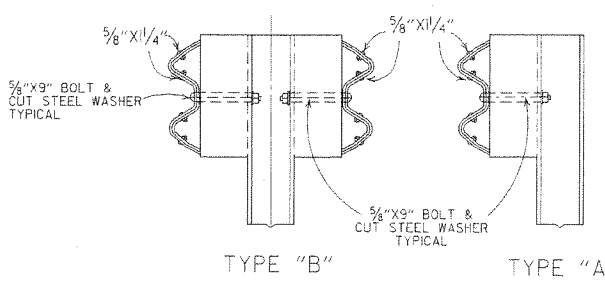


NOTES:
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)



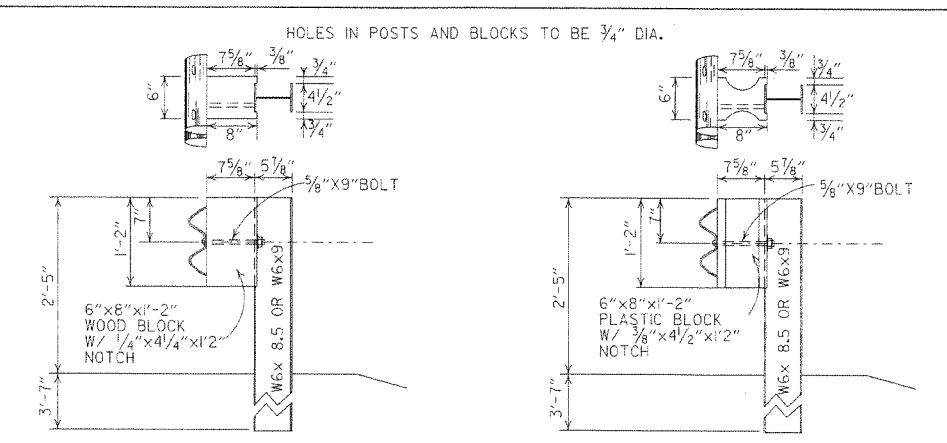
STEEL POST



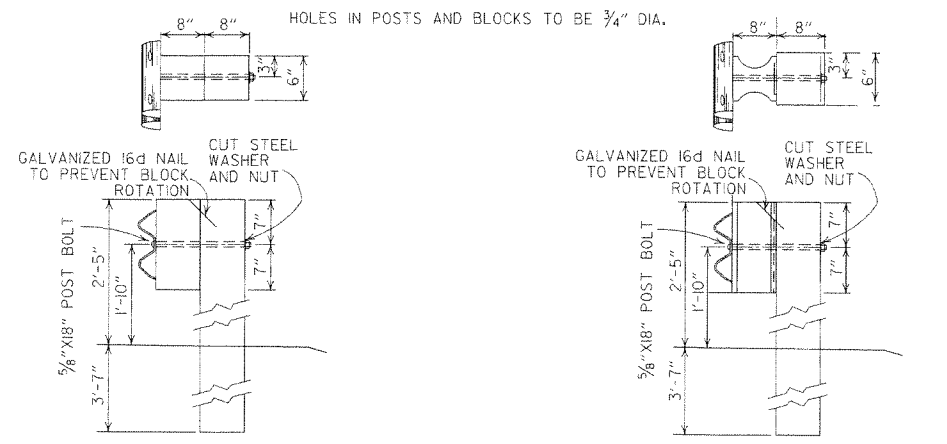
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" 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 9.7f (1400 f) OR NO. 1 (350 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.



WOOD BLOCKOUT CONNECTIONS
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)
PLASTIC BLOCKOUT CONNECTIONS



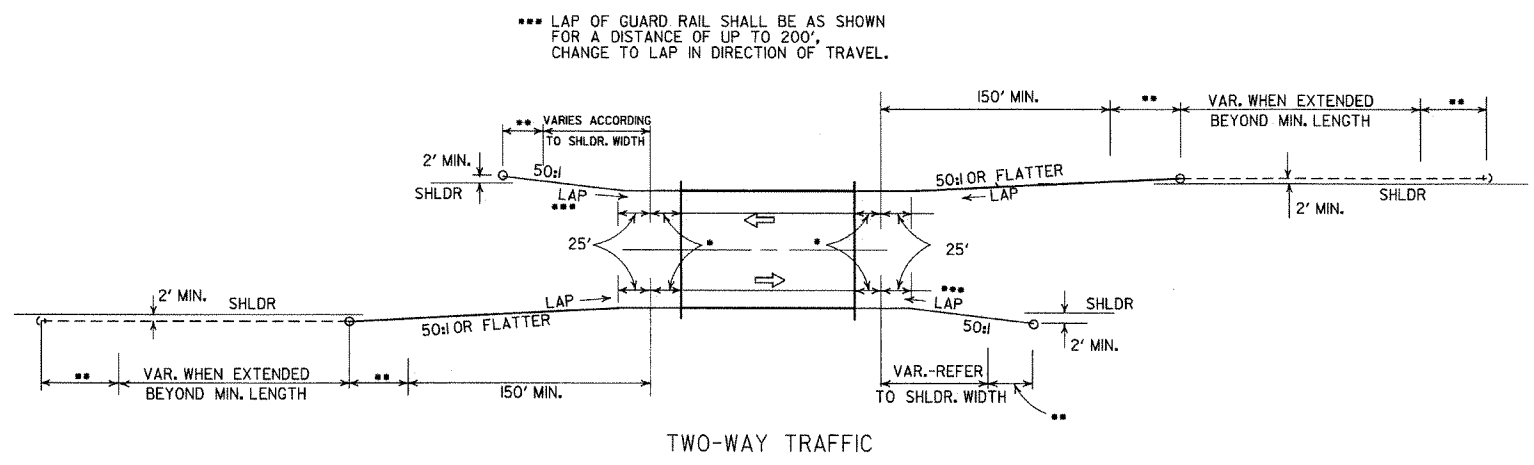
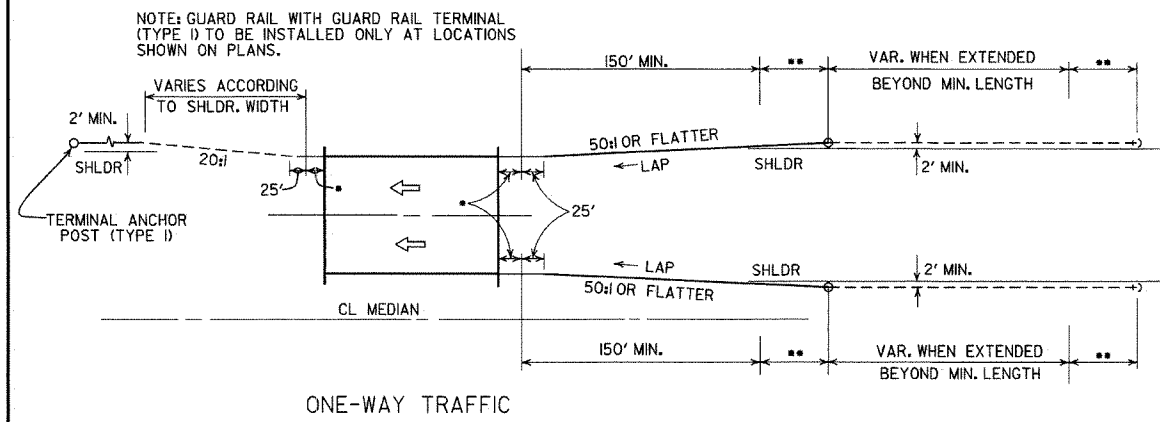
POSTS AND BLOCKS TO BE ROUGH SAWN 6" X 8" WITH A TOLERANCE OF + OR - 1/4".
WOOD BLOCKOUT CONNECTIONS
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)
PLASTIC BLOCKOUT CONNECTIONS

7-4-10	RAISED HEIGHT OF GUARD RAIL 1"	
10-5-09	ADDED REFERENCE TO MASH	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST	
11-6-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
3-30-00	REMOVED GUARD RAIL AT BRIDGE ENDS	
1-12-00	ADDED PLASTIC BLOCKOUT	
8-12-98	REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARD RAIL REPLACED, BEHIND CURB & DET. OF POST PLACED 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	8-5-91
8-2-90	REV. GEN. NOTE & DET. 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	602-10-9-87
DATE	REVISION	DATE FILED

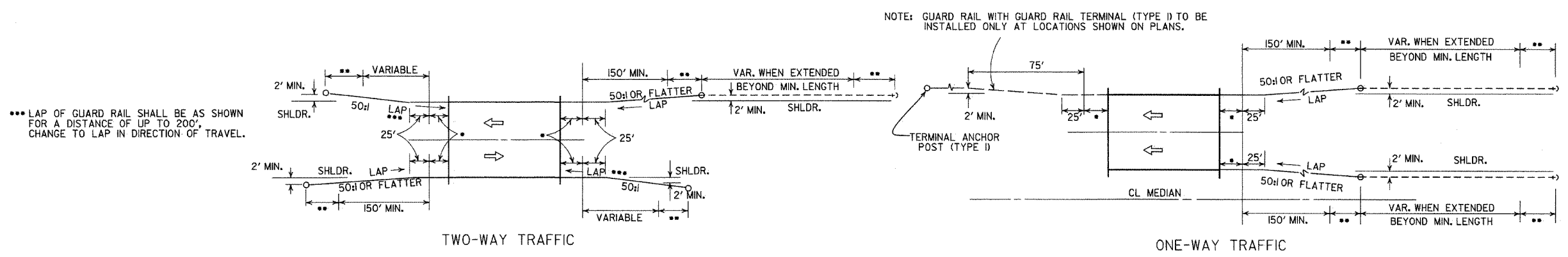
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

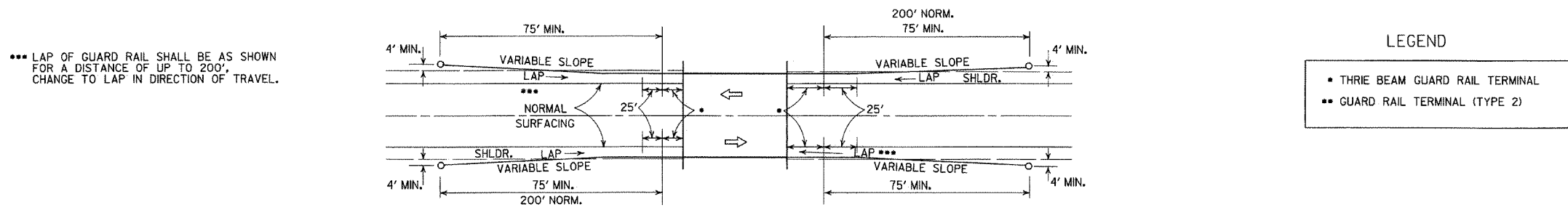
STANDARD DRAWING GR-8



METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

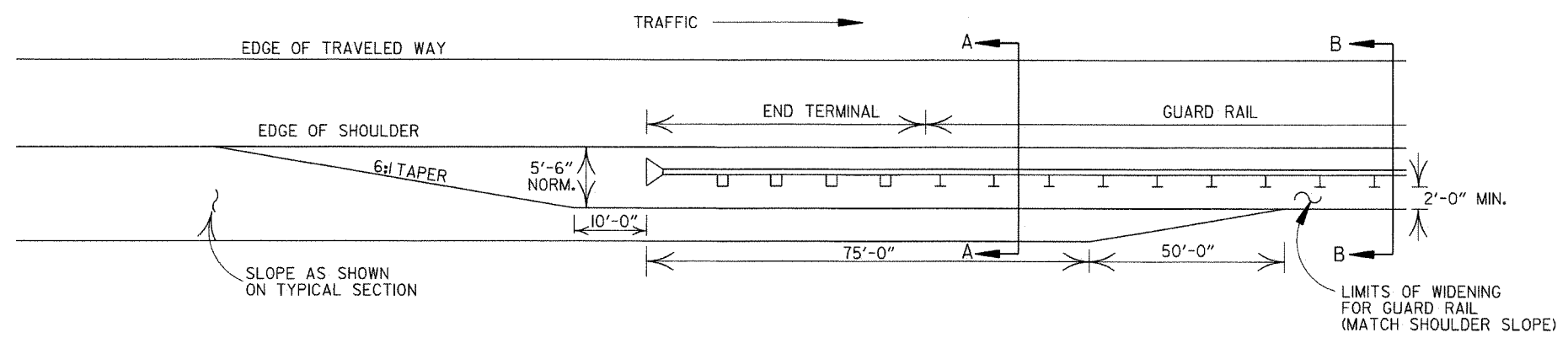


METHOD OF INSTALLATION OF GUARD RAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

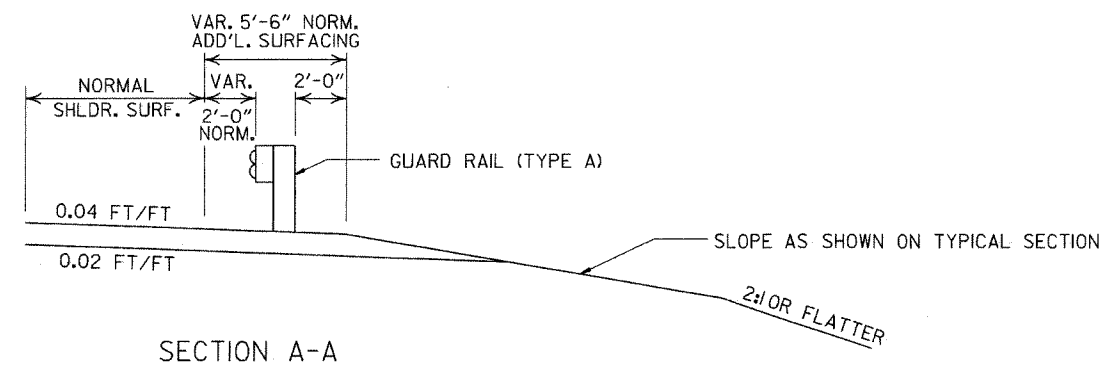


METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE 1) (FULL SHOULDER WIDTH OR LESS BRIDGES)

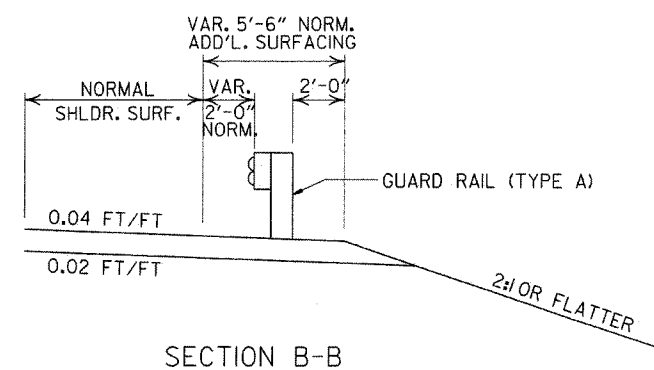
ARKANSAS STATE HIGHWAY COMMISSION		
GUARD RAIL DETAILS		
STANDARD DRAWING GR-9		
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. 1)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
10-9-87	ADDED NOTE	
10-9-87	REDRAWN & REVISED	
DATE	REVISION	DATE FILM



NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARD RAIL.

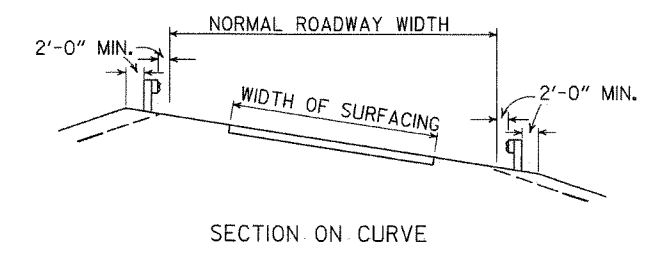
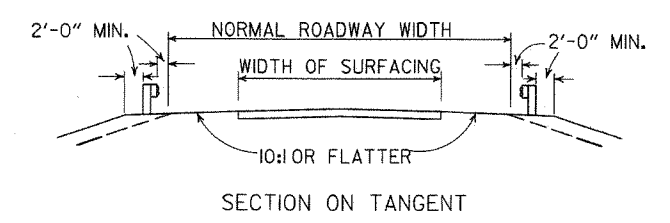


SECTION A-A

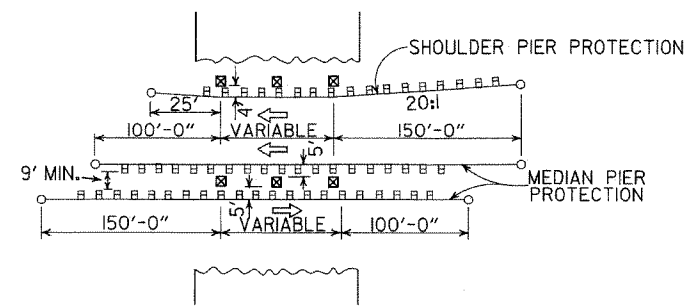


SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

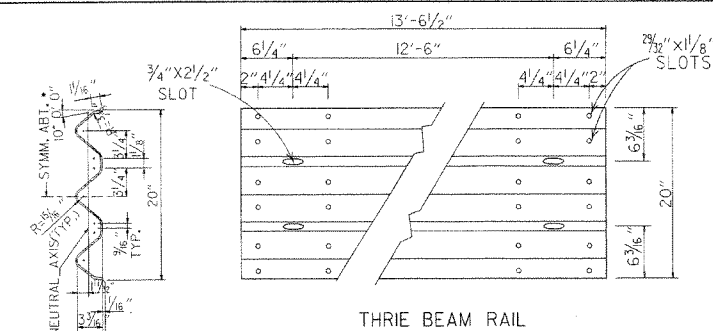


DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY

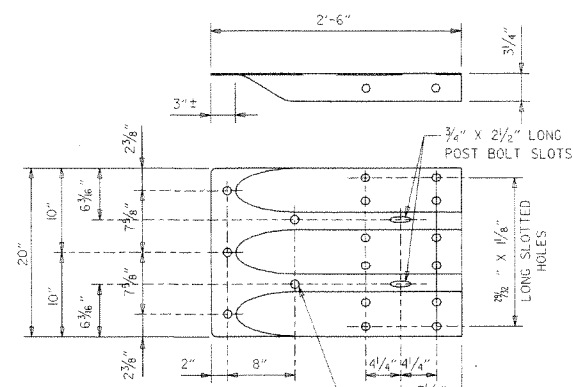


METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

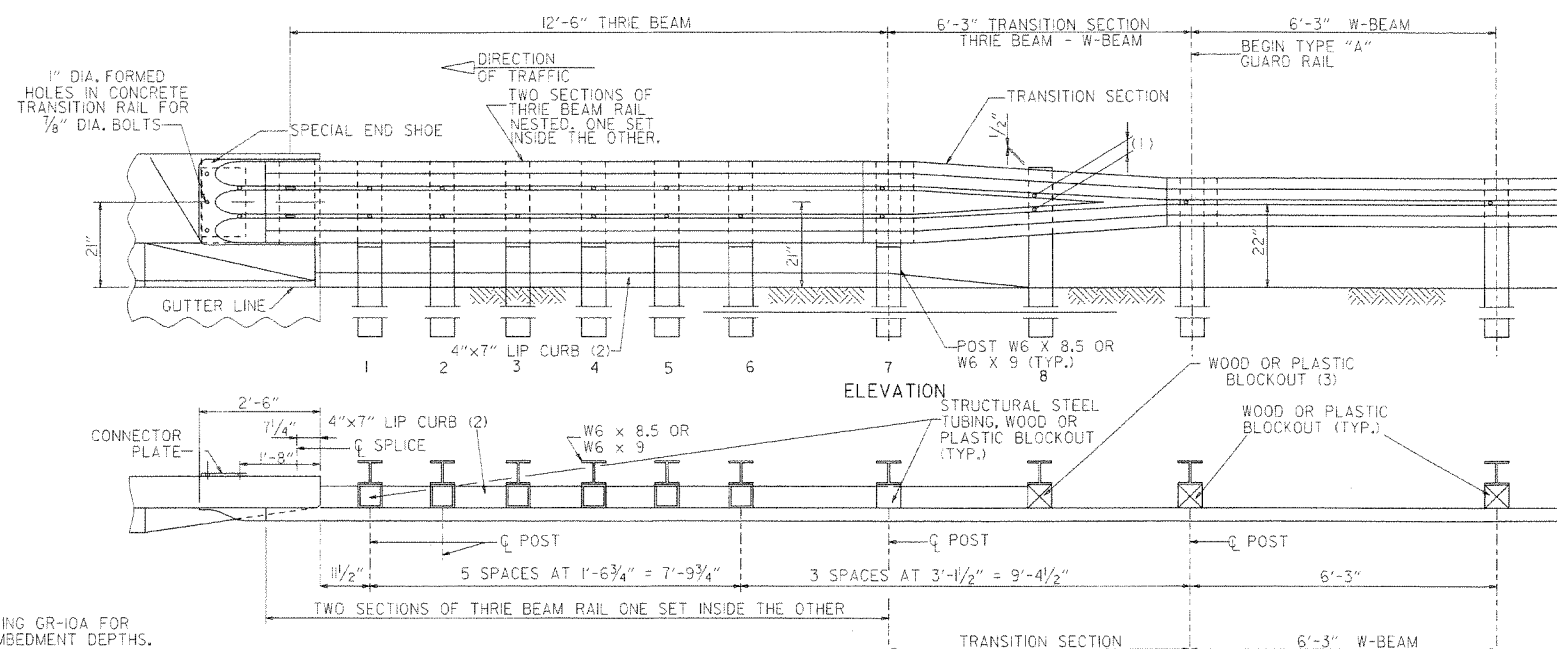
			ARKANSAS STATE HIGHWAY COMMISSION
			GUARD RAIL DETAILS
			STANDARD DRAWING GR-9A
4-17-08	MINOR REVISION		
11-10-05	DRAWN		
DATE	REVISION	DATE	FIRM



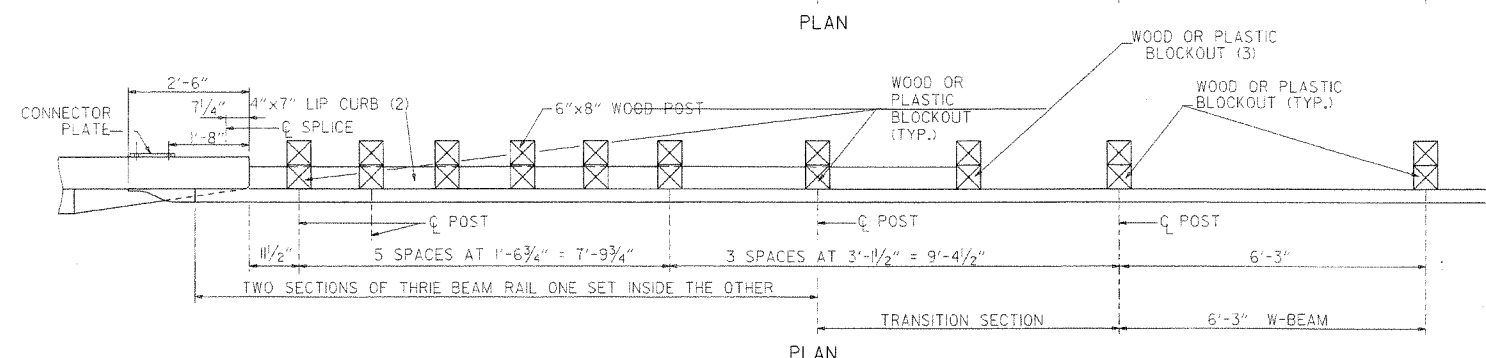
SECTION THRU
THREE BEAM RAIL



SPECIAL END SHOE



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.

THREE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

THE THREE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE I.

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 $\frac{3}{4}$ " BEYOND IT.

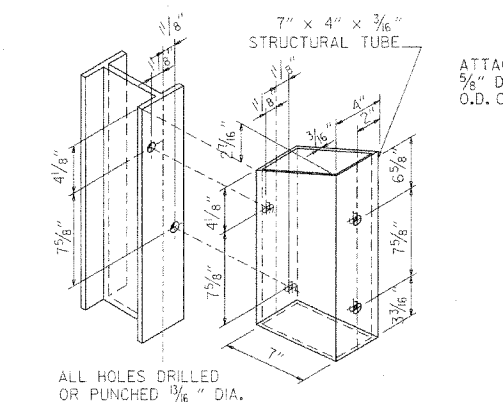
ALL LAP SPICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-9 & GR-11.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 (350 f) SOUTHERN PINE.

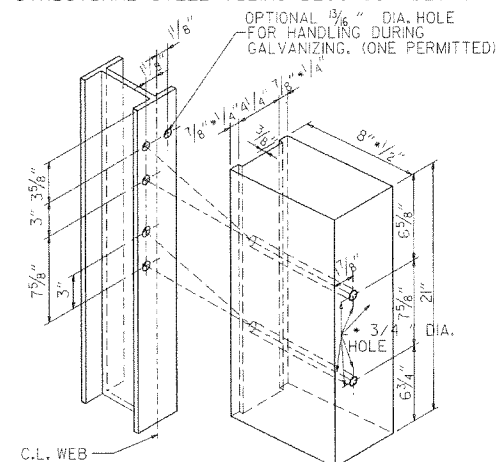
REFER TO STD. DRWG. CR-10A FOR POST DETAILS.

USE THREE BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

THREE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

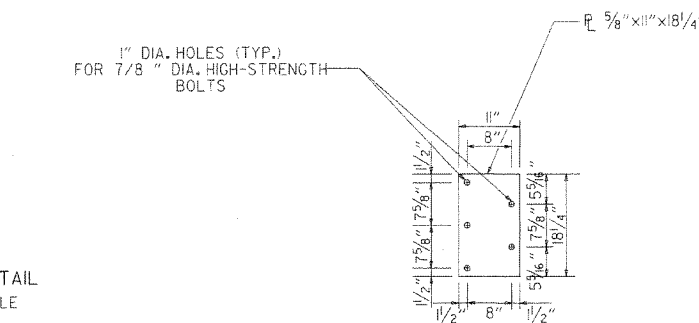


STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



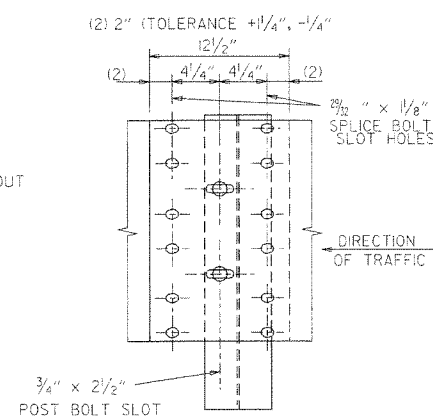
HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.

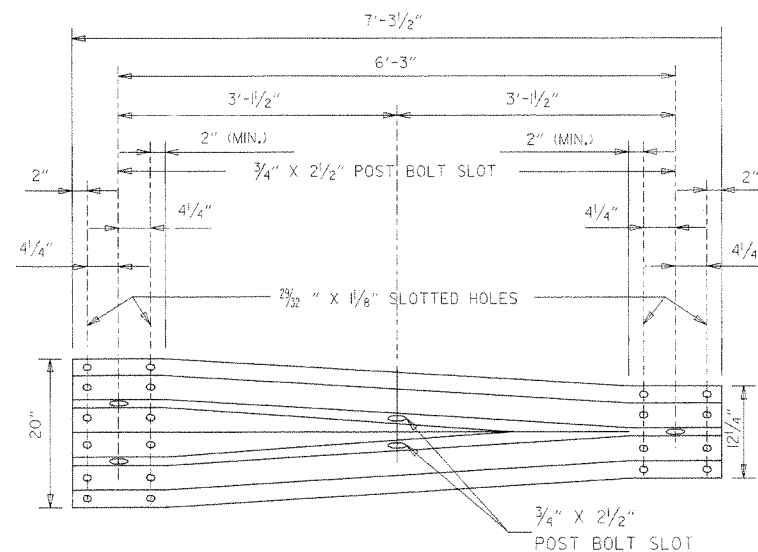


CONNECTOR PLATE

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 $\frac{7}{8}$ " 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.

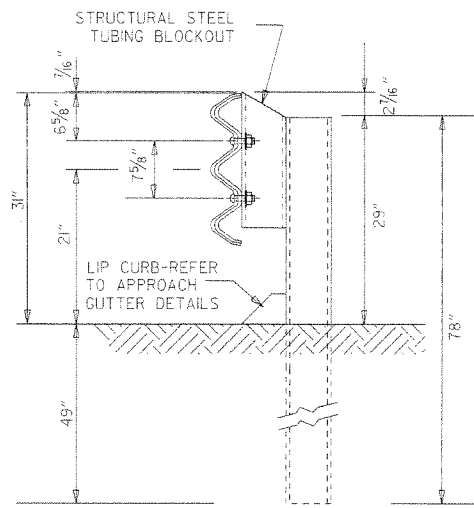


THRIE BEAM RAIL
SPLICE AT POST

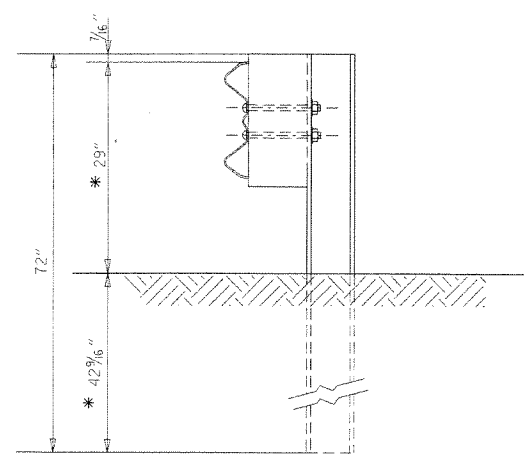


TRANSITION SECTION

7-14-10	RAISED HEIGHT OF W-BEAM 1"		ARKANSAS STATE HIGHWAY COMMISSION GUARD RAIL DETAILS STANDARD DRAWING GR-10
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		
DATE	REVISION	DATE FILED	

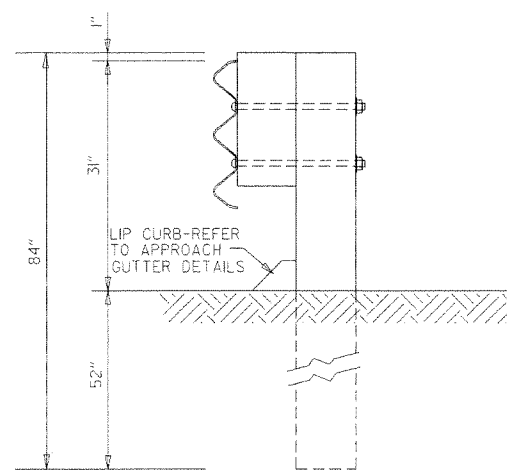


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

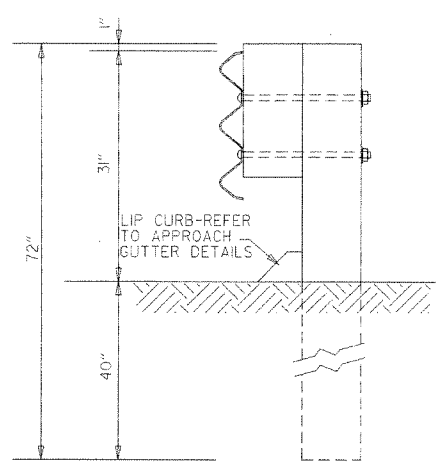


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

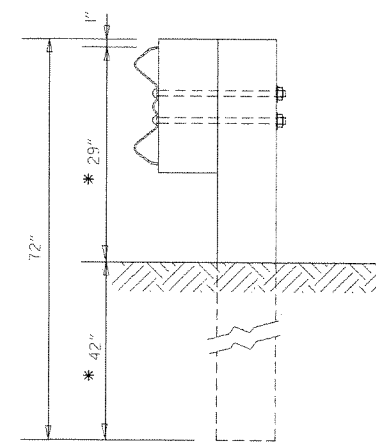
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED
IN THE FIELD TO MAKE THE TRANSITION FROM
21" MID POINT OF THRIE BEAM TO 22" MID POINT
OF W-BEAM.



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

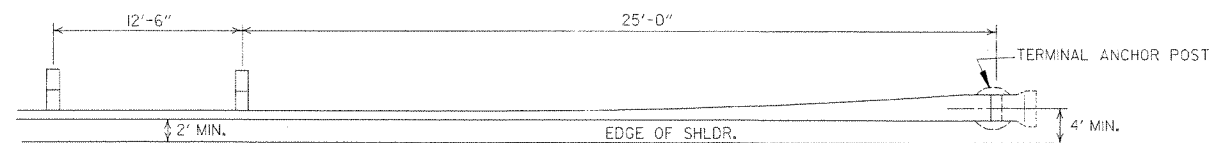


W-BEAM TO THRIE BEAM
TRANSITION RAIL WITH WOOD OR
PLASTIC BLOCKOUT & WOOD POST
POST 8

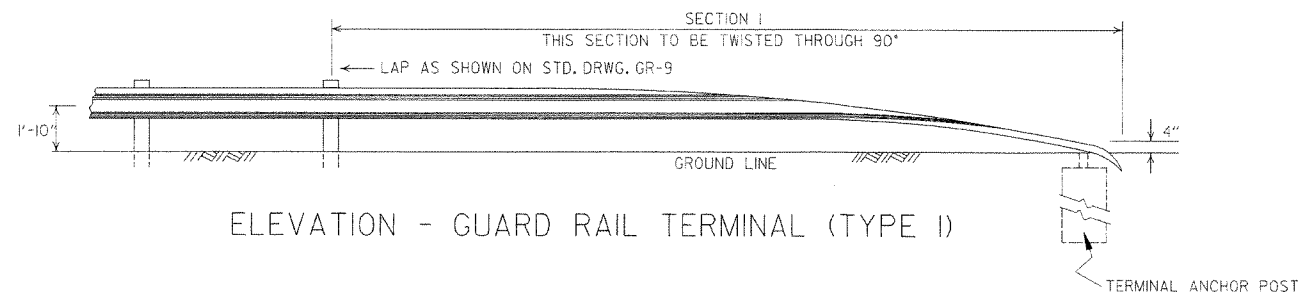
GENERAL NOTES:
RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND
VERTICALLY IN CROSS SECTION.
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR
BETTER 9.7F (1400 F) OR NO. 1 1350 F SOUTHERN PINE.

DATE	REVISION	DATE FILM
7-14-10	REVISED POST 8 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

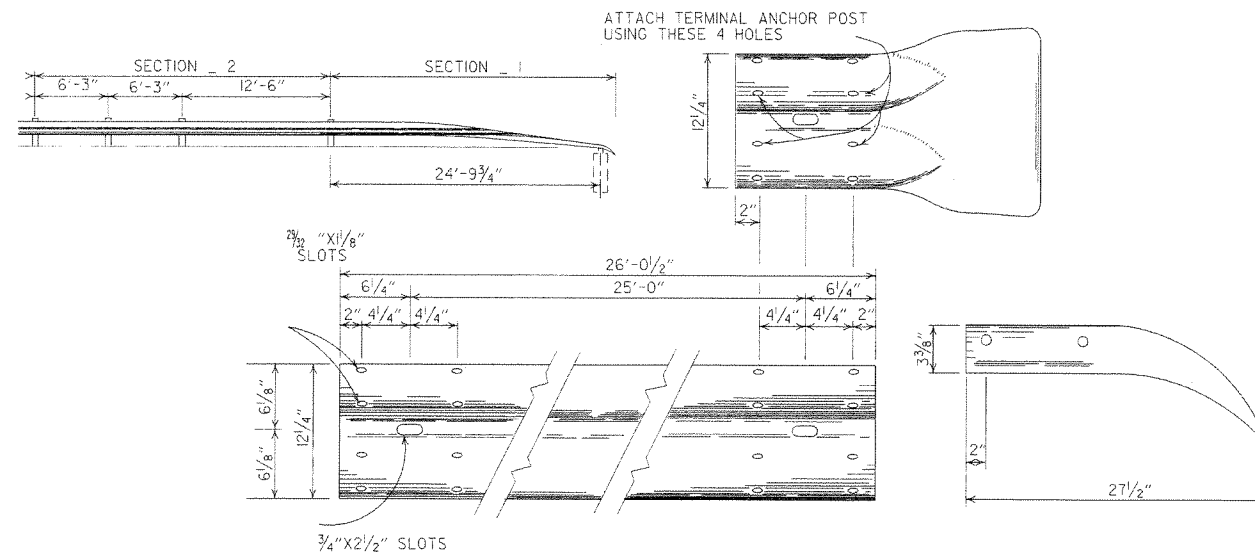


PLAN - GUARD RAIL TERMINAL (TYPE I)



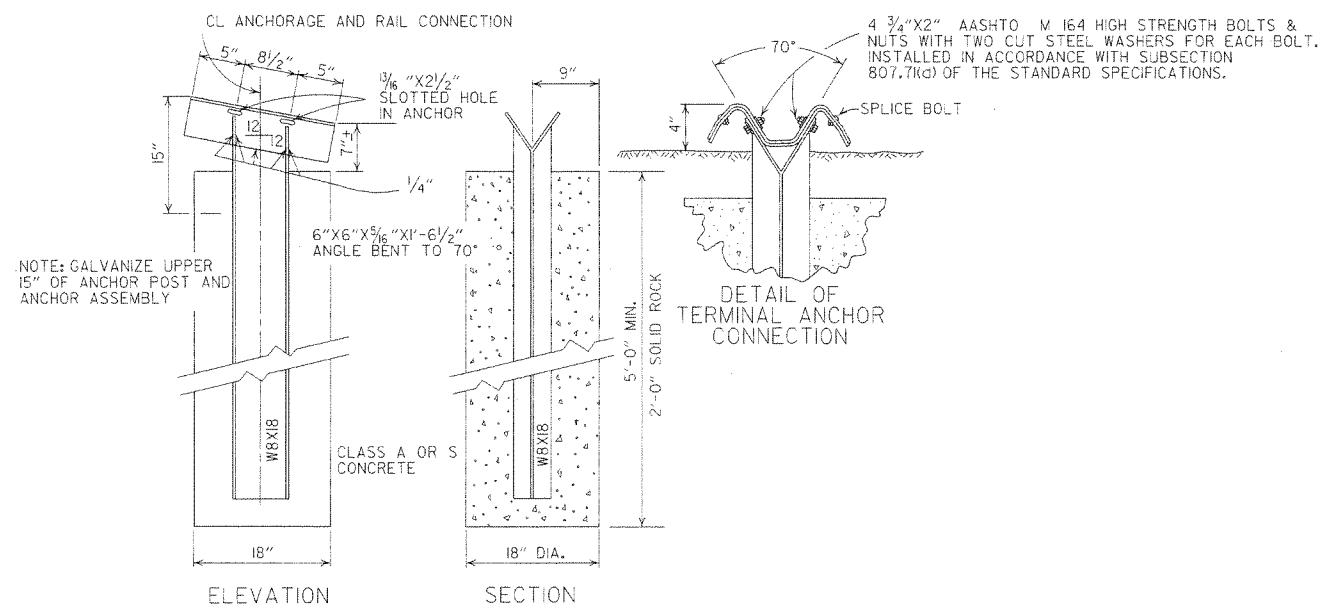
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

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: GALVANIZE UPPER
15" OF ANCHOR POST AND
ANCHOR ASSEMBLY

ELEVATION

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 W/ 17 POST IF CONTRACTOR SO DESIRES.

DETAIL OF TERMINAL
ANCHOR POST (TYPE I)

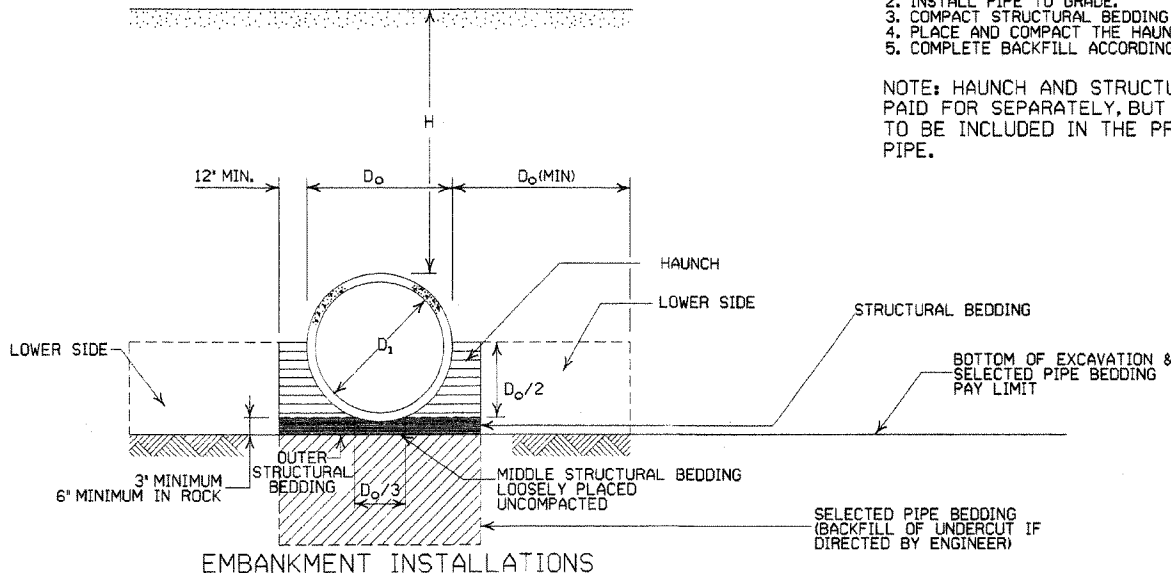
			ARKANSAS STATE HIGHWAY COMMISSION
			GUARD RAIL DETAILS
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"		
6-26-97	REVISED LAP NOTE		
10-18-96	REVISED ASTM REF. TO AASHTO		
11-3-94	DIMENSION TERMINAL DETAIL		
11-11-92	ADDED NOTE FOR PAYMENT	11-11-92	
10-1-92	DRAWN & ISSUED	10-1-92	
DATE	REVISION	DATE FILM	

STANDARD DRAWING GRT-1

CONSTRUCTION SEQUENCE

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

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



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

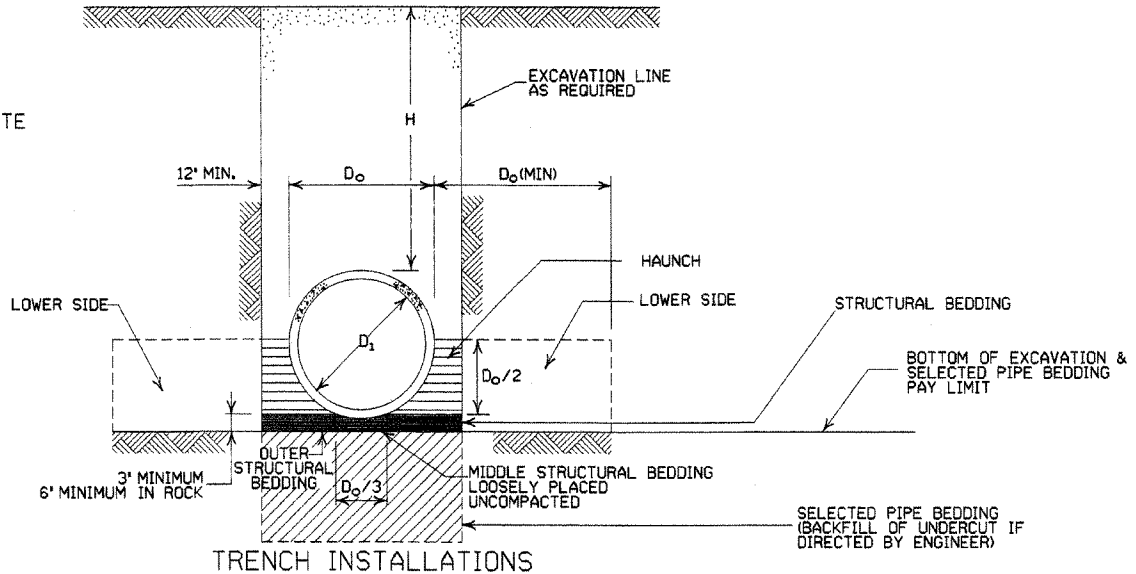
REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	• SPAN		• RISE	
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13 1/2	14
21	26	26	15 1/2	16
24	28 1/2	29	18	18
30	36 1/4	36	22 1/2	23
36	43 3/4	44	26 3/8	27
42	51 1/8	51	31 1/8	31
48	58 1/2	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77 1/4	77
108	138	138	87 1/8	87
120	154	154	96 1/8	97
132	168 3/4	169	106 1/2	107

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

GENERAL NOTES

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



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.

MAXIMUM HEIGHT OF FILL OVER R.C. PIPE CULVERTS

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

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

- LEGEND -

D1 = NORMAL INSIDE DIAMETER OF PIPE
D0 = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
UNDISTURBED SOIL

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND) H-20 LOADING

55

PIPE DIAMETER (INCHES)	MINIMUM COVER TOP OF PIPE TO TOP OF SUBGRADE (INCHES)	MAX. FILL HEIGHT ABOVE TOP OF PIPE (FEET)					
		METAL THICKNESS IN INCHES					
		0.064	0.079	0.109	0.138	0.168	
		2 1/2 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL					
12	12	84	91				
15	12	67	73				
18	12	61	61				
24	12	42	46	59			
30	12	34	36	47			
36	12		30	39			
42	12		43	46	67	48	70
48	12		37	45	58	61	50
		3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION** RIVETED, WELDED, HELICAL, OR SOLID					
36	12	48	60	78	89	101	131
42	12	41	51	64	72	90	102
48	12	36	45	57	64	77	85
54	12	32	40	52	59	71	79
60	12	29	36	49	53	64	71
66	12	26	33	47	49	58	64
72	12	24	30	44	47	53	59
78	12		28	41	46	49	54
84	12		28	38	45		51
90	12		24	35	43		45
96	12		22	33	40		44
102	24			31	38		42
108	24			30	35		39
114	24			28	34		37
120	24			27	32		35

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

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

CORRUGATED ALUMINUM PIPE (ROUND) H-20 LOADING

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

EQUIVALENT METAL THICKNESSES AND GAUGES

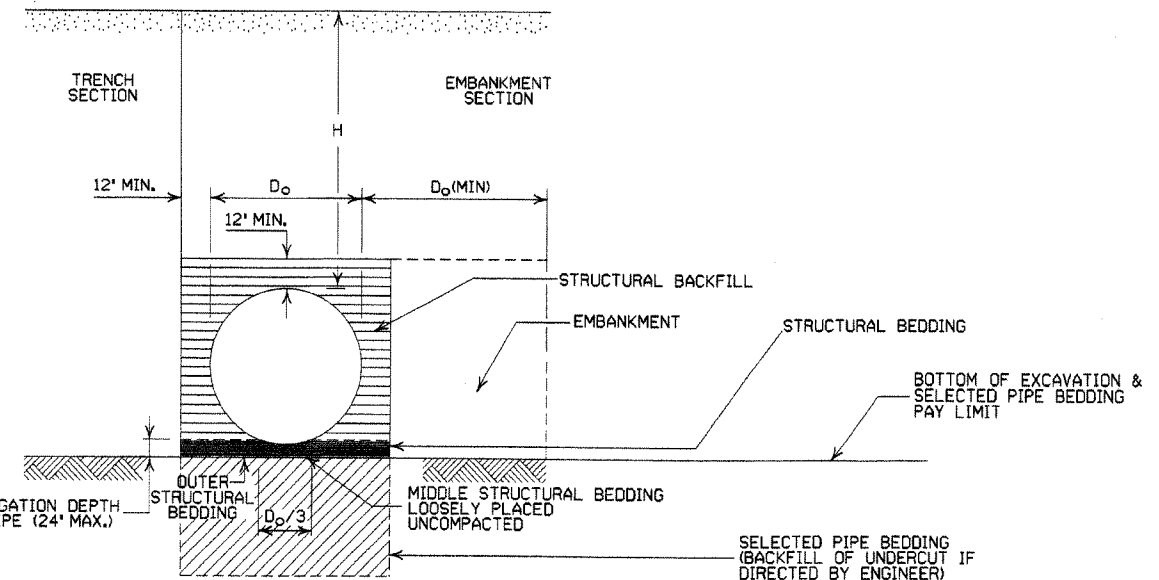
METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8
0.188	0.1838		7
0.218	0.2145		5
0.249	0.2451		3
0.280	0.2758		1

CORRUGATED METAL PIPE ARCHES (H - 20 LOADING)

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINIMUM CORNER RADIUS (INCHES)	MIN. COVER TOP OF PIPE TO TOP OF SUBGRADE FOR 2 TONS PER SQ. FT. (INCHES)	STEEL		ALUMINUM	
				MINIMUM THICKNESS REQUIRED INCHES	MAX. FILL HEIGHT ABOVE TOP OF PIPE (IN FT.) FOR THE FOLLOWING CORNER BEARING PRESSURE IN TONS PER SQ. FT.	MINIMUM THICKNESS REQUIRED INCHES	MAX. FILL HEIGHTS ABOVE TOP OF PIPE (IN FT.) FOR THE FOLLOWING CORNER BEARING PRESSURE IN TONS PER SQ. FT.
					2 TONS 3 TONS 1		2 TONS 3 TONS 1
				2 1/2 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL		2 1/2 INCH BY 1/2 INCH CORRUGATION RIVETED OR HELICAL	
15	17x13	3	12	0.064	13	15+	0.060
18	21x15	3	12	0.064	12	15+	0.060
21	24x18	3	12	0.064	10	15+	0.060
24	28x20	3	12	0.064	10	15	0.060
30	35x24	3	12	0.079	9	14	0.075
36	42x29	3 1/2	12	0.079	9	13	0.075
42	49x33	4	12	0.079	8	12	0.105
48	57x38	5	12	0.109	8	12	0.135
54	64x43	6	12	0.109	8	12	0.135
60	71x47	7	12	0.138	8	12	0.164
66	77x52	8	12	0.168	8	12	0.164
72	83x57	9	12	0.168	9	13	
				3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION** RIVETED, WELDED, OR HELICAL			
36	40x31	5	12	0.079	15	15+	
42	46x36	6	12	0.079	15	15+	
48	53x41	7	12	0.079	15	15+	
54	60x46	8	12	0.079	15	15+	
60	66x51	9	12	0.079	15	15+	
66	73x55	12	12	0.079	15	15+	
72	81x59	14	18	0.079	15	15+	
78	87x63	14	18	0.079	14	15+	
84	95x67	16	18	0.109	13	15+	
90	103x71	16	24	0.109	12	15+	
96	112x75	18	24	0.109	11	15+	
102	117x79	18	24	0.109	10	15	
108	128x83	18	24	0.138	9	14	

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

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

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

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

GENERAL NOTES

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

- LEGEND -

D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

===== = STRUCTURAL BACKFILL MATERIAL

===== = UNDISTURBED SOIL

ELONG. = ELONGATED

EQUIV. DIA. = EQUIVALENT DIAMETER

H = FILL COVER HEIGHT OVER PIPE (FEET)

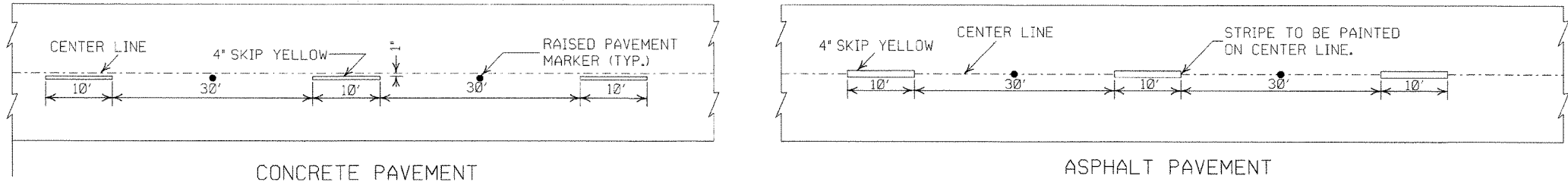
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

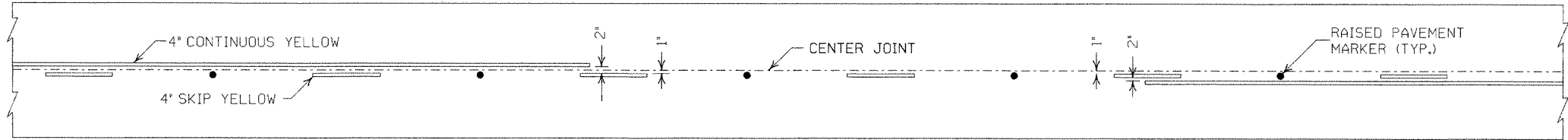
METAL PIPE CULVERT
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

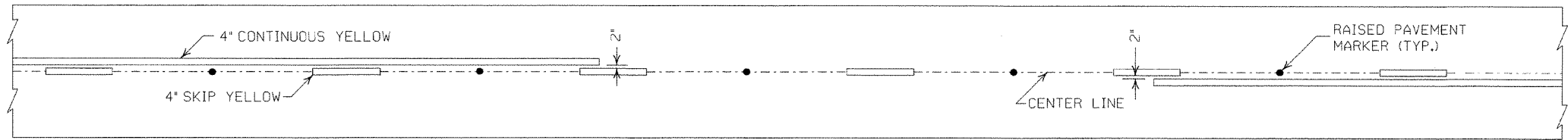
- NOTES:
- 1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
 - 2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
 - 3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."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



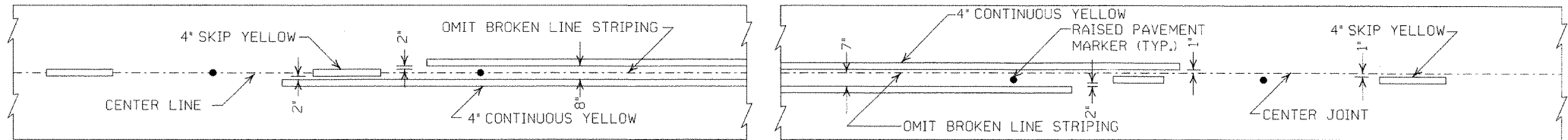
BROKEN LINE STRIPING



SOLID LINE STRIPING ON CONCRETE PAVEMENT



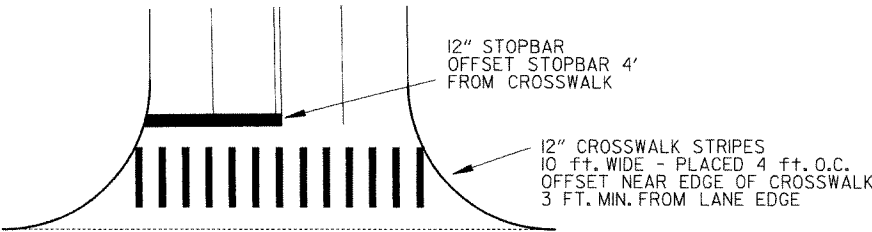
SOLID LINE STRIPING ON ASPHALT PAVEMENT



ASPHALT PAVEMENT

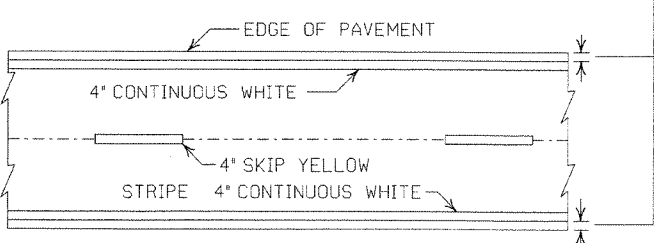
CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

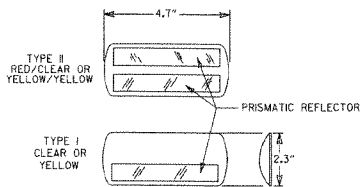


CROSSWALK AND STOPBAR DETAILS

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



PAVEMENT EDGE LINE MARKING



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

DETAIL OF
STANDARD
RAISED PAVEMENT MARKERS

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

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

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

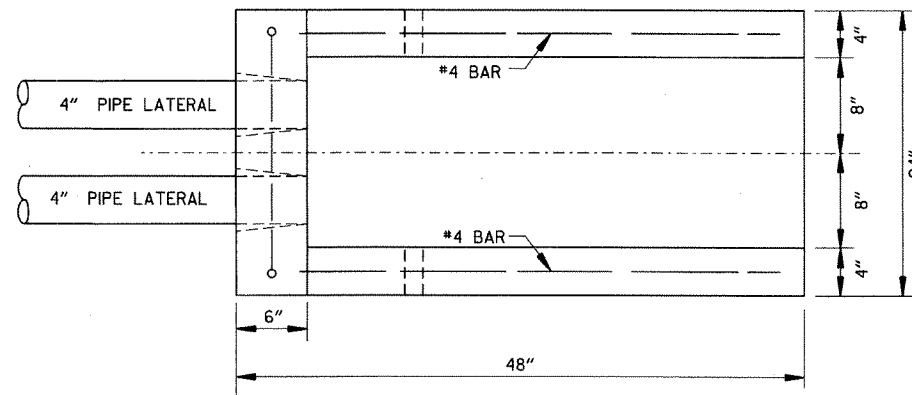
DATE	REVISION	FILMED
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

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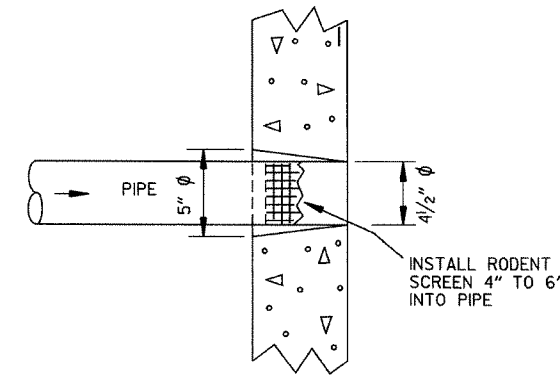
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

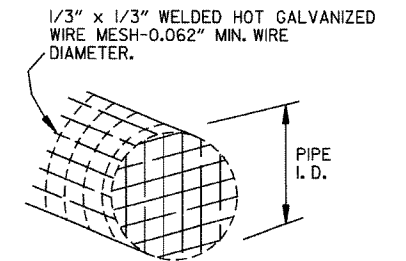
- NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.
 2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
 3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC, LAP FABRIC 12" OR THE WIDTH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



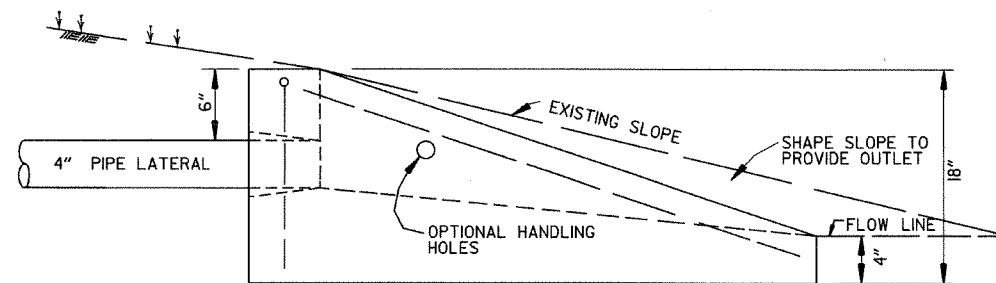
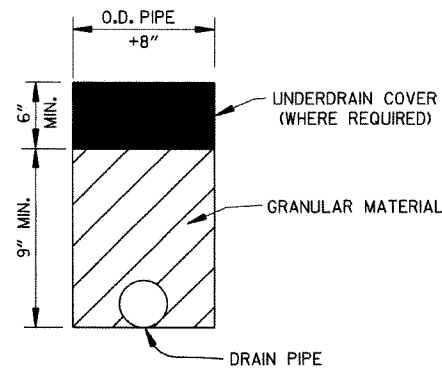
PLAN VIEW



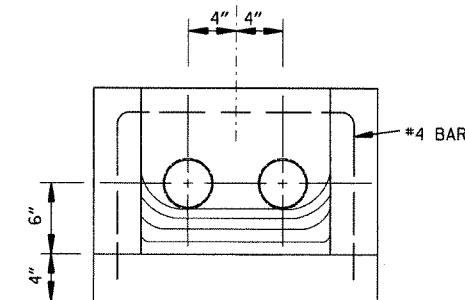
DETAIL OF HOLE FOR 4" PIPE



DETAIL OF RODENT SCREEN



SIDE VIEW

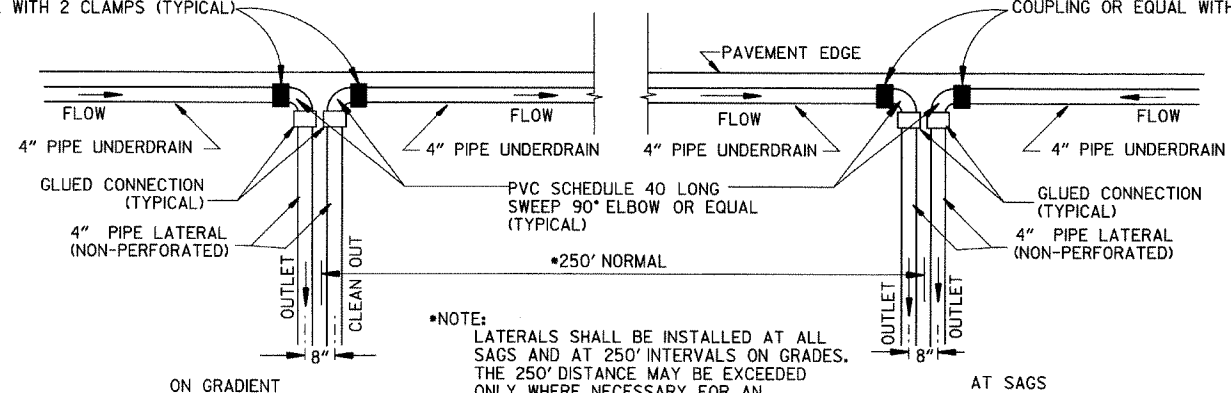


FRONT VIEW

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

UNDERDRAIN OUTLET PROTECTORS

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



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

DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

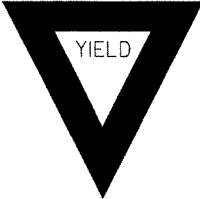
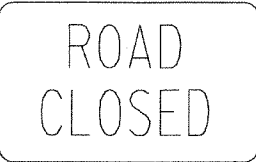
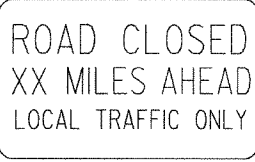
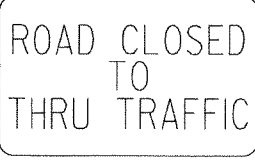
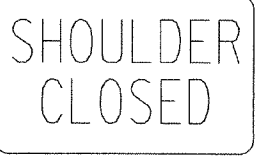
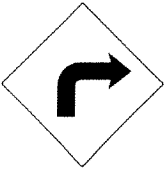
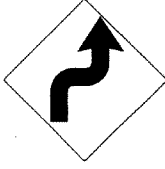
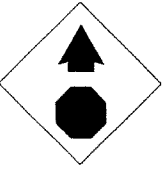
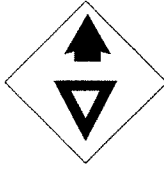
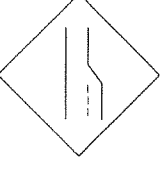
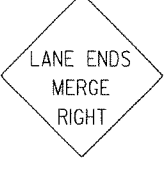
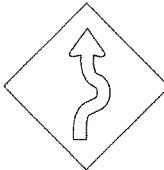
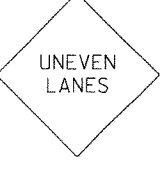
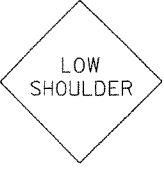
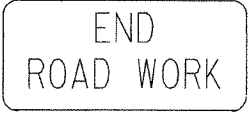
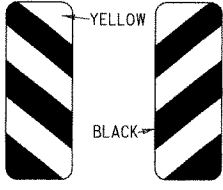
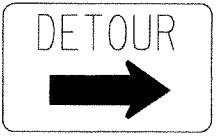
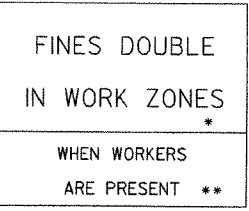
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE; 5 1/2" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11-3-94	REVISED FOR DUAL LATERALS	11-3-94
10-1-92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

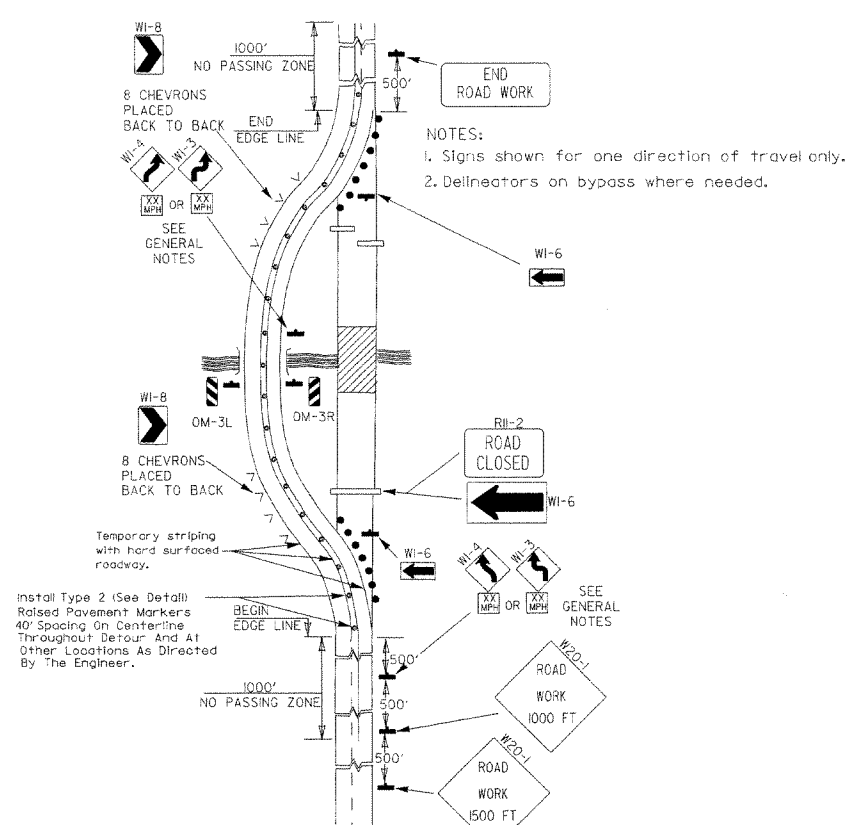
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

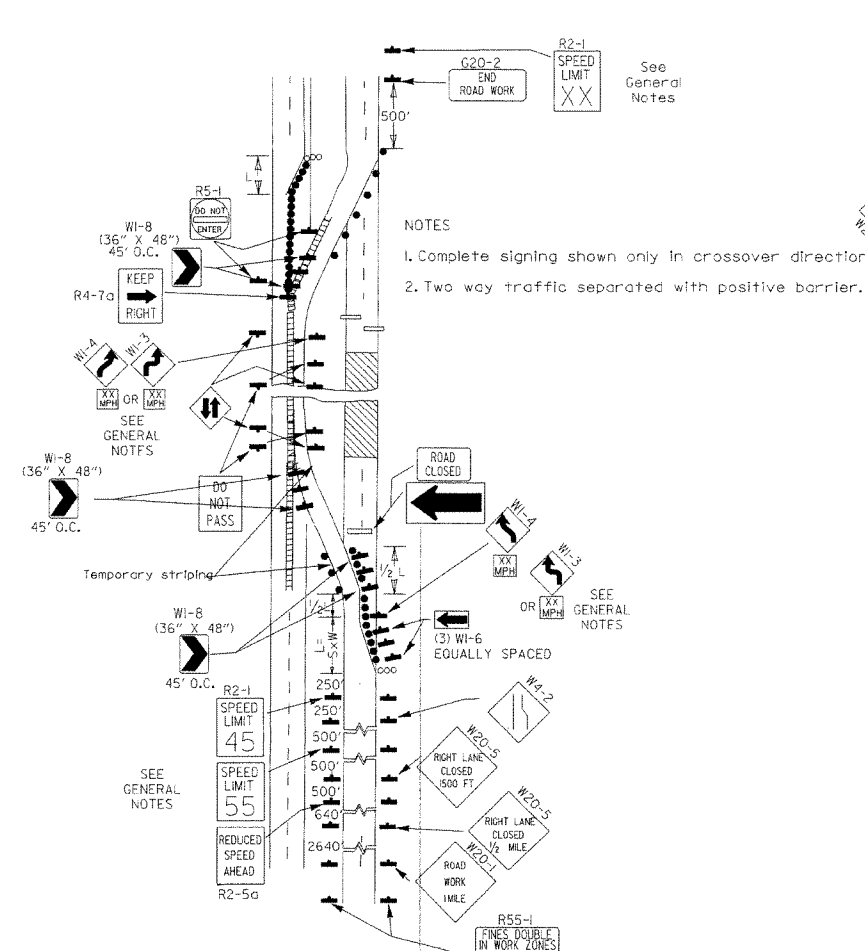
STANDARD DRAWING PU-1

DETAILS OF PIPE UNDERDRAIN

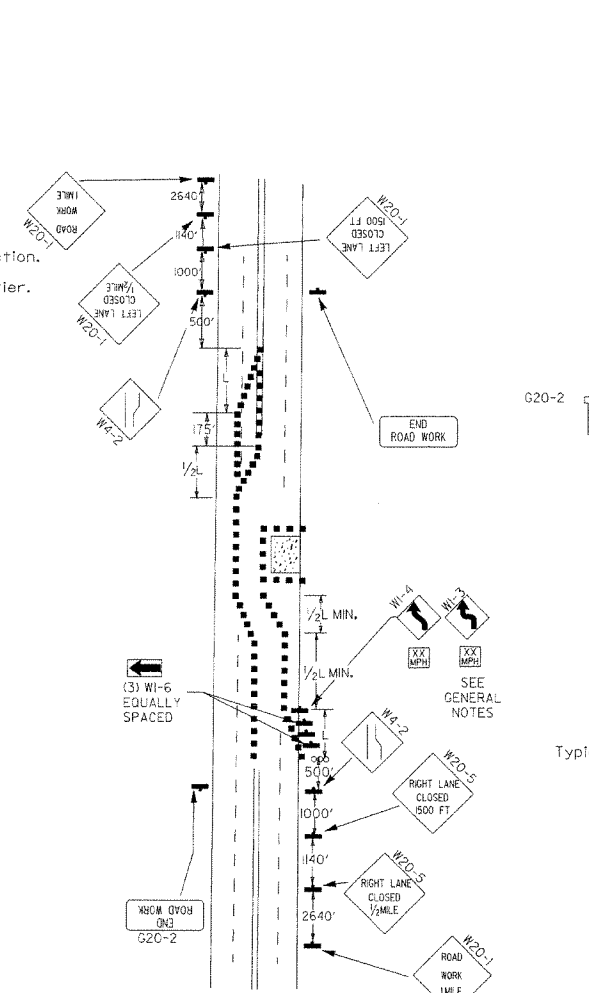
RI-1  STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"	RI-2  STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"	R2-1  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	R2-5A  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	R2-5C  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	R4-1  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	R4-2  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	ADVANCE DISTANCES (XXXX) 500 FT 1/2 MILE 1000 FT 3/4 MILE 1500 FT 1 MILE AHEAD GENERAL NOTES: 1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION. 2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER. 3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED. 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE. 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3. 6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE. 7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS. 8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS. 9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT. 10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN. * NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.
R5-1  STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"	R11-2  48"x30"	R11-3A  60"x30"	R11-4  60"x30"	RSP-1  48"x30"	W1-1  STD. 36"x36" FWY. 48"x48"	W1-2  STD. 36"x36" FWY. 48"x48"	W20-3  STD. 48"x48"
W1-3  STD. 48"x48"	W1-4  STD. 48"x48"	W1-6  STD. 48"x24" SPECIAL 60"x30"	W1-8  STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"	W3-1  STD. 36"x36" SPECIAL 48"x48"	W3-2  STD. 36"x36" SPECIAL 48"x48"	W4-2  STD. 36"x36" FWY. 48"x48"	
W5-1  STD. 36"x36" SPECIAL 48"x48"	W6-3  EXPWY. 36"x36" SPECIAL 48"x48"	W8-7  EXPWY. 36"x36" FWY. 48"x48"	W9-2  STD. 36"x36" FWY. 48"x48"	W13-1  STD. 24"x24"	W20-1  STD. 48"x48"	W20-2  STD. 48"x48"	R56-1  STD. 18"x18"
W20-4  STD. 48"x48"	W20-5  STD. 48"x48"	W20-7a  18" 500 FEET W16-2 24" STD. 36"x36" FWY. 48"x48"	W21-2  STD. 30"x30" SPECIAL 36"x36"	W21-5  STD. 30"x30" SPECIAL 36"x36"	W24-1  STD. 36"x36"	W1-4b  STD. 48"x48"	
W8-II  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



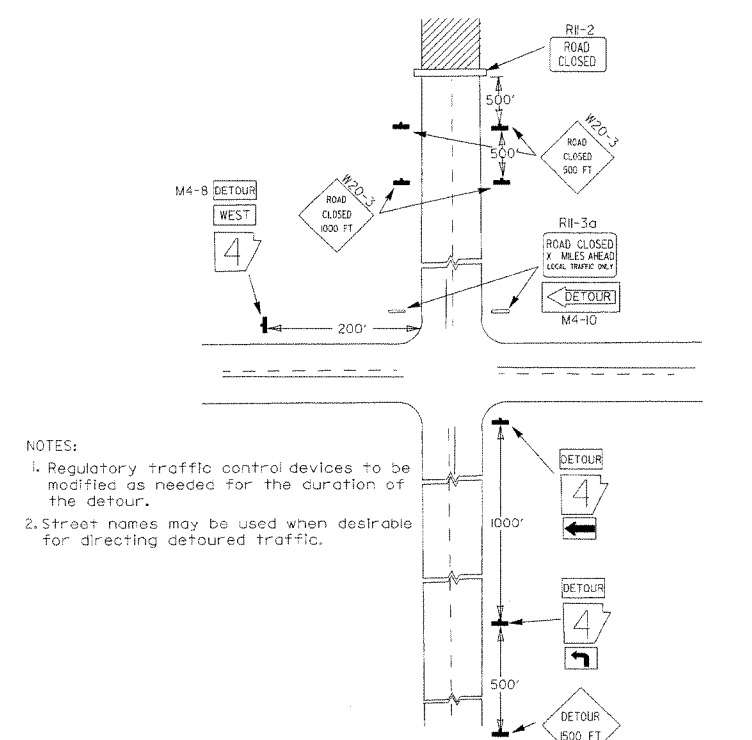
(A) Typical application of traffic control devices on a 2-lane highway where the entire roadway is closed and a bypass detour is provided.



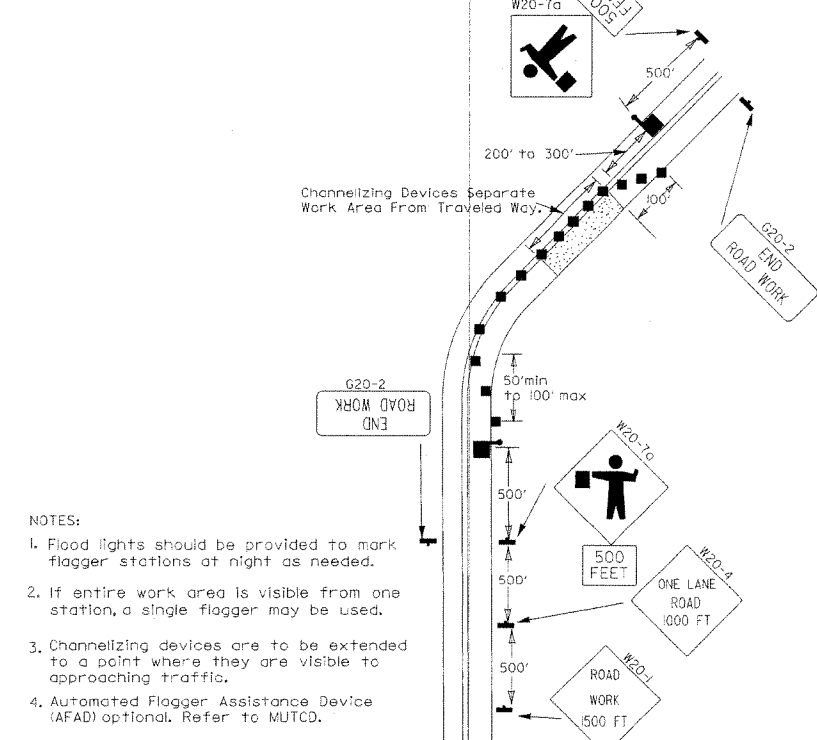
(B) Typical application - 4-lane divided roadway where one roadway is closed.



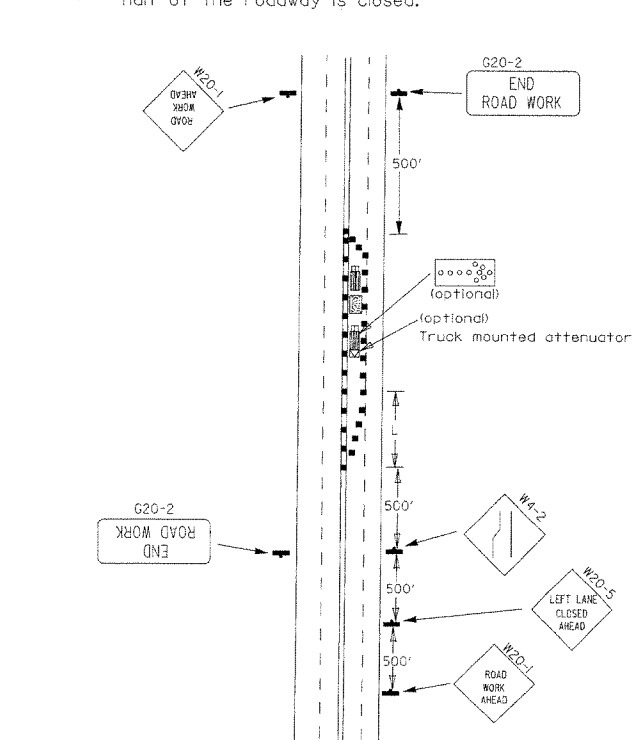
(C) Typical application - 4-lane undivided roadway where half of the roadway is closed.



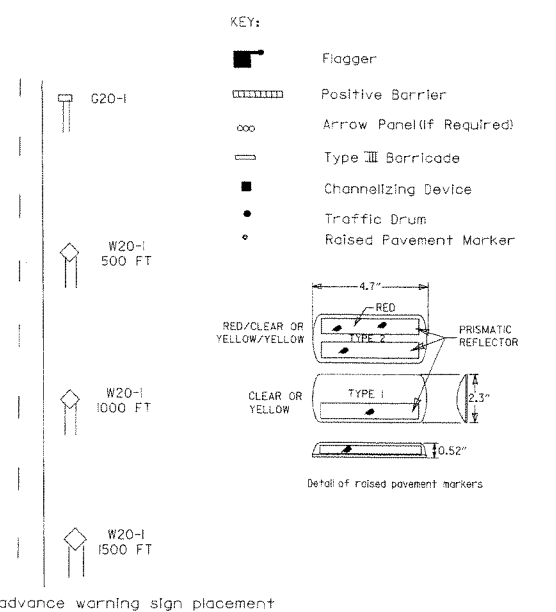
(D) Typical application - roadway closed beyond detour point.



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



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

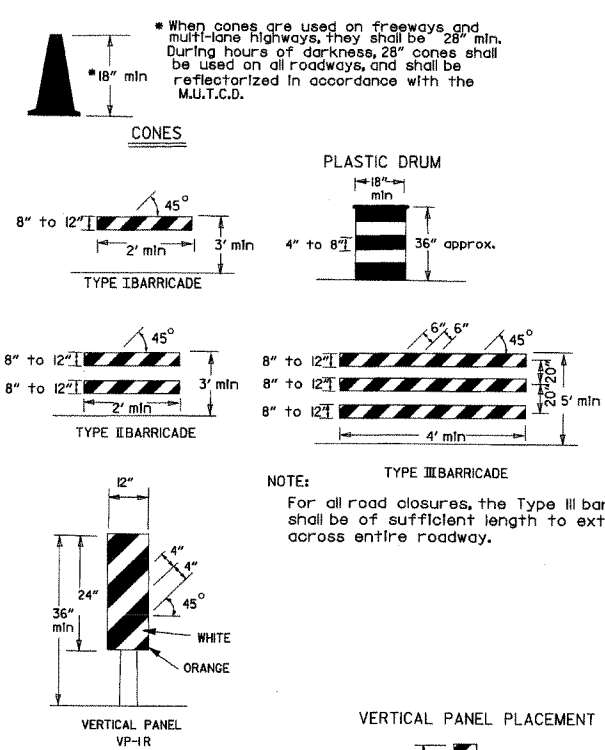


Taper formulae:
 $L = S \times W$ for speeds of 45mph or more.
 $L = \frac{WS^2}{60}$ for speeds of 40mph or less.
Where:
L = Minimum length of taper.
S = Numerical value of posted speed limit prior to work or 85th percentile speed.
W = Width of offset.

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(45) shall be omitted and the R2-5A shall be installed at that location. Additional R2-145mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(45) 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 R2-155mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(55) 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.

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

Channelizing devices

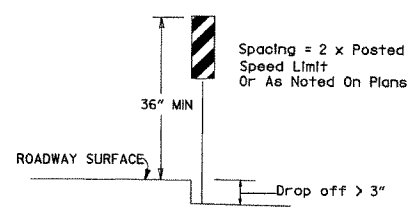


TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

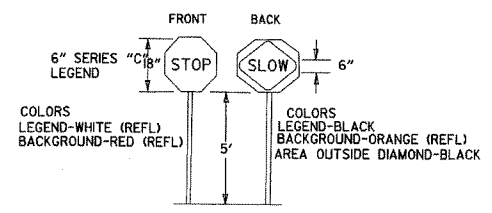
VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	W8-11
1" to 3"	Edge of shoulder	W8-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP-1 and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical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

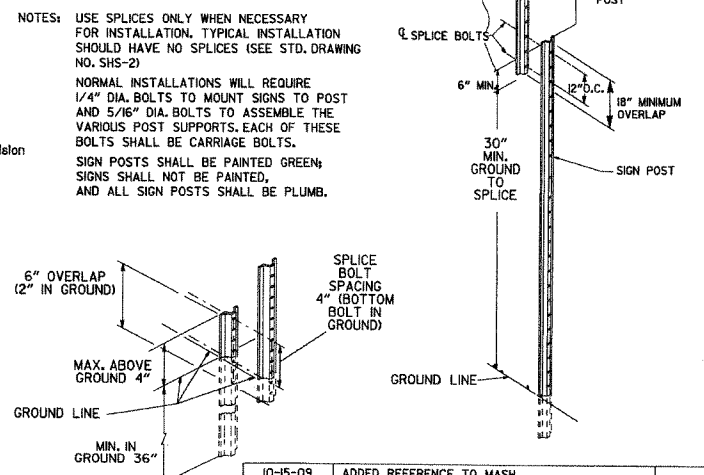
VERTICAL PANEL PLACEMENT



STOP SLOW PADDLE



DETAIL OF SPLICES



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

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

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

GENERAL NOTES:

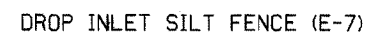
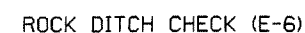
- A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
- When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5a shall be installed at that location. Additional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

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

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

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

1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.
2. STRAW BALES SHALL BE KEYED INTO SOIL A MINIMUM OF 4' AND NO GAPS SHALL BE LEFT BETWEEN BALES.



GENERAL NOTES

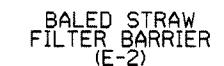
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



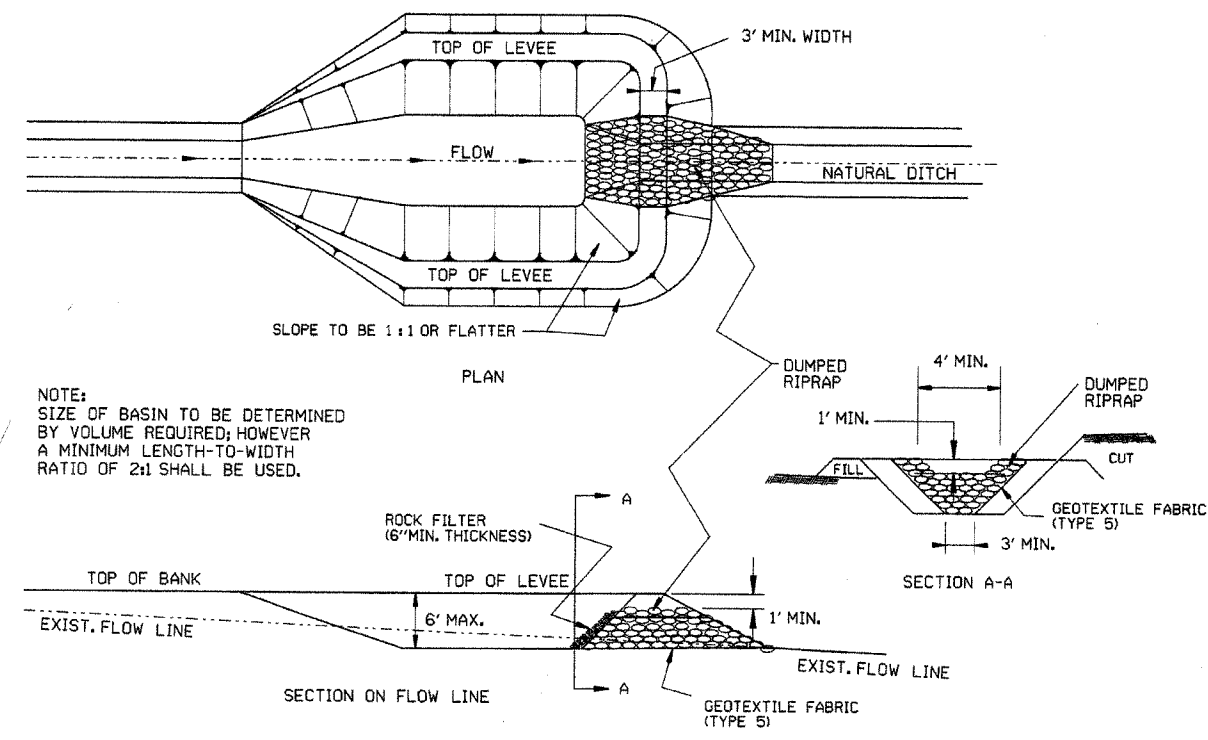
GENERAL NOTES

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.

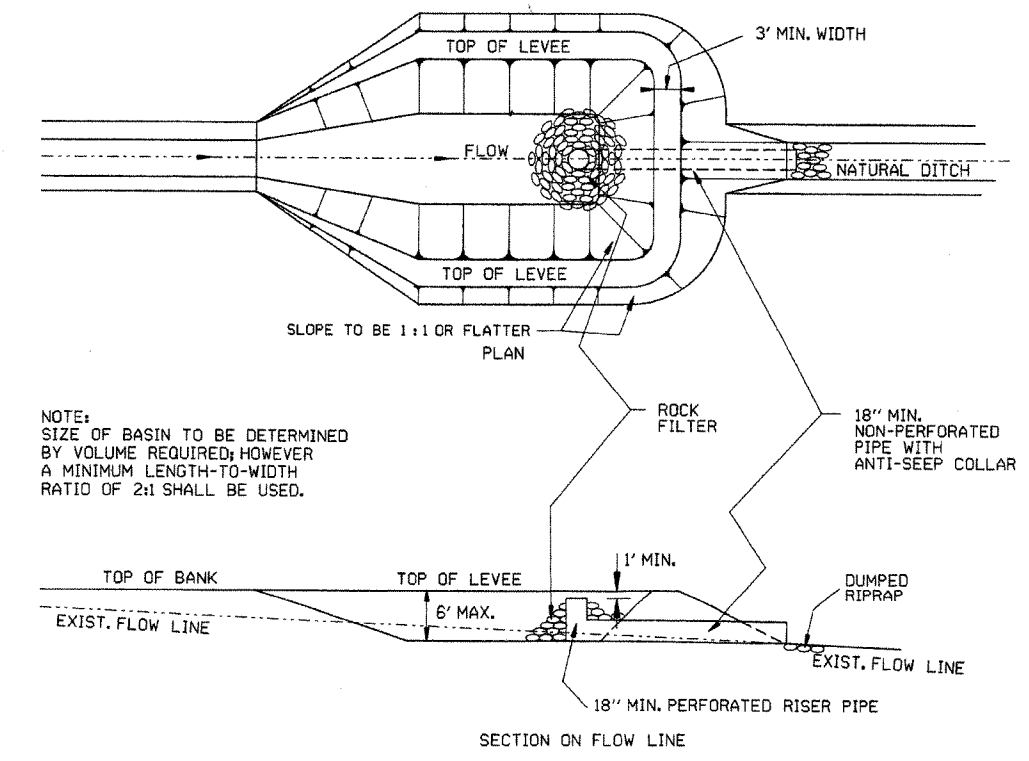
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.
2. NO GAPS SHALL BE LEFT BETWEEN BALES.
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED 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.



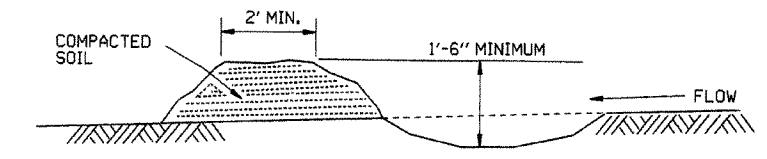
11-18-98	ADDED NOTES	11-18-98	ARKANSAS STATE HIGHWAY COMMISSION
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)		
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95	TEMPORARY EROSION CONTROL DEVICES
7-15-94	Rev. E-4 & E-11 Min. 13' Buried End of Fabric		
6-2-94	Revised E-1,4,7, & 11 Deleted E-2 & 3	6-2-94	
4-1-93	REDRAWN		
10-1-92	REDRAWN		
6-2-76	ISSUED R.D.M.	298-7-28-76	STANDARD DRAWING TEC-1
DATE	REVISION	FILED	



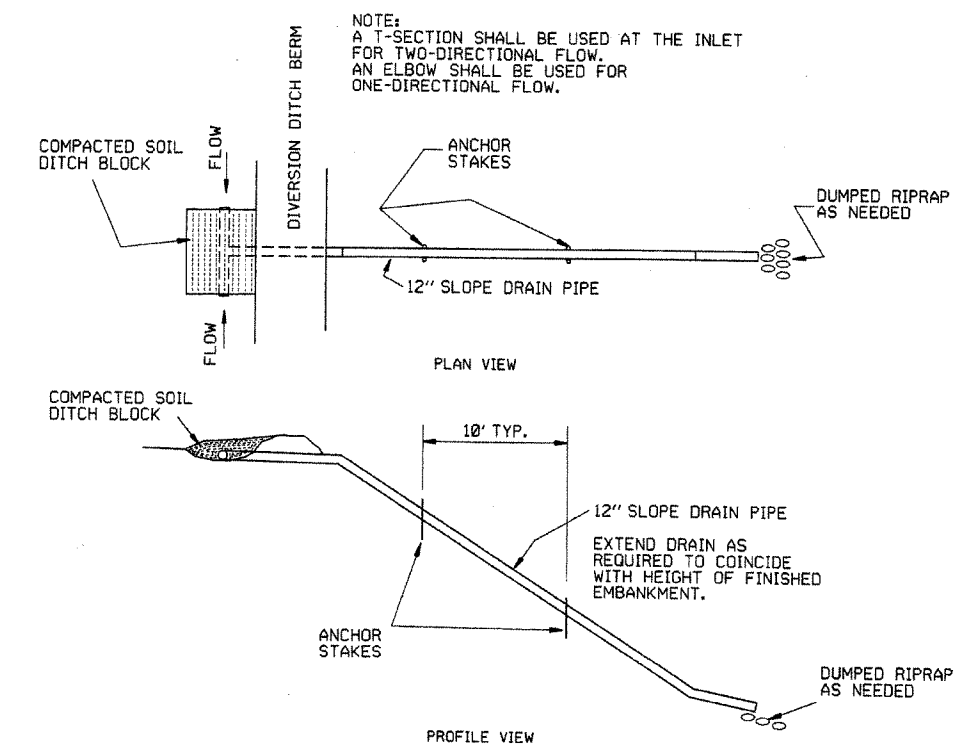
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



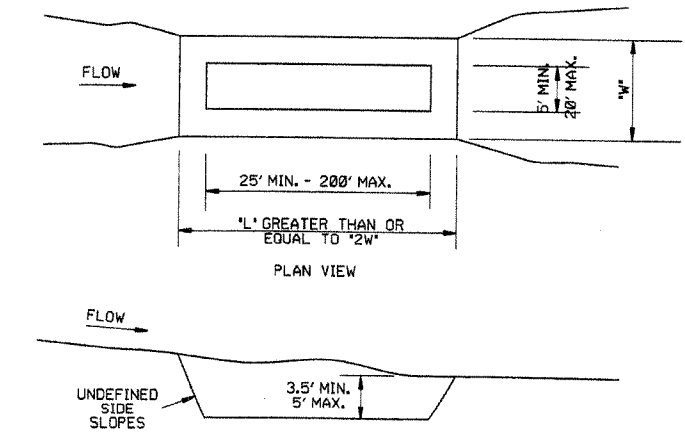
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



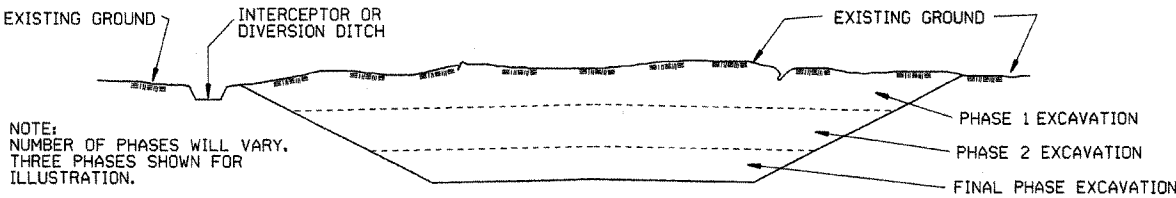
SEDIMENT BASIN (E-14)

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

CLEARING AND GRUBBING

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

EXCAVATION

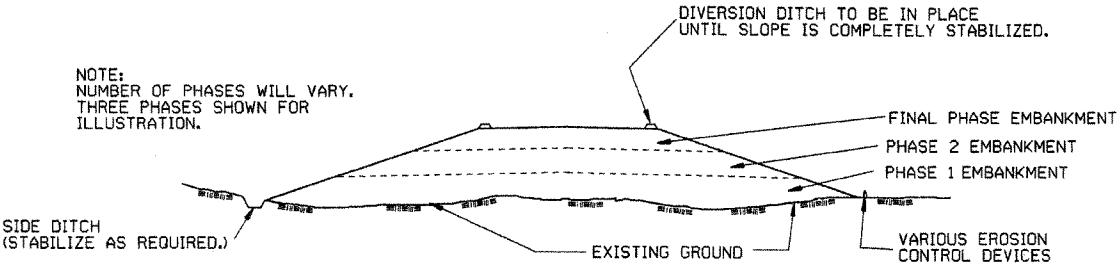


GENERAL NOTE

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

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

EMBANKMENT

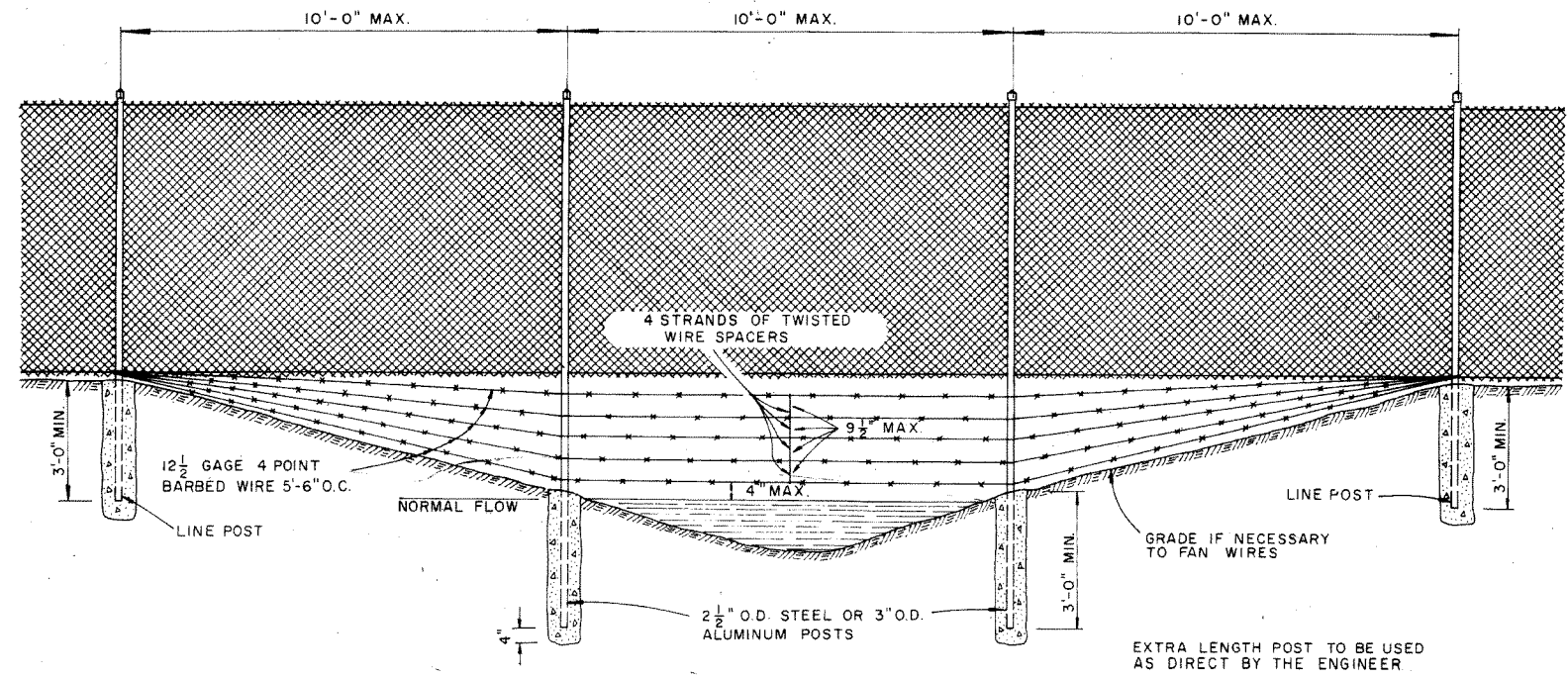
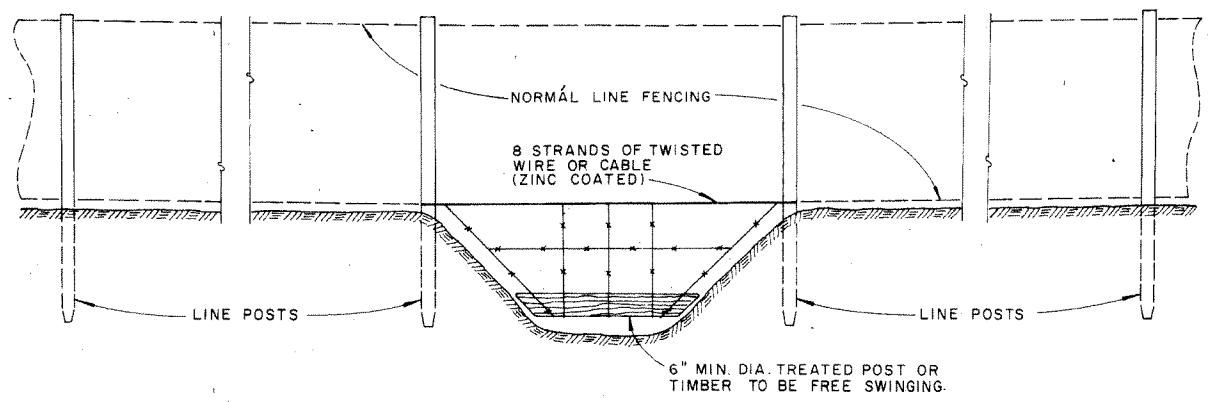
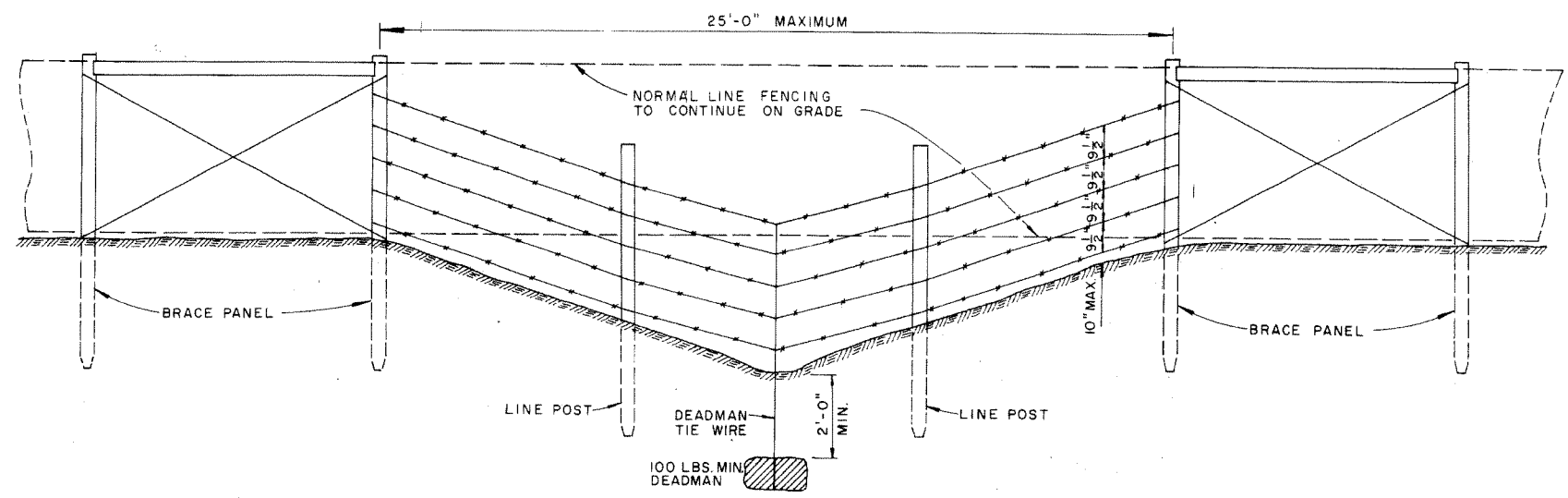


GENERAL NOTE

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

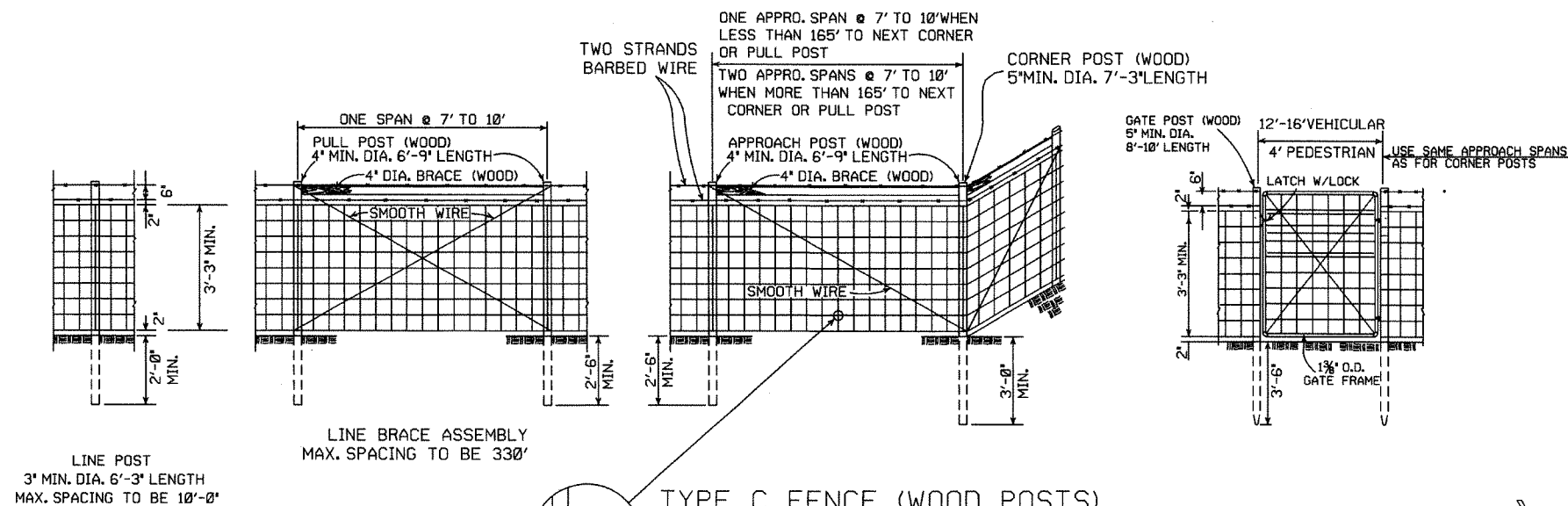
- CONSTRUCTION SEQUENCE
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
 2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY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

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



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

ARKANSAS STATE HIGHWAY COMMISSION		
WIRE FENCE WATER GAPS		
STANDARD DRAWING		
WF-2		
4-20-79	REVISED TOP RAIL & TENSION WIRE	676-4-20-79
10-2-72	REVISED & REDRAWN	529-10-2-72
DATE	REVISION	DATE FILMD



GENERAL NOTES:

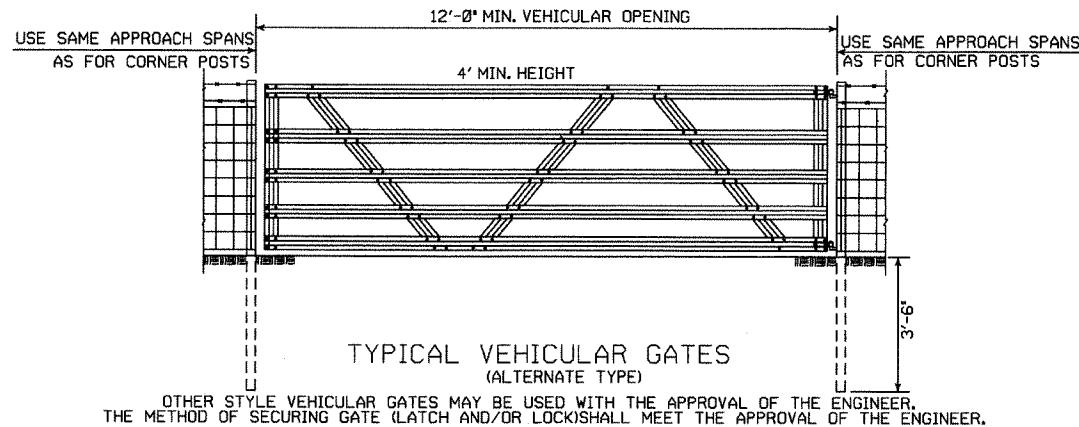
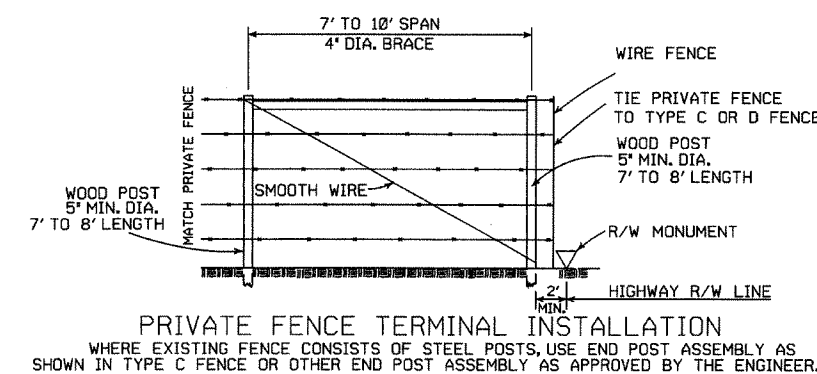
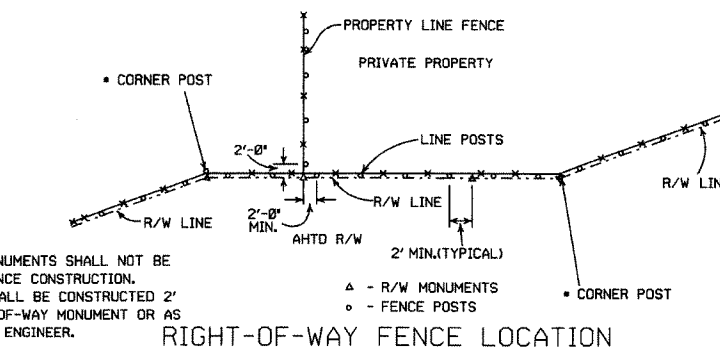
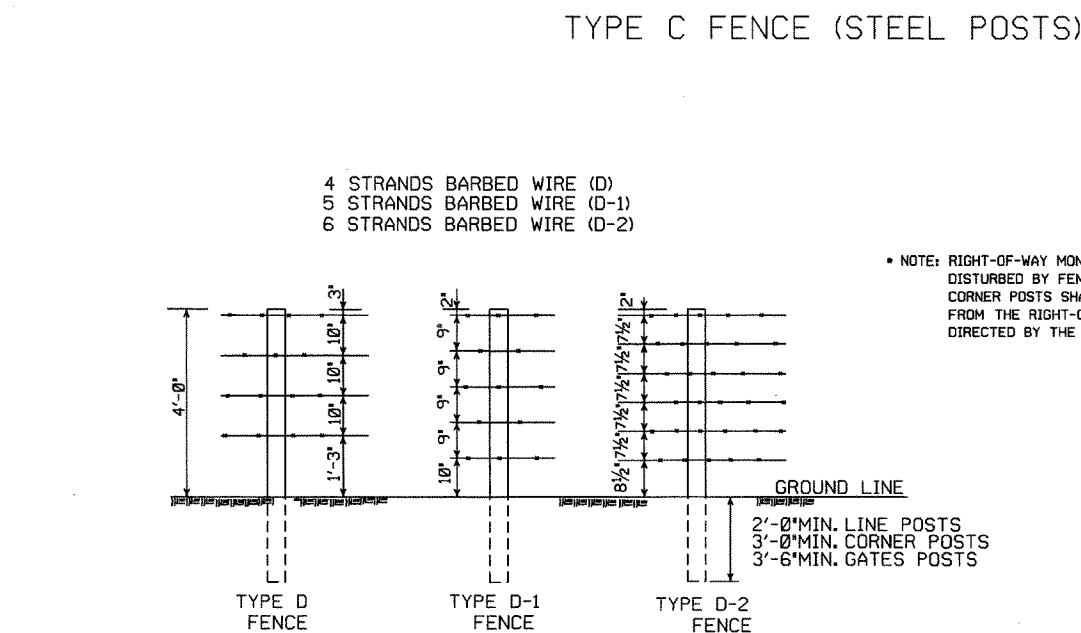
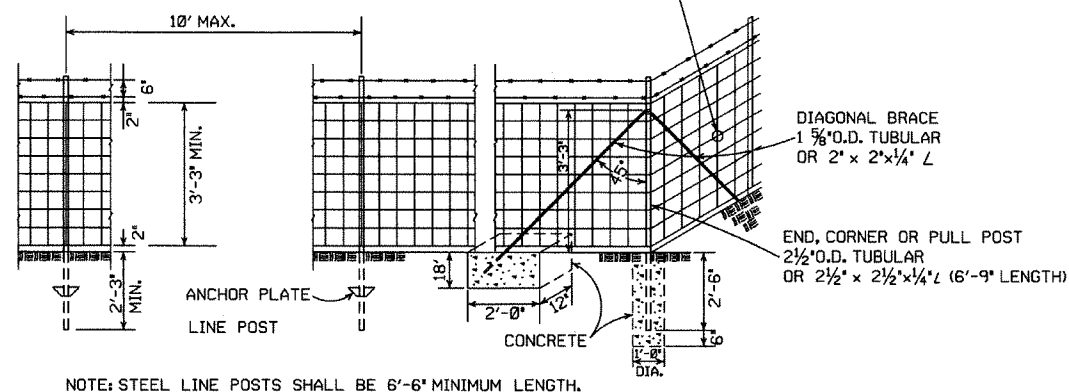
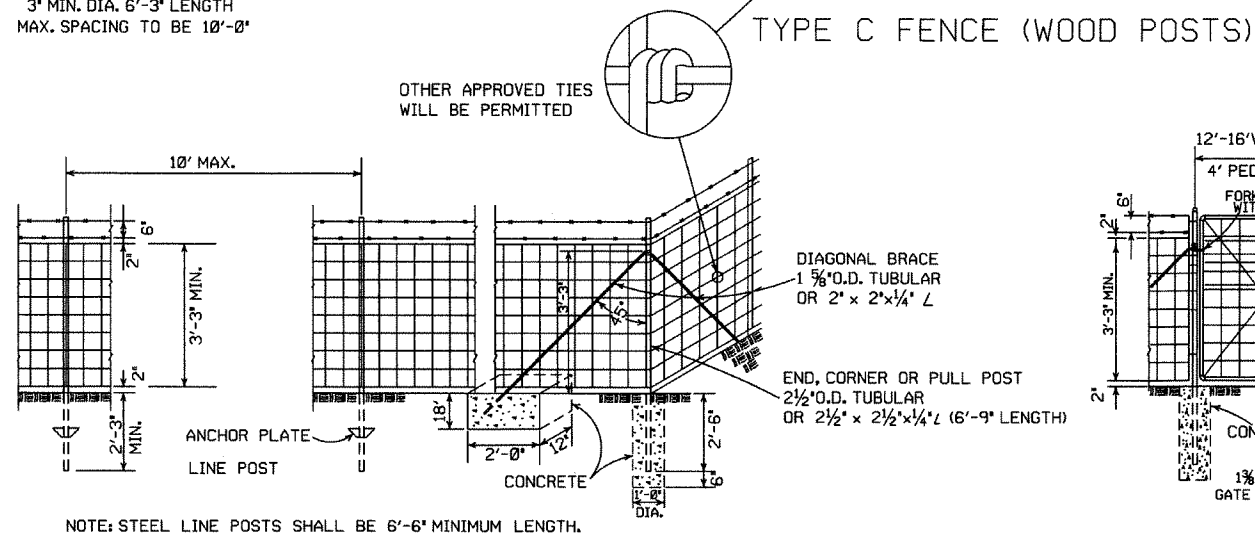
STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED.
TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST
CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON
STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES
ARE ACCEPTABLE.

AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN
POSTS SHALL BE - 1" TO +2".
TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

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

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

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



8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	707-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72
DATE	REVISION	FTI MFG

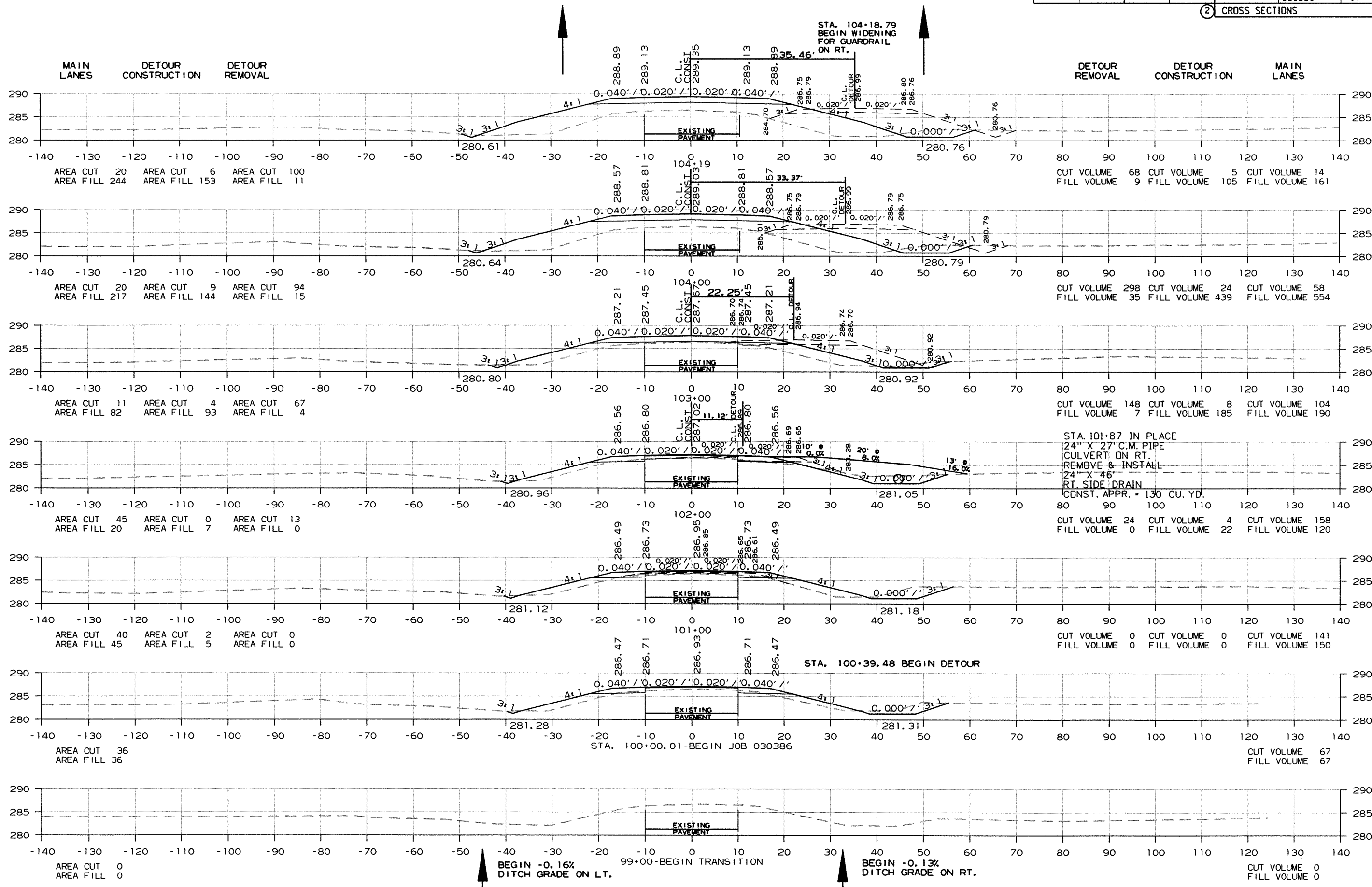
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE C AND D

STANDARD DRAWING WF-4

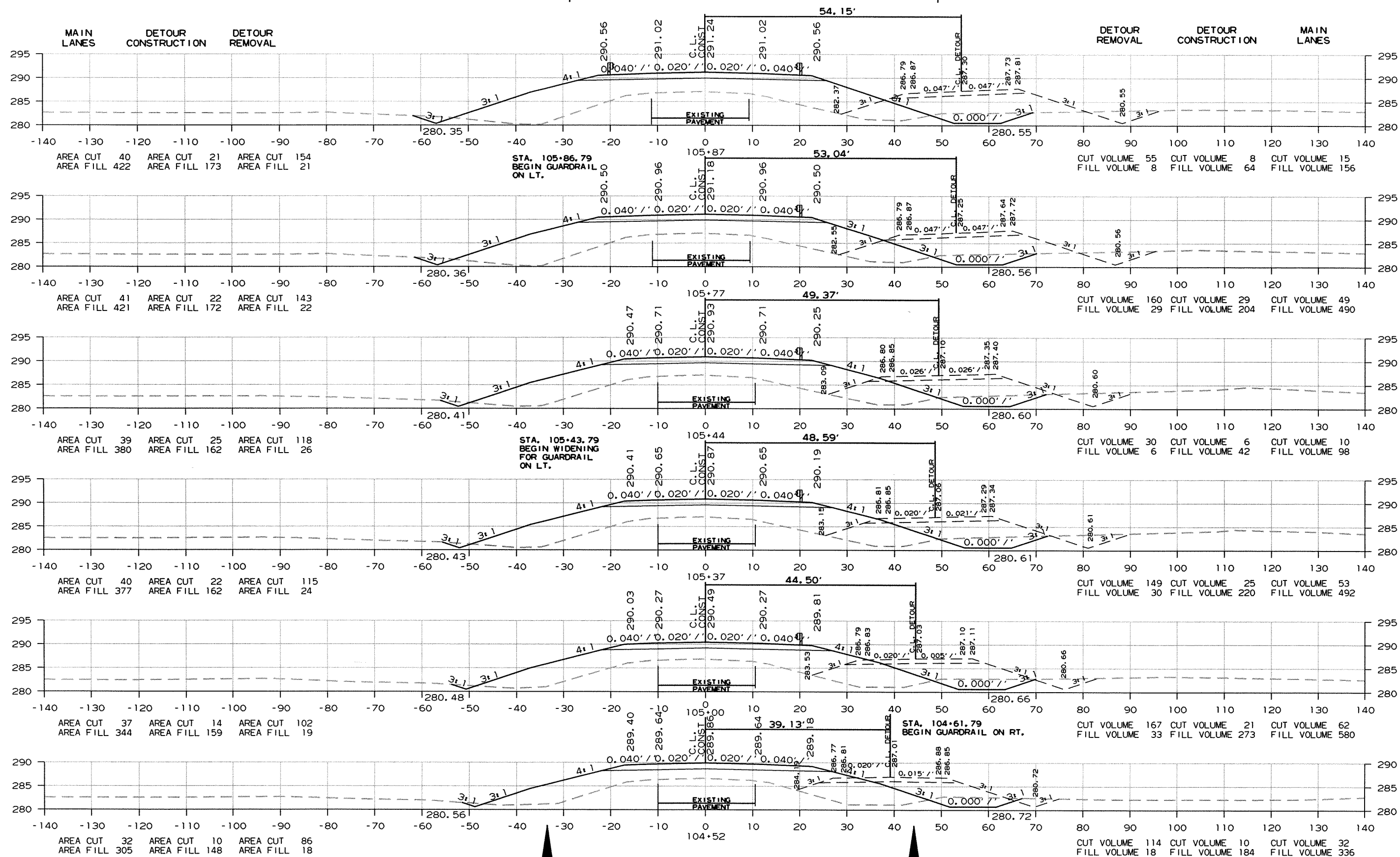
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				6	ARK.		67	77
				JOB NO.		030386	67	77

2 CROSS SECTIONS



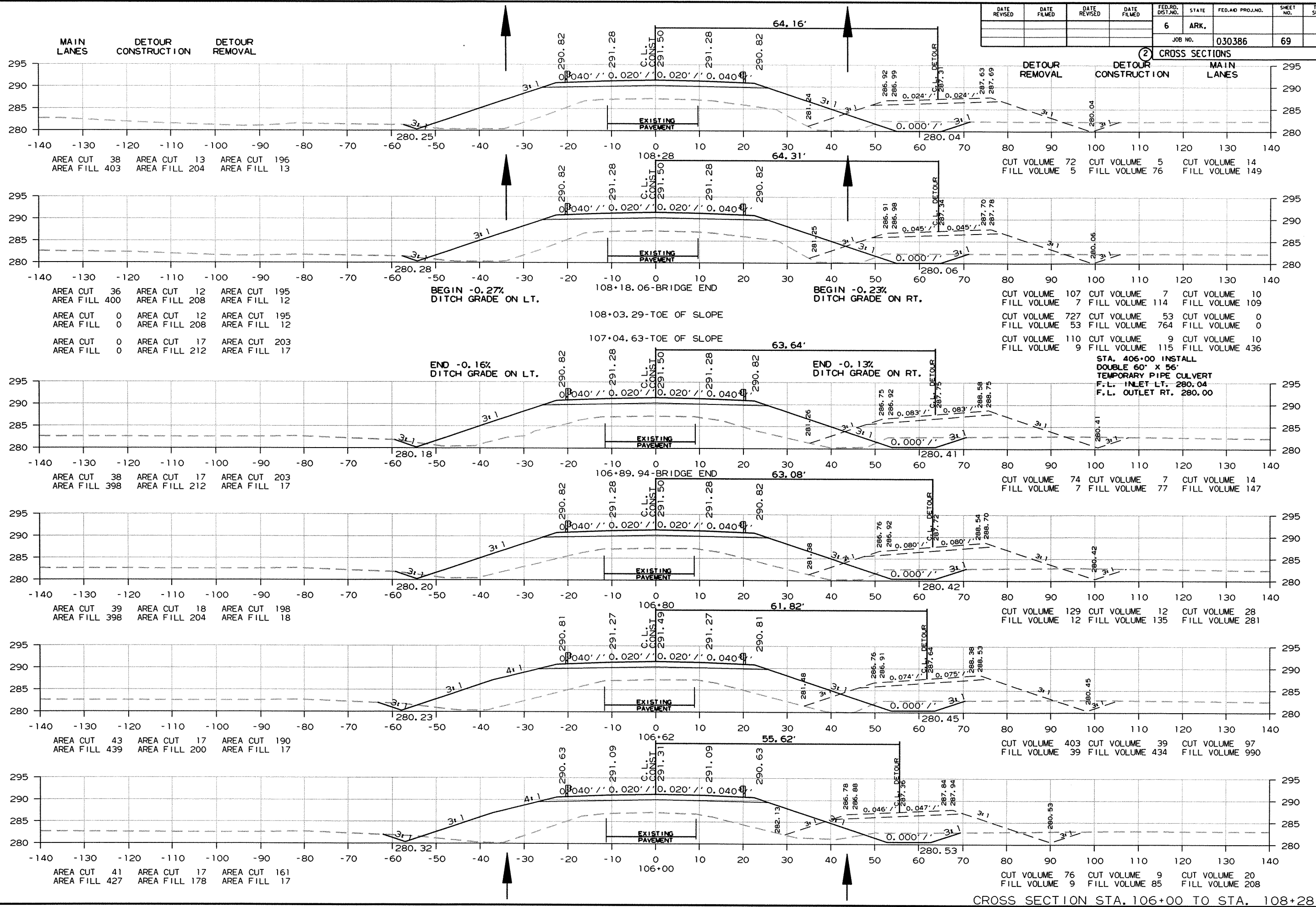
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						JOB NO. 030386	68	77

2 CROSS SECTIONS



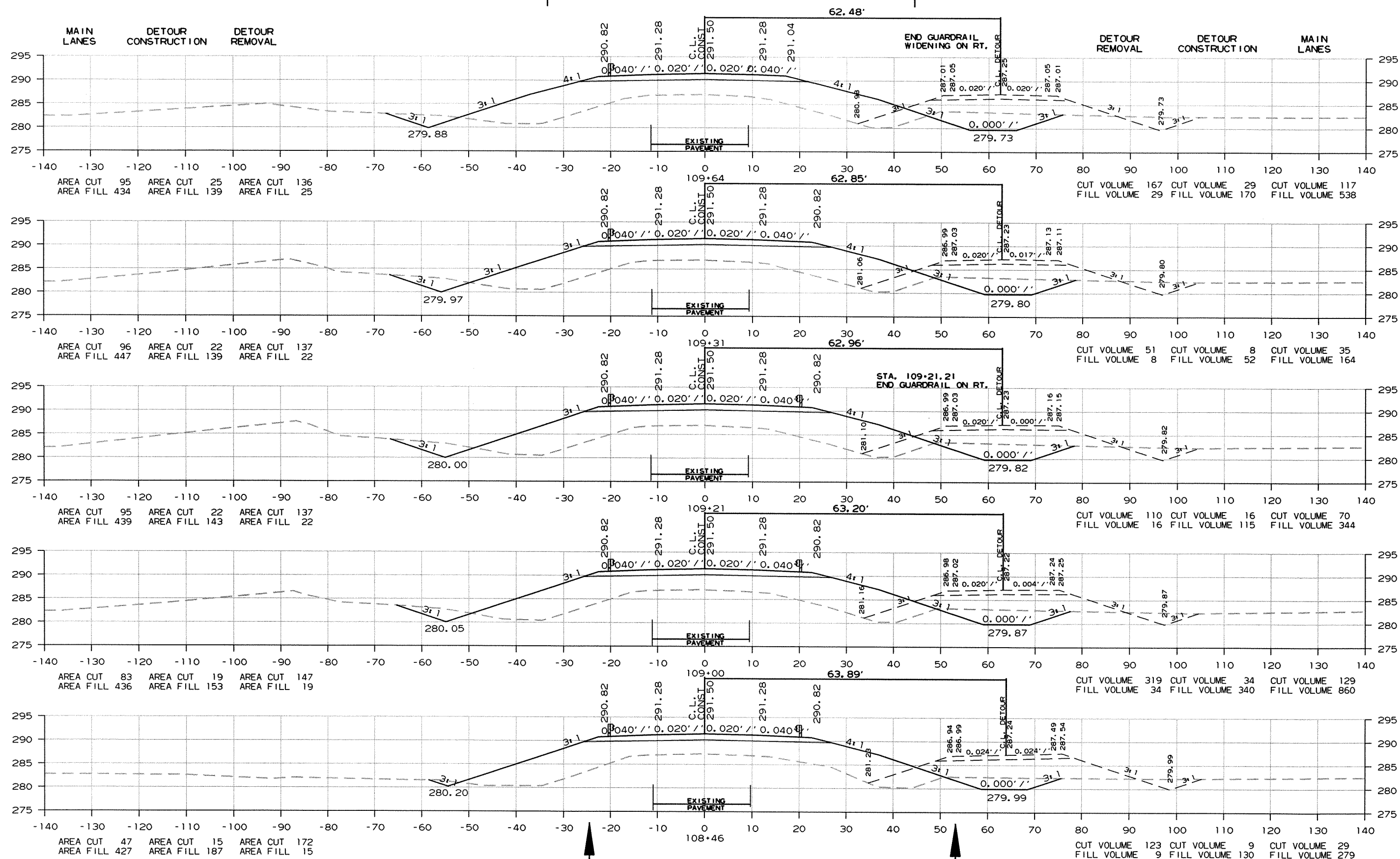
CROSS SECTION STA. 104+52 TO STA. 105+87

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				6	ARK.			
				JOB NO.	030386		69	77



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.		030386	70	77

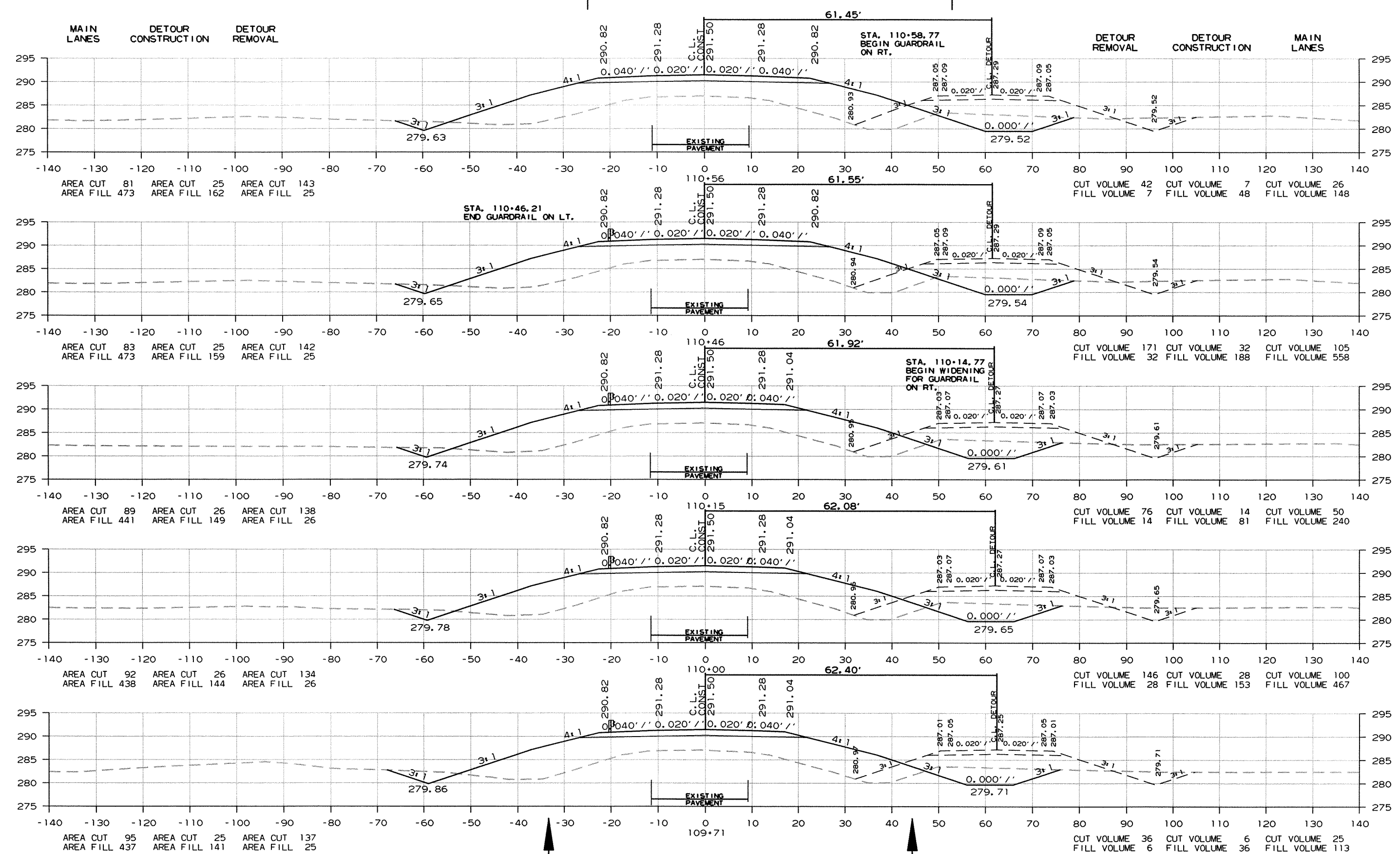
② CROSS SECTIONS



CROSS SECTION STA. 108+46 TO STA. 109+64

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. 030386	71	77

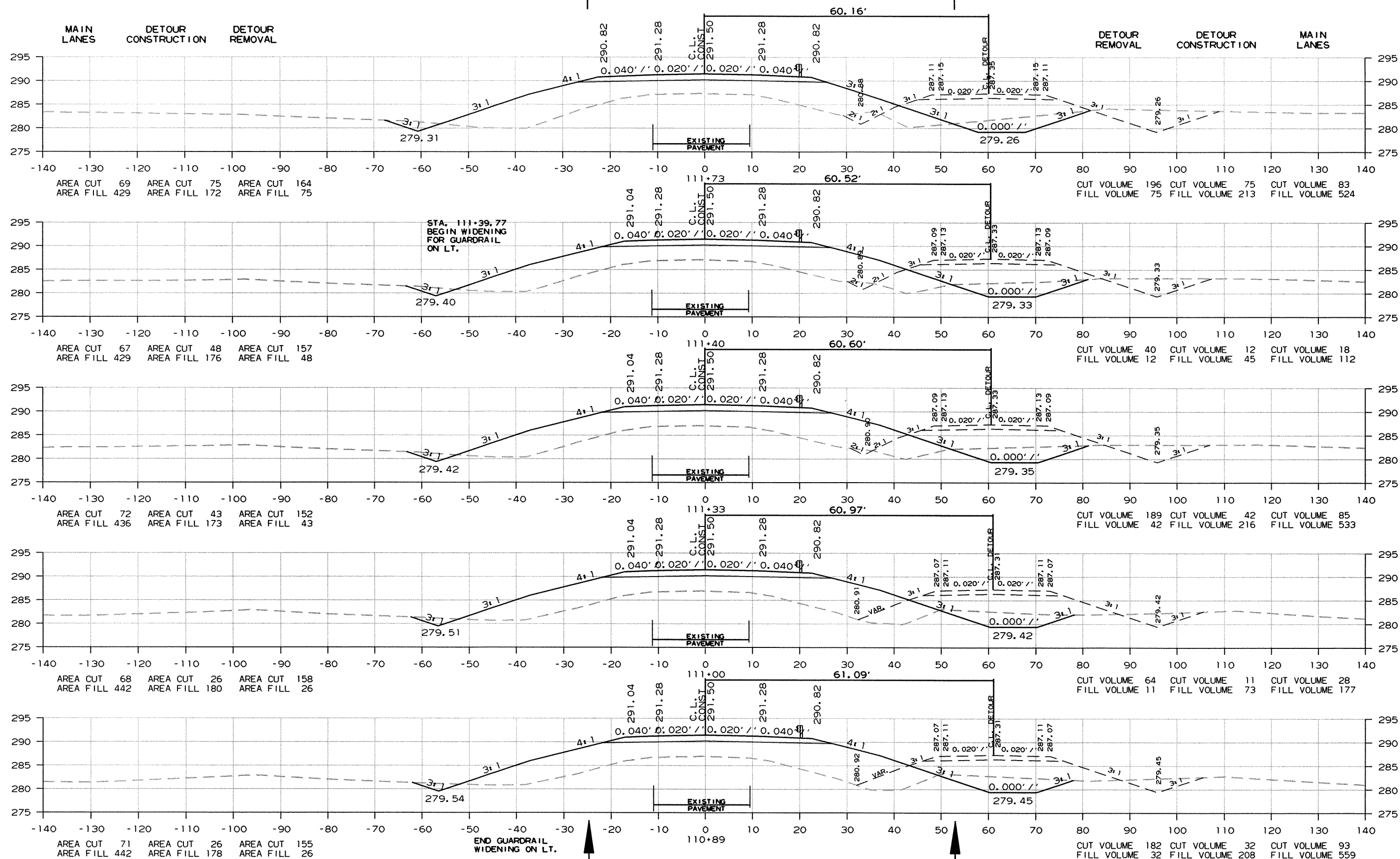
2 CROSS SECTIONS



CROSS SECTION STA. 109+71 TO STA. 110+56

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 030386	72	77

② CROSS SECTIONS



CROSS SECTION STA. 110+89 TO STA. 111+73

MAIN LANES
DETOUR CONSTRUCTION
DETOUR REMOVAL

AREA CUT 0 AREA CUT 43 AREA CUT 161
AREA FILL 0 AREA FILL 194 AREA FILL 43

AREA CUT 58 AREA CUT 43 AREA CUT 161
AREA FILL 513 AREA FILL 194 AREA FILL 43

AREA CUT 74 AREA CUT 45 AREA CUT 160
AREA FILL 475 AREA FILL 186 AREA FILL 45

AREA CUT 108 AREA CUT 50 AREA CUT 123
AREA FILL 448 AREA FILL 136 AREA FILL 50

AREA CUT 90 AREA CUT 71 AREA CUT 142
AREA FILL 424 AREA FILL 150 AREA FILL 71

AREA CUT 77 AREA CUT 72 AREA CUT 155
AREA FILL 423 AREA FILL 160 AREA FILL 72

END -0.27%
DITCH GRADE ON LT. 113+04.70-TOE OF SLOPE

END -0.23%
DITCH GRADE ON RT.

DETOUR REMOVAL
CUT VOLUME 112
FILL VOLUME 30

DETOUR CONSTRUCTION
CUT VOLUME 30
FILL VOLUME 135

MAIN LANES
CUT VOLUME 24
FILL VOLUME 183

CUT VOLUME 59
FILL VOLUME 16

CUT VOLUME 16
FILL VOLUME 70

CUT VOLUME 24
FILL VOLUME 183

CUT VOLUME 94
FILL VOLUME 32

CUT VOLUME 32
FILL VOLUME 107

CUT VOLUME 61
FILL VOLUME 310

CUT VOLUME 285
FILL VOLUME 130

CUT VOLUME 130
FILL VOLUME 307

CUT VOLUME 211
FILL VOLUME 932

CUT VOLUME 94
FILL VOLUME 45

CUT VOLUME 45
FILL VOLUME 98

CUT VOLUME 53
FILL VOLUME 270

CUT VOLUME 59
FILL VOLUME 27

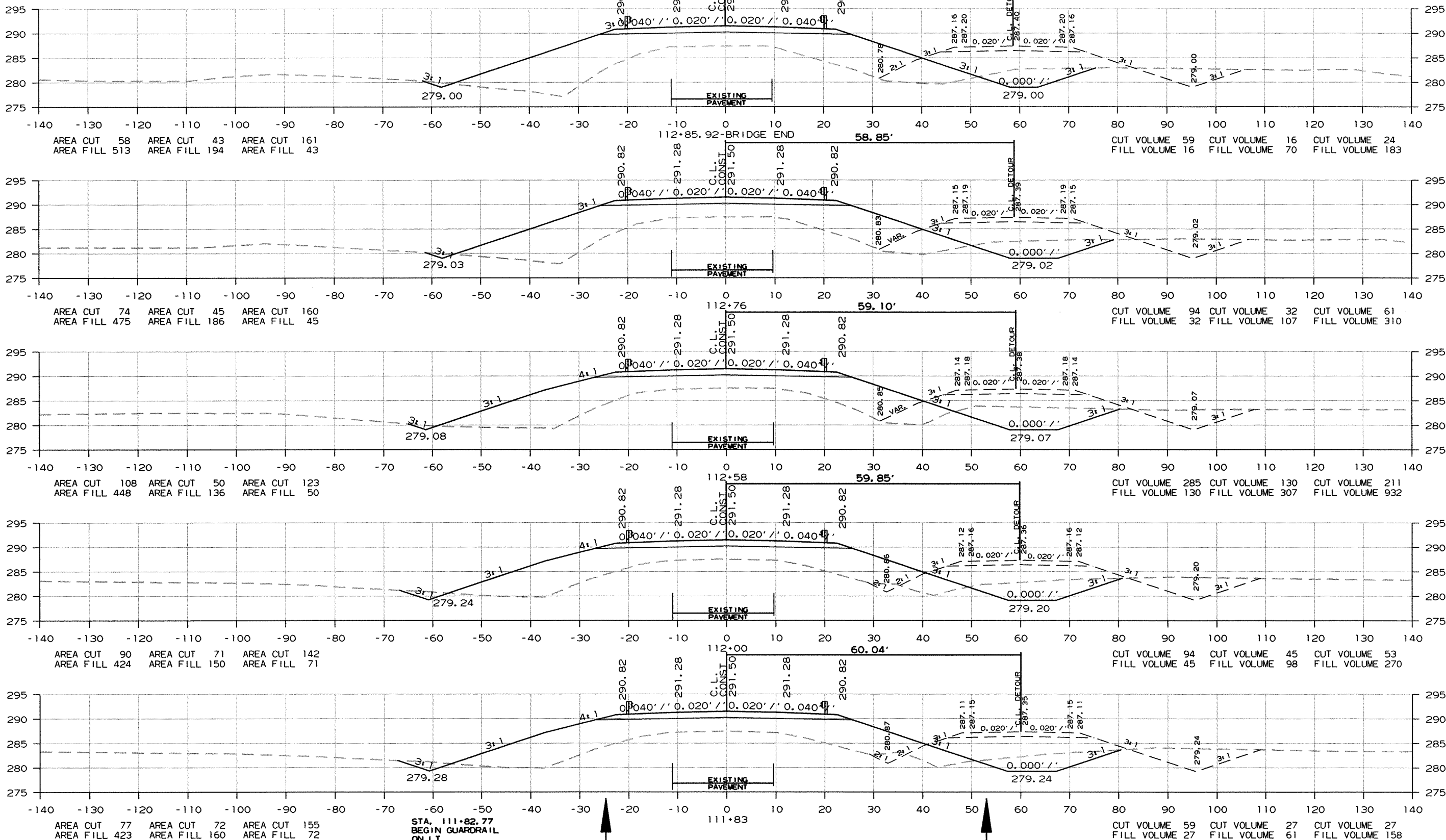
CUT VOLUME 27
FILL VOLUME 61

CUT VOLUME 27
FILL VOLUME 158

CROSS SECTION STA. 111+83 TO STA. 112+86

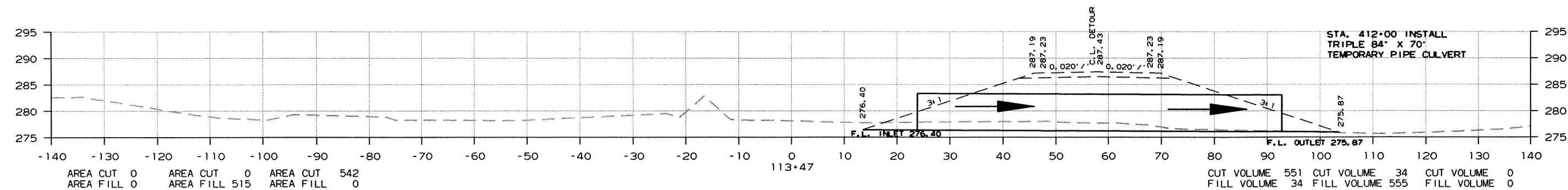
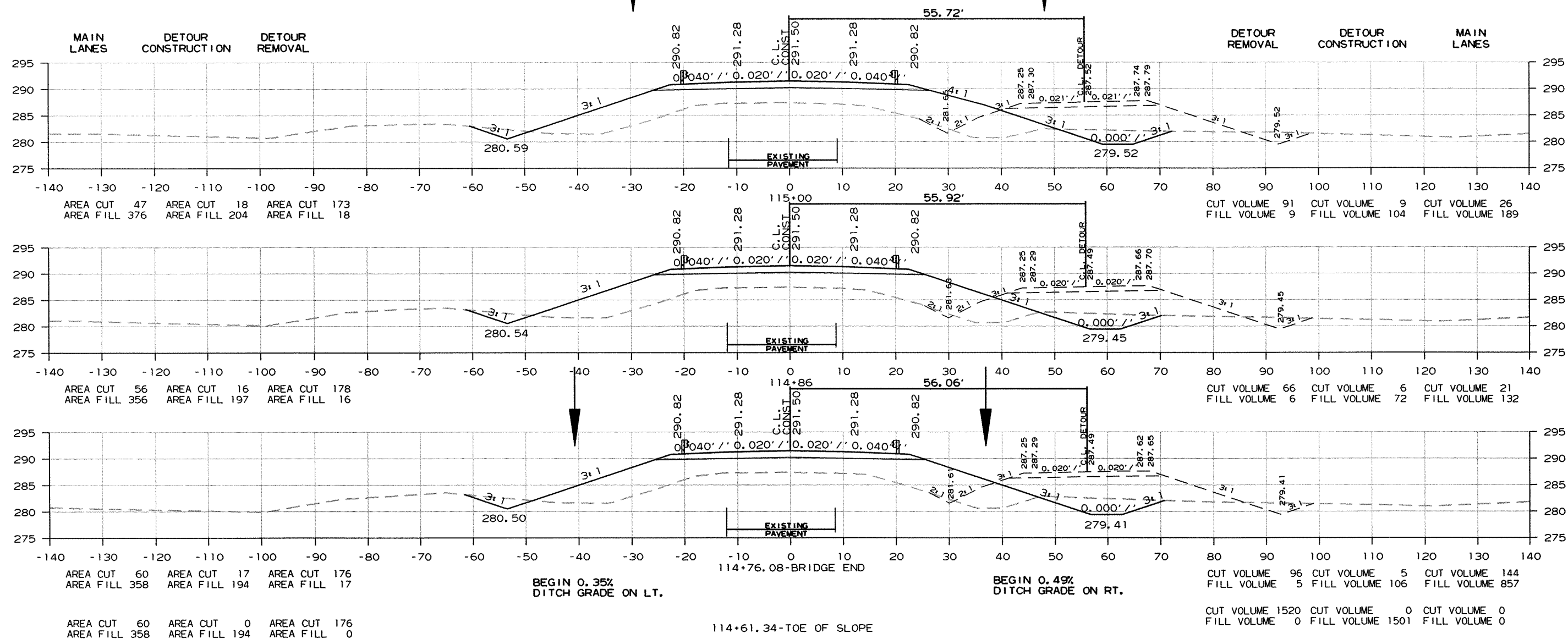
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				6	ARK.			
						JOB NO. 030386	73	77

2 CROSS SECTIONS



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
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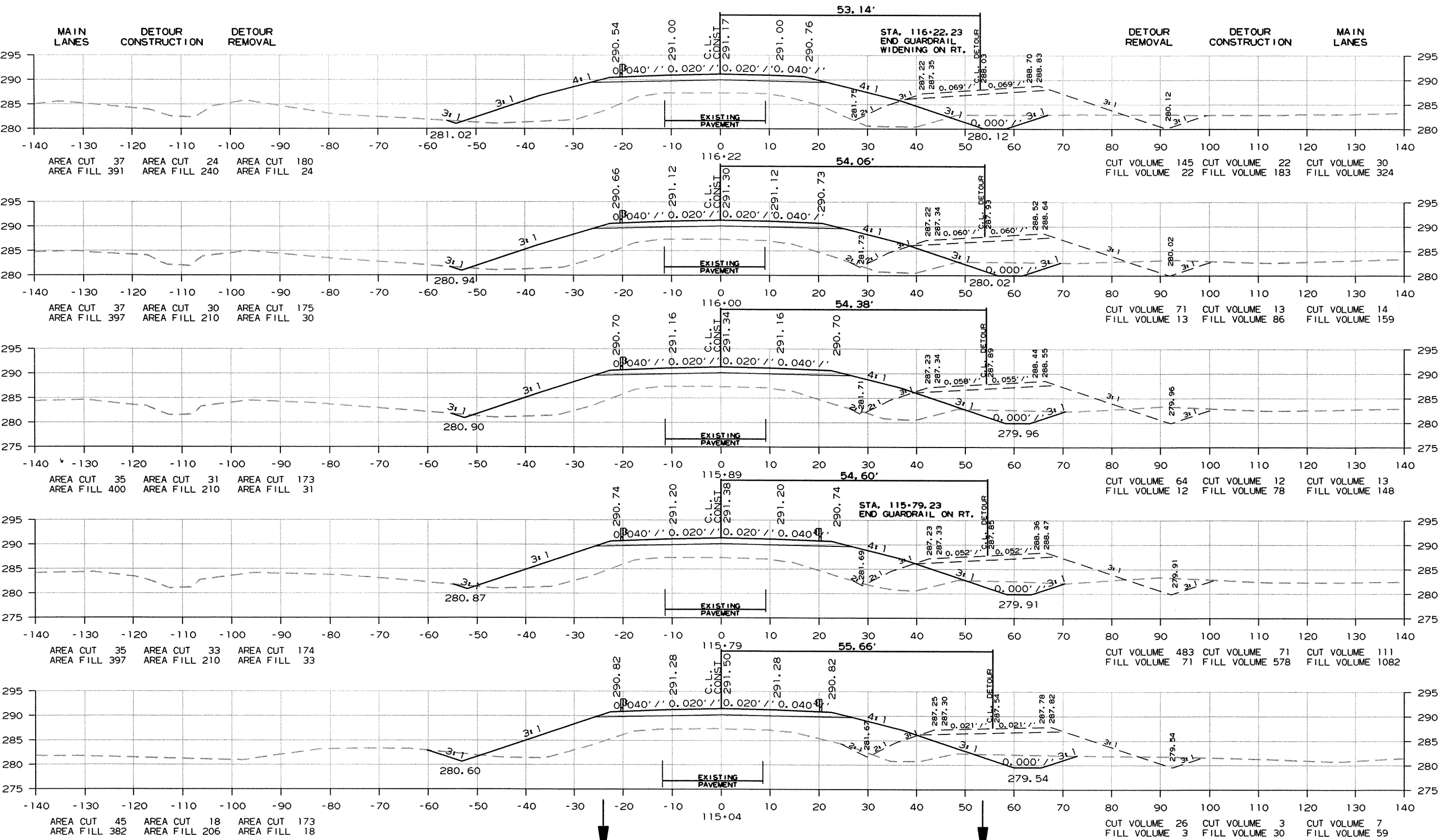
(2) CROSS SECTIONS



CROSS SECTION STA. 113+47 TO STA. 115+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. 030386	75	77

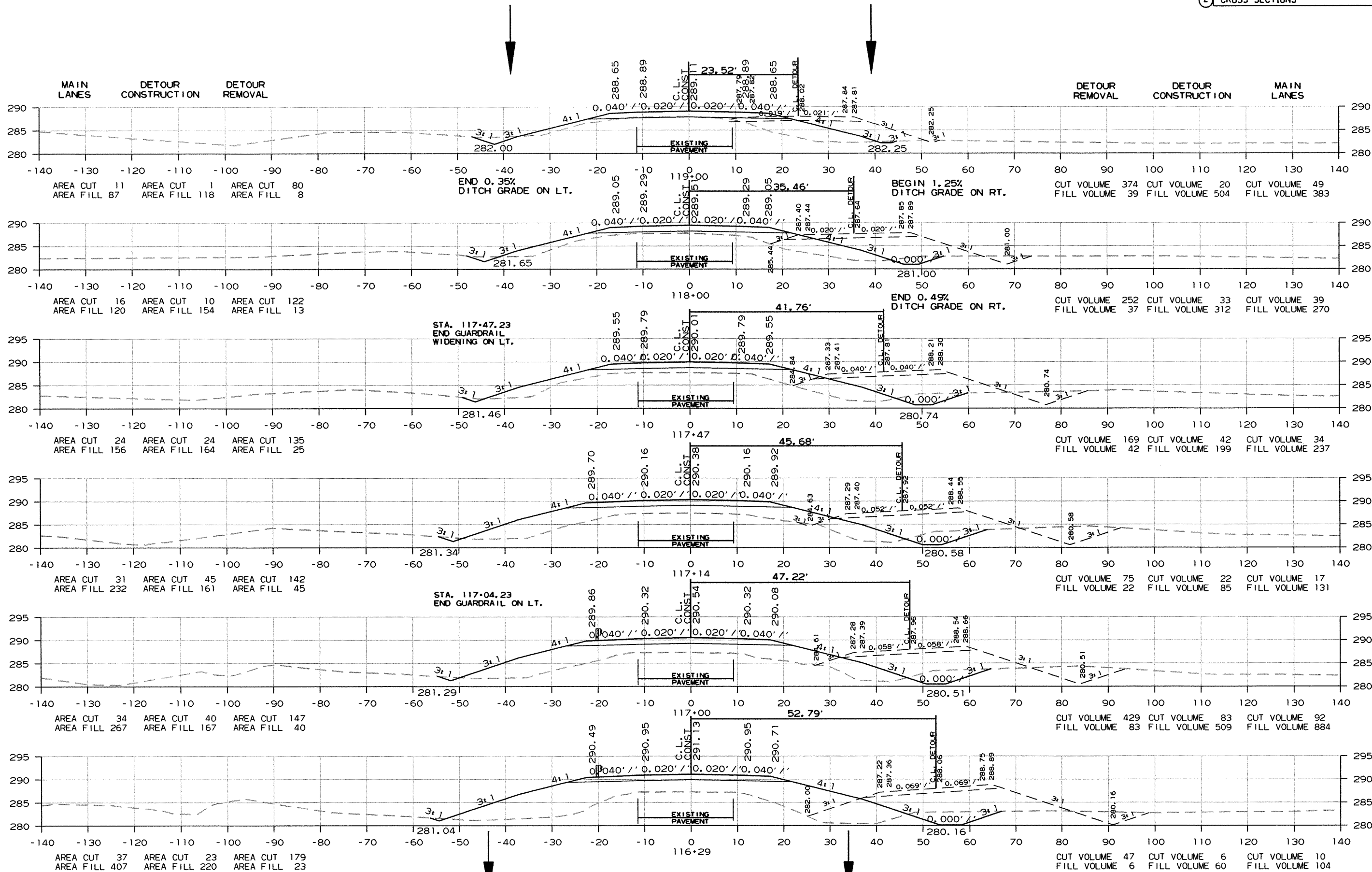
2 CROSS SECTIONS



CROSS SECTION STA. 115+04 TO STA. 116+22

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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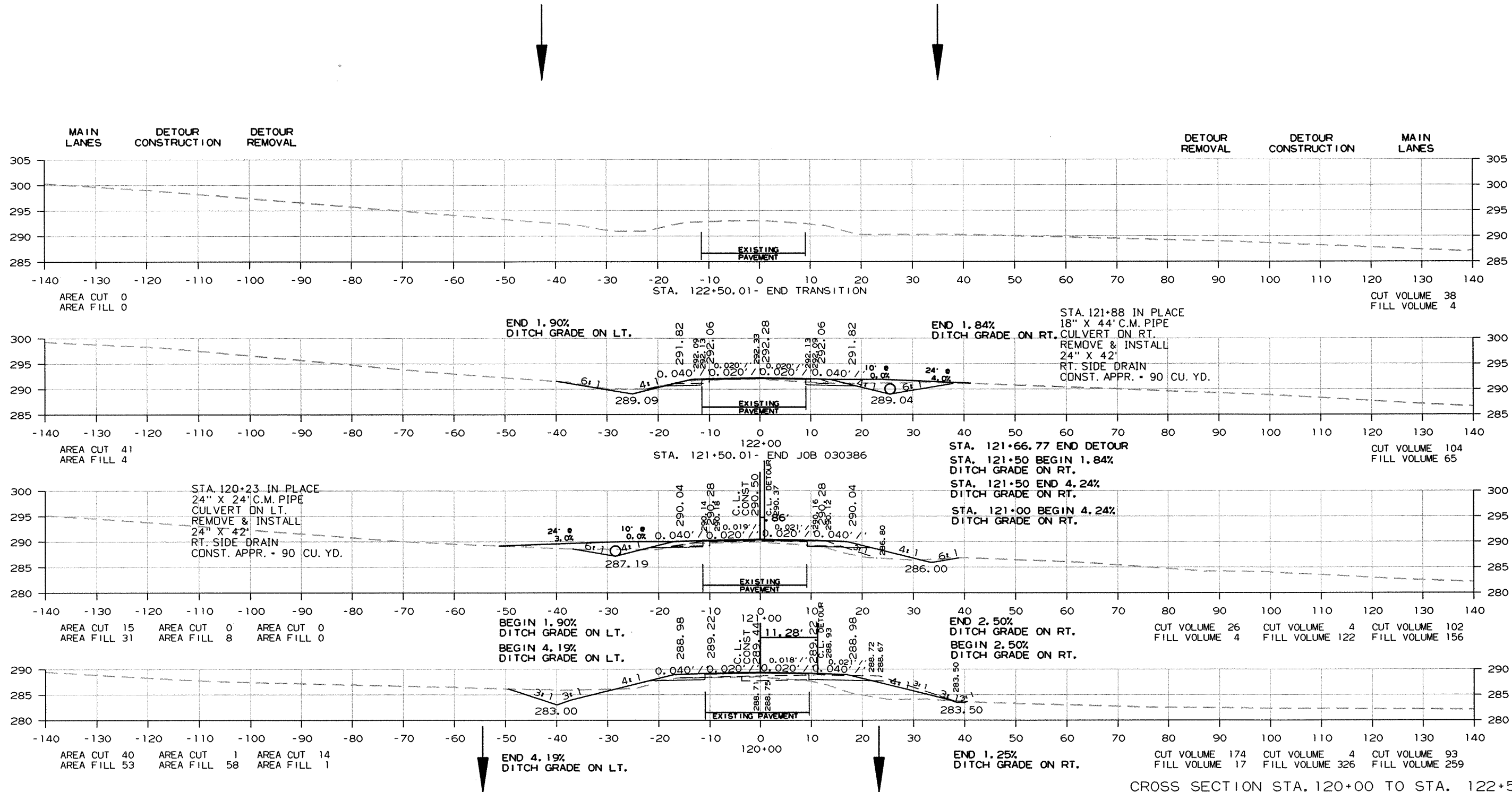
2 CROSS SECTIONS



CROSS SECTION STA. 116+29 TO STA. 119+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. 030386	77	77

2 CROSS SECTIONS



CROSS SECTION STA. 120+00 TO STA. 122+50