DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	1	121
				(2)	LAFE-MARMADUKE STRS. & APPRS.(S)			

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

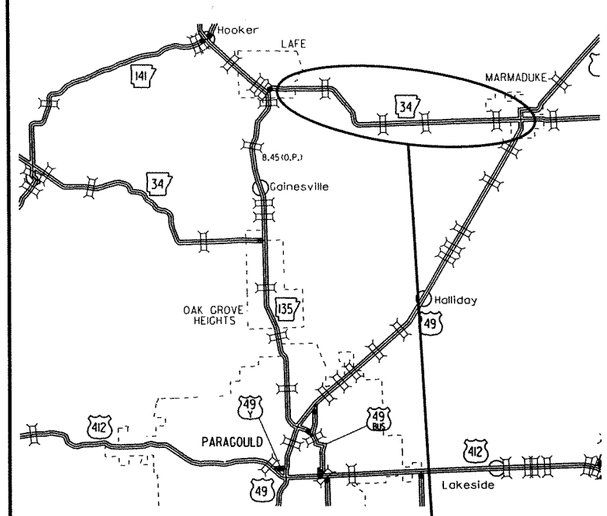
LAFE-MARMADUKE STRS. & APPRS.(S)

GREENE COUNTY

ROUTE 34 SECTION 4

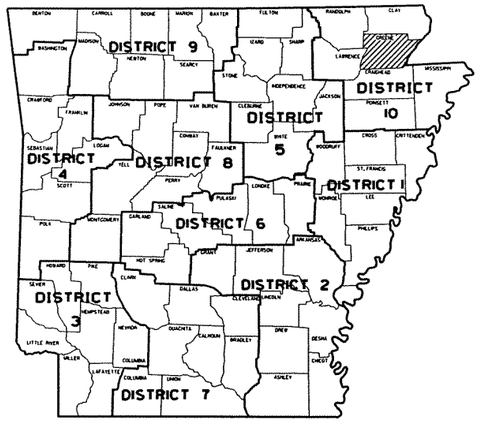
JOB 100722

F. A. P. NO. BRN-0028(37)



VICINITY MAP

PROJECT LOCATION



ARK. HWY. DIST. NO. 10

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2031
2011 ADT	1500
2031 ADT	2000
2031 DHV	220
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	7%
DESIGN SPEED	50 MPH

0 1 2 MILE
BAR SCALE

STRUCTURES OVER 20'-0" SPAN

① STA. 110+00 CONSTRUCT
TRP. 9' X 11' X 92'
R.C. BOX CULVERT
@ 18° LT. FWD. SKEW
WITH 3:1 WINGS LT. AND RT.
Q25 = 380 CFS. D.A. = 0.24 SQ. MI.
ROADWAY SPAN = 30.83'

② BR. END STA. 306+66.00
BRIDGE NO. 07211
32'-0" CLEAR ROADWAY
68'-0" TOTAL LENGTH
67'-0" INTEGRAL COMP.
W-BEAM SPAN
BR. END STA. 307+34.00

③ BR. END STA. 611+46.50
BRIDGE NO. 07212
32'-0" CLEAR ROADWAY
132'-0" TOTAL LENGTH
131'-0" INTEGRAL CONT. COMP.
W-BEAM UNIT (41'-6", 48'-0", 41'-6")
BR. END STA. 612+78.50

STA 303+50.02 - BEGIN
HURRICANE CREEK
LOG MILE 3.60

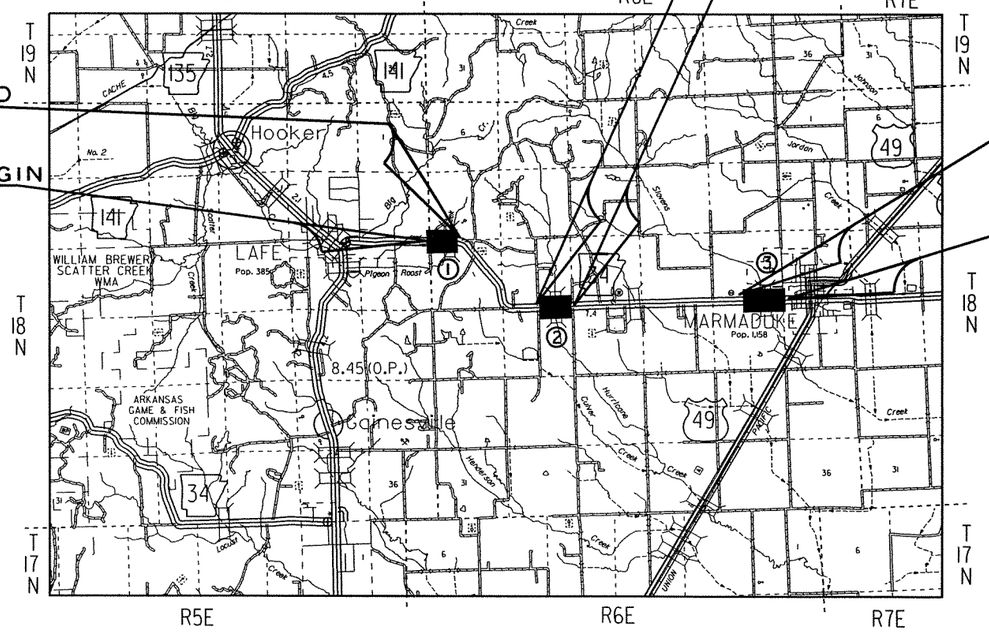
STA. 310+50.02 - END
HURRICANE CREEK
L.M. 3.73

STA. 114+13.36 - END
PIGEON ROOST CREEK
L.M. 1.69

STA. 104+00.00 - BEGIN
PIGEON ROOST CREEK
L.M. 1.50

STA 607+00.01 - BEGIN
SLAVENS CREEK
LOG MILE 6.62

STA 617+00.01 - END
JOB 100722
L.M. 6.81



N

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 3917
FRANK VOZEL

9/26/11

DEPUTY DIRECTOR AND CHIEF ENGINEER

GROSS LENGTH OF	PROJECT	2713.36	FEET	OR	0.514	MILES
NET " "	ROADWAY	2482.53	"	"	0.470	"
NET " "	BRIDGES	230.83	"	"	0.044	"
NET " "	PROJECT	2713.36	"	"	0.514	"

P.E. 100722
NON-PART.

BEGINNING:	
LAT: N36° 12' 09"	
LONG: W90° 28' 47"	
MID POINT:	
LAT: N36° 11' 16"	
LONG: W90° 27' 03"	
ENDING:	
LAT: N36° 11' 13"	
LONG: W90° 23' 40"	

08/10/2011 r100722.dgn. TITLE SHEET

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	2	121

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

INDEX OF SHEETS

SHEET NO.	TITLE	BRIDGE NO.	DRAWING NO.	DATE
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2	INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES			
3	SYMBOL-LINE LEGEND			
4	TYPICAL SECTIONS OF IMPROVEMENT			
5-9	SPECIAL DETAILS			
10-18	TEMPORARY EROSION CONTROL DETAILS			
19-27	MAINTENANCE OF TRAFFIC DETAILS			
28-30	QUANTITY SHEETS			
31	SCHEDULE OF BRIDGE QUANTITIES	07211,07212	51926	
32	SUMMARY OF QUANTITIES AND REVISIONS			
33-36	SURVEY CONTROL DETAILS			
37-39	PLAN AND PROFILE SHEETS			
40-42	DETOUR PLAN AND PROFILE SHEETS			
43	LAYOUT OF BRIDGE OVER HURRICANE CREEK	07211	51927	
44	SOIL BORINGS HURRICANE CREEK	07211	51928	
45	DETAILS OF END BENTS HURRICANE CREEK	07211	51929	
46	DETAILS OF CONCRETE FILLED STEEL SHELL PILES HURRICANE CREEK AND SLAVENS CREEK	07211,07212	51930	
47	DETAILS OF 67'-0" INTEGRAL COMPOSITE W-BEAM SPAN HURRICANE CREEK SHEET 1 OF 5	07211	51931	
48	DETAILS OF 67'-0" INTEGRAL COMPOSITE W-BEAM SPAN HURRICANE CREEK SHEET 2 OF 5	07211	51932	
49	DETAILS OF 67'-0" INTEGRAL COMPOSITE W-BEAM SPAN HURRICANE CREEK SHEET 3 OF 5	07211	51933	
50	DETAILS OF 67'-0" INTEGRAL COMPOSITE W-BEAM SPAN HURRICANE CREEK SHEET 4 OF 5	07211	51934	
51	DETAILS OF 67'-0" INTEGRAL COMPOSITE W-BEAM SPAN HURRICANE CREEK SHEET 5 OF 5	07211	51935	
52	LAYOUT OF TEMPORARY BRIDGE OVER HURRICANE CREEK	07211	51936	
53	DETAILS OF TEMPORARY BRIDGE STRUCTURE 20'-0" ROADWAY SHEET 1 OF 2	07211,07212	51937	
54	DETAILS OF TEMPORARY BRIDGE STRUCTURE 20'-0" ROADWAY SHEET 2 OF 2	07211,07212	51938	
55	DETAILS OF UNFILLED STEEL SHELL PILES FOR TEMPORARY BRIDGE STRUCTURE	07211,07212	51939	
56	LAYOUT OF BRIDGE OVER SLAVENS CREEK	07212	51940	
57	SOIL BORINGS SLAVENS CREEK	07212	51941	
58	DETAILS OF END BENTS SLAVENS CREEK	07212	51942	
59	DETAILS OF INTERMEDIATE BENTS SLAVENS CREEK	07212	51943	
60	DETAILS OF 131'-0" INTEGRAL CONTINUOUS COMPOSITE W-BEAM UNIT SLAVENS CREEK SHEET 1 OF 6	07212	51944	
61	DETAILS OF 131'-0" INTEGRAL CONTINUOUS COMPOSITE W-BEAM UNIT SLAVENS CREEK SHEET 2 OF 6	07212	51945	
62	DETAILS OF 131'-0" INTEGRAL CONTINUOUS COMPOSITE W-BEAM UNIT SLAVENS CREEK SHEET 3 OF 6	07212	51946	
63	DETAILS OF 131'-0" INTEGRAL CONTINUOUS COMPOSITE W-BEAM UNIT SLAVENS CREEK SHEET 4 OF 6	07212	51947	
64	DETAILS OF 131'-0" INTEGRAL CONTINUOUS COMPOSITE W-BEAM UNIT SLAVENS CREEK SHEET 5 OF 6	07212	51948	
65	DETAILS OF 131'-0" INTEGRAL CONTINUOUS COMPOSITE W-BEAM UNIT SLAVENS CREEK SHEET 6 OF 6	07212	51949	
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70	DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES		1891F	4-10-03
71	DETAILS OF STANDARD TYPE D BRIDGE NAME PLATES		2387	9-8-11
72	DETAILS OF STANDARD TEMPORARY BRIDGE STRUCTURE BRIDGE END PROTECTION SYSTEM		2465	4-10-03
73	DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONC. GIRDER SPANS		14991	4-10-03
74	DETAILS OF STANDARD 31'-0" PRECAST CONCRETE SPANS 28'-0" & 24'-6" CLEAR ROADWAYS		15240	4-10-03
75	DETAILS OF STANDARD 25'-0" PRECAST CONCRETE SPANS 28'-0" & 24'-6" CLEAR ROADWAYS		15241	10-9-03
76	CONCRETE DITCH PAVING		CDP-1	11-17-10
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78	GUARD RAIL DETAILS		GR-9	4-17-08
79	GUARD RAIL DETAILS		GR-9A	4-17-08
80	GUARD RAIL DETAILS		GR-10	7-14-10
81	GUARD RAIL DETAILS		GR-10A	7-14-10
82	GUARD RAIL DETAILS		GRT-1	7-14-10
83	MAILBOX DETAILS		MB-1	11-18-04
84	PRECAST CONCRETE BOX CULVERTS		PBC-1	10-15-09
85	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING		PCC-1	5-18-00
86	METAL PIPE CULVERT FILL HEIGHTS & BEDDING		PCM-1	3-30-00
87	PAVEMENT MARKING DETAILS		PM-1	11-17-10
88	DETAILS OF PIPE UNDERDRAIN		PU-1	4-10-03
89	REINFORCED CONCRETE BOX CULVERT DETAILS		RCB-1	5-25-06
90	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS		RCB-2	11-20-03
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93	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-2	3-11-10
94	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-3	10-15-09
95	TEMPORARY EROSION CONTROL DEVICES		TEC-1	11-18-98
96	TEMPORARY EROSION CONTROL DEVICES		TEC-2	6-02-94
97	TEMPORARY EROSION CONTROL DEVICES		TEC-3	11-03-94
98	WIRE FENCE WATER GAPS		WF-2	4-20-79
99	WIRE FENCE TYPE C AND D		WF-4	8-22-02
100	STANDARD BARREL SECTIONS FOR STRAIGHT BARRELS		R-300X-X3	3-28-63
101	STANDARD WINGS FOR 15^ SKEW BARRELS		W-X15	6-13-63
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103	STANDARD BARREL SECTIONS FOR 15^ SKEW BARRELS		R-315X-2	9-02-71
104-121	CROSS SECTIONS			

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

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	FHWA-1273 REVISIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-2	MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
103-1	DETERMINATION OF DBE PARTICIPATION
105-1	CONSTRUCTION CONTROL MARKINGS
105-2	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
107-1	WORKER VISIBILITY
108-1	LIQUIDATED DAMAGES
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
303-1	AGGREGATE BASE COURSE
404-1	PRODUCTION VERIFICATION OF ASPHALT CONCRETE HOT MIX
409-1	MINERAL AGGREGATES
410-3	DENSITY TESTING FOR ACHM LEVELING COURSES AND BOND BREAKERS
411-1	ASPHALT CONCRETE COLD PLANT MIX
600-1	WATER FOR VEGETATION
603-1	MAINTENANCE OF TRAFFIC
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
719-2	THERMOPLASTIC PAVEMENT MARKING MATERIAL
JOB 100722	AUTOMATIC FLOODGATE REMOVED AND RELOCATED
JOB 100722	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 100722	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 100722	CONSTRUCTION IN SPECIAL HAZARD AREAS
JOB 100722	DRIVEN STEEL PILING BY METHOD B
JOB 100722	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 100722	HIGH PERFORMANCE PAVEMENT MARKING
JOB 100722	INTERNET BIDDING
JOB 100722	NESTING SITES OF MIGRATORY BIRDS
JOB 100722	PARTNERING REQUIREMENTS
JOB 100722	SECTION 404 NATIONWIDE PERMIT 14 REQUIREMENTS
JOB 100722	SOIL STABILIZATION
JOB 100722	STEEL SHELL PILES
JOB 100722	STORM WATER POLLUTION PREVENTION PLAN
JOB 100722	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 100722	UTILITY ADJUSTMENTS
JOB 100722	VALUE ENGINEERING
JOB 100722	WARM MIX ASPHALT
JOB 100722	WELLHEAD PROTECTION

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 RESPECT OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
8. 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.
9. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 UNCLASSIFIED EXCAVATION.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11

8/10/2011

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
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(2) SYMBOL-LINE LEGEND

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

8-26-11

SYMBOL LEGEND

- SURVEY POINTS
- TOPO POINTS
- LAND CORNER
- LAND MONUMENT
- FIRE HYDRANT
- LIGHT POLE
- SIGN
- WATER METER
- WATER VALVE
- WELL
- EXISTING DROP INLET
- POWER POLE
- PROPOSED BOX CULVERT
- PROPOSED PIPE CULVERT
- COMBINATION POLE
- POLE WITH GUY
- GUY
- TELEPHONE POLE
- TELEPHONE BOX
- UGC MARKER
- GAS VALVE
- GAS LIGHT
- GAS METER
- DECIDUOUS TREE
- EVERGREEN TREE
- MANHOLE
- DRIVEWAY (RURAL)

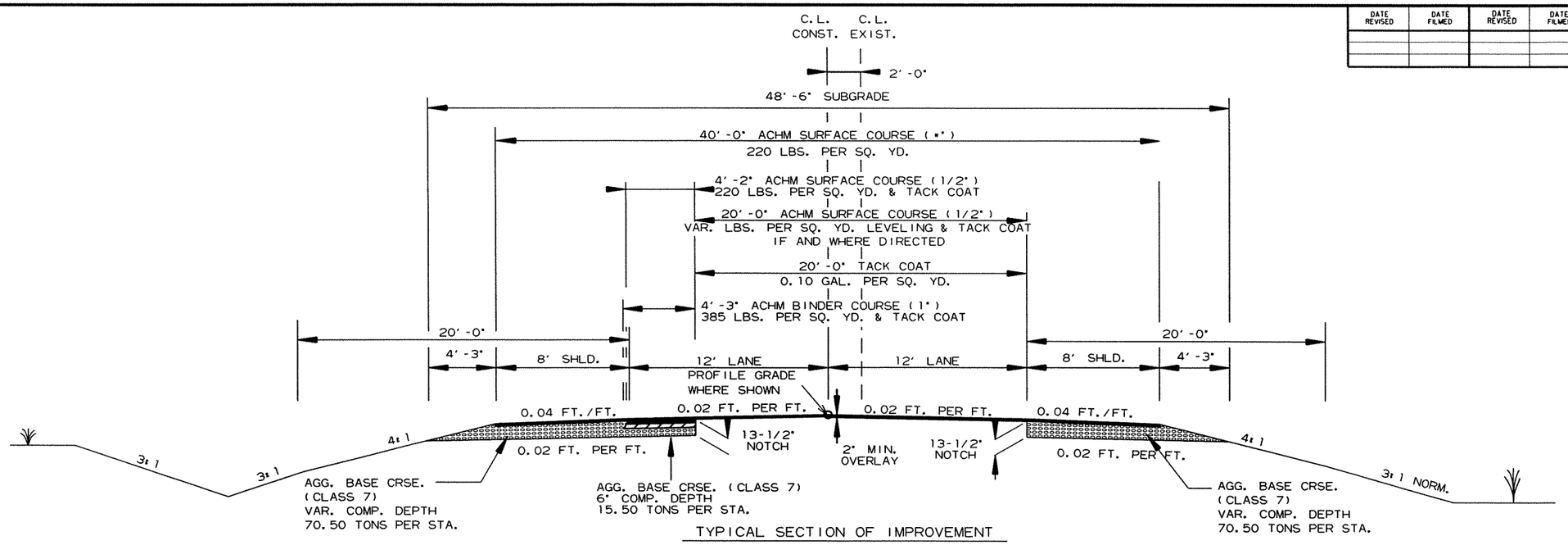
LINE LEGEND

- SURVEY ALIGNMENT
- CONSTR. ALIGNMENT
- EXISTING PAVMT EDGE
- CONSTRUCTION LIMITS
- PROPOSED RIGHT-OF-WAY (·00 / 40')
- EXISTING RIGHT-0F-WAY
- TEMP. CONST. ESMT. (·00 / 40')
- EDGE GRAVEL SURFACE
- EXISTING CULVERT
- RIGHT-0F-WAY WITH CONTROL OF ACCESS FENCE
- RIGHT-OF-WAY WITH CONTROL OF ACCESS
- TRAIL
- BOUNDARY
- WIRE FENCE
- CHAIN LINK FENCE
- WATER LINE (W)
- S. S. LINE (S)
- GAS LINE (G)
- STREAM OR DITCH

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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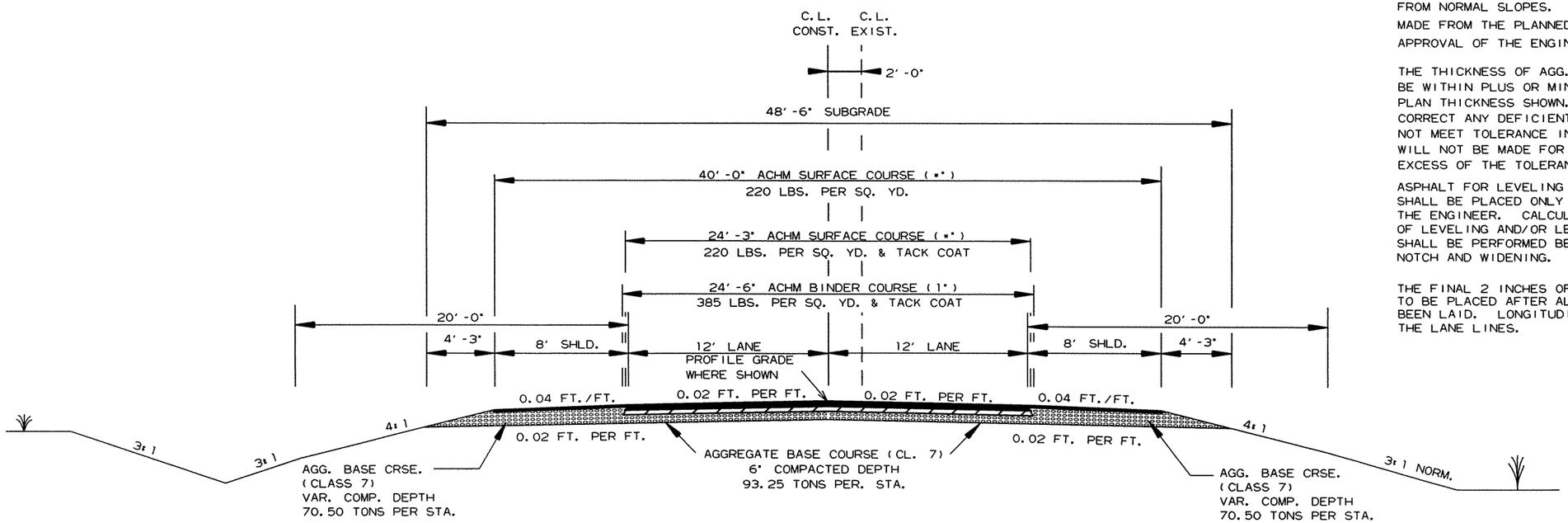
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



TYPICAL SECTION OF IMPROVEMENT

STA. 104+00.00 - STA. 105+50.00
STA. 114+00.00 - STA. 114+13.36
STA. 303+50.02 - STA. 304+11.50
STA. 309+67.00 - STA. 310+50.02
STA. 607+00.01 - STA. 608+50.00
STA. 615+20.00 - STA. 617+00.01



TYPICAL SECTION OF IMPROVEMENT

STA. 105+50.00 - STA. 114+00.00
STA. 304+11.50 - STA. 306+39.00
STA. 307+61.00 - STA. 309+67.00
STA. 608+50.00 - STA. 611+19.50
STA. 613+05.50 - STA. 615+20.00

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.

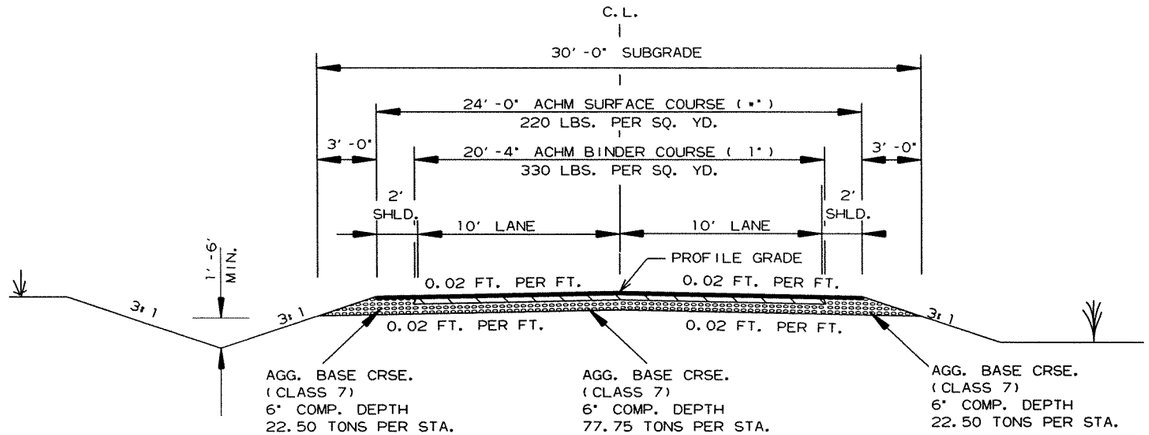
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TYPICAL SECTIONS OF IMPROVEMENT

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(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11

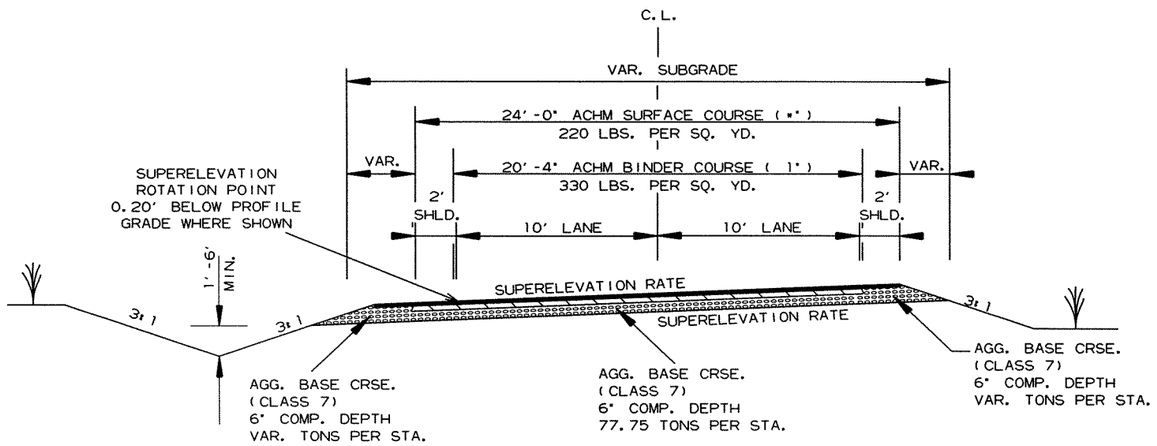


TYPICAL SECTION OF IMPROVEMENT

STA. 10+72.40 - STA. 22+35.96
STA. 30+28.74 - STA. 34+60.00
STA. 35+10.00 - STA. 39+14.11
STA. 50+00.12 - STA. 54+13.00
STA. 55+06.00 - STA. 59+50.70

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.



TYPICAL SECTION OF IMPROVEMENT

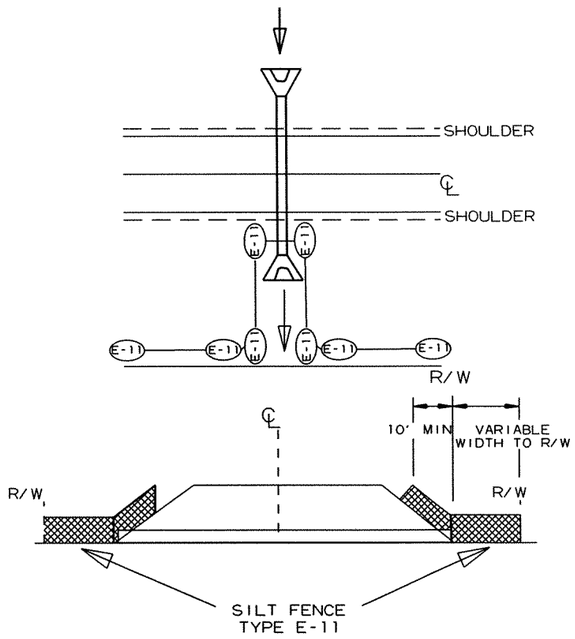
DETOUR RD. - SUPERELEVATION

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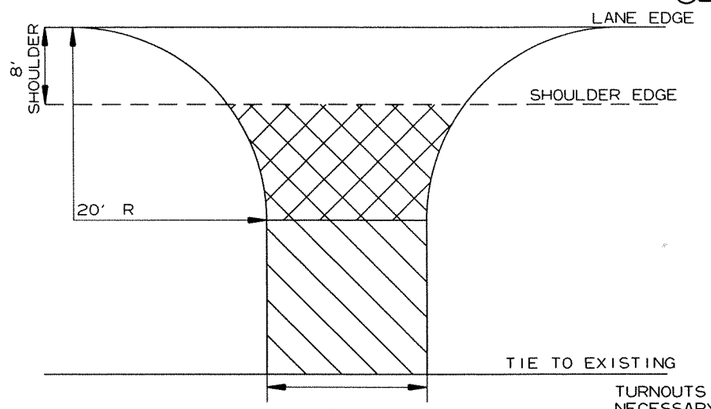
SPECIAL DETAILS

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



DETAILS OF SILT FENCE AT CROSS DRAINS



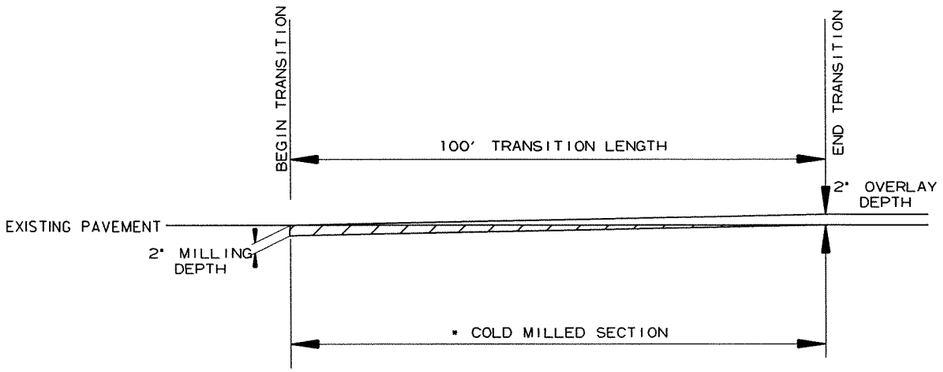
TURNOUTS SHALL BE MODIFIED AS NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

A. C. H. M. SURFACE COURSE (1/2") (220 LBS./SQ. YD.) & AGGREGATE BASE COURSE (CLASS 7)(7" COMP. DEPTH) IF ASPHALT DRIVEWAY EXISTS OR 6" CONCRETE IF CONCRETE DRIVE EXISTS.

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

DETAIL FOR DRIVEWAY TURNOUTS (COLLECTORS)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



DETAIL SHOWING TAPER TO EXISTING PAVEMENT

* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

HWY. 34

PIGEON ROOST CREEK

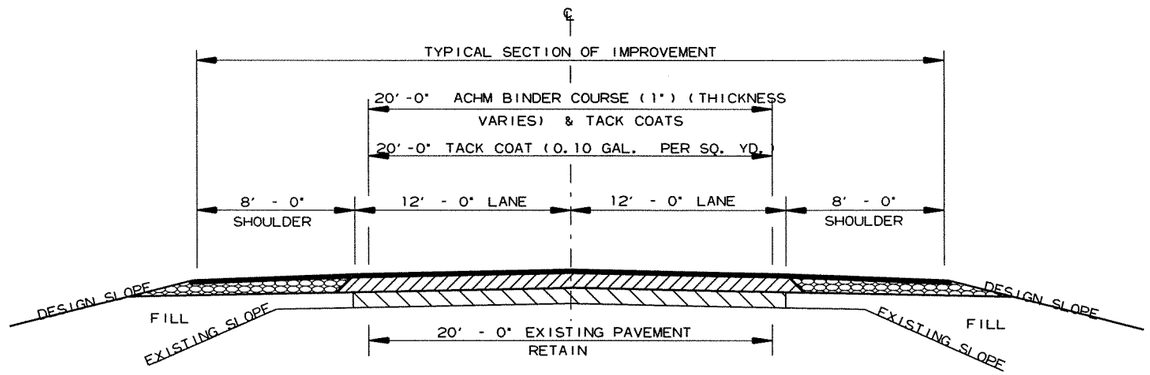
STA. 103+00.00 - STA. 104+00.00
STA. 114+13.36 - STA. 115+13.36

HURRICANE CREEK

STA. 302+50.02 - STA. 303+50.02
STA. 310+50.02 - STA. 311+50.02

SLAVENS CREEK

STA. 606+00.01 - STA. 607+00.01
STA. 617+00.01 - STA. 618+00.01



METHOD OF RAISING GRADE

NOTES:
(1) THIS DETAIL TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.
(2) QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.
(3) IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003.

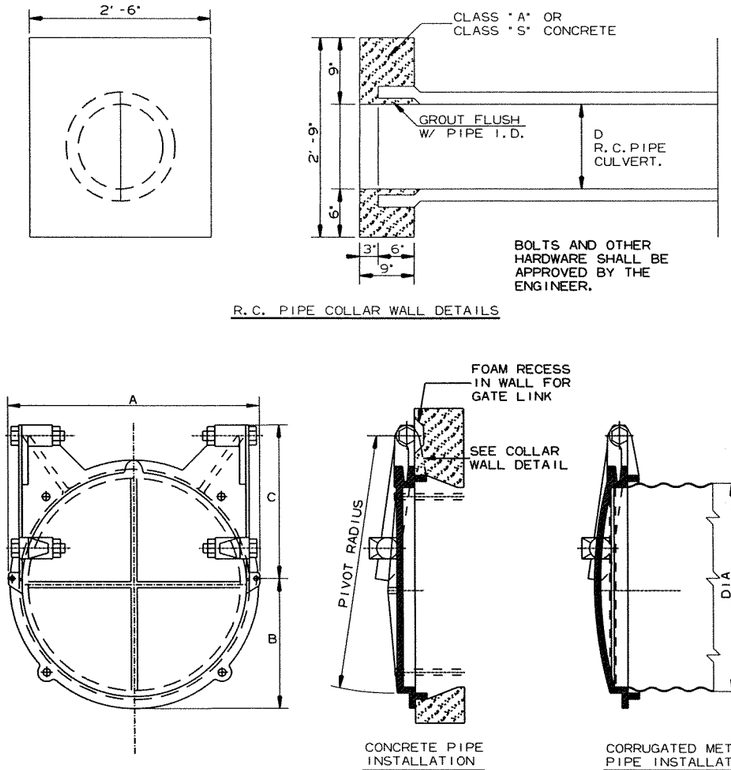
r100722.dgn 8/10/2011

SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	7	121

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



R.C. PIPE COLLAR WALL DETAILS

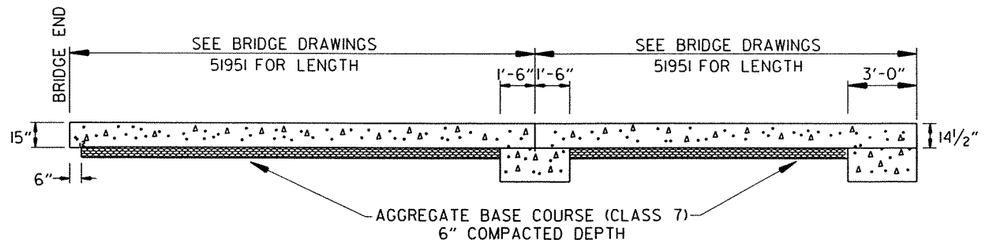
CONCRETE PIPE INSTALLATION

CORRUGATED METAL PIPE INSTALLATION

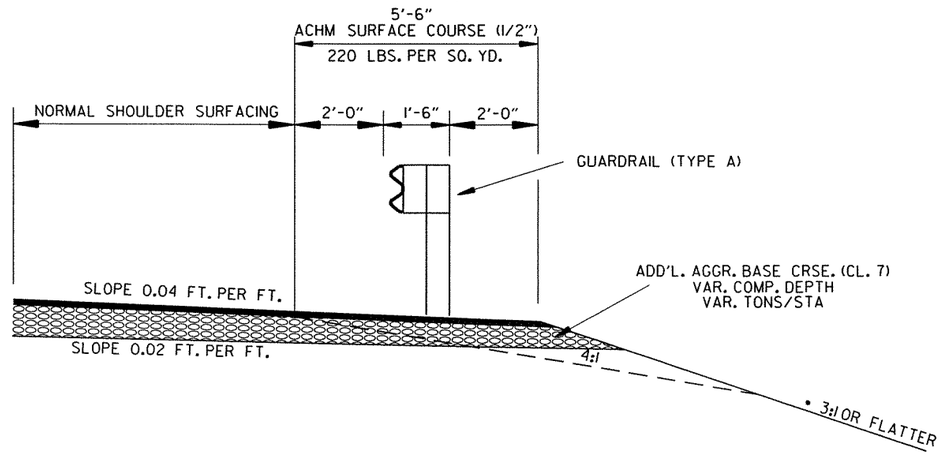
TYPICAL DIMENSIONS FOR 36" PIPE

A	= 41.50'
B	= 20.50'
C	= 26.25'
PIVOT RADIUS	= 43.75'

TYPICAL AUTOMATIC FLOOD GATE DETAILS



SPECIAL DETAIL OF APPROACH SLAB



DETAIL OF WIDENING FOR GUARDRAIL

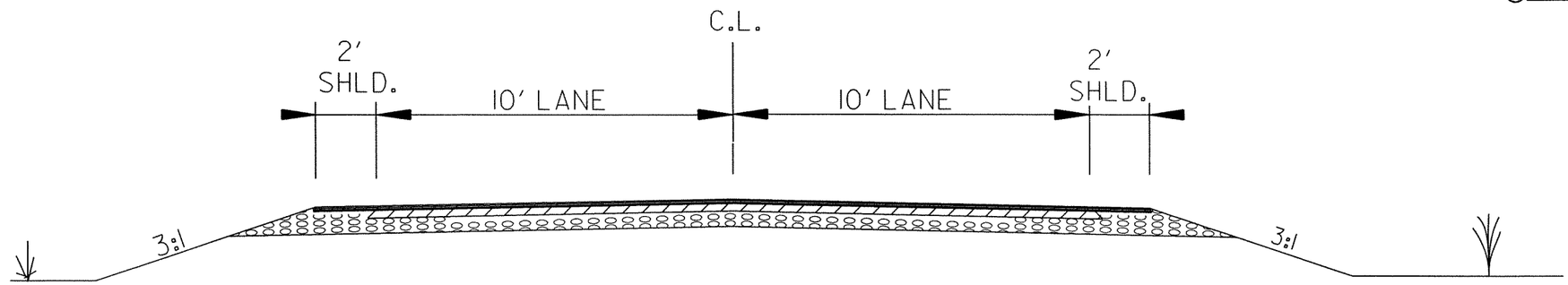
* REFER TO STD. DWG. GR-9A FOR SLOPE REQUIREMENTS BEHIND GUARDRAIL.

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	8	121

(2) SPECIAL DETAILS

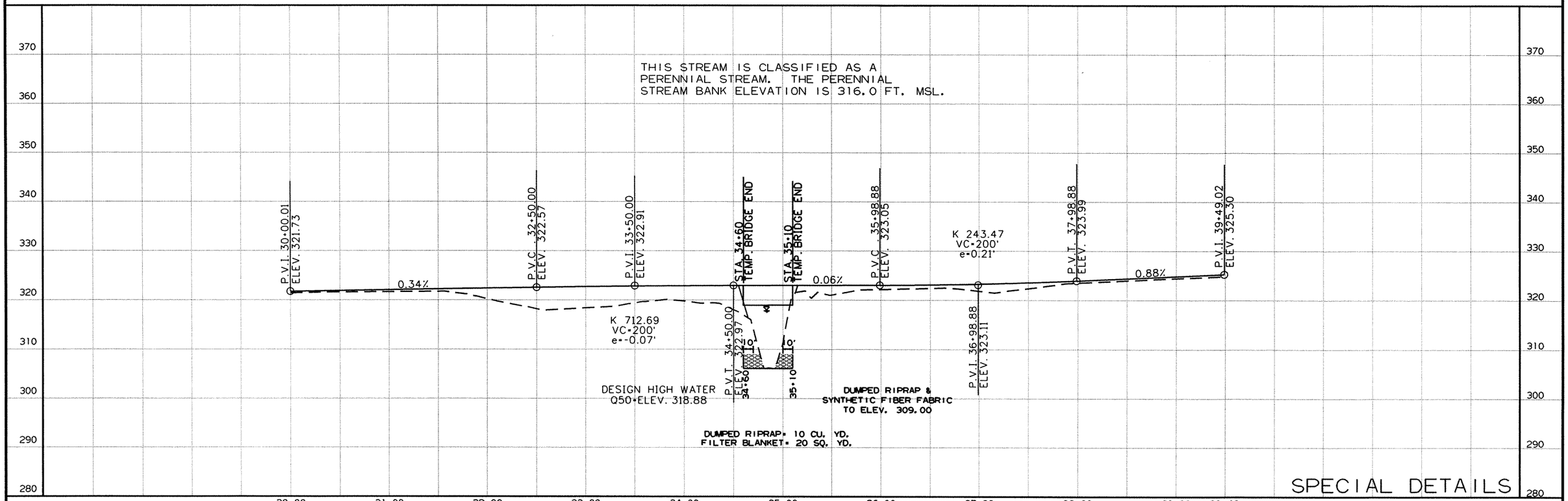
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. FUGETT
8-26-11



TYPICAL SECTION OF IMPROVEMENT-DETOUR RD.

STA. 34+60 - STA. 35+10

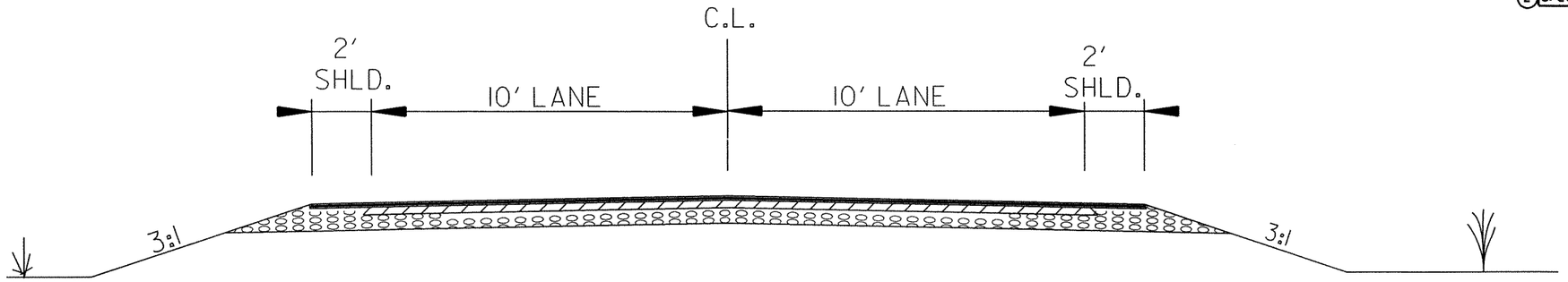
SPECIAL DETAILS FOR
DUMPED RIPRAP AND
SYNTHETIC FIBER FABRIC
HURRICANE CREEK



SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	9	121

(2) SPECIAL DETAILS

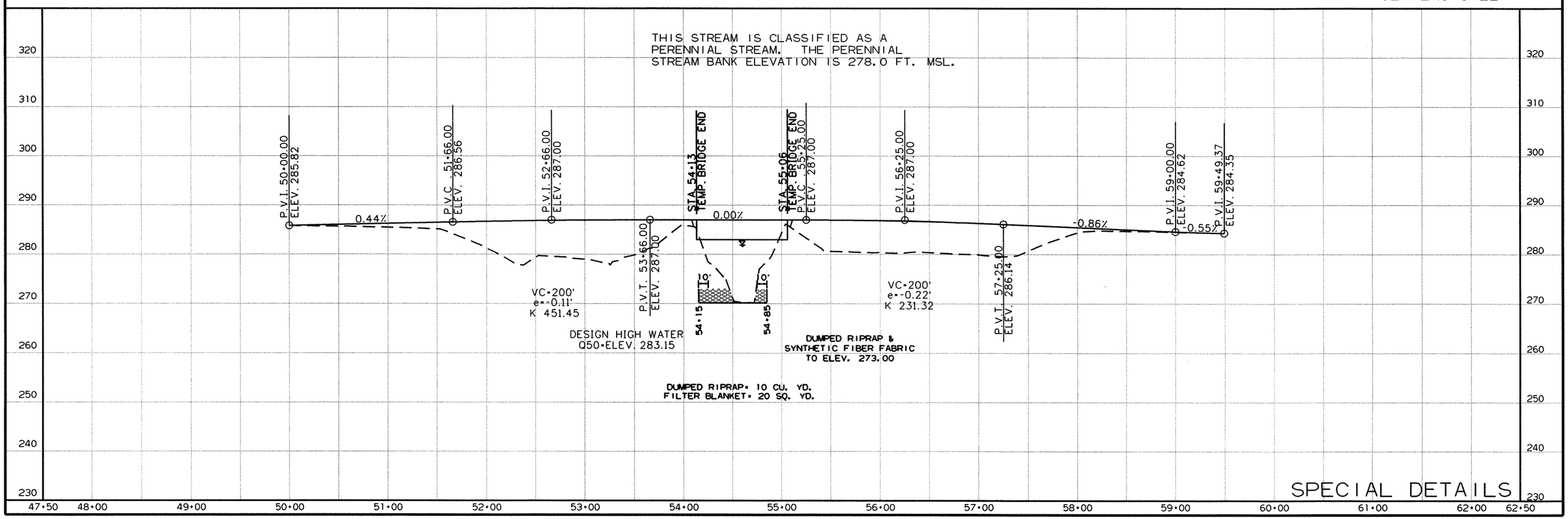


STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11

TYPICAL SECTION OF IMPROVEMENT-DETOUR RD.

STA. 54+15 - STA. 54+85

SPECIAL DETAILS FOR
DUMPED RIPRAP AND
SYNTHETIC FIBER FABRIC
SLAVENS CREEK



TEMPORARY 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.

TEMPORARY EROSION CONTROL QUANTITIES - STAGE 1

ROCK DITCH CHECKS (E-6) = 65 CU. YD.
DIVERSION DITCH (E-8) = 4061 LIN.FT.
SILT FENCE (E-11) = 1231 LIN.FT.
PIPE FOR SLOPE DRAIN (E-12) = 288 LIN.FT.
SEDIMENT BASIN (E-14) = 234 CU.YD.
OBLITERATION OF SEDIMENT BASIN = 234 CU.YD.
SEDIMENT REMOVAL AND DISPOSAL = 1000 CU.YD.
DUMPED RIPRAP = 12 CU.YD.

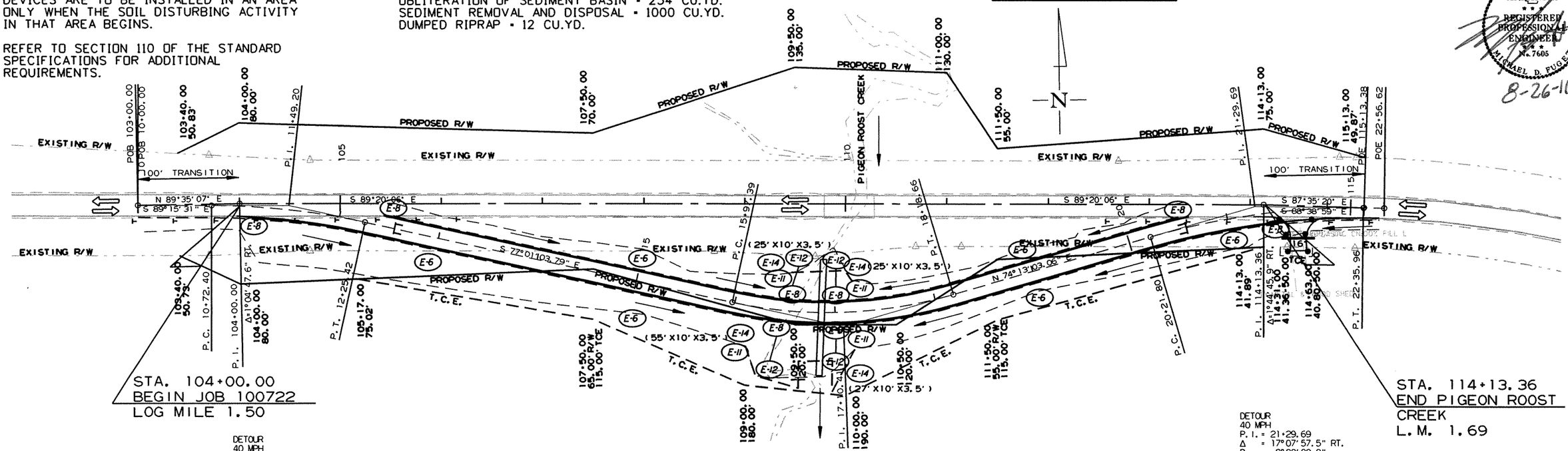
DETOUR
40 MPH
P. I. = 17+10.41
Δ = 28°45'53.1" LT.
D = 13°00'00.0"
T = 113.02'
L = 221.27'

(E-6) ROCK DITCH CHECKS
(E-8) DIVERSION DITCH
(E-11) SILT FENCE
(E-12) PIPE FOR SLOPE DRAIN
(E-14) SEDIMENT BASIN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	10	121

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



STA. 104+00.00
BEGIN JOB 100722
LOG MILE 1.50

DETOUR
40 MPH
P. I. = 11+49.20
Δ = 12°14'27.4" RT.
D = 8°00'00.0"
T = 76.80'
L = 153.01'

STA. 16+87 INSTALL
84" X 116'
TEMPORARY PIPE CULVERT

STA. 114+13.36
END PIGEON ROOST CREEK
L.M. 1.69

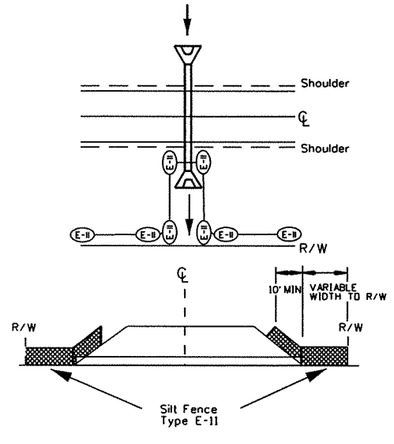
DETOUR
40 MPH
P. I. = 21+29.69
Δ = 17°07'57.5" RT.
D = 8°00'00.0"
T = 107.88'
L = 214.16'

ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 13+00	RT.	5
STA. 15+00	RT.	5
STA. 15+00	LT.	5
STA. 19+00	RT.	5
STA. 19+00	LT.	5
STA. 21+00	RT.	5

STATION	STATION	SIDE	DIVERSION DITCH LIN. FT.	PIPE FOR SLOPE DRAIN LIN. FT.	DUMPED RIPRAP CU. YD.
11+15	21+50	RT.	1035		
12+50	20+50	LT.	800		
16+50		RT.		67	1
16+50		LT.		55	1
17+00		RT.		35	1
17+00		LT.		34	1

SEDIMENT BASIN (E-14)		SIDE	CU. YD.
STA. 16+00	STA. 16+55	RT.	71
STA. 16+00	STA. 16+25	LT.	32
STA. 17+10	STA. 17+37	RT.	35
STA. 17+10	STA. 17+35	LT.	32

SILT FENCE (E-11)		SIDE	LIN. FT.
STA. 16+00	17+23	RT.	213
STA. 16+50	17+23	LT.	63



DETAILS OF SILT FENCE
AT CROSS DRAINS

REVISION BOX

DATE	REVISION

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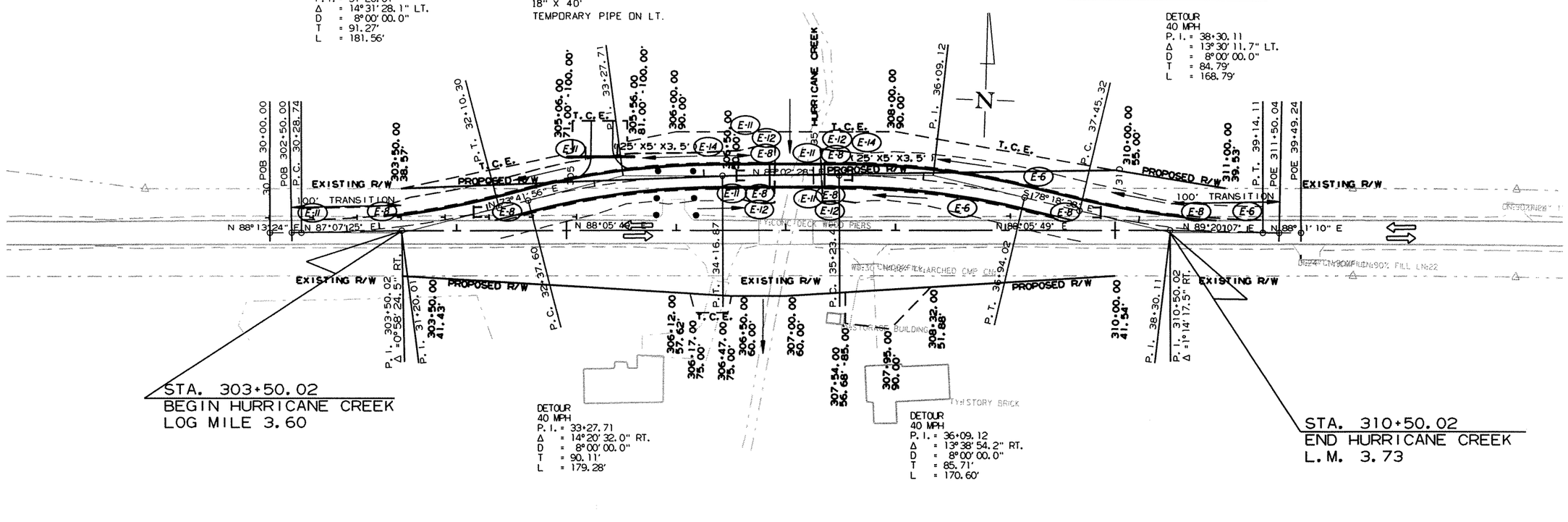
TEMPORARY EROSION CONTROL DETAILS
PIGEON ROOST CREEK STAGE 1

E-6	ROCK DITCH CHECKS
E-8	DIVERSION DITCH
E-11	SILT FENCE
E-12	PIPE FOR SLOPE DRAIN
E-14	SEDIMENT BASIN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	11	121

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



STATION	STATION	SIDE	DIVERSION DITCH LIN. FT.	PIPE FOR SLOPE DRAIN LIN. FT.	DUMPED RIPRAP CU. YD.
31+00	34+53	LT.	353		
32+10	34+53	RT.	243		
34+53		LT.		15	1
34+53		RT.		14	1
35+12		RT.		9	1
35+12		LT.		9	1
35+12	37+26	RT.	214		
35+12	38+46	LT.	334		

ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 36+50	RT.	5
STA. 37+00	LT.	5
STA. 39+00	LT.	5

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 34+25 - STA. 34+50	RT.	16
STA. 35+15 - STA. 35+40	RT.	16

SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 30+00 - STA. 34+65	LT.	545
AROUND TOE OF SLOPE		112

REVISION BOX

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS
HURRICANE CREEK STAGE 1

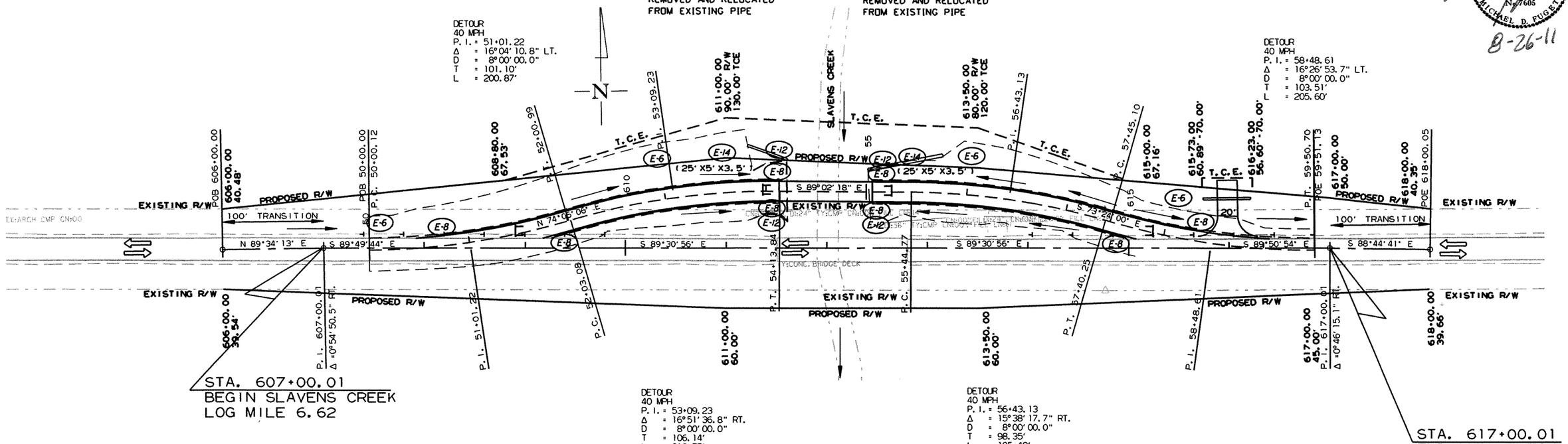
r100722.dgn 8/10/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	12	121

(2) TEMPORARY EROSION CONTROL DETAILS

(E-6) ROCK DITCH CHECKS
(E-8) DIVERSION DITCH
(E-11) SILT FENCE
(E-12) PIPE FOR SLOPE DRAIN
(E-14) SEDIMENT BASIN

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



DETOUR
40 MPH
P. I. = 53+09.23
Δ = 16°51' 36.8" RT.
D = 8°00' 00.0"
T = 106.14'
L = 210.75'

DETOUR
40 MPH
P. I. = 56+43.13
Δ = 15°38' 17.7" RT.
D = 8°00' 00.0"
T = 98.35'
L = 195.48'

ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 50+00	LT.	5
STA. 53+00	LT.	5
STA. 56+00	LT.	5
STA. 58+10	LT.	5

STATION	STATION	SIDE	DIVERSION DITCH LIN. FT.	PIPE FOR SLOPE DRAIN LIN. FT.	DUMPED RIPRAP CU. YD.
50+80	54+09	LT.	329		
52+00	54+09	RT.	209		
54+09		LT.		9	1
54+09		RT.		9	1
55+12		RT.		12	1
55+12		LT.		20	1
55+12	58+23	LT.	311		
55+12	57+45	RT.	233		

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 53+75 - STA. 54+00	RT.	16
STA. 55+15 - STA. 55+40	RT.	16

SILT FENCE (E-11)	LIN. FT.
AROUND TOE OF SLOPE	170
AROUND TOE OF SLOPE	128

REVISION BOX

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS
SLAVENS CREEK STAGE 1

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TEMPORARY 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.

TEMPORARY EROSION CONTROL QUANTITIES - STAGE 2

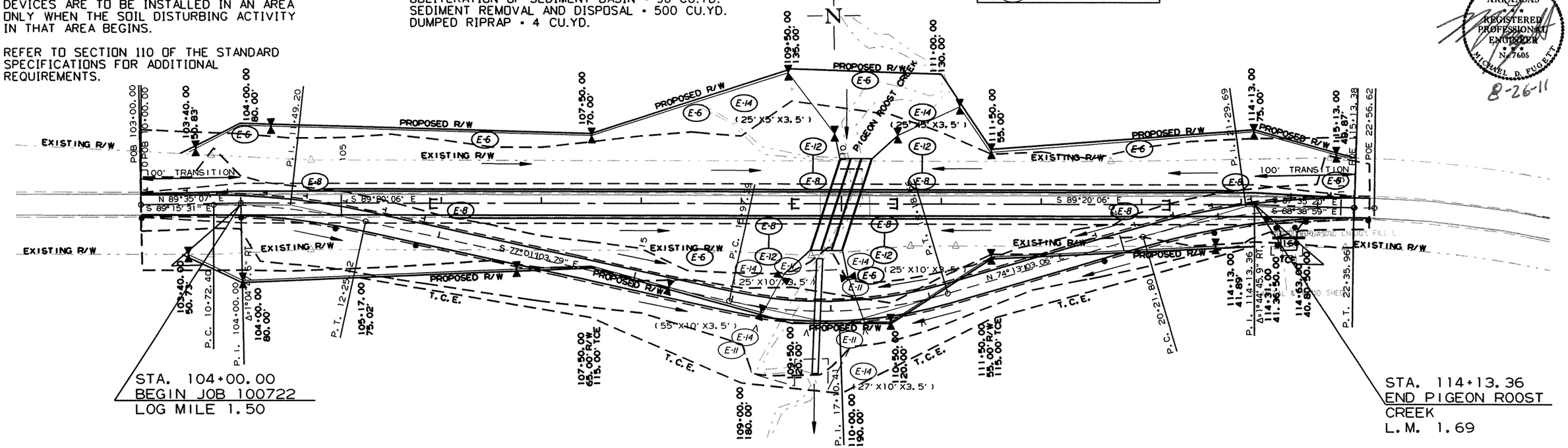
ROCK DITCH CHECKS (E-6) = 80 CU. YD.
DIVERSION DITCH (E-8) = 1582 LIN.FT.
SILT FENCE (E-11) = 1826 LIN.FT.
PIPE FOR SLOPE DRAIN (E-12) = 181 LIN.FT.
SEDIMENT BASIN (E-14) = 96 CU.YD.
OBLITERATION OF SEDIMENT BASIN = 96 CU.YD.
SEDIMENT REMOVAL AND DISPOSAL = 500 CU.YD.
DUMPED RIPRAP = 4 CU.YD.

- (E-6) ROCK DITCH CHECKS
- (E-8) DIVERSION DITCH
- (E-11) SILT FENCE
- (E-12) PIPE FOR SLOPE DRAIN
- (E-14) SEDIMENT BASIN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	13	121

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11

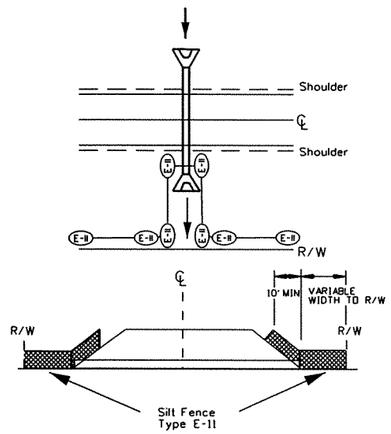


ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 104+00	LT.	5
STA. 106+50	LT.	5
STA. 108+50	LT.	5
STA. 108+50	RT.	5
STA. 110+17	LT.	5
STA. 110+17	RT.	5
STA. 113+00	LT.	5
STA. 115+00	LT.	5

STATION	STATION	SIDE	DIVERSION DITCH LIN. FT.	PIPE FOR SLOPE DRAIN LIN. FT.	DUMPED RIPRAP CU. YD.
104+81	114+00	LT.	919		
106+20	112+83	RT.	663		
109+27		RT.		33	1
109+73		LT.		61	1
110+42		RT.		65	1
110+82		LT.		22	1

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 109+00 - STA. 109+25	LT.	16
STA. 111+00 - STA. 111+25	LT.	16

SILT FENCE (E-11)	LIN. FT.
AROUND TOE OF SLOPE	170
AROUND TOE OF SLOPE	128



DETAILS OF SILT FENCE AT CROSS DRAINS

REVISION BOX

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS
PIGEON ROOST CREEK STAGE 2

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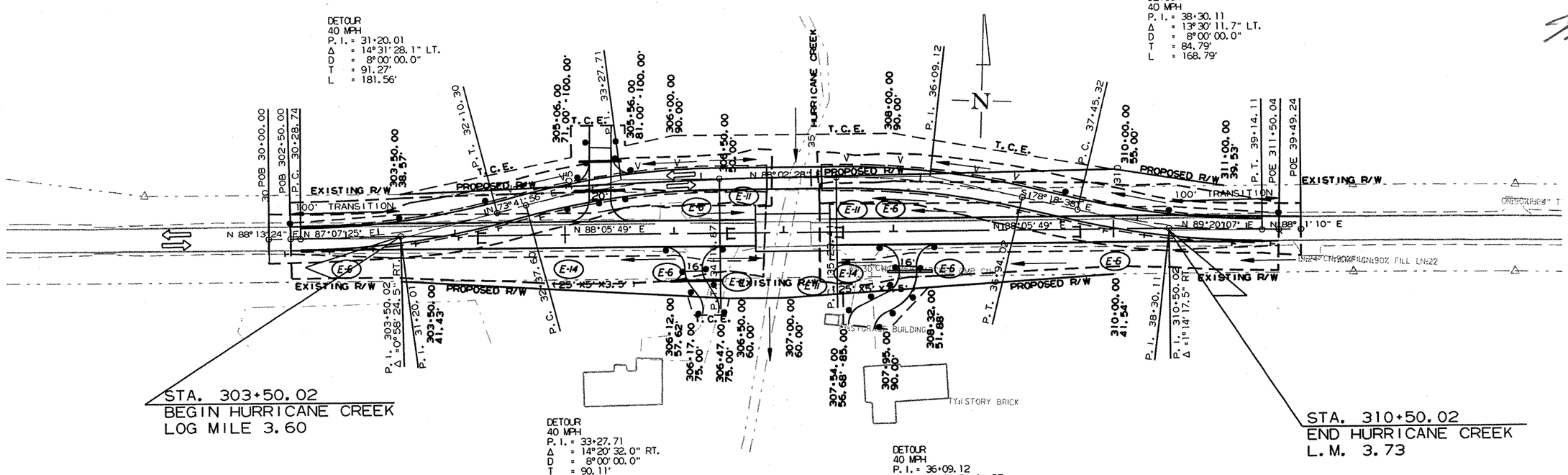
E-6	ROCK DITCH CHECKS
E-11	SILT FENCE
E-14	SEDIMENT BASIN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		100722	14	121

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 303+00	RT.	5
STA. 306+00	RT.	5
STA. 306+15	LT.	5
STA. 308+00	LT.	5
STA. 308+50	RT.	5
STA. 310+00	RT.	5

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 305+00 - STA. 305+25	RT.	16
STA. 307+50 - STA. 307+75	RT.	16

SILT FENCE (E-11)	LIN. FT.
AROUND TOE OF SLOPE	125
AROUND TOE OF SLOPE	115

REVISION BOX

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS
HURRICANE CREEK STAGE 2

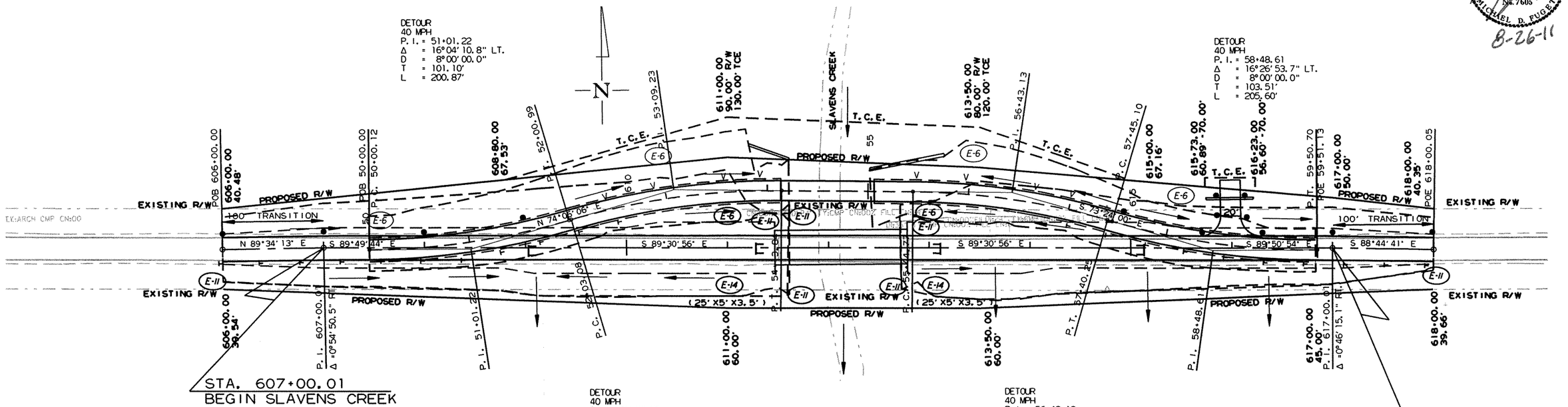
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(E-6) ROCK DITCH CHECKS
(E-11) SILT FENCE
(E-14) SEDIMENT BASIN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	15	121

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



STA. 607+00.01
BEGIN SLAVENS CREEK
LOG MILE 6.62

DETOUR
40 MPH
P. I. = 53+09.23
Δ = 16°51' 36.8" RT.
D = 8°00' 00.0"
T = 106.14'
L = 210.75'

DETOUR
40 MPH
P. I. = 56+43.13
Δ = 15°38' 17.7" RT.
D = 8°00' 00.0"
T = 98.35'
L = 195.48'

STA. 617+00.01
END JOB 100722
L.M. 6.81

ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 611+00	LT.	5
STA. 613+00	LT.	5

SEDIMENT BASIN (E-14)	SIDE	CU. YD.
STA. 611+00 - STA. 611+25	RT.	16
STA. 613+00 - STA. 613+25	RT.	16

SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 606+00 - STA. 611+47	RT.	660
STA. 612+78 - STA. 617+00	RT.	628

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TEMPORARY EROSION CONTROL DETAILS
SLAVENS CREEK STAGE 2

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TEMPORARY 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.

TEMPORARY EROSION CONTROL QUANTITIES - STAGE 3

ROCK DITCH CHECKS (E-6) • 35 CU.YD.
SILT FENCE (E-11) • 385 LIN.FT.
SEDIMENT REMOVAL AND DISPOSAL • 200 CU.YD.

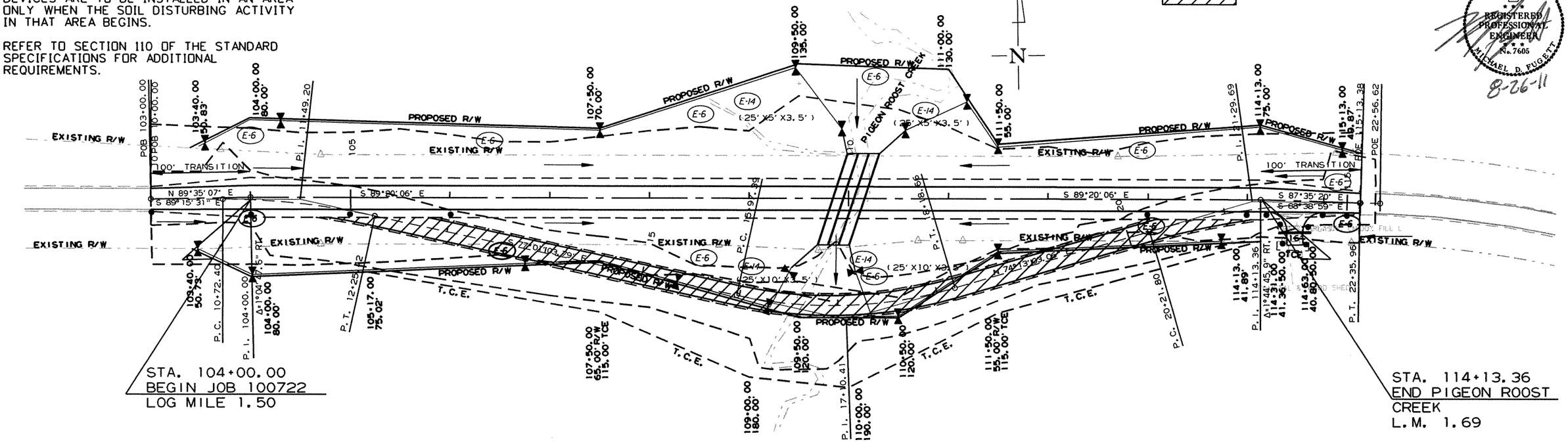
(E-6) ROCK DITCH CHECKS
(E-11) SILT FENCE
(E-14) SEDIMENT BASIN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	16	121

(2) TEMPORARY EROSION CONTROL DETAILS

OBLITERATION AREA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 104+00	RT.	5
STA. 106+50	RT.	5
STA. 113+00	RT.	5
STA. 115+00	RT.	5

SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 109+00 - STA. 109+85	RT.	85

REVISION BOX

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS
PIGEON ROOST CREEK STAGE 3

r100722.dgn 8/10/2011

OBLITERATION AREA

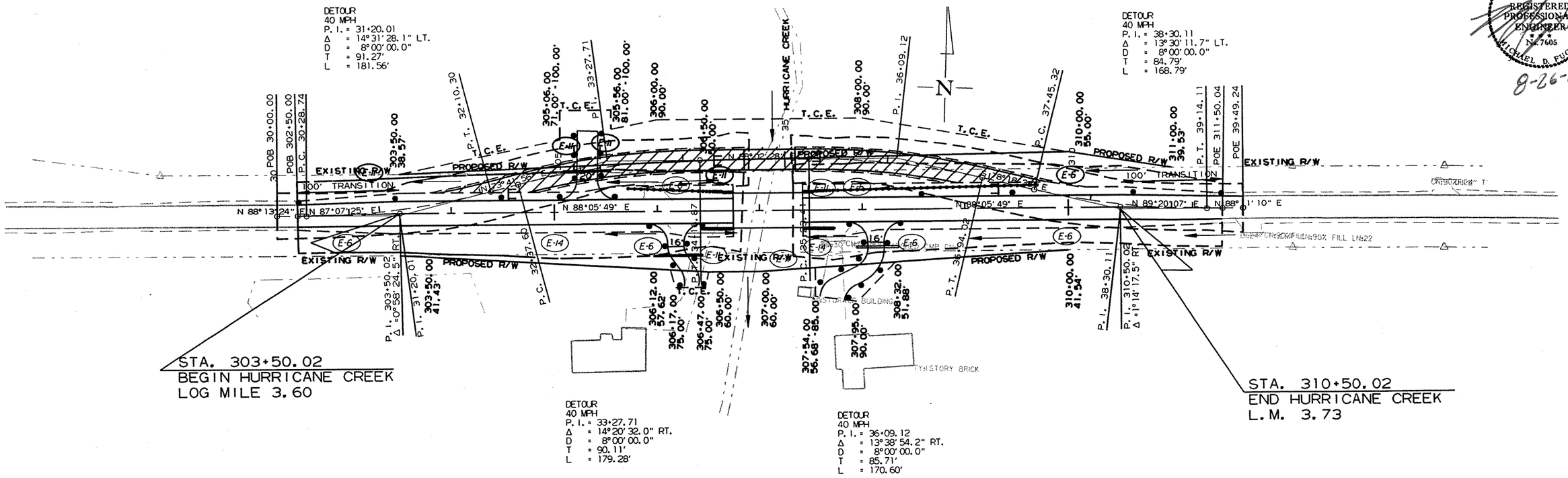
E-6	ROCK DITCH CHECKS
E-11	SILT FENCE
E-14	SEDIMENT BASIN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		100722	17	121

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



STA. 303+50.02
BEGIN HURRICANE CREEK
LOG MILE 3.60

STA. 310+50.02
END HURRICANE CREEK
L.M. 3.73

DETOUR
40 MPH
P. I. = 33+27.71
Δ = 14°20'32.0" RT.
D = 8°00'00.0"
T = 90.11'
L = 179.28'

DETOUR
40 MPH
P. I. = 36+09.12
Δ = 13°38'54.2" RT.
D = 8°00'00.0"
T = 85.71'
L = 170.60'

ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 310+00	LT.	5

SILT FENCE (E-11)	SIDE	LIN. FT.
STA. 303+50 - STA. 306+50	LT.	300

REVISION BOX

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS
HURRICANE CREEK STAGE 3

r100722.dgn 8/10/2011

OBLITERATION AREA

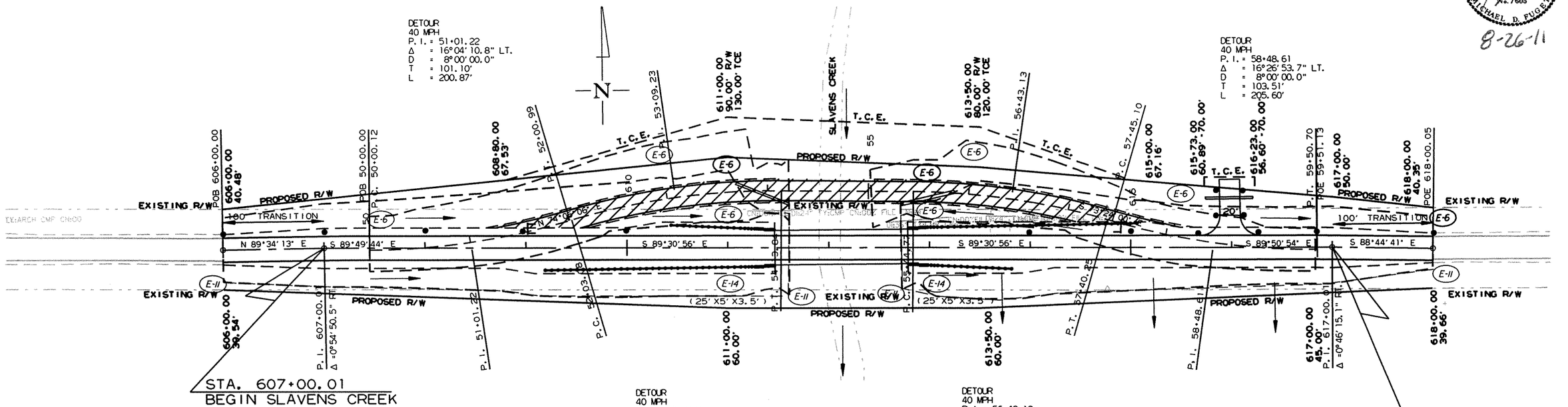
E-6	ROCK DITCH CHECKS
E-11	SILT FENCE
E-14	SEDIMENT BASIN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		100722	18	121

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



STA. 607+00.01
BEGIN SLAVENS CREEK
LOG MILE 6.62

DETOUR
40 MPH
P. I. = 53+09.23
Δ = 16°51' 36.8" RT.
D = 8°00' 00.0"
T = 106.14'
L = 210.75'

DETOUR
40 MPH
P. I. = 56+43.13
Δ = 15°38' 17.7" RT.
D = 8°00' 00.0"
T = 98.35'
L = 195.48'

STA. 617+00.01
END JOB 100722
L.M. 6.81

ROCK DITCH CHECK (E-6)	SIDE	CU. YD.
STA. 611+00	LT.	5
STA. 613+00	LT.	5

REVISION BOX

DATE	REVISION

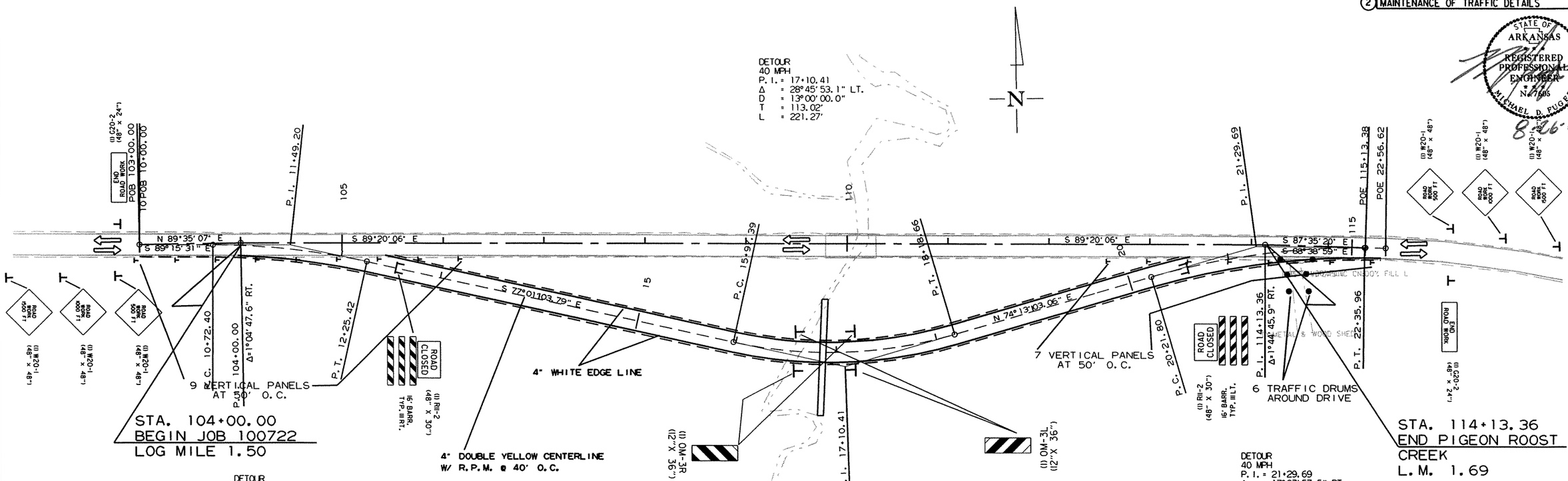
r100722.dgn 8/10/2011

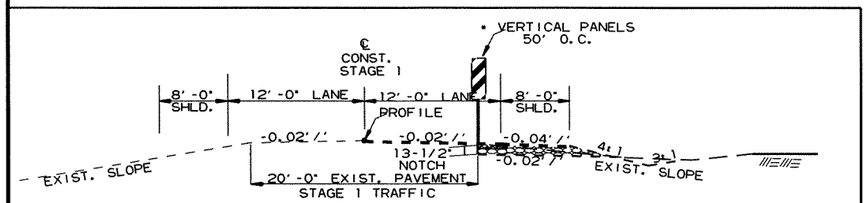
TEMPORARY EROSION CONTROL DETAILS
SLAVENS CREEK STAGE 3

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	19	121

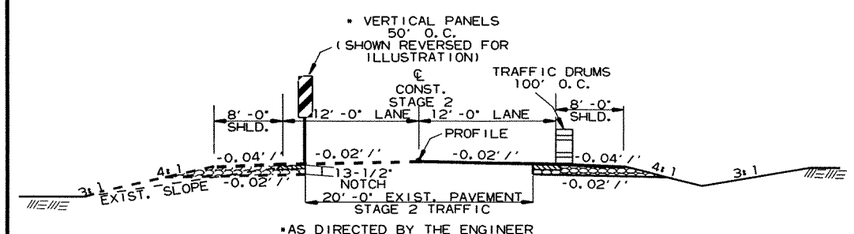
(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13585
MICHAEL D. FUGETT
8-26-11





OVERLAY TANGENT - RIGHT SIDE WIDENING



OVERLAY TANGENT - LEFT SIDE WIDENING

NOTCH AND WIDENING M. O. T. DETAILS
(REVERSE DRUM AND VERTICAL PANEL PLACEMENT FOR LEFT SIDE NEW LOCATION)

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
INSTALL TEMPORARY PIPES AND CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE EXISTING BRIDGES AND CONSTRUCT NEW R.C. BOX CULVERT AND BRIDGES.

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

END OF JOB
INSTALL FINAL STRIPING.

MAINTENANCE OF TRAFFIC - STAGE 1 QUANTITIES

SIGNS = 478 SQ. FT.
BARRICADES TY. III LT. = 48 LIN. FT.
BARRICADES TY. III RT. = 48 LIN. FT.
TRAFFIC DRUMS = 12 EACH
VERTICAL PANELS = 46 EACH
CONSTRUCTION PAVEMENT MARKING = 9080 LIN. FT.
RAISED PAVEMENT MARKERS (TY. II) (YEL./YEL.) = 57 EACH
84" TEMPORARY CULVERT = 115 LIN. FT.

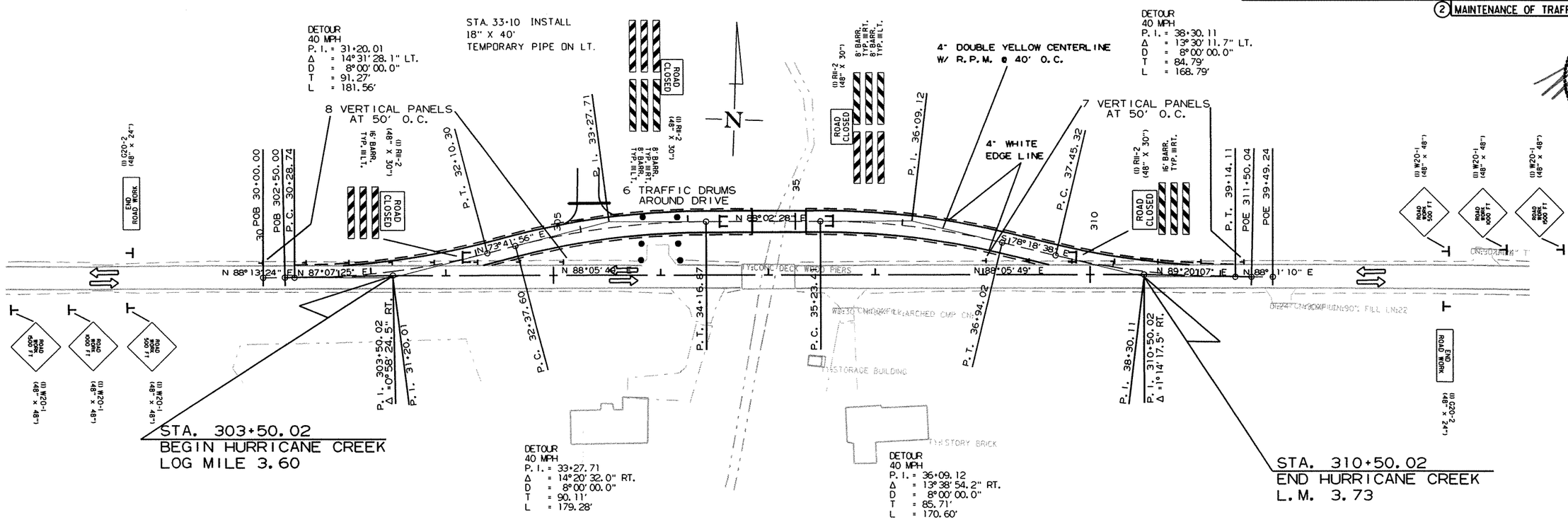
MAINTENANCE OF TRAFFIC DETAILS PIGEON ROOST CREEK STAGE 1

r100722.dgn 8/10/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	20	121

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
8-26-11



4" WHITE EDGE LINE

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
INSTALL TEMPORARY PIPES AND CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE EXISTING BRIDGES AND CONSTRUCT NEW R.C. BOX CULVERT AND BRIDGES.

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

END OF JOB
INSTALL FINAL STRIPING.

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MAINTENANCE OF TRAFFIC DETAILS
HURRICANE CREEK STAGE 1

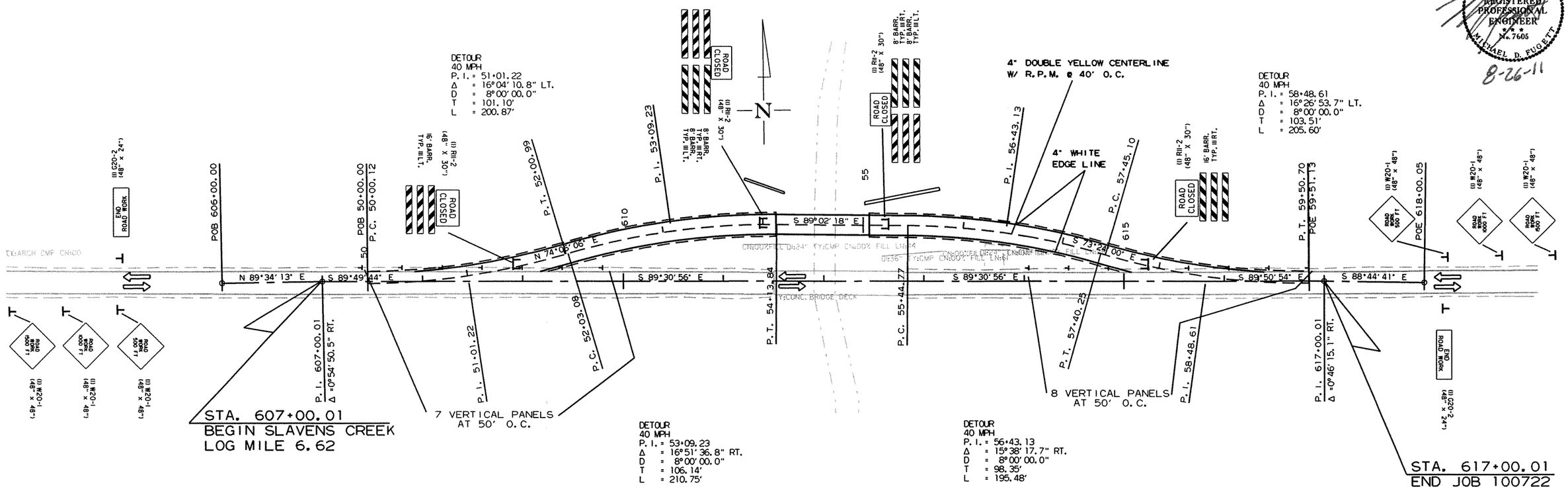
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				6	ARK.			
				JOB NO.		100722	21	121

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11

STA. 54+00 INSTALL
24" X 42' TEMPORARY PIPE
ON LT. W/ AUTOMATIC FLOODGATE
REMOVED AND RELOCATED
FROM EXISTING PIPE

STA. 55+40 INSTALL
36" X 76' TEMPORARY PIPE
ON LT. W/ AUTOMATIC FLOODGATE
REMOVED AND RELOCATED
FROM EXISTING PIPE



DETOUR
40 MPH
P. I. = 53+09.23
Δ = 16°51' 36.8" RT.
D = 8°00' 00.0"
T = 106.14'
L = 210.75'

DETOUR
40 MPH
P. I. = 56+43.13
Δ = 15°38' 17.7" RT.
D = 8°00' 00.0"
T = 98.35'
L = 195.48'

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
INSTALL TEMPORARY PIPES AND CONSTRUCT
TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE EXISTING BRIDGES AND CONSTRUCT
NEW R.C. BOX CULVERT AND BRIDGES.

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

END OF JOB
INSTALL FINAL STRIPING.

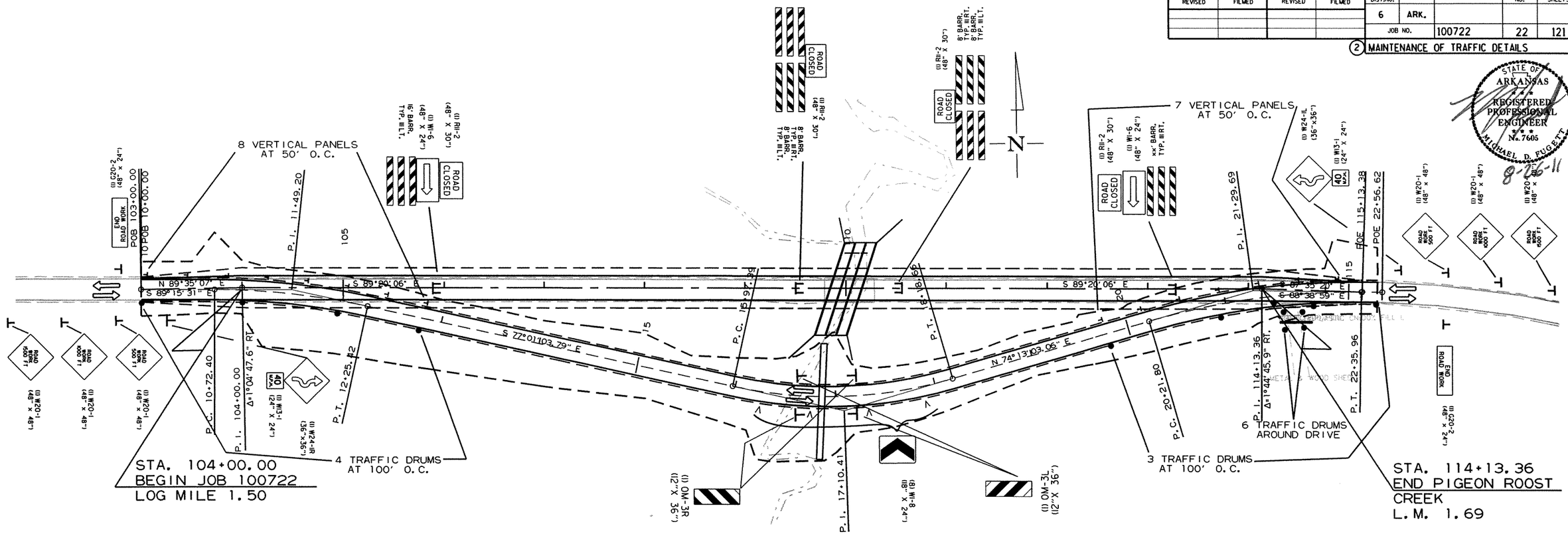
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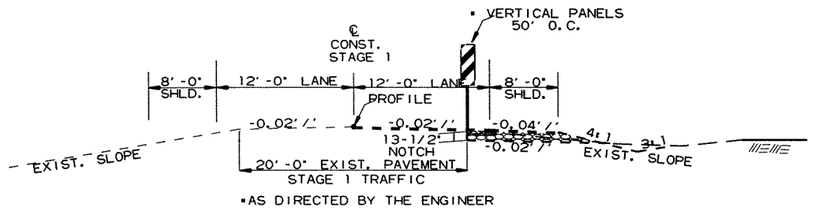
MAINTENANCE OF TRAFFIC DETAILS
SLAVENS CREEK STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	22	121

(2) MAINTENANCE OF TRAFFIC DETAILS

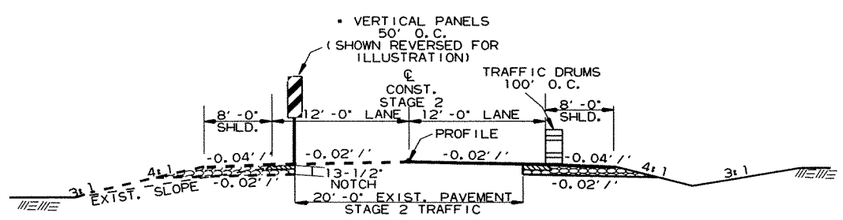
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11





▪AS DIRECTED BY THE ENGINEER

OVERLAY TANGENT - RIGHT SIDE WIDENING



▪AS DIRECTED BY THE ENGINEER

OVERLAY TANGENT - LEFT SIDE WIDENING

NOTCH AND WIDENING M.O.T. DETAILS
(REVERSE DRUM AND VERTICAL PANEL PLACEMENT FOR LEFT SIDE NEW LOCATION)

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
INSTALL TEMPORARY PIPES AND CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE EXISTING BRIDGES AND CONSTRUCT NEW R.C. BOX CULVERT AND BRIDGES.

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

END OF JOB
INSTALL FINAL STRIPING.

MAINTENANCE OF TRAFFIC - STAGE 2 QUANTITIES

SIGNS = 744 SQ.FT.
BARRICADES TY. III LT. = 96 LIN. FT.
BARRICADES TY. III RT. = 96 LIN. FT.
TRAFFIC DRUMS = 54 EACH
VERTICAL PANELS = 53 EACH
REMOVAL OF PERMANENT PAVEMENT MARKING = 3632 LIN. FT.
CONSTRUCTION PAVEMENT MARKING = 3632 LIN. FT.
RAISED PAVEMENT MARKERS (TY. II) (YEL./YEL.) = 23 EACH

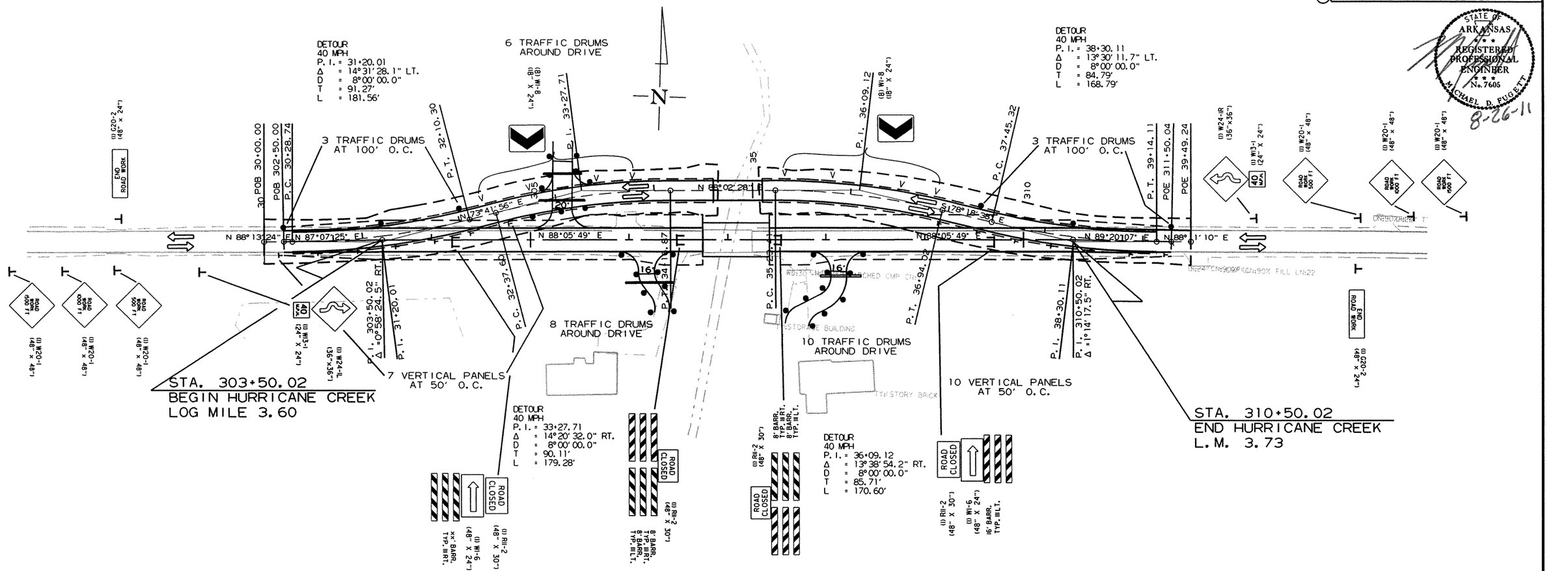
MAINTENANCE OF TRAFFIC DETAILS
PIGEON ROOST CREEK STAGE 2

r100722.dgn 8/10/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	23	121

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
INSTALL TEMPORARY PIPES AND CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE EXISTING BRIDGES AND CONSTRUCT NEW R.C. BOX CULVERT AND BRIDGES.

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

END OF JOB
INSTALL FINAL STRIPING.

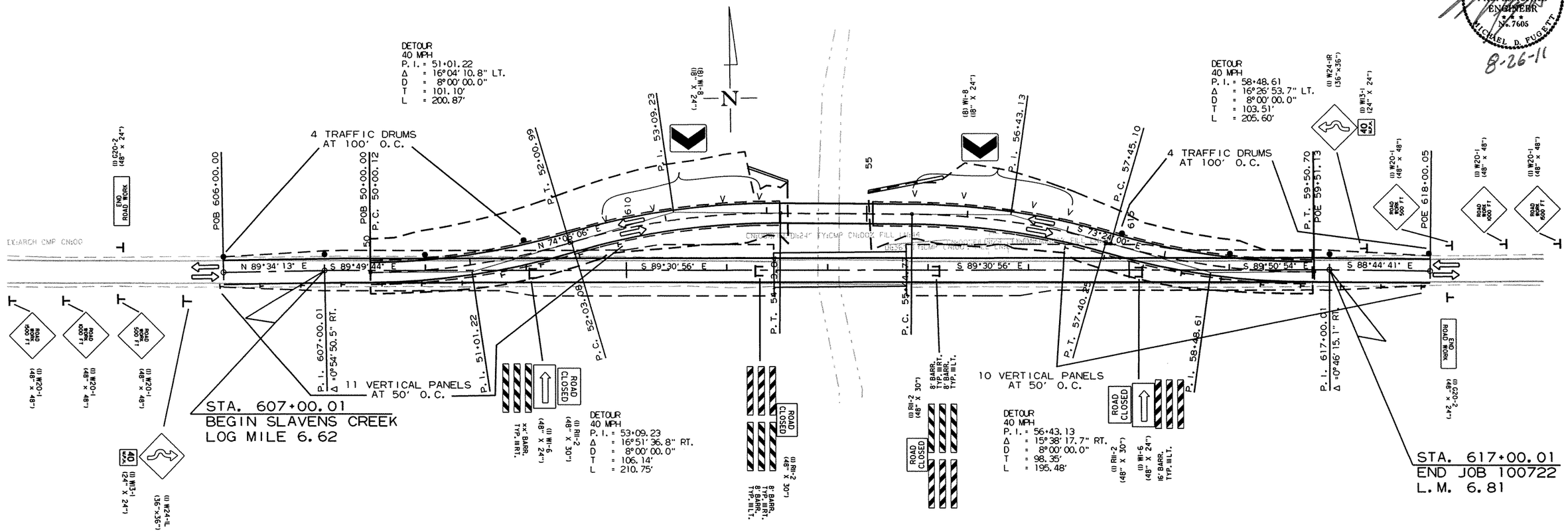
r100722.dgn 8/10/2011

MAINTENANCE OF TRAFFIC DETAILS
HURRICANE CREEK STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	24	121

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
INSTALL TEMPORARY PIPES AND CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE EXISTING BRIDGES AND CONSTRUCT NEW R.C. BOX CULVERT AND BRIDGES.

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

END OF JOB
INSTALL FINAL STRIPING.

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MAINTENANCE OF TRAFFIC DETAILS
SLAVENS CREEK STAGE 2

MAINTENANCE OF TRAFFIC - STAGE 3 QUANTITIES

SIGNS = 514 SQ.FT.
BARRICADES TY. III LT. = 80 LIN. FT.
BARRICADES TY. III RT. = 80 LIN. FT.
TRAFFIC DRUMS = 61 EACH
REMOVAL OF CONSTRUCTION PAVEMENT MARKING = 3632 LIN. FT.

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
INSTALL TEMPORARY PIPES AND CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE EXISTING BRIDGES AND CONSTRUCT NEW R.C. BOX CULVERT AND BRIDGES.

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

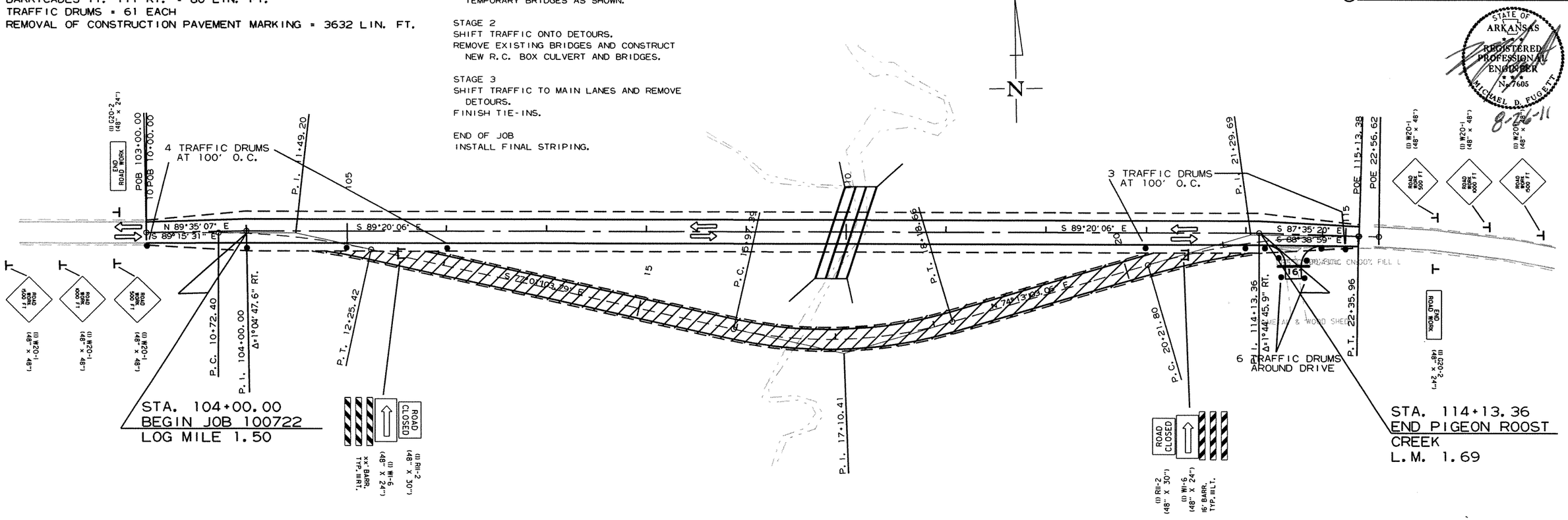
END OF JOB
INSTALL FINAL STRIPING.

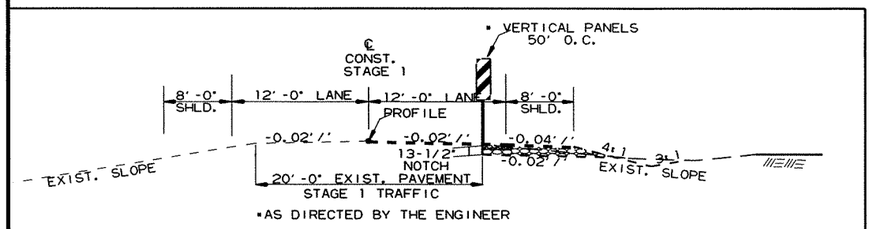
OBLITERATION AREA

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.		100722	25	121

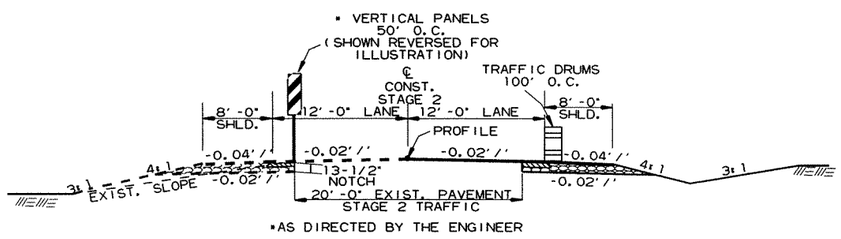
(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-2-11





OVERLAY TANGENT - RIGHT SIDE WIDENING

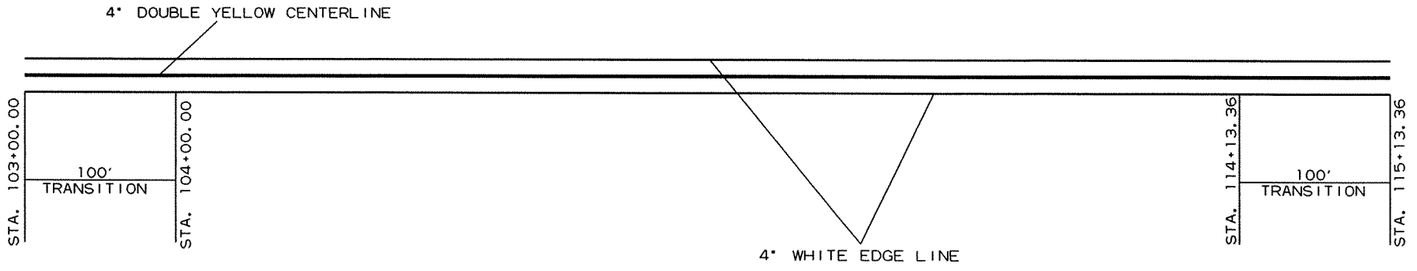


OVERLAY TANGENT - LEFT SIDE WIDENING

NOTCH AND WIDENING M.O.T. DETAILS
(REVERSE DRUM AND VERTICAL PANEL PLACEMENT FOR LEFT SIDE NEW LOCATION)

PERMANENT PAVEMENT MARKING QUANTITIES

THERMOPLASTIC PAVEMENT MARKING YELLOW (4") = 2427 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (4") = 2427 LIN. FT.



FINAL STRIPING DETAIL

MAINTENANCE OF TRAFFIC DETAILS
PIGEON ROOST CREEK STAGE 3

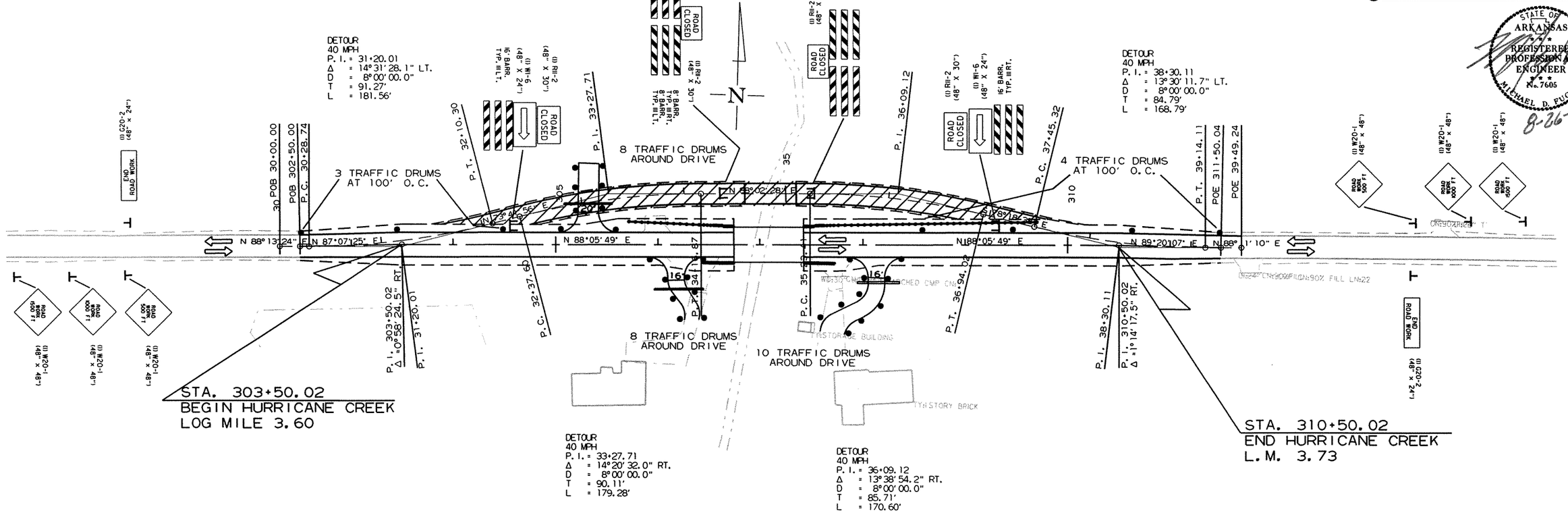
r100722.dgn 8/10/2011

OBLITERATION AREA

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	26	121

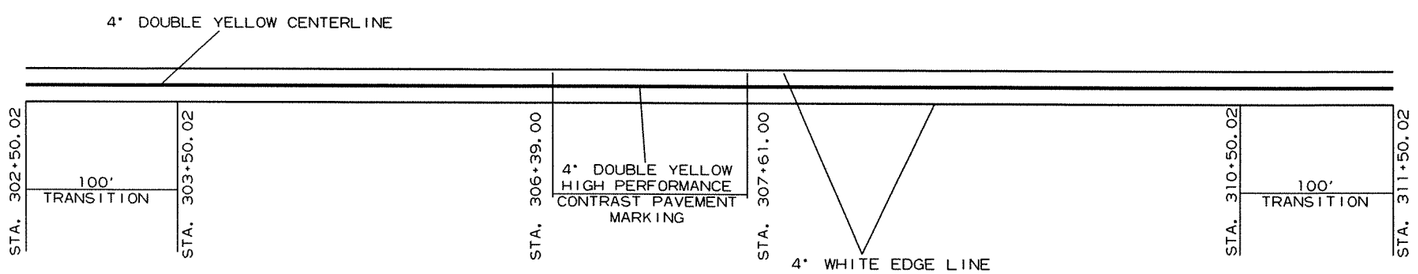
(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGLETT
8-26-11



PERMANENT PAVEMENT MARKING QUANTITIES

THERMOPLASTIC PAVEMENT MARKING YELLOW (4") = 1556 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (4") = 1800 LIN. FT.
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4") = 244 LIN. FT.



SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
INSTALL TEMPORARY PIPES AND CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE EXISTING BRIDGES AND CONSTRUCT NEW R.C. BOX CULVERT AND BRIDGES.

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

END OF JOB
INSTALL FINAL STRIPING.

FINAL STRIPING DETAIL

MAINTENANCE OF TRAFFIC DETAILS
HURRICANE CREEK STAGE 3

r100722.dgn 8/10/2011

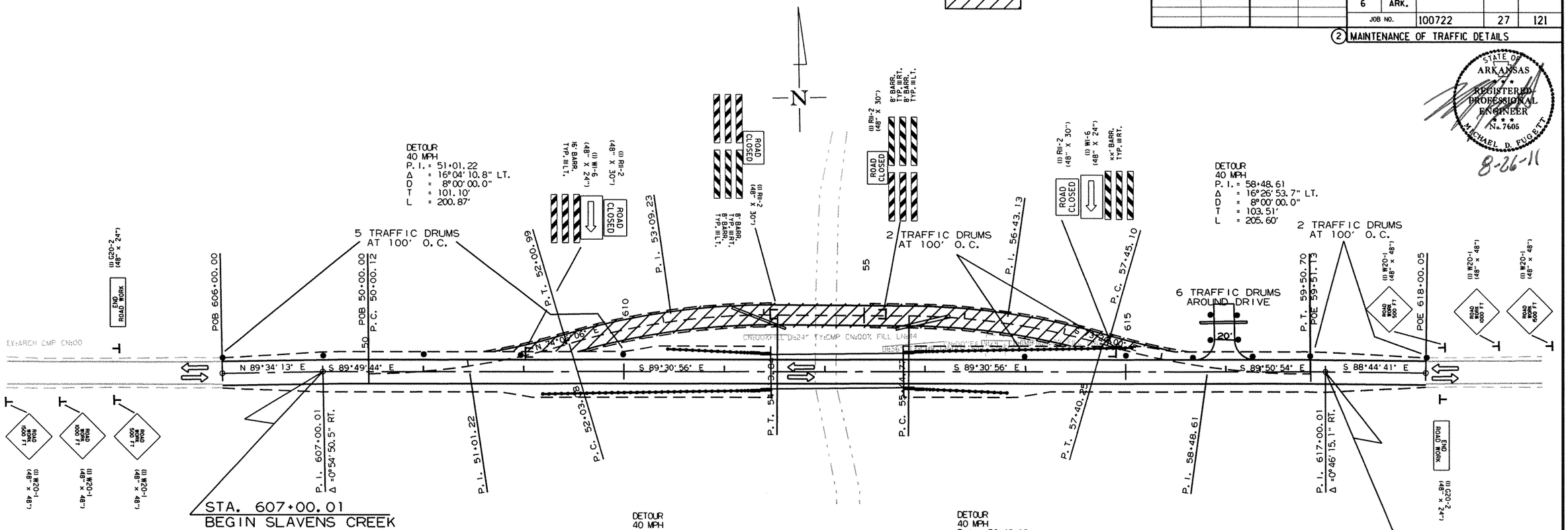
OBLITERATION AREA

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		100722	27	121

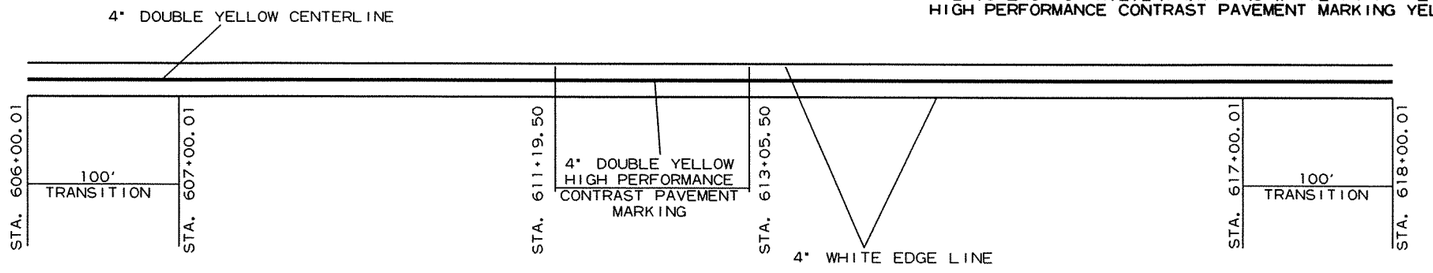
(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



PERMANENT PAVEMENT MARKING QUANTITIES

THERMOPLASTIC PAVEMENT MARKING YELLOW (4") = 2028 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (4") = 2400 LIN. FT.
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4") = 372 LIN. FT.



FINAL STRIPING DETAIL

SEQUENCE OF CONSTRUCTION

STAGE 1
CONSTRUCT DETOURS AS SHOWN.
INSTALL TEMPORARY PIPES AND CONSTRUCT TEMPORARY BRIDGES AS SHOWN.

STAGE 2
SHIFT TRAFFIC ONTO DETOURS.
REMOVE EXISTING BRIDGES AND CONSTRUCT NEW R.C. BOX CULVERT AND BRIDGES.

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

END OF JOB
INSTALL FINAL STRIPING.

MAINTENANCE OF TRAFFIC DETAILS
SLAVENS CREEK STAGE 3

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	28	121

(2) QUANTITY SHEET

REMOVAL AND DISPOSAL OF STRUCTURES

STATION	SIDE	DESCRIPTION	PIPE CULVERTS	FLOOD GATES
			EACH	
114+43	RT.	15" X 20' PLASTIC PIPE CULVERT	1	
308+16	RT.	30" X 18" X 25' C.M. PIPE CULVERT	1	
611+31	LT.	24" X 44' C.M. PIPE CULVERT	1	
613+00	LT.	36" X 61' C.M. PIPE CULVERT	1	
613+82	LT.	24" X 26' C.M. PIPE CULVERT	1	
54+00	LT.	24" FLOOD GATE FROM TEMPORARY CULVERT		1
54+40	LT.	36" FLOOD GATE FROM TEMPORARY CULVERT		1
TOTALS			**5**	**2**

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

FENCING ITEMS

STATION	STATION	SIDE	REMOVAL AND DISPOSAL OF FENCE	WIRE FENCE (TYPE D-1)
			LIN. FT.	LIN. FT.
103+40	109+42	RT.		633
103+40	109+93	LT.		704
103+40	114+13	RT.	1073	
103+40	115+13	LT.	1173	
110+06	114+13	RT.		455
110+57	115+13	LT.		487
TOTALS			**2246**	**2279**

CLEARING AND GRUBBING

STATION	STATION	CLEARING	GRUBBING
		STATION	
103+00	115+00	12	12
303+00	311+00	8	8
611+00	613+00	2	2
TOTALS		**22**	**22**

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11

PERMANENT PAVEMENT MARKING ITEMS

LOCATION	THERMOPLASTIC PAVEMENT MARKING		HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
	WHITE	YELLOW	YELLOW
	4"	4"	4"
	LIN. FT.		
ENTIRE PROJECT	6627	6011	616
TOTALS	**6627**	**6011**	**616**

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

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.

GUARDRAIL

STATION	STATION	SIDE	GUARDRAIL (TYPE A)	TERMINAL ANCHOR POSTS (TYPE 1)	THRIE BEAM GUARDRAIL TERMINAL	BRIDGE END TERMINAL
			LIN. FT.	EACH		
305+62.85	306+66.00	LT.	75	1	1	
306+36.00	306+66.00	RT.				1
307+34.00	309+62.15	LT.	200	1	1	
307+34.00	307+64.00	RT.				1
609+43.35	611+46.50	RT.	200	1	1	
610+43.35	611+46.50	LT.	75	1	1	
612+78.50	615+06.65	LT.	200	1	1	
612+78.50	613+81.65	RT.	75	1	1	
TOTALS			**825**	**6**	**6**	**2**

MAINTENANCE OF TRAFFIC ITEMS

LOCATION	BARRICADES		TRAFFIC DRUMS	VERTICAL PANELS	CONSTRUCTION PAVEMENT MARKING	REMOVAL OF CONSTRUCTION PAVEMENT MARKING	REMOVAL OF PERMANENT PAVEMENT MARKING	RAISED PAVEMENT MARKERS (TY.II) (YEL./YEL.)
	TY. III RT.	TY. III LT.						
	LIN. FT.		EACH		LIN. FT.			EACH
MAIN LANES-STAGE 1	48	48	12	46	9080			57
MAIN LANES-STAGE 2	96	96	54	53	3632		3632	23
MAIN LANES-STAGE 3	80	80	61			3632		
TOTALS	**96**	**96**	**61**	**53**	**12712**	**3632**	**3632**	**80**

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

ASPHALT CONCRETE PATCHING FOR MAINTENANCE 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.

SIGNS

SIGN NO.	DESCRIPTION	SIZE	QUANTITY			MAXIMUM REQUIRED	SIGNS SQ. FT.
			STAGE 1	STAGE 2	STAGE 3		
G20-2	END ROAD WORK	48" X 24"	6	6	6	6	48
OM-3L	OBJECT MARKER	12" X 36"	2	2		2	6
OM-3R	OBJECT MARKER	12" X 36"	2	2		2	6
R4-1	DO NOT PASS	24" X 30"	6	6	6	6	30
RII-2	ROAD CLOSED	48" X 30"	10	12	10	12	120
W24-1L	DOUBLE REVERSE CURVE LEFT	36" X 36"		3		3	27
W24-1R	DOUBLE REVERSE CURVE RIGHT	36" X 36"		3		3	27
W1-6	ARROW	48" X 24"		6	6	6	48
W1-8	CHEVRON	18" X 24"		40		40	120
W13-1	SPEED LIMIT	24" X 24"		6		6	24
W20-1	ROAD WORK 1500 FT.	48" X 48"	6	6	6	6	96
W20-1	ROAD WORK 1000 FT.	48" X 48"	6	6	6	6	96
W20-1	ROAD WORK 500 FT.	48" X 48"	6	6	6	6	96
TOTAL							**744**

SOIL LOG

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO SOIL CLASS	COLOR
103+00	23'RT	0-5	38	18	A-6(19)	BROWN
103+00	5'RT	0-5	44	24	A-7-6(25)	BROWN
111+00	25'LT	0-5	36	18	A-6(18)	BROWN
111+00	5'LT	0-5	36	20	A-6(17)	BROWN
111+00	25'LT	0-5	37	18	A-6(18)	BROWN
303+00	28'RT	0-5	36	15	A-6(14)	BROWN
303+00	5'RT	0-5	34	19	A-6(9)	BROWN
311+00	28'LT	0-5	30	12	A-6(10)	BROWN
311+00	5'LT	0-5	36	17	A-6(14)	BROWN
311+00	28'LT	0-5	32	12	A-6(11)	BROWN
608+00	5'RT	0-5	36	16	A-6(14)	GR/BR
608+00	35'RT	0-5	26	7	A-4(6)	RD/BR
608+00	30'RT	0-5	28	4	A-4(4)	RD/BR
616+00	25'LT	0-5	29	9	A-4(7)	GRAY
616+00	5'LT	0-5	34	18	A-6(15)	GRAY

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.

APPROACH SLABS & APPROACH GUTTERS (TYPE SPECIAL)

LOCATION	APPROACH SLABS (TY. SPECIAL)	APPROACH GUTTERS (TY. SPECIAL)	REINFORCING STEEL - RDWY (GRADE 60)	AGGREGATE BASE COURSE (CL.7) (6" COMP. DEPTH)
	CU. YD.		POUND	TON
STA. 306+39.00 - STA. 306+66.00	38.80	12.00	5014	26
STA. 307+34.00 - STA. 307+61.00	38.80	12.00	5014	26
STA. 611+19.50 - STA. 611+46.50	38.80	12.00	5014	26
STA. 612+78.50 - STA. 613+05.50	38.80	12.00	5014	26
TOTALS	**155.20**	**48.00**	**20056**	**104**

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				6	ARK.			
				JOB NO.		100722	29	121

(2) QUANTITY SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11

R.C. BOX CULVERT-STRUCTURE OVER 20'-0" SPAN

STATION	DESCRIPTION	SPAN	HEIGHT	LENGTH	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	CLASS S CONCRETE-ROADWAY	REINFORCING STEEL- ROADWAY (GR. 60)	SOLID SODDING	WATER	STANDARD DRAWINGS
		LIN.FT.			CU.YD.		POUND	SQ.YD	M.GAL.	
110+00	CONST. TRP. 9' X 11' X 92' R.C. BOX CULVERT @ 18^ LT. FWD. SKEW W/3:1 WINGS LT. & RT.	9	11	97	145	382.92	53227	40	0.5	PBC-1, RCB-1, RCB-2, R-300X-X3, R315X-2, W-X15,W-X153-2
TOTALS					**145**	**382.92**	**53227**	**40**	**0.5**	

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

STRUCTURES

STATION	DESCRIPTION	PIPE CULVERTS CORRUGATED STEEL ALTERNATES 24"	PIPE CULVERTS CORRUGATED STEEL ALTERNATES 36"	AUTOMATIC FLOODGATE 24"	AUTOMATIC FLOODGATE 36"	STANDARD DRAWINGS
		LIN. FT.		EACH		
611+31	PIPE CULVERT ON LT. WITH AUTOMATIC FLOODGATE	56		1		PCM-1 & SPECIAL DETAIL
613+00	PIPE CULVERT ON LT. WITH AUTOMATIC FLOODGATE		56		1	PCM-1 & SPECIAL DETAIL
TOTALS		**56**	**56**	**1**	**1**	

SOIL STABILIZATION

LOCATION	SOIL STABILIZATION
	TON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	100
TOTAL	**100**

QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

BENCH MARKS

LOCATION	BENCH MARKS
	EACH
STA. 110+00 IN R.C. BOX HDWL. ON RT.	1
STA. 306+66 AT BRIDGE END ON LT.	1
STA. 611+46.50 AT BRIDGE END ON RT.	1

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

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		ACHM BINDER COURSE (1") (64-22)				ACHM SURFACE COURSE (1/2") (64-22) (220 LBS./SQ. YD.)			ACHM SURFACE COURSE (1/2") (64-22) LEVELING			TACK COAT (0.03 GAL./SQ. YD.)			TACK COAT (0.10 GAL./SQ. YD.)	
			LIN. FT.	TONS/STA.	TON	AVG. WIDTH	LBS./ SQ.YD.	SQ.YD.	TON	AVG. WIDTH	SQ.YD.	TON	SQ.YD.	LBS./ SQ.YD.	TON	AVG. WIDTH	SQ.YD.	GAL.	SQ.YD.	GAL.
103+00.00	104+00.00	MAIN LANES-TRANSITION	100.00	78.25	78	2.33	385	26	5	30.17	335	37	222	220	24	2.33	26	1	222	22
104+00.00	105+50.00	MAIN LANES-NOTCH AND WIDENING	150.00	156.50	235	4.25	385	71	14	44.17	736	81	333	275	46	4.25	71	2	444	44
105+50.00	114+00.00	MAIN LANES-FULL DEPTH	863.36	234.25	2022	24.50	385	2350	452	64.25	6163	678				24.50	2350	71		
114+00.00	114+13.36	MAIN LANES-NOTCH AND WIDENING	13.36	156.50	21	4.25	385	6	1	44.17	66	7	30	275	4	4.25	6	0	444	44
114+13.36	115+13.36	MAIN LANES-TRANSITION	100.00	78.25	78	2.33	385	26	5	30.17	335	37	222	275	31	2.33	26	1	222	22
302+50.00	303+50.00	MAIN LANES-TRANSITION	100.00	78.25	78	2.33	385	26	5	30.17	335	37	222	220	24	2.33	26	1	222	22
303+50.00	304+11.50	MAIN LANES-NOTCH AND WIDENING	61.50	156.50	96	4.25	385	29	6	44.17	302	33	137	330	23	4.25	29	1	137	14
304+11.50	306+39.00	MAIN LANES-FULL DEPTH	227.50	234.25	533	24.50	385	619	119	64.25	1624	179				24.50	619	19		
307+61.00	309+67.00	MAIN LANES-FULL DEPTH	206.00	234.25	483	24.50	385	561	108	64.25	1471	162				24.50	561	17		
309+67.00	310+50.02	MAIN LANES-NOTCH AND WIDENING	83.02	156.50	130	4.25	385	39	8	44.17	407	45	184	965	89	4.25	39	1	184	18
310+50.02	311+50.02	MAIN LANES-TRANSITION	100.00	78.25	78	2.33	385	26	5	30.17	335	37	222	220	24	2.33	26	1	222	22
606+00.00	607+00.00	MAIN LANES-TRANSITION	100.00	78.25	78	2.33	385	26	5	30.17	335	37	222	220	24	2.33	26	1	222	22
607+00.00	608+50.00	MAIN LANES-NOTCH AND WIDENING	150.00	156.50	235	4.25	385	71	14	44.17	736	81	333	440	73	4.25	71	2	333	33
608+50.00	611+19.50	MAIN LANES-FULL DEPTH	269.50	234.25	631	24.50	385	734	141	64.25	1924	212				24.50	734	22		
613+05.50	615+20.00	MAIN LANES-FULL DEPTH	214.50	234.25	502	24.50	385	584	112	64.25	1531	168				24.50	584	18		
615+20.00	617+00.01	MAIN LANES-NOTCH AND WIDENING	180.01	156.50	282	4.25	385	85	16	44.17	883	97	400	275	55	4.25	85	3	400	40
617+00.01	618+00.01	MAIN LANES-TRANSITION	100.00	78.25	78	2.33	385	26	5	30.17	335	37	222	220	24	2.33	26	1	222	22
11+93.96	21+14.26	DETOUR PIGEON ROOST CREEK	920.30	122.75	1130	20.33	330	2079	343	24.00	2454	270	444	220	49	20.33	2079	62	444	44
31+71.23	34+60.00	DETOUR HURRICANE CREEK	288.77	122.75	354	20.33	330	652	108	24.00	770	85	222	220	24	20.33	652	20	222	22
35+10.00	37+72.83	DETOUR HURRICANE CREEK	262.83	122.75	323	20.33	330	594	98	24.00	701	77	222	220	24	20.33	594	18	222	22
51+37.72	54+13.00	DETOUR SLAVENS CREEK	275.28	122.75	338	20.33	330	622	103	24.00	734	81	444	220	49	20.33	622	19	444	44
55+06.00	58+05.09	DETOUR SLAVENS CREEK	299.09	122.75	367	20.33	330	676	111	24.00	798	88	222	220	24	20.33	676	20	222	22
		ADDITIONAL FOR GUARDRAIL WIDENING			231							73								
		ADDITIONAL FOR GRADE RAISE							200											
TOTALS					**8381**				**1984**			**2639**			**611**			**301**		**479**

VOLUME CONTROL:
ACHM BINDER COURSE (1"): MIN. AGGR. 95.9%, ASPHALT BINDER (PG 64-22) 4.1%
ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.7%, ASPHALT BINDER (PG 64-22) 5.3%
Nmax= 115 GYRATIONS

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	30	121

(2) QUANTITY SHEET

TEMPORARY PIPE CULVERT

LOCATION	TEMPORARY PIPE CULVERT			
	18"	24"	36"	84"
	LIN. FT.			
STA. 16+87-PIGEON ROOST CREEK DETOUR				116
STA. 33+10 ON LT.-HURRICANE CREEK SIDE DRAIN	40			
*STA. 54+00 ON LT.-SLAVENS CREEK DETOUR		42		
*STA. 55+40 ON LT.-SLAVENS CREEK DETOUR			76	
TOTALS	**40**	42	76	116

*NOTE: CORRUGATED METAL PIPES TO BE USED WITH REMOVED AND RELOCATED AUTOMATIC FLOODGATE.
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.

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)
	EACH	
ENTIRE PROJECT	2	2
TOTALS	**2**	**2**

COLD MILLING ASPHALT PAVEMENT

LOCATION	COLD MILLING ASPHALT PAVEMENT
	SQ. YD.
STA. 103+00.00 - STA. 104+00.00	222
STA. 114+13.36 - STA. 115+13.36	222
STA. 302+50.00 - STA. 303+50.00	222
STA. 310+50.04 - STA. 311+50.04	222
STA. 606+00.00 - STA. 607+00.01	222
STA. 617+00.01 - STA. 618+00.01	222
TOTAL	**1332**

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
8-26-11

PIPE UNDERDRAINS

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

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.
ENTIRE PROJECT	3.76	8	3.76	3.76	367.2
OBLITERATION AREA	3.32	7	3.32	3.32	338.6
TOTALS	**7.08**	**15**	**7.08**	**7.08**	**705.8**

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

SELECTED PIPE BEDDING AND SELECTED PIPE BACKFILL

LOCATION	SELECTED PIPE BEDDING	SELECTED PIPE BACKFILL
	CU. YD.	
ENTIRE PROJECT	50	100
TOTALS	**50**	**100**

QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

EARTHWORK

STATION	STATION	LOCATION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU. YD.	
104+00.00	114+13.36	MAIN LANES - PIGEON ROOST CREEK	10500	11892
303+50.02	310+50.04	MAIN LANES - HURRICANE CREEK	570	2469
607+00.01	617+00.01	MAIN LANES - SLAVENS CREEK	775	6263
DETOUR CONSTRUCTION:		PIGEON ROOST CREEK	3060	5588
DETOUR CONSTRUCTION:		HURRICANE CREEK	108	1499
DETOUR CONSTRUCTION:		SLAVENS CREEK	467	4318
DETOUR REMOVAL:		PIGEON ROOST CREEK	5860	2141
DETOUR REMOVAL:		HURRICANE CREEK	1583	97
DETOUR REMOVAL:		SLAVENS CREEK	2901	461
CHANNEL EXCAVATION:		PIGEON ROOST CREEK	700	
CHANNEL EXCAVATION:		HURRICANE CREEK	260	
CHANNEL EXCAVATION:		SLAVENS CREEK	210	
ENTIRE PROJECT		DRIVES		700
TOTALS			**26994**	**35428**

NOTE: EARTHWORK QUANTITIES TO BE PAID AS PLAN QUANTITY.

EROSION CONTROL ITEMS - TEMPORARY

LOCATION	ROCK DITCH CHECKS (E-6)	DIVERSION DITCH (E-8)	SILT FENCE (E-11)	PIPE FOR SLOPE DRAINS (E-12)	SEDIMENT BASIN	OBLITERATION OF SEDIMENT BASIN	SEDIMENT REMOVAL AND DISPOSAL	TEMPORARY SEEDING	MULCH COVER	WATER	DUMPED RIPRAP	FILTER BLANKET
	CU.YD.	LIN. FT.			CU. YD.		CU.YD.	ACRE		M. GAL.	CU.YD.	SQ.YD.
MAIN LANES-STAGE 1	65	4061	1231	288	234	234	1000				12	
MAIN LANES-STAGE 2	80	1582	1826	181	96	96	500				4	
MAIN LANES-STAGE 3	35		385				200					
DETOUR CONSTRUCTION								1.61	1.61	32.8	20	40
*ENTIRE PROJECT											100	200
TOTALS	**180**	**5643**	**3442**	**469**	**330**	**330**	**1700**	**1.61**	**1.61**	**32.8**	**136**	**240**

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.

DRIVEWAYS

STATION	DESCRIPTION	SIDE	WIDTH	TURNOUT AREA	EXTENSION AREA *AGGREGATE (CLASS 7) (9" COMP. DEPTH)	TOTAL DRIVEWAY AREA	*AGGREGATE BASE COURSE (CLASS 7)	ACHM SURFACE COURSE (1/2")(64-22) (220 LB./SQ.YD.)	SIDE DRAIN		
									18"	24"	30"
			LIN. FT.	SQ. YD.			TON	TON	LIN.FT.		
114+43	PRIVATE DRIVE	RT.	16	56	22	78	34	6	32		
305+32	PRIVATE DRIVE	LT.	20	65	106	171	82	7	62		
306+18	PRIVATE DRIVE	RT.	16	56	67	123	58	6	48		
308+18	PRIVATE DRIVE	RT.	16	56	144	200	98	6			42
616+00	PRIVATE DRIVE	LT.	20	65	79	144	68	7		26	
TEMPORARY DRIVES							150				
TOTALS							**490**	**32**	**142**	**26**	**42**

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).

CONCRETE DITCH PAVING

LOCATION	TYPE B W=4'	SOLID SODDING	WATER
	SQ.YD.		M.GAL.
STA. 107+00-STA. 109+85 RT.	127	128	1.6
STA. 107+00-STA. 109+85 LT.	127	128	1.6
STA. 110+17-STA. 113+00 RT.	126	128	1.6
STA. 110+17-STA. 113+00 LT.	126	128	1.6
*ENTIRE PROJECT	444	446	5.6
TOTALS	**950**	**958**	**12.0**

BASIS OF ESTIMATE:
WATER = 12.6 GAL. PER SQ. YD. SOLID SODDING
*QUANTITIES ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

r100722.dgn 8/10/2011

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.		100722	31	121
① 07211, 07212		QUANTITIES		51926

SCHEDULE OF BRIDGE QUANTITIES-JOB 100722

BRIDGE NO.	CODE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	603	801	802	802	803	804	SP & 805	SP & 805	805	805	807	812	816	816
				ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	TEMPORARY BRIDGE STRUCTURE (20' ROADWAY WIDTH)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS I PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	① STEEL SHELL PILING (16" DIA.)	① STEEL SHELL PILING (18" DIA.)	PILE ENCASEMENT	PREBORING	STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W)	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP
				UNIT	LUMP SUM	LIN. FT.	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	EACH	SQ. YD.	CU. YD.
			EXISTING BR. NO. M0777 (SITE 1)		②1														
07211	X071	HURRICANE CREEK	END BENT 1 & 2				70	26.80			3,785	750			100			340	210
			67' INTEGRAL COMP. W-BEAM SPAN						104.80	6.2	21,075					54,500	1		
			EXISTING BR. NO. M0778 (SITE 2)		1	50													
			TOTALS FOR BRIDGE NO. 07211		1	50	70	26.80	104.80	6.2	24,860	750			100	54,500	1	340	210
07212	X071	SLAVENS CREEK	END BENT 1 & 4				39	26.80			3,777	850			100			160	105
			INT. BENT 2 & 3					24.60			2,989		850	100					
			131' INTEGRAL CONT. COMP. W-BEAM UNIT						181.30	11.8	39,234					75,130	1		
			EXISTING BR. NO. M0780 (SITE 3)		1	93													
			TOTALS FOR BRIDGE NO. 07212		1	93	39	51.40	181.30	11.8	46,000	850	850	100	100	75,130	1	160	105
			TOTALS FOR JOB 100722			143	109	78.20	286.10	18.0	70,860	1,600	850	100	200	129,630	2	500	315

① ASTM A252 GRADE 3, (Fy = 45,000 psi)

② Existing Bridge No. M0777 (Site No. 1) is 50' in length and 27.4' wide and is comprised of a concrete deck with asphalt overlay, timber stringers and supported by steel pile bents with timber caps. After detour is open to traffic, the existing bridge shall be removed in accordance with Section 205 of the Standard Specifications. All material from the existing bridge shall become the property of the Contractor.

JIM TRIBO
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Carl A. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL A. FUSELIER
6/3/11

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
LAFE-MARMADUKE STRS. & APPRS. (S)
GREENE COUNTY
ROUTE 34 SEC. 4
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 03/01/11 FILENAME: BI00722XL-01.DGN
CHECKED BY: BEF DATE: 3/15/11 SCALE: No Scale
DESIGNED BY: — DATE: —

BRIDGE NO. 07211,07212 DRAWING NO. 51926

SUMMARY OF QUANTITIES

ITEM NO.	ITEM		QUANTITY	UNIT
201	CLEARING		22	STATION
201	GRUBBING		22	STATION
202	REMOVAL AND DISPOSAL OF FENCE		2246	LIN. FT.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		5	EACH
202	REMOVAL AND DISPOSAL OF FLOOD GATES		2	EACH
210	UNCLASSIFIED EXCAVATION		26994	CU. YD.
210	COMPACTED EMBANKMENT		35428	CU. YD.
SP&210	SOIL STABILIZATION		100	TON
SS&303	AGGREGATE BASE COURSE (CLASS 7)		8975	TON
401	TACK COAT		802	GAL
SPSS&406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		1903	TON
SPSS&406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		81	TON
SPSS&407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		3108	TON
SPSS&407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		174	TON
412	COLD MILLING ASPHALT PAVEMENT		1332	SQ. YD.
SPSS&414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		11	TON
SPSS&415	ACHM PATCHING OF EXISTING ROADWAY		100	TON
504	APPROACH SLABS (TYPE SPECIAL)		155.20	CU. YD.
504	APPROACH GUTTERS (TYPE SPECIAL)		48.00	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	18" TEMPORARY CULVERT		40	LIN. FT.
SP&603	24" TEMPORARY CULVERT		42	LIN. FT.
SP&603	36" TEMPORARY CULVERT		76	LIN. FT.
603	84" TEMPORARY CULVERT		116	LIN. FT.
SS&604	SIGNS		744	SQ. FT.
SS&604	BARRICADES		192	LIN. FT.
SS&604	TRAFFIC DRUMS		61	EACH
SS&604	CONSTRUCTION PAVEMENT MARKINGS		12712	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		3632	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		3632	LIN. FT.
SS&604	VERTICAL PANELS		53	EACH
605	CONCRETE DITCH PAVING (TYPE B)		950	SQ. YD.
606	24" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 1)	56	LIN. FT.
606	24" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 2)	56	LIN. FT.
606	24" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (16 GAUGE)	(ALTERNATE NO. 3)	56	LIN. FT.
606	36" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (14 GAUGE)	(ALTERNATE NO. 1)	56	LIN. FT.
606	36" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (14 GAUGE)	(ALTERNATE NO. 2)	56	LIN. FT.
606	36" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (14 GAUGE)	(ALTERNATE NO. 3)	56	LIN. FT.
SS&606	18" SIDE DRAIN		142	LIN. FT.
SS&606	24" SIDE DRAIN		26	LIN. FT.
SS&606	30" SIDE DRAIN		42	LIN. FT.
606	SELECTED PIPE BEDDING		50	CU. YD.
606	SELECTED PIPE BACKFILL		100	CU. YD.
611	UNDERDRAIN OUTLET PROTECTORS		8	EACH
611	4" PIPE UNDERDRAINS		1000	LIN. FT.
616	24" AUTOMATIC FLOODGATES		1	EACH
616	36" AUTOMATIC FLOODGATES		1	EACH
SS&617	GUARDRAIL (TYPE A)		825	LIN. FT.
SS&617	TERMINAL ANCHOR POSTS (TYPE 1)		6	EACH
SS&617	THRIE BEAM GUARDRAIL TERMINAL		6	EACH
619	WIRE FENCE (TYPE D-1)		2279	LIN. FT.
620	LIME		15	TON
620	SEEDING		7.08	ACRE
620	MULCH COVER		8.69	ACRE
SS&620	WATER		751.1	MGAL
621	TEMPORARY SEEDING		1.61	ACRE
621	SILT FENCE		3442	LIN. FT.
621	DIVERSION DITCH		5643	LIN. FT.
621	SEDIMENT BASIN		330	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN		330	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL		1700	CU. YD.
621	PIPE FOR SLOPE DRAINS		469	LIN. FT.
621	ROCK DITCH CHECKS		180	CU. YD.
623	SECOND SEEDING APPLICATION		7.08	ACRE
624	SOLID SODDING		998	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
637	MAILBOXES		2	EACH
637	MAILBOX SUPPORTS (SINGLE)		2	EACH
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")		6627	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")		6011	LIN. FT.
SP&719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	(ALTERNATE NO. 1)	616	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	(ALTERNATE NO. 2)	616	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		80	EACH
SS&734	BRIDGE END TERMINAL		2	EACH
804	REINFORCING STEEL-ROADWAY (GRADE 60)		20056	POUND
816	FILTER BLANKET		240	SQ. YD.
816	DUMPED RIPRAP		136	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
603	TEMPORARY BRIDGE STRUCTURE (20' ROADWAY WIDTH)		143	LIN. FT.
636	BRIDGE CONSTRUCTION CONTROL		1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE		109	CU. YD.
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		145	CU. YD.
802	CLASS S CONCRETE-ROADWAY		382.92	CU. YD.
802	CLASS S CONCRETE-BRIDGE		78.20	CU. YD.
802	CLASS S(AE) CONCRETE - BRIDGE		286.10	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT		18.0	GAL.
804	REINFORCING STEEL-ROADWAY (GRADE 60)		53227	POUND
804	REINFORCING STEEL-BRIDGE (GRADE 60)		70860	POUND
SP&805	STEEL SHELL PILING (16" DIAMETER)		1600	LIN. FT.
SP&805	STEEL SHELL PILING (18" DIAMETER)		850	LIN. FT.
805	PREBORING		200	LIN. FT.
805	PILE ENCASEMENT		100	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)		129630	POUND
812	BRIDGE NAME PLATE (TYPE D)		2	EACH
816	FILTER BLANKET		500	SQ. YD.
816	DUMPED RIPRAP		315	CU. YD.

* DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	DESCRIPTION	PAGE NO.(S)



9-16-11

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.AID DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				100722				
							32	121

2 SUMMARY OF QUANTITIES AND REVISIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	33	121

(2) SURVEY CONTROL DETAILS

SURVEY CONTROL COORDINATES

Project Name: s100722
Date: 6/3/2010
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL.
PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	683829.3470	1761101.9056	400.43	CTL	5/8" REBAR W/ 2" CAP
2	683817.2234	1761544.0462	383.46	CTL	5/8" REBAR W/ 2" CAP
3	683800.2164	1761958.3024	400.43	CTL	5/8" REBAR W/ 2" CAP
4	678582.5137	1769301.8916	320.89	CTL	5/8" REBAR W/ 2" CAP
5	678556.9854	1770013.8457	323.14	CTL	5/8" REBAR W/ 2" CAP
6	678593.0108	1785158.0376	282.67	CTL	5/8" REBAR W/ 2" CAP
7	678574.5492	1785982.2086	279.72	CTL	5/8" REBAR W/ 2" CAP
100	683812.5064	1762453.3784	418.63	GPS	AHTD GPS 280019
101	683827.6904	1760676.9626	411.56	GPS	AHTD GPS 280019A
102	678632.3688	1770665.5404	347.38	GPS	AHTD GPS 280018
103	678503.2289	1768517.7249	315.64	GPS	AHTD GPS 280018A
104	678692.8426	1784235.9533	283.40	GPS	AHTD GPS 280017
105	678575.0906	1786373.2170	280.04	GPS	AHTD GPS 280017A
900	684092.3588	1750913.9941	314.64	BM	NGS MARK Q 32
901	683652.3835	1753181.0391	326.87	TBM	AHTD DISK
902	683952.2775	1755014.5905	326.12	TBM	CHISELED SQUARE, SE CORNER CONC PAD
903	683906.6894	1758197.7062	363.61	TBM	CHISELED SQUARE, CTR OF HEADWALL S SIDE HWY 34
904	683819.1581	1760581.9922	405.45	TBM	CHISELED SQUARE
905	683100.2745	1763245.9408	433.82	TBM	CHISELED SQUARE
906	680809.1056	1764902.6536	395.20	TBM	CHISELED SQUARE
907	678628.1374	1766213.6183	384.16	TBM	CHISELED SQUARE
908	678564.2943	1768914.1654	321.62	TBM	CHISELED SQUARE NORTH HEADWALL CORNER
909	678578.5431	1771755.6421	342.72	TBM	CHISELED SQUARE, NORTH HEADWALL CORNER OF S HEAD WALL HWY 34
910	678583.1175	1774458.6619	363.73	TBM	CHISELED SQUARE, CTR OF HEADWALL S SIDE HWY 34
911	678663.0833	1776208.0024	314.36	TBM	CHISELED SQUARE, CTR HEADWALL N SIDE HWY 34
912	678597.9209	1778160.2265	318.44	TBM	CHISELED SQUARE, CTR HEADWALL S SIDE HWY 34
913	678616.3880	1781594.6888	289.81	TBM	CHISELED SQUARE, SE CRNR OF S HEADWALL HWY 34
914	678587.7715	1784146.6087	283.88	TBM	CHISELED SQUARE NORTH HEADWALL CORNER OF SW
915	678585.9194	1786884.1142	280.47	TBM	CHISELED SQUARE CTR OF HEADWALL S OF
916	679328.6267	1789005.0440	281.96	TBM	CHISELED SQUARE
917	679909.1810	1790969.0714	271.47	TBM	CHISELED SQUARE, NE CORNER HEADWALL S SIDE HWY49
918	681045.3887	1792203.4338	268.55	TBM	CHISELED SQUARE, CTR HEADWALL W SIDE HWY 49
919	683636.6773	1794709.3980	275.86	TBM	CHISELED SQUARE
920	686343.6057	1797108.1239	272.77	BM	NGS MARK U 187

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.9999764962 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. s100722gi.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 - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 880088-880088A
CONVERGENCE ANGLE: 00 54 08.71 RIGHT AT LT: 36-11-15 LG: 090-26-57.0
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11

CONST 1.61

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	103+00.00	683851.1663	1760898.0025
8001	PI	104+00.00	683851.8904	1760998.0009
8002	PI	114+13.36	683840.1286	1762011.2936
8003	POE	115+13.38	683835.9211	1762111.2185

CONST 3.67

POINT NO.	TYPE	STATION	NORTHING	EASTING
8100	POB	302+50.00	678557.8051	1769093.9322
8101	PI	303+50.02	678562.8242	1769193.8220
8102	PI	310+50.02	678586.0696	1769893.4355
8103	POE	311+50.04	678587.2302	1769993.4567

CONST 6.71

POINT NO.	TYPE	STATION	NORTHING	EASTING
8200	POB	606+00.00	678618.0156	1784928.3518
8201	PI	607+00.01	678618.7656	1785028.3628
8202	PI	617+00.01	678610.3122	1786028.3274
8203	POE	618+00.05	678608.1209	1786128.3349

DETOUR 1.61RT

POINT NO.	TYPE	STATION	NORTHING	EASTING
9000	POB	10+00.00	683851.1663	1760898.0025
9001	PC	10+72.40	683850.2295	1760970.4005
9003	PT	12+25.42	683831.9832	1761122.0277
9004	PC	15+97.39	683748.4190	1761484.4954
9006	PT	18+18.66	683753.7688	1761703.3810
9007	PC	20+21.80	683809.0211	1761898.8667
9009	PT	22+35.96	683835.8221	1762110.5377
9010	POE	22+56.62	683835.3353	1762131.1922

DETOUR 3.67

POINT NO.	TYPE	STATION	NORTHING	EASTING
9100	POB	30+00.00	678557.0888	1769073.9431
9101	PC	30+28.74	678557.9800	1769102.6730
9103	PT	32+10.30	678586.4271	1769281.4945
9104	PC	32+37.60	678594.0891	1769307.6942
9106	PT	34+16.87	678622.4619	1769484.2390
9107	PC	35+23.41	678626.1037	1769590.7131
9109	PT	36+94.02	678611.6685	1769760.3015
9110	PC	37+45.32	678601.2745	1769810.5389
9112	PT	39+14.11	678586.7795	1769978.3141
9113	POE	39+49.24	678587.8914	1770013.4274

DETOUR 6.71

POINT NO.	TYPE	STATION	NORTHING	EASTING
9200	POB	50+00.00	678616.4474	1785073.3712
9201	PC	50+00.12	678616.4470	1785073.4894
9203	PT	52+00.99	678643.8392	1785271.8199
9204	PC	52+03.08	678644.4131	1785273.8347
9206	PT	54+13.84	678671.7076	1785482.0464
9207	PC	55+44.77	678669.5098	1785612.9659
9209	PT	57+40.25	678639.7613	1785805.5539
9210	PC	57+45.10	678638.3762	1785810.2000
9212	PT	59+50.70	678608.5294	1786012.9122
8061	POE	59+51.13	678608.5282	1786013.3349

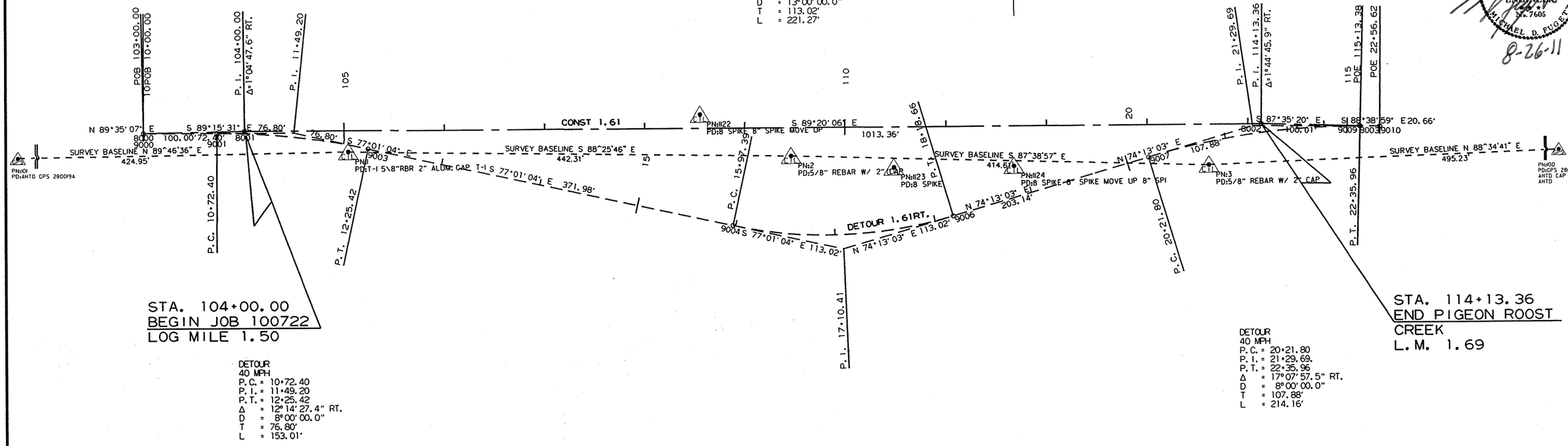
r100722.dgn 8/10/2011

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	34	121

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGH, P.E.
8-26-11



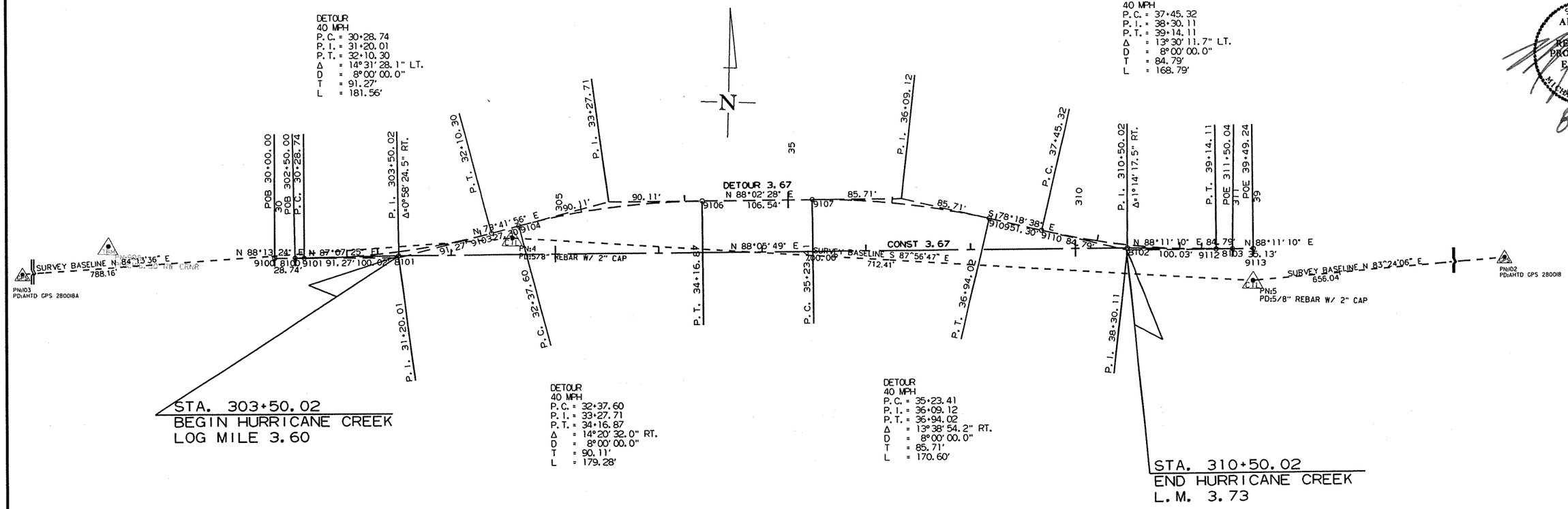
SURVEY CONTROL DETAILS
PIGEON ROOST CREEK

r100722.dgn 8/10/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	35	121

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



SURVEY CONTROL DETAILS
HURRICANE CREEK

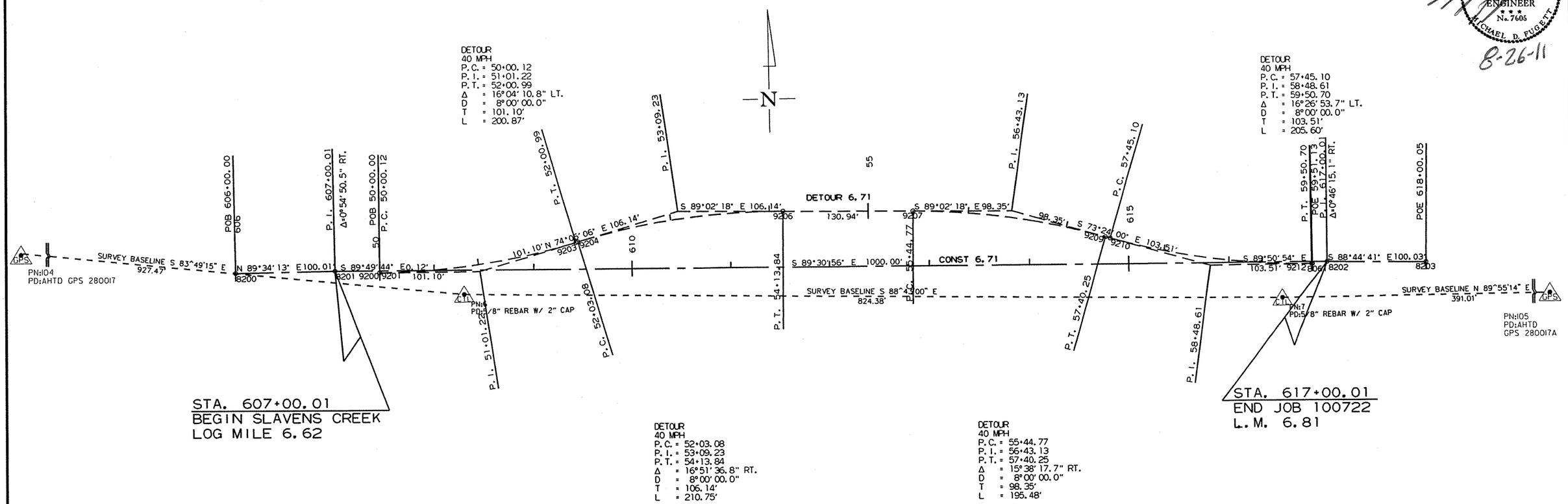
r100722.dgn 8/10/2011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		100722	36	121

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



DETOUR
40 MPH
P.C. = 52+03.08
P.I. = 53+09.23
P.T. = 54+13.84
Δ = 16°51'36.8" RT.
D = 8°00'00.0"
T = 106.14'
L = 210.75'

DETOUR
40 MPH
P.C. = 55+44.77
P.I. = 56+43.13
P.T. = 57+40.25
Δ = 15°38'17.7" RT.
D = 8°00'00.0"
T = 98.35'
L = 195.48'

r100722.dgn 8/10/2011

SURVEY CONTROL DETAILS
SLAVENS CREEK

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		100722	37	121

(2) PLAN & PROFILE STA. 104+00.00-STA. 114+13.36

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. PUGETT
8-26-11

FENCING

STATION	STATION	SIDE	WIRE FENCE TYPE D-1 LIN. FT.
103+40	109+93	LT.	704
110+57	115+13	LT.	487

CONCRETE DITCH PAVING (TYPE B)

STATION	STATION	SIDE	"W"	SQ. YDS.
107+00	109+85	LT.	4'	127
107+00	109+85	RT.	4'	127
110+17	113+00	LT.	4'	126
110+17	113+00	RT.	4'	126

STA. 109+78 TO STA. 110+28 - IN PLACE
50' X 24' CLEAR ROADWAY BRIDGE NO. M0777 AT L.M. 1.61
CONSISTING OF A CONCRETE DECK WITH ASPHALT OVERLAY
AND TIMBER STRINGER SUPPORTED BY STEEL PILE BENTS WITH TIMBER CAPS.
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. I) = 1.00 LUMP SUM

STA. 104+00.00
BEGIN JOB 100722
LOG MILE 1.50

STA. 110+00 CONSTRUCT
TRP. 9' X 11' X 92'
R.C. BOX CULVERT AT 18° LT. FWD. SKEW
W/ 3:1 WINGS LT. & RT.
ROADWAY SPAN = 30.83'
Q25 = 380 CFS D.A. = 0.24 SQ. MI.

FENCING

STATION	STATION	SIDE	WIRE FENCE TYPE D-1 LIN. FT.
103+40	109+42	RT.	633
110+06	114+13	RT.	455

STA. 114+43 IN PLACE
15" X 20' PLASTIC PIPE
CULVERT ON RT.
REMOVE & INSTALL
18" X 32'
RT. SIDE DRAIN
CONST. APPR. - 25 CU. YD.

STA. 114+13.36
END PIGEON ROOST
CREEK
L.M. 1.69
MAIN LANES
PIGEON ROOST CREEK

STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL
PIGEON ROOST CREEK	STA. 16+45 -STA. 17+10	INTERMITTENT	381 ft. msl

K 97.76
VC-850'
e-9.24'

STA. 110+00.00
F.L. INLET 373.25 LT.
F.L. OUTLET 372.25 RT.

THE GPS POINTS AND CONTROL POINTS LISTED IN THE SURVEY CONTROL DETAILS MAY BE USED AS BENCH MARKS.

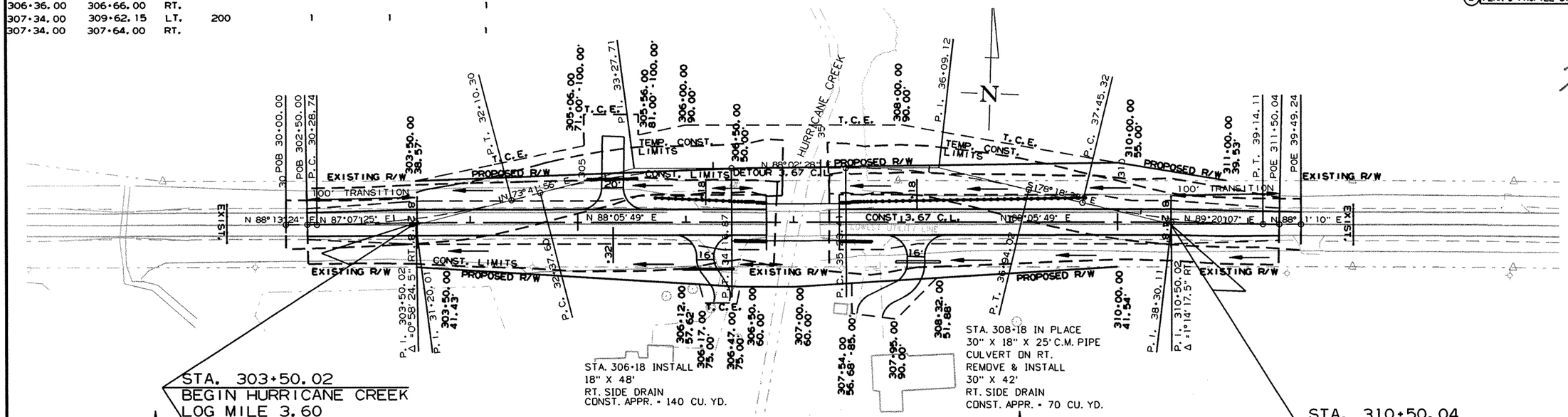
STA.	STA.	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL (EA)	TERMINAL ANCHOR POSTS (TYPE 1) (EA)	BRIDGE END TERMINAL (EA)
305+62.85	306+66.00	LT.	75	1	1	
306+36.00	306+66.00	RT.				1
307+34.00	309+62.15	LT.	200	1	1	
307+34.00	307+64.00	RT.				1

STA. 305+32 INSTALL
18" X 62'
LT. SIDE DRAIN
CONST. APPR. - 265 CU. YD.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	38	121

(2) PLAN & PROFILE STA. 303+50.02-STA. 310+50.02

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



STA. 306+18 INSTALL
18" X 48'
RT. SIDE DRAIN
CONST. APPR. - 140 CU. YD.

STA. 308+18 IN PLACE
30" X 18" X 25' C.M. PIPE
CULVERT DN RT.
REMOVE & INSTALL
30" X 42'
RT. SIDE DRAIN
CONST. APPR. - 70 CU. YD.

STA. 303+50.02
BEGIN HURRICANE CREEK
LOG MILE 3.60

STA. 306+66.00 - STA. 307+34.00 CONSTRUCT
68' X 32' BRIDGE NO. 07211
67'-0" INTEGRAL CONTINUOUS COMPOSITE
W-BEAM SPAN

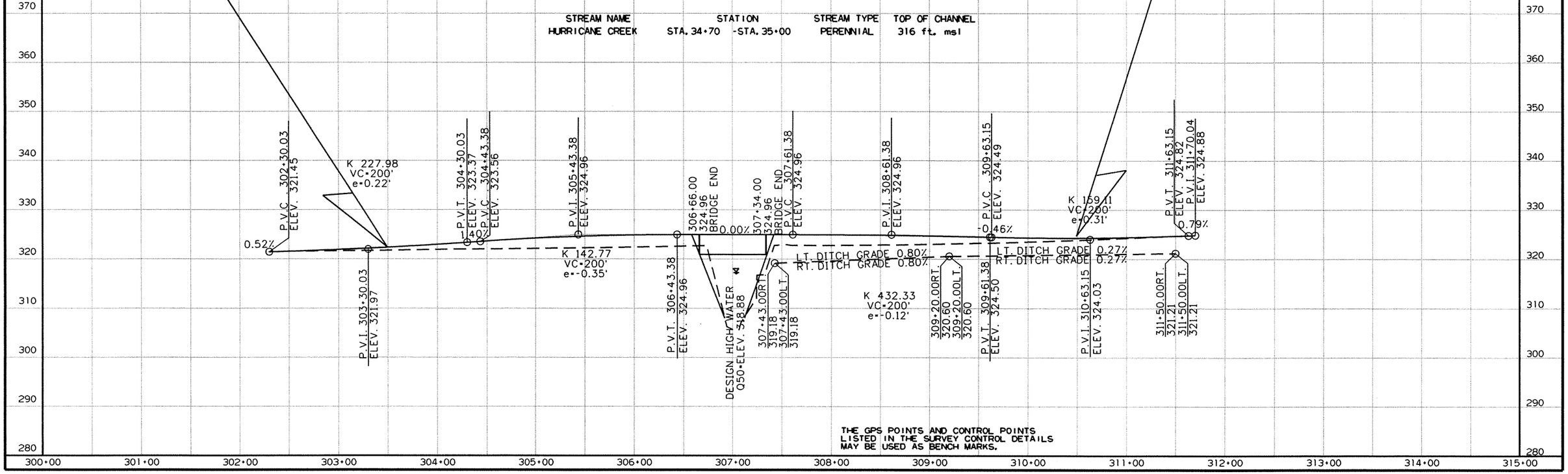
STA. 306+75 TO STA. 307+25 - IN PLACE
50' X 24' CLEAR ROADWAY BRIDGE NO. M0778 AT L.M. 3.67
CONSISTING OF A SINGLE SPAN CONCRETE DECK
AND TIMBER STRINGER/GIRDER WITH TIMBER PILINGS
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 2) = 1.00 LUMP SUM

STA. 310+50.04
END HURRICANE CREEK
L.M. 3.73

MAIN LANES
HURRICANE CREEK

SPECIAL FLOOD HAZARD AREA

STREAM NAME: HURRICANE CREEK
STATION: STA. 34+70 - STA. 35+00
STREAM TYPE: PERENNIAL
TOP OF CHANNEL: 316 ft. msl



THE GPS POINTS AND CONTROL POINTS LISTED IN THE SURVEY CONTROL DETAILS MAY BE USED AS BENCH MARKS.

STA.	STA.	SIDE	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL (EA)	TERMINAL ANCHOR POSTS (TYPE I) (EA)
609+18.35	611+46.50	RT.	200	1	1
610+43.35	611+46.50	LT.	75	1	1
612+78.50	615+06.65	LT.	200	1	1
612+78.50	613+81.65	RT.	75	1	1

STA. 611+31 IN PLACE
24" X 44' C.M. PIPE
CULVERT ON LT.
W/ FLOODGATE
REMOVE & RELOCATE
AUTOMATIC FLOODGATE FOR
TEMPORARY STRUCTURE
INSTALL 24" X 56' C.M. PIPE CULVERT
W/ 24" AUTOMATIC FLOODGATE

STA. 613+00 IN PLACE
36" X 61' C.M. PIPE
CULVERT ON LT.
W/ FLOODGATE
REMOVE & RELOCATE
AUTOMATIC FLOODGATE FOR
TEMPORARY STRUCTURE
INSTALL 36" X 56' C.M. PIPE CULVERT
W/ 36" AUTOMATIC FLOODGATE

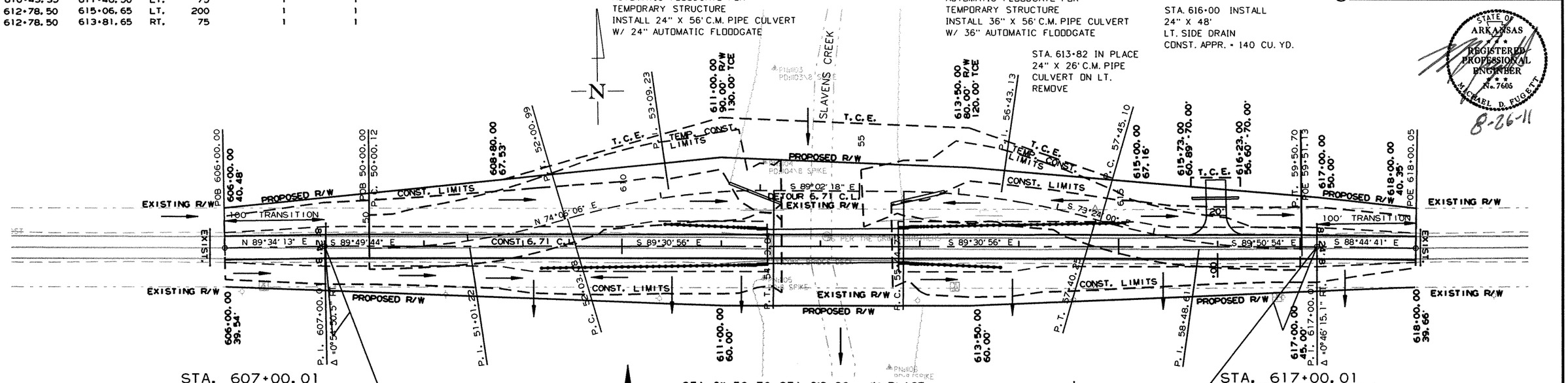
STA. 613+82 IN PLACE
24" X 26' C.M. PIPE
CULVERT ON LT.
REMOVE

STA. 616+00 INSTALL
24" X 48'
LT. SIDE DRAIN
CONST. APPR. = 140 CU. YD.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	39	121

(2) PLAN & PROFILE STA. 607+00.01-STA. 617+00.01

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11



STA. 607+00.01
BEGIN SLAVENS CREEK
LOG MILE 6.62

STA. 611+46.50 - STA. 612+78.50 CONSTRUCT
132' X 32' BRIDGE NO. 07212
131'-0" INTEGRAL CONTINUOUS COMPOSITE
W-BEAM UNIT (41'-6", 48'-0", 41'-6")

STA. 611+50 TO STA. 612+80 - IN PLACE
130' X 25.5' CLEAR ROADWAY BRIDGE NO. M0780 AT L.M. 6.71
CONSISTING OF A CONCRETE DECK WITH ASPHALT OVERLAY
AND TIMBER AND STEEL STRINGER/GIRDER WITH TIMBER PILINGS
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 3) = 1.00 LUMP SUM

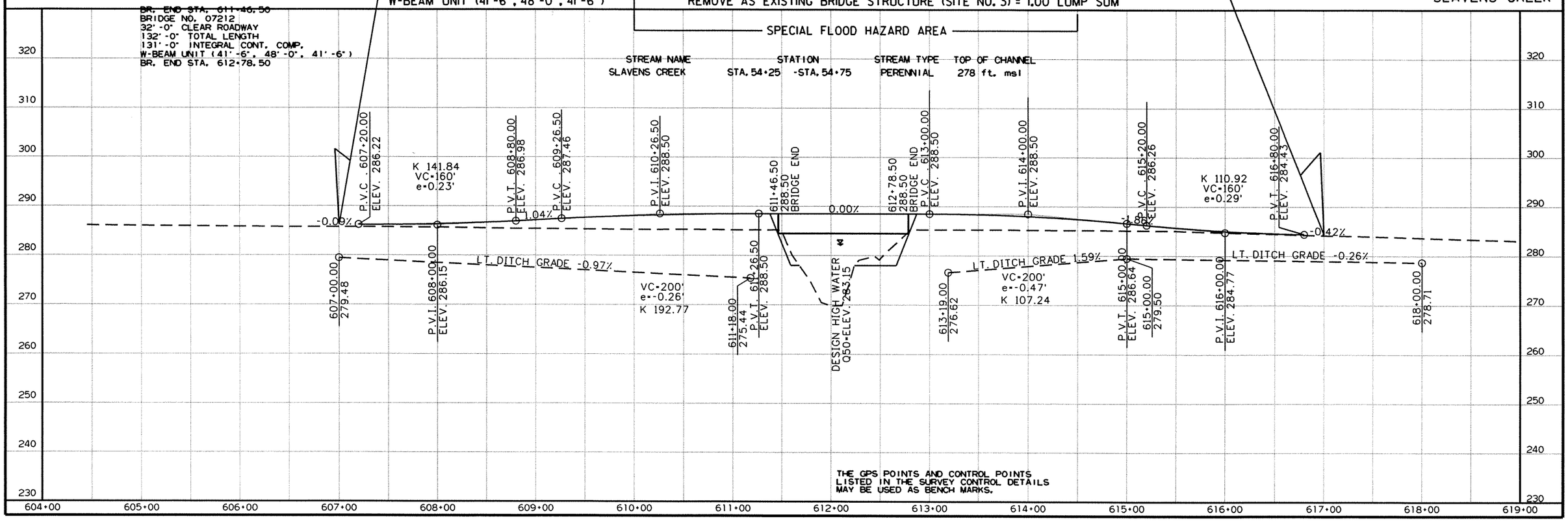
STA. 617+00.01
END JOB 100722
L. M. 6.81

MAIN LANES
SLAVENS CREEK

SPECIAL FLOOD HAZARD AREA

BR. END STA. 611+46.50
BRIDGE NO. 07212
32'-0" CLEAR ROADWAY
132'-0" TOTAL LENGTH
131'-0" INTEGRAL CONT. COMP.
W-BEAM UNIT (41'-6", 48'-0", 41'-6")
BR. END STA. 612+78.50

STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL
SLAVENS CREEK	STA. 54+25 -STA. 54+75	PERENNIAL	278 ft. msl



THE GPS POINTS AND CONTROL POINTS LISTED IN THE SURVEY CONTROL DETAILS MAY BE USED AS BENCH MARKS.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	40	121

(2) DETOUR PLAN & PROF. STA. 10+00.00-STA. 22+56.62

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
MICHAEL D. FUGETT
No. 7605
8-26-11

40 MPH
P. I. = 17+10.41
Δ = 28°45'53.1" LT.
D = 13°00'00.0"
T = 113.02'
L = 221.27'
e = 0.100'/'
Ls = 250.00'

PIGEON ROOST CREEK

EXISTING R/W
PROPOSED R/W
100' TRANSITION
TEMP. CONST. LIMITS
T.C.E.
N 89°35'07" E
S 89°15'31" E
S 89°20'06" E
S 87°35'20" E
S 88°38'59" E
S 77°01'03.79" E
N 74°13'03.06" E
P.O.B. 103+00.00
10+00.00
P.O.E. 22+56.62
103+40.00 50.83'
104+00.00 80.00'
107+50.00 70.00'
109+50.00 135.00'
111+00.00 130.00'
111+50.00 55.00'
114+13.00 75.00'
115+13.00 49.87'
P.I. 11+49.20
P.I. 21+29.69
P.C. 10+72.40
P.I. 104+00.00
P.T. 12+25.42
105+17.00 75.02'
107+50.00 65.00' R/W 115.00' TCE
P.C. 15+97.39
109+50.00 120.00'
P.I. 17+10.41
110+00.00 180.00'
110+50.00 120.00'
111+50.00 55.00' R/W 115.00' TCE
P.C. 20+21.80
114+13.00 41.89'
114+13.36
114+31.00 41.36'
114+63.00 40.40'
50.00' TCE
P.T. 22+35.96
105+13.38

STA. 10+72.40
BEGIN PIGEON ROOST CREEK DETOUR

40 MPH
P.I. = 11+49.20
Δ = 12°14'27.4" RT.
D = 8°00'00.0"
T = 76.80'
L = 153.01'
NO SUPER

STA. 16+87 INSTALL
84" X 116'
TEMPORARY PIPE CULVERT

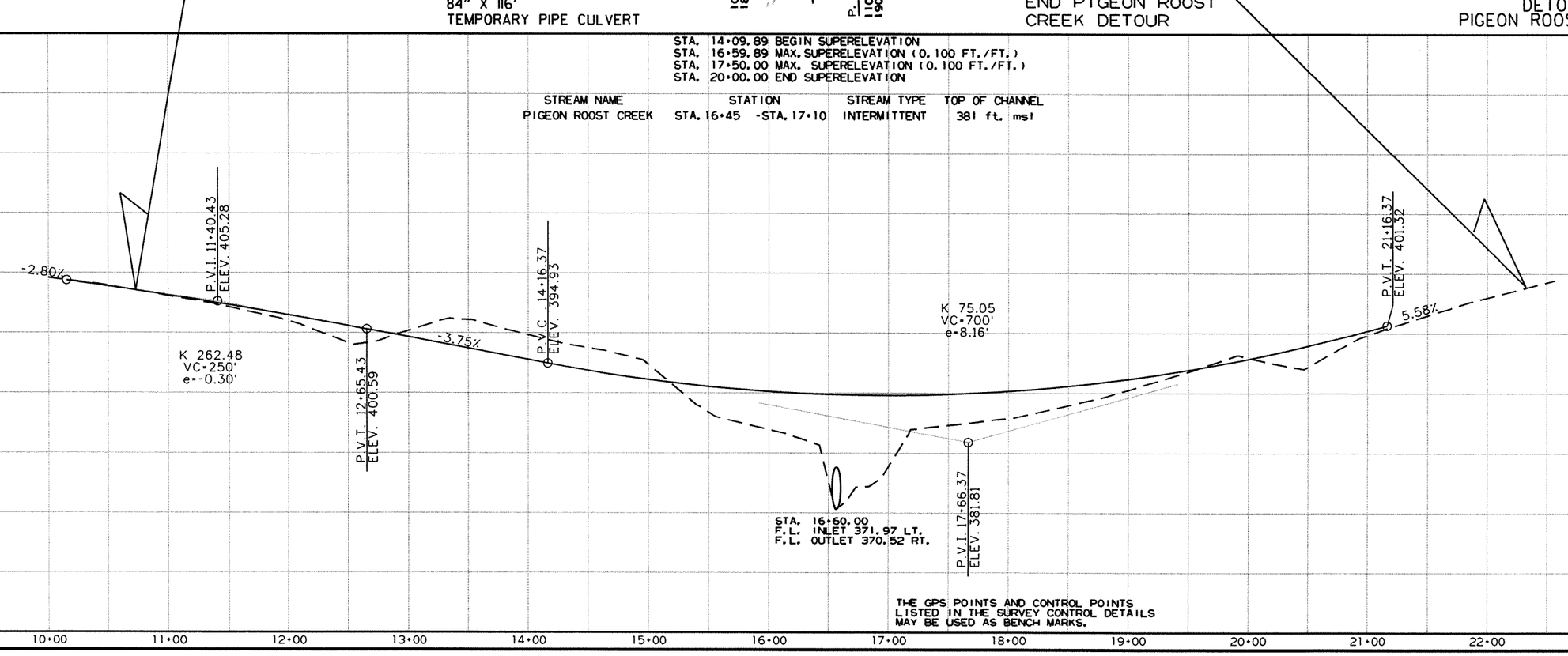
STA. 22+35.96
END PIGEON ROOST CREEK DETOUR

40 MPH
P.I. = 21+29.69
Δ = 17°07'57.5" RT.
D = 8°00'00.0"
T = 107.88'
L = 214.16'
NO SUPER

DETOUR
PIGEON ROOST CREEK

STA. 14+09.89 BEGIN SUPERELEVATION
STA. 16+59.89 MAX. SUPERELEVATION (0.100 FT./FT.)
STA. 17+50.00 MAX. SUPERELEVATION (0.100 FT./FT.)
STA. 20+00.00 END SUPERELEVATION

STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL
PIGEON ROOST CREEK	STA. 16+45 -STA. 17+10	INTERMITTENT	381 ft. msl



THE GPS POINTS AND CONTROL POINTS LISTED IN THE SURVEY CONTROL DETAILS MAY BE USED AS BENCH MARKS.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	41	121

(2) DETOUR PLAN & PROF. STA. 30+00.00-STA. 39+49.24

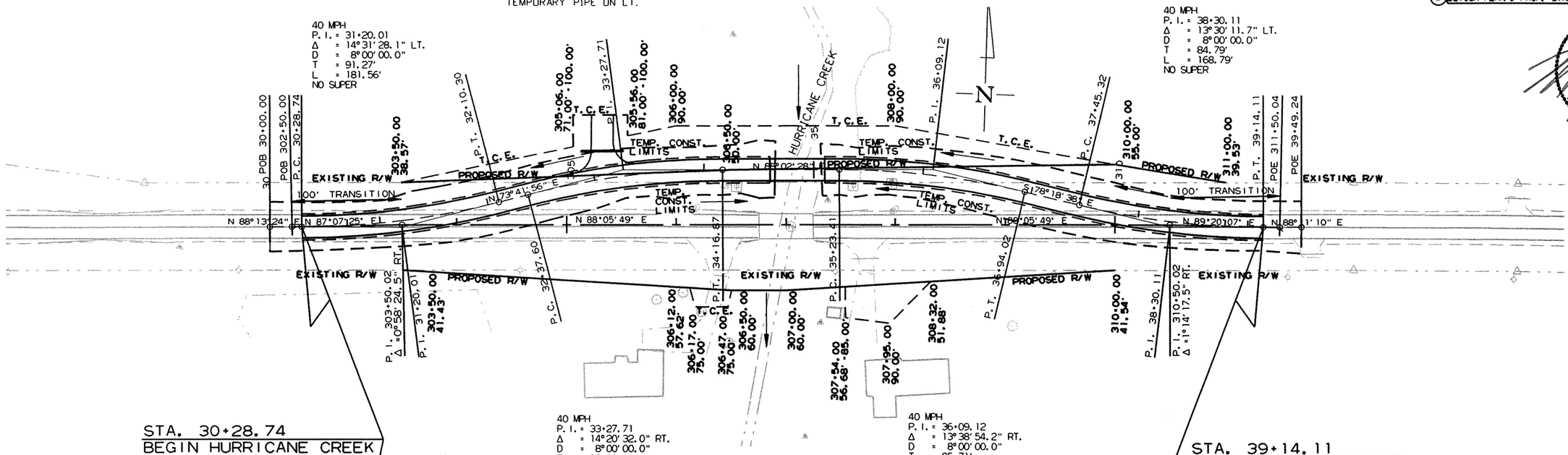
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7605
MICHAEL D. FUGETT
8-26-11

STA. 34+60 - STA. 35+10 CONSTRUCT 50' X 20' TEMPORARY BRIDGE

STA. 33+10 INSTALL
18" X 40'
TEMPORARY PIPE ON LT.

40 MPH
P. I. = 31+20.01
Δ = 14°31'28.1" LT.
D = 8°00'00.0"
T = 91.27'
L = 181.56'
NO SUPER

40 MPH
P. I. = 38+30.11
Δ = 13°30'11.7" LT.
D = 8°00'00.0"
T = 84.79'
L = 168.79'
NO SUPER



STA. 30+28.74
BEGIN HURRICANE CREEK DETOUR

40 MPH
P. I. = 33+27.71
Δ = 14°20'32.0" RT.
D = 8°00'00.0"
T = 90.11'
L = 179.28'
e = 0.084'/'
Ls = 250.00'

40 MPH
P. I. = 36+09.12
Δ = 13°38'54.2" RT.
D = 8°00'00.0"
T = 85.71'
L = 170.60'
e = 0.084'/'
Ls = 250.00'

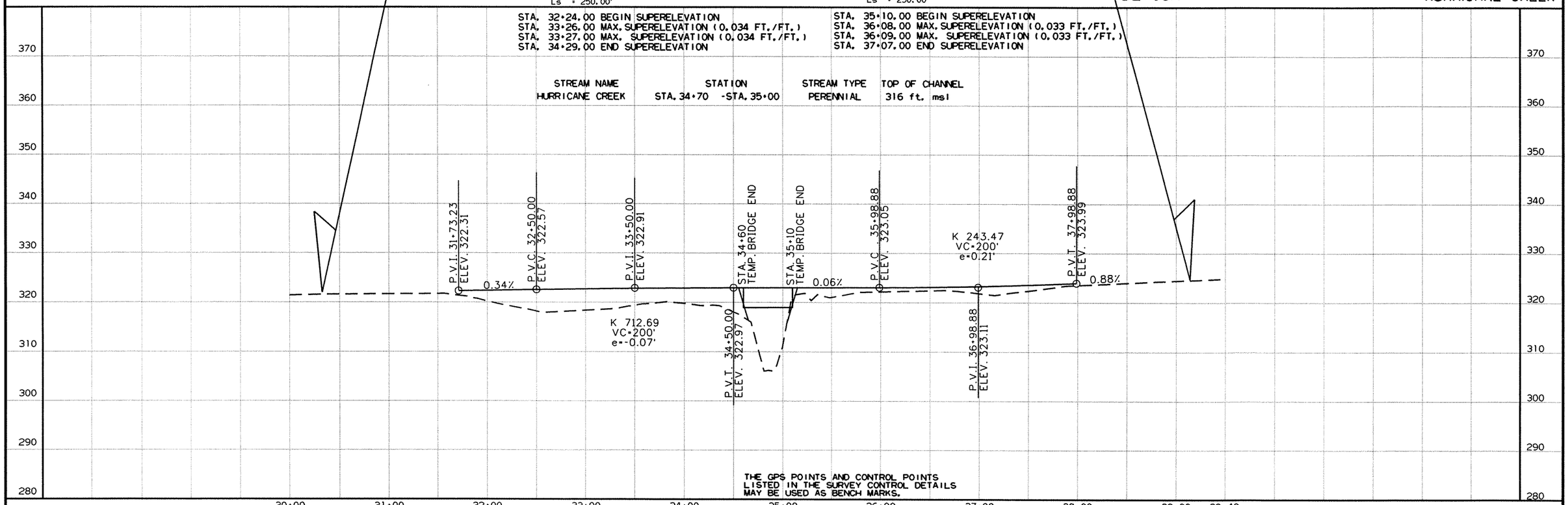
STA. 39+14.11
END HURRICANE CREEK DETOUR

DETOUR
HURRICANE CREEK

STA. 32+24.00 BEGIN SUPERELEVATION
STA. 33+26.00 MAX. SUPERELEVATION (0.034 FT./FT.)
STA. 33+27.00 MAX. SUPERELEVATION (0.034 FT./FT.)
STA. 34+29.00 END SUPERELEVATION

STA. 35+10.00 BEGIN SUPERELEVATION
STA. 36+08.00 MAX. SUPERELEVATION (0.033 FT./FT.)
STA. 36+09.00 MAX. SUPERELEVATION (0.033 FT./FT.)
STA. 37+07.00 END SUPERELEVATION

STREAM NAME	STATION	STREAM TYPE	TOP OF CHANNEL
HURRICANE CREEK	STA. 34+70 -STA. 35+00	PERENNIAL	316 ft. msl



THE GPS POINTS AND CONTROL POINTS LISTED IN THE SURVEY CONTROL DETAILS MAY BE USED AS BENCH MARKS.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	42	121

(2) DETOUR PLAN & PROF. STA. 50+00.00-STA. 59+51.13

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 7605
MICHAEL D. RUGETT
8-26-11

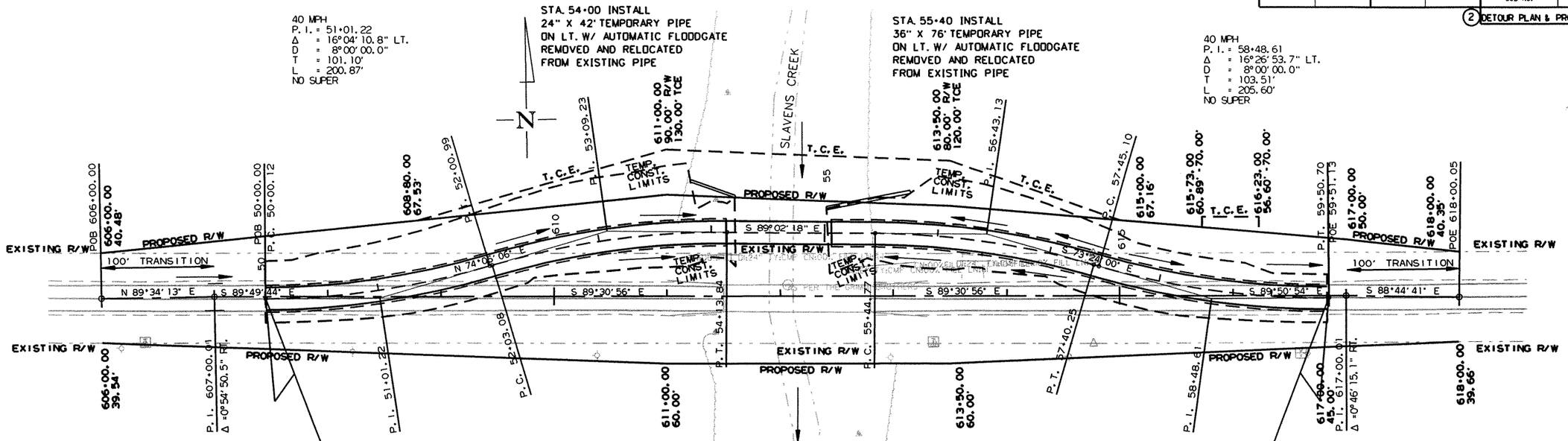
STA. 54+13 - STA. 55+06 CONSTRUCT 93' X 20' TEMPORARY BRIDGE

40 MPH
P. I. = 51+01.22
Δ = 16°04' 10.8" LT.
D = 8°00' 00.0"
T = 101.10'
L = 200.87'
NO SUPER

STA. 54+00 INSTALL
24" X 42' TEMPORARY PIPE
ON LT. W/ AUTOMATIC FLOODGATE
REMOVED AND RELOCATED
FROM EXISTING PIPE

STA. 55+40 INSTALL
36" X 76' TEMPORARY PIPE
ON LT. W/ AUTOMATIC FLOODGATE
REMOVED AND RELOCATED
FROM EXISTING PIPE

40 MPH
P. I. = 58+48.61
Δ = 16°26' 53.7" LT.
D = 8°00' 00.0"
T = 103.51'
L = 205.60'
NO SUPER



STA. 50+00.12
BEGIN SLAVENS CREEK DETOUR

40 MPH
P. I. = 53+09.23
Δ = 16°51' 36.8" RT.
D = 8°00' 00.0"
T = 106.14'
L = 210.75'
e = 0.084'/'
Ls = 250.00'

40 MPH
P. I. = 56+43.13
Δ = 15°38' 17.7" RT.
D = 8°00' 00.0"
T = 98.35'
L = 195.48'
e = 0.084'/'
Ls = 250.00'

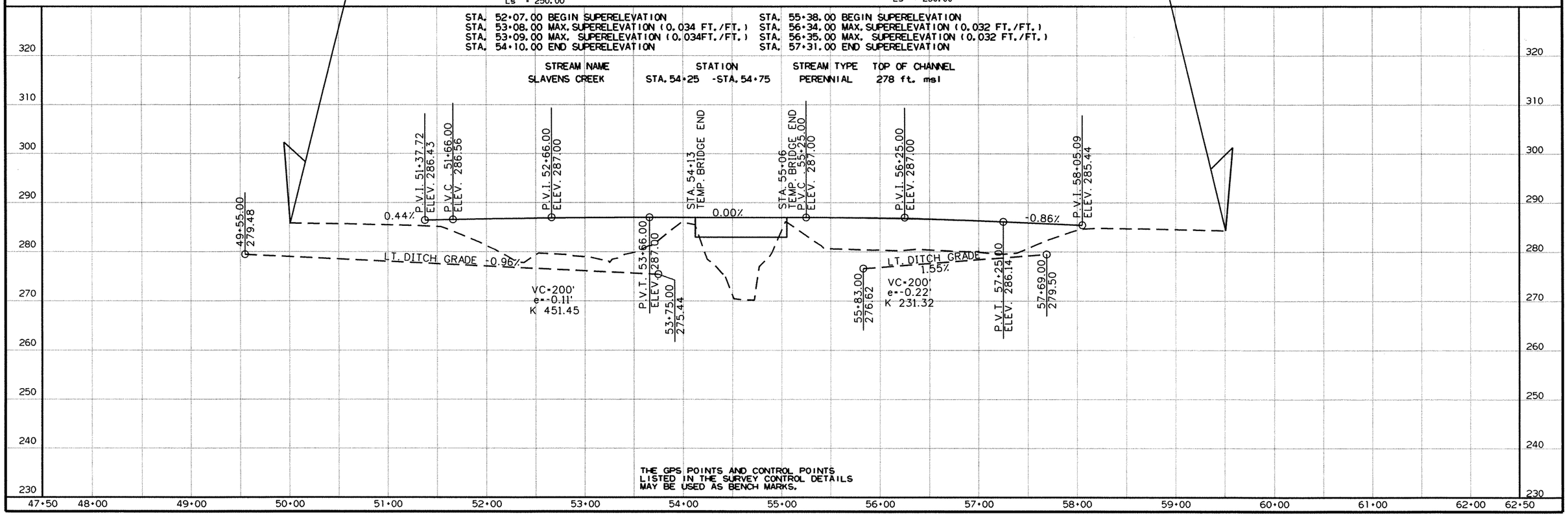
STA. 59+50.70
END SLAVENS CREEK DETOUR

DETOUR
SLAVENS CREEK

STA. 52+07.00 BEGIN SUPERELEVATION
STA. 53+08.00 MAX. SUPERELEVATION (0.034 FT./FT.)
STA. 53+09.00 MAX. SUPERELEVATION (0.034FT./FT.)
STA. 54+10.00 END SUPERELEVATION

STA. 55+38.00 BEGIN SUPERELEVATION
STA. 56+34.00 MAX. SUPERELEVATION (0.032 FT./FT.)
STA. 56+35.00 MAX. SUPERELEVATION (0.032 FT./FT.)
STA. 57+31.00 END SUPERELEVATION

STREAM NAME: SLAVENS CREEK
STATION: STA. 54+25 -STA. 54+75
STREAM TYPE: PERENNIAL
TOP OF CHANNEL: 278 ft. msl

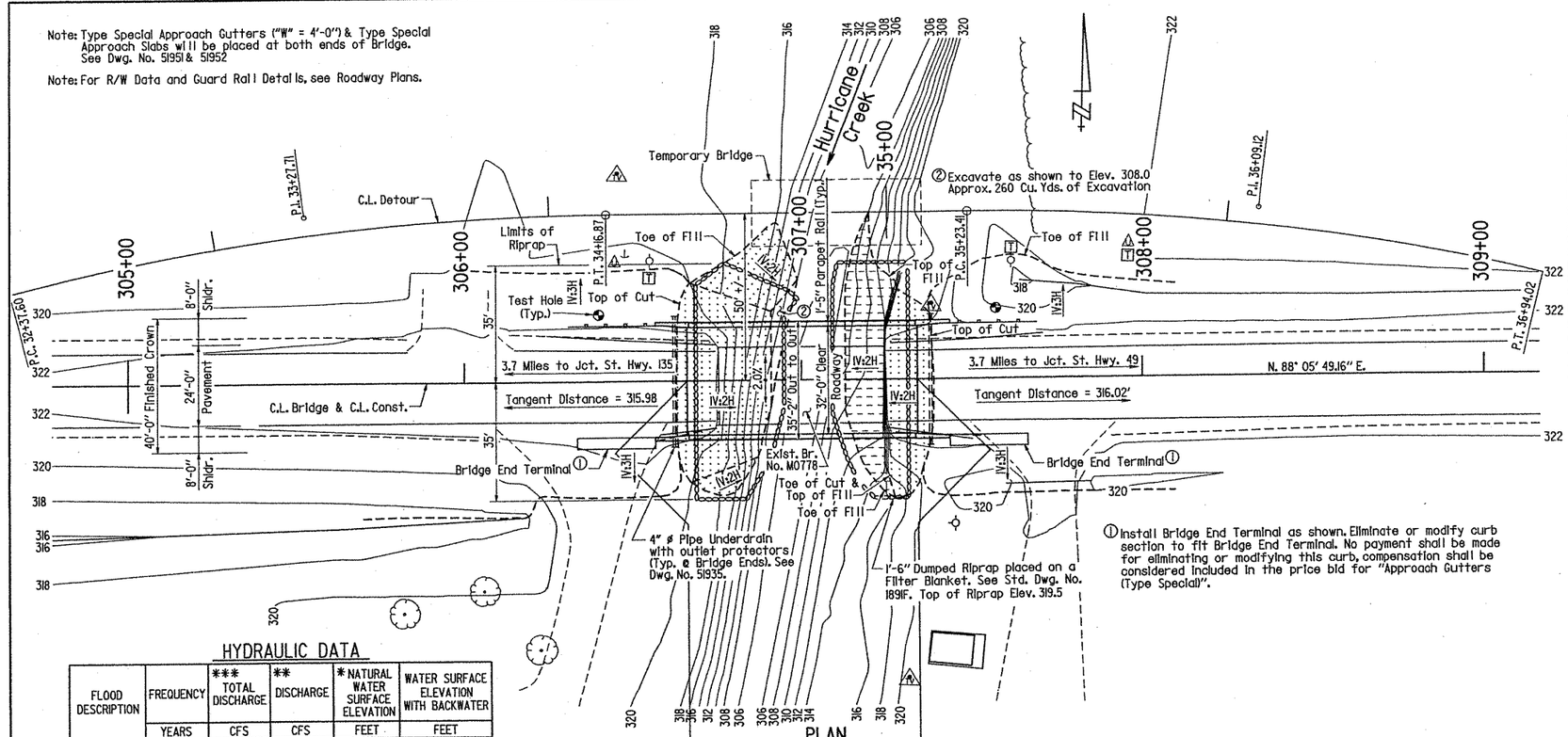


THE GPS POINTS AND CONTROL POINTS LISTED IN THE SURVEY CONTROL DETAILS MAY BE USED AS BENCH MARKS.

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.		100722	43	121
				(1) 07211		LAYOUT		51927

Note: Type Special Approach Gutters ("W" = 4'-0") & Type Special Approach Slabs will be placed at both ends of Bridge. See Dwg. No. 51951 & 51952

Note: For R/W Data and Guard Rail Details, see Roadway Plans.



① Install Bridge End Terminal as shown. Eliminate or modify curb section to fit Bridge End Terminal. No payment shall be made for eliminating or modifying this curb, compensation shall be considered included in the price bid for "Approach Gutters (Type Special)".

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	*** TOTAL DISCHARGE	** DISCHARGE	* NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION WITH BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	050	2560	2381	318.57	318.88
Base	0100	3130	2853	318.91	319.37
Extreme	0500	3730	3367	319.21	319.88
Overtopping	>0500	–	–	–	–

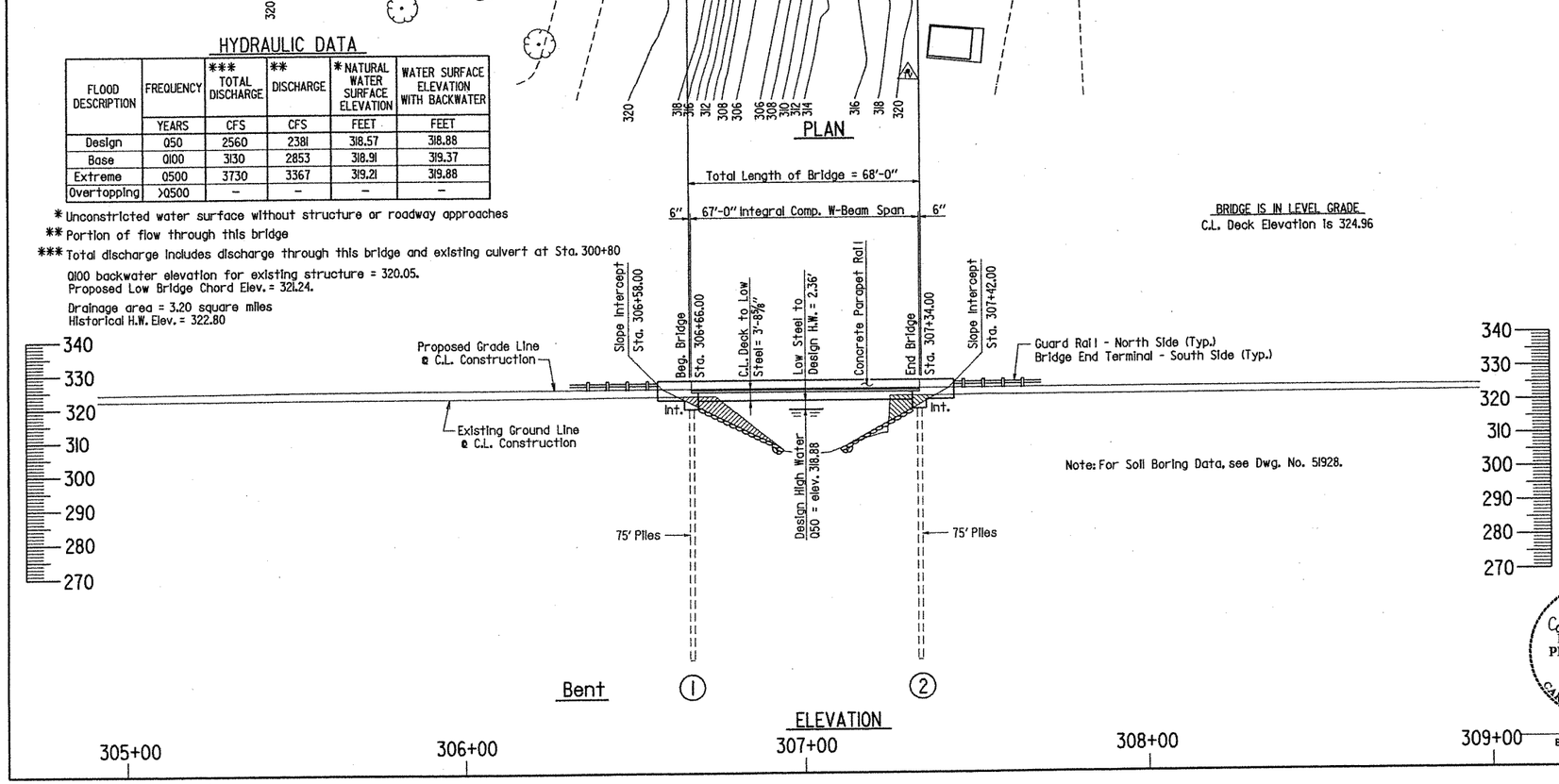
* Unconstricted water surface without structure or roadway approaches

** Portion of flow through this bridge

*** Total discharge includes discharge through this bridge and existing culvert at Sta. 300+80

Q100 backwater elevation for existing structure = 320.05.
Proposed Low Bridge Chord Elev. = 321.24.

Drainage area = 3.20 square miles
Historical H.W. Elev. = 322.80



Note: For Soil Boring Data, see Dwg. No. 51928.

GENERAL NOTES

BENCH MARK: BM 908 Chiseled Square NW Corner, 12.7' Left, Sta. 300+70.54, Elev. 321.62

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2003 edition, with applicable supplemental specifications and special provisions. Unless otherwise noted in the plans Section and Subsection refer to the Standard Construction Specifications.

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

LIVE LOADING: HL-93

SEISMIC ZONE: 4

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M 31 or M 53, Gr. 60)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi

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

PILING: Piling for Bents 1 and 2 shall be 16" concrete filled steel shell and shall be driven to a minimum ultimate bearing capacity of 189 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. All piling shall have a tip elevation of 247.00 or lower. Lengths of piling shown are assumed for estimating quantities only. Actual lengths are to be determined in the field. Test Piles are not required, but may be driven for the Contractor's information in accordance with subsection 805.08(g). There will be no additional payment for cut-off or build-up of the piles.

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)" of the standard specifications. It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16"dia. piles will be 40,000 foot pounds per blow.

PREBORING: Preboring is required on all piling in Bents 1 and 2 to a depth of 10' below bottom of cap. Prebored holes shall be a minimum of 6" greater than the diameter of the pile section and shall be back-filled with sand or pea gravel after piles are in place. This required preboring will be paid for at the unit price bid for "Preboring". The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casings or other methods. Temporary casings, if required, shall not be paid for directly but shall be considered subsidiary to Preboring.

Water jetting or other methods approved by the Engineer may be needed to achieve the minimum pile penetration. Any cost associated with achieving the minimum pile penetration shall be considered subsidiary to "Steel Shell Piling".

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

PIPE UNDERDRAIN: One Pipe Underdrain with Outlet Protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Underdrains and Outlet Protectors will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:

	DRAWING NO.
End Bents	51929
Concrete Filled Steel Shell Piling	51930
67' Integral Composite W-Beam Span	51931-51935
Type Special Approach Gutters	51952
Type Special Approach Slabs	51951

EXISTING BRIDGE: Existing Bridge No. M0778 (LM 3.67) is 50' in length and 25.4' wide and is comprised of a concrete deck w/asphalt overlay, timber stringer/girders and supported by timber pile bents. Centerline of existing bridge is located on the proposed roadway centerline.

REMOVAL AND SALVAGE: After temporary bridge is open to traffic, existing Bridge No. M0778 (Site. No. 2) shall be removed in accordance with Section 205 of the Standard Specifications. All material from the existing bridge shall become the property of the Contractor.

TEMPORARY BRIDGE: Construct a temporary bridge in accordance with Section 603 approximately 50 feet upstream from centerline construction with a minimum deck elevation of 318.60. See Roadway Plans for actual detour grade and alignment. The temporary bridge shall have a minimum length of 50' with a minimum roadway width of 20', a minimum span length of 19', a minimum live load capacity of H15, and meet the requirements for Seismic Zone 'B'. See Dwg. Nos. 51936-51939 for temporary bridge details. A timber deck will not be allowed.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Carl J. Fuselier
No. 7610
REGISTERED PROFESSIONAL ENGINEER
CARL J. FUSELIER
6/13/11
BRIDGE ENGINEER

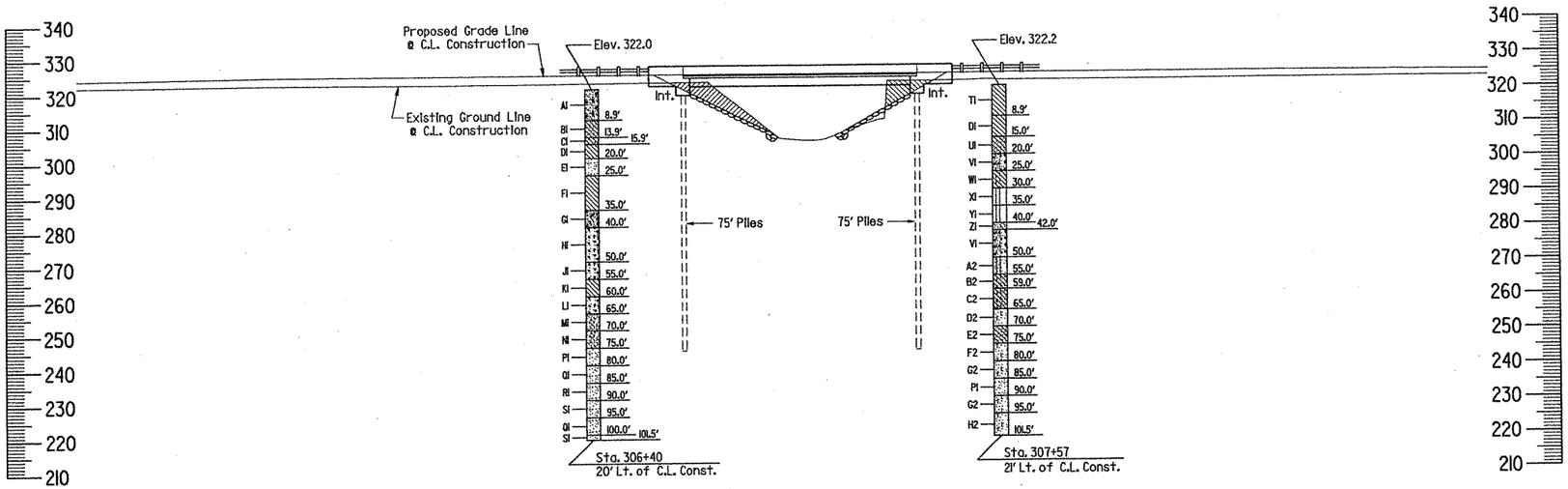
LAYOUT OF BRIDGE OVER HURRICANE CREEK
LAFE-MARMADUKE STRS. & APPRS. (S)
GREENE COUNTY
ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 10/29/10 FILENAME: BI00722XI_LI.DGN
CHECKED BY: JGT DATE: 3-21-11 SCALE: 1" = 20'-0"
DESIGNED BY: BEE DATE: 9/10

BRIDGE NO. 07211 DRAWING NO. 51927

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.		100722	44	121
				(1) 07211		LAYOUT		51928



BORING LEGEND

A1-Wet, Loose, Brown Sand with Clay and Organic Matter
B1-Moist, Hard, Gray and Brown Clay
C1-Moist, Stiff, Gray and Brown Silty Clay
D1-Moist, Stiff, Gray and Brown Clay
E1-Wet, Loose, Brown and Gray Sand with Trace of Gravel and Organic Matter
F1-Wet, Medium Stiff, Brown Clay
G1-Wet, Medium Dense, Brown and Gray Sand with Clay and Gravel
H1-Wet, Dense, Brown to Brown and Gray Sand with Gravel
J1-Wet, Medium Dense, Brown Sand with Gravel
K1-Moist, Stiff, Gray Clay
L1-Wet, Medium Dense, Gray Sand with Gravel
M1-Wet, Medium Dense, Gray Sand with Clay
N1-Wet, Medium Dense, Gray Sand with Clay and Trace of Gravel
P1-Wet, Very Dense, Brown Sand with Trace of Gravel
Q1-Wet, Very Dense, Brown Sand
R1-Wet, Very Dense, Reddish Brown Sand
S1-Wet, Dense, Brown Sand with Trace of Gravel
T1-Moist, Stiff, Brown Clay with some Organic Matter
U1-Wet, Stiff, Gray Clay with Sand
V1-Wet, Medium Dense, Brown Sand with Silt and Gravel
W1-Wet, Medium Stiff, Brown Silty Clay
X1-Wet, Loose, Brown Silt
Y1-Wet, Very Loose, Brown Silt
Z1-Wet, Medium Dense, Brown Clayey Sand
A2-Wet, Dense, Brown and Gray Sandy Silt with some Gravel
B2-Wet, Soft, Gray Sandy, Silty Clay with Trace of Gravel
C2-Wet, Stiff, Brown and Gray Sandy, Silty Clay and some Gravel
D2-Wet, Medium Dense, Gray Sand with Silt
E2-Wet, Very Stiff, Gray Clay withSand
F2-Wet, Very Dense, Dark Brown Sand with Silt and Trace of Gravel
G2-Wet, Very Dense, Brown Sand with Silt and Trace of Gravel
H2-Wet, Very Dense, Brown Sand with Silt

"N" VALUES

Sta. 306+40 - 20' Lt. of C.L. Const.

4.4- 5.4, N=5
11.4- 12.4, N=45
16.4- 17.4, N=11
20.5- 21.5, N=10
25.0- 25.0, N=7
30.5- 31.5, N=6
35.5- 36.5, N=24
40.5- 41.5, N=48
45.5- 46.5, N=34
50.5- 51.5, N=11
55.5- 56.5, N=14
60.5- 61.5, N=14
65.5- 66.5, N=23
70.5- 71.5, N=20
75.5- 76.3, N=114(10")
80.5- 81.5, N=107
85.0- 85.3, N=60(4")
90.5- 91.5, N=47
95.5- 96.5, N=58
100.5-101.5, N=45

Sta. 307+57 - 21' Lt. of C.L. Const.

4.4- 5.4, N=11
9.4- 10.4, N=11
15.5- 16.5, N=11
20.5- 21.5, N=20
25.5- 26.5, N=5
30.5- 31.5, N=5
35.5- 36.5, N=4
40.5- 41.5, N=17
45.5- 46.5, N=20
50.5- 51.5, N=50
55.5- 56.5, N=4
60.5- 61.5, N=11
65.5- 66.5, N=20
70.5- 71.5, N=20
75.5- 75.7, N=60(2")
80.5- 81.5, N=113
85.5- 86.5, N=65
90.5- 91.5, N=101
95.5- 96.5, N=39
100.5-101.5, N=29

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
4/2/11
BRIDGE ENGINEER

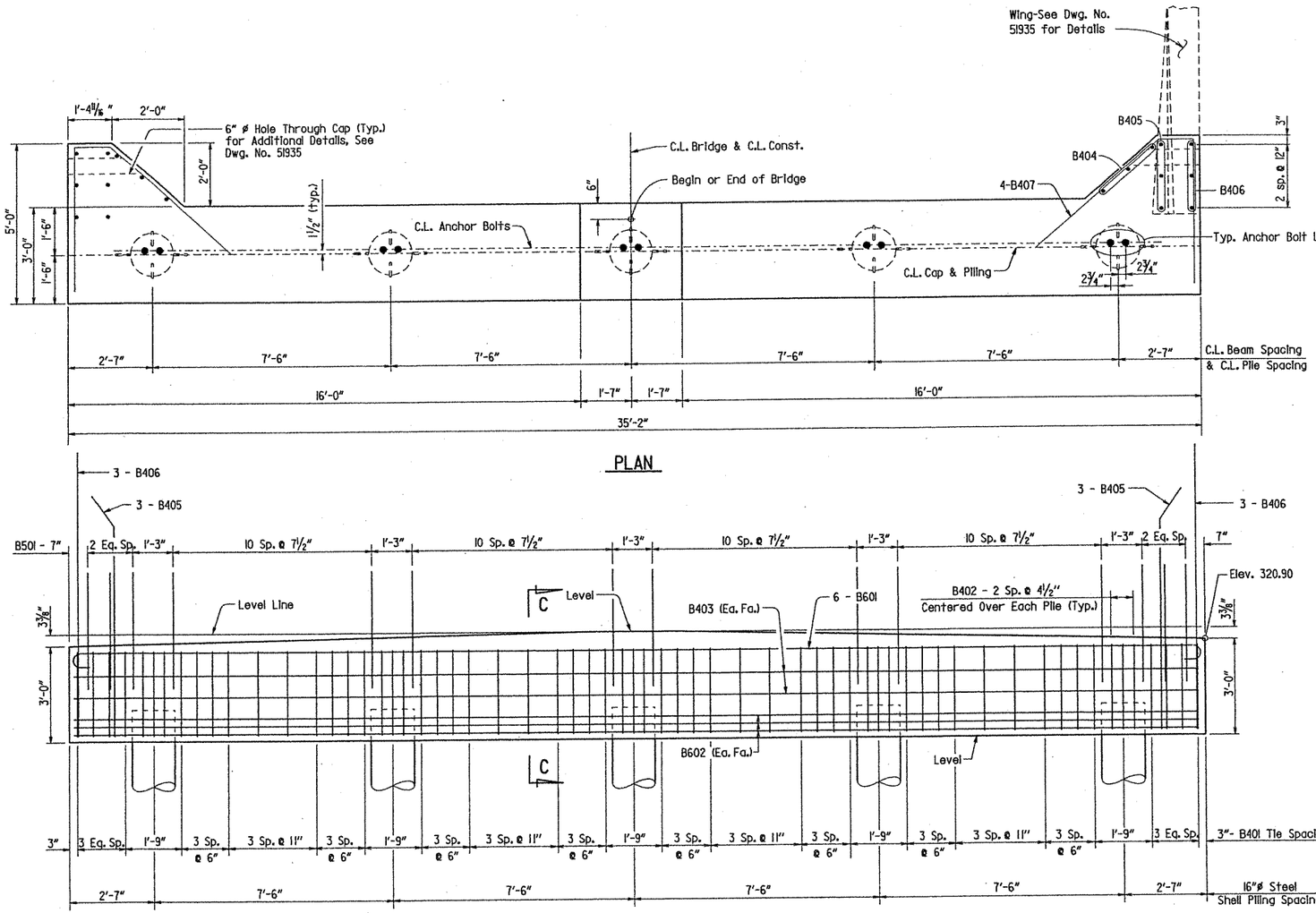
SOIL BORINGS
HURRICANE CREEK
LAFE-MARMADUKE STRS. & APPRS. (S)
GREENE COUNTY
ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 02/16/11 FILENAME: BI00722XI_LI.DGN
CHECKED BY: JGT DATE: 2/17/11 SCALE: 1" = 20'-0"
DESIGNED BY: — DATE: —

BRIDGE NO. 07211 DRAWING NO. 51928

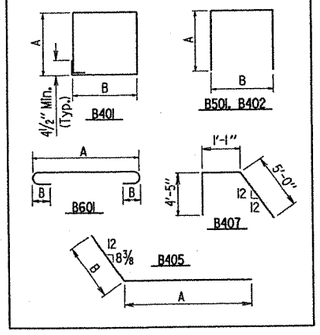
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				×	ARK.			
				JOB NO.		100722	45	121
				①	07211	END BENTS		51929

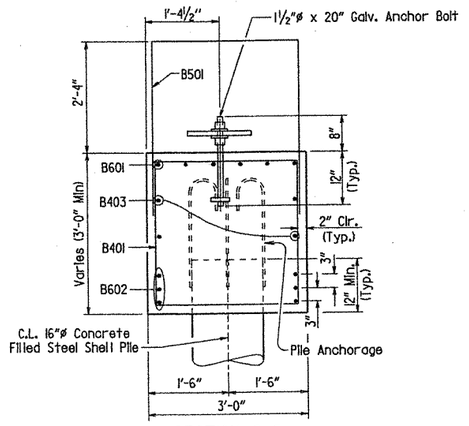


BAR LIST (PER END BENT)

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	48	11'-0"	2'-8"	2'-8"	2"
B402	15	7'-10"	2'-8"	2'-8"	2"
B403	4	34'-10"	-	-	Str.
B404	6	5'-4"	-	-	Str.
B405	6	8'-0"	6'-10"	1'-2"	2"
B406	6	9'-2"	-	-	Str.
B407	8	10'-5"			2"
B501	50	11'-2"	4'-4"	2'-8"	2½"
B601	6	36'-2"	34'-10"	6"	4½"
B602	6	34'-10"	-	-	Str.

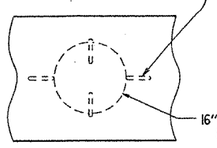
BENDING DIAGRAMS
(DIMENSIONS ARE OUT TO OUT OF BARS.)





SECTION C-C
¾" = 1'-0"

Position to minimize interference with reinforcing steel and anchor bolts.



PILE ANCHORAGE DETAIL
Not to Scale

GENERAL NOTES

All concrete Shall be Class "S" with a minimum 28-Day compressive Strength f'c=3500 psi. Concrete shall be poured in the dry and all exposed corners to be Chamfered ¾" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 OR M53 Grade 60 (fy = 60,000 psi).

Granular Backfill and Pipe Underdrain required behind Cap. See Dwg. No. 51933.

For Details of Pipe Piles and Pile Anchorage, See Dwg. No. 51930.

For Details of Anchor Bolts, See Dwg. No. 51932.

For additional Information, See Layout.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
BRIDGE ENGINEER

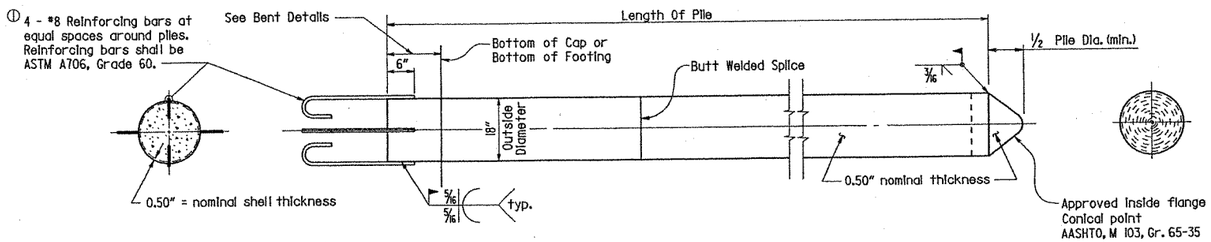
DETAILS OF END BENTS
HURRICANE CREEK
ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 01/07/11 FILENAME: BI00722XL_BI.DGN
CHECKED BY: BEF DATE: 3/15/11 SCALE: ½" = 1'-0" OR AS NOTED
DESIGNED BY: BEF DATE: 1/11

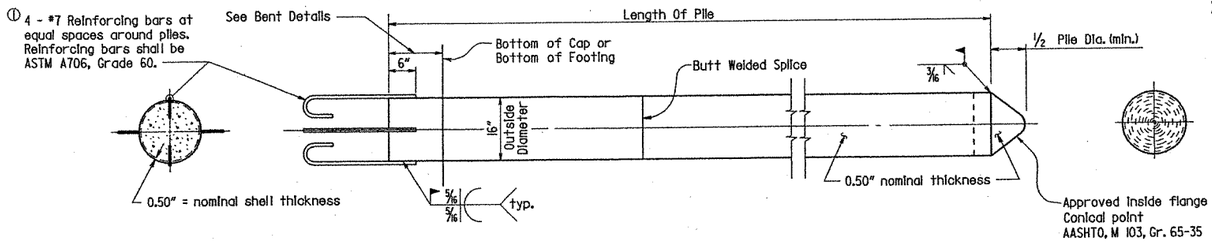
BRIDGE NO. 07211 DRAWING NO. 51929

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.		100722	41o	121
				(1) 07211,07212		PILE DETAILS		51930



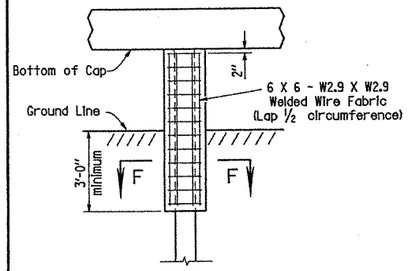
(1) Anchorage straps shall be arranged so as to clear Anchor Bolts and reinforcing

18" DIA. CONCRETE FILLED STEEL SHELL PILES

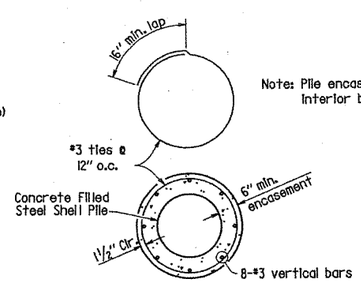


16" DIA. CONCRETE FILLED STEEL SHELL PILES

Note:
Steel pile tip will not be paid for directly, but shall be subsidiary to the item "Steel Shell Piling"

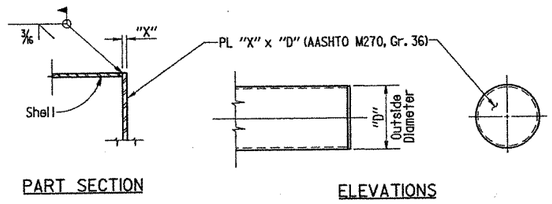


PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES



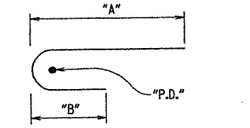
SECTION F-F

Note: Pile encasement to extend to bottom of cap. Only interior bent piles have pile encasements.

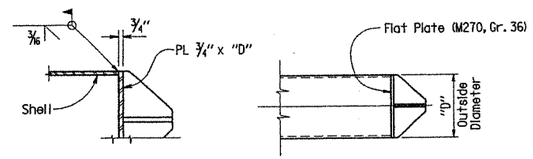


PART SECTION ELEVATIONS

ALTERNATE FLAT TIP DETAIL

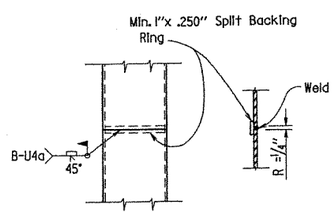


TYPICAL HOOKED BAR DETAIL



PART SECTION ELEVATIONS SECTION H-H

ALTERNATE VANED TIP DETAIL



TYPICAL SPLICE DETAILS

TABLE FOR SHELL PILES

OUTSIDE DIAMETER "D"	"P.D."	"A"	"B"	"X"
16"	5 1/4"	2'-0"	7"	1"
18"	6"	2'-0"	8"	1 1/4"

GENERAL NOTES FOR CONCRETE FILLED STEEL SHELL PILES

Steel shells shall conform to ASTM A252, Grade 3, (Fy = 45,000 psi.).

Concrete used for filling of steel shell shall be Class S with a minimum 28 day compressive strength, f'c = 3,500 psi. and shall be poured in the dry.

See bridge layout for size and length of shell piles and for additional driving information.

Concrete, structural steel and reinforcing bars, including welding, will not be paid for directly, but will be considered as part of the corresponding items "Steel Shell Piling ("D" Dia.)"

GENERAL NOTES FOR PILE ENCASEMENTS

See bridge layouts for required location of encasements.

Concrete shall have a minimum 28 day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Class S concrete may be used as Seal Concrete and placed continuously from bottom to top of encasement.

Reinforcing steel shall conform to AASHTO M31 or M53, Grade 60.

Concrete, welded wire fabric or reinforcing steel will not be paid for directly, but will be considered as part of the item "Pile Encasements".

Galvanized corrugated steel pipe will not be allowed for pile encasement.

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
BRIDGE ENGINEER

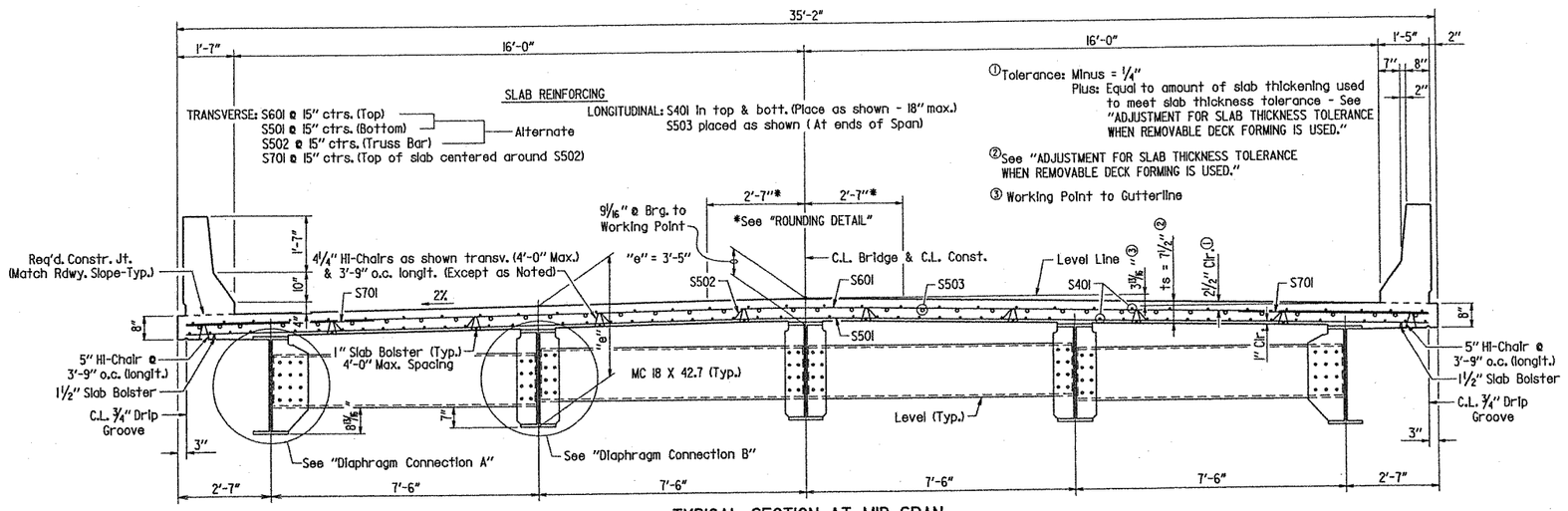
DETAILS OF CONCRETE FILLED STEEL SHELL PILES
HURRICANE CREEK & SLAVENS CREEK
ROUTE 34 SEC. 4
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 03/01/11 FILENAME: BI00722XL_SSP.DGN
CHECKED BY: JGT DATE: 3/3/11 SCALE: None
DESIGNED BY: STD. DATE:
BRIDGE NO. 07211,07212 DRAWING NO. 51930

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.		100722	47	121
				(1) 07211		SPAN DETAILS		51931

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

Note: At the Contractors option, one No. 5 straight bar in top and bottom may be substituted for bar S502. Payment for reinforcing will be based on the weight of bar S502.



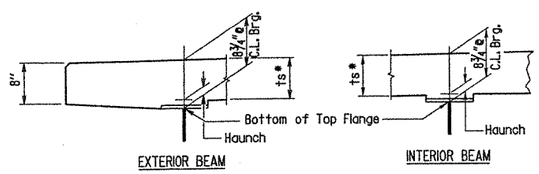
TYPICAL SECTION AT MID-SPAN

1/2" = 1'-0"

TABLE FOR WELD

Material Thickness Of Thicker Part Joined (Inches)	Minimum Size Of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To 3/4" Inclusive	1/4"	
Over 3/4"	5/16"	

Note: When a fillet weld size, as shown on the Plans, is larger than the minimum, the First Pass shall be that specified for minimum size of fillet weld.



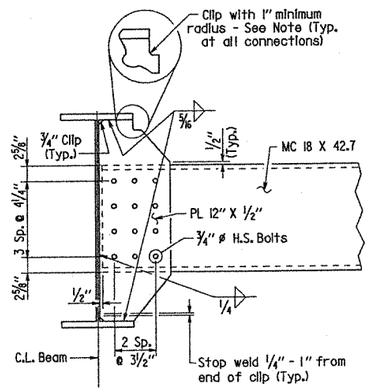
*Tolerance when removable deck forming is used is + 1/2", - 1/4". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

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

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 14991 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

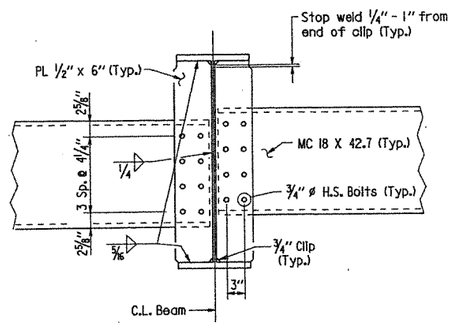
No Scale



DIAPHRAGM CONNECTION A

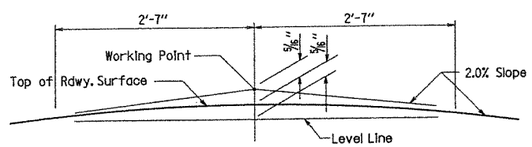
Scale: 1" = 1'-0"

Note: If permanent steel deck forms are used, the fabricator shall clip the plate as necessary to accommodate the deck form support.



DIAPHRAGM CONNECTION B

Scale: 1" = 1'-0"



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

No Scale

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
4/3/11

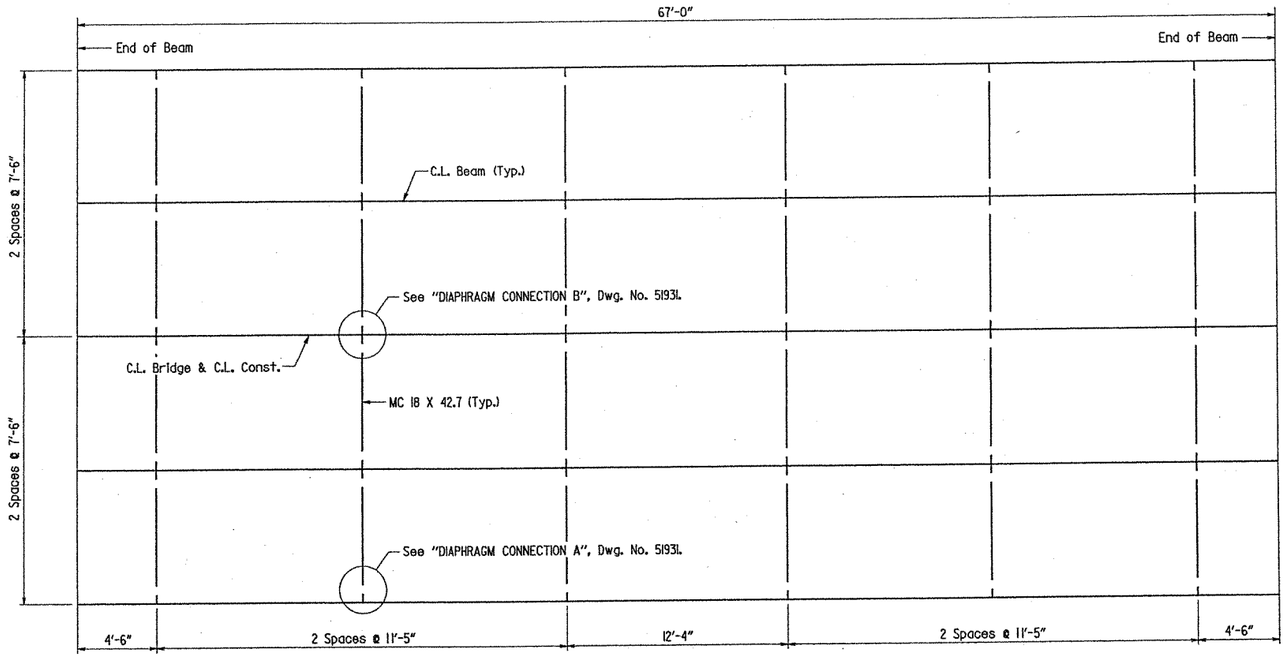
BRIDGE ENGINEER

SHEET 1 OF 5
DETAILS OF 67'-0" INTEGRAL COMPOSITE W-BEAM SPAN
HURRICANE CREEK
ROUTE 34 SEC. 4
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

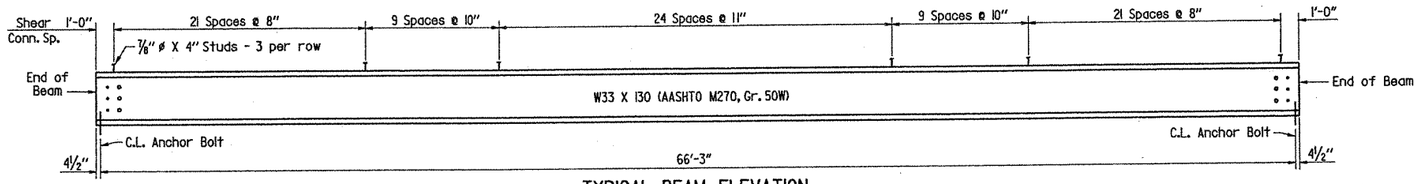
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CHECKED BY: BCF DATE: 3/15/11 SCALE: AS SHOWN
DESIGNED BY: TMG DATE: 12/10

BRIDGE NO. 07211 DRAWING NO. 51931

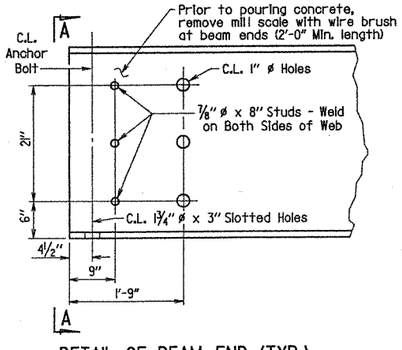
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				6	ARK.			
				JOB NO.		100722	48	121
				(1) 07211		SPAN DETAILS		51932



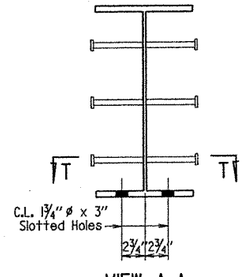
FRAMING PLAN
1/4" = 1'-0"



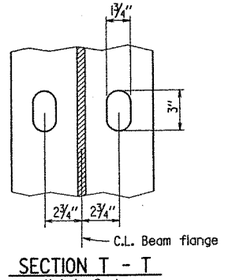
TYPICAL BEAM ELEVATION
Not to Scale



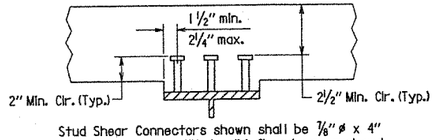
DETAIL OF BEAM END (TYP.)
Not to Scale



VIEW A-A
Not to Scale



SECTION T - T
Not to Scale

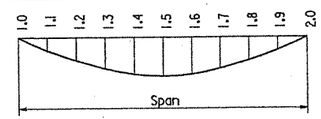


Stud Shear Connectors shown shall be 7/8" ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. 3/4" ø studs may be used in place of the 7/8" ø studs shown, at the ratio of 1.361 - 3/4" ø studs in place of one 7/8" ø stud. 7/8" ø studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24".

SHEAR CONNECTOR DETAIL
Not to Scale

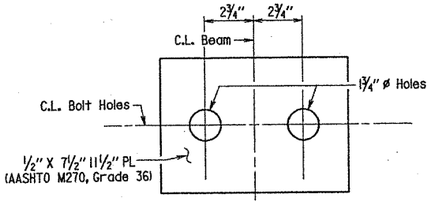
TABLE OF DEAD LOAD DEFLECTIONS - INCHES

POINT OF DEFLECTION	STRUCTURAL STEEL		STRUCTURAL STEEL + SLAB		STRUCTURAL STEEL + SLAB + PARAPET	
	INT. BEAM	EXT. BEAM	INT. BEAM	EXT. BEAM	INT. BEAM	EXT. BEAM
L0	0.000	0.000	0.000	0.000	0.000	0.000
L1	0.120	0.108	0.639	0.546	0.687	0.622
L2	0.228	0.204	1.209	1.033	1.300	1.176
L3	0.312	0.280	1.655	1.416	1.779	1.612
L4	0.365	0.327	1.938	1.657	2.083	1.886
L5	0.383	0.344	2.035	1.740	2.188	1.981
L6	0.365	0.327	1.938	1.657	2.083	1.886
L7	0.312	0.280	1.655	1.416	1.779	1.612
L8	0.228	0.204	1.209	1.033	1.300	1.176
L9	0.120	0.108	0.639	0.546	0.687	0.622
2.0	0.000	0.000	0.000	0.000	0.000	0.000

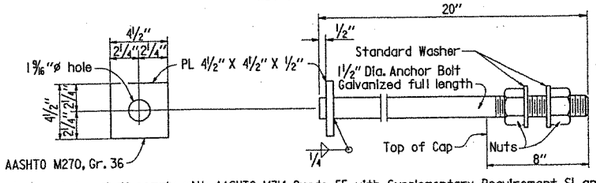


DEAD LOAD DEFLECTION DIAGRAM
Not to Scale

Note: Camber for Dead Load Deflection plus Vertical curve +/- 1/4" tolerance. Deflections shown are from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included.



ANCHOR BOLT PLATE DETAIL
Not to Scale



Anchor bolts shall comply with AASHTO M314, Grade 55, with Supplementary Requirement S1, and galvanized according to Section 807.07. Nuts for bolts shall be as specified in Section 807.07. Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.

ANCHOR BOLT DETAIL
No Scale

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No. 7510
4/21/11
CARL J. FUSELIER
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SHEET 2 OF 5
DETAILS OF 67'-0" INTEGRAL COMPOSITE W-BEAM SPAN HURRICANE CREEK

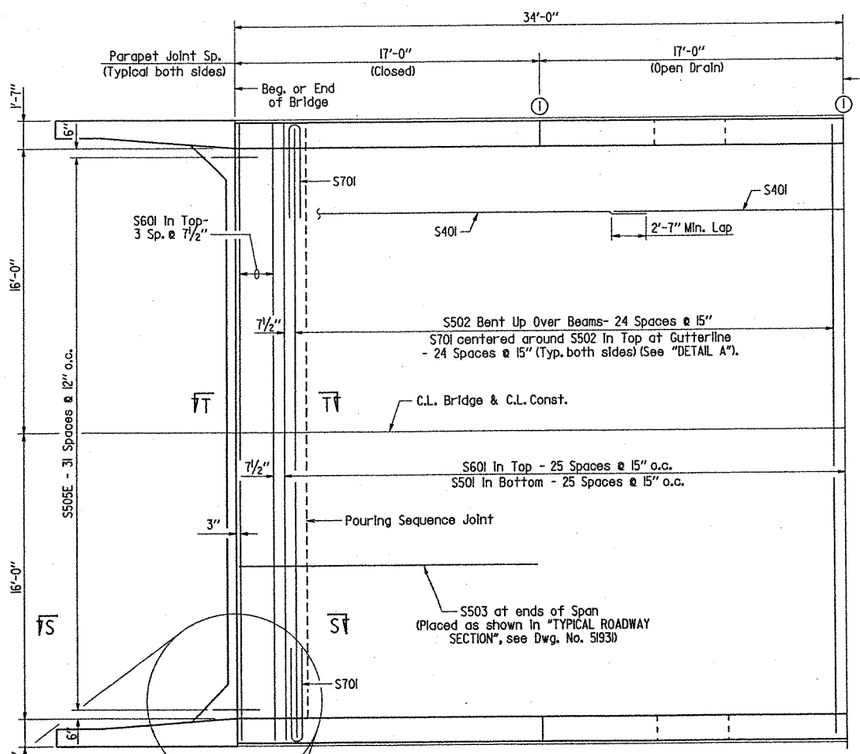
ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 12/27/10 FILENAME: BI00722XL_SI.DGN
CHECKED BY: BEF DATE: 3/15/11 SCALE: AS SHOWN
DESIGNED BY: TMC DATE: 12/10

BRIDGE NO. 07211 DRAWING NO. 51932

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.		100722	49	121
				(1) 07211		SPAN DETAILS		51933

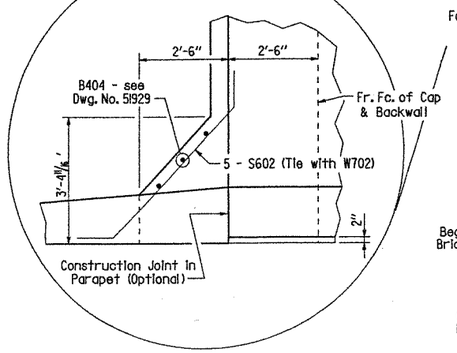


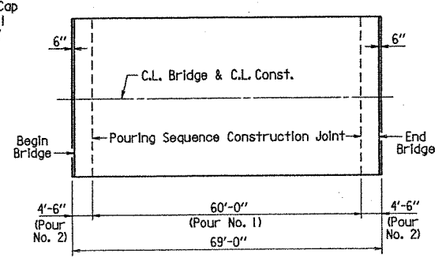
HALF-REINFORCING PLAN

1/4" = 1'-0"

Notes: Rails and wings are included in span construction and included in span quantities.

For "VIEW R-R", "SECTION S-S" and "SECTION T-T", see Dwg. No. 51935.





CONCRETE POURING SEQUENCE

Not to Scale

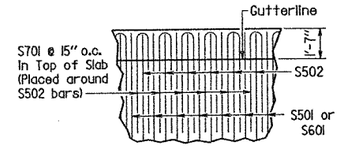
Note: Pour (1) must be placed before Pours (2) can be placed. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

Concrete diaphragms at ends of span shall be poured monolithically with deck pour no. 2.

Any railing pours made before the entire slab unit has been placed must be approved by the Bridge Engineer.

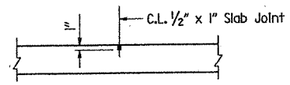
Concrete in bridge superstructure must be consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Engineer for any deviations from the Pouring Sequences shown.

(1) C.L. Partial-Depth Parapet Joint (1/4" to 1" max.) Stop 1'-2" from top of slab.



DETAIL A

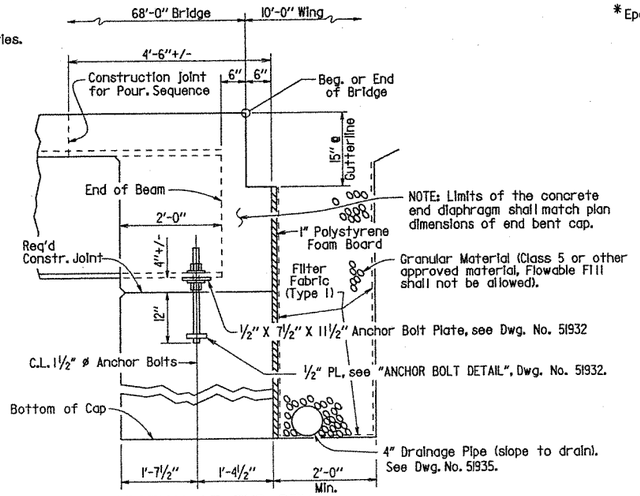
Not to Scale



Use ½" x 1" Type 3, 4 or 6 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer rod shall not be installed. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab. Slab Joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the slab has sufficiently set to allow sawing of the joints without damaging the slab. Slab Joints shall be placed at all pouring sequence construction joints.

SLAB JOINT DETAIL

Not to Scale



SECTION AT END BENT

Not to Scale

Note: For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611 of the Standard Specifications. Pipe underdrains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation".

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
R401	16	3'-11"	2"	Dimensions are out to out of bars.
R402	16	4'-0"	2"	** ½" Overtolerance, No Undertolerance.
R403	24	9'-8"	Str.	
R404	24	5'-0"	Str.	
R601	32	6'-2"	Str.	
R602	12	5'-0"	Str.	
S401	172	35'-2"	Str.	
S402	20	34'-10"	Str.	
S501	51	34'-10"	Str.	
S502	50	35'-6"	3"	
S503	76	15'-3"	3¾"	
S504	100	8'-0"	2½"	
*S505E	64	3'-7"	2½"	
S601	59	34'-10"	Str.	
S602	20	7'-4"	4½"	
S701	100	10'-9"	6"	
W401	20	4'-10"	2"	
W402	20	6'-0"	Str.	
W701	12	12'-0"	Str.	
W702	48	12'-3"	5¼"	

Note: Bars designated with an "E" suffix are to be epoxy-coated.

*Epoxy-coated reinforcing steel is to be paid for as "Reinforcing Steel - Bridge (Grade 60)."

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SHEET 3 OF 5
DETAILS OF 67'-0" INTEGRAL COMPOSITE W-BEAM SPAN HURRICANE CREEK

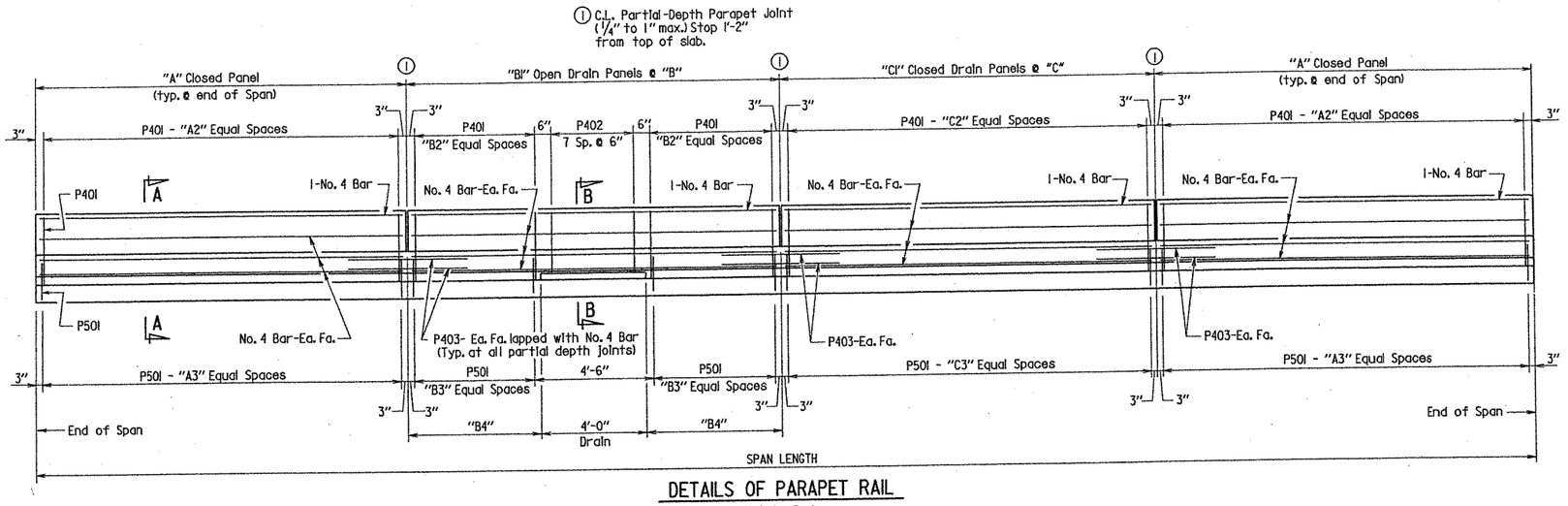
ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 12/27/10 FILENAME: BI00722XI_SI.DGN
CHECKED BY: BEF DATE: 3/15/11 SCALE: AS SHOWN
DESIGNED BY: TMG DATE: 12/10
BRIDGE NO. 07211 DRAWING NO. 51933

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.		100722	50	121
				(1) 07211		SPAN DETAILS		51934

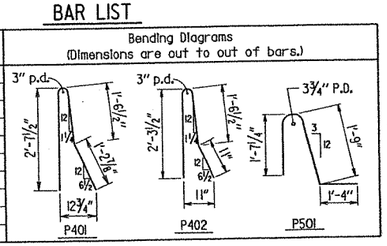


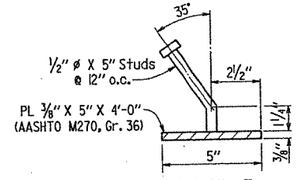
DETAILS OF PARAPET RAIL

Not to Scale

BAR LIST

Mark	No. Req'd.	Length	Pin Dia.	Bending Diagrams (Dimensions are out to out of bars.)
P401	200	5'-6"	2"	
P402	32	4'-10"	2"	
P403	24	5'-0"	Str.	
P404	56	16'-8"	Str.	
P501	240	4'-9"	2½"	





DETAIL Z

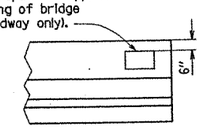
No Scale

Note: Parapet Studs shall be 5" long, granular flux filled, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)". The surfaces of the ⅜" Plates which will not be in contact with concrete shall be painted in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the Fabricator's shop. Painting will not be paid for directly but will be included in the item for structural steel.

TABLE OF VARIABLES

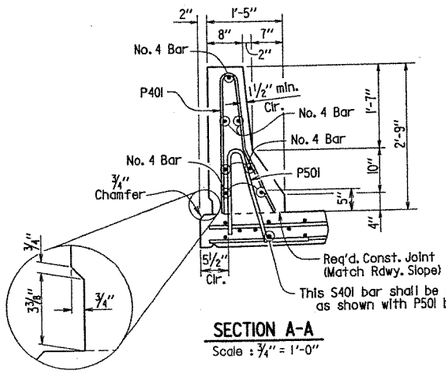
SPAN LENGTH	"A"	"A2"	"A3"	"B"	"B1"	"B2"	"B3"	"B4"	"C"	"C1"	"C2"	"C3"	Longit. No. 4 Bar MARK	Longit. No. 4 Bar LENGTH
67'-0"	17'-0"	27	33	17'-0"	2	10	12	6'-6"	—	—	—	—	P404	16'-8"

Place Type D Bridge Name Plate on front face of span rail approx. 2'-0" from beginning of bridge (Right side of roadway only).



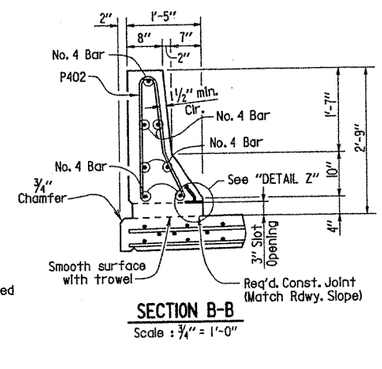
NAME PLATE DETAIL

No Scale



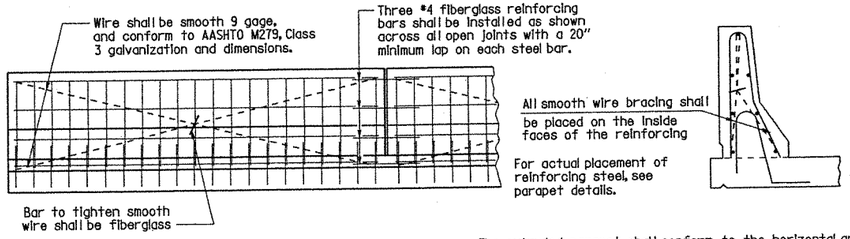
SECTION A-A

Scale : ¾" = 1'-0"



SECTION B-B

Scale : ¾" = 1'-0"



All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of ¼". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale

STATE OF ARKANSAS
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6/13/11

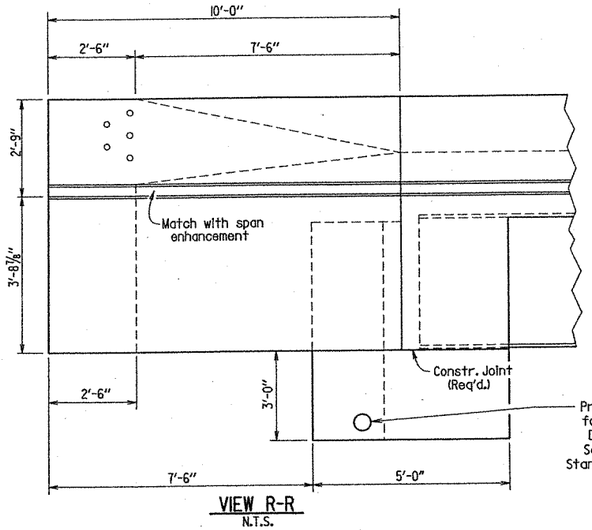
BRIDGE ENGINEER

SHEET 4 OF 5
DETAILS OF 67'-0" INTEGRAL COMPOSITE W-BEAM SPAN
HURRICANE CREEK
ROUTE 34 SEC. 4
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

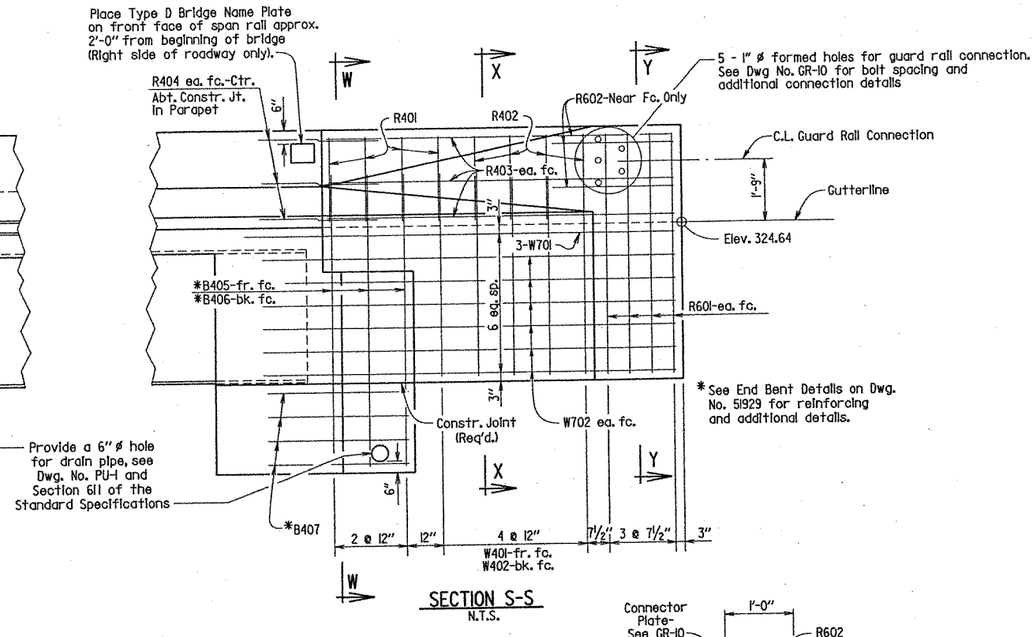
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CHECKED BY: BEF DATE: 3/15/11 SCALE: AS SHOWN
DESIGNED BY: TMG DATE: 12/10

BRIDGE NO. 07211 DRAWING NO. 51934

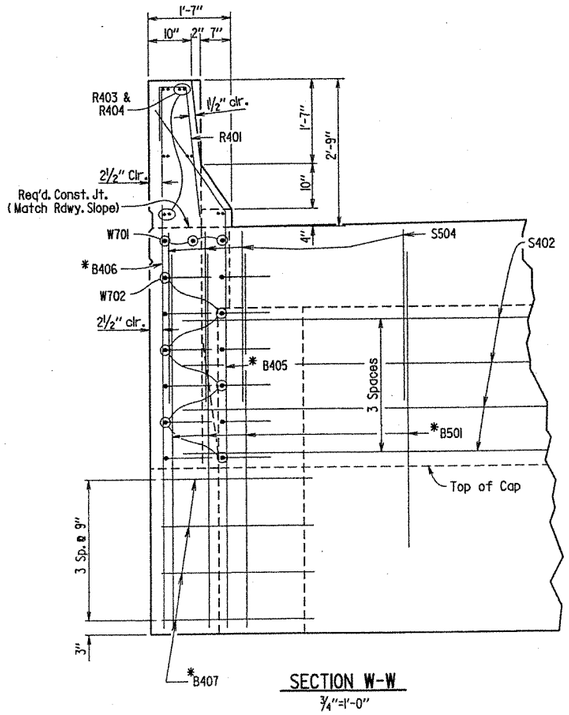
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	51	121
				1 07211		SPAN DETAILS		51935



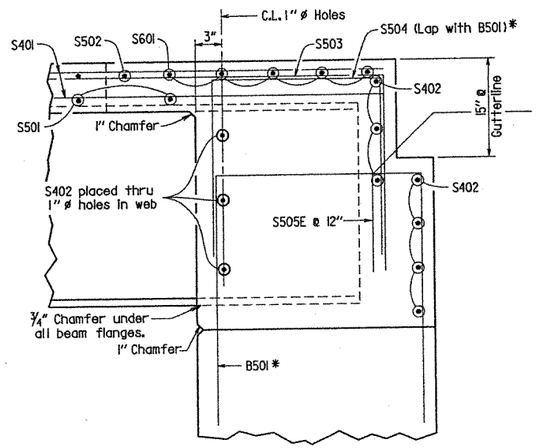
VIEW R-R
N.T.S.



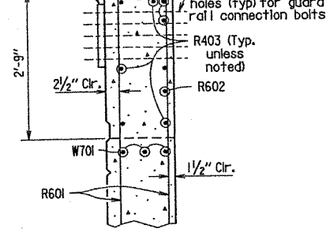
SECTION S-S
N.T.S.



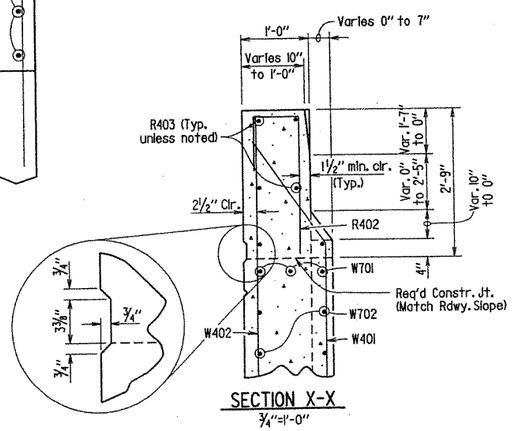
SECTION W-W
¾"=1'-0"



SECTION T-T
N.T.S.



SECTION Y-Y
¾"=1'-0"



SECTION X-X
¾"=1'-0"

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, Fifth Edition (2010), with 2010 interim revisions.

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 ¾" unless otherwise noted. All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 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 tine finish in accordance with subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam. 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 :
All 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, Grade 36 unless otherwise noted.

Anchor bolts, anchor bolt plates, nuts and washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Grade 50W)".

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

All beams shall be blocked in their true position with webs horizontal in the shop. The camber, length of sections, distance between bearings and openings of joints shall be measured with the beams in their true position and this information shall become part of the permanent records for this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of ¼"+/- is allowed for camber.

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 the Contractor or Erector should want to make additional welds, whether temporary or permanent, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used to attach falsework support devices and screed rail supports to the structural steel that does 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 ¾" ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges. Holes for ¾" ø high-strength bolts may be 15/16" diameter if a washer is supplied for use under both the nut and head of the bolt.

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BRIDGE ENGINEER

SHEET 5 OF 5
DETAILS OF 67'-0" INTEGRAL COMPOSITE W-BEAM SPAN HURRICANE CREEK

ROUTE 34 SEC. 4

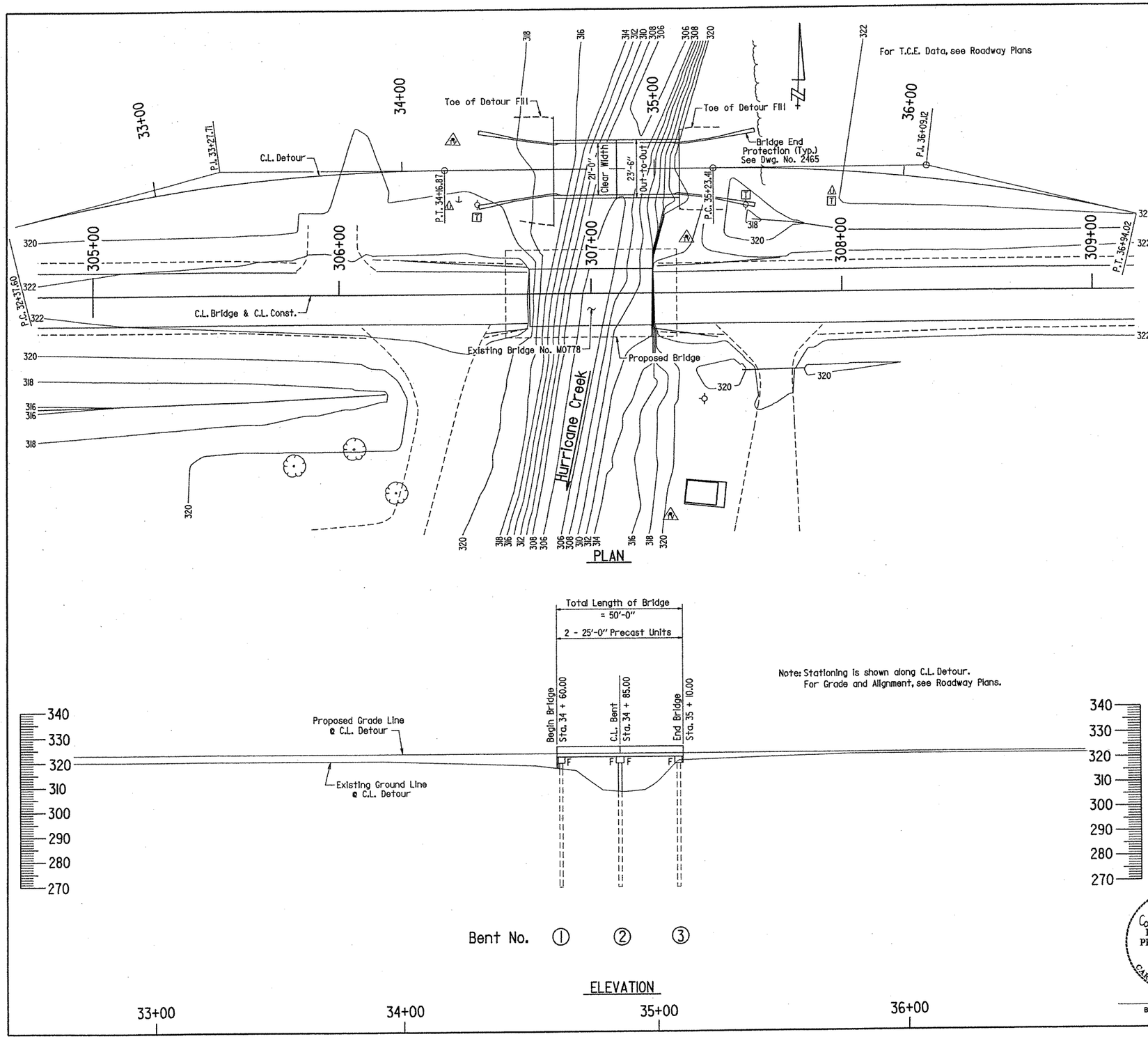
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 12/27/10 FILENAME: BI00722XI_SI.DGN
CHECKED BY: BEF DATE: 3/15/11 SCALE: AS SHOWN
DESIGNED BY: TMG DATE: 12/10

BRIDGE NO. 07211 DRAWING NO. 51935

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.		100722	52	121
				07211		LAYOUT		51936



GENERAL NOTES

BENCH MARK: BM 908 Chiseled Square NW Corner, 12.7' Left, Sta. 300+70.54, Elev. 321.62

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2003 edition, with applicable supplemental specifications and special provisions. Unless otherwise noted in the plans Section and Subsection refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO Standard Specifications for Highway Bridges, 2002 Edition, with interim revisions.

LIVE LOADING: H-15

METHOD OF DESIGN: Load Factor

SEISMIC PERFORMANCE CATEGORY: B

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M 31 or M 53, Gr. 60)	fy = 60,000 psi

PILING: All Piling shall be 16" unfilled steel shell piling and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 44 tons per pile. Drive piles in Bents 1 thru 3 to a tip elevation of 282.00 or lower.

Preboring or other methods as approved by the Engineer may be used to achieve the minimum penetration. Any cost for these methods shall be included in the item "Temporary Bridge Structure".

PRECAST CONCRETE UNITS: Precast concrete units shall comply with the requirements of AHTD Standard Drawings. Precast concrete units within the drawings series 5291 thru 5307, 14800 thru 14899 and 15190 thru 15400 may be used in lieu of units shown on Dwg. No. 15241. All precast units shall be doweled to bent caps as shown on Dwg. No. 51937.

DETAIL DRAWINGS:	DRAWING NO.
Temporary Bridge Structure	51937& 51938
Unfilled Steel Shell Piling	51939
25' - Precast Concrete Spans	15241
Bridge End Protection System	2465

The Temporary Bridge Structure shall comply with and be paid for per linear foot as Temporary Bridge Structure (20' Roadway Width) in accordance with Section 603.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
3/31/11
CARL J. FUSELIER
BRIDGE ENGINEER

LAYOUT OF TEMPORARY BRIDGE OVER HURRICANE CREEK LAFE-MARMADUKE STRS. & APPRS. (S) GREENE COUNTY

ROUTE 34 SEC. 4

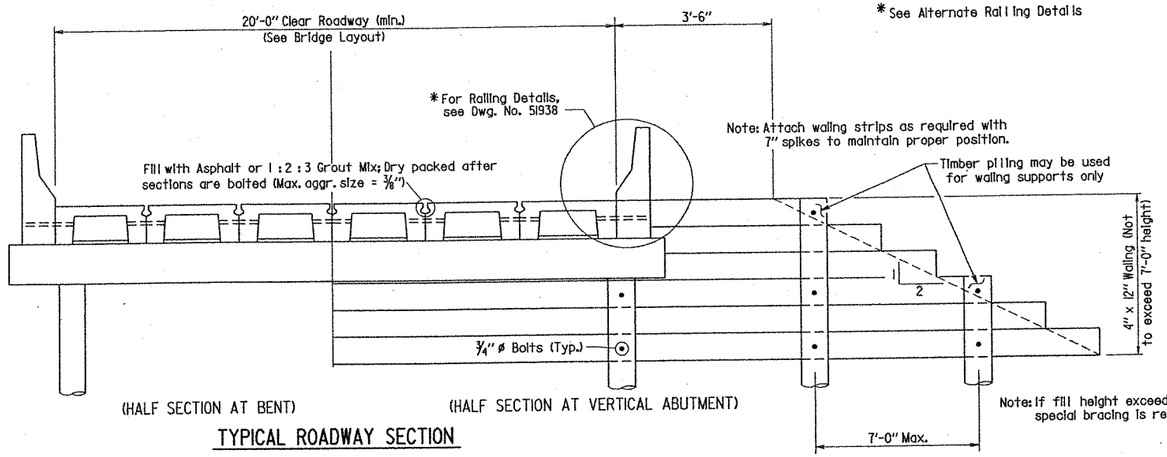
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 10/29/10 FILENAME: BI00722XL_LI.DGN
CHECKED BY: JGT DATE: 3/21/11 SCALE: 1" = 20'-0"
DESIGNED BY: BEF DATE: 9/10

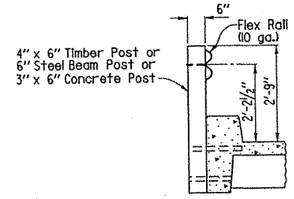
BRIDGE NO. 07211 DRAWING NO. 51936

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.		100722	53	121
				(1) 07211,07212		TEMPORARY BRIDGE		51937

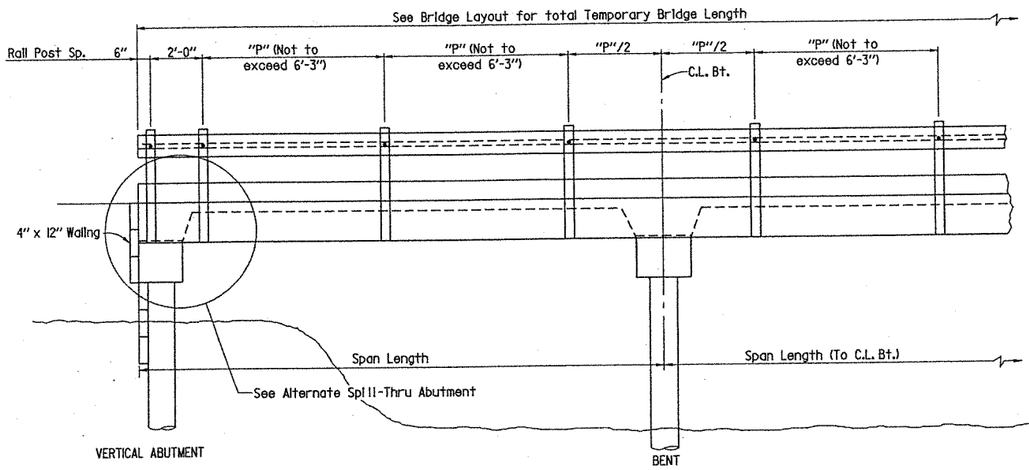


TYPICAL ROADWAY SECTION

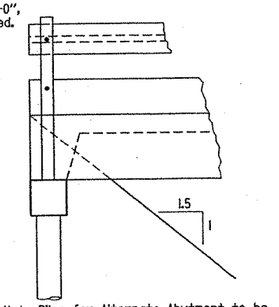
Note: If fill height exceeds 7'-0", special bracing is required.



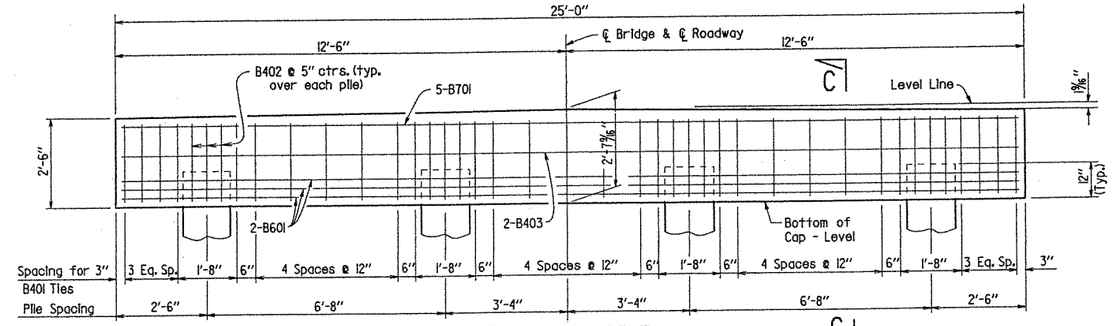
ALTERNATE RAILING DETAILS



LONGITUDINAL SECTION SHOWING ALTERNATE RAILING DETAILS

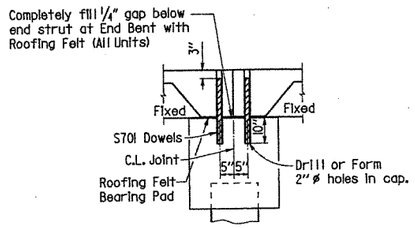


ALTERNATE SPILL-THRU ABUTMENT

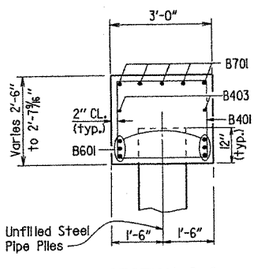


ELEVATION - BENT

ALL BENTS



SECTION AT FIXED BENT



SECTION C-C

GENERAL NOTES

Concrete shall be Class S with a minimum 28 day compressive strength f'c = 3500 psi unless otherwise noted.

Reinforcing Steel shall conform to AASHTO M 31 or M 53, Grade 60 unless otherwise noted.

Structural Steel shall be AASHTO M 270, Grade 36 unless otherwise noted.

Timber piling for waling supports shall comply with Section 818 of the Standard Specifications and shall be driven to a minimum bearing capacity of 20 tons per pile and with a minimum penetration of 5 feet. Steel piling shall be 16" Diameter Unfilled Steel Shell piling and shall be driven to a minimum bearing capacity of 44 tons per pile.

Malleable or cast iron washers shall be used under all bolt heads and nuts bearing on timber. Standard washers shall be provided under all bolt heads and nuts in connection with concrete.

Bolts shall conform to the requirements of ASTM A 307. Minimum dimensions are shown for bolts, dowels, and drift pins.

Timber material, regardless of species, must be of equal or better strength than no. 2 southern pine or douglas fir, graded by the standard grading rules. All timber widths and thicknesses are shown as nominal.

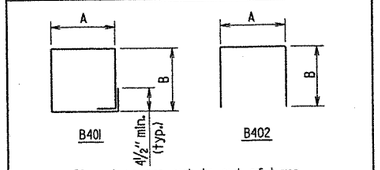
For additional notes concerning "Bridge End Protection System", see Dwg. No. 2465.

Unless otherwise noted, the Temporary Bridge Structure shall comply with and be paid for in accordance with Section 603.

BAR LIST PER BENT

MARK	NO. REQ'D.	LENGTH	'A'	'B'	P.D.
B401	29	10'-0"	2'-8"	2'-2"	2"
B402	12	6'-10"	2'-8"	2'-2"	2"
B403	2	24'-8"	—	—	Str.
B601	6	24'-8"	—	—	Str.
B701	5	24'-8"	—	—	Str.
S701	**	2'-0"	—	—	Str.

BENDING DIAGRAMS



Dimensions are out to out of bars.

** 24 for Intermediate Bents
12 for End Bents

QUANTITIES

(FOR INFORMATION ONLY)

Class "S" Concrete -Bridge	Reinforcing Steel (Gr. 60) -Bridge
7.1 Cu. Yds.	835 LBS.

Note: After each unit is in its final position, S701 Dowels shall be grouted in place using a QPL approved non-shrink grout that completely fills the holes.

STATE OF ARKANSAS
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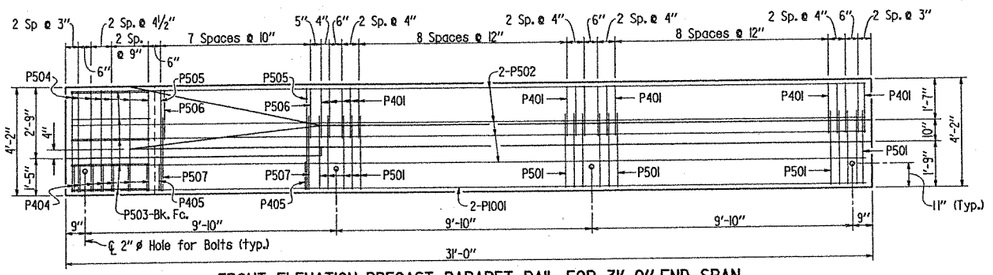
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF
TEMPORARY BRIDGE STRUCTURE
20'-0" ROADWAY
ROUTE 34 SEC. 4
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 03/08/11 FILENAME: BI00722X1_TB.DGN
CHECKED BY: BEF DATE: 3/15/11 SCALE: NO SCALE
DESIGNED BY: BEF DATE: 3/11

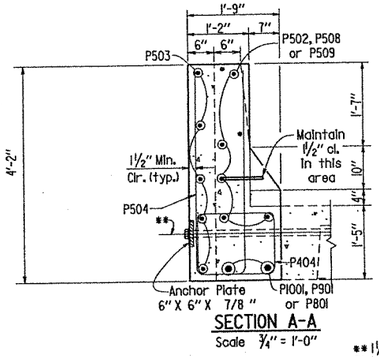
BRIDGE NO. 07211,07212 DRAWING NO. 51937

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.		100722	54	121
				(1) 07211,07212		TEMPORARY BRIDGE		51938



FRONT ELEVATION-PRECAST PARAPET RAIL FOR 31'-0" END SPAN

Scale ⅜" = 1'-0"



SECTION A-A

Scale ¾" = 1'-0"

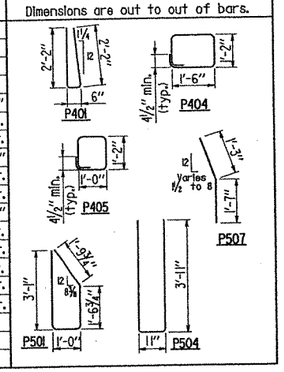
** 1½" ø X 3'-0" Richmond S.C.A.B. or equal required at End Post Connections only.

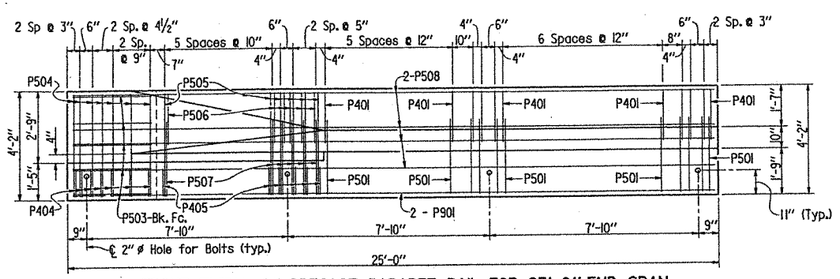
BAR LIST FOR PARAPET RAIL UNITS

MARK	NUMBER REQUIRED PER RAIL 19'-0" RAIL	25'-0" RAIL	31'-0" RAIL	LENGTH	PIN DIA.
P401	12	20	30	4'-8"	2"
P404	7	7	7	5'-8"	2"
P405	9	10	8	4'-8"	2"
P501	12	20	30	7'-3"	2½"
P502			8	30'-8"	Str.
P503	5	5	5	3'-3"	Str.
P504	7	7	7	8'-6"	2½"
P505	9	10	8	3'-11"	Str.
P506	9	10	8	2'-2"	Str.
P507	9	10	8	2'-10"	2½"
P508		8		24'-8"	Str.
P509	8			18'-8"	Str.
P80l	2			18'-8"	Str.
P90l		2		24'-8"	Str.
P100l			2	30'-8"	Str.

BENDING DIAGRAMS

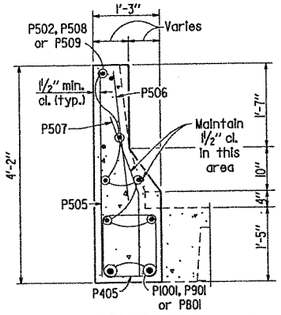
Dimensions are out to out of bars.





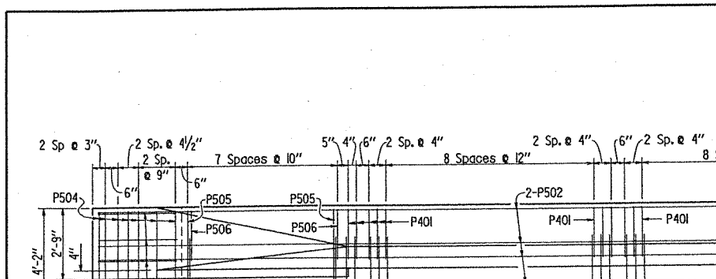
FRONT ELEVATION-PRECAST PARAPET RAIL FOR 25'-0" END SPAN

Scale ⅜" = 1'-0"



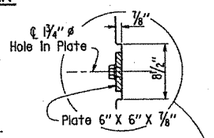
SECTION B-B

Scale ¾" = 1'-0"

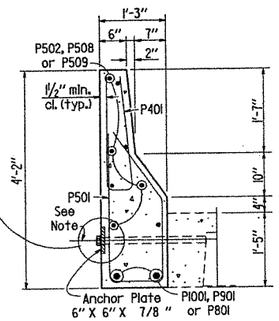


FRONT ELEVATION-PRECAST PARAPET RAIL FOR 19-0" END SPAN

Scale ⅜" = 1'-0"

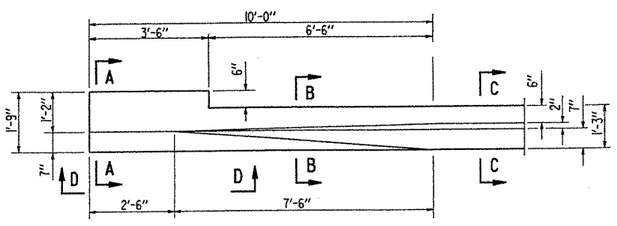


Note :
2" ø Hole for Bolt.
½" ø X 2'-6" Richmond Screw Anchor & Bolt Assembly or equal is typical for all connections except as shown in SECTION A-A.



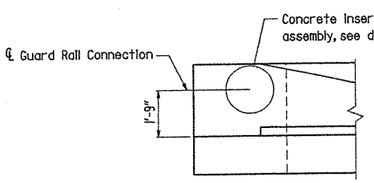
SECTION C-C

Scale ¾" = 1'-0"



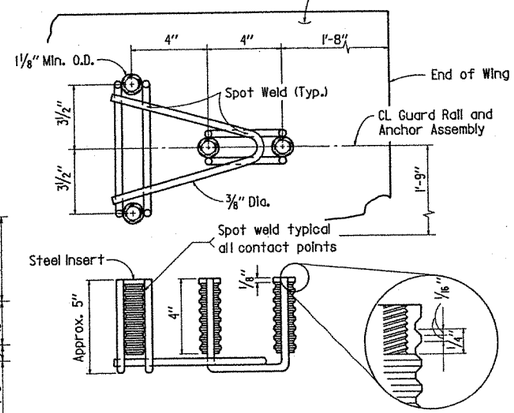
TYPICAL PLAN OF PRECAST PARAPET RAIL FOR END SPAN

Scale ½" = 1'-0"



VIEW D-D

Scale ⅜" = 1'-0"



CONCRETE INSERT ANCHOR ASSEMBLY

N.T.S.

Minimum capacity of guard rail attachment by concrete insert anchor assembly or other means shall be 12,000 lbs. ultimate shear capacity per bolt and insert (48,000 lbs. per assembly). There shall be a minimum of four bolts per attachment located as shown. The contractor may use the insert anchor assembly shown, or one similar which provides the same ferrule depth and thread length. The capacity of the insert anchor assembly shall be certified to the Engineer.

Guard rail attachment using other types of concrete insert will be allowed, provided they meet the minimum capacity specified, the capacity is certified, and approval is obtained from the Engineer before use.

The threaded steel insert shall have a solid bottom, tapped to a minimum threaded depth of 2½". The guard rail shall be connected with ⅞"ø x 2½" high strength hex bolts and one hardened steel washer. See Section 807 of the Standard Specifications.

Bolts shall conform to the requirements of ASTM A325 or A449 and shall be threaded full length. Bolts and washers shall be galvanized in accordance with ASTM A153.

Bolts shall be installed in accordance with Subsection 807.22(d) of the Standard Specifications.

For Details of Guard Rail see dwg. nos. GR-8 & GR-8A.

STATE OF ARKANSAS
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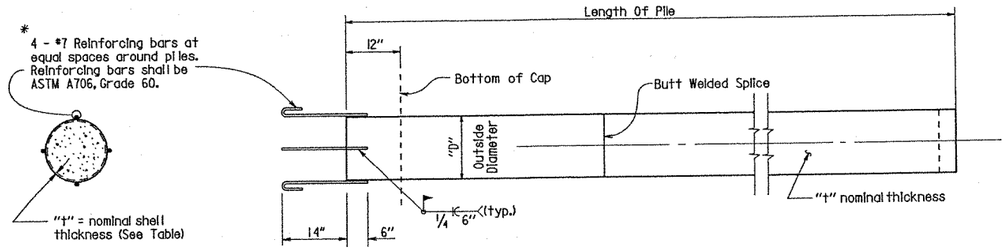
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF
TEMPORARY BRIDGE STRUCTURE
20'-0" ROADWAY
ROUTE 34 SEC. 4
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 03/08/11 FILENAME: BI00722XI_TB.DGN
CHECKED BY: CEF DATE: 3/15/11 SCALE: NO SCALE
DESIGNED BY: STD DATE:

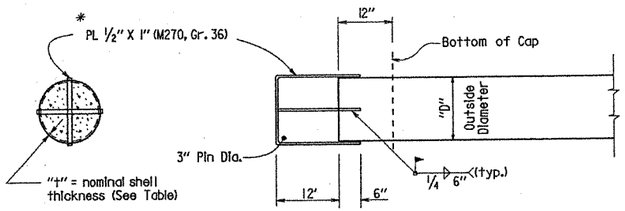
BRIDGE NO. 07211,07212 DRAWING NO. 51938

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.		100722	55	121
				1 07211,07212		PILE DETAILS		51939

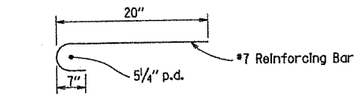


UNFILLED STEEL SHELL PILES

* Straps or reinforcing bars shall be placed to minimize interference with anchor bolts and cap reinforcing



ALTERNATE CONNECTION DETAIL



TYP. HOOKED BAR DETAIL

GENERAL NOTES FOR UNFILLED STEEL SHELL PILES

Steel shells shall conform ASTM A252, Grade 3, (Fy = 45,000 psi.).

Steel Shell Piling shall comply with Section 805 except piling shall not be filled with concrete after driving.

See temporary bridge layout for additional driving information.

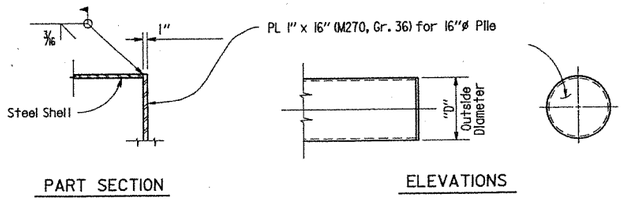
Steel Shell Piling will not be paid for directly but shall be included in the item "Temporary Bridge Structure (20' Roadway Width)".

Painting of steel piles will not be required.

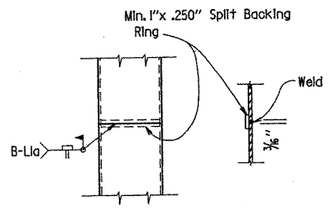
Steel shell piling may be driven open or closed ended.

TABLE FOR SHELL PILES

OUTSIDE DIAMETER D	"t"-NOMINAL SHELL THICKNESS
16"	0.50"



ALTERNATE FLAT TIP DETAIL



SPLICE DETAILS

STATE OF ARKANSAS
Carl G. Fuselier
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CARL G. FUSELIER

BRIDGE ENGINEER

DETAILS OF UNFILLED STEEL SHELL PILES FOR TEMPORARY BRIDGE STRUCTURE

ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 03/09/11 FILENAME: BI00722XISS.DGN

CHECKED BY: BEF DATE: 3/15/11 SCALE: NONE

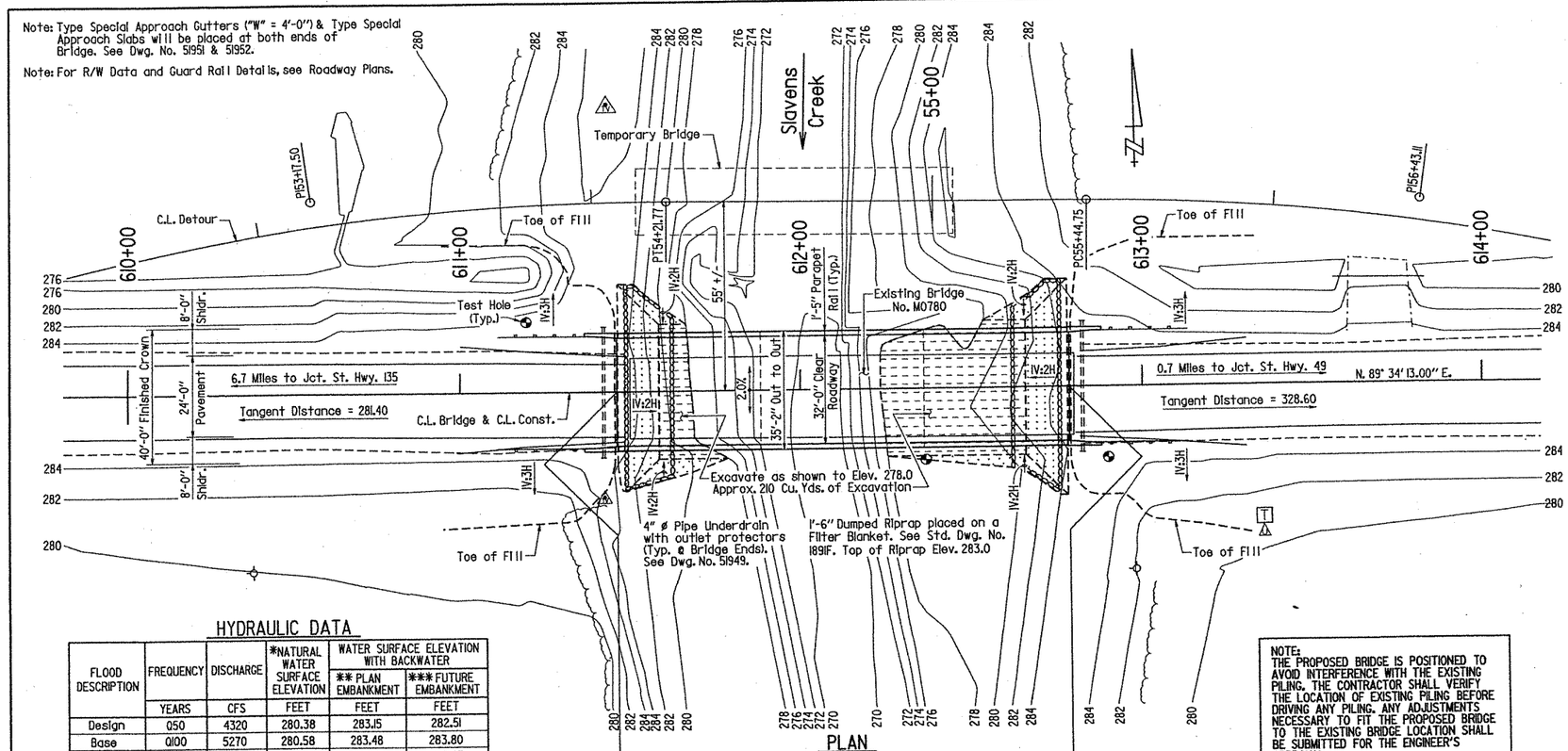
DESIGNED BY: STD DATE:

BRIDGE NO. 07211,07212 DRAWING NO. 51939

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.		100722	516	121
				(1) 07212		LAYOUT	51940	

Note: Type Special Approach Gutters ("W" = 4'-0") & Type Special Approach Slabs will be placed at both ends of Bridge. See Dwg. No. 51951 & 51952.

Note: For R/W Data and Guard Rail Details, see Roadway Plans.



NOTE:
THE PROPOSED BRIDGE IS POSITIONED TO AVOID INTERFERENCE WITH THE EXISTING PILING. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING PILING 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.

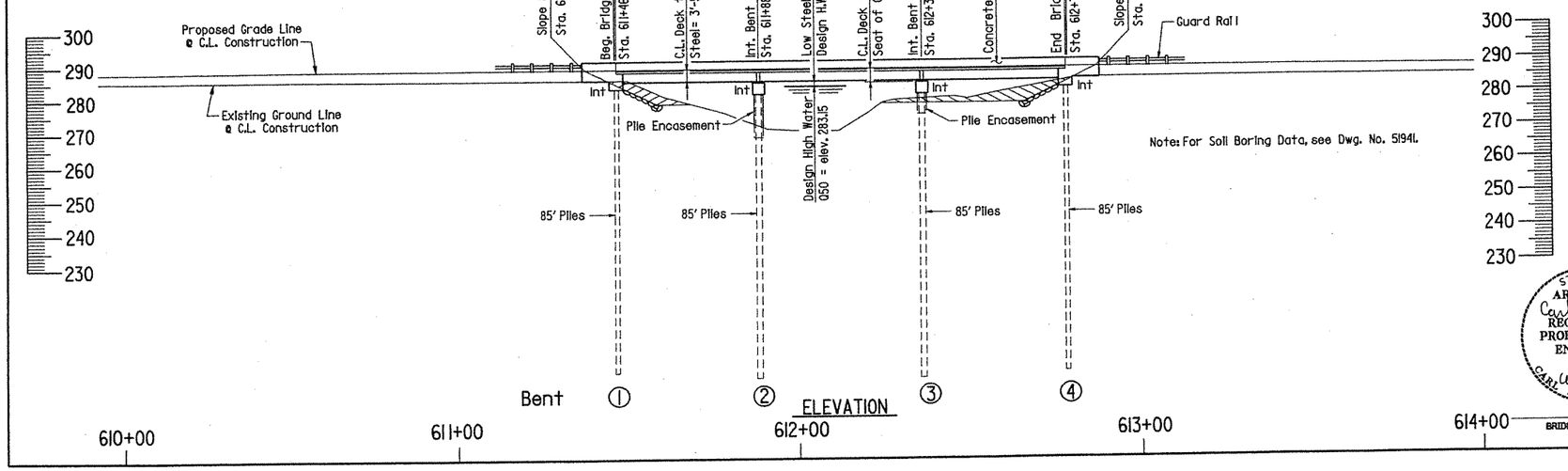
HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	*NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION WITH BACKWATER	
				**PLAN EMBANKMENT	***FUTURE EMBANKMENT
	YEARS	CFS	FEET	FEET	FEET
Design	Q50	4320	280.38	283.15	282.51
Base	Q100	5270	280.58	283.48	283.80
Extreme	Q500	6290	280.77	283.53	283.95
Overtopping	Q33	3885	280.52	282.22	N/A

* Unconstricted water surface without structure or roadway approaches
** Low elevation of plan embankment is elev. 282.22 (Sta. 621+81).
*** Low elevation of future embankment is elev. 282.51.

Q100 backwater elevation for existing structure = 283.64.
Proposed Low Bridge Chord Elev. = 285.06.

Drainage area = 8.5 square miles
Historical H.W. Elev. = 283.40



Note: For Soil Boring Data, see Dwg. No. 51941.

GENERAL NOTES

BENCH MARK: BM 908 Chiseled Square NW Corner, 12.7' Left, Sta. 300+70.54, Elev. 321.62

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2003 edition, with applicable supplemental specifications and special provisions. Unless otherwise noted in the plans Section and Subsection refer to the Standard Construction Specifications.

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

LIVE LOADING: HL-93

SEISMIC ZONE: 4

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M 31 or M 53, Gr. 60)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi

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

PILING: Piling for Bents 1 and 4 shall be 16" dia. concrete filled steel shell and shall be driven to a minimum ultimate bearing capacity of 140 tons per pile. Piling in Bents 2 and 3 shall be 18" dia. concrete filled steel shell and shall be driven to an ultimate bearing capacity of 199 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. All piling shall have a minimum tip elevation of 199.00 or lower. Lengths of piling shown are assumed for estimating quantities only. Actual lengths are to be determined in the field. Test piles are not required, but may be driven for the Contractor's information in accordance with subsection 805.08(g). There will be no additional payment for cut-off or build-up of the piles.

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)" of the standard specifications. It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16"dia. piles will be 30,000 foot pounds per blow and on 18" dia. piles shall be 40,000 foot pounds per blow.

PREBORING: Preboring is required on all piling in Bents 1 and 4 to a depth of 10' below bottom of cap. Prebored holes shall be a minimum of 6" greater than the diameter of the pile cross-section and shall be back-filled with sand or pea gravel after piles are in place. This required preboring will be paid for at the unit price bid for "Preboring". The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casings or other methods. Temporary casings, if required, shall not be paid for directly but shall be considered subsidiary to Preboring.

Water jetting or other methods approved by the Engineer may be needed to achieve the minimum pile penetration. Any cost associated with achieving the minimum pile penetration shall be considered subsidiary to "Steel Shell Piling".

PILE ENCASEMENT: Pile encasement for Bents 2 & 3 shall extend 3 feet below Natural Ground or Channel Bottom and to Bottom of Cap. See Drawing No. 51930 for additional details.

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

PIPE UNDERDRAIN: One Pipe Underdrain with Outlet Protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Underdrains and Outlet Protectors will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:	DRAWING NO.
End Bents	51942
Intermediate Bents	51943
Concrete Filled Steel Shell Piling	51930
131' Integral Continuous Composite W-Beam Unit	51944-51949
Type Special Approach Gutters	51952
Type Special Approach Slabs	51951

EXISTING BRIDGE: Existing Bridge No. M0780 (LM 6.71) is 130' in length and 25.5' wide and is comprised of concrete deck w/asphalt overlay, timber and steel Stringer/Girders and supported by timber pile bents. Centerline of existing bridge is located on the proposed roadway centerline.

REMOVAL AND SALVAGE: After temporary bridge is open to traffic, existing Bridge No. M0780 (Site No. 3) shall be removed in accordance with Section 205 of the Standard Specifications. All material from the existing bridge shall become the property of the Contractor.

TEMPORARY BRIDGE: Construct a temporary bridge in accordance with Section 603 approximately 55 feet upstream from centerline construction with a minimum deck elevation of 283.15. See Roadway Plans for actual detour grade and alignment. The temporary bridge shall have a minimum length of 93' with a minimum roadway width of 20', a minimum span length of 19' and a minimum live load capacity of H15, and meet the requirements for Seismic Zone 'B'. See Dwg. Nos. 51937-51939 & 51950 for temporary bridge details. A timber deck will not be allowed.

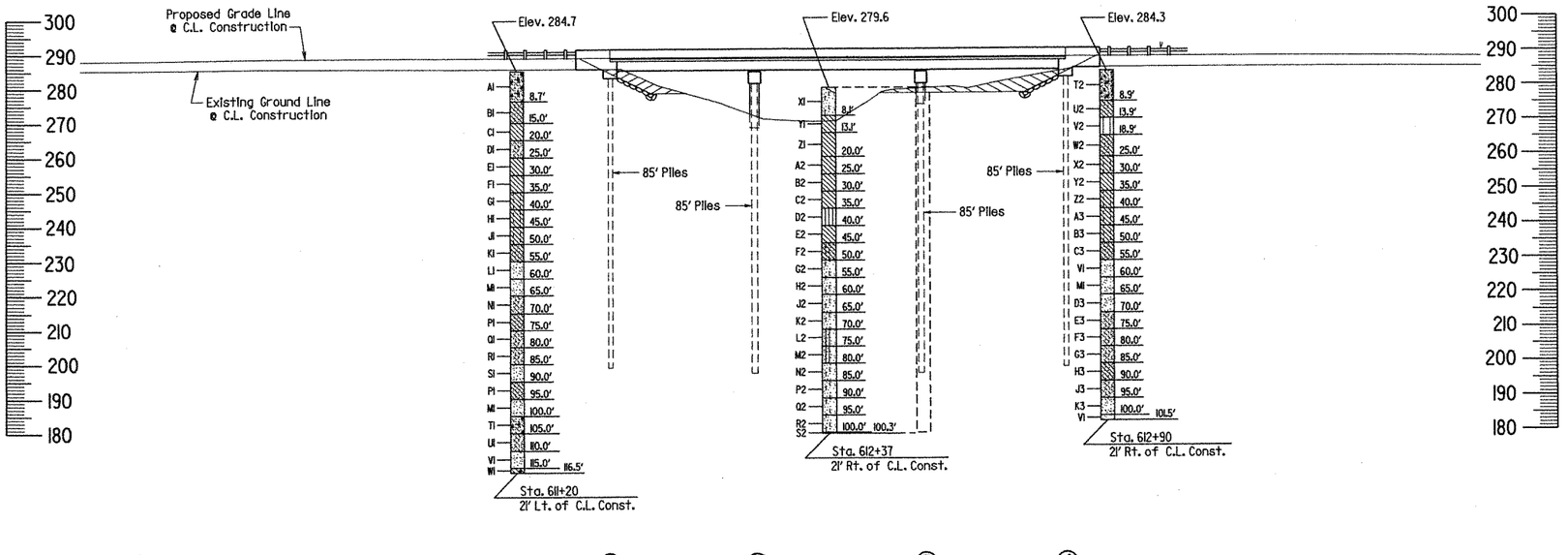
MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7610
4/3/11
BRIDGE ENGINEER

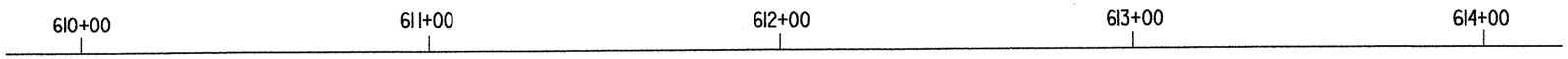
LAYOUT OF BRIDGE OVER SLAVENS CREEK
LAFE-MARMADUKE STRS. & APPRS. (S)
GREENE COUNTY
ROUTE 34 SEC. 4
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 10/29/10 FILENAME: BI00722XLLI.DGN
CHECKED BY: JGT DATE: 3/21/11 SCALE: 1" = 20'-0"
DESIGNED BY: BEF DATE: 9/10
BRIDGE NO. 07212 DRAWING NO. 51940

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.		100722	57	121
				①	07212	SOIL BORINGS		51941



ELEVATION



BORING LEGEND

A1-Moist, Loose, Brown Sand with Clay and Organic Matter
B1-Wet, Very Soft, Gray Clay with Sand
C1-Wet, Medium Stiff, Brown Clay
D1-Wet, Medium Dense, Brown and Gray Sand with Clay
E1-Wet, Medium Stiff, Gray Clay
F1-Wet, Soft, Brown Clay
G1-Wet, Medium Stiff, Dark Gray Clay with Silt
H1-Wet, Soft, Gray Clay with Silt
J1-Wet, Medium Stiff, Gray Clay with Silt
K1-Wet, Medium Stiff, Brown Clay with Sand
L1-Wet, Dense, Brown Sand
M1-Wet, Dense, Reddish Brown Sand
N1-Wet, Medium Dense, Reddish Brown Sand with Clay
P1-Wet, Very Stiff, Gray Clay with Sand
Q1-Wet, Very Dense, Brown and Gray Sand with Clay
R1-Wet, Medium Dense, Reddish Brown and Gray Sand with Clay
S1-Wet, Dense, Reddish Brown Sand with Trace of Clay
T1-Wet, Dense, Brown and Gray Sand with Clay and Organic Matter
U1-Wet, Dense, Brown and Gray Sand with Clay
V1-Wet, Very Dense, Brown Sand
W1-Moist, Hard, Dark Brown Clay with Organic Matter
X1-Moist, Loose, Brown Silt with Sand with some Organic Matter
Y1-Moist, Hard, Light Gray Clay with some Organic Matter
Z1-Moist, Stiff, Light Gray Clay with some Organic Matter
A2-Wet, Very Stiff, Light Gray and Brown Clay
B2-Wet, Medium Stiff, Light Gray Clay
C2-Wet, Stiff, Light Gray Clay
D2-Wet, Very Loose, Gray Silt
E2-Wet, Stiff, Brown Clay
F2-Wet, Medium Stiff, Brown Sandy, Silty Clay
G2-Wet, Dense, Brown Sand with Silt
H2-Wet, Medium Dense, Reddish Brown Sand with Silt
J2-Wet, Dense, Reddish Brown Sand with Silt
K2-Wet, Medium Dense, Reddish Brown and Gray Sand with Silt
L2-Wet, Medium Dense, Light Gray Sandy Silt
M2-Wet, Dense, Light Gray Sandy Silt
N2-Wet, Dense, Light Gray Silty Sand with some Organic Matter
P2-Wet, Very Dense, Brown and Gray Sand with Silt
Q2-Wet, Dense, Brown and Gray Silty Sand
R2-Wet, Very Dense, Brown Sand with Silt and Cemented Sand Seams
S2-Wet, Very Dense, Brown and Gray Silty Sand
T2-Moist, Medium Dense, Brown Sand with Clay and Gravel
U2-Moist, Very Stiff, Gray Clay with Sand
V2-Moist, Loose, Gray and Brown Silt
W2-Moist, Stiff, Gray and Brown Clay with Sand
X2-Wet, Soft, Brown Clay with Silt
Y2-Wet, Stiff, Gray Clay
Z2-Wet, Stiff, Gray Clay with Silt
A3-Wet, Very Soft, Dark Brown Clay with Silt
B3-Wet, Very Soft, Brown Clay with Silt
C3-Wet, Very Soft, Brown Clay with Sand
D3-Wet, Very Dense, Reddish Brown Sand
E3-Wet, Dense, Gray Sand with Clay
F3-Wet, Dense, Gray and Brown Sand with Clay
G3-Wet, Medium Dense, Gray and Brown Sand with Clay
H3-Wet, Very Hard, Gray and Brown Sandy Clay
J3-Wet, Very Dense, Gray and Brown Sand with Clay
K3-Wet, Very Dense, Brown and Gray Sand

"N" VALUES

Sta. 611+20 - 21' Lt. of C.L. Const.

4.2- 5.2, N=8
9.2- 10.2, N=0
15.5- 16.5, N=8
20.5- 21.5, N=17
25.5- 26.5, N=5
30.5- 31.5, N=3
35.5- 36.5, N=5
40.5- 41.5, N=2
45.5- 46.5, N=7
50.5- 51.5, N=8
55.5- 56.5, N=37
60.5- 61.5, N=48
65.5- 66.5, N=19
70.5- 71.5, N=23
75.5- 76.5, N=51
80.5- 81.5, N=27
85.5- 86.5, N=36
90.5- 91.5, N=19
95.5- 96.5, N=45
100.5-101.5, N=35
105.5-106.5, N=49
110.0-110.3, N=60(4")
115.5-116.5, N=42

Sta. 612+37 - 21' Rt. of C.L. Const.

3.6- 4.6, N=10
8.6- 9.6, N=39
13.6- 14.6, N=11
20.5- 21.5, N=17
25.5- 26.5, N=6
30.5- 31.5, N=13
35.5- 36.5, N=0
40.5- 41.5, N=10
45.5- 46.5, N=5
50.5- 51.5, N=34
55.5- 56.5, N=24
60.5- 61.5, N=38
65.5- 66.5, N=30
70.5- 71.5, N=30
75.5- 76.5, N=31
80.5- 81.5, N=45
85.5- 86.5, N=72
90.5- 91.5, N=38
95.5- 95.8, N=60(3")
100.0-100.2, N=60(3")

Sta. 612+90 - 21' Rt. of C.L. Const.

4.4- 5.4, N=14
9.4- 10.4, N=18
16.4- 17.4, N=9
21.4- 22.4, N=10
25.5- 26.5, N=4
30.5- 31.5, N=9
35.5- 36.5, N=15
40.5- 41.5, N=0
45.5- 46.5, N=1
50.5- 51.5, N=1
55.5- 56.5, N=52
60.5- 61.5, N=50
65.5- 65.8, N=60(4")
70.5- 71.5, N=46
75.5- 76.5, N=33
80.5- 81.5, N=27
85.5- 86.5, N=63
90.5- 91.5, N=76
95.5- 96.2, N=119(8")
100.5-101.5, N=119

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
(6/30/11)
CARL J. FUSELIER

BRIDGE ENGINEER

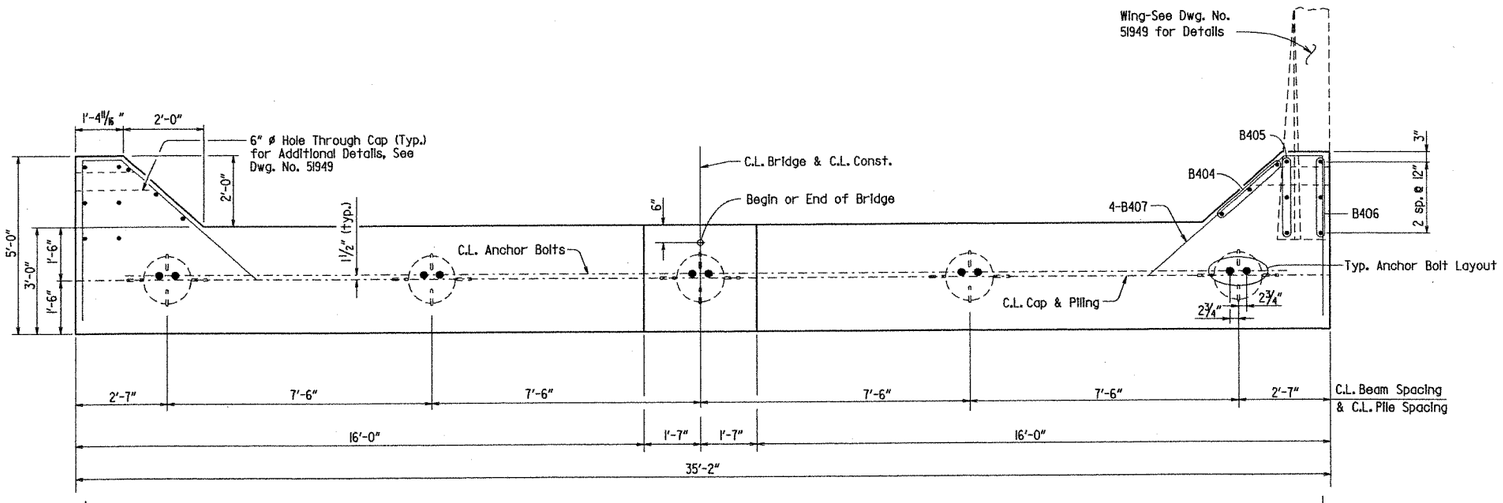
SOIL BORINGS
SLAVENS CREEK
LAFE-MARMADUKE STRS. & APPRS. (S)
GREENE COUNTY
ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

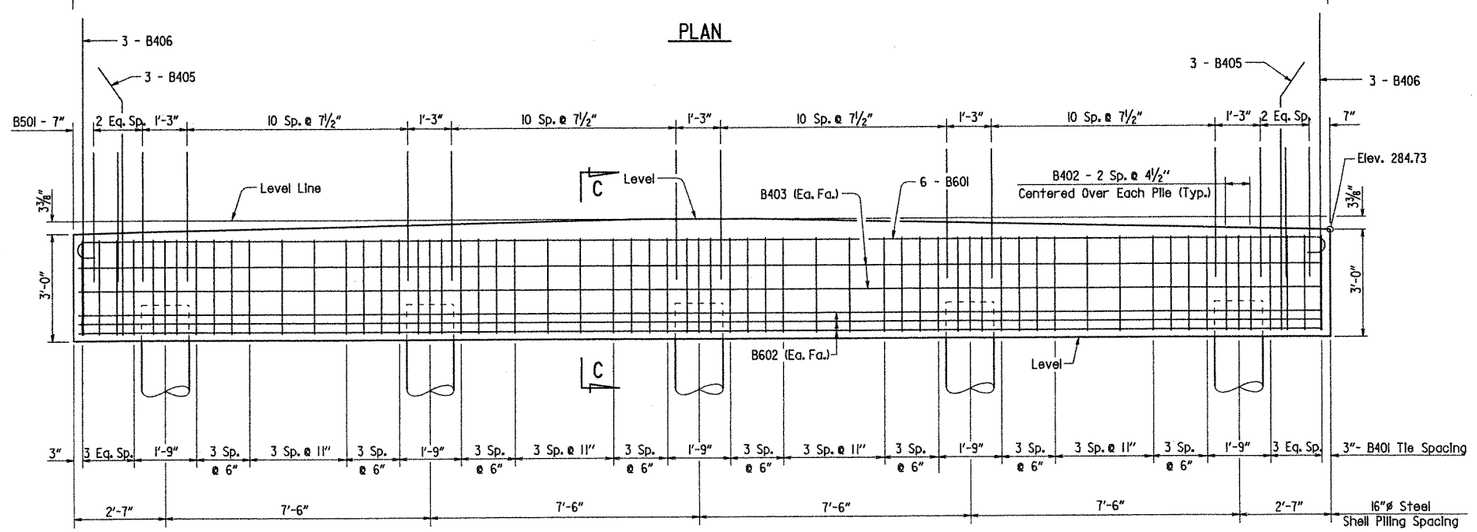
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DESIGNED BY: — DATE: —

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				×	ARK.			
				JOB NO.		100722	58	121
				①	07212	END BENTS		51942



PLAN

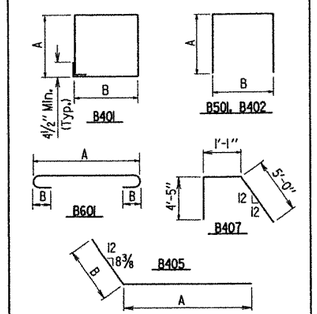


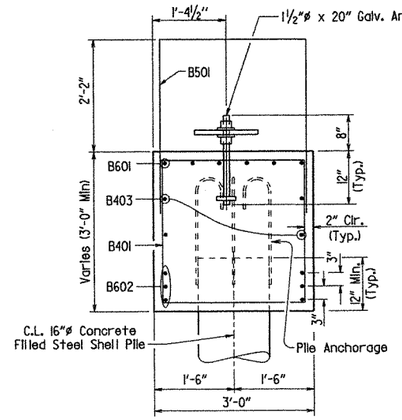
ELEVATION

BAR LIST (PER END BENT)

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	48	11'-0"	2'-8"	2'-8"	2"
B402	15	7'-10"	2'-8"	2'-8"	2"
B403	4	34'-10"	-	-	Str.
B404	6	5'-0"	-	-	Str.
B405	6	7'-8"	6'-6"	1'-2"	2"
B406	6	8'-10"	-	-	Str.
B407	8	10'-5"			2"
B501	50	11'-2"	4'-4"	2'-8"	2½"
B601	6	36'-2"	34'-10"	6"	4½"
B602	6	34'-10"	-	-	Str.

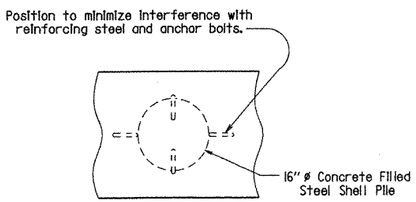
BENDING DIAGRAMS
(DIMENSIONS ARE OUT TO OUT OF BARS.)





SECTION C-C

¾" = 1'-0"



PILE ANCHORAGE DETAIL

Not to Scale

GENERAL NOTES

All concrete Shall be Class "S" with a minimum 28-Day compressive Strength f'c=3500 psi. Concrete shall be poured in the dry and all exposed corners to be Chamfered ¾" unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 OR M53 Grade 60 (fy = 60,000 psi).

Granular Backfill and Pipe Underdrain required behind Cap. See Dwg. No. 51947.

For Details of Pipe Piles and Pile Anchorage, See Dwg. No. 51930.

For Details of Anchor Bolts, See Dwg. No. 51945.

For additional Information, See Layout.

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
6/30/11

BRIDGE ENGINEER

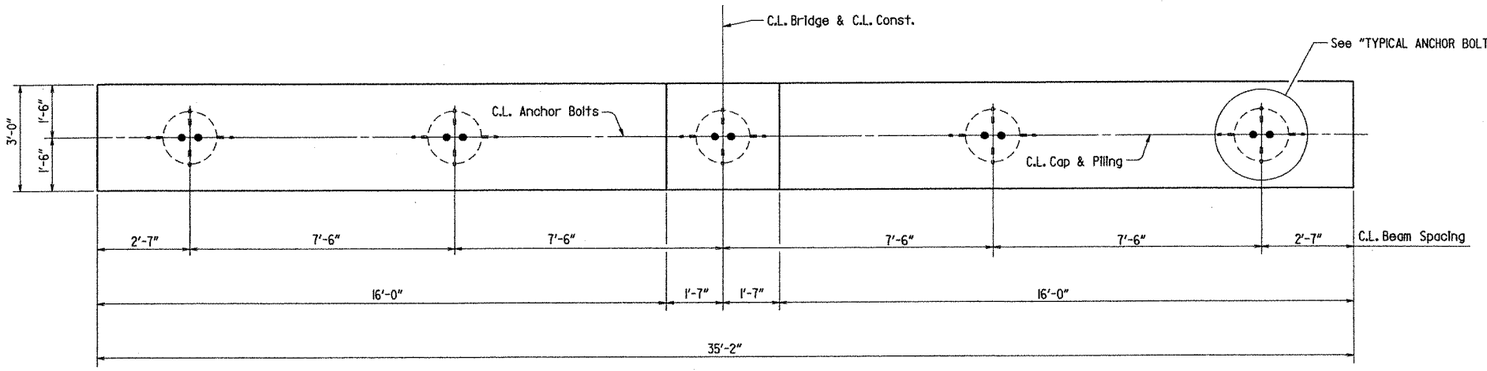
DETAILS OF END BENTS
SLAVENS CREEK
ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION

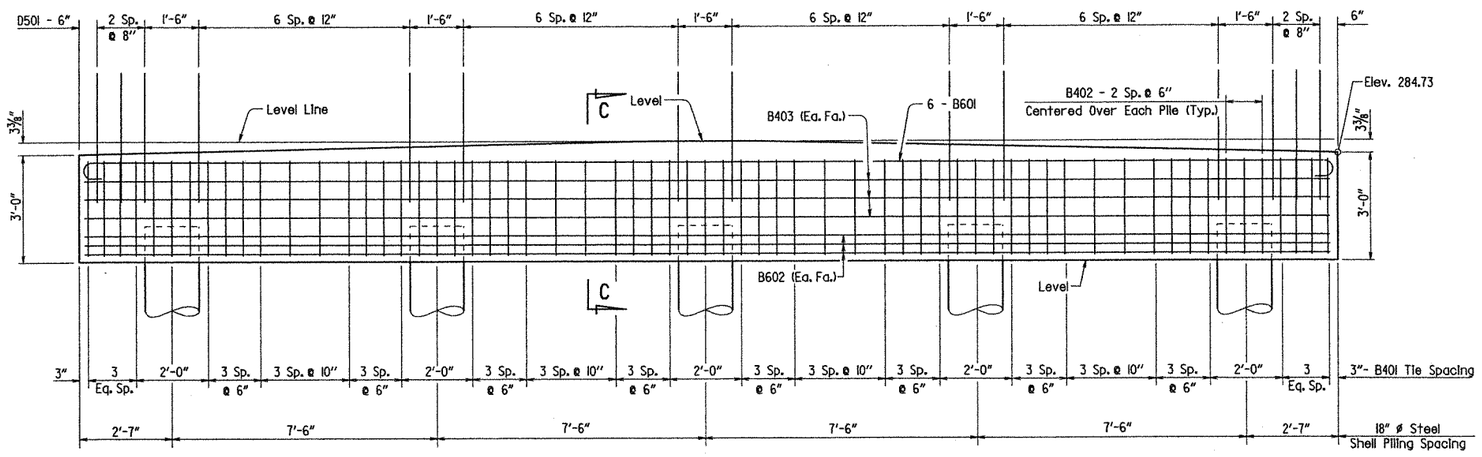
LITTLE ROCK, ARK.

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CHECKED BY: BEF DATE: 3/15/11 SCALE: ½" = 1'-0" OR
DESIGNED BY: BEF DATE: 1/11 AS NOTED
BRIDGE NO. 07212 DRAWING NO. 51942

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				x	ARK.			
				JOB NO.		100722	59	121
				(1) 07212		INT. BENTS	51943	



PLAN

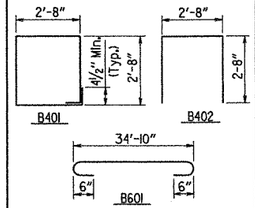


ELEVATION

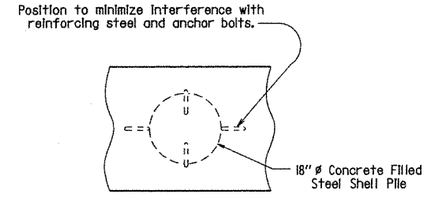
BAR LIST (PER BENT)

MARK	NO. REQ'D.	LENGTH	P.D.
B401	48	11'-0"	2"
B402	15	7'-10"	2"
B403	6	34'-10"	Str.
B601	6	36'-2"	4½"
B602	6	34'-10"	Str.
D501	68	4'-0"	Str.

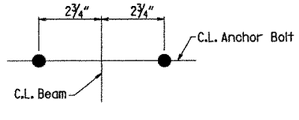
BENDING DIAGRAMS



Dimensions are out to out of bars.



PILE ANCHORAGE DETAIL
Not to Scale



TYPICAL ANCHOR BOLT LAYOUT
N.T.S.

GENERAL NOTES

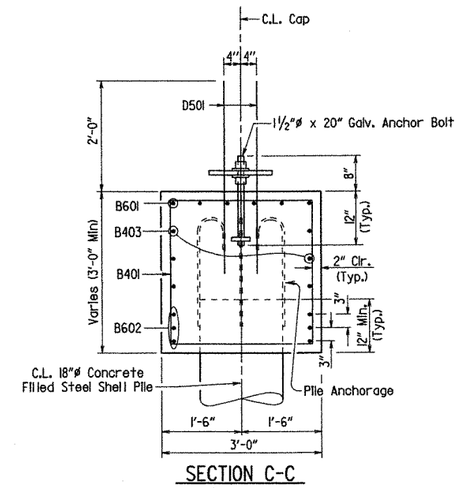
All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted.

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

For details of pipe piles, pile anchorage, & pile encasement, see Dwg. No. 51930

For Details of Anchor Bolts, see Dwg. No. 51945.

For additional information, see layout.



SECTION C-C
¾" = 1'-0"

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENTS
SLAVENS CREEK
ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

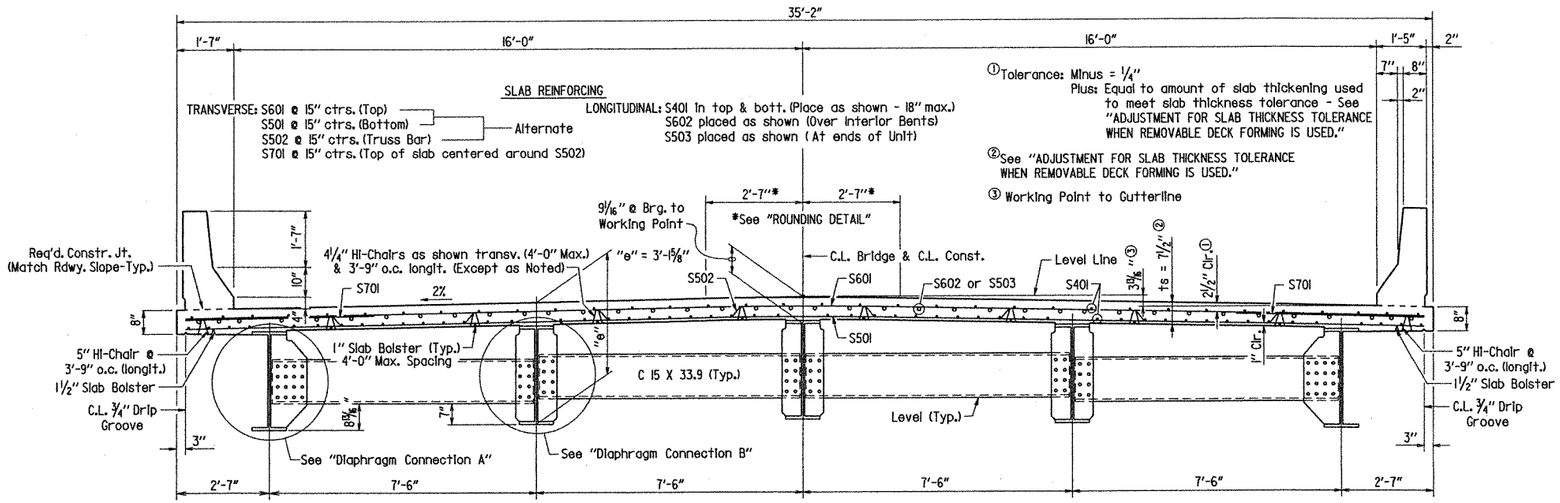
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DESIGNED BY: BEF DATE: 1/11

BRIDGE NO. 07212 DRAWING NO. 51943

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.		100722	60	121
				(1) 07212		SPAN DETAILS		51944

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

Note: At the Contractors option, one No. 5 straight bar top and bottom may be substituted for bar S502. Payment for reinforcing will be based on the weight of bar S502.



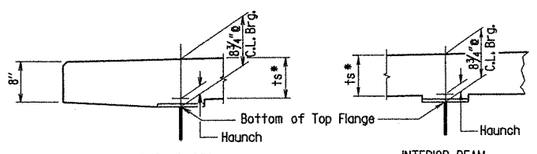
TYPICAL SECTION AT MID-SPAN

1/2" = 1'-0"

TABLE FOR WELD

Material Thickness Of Thicker Part Joined (Inches)	Minimum Size Of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To 3/4" Inclusive	1/4"	
Over 3/4"	5/16"	

Note: When a fillet weld size, as shown on the Plans, is larger than the minimum, the First Pass shall be that specified for minimum size of fillet weld.



EXTERIOR BEAM

INTERIOR BEAM

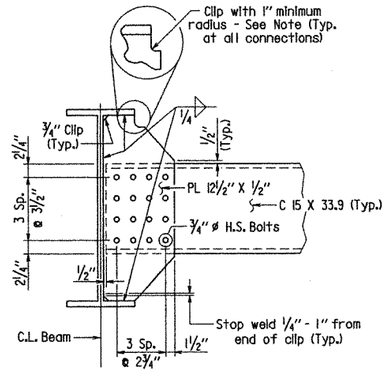
*Tolerance when removable deck forming is used is + 1/2", - 1/4". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

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

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 1499I for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

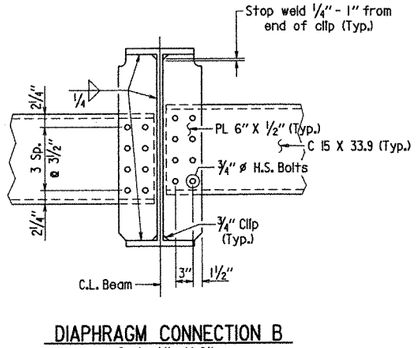
No Scale



DIAPHRAGM CONNECTION A

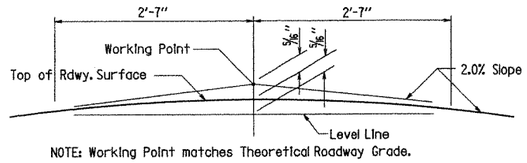
Scale: 1" = 1'-0"

Note: If permanent steel deck forms are used, the fabricator shall clip the plate as necessary to accommodate the deck form support.



DIAPHRAGM CONNECTION B

Scale: 1" = 1'-0"



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

No Scale

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
3/31/11

BRIDGE ENGINEER

SHEET 1 OF 6
DETAILS OF 131'-0" INTEGRAL CONTINUOUS COMPOSITE W-BEAM UNIT SLAVENS CREEK

ROUTE 34 SEC. 4

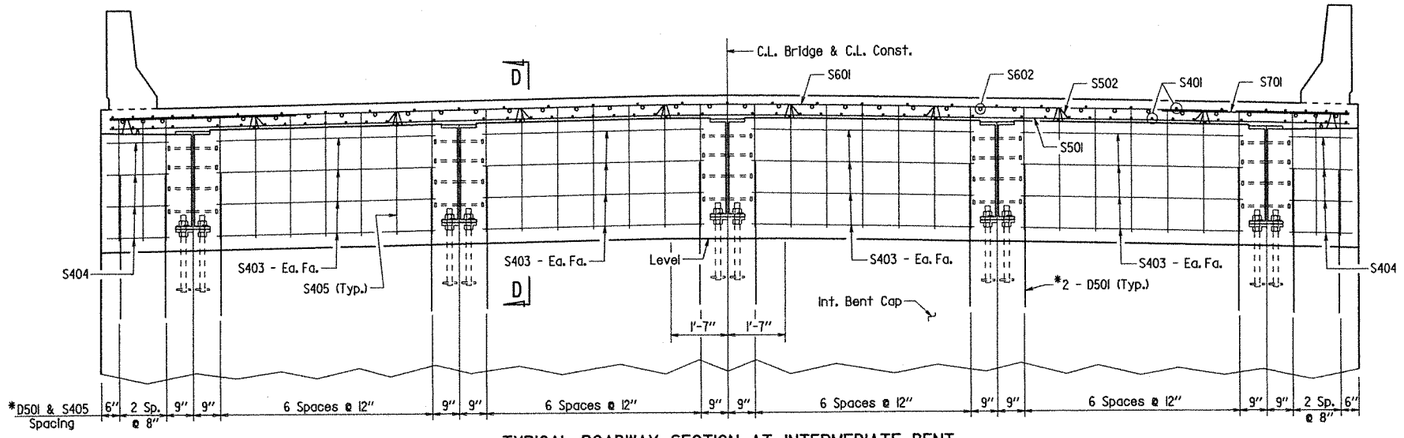
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

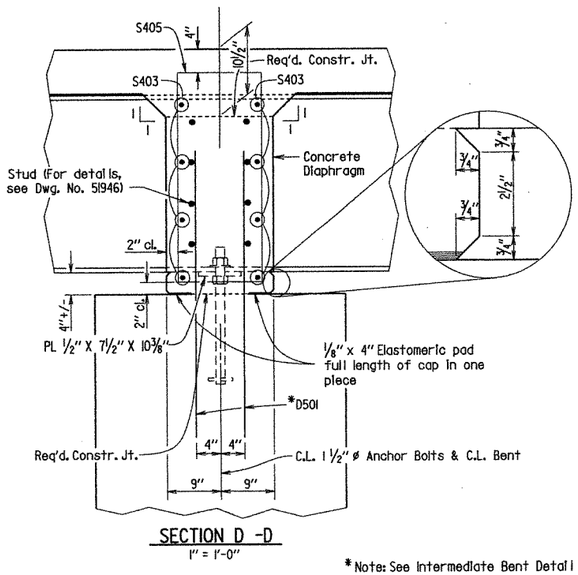
DRAWN BY: MJT DATE: 12/27/10 FILENAME: BI00722X1_SI.DGN
CHECKED BY: BEF DATE: 3/15/11 SCALE: AS SHOWN
DESIGNED BY: TMG DATE: 12/10

BRIDGE NO. 07212 DRAWING NO. 51944

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.		100722	61	121
				(1) 07212		SPAN DETAILS		51945

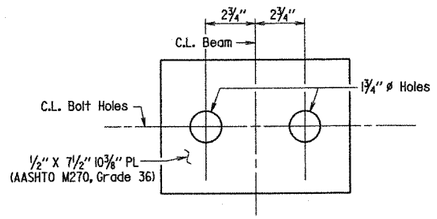


TYPICAL ROADWAY SECTION AT INTERMEDIATE BENT
½" = 1'-0"

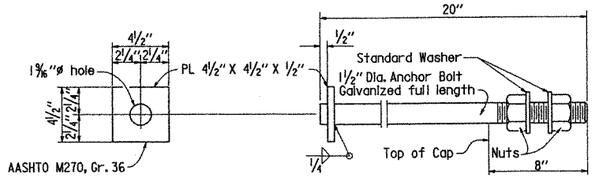


SECTION D -D
1" = 1'-0"

*Note: See Intermediate Bent Detail on Dwg. No. 51943 for reinforcing and additional details.



ANCHOR BOLT PLATE DETAIL
Not to Scale



Anchor bolts shall comply with AASHTO M314, Grade 55, with Supplementary Requirement S1, and galvanized according to Section 807.07. Nuts for bolts shall be as specified in Section 807.07.

Use lower nut and washer to adjust to grade. Snug tight top nut and washer after grade is adjusted.

ANCHOR BOLT DETAIL
No Scale

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL G. FUSELIER
3/15/11

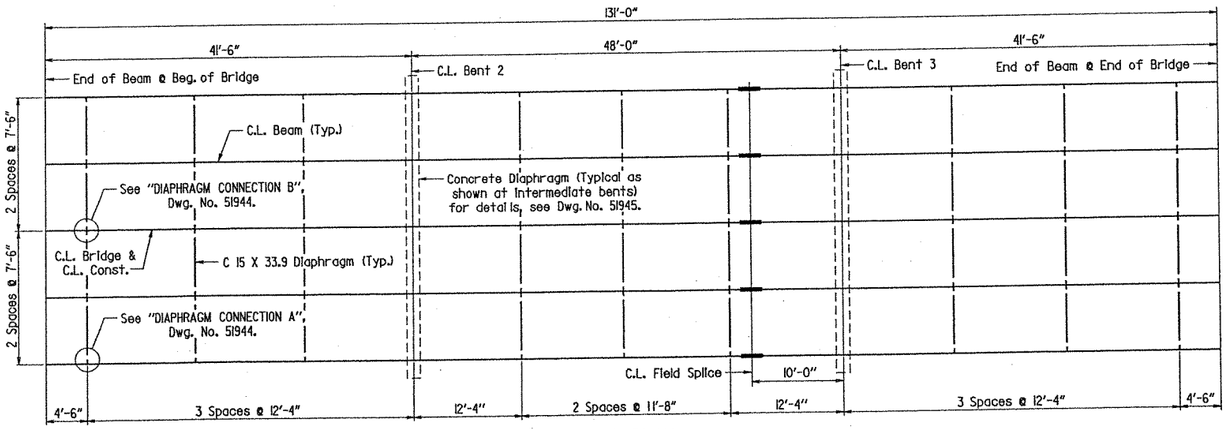
BRIDGE ENGINEER

SHEET 2 OF 6
DETAILS OF 131'-0" INTEGRAL CONTINUOUS COMPOSITE W-BEAM UNIT
SLAVENS CREEK
ROUTE 34 SEC. 4
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

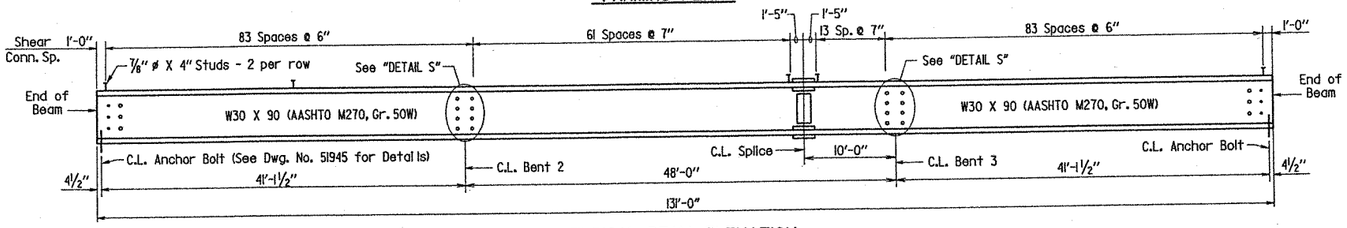
DRAWN BY: MJT DATE: 12/27/10 FILENAME: BI00722XL_SL.DGN
CHECKED BY: BEF DATE: 3/15/11 SCALE: AS SHOWN
DESIGNED BY: TMG DATE: 12/10

BRIDGE NO. 07212 DRAWING NO. 51945

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.		100722	602	121
				(1) 07212		SPAN DETAILS		51946



FRAMING PLAN



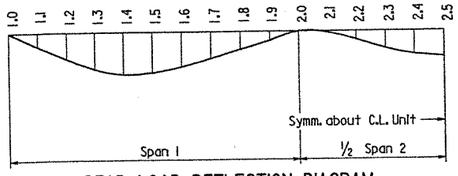
TYPICAL BEAM ELEVATION

Not to Scale

TABLE OF DEAD LOAD DEFLECTIONS - INCHES

POINT OF DEFLECTION	STRUCTURAL STEEL		STRUCTURAL STEEL + SLAB		STRUCTURAL STEEL + SLAB + PARAPET	
	INT. BEAM	EXT. BEAM	INT. BEAM	EXT. BEAM	INT. BEAM	EXT. BEAM
1.0	0.000	0.000	0.000	0.000	0.000	0.000
1.1	0.012	0.011	0.088	0.077	0.089	0.078
1.2	0.022	0.020	0.158	0.137	0.160	0.141
1.3	0.029	0.026	0.208	0.180	0.212	0.186
1.4	0.033	0.030	0.239	0.207	0.245	0.217
1.5	0.032	0.030	0.235	0.205	0.242	0.216
1.6	0.028	0.026	0.206	0.179	0.212	0.189
1.7	0.020	0.019	0.148	0.130	0.153	0.138
1.8	0.014	0.013	0.104	0.091	0.108	0.097
1.9	0.008	0.007	0.056	0.048	0.058	0.051
2.0	0.000	0.000	0.000	0.000	0.000	0.000
2.1	0.001	0.001	0.006	0.005	0.007	0.007
2.2	0.007	0.006	0.047	0.039	0.051	0.046
2.3	0.014	0.012	0.100	0.084	0.108	0.097
2.4	0.018	0.016	0.129	0.109	0.139	0.125
2.5	0.022	0.020	0.158	0.134	0.170	0.153

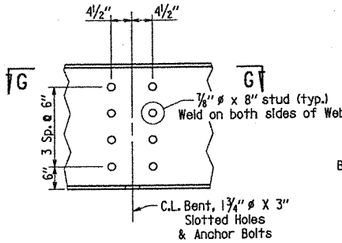
Symm. about C.L. Unit



DEAD LOAD DEFLECTION DIAGRAM

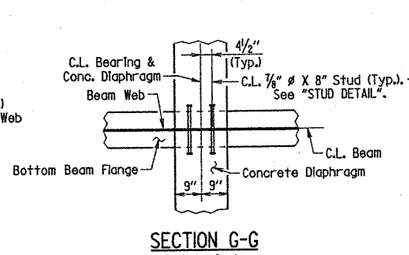
Not to Scale

Note: Camber for Dead Load Deflection plus Vertical curve +/- 1/4" tolerance. Deflections shown are from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included.



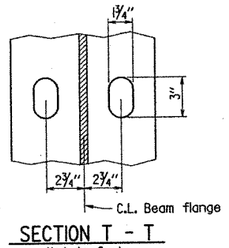
DETAIL S

3/4" = 1'-0"



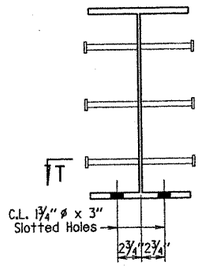
SECTION G-G

Not to Scale



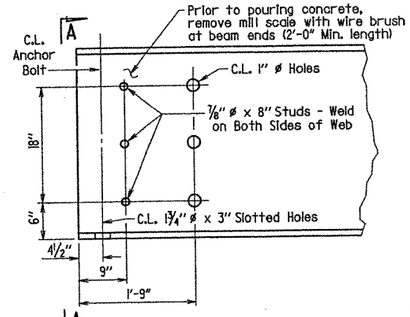
SECTION T - T

Not to Scale



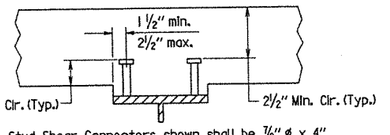
VIEW A-A

Not to Scale



DETAIL OF BEAM END (TYP.)

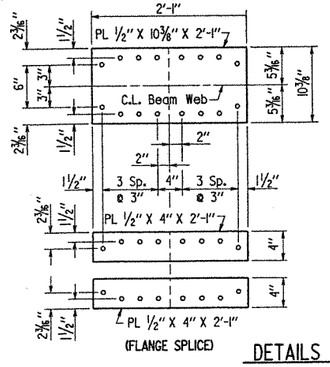
Not to Scale

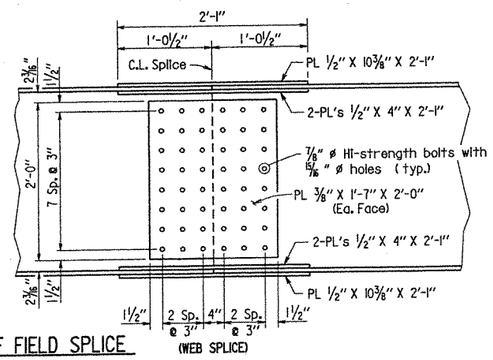


Stud Shear Connectors shown shall be 7/8" ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. 3/4" ø studs may be used in place of the 7/8" ø studs shown, at the ratio of 1.361 - 3/4" ø studs in place of one 7/8" ø stud. 7/8" ø studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24".

SHEAR CONNECTOR DETAIL

Not to Scale





DETAILS OF FIELD SPLICE

No Scale

Notes: 1. All Field Splice Bolts to be 7/8" ø H.S. Bolts.
2. All Field Splice plates to be AASHTO M270, Gr. 50W steel.
3. All holes for splice bolts to be 15/16" ø.

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/31/11

BRIDGE ENGINEER

SHEET 3 OF 6
DETAILS OF 131'-0" INTEGRAL CONTINUOUS COMPOSITE W-BEAM UNIT SLAVENS CREEK

ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION

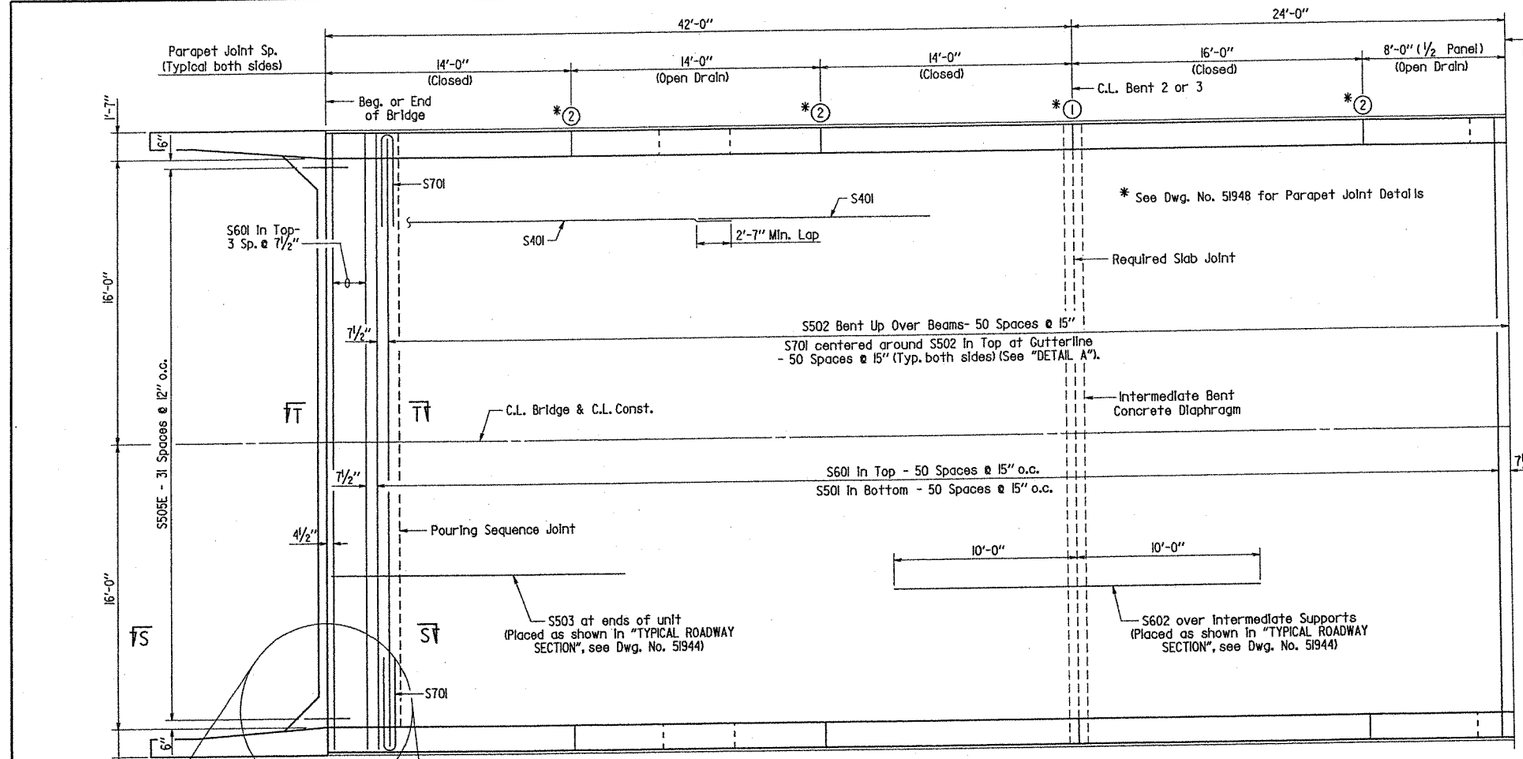
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 12/27/10 FILENAME: BI00722XI_SI.DGN
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DESIGNED BY: TMG DATE: 12/10

BRIDGE NO. 07212 DRAWING NO. 51946

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.		100722	63	121
07212		SPAN DETAILS		51947



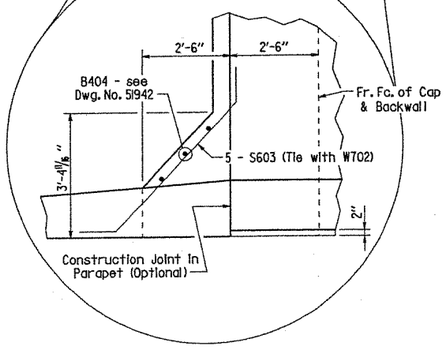
HALF-REINFORCING PLAN

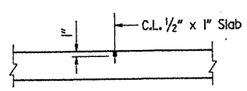
1/4" = 1'-0"

Notes: Rails and wings are included in span construction and included in span quantities.

Required slab joints and intermediate pouring sequence joint shall align with parapet open joints at the gutterline.

For "VIEW R-R", "SECTION S-S" and "SECTION T-T", see Dwg. No. 51949.

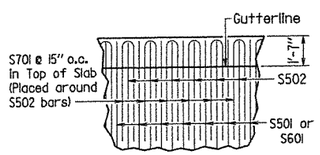




Use ½" x 1" Type 3, 4 or 6 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer rod shall not be installed. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab. Slab Joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the slab has sufficiently set to allow sawing of the joints without damaging the slab. Slab Joints shall be placed at all pouring sequence construction joints and required slab joint locations.

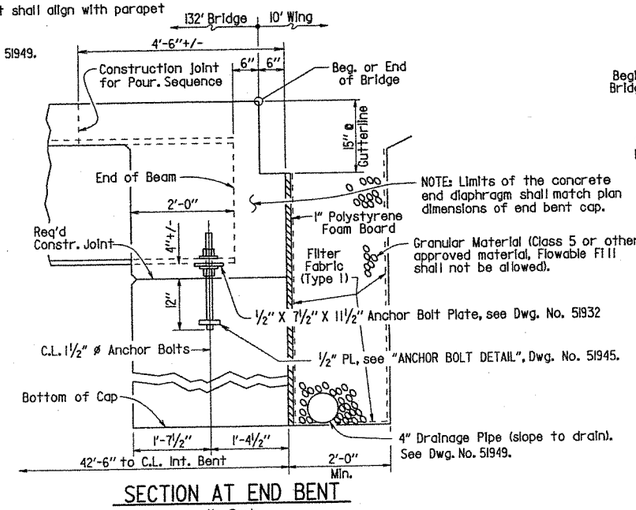
SLAB JOINT DETAIL

Not to Scale



DETAIL A

Not to Scale



SECTION AT END BENT

No Scale

Note: For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611 of the Standard Specifications. Pipe underdrains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation".

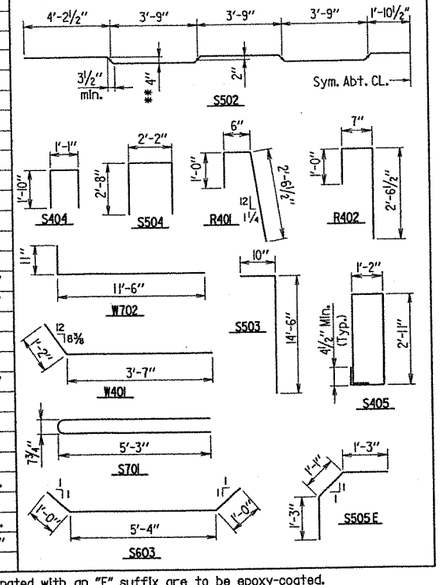
BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
R401	16	3'-11"	2"
R402	16	4'-0"	2"
R403	24	9'-8"	Str.
R404	24	5'-0"	Str.
R601	32	5'-11"	Str.
R602	12	5'-0"	Str.
S401	344	34'-11"	Str.
S402	20	34'-10"	Str.
S403	64	6'-4"	Str.
S404	16	4'-7"	2"
S405	68	8'-2"	2"
S501	102	34'-10"	Str.
S502	101	35'-6"	3"
S503	76	15'-3"	3¾"
S504	100	7'-4"	2½"
*S505E	64	3'-7"	2½"
S601	110	34'-10"	Str.
S602	76	20'-0"	Str.
S603	20	7'-4"	4½"
S701	202	10'-9"	6"
W401	20	4'-9"	2"
W402	20	5'-11"	Str.
W701	12	12'-0"	Str.
W702	48	12'-3"	5¼"

BENDING DIAGRAMS

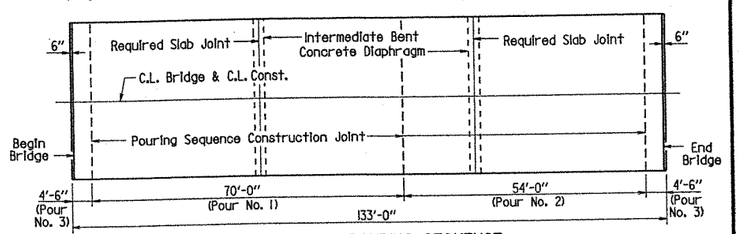
Dimensions are out to out of bars.

** ½" Overtolerance, No Undertolerance.



Note: Bars designated with an "E" suffix are to be epoxy-coated.

*Epoxy-coated reinforcing steel is to be paid for as "Reinforcing Steel - Bridge (Grade 60)."



CONCRETE POURING SEQUENCE

Not to Scale

Note: Pour (1) must be placed before Pour (2) can be placed. Pour (2) must be placed before Pours (3) can be placed. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

Concrete Diaphragms at Intermediate Bents shall be poured a minimum of 48 hours before the slab is poured. Concrete diaphragms at ends of unit shall be poured monolithically with deck pour no. 3.

Any railing pours made before the entire slab unit has been placed must be approved by the Bridge Engineer.

Concrete in bridge superstructure must be consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Engineer for any deviations from the Pouring Sequences shown.

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/3/11

BRIDGE ENGINEER

SHEET 4 OF 6
DETAILS OF 131'-0" INTEGRAL CONTINUOUS COMPOSITE W-BEAM UNIT
SLAVENS CREEK
ROUTE 34 SEC. 4

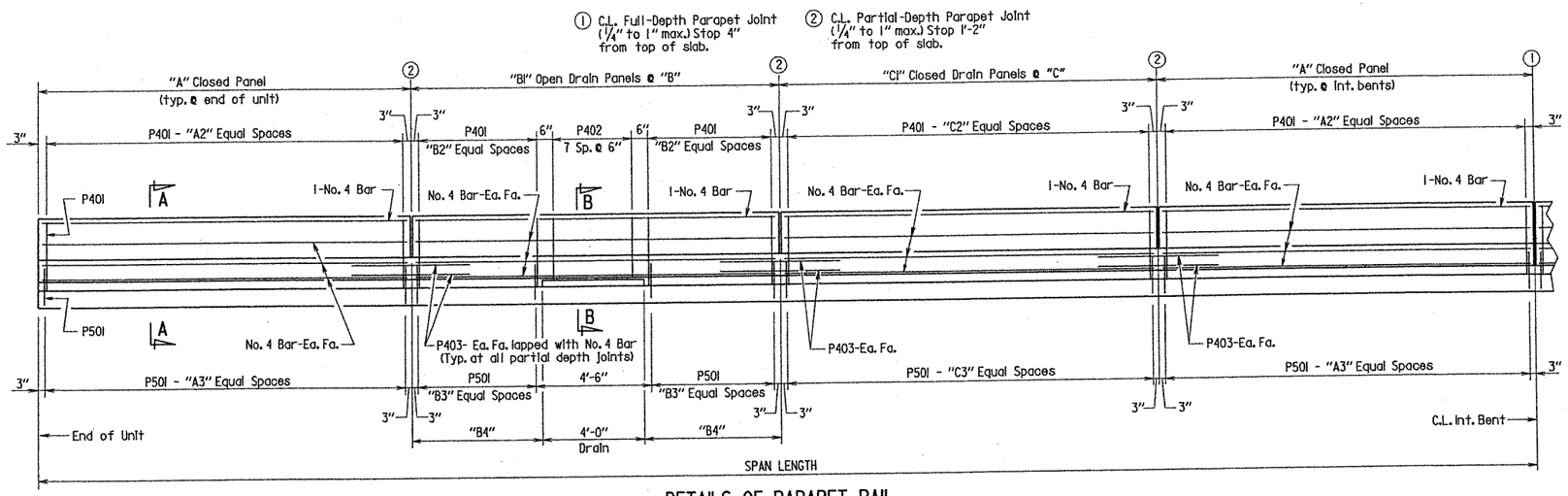
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 12/27/10 FILENAME: BI00722XI_SLDGN
CHECKED BY: BEF DATE: 3/15/11 SCALE: AS SHOWN
DESIGNED BY: TMG DATE: 12/10

BRIDGE NO. 07212 DRAWING NO. 51947

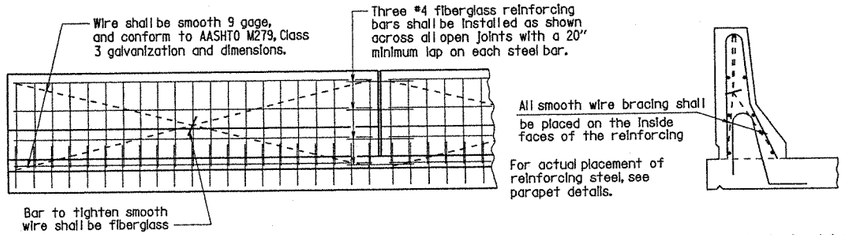
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				6	ARK.			
				JOB NO.		100722	64	121
				1	07212	SPAN DETAILS		51948



DETAILS OF PARAPET RAIL
Not to Scale

TABLE OF VARIABLES

SPAN LENGTH	"A"	"A2"	"A3"	"B"	"B1"	"B2"	"B3"	"B4"	"C"	"C1"	"C2"	"C3"	Longit. No. 4 Bar MARK	Longit. No. 4 Bar LENGTH
42'-0"	14'-0"	22	27	14'-0"	1	8	9	5'-0"	—	—	—	—	P404	13'-8"
48'-0"	16'-0"	25	31	16'-0"	1	9	11	6'-0"	—	—	—	—	P405	15'-8"



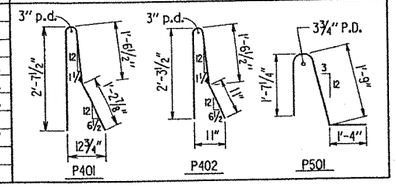
All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practicalto a minimum width of 1/4". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

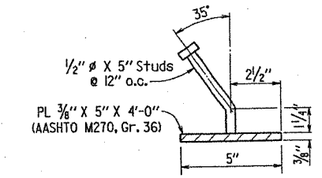
The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL
No Scale

BAR LIST

Mark	No. Req'd.	Length	Pin Dia.	Bending Diagrams (Dimensions are out to out of bars.)
P401	400	5'-6"	2"	
P402	48	4'-10"	2"	
P403	48	5'-0"	Str.	
P404	84	13'-8"	Str.	
P405	42	15'-8"	Str.	
P501	480	4'-9"	2 1/2"	

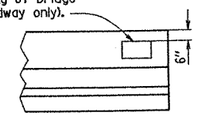




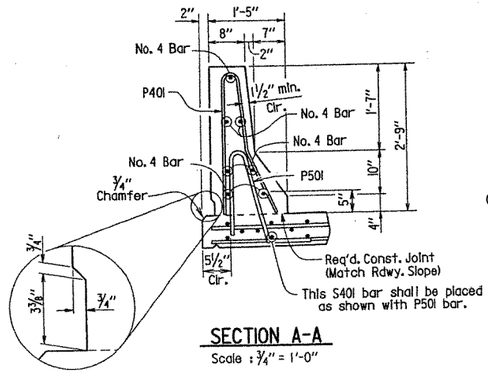
DETAIL Z
No Scale

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

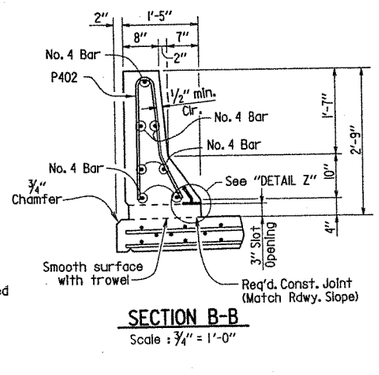
Place Type D Bridge Name Plate on front face of span rail approx. 2'-0" from beginning of bridge (Right side of roadway only).



NAME PLATE DETAIL
No Scale



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



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

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
6/3/11
BRIDGE ENGINEER

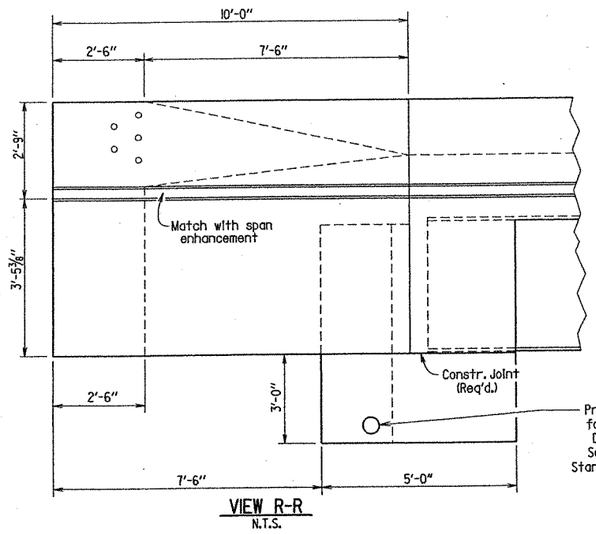
SHEET 5 OF 6
DETAILS OF 131'-0" INTEGRAL CONTINUOUS COMPOSITE W-BEAM UNIT SLAVENS CREEK
ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

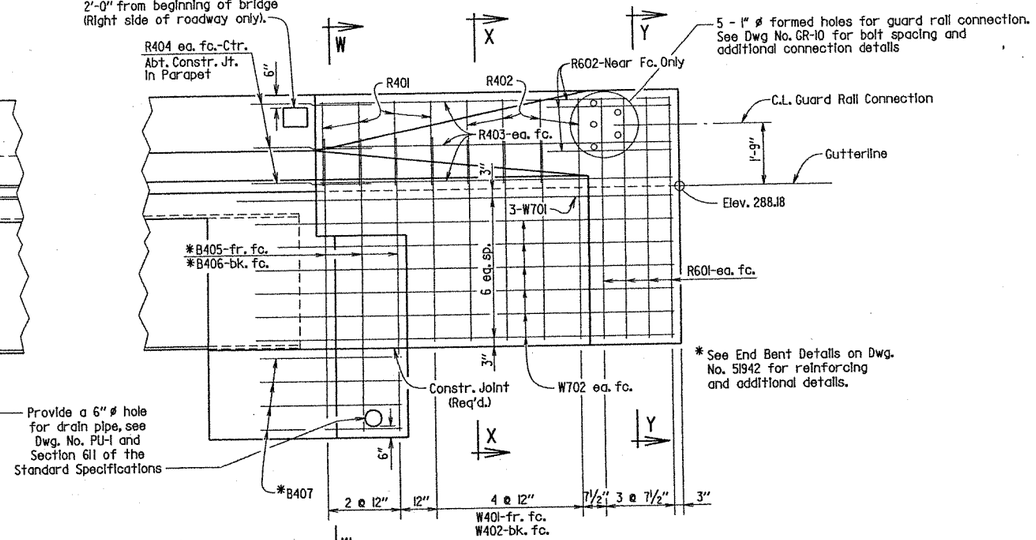
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BRIDGE NO. 07212 DRAWING NO. 51948

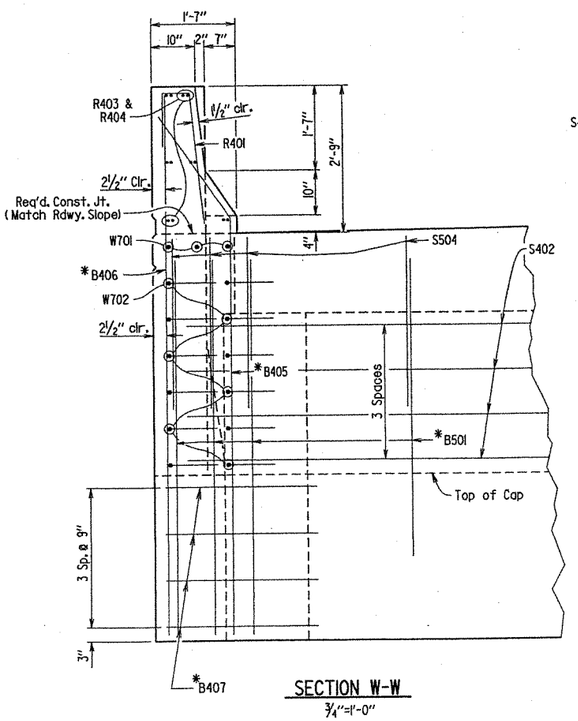
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				6	ARK.			
				JOB NO.		100722	65	121
				07212		SPAN DETAILS		51949



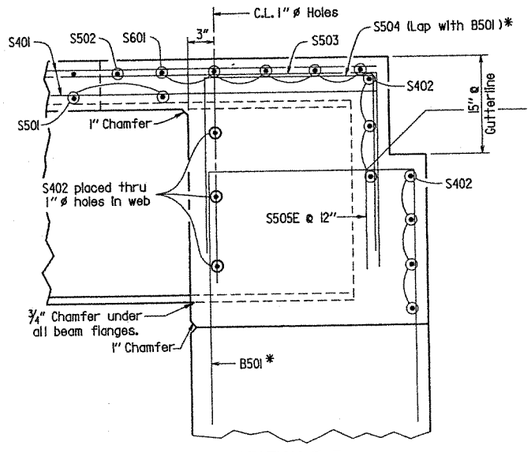
VIEW R-R
N.T.S.



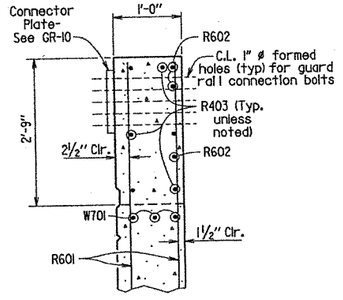
SECTION S-S
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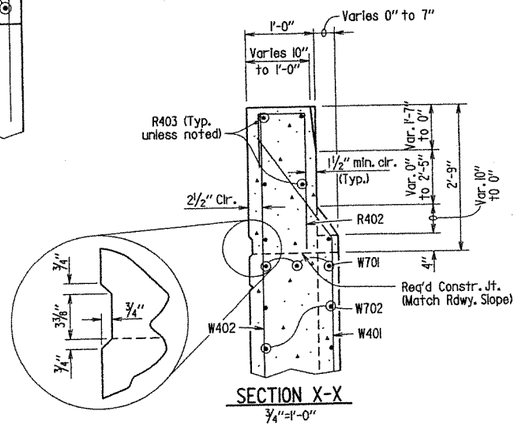
SECTION W-W
3/4"=1'-0"



SECTION T-T
N.T.S.



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



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

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, Fifth Edition (2010), with 2010 Interim revisions.

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 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 S(AE) 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 fine 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. 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 :
All 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, Grade 36 unless otherwise noted.

Anchor bolts, anchor bolt plates, nuts and washers shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Grade 50W)".

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 blocked in their true position with webs horizontal in the shop. The camber, length of sections, distance between bearings and openings of joints shall be measured with the beams in their true position and this information shall become part of the permanent records for this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4"+/- is allowed for camber.

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 the Contractor or Erector should want to make additional welds, whether temporary or permanent, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used to attach falsework support devices and screed rail supports to the structural steel that does 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 3/4" ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges. Holes for 3/4" ø high-strength bolts may be 15/16" diameter if a washer is supplied for use under both the nut and head of the bolt.

Elastomeric pads at intermediate bents shall conform to subsection 807.15(b). The pads will not be paid for directly, but will be considered subsidiary to the item "Class S Concrete-Bridge".

STATE OF ARKANSAS
CARL T. PUSELLER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL T. PUSELLER

BRIDGE ENGINEER

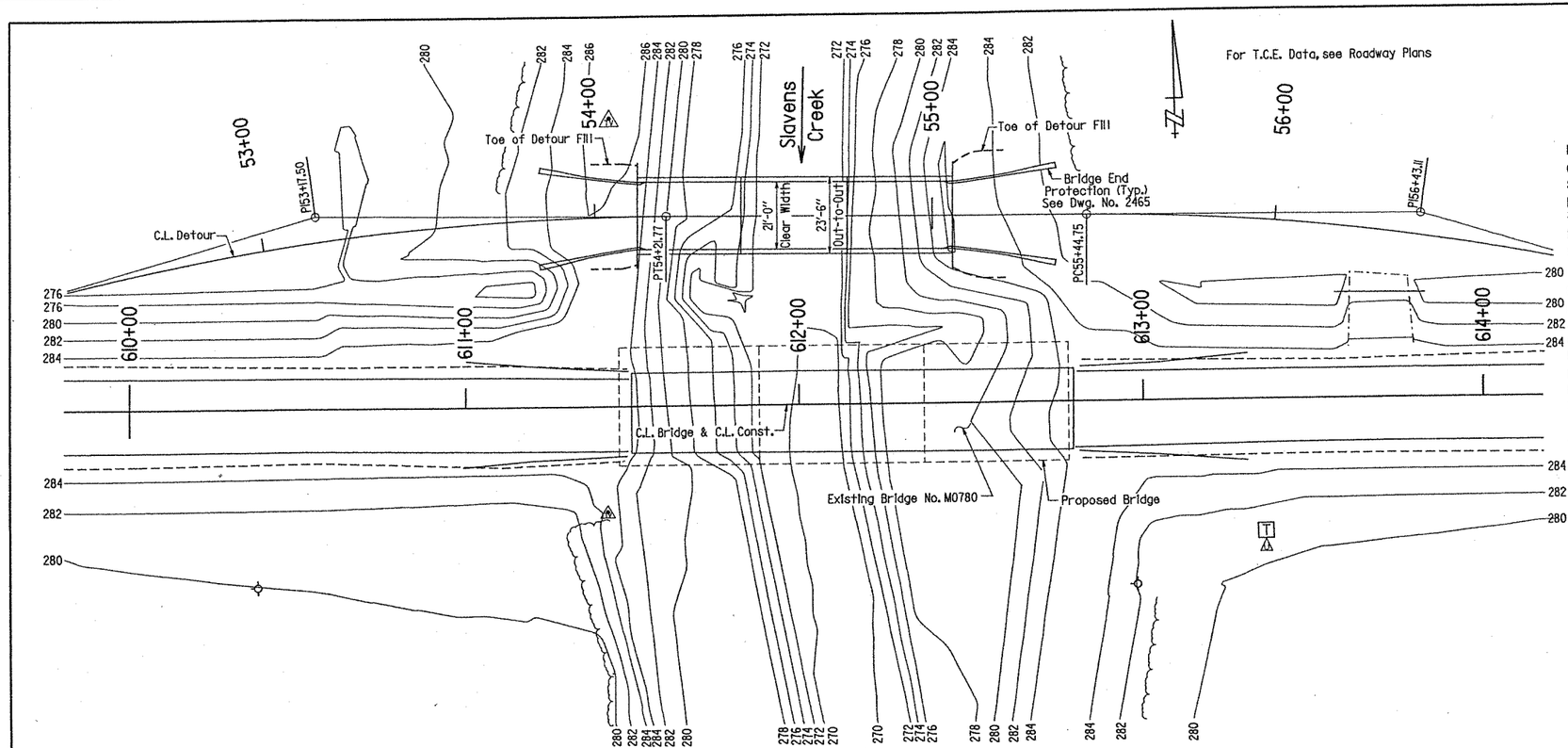
SHEET 6 OF 6
DETAILS OF 131'-0" INTEGRAL CONTINUOUS COMPOSITE W-BEAM UNIT
SLAVENS CREEK
ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

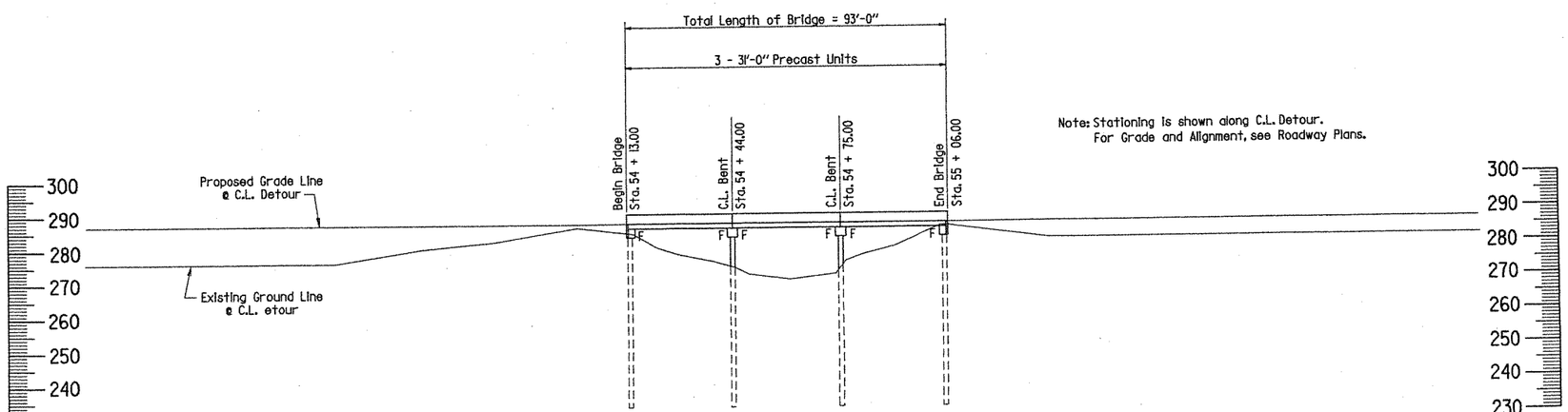
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DESIGNED BY: TMG DATE: 12/10

BRIDGE NO. 07212 DRAWING NO. 51949

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.		100722	60	121
				(1) 07212		LAYOUT	51950	



PLAN



ELEVATION

GENERAL NOTES

BENCH MARK: BM 908 Chiseled Square NW Corner, 12.7' Left, Sta. 300+70.54, Elev. 321.62

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2003 edition, with applicable supplemental specifications and special provisions. Unless otherwise noted in the plans Section and Subsection refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO Standard Specifications for Highway Construction, 2002 Edition.

LIVE LOADING: H-15

METHOD OF DESIGN: Load Factor

SEISMIC PERFORMANCE CATEGORY: B

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (AASHTO M 31 or M 53, Gr. 60)	fy = 60,000 psi

PILING: All piling shall be 16" unfilled steel shell piling and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 44 tons per pile. Drive piles in Bents 1 thru 4 to a tip elevation of 229.00 or lower.

Preboring or other methods as approved by the Engineer may be used to achieve the minimum penetration. Any cost for these methods shall be included in the item "Temporary Bridge Structure".

PRECAST CONCRETE UNITS: Precast concrete units shall comply with the requirements of AHTD Standard Drawings. Precast concrete units within the drawings series 5291 thru 5307, 14800 thru 14899 and 15190 thru 15400 may be used in lieu of units shown on Dwg. Nos. 15240. All precast units shall be doweled to bent caps as shown on Dwg. No. 51937.

DETAIL DRAWINGS:

	DRAWING NO.
Temporary Bridge Structure	51937 & 51938
Unfilled Steel Shell Piling	51939
31' - Precast Concrete Spans	15240
Bridge End Protection System	2465

The Temporary Bridge Structure shall comply with and be paid for per linear foot as Temporary Bridge Structure (20' Roadway Width) in accordance with Section 603.

STATE OF ARKANSAS
CARL J. PUSELLIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
9/3/11

BRIDGE ENGINEER

LAYOUT OF TEMPORARY BRIDGE OVER SLAVENS CREEK LAFE-MARMADUKE STRS. & APPRS. (S) GREENE COUNTY

ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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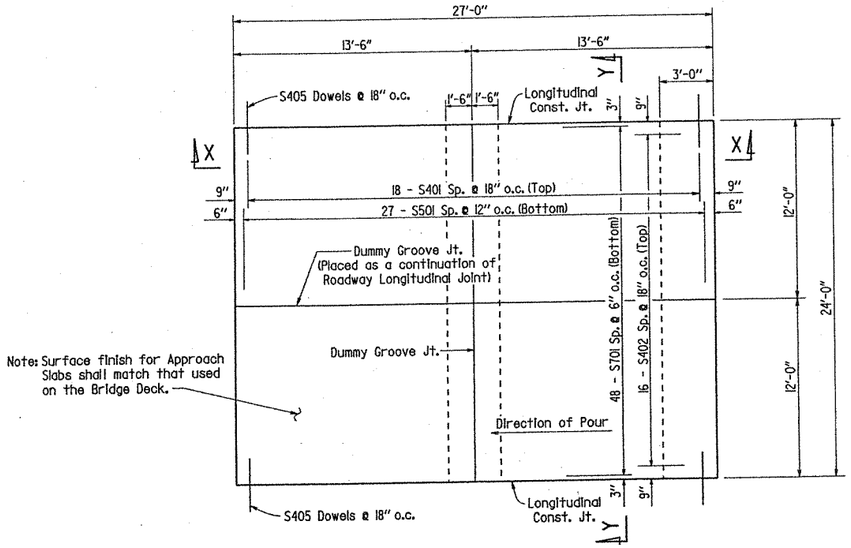
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				6	ARK.			
				JOB NO.		100722	67	121

(1) 07211,07212 TYPE SPECIAL APPROACH SLAB 51951



PLAN - APPROACH SLAB
N.T.S.

BAR LIST

MARK	NO. REQ'D.	LENGTH	BENDING DIAGRAM
S401	18	23'-8"	Dimensions are out to out of bars.
S402	16	26'-8"	
S403	8	23'-8"	
S404	48	10'-4"	
S405	36	3'-0"	
S501	27	23'-8"	
S701	48	26'-8"	

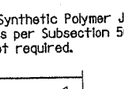
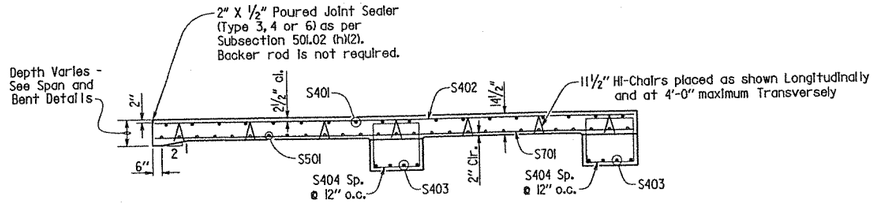
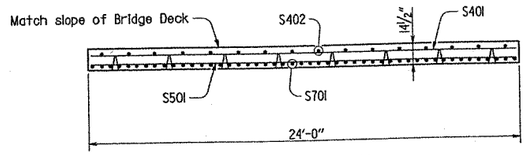


TABLE OF QUANTITIES FOR ONE TYPE SPECIAL APPROACH SLAB

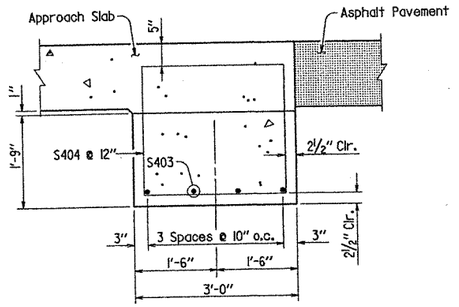
Slab Width	Reinforcing Steel (lbs.)	Concrete (Cu. Yds.)
24'-0"	4,380	38.80



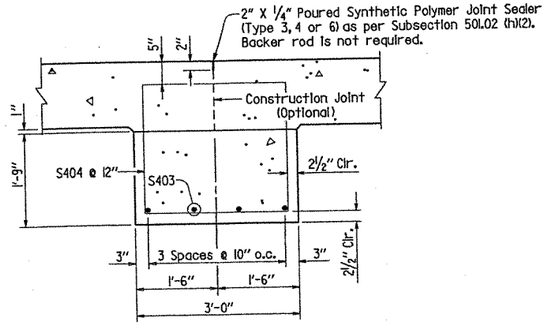
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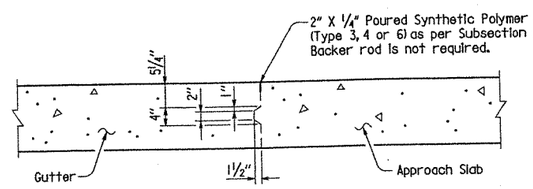
SECTION Y - Y
Not to Scale



DETAILS OF SUPPORT AT END OF SLAB
¾" = 1'-0"



DETAILS OF DUMMY GROOVE JOINT
¾" = 1'-0"



DETAILS OF LONGITUDINAL CONSTRUCTION JOINT
¾" = 1'-0"

GENERAL NOTES

Concrete shall be Class S(AE) (f'c = 4,000 psi).

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

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
6/3/11
CARL J. PUSELLIER

BRIDGE ENGINEER

DETAILS OF TYPE SPECIAL APPROACH SLABS

ROUTE 34 SEC. 4

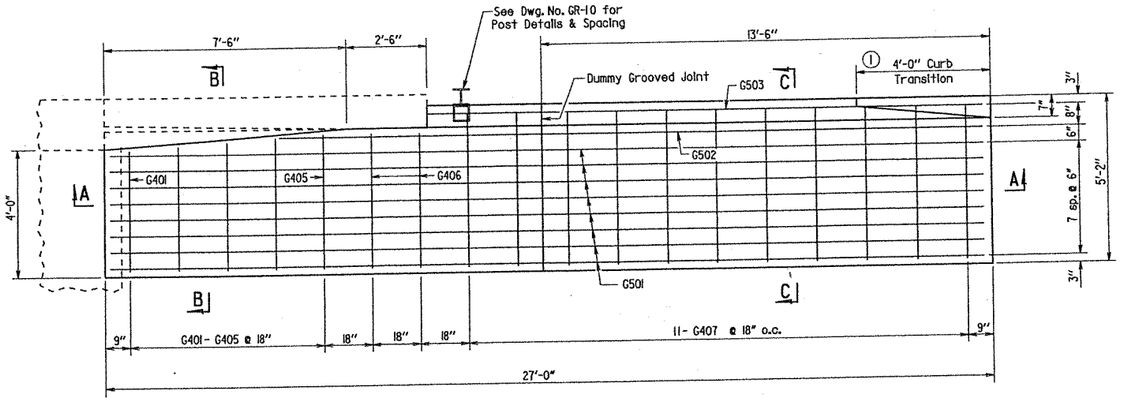
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

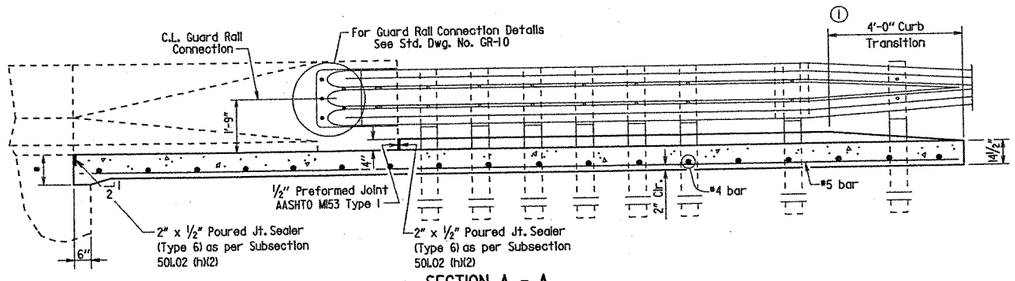
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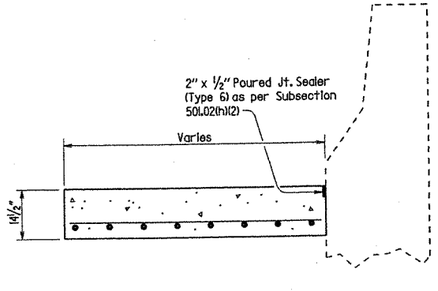
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				① 07211,07212		APPROACH GUTTERS		51952



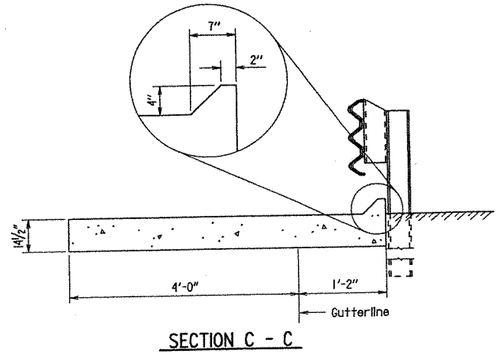
HALF PLAN OF APPROACH GUTTERS



SECTION A - A



SECTION B - B



SECTION C - C

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.

BAR LIST
ONE TYPE SPECIAL APPROACH GUTTER

Mark	No. Required	Length
G401 - G405	1 each	3'-9" to 4'-3"
G406	2	4'-3"
G407	11	4'-10"
G501	8	26'-8"
G502	1	21'-5"
G503	1	16'-8"

QUANTITIES FOR ONE TYPE SPECIAL APPROACH GUTTER

Reinforcing Steel (lbs.)	Concrete (cubic yards)
317	6.00

GENERAL NOTES

Concrete shall be Class S(AE) (f'c = 4,000 psi).

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.

STATE OF ARKANSAS
CARL L. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510
12/31/11

BRIDGE ENGINEER

DETAILS OF TYPE SPECIAL APPROACH GUTTERS

ROUTE 34 SEC. 4

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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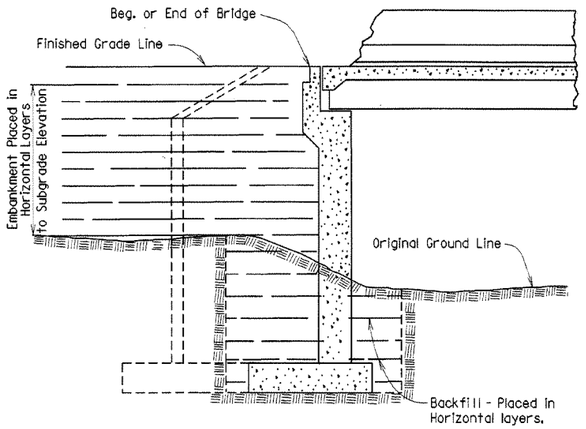
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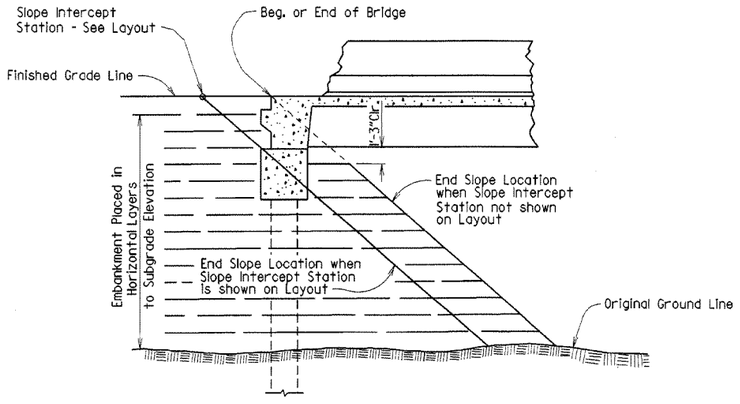
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				JOB NO.				

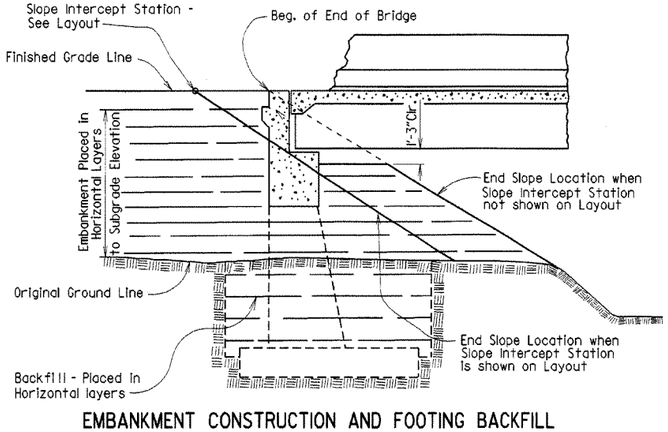
① EMBANKMENT & BACKFILL I888A



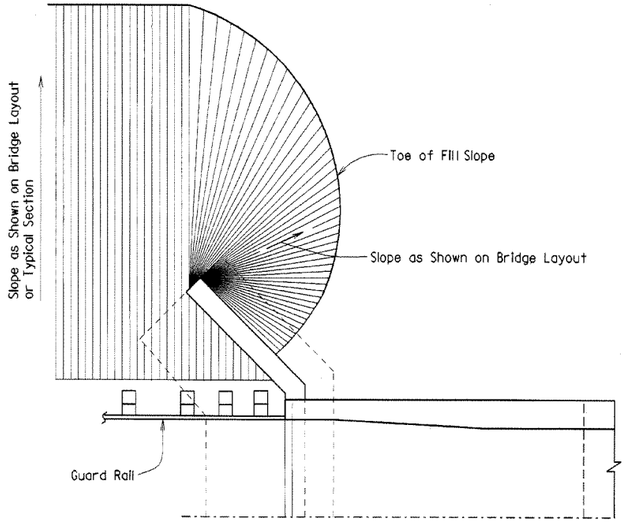
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



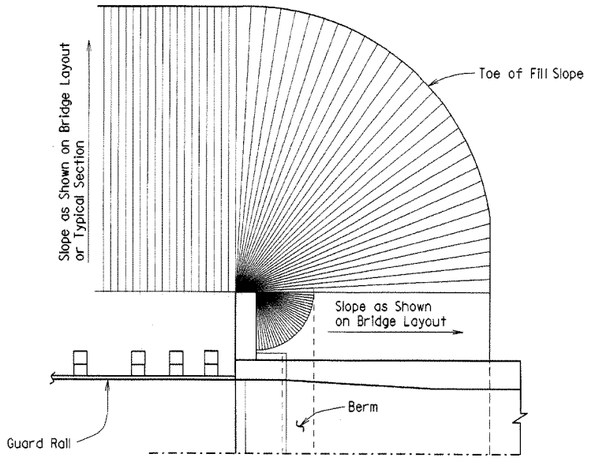
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



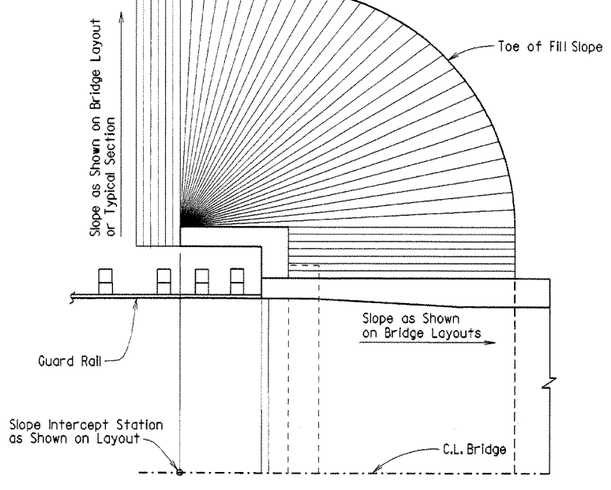
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



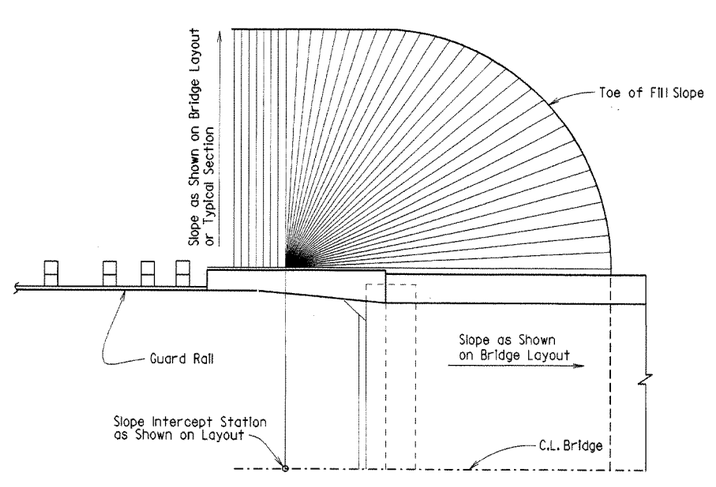
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge end including around the end of wingwalls. Embankment adjacent to structures shall be constructed in 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: CJF 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND

BRIDGE ENGINEER

EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

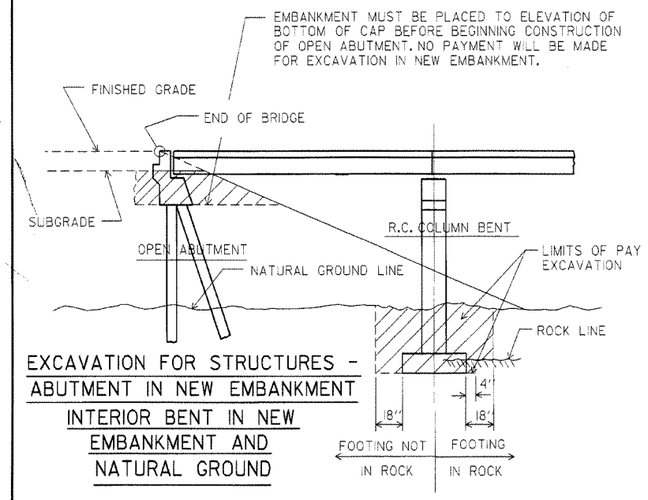
LITTLE ROCK, ARK.

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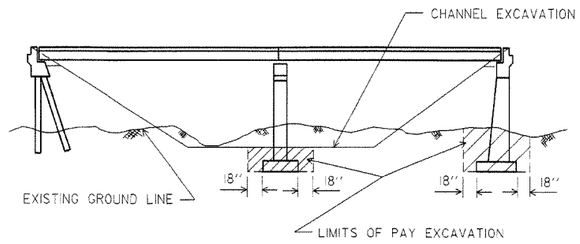
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		10	
				JOB NO.				

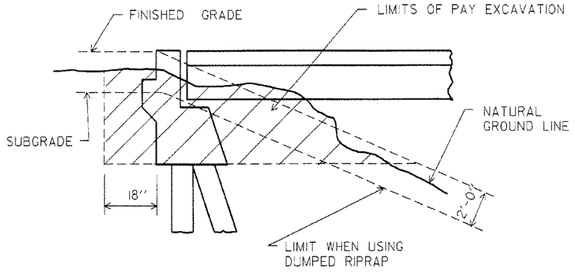
① RIP. & EXCAV. 1891F



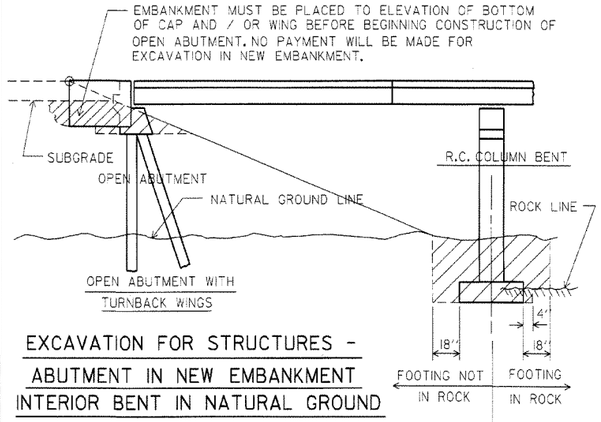
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



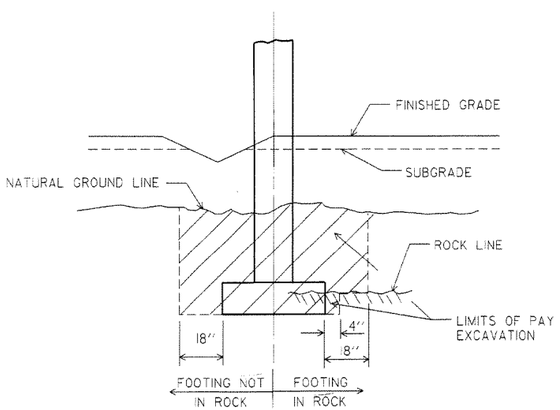
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



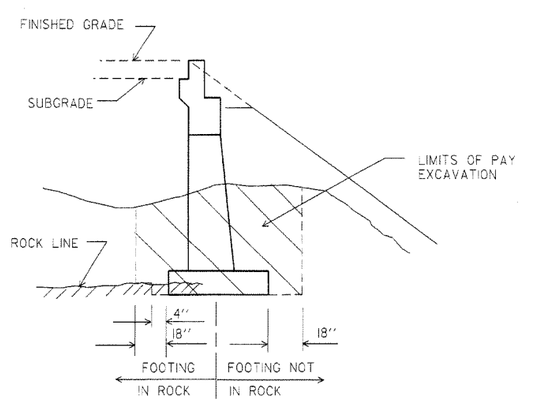
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



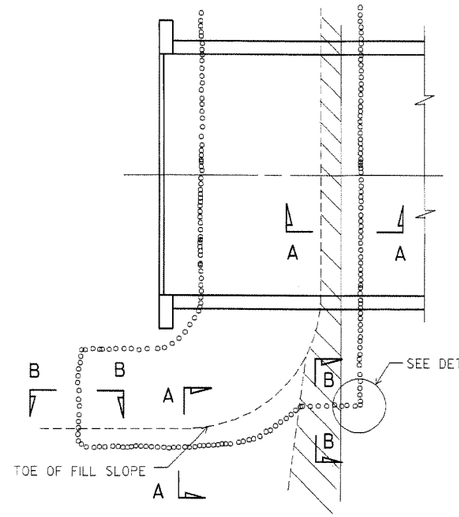
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



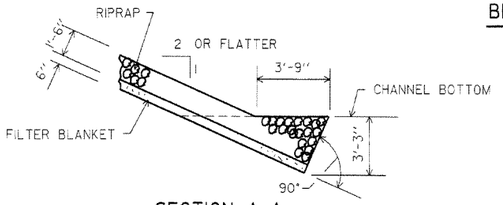
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



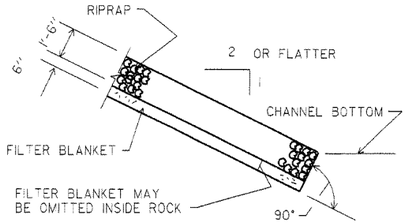
PLAN OF DUMPED RIPRAP



SECTION A-A

(TOE EXCAVATION IN SOIL)

EXCAVATION FOR TOES IS NOT A PAY ITEM



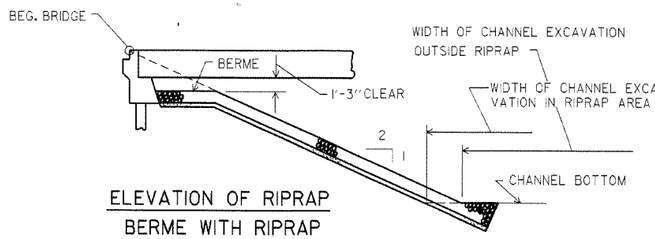
SECTION A-A

(TOE EXCAVATION IN ROCK)

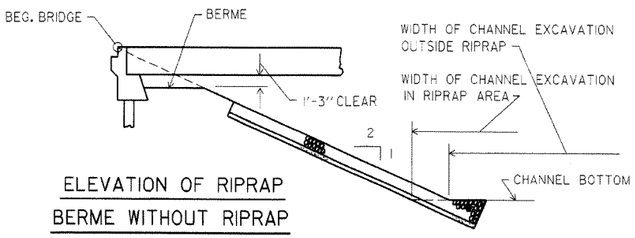
NOTE : USE THIS TYPE OF TOE WHEN ROCK IS ENCOUNTERED WHICH IS IN A STABLE CONDITION.

NOTE : IN LIEU OF AN AGGREGATE FILTER BLANKET, A SYNTHETIC FIBER GEOTEXTILE FABRIC COMPLYING WITH THE REQUIREMENTS OF SUBSECTION 816.02(e) MAY BE USED.

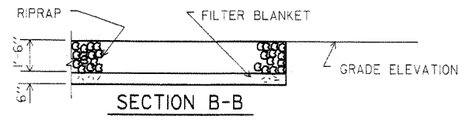
NOTE : DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES ARE INCLUDED FOR INFORMATION AS TO HOW PLAN QUANTITIES WERE CALCULATED AND FOR USE WHEN ADJUSTING QUANTITIES WHEN CHANGING FOOTING ELEVATION.



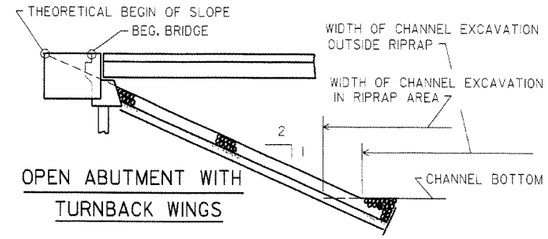
ELEVATION OF RIPRAP BERME WITH RIPRAP



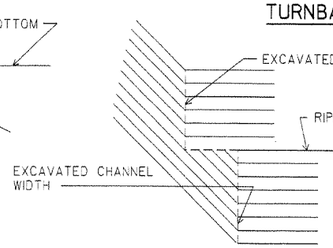
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND
BRIDGE ENGINEER

DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: B1891F.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

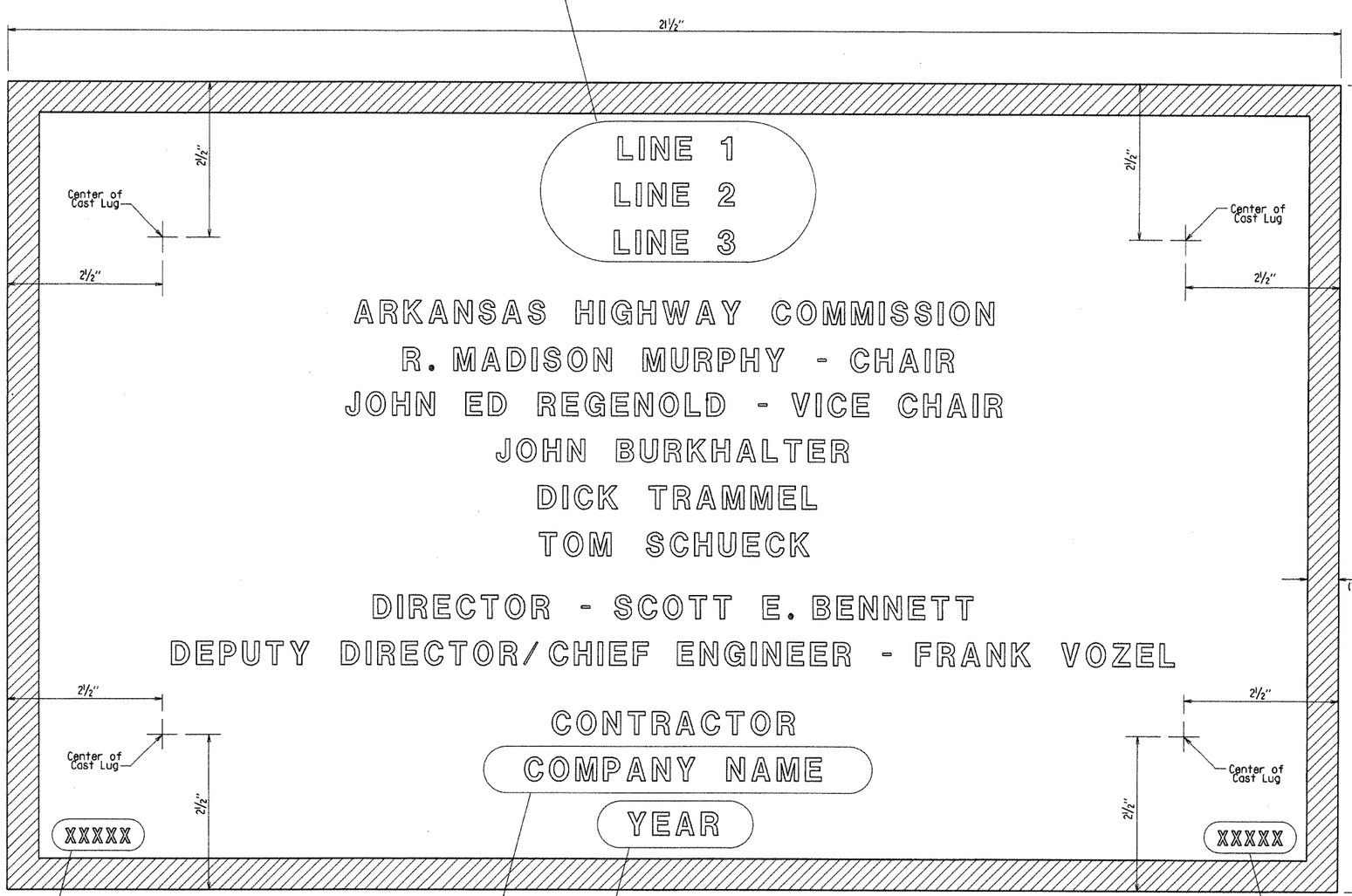
BRIDGE NO. DRAWING NO. 1891F

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
9-8-11				6	ARK.		71	
				JOB NO.				

(1) NAME PLATE 2387

The name of the bridge as shown on the plans shall be placed on Lines 1 - 3 using 1/8" raised letters and numerals 3/8" high.

	Example 1	Example 2	Example 3	Example 4
Line 1	Red River	Southern	Saline	
Line 2	Relief	Railroad	River	Highway 5
Line 3		Overpass	Relief	



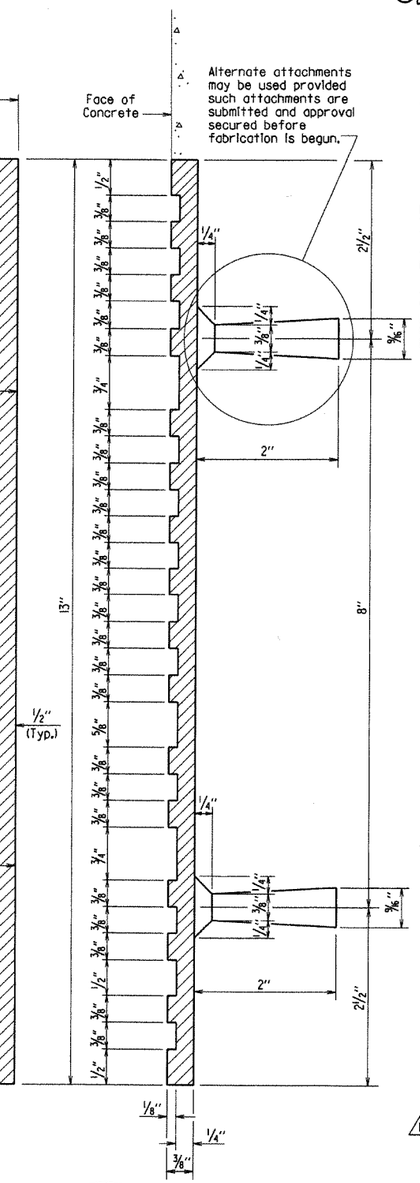
Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20
HL-93

Place the Year in which Contract was awarded here using 1/8" raised numerals 3/8" high. Example : 2001

Place the name of the company awarded the construction contract here using 1/8" raised letters and numerals 3/8" high. Example : ABCD CONSTRUCTION, INC.

Place the Bridge number here using 1/8" raised letters and numerals 1/4" high. Examples : AI234
05432

TYPICAL BRIDGE NAME PLATE



GENERAL NOTES

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

Name plates shall be cast bronze and shall meet the material requirements as specified in Section 812 of the Standard Specifications.

Body of plate shall be 1/4" thick and shall include four tapering cone lugs 3/8" to 5/16" x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered. The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

⚠1 Revised and Redrawn 9-8-11 KDH Checked By: CRE

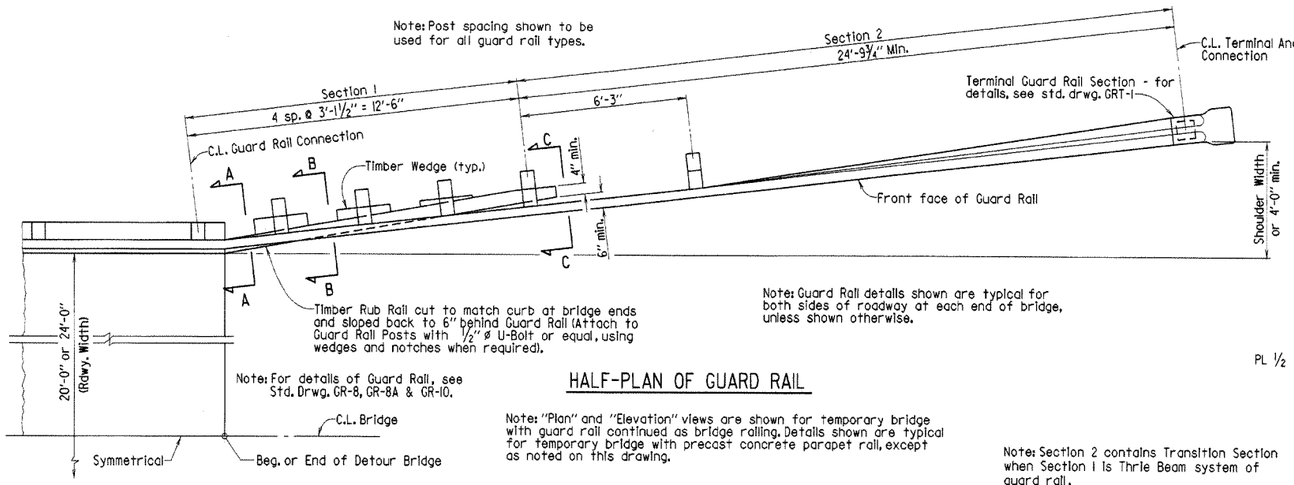
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
BRIDGE ENGINEER

DETAILS OF STANDARD TYPE D BRIDGE NAME PLATE
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 9-8-11 FILENAME: B2387.STD
CHECKED BY: CRE DATE: 9-8-11 SCALE: 1'-0" = 1'-0" OR AS NOTED
DESIGNED BY: STD. DATE: —
BRIDGE NO. DRAWING NO. 2387

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-05-01				6	ARK.		12	
04-10-03				JOB NO.				
				TEMP. BRIDGE			2465	

Note: Post spacing shown to be used for all guard rail types.



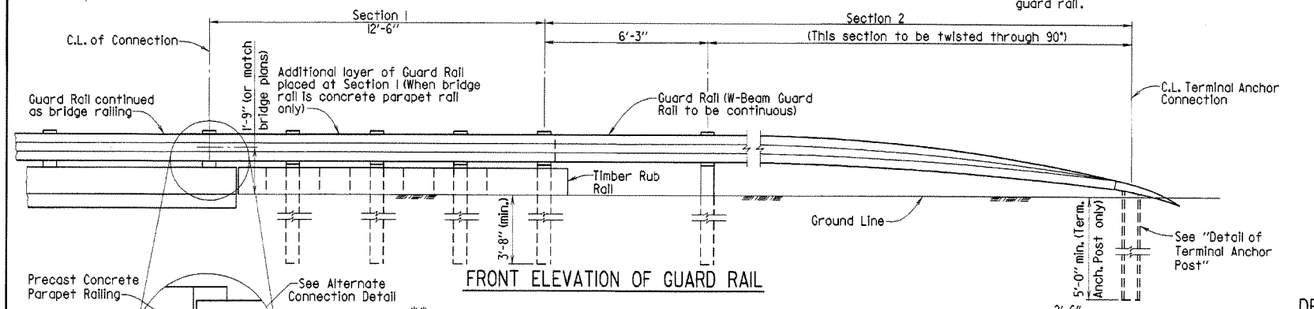
Note: For details of Guard Rail, see Std. Drwg. GR-8, GR-8A & GR-10.

Note: Guard Rail details shown are typical for both sides of roadway at each end of bridge, unless shown otherwise.

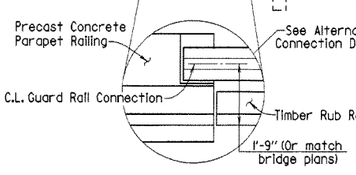
HALF-PLAN OF GUARD RAIL

Note: "Plan" and "Elevation" views are shown for temporary bridge with guard rail continued as bridge railing. Details shown are typical for temporary bridge with precast concrete parapet rail, except as noted on this drawing.

Note: Section 2 contains Transition Section when Section 1 is Thrie Beam system of guard rail.

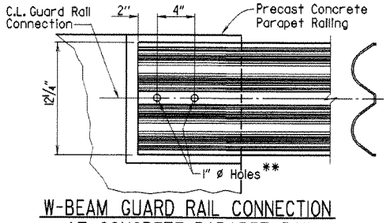


FRONT ELEVATION OF GUARD RAIL



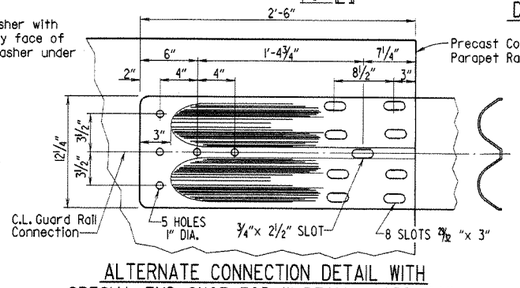
Note: For details of Thrie Beam system of guard rail, see std. drwg. GR-10 & GR-10A. Thrie Beam rail and five bolt connection as shown on GR-10 are required when precast rail has five cast holes for guard rail connection.

** Two ¾" ø H.S. Bolts are required. Use 7" x 2½" x ⅜" washer with two ⅞" ø holes against back of parapet and on roadway face of guard rail (Bend to fit guard rail) with 1 ½" o.d. steel washer under heads and nuts (Clipped to 1⅝" x 1½" at nuts).



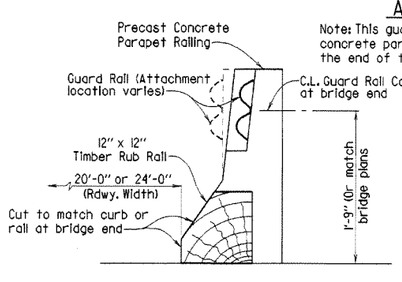
W-BEAM GUARD RAIL CONNECTION AT CONCRETE PARAPET RAIL

Note: This guard rail connection will only be allowed on precast concrete parapet rail units with a 12½" x 14" x 3⅜" notch at the end of the unit for connection of guard rails.

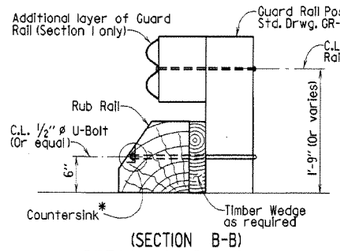


ALTERNATE CONNECTION DETAIL WITH SPECIAL END SHOE FOR W-BEAM GUARD RAIL CONNECTION AT CONCRETE PARAPET RAIL

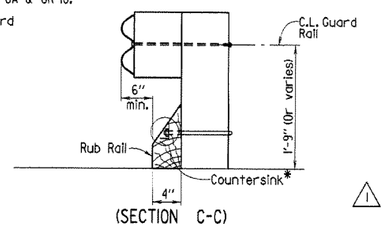
Note: Special End Shoe and four ⅞" ø x 2½" H.S. Bolts are required when concrete insert anchor assembly is present in precast rail unit.



(SECTION A-A)

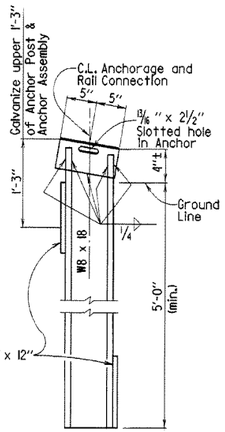


(SECTION B-B)

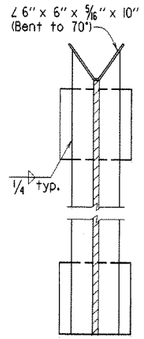


(SECTION C-C)

DETAILS OF RUB RAIL (CONC. PARAPET BRIDGE RAIL)



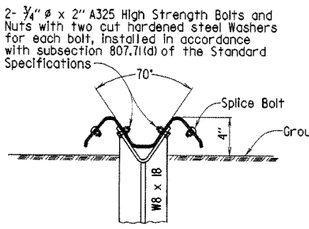
(ELEVATION)



(SECTION)

Note: Post shall be driven or set in dug hole and compacted.

DETAILS OF TERMINAL ANCHOR POST



DETAILS OF TERMINAL ANCHOR CONNECTION

GENERAL NOTES

Bridge End Protection is required on both sides of roadway at both ends of temporary bridge. The end protection system shall consist of a minimum of two end sections (Section 1 and Section 2). If additional guard rail is used, it shall be placed in Section 2 and shall have a maximum post spacing of 6'-3".

If W-Beam Guard Rail is also used as Bridge Rail, it shall be continuous from terminal anchor post to terminal anchor post with splices as shown on Std. Drwg. GR-8 & GR-10.

A doubled guard rail beam section (One W-Beam Rail section or one Thrie Beam Rail section nested inside the other) shall be required for Section 1 if the guard rail is not continued as bridge rail, but connects directly to a precast concrete parapet bridge rail end.

Rub rails shown in Section 1 are representative of members required to transition the curb or wheel guard section to a minimum distance behind the face of guard rail.

Timber rub rail, regardless of species, must be of equal or better strength than no. 2 southern pine or douglas fir, graded by the standard grading rules. All timber widths and thicknesses are shown as nominal.

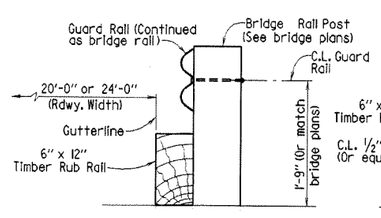
Except as noted, bolts shall conform to the requirements of ASTM A 307 and minimum dimensions as shown. Malleable or cast iron washers to be used under all bolt heads and nuts bearing on timber. High strength bolts shall conform to Section 807.

Guard rail as described in subsection 617.01 of the Standard Specifications and these plans shall be constructed in accordance with subsection 617.03. Subsection 617.02 is modified to allow the use of materials consistent with the requirements of Section 603.

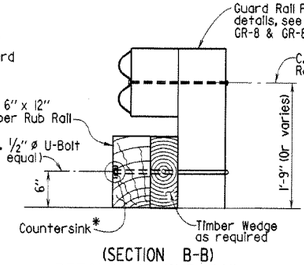
Payment: The bridge end protection system completed and accepted will not be paid for directly, but shall be included in the contract unit price bid per linear foot for temporary bridge structure, which price shall be full compensation for furnishing materials and erecting guard rail, line posts, blockouts, rub rails, terminal anchor posts, etc.; and for all labor, tools, equipment and incidentals necessary to complete the work.

GUARD RAIL CONNECTION COMBINATIONS

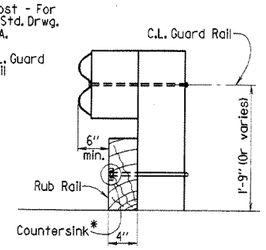
BRIDGE RAIL TYPE	GUARD RAIL AND CONNECTION TYPE
Guard Rail continued as bridge railing	W-Beam Guard Rail. See Standard Drawing GR-8 for splice details.
Concrete Parapet with 12½" x 14" x 3⅜" notch and two cast in holes	W-Beam Guard Rail fastened with two high-strength bolts as shown; blunt end on guard rail. Guard Rail doubled at Section 1.
Concrete Parapet with Concrete Insert Anchor assembly (4-Bolt embedded Anchor) flush with rail face	W-Beam Guard Rail fastened with four high-strength bolts; Special End Shoe. Guard Rail doubled at Section 1.
Concrete Parapet with 5 cast in holes	Thrie Beam Guard Rail; five high-strength through bolts with back-up plate; special end shoe as shown on std. drwg. GR-10. Guard Rail doubled at Section 1. Section 2 contains transitional rail and W-Beam Guard Rail.



(SECTION A-A)



(SECTION B-B)



(SECTION C-C)

DETAILS OF RUB RAIL (CONTINUOUS W-BEAM RAIL)

* U-Bolt Assembly, or equal, shall not project beyond rdwy. face of Rub Rail at any location.

1 REDRAWN AND REVISED 04-05-2001
CHECKED BY: MEC

2 Revised for CPB Seal, CRE 04-10-2003
Chk'd By: CRE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND

BRIDGE ENGINEER

DETAILS OF STANDARD TEMPORARY BRIDGE STRUCTURE BRIDGE END PROTECTION SYSTEM

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

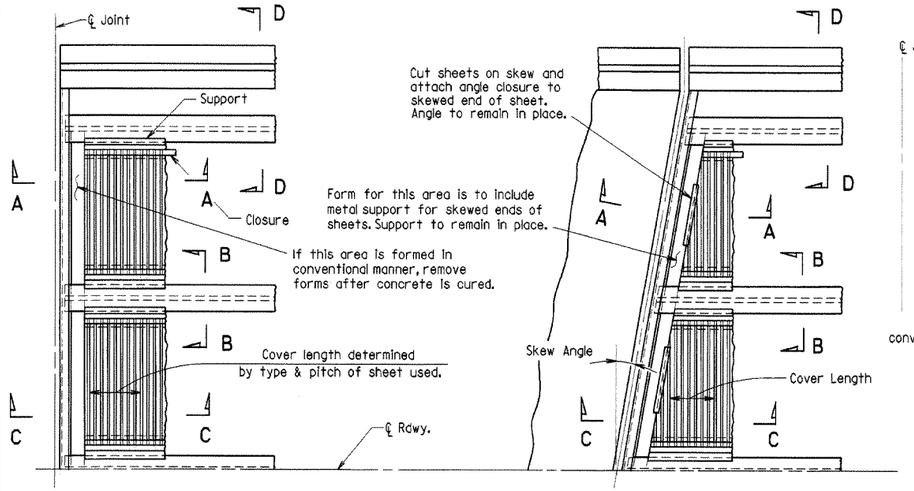
LITTLE ROCK, ARK.

DRAWN BY: KMG DATE: 04-05-01 FILENAME: B2465.STD
CHECKED BY: MEC DATE: 04-05-01 SCALE: No Scale
DESIGNED BY: Std. DATE:

BRIDGE NO. DRAWING NO. 2465

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.		23	
04-10-2003						JOB NO.				

(1) BR. DECK FORMS 14991

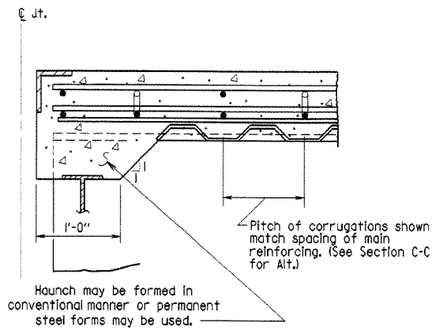


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

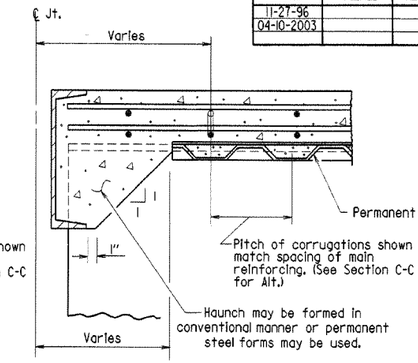
3/8" = 1'-0"



SECTION A-A

N.T.S.

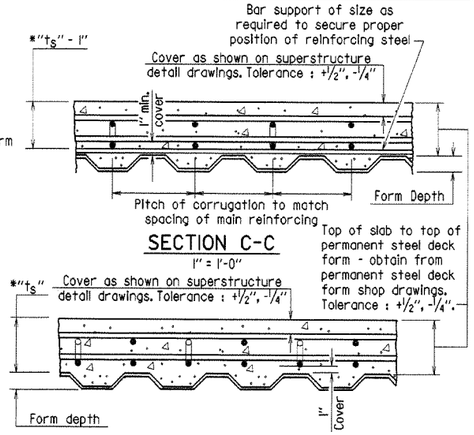
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



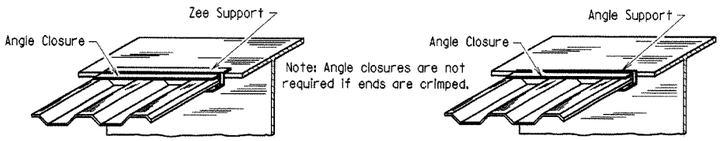
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

(Applicable when corrugations do not match spacing of main reinforcement)



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

$*t_s$ = slab thickness as shown on superstructure detail drawings.

GENERAL NOTES

Permanent steel deck forms may be used at the Contractor's option and shall be at no additional cost to the Department. Such use may result in changes to the dead load deflection of the girder. Any cost for adjustments due to a change in the dead load deflection will be borne by the Contractor. Payment for deck concrete and structural steel will not be increased due to use of permanent steel deck forms.

Permanent steel deck forms shall conform to subsection 802.14(b) of the Standard Specifications. Detailed plans, 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 ∠ supports to the flange must be approved by the Bridge Engineer.

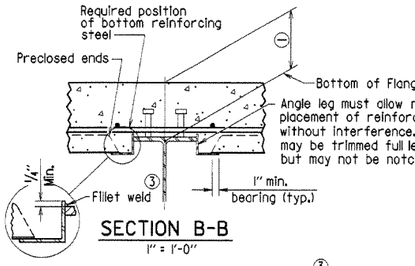
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Bridge Engineer.

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.

⚠2 Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition), with applicable supplemental specifications and special provisions.

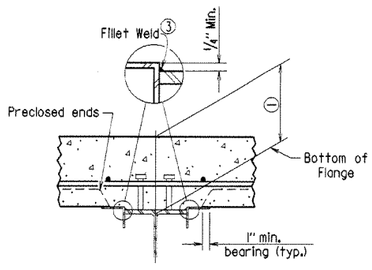


SECTION B-B

1" = 1'-0"

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

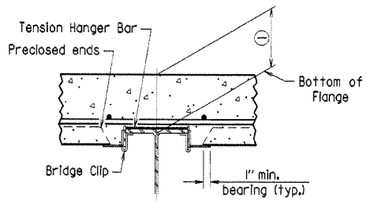
(3) Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



SECTION B-B

1" = 1'-0"

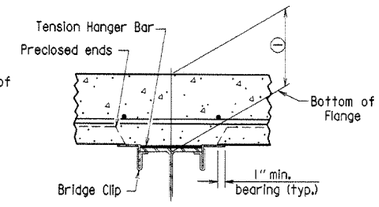
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

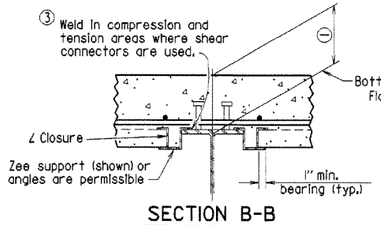
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

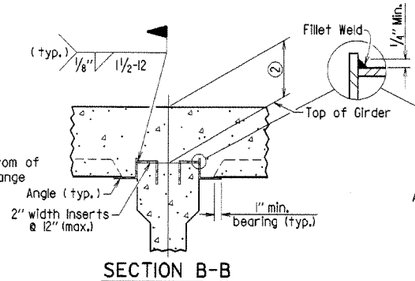
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

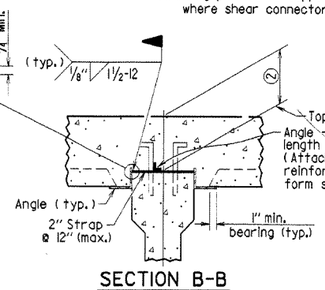


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)

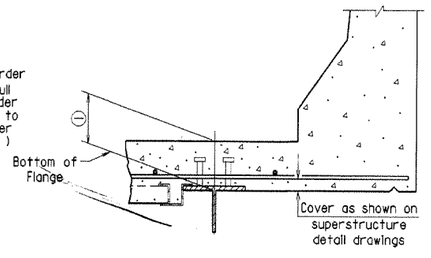


SECTION B-B

(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 3/4" + 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.

⚠2 Revised for 2003 AHTD Construction Specifications and CPB Seal. MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

⚠1 Redrawn and revised 11/27/96; MJT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4537
CHARLES P. BRAND

BRIDGE ENGINEER

DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

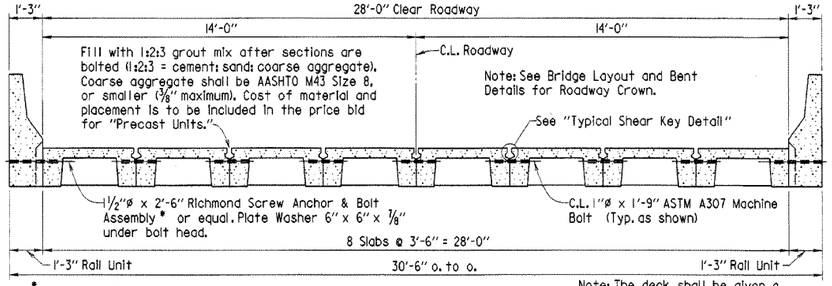
LITTLE ROCK, ARK.

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

B14991.STD

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-10-2003				6	ARK.		74	
				JOB NO.				
				31' PRECAST SPAN				15240

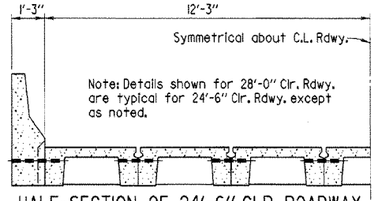


*Designated "Richmond SCAB" on the Plans.

CROSS-SECTION OF 28'-0" CLR. RDWY. (SHOWING ASSEMBLY)

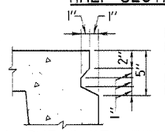
Scale: ⅜" = 1'-0"

Note: The deck shall be given a tine finish as specified for Class 5 Roadway Surface Finish in subsection 802.19 of the Standard Specifications.



HALF-SECTION OF 24'-6" CLR. ROADWAY

Scale: ⅜" = 1'-0"



Note: All corners exposed after erection shall have a ½" minimum chamfer. All other corners shall have sufficient chamfer or rounding to prevent breakage during form removal, handling and erection.

TYPICAL SHEAR KEY DETAIL

Scale: 1½" = 1'-0"

BAR LIST FOR PRECAST BRIDGE COMPONENTS

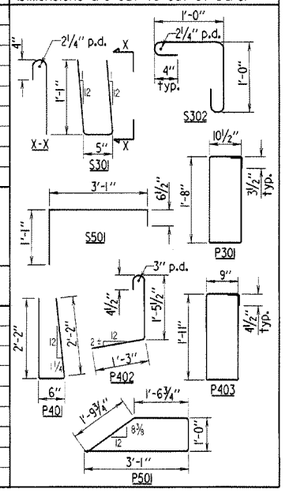
PRECAST SLAB UNIT

Note: Bar designations ending with "E" indicate epoxy coated bars.

MARK	NUMBER REQUIRED: CURB UNIT	NUMBER REQUIRED: INT. UNIT	LENGTH	P.D.
S301	122	122	3'-3½"	1½"
S302	4	4	2'-9"	1½"
S401	10	8	3'-2"	Str.
S501	26 Ⓐ	-	4'-6"	2½"
S701E	Ⓑ	Ⓑ	1'-11"	Str.
S1001	4	4	30'-8"	Str.
S1101	2	2	30'-8"	Str.

Ⓐ Plus 7 additional for each Drain Slot eliminated
Ⓑ 2 Per Fixed end of each Unit

BENDING DIAGRAMS (Dimensions are out to out of bars)



PRECAST PARAPET RAIL UNIT

MARK	NUMBER REQUIRED: END SPAN	NUMBER REQUIRED: INT. SPAN	LENGTH	P.D.
P301	See Std. Drwg. No. 15230	8	5'-4"	1½"
P401		54	4'-8"	2"
P402		36	3'-1½"	2"
P403		36	5'-8"	2"
P501		18	7'-2"	2½"
P502		9	30'-8"	Str.
P1001		2	30'-8"	Str.

GENERAL NOTES

All Reinforcing steel shall be AASHTO M31 or M53, Grade 60. Wire fabric shall be AASHTO M55 or M221. Reinforcing steel and wire fabric shall be accurately located in the forms and securely held in place by steel wire supports.

Concrete for precast units shall be Class S(AE) except that the coarse aggregate size shall meet AASHTO M43, Size 67 (¾" Max.).

Standard washers shall be provided under head and nut of all bolts in connection with concrete. Bolts shall be A307. All bolts, washers and nuts shall be galvanized to meet AASHTO M232, Class C or M298, Class 50.

Screw Anchor and Bolt Assembly (SCAB) shall be 1½"ø Richmond Screw Anchor or equal, and have a minimum ultimate strength of 65,000 psi in tension. Assembly shall be galvanized to meet AASHTO M232, Class C or M298, Class 50. Plate Washers for SCAB shall be AASHTO M270, Grade 36 and shall be galvanized to meet AASHTO M111.

Camber required for dead load deflection is ⅜". Deviation of more than ¼" in dimension of grade or line will be cause for rejection.

Concrete, reinforcing, wire mesh, bar supports, bolts, nuts, washers, threaded anchors, grout, roofing felt bearing pad and expansion joint fillers are considered subsidiary to the pay items for Precast Concrete Units. Roofing felt shall meet or exceed the requirements of ASTM D224 Type I. See Section 802.18(d). The roofing felt shall be in one piece for the full length of the cap and three layers shall be used.

Ends of adjacent units shall be coated (1/16"±) with asphaltic paint. The coating shall adhere and set firm and its softening point shall not be less than 140°F.

Bid Items shall be as follows:
"31' Precast Concrete Curb Units"
"31' Precast Concrete Interior Units"
"31' Precast Parapet Rail Units"

Design Specifications: AASHTO 2002
Method of Design: Load Factor
Live Loading: HS 20, 0.9 Wheels per Unit
Materials: 28 Day compressive strength of Concrete = 4,000 psi
Yield strength of Grade 60 Steel = 60,000 psi
Yield strength of Wire Fabric = 65,000 psi

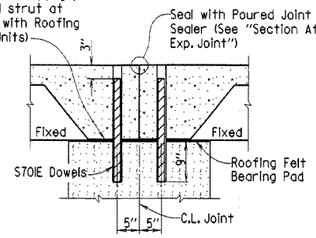
Seismic Performance Category: A, B or C

Seismic Performance Category A:
1. Maximum spacing between 1 inch Expansion Joints is 155 feet.
2. 2"ø Dowel holes at expansion ends are not required. Grout holes if they exist.

Seismic Performance Category B or C:
1. All bents shall be fixed.
2. Do not use this drawing with bridge lengths that exceed 155 feet in Category B or 93 feet in Category C.

Note: For details and bar list for Precast Parapet Rail at End Span, see std. drwg. no. 15230.

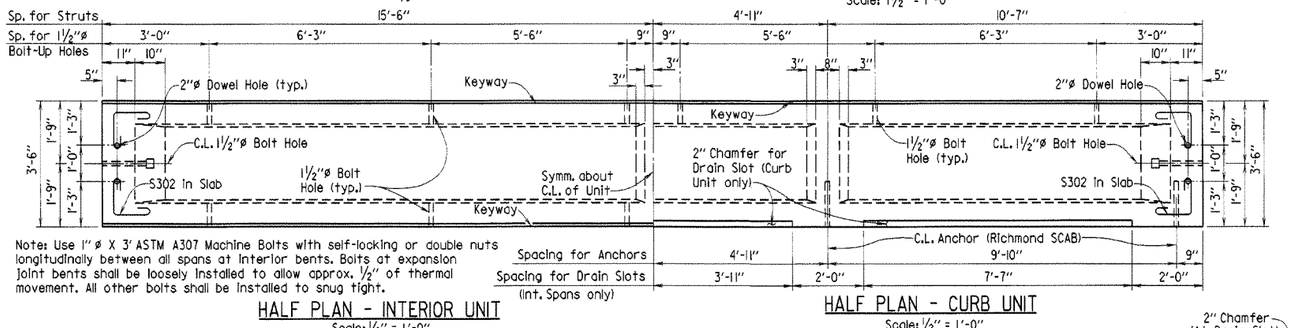
Completely fill ¼" gap below and strut at End Bent with Roofing Felt (All Units)



Note: After each unit is in its final position, S701E Dowels shall be grouted in place using a DPL approved non-shrink grout that completely fills the holes.

SECTION AT FIXED BENT

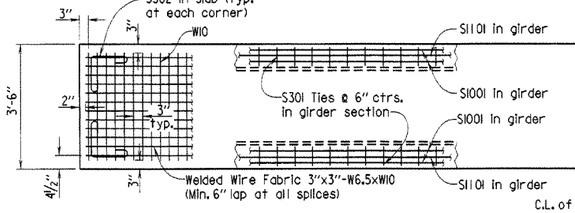
No Scale



Note: Use 1" ø X 3' ASTM A307 Machine Bolts with self-locking or double nuts longitudinally between all spans at interior bents. Bolts at expansion joint bents shall be loosely installed to allow approx. ½" of thermal movement. All other bolts shall be installed to snug tight.

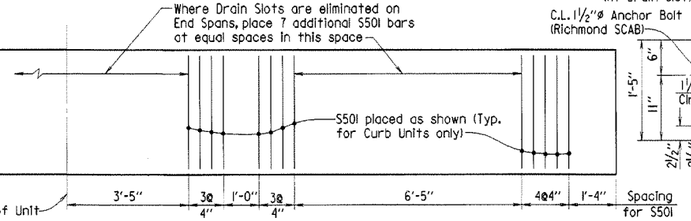
HALF PLAN - INTERIOR UNIT

Scale: ½" = 1'-0"



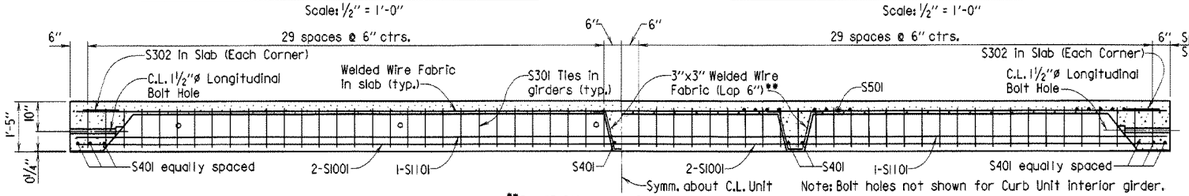
HALF PLAN - CURB UNIT

Scale: ½" = 1'-0"



HALF REINFORCING PLAN - CURB & INT. UNITS

Scale: ½" = 1'-0"



HALF REINFORCING PLAN - CURB UNIT ONLY

Scale: ½" = 1'-0"

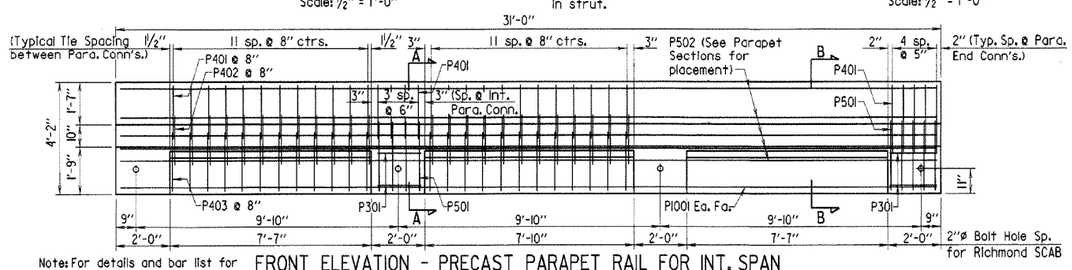
**5 - #3 Stirrups @ 6" ctrs. may be used in place of wire fabric in strut.

HALF LONGIT. SECTION - INTERIOR UNIT

Scale: ½" = 1'-0"

HALF LONGIT. SECTION - CURB UNIT

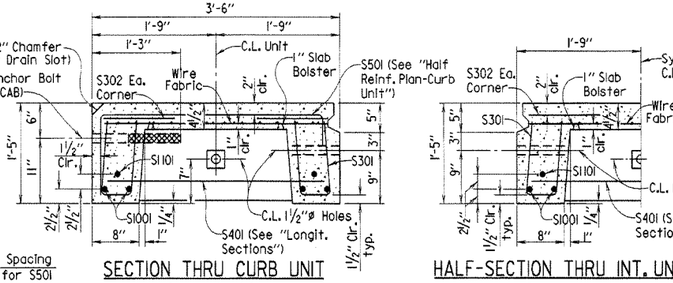
Scale: ½" = 1'-0"



Note: For details and bar list for Precast Parapet Rail at End Span, see std. drwg. no. 15230.

FRONT ELEVATION - PRECAST PARAPET RAIL FOR INT. SPAN

Scale: ⅜" = 1'-0"

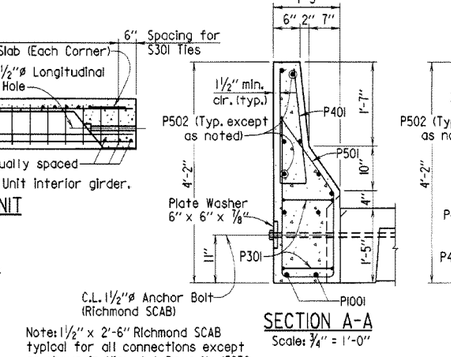


SECTION THRU CURB UNIT

Scale: 1" = 1'-0"

HALF-SECTION THRU INT. UNIT

Scale: 1" = 1'-0"



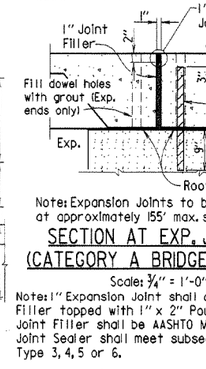
SECTION A-A

Scale: ¾" = 1'-0"

Note: 1½" x 2'-6" Richmond SCAB typical for all connections except as shown in View A-A, Drwg. No. 15230.

SECTION B-B

Scale: ¾" = 1'-0"



Note: Expansion Joints to be placed at approximately 155' max. spacings.

SECTION AT EXP. JOINT (CATEGORY A BRIDGES ONLY)

Scale: ¾" = 1'-0"

Note: 1" Expansion Joint shall consist of 1" Joint Filler topped with 1" x 2" Poured Joint Sealer. Joint Filler shall be AASHTO M153, Type 1. Poured Joint Sealer shall meet subsection 501.02(h) (2), Type 3, 4, 5 or 6.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND
BRIDGE ENGINEER

⚠1 Revised and redrawn: KDH 4-10-2003
Chkd. By: MAH

DETAILS OF STANDARD 31'-0" PRECAST CONCRETE SPANS 28'-0" & 24'-6" CLEAR ROADWAYS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

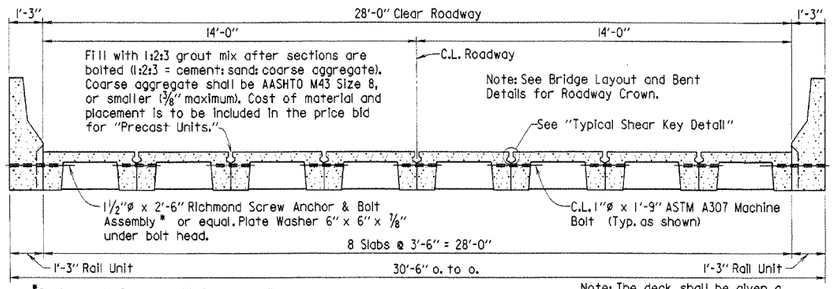
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 4-10-2003 FILENAME: B15240.STD
CHECKED BY: MAH DATE: 4-10-2003 SCALE: As Shown
DESIGNED BY: STD. DATE:

BRIDGE NO. DRAWING NO. 15240

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6-24-94	6-27-94	11-16-2001		6	ARK.		75	
2-20-97	2-20-97	10-09-03		JOB NO.				
01-12-2000	01-12-2000							

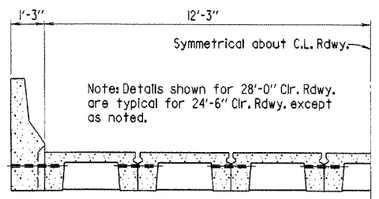
(1) 25' PRECAST SPAN 15241



*Designated "Richmond SCAB" on the Plans.

CROSS-SECTION OF 28'-0" CLR. RDWY. (SHOWING ASSEMBLY)

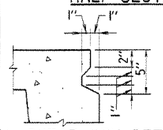
Scale: 3/8" = 1'-0"



HALF-SECTION OF 24'-6" CLR. ROADWAY

Scale: 3/8" = 1'-0"

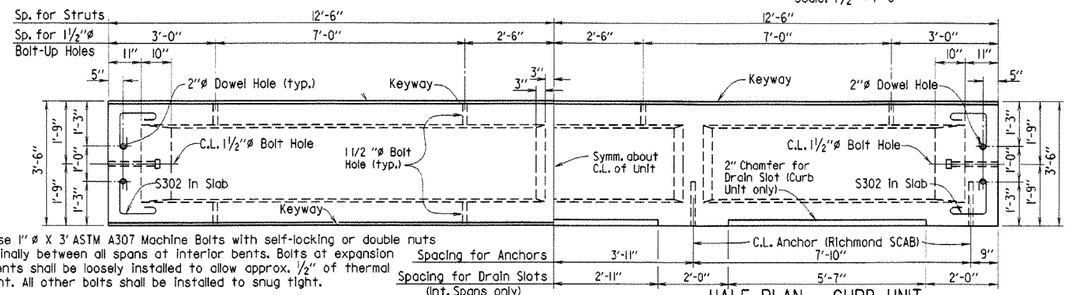
Note: The deck shall be given a tine finish as specified for Class 5 Roadway Surface Finish in subsection 802.19 of the Standard Specifications.



TYPICAL SHEAR KEY DETAIL

Scale: 1 1/2" = 1'-0"

Note: All corners exposed after erection shall have a 1/2" minimum chamfer. All other corners shall have sufficient chamfer or rounding to prevent breakage during form removal, handling and erection.



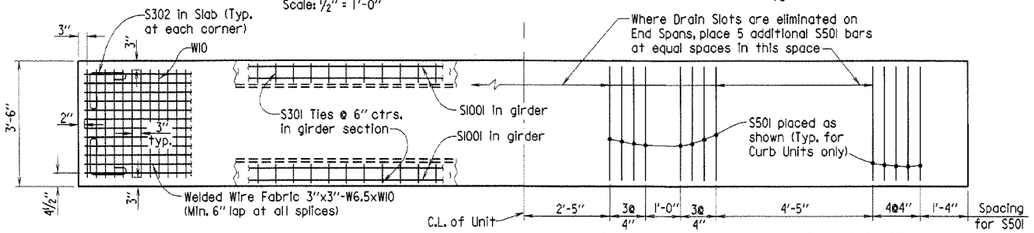
Note: Use 1" ø X 3' ASTM A307 Machine Bolts with self-locking or double nuts longitudinally between all spans at interior bents. Bolts at expansion joint bents shall be loosely installed to allow approx. 1/2" of thermal movement. All other bolts shall be installed to snug tight.

HALF PLAN - INTERIOR UNIT

Scale: 1/2" = 1'-0"

HALF PLAN - CURB UNIT

Scale: 1/2" = 1'-0"

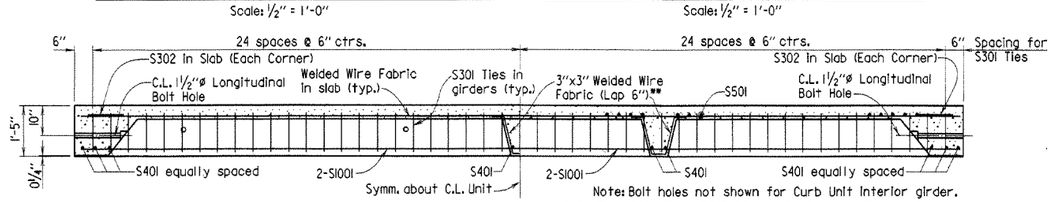


HALF REINFORCING PLAN - CURB & INT. UNITS

Scale: 1/2" = 1'-0"

HALF REINFORCING PLAN - CURB UNIT ONLY

Scale: 1/2" = 1'-0"



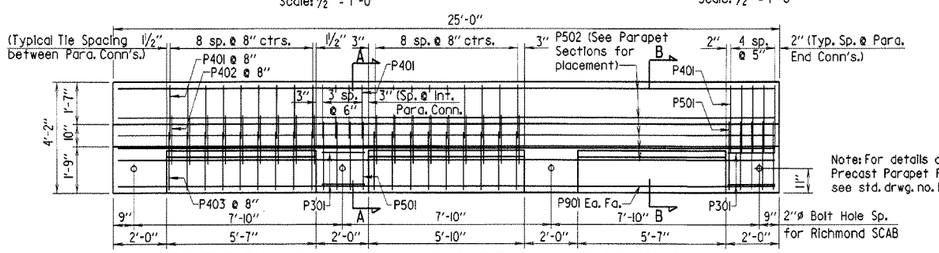
HALF LONGIT. SECTION - INTERIOR UNIT

Scale: 1/2" = 1'-0"

HALF LONGIT. SECTION - CURB UNIT

Scale: 1/2" = 1'-0"

**5 - #3 Stirrups @ 6" ctrs. may be used in place of wire fabric in strut.



FRONT ELEVATION - PRECAST PARAPET RAIL FOR INT. SPAN

Scale: 3/8" = 1'-0"

Note: For details and bar list for Precast Parapet Rail at End Span, see std. drwg. no. 15230.

BAR LIST FOR PRECAST BRIDGE COMPONENTS

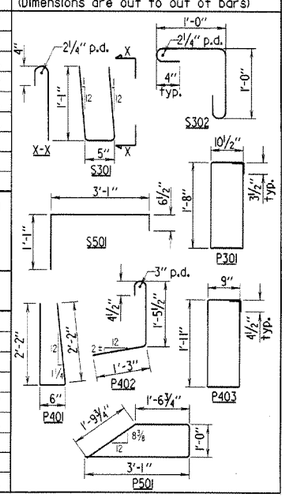
PRECAST SLAB UNIT

Note: Bars designated with an "E" are to be epoxy coated.

MARK	NUMBER REQUIRED CURB UNIT	NUMBER REQUIRED INT. UNIT	LENGTH	P.D.
S301	98	98	3'-3 1/2"	1 1/2"
S302	4	4	2'-9"	1 1/2"
S401	10	8	3'-2"	Str.
S501	26 (A)	-	4'-6"	2 1/2"
S601E	(B)	(B)	1'-11"	Str.
S1001	4	4	24'-8"	Str.

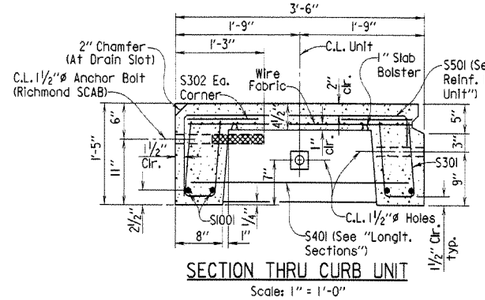
(A) Plus 5 additional for each Drain Slot eliminated
(B) 2 Per Fixed end of each Unit

BENDING DIAGRAMS (Dimensions are out to out of bars)



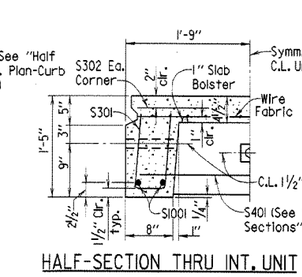
PRECAST PARAPET RAIL UNIT

MARK	NUMBER REQUIRED END SPAN	NUMBER REQUIRED INT. SPAN	LENGTH	P.D.
P301	See Std. Drwg. No. 15230	8	5'-4"	1 1/2"
P401		45	4'-8"	2"
P402		27	3'-1 1/2"	2"
P403		27	5'-8"	2"
P501		18	7'-2"	2 1/2"
P502		9	24'-8"	Str.
P901		2	24'-8"	Str.



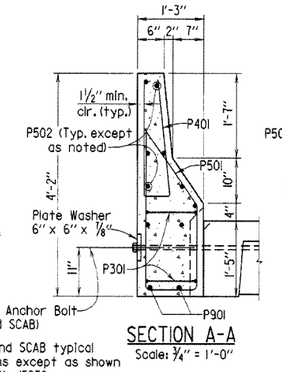
SECTION THRU CURB UNIT

Scale: 1" = 1'-0"



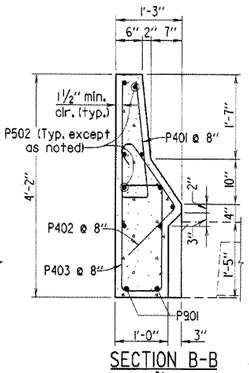
HALF-SECTION THRU INT. UNIT

Scale: 1" = 1'-0"



SECTION A-A

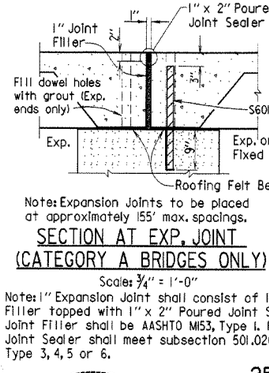
Scale: 3/4" = 1'-0"



SECTION B-B

Scale: 3/4" = 1'-0"

Note: 1 1/2" x 2'-6" Richmond SCAB typical for all connections except as shown in View A-A, Drwg. No. 15230.

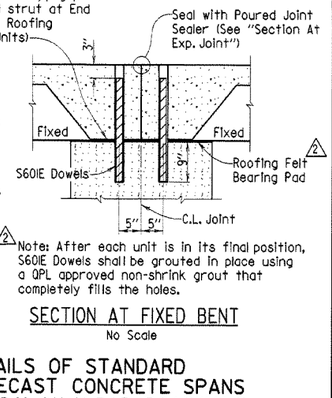


Note: Expansion Joints to be placed at approximately 155' max. spacings.

SECTION AT EXP. JOINT (CATEGORY A BRIDGES ONLY)

Scale: 3/4" = 1'-0"

Note: 1" Expansion Joint shall consist of 1" Joint Filler topped with 1" x 2" Poured Joint Sealer. Joint Filler shall be AASHTO M153, Type I. Poured Joint Sealer shall meet subsection 501.02(h) (2), Type 3, 4, 5 or 6.



Note: After each unit is in its final position, S601E Dowels shall be grouted in place using a QPL approved non-shrink grout that completely fills the holes.

SECTION AT FIXED BENT

No Scale

GENERAL NOTES

All Reinforcing steel shall be AASHTO M31 or M53, Grade 60. Wire fabric shall be AASHTO M55 or M221. Reinforcing steel and wire fabric shall be accurately located in the forms and securely held in place by steel wire supports.

Concrete for precast units shall be Class S(AE) except that the coarse aggregate size shall meet AASHTO M43, Size 67 (3/4" Max.).

Standard washers shall be provided under head and nut of all bolts in connection with concrete. Bolts shall be A307. All bolts, washers and nuts shall be galvanized to meet AASHTO M232, Class C or M298, Class 50.

Screw Anchor and Bolt Assembly (SCAB) shall be 1 1/2"ø Richmond Screw Anchor or equal, and have a minimum ultimate strength of 65,000 psi in tension. Assembly shall be galvanized to meet AASHTO M232, Class C or M298, Class 50. Plate Washers for SCAB shall be AASHTO M270, Grade 36 and shall be galvanized to meet AASHTO M111.

Camber required for dead load deflection is 1/4". Deviation of more than 1/4" in dimension of grade or line will be cause for rejection.

(2) Concrete, reinforcing, wire mesh, bar supports, bolts, nuts, washers, threaded anchors, grout, roofing felt bearing pad and expansion joint fillers are considered subsidiary to the pay items for the Precast Concrete Units. Roofing felt shall meet or exceed the requirements of ASTM D224 Type I. See Section 802.18(d). The roofing felt shall be in one piece for the full length of the cap and three layers shall be used.

Ends of adjacent units shall be coated (1/16"±) with asphaltic paint. The coating shall adhere and set firm and its softening point shall not be less than 140°F.

Bid items shall be as follows:
"25' Precast Concrete Curb Units"
"25' Precast Concrete Interior Units"
"25' Precast Parapet Rail Units"

(4) Design Specifications: AASHTO 2002
Method of Design: Load Factor
Live Loading: HS 20, 0.9 Wheels per Unit
Materials: 28 Day compressive strength of Concrete = 4,000 psi
Yield strength of Grade 60 Steel = 60,000 psi
Yield strength of Wire Fabric = 65,000 psi

Seismic Performance Category: A, B or C

Seismic Performance Category A:
1. Maximum spacing between Linch Expansion Joints is 155 feet.
2. 2"ø Dowel holes at expansion ends are not required. Grout holes if they exist.

Seismic Performance Category B or C:
1. All bents shall be fixed.
2. Do not use this drawing with bridge lengths that exceed 155 feet in Category B or 93 feet in Category C.

Note: For details and bar list for Precast Parapet Rail at End Span, see std. drwg. no. 15230.

(2) Completely fill 1/4" gap below end strut at End Bent with Roofing Felt (All Units)

(4) Revised for current specifications and P.E. stamp 10-09-03 MJT Chk'd. By: JGT

(3) Revised S601 bars to S601E 11-16-2001, JAC Chk'd. by: JGT

(2) Revised type of bearing pad material and grout specifications. 01-12-2000, AMS

(1) Revised for 1996 Specs. and Redrawn 02-20-97 MJT Chk'd. By: RLW Date: 1-31-97

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND
BRIDGE ENGINEER

DETAILS OF STANDARD 25'-0" PRECAST CONCRETE SPANS 28'-0" & 24'-6" CLEAR ROADWAYS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

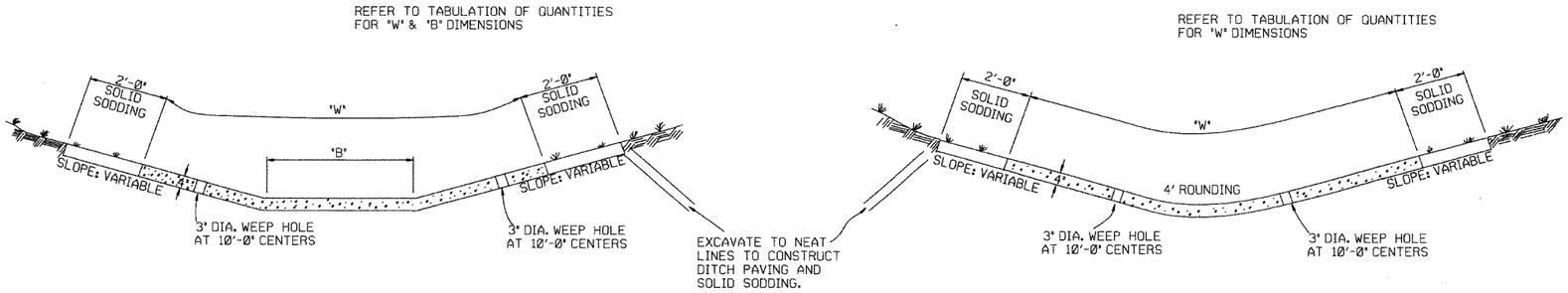
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 01-09-97
CHECKED BY: RLW DATE: 01-31-97
DESIGNED BY: STD. DATE: -
SCALE: As Shown

BRIDGE NO. DRAWING NO. 15241

FILENAME: B15240.STD

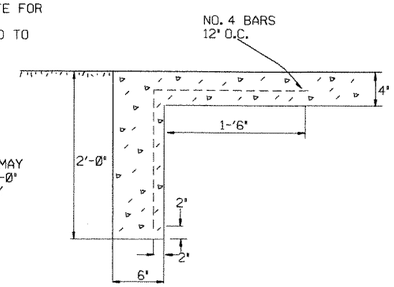
B15241.STD



TYPE A

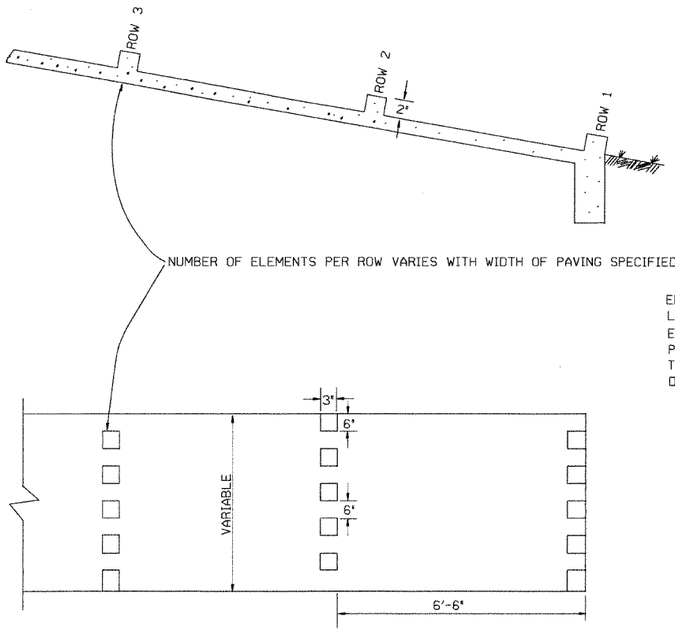
TYPE B

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



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

TOE WALL DETAIL FOR CONCRETE DITCH PAVING



ENERGY DISSIPATORS
(NO SCALE)

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

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

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

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

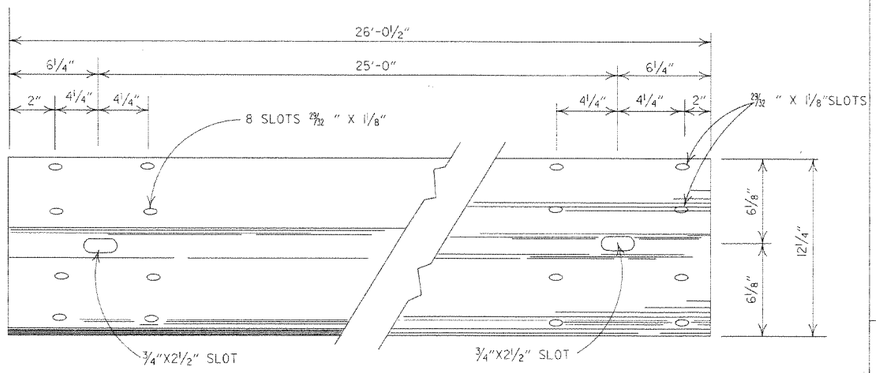
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

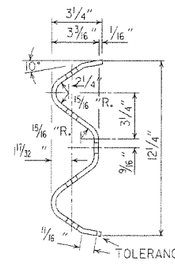
DATE	REVISION	DATE FILM'D
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

STANDARD DRAWING CDP-1

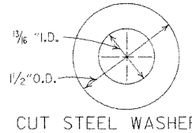




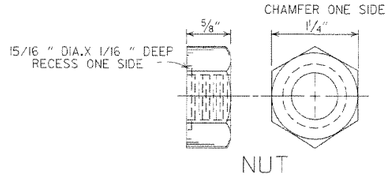
DETAILS OF W-BEAM GUARD RAIL

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

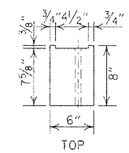
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

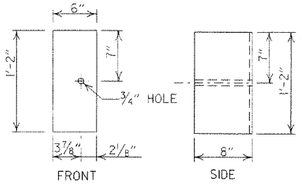


NUT

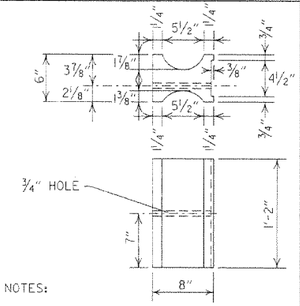


WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

TOP



WOOD BLOCKOUT (W-BEAM)

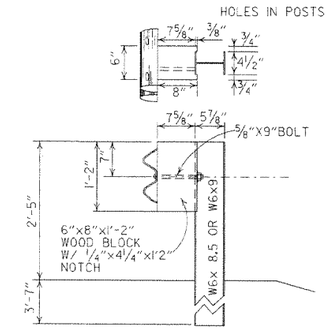


NOTES:

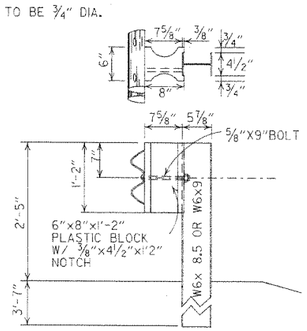
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.

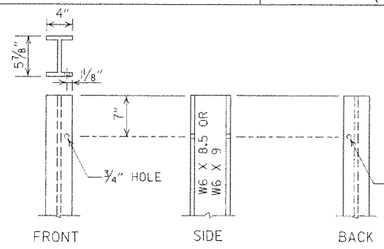


WOOD BLOCKOUT CONNECTIONS

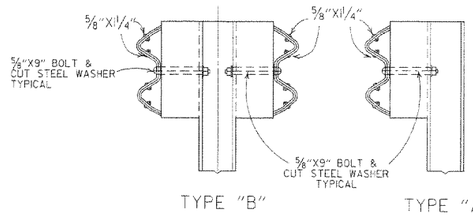


PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



STEEL POST



TYPE "B" TYPE "A"

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 9.7# (1400 f) OR NO.1 1350 f SOUTHERN PINE.

CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

HOLES IN POSTS AND BLOCKS TO BE 3/4" DIA.

POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - 1/4".

WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

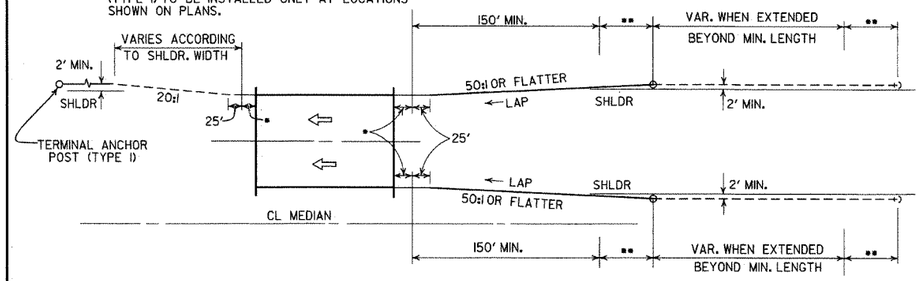
DATE	REVISION	DATE FILM
7-4-10	RAISED HEIGHT OF GUARD RAIL 1"	
10-15-09	ADDED REFERENCE TO MASH	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
3-30-00	REMOVED GUARD RAIL AT BRIDGE ENDS	
1-12-00	ADDED PLASTIC BLOCKOUT	
8-12-98	REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE. DELETED DET. OF GUARD RAIL REPLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK, & ADDED DETAILS OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES	
4-3-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
6-2-94	ADDED ALT. STEEL POST SIZE	
8-5-93	REVISED STEEL POST SIZE	8-5-93
10-1-92	REDRAWN & REVISED	10-1-92
8-15-91	REVISED WASHER NOTE	8-15-91
8-2-90	REV. GEN. NOTE & DEPHT OF ANC. POST IN ROCK	8-2-90
7-15-88	REVISED SECTION 3 & GENERAL NOTES	
3-4-88	REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-9-87	REDRAWN & REVISED	802-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

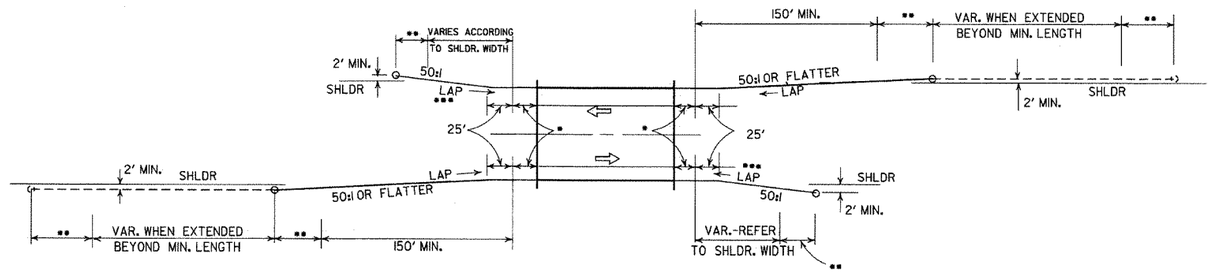
STANDARD DRAWING GR-8

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

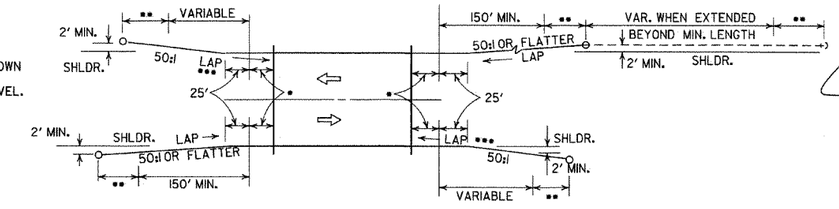
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

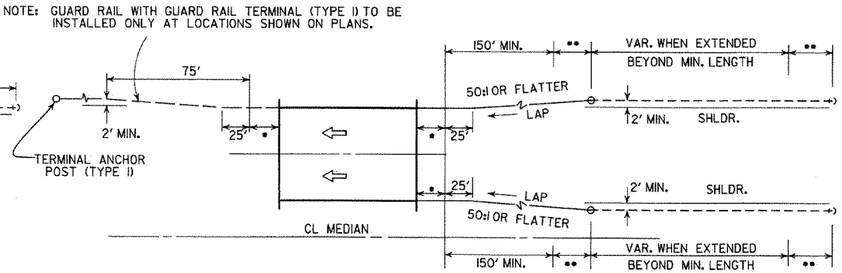
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

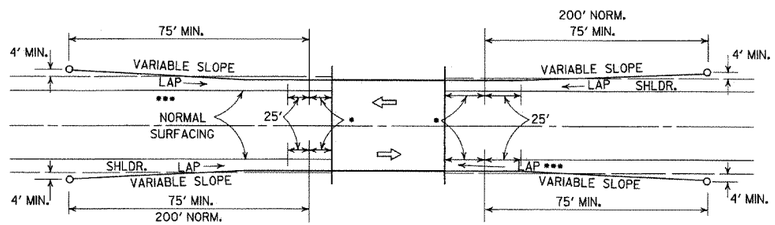
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

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

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



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

LEGEND

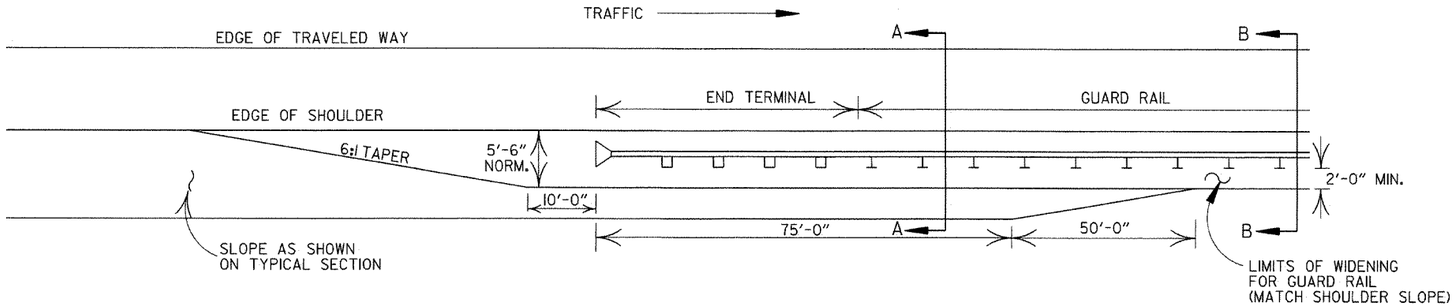
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

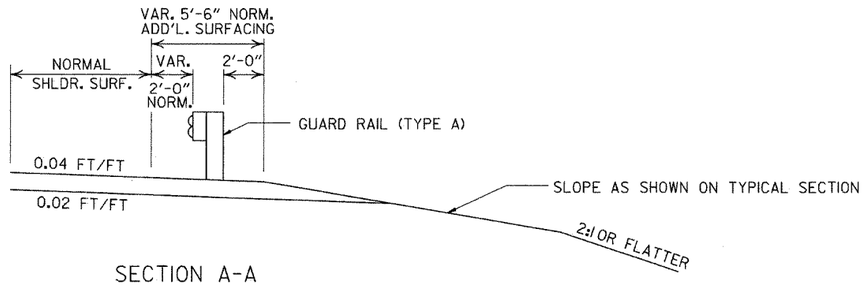
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87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

ARKANSAS STATE HIGHWAY COMMISSION

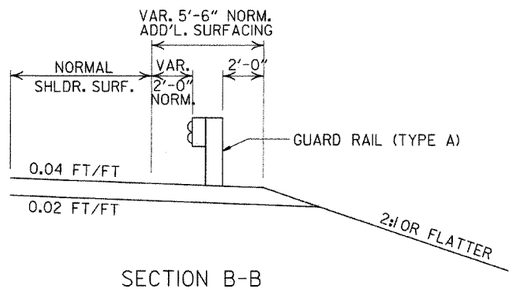
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





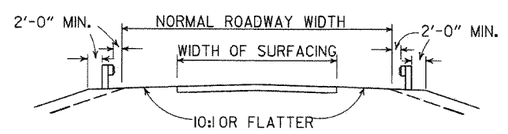
SECTION A-A



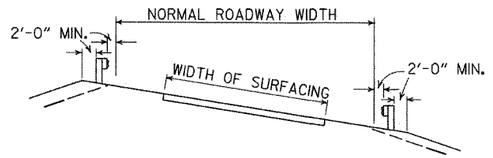
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

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

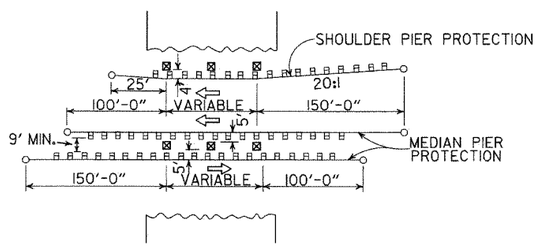


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



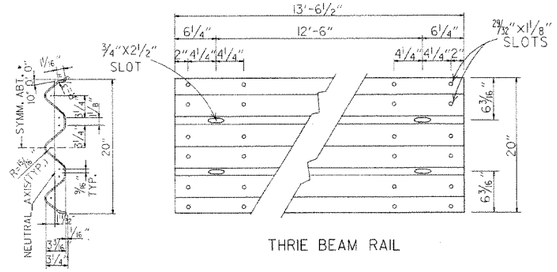
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

DATE	REVISION	DATE FILM
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

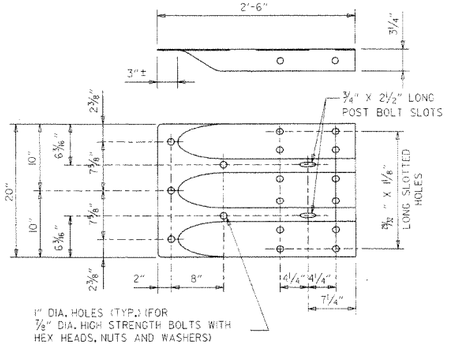
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A

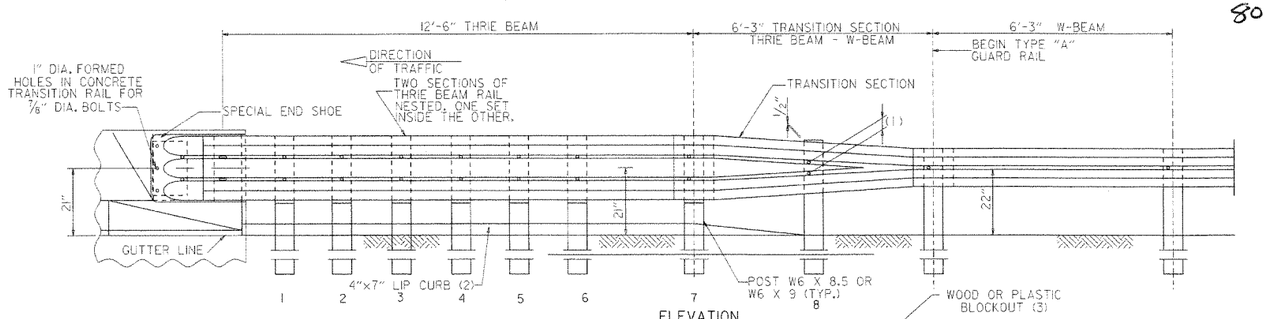


THRIE BEAM RAIL

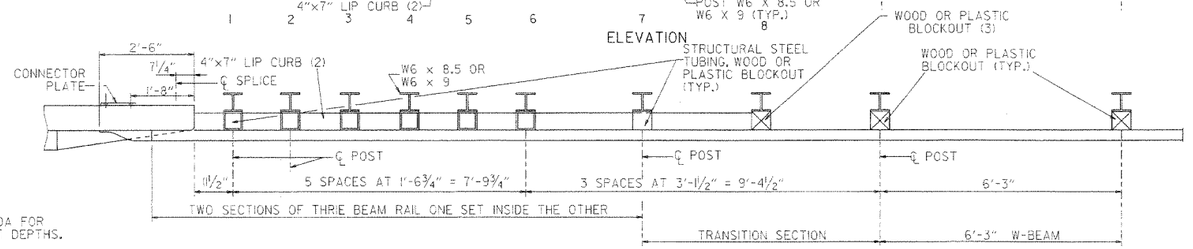
SECTION THRU THRIE BEAM RAIL



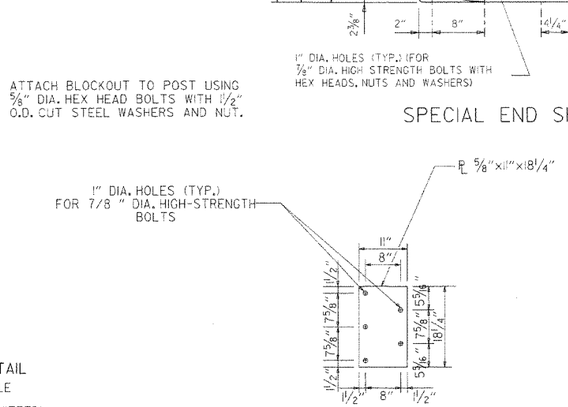
SPECIAL END SHOE



ELEVATION



PLAN



STRUCTURAL STEEL TUBING BLOCKOUT DETAIL

ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.

ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

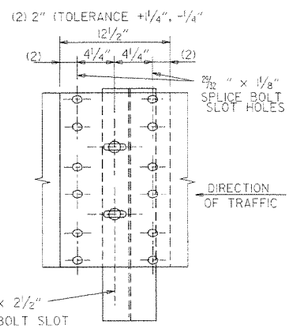
HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

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

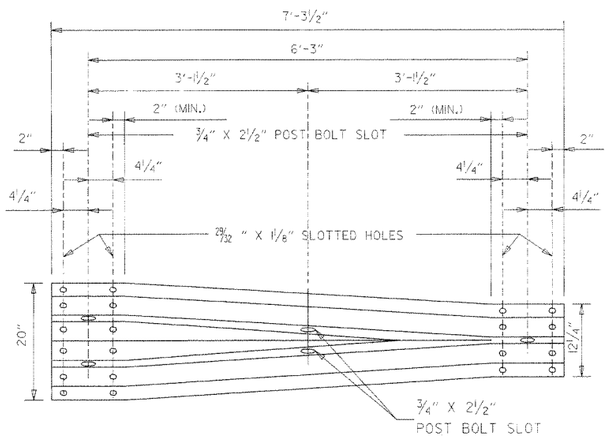
CONNECTOR PLATE

NOTE:
SEE STANDARD DRAWING GR-10A FOR GUARD RAIL POST EMBEDMENT DEPTHS.

CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.



THRIE BEAM RAIL SPLICE AT POST



TRANSITION SECTION

(1) VERIFY BOLT SPACING FROM RAIL TRANSITION PRODUCER.
(2) REFER TO APPROACH GUTTER DETAILS.
(3) LENGTH OF BLOCKOUT ON POST 8 TO BE MODIFIED TO FIT RAIL WIDTH.

THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

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

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

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

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7# (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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

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

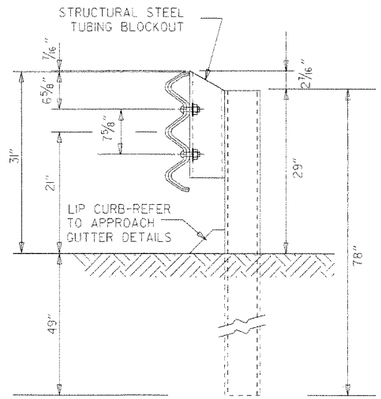
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF W-BEAM 1"	
11-29-07	ADDED PLASTIC BLOCKOUTS	
11-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT	
11-18-04	REVISED GENERAL NOTES	
10-9-03	REVISED GENERAL NOTES	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED NOTE (2)	
6-29-00	MOVED DIMENSION LINES	
5-18-00	ADDED NOTE	
3-30-00	DRAWN & ISSUED	

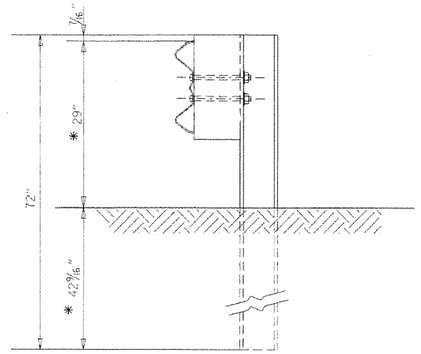
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GUARD RAIL DETAILS

STANDARD DRAWING GR-10

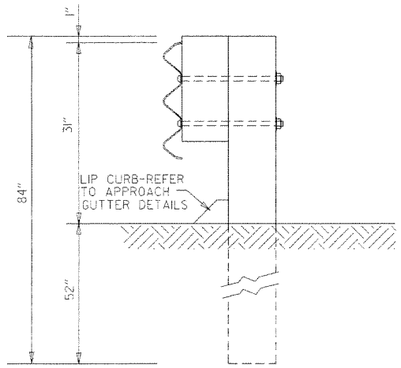


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

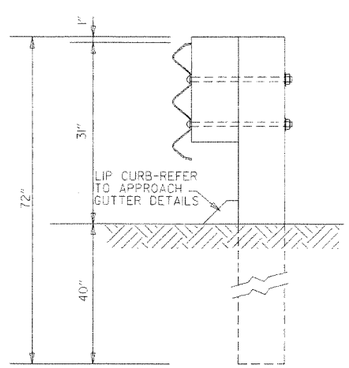


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

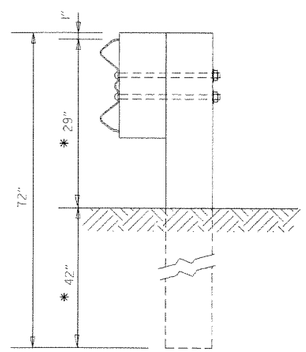
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7



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

GENERAL NOTES:

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

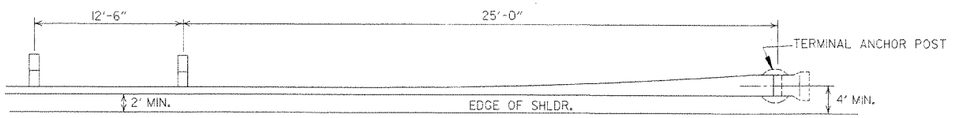
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 (1350 f SOUTHERN PINE.

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	

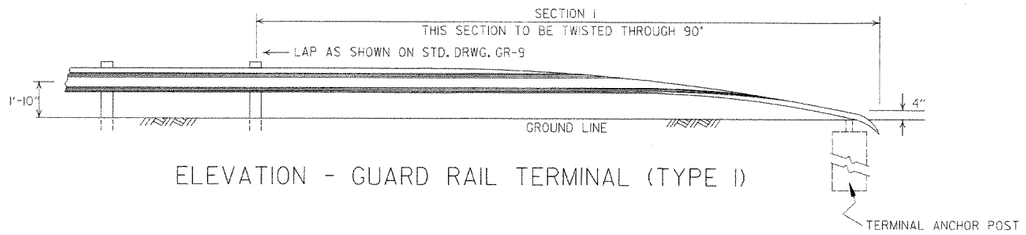
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

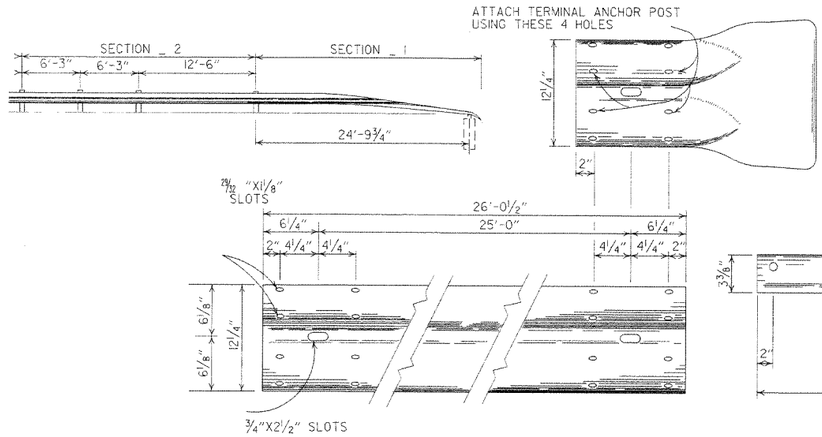


PLAN - GUARD RAIL TERMINAL (TYPE I)



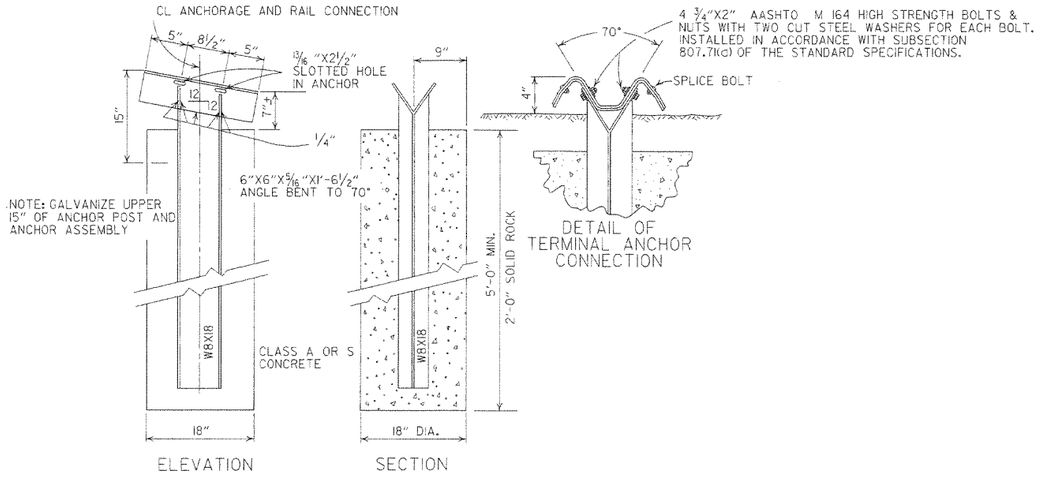
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

NOTE:
SECTIONS I 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 I

TERMINAL SECTION



NOTE: RAIL MEMBERS MAY BE BOLTED TO ANGLE AT TERMINAL ANCHOR AND THE TWO ASSEMBLIES POSITIONED TO PROPER ALIGNMENT PRIOR TO PLACING CONCRETE AROUND 8 WF 17 POST IF CONTRACTOR SO DESIRES.

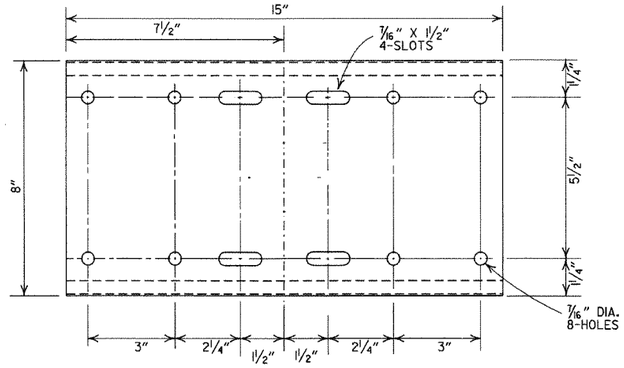
DETAIL OF TERMINAL ANCHOR POST (TYPE I)

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

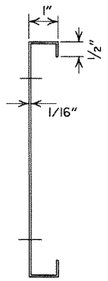
ARKANSAS STATE HIGHWAY COMMISSION

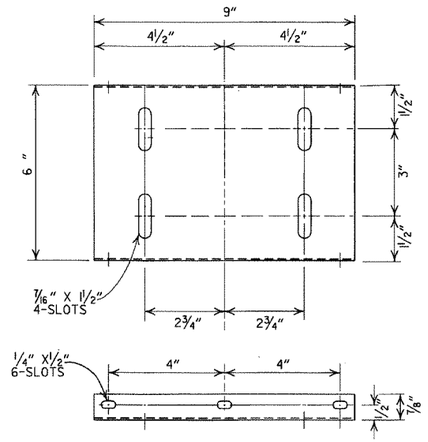
GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

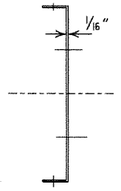


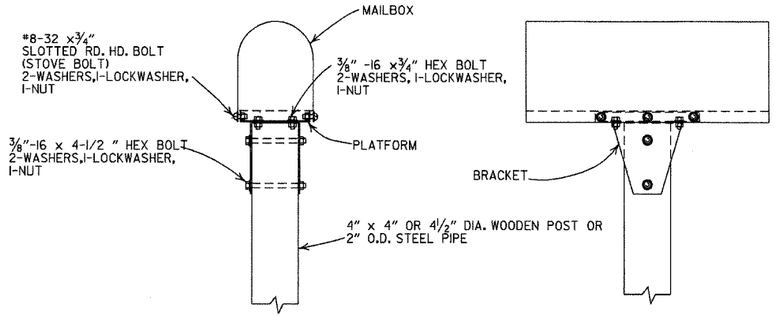
SHELF



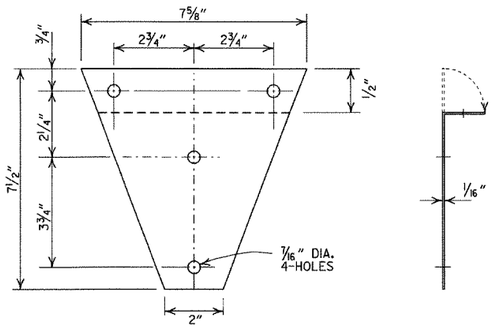


PLATFORM

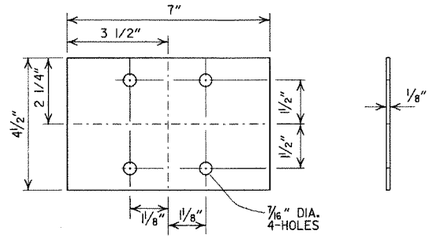




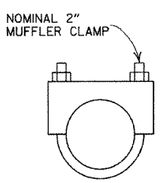
SINGLE INSTALLATION



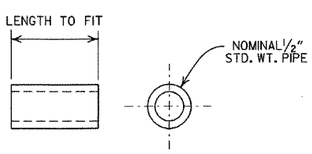
BRACKET



ANTI-TWIST PLATE



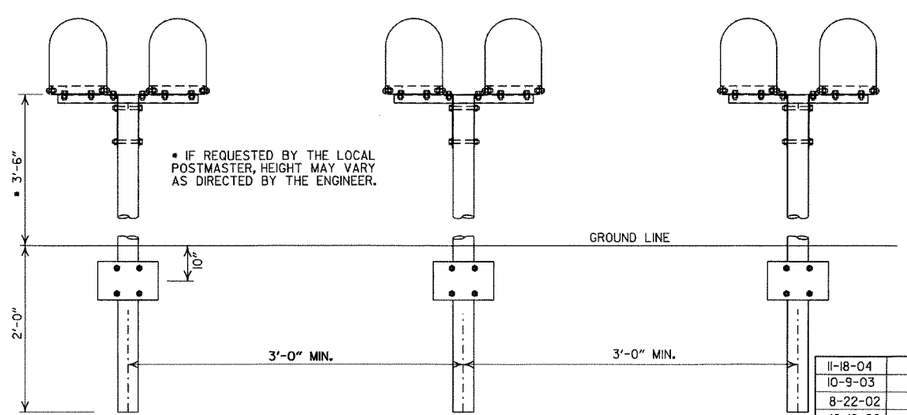
CLAMP



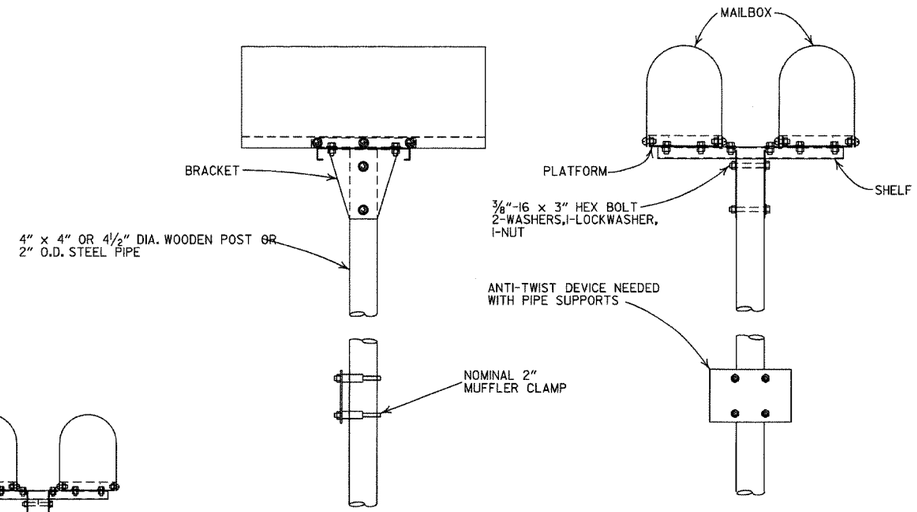
SPACER

GENERAL NOTES

1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF ¾" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X¾" FLATHEAD WOOD SCREWS USED TO ATTACH THE MAILBOX TO THE PLATFORM.
4. THE MAILBOX SHELF AND PLATFORM THAT IS SHOWN IS FOR STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM SIZE SHALL BE MODIFIED TO FIT MAILBOXES OF A DIFFERENT SIZE.
5. METAL PIPE FOR MAILBOX SUPPORT SHALL BE 2" OUTSIDE DIAMETER STEEL WITH A WALL THICKNESS OF 0.145" AND A WEIGHT OF 2.72 LBS PER FT. OUTSIDE DIAMETER AND WEIGHT SHALL HAVE A TOLERANCE OF +/- 5% ACCORDING TO AASHTO M 181.
6. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE USED, PROVIDED THEY ARE ON THE AHTD QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



SPACING FOR MULTIPLE POST INSTALLATION



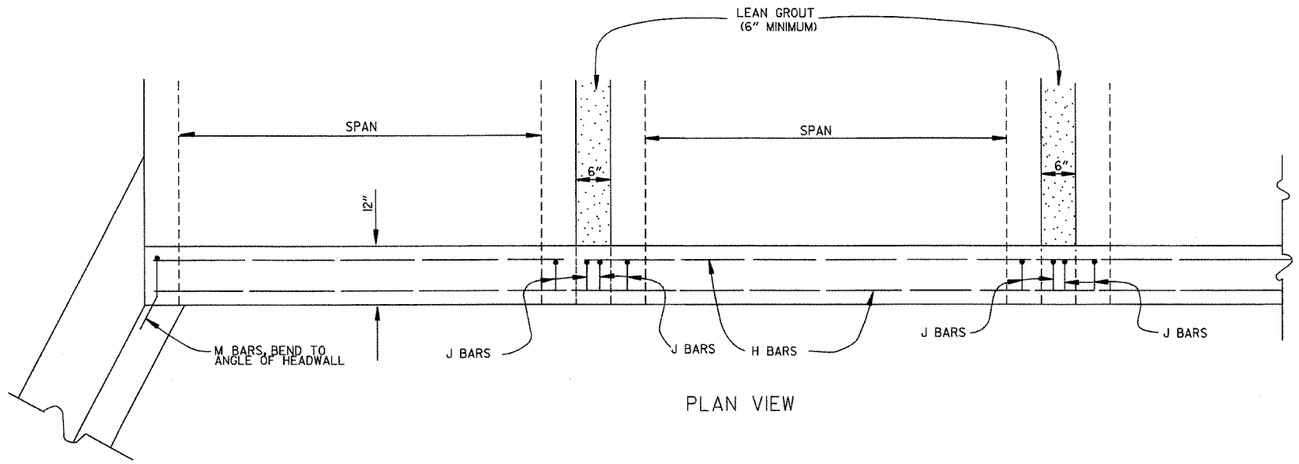
DOUBLE INSTALLATION

DATE	FILMED	REVISION
11-18-04		REVISED NOTES
10-9-03		REVISED NOTE 6
8-22-02		REVISED NOTE 6
10-18-96		CORRECTED AASHTO
10-1-92		CORRECTED SPELLING
9-26-91		NEW PHONE NUMBER
8-15-91		ADDED NOTE
11-30-89		ADJUSTED HEIGHT & ADDED NOTE
2-16-89		DELETED SLOTS FROM SHELF & PLTF
11-17-88	10-1-92	ADJUSTED DIMENSIONS OF STEEL POSTS
7-15-88	120-7-15-88	ISSUED

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MAILBOX DETAILS

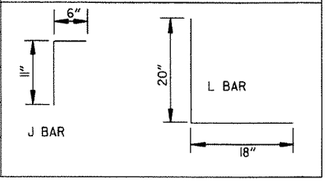
STANDARD DRAWING MB-1



PLAN VIEW

BAR LIST

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



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

GENERAL NOTES

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

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

ALL EXPOSED CORNERS TO HAVE $\frac{3}{4}$" CHAMFERS.

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

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

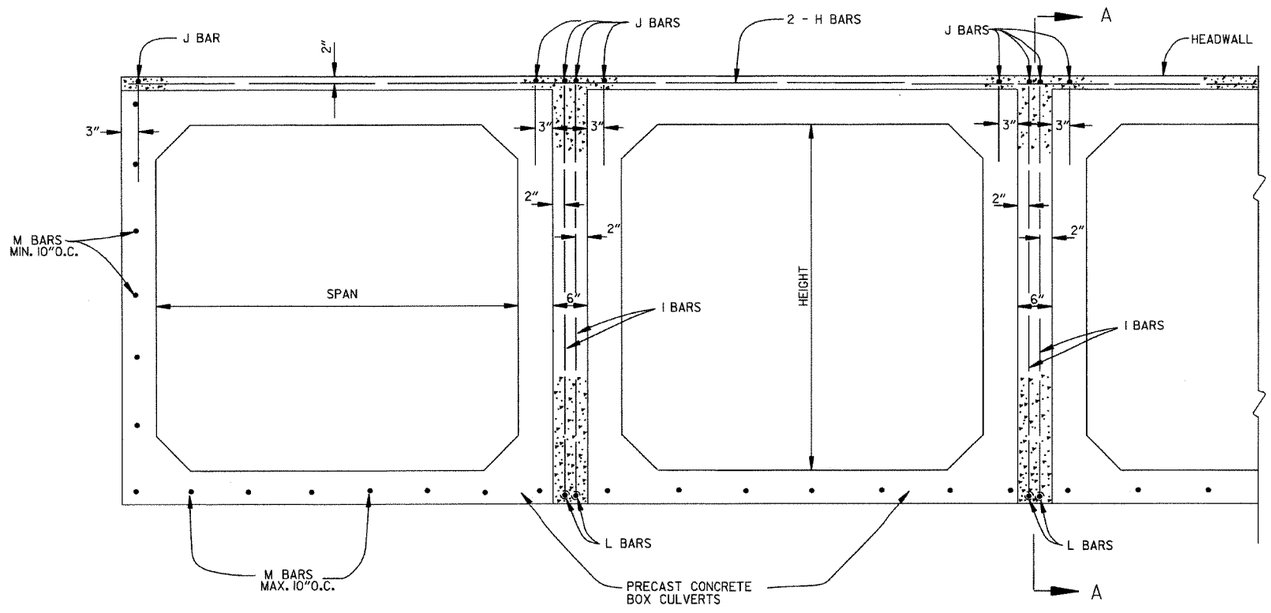
LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS:
PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS.
THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE.
THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8 INCH THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

MEMBRANE WATERPROOFING CONFORMING TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.

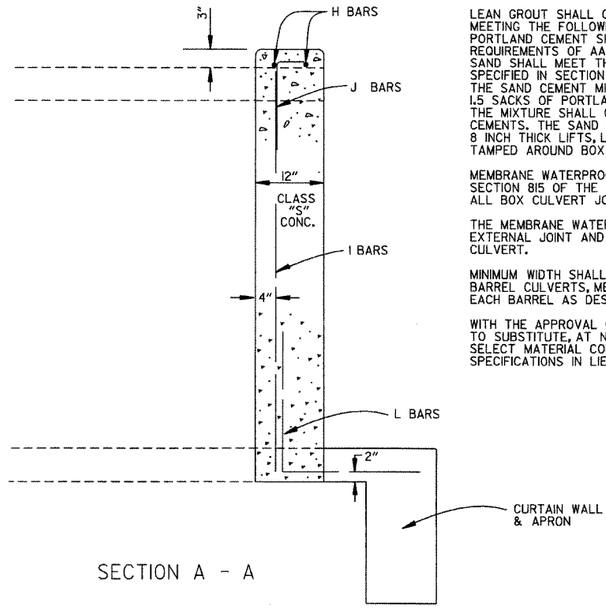
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

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

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



END VIEW



SECTION A - A

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

ARKANSAS STATE HIGHWAY COMMISSION

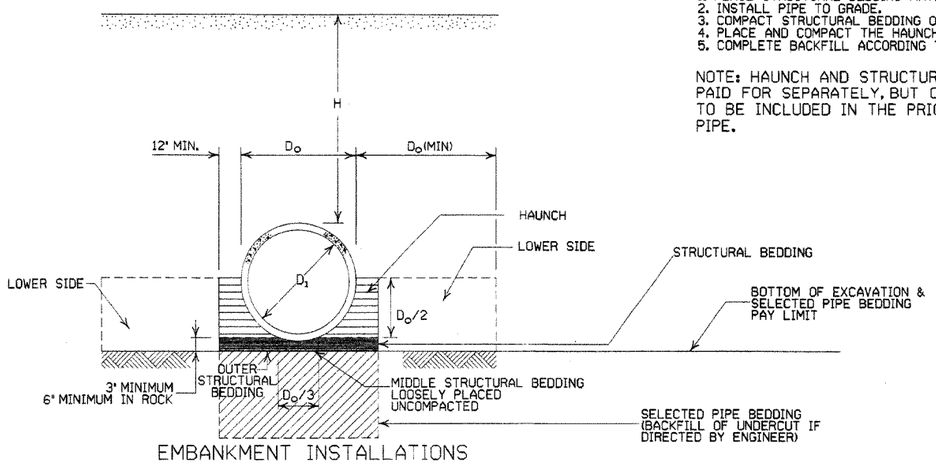
PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-1

CONSTRUCTION SEQUENCE

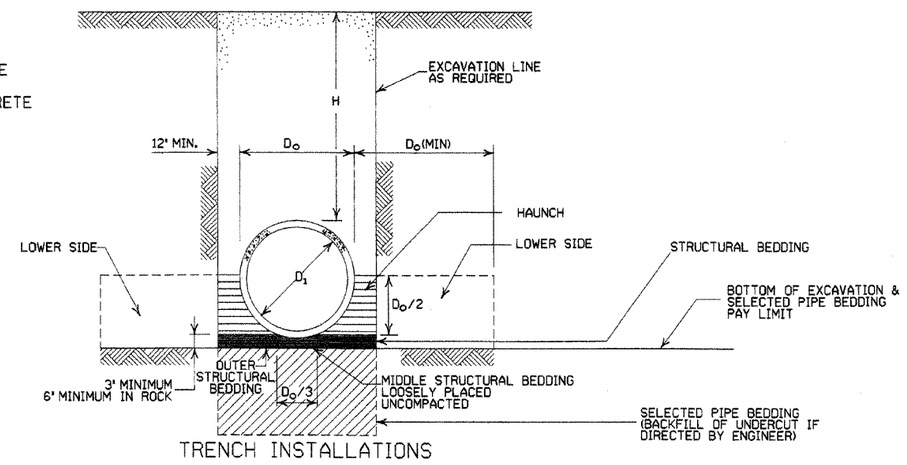
1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE MIDDLE OF THE PIPE.
5. COMPLETE BACKFILL ACCORDING TO SPECIFICATIONS.

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



EMBANKMENT INSTALLATIONS

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



TRENCH INSTALLATIONS

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

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	*SPAN		* RISE	
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43¾	44	26⅞	27
42	51⅛	51	31⅝	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77¼	77
108	138	138	87½	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

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

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

MAXIMUM HEIGHT OF FILL OVER R.C. PIPE CULVERTS

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

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

GENERAL NOTES

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

- LEGEND -

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

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND) H-20 LOADING

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

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

•• WHERE THE STANDARD 2 ⅔ x ½' 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 GAGE AND CORRUGATION

CORRUGATED ALUMINUM PIPE (ROUND) H-20 LOADING

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

EQUIVALENT METAL THICKNESSES AND GAUGES

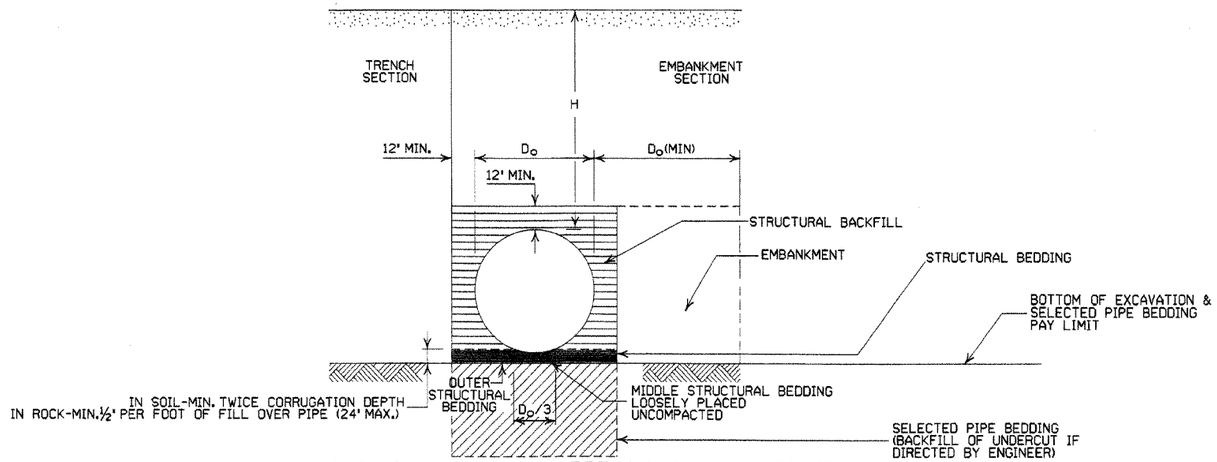
METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8
0.188	0.1838		7
0.218	0.2145		5
0.249	0.2451		3
0.280	0.2758		1

CORRUGATED METAL PIPE ARCHES (H - 20 LOADING)

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

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

•• WHERE THE STANDARD 2 ⅔ x ½' 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 -

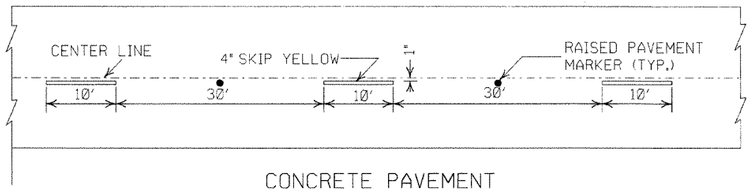
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL
ELONG. = ELONGATED
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)

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

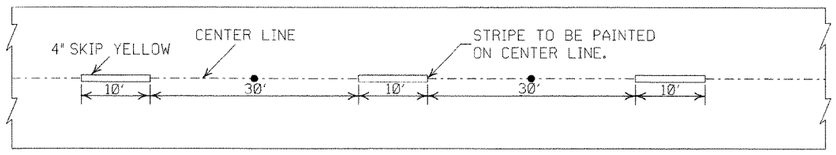
ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

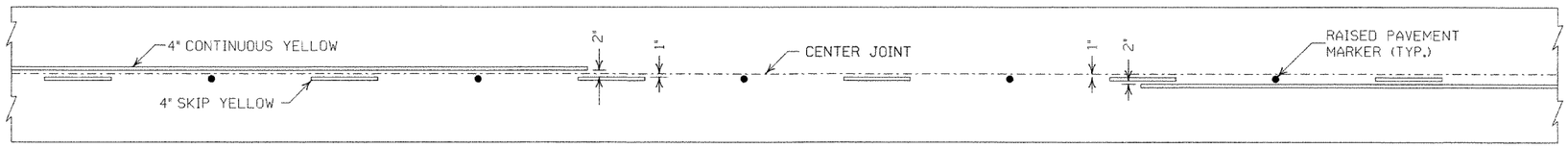


CONCRETE PAVEMENT

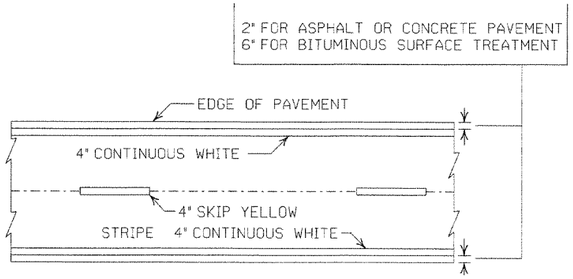


ASPHALT PAVEMENT

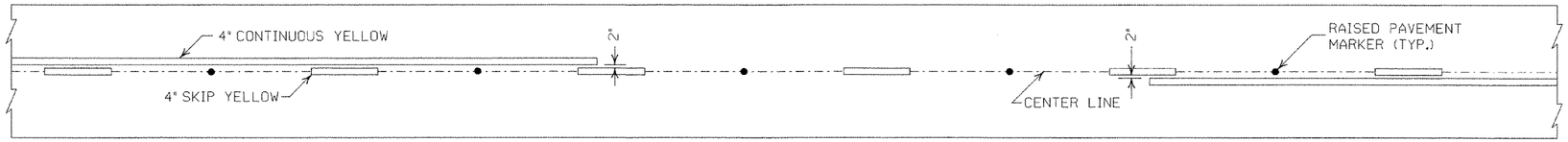
BROKEN LINE STRIPING



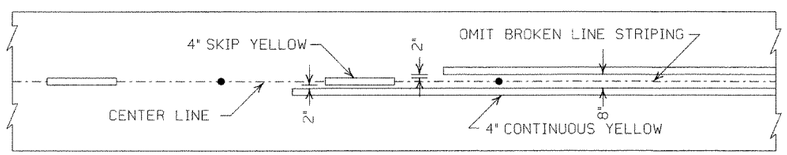
SOLID LINE STRIPING ON CONCRETE PAVEMENT



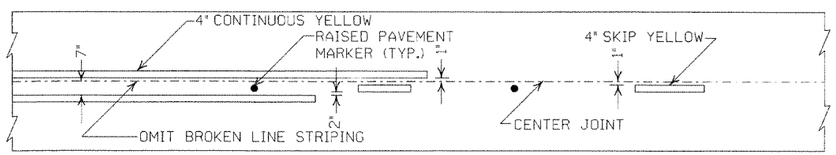
PAVEMENT EDGE LINE MARKING



SOLID LINE STRIPING ON ASPHALT PAVEMENT

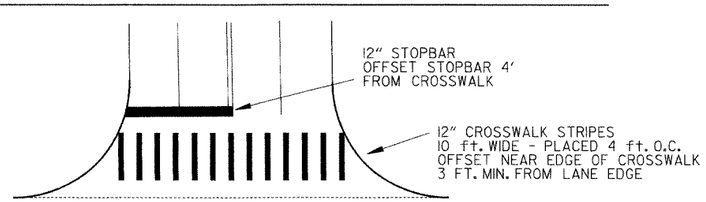


ASPHALT PAVEMENT



CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES



CROSSWALK AND STOPBAR DETAILS

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

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.

GENERAL NOTES:

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

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

NOTE:

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

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

ARKANSAS STATE HIGHWAY COMMISSION

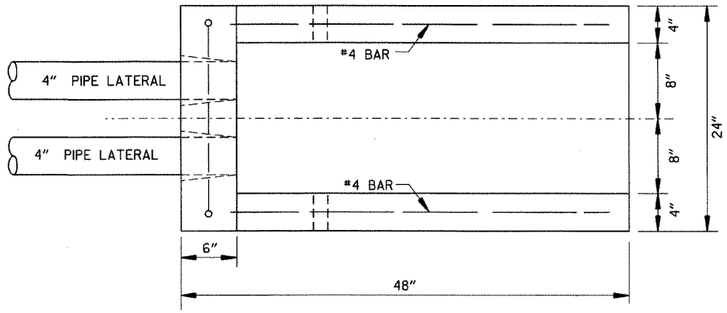
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

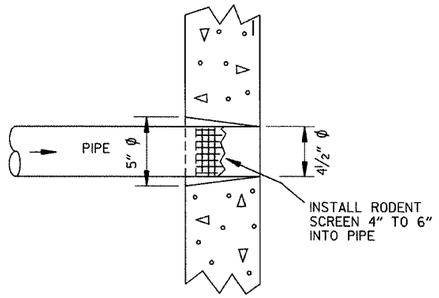
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

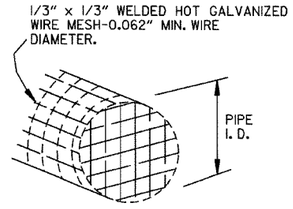
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



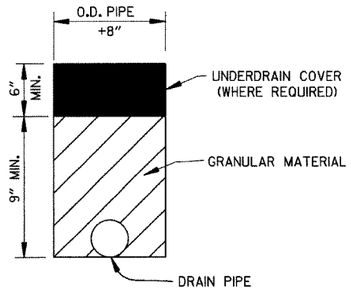
PLAN VIEW

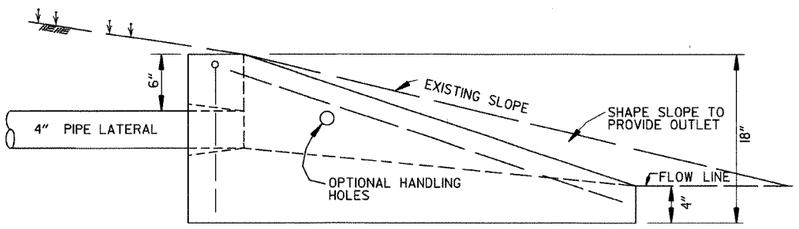


DETAIL OF HOLE FOR 4" PIPE

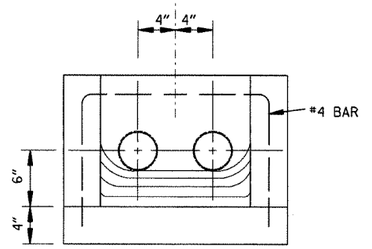


DETAIL OF RODENT SCREEN

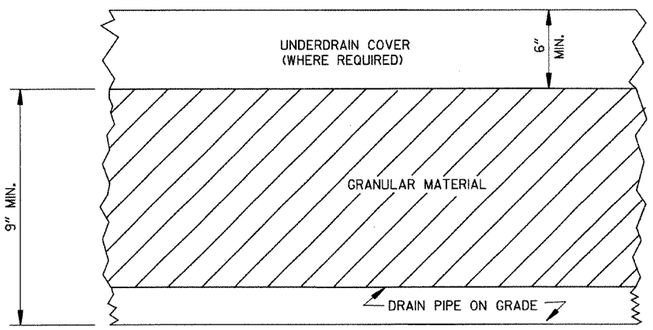




SIDE VIEW

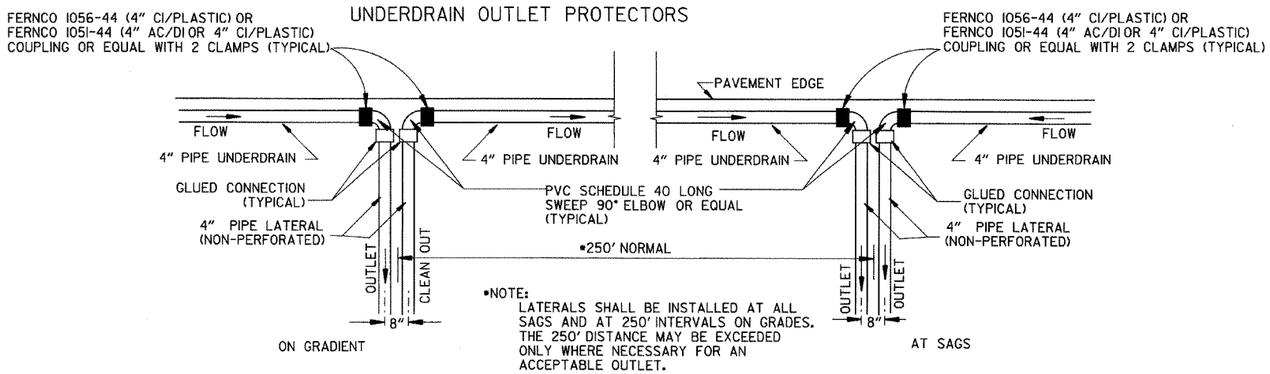


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

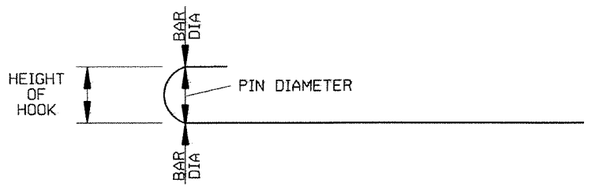
STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

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

BAR SIZE	PIN DIAMETER	HOOK EXTENSION "K"
3	2¼"	4"
4	3 "	4½"
5	3¾"	5"
6	4½"	6"
7	5¼"	7"
8	6"	8"

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "b1", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2¾ INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.



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

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

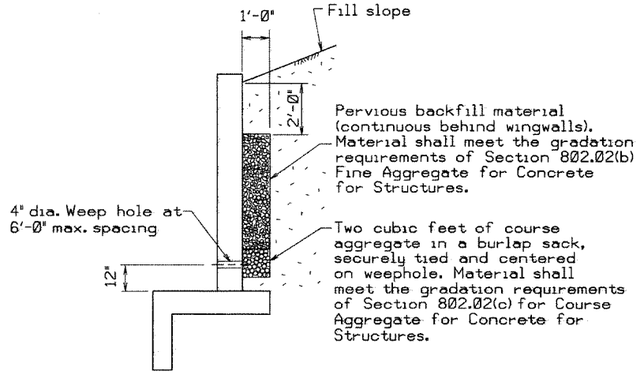
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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

REPLACEMENT BAR LENGTHS TABLE

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

L = "OW" - 3 INCHES



WINGWALL DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

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

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

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

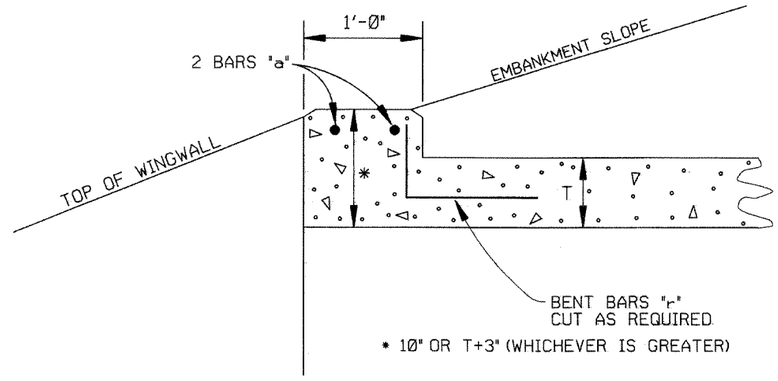
MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.

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

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

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

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



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

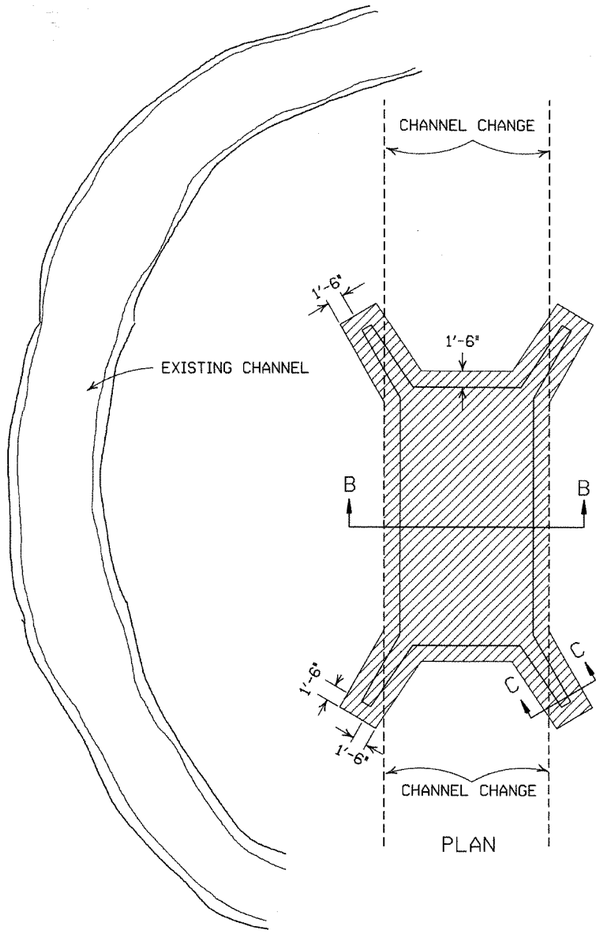
R.C. BOX CULVERT HEADWALL MODIFICATIONS

DATE	REVISION	DATE FILMED
05-25-06	REV. GEN. NOTES AND DETAILS FOR WEEP HOLES; BAR DIAGRAM	
8-16-01	ADDED WINGWALL DRAINAGE DETAIL/EDITED GEN. NOTES	
10-18-96	REV. ASTM REF. TO AASHTO & ADDED BAR DIAGRAM	
10-12-95	MOVED SOLID SODDING DETAIL TO RCB-2	
6-2-94	ADDED SOLID SODDING PLAN DETAIL	
8-5-93	REVISED PIN DIAMETER TO SPECS.	
8-15-91	DRAWN AND ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

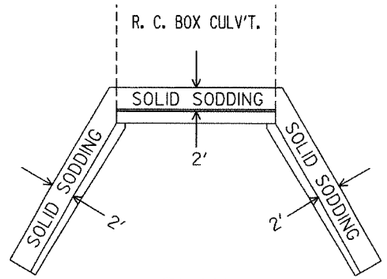
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

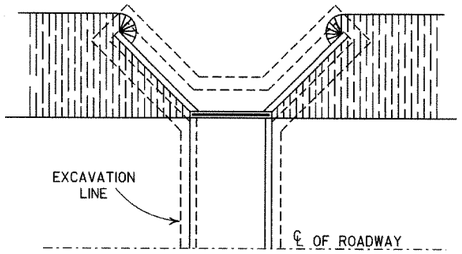
SOLID SODDING



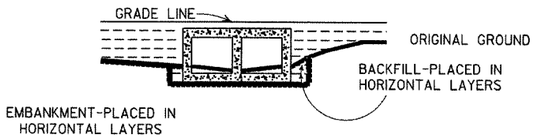
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

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

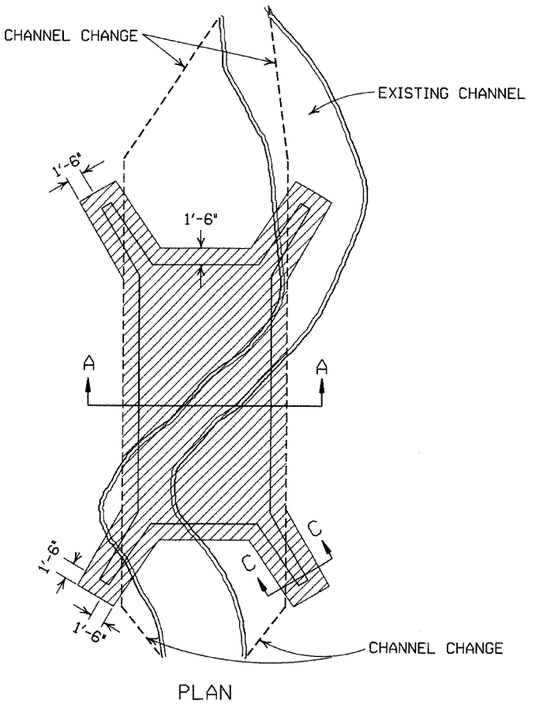


PLAN

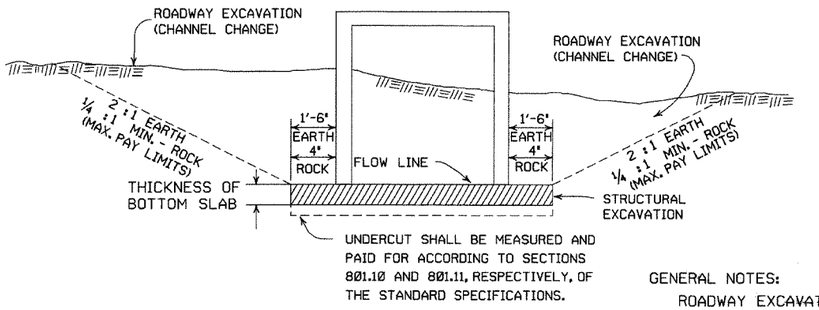


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

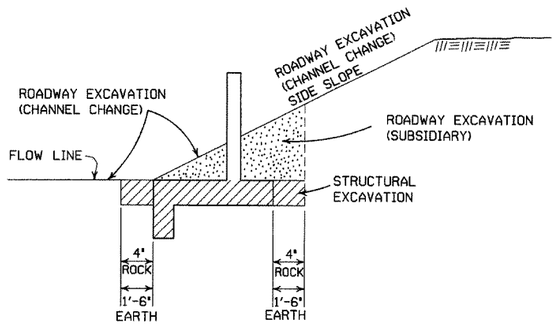


PLAN

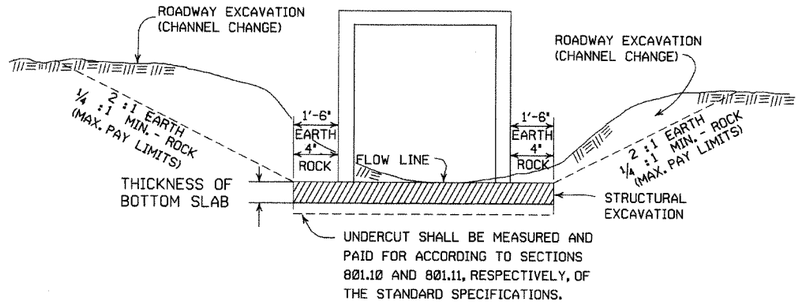


SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:

ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

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

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

ARKANSAS STATE HIGHWAY COMMISSION

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

STANDARD DRAWING RCB-2

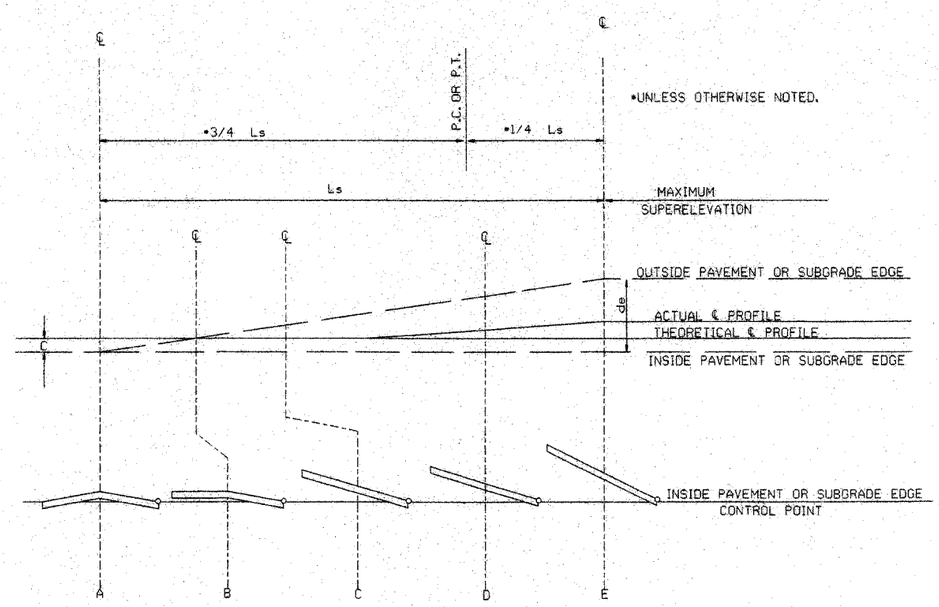
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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

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

ABBREVIATIONS

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



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

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

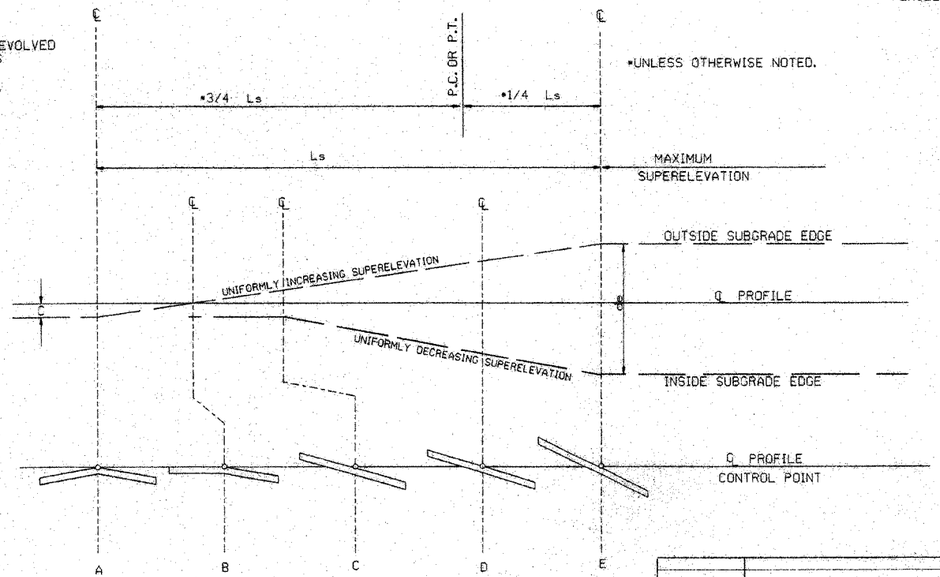
GENERAL NOTES

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

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

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

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

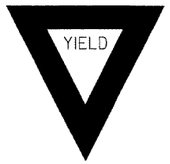
FILE STDSE2.DGN

R1-1



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

R1-2



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

R2-1



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

R2-5A



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

R2-5C



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

R4-1



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

R4-2



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

R5-1



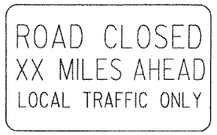
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2



48"X30"

RII-3A



60"X30"

RII-4



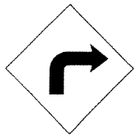
60"X30"

RSP-1



48"X30"

WI-1



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

WI-2



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

WI-3



STD. 48"X48"

WI-4



STD. 48"X48"

WI-6



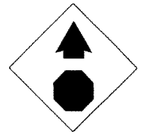
STD. 48"X24"
SPECIAL 60"X30"

WI-8



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

W3-1



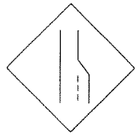
STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1



STD. 36"X36"
SPECIAL 48"X48"

W6-3



EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7



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

W9-2



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

WI3-1



STD. 24"X24"

W20-1



STD. 48"X48"

W20-2



STD. 48"X48"

W20-3



STD. 48"X48"

W20-4



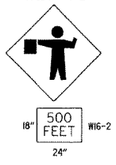
STD. 48"X48"

W20-5



STD. 48"X48"

W20-7a



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

W21-2



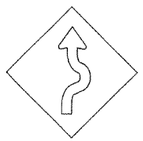
STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

WI-4b



STD. 48"X48"

R56-1



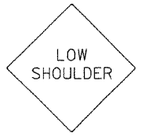
STD. 18"X18"

W8-11



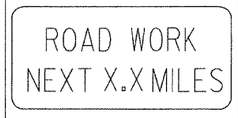
STD. 36"X36"
FWY. 48"X48"

W8-9



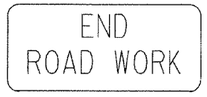
STD. 36"X36"
FWY. 48"X48"

G20-1



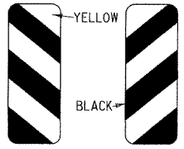
60"X24"

G20-2



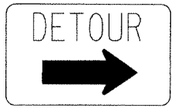
48"X24"

OM-3L OM-3R



12"X36"

M4-9



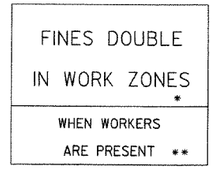
STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10



48"X18"

R55-1



36"X60"

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

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE
	AHEAD

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

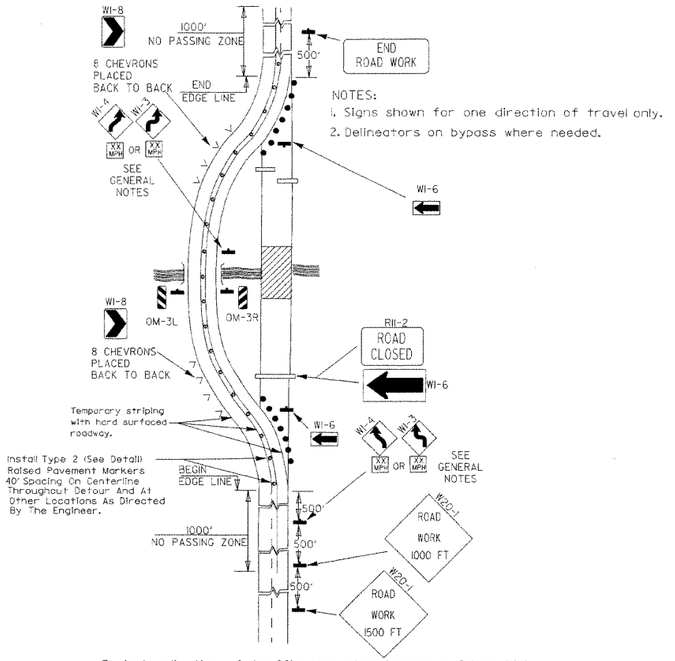
* NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

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

ARKANSAS STATE HIGHWAY COMMISSION

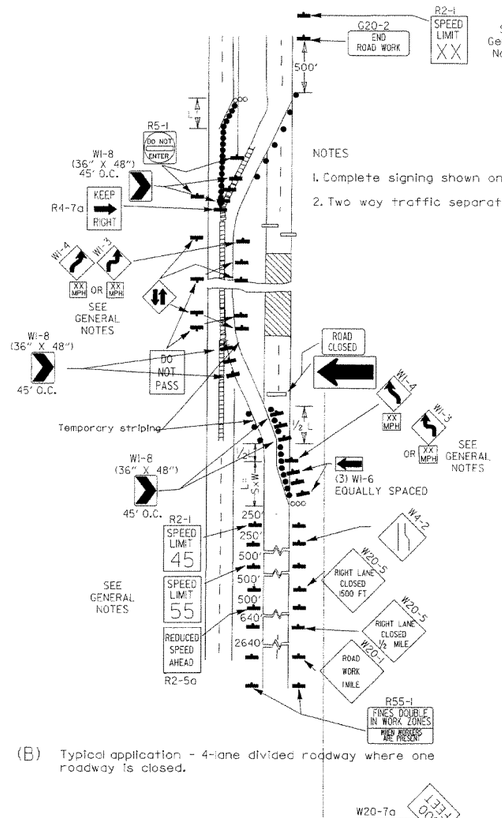
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



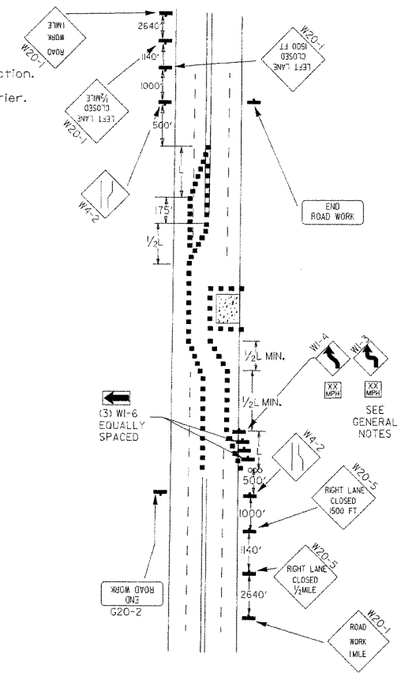
NOTES:
1. Signs shown for one direction of travel only.
2. Delineators on bypass where needed.

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

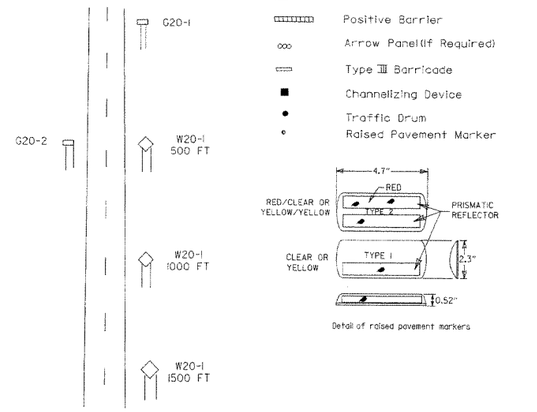


NOTES
1. Complete signing shown only in crossover direction.
2. Two way traffic separated with positive barrier.

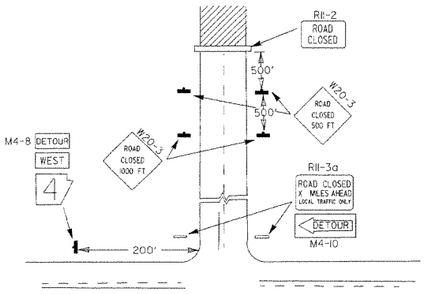
(B) Typical application - 4-lane divided roadway where one roadway is closed.



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

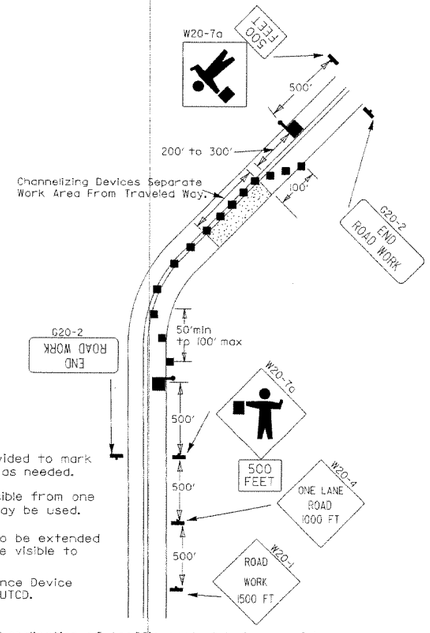


Typical advance warning sign placement



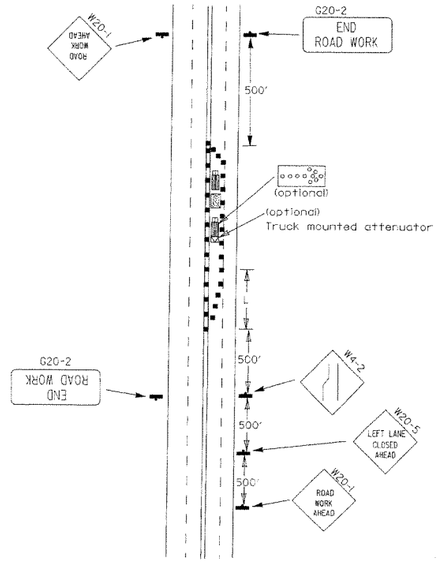
NOTES:
1. Regulatory traffic control devices to be modified as needed for the duration of the detour.
2. Street names may be used when desirable for directing detoured traffic.

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



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

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



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

Taper formulae:

$L = S \times W$ 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:

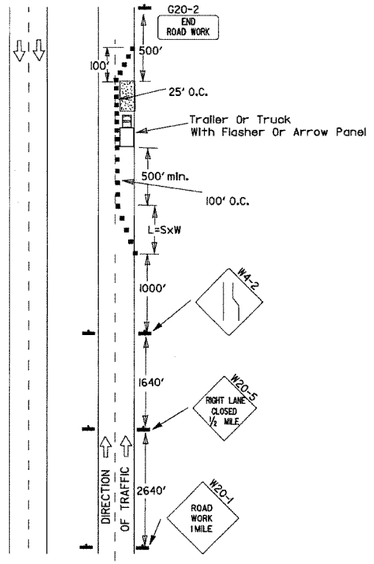
1. Advisory speed posted on WI-3 or WI-4 curve warning signs to be determined at site. Use WI-4 when speed is greater than 30mph and WI-3 when 30mph or less.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed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

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

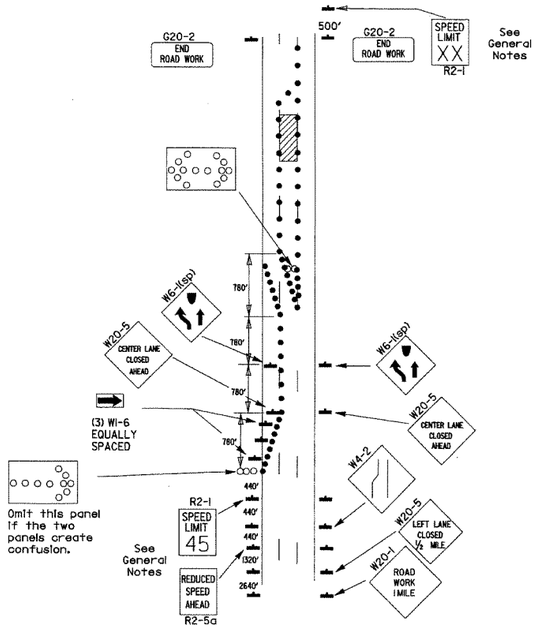
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

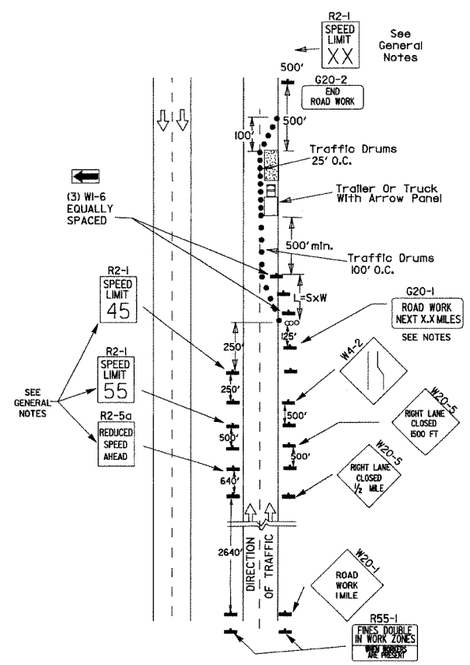
STANDARD DRAWING TC-2



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



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



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

KEY:

○○○ Arrow Panel (If Required)

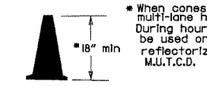
■ Channelizing Device

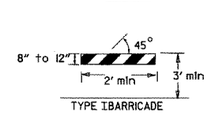
● Traffic drum

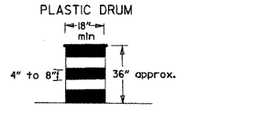
GENERAL NOTES:

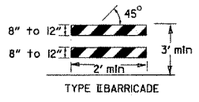
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional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

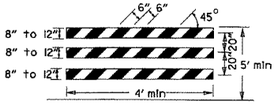
Channelizing devices



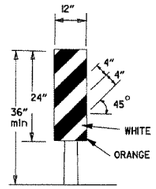




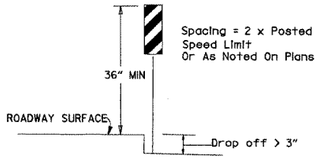




NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.



VERTICAL PANEL PLACEMENT



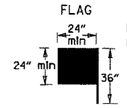
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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

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

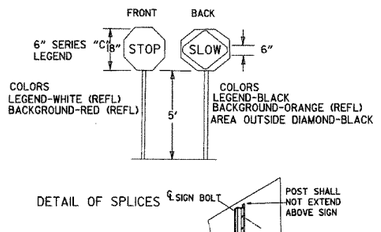
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG



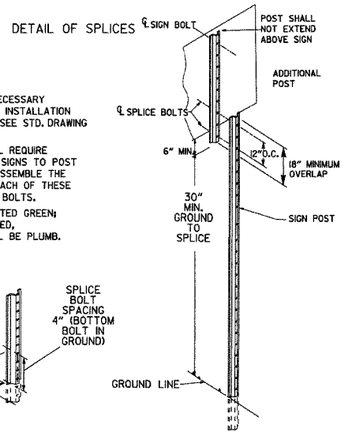
Flag shall be of good grade red material

STOP SLOW PADDLE



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

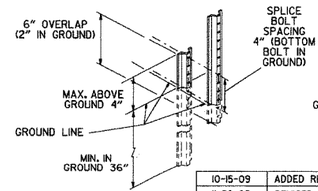
DETAIL OF SPLICES



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

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

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



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

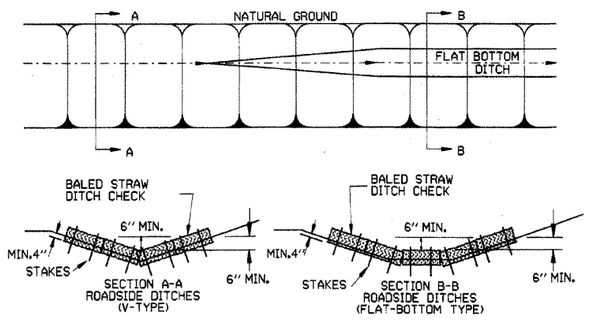
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

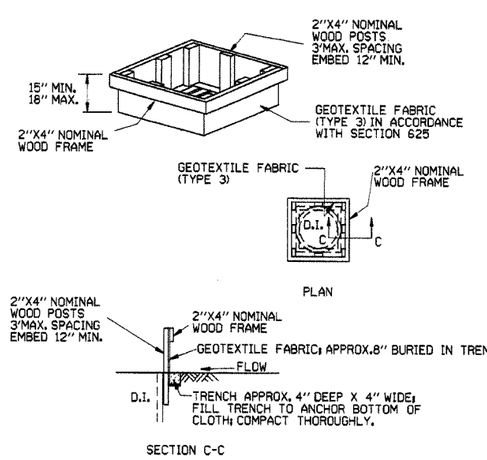
STANDARD DRAWING TC-3

GENERAL NOTES

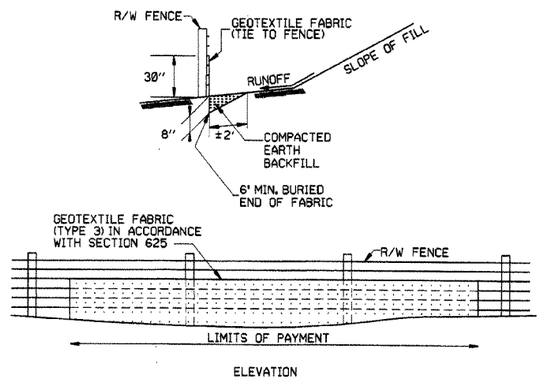
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.
2. STRAW BALES SHALL BE KEYED INTO SOIL A MINIMUM OF 4' AND NO GAPS SHALL BE LEFT BETWEEN BALES.



BALED STRAW DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



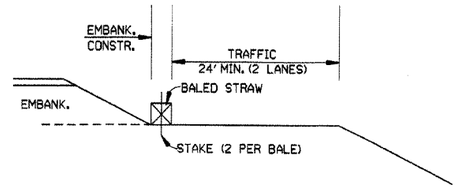
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

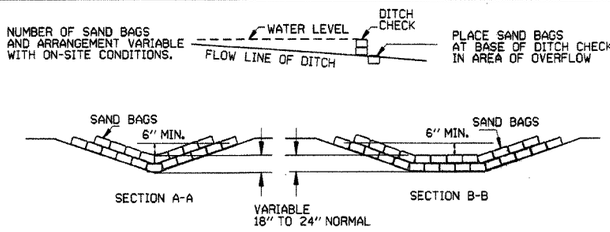
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

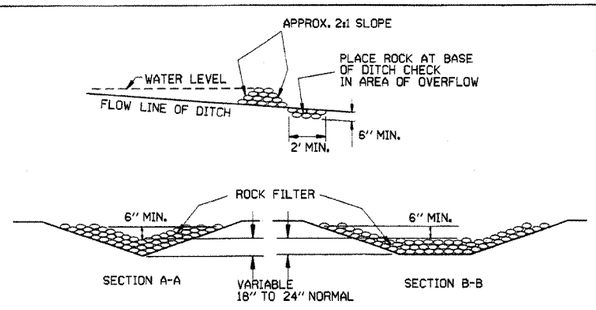
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.
2. NO GAPS SHALL BE LEFT BETWEEN BALES.
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



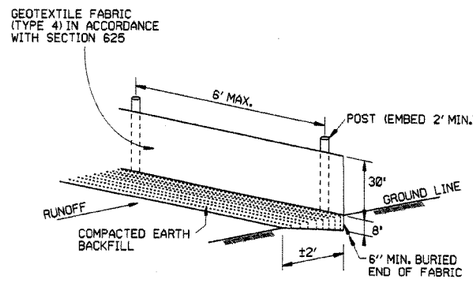
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

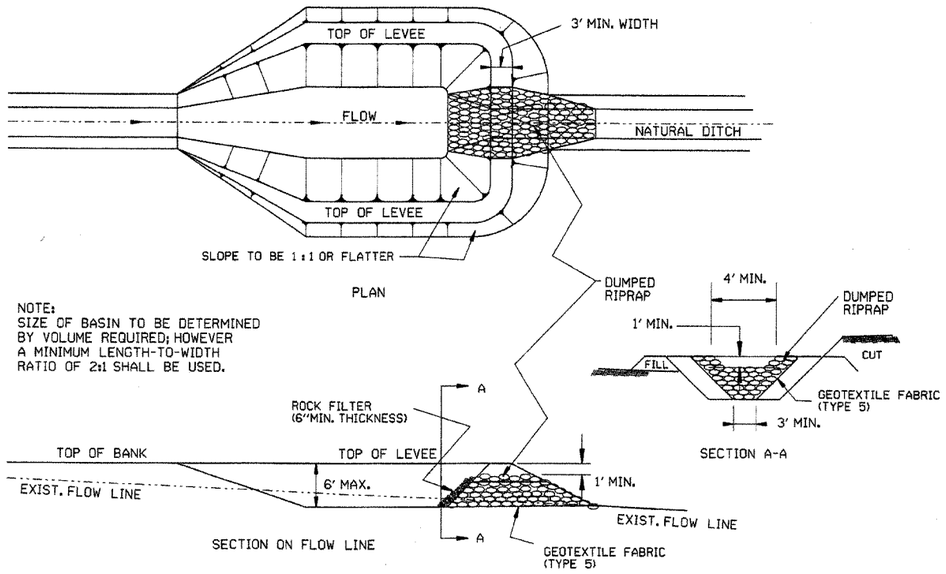
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

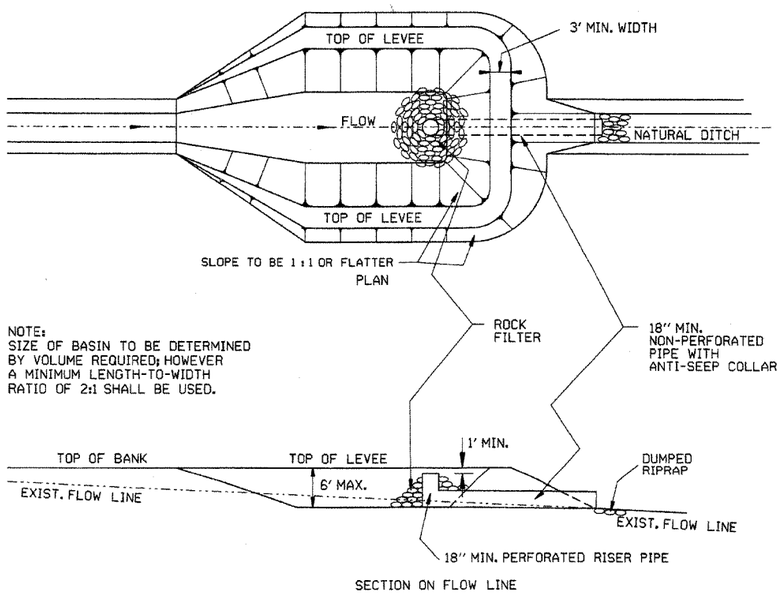
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

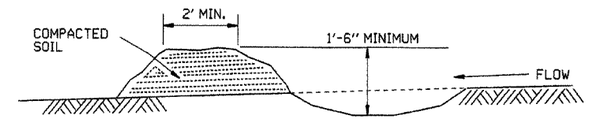
STANDARD DRAWING TEC-1



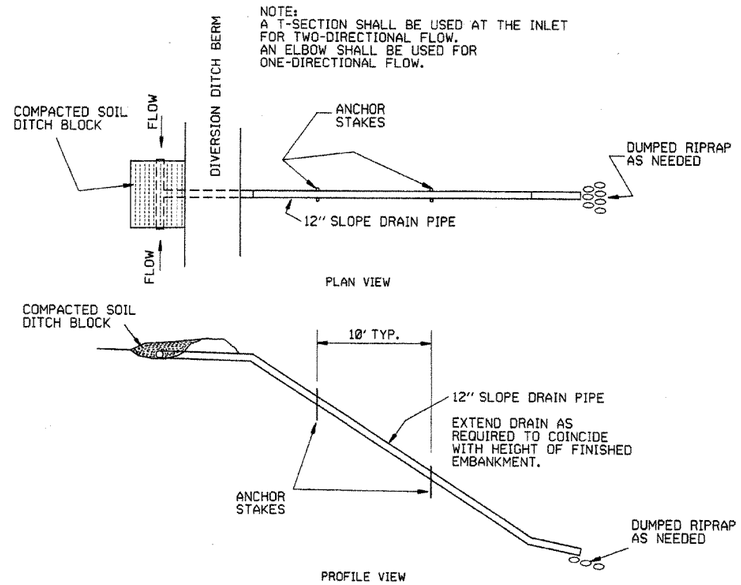
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



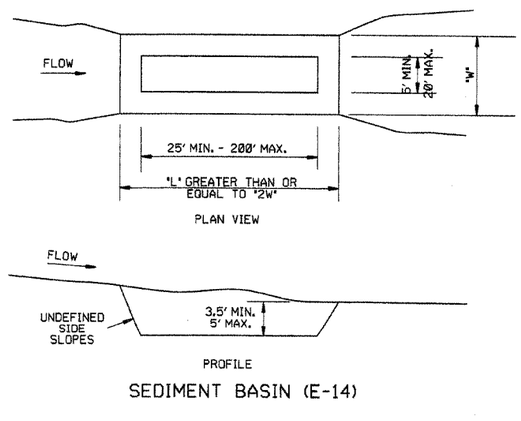
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

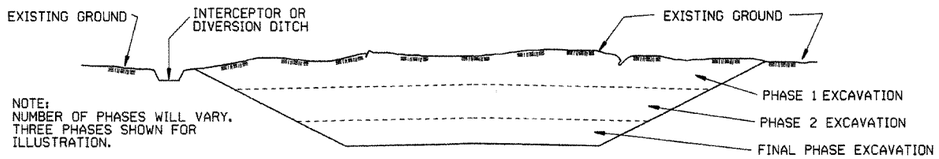
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



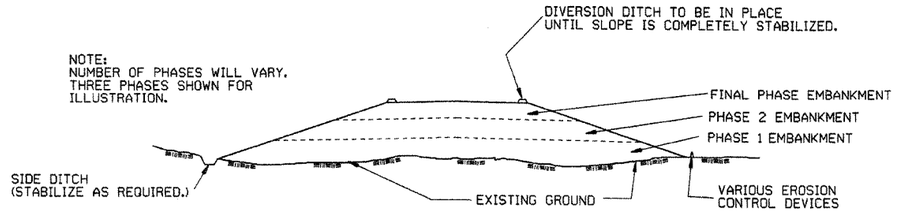
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

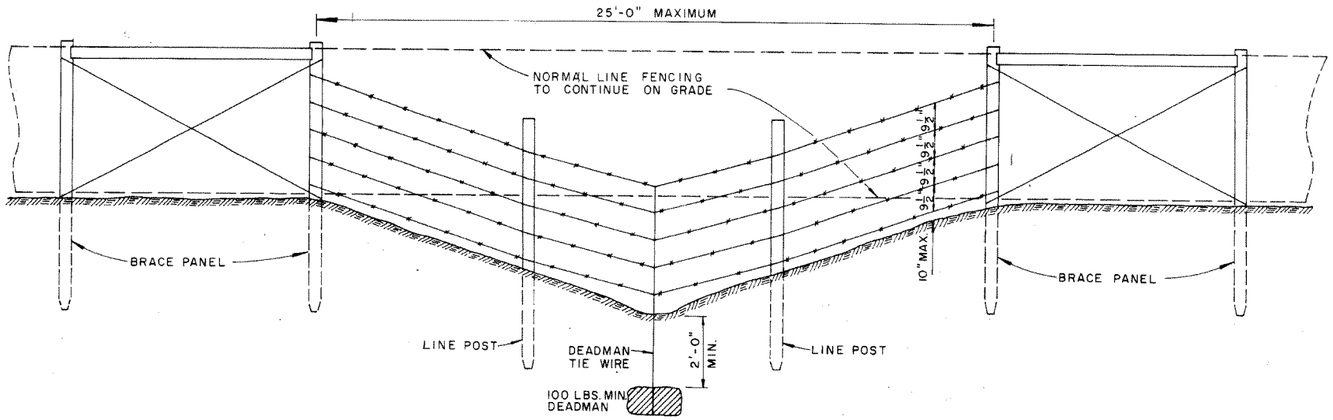
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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

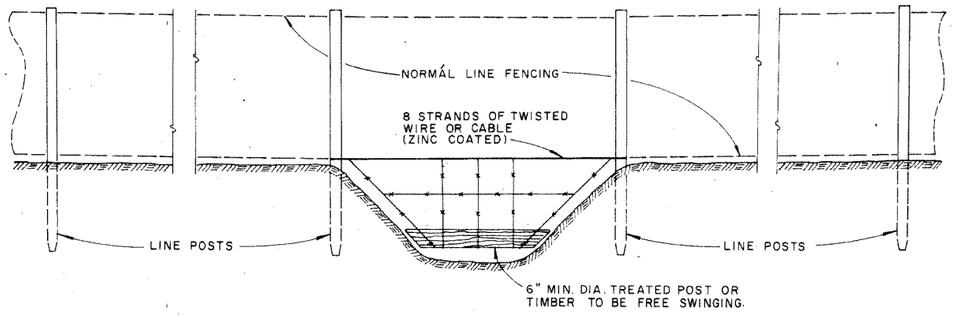
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

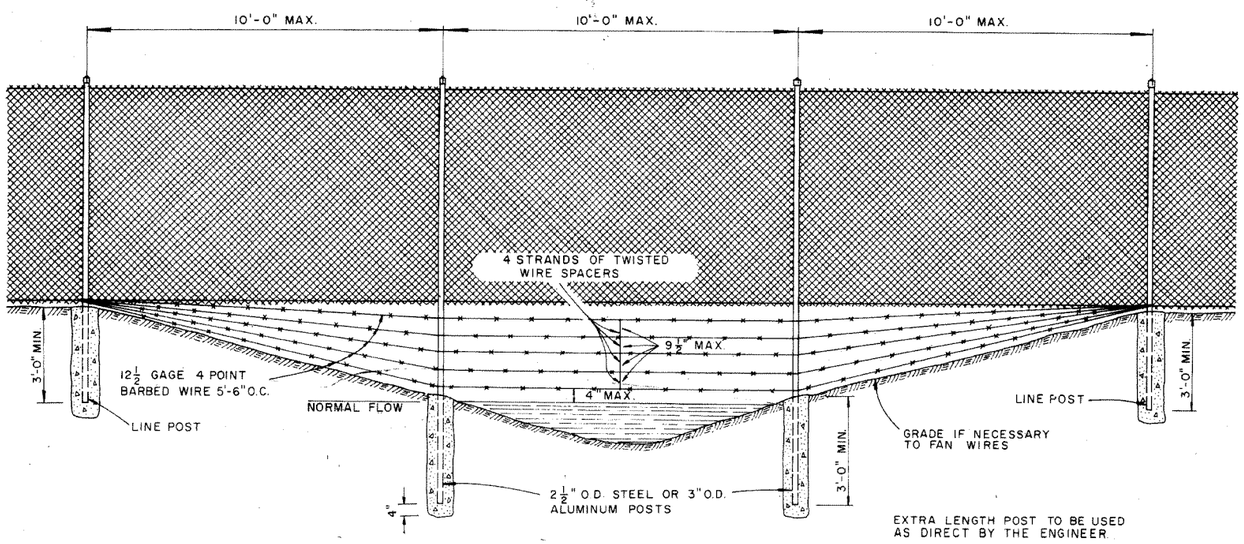
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3







GENERAL NOTES:

THESE INSTALLATIONS TO BE USED WHERE NORMAL FENCING INSTALLATION WOULD CAUSE THE COLLECTING OF DRIFT IN THE CHANNEL OR THE DEPRESSION WILL NOT PERMIT NORMAL INSTALLATION. INSTALLATIONS WILL BE MADE ONLY WHERE DIRECTED BY THE ENGINEER.

WHEN A FENCE LINE APPROACHES A DITCH, GULLY OR DEPRESSION, THE LAST POST ON LEVEL GROUND SHALL BE PLACED CLOSE ENOUGH TO THE EDGE OF THE DROP OFF THAT THE FENCE MAY BE STRUNG TO THE POST IN THE DEPRESSION WITHOUT TOUCHING THE GROUND.

IN TERRAIN OF SUCH EXTREME IRREGULARITY THAT MINOR GRADING WILL NOT BE FEASIBLE, THE NORMAL FENCE SHALL CONTINUE ON GRADE AND THE GULLIES OR DEPRESSIONS TREATED BY AUXILIARY FENCES AS SHOWN.

PAYMENT FOR THE TYPE INSTALLATION USED WILL NOT BE MADE DIRECTLY BUT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR WIRE FENCE OR CHAIN LINK FENCE.

DATE	REVISION	DATE FILM'D.
4-20-79	REVISED TOP RAIL & TENSION WIRE	696 4-20-79
10-2-72	REVISED & REDRAWN	529 10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE WATER GAPS

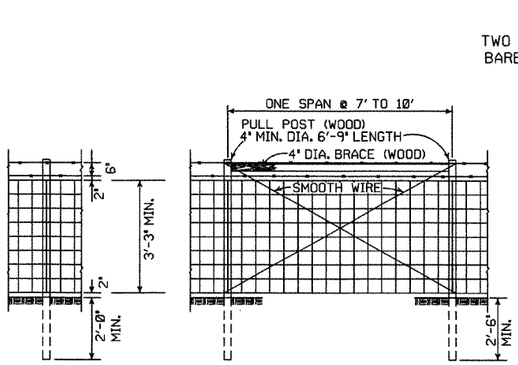
STANDARD DRAWING

WF-2

73

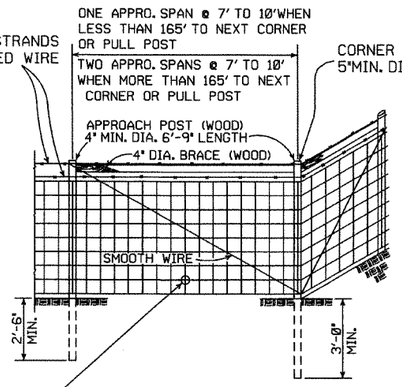
LM—11-71—67001—PP&SC

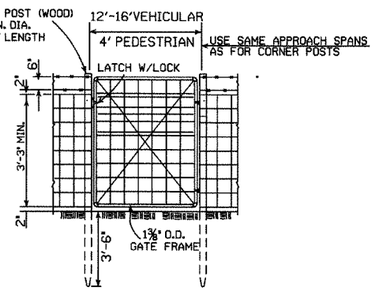
TYPE C FENCE (WOOD POSTS)



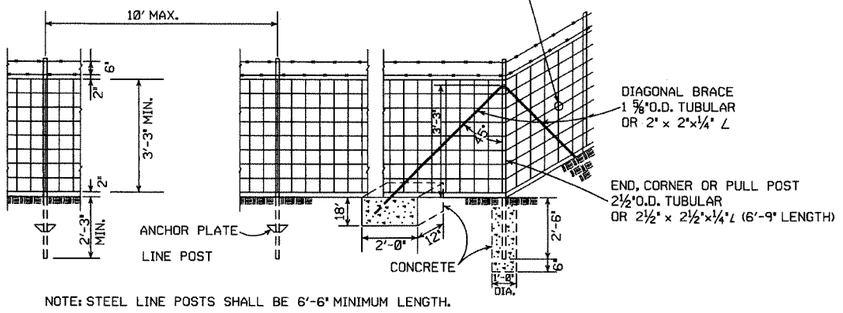
LINE POST
3" MIN. DIA. 6'-3" LENGTH
MAX. SPACING TO BE 10'-0"

LINE BRACE ASSEMBLY
MAX. SPACING TO BE 330'

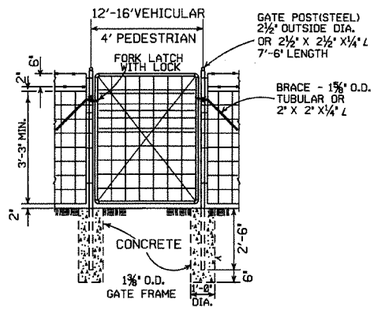


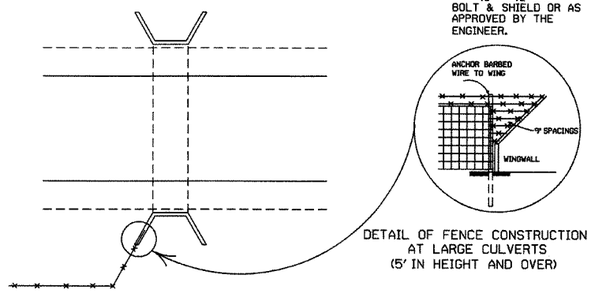


OTHER APPROVED TIES
WILL BE PERMITTED



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





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

GENERAL NOTES:

STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED.
TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE - 1" TO +2".
TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

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

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

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

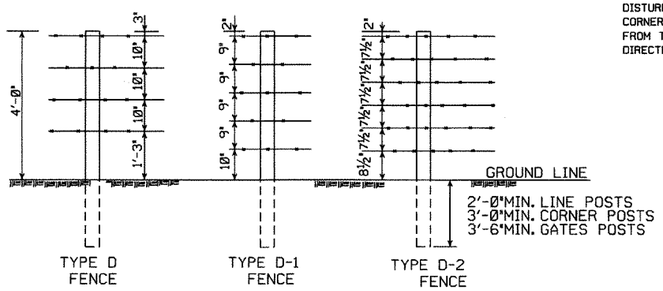
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

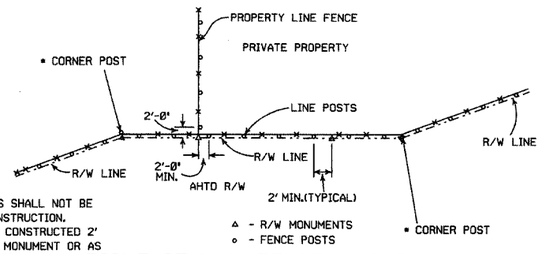
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE C FENCE (STEEL POSTS)

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

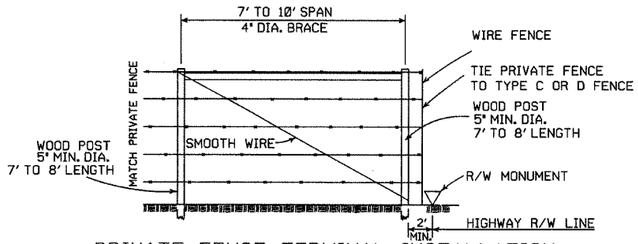


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.

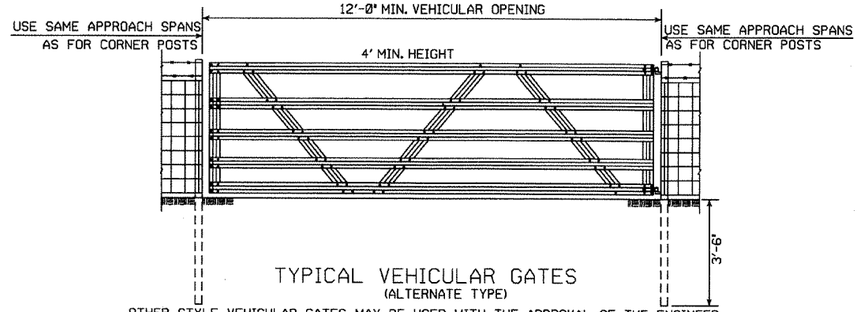


• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



PRIVATE FENCE TERMINAL INSTALLATION
WHERE EXISTING FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN IN TYPE C FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.



TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)

OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
THE METHOD OF SECURING GATE (LATCH AND/OR LOCK) SHALL MEET THE APPROVAL OF THE ENGINEER.

DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	700-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE C AND D

STANDARD DRAWING WF-4

RESHOT 3-5-93

366 ~~100~~

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			100	
JOB No.					

BAR LIST FOR VARIOUS SECTIONS OF BARREL

SECTION & BAR GROUP	LENGTHS OF SECTION	DEPTH OF COVER	CLEAR SPANS	CLEAR HEIGHT	'a' bars STRAIGHT: In Top and Bottom Slab of Barrel. 2 Add'l in Apron and Headwall - Each	'b' bars BENT - See Diagram below. In Bottom of Top Slab bent up over Division Walls - hooked. Alternate with 'a' and 'c' bars.	'b2' bars BENT - See Diagram below. In Top of Bottom Slab bent down under Division Walls - hooked. Alternate with 'a' and 'c' bars.	'c' bars STRAIGHT: In Top and Bottom Slab of Barrel. Alternate with 'b' and 'b2' bars.	'd' bars STRAIGHT: Longitudinal in Top Slab of Barrel	'd1' bars STRAIGHT: Longitudinal in Sidewalls and Division Walls.	'e' bars STRAIGHT: Longitudinal in Bottom Slab of Barrel	'f' bars STRAIGHT: Vertical in Sidewalls and Division Walls.
		D	S	H	Size / Spacing / Number Req'd 3:1 4:1 / Length	Spacing / Number Req'd 3:1 4:1 / Length / X / Y / Z	Spacing / Number Req'd 3:1 4:1 / Length / X / Y / Z	Size / Spacing / Number Req'd 3:1 4:1 / Length	Size / Spacing / No. Req'd / Length	Size / Spacing / No. Req'd / Length	Size / Spacing / No. Req'd / Length	Size / Spacing / Number Req'd 3:1 4:1 / Length
SECTION 'A' & BAR GROUP 'A'	SECTION 'A' 3:1 = 22'-0" 4:1 = 32'-0"	0' TO 10'-0"	7' @	5'	#5 12" 98 68 23'-1"	22 32 24'-6" 0'-6½" 3'-5½" 5'-7"	22 32 24'-6" 0'-6½" 3'-5" 5'-7"	44 64 15'-5"	30	30		12" 132 192 6'-1"
				6'	98 68 23'-5"	22 32 24'-10" 0'-6¼" 3'-6" 5'-8"	22 32 24'-10" 0'-6¼" 3'-6" 5'-8"	44 64 15'-6"	34	34		132 192 7'-1"
				7'	98 68 23'-8"	22 32 25'-1" 0'-6¼" 3'-7½" 5'-8½"	22 32 25'-1" 0'-6¼" 3'-7" 5'-8½"	44 64 15'-6"	38	38	12" 132 192 8'-1"	
				8'	98 68 23'-11"	22 32 25'-6" 0'-6½" 3'-8½" 5'-9"	22 32 25'-6" 0'-6½" 3'-8" 5'-9"	44 64 15'-7"	42	42		11" 154 210 9'-1"
				9'	98 68 24'-2"	22 32 25'-6" 0'-6½" 3'-8½" 5'-10"	22 32 25'-6" 0'-6½" 3'-8" 5'-10"	44 64 15'-10"	54	54		10'-3" 142 194 10'-1"
			9' @	6'	98 68 23'-8"	22 32 3'-1" 0'-5½" 4'-4½" 7'-2½"	22 32 3'-1" 0'-6" 4'-3½" 7'-2½"	44 64 19'-8"	40	40		12" 132 192 7'-6"
				7'	98 68 23'-8"	22 32 3'-1'5" 0'-5½" 4'-4½" 7'-2½"	22 32 3'-1" 0'-6" 4'-3½" 7'-2½"	44 64 19'-8"	48	48		10" 142 194 8'-6"
				8'	98 68 23'-9"	22 32 3'-1'6" 0'-5½" 4'-4½" 7'-3"	22 32 3'-1" 0'-6" 4'-3½" 7'-3"	44 64 19'-8"	56	56	12" 132 192 9'-4"	
				9'	98 68 23'-10"	22 32 3'-1'10" 0'-5½" 4'-4½" 7'-3½"	22 32 3'-1" 0'-6" 4'-3½" 7'-3½"	44 64 19'-9"	64	64		11" 154 210 9'-11"
				10'	98 68 24'-0"	22 32 3'-2" 0'-5½" 4'-4½" 7'-4"	22 32 3'-2" 0'-6" 4'-3½" 7'-4"	44 64 19'-10"	72	72	12" 132 192 10'-7"	
				11'	98 68 24'-1"	22 32 3'-2'4" 0'-5½" 4'-4½" 7'-4½"	22 32 3'-2'5" 0'-6" 4'-3½" 7'-4½"	44 64 20'-0"	80	80		10" 142 194 10'-6"
			11' @	6'	98 68 23'-9"	22 32 3'-7'10" 0'-7" 5'-2" 8'-3"	22 32 3'-7'11" 0'-7½" 5'-1" 8'-3"	44 64 23'-6"	36	36		12" 132 192 7'-10"
				7'	98 68 23'-9"	22 32 3'-7'10" 0'-7" 5'-2" 8'-3"	22 32 3'-7'11" 0'-7½" 5'-1" 8'-3"	44 64 23'-6"	42	42		10" 142 194 8'-7"
				8'	98 68 23'-9"	22 32 3'-7'10" 0'-7" 5'-2" 8'-3"	22 32 3'-7'11" 0'-7½" 5'-1" 8'-3"	44 64 23'-6"	48	48	12" 132 192 9'-3"	
				9'	98 68 24'-1"	22 32 3'-8'2" 0'-7" 5'-2" 8'-10"	22 32 3'-8'3" 0'-7½" 5'-2" 8'-10"	44 64 23'-10"	54	54		10'-3" 142 194 10'-1"
				10'	98 68 24'-5"	22 32 3'-8'6" 0'-7" 5'-2" 8'-11"	22 32 3'-8'7" 0'-7½" 5'-2" 8'-11"	44 64 24'-0"	60	60	12" 132 192 11'-0"	
				11'	98 68 24'-10"	22 32 3'-8'8" 0'-7" 5'-2" 9'-0"	22 32 3'-8'9" 0'-7½" 5'-3" 9'-0"	44 64 24'-0"	66	66		11" 154 210 12'-7"
				12'	98 68 24'-11"	22 32 3'-8'10" 0'-7" 5'-2" 9'-1"	22 32 3'-8'11" 0'-7½" 5'-3" 9'-1"	44 64 24'-0"	72	72		9" 180 250 13'-7"
				5'	22 32 23'-1"	11 16 24'-9" 0'-5" 3'-4" 5'-7"	11 16 24'-10" 0'-5½" 3'-3" 5'-7"	22 32 15'-9"	30	30		12" 66 96 6'-2"
				6'	22 32 23'-5"	11 16 25'-1" 0'-5" 3'-5" 5'-8"	11 16 25'-2" 0'-5½" 3'-4" 5'-8"	22 32 15'-6"	34	34		11" 72 108 7'-2"
				7'	22 32 23'-8"	11 16 25'-4" 0'-5" 3'-6" 5'-8½"	11 16 25'-5" 0'-5½" 3'-5" 5'-8½"	22 32 15'-8"	38	38		8" 66 96 8'-2"
				8'	22 32 23'-9"	11 16 25'-7" 0'-5" 3'-6" 5'-9"	11 16 25'-6" 0'-5½" 3'-5" 5'-9"	22 32 15'-8"	48	48		11" 72 102 9'-2"
				9'	22 32 24'-1"	11 16 25'-9" 0'-5" 3'-7" 5'-10"	11 16 25'-10" 0'-5½" 3'-6" 5'-10"	22 32 15'-10"	54	54		10'-2" 142 202 10'-2"
				6'	24 36 28'-8"	12 17 31'-7" 0'-6½" 4'-2½" 7'-2½"	12 17 31'-8" 0'-7½" 4'-1½" 7'-2½"	24 36 19'-8"	40	40		12" 66 96 7'-6"
				7'	24 36 28'-8"	12 17 31'-7" 0'-6½" 4'-2½" 7'-2½"	12 17 31'-8" 0'-7½" 4'-1½" 7'-2½"	24 36 19'-8"	46	46		11" 72 102 8'-6"
				8'	24 36 28'-9"	12 17 31'-8" 0'-6½" 4'-2½" 7'-2½"	12 17 31'-9" 0'-7½" 4'-1½" 7'-3"	24 36 19'-8"	52	52	12" 66 96 9'-4"	
				9'	24 36 28'-11"	12 17 31'-9" 0'-6½" 4'-2½" 7'-3"	12 17 31'-10" 0'-7½" 4'-1½" 7'-3"	24 36 19'-8"	58	58		11" 72 102 9'-11"
				10'	24 36 29'-2"	12 17 31'-10" 0'-6½" 4'-2½" 7'-3½"	12 17 31'-11" 0'-7½" 4'-1½" 7'-3½"	24 36 19'-9"	64	64		10" 142 202 10'-7"
				11'	24 36 29'-5"	12 17 31'-11" 0'-6½" 4'-2½" 7'-4"	12 17 32'-0" 0'-7½" 4'-1½" 7'-4"	24 36 19'-9"	70	70		10" 142 202 11'-3"
			11' @	6'	24 36 28'-8"	12 17 31'-7" 0'-6½" 4'-2½" 7'-2½"	12 17 31'-8" 0'-7½" 4'-1½" 7'-2½"	24 36 19'-8"	40	40		12" 66 96 7'-6"
				7'	24 36 28'-8"	12 17 31'-7" 0'-6½" 4'-2½" 7'-2½"	12 17 31'-8" 0'-7½" 4'-1½" 7'-2½"	24 36 19'-8"	46	46		11" 72 102 8'-6"
				8'	24 36 28'-9"	12 17 31'-7" 0'-6½" 4'-2½" 7'-2½"	12 17 31'-9" 0'-7½" 4'-1½" 7'-3"	24 36 19'-8"	52	52	12" 66 96 9'-4"	
				9'	24 36 28'-11"	12 17 31'-9" 0'-6½" 4'-2½" 7'-3"	12 17 31'-10" 0'-7½" 4'-1½" 7'-3"	24 36 19'-8"	58	58		11" 72 102 9'-11"
				10'	24 36 29'-2"	12 17 31'-10" 0'-6½" 4'-2½" 7'-3½"	12 17 31'-11" 0'-7½" 4'-1½" 7'-3½"	24 36 19'-9"	64	64		10" 142 202 10'-7"
				11'	24 36 29'-5"	12 17 31'-11" 0'-6½" 4'-2½" 7'-4"	12 17 32'-0" 0'-7½" 4'-1½" 7'-4"	24 36 19'-9"	70	70		10" 142 202 11'-3"
SECTION 'B' & BAR GROUP 'B'	SECTION 'B' 3:1 = 11'-0" 4:1 = 14'-0"	10'-0" TO 15'-0"	7' @	5'	#5 12" 22 32 23½"	11 16 24'-9" 0'-5" 3'-4" 5'-7"	11 16 24'-10" 0'-5½" 3'-3" 5'-7"	22 32 15'-9"	30	30		12" 66 96 6'-2"
				6'	22 32 23'-5"	11 16 25'-1" 0'-5" 3'-5" 5'-8"	11 16 25'-2" 0'-5½" 3'-4" 5'-8"	22 32 15'-6"	34	34		11" 72 108 7'-2"
				7'	22 32 23'-8"	11 16 25'-4" 0'-5" 3'-6" 5'-8½"	11 16 25'-5" 0'-5½" 3'-5" 5'-8½"	22 32 15'-8"	38	38		8" 66 96 8'-2"
				8'	22 32 23'-9"	11 16 25'-7" 0'-5" 3'-6" 5'-9"	11 16 25'-6" 0'-5½" 3'-5" 5'-9"	22 32 15'-8"	48	48		11" 72 102 9'-2"
				9'	22 32 24'-1"	11 16 25'-9" 0'-5" 3'-7" 5'-10"	11 16 25'-10" 0'-5½" 3'-6" 5'-10"	22 32 15'-10"	54	54		10'-2" 142 202 10'-2"
				6'	24 36 28'-8"	12 17 31'-7" 0'-6½" 4'-2½" 7'-2½"	12 17 31'-8" 0'-7½" 4'-1½" 7'-2½"	24 36 19'-8"	40	40		12" 66 96 7'-6"
				7'	24 36 28'-8"	12 17 31'-7" 0'-6½" 4'-2½" 7'-2½"	12 17 31'-8" 0'-7½" 4'-1½" 7'-2½"	24 36 19'-8"	46	46		11" 72 102 8'-6"
				8'	24 36 28'-9"	12 17 31'-7" 0'-6½" 4'-2½" 7'-2½"	12 17 31'-9" 0'-7½" 4'-1½" 7'-3"	24 36 19'-8"	52	52	12" 66 96 9'-4"	
				9'	24 36 28'-11"	12 17 31'-9" 0'-6½" 4'-2½" 7'-3"	12 17 31'-10" 0'-7½" 4'-1½" 7'-3"	24 36 19'-8"	58	58		11" 72 102 9'-11"
				10'	24 36 29'-2"	12 17 31'-10" 0'-6½" 4'-2½" 7'-3½"	12 17 31'-11" 0'-7½" 4'-1½" 7'-3½"	24 36 19'-9"	64	64		10" 142 202 10'-7"
				11'	24 36 29'-5"	12 17 31'-11" 0'-6½" 4'-2½" 7'-4"	12 17 32'-0" 0'-7½" 4'-1½" 7'-4"	24 36 19'-9"	70	70		10" 142 202 11'-3"
			11' @	6'	24 36 28'-8"	12 17 31'-7" 0'-6½" 4'-2½" 7'-2½"	12 17 31'-8" 0'-7½" 4'-1½" 7'-2½"	24 36 19'-8"	40	40		12" 66 96 7'-6"
				7'	24 36 28'-8"	12 17 31'-7" 0'-6½" 4'-2½" 7'-2½"	12 17 31'-8" 0'-7½" 4'-1½" 7'-2½"	24 36 19'-8"	46	46		11" 72 102 8'-6"
				8'	24 36 28'-9"	12 17 31'-7" 0'-6½" 4'-2½" 7'-2½"	12 17 31'-9" 0'-7½" 4'-1½" 7'-3"	24 36 19'-8"	52	52	12" 66 96 9'-4"	
				9'	24 36 28'-11"	12 17 31'-9" 0'-6½" 4'-2½" 7'-3"	12 17 31'-10" 0'-7½" 4'-1½" 7'-3"	24 36 19'-8"	58	58		11" 72 102 9'-11"
				10'	24 36 29'-2"	12 17 31'-10" 0'-6½" 4'-2½" 7'-3½"	12 17 31'-11" 0'-7½" 4'-1½" 7'-3½"	24 36 19'-9"	64	64		10" 142 202 10'-7"
				11'	24 36 29'-5"	12 17 31'-11" 0'-6½" 4'-2½" 7'-4"	12 17 32'-0" 0'-7½" 4'-1½" 7'-4"	24 36 19'-9"	70	70		10" 142 202 11'-3"
SECTION 'C' & BAR GROUP 'C'	SECTION 'C' 3:1 = 16'-0" 4:1 = 16'-0"	15'-0" TO 20'-0"	7' @	6'	24 36 23'-2"	12 17 24'-11" 0'-5½" 3'-2½" 5'-7½"	12 17 25'-0" 0'-6½" 3'-1½" 5'-7½"	24 36 15'-4"	34	34		12" 66 96 6'-4"
				7'	24 36 23'-5"	12 17 25'-2" 0'-5½" 3'-3" 5'-8"	12 17 25'-3" 0'-6½" 3'-2½" 5'-8"	24 36 15'-4"	38	38		11" 72 102 7'-1"
				8'	24 36 23'-8"	12 17 25'-5" 0'-5½" 3'-3½" 5'-8½"	12 17 25'-6" 0'-6½" 3'-3½" 5'-8½"	24 36 15'-8"	42	42	12" 66 96 7'-9"	
				9'	24 36 23'-9"	12 17 25'-7" 0'-5½" 3'-4" 5'-9"	12 17 25'-8" 0'-6½" 3'-3½" 5'-9"	24 36 15'-8"	48	48		11" 72 102 8'-5"
				10'	24 36 24'-0"	12 17 25'-10" 0'-5½" 3'-3½" 5'-10"	12 17 25'-11" 0'-6½" 3'-3½" 5'-10"	24 36 15'-10"	54	54		10" 142 202 9'-3"
			9' @	6'	24 36 23'-2"	12 17 24'-11" 0'-5½" 3'-2½" 5'-7½"	12 17 25'-0" 0'-6½" 3'-1½" 5'-7½"	24 36 15'-4"	34	34		12" 66 96 6'-4"
				7'	24 36 23'-5"	12 17 25'-2" 0'-5½" 3'-3" 5'-8"	12 17 25'-3" 0'-6½" 3'-2½" 5'-8"	24 36 15'-4"	38	38		11" 72 102 7'-1"
				8'	24 36 23'-8"	12 17 25'-5" 0'-5½" 3'-3½" 5'-8½"	12 17 25'-6" 0'-6½" 3'-3½" 5'-8½"	24 36 15'-8"	42	42	12" 66 96 7'-9"	
				9'	24 36 23'-9"	12 17 25'-7" 0'-5½" 3'-4" 5'-9"	12 17 25'-8" 0'-6½" 3'-3½" 5'-9"	24 36 15'-8"	48	48		11" 72 102 8'-5"
				10'	24 36 24'-0"	12 17 25'-10" 0'-5½" 3'-3½" 5'-10"	12 17 25'-11" 0'-6½" 3'-3½" 5'-10"	24 36 15'-10"	54	54		10" 142 202 9'-3"
			11' @	6'	24 36 23'-2"	12 17 24'-11" 0'-5½" 3'-2½" 5'-7½"	12 17 25'-0" 0'-6½" 3'-1½" 5'-7½"	24 36 15'-4"	34	34		12" 66 96 6'-4"
				7'	24 36 23'-5"	12 17 25'-2" 0'-5½" 3'-3" 5'-8"	12 17 25'-3" 0'-6½" 3'-2½" 5'-8"	24 36 15'-4"	38	38		11" 72 102 7'-1"
				8'	24 36 23'-8"	12 17 25'-5" 0'-5½" 3'-3½" 5'-8½"	12 17 25'-6" 0'-6½" 3'-3½" 5'-8½"	24 36 15'-8"	42	42	12" 66 96 7'-9"	
				9'	24 36 23'-9"	12 17 25'-7" 0'-5½" 3'-4" 5'-9"	12 17 25'-8" 0'-6½" 3'-3½" 5'-9"	24 36 15'-8"	48	48		11" 72 102 8'-5"
				10'	24 36 24'-0"	12 17 25'-10" 0'-5½" 3'-3½" 5'-10"	12 17 25'-11" 0'-6½" 3'-3½" 5'-10"	24 36 15'-10"	54	54		10" 142 202 9'-3"
SECTION 'D' & BAR GROUP 'D'	SECTION 'D' 3:1 = 16'-0" 4:1 = 16'-0"	20'-0" TO 25'-0"	7' @	5'	20 30 23'-2"	10 15 25'-3" 0'-6½" 3'-3½" 5'-7½"	10 15 25'-4" 0'-6½" 3'-3" 5'-7½"	20 30 15'-6"	30	30		12" 66 96 6'-5"
				6'	20 30 23'-5"	10 15 25'-6" 0'-6½" 3'-3½" 5'-8"	10 15 25'-7" 0'-6½" 3'-3½" 5'-8"	20 30 15'-6"	34	34		11" 72 102 7'-1"
				7'	20 30 23'-8"	10 15 25'-10" 0'-6½" 3'-3½" 5'-8½"	10 15 25'-11" 0'-6½" 3'-3½" 5'-8½"	20 30 15'-8"	38	38	12" 66 96 7'-9"	
				8'	20 30 23'-9"	10 15 25'-11" 0'-6½" 3'-3½" 5'-9"	10 15 26'-0" 0'-6½" 3'-3½" 5'-10"	20 30 15'-8"	42	42		11" 72 102 8'-5"
				9'	20 30 23'-11"	10 15 26'-1" 0'-6½" 3'-3½" 5'-10"	10 15 26'-2" 0'-6½" 3'-3½" 5'-10"	20 30 15'-10"	46	46		10" 142 202 9'-3"
				10'	20 30 24'-2"	10 15 26'-3" 0'-6½" 3'-3½" 5'-10"	10 15 26'-4" 0'-6½" 3'-3½" 5'-10"	20 30 16'-0"	50	50		10" 142 202 9'-10"
			9' @	6'	20 30 23'-2"	10 15 25'-3" 0'-6½" 3'-3½" 5'-7½"	10 15 25'-4" 0'-6½" 3'-3" 5'-7½"	20 30 15'-6"	30	30		12" 66 96 6'-5"
				7'	20 30 23'-5"	10 15 25'-6" 0'-6½" 3'-3½" 5'-8"	10 15 25'-7" 0'-6½" 3'-3½" 5'-8"	20 30 15'-6"	34	34		11" 72 102 7'-1"
				8'	20 30 23'-8"	10 15 25'-10" 0'-6½" 3'-3½" 5'-8½"	10 15 25'-11" 0'-6½" 3'-3½" 5'-8½"	20 30 15'-8"	38	38	12" 66 96 7'-9"	
				9'	20 30 23'-9"	10 15 25'-11" 0'-6½" 3'-3½" 5'-9"	10 15 26'-0" 0'-6½" 3'-3½" 5'-10"	20 30 15'-8"	42	42		11" 72 102 8'-5"
				10'	20 30 23'-11"	10 15 26'-1" 0'-6½" 3'-3½" 5'-10"	10 15 26'-2" 0'-6½" 3'-3½" 5'-10"	20 30 15'-10"	46	46		10" 142 202 9'-3"
			11' @	6'	20 30 23'-2"	10 15 25'-3" 0'-6½" 3'-3½" 5'-7½"	10 15 25'-4" 0'-6½" 3'-3" 5'-7½"	20 30 15'-6"	30	30		12" 66 96 6'-5"
				7'	20 30 23'-5"	10 15 25'-6" 0'-6½" 3'-3½" 5'-8"	10 15 25'-7" 0'-6½" 3'-3½" 5'-8"	20 30 15'-6"	34	34		11" 72 102 7'-1"
				8'	20 30 23'-8"	10 15 25'-10" 0'-6½" 3'-3½" 5'-8½"	10 15 25'-11" 0'-6½" 3'-3½" 5'-8½"	20 30 15'-8"	38	38	12" 66 96 7'-9"	
				9'	20 30 23'-9"	10 15 25'-11" 0'-6½" 3'-3½" 5'-9"	10 15 26'-0" 0'-6½" 3'-3½" 5'-10"	20 30 15'-8"	42	42		11" 72 102 8'-5"
				10'	20 30 23'-11"	10 15 26'-1" 0'-6½" 3'-3½" 5'-10"	10 15 26'-2" 0'-6½" 3'-3½" 5'-10"	20 30 15'-10"	46	46		10" 142 202 9'-3"
				11'	20 30 24'-2"	10 15 26'-3" 0'-6½" 3'-3½" 5'-10"	10 15 26'-4" 0'-6½" 3'-3½" 5'-10"	20 30 16'-0"	50	50		10" 142 202 9'-10"
SECTION 'E' & BAR GROUP 'E'	SECTION 'E' 3:1 = 16'-0" 4:1 = 16'-0"	25'-0" TO 30'-0"	7' @	5'	20 30 23'-2"	10 15 25'-3" 0'-6½" 3'-3½" 5'-7½"	10 15 25'-4" 0'-6½" 3'-3" 5'-7½"	20 30 15'-6"	30	30		12" 66 96 6'-5"
				6'	20 30 23'-5"	10 15 25'-6" 0'-6½" 3'-3½" 5'-8"	10 15 25'-7" 0'-6½" 3'-3½" 5'-8"	20 30 15'-6"	34	34		11" 72 102 7'-1"
				7'	20 30 23'-8"	10 15 25'-10" 0'-6½" 3'-3½" 5'-8½"	10 15 25'-11" 0'-6½" 3'-3½" 5'-8½"	20 30 15'-8"	38	38	12" 66 96 7'-9"	
				8'	20 30 23'-9"	10 15 25'-11" 0'-6½" 3'-3½" 5'-9"	10 15 26'-0" 0'-6½" 3'-3½" 5'-10"	20 30 15'-8"	42	42		11" 72 102 8'-5"
				9'	20 30 23'-11"	10 15 26'-1" 0'-6½" 3'-3½" 5'-10"	10 15 26'-2" 0'-6½" 3'-3½" 5'-10"	20 30 15'-10"	46	46		10" 142 202 9'-3"
				10'	20 30 24'-2"	10 15 26'-3" 0'-6½" 3'-3½" 5'-10"	10 15 26'-4" 0'-6½" 3'-3½" 5'-10"	20 30 16'-0"	50	50		10" 142 202 9'-10"
			9' @	6'	20 30 23'-2"	10 15 25'-3" 0'-6½" 3'-3½" 5'-7½"	10 15 25'-4" 0'-6½" 3'-3" 5'-7½"	20 30 15'-6"	30	30		12" 66 96 6'-5"
				7'	20 30 23'-5"	10 15 25'-6" 0'-6½" 3'-3½" 5'-8"	10 15 25'-7" 0'-6½" 3'-3½" 5'-8"	20 30 15'-6"	34	34		11" 72 102 7'-1"
				8'	20 30 23'-8"	10 15 25'-10" 0'-6½" 3'-3½" 5'-8½"	10 15 25'-11" 0'-6½" 3'-3½" 5'-8½"	20 30 15'-8"	38	38	12" 66 96 7'-9"	
				9'	20 30 23'-9"	10 15 25'-11" 0'-6½" 3'-3½" 5'-9"	10 15 26'-0" 0'-6½" 3'-3½" 5'-10"	20 30 15'-8"	42	42		11" 72 102 8'-5"
				10'	20 30 23'-11"	10 15 26'-1" 0'-6½" 3'-3½" 5'-10"	10 15 26'-2" 0'-6½" 3'-3½" 5'-10"	20 30 15'-10"	46	46		10" 142 202 9'-3"
				11'	20 30 24'-2"	10 15 26'-3" 0'-6½" 3'-3½" 5'-10"	10 15 26'-4" 0'-6½" 3'-3½" 5'-10"	20 30 16'-0"	50	50		10" 142 202 9'-10"
			11' @	6'	20 30 23'-2"	10 15 25'-3" 0'-6½" 3'-3½" 5'-7½"	10 15 25'-4" 0'-6½" 3'-3" 5'-7½"	20 30 15'-6"	30	30		12" 66 96 6'-5"
				7'	20 30 23'-5"	10 15 25'-6" 0'-6½" 3'-3½" 5'-8"	10 15 25'-7" 0'-6½" 3'-3½" 5'-8"	20 30 15'-6"	34	34		11" 72 102 7'-1"
				8'	20 30 23'-8"	10 15 25'-10" 0'-6½" 3'-3½" 5'-8½"	10 15 25'-11" 0'-6½" 3'-3½" 5'-8½"	20 30 15'-8"	38	38	12" 66 96 7'-9"	
				9'	20 30 23'-9"	10 15 25'-11" 0'-6½" 3'-3½" 5'-9"	10 15 26'-0" 0'-6½" 3'-3½" 5'-10"	20 30 15'-8"	42	42		11" 72 102 8'-5"
				10'	20 30 23'-11"	10 15 26'-1" 0'-6½" 3'-3½" 5'-10"	10 15 26'-2" 0'-6½" 3'-3½" 5'-10"	20 30 15'-10"	46	46		10" 142 202 9'-3"
				11'	20 30 24'-2"	10 15 26'-3" 0'-6½" 3'-3½" 5'-10"	10 15 26'-4" 0'-6½" 3'-3½" 5'-10"	20 30 16'-0"	50	50		10" 142 202 9'-10"

NOTE:- Bars for each Section to be marked with the Section letter, thus for Section B, the bars should be marked B6, B8, B10, B12, B14, B16 and B18.

Drawn by:- W.C.H. 3-28-63 Checked by:- TEMS 6-17-63
Quantities by:- W.C.H. 5-6-63 Checked by:- TEMS 6-17-63

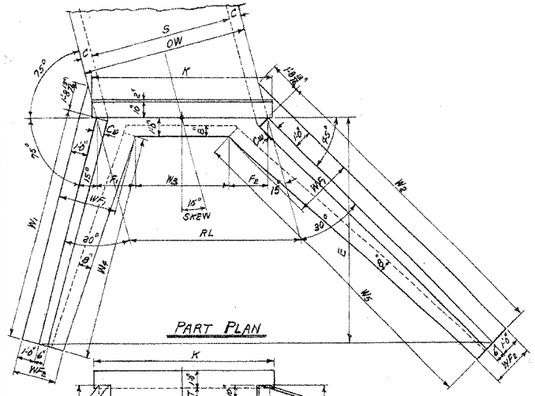
DIMENSIONS

MAX. DESIGN DEPTH OF COVER	CLEAR SPANS	BARREL DIMENSIONS: CLEAR HEIGHT	SQ.FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF DIVISION WALL	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT
D	S	H	A	OW	T	C	M	B	OH
SECTION 'A' - 10'-0"	7' @	5'	105	23'-6"	7½"	6"	8"	6"	6'-3½"
		6'	126	23'-8"		7"	9"		7'-3½"
		7'	147	23'-11"		7½"	10"		8'-3½"
		8'	168	24'-2"		8"	10"		9'-3½"
		9'	189	24'-6"		9"	11"		10'-3½"
	9' @	6'	162	29'-11"	7½"	7½"	10"	9½"	7'-7"
		7'	189	29'-11"		7½"	10"		8'-7"
		8'	216	30'-0"		8"	10"		9'-7"
		9'	243	30'-1"		9"	11"		10'-7"
		10'	270	30'-2"		10"	12"		11'-7"
		11'	297	30'-4"		11"	12"		12'-7"
	11' @	6'	198	36'-0"		8"	10"	11½"	7'-10"
		7'	231	36'-0"		8"	10"		8'-10"
		8'	264	36'-0"		8"	10"		9'-10"
		9'	297	36'-0"		9"	11"		10'-10"
		10'	330	36'-2"		10"	12"		11'-10"
		11'	363	36'-10"		11"	12"		12'-10"
SECTION 'B' - 15'-0"	7' @	6'	162	29'-11"	7½"	7½"	10"	8½"	7'-6"
		7'	189	29'-11"		7½"	10"		8'-6"
		8'	216	30'-0"		8"	10"		9'-6"
		9'	243	30'-1"		9"	11"		10'-6"
		10'	270	30'-2"		10"	12"		11'-6"
		11'	297	30'-4"		11"	12"		12'-6"
	9' @	6'	198	36'-0"		8"	10"	10½"	8'-9"
		7'	231	36'-0"		8"	10"		9'-9"
		8'	264	36'-0"		8"	10"		10'-9"
		9'	297	36'-1"		9"	11"		11'-9"
		10'	330	36'-3"		10"	12"		12'-9"
		11'	363	36'-10"		11"	12"		13'-9"
	11' @	6'	198	36'-0"		8"	10"	12½"	9'-0"
		7'	231	36'-0"		8"	10"		10'-0"
		8'	264	36'-0"		8"	10"		11'-0"
		9'	297	36'-1"		9"	11"		12'-0"
		10'	330	36'-3"		10"	12"		13'-0"
		11'	363	36'-10"		11"	12"		14'-0"
SECTION 'C' - 20'-0"	7' @	6'	198	36'-0"		8"	10"	13½"	9'-3"
		7'	231	36'-0"		8"	10"		10'-3"
		8'	264	36'-0"		8"	10"		11'-3"
		9'	297	36'-1"		9"	11"		12'-3"
		10'	330	36'-3"		10"	12"		13'-3"
		11'	363	36'-10"		11"	12"		14'-3"
	9' @	6'	198	36'-0"		8"	10"	14½"	9'-6"
		7'	231	36'-0"		8"	10"		10'-6"
		8'	264	36'-0"		8"	10"		11'-6"
		9'	297	36'-1"		9"	11"		12'-6"
		10'	330	36'-3"		10"	12"		13'-6"
		11'	363	37'-0"		11"	12"		14'-6"
	11' @	6'	198	36'-0"		8"	10"	15½"	9'-9"
		7'	231	36'-1"		8"	10"		10'-9"
		8'	264	36'-3"		8"	10"		11'-9"
		9'	297	36'-4"		9"	11"		12'-9"
		10'	330	36'-6"		10"	12"		13'-9"
		11'	363	37'-3"		11"	12"		14'-9"
SECTION 'D' - 25'-0"	7' @	5'	105	23'-5"	6½"	6"	8"	6"	6'-0½"
		6'	126	23'-8"		7"	9"		7'-0½"
		7'	147	24'-0"		7½"	10"		8'-0½"
		8'	168	24'-3"		8"	10"		9'-0½"
		9'	189	24'-5"		9"	11"		10'-0½"
	9' @	6'	162	30'-0"		8"	10"	9½"	7'-4"
		7'	189	30'-1"		8½"	10"		8'-4"
		8'	216	30'-2"		9½"	10"		9'-4"
		9'	243	30'-4"		10"	11"		10'-4"
		10'	270	30'-10"		11"

Reshot 3-5-93

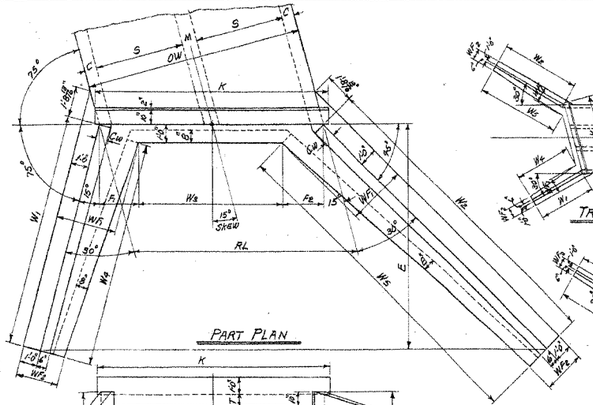
172

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			101	
JOB No.					



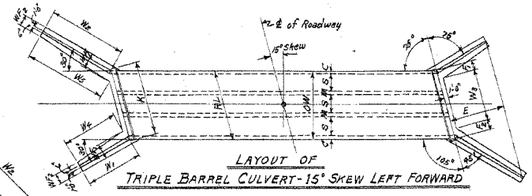
SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.

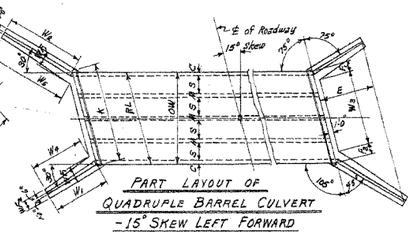


DOUBLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

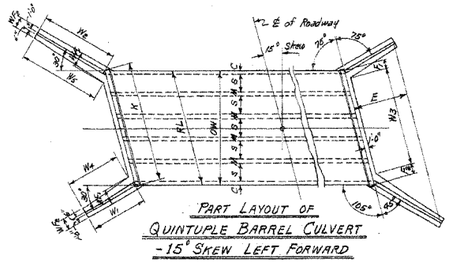
Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.



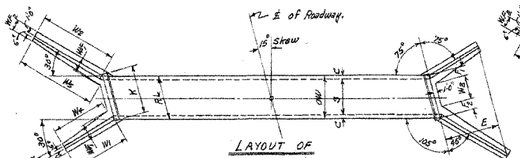
LAYOUT OF TRIPLE BARREL CULVERT - 15° SKEW LEFT FORWARD



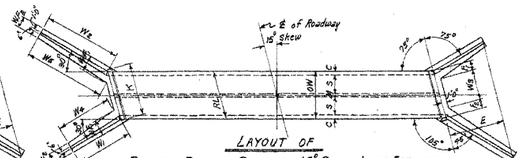
PART LAYOUT OF QUADRUPLE BARREL CULVERT - 15° SKEW LEFT FORWARD



PART LAYOUT OF QUINTUPLE BARREL CULVERT - 15° SKEW LEFT FORWARD

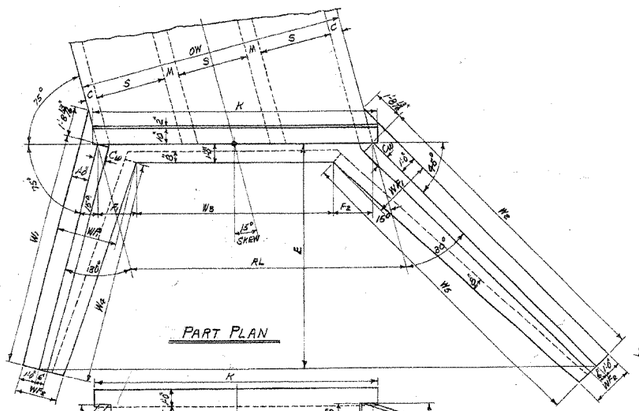


LAYOUT OF SINGLE BARREL CULVERT - 15° SKEW LEFT FORWARD



LAYOUT OF DOUBLE BARREL CULVERT - 15° SKEW LEFT FORWARD

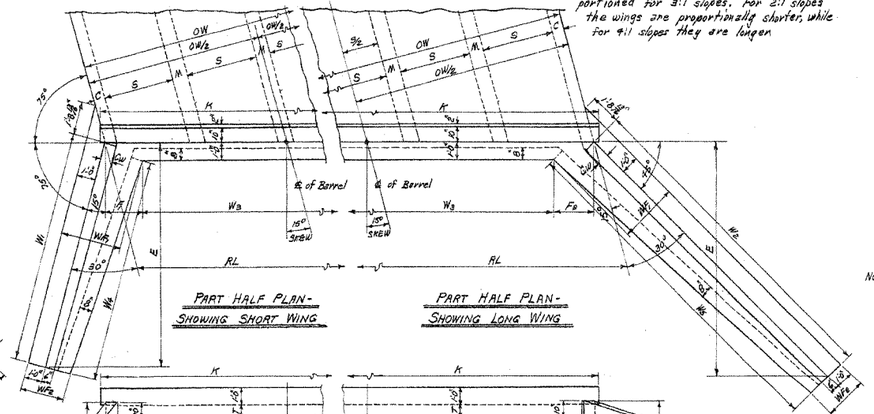
NOTE:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.



TRIPLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Layout at top center of sheet.

NOTE:- Plans and Elevations are not to scale.



QUADRUPLE BARREL CULVERT - 15° SKEW RT. FWD.

Details of Culvert with 15° Skew Left Forward is reversed, see Layout at above center.

QUINTUPLE BARREL CULVERT - 15° SKEW RT. FWD.

Details of Culvert with 15° Skew Left Forward is reversed, see Layout above.

NOTE:- Plans and Elevations are not to scale.

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION W_3

$RL = OW \times 1.035276$ — $K = RL + (6\frac{1}{2}")$ — $W_3 = RL - (F_1 + F_2)$

USE WITH DRAWING NO. W-X152-1, W-X153-1 OR W-X154-1. (FOR H = 8'-0" OR LESS)

CLEAR SPAN S	CLEAR HEIGHT H	SUM OF FOOTING DIMENSIONS $F_1 \& F_2$	SINGLE BARREL CULVERT OW	SINGLE BARREL CULVERT RL	SINGLE BARREL CULVERT K	SINGLE BARREL CULVERT W_3	DOUBLE BARREL CULVERT OW	DOUBLE BARREL CULVERT RL	DOUBLE BARREL CULVERT K	DOUBLE BARREL CULVERT W_3	TRIPLE BARREL CULVERT OW	TRIPLE BARREL CULVERT RL	TRIPLE BARREL CULVERT K	TRIPLE BARREL CULVERT W_3	QUADRUPLE BARREL CULVERT OW	QUADRUPLE BARREL CULVERT RL	QUADRUPLE BARREL CULVERT K	QUADRUPLE BARREL CULVERT W_3	QUINTUPLE BARREL CULVERT OW	QUINTUPLE BARREL CULVERT RL	QUINTUPLE BARREL CULVERT K	QUINTUPLE BARREL CULVERT W_3
4'	2'-0"	5'-0"	5'-2⅝"	5'-8⅝"	3'-2⅝"	9'-8"	14'-0"	10'-6⅝"	8'-0"	14'-6"	14'-10"	15'-4½"	12'-10"	19'-0"	19'-8"	20'-2½"	17'-8"	23'-8"	24'-6"	25'-0⅝"	22'-6"	
	2'-9⅝"	5'-10"	"	"	2'-9⅝"	9'-8"	"	"	7'-2⅝"	16'-4"	"	"	13'-6"	19'-0"	"	"	16'-0⅝"	23'-8"	"	"	21'-8⅝"	
	3'-7⅝"	5'-0"	"	"	1'-6⅝"	9'-8"	"	"	6'-4⅝"	14'-8"	"	"	11'-2⅝"	19'-0"	"	"	14'-0⅝"	23'-8"	"	"	20'-10⅝"	
	4'-5⅝"	5'-0"	"	"	0'-5⅝"	9'-8"	"	"	5'-6⅝"	16'-8"	"	"	10'-5⅝"	19'-0"	"	"	13'-2⅝"	23'-8"	"	"	20'-0⅝"	
	5'-3⅝"	5'-2"	5'-9⅝"	5'-10⅝"	0'-1"	9'-11"	10'-3⅝"	10'-3⅝"	5'-0"	16'-8"	15'-2⅝"	15'-8⅝"	9'-11"	19'-5"	20'-1⅞"	20'-7⅝"	14'-10"	24'-2"	25'-0⅝"	25'-6⅝"	19'-8"	
5'	2'-9⅝"	6'-0"	6'-2⅝"	6'-3"	3'-9⅝"	11'-8"	12'-1"	12'-7½"	9'-3⅛"	17'-4"	17'-11⅝"	18'-5⅛"	15'-1⅝"	23'-0"	23'-9⅛"	24'-1⅝"	21'-0"	28'-8"	29'-6⅛"	30'-0⅝"	26'-10⅛"	
	3'-7⅝"	6'-0"	"	"	2'-7"	11'-8"	"	"	8'-5⅝"	17'-4"	"	"	14'-3⅝"	23'-0"	"	"	20'-2⅝"	28'-8"	"	"	26'-0⅛"	
	4'-5⅝"	6'-0"	"	"	1'-9⅝"	11'-8"	"	"	7'-7⅛"	17'-4"	"	"	13'-6"	23'-0"	"	"	19'-4⅛"	28'-8"	"	"	25'-2⅝"	
	5'-3⅝"	6'-2"	6'-4⅝"	6'-11⅛"	1'-1⅝"	11'-11"	12'-9"	12'-10⅝"	7'-0⅛"	17'-8"	18'-3½"	18'-10"	13'-10⅝"	23'-5"	24'-2⅞"	24'-3⅛"	18'-11⅝"	29'-2"	30'-2⅝"	30'-8⅝"	24'-11⅛"	
	6'-3⅜"	6'-8"	6'-5⅝"	7'-0⅜"	Ⓐ 0"	12'-1"	12'-6⅝"	13'-0⅝"	6'-0⅝"	17'-11"	18'-6⅝"	19'-1"	12'-10⅝"	23'-9"	24'-7"	25'-1½"	18'-1⅛"	29'-7"	30'-7⅛"	31'-2"	24'-1⅝"	
6'	2'-9⅝"	7'-0"	7'-1"	7'-3⅝"	4'-1⅝"	13'-8"	14'-1⅝"	14'-8⅝"	11'-4"	20'-4"	21'-0⅝"	21'-7"	18'-2⅝"	27'-0"	27'-11⅜"	28'-5⅝"	25'-1⅜"	33'-8"	34'-6⅝"	35'-1⅛"	32'-0⅝"	
	4'-3⅞"	7'-0"	"	"	3'-7⅝"	13'-8"	"	"	10'-6⅝"	20'-4"	"	"	17'-5"	27'-0"	"	"	23'-6"	33'-8"	"	"	31'-2⅝"	
	5'-3⅝"	7'-0"	"	"	2'-9⅝"	13'-8"	"	"	9'-8⅝"	20'-4"	"	"	16'-7⅝"	27'-0"	"	"	23'-6"	33'-8"	"	"	30'-10⅝"	
	6'-3⅜"	7'-8"	7'-5"	7'-11⅝"	2'-1⅝"	13'-11"	14'-5"	14'-11⅝"	9'-1⅝"	20'-8"	21'-4⅝"	21'-11⅝"	16'-1⅞"	27'-5"	28'-4⅝"	28'-11"	23'-1⅝"	34'-2"	35'-1½"	35'-11"	30'-1⅛"	
	7'-3⅝"	7'-8"	7'-6"	8'-0⅝"	1'-0⅝"	14'-1"	14'-7"	15'-1⅝"	8'-1⅛"	20'-11"	21'-7⅝"	22'-2⅛"	15'-2"	27'-9"	28'-8½"	29'-3⅛"	22'-3"	34'-7"	35'-6½"	36'-0"	29'-1⅜"	
	8'-3⅝"	7'-8"	7'-7⅞"	8'-1⅝"	Ⓐ 0"	14'-2"	14'-8"	15'-2⅝"	6'-11⅞"	21'-0"	21'-8⅝"	22'-3⅛"	14'-0⅝"	27'-10"	28'-9⅝"	29'-4⅝"	21'-1⅛"	34'-8"	35'-8"	36'-5"	28'-2"	
7'	3'-7⅝"	8'-0"	8'-3⅝"	8'-9⅝"	4'-7⅝"	15'-9"	16'-3½"	16'-9"	12'-7"	23'-0"	24'-1⅝"	24'-10⅝"	20'-6"	31'-0"	32'-1⅝"	32'-10"	26'-5⅝"	38'-8"	40'-0⅝"	40'-9⅝"	36'-4⅝"	
	4'-5⅝"	8'-0"	"	"	3'-10"	15'-8"	"	"	11'-9⅝"	23'-0"	"	"	19'-8½"	31'-0"	"	"	25'-7⅝"	38'-8"	"	"	35'-2"	
	5'-3⅝"	8'-2"	8'-5⅝"	9'-0"	3'-2⅝"	15'-11"	16'-5⅝"	17'-0⅛"	11'-2⅝"	23'-3"	24'-4"	25'-0⅛"	19'-2⅝"	31'-5"	32'-6⅛"	33'-0⅝"	27'-3"	38'-11"	40'-3⅝"	41'-1"	35'-3⅝"	
	6'-3⅜"	8'-3"	8'-6⅝"	9'-10"	2'-0⅝"	16'-1"	16'-7⅝"	17'-3⅝"	10'-1"	23'-6"	24'-7⅝"	25'-3⅝"	18'-3⅝"	31'-9"	32'-10⅝"	33'-5"	27'-5"	39'-2"	40'-6⅝"	41'-4⅝"	35'-6"	
	7'-3⅝"	8'-3"	8'-6⅝"	9'-11"	2'-0⅝"	16'-2"	16'-8⅝"	17'-3⅝"	9'-10⅝"	23'-11"	24'-10⅝"	25'-5⅛"	17'-10⅝"	31'-10"	33'-0⅛"	33'-6"	25'-8⅜"	39'-5"	40'-10⅝"	41'-7⅝"	33'-10⅝"	
	8'-3⅝"	8'-4"	8'-7½"	9'-11⅝"	2'-1⅛"	16'-2"	16'-8⅝"	17'-3⅝"	9'-10⅝"	24'-1"	25'-0⅛"	25'-6⅝"	17'-7⅛"	32'-0"	33'-1⅝"	33'-7⅝"	25'-5⅝"	39'-8"	41'-0⅝"	41'-9⅝"	33'-7⅛"	
8'	3'-7⅝"	9'-0"	9'-3⅝"	9'-11⅝"	5'-5⅝"	17'-8"	18'-2⅝"	18'-10"	14'-8"	26'-4"	27'-3⅜"	27'-9⅝"	23'-7⅝"	35'-0"	36'-2⅝"	36'-9⅜"	32'-1⅝"	43'-8"	45'-2⅝"	45'-9"	41'-7"	
	4'-5⅝"	9'-2"	9'-5⅝"	10'-0⅝"	5'-0⅛"	17'-11"	18'-5⅝"	19'-1"	14'-1⅛"	26'-8"	27'-7⅝"	28'-1⅝"	23'-2"	35'-5"	36'-8"	37'-2⅝"	32'-2⅝"	44'-2"	45'-8⅝"	46'-3⅝"	41'-3⅛"	
	5'-3⅝"	9'-2"	"	"	4'-2⅝"	17'-11"	"	"	13'-3⅝"	26'-8"	"	"	22'-1⅝"	36'-5"	"	"	31'-7⅝"	44'-2"	"	"	40'-3⅝"	
	6'-3⅜"	9'-3"	9'-6"	10'-1⅛"	3'-1"	18'-1"	18'-7⅝"	19'-3"	15'-0⅝"	26'-11"	27'-10⅞"	28'-5⅝"	23'-5⅝"	36'-8"	37'-10⅞"	38'-6"	33'-0⅝"	44'-7"	46'-1⅝"	46'-8⅝"	41'-6⅝"	
	7'-3⅝"	9'-4"	9'-8"	10'-2⅝"	2'-0⅝"	18'-2"	18'-8⅝"	19'-3⅝"	11'-1⅝"	27'-0"	27'-11⅝"	28'-5⅝"	20'-2⅝"	36'-11"	38'-1⅝"	38'-7⅝"	29'-10⅝"	44'-10"	46'-3⅝"	46'-10⅝"	38'-6⅝"	
	8'-3⅝"	9'-4"	9'-8"	10'-3⅝"	1'-1⅛"	18'-2"	18'-8⅝"	19'-3⅝"	11'-1⅝"	27'-0"	27'-11⅝"	28'-5⅝"	20'-2⅝"	37'-0"	38'-2⅛"	38'-8⅝"	29'-11⅝"	45'-0"	46'-5⅛"	46'-10⅝"	38'-6⅝"	
9'	5'-3⅝"	10'-2"	10'-6⅝"	11'-0⅝"	6'-1"	19'-1"	20'-0⅞"	21'-2"	16'-2"	29'-8"	30'-8½"	31'-3"	26'-3⅝"	39'-5"	40'-7⅝"	41'-2⅝"	36'-4½"	49'-2"	50'-10⅝"	51'-5⅛"	46'-5½"	
	6'-3⅜"	10'-3"	10'-7⅝"	11'-1⅛"	5'-0⅝"	20'-1"	20'-9½"	21'-9"	15'-6⅝"	29'-11"	30'-11⅝"	31'-6"	25'-8⅝"	39'-9"	41'-1⅛"	41'-8⅝"	35'-10⅝"	49'-7"	51'-4"	51'-10⅝"	46'-10⅝"	
	7'-3⅝"	10'-3"	"	"	4'-1⅝"	20'-1"	"	"	14'-10⅝"	29'-11"	"	"	24'-5⅝"	39'-9"	"	"	34'-8"	49'-7"	"	"	44'-10"	
	8'-3⅝"	10'-4"	10'-8"	11'-2⅝"	3'-1⅛"	20'-2"	20'-10⅛"	21'-5"	13'-2"	30'-0"	31'-0⅝"	31'-7½"	28'-0⅝"	39'-10"	41'-2⅝"	41'-9⅝"	33'-6⅝"	49'-8"	51'-5"	51'-11"	43'-3⅝"	
10'	5'-3⅝"	11'-2"	11'-6⅝"	12'-1⅛"	7'-1⅝"	21'-1"	22'-0⅝"	23'-2⅝"	18'-3"	32'-8"	33'-9⅜"	34'-4⅝"	29'-9⅝"	43'-5"	44'-11⅝"	45'-6"	40'-1⅝"	54'-2"	56'-1"	56'-7⅝"	51'-7½"	
	6'-3⅜"	11'-3"	11'-7⅝"	12'-2⅝"	6'-1⅝"	22'-1"	22'-10⅝"	23'-9⅝"	17'-7⅝"	33'-1"	34'-1"	34'-7½"	29'-1⅜"	43'-9"	45'-3⅜"	45'-10"	40'-0⅝"	54'-7"	56'-6"	57'-0⅝"	51'-6"	
	7'-3⅝"	11'-3"	"	"	5'-1⅜"	22'-1"	"	"	16'-6⅝"	33'-1"	"	"	28'-1⅞"	43'-9"	"	"	38'-9⅝"	54'-7"	"	"	50'-10⅝"	
	8'-3⅝"	11'-5"	11'-8⅝"	12'-3⅝"	4'-0⅛"	22'-2"	22'-10⅝"	23'-5⅝"	15'-2⅝"	33'-0"	34'-0"	34'-6"	27'-7"	43'-10"	45'-3⅝"	45'-9⅝"	37'-8"	54'-8"	56'-6⅞"	57'-1⅛"	48'-10⅝"	
11'	6'-3⅜"	12'-4"	12'-8"	13'-2⅝"	7'-2⅝"	24'-2"	25'-0⅛"	25'-6⅝"	19'-3"	36'-0"	37'-3⅛"	37'-9⅝"	32'-0"	47'-10"	49'-4⅛"	50'-0"	44'-4⅝"	—	—	—	—	
	7'-3⅝"	12'-4"	"	"	6'-3⅝"	24'-2"	"	"	18'-4⅝"	36'-0"	"	"	30'-9⅝"	47'-10"	"	"	43'-0⅝"	—	—	—	—	
	8'-3⅝"	12'-4"	"	"	5'-0⅝"	24'-2"	"	"	17'-5⅝"	36'-0"	"	"	29'-6⅝"	47'-10"	"	"	41'-9⅝"	—	—	—	—	
12'	6'-3⅜"	13'-4"	13'-8⅝"	14'-3⅛"	8'-6⅝"	26'-2"	27'-1"	27'-7⅝"	21'-10"	39'-0"	40'-4⅝"	41'-0⅛"	35'-1⅝"	51'-10"	53'-6"	54'-2⅝"	48'-9⅛"	—	—	—	—	
	7'-3⅝"	13'-4"	"	"	7'-3⅝"	26'-2"	"	"	20'-7⅛"	39'-0"	"	"	32'-10⅝"	51'-10"	"	"	46'-5⅛"	—	—	—	—	
	8'-3⅝"	13'-4"	"	"	6'-1"	26'-2"	"	"	19'-8⅝"	39'-0"	"	"	32'-8"	51'-10"	"	"	45'-11⅝"	—	—	—	—	
7'																						
8'	8'-11⅝"	8'-6"	8'-10⅝"	9'-4"	Ⓐ 0"	16'-5"	17'-0"	17'-6⅝"	8'-0⅝"	24'-9"	25'-8½"	26'-0⅝"	16'-3"	32'-8"	33'-10⅝"	33'-11"	29'-5⅝"	40'-6"	41'-7"	42'-1⅝"	32'-7⅝"	
9'	8'-11⅝"	9'-6"	9'-10"	10'-3⅝"	0'-10⅝"	16'-5"	17'-0"	17'-6⅝"	10'-1⅝"	25'-1"	26'-3⅝"	26'-10"	19'-4⅝"	34'-3"	35'-7⅝"	35'-8"	31'-2⅝"	45'-2"	46'-5⅜"	47'-0⅝"	37'-3⅝"	
10'	10'-2"	9'-8"	10'-0⅝"	10'-6⅝"	Ⓐ 0"	16'-8"	17'-3⅜"	17'-10⅝"	9'-2"	25'-5"	26'-7⅝"	27'-2⅝"	19'-5⅝"	34'-8"	36'-0⅝"	36'-1½"	31'-6⅝"	45'-8"	47'-0⅜"	47'-6⅜"	37'-7½"	
9'	8'-11⅝"	10'-6"	10'-10"	11'-5"	1'-11⅝"	20'-5"	21'-4⅝"	21'-8½"	12'-8½"	30'-6"	31'-6⅝"	31'-11⅝"	22'-5½"	40'-3"	41'-8"	42'-2½"	32'-8⅝"	50'-2"	51'-8"	52'-5⅝"	43'-0"	
10'	10'-2"	10'-8"	11'-0⅝"	11'-7"	0'-10⅝"	20'-8"	21'-7⅝"	21'-11⅝"	11'-2⅝"	30'-8"	31'-9"	32'-1⅝"	23'-1"	40'-5"	42'-1⅛"	42'-7⅝"	31'-11⅝"	50'-8"	52'-3⅝"	53'-0"	42'-3⅝"	
11'	11'-0⅝"	10'-10"	11'-2⅝"	11'-9"	Ⓐ 0"	20'-10"	21'-6⅝"	22'-1⅝"	10'-2⅝"	30'-10"	31'-11"	32'-5⅝"	20'-6⅝"	40'-10"	42'-3⅜"	42'-9⅝"	30'-10⅝"	50'-10"	52'-7½"	53'-3"	41'-8⅝"	
10'	8'-11⅝"	11'-6"	11'-10⅝"	12'-5⅝"	2'-11⅝"	22'-5"	23'-2⅝"	23'-9"	14'-3⅝"	33'-4"	34'-6⅝"	35'-0⅝"	25'-10⅝"	44'-9"	45'-9⅜"	46'-4⅝"	36'-10⅝"	55'-2"	57'-1⅜"	57'-7⅜"	46'-2"	
11'	10'-2"	11'-8"	12'-1"	12'-7⅝"	1'-11"	22'-8"	23'-5⅝"	24'-0"	13'-8⅝"	33'-8"	34'-10⅝"	35'-5⅜"	26'-4⅝"	44'-8"	46'-1⅝"	46'-9¼"	36'-1"	55'-8"	57'-7⅝"	58'-1⅝"	47'-1⅝"	
12'	11'-0⅝"	11'-10"	12'-2"	12'-9⅝"	0'-10⅝"	22'-10"	23'-7⅝"	24'-2"	13'-10⅝"	33'-10"	35'-0⅝"	35'-6⅝"	26'-6⅝"	44'-10"	46'-3⅞"	46'-11⅛"	36'-3⅝"	55'-10"	57'-10⅛"	58'-3⅝"	47'-3⅝"	
9'	8'-11⅝"	12'-6"	13'-1⅛"	14'-0⅝"	5'-0⅝"	26'-5"	27'-6⅝"	27'-10⅞"	18'-5"	39'-6"	40'-8⅝"	41'-1⅜"	31'-3½"	52'-3"	54'-1⅞"	54'-7½"	45'-7⅛"	—	—	—	—	
10'	10'-2"	13'-8"	14'-1⅝"	14'-10⅝"	3'-10⅝"	26'-8"	27'-10⅝"	28'-1⅝"	17'-5⅝"	39'-8"	41'-0⅜"	41'-5⅞"	30'-10⅝"	52'-8"	54'-6⅝"	55'-0⅝"	44'-9⅝"	—	—	—	—	
11'	11'-0⅝"	13'-10"	14'-3⅝"	14'-10⅝"	2'-11⅝"	26'-10"	27'-10⅝"	28'-3⅝"	16'-8⅝"	39'-10"	41'-2⅝"	41'-8¼"	29'-10⅝"	52'-10"	54'-8⅝"	55'-2⅝"	43'-11⅝"	—	—	—	—	
12'	12'-7⅝"	14'-0"	14'-5⅜"	15'-0⅝"	1'-10⅝"	27'-0"	27'-10⅝"	28'-5"	15'-9"	40'-0"	41'-4⅜"	41'-11⅛"	28'-9⅜"	53'-0"	54'-10⅝"	55'-4⅜"	43'-1"	—	—	—	—	

Ⓐ *Special case for these boxes, See Detail "A" and Table "A" for revised values of F_1, F_2, W_4 and W_5, when apron width is more than 1'-0 and W_3 = 0. For Details "A" and Tables "A" for each slope, see Drawing Nos. W-X152-1, W-X152-2, or W-X153-1, W-X153-2, or W-X154-1, W-X154-2.*

NOTE:- This drawing to be used in conjunction with Standard Wing Drawings for 15° Skews for each slope as listed below.

2:1 Slopes	3:1 Slopes	4:1 Slopes
W-X152-1 or W-X152-2	W-X153-1 or W-X153-2	W-X154-1 or W-X154-2.

This drawing to be used in conjunction with Std. Barrel Sections, Drawing Nos.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-115X-0	R-215X-0	R-315X-0	R-415X-0	R-515X-0
R-115X-1	R-215X-1	R-315X-1	R-415X-1	R-515X-1
	R-215X-2	R-315X-2		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 15° SKEW

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

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

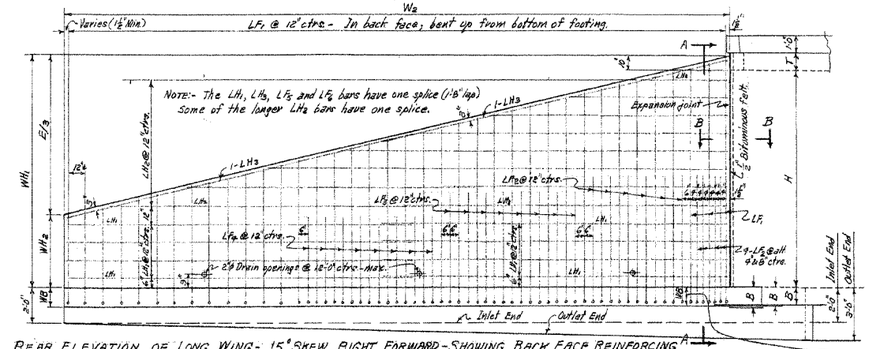
STANDARD DRAWING NO. W-X15

Designed by:- W.C.H. 5-22-63 — Checked by:- J.E.M. 6-20-63
Traced by:- W.C.H. 6-13-63 — Checked by:-
Quantities by:-

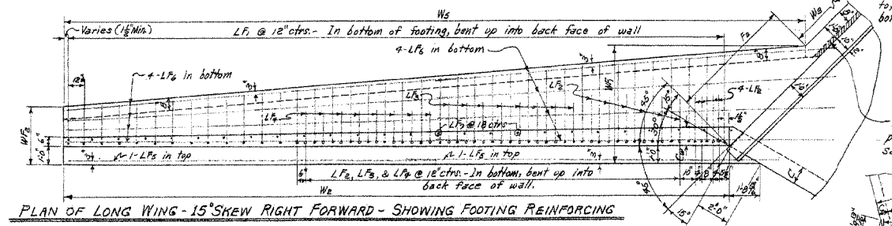
Reshot 3-8-93

393 ~~177~~

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			102	
JOB No.					

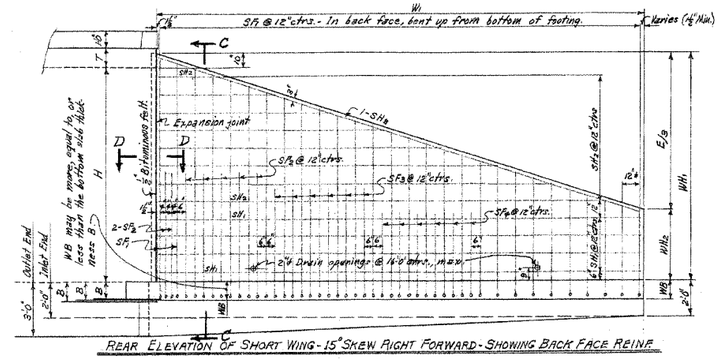


REAR ELEVATION OF LONG WING - 15° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING



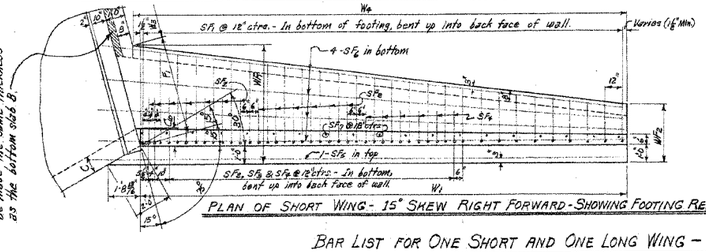
PLAN OF LONG WING - 15° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING

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

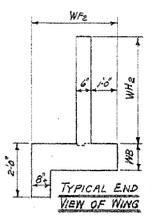


REAR ELEVATION OF SHORT WING - 15° SKEW RIGHT FORWARD - SHOWING BACK FACE REINF.

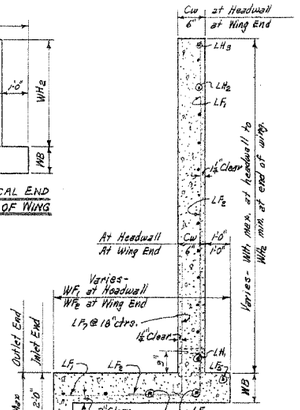
When B is more than WB, the shaded portion of the apron shall be made the same thickness as the bottom slab B.



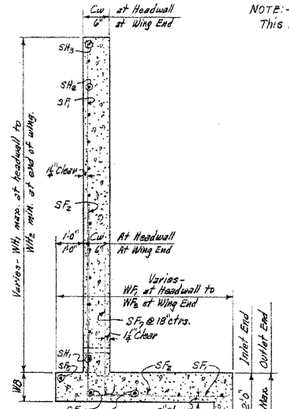
PLAN OF SHORT WING - 15° SKEW RIGHT FORWARD - SHOWING FOOTING REINF.



TYPICAL END VIEW OF WING



SECTION A-A



SECTION C-C

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

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-115X-0	R-215X-0	R-315X-0	R-415X-0	R-515X-0
R-115X-1	R-215X-1	R-315X-1	R-415X-1	R-515X-1
	R-215X-2	R-315X-2		

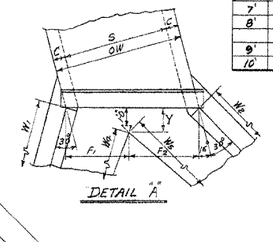
REGULAR WING DIMENSIONS - 3:1 SLOPES

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HDWL. & C.	WINGWALL HEIGHTS AT HEADWALL	WINGWALL HEIGHTS AT END OF WING	WIDTHS OF WING FOOTINGS AT HEADWALL	WIDTHS OF WING FOOTINGS AT END OF WING	FOOTING DIMENSION PARALLEL WITH HEADWALL SHORT WING	FOOTING DIMENSION PARALLEL WITH HEADWALL LONG WING	PERPENDICULAR DIST. FROM WING TO END OF WING	LENGTHS OF WINGWALLS SHORT WING	LENGTHS OF WINGWALLS LONG WING	INSIDE FOOTING DIMENSIONS SHORT WING	INSIDE FOOTING DIMENSIONS LONG WING	* QUANTITY PER WING CLASS S CONCRETE INLET END SHORT WING	INLET END LONG WING	OUTLET END SHORT WING	OUTLET END LONG WING
H	WB	Cw	WH1	WH2	WF1	WF2	F1	F2	E	W1	W2	W4	W5	Cu.Yds.	Cu.Yds.	Cu.Yds.	Cu.Yds.
9' x 10'	9"	9"	3'-10"	3'-0"	5'-2"	2'-10½"	4'-0½"	4'-1½"	20'-6"	21'-2¾"	29'-0"	21'-3¾"	31'-3"	6.651	9.296	6.928	9.647
10' x 11"	10"	10"	3'-4"	3'-0"	5'-6"	3'-0"	4'-6½"	5'-7½"	22'-6"	23'-3½"	31'-3⅝"	23'-6"	35'-0⅜"	8.977	11.781	8.782	12.225
11' x 12'	11"	11'-1⅝"	3'-8"	6'-2"	3'-1½"	5'-1"	6'-3½"	5'-1"	24'-6"	25'-4½"	34'-7⅝"	25'-8½"	38'-9⅜"	10.632	14.771	10.964	15.253
12' x 13'	12"	12'-1⅝"	4'-0"	6'-8"	3'-3"	5'-7½"	7'-0½"	5'-7½"	26'-6"	27'-3½"	37'-5⅝"	27'-11"	41'-8¾"	13.128	18.262	13.987	18.765

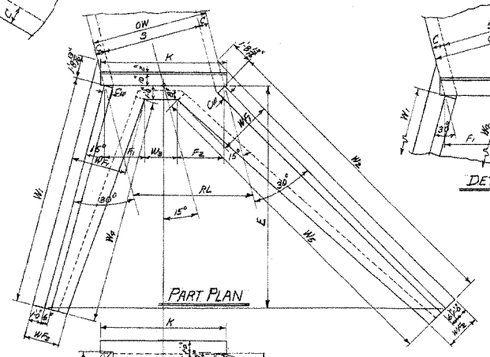
* Quantity per wing does not include headwall or that portion of apron or toewall for the length W5.
* See Table 'A' for special values of F1 & F2 and W4 & W5 for Single 7'x6', 8'x10', 9'x11' and 10'x12' Box Culverts.

TABLE "A" - DIMENSIONS FOR DETAIL "A"

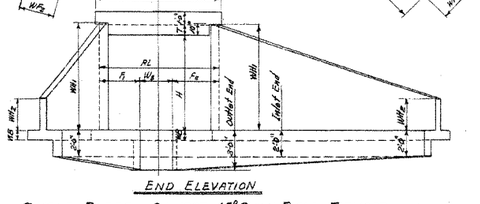
S	H	F1	F2	W3	Y	W4	W5
7'	9'	4'-0½"	4'-9½"	0"	1'-1½"	21'-2½"	31'-7⅛"
8'	10'	4'-6½"	5'-5⅛"	0"	1'-1½"	23'-9½"	34'-11"
9'	11'	5'-0½"	6'-2⅝"	0"	1'-1⅝"	25'-9½"	38'-2⅝"
10'	12'	5'-6½"	6'-10⅝"	0"	1'-1½"	27'-9½"	41'-6⅛"



DETAIL "A"



PART PLAN

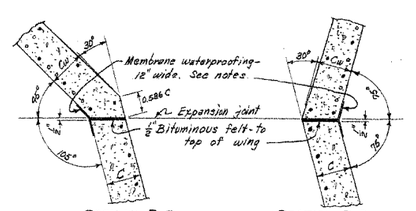


END ELEVATION

SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

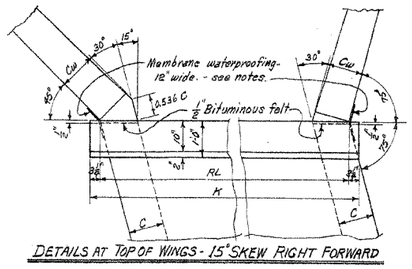
Details of Culvert with 15° Skew Left Forward is reversed. See Drwg. No. W-X15.

TYPICAL WING DETAILS



SECTION B-B SECTION D-D

SECTIONS THRU EXPANSION JOINTS



DETAILS AT TOP OF WINGS - 15° SKEW RIGHT FORWARD

Note:- For remainder of General Plans and Elevations of Single, Double, Triple, Quadruple and Quintuple Span Culverts, see Std. Drawing No. W-X15.
For values of RL, K and W5 for each box, see above Std. also.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING STEEL - FOR 4 WINGS	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS				
					SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
7'	9'	9"	10"	2362	33.07	34.81	36.53	38.27	40.00
8'	9'	9"	10"	2362	33.30	35.26	37.21	39.17	41.11
	10'	10"	11"	2932	41.94	43.94	45.92	47.82	49.90
9'	9'	9"	10"	2362	33.53	35.72	37.88	40.06	42.22
	10'	10"	11"	2932	42.18	44.39	46.60	48.81	51.02
	11'	11"	12"	3523	52.37	54.61	56.88	59.07	61.30
10'	9'	9"	10"	2362	33.76	36.19	38.56	40.92	43.32
	10'	10"	11"	2932	42.41	44.86	47.27	49.70	52.13
	11'	11"	12"	3523	52.61	55.07	57.52	59.96	62.42
	12'	12"	13"	4982	64.95	66.94	69.40	71.87	74.36
11'	9'	9"	10"	2362	33.99	36.67	39.28	41.86	———
	10'	10"	11"	2932	42.63	45.23	47.96	50.59	———
	11'	11"	12"	3523	52.83	55.54	58.20	60.87	———
	12'	12"	13"	4982	64.91	67.88	70.09	72.79	———
12'	9'	9"	10"	2362	34.21	37.16	39.99	42.83	———
	10'	10"	11"	2932	42.86	45.82	48.67	51.53	———
	11'	11"	12"	3523	53.07	56.02	58.88	61.78	———
	12'	12"	13"	4982	64.91	67.88	70.78	73.71	———

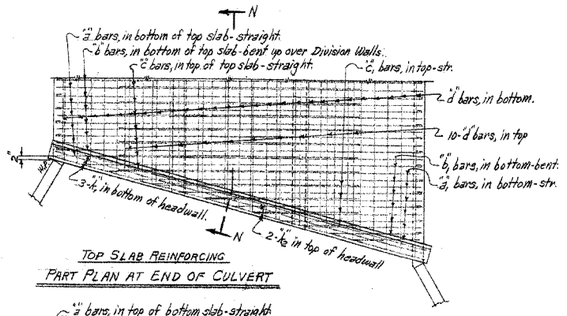
⊛ For reinforcing steel in Headwalls and Aprons, see Drawings listed at top of sheet.

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

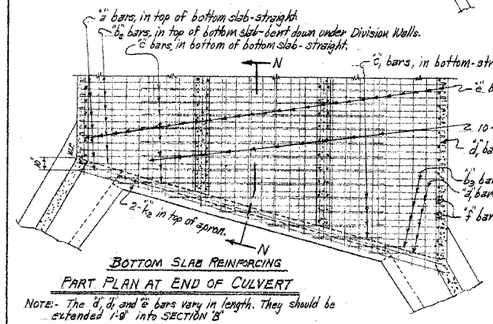
| CLEAR HEIGHT | WING LOCATION | SF1 & LF1 BENT: In bottom of footing, bent up into back face of wing. One bar of each length. SIZE | SPACING | NO. REQD | LENGTHS VARY MIN. | LENGTHS VARY MAX. | X MIN. | X MAX. | Y MIN. | Y MAX. | SF2 & LF2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars. SIZE | SPACING | NO. REQD | LENGTH | X | Y | SF3 & LF3 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars. SIZE | SPACING | NO. REQD | LENGTH | X | Y | SF4 & LF4 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars. SIZE | SPACING | NO. REQD | LENGTH | X | Y | SF5 & LF5 STRAIGHT: Longitudinal in top of wing footing heel. NO. REQD | LENGTH | SF6 & LF6 STRAIGHT: Longitudinal in bottom of wing footing toe. NO. REQD | LENGTH | SF7 & LF7 BENT: Footing dowels extending up into front face of wing. SIZE | SPACING | NO. REQD | LENGTH | X | SH1 & LH1 STRAIGHT: Horizontal in back face of wing. SIZE | SPACING | NO. REQD | LENGTH | SH2 & LH2 STRAIGHT: Horizontal in back face of wing. One bar of each length. * SIZE | SPACING | NO. REQD | LENGTHS VARY MAX. | LENGTHS VARY MIN. | SH3 & LH3 STRAIGHT: In back face of wing at top - on slope. SIZE | NO. REQD | LENGTH | BAR BENDING DIAGRAMS | QUANTITY REINFORCING STEEL PER WING - LBS. SHORT WING | QUANTITY REINFORCING STEEL PER WING - LBS. LONG WING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---

DATE REVISED	DATE FILED	DATE REVISED	DATE FILED
9-2-71	501-92-71		
RESHOT	3-8-93		

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			103	
JOB No.					



TOP SLAB REINFORCING
PART PLAN AT END OF CULVERT



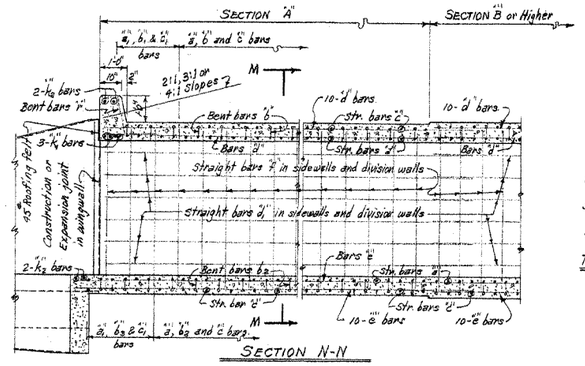
BOTTOM SLAB REINFORCING
PART PLAN AT END OF CULVERT

NOTE:- The "d", "d" and "e" bars vary in length. They should be extended 1'-8" into SECTION "B"

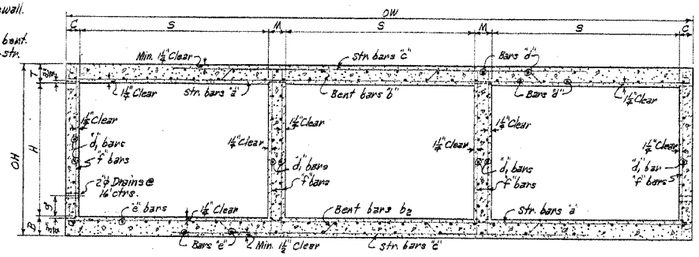
DOWEL BARS FOR ONE HEADWALL

SPAN	SIZE	SPACING	No. REQ'D	LENGTH	X	Dowel bars "f" in One Headwall.
9'	#4	12"c	31	2'-11"	1'-5⅝"	
10'	#4	12"c	34	3'-0"	1'-6"	
11'	#4	12"c	38	3'-2"	1'-7"	
12	#4	12"c	41	3'-4"	1'-8"	

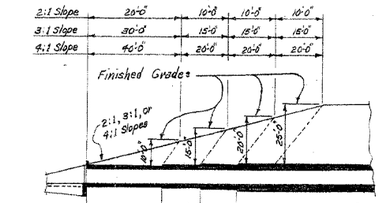
NOTE:- For Details of Standard Wings and Bar lists, see Drawing No. W-X152-1 or W-X152-2; W-X153-1 or W-X153-2, and W-X154-1 or W-X154-2. Also W-X15.



SECTION N-M



TYPICAL SECTION M-M

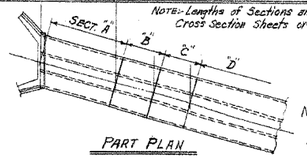


		A	B	C	D
2:1 Slope =	SECTIONS	A=12'-0"	B=6'-0"	C=6'-0"	MID-SECTION D-Varies
	Bar Group	A	B	C	D
3:1 Slope =	SECTIONS	A=22'-0"	B=11'-0"	C=11'-0"	MID-SECTION D-Varies
	Bar Group	A	B	C	D
4:1 Slope =	SECTIONS	A=32'-0"	B=16'-0"	C=16'-0"	MID-SECTION D-Varies
	Bar Group	A	B	C	D

These lengths are ℄ of roadway. See Table of Skew Lengths below.

TYPICAL LONGITUDINAL SECTION- SHOWING SECTIONS AND BAR GROUPS FOR VARIOUS DEPTHS OF COVER

NOTE:- Lengths of Sections and Bar Groups are to be shown on Cross Section Sheets or on Special Culvert Layout Sheet.



PART PLAN

NOTE:- For Details and Bar Lists for Sections B and C, see Barrel Drawing Nos. R-300X-X2 and R-300X-X3.

LENGTH OF SECTIONS ON 15° SKEW

SLOPE	2:1		3:1		4:1	
SECTIONS	A	B&C	A	B&C	A	B&C
LENGTHS	12'-5"	6'-2½"	22'-9½"	11'-4⅝"	33'-1⅝"	16'-6⅝"

SECTIONS AND BAR GROUPS TO BE USED FOR VARIOUS DEPTHS OF COVER

DEPTHS OF COVER	SECT'S & BAR GROUPS FOR END SECTIONS			MID-SECTION AND BAR GROUP
	A	B	C	
5.0' to 9.5'	A			A
10.0' to 14.5'	A			B
15.0' to 19.5'	A	B		C
20.0' to 25.0	A	B	C	D

DEPTHS OF COVER	SECT'S & BAR GROUPS FOR END SECTIONS			MID-SECTION AND BAR GROUP
	A	B	C	
5.0' to 9.5'	A			A
10.0' to 14.5'	A			B
15.0' to 19.5'	A	B		C
20.0' to 25.0	A	B	C	D

OR ALT.

BARREL DIMENSIONS

MAX. DESIGN DEPTH OF COVER	CLEAR SPANS	CLEAR HEIGHT	SIZE OF OPENING		THICKNESS OF TOP SLAB	THICKNESS OF BOTTOM SLAB	THICKNESS OF DIVISION WALLS	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	ROADWAY LENGTH	LENGTH OF HEADWALL
D	S	H	A	OW	T	C	M	B	OH	RL	K
SECTION "A" = 10'-0"	9' @ 3' c/to. c	5'	9'5"	29'-8"	7"	9"	10½"	10½"	6'-7"	30'-8½"	31'-3"
		6'	10'7"	29'-11"	7½"	10"			7'-7"	30'-11½"	31'-6"
		7'	11'9"	29'-11"	7½"	10"			8'-7"	"	"
		8'	12'11"	30'-0"	8"	10"			9'-7"	31'-0⅛"	31'-7⅛"
		9'	14'1"	30'-0"	9"	11"			10'-7"	31'-1⅛"	32'-1⅛"
		10'	15'3"	30'-1"	10"	12"			11'-7"	31'-2⅛"	32'-3⅛"
		11'	16'5"	30'-1"	11"	12"			12'-7"	31'-3⅛"	32'-4⅛"
	10' @ 3' c/to. c	5'	9'5"	32'-9"	7"	9"			6'-8"	33'-8⅝"	34'-4⅝"
		6'	10'7"	32'-11"	7½"	10"			7'-8"	34'-1"	34'-7⅝"
		7'	11'9"	32'-11"	7½"	10"			8'-8"	"	"
		8'	12'11"	33'-0"	8"	10"			9'-8"	34'-2"	34'-8⅝"
		9'	14'1"	33'-0"	9"	11"			10'-8"	34'-4⅝"	35'-0⅛"
		10'	15'3"	33'-1"	10"	12"			11'-8"	34'-10⅛"	35'-3⅛"
		11'	16'5"	33'-1"	11"	12"			12'-8"	35'-0⅛"	35'-6⅛"
		12'	17'7"	33'-2"	12"	12"			13'-8"	35'-2⅛"	35'-8⅛"
	11' @ 3' c/to. c	6'	10'7"	35'-0"	8"	10"			7'-10"	37'-2⅝"	37'-9⅝"
		7'	11'9"	35'-0"	8"	10"			8'-10"	"	"
		8'	12'11"	35'-1"	9"	11"			9'-10"	"	"
		9'	14'1"	35'-1"	9"	11"			10'-10"	37'-7⅛"	38'-1⅛"
		10'	15'3"	35'-2"	10"	12"			11'-10"	37'-11⅝"	38'-4"
		11'	16'5"	35'-2"	11"	12"			12'-10"	38'-1⅝"	38'-6"
		12'	17'7"	35'-3"	12"	12"			13'-10"	38'-3⅝"	38'-10"
	12' @ 3' c/to. c	6'	10'7"	37'-3"	8"	10"			7'-11"	40'-3½"	40'-10"
		7'	11'9"	37'-3"	8"	10"			8'-11"	"	"
		8'	12'11"	37'-4"	9"	11"			9'-11"	"	"
		9'	14'1"	37'-4"	9"	11"			10'-11"	40'-5½"	41'-1"
		10'	15'3"	37'-5"	10"	12"			11'-11"	40'-8½"	41'-4"
		11'	16'5"	37'-5"	11"	12"			12'-11"	40'-11½"	41'-7"
		12'	17'7"	37'-6"	12"	12"			13'-11"	41'-1½"	41'-9"

* QUANTITIES - ONE SECTION "A"

CLASS S CONCRETE BARREL ONLY			REINFORCING STEEL BARREL, APRON AND HEADWALL		
2:1	3:1	4:1	2:1	3:1	4:1
CU.YD.	CU.YD.	CU.YD.	LB.	LB.	LB.
27.74	30.87	34.00	4999	8786	12,349
29.84	34.76	39.60	4970	8699	12,449
31.18	37.18	43.18	5046	9181	13,103
32.88	40.30	47.71	5695	9858	14,206
35.86	45.01	55.73	5968	10,493	14,865
38.19	71.86	104.54	6418	11,200	15,936
41.84	78.79	111.63	6717	11,759	16,749
31.80	58.82	85.83	5782	10,010	13,136
33.91	62.19	90.46	5912	10,223	13,433
35.25	64.43	93.06	6086	10,583	15,275
36.96	67.79	98.61	6403	11,124	16,056
39.98	73.32	106.66	6736	11,748	16,948
43.31	79.42	115.54	7204	12,500	18,033
45.97	84.30	122.63	7511	13,062	18,860
48.78	89.47	130.15	7940	13,723	19,798
38.43	70.84	103.05	6989	11,917	16,413
40.01	73.37	106.73	6628	11,476	16,790
41.98	75.90	110.91	6983	12,293	17,685
44.48	81.47	118.52	7307	12,920	18,581
47.78	87.62	127.96	7788	13,684	19,687
50.45	92.52	134.59	8093	14,252	20,517
53.27	97.69	142.11	8447	15,299	22,013
43.40	79.58	115.77	7452	12,961	18,706
44.77	82.11	119.45	7561	13,151	18,980
46.16	84.66	123.16	7958	13,842	19,988
49.22	90.26	131.31	8289	14,478	20,894
52.58	96.49	140.38	8767	15,252	22,015
55.27	101.35	147.44	9081	15,825	22,851
58.10	106.54	154.99	9653	16,865	24,358

* For remainder of quantities see Std. Wing and Barrel Drawings listed below.

BAR LIST FOR SECTION A ON 15° SKEW - ONE END ONLY.

| SECTION & BAR GROUP | LENGTH OF SECTION | DEPTH OF COVER | CLEAR SPAN | CLEAR HEIGHT | "a" bars STRAIGHT In Top and Bottom Slab of Barrel. | | | | "a1" bars STRAIGHT In Top and Bottom Slab of Barrel. (Two of each Length.) | | | "b" bars BENT - See Diagrams below Alternate with "a" and "c" bars. | | | | | | | "b1" bars BENT - See Diagrams below In Bottom of Top Slab bent up over Division Walls - hooked. Alternate with "a" and "c" bars. | | | | | | | "b2" bars BENT - See Diagrams below In Top of Bottom Slab bent down under Division Wall - hooked. Alternate with "a" and "c" bars. | | | | | | | "b3" bars BENT - See Diagrams below In Top of Bottom Slab - some bent down under Division Wall - one end hooked. Alt. with "a" and "c" or "c" bars. | | | | | | | "c" bars STRAIGHT In Top and Bottom Slab of Barrel. Alternate with "a" and "b" bars. | | | | | | "c1" bars STRAIGHT In Top and Bottom Slab of Barrel. Alt. with "a" & "b" bars (Two of each Length) | | | | | | "d" bars STRAIGHT Longitudinal in Top Slab of Barrel. | | | "d1" bars STRAIGHT Longitudinal in Sidewalls and Division Walls. | | | "e" bars STRAIGHT Longitudinal in Bottom Slab of Barrel. | | | "f" bars STRAIGHT Verticals in Sidewalls and Division Walls | | | "k" bars STRAIGHT In Bottom of Headwall. | | "k2" bars STRAIGHT In Top of Headwall and Apron. (2 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.		100722	104	121
				(2) CROSS SECTIONS				

MAIN LANES | DETOUR CONST. | DETOUR REMOVAL

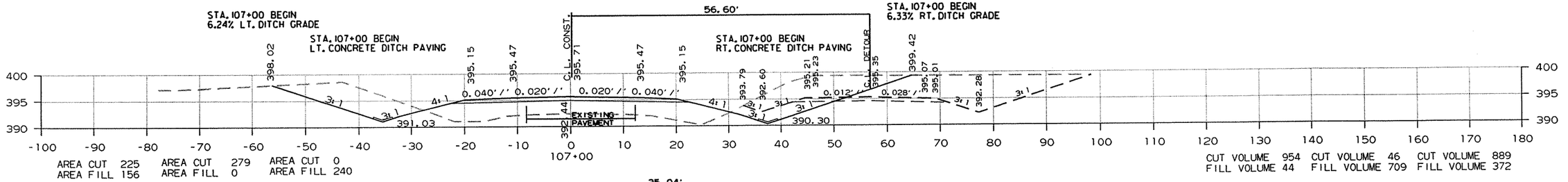
STA. 107+00 BEGIN
6.24% LT. DITCH GRADE

STA. 107+00 BEGIN
LT. CONCRETE DITCH PAVING

56.60'

STA. 107+00 BEGIN
RT. CONCRETE DITCH PAVING

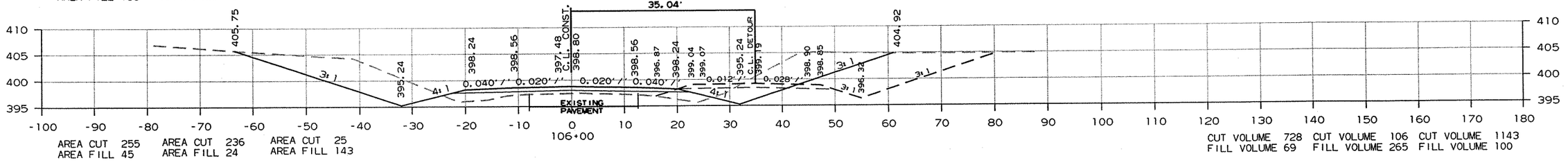
STA. 107+00 BEGIN
6.33% RT. DITCH GRADE



AREA CUT 225 AREA CUT 279 AREA CUT 0
AREA FILL 156 AREA FILL 0 AREA FILL 240

CUT VOLUME 954 CUT VOLUME 46 CUT VOLUME 889
FILL VOLUME 44 FILL VOLUME 709 FILL VOLUME 372

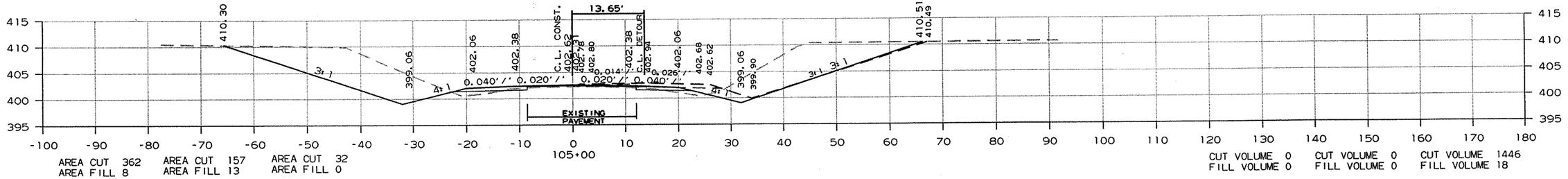
35.04'



AREA CUT 255 AREA CUT 236 AREA CUT 25
AREA FILL 45 AREA FILL 24 AREA FILL 143

CUT VOLUME 728 CUT VOLUME 106 CUT VOLUME 1143
FILL VOLUME 69 FILL VOLUME 265 FILL VOLUME 100

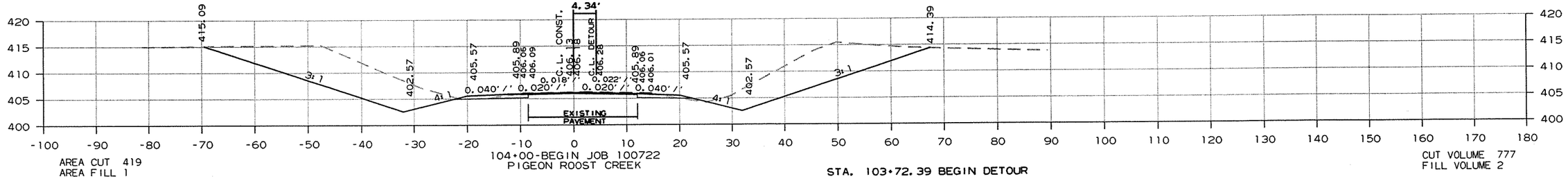
13.65'



AREA CUT 362 AREA CUT 157 AREA CUT 32
AREA FILL 8 AREA FILL 13 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 0 CUT VOLUME 1446
FILL VOLUME 0 FILL VOLUME 0 FILL VOLUME 18

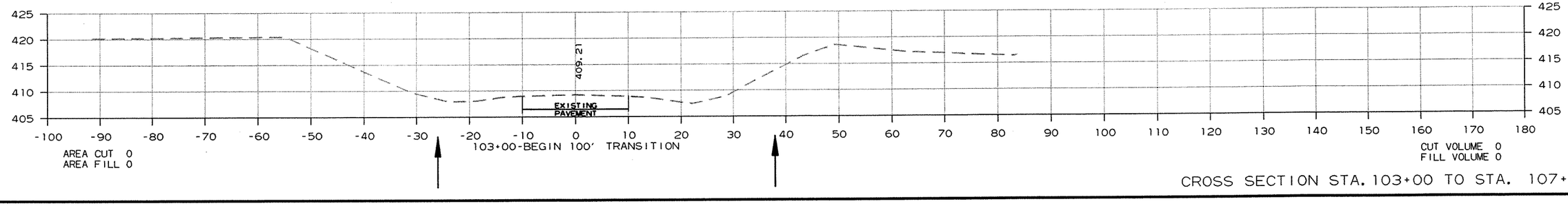
4.34'



AREA CUT 419
AREA FILL 1

CUT VOLUME 777
FILL VOLUME 2

STA. 103+72.39 BEGIN DETOUR



AREA CUT 0
AREA FILL 0

CUT VOLUME 0
FILL VOLUME 0

CROSS SECTION STA. 103+00 TO STA. 107+00

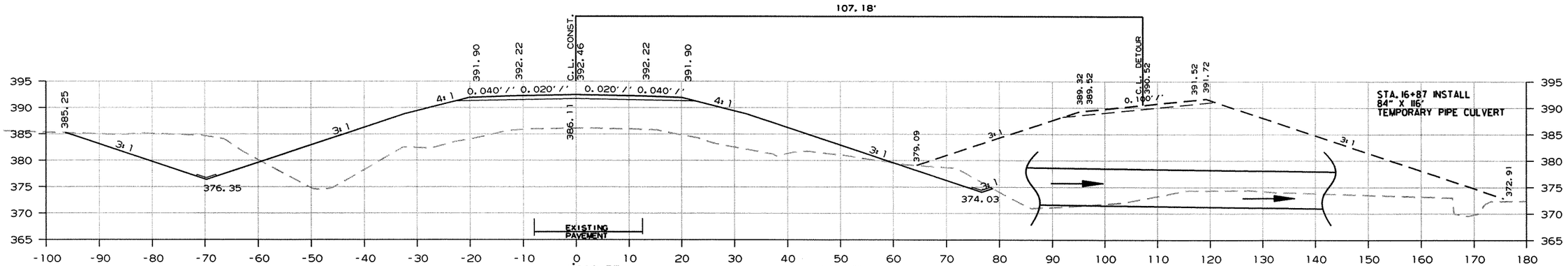
R100722.DGN 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	105	121

(2) CROSS SECTIONS

MAIN LANES | DETOUR CONST. | DETOUR REMOVAL

DETOUR CONST. | DETOUR REMOVAL | MAIN LANES



CROSS SECTION STA. 108+00 TO STA. 109+57

R100722.DGN 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	106	121

(2) CROSS SECTIONS

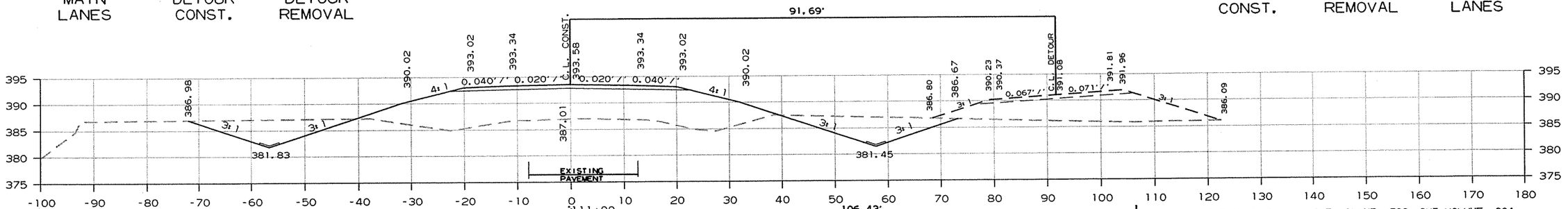
STA. 111+50 BEGIN
4.00% LT. DITCH GRADE

STA. 111+50 END
10.34% LT. DITCH GRADE

STA. 111+00 BEGIN
4.00% RT. DITCH GRADE

STA. 111+50 END
11.09% RT. DITCH GRADE

MAIN LANES | DETOUR CONST. | DETOUR REMOVAL



AREA CUT 182 AREA FILL 417 | AREA CUT 0 AREA FILL 177 | AREA CUT 198 AREA FILL 0

CUT VOLUME 1 FILL VOLUME 675 | CUT VOLUME 739 FILL VOLUME 1 | CUT VOLUME 994 FILL VOLUME 2690

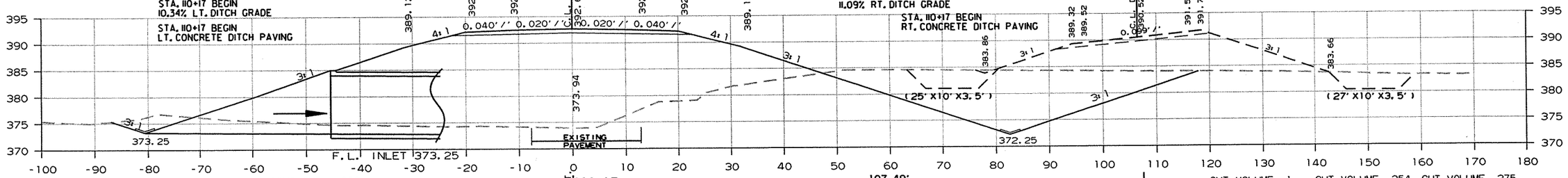
DETOUR CONST. | DETOUR REMOVAL | MAIN LANES

STA. 110+17 BEGIN
10.34% LT. DITCH GRADE

STA. 110+17 BEGIN
LT. CONCRETE DITCH PAVING

STA. 110+17 BEGIN
11.09% RT. DITCH GRADE

STA. 110+17 BEGIN
RT. CONCRETE DITCH PAVING

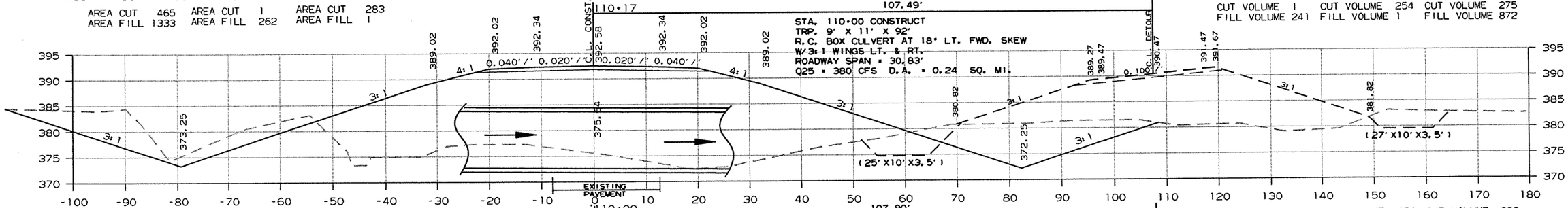


F.L. INLET 373.25

AREA CUT 465 AREA FILL 1333 | AREA CUT 1 AREA FILL 262 | AREA CUT 283 AREA FILL 1

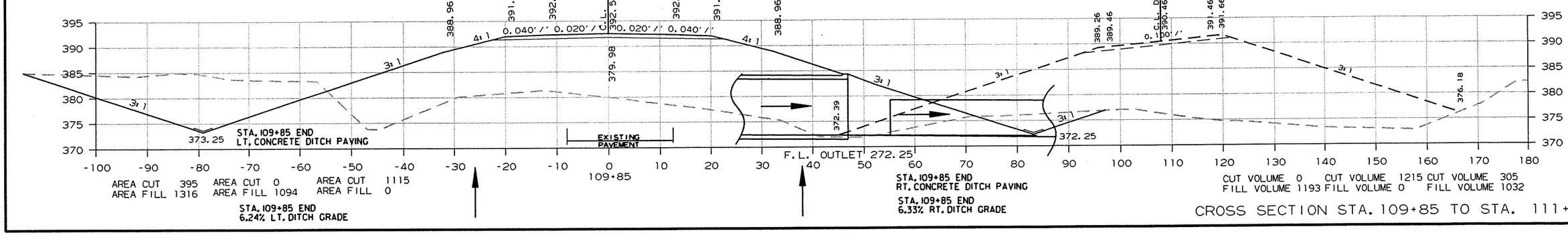
CUT VOLUME 1 FILL VOLUME 241 | CUT VOLUME 254 FILL VOLUME 1 | CUT VOLUME 275 FILL VOLUME 872

STA. 110+00 CONSTRUCT
TRP. 9' X 11' X 92'
R.C. BOX CULVERT AT 18° LT. FWD. SKEW
W/ 3:1 WINGS LT. & RT.
ROADWAY SPAN = 30.83'
Q25 = 380 CFS D.A. = 0.24 SQ. MI.



AREA CUT 409 AREA FILL 1436 | AREA CUT 0 AREA FILL 504 | AREA CUT 525 AREA FILL 0

CUT VOLUME 0 FILL VOLUME 444 | CUT VOLUME 456 FILL VOLUME 0 | CUT VOLUME 223 FILL VOLUME 764



F.L. OUTLET 272.25

STA. 109+85 END
LT. CONCRETE DITCH PAVING

STA. 109+85 END
6.24% LT. DITCH GRADE

AREA CUT 395 AREA FILL 1316 | AREA CUT 0 AREA FILL 1094 | AREA CUT 1115 AREA FILL 0

CUT VOLUME 0 FILL VOLUME 1193 | CUT VOLUME 1215 FILL VOLUME 0 | CUT VOLUME 305 FILL VOLUME 1032

STA. 109+85 END
RT. CONCRETE DITCH PAVING

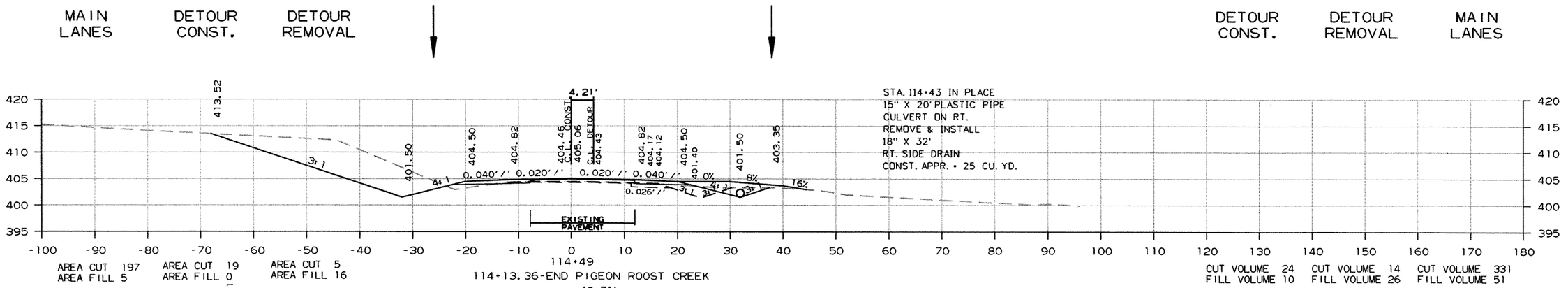
STA. 109+85 END
6.33% RT. DITCH GRADE

CROSS SECTION STA. 109+85 TO STA. 111+00

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				6	ARK.			
				JOB NO.		100722	107	121

(2) CROSS SECTIONS



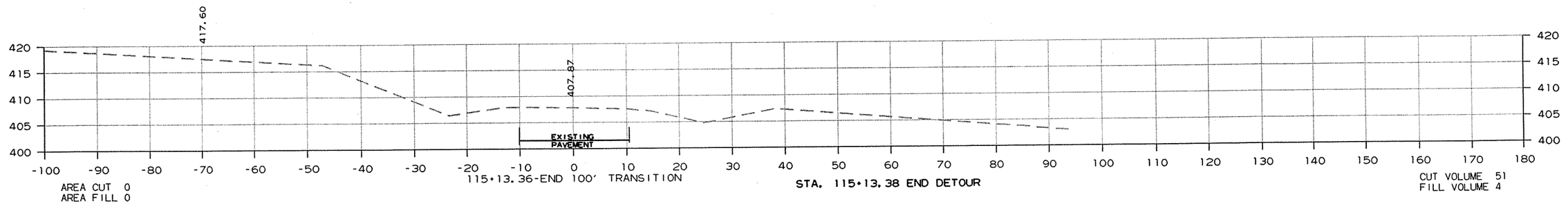
CROSS SECTION STA. 112+00 TO STA. 114+49

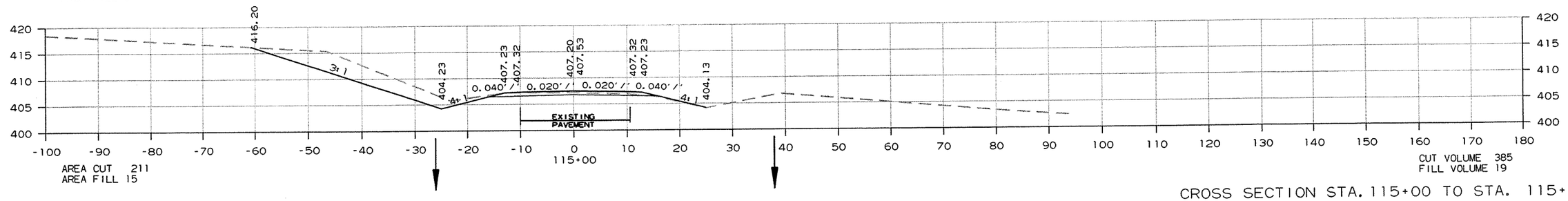
R100722.DGN 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		100722	108	121

(2) CROSS SECTIONS





CROSS SECTION STA. 115+00 TO STA. 115+13

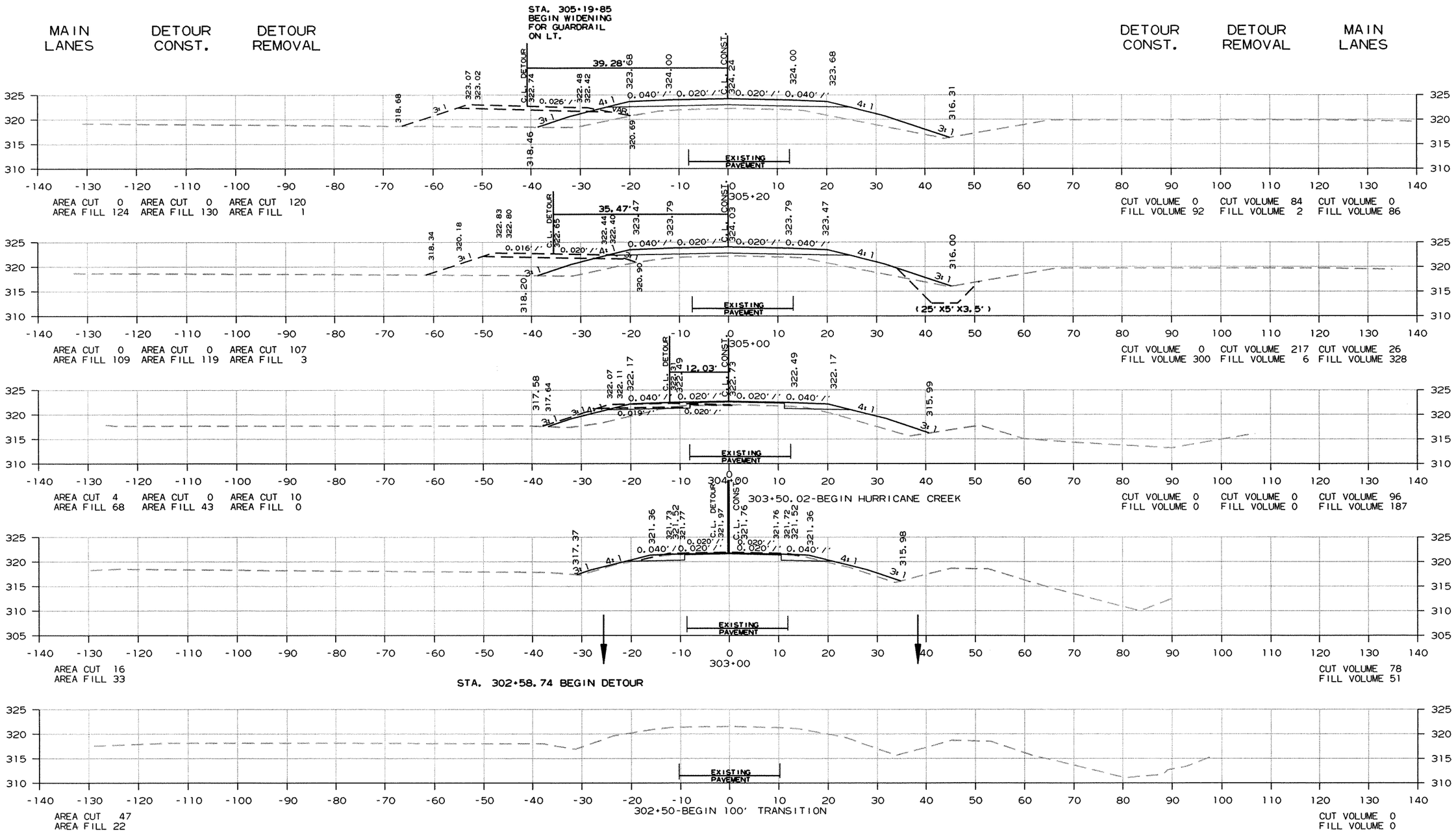
R100722.DGN 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	109	121

(2) CROSS SECTIONS

STA. 115+79.23
END GUARDRAIL ON RT.

STA. 104+61.79
BEGIN GUARDRAIL ON RT.

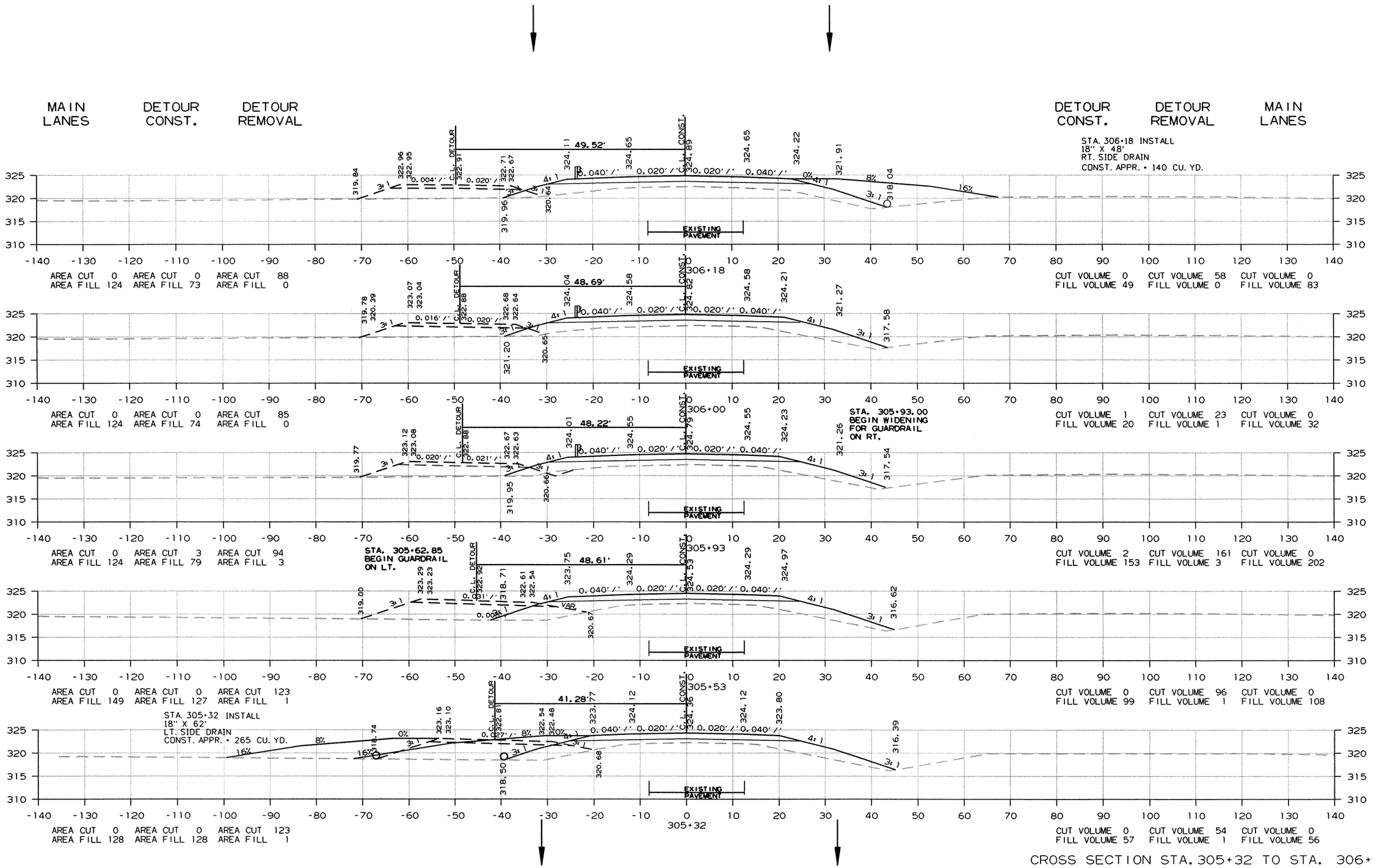


CROSS SECTION STA. 302+50 TO STA. 305+20

R100722.DGN 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	110	121

(2) CROSS SECTIONS

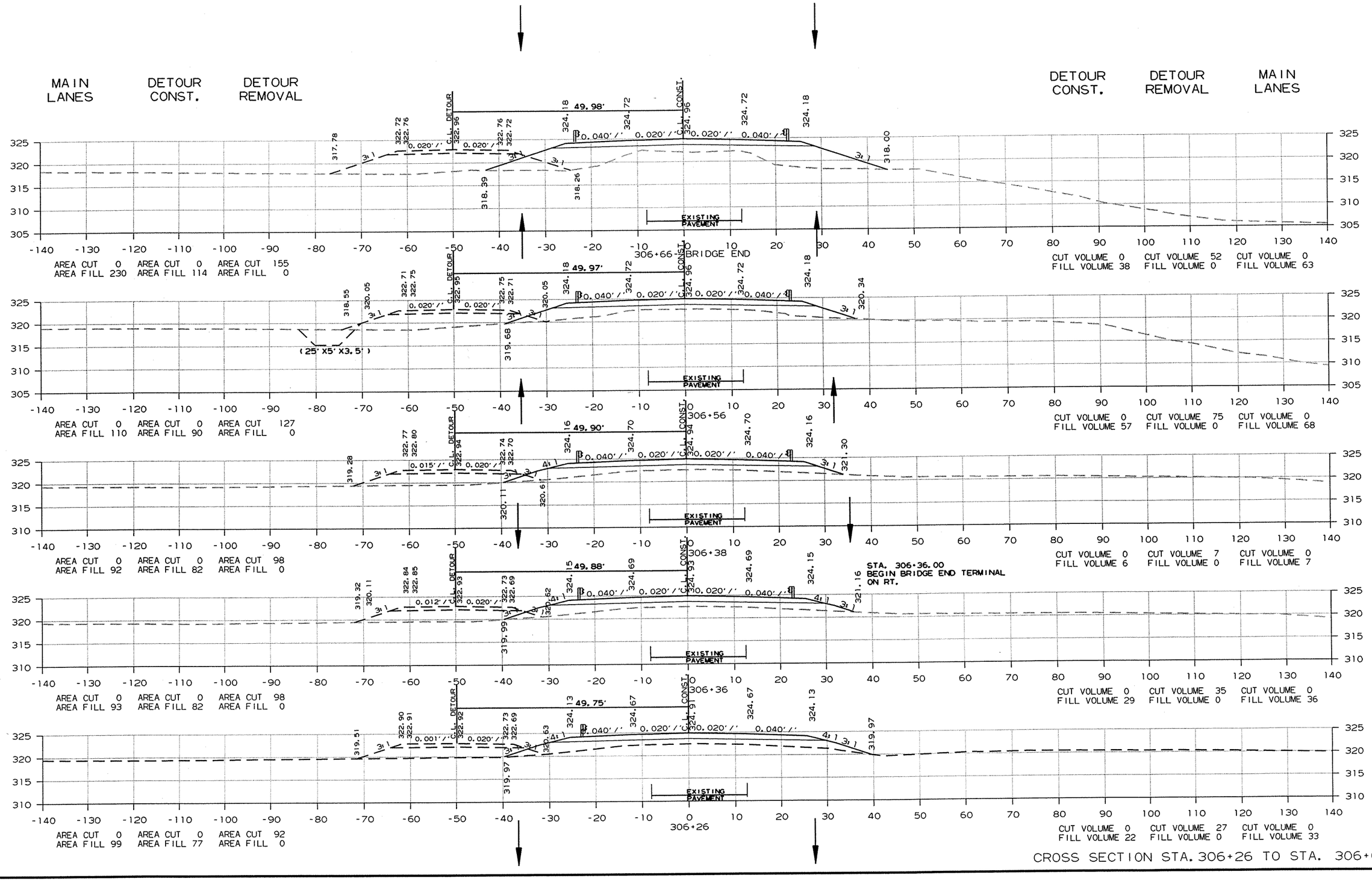


CROSS SECTION STA. 305+32 TO STA. 306+18

R100722.DGN 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	111	121

(2) CROSS SECTIONS

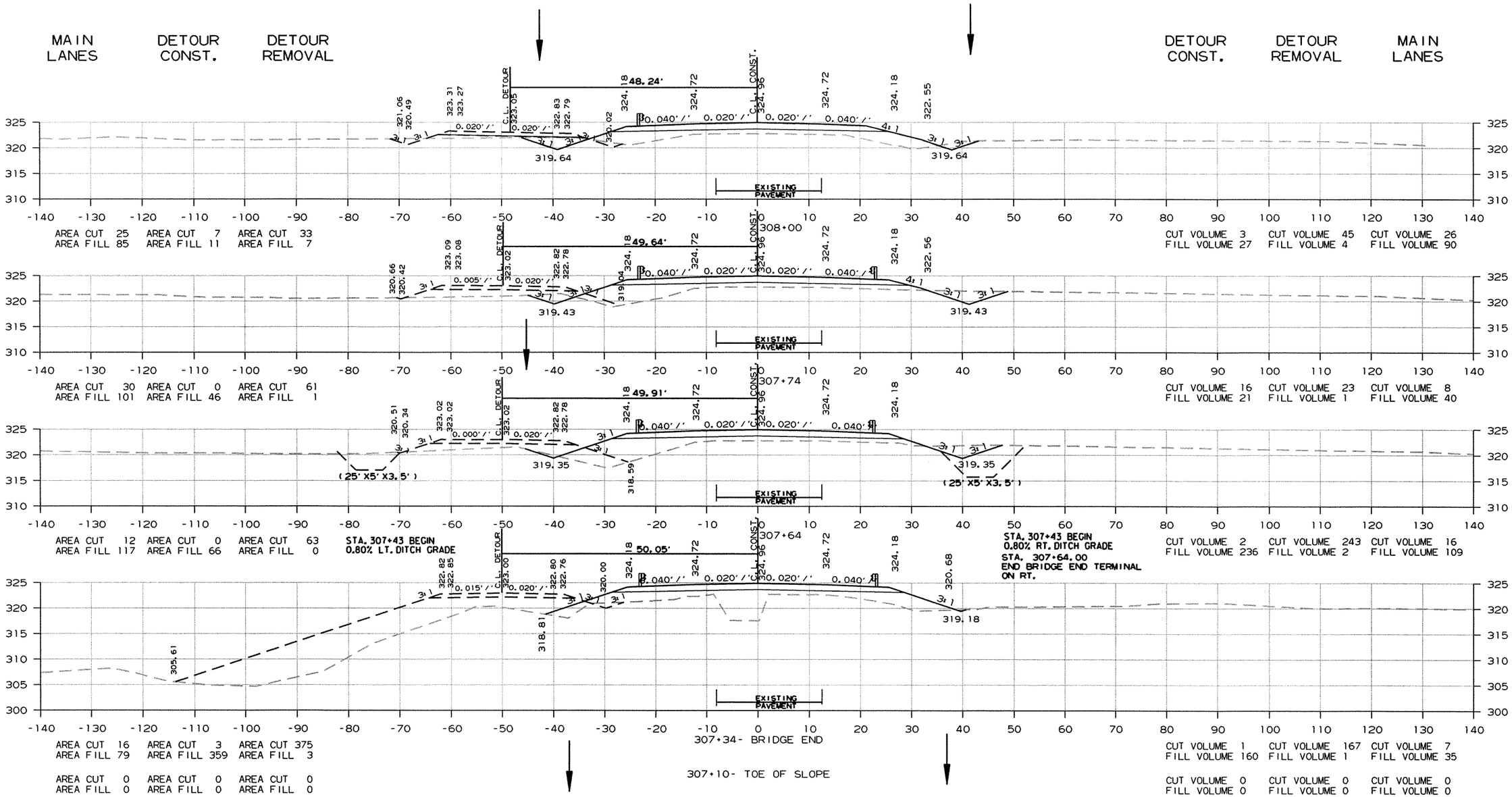


CROSS SECTION STA. 306+26 TO STA. 306+66

R100722.DGN 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	112	121

(2) CROSS SECTIONS



AREA CUT 25 AREA FILL 85 | AREA CUT 7 AREA FILL 11 | AREA CUT 33 AREA FILL 7
CUT VOLUME 3 FILL VOLUME 27 | CUT VOLUME 45 FILL VOLUME 4 | CUT VOLUME 26 FILL VOLUME 90

AREA CUT 30 AREA FILL 101 | AREA CUT 0 AREA FILL 46 | AREA CUT 61 AREA FILL 1
CUT VOLUME 16 FILL VOLUME 21 | CUT VOLUME 23 FILL VOLUME 1 | CUT VOLUME 8 FILL VOLUME 40

AREA CUT 12 AREA FILL 117 | AREA CUT 0 AREA FILL 66 | AREA CUT 63 AREA FILL 0
CUT VOLUME 2 FILL VOLUME 236 | CUT VOLUME 243 FILL VOLUME 2 | CUT VOLUME 16 FILL VOLUME 109

AREA CUT 16 AREA FILL 79 | AREA CUT 3 AREA FILL 359 | AREA CUT 375 AREA FILL 3
CUT VOLUME 1 FILL VOLUME 160 | CUT VOLUME 167 FILL VOLUME 1 | CUT VOLUME 7 FILL VOLUME 35

AREA CUT 0 AREA FILL 0 | AREA CUT 0 AREA FILL 0 | AREA CUT 0 AREA FILL 0
CUT VOLUME 0 FILL VOLUME 0 | CUT VOLUME 0 FILL VOLUME 0 | CUT VOLUME 0 FILL VOLUME 0

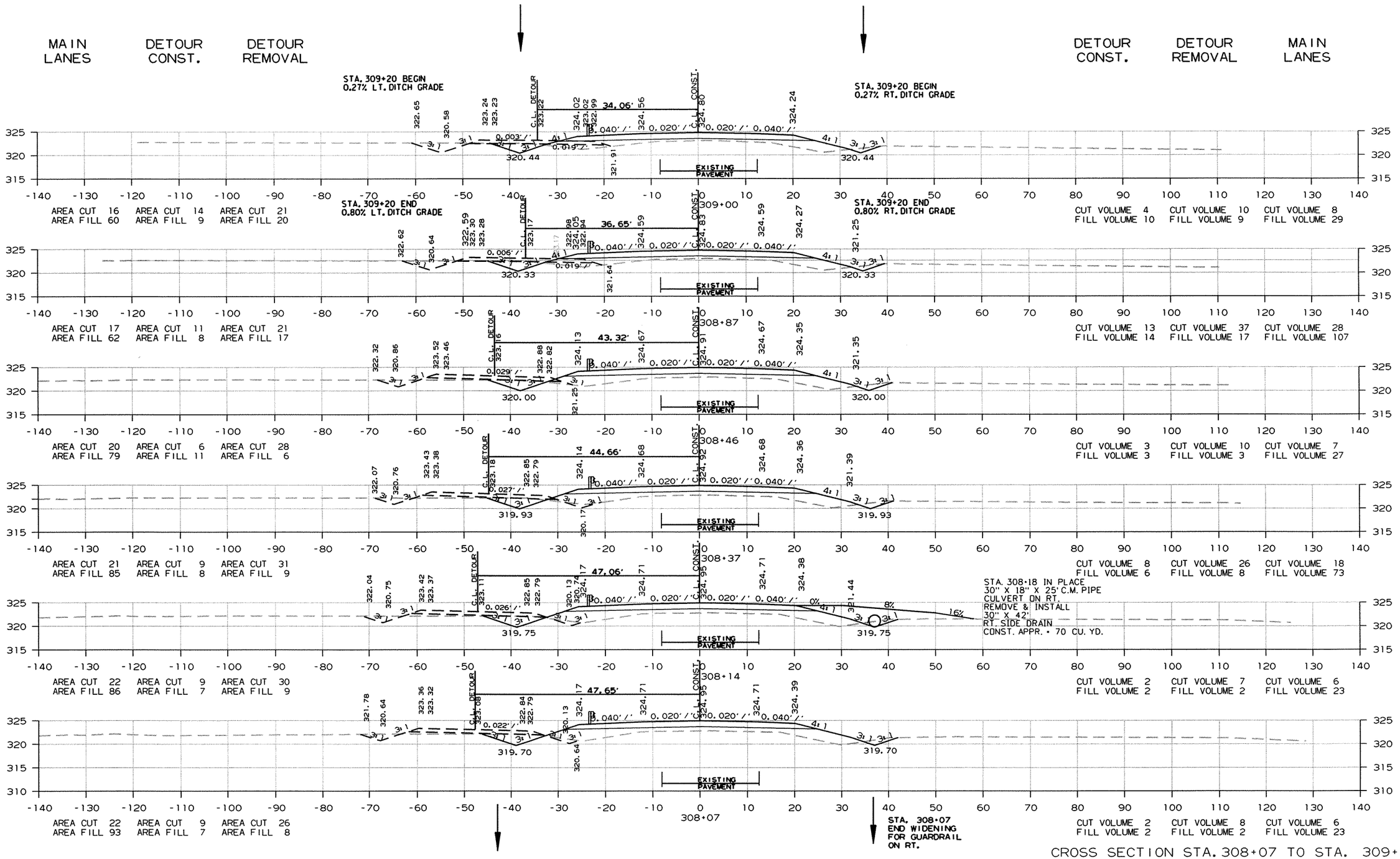
AREA CUT 0 AREA FILL 0 | AREA CUT 0 AREA FILL 0 | AREA CUT 0 AREA FILL 0
CUT VOLUME 0 FILL VOLUME 59 | CUT VOLUME 80 FILL VOLUME 0 | CUT VOLUME 0 FILL VOLUME 119

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CROSS SECTION STA. 306+94 TO STA. 308+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.		100722	113	121

(2) CROSS SECTIONS



CROSS SECTION STA. 308+07 TO STA. 309+00

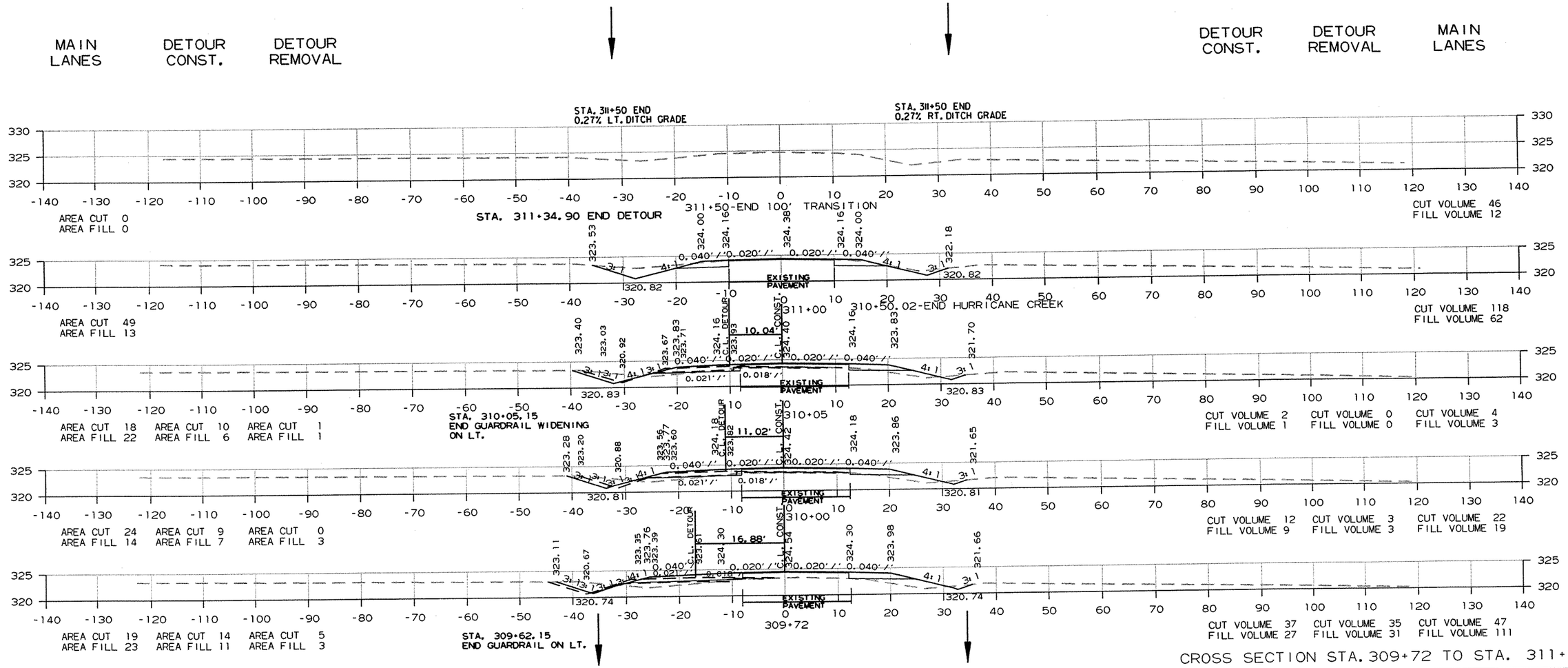
R100722.DGN 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	114	121

(2) CROSS SECTIONS

MAIN LANES | DETOUR CONST. | DETOUR REMOVAL

DETOUR CONST. | DETOUR REMOVAL | MAIN LANES

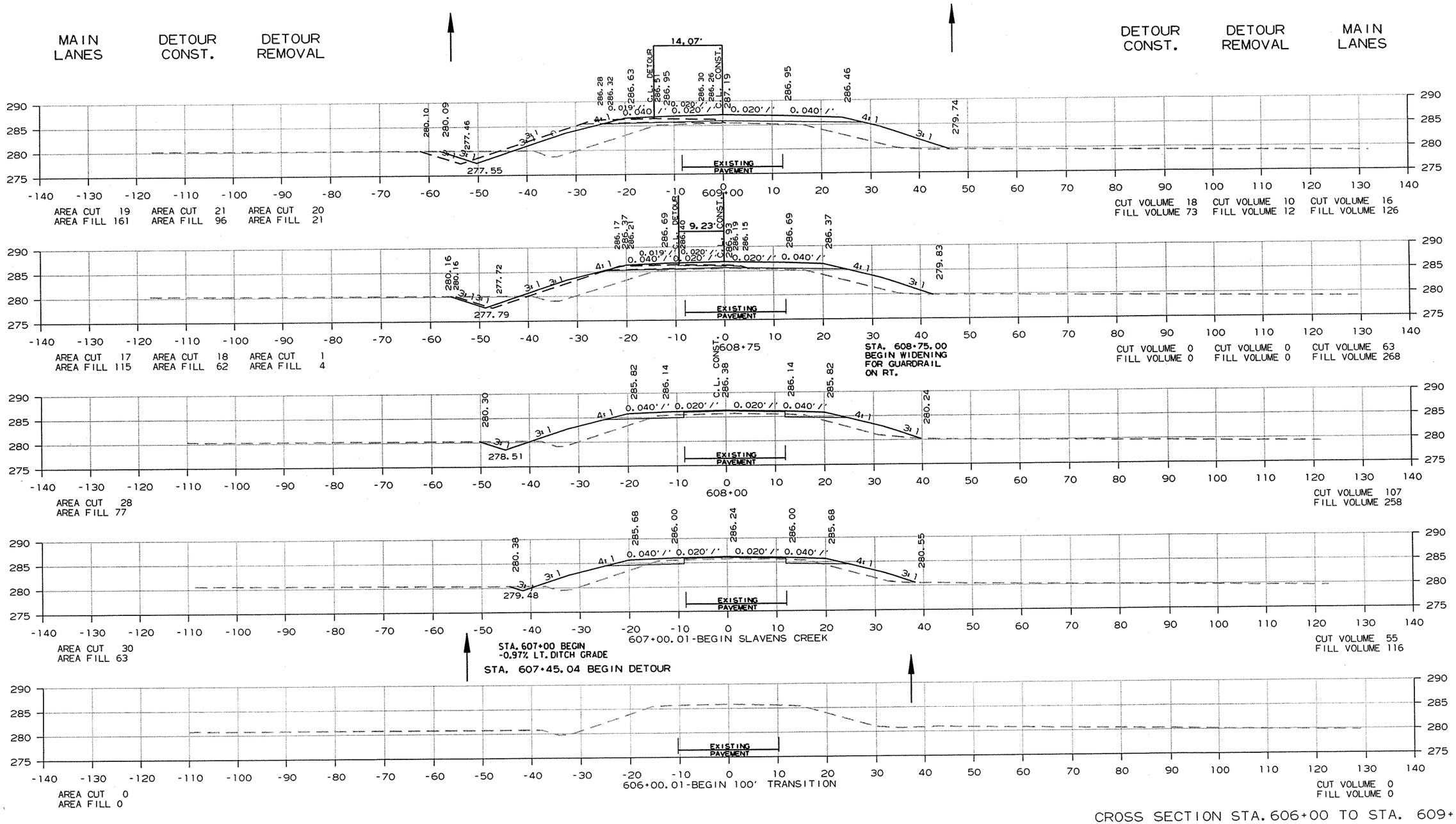


CROSS SECTION STA. 309+72 TO STA. 311+50

R100722.DGN 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	115	121

(2) CROSS SECTIONS

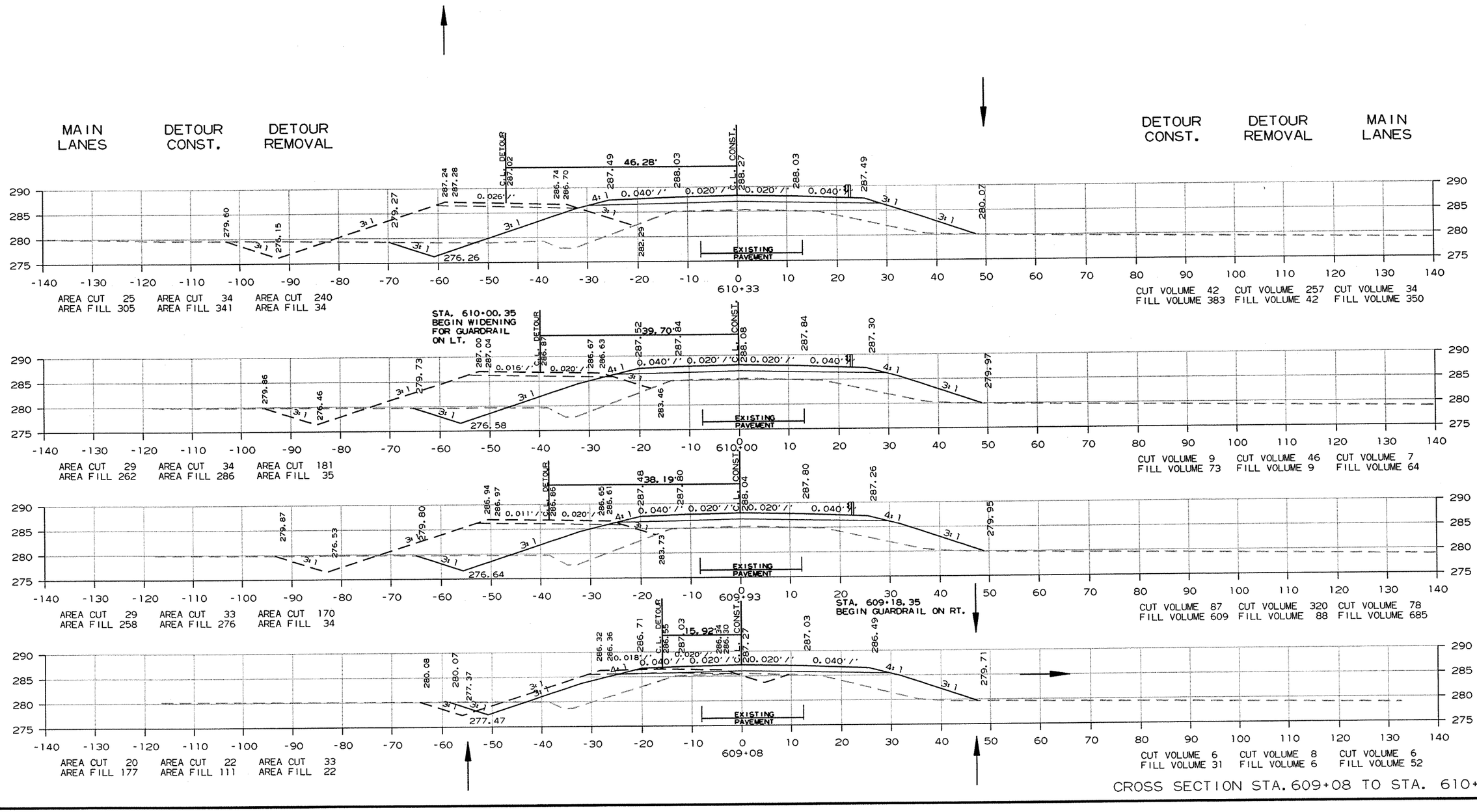


CROSS SECTION STA. 606+00 TO STA. 609+00

R100722.DGN 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	116	121

(2) CROSS SECTIONS

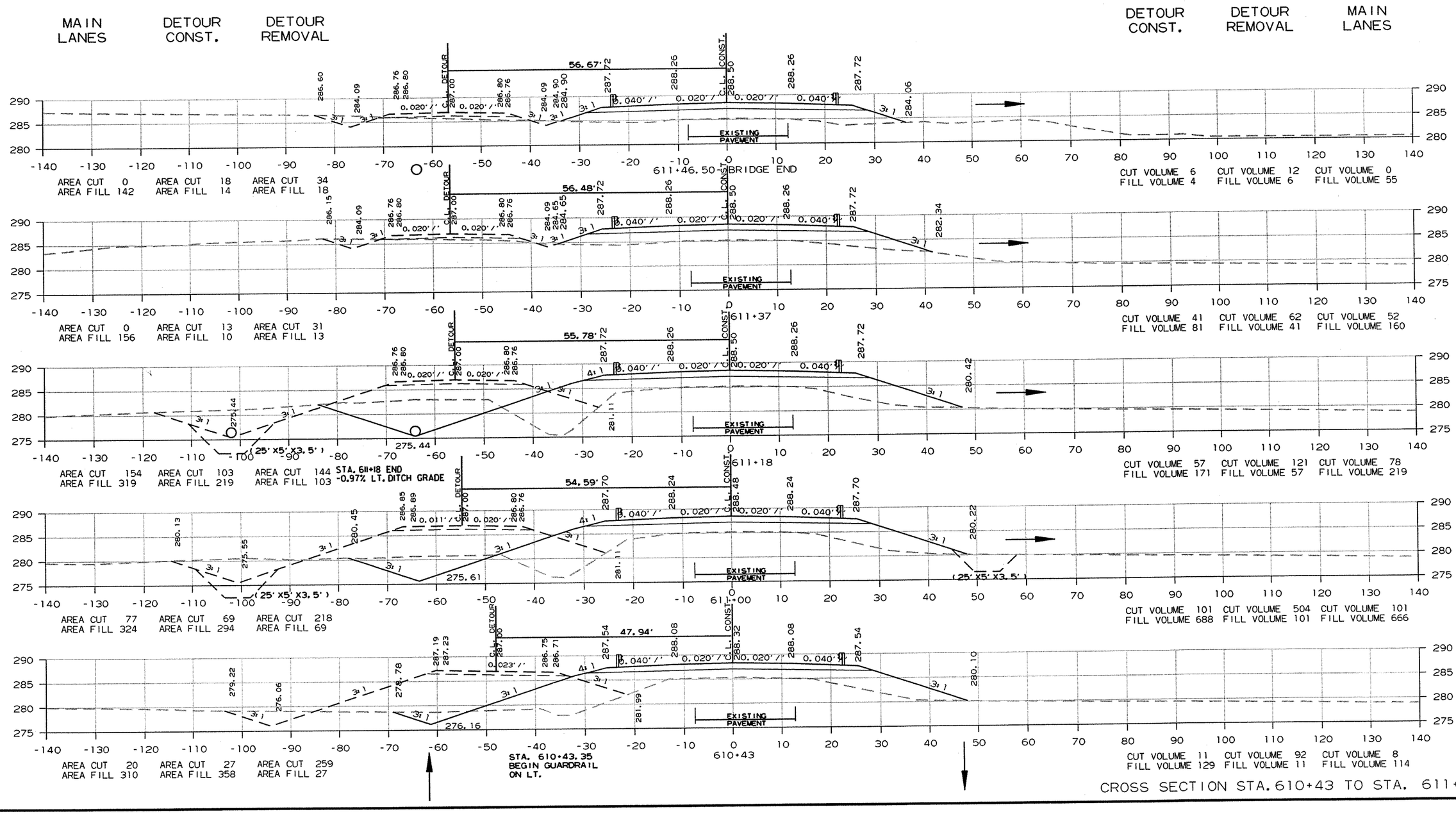


CROSS SECTION STA. 609+08 TO STA. 610+33

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	117	121

(2) CROSS SECTIONS

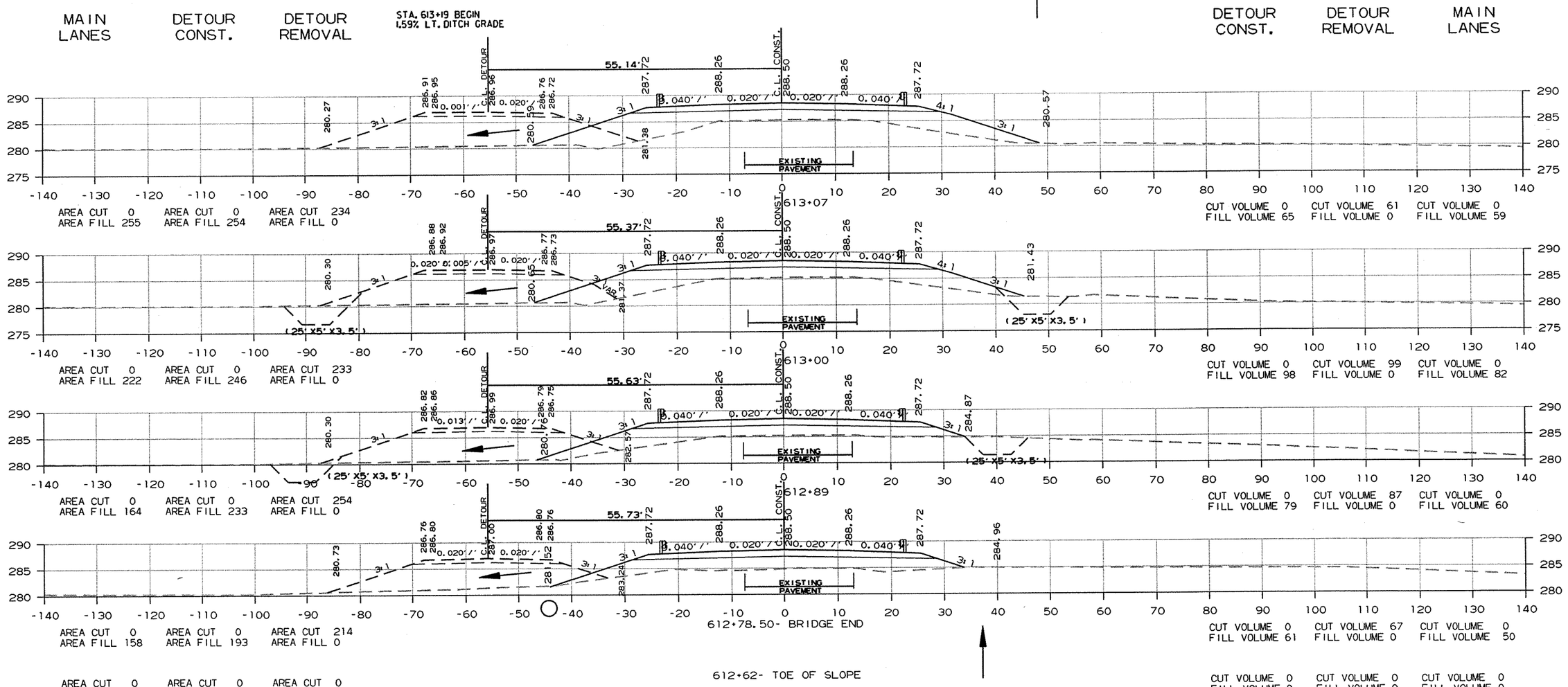


CROSS SECTION STA. 610+43 TO STA. 611+47

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	118	121

(2) CROSS SECTIONS

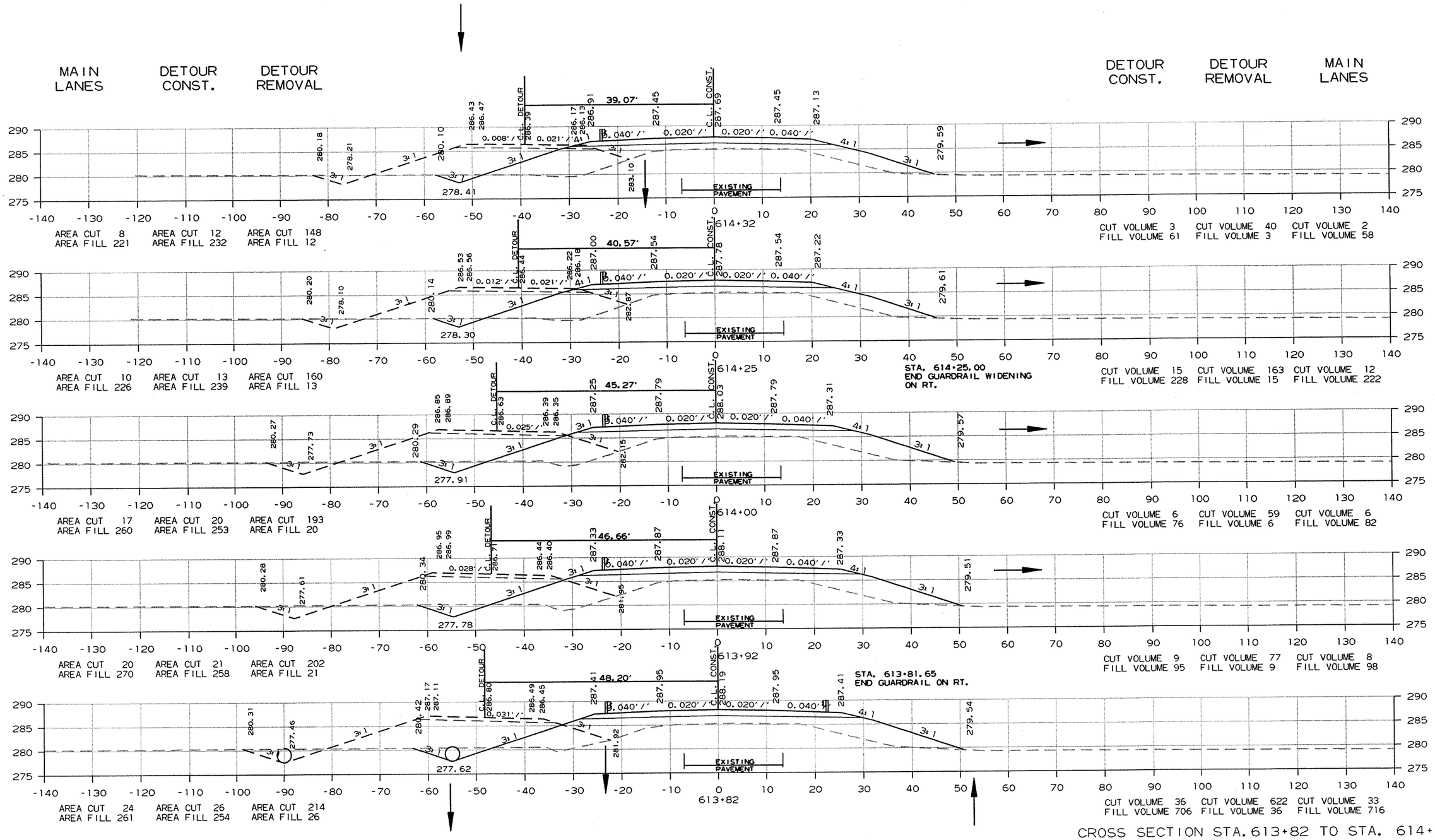


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CROSS SECTION STA. 611+62 TO STA. 613+07

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	119	121

(2) CROSS SECTIONS

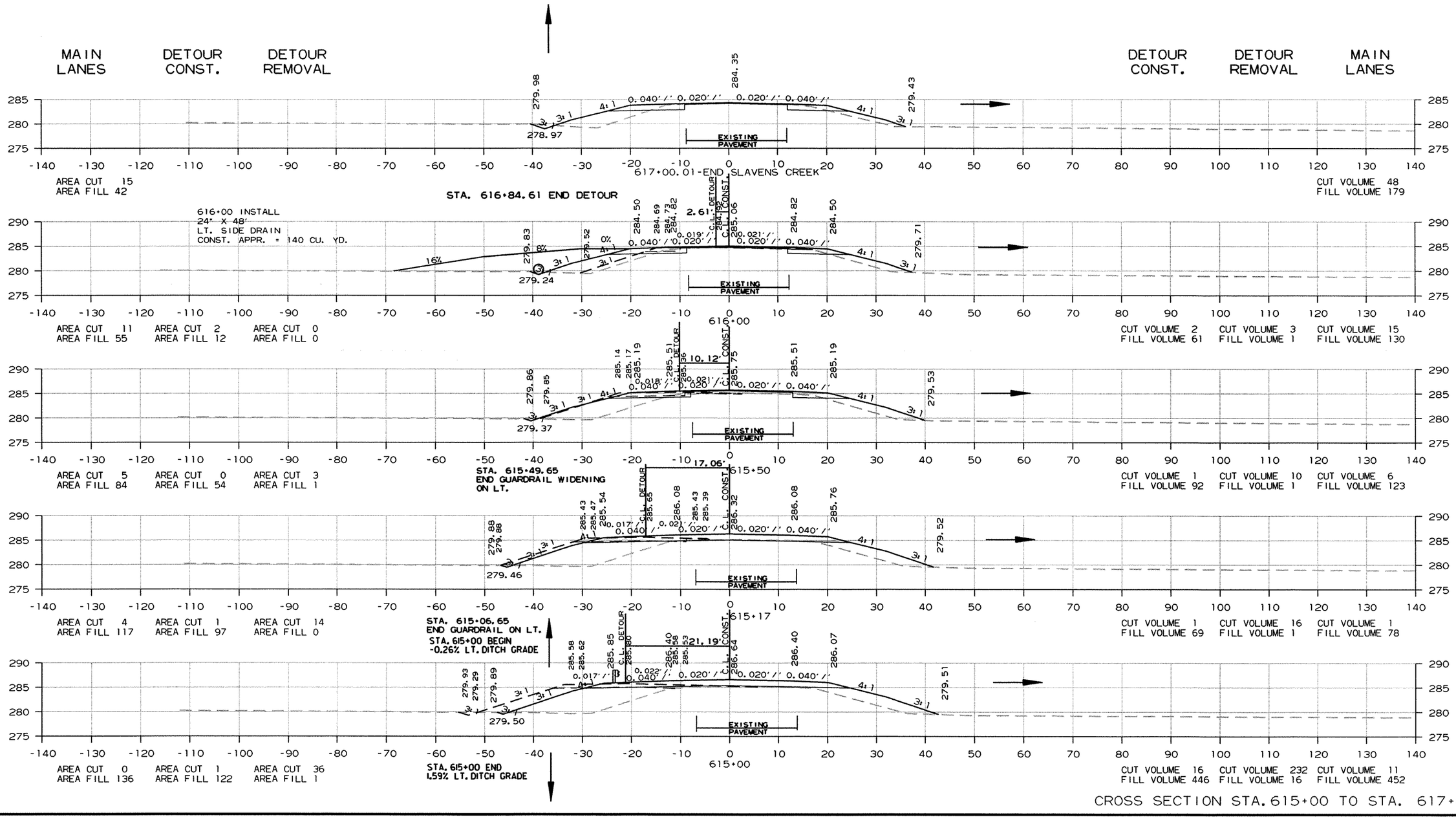


CROSS SECTION STA. 613+82 TO STA. 614+32

R100722.DGN 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	120	121

(2) CROSS SECTIONS

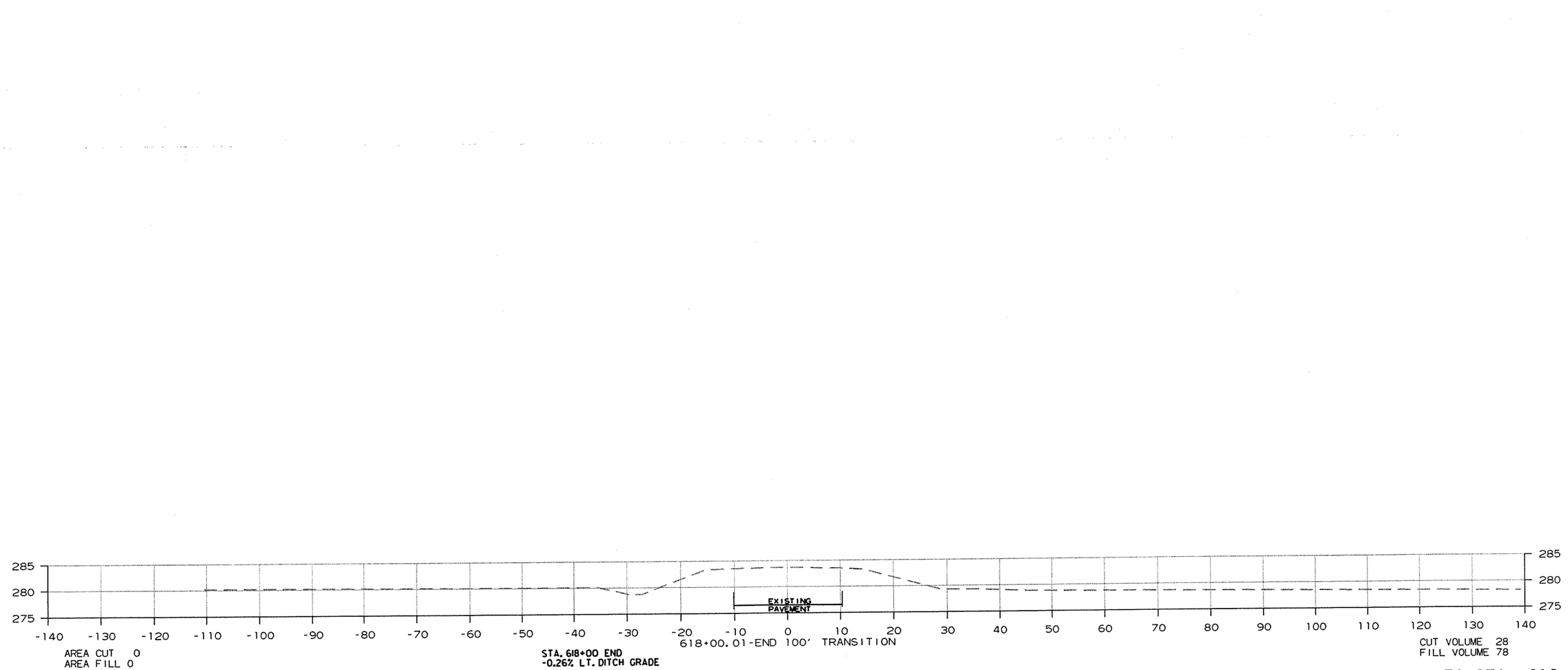


CROSS SECTION STA. 615+00 TO STA. 617+00

R100722.DGN 8/30/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100722	121	121

(2) CROSS SECTIONS



CROSS SECTION STA. 618+00 TO STA. 618+00

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